

DAZ 3D

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Welcome to Bryce 6

Welcome to Bryce® 6, the leading 3D program for desktop artists, animators, Web designers, and multimedia producers. Bryce is ideal for creating 3D graphics for magazines, ads, or virtually any illustration that would benefit from the powerful 3D impact of realistic perspective and shading.

Bryce animation features let you create great animations for video and multimedia easily. Bryce key-event and timeline-based animation lets you create incredibly realistic, fully animated, 3D worlds where rivers rush through gorges, the sun sets over the ocean, or mist evaporates to reveal flocks of birds soaring between mountain peaks. Bryce is also an invaluable tool for interactive multimedia.

What is Bryce?

Bryce is a stand-alone application that allows you to create and animate three-dimensional virtual environments.

With Bryce you can create any type of environment you can envision, from the ivory beaches of Tahiti to the silvery rings of Saturn. The Bryce user interface contains all the tools you'll need to create your environments.

For example, Bryce includes controls for managing infinite skies that let you set everything from time of day to the color and frequency of clouds. Using the sky controls, you can also set light direction, sun/moonlight, atmospheric depth haze (with intensity and color), height fog (with height, intensity, and color), and multiple sky color components.

You can also use Bryce controls to create a wide variety of objects you can use to populate your environment. You can use the Terrain Editor to create an infinite number of custom terrains, which you, in turn, use to create landscapes.

The realism of a Bryce environment largely depends on the materials applied to the objects in the scene. Materials are complex combinations of textures and values. The Materials Lab lets you combine textures and channel values that simulate any material found in the real world (and a few that aren't!).

When you have set up your environment just the way you want it, you can add a fourth dimension - time. You can use Bryce's animation tools to set up landscapes that move and materials that change over time.

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What's New in Bryce 6?

Bryce 6 introduces the following new features:

- Random Replicate
- Image-Based Lighting added in Sky Lab
- Tool Tips added in main working window
- Ability to apply a texture to the moon
- Sky Library updated to allow multiple categories
- Ability to add and delete library categories from within the libraries
- Scroll bar added in libraries allowing more than 14 categories
- Thumbnail preview in libraries increased so more presets can be viewed
- New Brush Library added in Texture Editor
- Import of animations from DAZ Studio
- Convert Boolean Group to Mesh
- Ability to import and export 16-Bit Terrain images to take advantage of the internal 16-Bit storage
- Main Working Window color scheme changed from blue to green

Other items updated/fixed:

- Proximity bug with metaballs and trees fixed for Bryce 6 metaballs (Bryce 5 metaballs cannot inherit the fix)
- Top file menu no longer permanently hidden
- Grouped trees added to the Objects Library no longer crash Bryce when imported into the library or loaded into the scene
- Macintosh permissions problems fixed
- Multi-Processor support completed
- Increased stability in OpenGL mode when opening files or moving objects
- Increased stability when importing DXF meshes
- Improved stability when importing via DAZ Studio
- Improved memory management when importing Poser/DAZ Studio figures with textures

Bryce 6.1 updated/fixed:

- Introduced a new IBL algorithm, added a Roller Ball to rotate the HDRI, and added Linear and Squared falloff options
- Improved performance of the Network Renderer

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- Stability increased
- Mac Intel compatibility added
- Nano-Preview reflects IBL settings
- Mac now imports textures from DAZ Studio correctly and imports in general improved
- Can now keyframe Materials
- Collision Detection added in the Multi-Replicate feature
- Library titles and descriptions now allow additional text to be added to accommodate the larger library preview size
- Added a render priority option for systems with multiple processors.

How this Manual is Set Up

Introduction to Bryce

A quick introduction to the main Bryce interface starts off this manual with an overview of the different palettes, labs, and, tools.

Reference Section

The next part of the manual is a reference section that goes through every menu, palette, lab, and dialog to show how to use each function. Plenty of examples are provided as well.

Commands, shortcut, and modifier keys are in bold text so they can be easily located on each page.

The Mac command is always shown first, followed by a slash. When the command is the same, only one is shown.

For example: Cmd/Ctrl+N, Cmd/Ctrl+Shift+A, Ctrl+Opt/Alt+M

Commands are also given in all capital letters.

For example: I, not i; L, not l

Practical Application

The third part of the manual provides some practical applications for some of the basic functions discussed in the reference section.

Appendices

The appendices provide quick access to a listing of all shortcut keys and modifiers, an acronym listing, glossary, known issues, and a few troubleshooting items.

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System Requirements

Windows®

Pentium® Processor or Compatible
Windows NT® 4 (Service Pack 6)
Windows 2000® (Service Pack 2)
Windows XP
700 MHz (1 GHz or faster recommended)
512 MB RAM min (1 GB recommended)
OpenGL compatible graphics card with at least 128 MB of onboard
(Drivers supporting OpenGL 1.1 recommended)- -
100MB free hard drive space for installation (500 recommended)
32-bit graphics color depth
CD-ROM drive

Macintosh®

Power Macintosh®
700 MHz (1 GHz or faster recommended)
Mac® OS X 10.3.9 or above
512 MB RAM min (1 GB recommended)
OpenGL compatible graphics card with at least 128 MB of onboard
(Drivers supporting OpenGL 1.1 recommended)
100MB free hard drive space for installation (500 recommended)
32-bit graphics color depth
CD-ROM drive

Macintosh® Intel

Macintosh® Pro, MacBook® Pro, or current iMac®
1.8 GHz Core Duo or faster
Mac® OS X 10.4.8 or above
512 MB RAM min (1 GB recommended)
OpenGL compatible graphics card with at least 128 MB of onboard
(Drivers supporting OpenGL 1.1 recommended)
100MB free hard drive space for installation (500 recommended)

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32-bit graphics color depth

CD-ROM drive

- Note: Bryce 6.0 will not function installed on a UNIX partition under Mac OS X.

Installing Bryce

Macintosh®

1. For the disk version, insert the Application CD into your CD-ROM drive and when the directory comes up, click on the Bryce Setup icon.
2. For the electronic version, double-click the Bryce 6.1 Installer icon to install Bryce 6.1 (installer filename: br_ap006_Br6_App.sit)
3. When the splash screen appears, click Continue.
4. Read the Software License Agreement. Read the terms then scroll all the way to the bottom of the agreement to activate the Accept button. Click the Accept button to accept the terms of the agreement and continue.
5. At this point, If you are want to uninstall Bryce, change the Easy Install located in the upper right corner of the current dialog to "Uninstall" then click on the Uninstall button to remove that version of Bryce. After uninstalling, you can switch back to Easy Install to reinstall Bryce.
6. To finish the install process, select a new install location from the drop-down dialog at the bottom left of the window. Once you've verified the install location, click the Install button.
7. You may have a dialog pop up telling you that you need to install the current version of DAZ Studio. If you know you have Studio already installed, you can skip this step, otherwise click Yes to install DAZ Studio.
8. When the installers were compiled, the most current version of DAZ Studio available was included. If you have a newer version already installed on your computer, you should select No.
9. When the installer has finished, you will need to restart your operating system in order to use the DAZ Studio integration.
10. For the download version only, next, install the preset files: br_ap006_Br6_Presets1.sit, br_ap006_Br6_Presets2.sit, br_ap006_Br6_Presets3.sit, and br_ap006_Br6_Presets4.sit. Bryce 6 will not work correctly without these presets and will crash when you attempt to access any of the libraries.
11. For the disk version, insert the Content CD and install the Bryce Content files to your Bryce 6 installation folder.
12. For the download version, install the Content files: br_ap006_Br6_Content1.sit, br_ap006_Br6_Content2.sit, and br_ap006_Br6_Content3.sit and the Sample Scenes: br_ap006_Br6_SmpScn.sit.

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13. For users who intend to use Bryce with multiple user accounts. Locate the file "CopyLibFiles.command" in your Bryce 6 folder and run it. The system password will be required. (This will copy needed system files to a hidden folder making them accessible to all users so that Bryce will run and function correctly for all users.)

Windows®

1. For the disk version, insert the Application CD into your CD-ROM drive and when the directory comes up, click on the Bryce Setup icon.
2. For the download version, double-click the Bryce 6.1 Installer icon to install Bryce 6.0 (installer filename: br_ap006_Br6_App.exe).
3. If you have a previous version of Bryce installed, you will get a "Previous Installation Detected" message. If you wish to keep the previous version installed, click on Yes. It is highly recommended that if the previous version is Bryce 6.0 or 6.0.1, that you choose No so that the Bryce 6.0/6.0.1 version is uninstalled and the Bryce 6.1 installation installed. Just make sure you backup your Preset folders before uninstalling the previous version.
4. When the splash screen appears, click Next.
5. Read the welcome screen, then click the Next button to continue.
6. Read the Software License Agreement. Then click the Yes button to accept the terms of the agreement and continue.
7. Select the install Destination Directory, then click Next to continue.
8. Select the Program Folder, then click Next to continue.
9. Click the Next button to begin installing the Application.
10. Choose whether to add the Bryce 6.0 icon to your Desktop and click Yes or No.
11. Click on OK to install the DAZ Studio character plug-in software (required for Bryce 6.0 to run). If you already have the latest version of DS installed, cancel the DS installation and skip to step 18.
12. When the sub-installer splash screen appears, click Next.
13. Read the welcome screen, then click the Next button to continue.
14. Read the Software License Agreement. Then click the Yes button to accept the terms of the agreement and continue.
15. Select the install Destination Directory, then click Next to continue.
16. Select the Program Folder, then click Next to continue.
17. Click the Next button to begin installing the Application.
18. Read the Last Minute Notes, then click Next to continue.
19. Choose whether or not to view the DAZ Studio ReadMe, then click Close to finish the sub-installer routine.

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20. Read the Bryce 6.0 Last Minute Notes, then click Next to continue.
21. Once the installation has completed select the Close button.
22. For the download version only, install the preset files: br_ap006_Br6_Presets1.exe, br_ap006_Br6_Presets2.exe, br_ap006_Br6_Presets3.exe, and br_ap006_Br6_Presets4.exe. Bryce 6 will not work correctly without these presets and will crash when you attempt to access any of the libraries.
23. For the disk version, insert the Content CD and install the Bryce Content files to your Bryce 6 installation folder.
24. For the download version, install the Content files: br_ap006_Br6_Content1.exe, br_ap006_Br6_Content2.exe, and br_ap006_Br6_Content3.exe and the Sample Scenes: br_ap006_Br6_SmpScn.exe.

Managing Content

Managing Bryce content is quite easy to do. All content that you want to access from within the Bryce libraries must be located in the Presets folder while extra content can be stored anywhere on your computer or on compact/DVD disk.

To add, delete, import, or export presets to the libraries or to add new categories to the libraries, refer to "Using the Preset Libraries."

Once you've acquired presets for Bryce you need to decide whether to load them immediately into Bryce, store them somewhere for later use, or archive them to disc.

Unless you've downloaded your presets directly from DAZ, they probably will not be in any specific folder structure. You'll need to unzip them into a folder and either import them into Bryce or organize them into storage folders.

Below is the folder structure used for Bryce packages at DAZ:

<table>
<tr><td rowspan="7">Content</td><td>Light Gels</td><td>PackageName</td><td></td></tr>
<tr><td rowspan="6">VendorName</td><td rowspan="6">PackageName</td><td>Materials*</td></tr>
<tr><td>Models*</td></tr>
<tr><td>Objects*</td></tr>
<tr><td>Scene Files*</td></tr>
<tr><td>Templates</td></tr>
<tr><td>Textures</td></tr>
<tr><td>Presets</td><td>Trees</td><td colspan="2">Vendor or PackageName</td></tr>
<tr><td>Scene Files</td><td>VendorName</td><td colspan="2">PackageName*</td></tr>
<tr><td>Skies</td><td>VendorName</td><td colspan="2">PackageName*</td></tr>
</table>

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* These folders may be eliminated in a package if only one type of item is provided.

You can use this same structure to store files you downloaded from other sites or come up with your own.

DAZ Support & Services

DAZ is committed to providing quality customer service and support that is easy to access and convenient to use, while fostering one-to-one customer relationships.

If you have a question about the features and functions of DAZ applications or operating systems, see the user manual or online Help for the product you are using. Updates and technical information are also available in the Release Notes.

Registering DAZ Products

Registering DAZ products is important. Registration provides you with timely access to the latest product updates, valuable information about product releases and access to free downloads, articles, tips and tricks, and special offers.

For more information about registering a DAZ product see the online Help for the product or see http://www.daz3d.com on the Internet.

Technical Support

DAZ provides the following support options for Bryce:

- FAQs: http://www.daz3d.com/i.x/faq/0/-/?
- Online Forums: http://forums.daz3d.com

Customer Service

DAZ Customer Service can provide you with prompt and accurate information about DAZ product features, specifications, pricing, availability, and services. DAZ Customer Service does not provide technical support. You can access Customer Service support as follows:

- World Wide Web: You can access general customer service and product information at http://www.daz3d.com/i.x/contact/0/-/? on the Internet.
- Email: You can send specific customer-service questions to DAZ Customer Service representatives by visiting http://www.daz3d.com/i.x/contact/contact_form/-/?.
- Online Manual: You can find this manual online at http://documentation.daz3d.com/bryce/Bryce6ArtistGuide.htm

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- Updates to the manual will be available as updated downloads in your account and on the downloads page at http://www.daz3d.com/i.x/support/downloads/-/?product=bryce

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"Poser" is a trademark of e frontier America, Inc. and e frontier, Inc.

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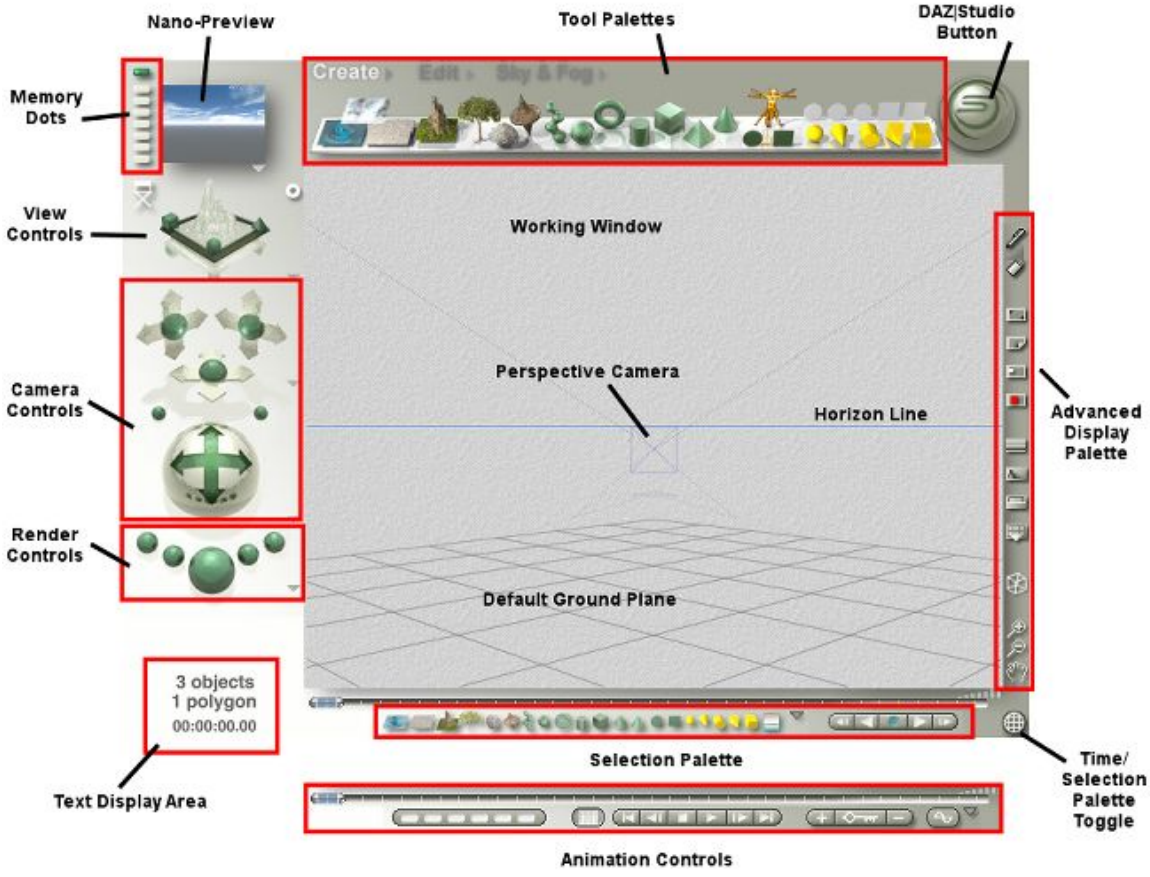
Introduction to Bryce

Before you get started, you'll want to learn about the Bryce Interface. Here you'll find out where everything is and how to use various components of Bryce.

Once you've gotten a quick overview of Bryce, you can move on to the Reference Section to get detailed descriptions on each Bryce function along with plenty of images and examples.

The Bryce Interface

The image below shows the Bryce Workspace when you first open up Bryce along with captions showing the names of each area. Notice that the controls have been changed to a light green instead of the blue controls introduced in Bryce 5.



The Bryce Window

Bryce's default environment consists of the Menu Bar, the Working window, the Control palette, and the Tool palettes. By default, the Bryce environment replaces your screen whenever you launch the application. However, your operating system's standard menus and windows are still accessible.

The Menu Bar

The Bryce Menu Bar contains five menus: the File menu, the Edit menu, the Objects menu, the Links menu, and the Help menu. These menus provide access to several Bryce functions and editors.

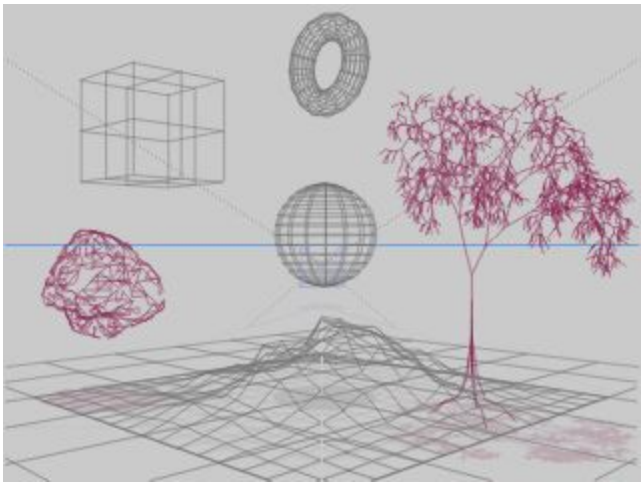
Refer to the "The Menu Bar" for more information on using the Menu Bar.



The Working Window

The Working Window is the area which displays all the objects in your Bryce scene. It's the work area where you'll arrange the objects and lights to create your environment.

The view of your scene shown in the Working window is taken from a "camera" that you can move around for different views of your scene. The Working window also has several display modes that let you view a scene as a wireframe, a rendered object, a combination of both, or as OpenGL. Refer to "Display Modes" for more information.



Nano-Preview

The Nano-Preview displays a rendered preview of your scene as shown in the figure below. As you update your scene, the Nano-Preview shows your changes. You can immediately see how your adjustments to object position or other properties affect the final look of the scene.

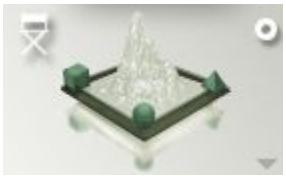


The Nano-Preview shows a small rendered version of your scene. As you change the scene, the display updates to show your changes.

You can use the preset viewing positions to see your scene from different angles, or you can use the Memory Dots to store and retrieve your favorite camera positions. Refer to "Nano-Preview" for more on working with the Nano-Preview.

View Controls

The View Control lets you adjust the view of your scene without moving the camera. Using this control you can see your scene from the top, bottom, left, right, front, or back. You can also set your scene to continuously rotate so you can see it from any angle. Refer to "Using the View Control" for more on using the View Control.



Camera Controls

Camera Controls change the position of the camera specifically along the X, Y, and Z axes. The Camera Trackball lets you move the camera in any direction, and along any axis. Refer to "Camera Controls" for more on moving the camera.



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Render Controls

The Render Controls let you render your scene to see all the materials and lighting effects you added. The center button starts the rendering process and the other buttons control rendering options. Refer to "Render Controls" for more on rendering.



Text Display Area

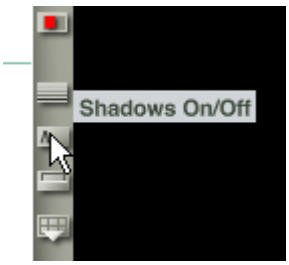
The area just below the Render Controls is reserved for momentary display of text information. When you pass your pointer over interface elements, this area displays the name of the interface element, and in some cases, it also displays the element's current settings. The Text Display Area also displays information about the total number of polygons in an object or a scene, and information about current control settings. Refer to "The Text Display Area" for more on this area.



Tool Tips

Bryce 6 adds Tool Tips to the main Working window. This allows you to quickly see what tool the mouse is over without having to look down to the Text Display Area.







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The Palettes

Bryce uses a series of palettes to manage tools and controls: the Create Palette, Edit Palette, Sky & Fog Palette, Advanced Display Palette, Selection Palette, and Animation Controls. These palettes let you create objects, edit objects, create skies and fog, control the display of your scene, select objects, and animate objects. Refer to "The Palettes" for more on using the different palettes.

Beside the title of each of the three tool palettes (the Create palette, Edit palette, and Sky & Fog palette) is a small triangle that opens the different Preset Libraries available in Bryce.

Refer to "The Bryce Preset Libraries" for more on Preset Libraries.

The Create Palette

The Create Palette contains tools for creating infinite planes, terrains, stones, primitive shapes, derivative primitives, 2D picture objects, and lights.

Refer to "The Create Palette" for more on the Create Palette.



The Edit Palette

The Edit Palette contains tools for editing object materials and resizing, rotating, repositioning, aligning, and randomizing objects.

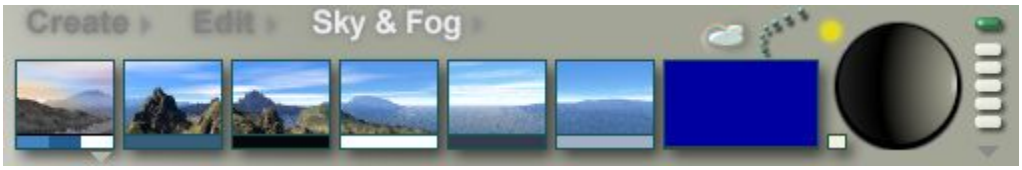
Refer to "The Edit Palette" for more on the Edit Palette.



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The Sky & Fog Palette

The controls available on the Sky & Fog Palette let you add shadows, fog, and haze, and let you set the altitude, frequency, and amplitude of clouds. The Sky & Fog Palette also lets you control the color of clouds in your sky and the position of the sun and moon. Refer to "The Sky & Fog Palette" for more on the Sky & Fog Palette.



The Advanced Display Palette

The Advanced Display Palette contains tools for controlling the display of the interface and enabling/disabling the Nano-Preview and Plop Render features. The Advanced Display appears on the right side of the Working window.

Refer to "The Advanced Display Palette" for more on using the Advanced Display palette tools.



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The Animation Palette

The Animation Controls on the Animation Palette let you set up key frames and edit the timeline of your animation. These controls also let you preview your animation, add and delete key frames, and access the Advanced Motion Lab.

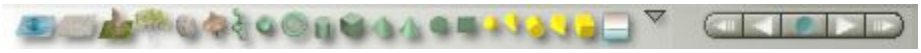
Refer to "Animation" for more on using the Animation Controls.



The Selection Palette

The Selection Palette contains tools for selecting specific types of objects in your scene. You do not see this palette in the default Working window. To view it, you must use the Time/Selection Palette toggle at the far bottom right of your Working window to replace the Animation Controls with the Selection Palette.

Refer to "The Selection Palette" for more on selecting objects.



The Time/Selection Palette Toggle

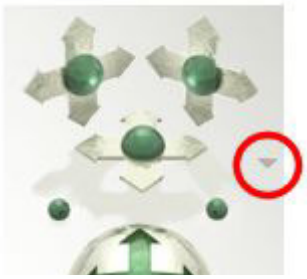
The Time/Selection Palette Toggle lets you switch between the Selection Palette and Animation Controls. Simply click on the toggle to switch between the palettes



Displaying Submenus & Popups

Wherever you see an inverted or sideways triangle icon in the interface, it indicates that there is a menu or other item available that contains options pertinent to the item closest to it. For example, in the Create Palette, there are triangle icons next to each tool in the palette. These triangles access the additional options for the tools.

To display a submenu, click on the triangle icon and the popup menu will be displayed.



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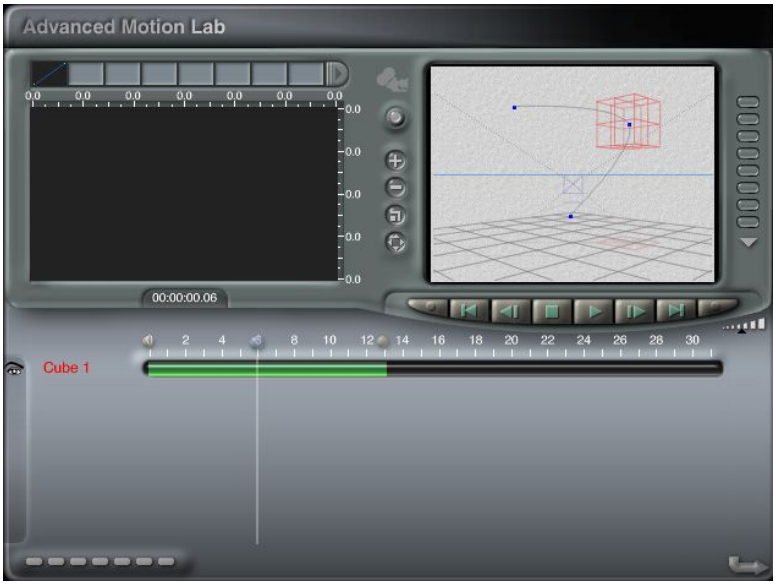
Laboratories & Editors

Bryce has several laboratories and Editors which allow you to apply materials and image textures to objects, adjust lighting, build terrains and textures, modify trees, and adjust animations. Click on the links below to find out what each lab or editor does, along with links to more detailed information.

The Advanced Motion Lab

The Advanced Motion Lab lets you fine-tune your animations. After you've created your key frames using the Animation Controls, you can use the tools available in this lab to control the speed at which objects move along a motion path, adjust the position of key frames, and preview your changes.

Refer to "The Advanced Motion Lab" for more on animating scenes and using the Advanced Motion Lab.

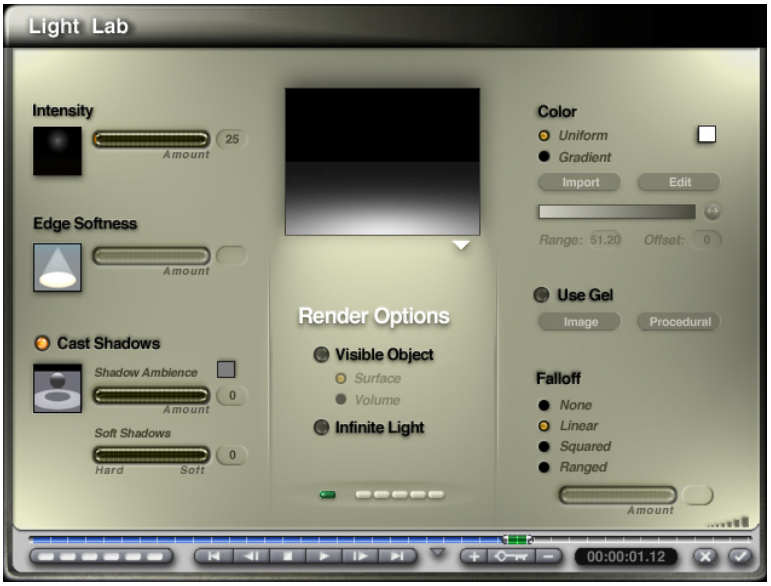


The Light Lab

The Light Lab lets you tweak the default Bryce light settings. You can set the intensity of the light, the edge softness, whether the light casts shadows or not, the color, add a light gel, and set the falloff options.

Refer to "The Light Lab" for more on working with lights.

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The Materials Lab

The Materials Lab is where you'll create the materials to apply to your objects. By combining up to four texture components on the materials grid, you can create incredibly complex surfaces that can bring your scene to life.

There are two types of materials you can create: Surface materials, which define the surface properties of an object, and Volume materials, which define the properties of an object's volume as well as its surface. When you're creating volume materials, the settings in the Materials Lab change. Some of the surface material settings are replaced by volume effects settings.

Refer to "The Materials Lab" for more on the Materials Lab and "Understanding Volume Material Channels" for more on Volume materials.



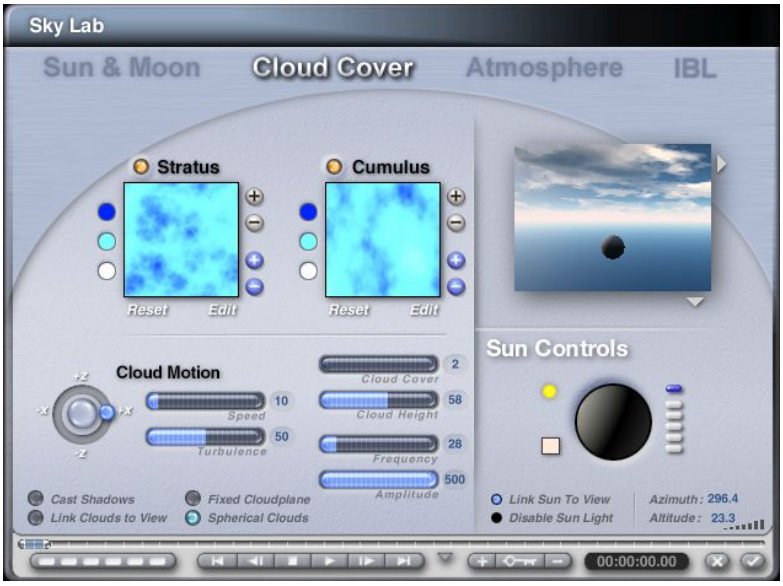
The Sky Lab

The Sky Lab gives you control over your atmosphere, from adding stars and comets to cloud cover and fog. The left side of the Sky Lab changes depending on the palette selected, while the right side shows a preview of the sky, access to the sky library, and the overall sky settings. Animation controls are also available at the bottom of the lab. Refer to "The Sky Lab" for more on editing the sky settings.

- The Sun & Moon palette provides the ability to affect the stars, sun, and moon, including setting the intensity of shadows, soft shadows, and the ambient and sky dome colors.



- The Cloud Cover palette takes care of your clouds, including motion, height, and whether they cast shadows or not.



- The Atmosphere palette provides the ability to add fog and haze, rainbows, and volumetric world density and quality.



- The IBL palette provides the ability to add an HDRI image to the scene.



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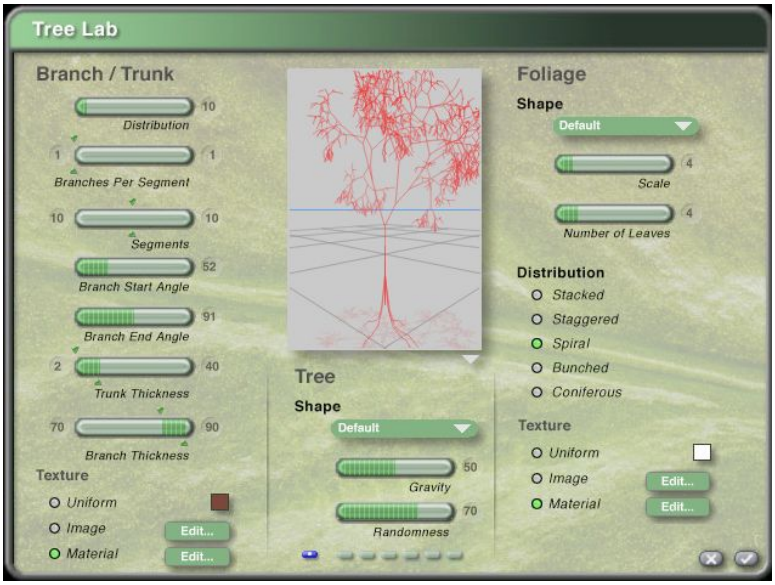
The Terrain Editor

The Terrain Editor is where you'll create all the terrain objects in your scene. The editor contains tools for painting and refining terrain objects. The Terrain Editor also has a real-time preview so you can see the effects of your changes instantly. Refer to "The Terrain Editor" for more on the Terrain Editor.



The Tree Lab

The Tree Lab lets you tweak the default Bryce trees. You can set the attributes of the branches and trunk, choose foliage shape, leaf distribution, tree shape, and apply textures. Refer to "The Tree Lab" for more on generating trees.



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Adjusting Editor Settings

The editors have unique interfaces that let you adjust individual settings by using a variety of tools, including controls, fields, knobs, and component indicators. To get the most out of each editor, it is important to know how these elements work.

Using Controls

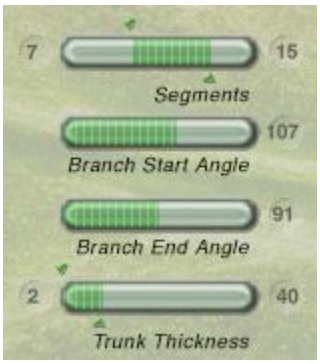
Controls let you set a value for an element within an editor. For example, in the Sky Lab, the Cloud Cover control lets you set the amount of clouds in your scene.

To adjust the value of a control using the slider:

- In the Materials Lab, pull the sliders in and out from the top or side of the panels.



- In other labs, slide the highlighted portion of the control to the left or right, or the small sliders above and below the oval sliders when available.

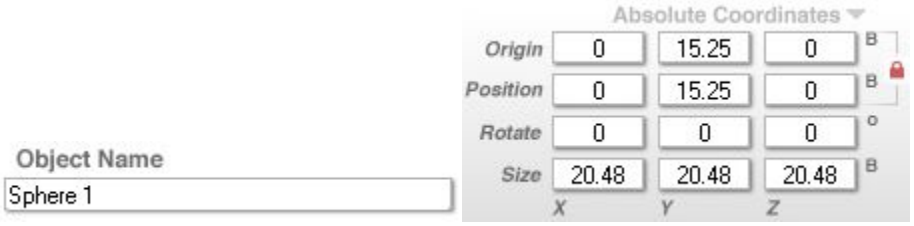


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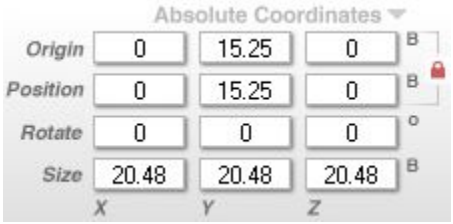
Using Fields

Fields can be found in dialogs and in controls. A field lets you enter a precise numerical value.

- To adjust the value of a text or numeric field:
    - Click in the field and type a value. Press the Enter key or click outside the field to accept the values.



- To adjust the value of a control using a field:
    - Click the numerical value to the right of the control's slider. The field will appear.



    - Click in the field and type a value.

Using Knobs

Some of the editors in Bryce contain knobs. Knobs can perform many different functions, such as randomizing or saving elements. To activate the knob's function, click the knob.



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Using Buttons

Buttons come in different shapes and sizes, ranging from dots to markers to radio buttons. Buttons are activated or selected by clicking on them.





Using Component Indicators

Some of the editors contain component indicators. When you are combining several components to create a composite element, such as a texture, the component indicator lets you know which component you are currently manipulating.

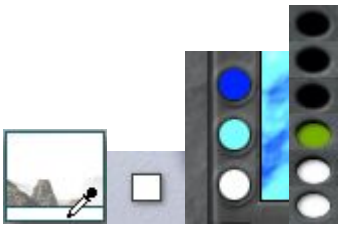
When working with materials, you can blend material components by turning on multiple component indicators simultaneously. Refer to "Combining Components" for more on using the component indicators to blend material components.

To turn a component indicator on or off, click the component indicator.



Using Color Swatches

Color swatches are used to change the color of items in your scene. They come in several shapes and are accessed by clicking on the swatch, either with or without pressing a modifier key.



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You can access different color pickers by pressing a modifier key when clicking on a color swatch.

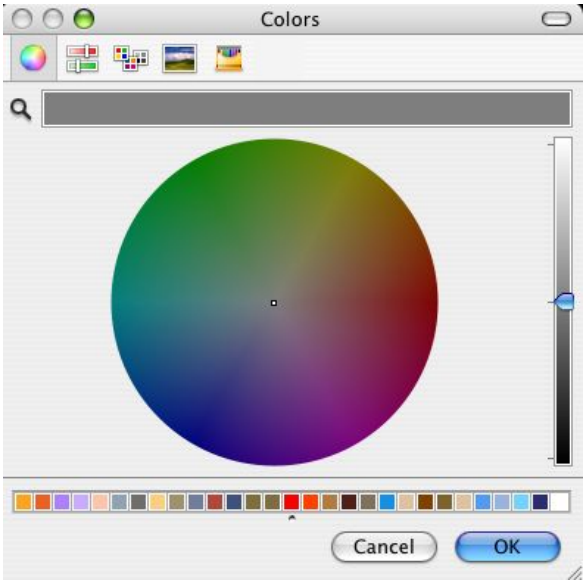
Mac Color Pickers

The Mac OS Color Pickers are accessed from Bryce by pressing **Ctrl+Opt** and clicking any color dot or swatch.

This opens the Colors dialog with five Pickers:

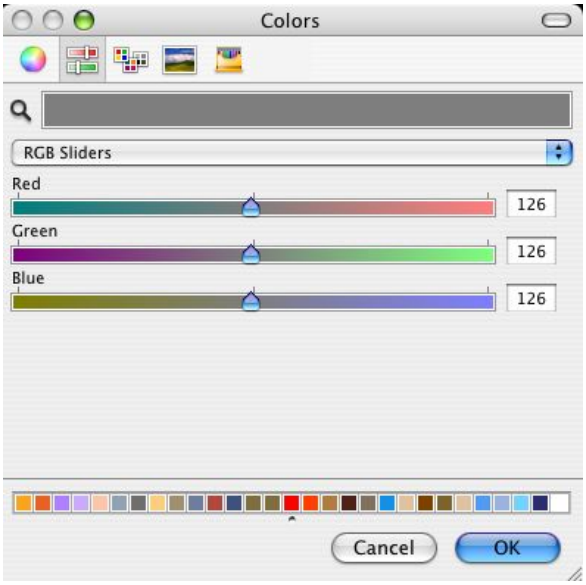
Besides the standard OS controls, each Picker has several things in common. At the top is a long color bar which is the current picked color. The Magnifying Glass icon next to it lets you select a magnified color from anywhere on the current screen. At the bottom are the preset boxes which are loaded by click dragging the top color bar to any preset box. You can expand/collapse the presets by dragging the small center dot.

- To use the Color Wheel, click on the color you want and adjust the brightness of the color from the right hand slider.

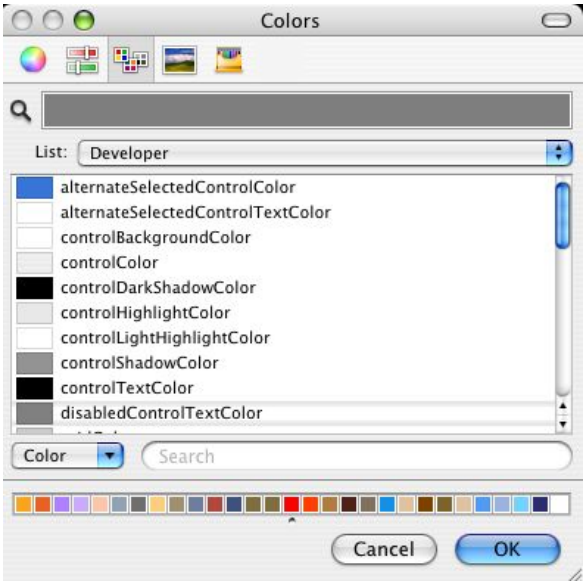


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- The Color Slider Picker lets you select a color via four different color schemes: Gray Scale, RGB, CYMK or HSB, accessed from the popup menu. Values can be set by adjusting the sliders or by typing in the numeric values.

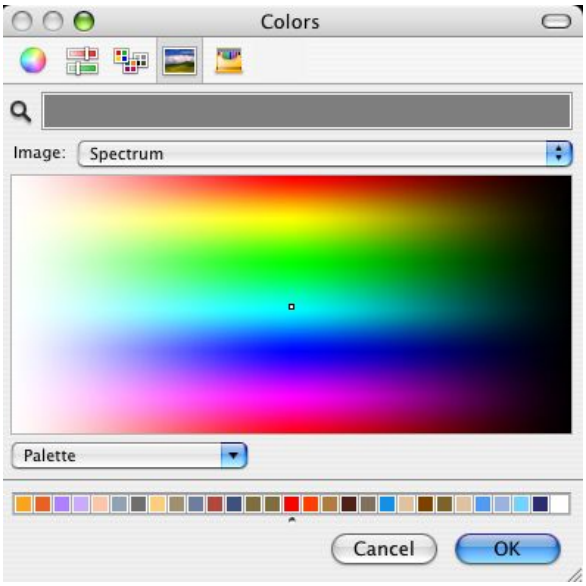


- The Color Palettes Pickers allows a color to be picked from a number of different preset "swatch" palettes. These include the System and Web Safe color lists. User Color lists can be created by selecting New from the popup and dragging colors into the main window. There are also options for renaming and removing colors and lists.



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- Most of the time the Image Palette is used to display a Spectrum image which can be clicked on to select a color. A user image can also be loaded from the bottom popup and stored permanently in the picker. The new image can be selected from the top popup.



- The Crayon Picker shows 64 standard Crayon colors. Clicking on one selects the color and displays the Crayon color name at the top.



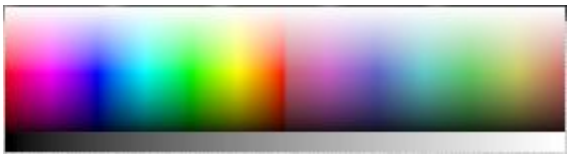
There are also several 3rd party Color pickers to be found online.

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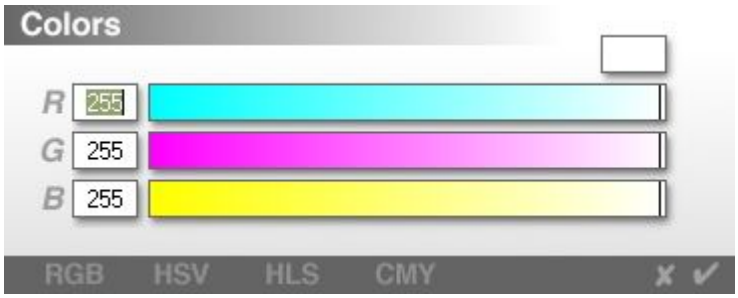
Win Color Pickers

Besides the basic Bryce Color Picker, there are two additional Color Pickers available for Windows users:

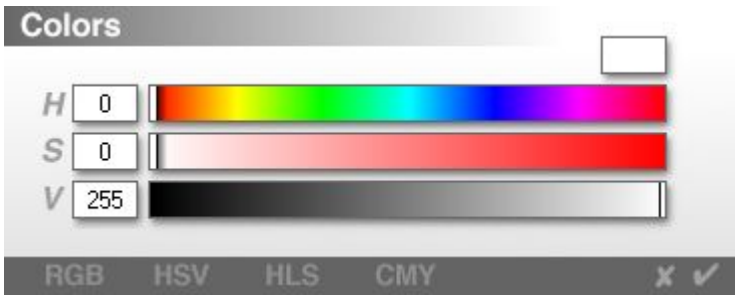
- Left-click on a color swatch then move the color picker over the color sections and click to select a color.



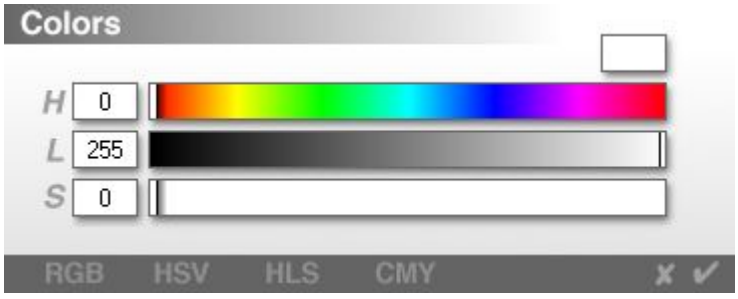
- Press **Alt** and click on a color swatch:
  - Default is RGB Color Picker



  - HSV Color Picker

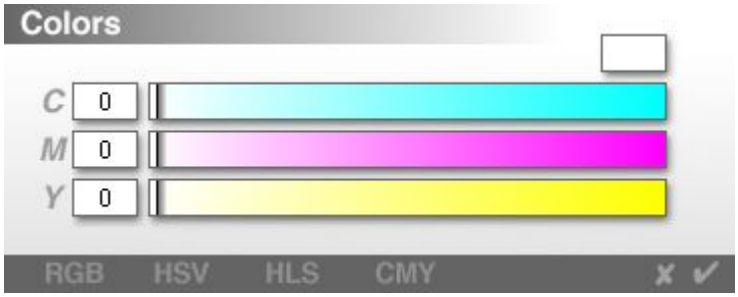


  - HLS Color Picker

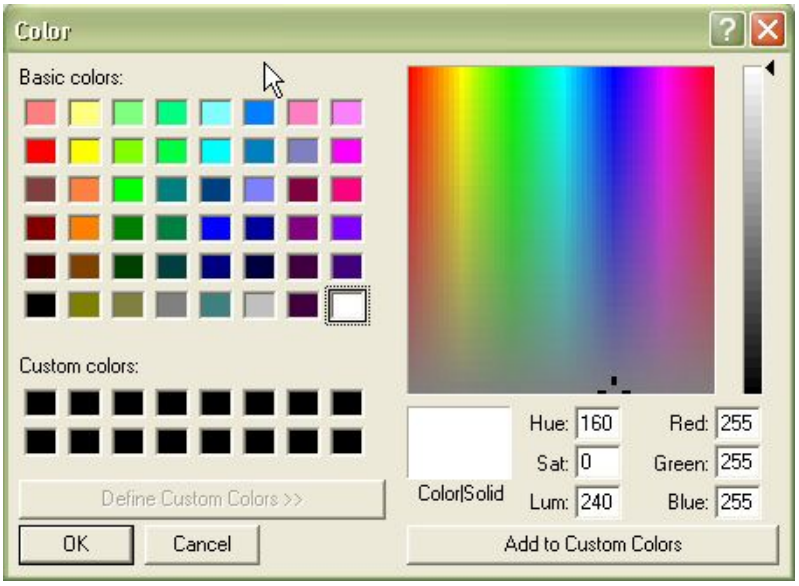


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- CMY Color Picker



- Press **Alt+Ctrl** and click on a color swatch to get the Windows Color Picker:



The Preset Libraries

Bryce has several libraries of presets that can make creating scenes easier. There are five preset libraries available in Bryce: the Preset Objects Library, the Preset Materials Library, the Preset Skies Library , the Preset Textures Library, and the Preset Brush Library.

You can use the Preset Objects Library to add ready-made objects to your scene.

- The Preset Materials Library lets you add a wide variety of materials to your objects.
- The Sky & Fog Preset Library contains pre-made skies that you can add to your scene to quickly create an environment.
- The Textures Preset Library contains pre-set textures created in the Deep Texture Editor.
- The Brush Preset Library contains several brush shapes along with the ability to reselect the default Terrain brush.

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Refer to "The Preset Libraries" for more on using the different libraries.



Reference Section

Menu Bar

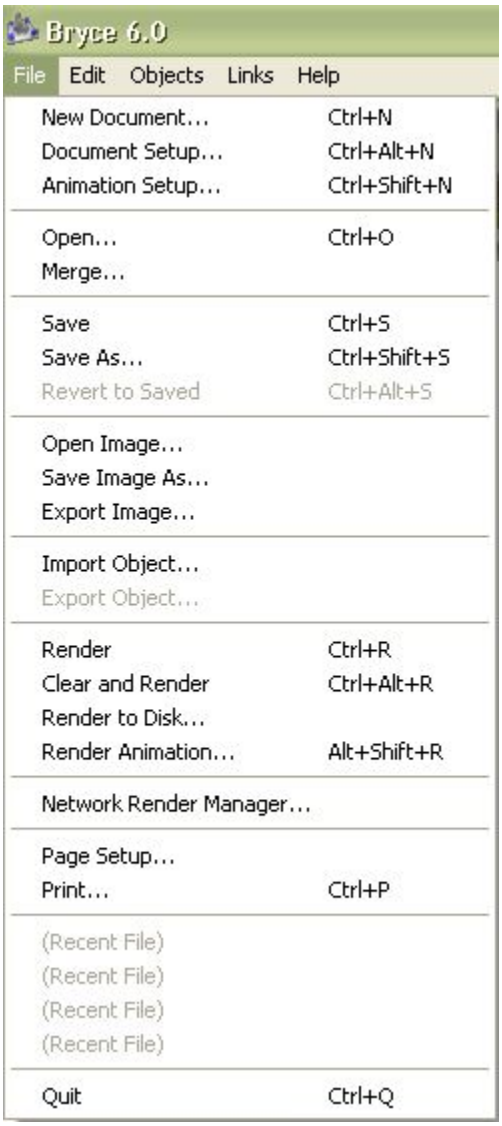
The Menu Bar is located at the top of the Bryce Working Window. In versions 5 and 5.5, this menu was hidden until you moved the mouse over the top of the window. Bryce 6 now has the menu fully visible at all times as previous versions to 5 had.



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File Menu

The File Menu is where you access file-related functions. To access this menu, just left-click on File.



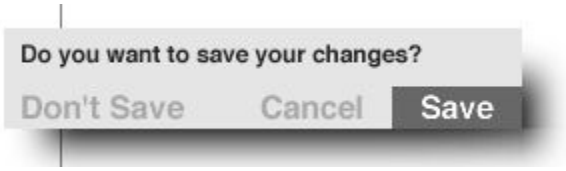
New Document

The New Document command closes your closes your current Bryce scene file and opens a new blank scene. You will be prompted to save any unsaved changes. If you do not save these changes, you will lose them. This action will also clear and reset the Undo/Redo stack.

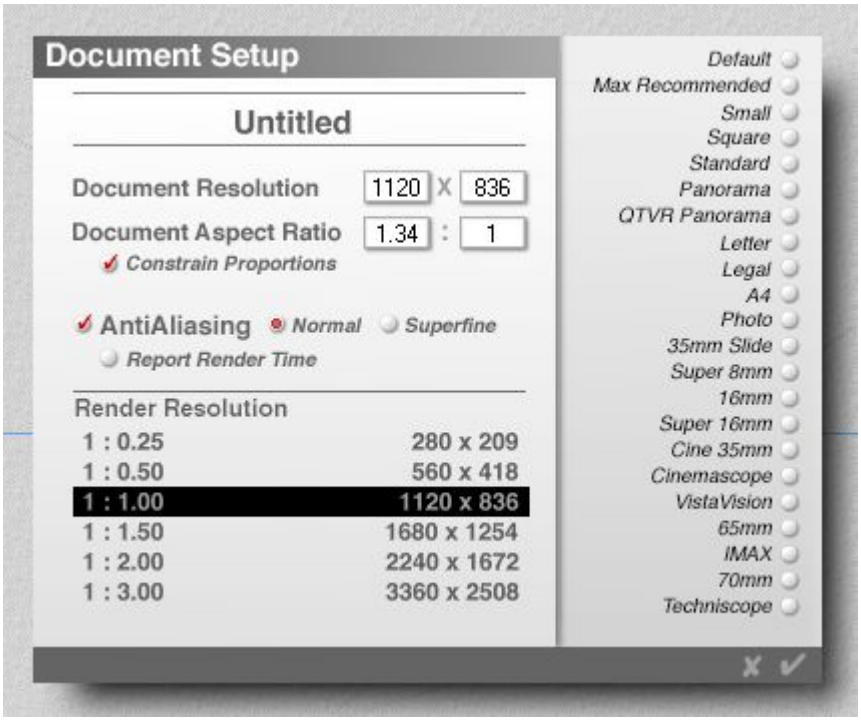
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To create a new document:

1. Select File > New Document from the menu or press Ctrl-N or, on the PC only, set the NumLock, then press Ctrl+decimal (on numpad).
2. Select whether to save the current scene, to not save it, or to cancel creating a new document.



3. Once the current scene has either been discarded or saved, the Document Setup dialog will come up. The current document settings will automatically be selected in the dialog.



4. Enter values in the Document Resolution fields.

   This is the absolute size of your working space expressed in pixels. You can enter any values you like here, although it's recommended that you do not exceed your available screen space if you can avoid it. You can work small and render larger if you need to. The values in the Aspect Ratio fields will update automatically as needed.

5. Enter values in the Document Aspect Ratio fields.

   These fields represent the Document Resolution as a ratio. Depending on the type of work you are doing, it may be more convenient to enter values here

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rather than in the resolution fields above. For instance, many video formats, as well as the standard 13" screen, are 3:4 aspect ratios.

The values in the Document Resolution fields will update automatically if you change the Aspect Ratio.

6. Enable the Constrain Proportions button if you want to preserve the current aspect ratio as you adjust the resolution.
7. Select whether to enable Anti-Aliasing and whether to use Normal or Superfine settings.

   These settings can always be changed later in the Render Settings.
8. Enable Report Render Time if you want to view the render report once a render is completed.
9. Select a Render Resolution from the list.

   This resolution sets the absolute size of your rendered image, expressed in pixels as a multiple of your document size.

   You can work in one size as you build your scene and render that scene in a different size. For example, you could be working at Bryce's default size but need to render four times larger for print or four times smaller for a Web page. Rather than resetting your document resolution every time you render (thereby impacting your wireframe workspace), you can simply set a separate size for rendering. Think of Document Resolution as input and Render Resolution as output.

   The default resolution is 540 x 405 and the default aspect ratio is 4:3.

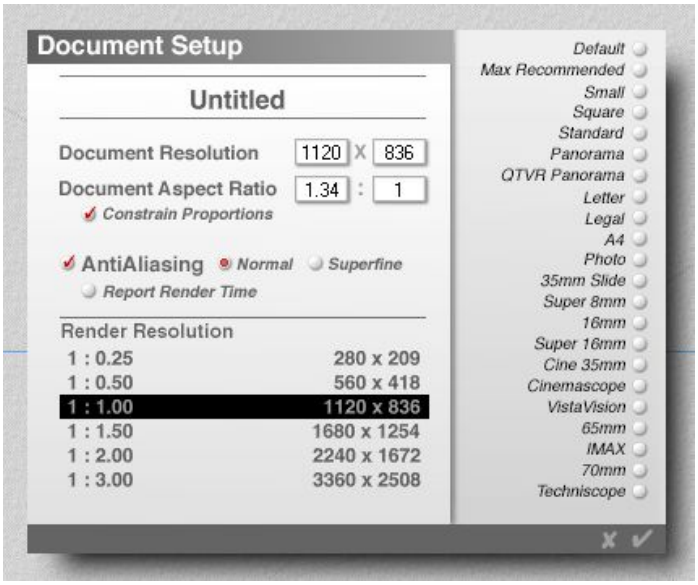
Document Setup

The Document Setup command brings up the Document Setup dialog where you can change the dimensions and aspect ration of the current document. This is the same dialog that comes up when you create a new document.

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To setup the document:

1. Choose File > Document Setup from the menu or press the Render button or press Ctrl-Alt-N. The Document Setup dialog will come up.



2. Enter values in the Document Resolution fields.

   This is the absolute size of your working space expressed in pixels. You can enter any values you like here, although it's recommended that you do not exceed your available screen space if you can avoid it. You can work small and render larger if you need to. The values in the Aspect Ratio fields will update automatically as needed.

3. Enter values in the Document Aspect Ratio fields.

   These fields represent the Document Resolution as a ratio. Depending on the type of work you are doing, it may be more convenient to enter values here rather than in the resolution fields above. For instance, many video formats, as well as the standard 13" screen, are 3:4 aspect ratios.

   The values in the Document Resolution fields will update automatically if you change the Aspect Ratio.

4. Enable the Constrain Proportions button if you want to preserve the current aspect ratio as you adjust the resolution.

5. Select whether to enable Anti-Aliasing and whether to use Normal or Superfine settings.

   These settings can always be changed later in the Render Settings.

6. Enable Report Render Time if you want to view the render report once a render is completed.

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7. Select a Render Resolution from the list.

   This resolution sets the absolute size of your rendered image, expressed in pixels as a multiple of your document size.

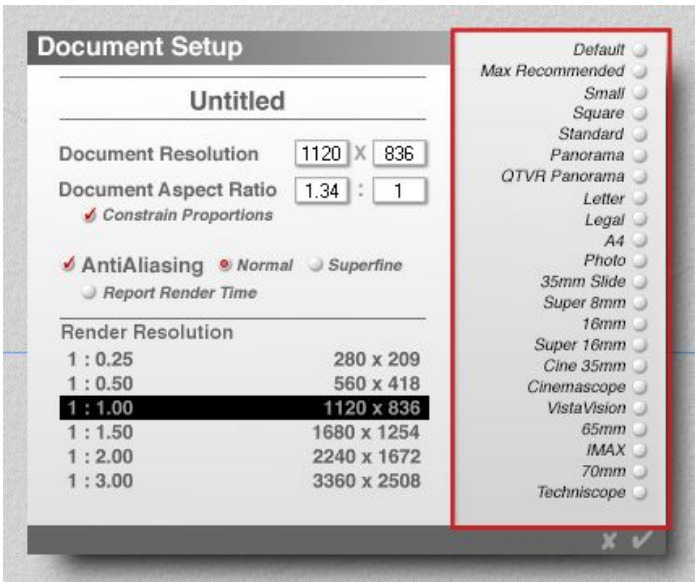
   You can work in one size as you build your scene and render that scene in a different size. For example, you could be working at Bryce's default size but need to render four times larger for print or four times smaller for a Web page. Rather than resetting your document resolution every time you render (thereby impacting your wireframe workspace), you can simply set a separate size for rendering. Think of Document Resolution as input and Render Resolution as output.

   The default resolution is 540 x 405 and the default aspect ratio is 4:3.

Document Presets

To set up the document using presets, click one of the preset aspect ratios displayed along the right side of the dialog.

These presets are aspect ratios for many useful document types. The pixel values that are placed in the Document Resolution fields are either absolute (as in Legal or Letter paper sizes) or based on your available screen resolution (as in Maximum Recommended or Square)



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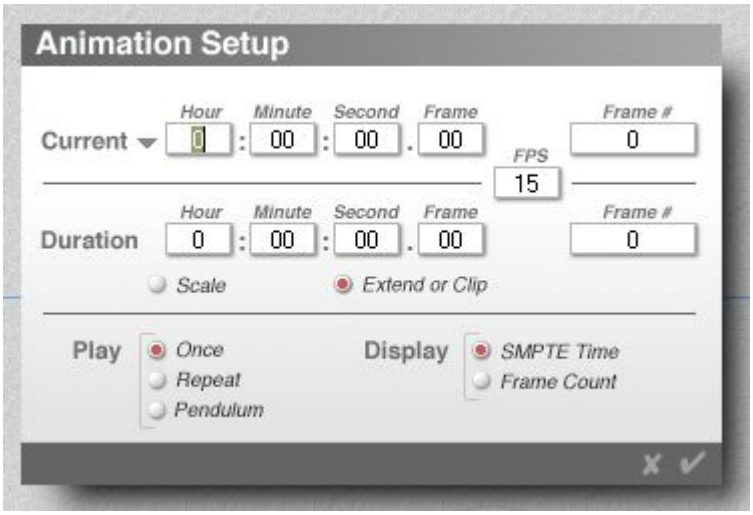
Animation Setup

The Animation Setup command brings up the Animation Setup dialog where you set up the time settings for your animation.

To set up the Animation:

1. Choose File > Animation Setup from the menu or press Cmd/Ctrl+Shift+N. The Animation Setup dialog will come up.

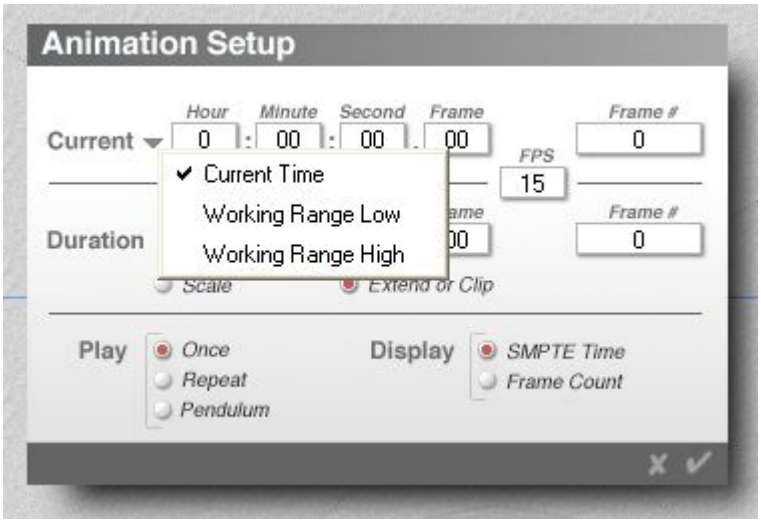
   There are three parts to this dialog. The top part indicates where the animation is right now, the middle part is where you define the length (duration) of the animation, and the bottom part is where you control the playback and how the time readout is to be displayed.



2. Set the animation time settings:
   - Current - As mentioned above, this shows where the current animation is at in time and the current frame number. The triangle next to Current brings up a popup menu where you can set the working range of the animation, for example, if you only want to work on minutes 5 through 9 in the scene.
   - Working Range Low - Select to set the start of the working range, set either the time or the frame number.

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- Working Range High - Select to set the end of the working range, set either the time or the frame number.



- Frame # - Shows the frame number of the current frame.
- FPS (Frames per Second) - Sets the frames per second for the animation. Lower frame rates render faster but can produce a jerky animation while a higher frame rate will product a more smooth animation.
- Duration - Shows the current duration of the animation and allows you to add more time to extend the length of the animation by either entering the time in the fields or entering a number in the Frame # field.
- Frame # - Shows the total number of frames in the current animation.
- Scale - Select to switch the Duration fields from setting the total time of the animation to setting the scale instead.
- Extend or Clip - Select to switch the Duration fields back to setting the total time of the animation.
- Play - Provides options you can use to alter the preview of your animation.
    - Once - plays the animation only once
    - Repeat - plays the animation continuously
    - Pendulum - plays the animation forwards then backwards, then forwards, continuously
- The Play Mode can also be set in the Timeline Options menu.
- Display - Select whether to display the animation in SMPTE Time or as a Frame Count.
- The Display Mode can also be set in the Timeline Options menu.

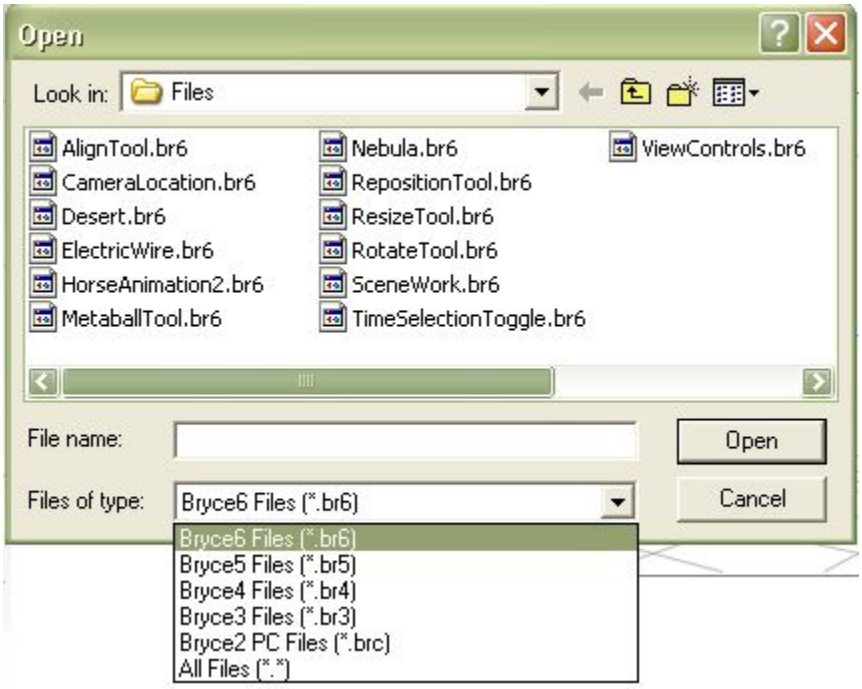
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Open File

The Open command allows you to select a previously saved scene to work on. A standard Open File dialog box appears, allowing you to navigate to the folder containing your desired file and select it for opening. Note that this will clear your existing scene, though you will be prompted to save any work you've performed on the current scene before the other one is opened. This action will also clear and reset the Undo/Redo stack.

To open a previously saved scene file:

1. Choose File > Open from the menu or press Ctrl+O or, on the PC only, set the NumLock, then press Ctrl+/ (divide on numpad). The Open File dialog will come up. You can also open a scene file by double-clicking on the Bryce scene file itself although this will open the file in a new copy of Bryce.
2. Navigate to the folder where the scene file is located and select it. If the scene file is from an earlier version of Bryce, choose the file type from the Files of type pull-down menu, then locate, and select the scene file.



Note: Bryce 5 and 5.5 scene files can be opened in either Bryce 5 or 5.5.

3. Click on Open to open the scene in Bryce. This may take some time depending on how large the scene file is and the capabilities of your system.

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Merge

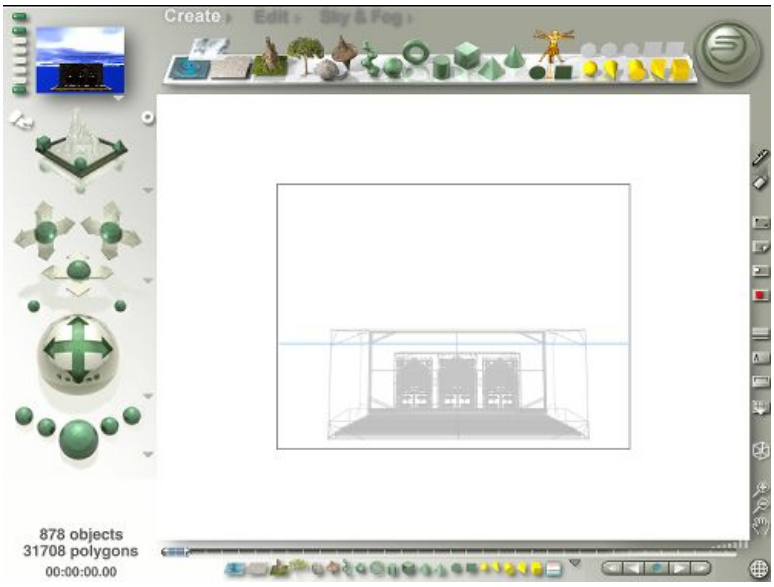
The Merge command allows you to merge a second scene into the currently loaded scene. A standard Open File dialog box appears, allowing you to navigate to the folder containing your desired file and select it for opening. You will be prompted to save any work you've performed on the current scene before the other one is opened. You will not lose any work in the current scene if you decide not to save it first. This action will also clear and reset the Undo/Redo stack.

Objects from the scene you're opening are placed in your current scene at the same absolute coordinates that they previously occupied. Some information from the scene you're opening will be discarded, such as family names.

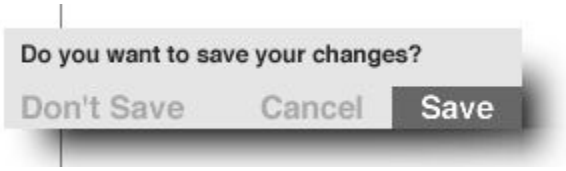
This feature is quite useful for large scenes where your computer cannot handle the size of the full size of the scene. The scene can be split up into multiple scene files, then merged prior to rendering. Once the files are merged, the camera will revert to the current Director's view so make sure you save the camera setting of the original scene before merging the files.

To merge two scenes:

1. Load first scene file.

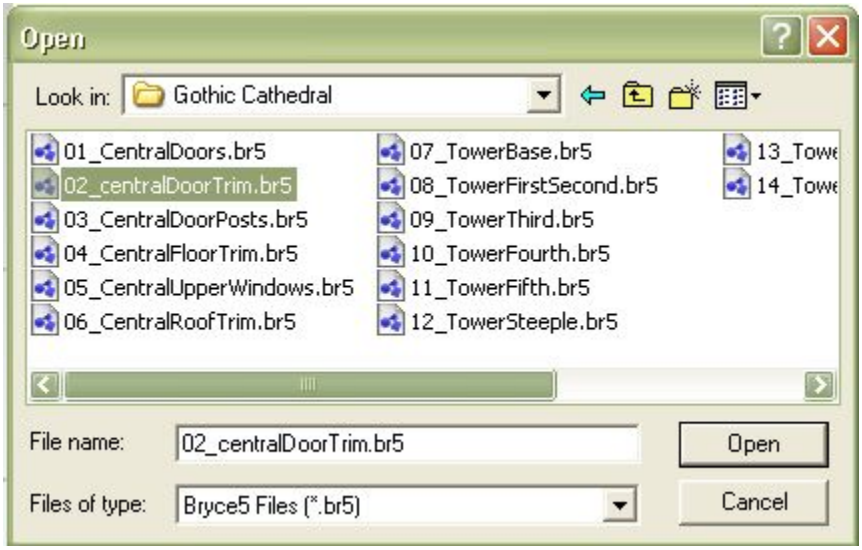


2. Choose File > Merge. A dialog appears prompting you to save the current scene.

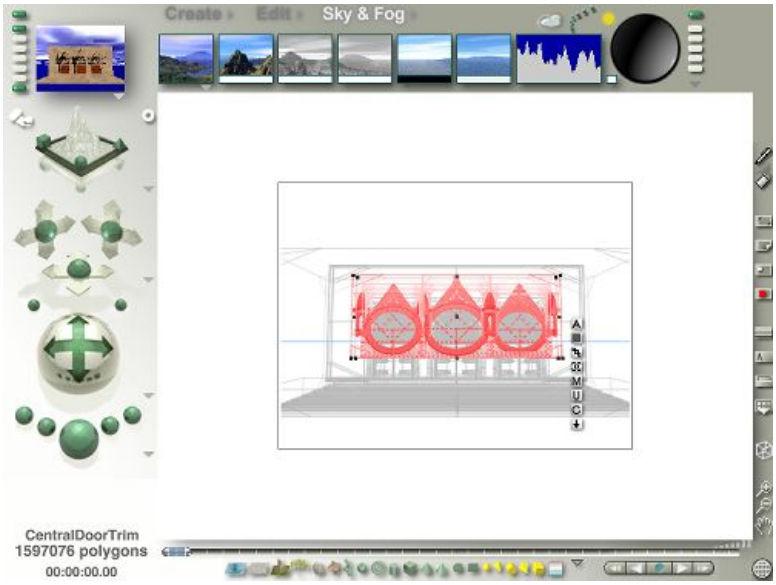


Choose an option. If you choose to Save the current scene, Bryce will save the scene before doing anything else. The Open dialog will then come up.

3. Use the dialog controls to locate the file you want to merge and click on Open.



4. The file you selected is merged with the current scene.



5. If you need to merge additional scenes, choose File > Merge again.

Holding down the Opt/Alt key while performing this function will merge only the sky from the incoming scene.

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Save / Save As

The Save and Save As commands allow you to save your work prior to continuing work, merging, or closing the scene. Since your scene files can quickly become large and complex, you should save your work often. It is also helpful to save the files under multiple names so that you can always revert back to an earlier version if needed (for example, house01.br6, house02.br6, etc.).

To save a file:

1. Choose File > Save or press Ctrl+S. The Save dialog appears.
2. Use the dialog controls to choose a location for your work and click Save.

To save a file under a different name:

1. Chose File > Save As or press Ctrl+Shift+S. The Save dialog appears.
2. Enter a new name and/or location in the fields provided and click Save.

   A copy of your work is saved, leaving the original intact.

If the Image With Scene Open/Save preference is selected, Bryce saves both the scene data and the rendered image when it saves the file.

Revert to Saved

The Revert to Saved command erases the effects of changes you made to your scene by reverting to the last saved version of your scene. All unsaved changes are discarded.

To revert a scene to the saved version choose File > Revert to Saved from the menu or press Ctrl+Opt/Alt+S.

Please note that using Revert to Saved can sometimes cause Bryce to crash and HDRI to stop working requiring you to restart Bryce to get it working again. The more memory intensive the scene is, the more likely a crash will occur on reverting. If this happens to you, use File > Open File to open the saved version instead of reverting to it. Of course, remember not to save the current scene when asked.

Open Image

The Open Image command allows you to open an image in Bryce in one of the following image types:

- CompuServe® GIF (.gif)
- DIB (*.dib) - Device Independent Bitmap
- Enhanced Metafile (.emf)
- FPix (*.fpi) - FlashPix Bitmap
- FPX (*.fpx) - FlashPix Bitmap

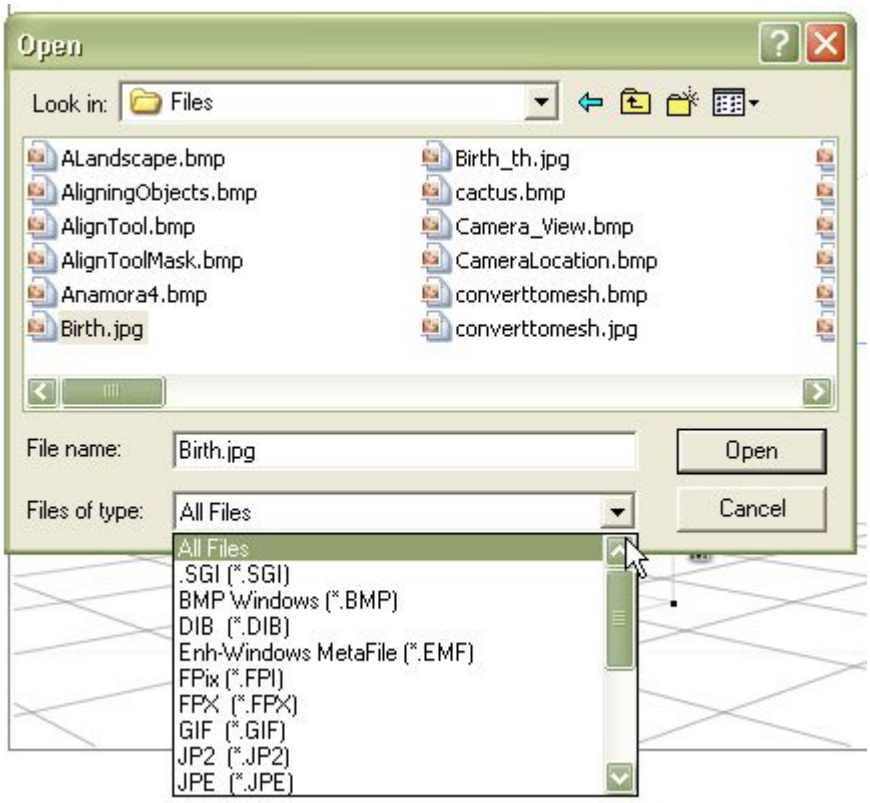
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- JP2 (*.jp2) - JPEG-2000 JP2 File
- JPE (*.jpe) - JPEG/JIFF Image
- JPEG (.jpg)
- Photoshop® (.psd)
- PIC (*.pic)
- PICT (Mac only)
- PNG (*.png)
- Targa (.tga)
- TIFF (.tif)
- Windows Bitmap (.bmp)

This is useful for loading an image to use as a modeling template or to add additional elements to a previous render without re-rendering the entire scene.

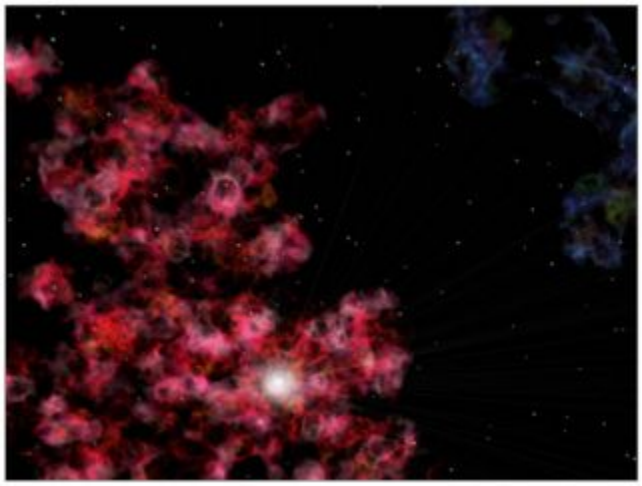
To open an image:

1. Choose File > Open Image from the menu. The Open File dialog will come up.
2. Navigate to the folder where the image is located, select it, and click on Open.



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The image will be loaded into the scene.



Save Image As

The Save Image As command allows you to save the rendered image out of Bryce. This allows you to save out a series of images of a scene as it is built for use in tutorials or for compositing in a paint program (i.e., object, distance, and altitude masks).

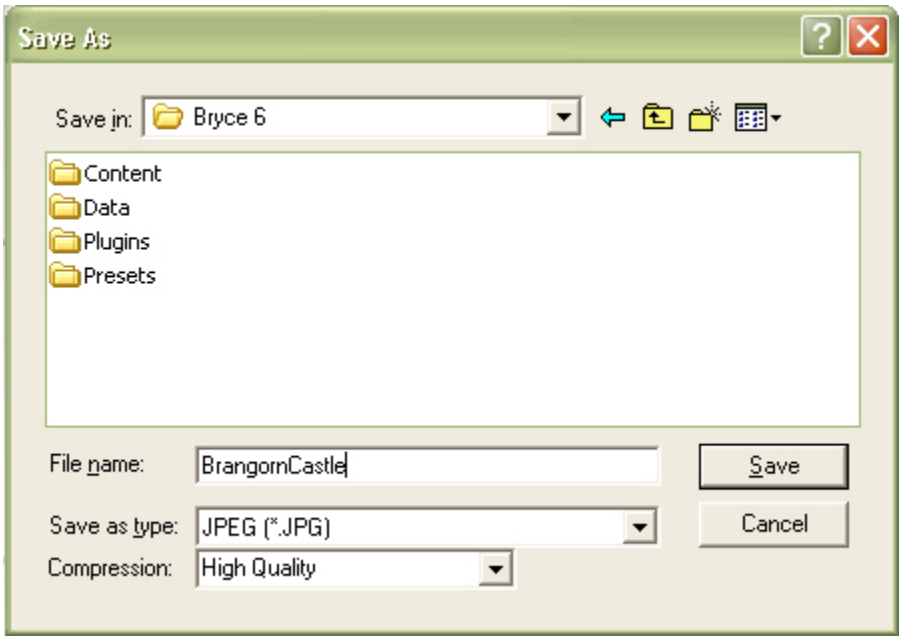
You can export images to the file formats listed below:

- Windows Bitmap (.bmp)
- JPEG (.jpg)
- Photoshop (.psd)
- PICT (.pct) (Mac only)
- TIFF (.tif)

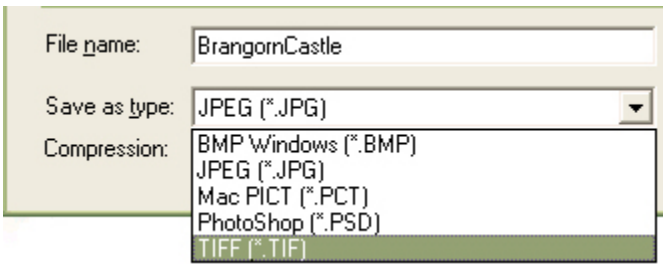
To save the current rendered image:

1. Render the scene.
2. Choose File > Save Image As from the menu. The Save As dialog comes up.
3. Navigate to the folder where you want to save the file, then enter a filename for the image.

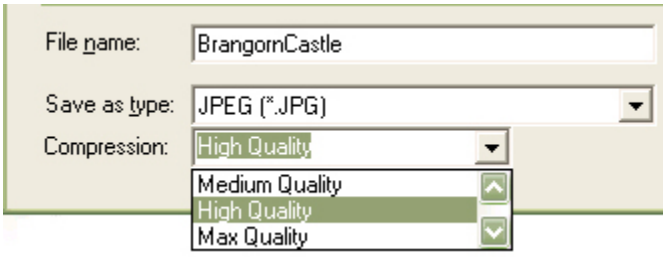
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4. Select a file type from the Save as type field. The default format is JPEG, however, for production work, the Bryce JPEG format is not recommended. Use BMP, PSD, or TIFF instead.



5. If you select JPEG, select a compression value from the Compression field.



Please note that Bryce's JPEG compression is not the best, so choose either High or Max Quality.

6. Click on Save to save the image to your computer.

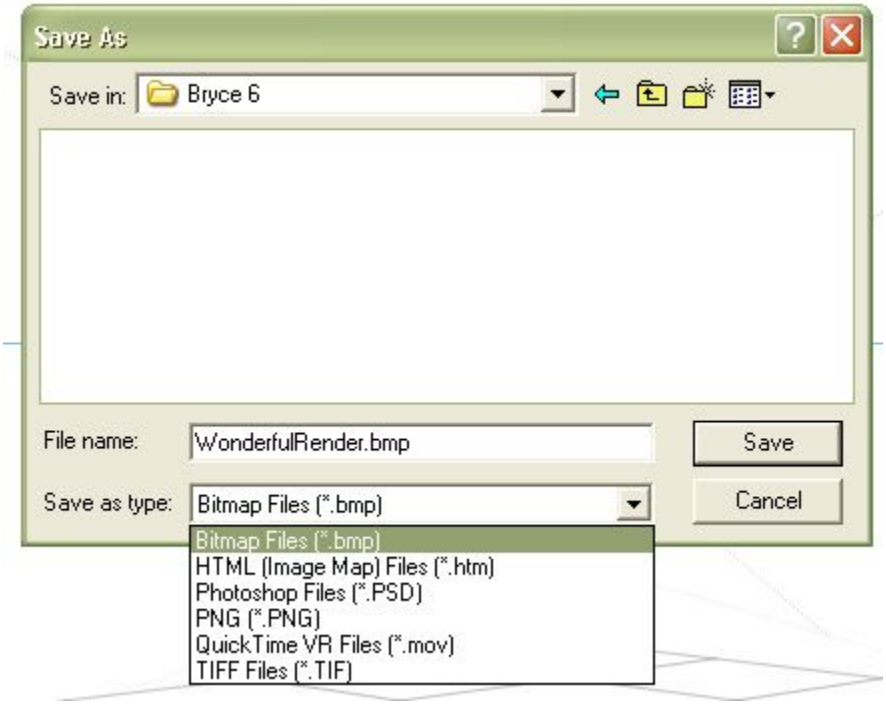
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Export Image

The Export Image command allows you to save the rendered image out of Bryce. Unlike the Save Image As option, the Export Image option allows you to save out an image map for use on the web with embedded links or as a QuickTime VR file.

To export an image:

1. Choose File > Export Image from the menu. The Save As dialog will come up.
2. Enter a file name in the Filename field.
3. Select a file format from the Save as type field then click on Save.



Import Object

The Import Object command allows you to import objects in the following file formats:

- 3d Studio® Objects (.3ds)
- 3d Studio® Project Files (.prj)
- 3DMF (.3mf, .b3d, & .t3d)
- AutoCad® (.dfx)
- Direct 3D (.x)
- Heightfield (.hf) Used to import descriptions of heightfields (terrains)
- LightWave™ (.lwo or .lws)

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- Both objects and scenes are supported. The camera, lights, and all objects (with material information) are imported. Versions 6 and up are not supported.
- Portable Greyscale Map (.pgm) Used to import descriptions of heightfields (terrains)
- TrueSpace™ (.cob) Versions up to 4.0 are supported. Material properties are supported
- USGS DEM (.dem) All forms of DEM files are supported
- USGS SDTS (.ddf) This format is the new USGS format which will replace DEM files
- VideoScape (.vsa) All versions are fully supported
- VRML1 (.wrl) Imports all properties relevant to Bryce, including camera, light, and surface and material textures
- Wavefront (.obj) Imports any textures referenced in the MTL file, if available
- WCS Elev (.elev)
- WorldToolKit® (.nff)

To import an object:

1. Choose File > Import Object from the menu. The Open dialog will come up.
2. Choose the drive and folder where the file is stored.
3. Select the file to import and click on Open.

   Note that when importing objects with an MTL file containing image references (exports from Poser are most often affected), if the pathname to the file is not in the MTL file or if the images are not in the same directory as the OBJ file, then you will be asked to locate each texture. Navigate to the folder(s) where the textures are located and select them when prompted.

   Two programs that help with this are Grouper and MeTaL Fixer - unfortunately for Mac users, these are PC only applications. See appendix E for links to these programs.

Export Object

The Export Object command allows you to export out terrains, symlats, and converted Boolean meshes from Bryce in the following formats:

- 3D Studio 3DS Files (.3ds)
- AutoCAD DXF Files (.dxf)
- Direct3D Files (.x)
- Infini-D 4.0 Files (.id4)

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- Lightwave Files (.lws)
- MetaStream Files (.mts)
- PGM Files (.pgm)
- Ray Dream Studio Files (.rds)
- RayShade HF Files (.hf)
- TrueSpace Files (.cob)
- USGS DEM Files (.dem)
- VideoScape Files (.vsa)
- VRML 1.0 Files (.wrl)
- Wavefront OBJ Files (.obj)
- WorldToolKit NFF Files (.nff)

When you export a file, you save information, such as vertices, smoothed normals, UVs (texture coordinates), and texture maps.

Some file formats have limitations. For example, DXF doesn't support smooth normals or UVs. If the file format doesn't support texture embedding, each texture map is written as a separate image at the same location specified for the mesh file. The names of the images will start with the name you specified for the mesh file and include the name of the material. If UV information can't be written, two texture maps are exported: one for the top part and one for the bottom.

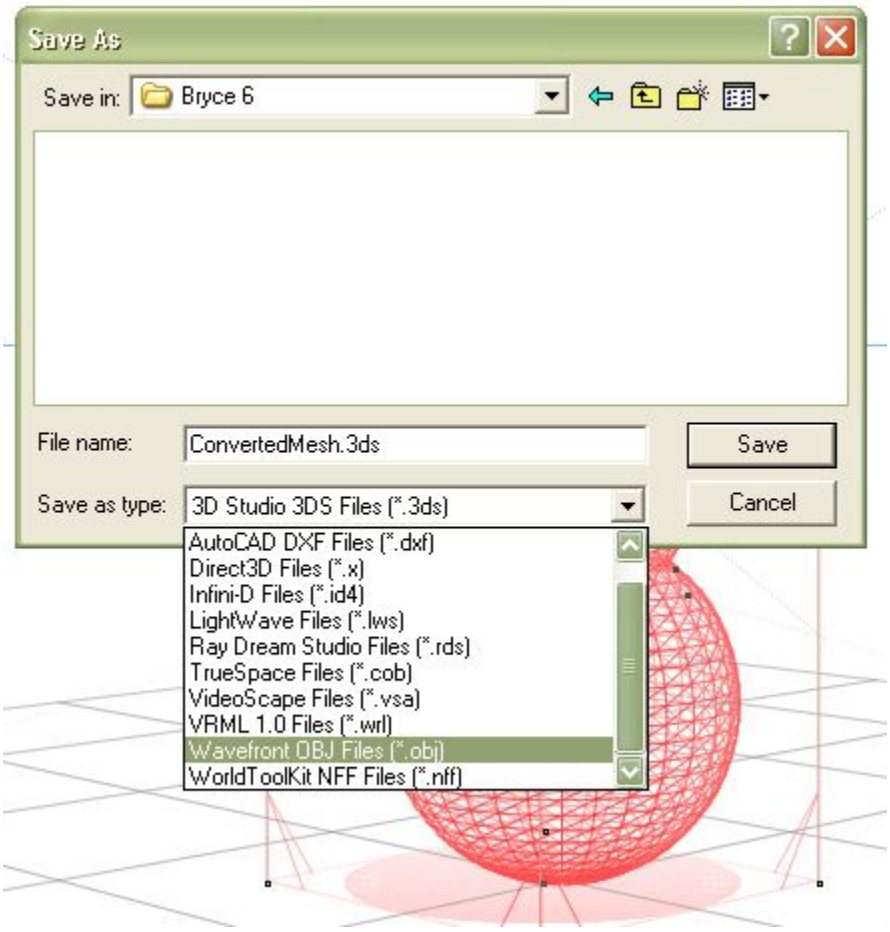
When you export to a 2D format such as DEM or PGM, all the possible texture maps are generated.

Terrains, SymLats, & Converted Meshes

To export a terrain, symlat, or converted Boolean mesh:

1. Select an object or group to export. If the group contains a Bryce primitive (non-converted), it will not export.
2. Choose File > Export Object from the menu. The Save As dialog comes up.
3. Enter a file name in the File name field.
4. Select a file format from the Save as type field and click on Save. The mesh will be exported. If materials or textures were applied to the mesh, they will be exported as well (512x512 pixels in size). Meshes exported as OBJ format will also have an MTL file generated.

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5. If exporting a terrain or symlat, the Export Terrain dialog will come up. Refer to "Exporting Terrains" for more information on exporting terrains.

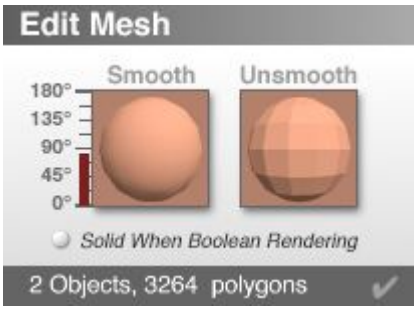
Rocks & Imported Meshes

The Export Object command cannot be used to export rocks or objects that were imported from another program, like Poser or DS, or a Boolean group that was converted, exported, then re-imported into Bryce. Instead, these objects are exported using a shortcut key.

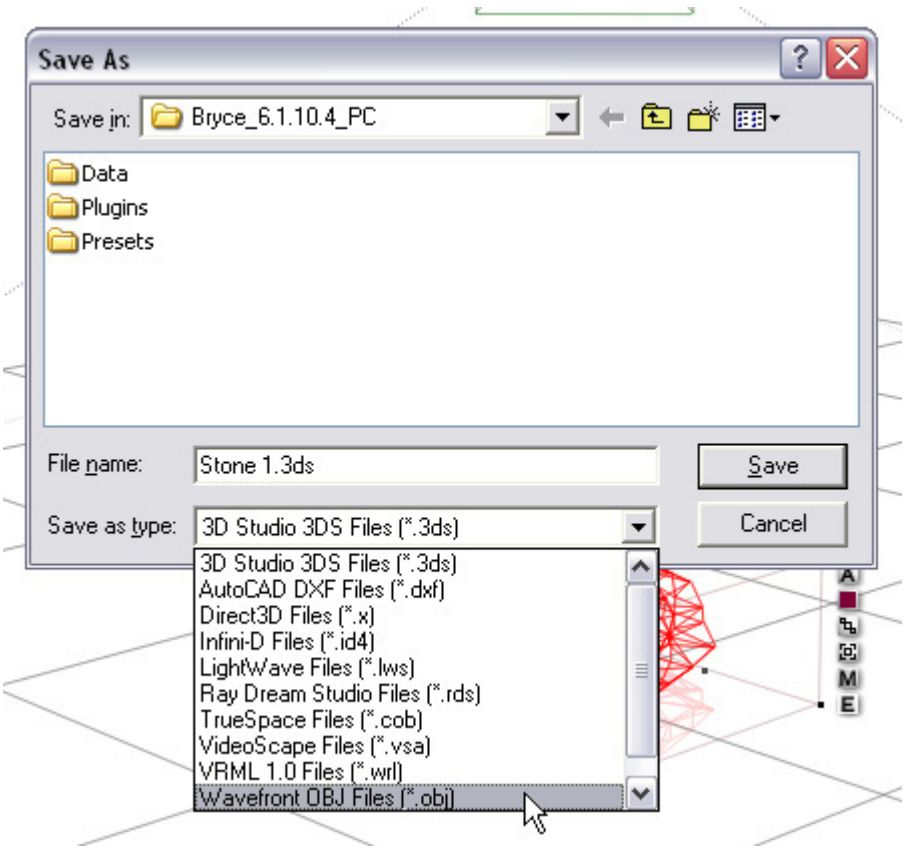
To export a rock or imported object:

1. Select a rock or a previously imported mesh. If the group contains a Bryce primitive (non-converted), it will not export.
2. Click on the E button next to the selected object or group. The Edit Mesh dialog comes up.

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3. Press Cmd/Ctrl+D. The Save As dialog comes up.
4. Enter a file name in the File name field.
5. Select a file format from the Save as type field and click on Save. The mesh will be exported. If materials or textures were applied to the mesh, they will be exported as well. Meshes exported as OBJ format will also have an MTL file generated.



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Render

The Render command immediately starts the scene to render using the current render settings. If no changes have been made to the scene, the render will continue where it left off. If any changes have been made to the scene, the render will start over.

To render a scene, choose File > Render from the menu or press Cmd/Ctrl+R.

If you have the Plop Render selection active, then only the selected area will render.

Clear and Render

The Clear and Render command will start a render over from the top. This command does not clear the screen before starting the render over.

To start a new render, choose File > Clear and Render, or click the Clear and Render control, or press Cmd/Ctrl+Opt/Alt+R.

If you have the Plop Render selection active, then only the selected area will render.

Render to Disk

The Render to Disk command allows you to render your image directly to disk. This is the best choice if you have created a very large image, because it lets you set the DPI and saves memory. In addition, rendering to disk is usually faster than rendering to screen (although this varies).

In addition to saving files to 2D formats (.bmp, .jpg, etc.), you can also save files to the following formats using Render to Disk:

- HTML (.htm)
- QuickTime VR (.mov)

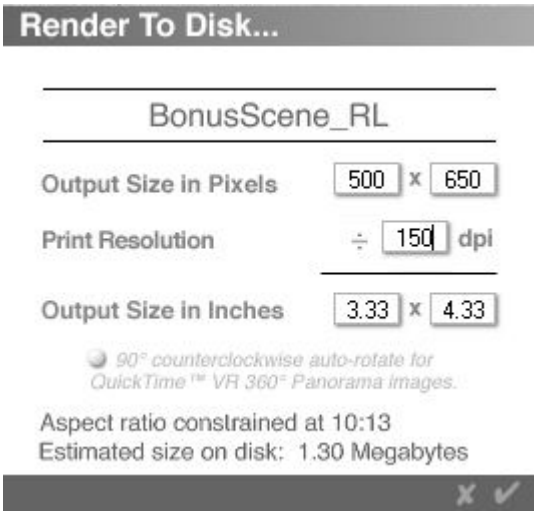
To render a scene to disk:

1. Choose File > Render to Disk. The Render to Disk dialog will come up.

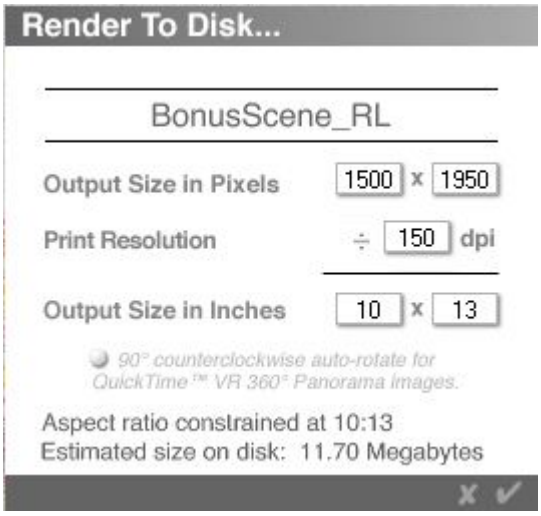
   The Output Size in Pixels, Print Resolution, and Output Size in Inches will show the current settings for the scene.

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2. Change the Print Resolution to the dpi you need for the image, the Output Size in Inches will change to match the new dpi.

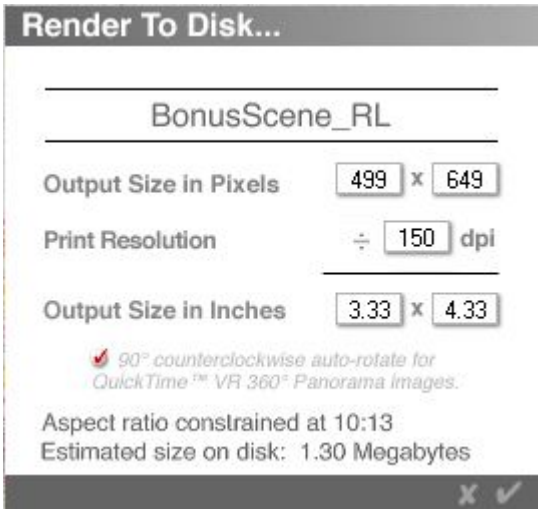


3. If you need the output size to be larger, change either the Output Size in Pixels or the Output Size in Inches, adjusting either one will automatically update the other setting.

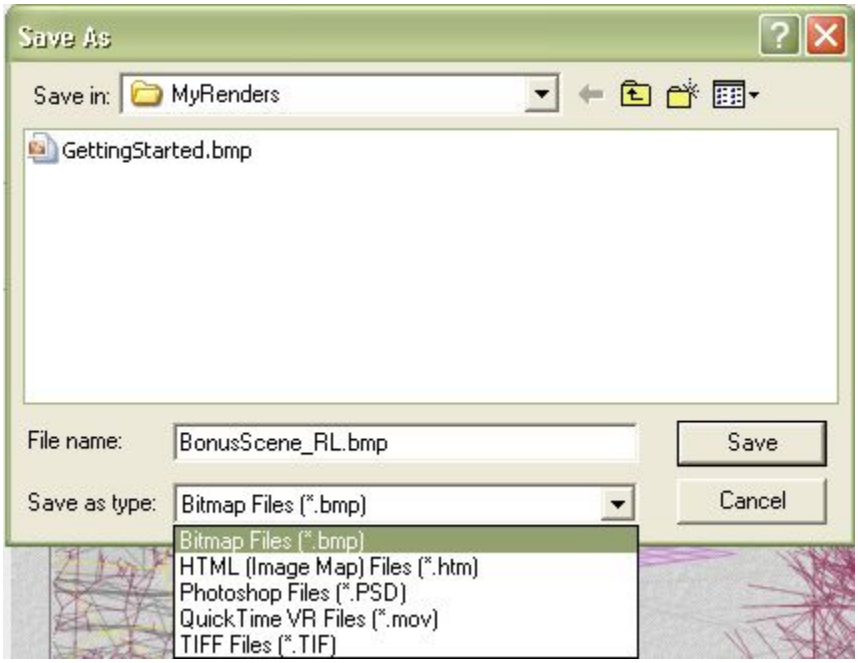


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4. If rendering a QuickTime VR, select the button next to that option.

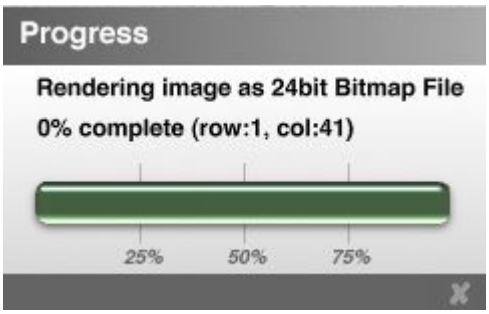


5. Click on the OK icon to accept the changes and the Save As dialog will come up. Select the file type and change the filename if needed, then click on Save.



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6. Once you click on Save, the Render Progress panel will come up where you can watch the progress of the render.



Note: If the render seems to stop in one place for a long time, clicking on the Progress Panel will sometimes "wake up" the render so it will continue.

7. You can stop the render by clicking on the Cancel icon and the following dialog will come up asking if you want to stop or resume the render.



8. Once the render has completed, you can find the image in the location you specified in the Save As dialog.

Render Animation

Rendering an animation is a lot like rendering a still image. Each frame in the animation is processed exactly like a still image. You can use the same rendering options you use to render still images.

In addition to the standard still image rendering options, there are several options you can set for movie files: you can choose a file type, a compression option, and a range of frames to render.

The Render Animation command lets you render an animation to several formats:

- AVI Movie
- BMP Sequence
- QuickTime Movie
- RealMovie

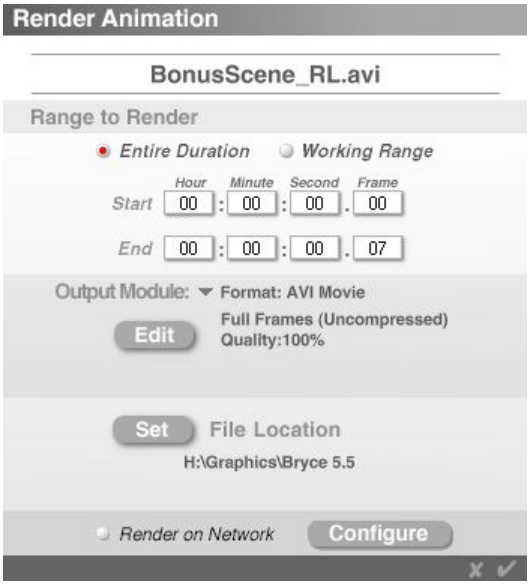
In addition, you can use the Render Animation dialog to "Render a Wireframe View" of your scene.

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To render an animation:

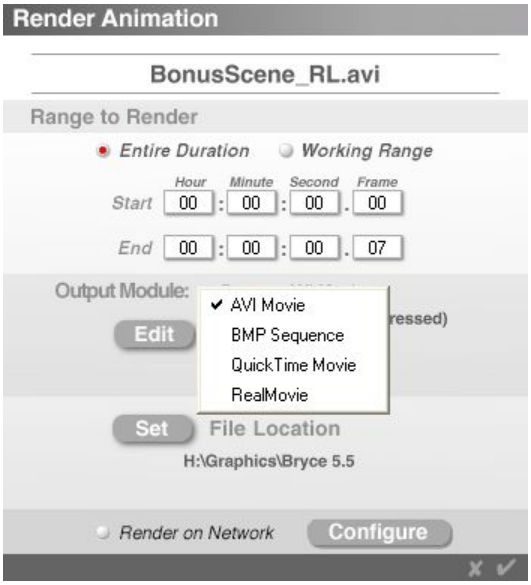
1. Choose File >Render Animation from the menu or press Opt/Alt+Shift+R.

   The Render Animation dialog will come up.



   - By default, the Entire Duration is pre-selected but if you only want to render the Working Range, then select that instead.
   - The Start and End fields show the range of the animation to be rendered. You can change these manually to render only a particular frame or range of frames.

2. Click the triangle icon beside Output Module and select the type of output to render.



- On the Macintosh, you can render a scene as a QuickTime (MOV) file or as sequenced frame files.
- On the PC you can render your scene as a MOV, AVI file, or as sequenced frame files.

3. Click on Edit and adjust the type of compression to use. The items listed in the Video Compression dialog depend on the compressors you have on your system. Refer to the documentation that came with the compressor or your system software for instructions on using a specific compressor.
4. Click on Set and choose the drive and folder where you want to save the file:
5. Type a filename and click on Save.
6. Click on Render to Network to use the Bryce Network Render and configure the network.

   Refer to "Render on Network" for more on rendering an animation over a network.
7. Click on the OK icon to accept the settings and start the animation render.

Render on Network

The Render Animation command allows you to select whether to render the animation over a network or not. The Network Render, also known as Bryce Lightning, allows you to render over a network of two or more computers.

Rendering complex scenes and animations requires a significant amount of computational power. Using only one computer, a complex scene or animation can take many hours to render. You can take a number of steps to decrease the time required to render such a scene, such as reducing the complexity of the scene, reducing the quality of the render, or upgrading the computing power of the computer.

The Network Rendering feature in Bryce lets you spread a rendering job over multiple computers. This lets you reduce the amount of time required to render a complex scene without sacrificing the complexity of the scene or the quality of the final rendered image or animation.

This is accomplished by breaking a scene into smaller sections and sending each section to a separate computer to be rendered simultaneously. The more computers you have working on rendering a particular scene, the less time it takes to render the scene.

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How Network Rendering Works

To use network rendering, you need two or more computers connected by a TCP/IP network. One of the machines acts as a server that controls the other machines, sending them sections to be rendered and reassembling all of the rendered sections into the final image or animation. The other machines act as client machines, receiving and rendering their sections of the image and then sending the rendered section back to the server.

When you render an animation over a network, by default, Bryce sends each frame of the animation to the client computers.

When you render a single frame over a network with the Tile Optimization option turned on, Bryce divides the frame into tiles and sends the tiles to the client computers.

The server is the only computer that needs to have Bryce installed; the other computers can have either a licensed copy of Bryce installed, or you can install Bryce Lightning, an application included with Bryce that is specifically designed for network rendering.

To start a network rendering session, you will need to know the IP addresses of each of the client machines you want to use. When you launch Bryce Lightning, it will display that information for you.

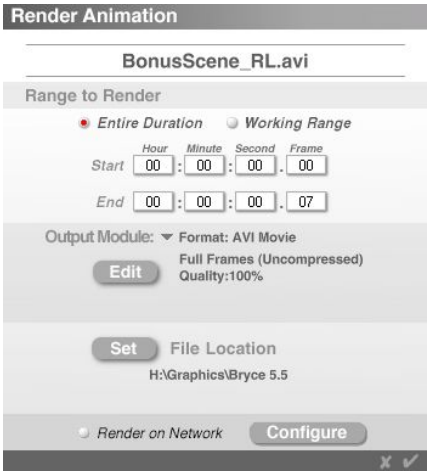
The next step is to open a scene on the server and select the network rendering option.

You will then need to configure the server by giving it the IP addresses of the client computers you will be using for rendering the scene.

To render over a network:

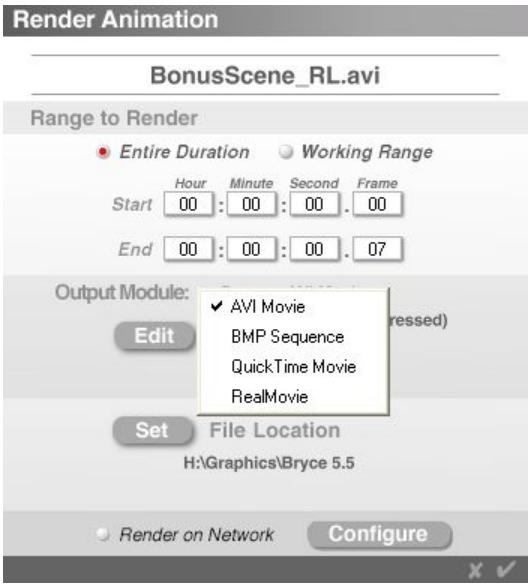
1. First, make sure that Bryce Lightning is installed on all the client machines.
2. Choose File > Render Animation from the menu or press Opt/Alt+Shift+R.

   The Render Animation dialog will come up.



- By default, the Entire Duration is pre-selected but if you only want to render the Working Range, then select that instead.
- The Start and End fields show the range of the animation to be rendered. You can change these manually to render only a particular frame or range of frames.

3. Click the triangle icon beside Output Module and select the type of output to render.



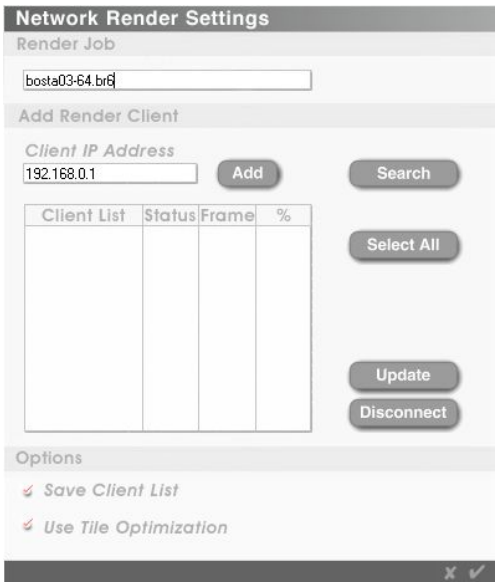
Note: For an image (one frame), select Output Mode of BMP Sequence.

4. Click on Edit and adjust the type of compression to use.
5. Click on Set and choose the drive and folder where you want to save the file.
6. Type a filename and click on Save.
7. Click on Render to Network and click on the Configure button.



The Network Render Settings dialog comes up.

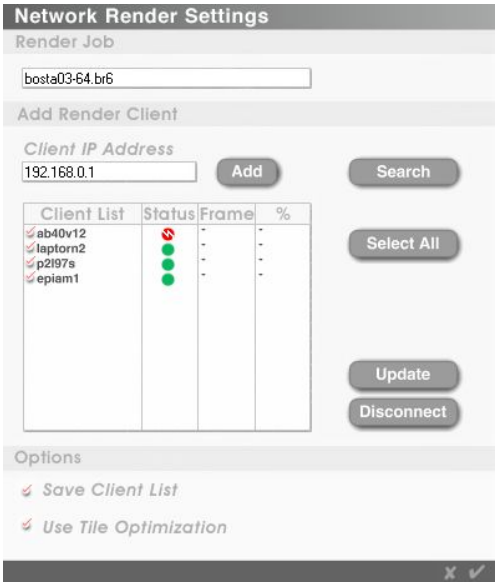
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8. Click on the Search button to have Bryce find the clients or enter the Client IP Address in the field and click on the Add button. If you have a firewall active, you may be asked whether to allow Bryce to access the network. Go ahead and let it. Please note that sometimes, Bryce will not be able find the clients so try again as needed.
9. Once the clients have been located, click on the Select All button or click on the buttons next to each client in the Client List that you want to participate in the render.
10. Click on the Update button to have Bryce check to see which clients are ready.

    The Client List either shows the IP address or the name of the client, if it is known to the system. All available clients get a Green Status. The client on which also the server runs sometimes shows as not being available (this is the case here). This can be ignored. Sometimes none of the clients turn up green. Ignore it for now and check back later.

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Note: For single picture network rendering, Use Tile Optimization must be enabled (this is the default).

11. Click on the OK icon to accept the settings and start the animation render.
12. The following image shows that the Network Render is in full swing. All clients are shown as busy including the one that showed as unreachable earlier.

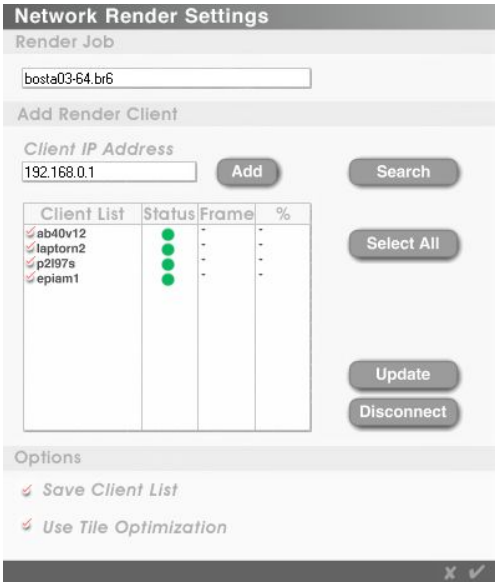


13. Each render client will have a status dialog showing the status of the piece it is rendering.

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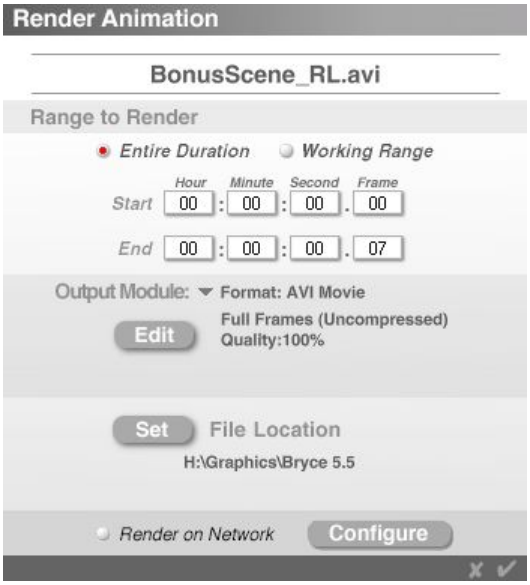
14. To check on the render as a whole, choose File > Network Render Manager from the menu.
15. When the Render job is finished, all clients will show as Ready (green). After a few seconds, the Status will turn black with a white question mark.



Render Wireframe View

To render a wireframe view of your scene:

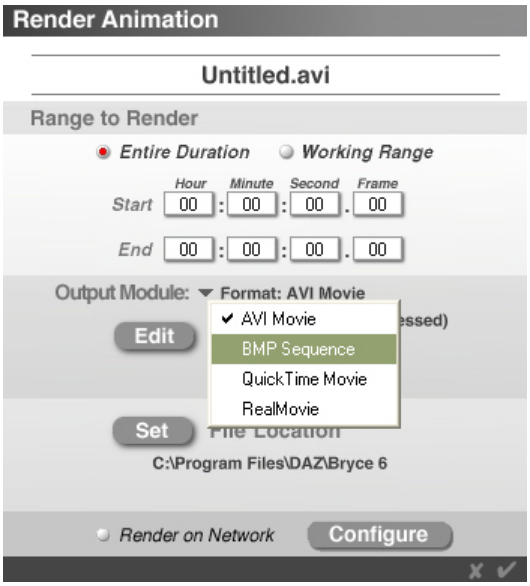
1. Set up your scene and the document size. You cannot set the dpi for this type of render so take that into consideration when determining the render size.
2. Deselect any objects in the scene unless you want the selected object to render selected in the wireframe render (see last image on this page).
3. Choose File > Render Animation from the menu or press Opt/Alt+Shift+R.
4. The Render Animation dialog will come up.



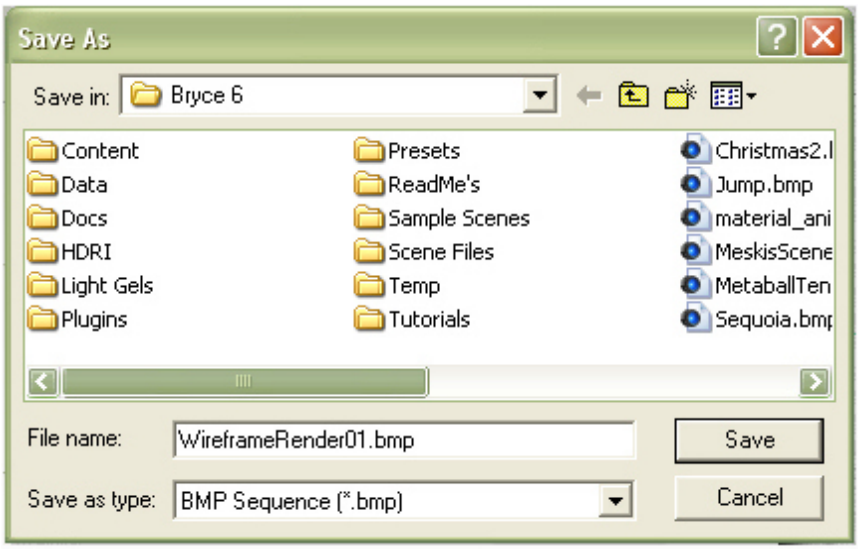
- By default, the Entire Duration is pre-selected but if you only want to render the Working Range, then select that instead.
- The Start and End fields show the range of the animation to be rendered. You can change these manually to render only a particular frame or range of frames.
- If you have not set up an animation, the fields will all have zeroes in them. For a wireframe render, this is okay.

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2. Click the triangle icon beside Output Module and select BMP Sequence from the list.



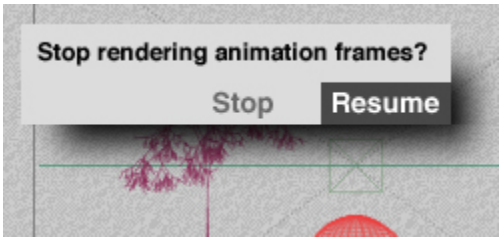
3. Click on Set and choose the drive and folder where you want to save the file:
4. Type a filename and click on Save.



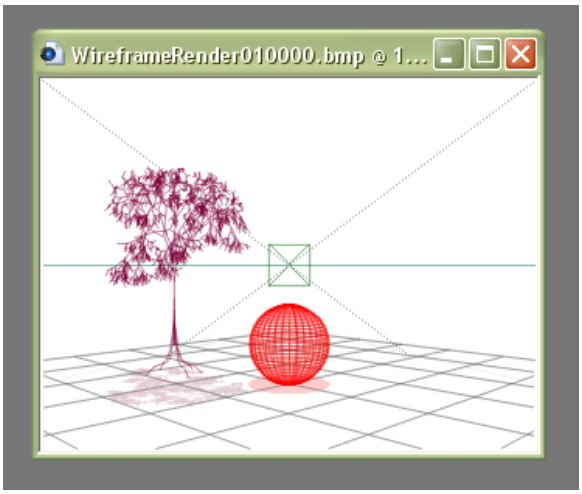
5. Press the Shift key and click on the OK icon to accept the settings.

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6. When asked if you want to stop or resume the render, click on Resume.



7. The frame will render and the bitmap file will open in your default picture editor. Note in the image below that any objects selected in the scene will render selected as well.



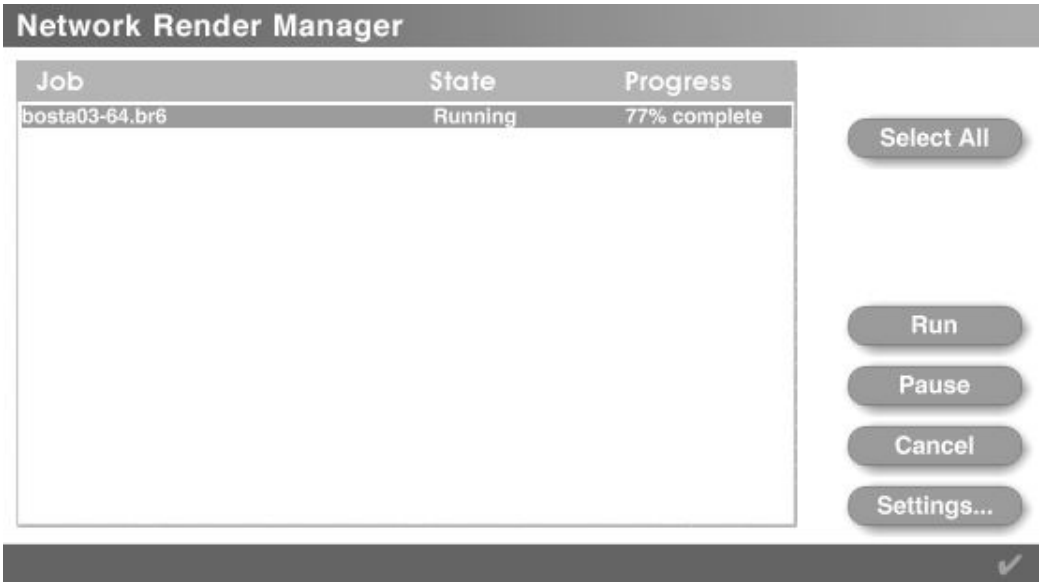
Network Render Manager

The Network Render Manager lets you monitor the progress of the network render. You can also monitor the status of individual client computers; pause rendering on a client computer; cancel rendering on a client computer; and add or remove client computers from the list of available clients.

You will not see the scene being rendered on the server. However, you can go to the client computers and see the section that client is rendering. The Network Render Manager displays a list of all network rendering jobs in progress, the state of each job, and its percentage complete. You can use the Network Render Manager to change the settings of a network rendering job.

To monitor a render using the Network Render Manager, choose File > Network Render Manager from the menu. From the Network Render Manager, you can monitor the progress of your network rendering jobs, view the status of the client computers working on a job, and pause or cancel a job.

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To pause a network rendering job:

1. Choose File > Network Render Manager from the menu.
2. Select the job to be paused.
3. Click Pause.

To resume a network rendering job:

1. Choose File > Network Render Manager from the menu.
2. Select the paused job.
3. Click Run.

To cancel a network rendering job:

1. Choose File > Network Render Manager from the menu.
2. Select the job to be cancelled.
3. Click Cancel.

To view the status of the client computers working on a job:

1. Choose File >Network Render Manager from the menu.
2. Select the network rendering job.
3. Click Settings. This brings you to the Network Render Settings dialog. Bryce will automatically verify the current status of client computers in the Client List, except for those clients you have manually disconnected. You can click the Update button to have Bryce verify the current status of the client computers in the Client List that are listed as unverified, unreachable, or disabled. The Status column in the Client List displays colored icons next to each client computer.

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Each color represents a different status:

- Green = Ready. The client computer at that IP address is running Bryce Lightning and is available to receive a rendering job from the server.
- Orange = Working: The client computer at that IP address is running Bryce Lightning and is processing a rendering job.
- Red with horizontal bar = Locked: The client computer at that IP address is connected to another server, or an error has occurred on the client computer.
- Red with lightning bolt = Unreachable: The client computer at that IP address is unreachable or is not running Bryce Lightning, the IP address is invalid, or the client computer does not have enough memory to render the job.
- Black with question mark = Unverified: The Network Render Manager did not attempt to determine the status of the client computer at this IP address. This icon will only appear when you first add a client to the Client List.
- Grey = Disabled: The client computer at that IP address the user and will not be used for the rendering job

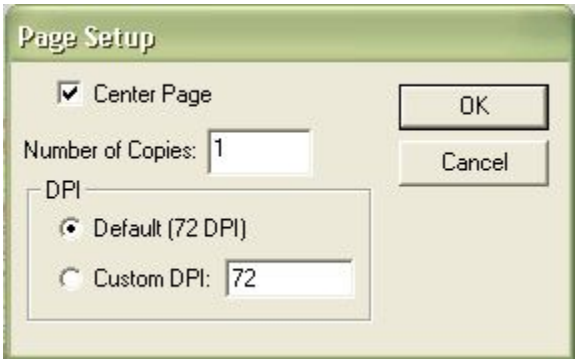
Page Setup

The Page Setup command allows you to setup the page settings for printing the current rendered image.

On PCs, you can set whether to center the image on the page, how many copies to print, and what dpi to print it at.

To set up the page:

1. Choose File > Page Setup from the menu. The Page Setup dialog comes up.

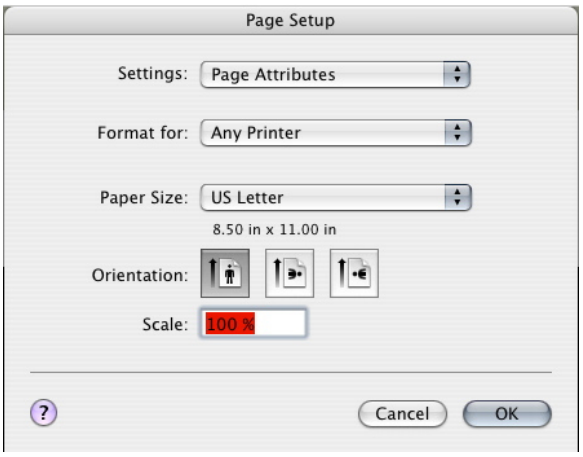


2. Select whether to center the page on the paper, the number of copies, and the DPI setting. Please note that if you set a Custom DPI setting, you will need to increase the document size before printing as a higher DPI will print the image smaller to accommodate the DPI.

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3. Click on OK to save the settings.

On Macs there are no options to set the dpi in the Page Setup.

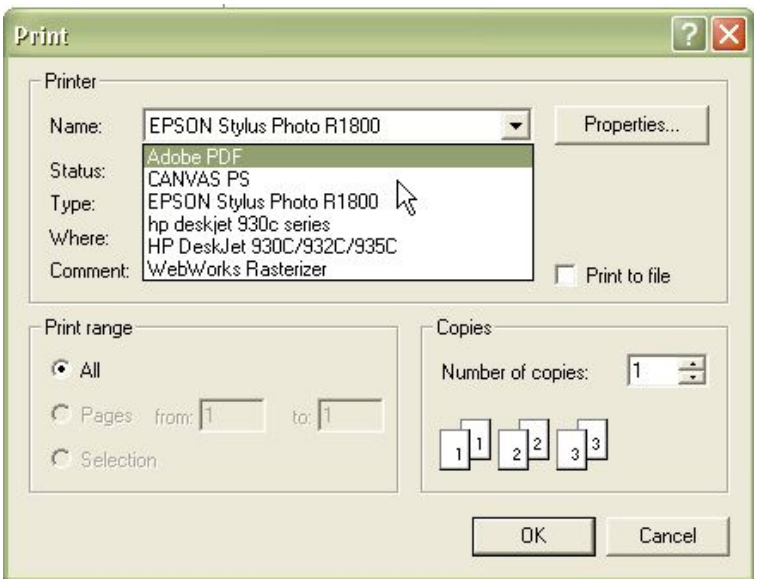


Print

The Print command brings up the print menu for your printer so you can print the current working window. The Page Setup settings are used here to print the image. This is a great way to print out the wireframe view of your image without having to do a screen capture.

To print the current working window:

1. Set up the page using the Page Setup command.
2. Choose File > Print from the menu or press Ctrl+P. The Print dialog for your system will come up.
3. Select your printer from the drop down menu and click on OK to print.



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Printing to a Software Program

If you have Adobe Acrobat Standard or Professional, you can print the working window to PDF, then use the Snapshot Tool to copy the image and paste it into your paint program.

You can also print to any other program format you may have available, such as Canvas or SnagIt. Make sure you click on properties and set the dpi setting for the program (page setup doesn't seem to affect printing to a paint program). This may be under advanced settings.

If you do have Canvas, close the program before printing. Bryce prints the image and then Canvas opens with the image in a new document. Canvas saves the image in slices, so you'll need to merge the layers before trying to do any postwork on the image

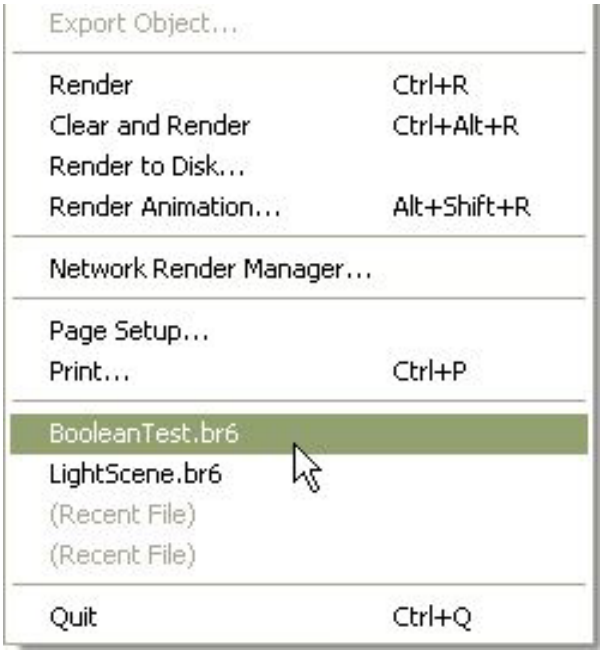
If you use SnagIt, make sure you save the image to a file and not to the clipboard. Pasting to the clipboard will do so at 72 dpi.

See appendix E for links to the listed programs.

Recent Files

Between the Print and Quit items on the File menu, there are four slots for the four last saved scenes. Click on the one you want and it will load in Bryce as long as it is in the same location as where you saved it to. If it was moved, Bryce will notify you that it cannot find the file.

Please note that any scenes that were opened but not saved, then that scene file will not be listed in the Recent Files listing. In addition, any scene files you worked on before a program crash will not be listed either.



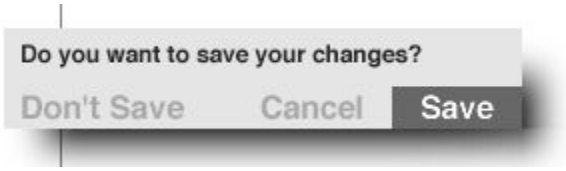
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Quit

The Quit command will close Bryce, but not before you are given the chance to save the current scene or not, or to cancel closing Bryce.

To exit Bryce:

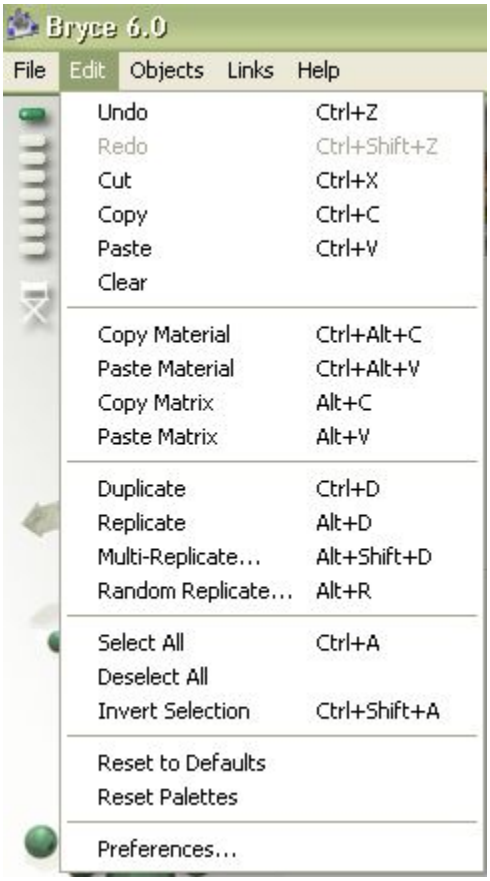
1. Choose File > Quit from the menu or press Ctrl-Q. A dialog appears prompting you to save the current scene.



2. Select to not save the scene, to save the scene, or cancel the close.

Edit Menu

The Edit Menu is where you access object-related functions. To access this menu, just left-click on Edit.



Undo

The Undo command undoes the last action performed on the objects, up to 16 steps. It does not affect changes made to the camera/view.

To undo the last performed action, choose Edit > Undo from the menu or press Cmd/Ctrl+Z.

Cmd/Ctrl+Z can also be used in the different laboratories, but the labs only undo the last step. If you press Cmd/Ctrl+Z a second time, then the lab will redo the previous step (the one you just reversed).

Redo

The Redo command redoes the last action previously undone on the objects, up to 16 steps. It does not affect changes made to the camera/view.

To redo an action, choose Edit > Redo from the menu or press Cmd/Ctrl+Shift+Z.

Cut

The Cut command removes the selected object or group from the scene and places it on the clipboard. The object can then be pasted back into the scene or into a new scene.

To cut an object from the scene:

1. Select the object(s) or group(s) you want to delete.
2. Choose Edit > Cut or press Ctrl+X.

Copy

The Copy command copies the selected object(s) and places the copy on the clipboard ready to paste into the scene or into a new scene.

When copying an item that is part of a group, using Copy/Paste will place the new object outside the group. Use Duplicate if you want the new object to be part of the group.

To copy an object or group of objects:

1. Select an object, multiple objects, or group(s).
2. Choose Edit > Copy from the menu or press Cmd/Ctrl+C.

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Paste

The Paste command places any object currently in the clipboard, after using Cut or Copy, into the scene.

To paste an object:

1. Select an object or group and Copy or Cut it.
2. Choose Edit > Paste or press Cmd/Ctrl+V.

Clear

The Clear command removes the selected object(s) from the scene without placing it on the clipboard. This means that you cannot use Edit > Paste or press Cmd/Ctrl+V to paste the object back into the scene.

To clear an object(s) from the scene:

1. Select an object or objects.
2. Select Edit > Clear from the menu.

To undo the clear:

1. Choose Edit > Undo from the menu.

   OR
2. Press Cmd/Ctrl+Z.

Copy Material

The Copy Material command copies the material on the current selected object so that it can be pasted onto another object using the Paste Material command. This is extremely useful when you have tweaked a material and want to quickly apply it to other objects without having to select it from the Materials Library each time.

To copy a material:

1. Select an object that has the material applied to it that you want to copy.
2. Choose Edit > Copy Material or press Ctrl+Opt/Alt+C.

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Paste Material

The Paste Material command pastes the material copied using the Copy Material command, overriding the currently applied material.

To paste a material onto an object:

1. Select an object and copy the material using the Edit > Copy Material command.
2. Select another object and choose Edit > Paste Material from the menu or press Ctrl+Opt/Alt+V.

Copy Matrix

The Copy Matrix command copies an object(s) position, rotation, and size. The copied Matrix can then be copied on to another object using the Paste Matrix command to override the object's own position, rotation, and size.

This function is especially useful when using the DAZ Studio link to import figures and need to modify an item. Since Bryce literally deletes the object and replaces it, the object is loaded into Bryce at the default size, location, and rotation. Before going back into DS, copy the matrix of the object, then when you come back into Bryce and the object has been reloaded, paste the matrix on to the imported DS object to restore it to the size, position, and rotation the previous version was at.

One caveat though, if you change the pose or clothing on the figure, you won't get exactly the same thing as before because the matrix of the new object is different than the new one. In this case, it is better to use the 3D Transformation and size the object by a percentage each time.

To copy an object's matrix:

1. Select an object or group.
2. Choose Edit > Copy Matrix from the menu or press Opt/Alt+C.

Paste Matrix

The Paste Matrix command pastes the matrix copied using the Copy Matrix command, overriding the selected object(s) position, rotation, and size.

To paste a matrix onto an object:

1. Select an object and copy the matrix using the Edit > Copy Matrix command.
2. Select another object and choose Edit > Paste Matrix from the menu or press Opt/Alt+V.

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Duplicate

The Duplicate command duplicates the selected object(s) and places the copy directly into the scene. The duplicate is not placed on the clipboard so it cannot be pasted into the scene later.

If the selected object is part of a group, then the new object will also be part of the group. If you don't want the new object to be part of the group, use Copy/Paste instead.

To duplicate an object(s) or group(s):

1. Select the object(s) or group(s) you want to duplicate.
2. Choose Edit > Duplicate from the menu or press Cmd/Ctrl+D.

Replicate

The Replicate command not only duplicates the selected object(s) or group of objects, but also the last 3D transformations made on the objects. For example, if you move an object up and rotate it, then Replicate will create a copy, then move it up, and rotate it the same amount. Each time you replicate, it moves and rotates the new object the same amount.

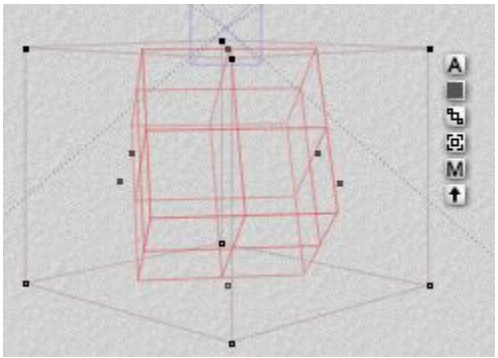
Replicate only duplicates the object one time. To replicate the object more than once, use Multi-Replicate instead.

To replicate an object:

1. Select an object or group.
2. Perform any required 3D transformations on the selection.
3. Choose Edit > Replicate from the menu or press Opt/Alt+D.

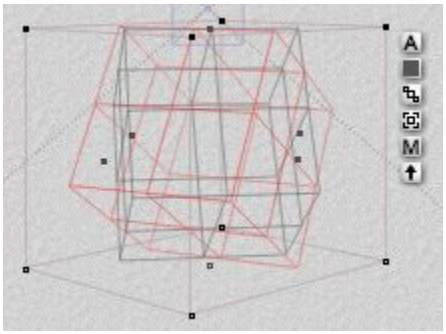
Example:

Here is a cube rotated:

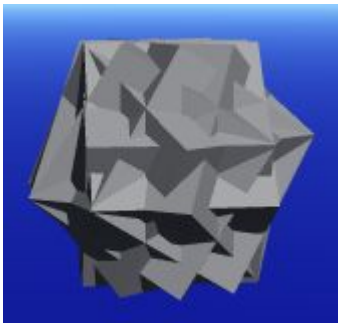


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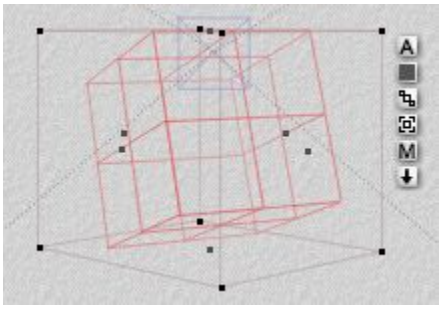
Replicated once:



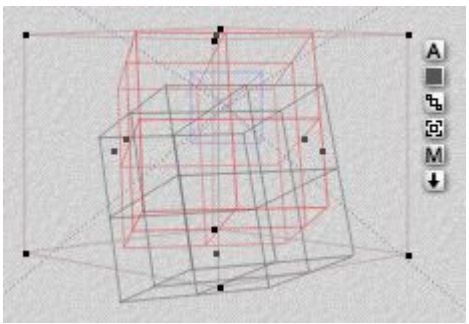
Replicated five times, notice how it only rotated the cube:



Here's another cube, rotated and moved up:

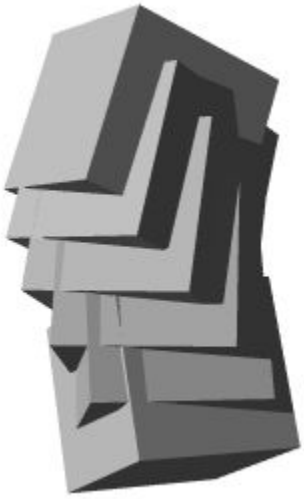


Replicated once:



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Replicated five times, notice how it not only rotated the cube, but moved it up each time:

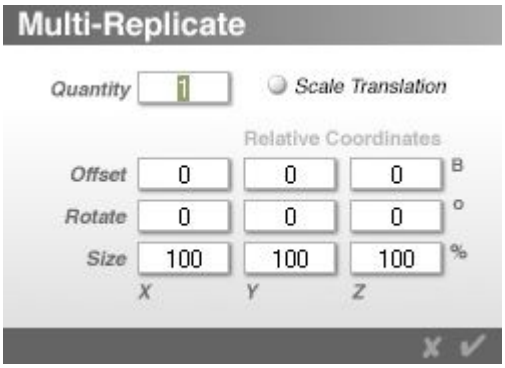


Multi-Replicate

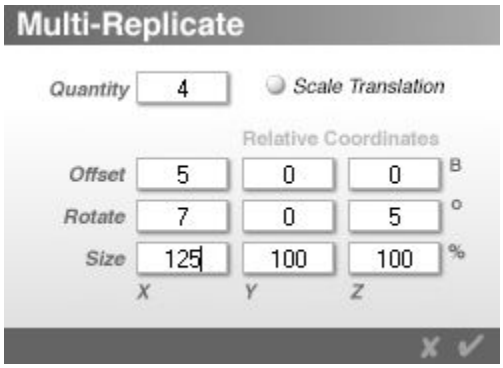
The Multi-Replicate command works the same way as Replicate but instead of just replicating the object once, it can replicate it multiple times. It can either repeat the last transformations you made on the object or you can change the settings manually to modify the replications.

To multi-replicate an object:

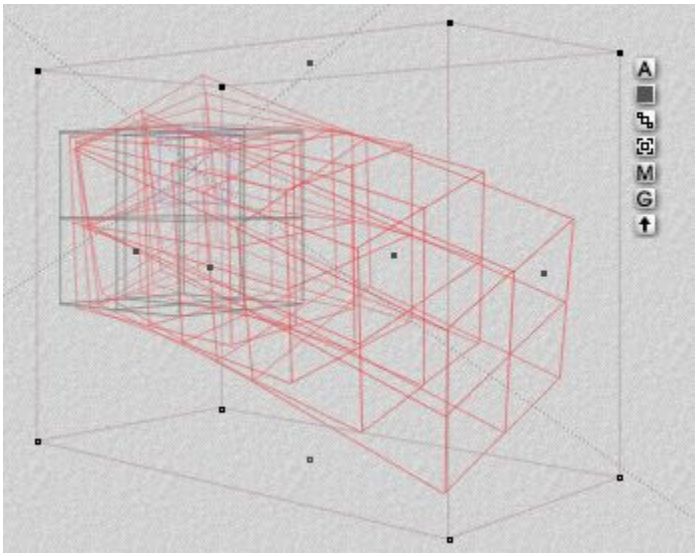
1. Select an object or group to replicate.
2. Choose Edit > Multi-Replicate from the menu or press Opt/Alt+Shift+D. The Multi-Replicate dialog will come up.



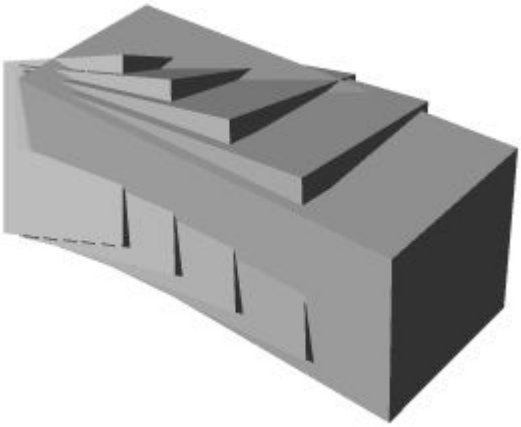
3. Enter values in the following fields:
    - Quantity - Enter how many objects to replicate, if you need 10 objects total, enter 9 in the field.
    - Scale Translation - Select to apply the size percentage to the Offset amount, for example, if the size percentage is 90%, then the offset will be at 90% of the entered amount for each object.
    - Offset - Enter the amount to move the replicated objects on the X, Y, and/or Z-axis.
    - Rotate - Enter the amount to rotate the replicated objects on the X, Y, and/or Z-axis.
    - Size - Enter the percentage to re-size the replicated objects on the X, Y, and/or Z-axis, set at 100% to keep them the same size as the original.



    - Scale Translation - enable to use this option
4. Click on the OK icon to close the dialog and complete the operation.



And here is the rendered example:



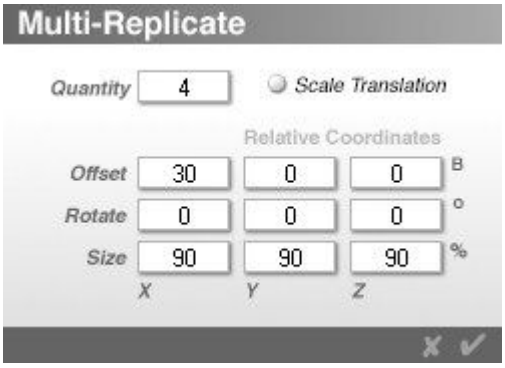
Notes:

1. When the object is transformed prior to choosing Multi-Replicate, the fields have the matching amounts already in them.
2. If the object has not been moved, the Offset and Rotate fields will be at zero and the Size at 100%.

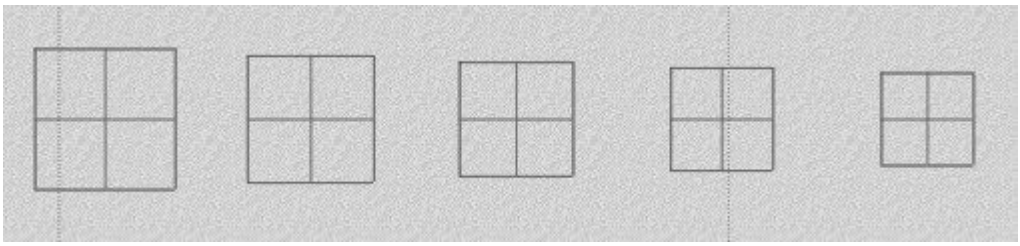
Scale Translation

As mentioned on the Multi-Replicate page, selecting Scale Translation will apply the size percentage to the Offset amount, for example, if the size percentage is 90%, then the offset will be at 90% of the entered amount for each object.

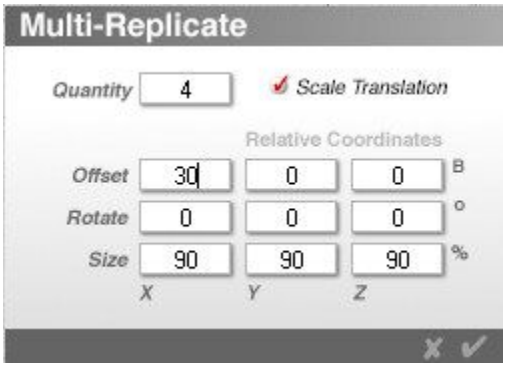
For example, the dialog below shows that we want to replicate an object four times, offsetting each duplicate 30 BU along the X-axis, and reducing the size of each duplicate to 90% of the previous duplicate:



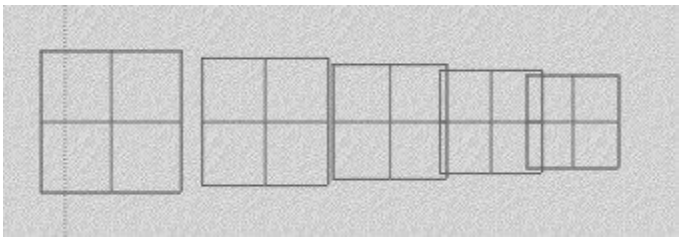
And here is the result, notice how the cubes are all exactly the same space apart (30 BU):



But, if we select Scale Translation:



Then the offset will be 90% of 30 BU for each duplicate:



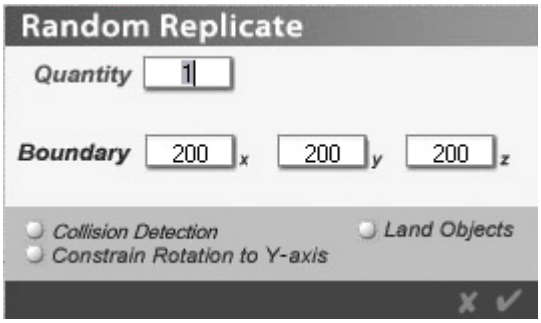
Random Replicate

New in Bryce 6 is the Random Replicate command. This function is similar to Multi-Replicate in that it replicates one or more objects. The difference is that each replication is random in placement and in the number each object is replicated. Each time you repeat a replication, the number of each object replicated changes.

- Quantity - Enter how many objects to create during the replication
- Boundary - Enter the boundary, in BUs for where the replicated objects can be created around the original objects
- Collision Detection - Select to enable collision detection when replicating objects
- Constrain Rotation to Y-axis - Select to constrain rotation to the Y-axis

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- Land Objects - Select to have objects Snap to Land after being replicated



Please note that if you are replicating Bryce Trees or Terrains, the Constrain Rotation to Y-axis function is automatically selected. If you deselect Constrain Rotation to Y-axis when trees or terrains are selected, Bryce will still constrain the objects to the Y-axis.

To use random replicate:

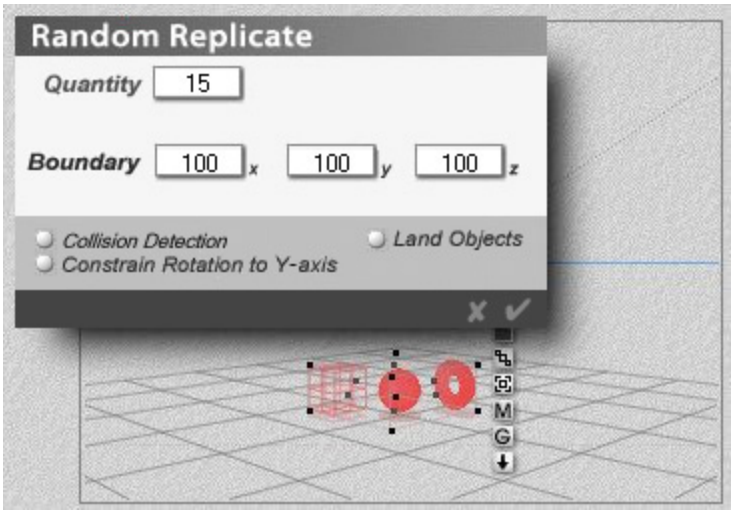
1. Create one or more objects
2. Select all the objects you want to replicate.
3. Choose Edit > Random Replicate from the menu or press Opt/Alt+R.
4. Enter the number of replications in the Quantity field
5. Enter the Boundary amount on the X, Y, and Z-axis (defaults to 200).
    - If you want the objects to be no more than 50 BU away from the originals, enter 100 (50 BU both positive and negative).
    - If you want the objects to be no more than 200 BU away from the originals, enter 400 (200 BU both positive and negative).
6. To have the objects snap to land, select Land Objects.
7. To only allow the objects to be rotated on the Y-axis (good for trees, houses, etc.), select Constrain Rotation to Y-axis.
8. Click on the OK icon to accept the changes and complete the operation.

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Examples:

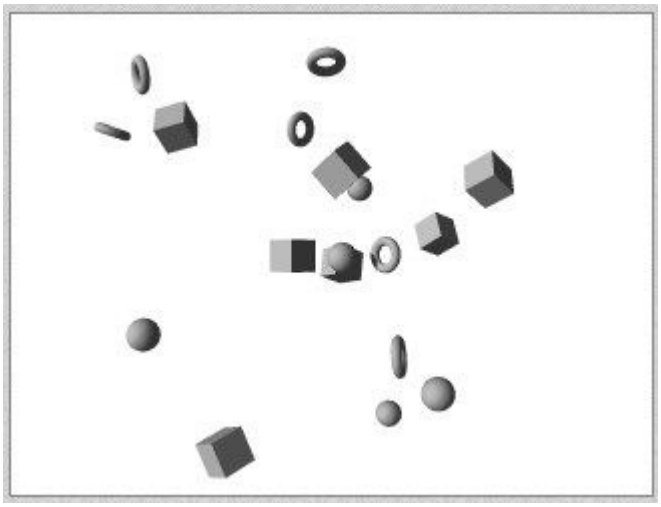
Basic Random Replication

The following example replicates three objects (cube, sphere, and torus) 15 times with a boundary of 100 on all axes:



And here is the result:

- Sphere - Replicated four times
- Torus - Replicated five times
- Cube - Replicated six times

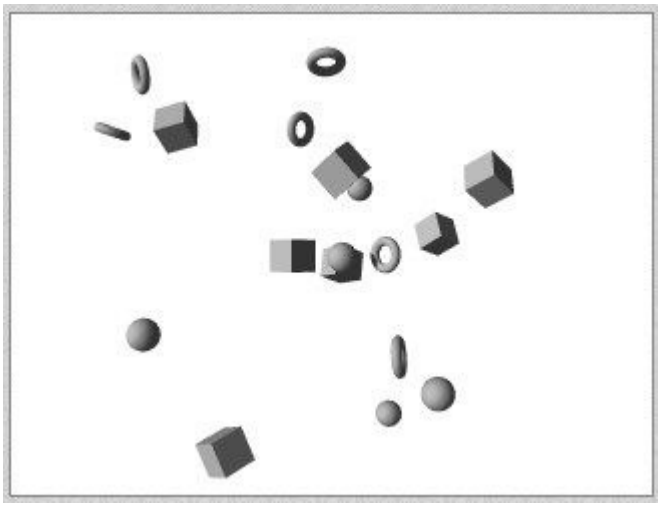


If the objects are all selected and grouped, the size of the group (Boundary) will be around 100 BUs (give or take a few BUs) based on the boundary selected in the dialog.

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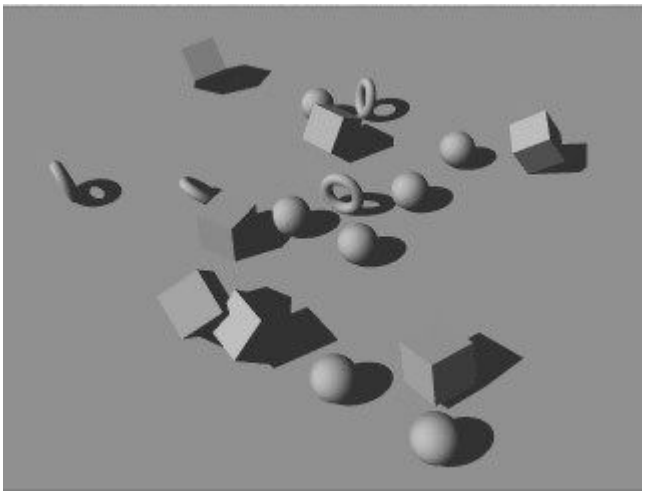
After deleting the replicated objects and repeating the same Random Replication, a different combination of objects is created, for example:

- Sphere - Replicated seven times
- Torus - Replicated four times
- Cube - Replicated four times



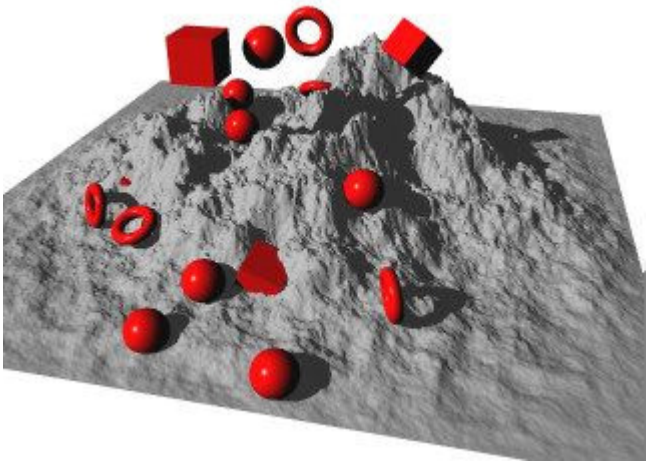
Land Objects

The following image shows the result of the random replication with the Land Objects selected. Since the default plane is the "land," the objects all snap to it. The same thing will happen if the default plane has been deleted (underground plane is considered the "land").



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The following image shows the result of the random replication with the Land Objects selected and a terrain in the scene. Only the primitives were replicated, not the terrain.

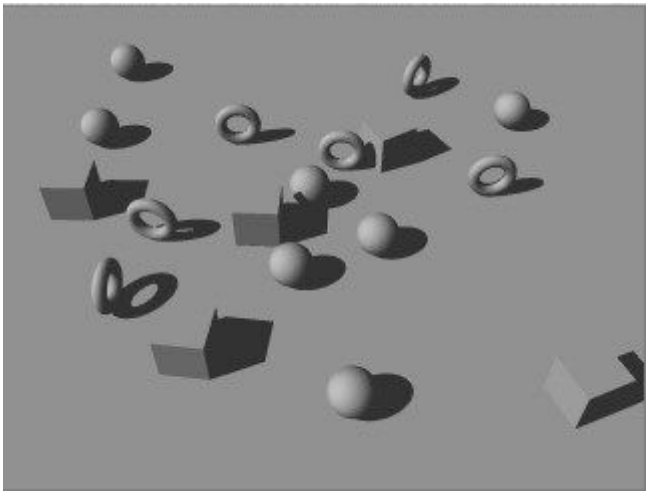


This is especially useful for placing objects like trees and rocks around a terrain. The objects will snap to the terrain for a more natural look:

(Okay, so primitives on a terrain aren't "natural" but you get the idea.)

Constrain Rotation to Y-axis & Collision Detection

The image below shows the result of the random replication with the Constrain Rotation to Y-axis and Collision Detection selected. Notice that the objects are only rotated around the Y-axis - useful for placing trees, houses, people, etc.



Select All

The Select All command will select all objects in the working window.

To select all objects, choose Edit > Select All from the menu or press Cmd/Ctrl+A. On the PC, you can also set the NumLock, then press Ctrl+1 key on the numpad.

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Deselect All

The Deselect All command deselects all currently selected objects or groups in a scene.

To deselect all selected objects or groups in a scene, choose Edit > Deselect All from the menu.

Invert Selection

The Invert Selection command will invert the selection by deselecting all currently selected objects in the scene and selecting all objects that weren't previously selected.

To invert the selection, choose Edit > Invert Selection from the menu or press Ctrl+Shift+A.

Reset to Defaults

The Reset to Defaults command resets all menus, palettes, and the working window to their default factory position.

To reset the interface to the default settings, choose Edit > Reset to Defaults from the menu.

Reset Palettes

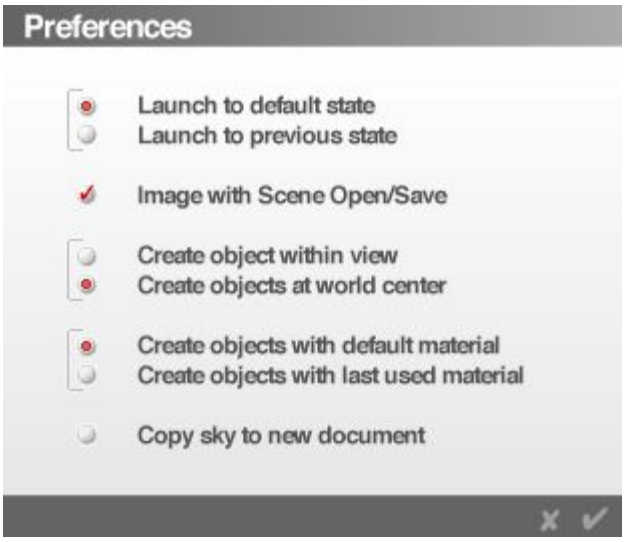
The Reset Palettes command will reset all moved palettes back to their default position.

To reset all palettes, choose Edit > Reset Palettes from the menu.

Preferences

The Preferences command brings up the preferences palette where you can set how Bryce launches and saves.

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The Preferences dialog contains the following options:

- Launch to default state - opens Bryce to the default factory state OR to the saved Default.br6 scene file.
- Launch to previous state - opens Bryce to the last state Bryce was in before closing the program.
- Image with Scene Open/Save - saves the rendered image with the scene and loads the image when the scene is loaded.
- Create object within view - creates objects within the current view, this allows you to be anywhere in the scene and new objects will still be in view.
- Create object at world center - creates objects at world center, no matter where the current camera view is at.
- Create objects with default material - creates objects with the default gray material.
- Create objects with last used material - creates objects with the last material loaded manually through the Materials Library or Texture Editor.
- Copy sky to new document - will copy the sky in the current scene to a new scene created by File > New Document.

By setting application Preferences, you can customize Bryce to suit the way you work. You do not have to restart Bryce to make these changes take effect.

To set the application's launch state:

1. Choose Edit > Preferences. The Preferences dialog appears.
2. Enable either Launch to Previous State or Launch to Default State.
    - Launch to Previous State launches Bryce using the settings from your last session.
    - Launch to Default State launches Bryce using the default settings.

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To save images used in a scene with a file:

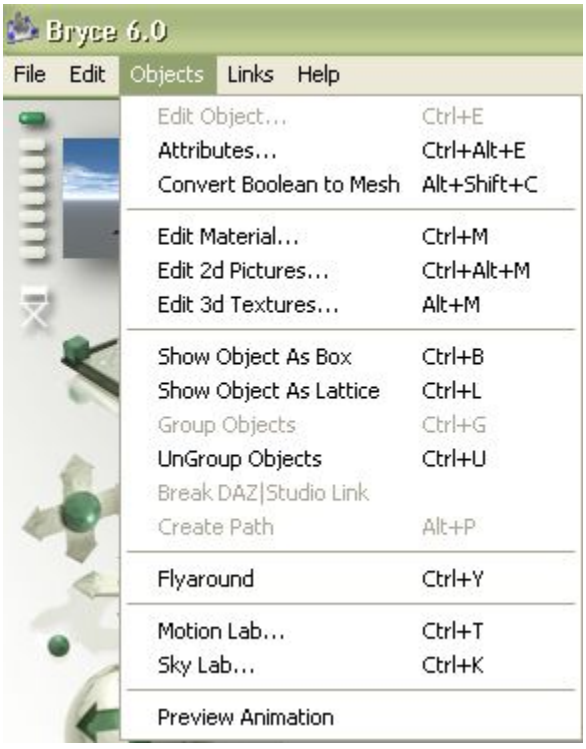
1. Choose Edit > Preferences. The Preferences dialog appears.
2. Enable Image with Scene Open/Save. With this option enabled, Bryce will automatically open or save a PICT or BMP file (PICT/BMP files are automatically appended with the extension), along with your scene file, every time you open or save. In most cases, this option should always be selected.

To control new object placement:

1. Choose Edit > Preferences. The Preferences dialog appears.
2. Enable either Create Objects Within View or Create Objects at World Center.
    - Create Objects Within View places newly created objects within the camera view, rather than at world center.
    - Create Objects at World Center places newly created objects at world center, regardless of whether they will be visible in your current camera view.

Objects Menu

The Objects Menu is where you access object-related functions. To access this menu, just left-click on Objects.



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Edit Object

The Edit Object command brings up the appropriate edit palette for the selected object. This only works on objects that have the E button next to the selected object.

To edit an object:

1. Select an object in the scene.
2. Choose Objects > Edit Object from the menu or press Cmd/Ctrl+E. The editor for that object will come up.

Object Selected	Edit Palette
Terrain or SymLat	Terrain Editor
Torus	Edit Torus
Tree	Tree Lab
Rock, Imported Mesh *	Edit Mesh

* Once the Edit Mesh dialog comes up for rocks and imported meshes, you can export the mesh by pressing Cmd/Ctrl+D. See "Exporting Rocks & Imported Meshes" for more on this.

Attributes

The Attributes command brings up the Object Attributes dialog. This is the same dialog panel that comes up when you press the A button next to the selected object.

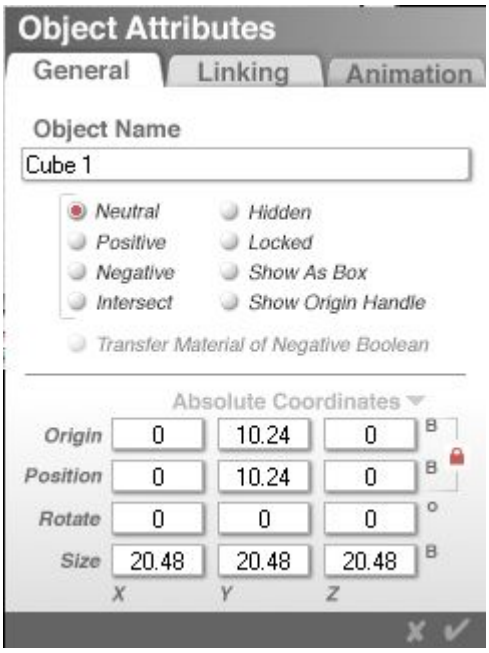
To edit the object's attributes:

1. Select a group or object.
2. Choose Objects > Attributes from the menu or press Cmd/Ctrl+Opt/Alt+E.

The Object Attributes dialog consists of three tabs: General, Linking, and Animation.

- The General tab is where the basic object attributes are set: object name, position, size, rotation, and display quality.

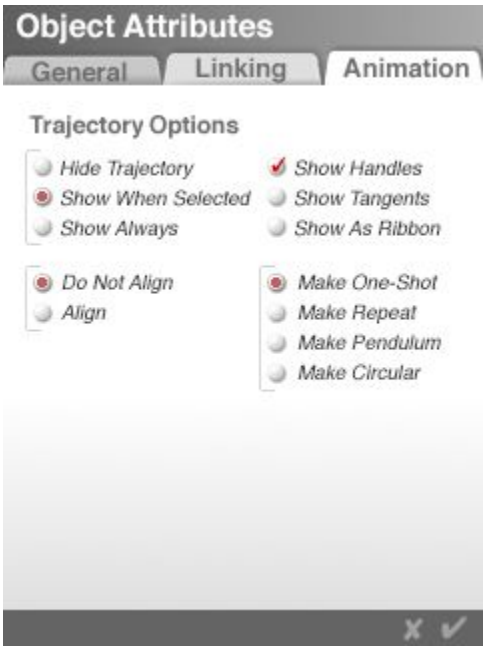
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- The Linking tab contains options that let you set up the link between two objects and set up the tracking link.



- The Animation tab contains options for controlling the display of motion paths and setting the motion path type.



See "Working with Objects" for more on this dialog.

Convert Boolean to Mesh

The Convert Boolean to Mesh command is new in Bryce 6 and converts Boolean groups to mesh which can then be exported from Bryce and imported into other programs.

To convert a Boolean group to mesh:

1. Build an object using Boolean objects that are grouped together.
2. Choose Objects > Convert Boolean to Mesh from the menu or press Opt/Alt+Shift+C. The Boolean group will be converted to a mesh.
3. Choose File > Export Object from the menu and export the converted mesh to finalize the conversion.
4. Choose File > Import Object from the menu to import the mesh.

See "Convert Boolean Icon" for information on using this feature.

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Edit Material

The Edit Material command brings up the Materials Lab. This is the same editor that comes up when you press the button next to the selected object.

The Materials Lab is where you create the materials to apply to your objects. By combining up to four texture components on the materials grid, you can create incredibly complex surfaces that can bring your scene to life.

There are two types of materials you can create: Surface materials, which define the surface properties of an object, and Volume materials, which define the properties of an object's volume as well as its surface. When you're creating volume materials, the settings in the Materials Lab change. Some of the surface material settings are replaced by volume effects settings.

To edit a material in the Materials Lab, select Objects > Edit Material from the menu or press Cmd/Ctrl+M.

You do not have to have an object selected in order to open the Materials Lab, however, if you want to edit a material already applied to an object, select the object first.

Refer to "The Materials Lab" for more on the Materials Lab and "Understanding Volume Material Channels" for more on Volume materials.



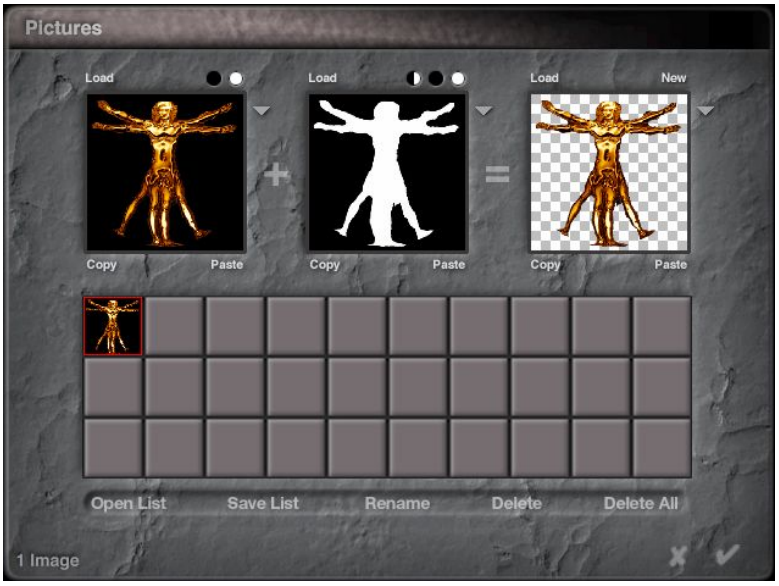
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Edit 2D Pictures

The Edit 2d Pictures command brings up the Pictures Editor. You can also access the Pictures Editor from the Create Palette, the Materials Lab, the Light Lab, and the Tree Lab.

To open the Pictures Editor, choose Objects > Edit 2d Pictures from the menu or press Cmd/Ctrl+Opt/Alt+M. You do not have to have an object selected to bring up the Pictures Editor this way.

The Pictures Editor will come up:

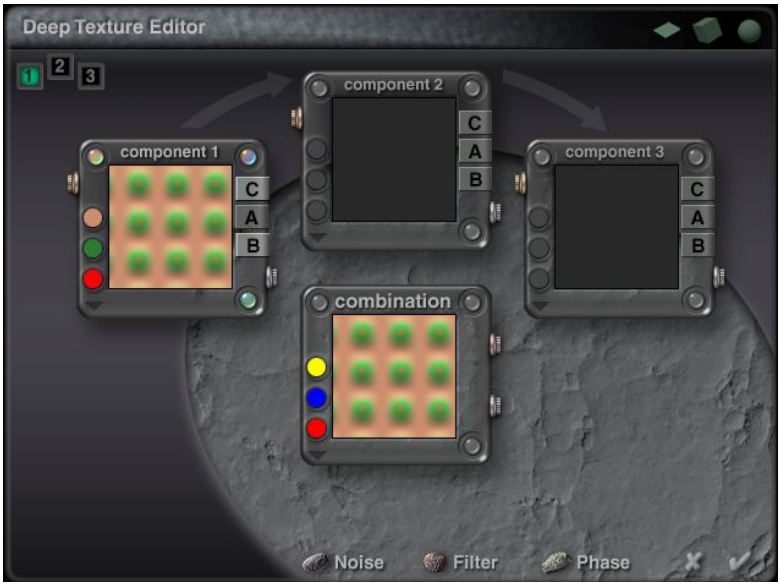


Edit 3D Textures

The Edit 3d Textures command brings up the Deep Texture Editor (DTE) You can also access the Deep Texture Editor from the Edit Palette, Materials Editor, Light Lab, Sky Lab, Tree Lab, and Terrain Editor.

To open the Deep Texture Editor, choose Objects > Edit 3d Textures from the menu or press Opt/Alt+M. You do not have to have an object selected to bring up the Deep Texture Editor this way.

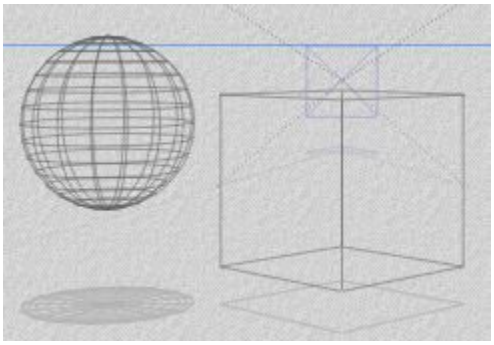
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Show Object As Box

The Show Object As Box command changes the selected object(s) or group as box(es). This is useful when you just want to work with the object's position but don't need more details.

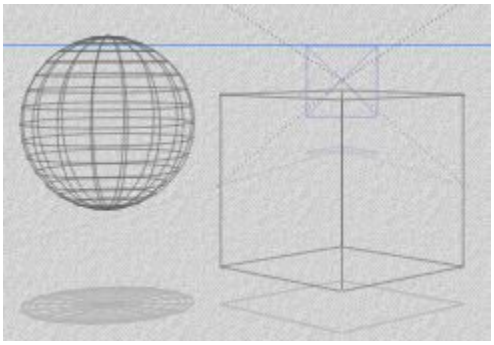
To show objects as boxes, choose Objects > Show Object As Box from the menu or press Cmd/Ctrl+B.



Show Object As Lattice

The Show Object As Lattice command changes objects shown as boxes back to wireframes.

To show objects as a wireframe, choose Objects > Show Object As Lattice from the menu or press Cmd/Ctrl+L.



Group Objects

The Group Objects command groups two or more objects or groups into a single group.

As your scene becomes more complex, you'll need to group objects. Grouping lets you control a set of objects as a single unit. When you perform a transformation on a group, all the objects are equally affected. If you scale a group, all the objects change size, or if you rotate a group, all the objects rotate around a single axis.

Your choice of objects to place in a group depends on how you want to organize your scene. You may want to group the objects that comprise more complex objects, like the walls and turrets of a castle. You can group objects to keep all the components of a complex object like this train engine together. You can also create groups to maintain the spatial relationships between objects as you transform them.

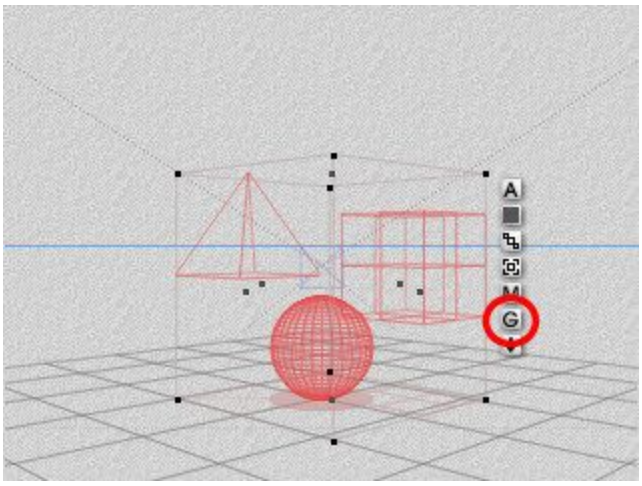
You can also create a group to maintain the spatial relationships between objects as you transform them, like the boards in this fence. You can place as many objects as you like in your group. You can even nest groups within groups. Nesting can be an easy way of managing more complex scenes.

Groups are essential to creating Boolean objects and converting them to a mesh. Boolean operations will not work unless the objects are part of a group. You cannot create a group using a child object. If a child object is part of your selection the icon will not appear.

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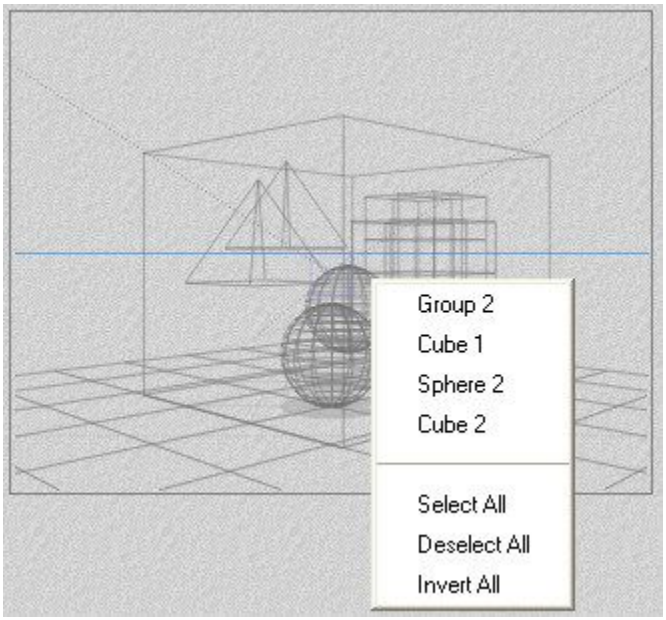
To create a new group:

1. Select all the objects and/or groups you want to group.
2. Choose Objects > Group Objects from the menu or press Cmd/Ctrl+G. You can also click the G button next to the selected objects' bounding box.

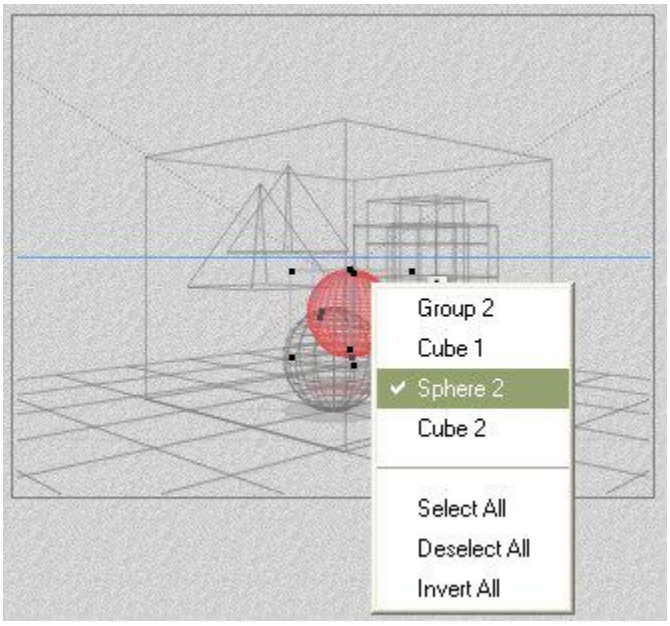


To select objects within a group:

1. Hold down Cmd/Ctrl and click on an object inside the group bounding box. A popup menu will come up listing all the objects under the mouse.



2. Select the object you want from the menu.



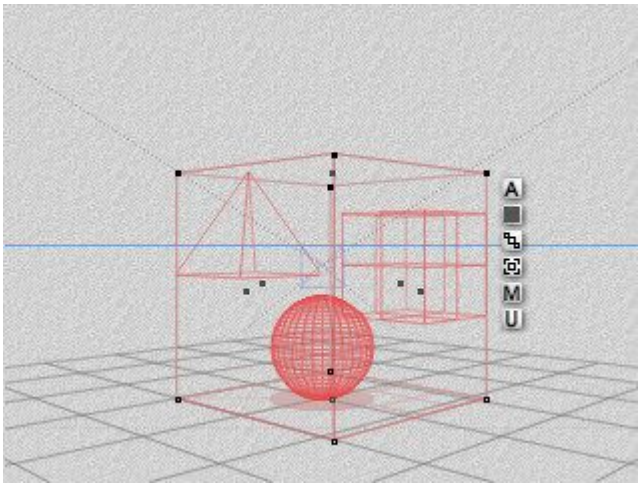
Ungroup Objects

The UnGroup Objects command removes the grouping from the current selection. If the selection contains nested groups, you can continue to choose this command until all the groups are ungrouped, or until the ungroup control disappears.

The ungroup control (button) only appears if you've selected a group or a number of objects contained in a group. When you click this control, any group in the selection is ungrouped.

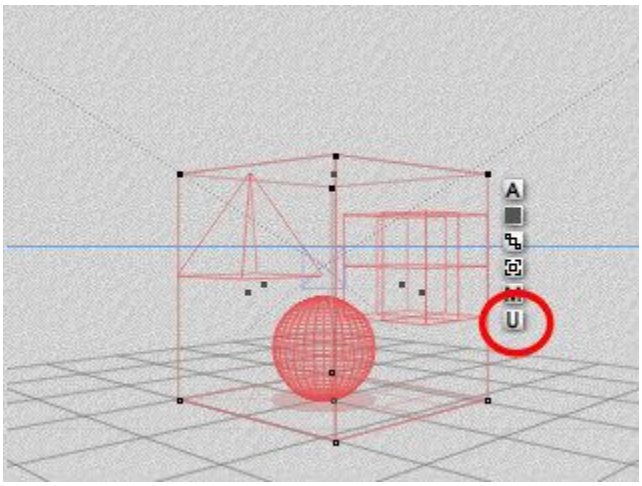
To ungroup a selected group of objects:

1. Select all the groups you want ungrouped.



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2. Choose Objects > UnGroup Objects from the menu or press Cmd/Ctrl+U. You can also click the U button next to the selected groups' bounding box.



Break DAZ Studio Link

The Break DAZ Studio Link command breaks the link between Bryce and the object(s) imported through the DAZ Studio link.

Breaking the link will let you modify the mesh as needed, such as deleting meshes that won't be seen. If you attempt to the delete one of the meshes without breaking the link, you'll delete the imported objects instead.

To break the link to DS:

1. Select the object group that was imported from DS.
2. Choose Objects > Break DAZ Studio Link from the menu.

Caution: If you have imported an animation from DS, do not break the link! Since the animation is stored in the corresponding .daz file and not in Bryce, this will delete the animation as well.

Create Path

The Create Path command creates a default geometric path which can then be used as a motion path for other objects.

A Geometric Path is an object that acts as a motion path for other objects. Geometric Paths do not render as objects. You can think of these paths as railroad tracks. Objects can move along the track but they can't move off of it.

You can control how an object is constrained to the path using the options in the Object Attributes dialog.

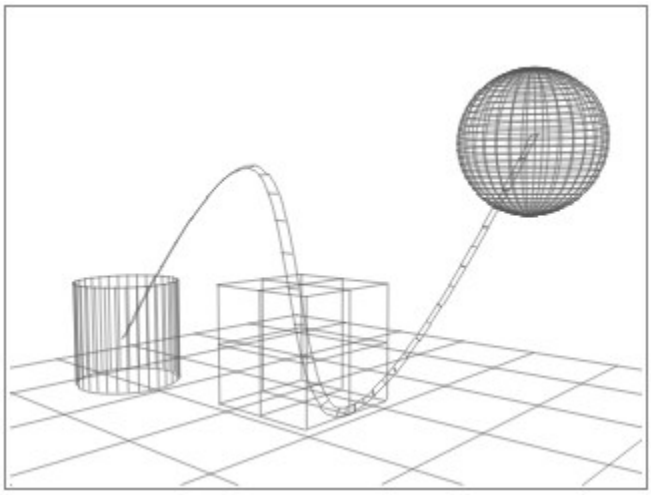
Geometric Paths can be edited just as you would any other object. You rotate, position, or scale the path using the tools in the Edit palette. You can also edit a path by dragging

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its control points. This way you can change the geometry of the paths as well as the trajectory of any object attached to it.

Geometric Paths are especially useful when you are creating motion animations, as they can help you create predictable and repeatable motion.

The other great thing about Geometric Paths is that you can have more than one object attached to it. This can be very useful if you want a number of objects to move along the same trajectory.



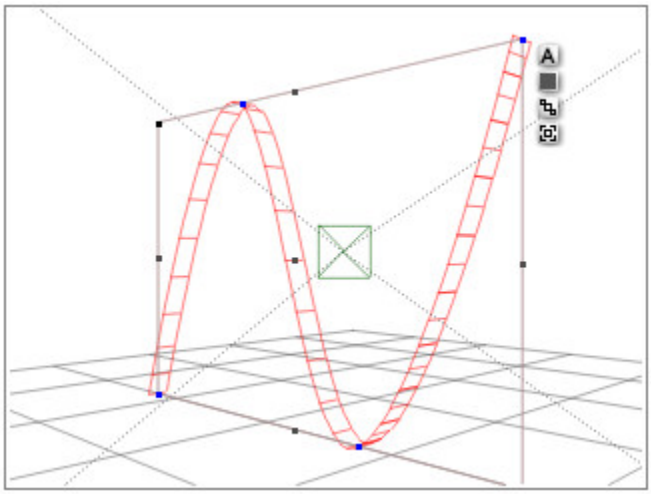
Objects that are attached to the same path can be animated at different rates. So, if you can think of the objects as different trains on the same track, some trains are at the beginning of the track, others are in the middle, and some are at the end. All the objects attached to the path will have the same trajectory.

You can also align objects differently to the same path. So objects may appear to tilt differently as they follow the same trajectory.

Since Geometric Paths are objects, they can also be attached to other paths. Some very complex types of motion can be created using this technique. For example, you can simulate the motion of the solar system by attaching an object on a circular path to a circular geometric path. The object on the circular path would act like a moon orbiting a planet which is also orbiting the Sun.

To create a geometric path, choose Objects > Create Path from the menu or press Opt/Alt+P. A default-shaped path object appears in your scene.

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To convert a motion path into a geometric path object:

1. Select an object with a motion path.
2. Choose Objects > Create Path from the menu. A path object with the same shape path you selected is created.

To link an object to a path:

1. Select the object you want to attach to the path.
2. Move the cursor over the Link icon that appears next to its bounding box.
3. Drag the linking control handle from the object to the path object.

Fly-around

The Fly-around command starts the wireframe view in the Working window to rotate allowing you to view the objects in the scene.

To start the scene fly-around, choose Objects > Fly-around from the menu or press Cmd/Ctrl+Y.

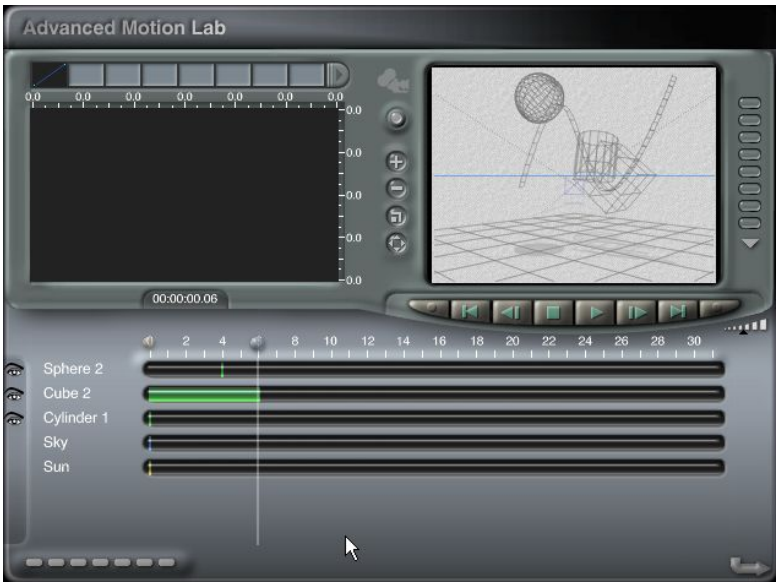
To stop the scene fly-around, click in the Working window.

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Motion Lab

The Motion Lab command opens the Advanced Motion Lab (AML) where animations can be modified.

To open the AML, choose Objects > Motion Lab from the menu or press Cmd/Ctrl+T.



Sky Lab

The Sky Lab command opens up the Sky Lab where your sky can be modified.

To access the Sky Lab, choose Objects > Sky Lab from the menu or press Cmd/Ctrl+K.



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Preview Animation

The Preview Animation command allows you to see a rendered preview of your animation either in the Nano-Preview window or as a storyboard depending on what is selected in the Preview Animation popup menu

To preview an animation, choose Objects > Preview Animation from the menu.

Links Menu

The Links Menu provides links to DAZ3D.com, Tech Support, and DAZ Arcana Tutorials.



To change the links in the Bryce 6 Links menu:

1. Locate the file "Bryce6 Links.txt" in your Bryce folder.
2. Open this file with a text editor.
3. Type in a link name as you want to see it in the menu, followed by a comma (,) and two spaces, then on the same line type the URL in quotation marks such as "http://www.daz3d.com"
4. To place a separator between links, type a dash between quotation marks ("-")
5. Save the file to replace the existing one.

Example:

"Tech Support", "http://www.daz3d.com/redirects/contact_us.php"

"Tutorials", "http://www.daz3d.com/redirects/bryce_tutorial.php"

"-", "-"

"How to change this menu...", "linksmenu.htm"

You can replace the links that are there or add new ones.

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Help Menu

The Help Menu provides links to the included help file and other helpful links.



To view the current version/build of Bryce, press Cmd/Ctrl and choose Help > About Bryce 6.x.

Customizing Bryce

The Bryce interface can be customized to better suit your personal workflow. If you want to, you can tear apart the interface and reposition any palette, or you can choose to hide the entire interface and leave only the working window visible.

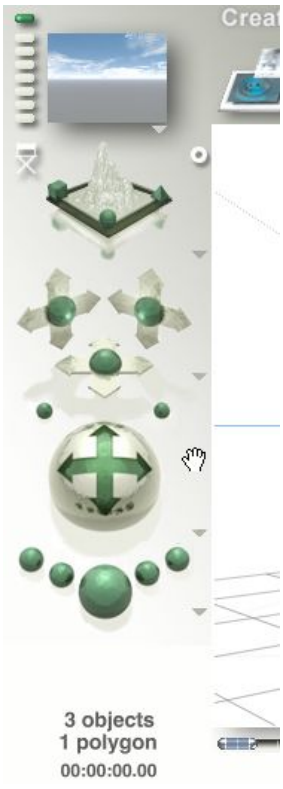
Moving Palettes

Most of the palettes can be moved around the Bryce interface. This allows you to take advantage of some of the space around the Working Window and save time since you don't have to keep clicking the buttons at the top of the window to change palettes.

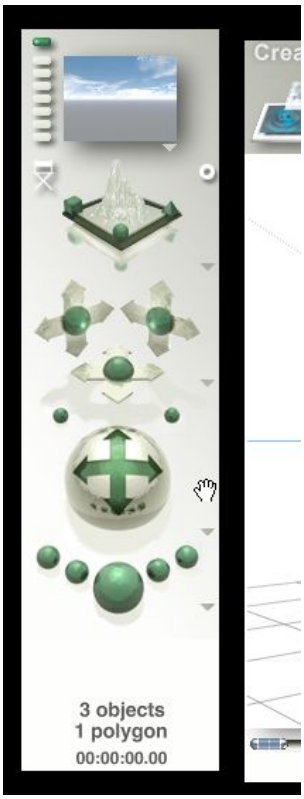
To move the palettes:

1. Move the cursor over the palette to be moved and press the Space Bar. The cursor will change to a hand.

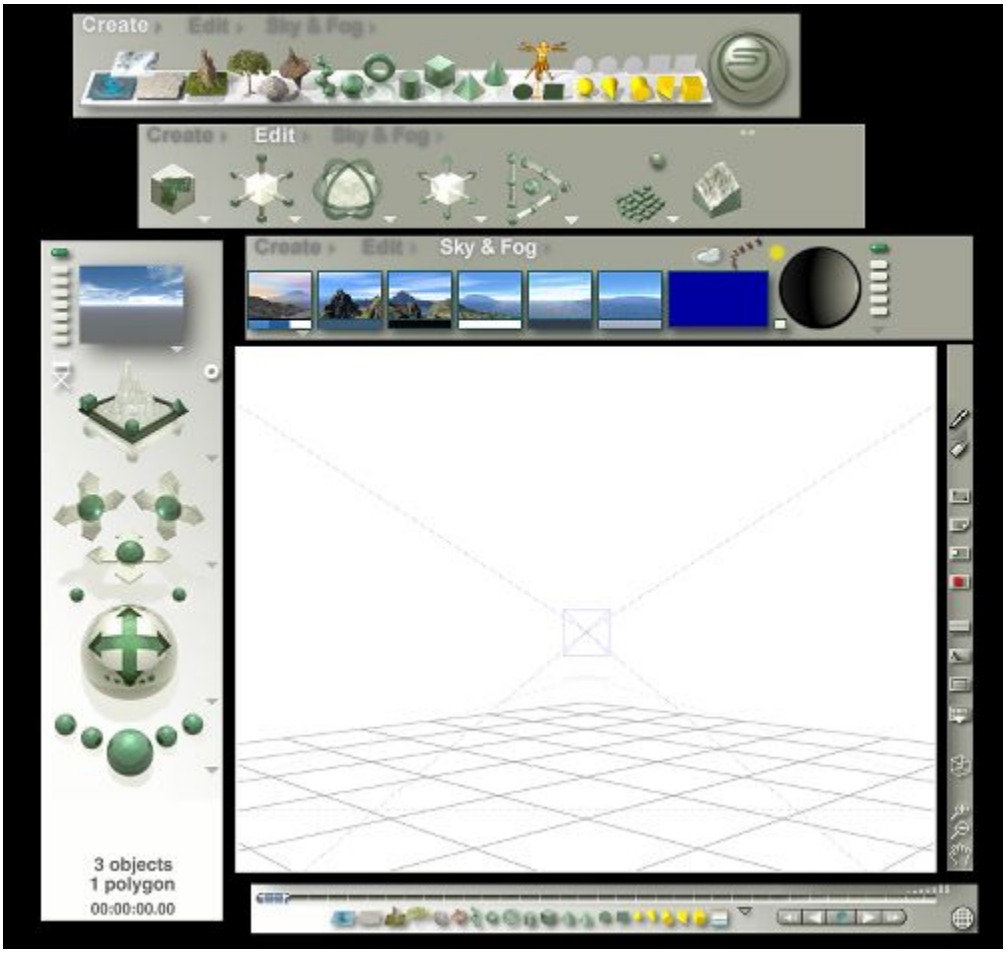
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2. With the **Space Bar** still pressed, left-click-drag the palette to where you want it.



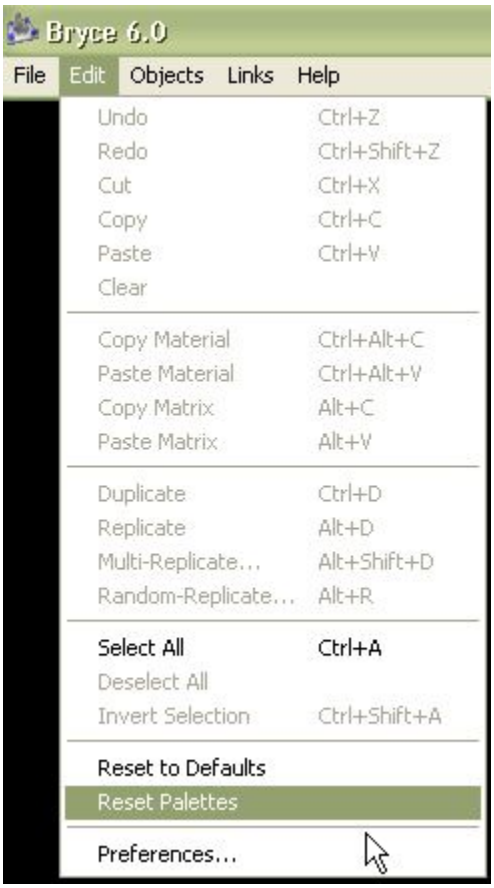
3. Repeat for any other palettes you want to move. Using this technique, you can have the Create, Edit, and Sky & Fog palettes active at the same time instead of having to click on each palette name each time you want to use it.



Note that the Time and Selection palettes cannot be moved separately. Continue to use the Time/Selection Toggle to switch between them.

Reset All Palettes

To reset all the palettes to their original positions, select Edit > Reset Palettes from the menu or press Opt/Alt+Spacebar+click on any palette.



Display or Hide Palettes

To keep the interface uncluttered, some of Bryce palettes and toolbars may be hidden.

To hide or display palettes, either click on a text button above the Working window or press the key combination for the desired palette:

- Ctrl+1 - Create palette
- Ctrl+2 - Edit palette
- Ctrl+3 - Sky & Fog palette
- Ctrl+4 - Control palette
- Ctrl+6 - Advanced Display palette
- Ctrl+Tab - Display or Hide all palettes

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Hide Interface

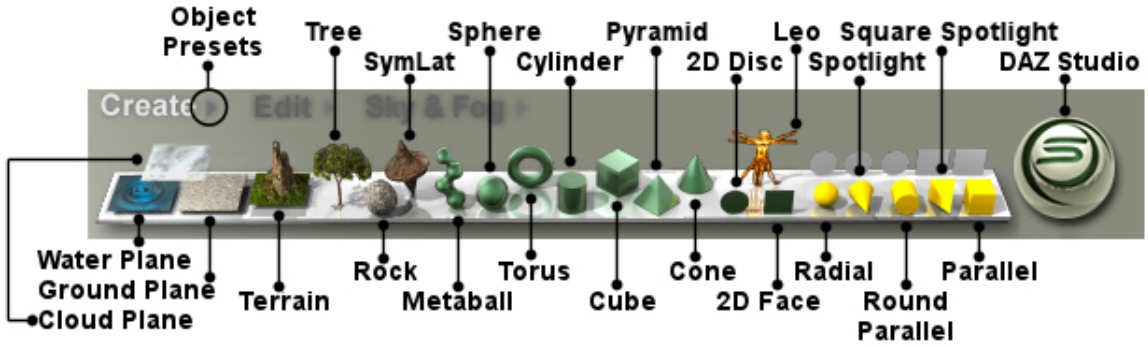
To hide the Bryce interface, press Cmd/Ctrl+Alt. All the palettes disappear and your image appears at the center of your work space. Press Cmd/Ctrl+Alt again to display all the palettes.

The Palettes

Bryce uses a series of palettes to manage tools and controls: the Create Palette, Edit Palette, Sky & Fog Palette, Advanced Display Palette, Selection Palette, and Animation Controls. These palettes let you create objects, edit objects, create skies and fog, control the display of your scene, select objects, and animate objects. Refer to "The Palettes" for more on using the different palettes.

Beside the title of each of the three tool palettes (the Create palette, Edit palette, and Sky & Fog palette) is a small triangle that opens the different Preset Libraries available in Bryce. Refer to "Preset Libraries" for more on Preset Libraries.

Create Palette



The main tool for creating objects is the Create palette. This palette provides access to tools that let you create all the object types available in Bryce. The tools on the palette represent the type of object they create. The name of each tool appears in the Text Display Area and as a Tool Tip as you move your cursor over it. When you click a tool, the object appears in the center of the workspace or scene depending on your preference setting.

To display the Create palette, click the Create button at the top of the Bryce window.

To use a Create tool:

1. Display the Create palette by clicking on the Create button.

   Create

2. Click on the tool for the object type you want to create. The object appears in the working window.

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The Triangle icon next to the Create button at the top of the Bryce window lets you access the Object Presets Library.

Objects Library

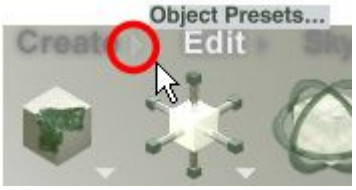
The Preset Object Library contains all the preset objects distributed with Bryce as well as presets you add. Objects in the library are either 3D models or geometric paths. You can use the Preset Objects Library to add ready-made objects to your scene.

You can place objects from the library anywhere in your scene and edit them just as you would any object.

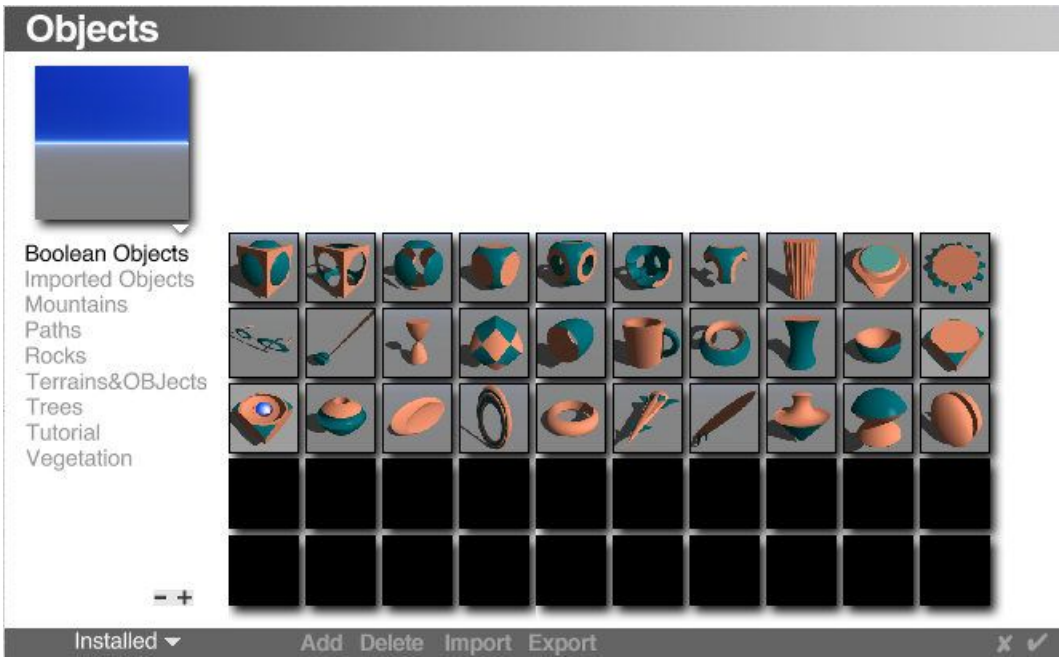
You can add and delete objects from the libraries, add and delete categories, and change the thumbnail preview image.

To access the Preset Objects Library:

1. Click quickly on the triangle next to the Create button. Please note that if you hold down the mouse key for too long, the library will open, then close immediately. To keep the library open, click quickly on the triangle icon.



2. The Preset Objects Library will come up.



Bryce comes with two object preset category folders: Installed and User. The Installed preset category folder contains the presets that are installed with Bryce. The User preset category folder is empty by default and provides a quick way to save objects to the library.

To choose a preset category folder, click the triangle icon next to the preset category folder name at the bottom left of the Preset Object Library and choose a preset category folder from the drop-down menu. The Preset Object Library opens that preset category folder and displays the categories and presets found in that folder.



Refer to "Libraries" for more information on adding/deleting categories and presets and updating the thumbnail previews.

Primitives vs. Procedurals

Bryce's Create palette lets you create two different types of basic objects: Primitives and Procedurals.

Primitives are basic geometric shapes such as the sphere, torus, cylinder, cube, pyramid, cone, plane, and disk. These shapes can be thought of as primary geometric building blocks, from which more complex objects are constructed.

Primitives also have derivative groups (such as the ellipsoid and squashed sphere, which are derived from the Sphere), which allow you to create different shapes without having to perform the transformations yourself.

Procedural objects are object that require special constructions, or "procedures," to create, such as terrains, trees, rocks, symmetrical lattices, and Metaballs. Procedures can include operations such as assigning materials, randomizing internal parameters, or assigning light properties.

Creating Primitives

Primitives are the primary geometric building blocks in Bryce. You can create spheres, tori, cylinders, cubes, pyramids, cones, discs, and 2D faces.

By default all Primitives are assigned a flat gray color.

Derivative Primitives

Derivative Primitives are primitive objects whose shape is "derived" from basic geometric primitives.

Derivative Primitives were created so that you could skip some of the editing procedures on most of the basic primitives. For example, instead of elongating a cube

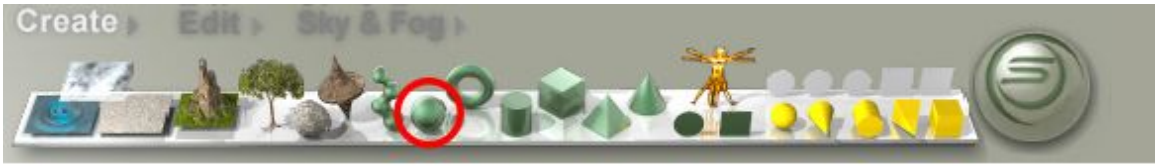
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to make it into a pillar, you can just use the Stretched Cube derivative. Instead of shortening a cube to make it into a rectangle, you can use the Squashed Cube derivative.

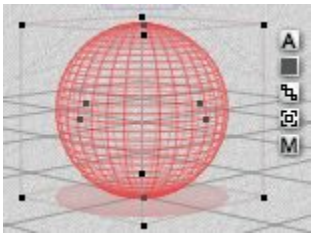
To create a geometric primitive, click one of the primitive tools in the Create Palette.

Creating a Sphere

To create a default Sphere, click on the Sphere tool in the Create palette:

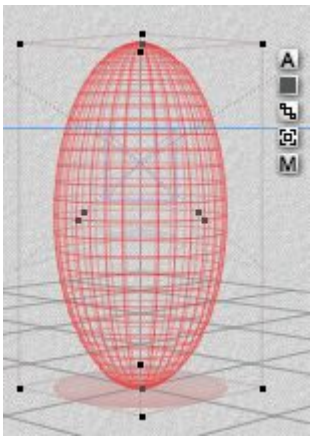


The Sphere will be created with X, Y, and Z-size of 20.48 BU:



To create a Stretched Sphere, press Shift+click Sphere tool.

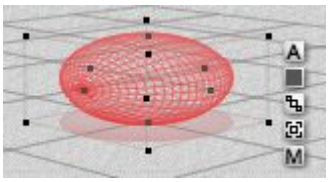
The Stretched Sphere will be created with X and Z-size of 20.48 BU and Y-size of 40.96 BU:



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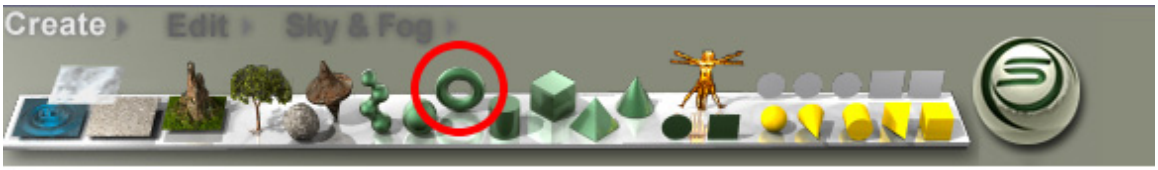
To create a Squashed Sphere, press Cmd/Ctrl+click Sphere tool.

The Squashed Sphere will be created with an X and Z-size of 20.48 BU and Y-size of 10.24 BU:

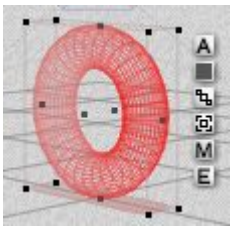


Creating a Torus

To create a default Torus, click on the Torus tool in the Create palette:



The Torus will be created with an X and Y-size of 20.48 BU, Z-size of 5.12 BU, and radius of 256:



The torus has it's own editor which can be accessed by clicking the E button next to the torus.

See the "Torus Editor" for more information on using the editor.

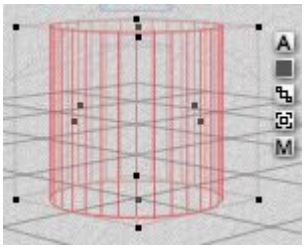
Creating a Cylinder

To create a default Cylinder, click on the Cylinder tool in the Create palette:



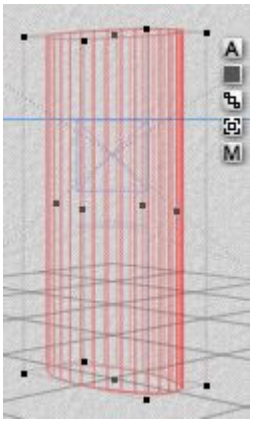
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The Cylinder will be created with an X, Y, and Z-size of 20.48 BU:



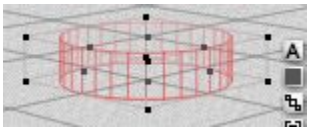
To create a Stretched Cylinder, press Shift+click Cylinder tool.

The Stretched Cylinder will be created with an X-size of 20.48 BU, Y-size of 40.96 BU, and Z-size of 10.24 BU:



To create a Squashed Cylinder, press Cmd/Ctrl+click Cylinder tool.

The Squashed Cylinder will be created with an X and Z-size of 20.48 BU and Y-size of 5.12 BU:

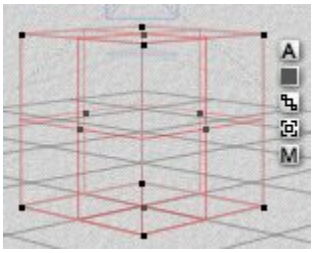


Creating a Cube

To create a default Cube, click on the Cube tool in the Create palette:

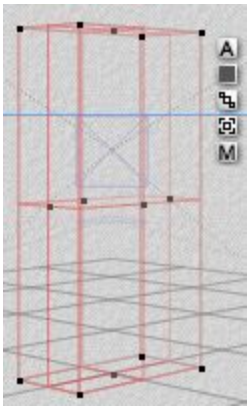


The Cube will be created with an X, Y, and Z-size of 20.48 BU:



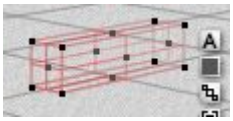
To create a Stretched Cube, press Shift+click Cube tool.

The Stretched Cube will be created with an X-size of 10.24 BU, Y-size of 40.96 BU, and Z-size of 20.48 BU:



To create a Squashed Cube, press Cmd/Ctrl+click Cube tool.

The squashed cube will be created with an X and Y-size of 5.12 BU and Z-size of 20.48 BU:



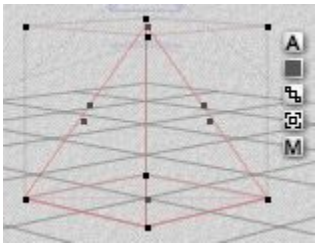
Creating a Pyramid

To create a default Pyramid, click on the Pyramid tool in the Create palette:



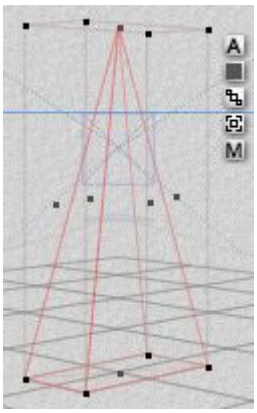
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The Pyramid will be created with an X, Y, and Z-size of 20.48 BU:



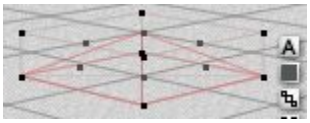
To create a Stretched Pyramid, press Shift+click Pyramid tool.

The Stretched Pyramid will be created with an X-size of 10.24 BU, Y-size of 40.96 BU, and Z-size of 20.48 BU:



To create a Squashed Pyramid, press Cmd/Ctrl+click Pyramid tool.

The Squashed Pyramid will be created with an X and Z-size of 20.48 BU and Y-size of 5.12 BU:

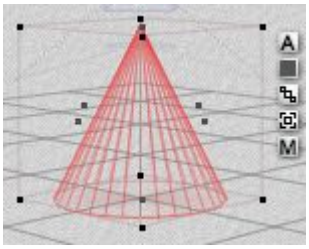


Creating a Cone

To create a default Cone, click on the Cone tool in the Create palette:

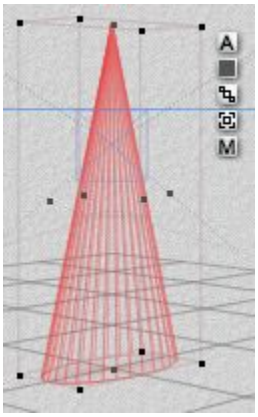


The Cone will be created with an X, Y, and Z-size of 20.48 BU:



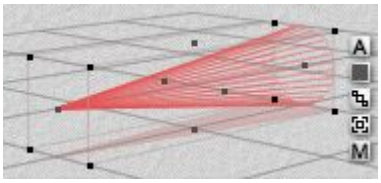
To create a Stretched Cone, press Shift+click Cone tool.

The Stretched Cone will be created with an X-size of 10.24 BU, Y-size of 40.96 BU, and Z-size of 20.48 BU:



To create a Squashed Cone, press Cmd/Ctrl+click Cone tool.

The Squashed Cone will be created with an X and Y-size of 10.12 BU and Z-size of 40.96 BU, it will also be lying on its side:



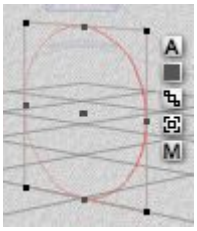
Creating a 2D Disc

To create a default, vertical Disc, click on the Disc tool in the Create palette:

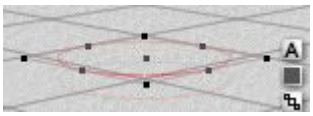


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The Disc will be created with an X and Y-size of 20.48 BU and Z-size of 0 BU:

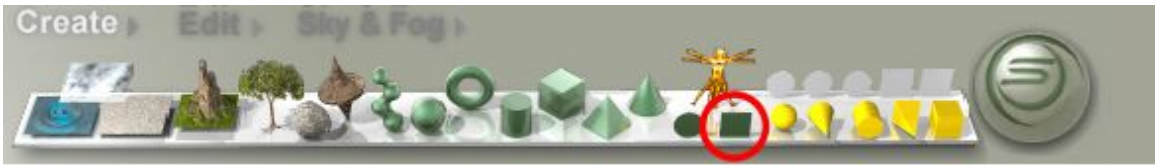


To create a horizontal Disc, press Cmd/Ctrl+click Disc tool:

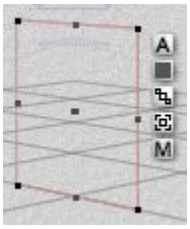


Creating a 2D Face

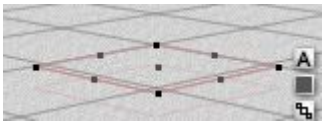
To create a default, vertical 2D Face, click on the 2D Face tool in the Create palette:



The 2D Face will be created with an X and Y-size of 20.48 BU and Z-size of 0 BU:



To create a horizontal 2D Face, press Cmd/Ctrl+click 2D Face tool:

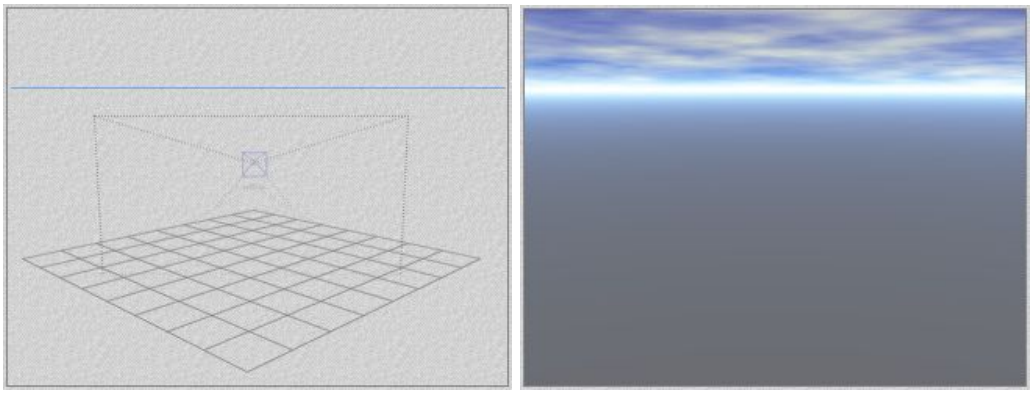


Creating Infinite Planes

An Infinite Plane object extends in all directions to infinity. You can create cloud, water, and ground planes.

When you create a plane in Bryce it appears as a finite plane to make it easier to position, but when your scene is rendered the plane extends infinitely in all directions. Though procedurally the three infinite plane types are different, they are all considered to be Infinite Planes for the purpose of selecting with the Selection tools.

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An Infinite Plane is a plane object that has no depth. An Infinite Slab is a plane object that has depth. The Infinite Plane has no effect on objects above it or below it; an Infinite Slab can affect objects within it. For example, anything you place within the slab's depth will be affected by the slab's volume color.

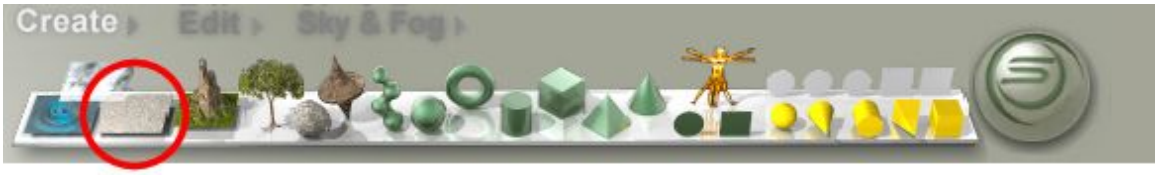
Slabs are usually used to create water. When you create a water slab, you create water with realistic volume. This means that if you sink an object into the water it will be affected by the colors or textures you assign to the slab's volume.

The realistic look of a water slab depends almost entirely on the material you assign to it. The Volume color plays an essential role in creating realistic water effects.

Creating a Ground Plane

Ground Planes are created at ground level. By default, all new scenes open with an infinite Ground Plane.

To create a Ground Plane, click the Ground Plane tool in the Create palette.



OR

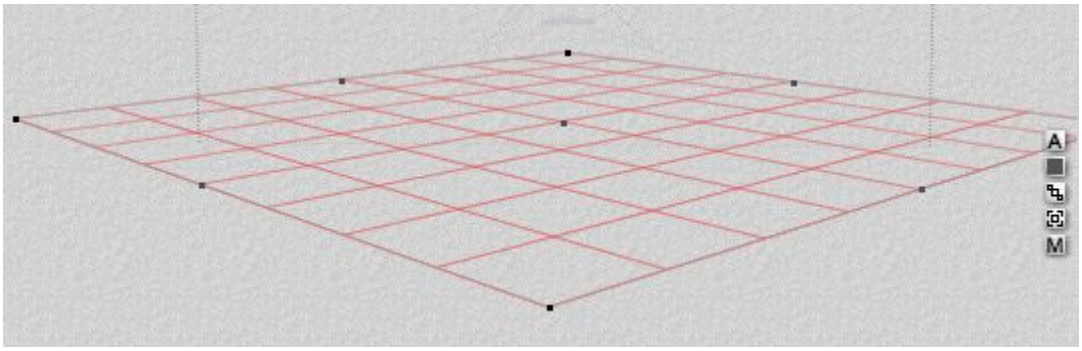
Left-click-hold on the Ground Plane and choose Surface from the menu:



Once the plane appears in your scene you can edit it like any other object. Use the Ground Plane to add ground to your environment.

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The Ground Plane is created with a gray color, as are all Bryce primitives. Once you begin assigning textures to objects, Ground objects (as well as all other primitive objects) will inherit the texture assigned to the previous object.



Ground Slab

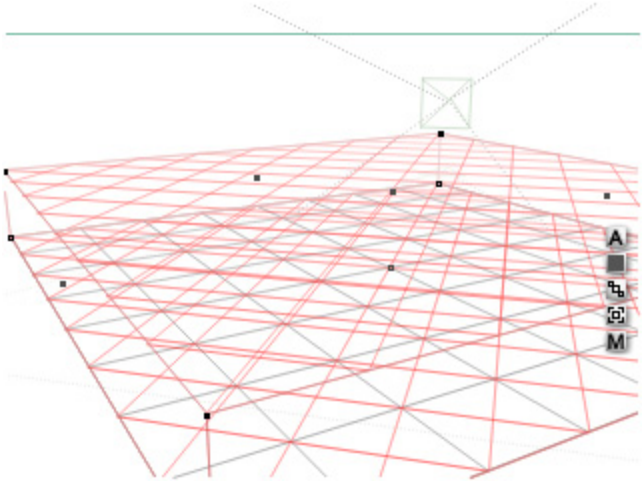
To create a Ground Slab, press Alt+click Ground Plane tool

OR

Left-click-hold on the Ground Plane and choose Volume from the menu:

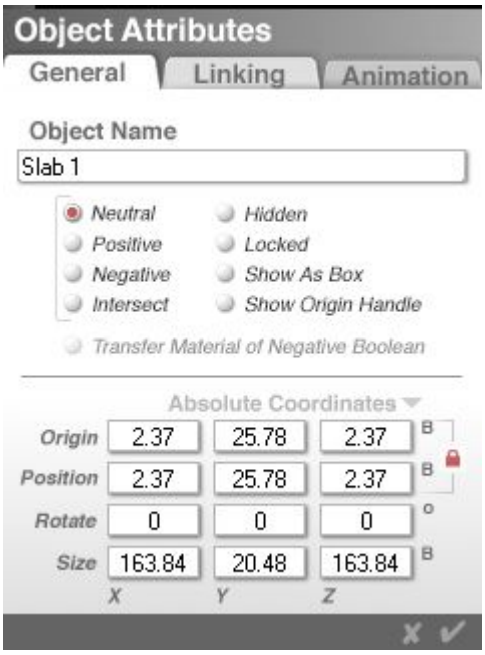


The Ground Slab will be created with the base of the slab at the same level as the default Ground Plane:

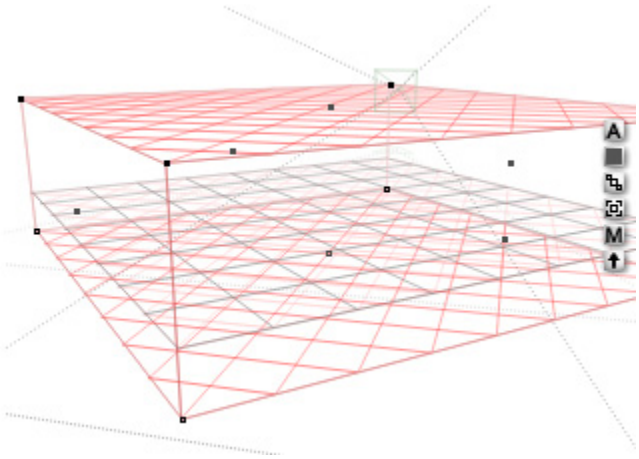


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The slab depth can be modified by clicking on the A button and changing the Y-size from the default 20.48 BU:



Here the Y-size has been changed to 50 BU:

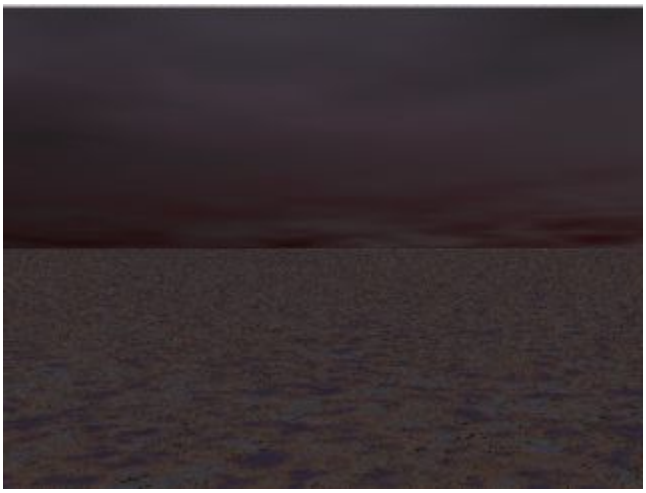


A Ground Slab usually has an opaque material applied to it so it can't affect objects placed within it, however, when a cloud material is applied to it, you've got a fog object that affects the ground below it and any objects placed in it

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Examples:

- Ground Plane by itself:



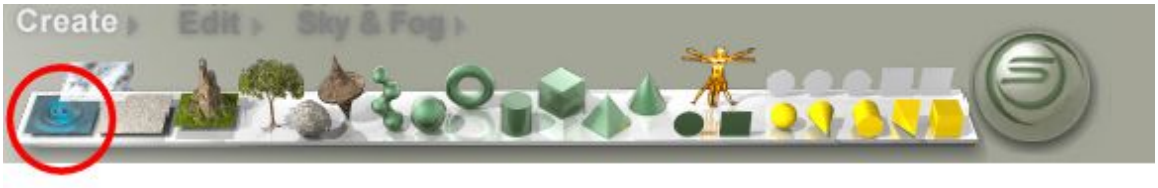
- Ground Slab added with foggy material applied:



Creating a Water Plane

Water Planes are created just a bit higher than ground level. That way, if you have already created ground and terrains, you can easily place a water plane into your scene and immediately see the terrains peeking out from the water.

To create a Water Plane, click the Water Plane tool in the Create palette:



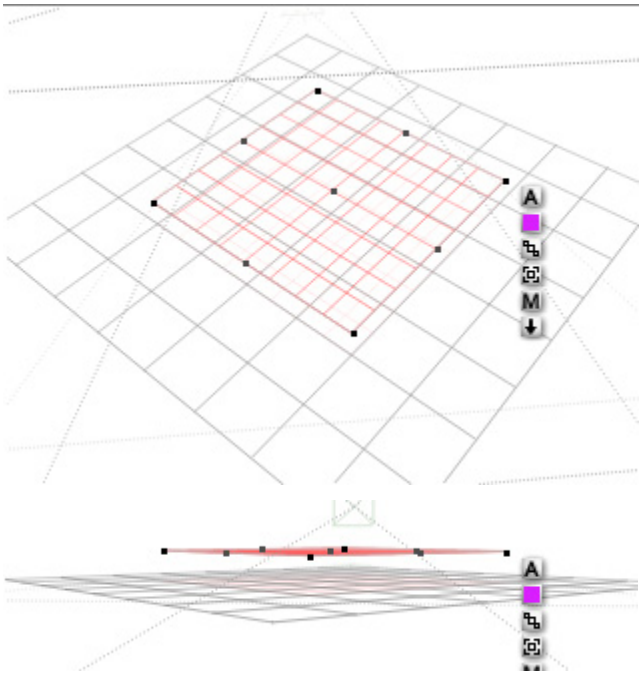
OR

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Left-click-hold on the Water Plane tool and choose Surface from the menu:



The Water Plane will be created with the plane above the default Ground Plane: Once the plane appears in your scene you can edit it like any other object.



Water Planes are created with a water texture randomly chosen from the Waters Preset Materials Library. You can change this material by selecting a different preset or creating a new material.

Water Slab

To create a Water Slab, press Opt/Alt+click Water Plane tool

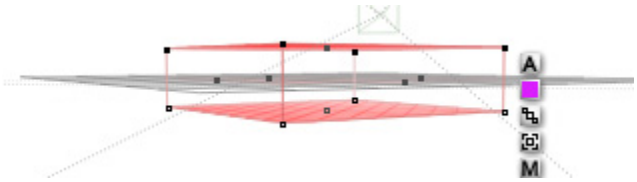
OR

Left-click-hold on the Water Plane tool and choose Volume from the menu:



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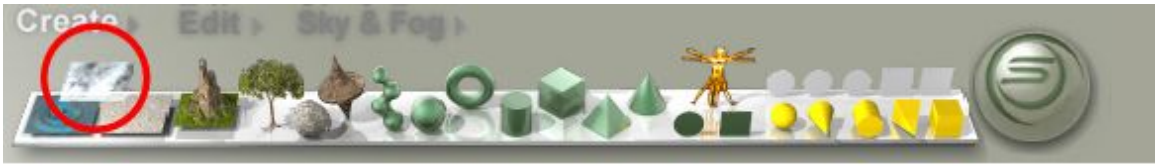
The water slab will be created with the Ground plane halfway between the top and bottom of the slab:



The slab depth can be modified by clicking on the A button and changing the Y-size from the default 20.48 BU:

Creating a Cloud Plane

To create a Cloud Plane, click on the Cloud Plane tool in the Create palette:

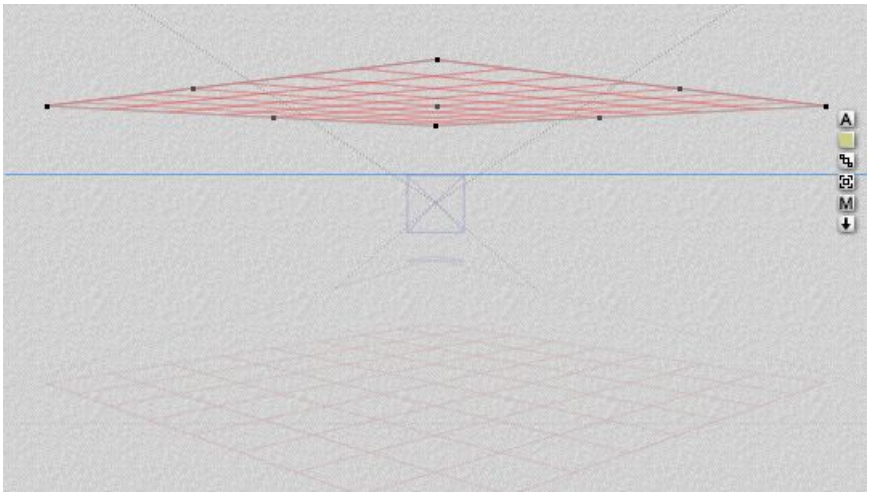


OR

Left-click-hold on the Cloud Plane tool and choose Surface from the menu:



Once the plane appears in your scene you can edit it like any other object.



Cloud planes are created with a cloud texture randomly chosen from the Clouds > Infinite Planes Preset Materials Library. You can change this material by selecting a different preset or creating a new material.

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Cloud Slab

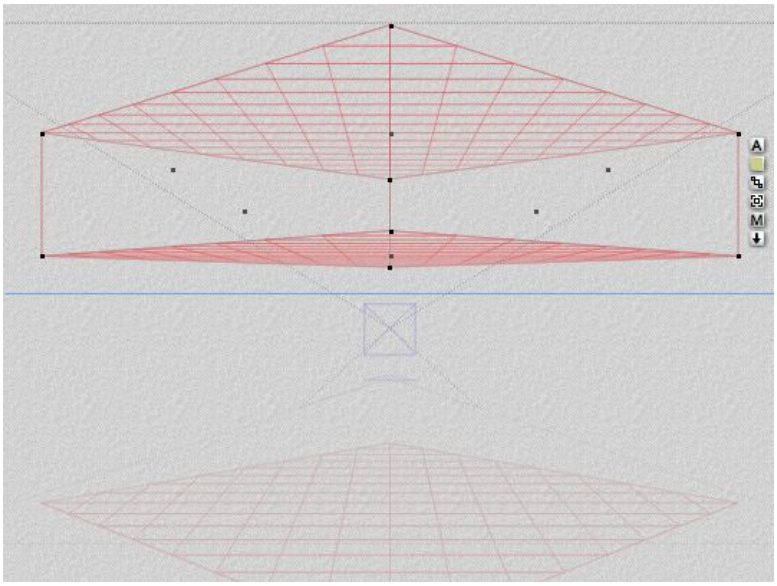
To create a Cloud Slab, press Alt+click on the Cloud Plane tool in the Create palette:

OR

Left-click-hold on the Cloud Plane tool and choose Volume from the menu:



The volume Cloud Plane will be created:



Creating Terrains

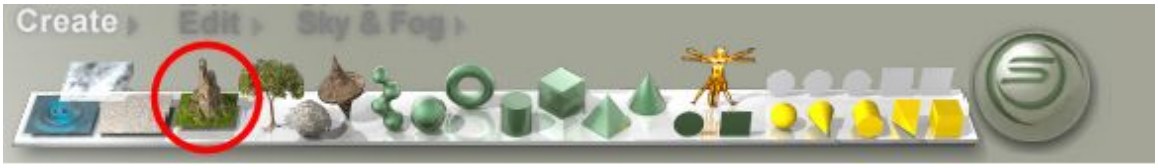
Terrain Objects define the landscape of your scene. They represent the land forms of any scene: mountains, deserts, islands, or even floating cities. In Bryce, a Terrain Object is a height map that determines the shape of your landscape.

Bryce creates a terrain's shape by converting brightness values in grayscale images into a height map. White areas in the image result in the highest altitudes and black areas result in the lowest. These maps are called grayscale-to-height maps (G2H). The Terrain Editor (TE) lets you generate the grayscale images that are used to create terrain objects and you can also create grayscale images in a paint program and import them into the TE.

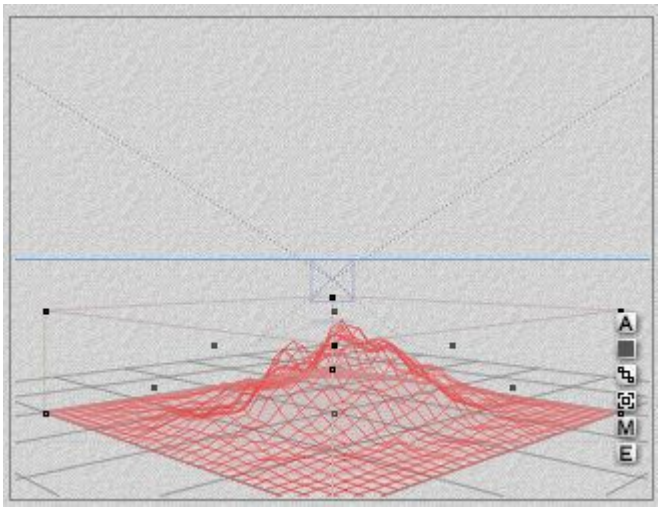
Once you have a Terrain object you can customize it in the Terrain Editor.

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To create a Terrain, click on the Terrain tool in the Create palette:



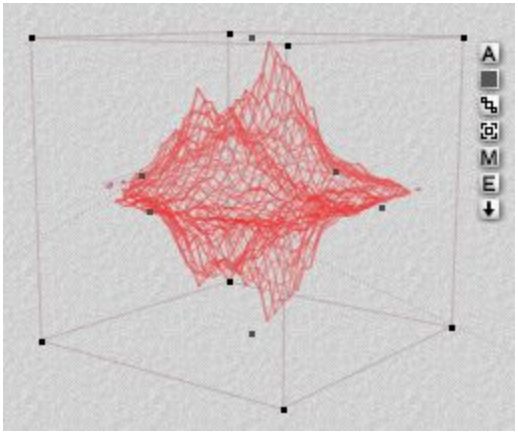
A randomly generated Terrain appears in your scene with X and Z-size of 81.92 and Y-size of 20.48:



To modify the Terrain, click on the A button next to the selected terrain to enter the Terrain Editor.

Creating Symmetrical Lattices

A Symmetrical Lattice (or SymLat) is a terrain object that has a mirror image of itself fused at its base. When you modify one half of the lattice, the corresponding changes are applied to the mirrored half.

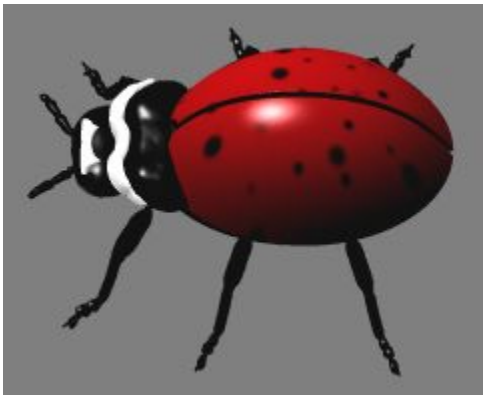


The Symmetrical Lattice can be a great timesaving tool. Instead of creating symmetrical shapes by duplicating and aligning two halves, you just need to create one half of a

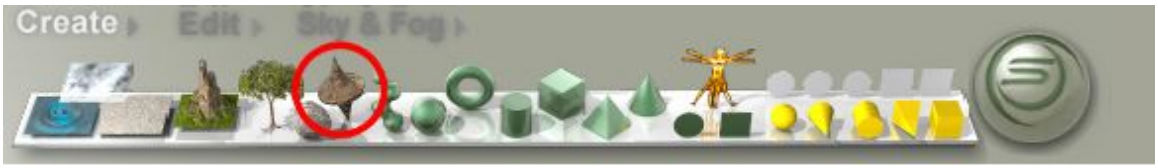
lattice and your object is duplicated for you. Symmetrical Lattices are edited as Terrains, using the Terrain Editor.

Many advanced types of objects can be created using the Symmetrical Lattice object. Any object that is symmetrical can be created by painting its shape in the Terrain Editor.

The Ladybird in the image below was created using several Symmetrical Lattice objects for the legs, head, thorax, body, and antennae. The shell is a terrain.



To create a Symmetrical Lattice, click the Symmetrical Lattice tool in the Create palette:



Creating Trees

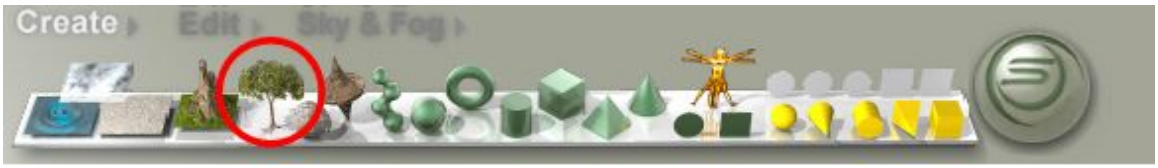
The Tree Object tool creates natural-looking tree shapes that can be assigned materials, shaped, and positioned throughout your scene.

To add a Tree Object to your scene, click the Tree Object tool. A random default tree appears in your scene.

Once you have a Tree Object, you can customize it in the Tree Lab. You can control the size and texture of the tree trunk, the thickness and number of branches, and the type of foliage and its frequency, randomness, and color. You can import images to be used for the trunk or foliage texture. You can also control how gravity affects the tree, making branches bend and leaves droop to varying degrees.

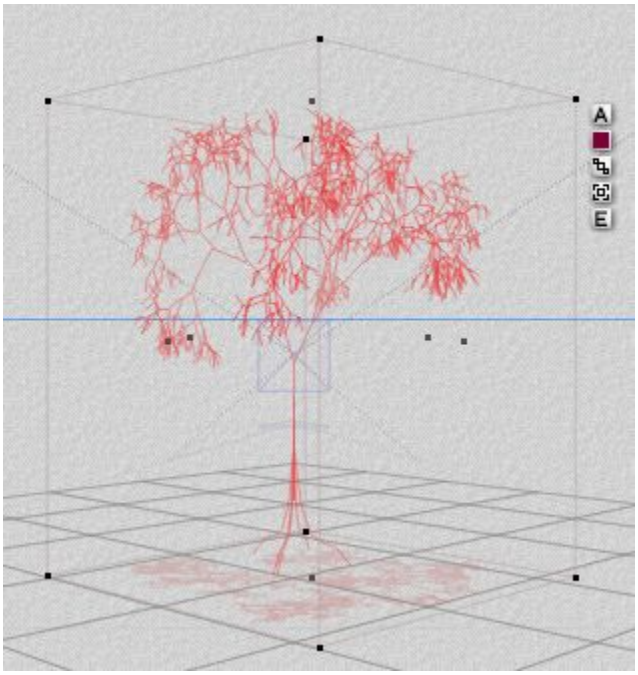
Once you have a tree object you can customize it in the Tree Lab.

To create a Tree, click on the Tree tool in the Create palette:



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A randomly generated Tree appears in your scene:

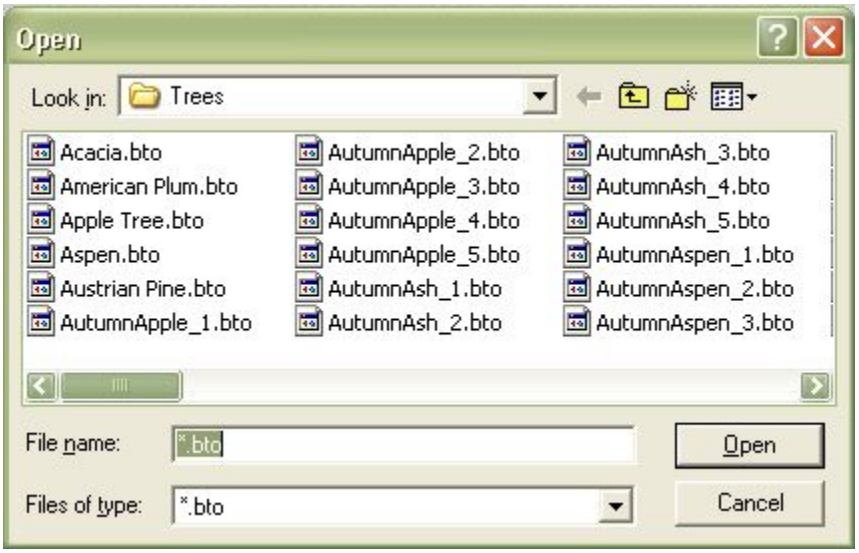


To modify the Tree, click on the E button next to the selected Tree to enter the Tree Lab.

Access Pre-Generated Trees

Bryce includes a library of pre-generated Trees that can be accessed using a modifier key.

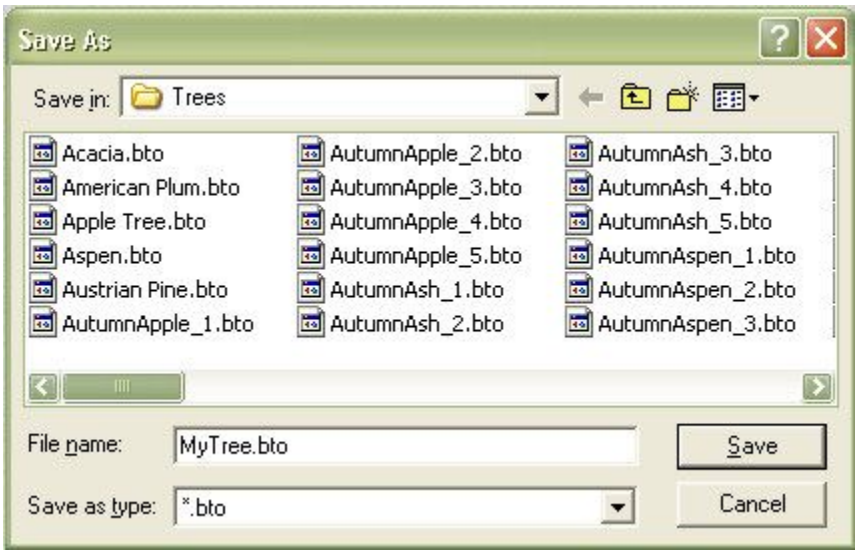
To access these presets, press the Opt/Alt+click Tree tool, a File Open dialog will come up where you can select one of the .bto tree presets to load in the scene.



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Saving Tree Presets

To save a Tree preset to the Tree Library folder, select the tree then press the Ctrl+click Tree tool, a file save dialog will come up where you can name the Tree and save it.



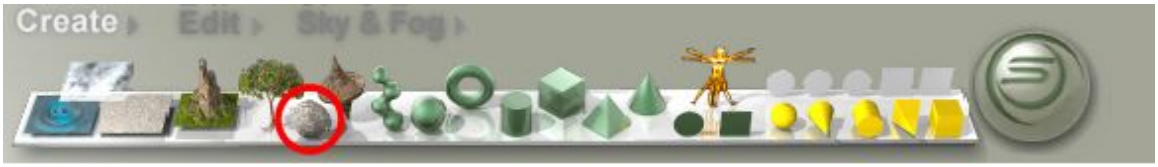
Please note that when you save a tree this way, only the material applied to the trunk and branches is saved along with the tree information. Any material applied to the leaves is lost.

To save the tree with materials intact and to ensure that the tree isn't randomized on loading, save the tree to the Objects Library.

Creating Stones

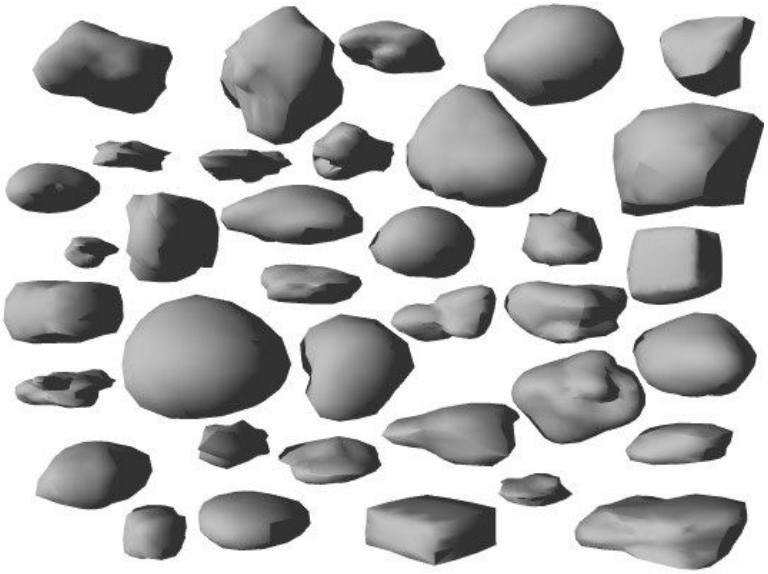
The Stone Object tool creates random, natural-looking stone shapes that can be assigned materials and positioned throughout your scene.

To create a Stone Object, click the Stone Object tool in the Create palette:



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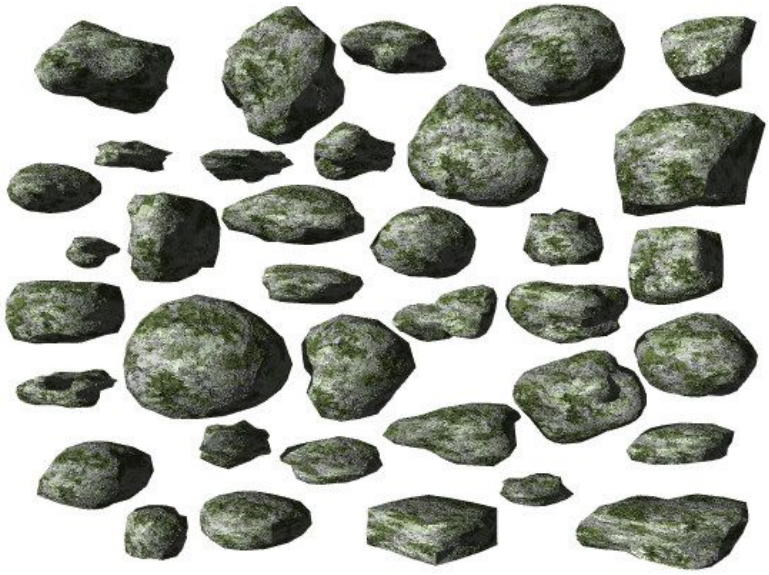
Each time you click the Stone Object tool, you will get a different shaped mesh. The image below shows examples of some of the possibilities:



Stone Objects are mesh based, and can be smoothed or unsmoothed using the Edit Mesh dialog. See "Mesh Editor" for more information on smoothing and unsmoothing meshes.

Stones are assigned random textures automatically from the Stones Preset Materials Library.

Since Stones are essentially clumps of meshes, their realism is highly dependent on the textures assigned to them. For example, if you assign a flat texture with no bumpiness to a Stone, the results won't be very Stone-like. Try to assign rocky textures to stones.



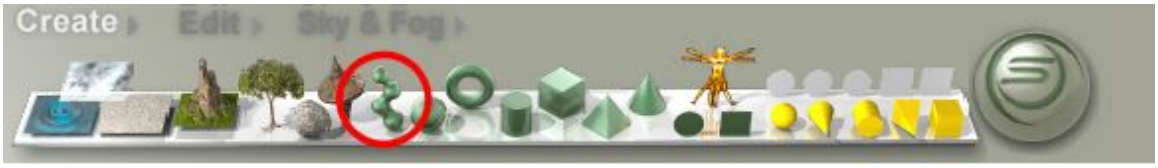
©2007 DAZ 3D, Inc.

Creating Metaballs

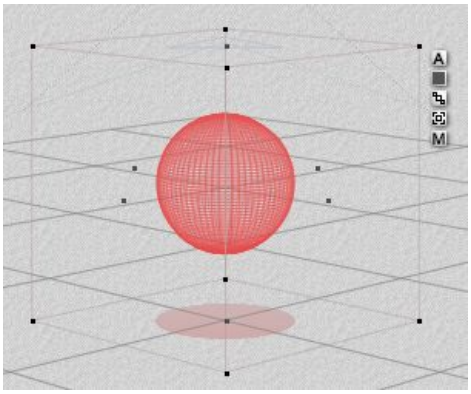
Metaballs are spheres that blend into each other based on proximity. With Metaballs, you can create a wide variety of realistic-looking shapes. Metaballs let you quickly create fluid shapes that are otherwise time-consuming or even impossible to create using primitives and Boolean operations.

When you are in Wireframe view, Metaballs are represented as simple spheres. To see how the Metaballs will blend together, you must either look at the Nano-Preview or render the image.

To create a Positive Metaball, click on the Metaball tool in the Create palette:



The Metaball will be created with X, Y, and Z-size of 20.48 BU (although the actual Metaball is much smaller than that):

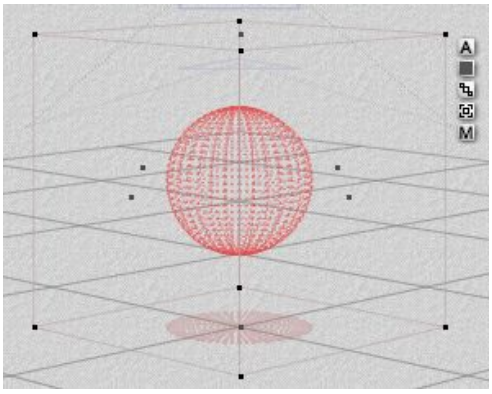


To create a Negative Metaball, press Shift+click Metaball tool.

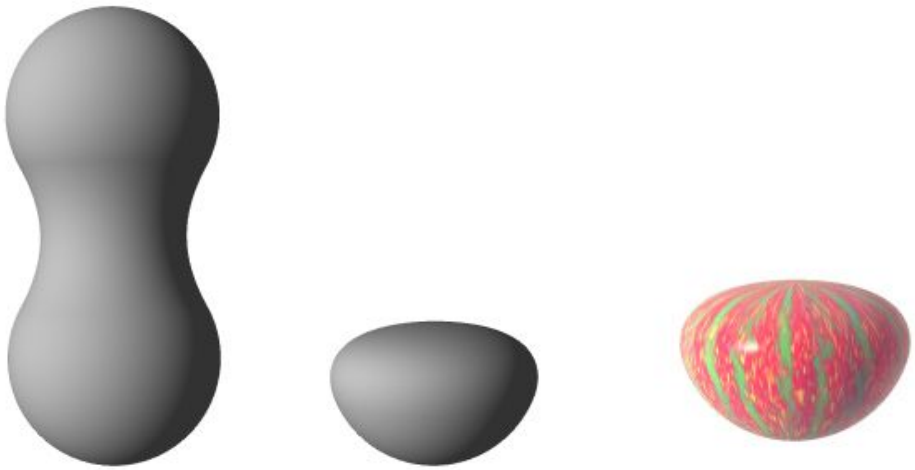
The Negative Metaball looks just like the positive one, even down to the Attributes being set to Neutral. You'll only be able to tell the difference by rendering the scene to see the effect of the Negative Metaball on the Positive Metaball(s).

If your metaball looks like the image below (created by pressing N+click Metaball tool), then it will act like a Positive Metaball, even though it looks like a negative object:

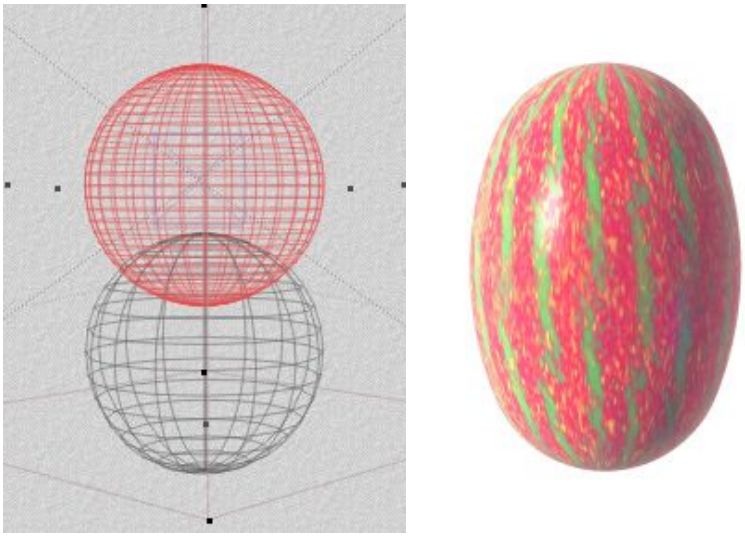
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Two rendered Positive Metaball compared to a Negative and Positive set:



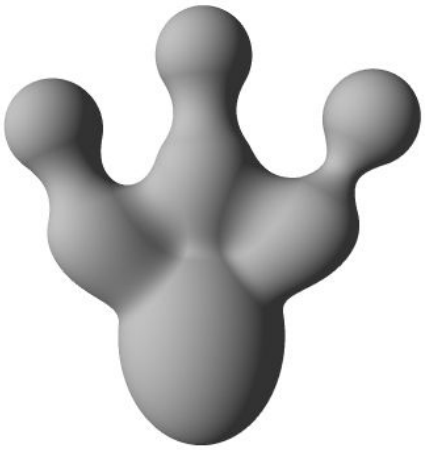
You can blend Metaballs of different sizes. This gives you more control over the resulting shape. To blend Metaballs, simply place the Metaballs close to each other. The closer together they are, the more they will blend into each other. The farther apart they are, the more they will resemble distinct spheres.



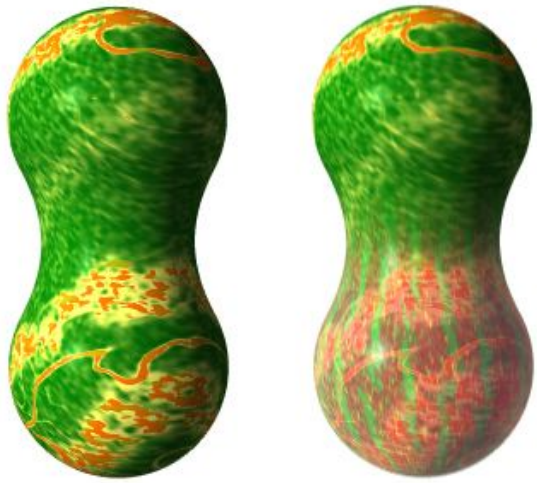
©2007 DAZ 3D, Inc.

- Level of Attraction - find out more about metaballs and how they attract or repel each other.

You can also change the shape of Metaballs in your scene to get different effects. For example, you can squash or stretch a Metaball, changing the surface area that blends into nearby Metaballs. Two oval Metaballs will give you a different blend result than two spherical Metaballs.



For Metaballs to blend smoothly, they must have the same material. If you blend two Metaballs with differing materials, you will not always get a smoothly blended result - unless that's the effect you're going for.



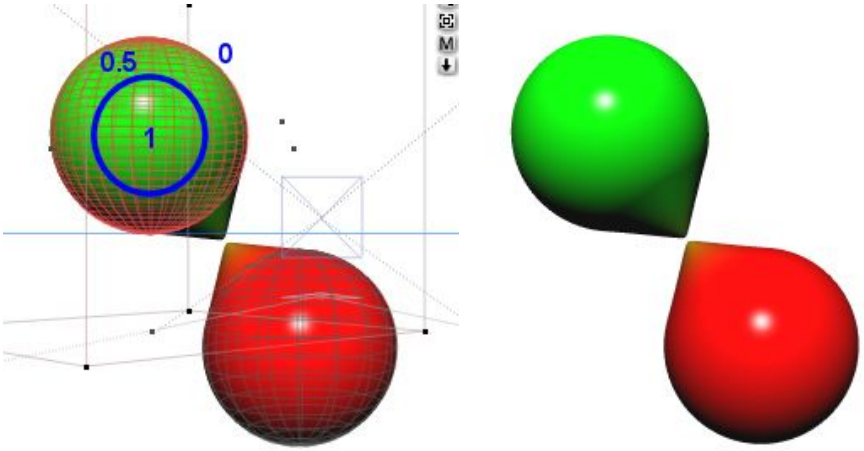
Metaballs can also be grouped - see "Grouping Metaballs" for more on this.

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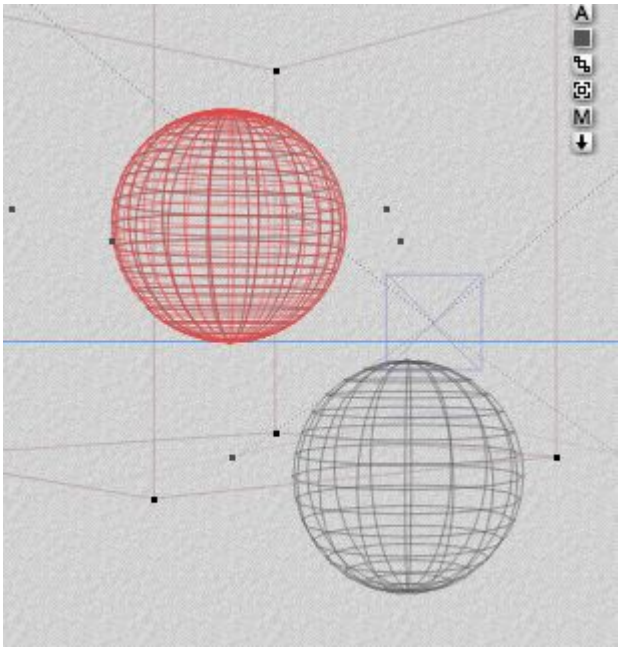
Level of Attraction

Metaballs have a default "level of attraction" starting from the center of the Metaball and decreasing as it moves towards the outside edge.

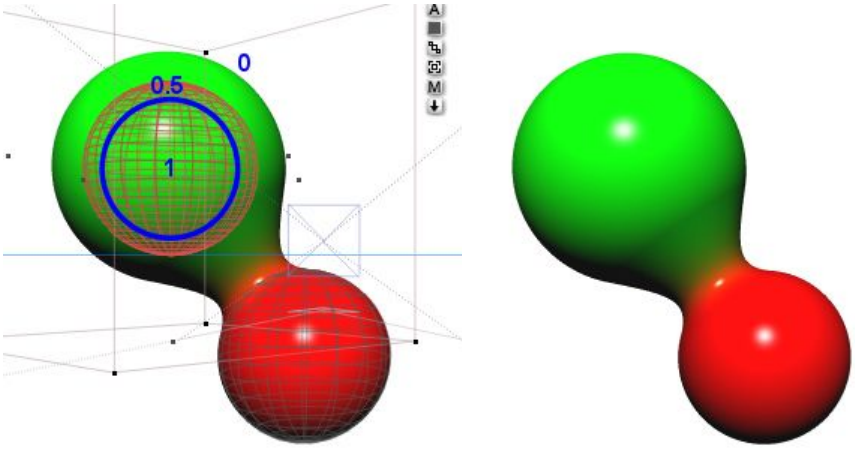
If we use a scale of 0 to 1, the center of the Metaball has an attraction level of 1 while the outer radius of the Metaball has an attraction level of 0.



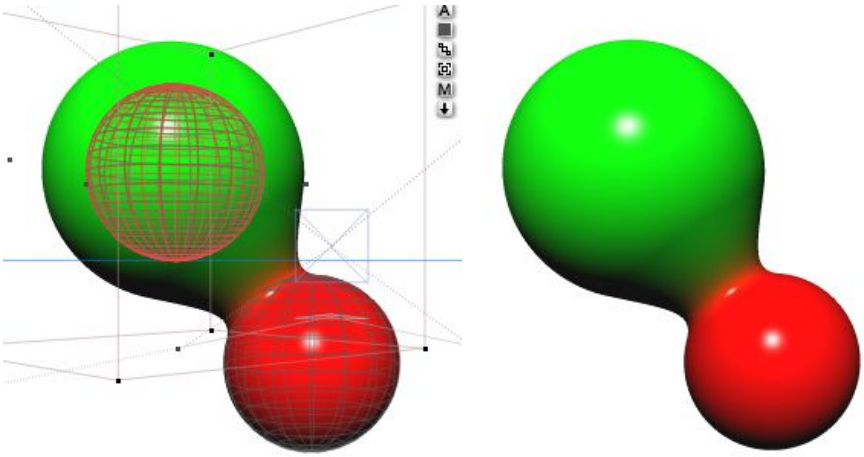
The level of attraction can be increased by duplicating one of the Metaballs.



Notice how the level of attraction increases where the two Metaballs are:



Duplicating the Metaball again increases the level of attraction even more:



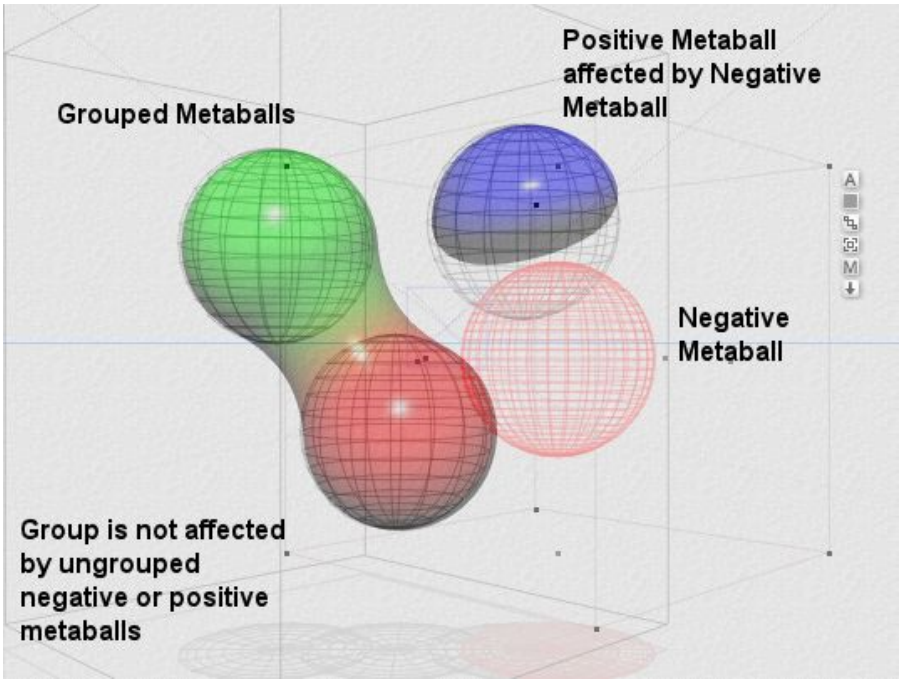
Grouping Metaballls

Metaballs can be grouped together to prevent other Metaballs from affecting them.

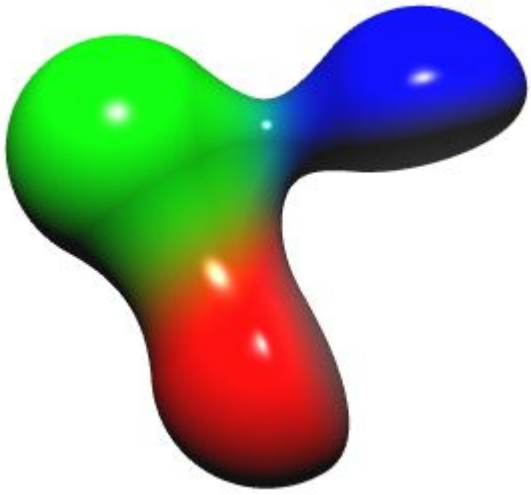
In the example below, two positive Metaballs (green and red) are grouped and placed next to a positive and negative Metaball.

The ungrouped Positive Metaball is affected by the Negative Metaball, but the grouped Metaballs are not.

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If we ungroup the red and green Metaballs, they then can be affected by the other Metaballs, both positive and negative.



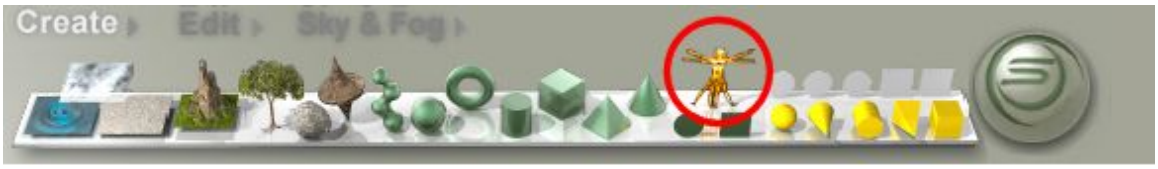
Please note that grouped metaballs cannot be rendered with an object mask.

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Creating 2D Picts

A Pict Object is a 2D picture that is applied to a 2D finite plane. The object is basically a picture on a frame. The Frame is a 2D plane, meaning that it has no depth. If you view it from the side, it disappears.

Using a Pict Object is a quick way of creating very complex-looking objects. The only limitation is that you can view them from only one angle, so the front of the Pict Object must always be facing the camera.



The Alpha channel of the object can be used to create transparencies in the Pict Object.

This object was created using a 2D Pict Object (top). However, if you move the camera, the 2D nature of the object is very obvious (bottom).



A good way of ensuring that your 2D Pict Object never appears distorted is to have it track the camera.

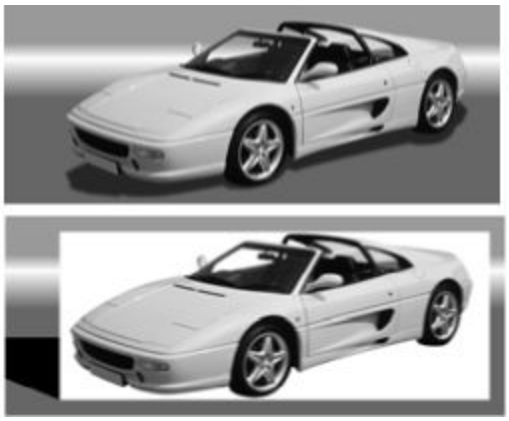
Alpha Channels and Pict Objects

The picture you use as a Pict Object must have an Alpha channel if you need areas of the image to be transparent..

The Alpha channel of your Pict images will allow you to specify visible and invisible portions of your picture texture.

For example, you can clip out a picture's background so that only the main object in the picture is visible. This is what the car image looks like with (top) and without (bottom) an alpha channel applied.

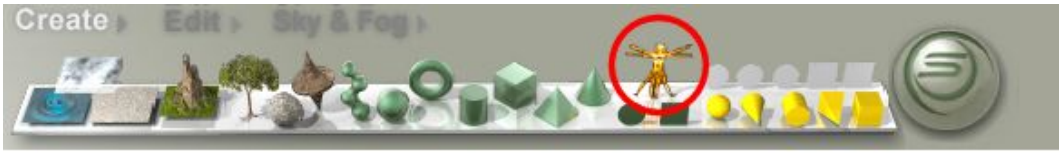
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The shadow cast by the image will be in the shape of the picture's Alpha channel, which gives a more realistic look.

To create a Pict Object:

1. Click the Pict Object tool (Leo) in the Create palette to open up the Pictures dialog.



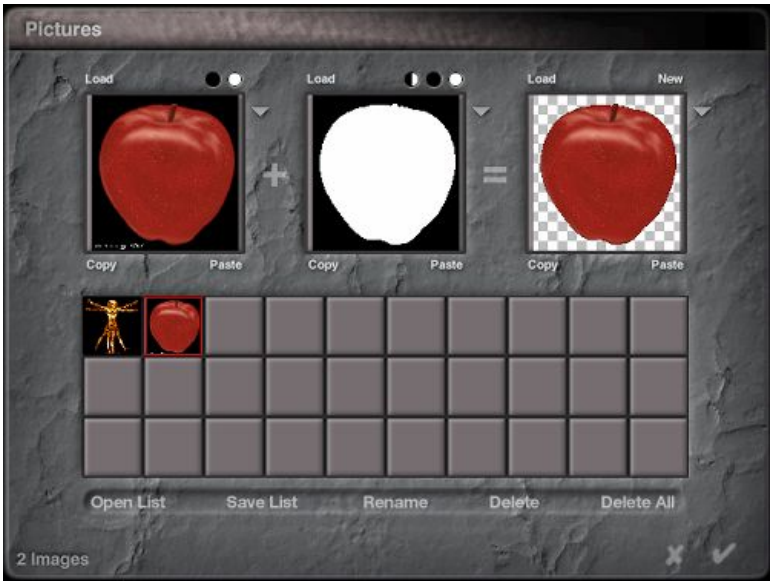
2. Click on an image square to load an image.



3. If the image you want is not in the library, either:
    - Click the Combination Load button above the first box. The load image dialog appears. Use the dialog controls to locate the picture you want to use and click Open.

      OR
    - In another application, copy the picture you want to use to the clipboard. Access the Pictures dialog and click the Paste button.

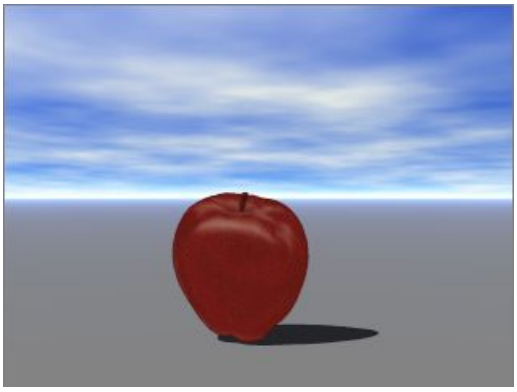
      OR
    - Click on a blank square. The load image dialog appears. Use the dialog controls to locate the picture you want to use and click Open.
4. When you load a new picture into the Pictures dialog, the main image is loaded into the first box, its alpha channel is loaded into the second box, and the combination is loaded into the third. If the image did not have an alpha channel, you can load a mask separately by clicking on the Load button above the second box:



5. You can invert the alpha channel by clicking the Invert button.



6. Click the OK icon to exit the dialog. Bryce creates a 2D plane and maps the image onto it as a texture. The Pict Object is created with the same aspect ratio as the original picture.



Creating Lights

There are two types of lights in Bryce - natural and direct. Natural lighting is provided by the sun while direct lighting is provided by light sources.

There are five types of direct lights you can create: Radial, Spot, Round Parallel, Square Spot, and Parallel.

You can create as many light sources as you need. The only limit is your system's memory. Creating additional lights (or light sources) may add significantly to the render time of your scene. The size, position, and orientation of a light source can be edited exactly like any other object.

You can also link lights to specific objects so that a light source moves as the object moves. You can also set a light to track an object. When it's tracking an object, the light reorients itself so that it's always facing the object no matter where it moves. Linking and tracking are quick ways of animating light positions.

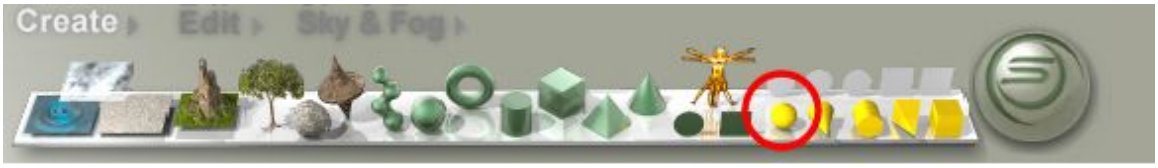
Light attributes can be edited in the Light Lab.

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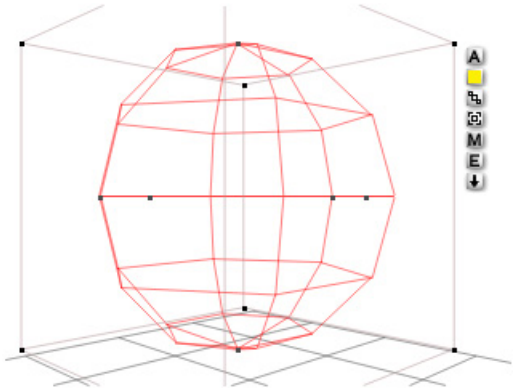
Radial Lights

Radial Lights throw light equally in all directions. Use this as a general light source, and remember that you can make these lights as tiny as you like and use as many as you need.

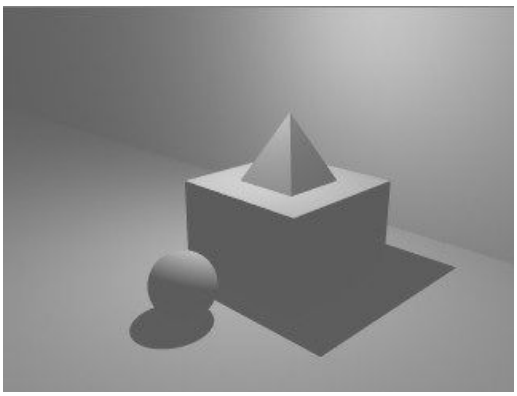
To create a Radial Light, left-click on the Radial Light tool in the Create palette.



A Radial Light will be loaded into the scene.



The example below shows how a radial light works in a scene.

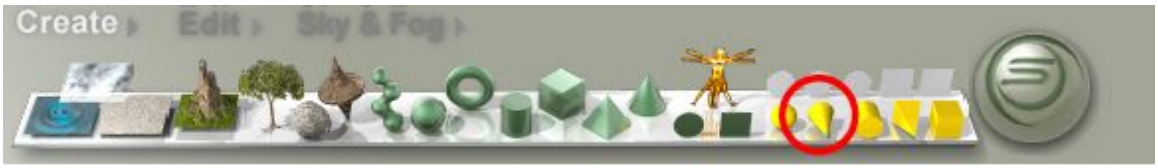


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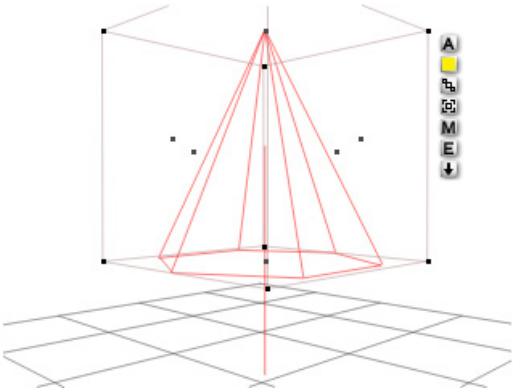
Spotlights

Spotlights throw light along a cone-shaped path, creating the classic "stage spot" effect.

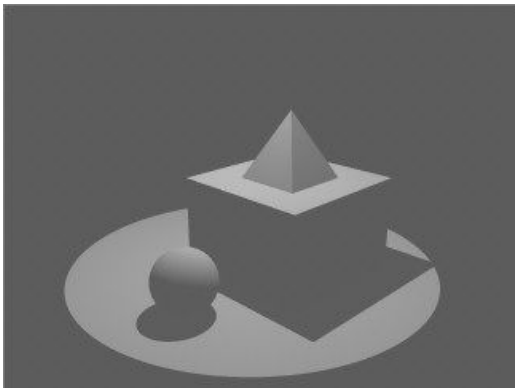
To create a Spotlight, left-click on the Spotlight tool in the Create palette.



A Spotlight will be loaded into the scene.



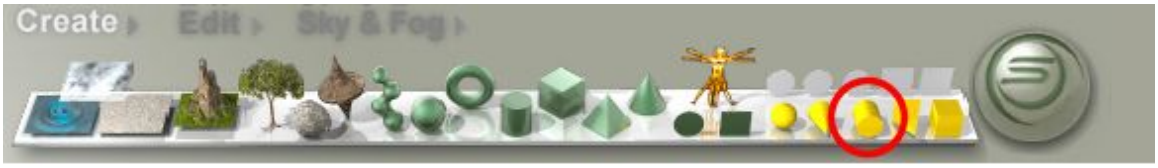
The example below shows how a spotlight works in a scene.



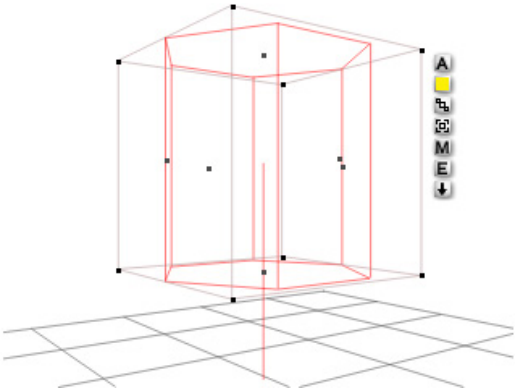
Round Parallel Lights

Round Parallel Lights produce cylindrical tubes of light and cast circular spots where the light falls.

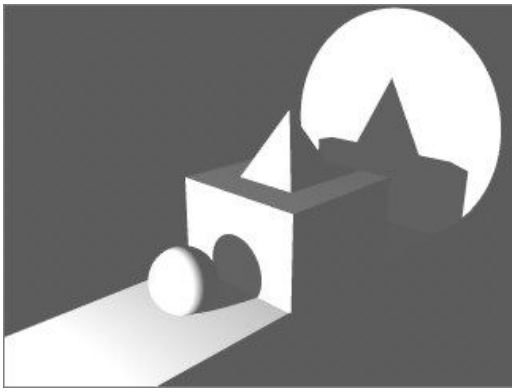
To create a Round Parallel Light, left-click on the Round Parallel Light tool in the Create palette.



A Round Parallel Light will be loaded into the scene.



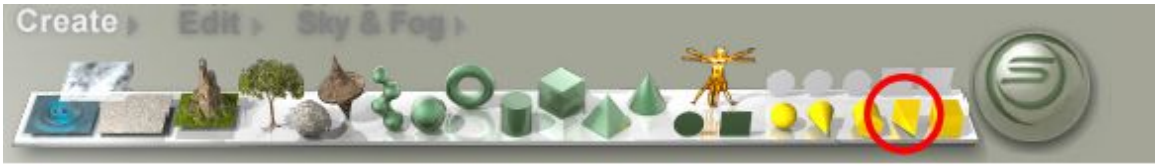
The example below shows how a round parallel light works in a scene.



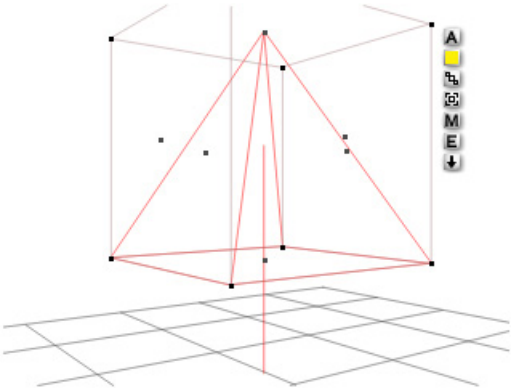
Square Spotlights

Square Spotlights are the same as spotlights, except they cast light along a pyramid-shaped path, creating a square spot where the light falls.

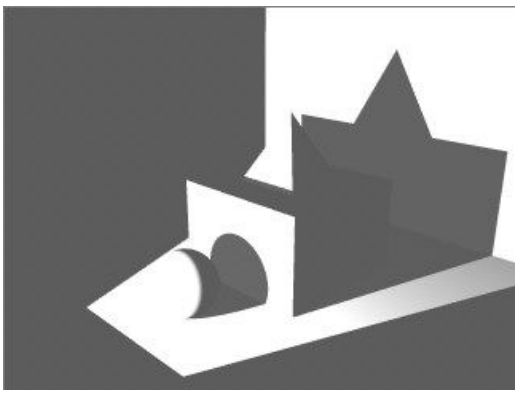
To create a Square Spotlight, left-click on the Square Spotlight tool in the Create palette.



A Square Spotlight will be loaded into the scene.



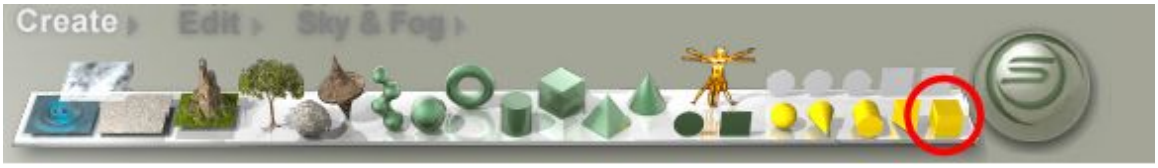
The example below shows how a square spotlight works in a scene.



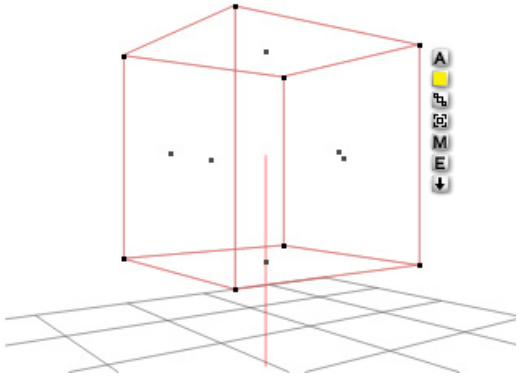
Parallel Lights

Parallel Lights cast parallel rays, resulting in no spatial distortion of shadows. This type of light is very useful for creating specific shadow patterns, or when used with gels, for creating a slide projector.

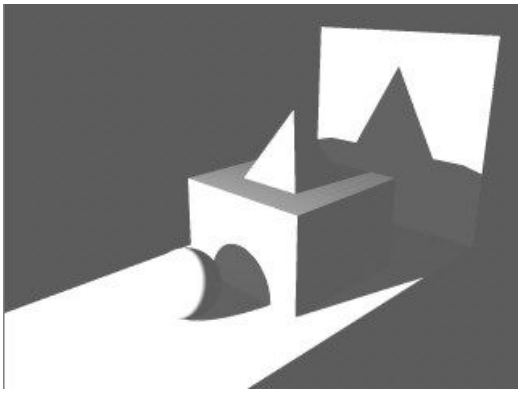
To create a Parallel Light, left-click on the Parallel Light tool in the Create palette.



A Parallel Light will be loaded into the scene.

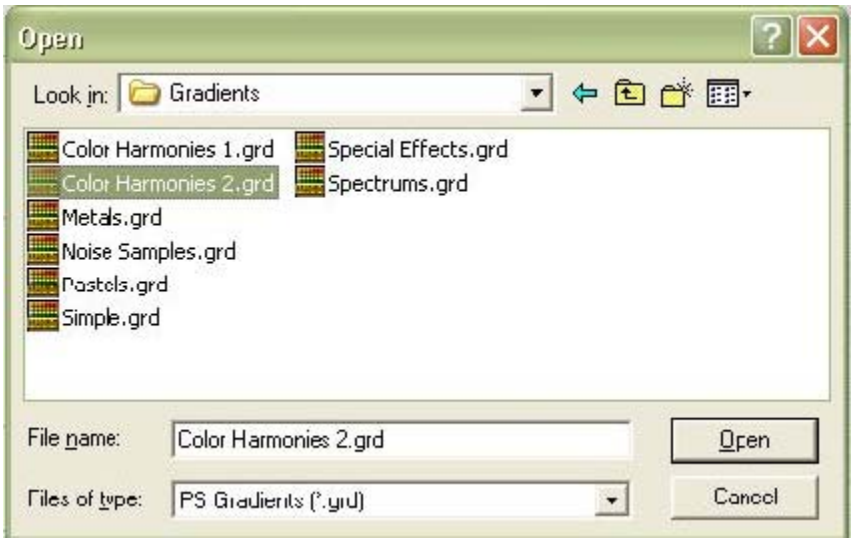


The example below shows how a parallel light works in a scene.



Apply Gradient

You can apply a gradient file (.grd) created in another program by pressing Shift then clicking on the light tool. The Open File dialog comes up where you can locate and select a gradient file. Once you click on Open, the light source is created with the gradient applied.



Launch DAZ Studio

Bryce includes DAZ Studio (DS) as a plug-in. DS is a complete virtual photo studio where you can create scenes by adding and positioning figures, clothing, props, materials, lights, and more. Once you create one or more objects in your DS scene, exiting DS automatically brings these objects into Bryce, where you can work with them just as you would any other Bryce object. With Bryce 6, you can also import animations from DS.

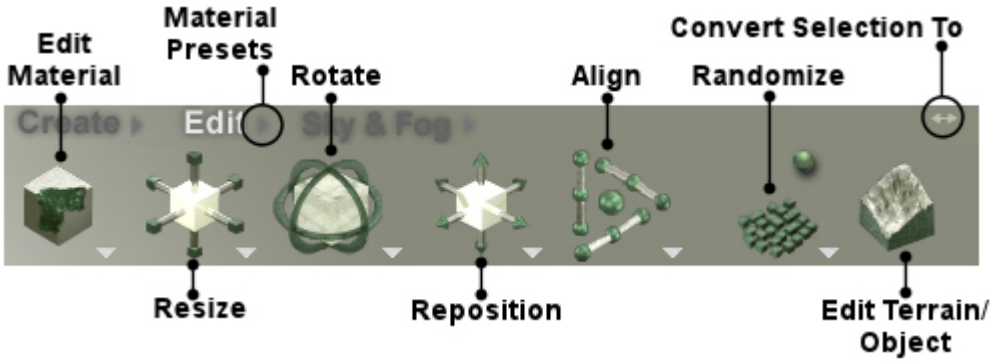
To launch DS from within Bryce, click on the Launch DAZ Studio button located at the right side of the Create palette:



Refer to "Working with DAZ Studio and Poser" for more on importing objects and animations from DS and Poser.

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Edit Palette



The Edit palette contains tools for editing object materials and resizing, rotating, repositioning, aligning, and randomizing objects.

To display the Edit palette, click the Edit button at the top of the Bryce window.

The transformation tools let you perform all the object transformation operations available in Bryce. The tools act as interactive controls. As you drag over the tool, the operation is performed on the selected object.

To select a tool:

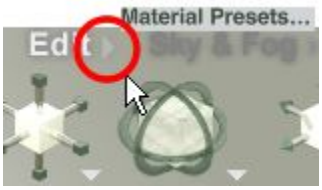
1. Click the Edit button at the top of the Bryce window to display the Edit Palette.

2. Select an object.
3. Drag over the tool to perform a transformation operation or click on the edit tools.

The Triangle icon next to the Edit button at the top of the Bryce window lets you access the Preset Materials Library.

To open the Preset Materials Library, click quickly on the triangle icon next to the Edit button at the top of the Bryce window. Please note that if you hold down the mouse key for too long, the library will open, then close immediately. To keep the library open, click quickly on the triangle icon.



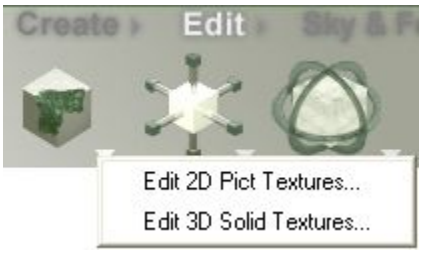
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Edit Materials

The Edit Materials tool brings up the Materials Lab by default when it is clicked on and no objects are selected.



Clicking on the triangle next to the tool brings up a popup menu allowing you to select whether to edit 2D Pict or 3D Solid Textures.



You do not have to have an object selected before using the Edit Materials tool. This is useful if you want to add 2D picts to the Picture Editor or just want to make new materials in the Materials Lab. If you do have an object selected before clicking on the tool, then the selected material or 2D pict editor will be opened.

To use the Edit Materials tool:

- Edit 3D Solid Textures:
    1. Take sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

    2. Click on the Edit Materials tool to open up the Materials Lab.

       OR

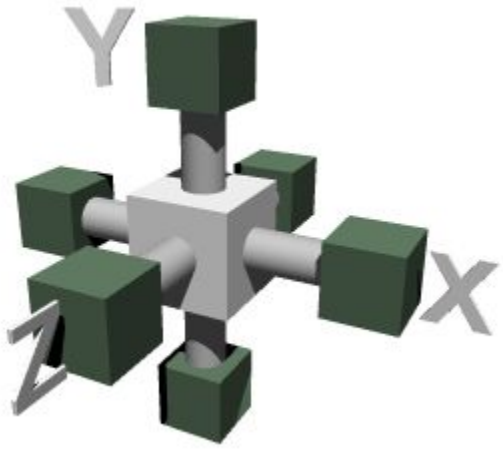
    3. Click on the triangle next to the Edit Materials tool and choose Edit 3D Solid Textures from the menu.
- Edit 2D Pict Textures:
    1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

    2. Click on the triangle next to the Edit Materials tool and choose Edit 2D Pict Textures from the menu. The Picture Editor will come up.

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Resize Tool



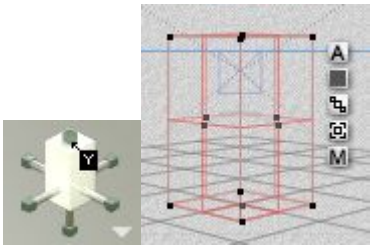
Use the Resize Tool to resize objects along one or all of the three axes. Objects are resized from their origin point.



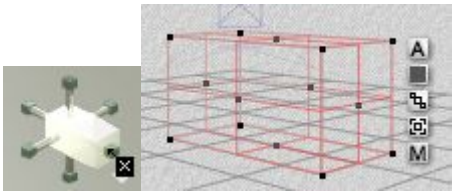
When you create an object, it appears at a default size. Once you place it in your scene, you may need to resize it to make it proportional to the other objects in your scene.

The Resize Tool has seven different states. As you move the pointer over the tool each state becomes active. The different states let you resize the object along different axes.

- Resizing along the Y-axis increases/decreases the object's height.

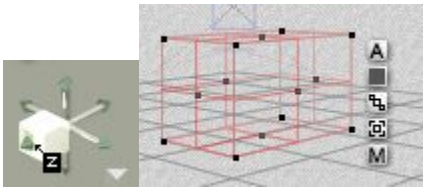


- Resizing along the X-axis increases/decreases the object's width.



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- Resizing along the Z -axis increases/decreases the object's depth.

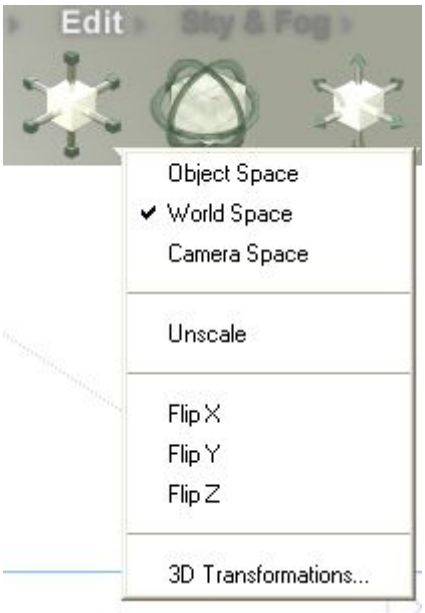


There are four ways of resizing objects in Bryce:

1. using the Resize tool to resize an object along different axes
2. using the 3D Transformation dialog which lets you enter precise values to resize objects
3. using the control points on the object's bounding box to interactively resize the object
4. using the Object Attributes dialog to numerically resize the object

Objects are measured in Bryce Units. When you resize an object, you are increasing or decreasing its size based on unity size. When you resize an object to 150%, you're sizing it to 150% of unity.

Clicking the triangle icon to the bottom right of the Resize tool brings up a popup menu with various options for manipulating objects.



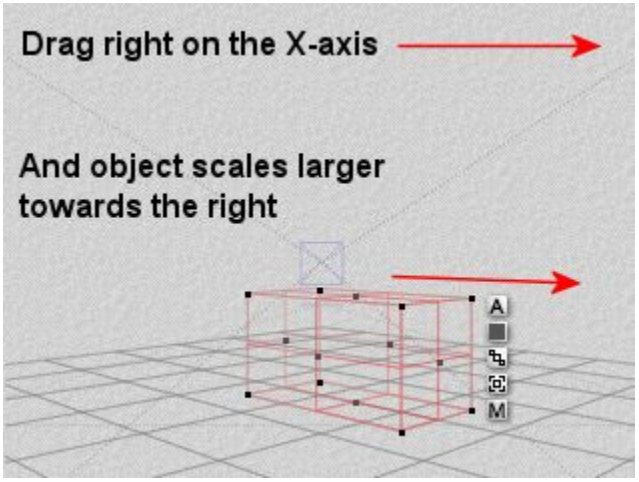
Resize on the X-Axis

To resize from the right-hand X-axis:

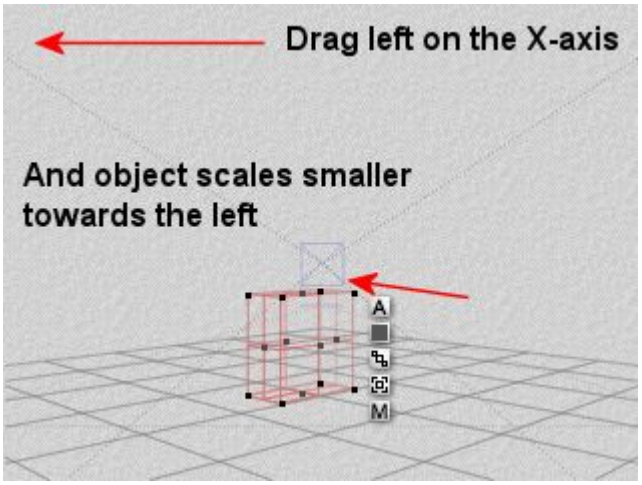
1. Move the cursor over the right-hand X-axis on the Resize tool.



2. Hold down the left mouse button and drag right - the object scales larger towards the right.



3. Drag left and the object scales smaller towards the left.



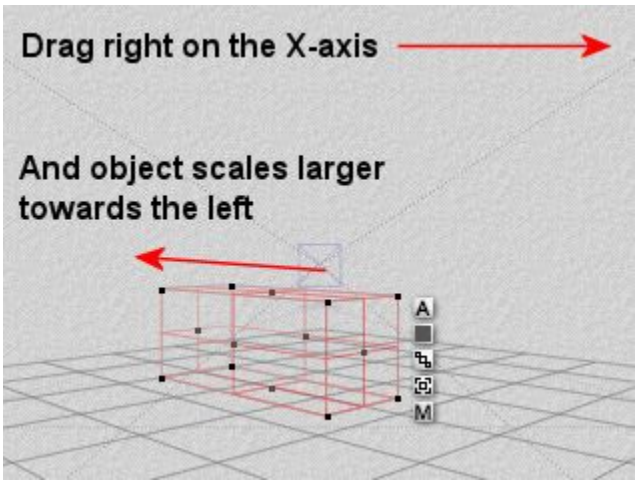
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To resize from the left-hand X-axis:

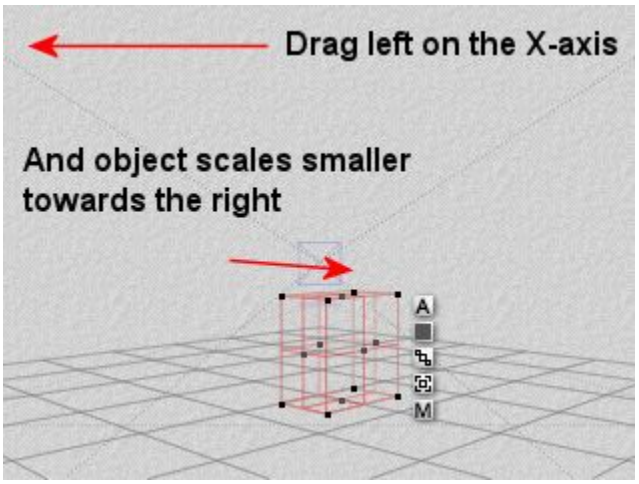
1. Move the cursor over the left-hand X-axis on the Resize tool.



2. Hold down the left mouse button and drag right - the object scales larger towards the left.



3. Drag left and the object scales smaller towards the right.



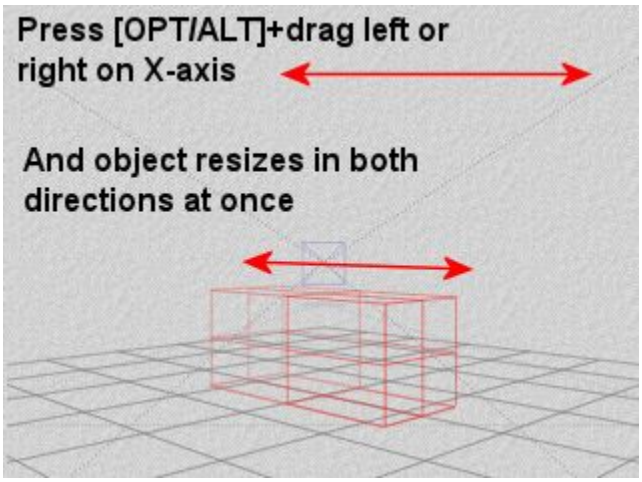
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To resize in both directions on the X-axis:

1. Move the cursor over the left or right-hand X-axis on the Resize tool.



2. Press Opt/Alt and drag right to scale the object larger on the X-axis or left to scale the object smaller on the X-axis.



Hold down Shift to constrain the resize increments to 50% intervals when increasing/decreasing the size of the object.

Resize on the Y-Axis

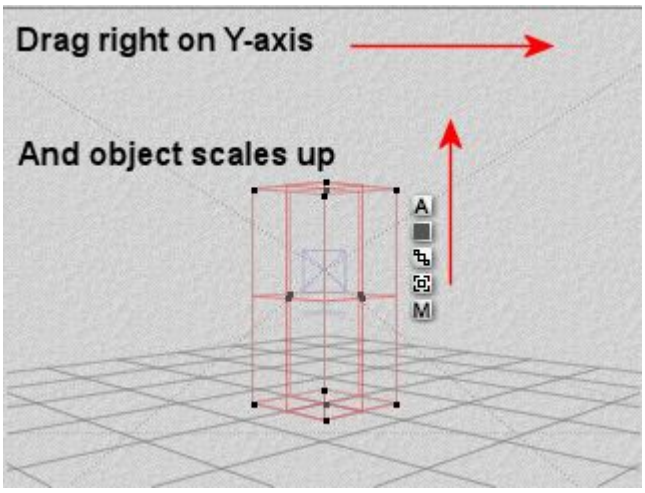
To resize from the top on the Y-axis:

1. Move the cursor over the top of the Y-axis on the Resize tool.

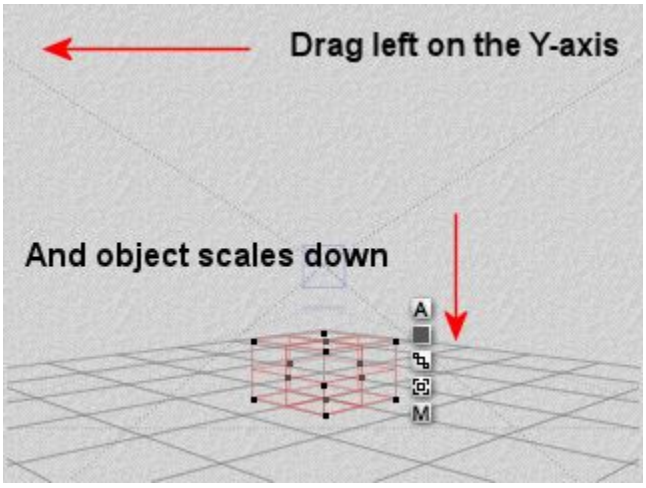


2. Hold down the left mouse button and drag right - the object scales larger upwards.

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3. Drag left and the object scales smaller towards the ground.



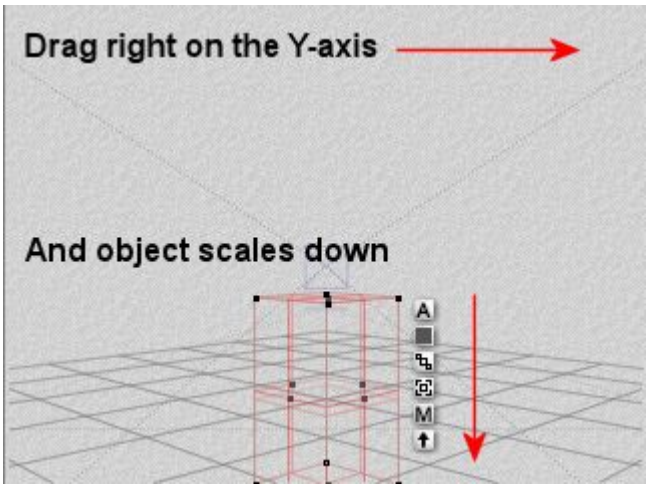
To resize from the bottom on the Y-axis:

1. Move the cursor over the bottom of the Y-axis on the Resize tool.

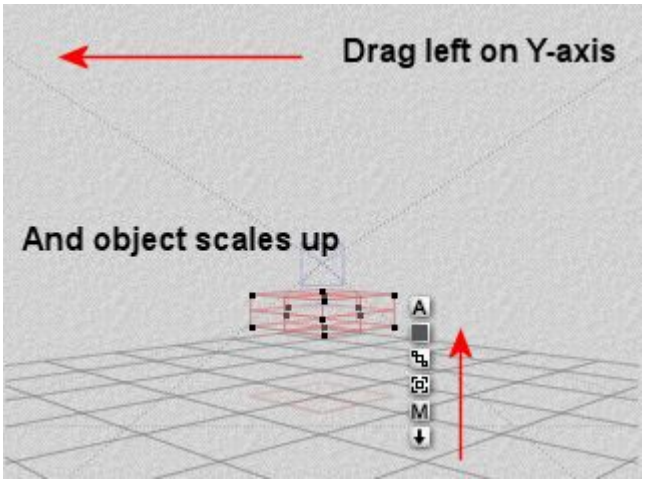


2. Hold down the left mouse button and drag right - the object scales larger downwards.

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3. Drag left and the object scales smaller going up.



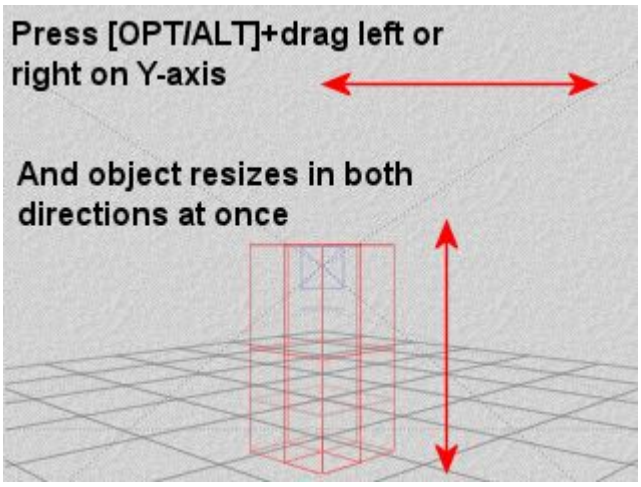
To resize in both directions on the Y-axis:

1. Move the cursor over the top or bottom of the Y-axis on the Resize tool.



2. Press Opt/Alt and drag right to scale the object larger on the Y-axis or left to scale the object smaller on the Y-axis.

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Hold down Shift to constrain the resize increments to 50% intervals when increasing/decreasing the size of the object.

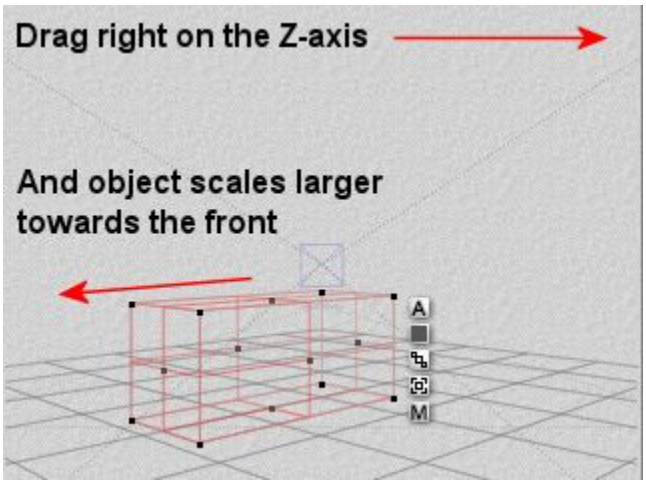
Resize on the Z-Axis

To resize from the front-side Z-axis:

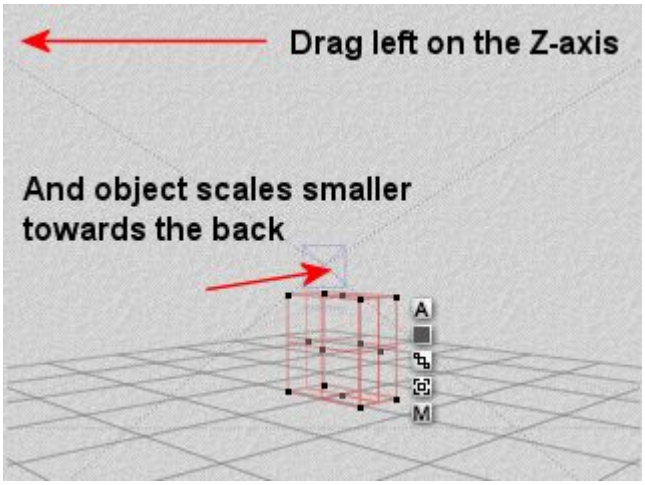
1. Move the cursor over the front of the Z-axis on the Resize tool.



2. Drag right to scale object larger from the top
3. Hold down the left mouse button and drag right - the object scales larger towards the front.



4. Drag left and the object scales smaller towards the back.

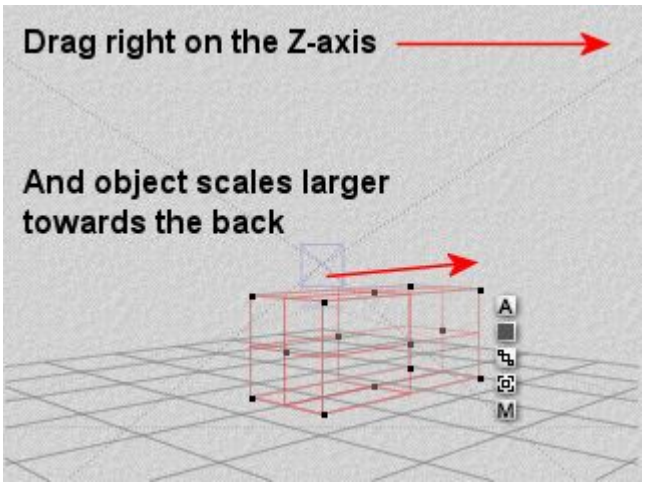


To resize from the back-side Z-axis:

1. Move the cursor over the back of the Z-axis on the Resize tool.

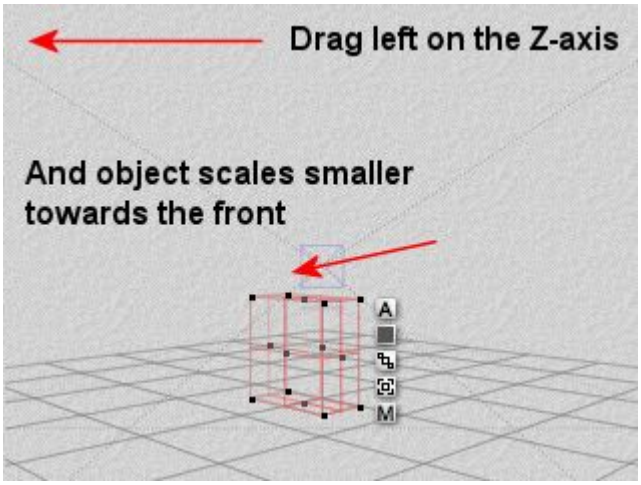


2. Hold down the left mouse button and drag right - the object scales larger towards the back.



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3. Drag left and the object scales smaller towards the front.

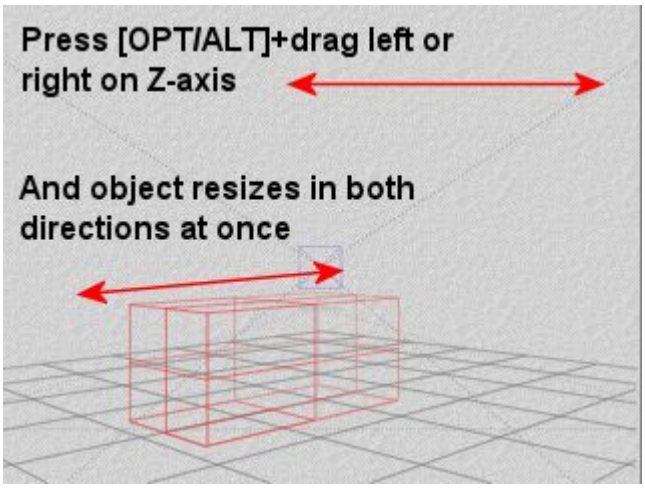


To resize in both directions on the Z-axis:

1. Move the cursor over the back or front of the Z-axis on the Resize tool.



2. Press Opt/Alt and drag right to scale the object larger on the Z-axis or left to scale the object smaller on the Z-axis.



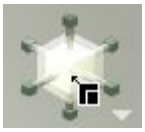
Hold down Shift to constrain the resize increments to 50% intervals when increasing/decreasing the size of the object.

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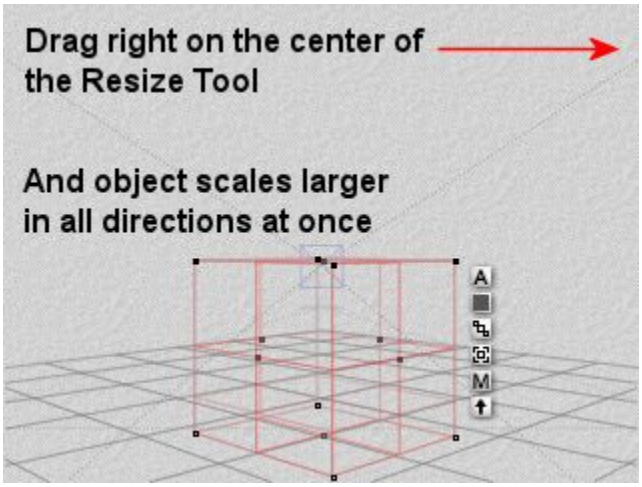
Resize in All Directions

To resize an object in all directions:

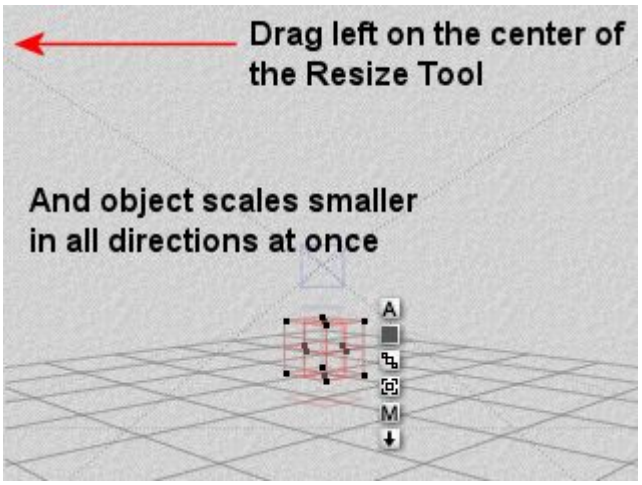
1. Click the center of the Resize tool.



2. Hold down the left mouse button and drag right to increase the size of the object.



3. Drag left to decrease the size of the object.



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Spatial Options

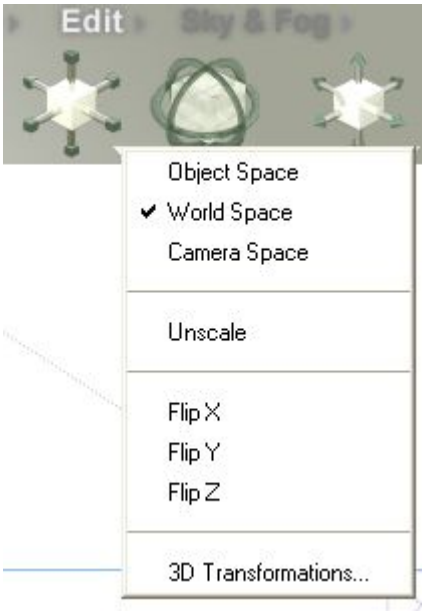
Objects can be resized using any of the three spatial definitions: World, Object, or Camera. The definition you choose depends on the effect you wish to create.

To choose a spatial option for resizing:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Click the triangle icon next to the Resize tool and choose an option from the menu.

   - Object Space resizes your selection relative to itself.
   - World Space resizes your selection in absolute world coordinates (default).
   - Camera Space resizes your selection relative to the camera.

When you set Object, World, or Camera Space for the Resize tool, it is also the option set for the other two transformation tools. However, spatial options are global for the transformation tools only. The option you select in the Edit palette does not affect the 3D Transformations dialog.

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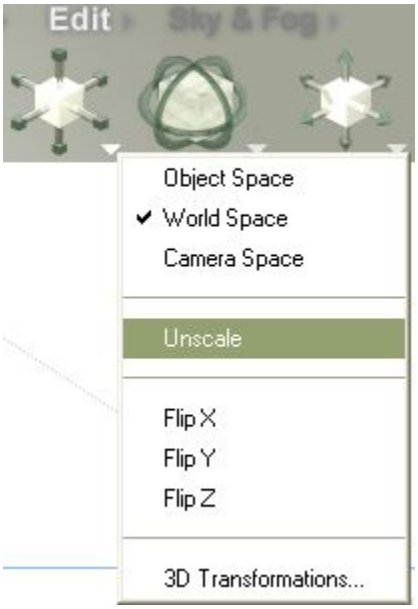
Undo Resize Operation (Unscale)

To undo resize operations:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select an object.
3. Click the triangle icon next to the Resize tool and choose Unscale from the menu. This will reset the object back to its original size, no matter how many scaling operations have been made to the object.



Flipping Objects

Flipping is not the same as rotating an object 180°. Flipping mirrors an object along an axis instead of rotating it.

This option is extremely useful for placing copies of objects that are exact opposites of each other, such as towers on the side of a building.

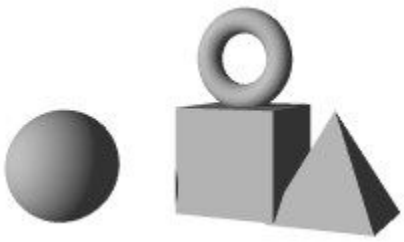
To flip an object:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

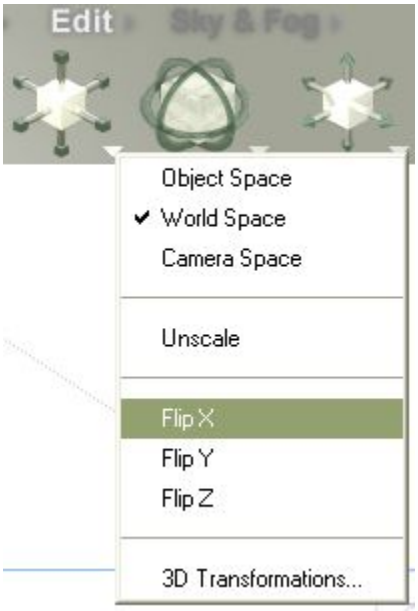
   

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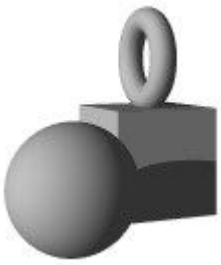
2. Select an object or group of objects. If you want all the object to flip together, group them before flipping.



3. Click the triangle icon next to the Resize tool and choose a flip option from the menu:

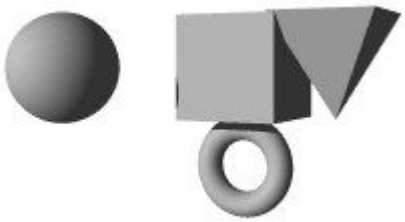


- Flip X: inverts your object's dimensions along the X axis.



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- Flip Y: inverts your object's dimensions along the Y axis.



- Flip Z: inverts your object's dimensions along the Z axis.



3D Transformations

Sometimes you will need more precise control over the size of your object. The 3D Transformations dialog lets you enter specific resize values for a selected object. All transformations you enter in this dialog are performed in World Space regardless of the spatial option you chose for the Resize tool.

Resize values are expressed as a percentage of the current size of the selected object.

You cannot enter negative numbers in this dialog.

Resizing numerically is especially useful when importing objects from other programs (i.e., DAZ Studio & Poser) that come in small. See "Working with DS & Poser" for more information

To resize an object numerically:

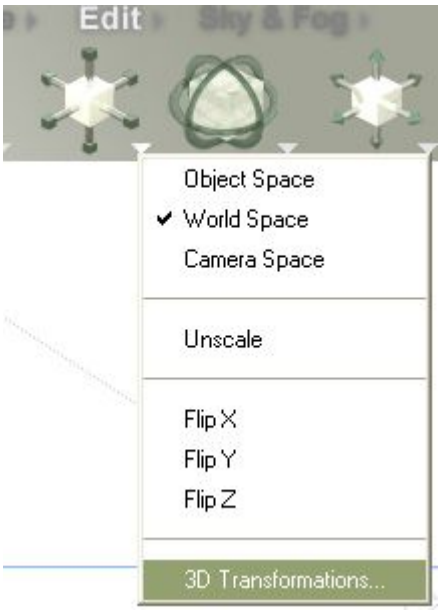
1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

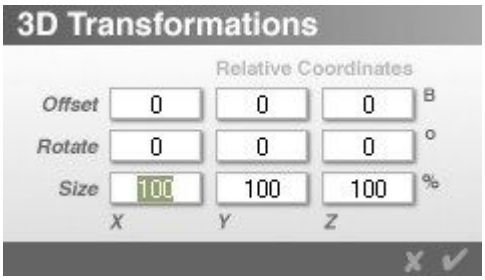
2. Select an object.

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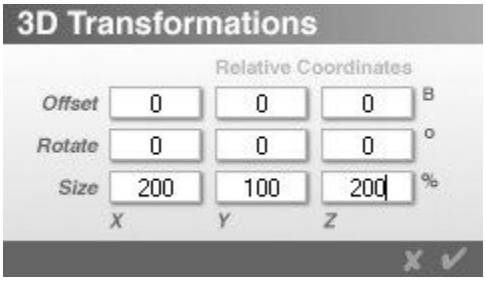
3. Click the triangle icon below the Resize tool and choose 3D Transformations from the menu.



The 3D Transformations dialog appears.

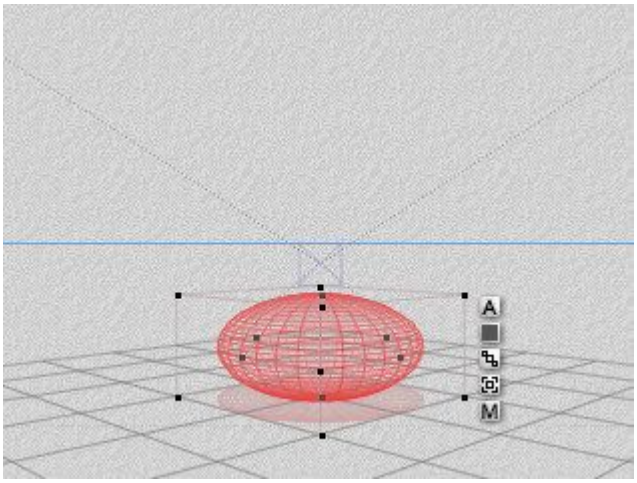


4. Enter a percentage in one or all of the axis fields. The percentage determines the new size of the object based on its original size. For example, to double the object's size in all directions, enter 200 in the X, Y, and Z fields. To resize along a single axis, enter values in only one axis field.

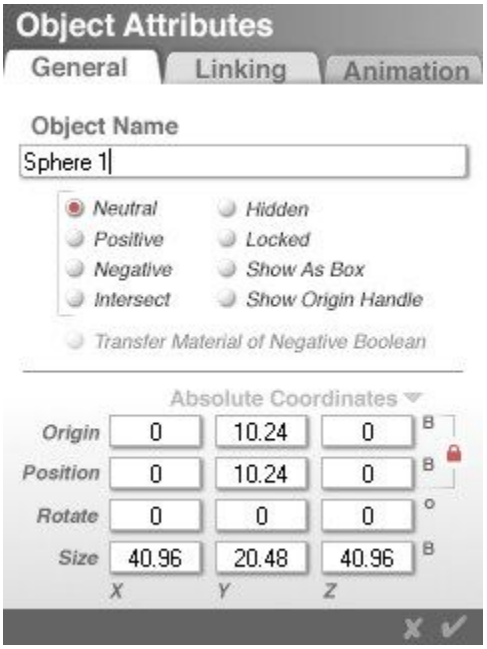


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And here is the result of the above changes on a sphere:



And the Object Attributes dialog showing that the X and Z-axis have doubled in size:



Since you are dealing with World Space transformations in this dialog, if you resize an object along only one or two axes you may unintentionally skew the object's shape.

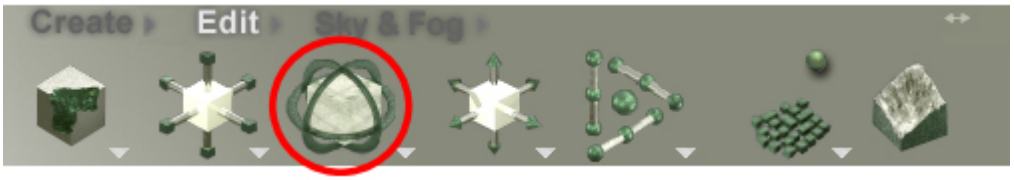
To resize the object without skewing it, use the numeric entry fields in the Object Attributes dialog. Using this dialog can resize the object based on its original position, with no unintentional skewing.

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Rotate Tool



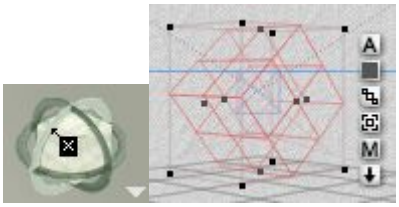
Use the Rotate tool to rotate objects in 3D space. Objects can be rotated in World Space, Object Space, or Camera Space.



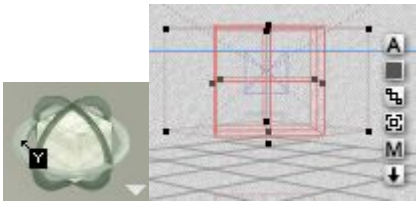
Most objects have a specific up, down, left, right, back, and front associated with them when you create them.

When you place the object in a scene, its orientation may need to be altered to achieve a desired effect. For example, an airplane that's taking off should be tilted upwards or tilted downward when it is descending. The Rotate tool has three states. As you move the cursor over the tool, one of the states becomes active. The different states let you rotate the object around different axes.

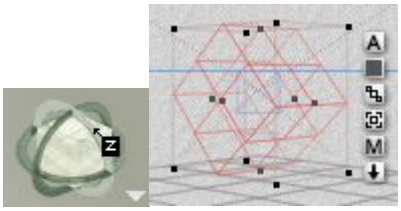
- Rotating along the Z-axis:



- Rotating along the Y-axis:



- Rotating along the Z-axis:



There are four ways of rotating objects in Bryce:

1. using the Rotate tool to resize an object along different axes
2. using the 3D Transformations dialog, which lets you enter precise rotation angles
3. using the object's control points to interactively rotate the object
4. using the Object Attributes dialog to numerically rotate the object

Clicking the triangle icon to the bottom right of the Rotate tool brings up a popup menu with various options for manipulating objects.



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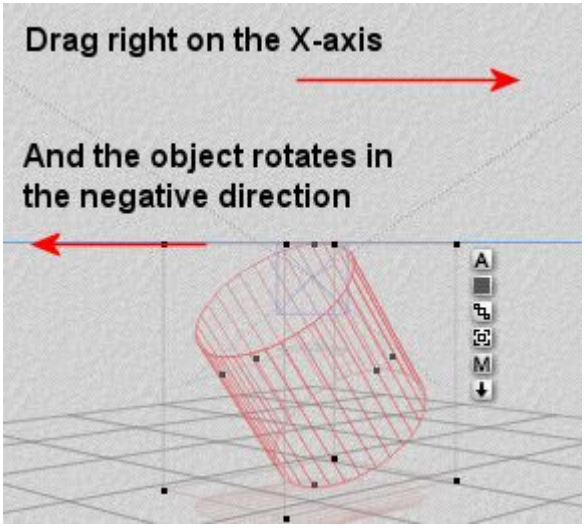
Rotate on the X-Axis

To rotate on the X-axis:

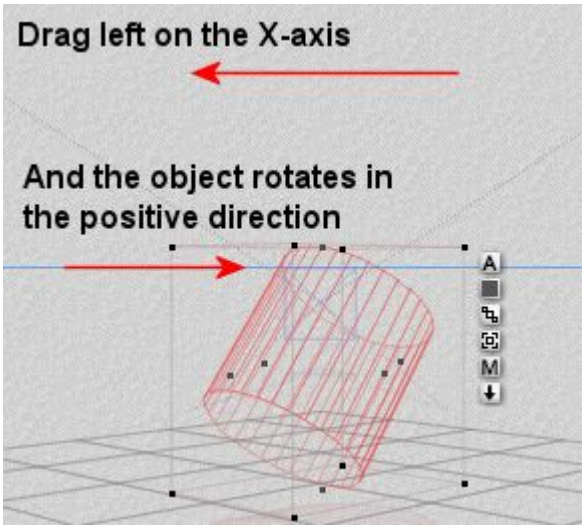
1. Move the cursor over the X-axis on the Rotate tool.



2. Hold down the left mouse button and drag right - the object rotates on the X-axis in the negative direction.



3. Drag left and the object rotates on the X-axis in the positive direction.



Hold down Shift to constrain the rotate increments to 45 degree intervals when rotating the object.

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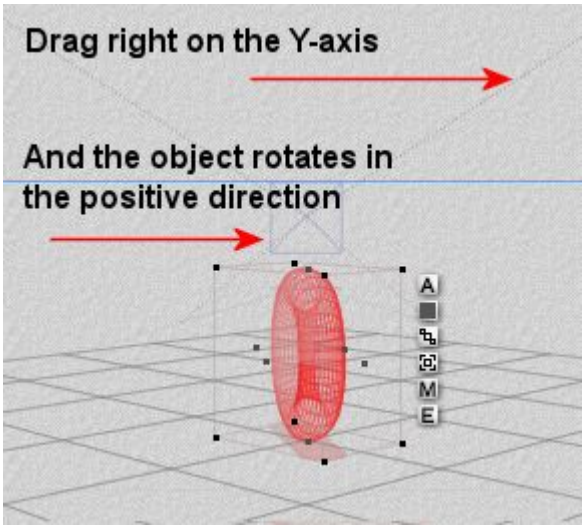
Rotate on the Y-Axis

To rotate on the Y-axis:

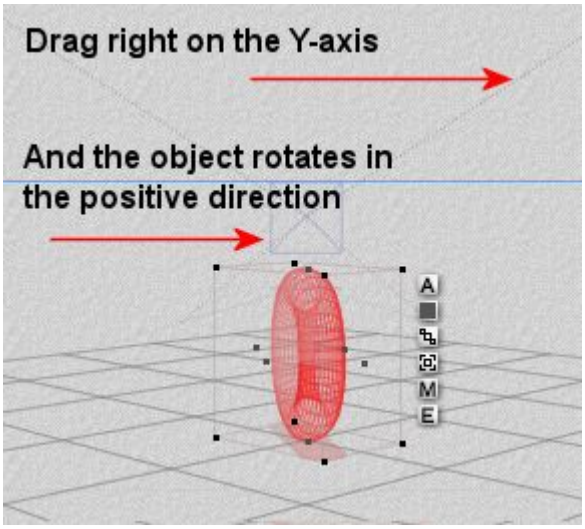
1. Move the cursor over the Y-axis on the Rotate tool.



2. Hold down the left mouse button and drag right - the object rotates on the Y-axis in the positive direction.



3. Drag left and the object rotates on the Y-axis in the negative direction.



Hold down Shift to constrain the rotate increments to 45 degree intervals when rotating the object.

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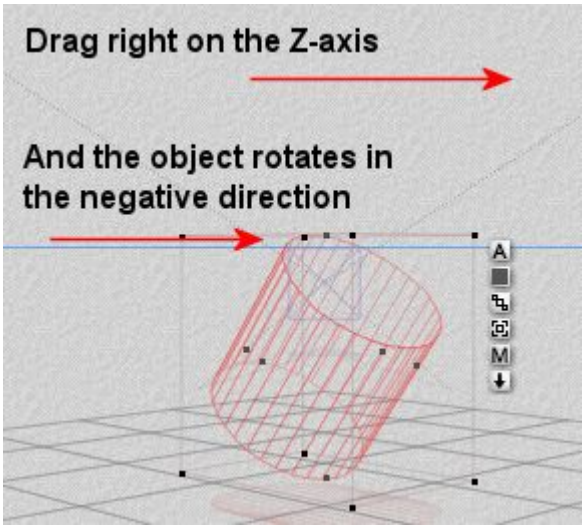
Rotate on the Z-Axis

To rotate on the Z-axis:

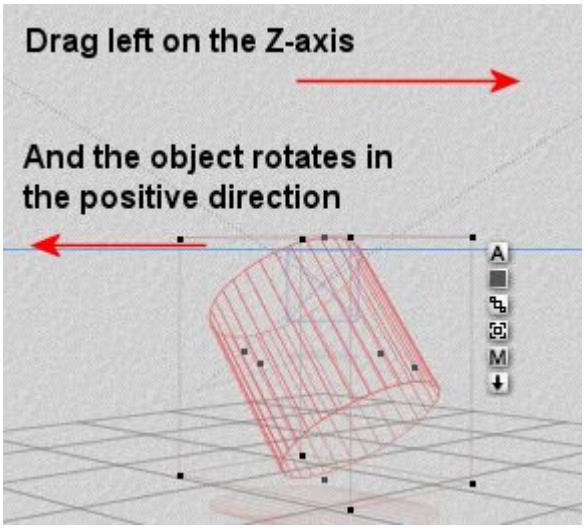
1. Move the cursor over the Z-axis on the Rotate tool.



2. Hold down the left mouse button and drag right - the object rotates on the Z-axis in the negative direction.



3. Drag left and the object rotates on the Z-axis in the positive direction.



Hold down Shift to constrain the rotate increments to 45 degree intervals when rotating the object.

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Spatial Options

Objects can be rotated using any of the three spatial definitions: World, Object, or Camera. The definition you choose depends on the effect you wish to create.

To choose a spatial option for rotation:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Click the triangle icon next to the Rotate tool and choose an option from the menu:

   - Object Space: rotates your selection relative to itself.
   - World Space: rotates your selection in absolute world coordinates.
   - Camera Space: rotates your selection relative to the camera

The three spatial options are also available for the Resize and Reposition tools. When you select Object, World, or Camera space for the Rotation tool, it is also set for the other two tools. The option you choose in the Edit palette does not affect the 3D Transformations dialog.

Undo Rotate Operations

To undo rotate operations:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select an object.

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3. Click the triangle icon next to the Rotate tool and choose Unrotate from the menu. This will reset the object back to its original rotation, no matter how many rotation operations have been made to the object.



3D Transformations

In a complex scene, orienting objects may require more precision than the Rotation tool offers. The 3D Transformations dialog lets you enter specific rotation angles for a selected object.

All transformations performed using this dialog use World Space coordinates regardless of the spatial option you chose for the Rotate tool.

Rotation values are expressed as degrees, with 360° being a single full rotation. Since rotations are relative, you may enter negative values and cumulative values (greater than 360° or less than -360°).

To rotate an object numerically:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

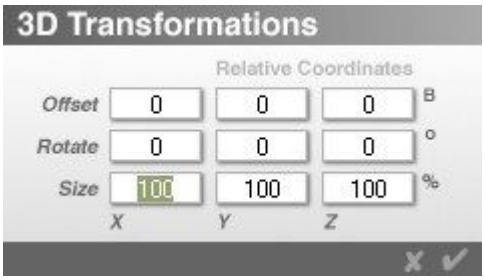


2. Select an object.

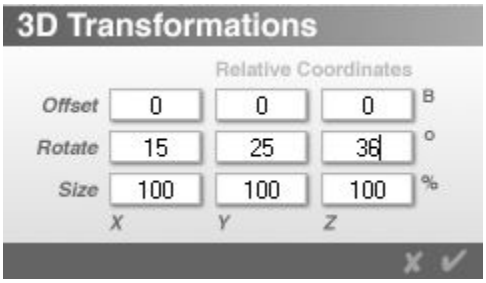
3. Click the triangle icon next to the Rotate tool and choose 3D Transformations from the menu.



The 3D Transformations dialog appears.

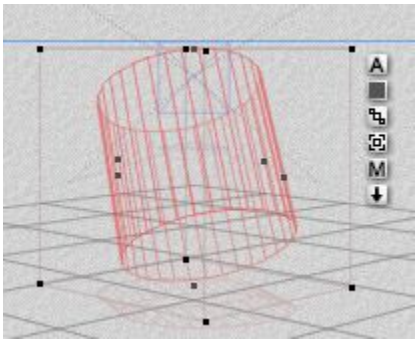


4. Enter a degree value in one or more of the Rotate fields. The degrees determine the angle of rotation. For example, to rotate an object 45° around Y, enter 45 in the Rotate Y field. To rotate around other axes, just enter values in the appropriate fields.



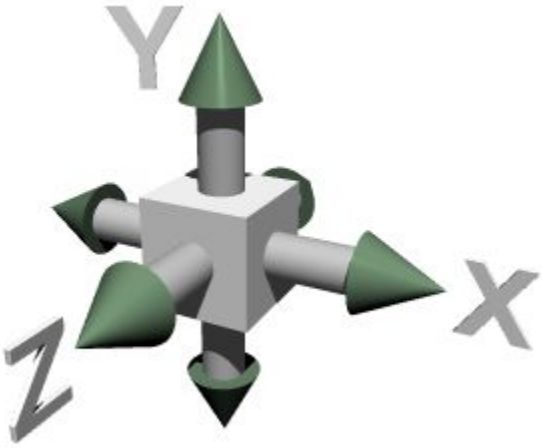
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And here is the result of the above changes on a cylinder:



Since you're dealing with World Space transformations, objects are rotated with respect to the World Space X, Y, and Z axes.

Reposition Tool



Use the Reposition tool to reposition objects along any of three axes.



The composition of your scene depends on the position of the objects relative to other objects. In most cases, you'll need to use the Reposition tool in conjunction with the Resize and Rotation tools to create the desired relationships.

- Repositioning along the Y-axis moves the object up and down on the Y-axis.



- Repositioning along the X-axis moves the object along the X-axis.



- Repositioning along the Z-axis moves the object along the Z-axis.

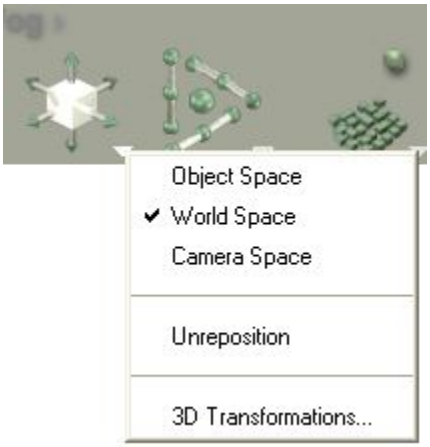


Positioning applies to objects, groups, and families as well as lights and the camera. In this section the term "object" also refers to the camera and lights.

There are four ways of positioning objects in Bryce:

1. using the Reposition tool to move objects along a specific axis
2. using the 3D Transformation dialog to enter specific offset positions
3. by dragging the object to a different location
4. by using the arrow keys to nudge objects.

Clicking the triangle icon to the bottom right of the Reposition tool brings up a popup menu with various options for manipulating objects.



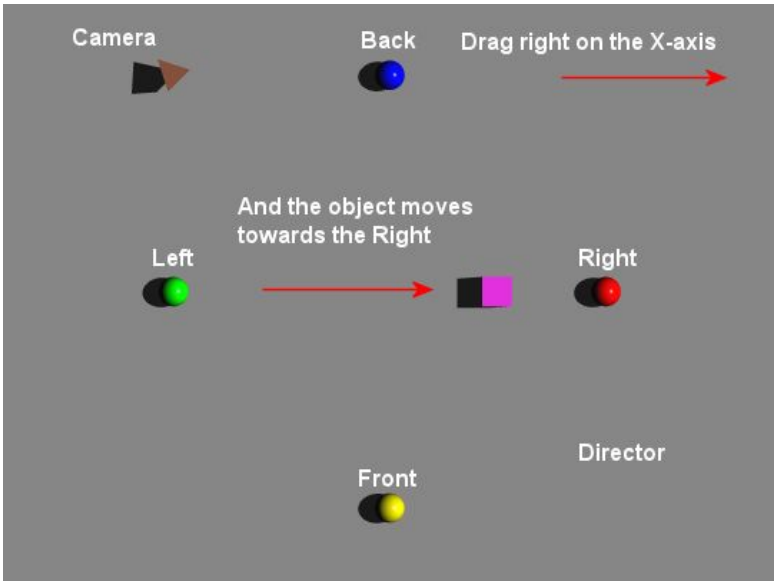
Repositioning on the X-Axis

To reposition on the X-axis (World Space):

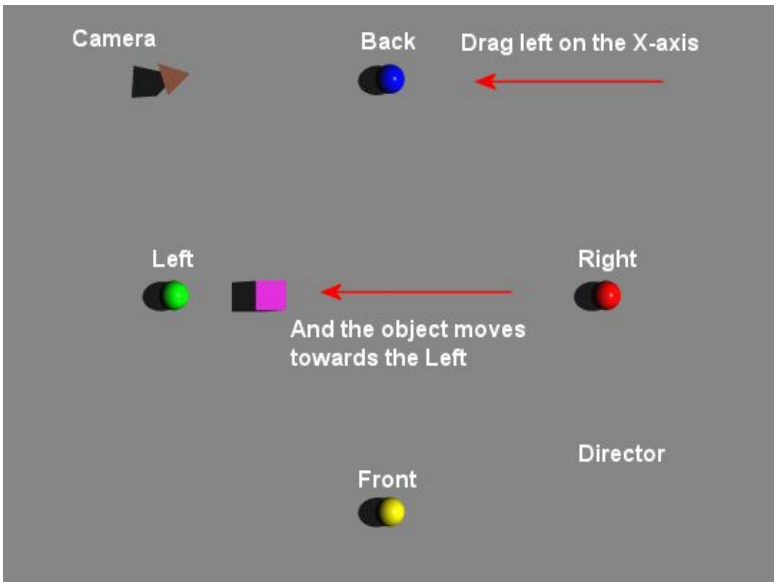
1. Move the cursor over either end of the X-axis on the Reposition tool.



2. Hold down the left mouse button and drag right - the object moves towards the right.

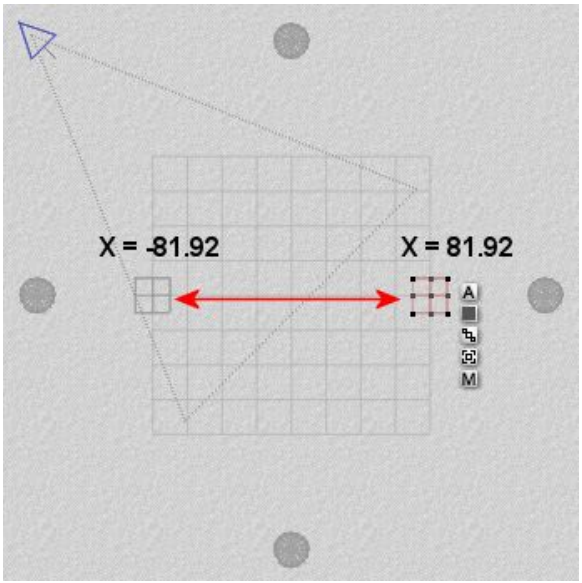


3. Drag left and the object moves towards the left.



You can see the results of moving the object by clicking on the A button and bringing up the Object Attributes dialog.

- Moving the object by dragging right on the X-axis increases the value in the X-position field.
- Moving the object by dragging left on the X-axis decreases the value in the X-position field.



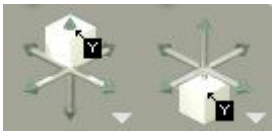
Remember that if Object or Camera Space is active, the object will move relative to the object or camera. So if using Object Space and the object has been rotated, it will move in the direction of the object's X-axis.

Hold down Shift to constrain the reposition increments to 10.24 BUs (one-half of a Unity Unit).

Repositioning on the Y-Axis

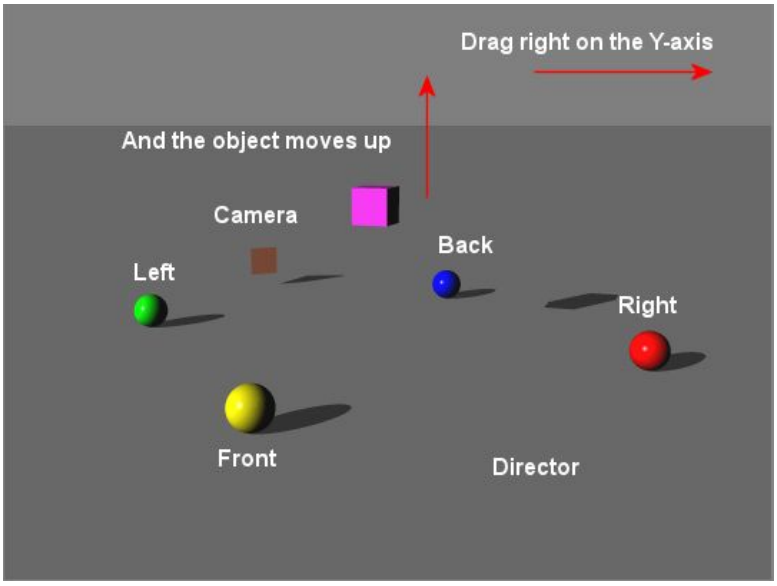
To reposition on the Y-axis (World Space):

1. Move the cursor over either end of the Y-axis on the Reposition tool.

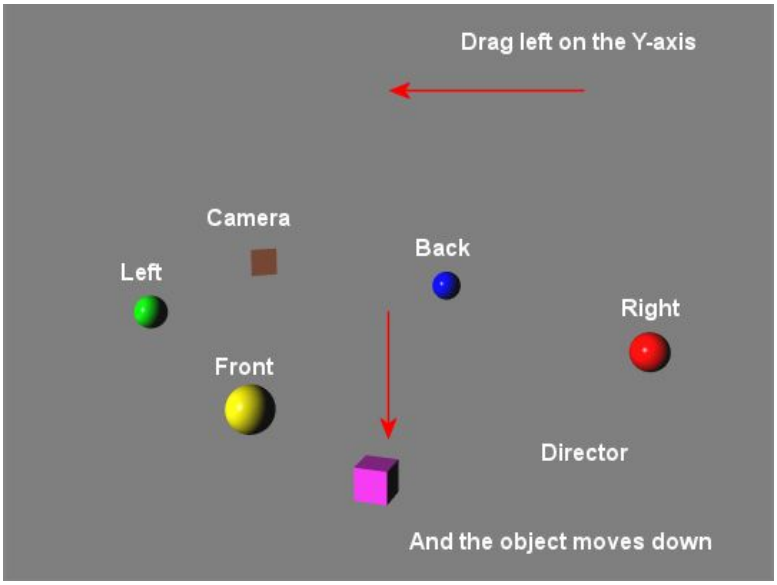


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2. Hold down the left mouse button and drag right - the object moves up.



3. Drag left and the object moves down.

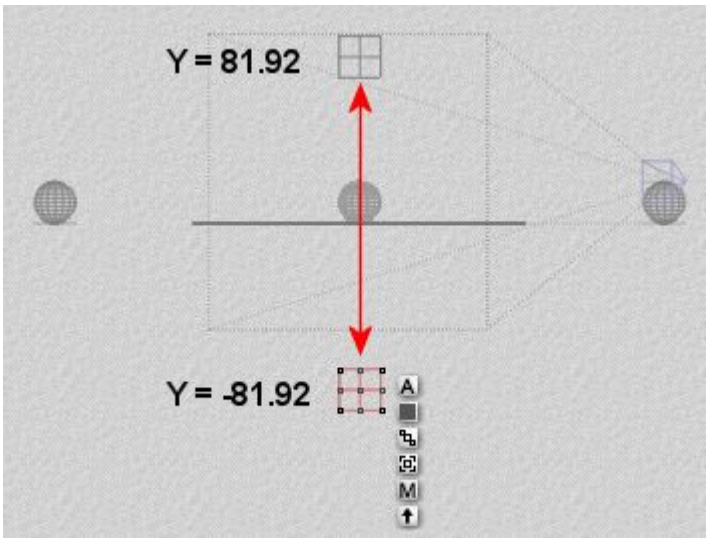


You can see the results of moving the object by clicking on the A button and bringing up the Object Attributes

dialog.

- Moving the object by dragging right on the Y-axis increases the value in the Y-position field.
- Moving the object by dragging left on the Y-axis decreases the value in the Y-position field.

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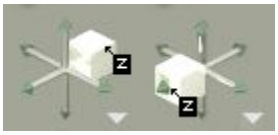
Remember that if Object or Camera Space is active, the object will move relative to the object or camera. So if using Object Space and the object has been rotated, it will move in the direction of the object's Y-axis.

Hold down Shift to constrain the reposition increments to 10.24 BUs (one-half of a Unity Unit).

Repositioning on the Z-Axis

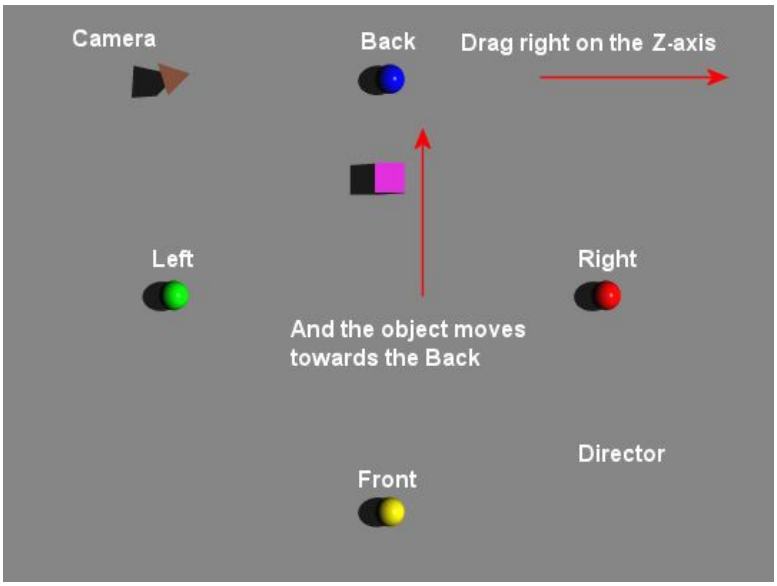
To reposition on the Z-axis (World Space):

1. Move the cursor over either end of the Z-axis on the Reposition tool.

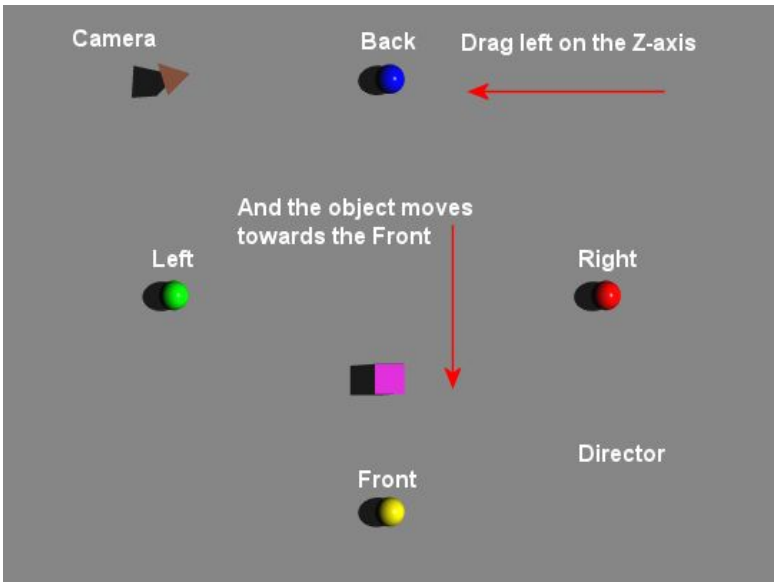


2. Hold down the left mouse button and drag right - the object moves towards the back.

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3. Drag left and the object moves towards the front.

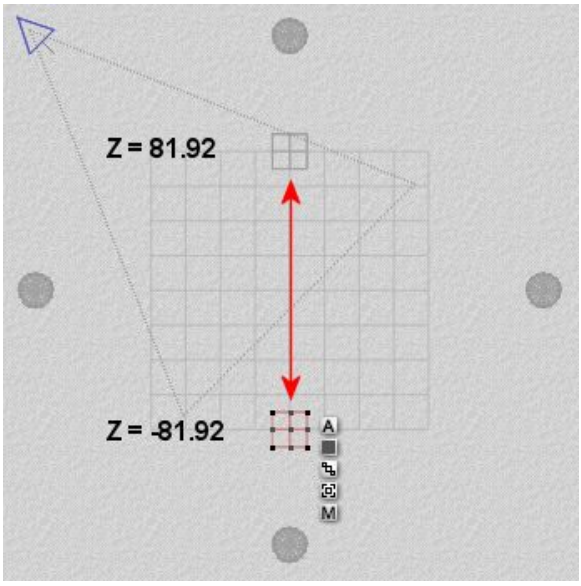


You can see the results of moving the object by clicking on the A button and bringing up the Object Attributes dialog.

- Moving the object by dragging right on the Z-axis increases the value in the Z-position field.
- Moving the object by dragging left on the Z-axis decreases the value in the Z-position field.

Remember that if Object or Camera Space is active, the object will move relative to the object or camera. So if using Object Space and the object has been rotated, it will move in the direction of the object's Z-axis.

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Hold down Shift to constrain the reposition increments to 10.24 BUs (one-half of a Unity Unit).

Spatial Options

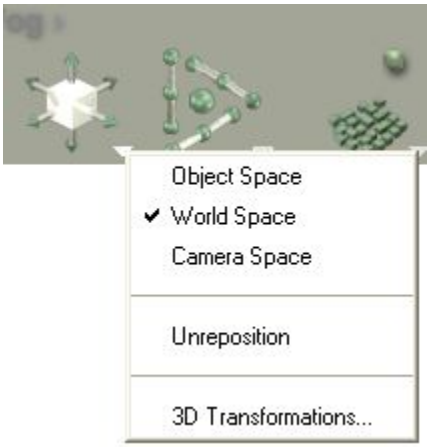
Objects can be repositioned using any of the three spatial definitions: World, Object, or Camera. The definition you choose depends on the effect you wish to create.

To choose a spatial option for repositioning:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Click the triangle icon next to the Reposition tool and choose an option from the menu:

- Object Space: rotates your selection relative to itself.
- World Space: rotates your selection in absolute world coordinates.
- Camera Space: rotates your selection relative to the camera.

The three spatial options are also available for the Resize and Rotate tools. When you select Object, World, or Camera Space for the Rotation tool, it is also set for the other two tools. The option you choose in the Edit palette does not affect the 3D Transformations dialog.

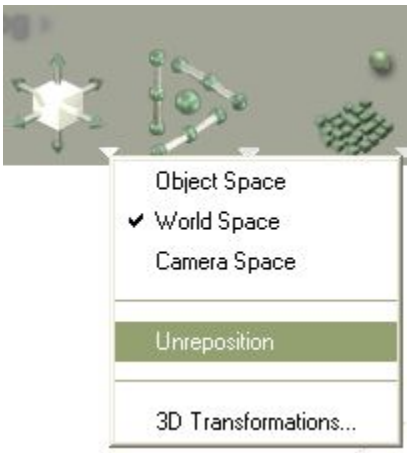
Undo Reposition Operations

To undo position operations:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Click the triangle icon next to the Reposition tool and choose Unreposition from the menu. This will reset the object back to its original position, no matter how many repositioning operations have been made to the object.



3D Transformations

The most precise method of positioning objects is by using the 3D Transformations dialog. This dialog lets you enter specific offset values for a selected object.

All transformations performed using this dialog use World Space coordinates regardless of the spatial option you chose for the Reposition tool.

Offset values are expressed in Bryce units of measure. You may enter negative numbers in the Reposition fields.

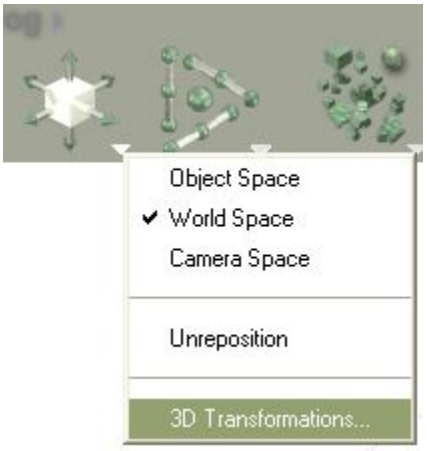
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To reposition an object numerically:

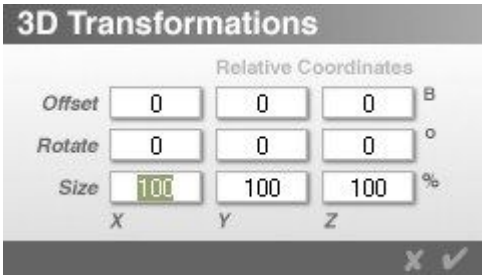
1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select an object.
3. Click the triangle icon next to the Reposition tool and choose 3D Transformations from the menu.

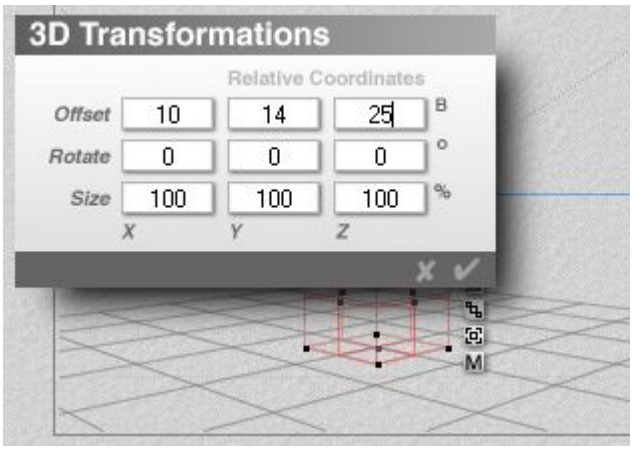
   

   The 3D Transformations dialog appears.

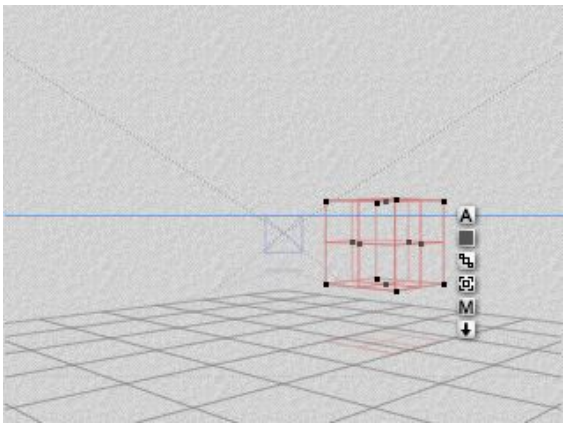
   

4. Enter a value in one or all of the Offset fields. The value determines the number of Bryce units the object is offset from its current position.

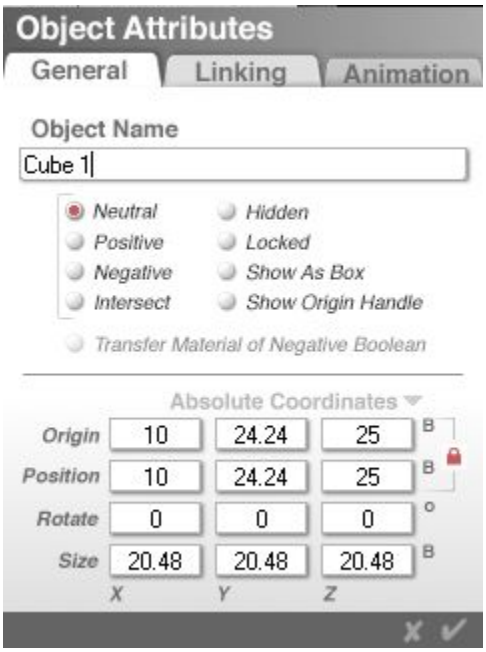
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And here is the result of the above changes on a cube:



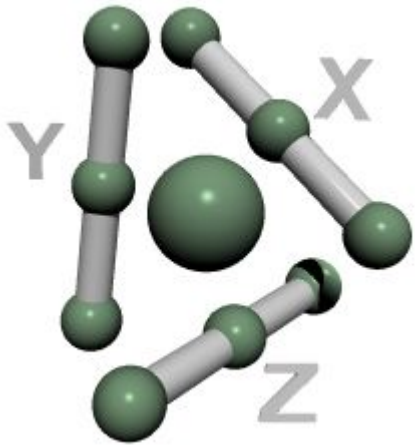
And the Object Attributes dialog showing the changes:



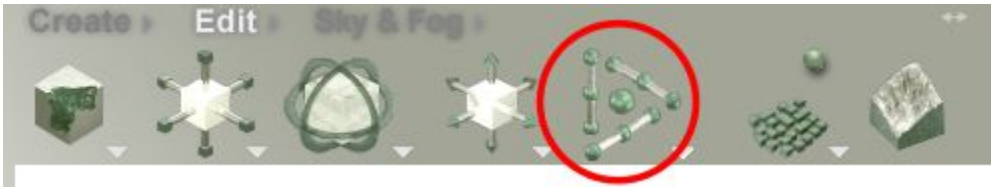
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Remember that since this dialog only performs transformations in World Space, you are moving the object relative to world X, Y, and Z coordinates.

Align Tool

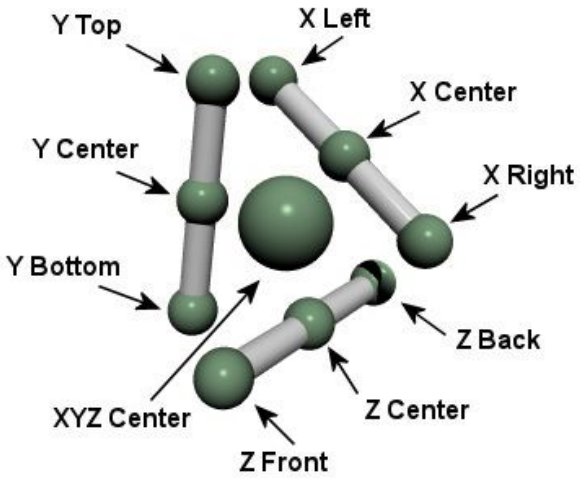


Use the Align tool to align objects along their tops, bottoms, left sides, right sides, fronts, backs, or centers.



Bryce's alignment features let you position several objects with respect to each other. Alignment transformations are performed with respect to the Grid. Bryce maintains an internal grid that is comprised of 3D cube increments, 20.48 x 20.48 x 20.48 Bryce units in size.

The Align tool has ten states. As you move the pointer over the tool, the states become active.



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The Grid is used for Snap To operations and acts as common reference for alignment operations. One grid unit is equal to unity size and unity position is always snapped to a position on the grid.

Clicking the arrow icon to the bottom right of the Align tool brings up a popup menu with various options for aligning objects.



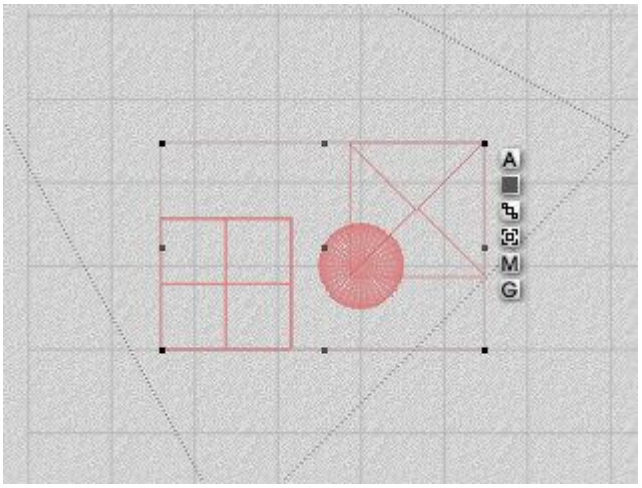
Align X

To align objects along the X-axis:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select two or more objects.

3. Move the cursor over the Align tool.

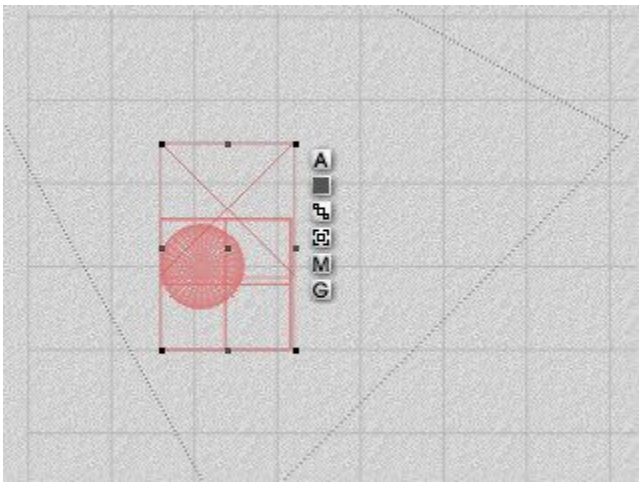
4. When the state you want to use is active, click the mouse button.



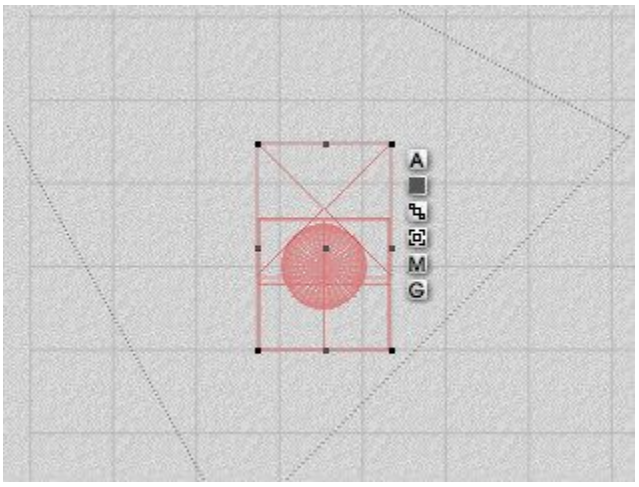
The default alignment is "non-anchor based" which means that the tool aligns objects based on the bounding box of the selected objects.

Examples:

- Align X Left:

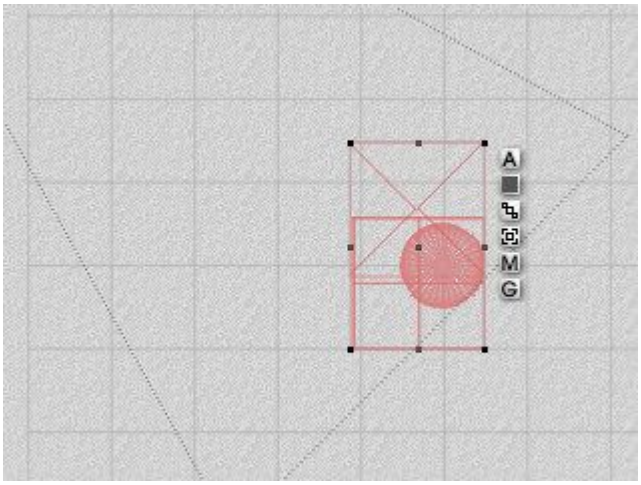


- Align X Center:



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- Align X Right:



To align objects to a specific object, use Anchor-Based Alignment which aligns the selected objects to the first selected object.

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

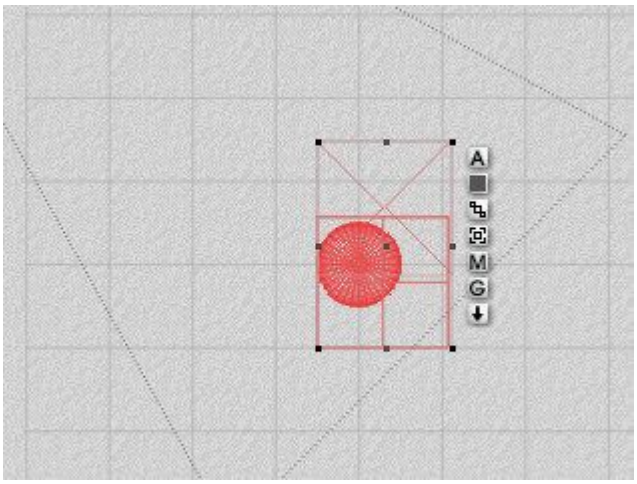
2. Click the arrow icon to the bottom right of the Align tool and choose Anchor-Based Aligning from the menu.



3. Select the object you want to use as the align anchor.
4. Select the remaining objects to align.
5. Move the cursor over the Align tool.
6. When the state you want to use is active, click the mouse button.

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The example below shows the selected objects aligned to the X Left edge of the sphere, which was selected first.



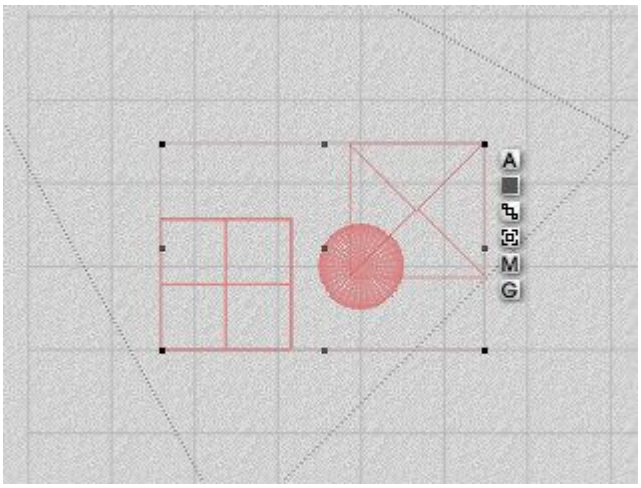
Align Y

To align objects along the Y-axis:

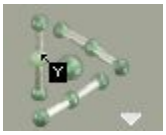
1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select two or more objects. Move the cursor over the Align tool.

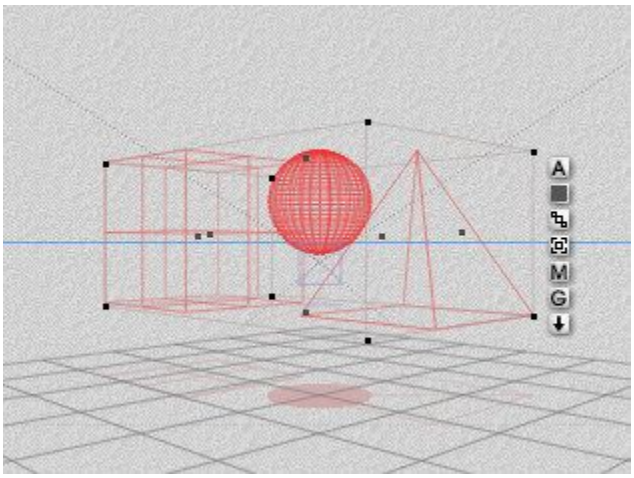
3. When the state you want to use is active, click the mouse button.

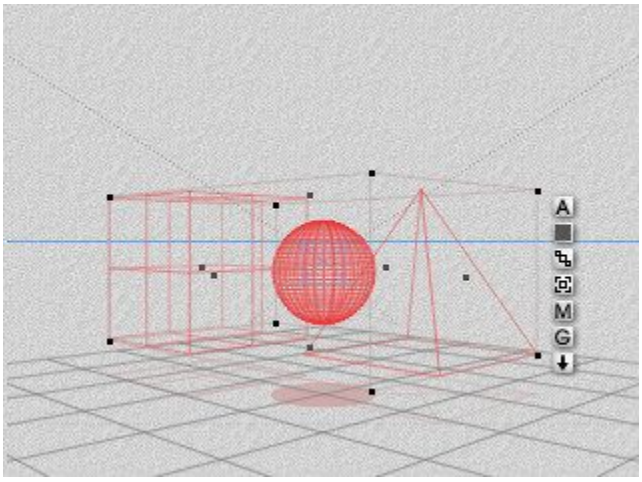
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The default alignment is "non-anchor based" which means that the tool aligns objects based on the bounding box of the selected objects. Examples:

- Align Y Top:

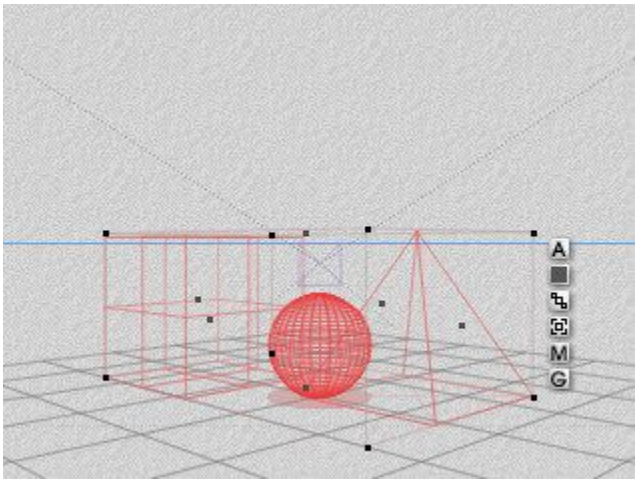


- Align Y Center:



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- Align Y Bottom:



To align objects to a specific object, use Anchor-Based Alignment which aligns the selected objects to the first selected object.

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



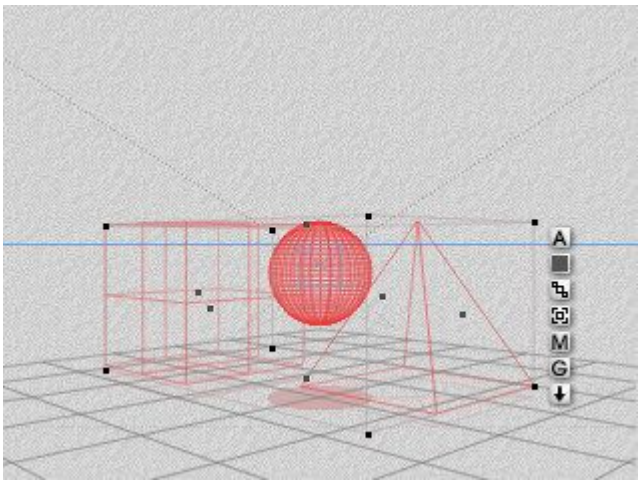
2. Click the arrow icon to the bottom right of the Align tool and choose Anchor-Based Aligning from the menu.



3. Select the object you want to use as the align anchor.
4. Select the remaining objects to align.
5. Move the cursor over the Align tool.
6. When the state you want to use is active, click the mouse button.

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The example below shows the selected objects aligned to the Y Top edge of the sphere, which was selected first.



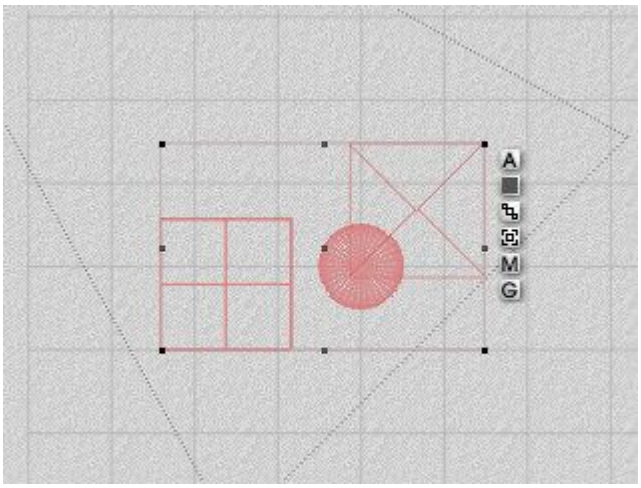
Align Z

To align objects along the Z-axis:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select two or more objects.

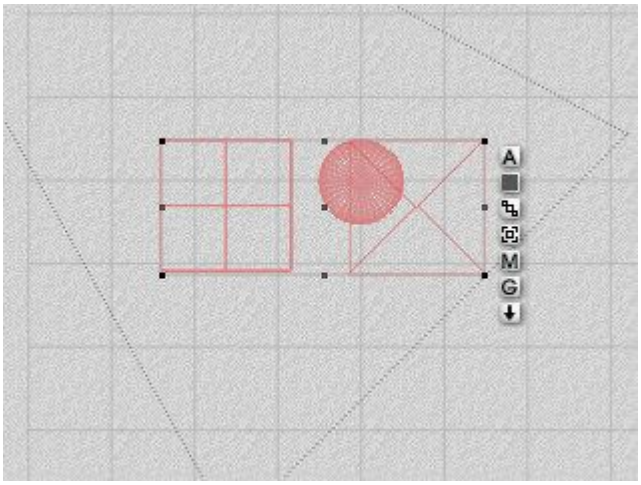
   

3. Move the cursor over the Align tool.
4. When the state you want to use is active, click the mouse button.

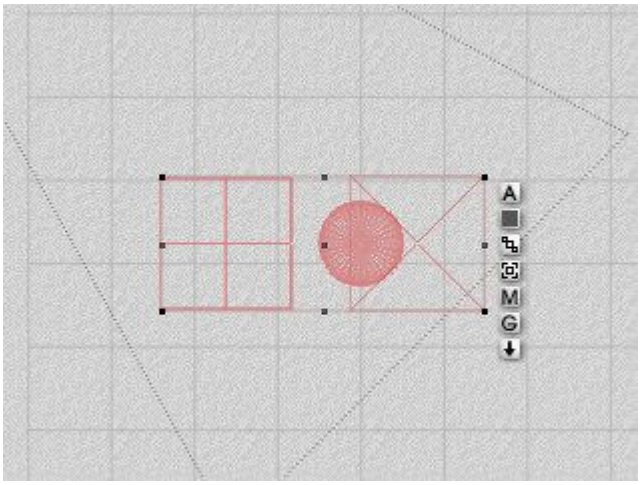
   

The default alignment is "non-anchor based" which means that the tool aligns objects based on the bounding box of the selected objects. Examples:

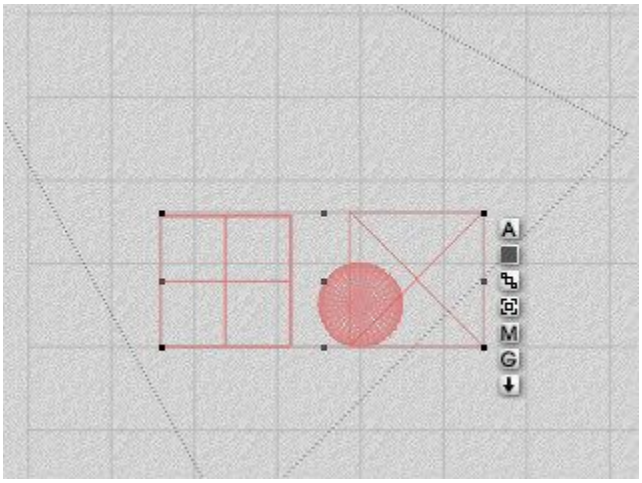
- Align Z Back:



- Align Z Center:



- Align Z Front:



To align objects to a specific object, use Anchor-Based Alignment which aligns the selected objects to the first selected object.

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



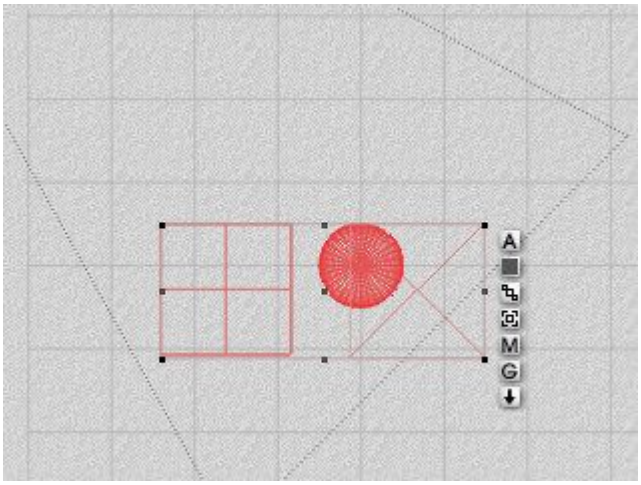
2. Click the arrow icon to the bottom right of the Align tool and choose Anchor-Based Aligning from the menu.



3. Select the object you want to use as the align anchor.
4. Select the remaining objects to align.
5. Move the cursor over the Align tool.

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When the state you want to use is active, click the mouse button. The example below shows the selected objects aligned to the Z Back edge of the sphere, which was selected first.



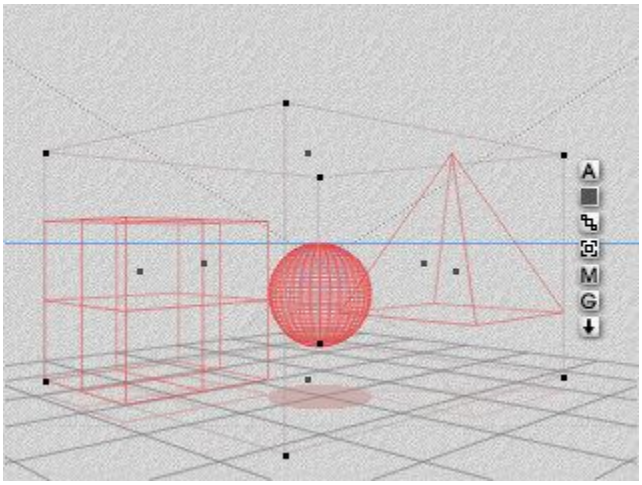
Align All

To align objects to the center of the objects:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select two or more objects.

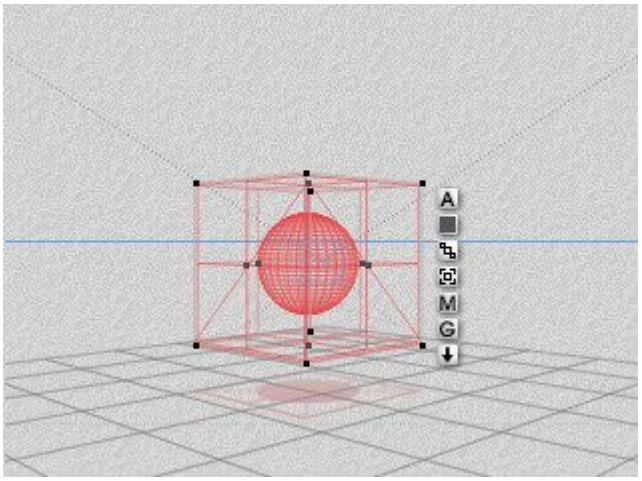
3. Move the cursor over the Align tool.

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4. When the state you want to use is active, click the mouse button.



The default alignment is "non-anchor based" which means that the tool aligns objects based on the bounding box of the selected objects. Example: Align All Center:



To align objects to a specific object, use Anchor-Based Alignment which aligns the selected objects to the first selected object.

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



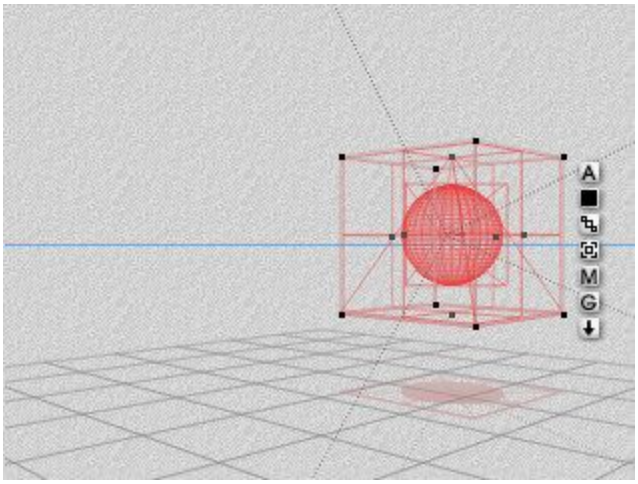
2. Click the arrow icon to the bottom right of the Align tool and choose Anchor-Based Aligning from the menu.



3. Select the object you want to use as the align anchor.
4. Select the remaining objects to align.

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5. Move the cursor over the Align tool.
6. When the state you want to use is active, click the mouse button. The example below shows the selected objects aligned to the center of the pyramid, which was selected first.



Snap To Options

The Snap To Options let you automatically align objects to the grid, an anchor object, World Center, ground level, or to land on an object.



Snap to Grid

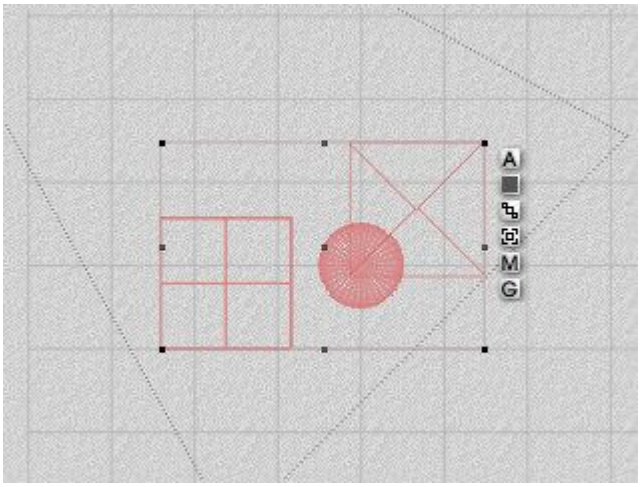
The Grid can be used as a guide to help you precisely position objects in your scene. To snap objects to the Grid:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



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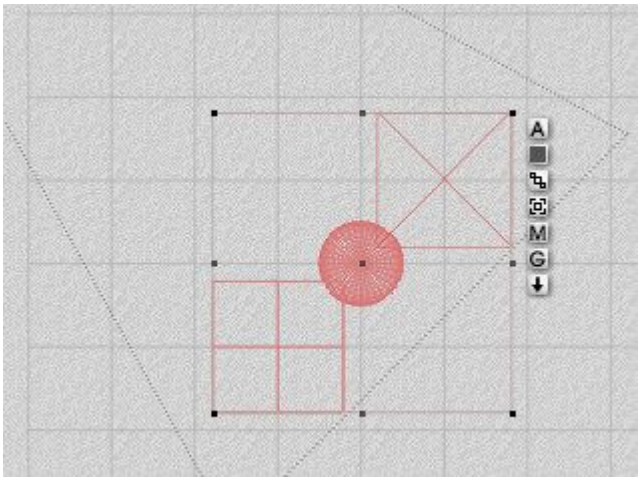
2. Select an object or multiple objects.



3. Click the triangle icon next to the Align tool and choose Snap to Grid.

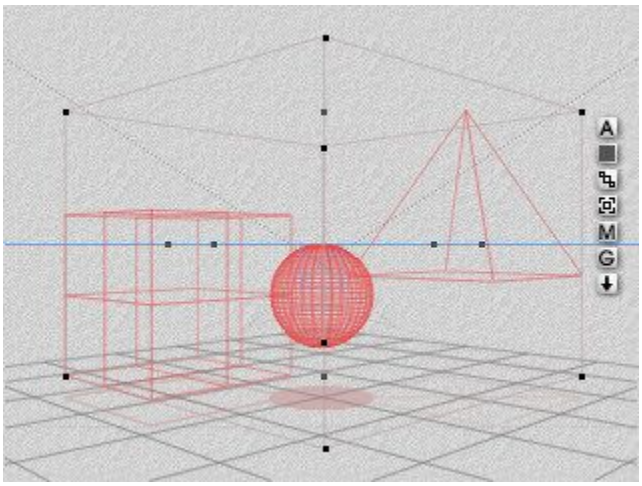


The center of the object (or objects) will align to the nearest point on the grid.



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Please note that the Align to Grid option does not place the objects on the ground.



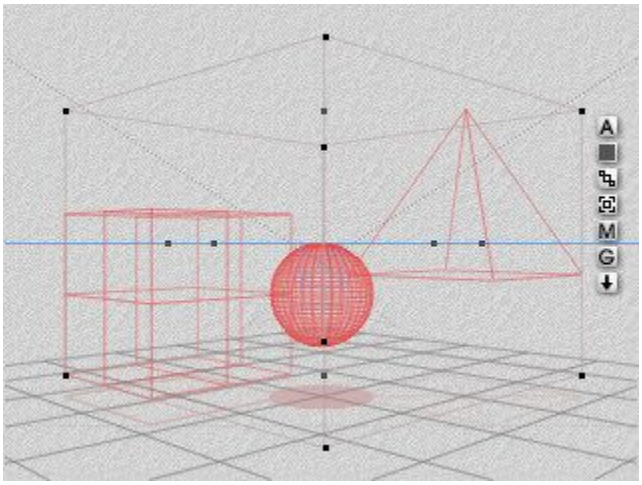
Snap Together

To snap objects together:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select the object you want to use as the anchor object.
3. Select the remaining objects to align.

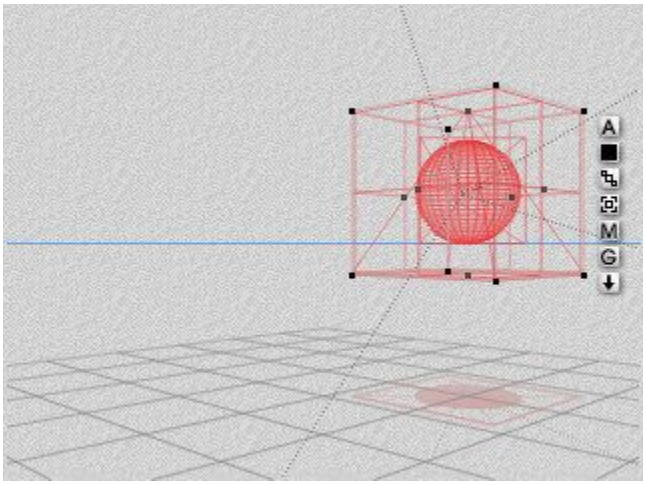


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4. Click the triangle icon next to the Align tool and choose Snap Together.



The X, Y, and Z centers of all selected objects are aligned to the X, Y, and Z center of the anchor object (in this case, the pyramid).



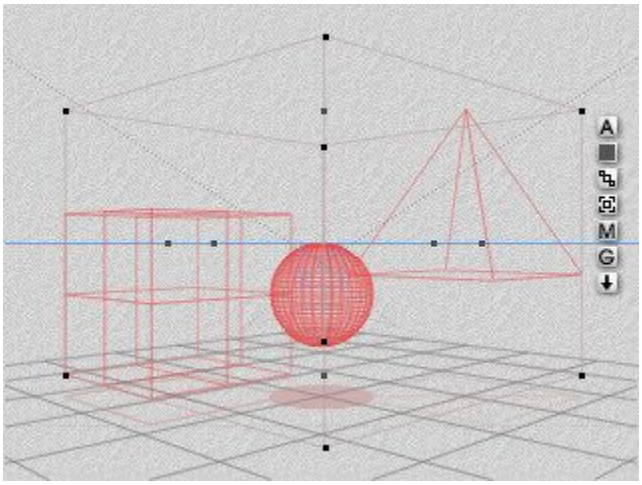
Snap to World Center

To snap an object to World Center:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



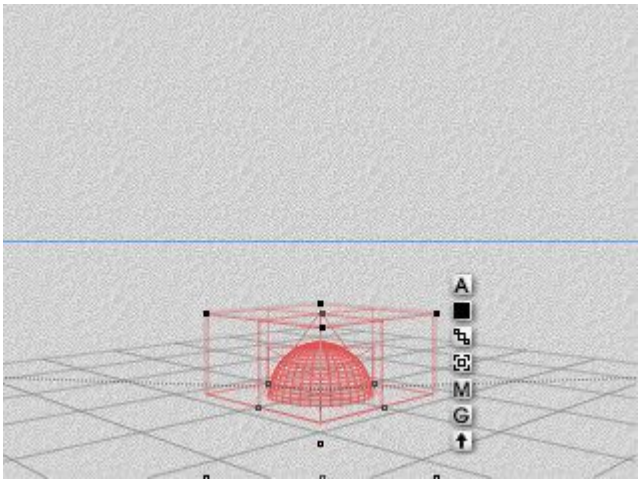
2. Select an object or multiple objects.



3. Click the triangle icon next to the Align tool and choose Snap to World Center.



The selected object(s) moves to coordinates X=0, Y=0, Z=0, or World Center.



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4. If needed, click the triangle icon next to the Align tool and choose Snap to Ground to bring the object(s) back to ground level.

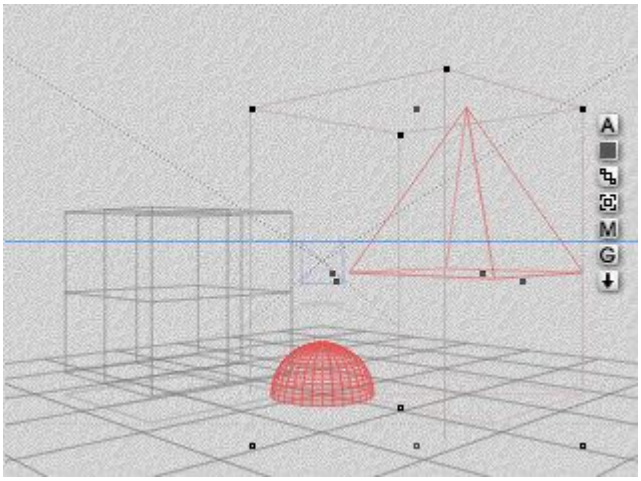
Snap to Ground

To drop or lift objects to ground level:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



2. Select an object or multiple objects.

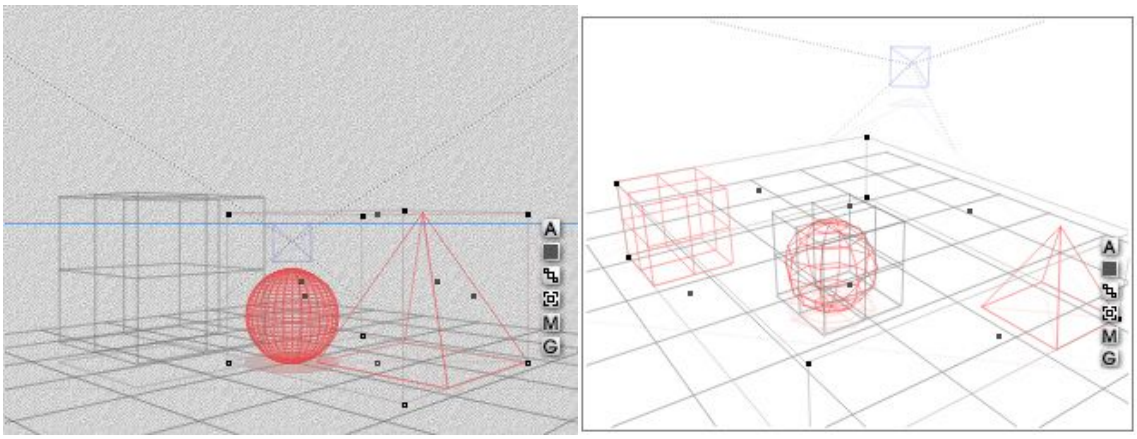


3. Click the triangle icon next to the Align tool and choose Snap to Ground.



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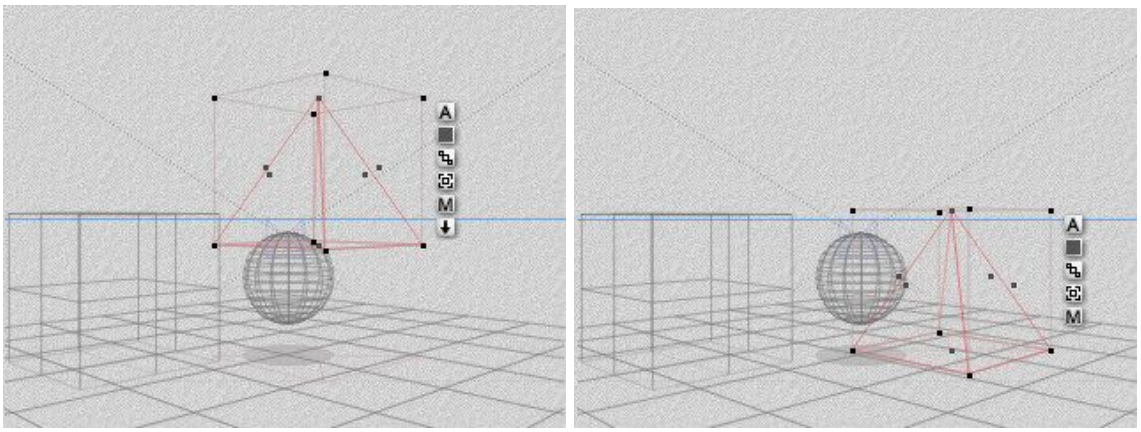
The selected object (or objects) will move up or down as necessary to place the object on the ground even if that puts the object inside another object.



Snap to Land

The Snap to Land option lets you snap an object to any object directly below it, much like creating a gravity effect.

When you activate the Snap to Land option, Bryce snaps the selected object to the top of any object directly below its center Y control handle. The second object must be directly below the Y-control handle, otherwise the object lands on the ground plane (see left example).



In the right hand example, a corner of the selected object is over the "land" object, but since there are no objects directly under its Y control handle, the selected object lands on the ground.

Landing operations work best with objects that have not been rotated and that have no sloped characteristics.

This option can create many interesting effects. For example, you can quickly create falling rock animations by placing rock objects throughout your scene with a terrain below them in one frame. Then, in a different frame, select all the rocks and choose the

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Snap to Land option. When you run the animation, all the rocks will appear to fall onto the terrain.

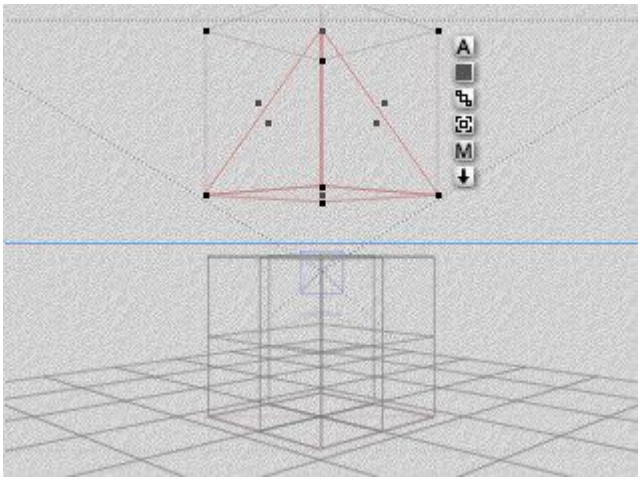
Another use of Snap to Land is when attempting to place trees on a terrain. Place the tree over the terrain then choose the Snap to Land option. The tree will drop to the terrain and you can then use the Reposition tool or Object Attributes dialog to lower the tree slightly to place the roots into the terrain.

To snap an object to the top surface of an object below it:

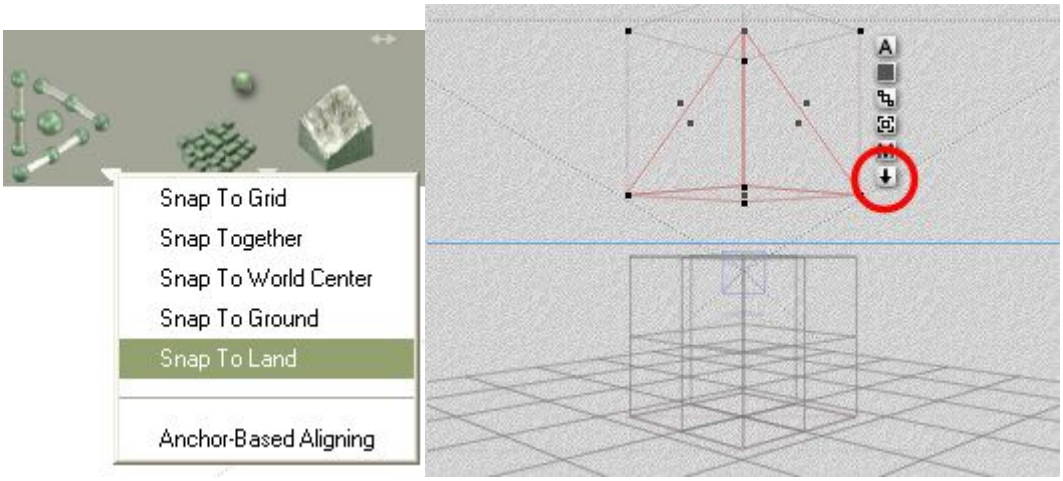
1. Make sure the Edit palette is visible. If it's not, click the Edit text button at the top of the Working window.

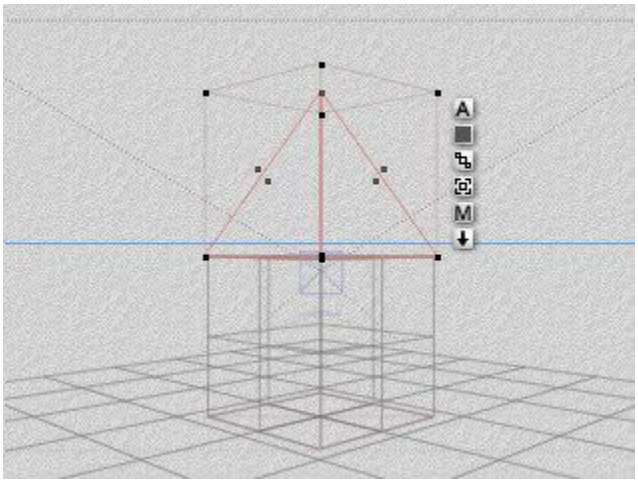
2. Select an object that is above another object or above the ground plane.

3. Either click the triangle icon next to the Align tool and choose Snap to Land from the menu or click the Down arrow icon that appears next to the object's bounding box.

The object will land on top of the object below it.



Anchor & Non-Anchor-Based Aligning

Bryce provides two options for aligning multiple objects: anchor-based aligning and non-anchor-based aligning.

Anchor-based aligning considers the first selected object to be the anchor of the aligning operation. All other objects are aligned to this object.

With non-anchor-based aligning, objects are aligned to the bounding box of all the selected objects.

To choose an aligning option:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Click the triangle icon next to the Align tool, and enable/disable Anchor-Based Aligning.



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See the following for examples of using Anchor-Based Aligning:

- Align X
- Align Y
- Align Z
- Align All

Randomize Tool

Use the Randomize tool to scatter or disperse objects in 2D or 3D space.



The Randomize tool is a great way of randomly dispersing objects throughout your scene without having to manually position each object. As you click the Randomize tool each of its states becomes active.

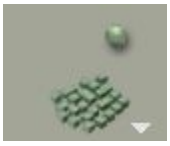
Clicking the arrow icon to the bottom right of the Randomize tool brings up a pop-up menu with the options for randomizing objects.



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2D Disperse

Use 2D Disperse to disperse objects in 2D space.

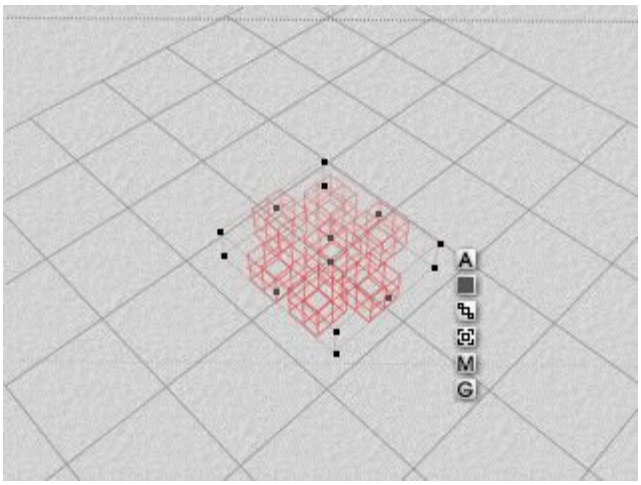


To disperse objects in 2D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select a number of objects.

3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose the 2D Disperse mode from the menu.

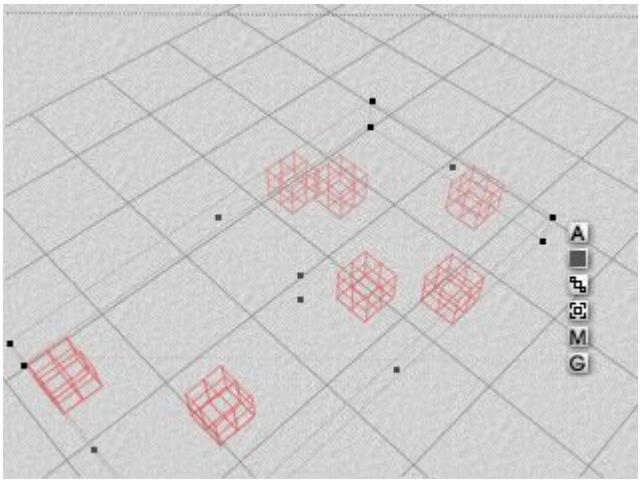
   

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4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



The objects will be dispersed along the 2D plane:



2D Disperse Rotate

Use 2D Disperse Rotate to disperse and rotate objects in 2D space.



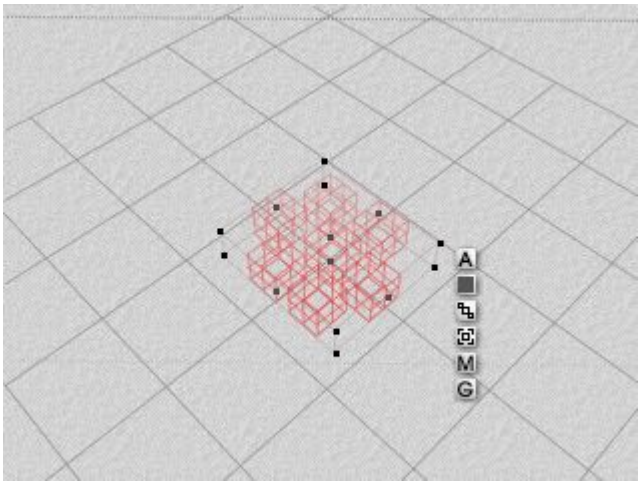
To disperse and rotate objects in 2D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



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2. Select a number of objects.



3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 2D Disperse Rotate mode from the menu.

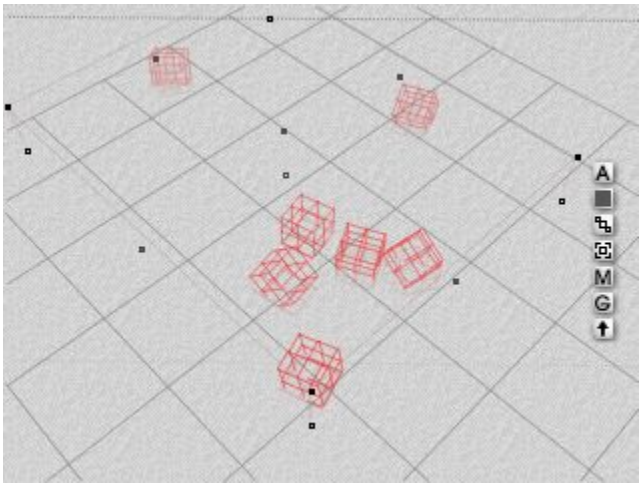


4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



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The objects will be dispersed and rotated along the 2D plane:



2D Disperse Size

Use 2D Disperse Size to disperse and resize objects in 2D space.

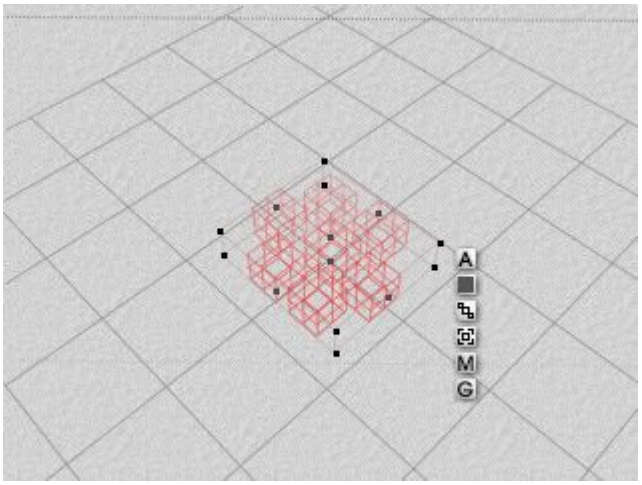


To disperse and resize objects in 2D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select a number of objects.



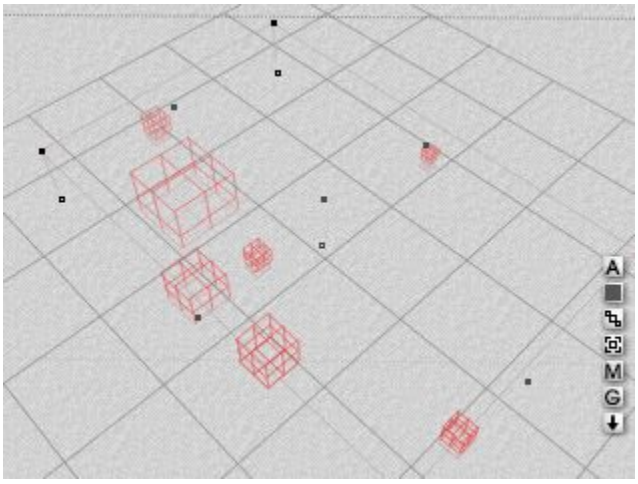
3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 2D Disperse Size mode from the menu.



4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



The objects will be dispersed and resized along the 2D plane:



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2D Disperse Size/Rotate

Use 2D Disperse Size/Rotate to disperse, resize, and rotate objects in 2D space.

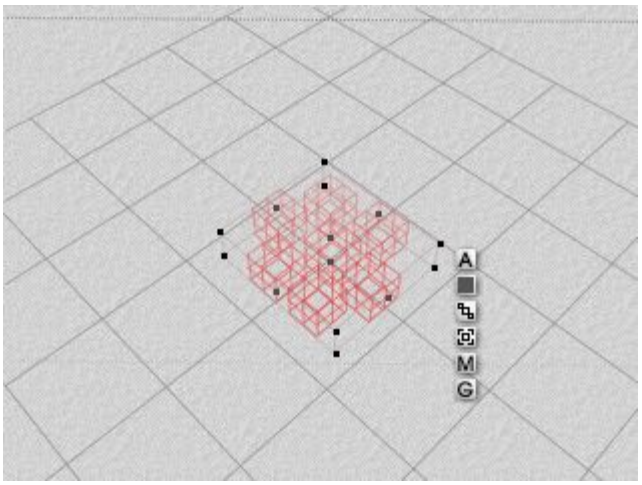


To disperse, resize, and rotate objects in 2D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select a number of objects.

3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 2D Disperse Size/Rotate mode from the menu.

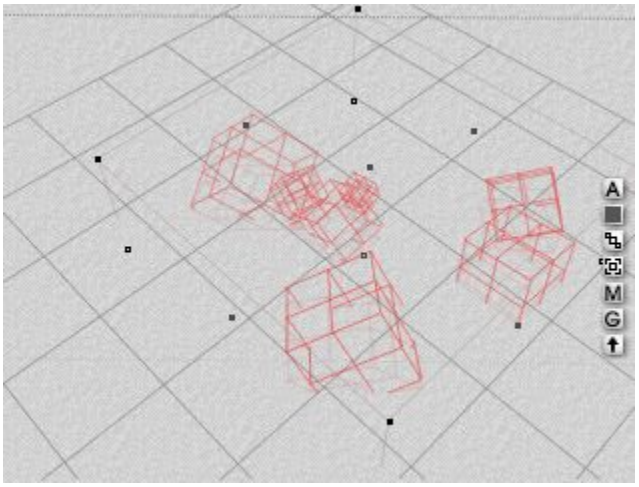
   

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4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



The objects will be dispersed, resized, and rotated along the 2D plane:



3D Disperse

Use 3D Disperse to disperse objects in 3D space.



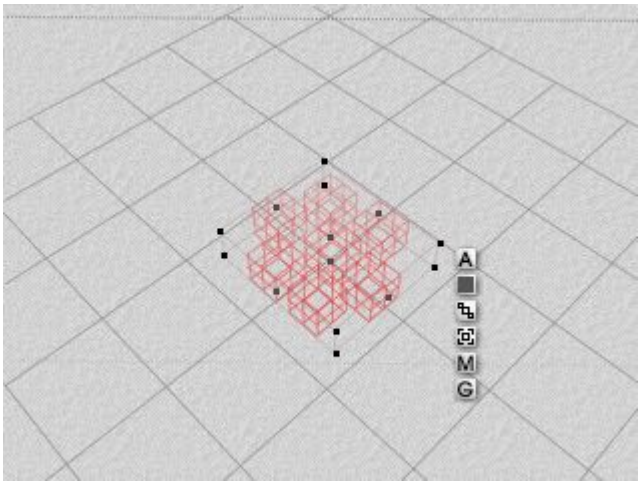
To disperse objects in 3D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



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2. Select a number of objects.



3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 3D Disperse mode from the menu.

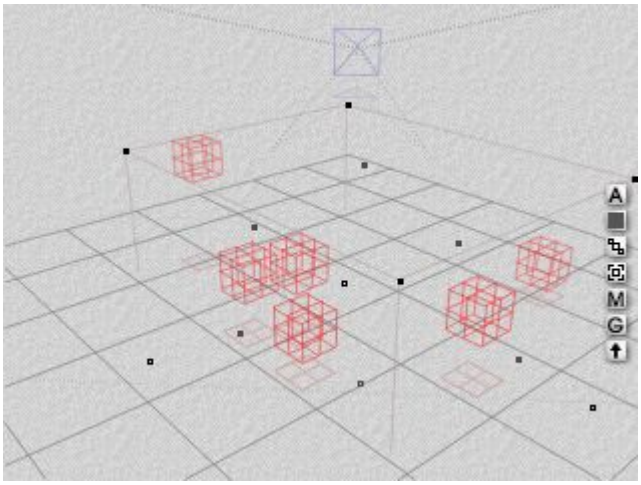


4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



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The objects will be dispersed along the 3D planes:



3D Disperse Rotate

Use 3D Disperse Rotate to disperse and rotate objects in 3D space.

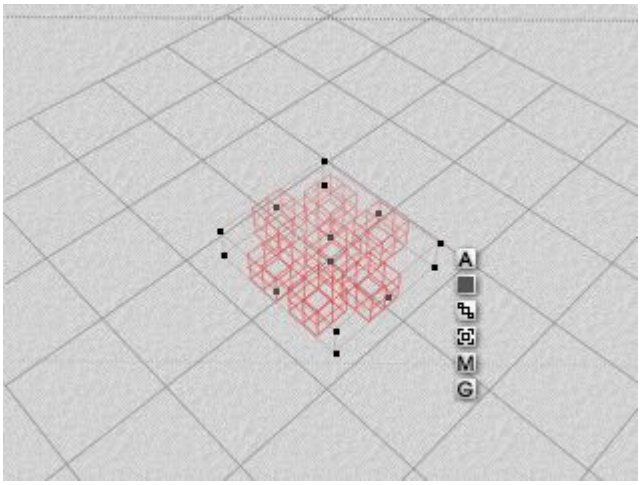


To disperse and rotate objects in 3D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select a number of objects.



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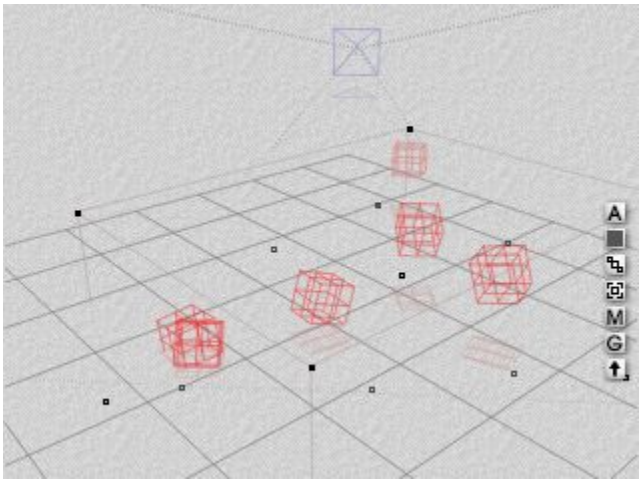
3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 3D Disperse Rotate mode from the menu.



4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



The objects will be dispersed and rotated along the 3D planes:



3D Disperse Size

Use 3D Disperse Size to disperse and resize objects in 3D space.

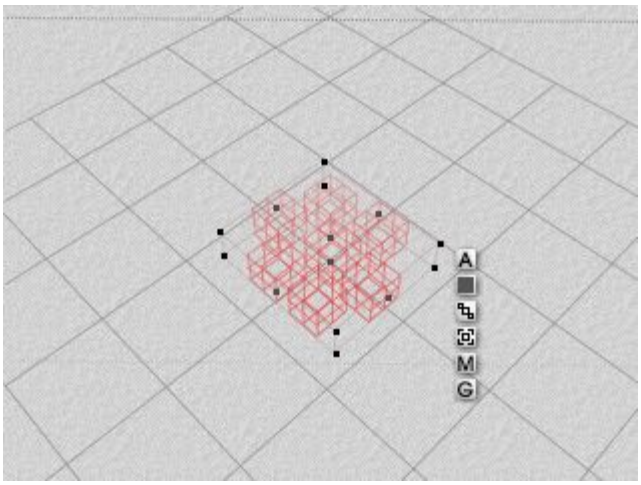


To disperse and resize objects in 3D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

2. Select a number of objects.

3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 3D Disperse Size mode from the menu.

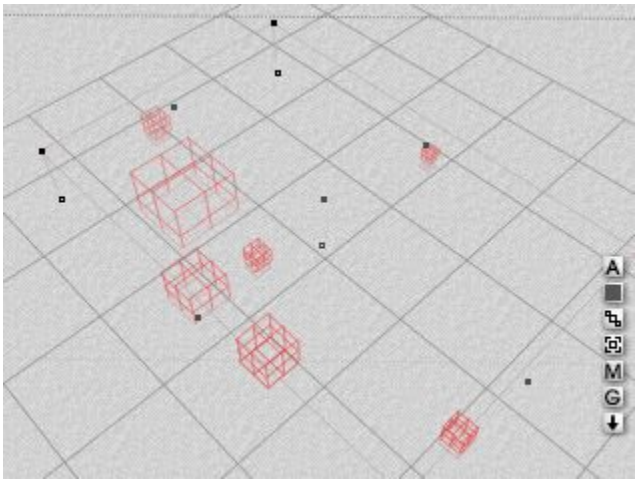
   

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4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



The objects will be dispersed and resized along the 3D planes:



3D Disperse Size/Rotate

Use the 3D Disperse Size/Rotate to disperse, resize, and rotate objects in 3D space.



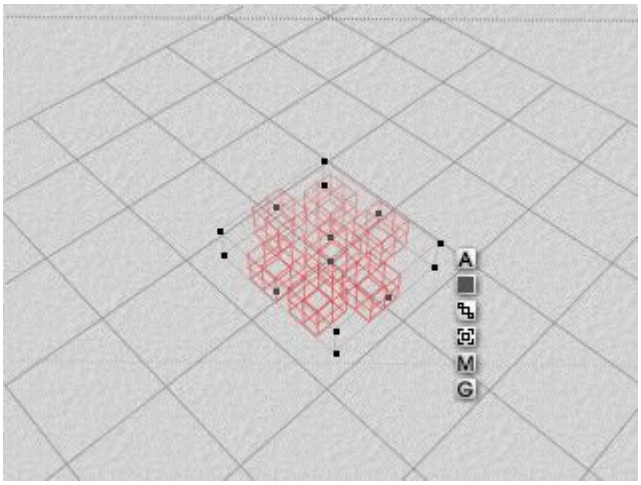
To disperse, resize, and rotate objects in 3D space:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.



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2. Select a number of objects.



3. Either click the Randomize tool repeatedly until the mode you want to use is active or click the triangle icon next to the Randomize tool and choose 3D Disperse Size/Rotate mode from the menu.

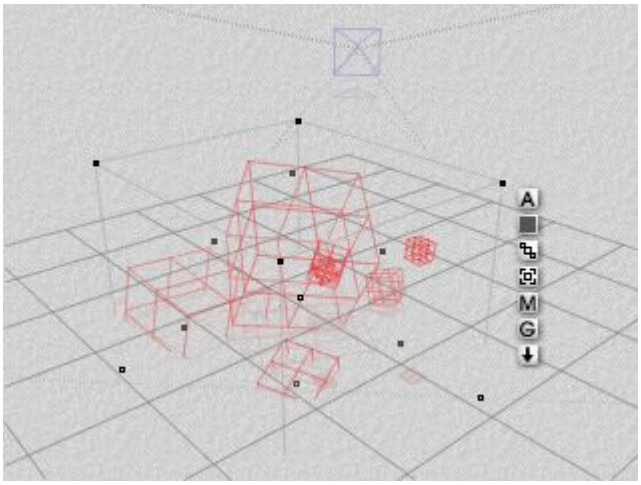


4. Click and drag over the Randomize Amount sphere. The Randomize Amount sphere is the green sphere to the top-right of the Randomize tool.



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The objects will be dispersed, resized, and rotated along the 3D planes:



Edit Terrain/Object



The Edit Terrain/Object tool brings up the appropriate lab or editor depending on what object is selected. Unlike the Edit Materials tool, you must have an object selected in order to use this tool.

To use the Edit Terrain/Object tool, select an object and click on the Edit Terrain/Object tool.

- Terrain or SymLat - opens the Terrain Editor
- Tree - opens the Tree Lab
- Rock - opens the Edit Mesh dialog
- Imported Mesh Object - opens the Edit Mesh dialog
- Torus - opens the Edit Torus dialog
- Any Light - opens the Light Lab
- Any other object - nothing happens

Convert Selection To

The Convert Selection To tool in the Edit palette lets you convert any type of object into another type of object with a single click. You can change a square into a light, a terrain into a sphere, or an infinite plane into a cone. Any transformations or materials you applied to the original object are preserved through the conversion. Just remember that

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if the original object is larger or smaller than the default size of the object it is being converted to, then the converted object will reflect the size change.

Conversions cannot be animated. You can't have a box that turns into a cone over time.

The Convert tool is above and to the right of the Edit Terrain/Object tool and looks like a double-headed arrow:



To convert an object to another type of object:

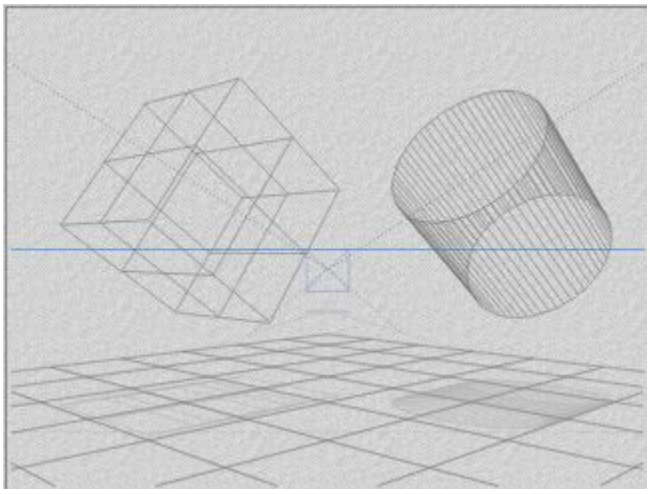
1. Select the object you want to convert.
2. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

3. Left-click-hold on the double-headed arrow in the top left corner of the palette and choose an object type from the palette that appears.



4. The selected object will be converted to the chosen object. The image below shows a rotated cube that has been converted to a cylinder:

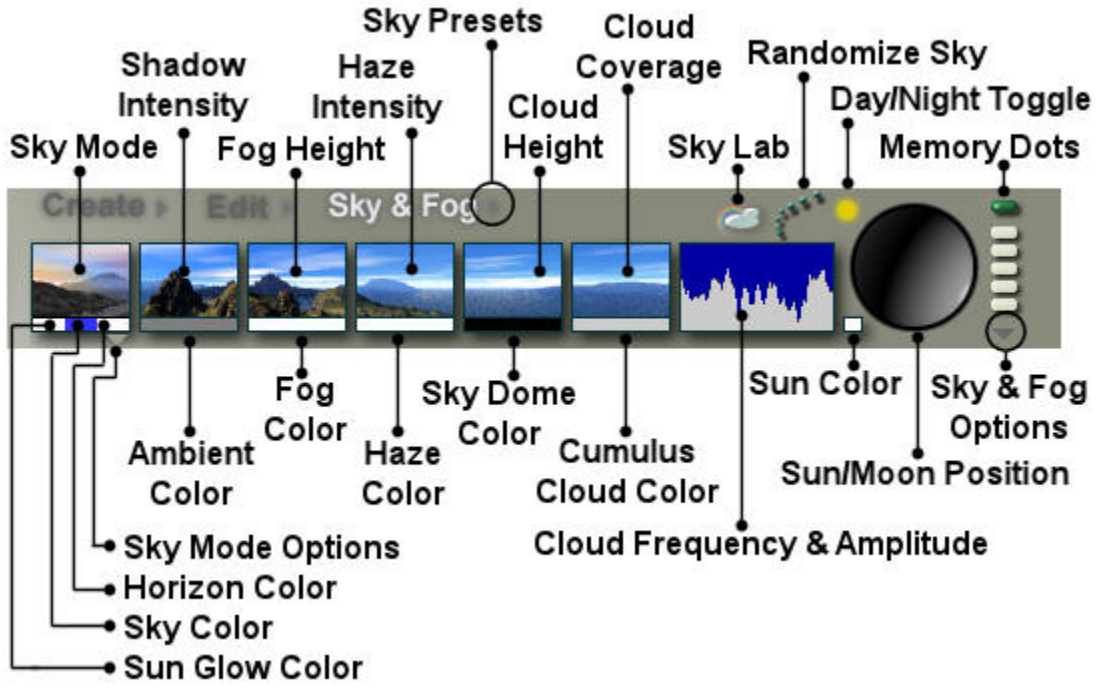


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The image below shows a cube converted to a torus (left) and a 2D square converted to a pyramid (right). Since the cube Z-size is longer than the default torus Z-size, the converted torus is stretched to match the original cube size. The same with the pyramid which is squashed on the Z-axis to match the Z-axis of the 2D square.



Sky & Fog Palette



The controls available on the Sky & Fog Palette let you add shadows, fog, and haze, and let you set the altitude, frequency, and amplitude of clouds. The Sky & Fog Palette also lets you control the color of clouds in your sky and the position of the sun and moon.

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A Bryce sky defines the virtual environment of your scene. Unlike many other 3D applications, the Bryce virtual environment is not merely a backdrop; it is an infinite 3D representation of natural environmental phenomena.

All of the elements in your sky interact with each other just as they would in the real world. Colors in your environment interact with everything in your scene just as they would in nature. For example, red sunlight is invisible until it strikes an object; then the object exhibits red highlights. If it's a blue object, it takes on a purple cast and so on.

The colors in the sky change depending on the position of the sun, and how much moisture (Haze, Fog) is present in the atmosphere. All this, plus natural reflection, refraction, and more make the Bryce Sky & Fog Palette responsible for a great deal of the natural, or supernatural, look and feel of Bryce images.

The objects in your scene may look incredibly realistic on their own, but when you add a sky, the scene becomes a window looking out into a real world. You can add even more realism to a sky by enabling one of the many environmental effects available for skies. Using these effects you can create night skies full of stars, or have a bright rainbow streaking across the roof of your world. One of the most spectacular effects is the Volumetric World effect. When this effect is enabled all the light in your scene appears as visible rays. This is similar to the effects of light shining through clouds on a hazy day.

Like any other scene setting, skies can be animated. Any property of a sky can be changed at different points along the animation timeline. When the animation plays, the sky property will appear to change over time. Using this technique, you can create a scene that changes from day to night, or from clear to cloudy.

The Sky & Fog Palette is where you'll set up the attributes of your environment. The palette uses visual controls in the form of thumbnails to help you see how changing the value of an attribute affects your sky.

The name of the control you're adjusting appears in the Text Display area of the Control Palette. You can also use this area to help guide you if you prefer numeric precision, as when you are adjusting the setting of a control; this area displays the current control's value.



Each control has at least one color swatch along the bottom of the thumbnail. These swatches are used to set the color for a given sky attribute, like cloud color or fog color. Next to the thumbnails are a series of controls that let you set the frequency and amplitude of clouds, set the position of the sun or moon, and store sky properties. You can see their effects in the Preview Area.

The Triangle icon next to the Sky & Fog button at the top of the Bryce window lets you access the Preset Skies Library.

To open the Preset Skies Library, click quickly on the triangle icon next to the Sky & Fog button at the top of the Bryce window. Please note that if you hold down the mouse key

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for too long, the library will open, then close immediately. To keep the library open, click quickly on the triangle icon.



Using the Control Thumbnails

The thumbnails in the Sky & Fog Palette are visual guides and are also used to set the attributes of the Sky & Fog effects.

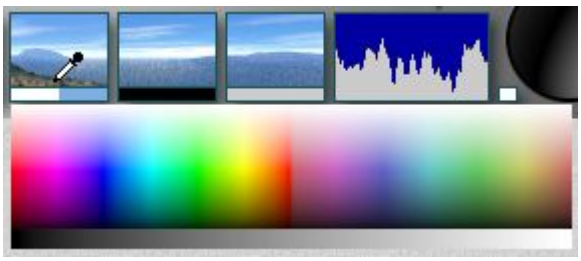
To change the intensity of an effect, drag to the left or right, up or down, inside the thumbnail to change the intensity of the effect.



To pick a color for an effect, click the color bar below the thumbnail. A color picker appears and your pointer changes to an eyedropper.



While the eyedropper is active, you can select colors from anywhere in your scene, or even different parts of the interface.



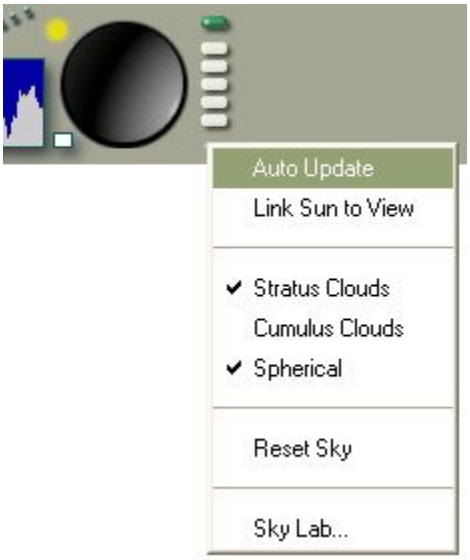
For more control after picking with the color picker, you can switch to HLS mode and adjust saturation or lightness (less saturated colors can make for more realistic fog and haze effects), or you can enter numeric values if you need to precisely match specific colors.

For more on the different color pickers for both PC and Mac, refer to "Adjusting Editor Settings."

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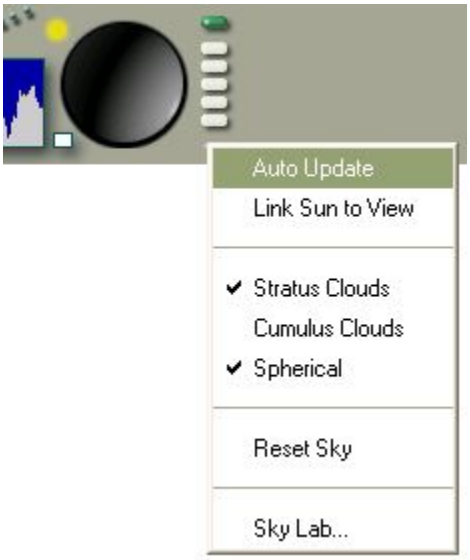
Setting Palette Options

The Sky & Fog Palette options let you link the palette controls directly to your scene.



Auto Update

To link Sky & Fog attributes directly to your scene, click the triangle icon below the memory dots at the right edge of the palette and choose Auto Update from the menu.



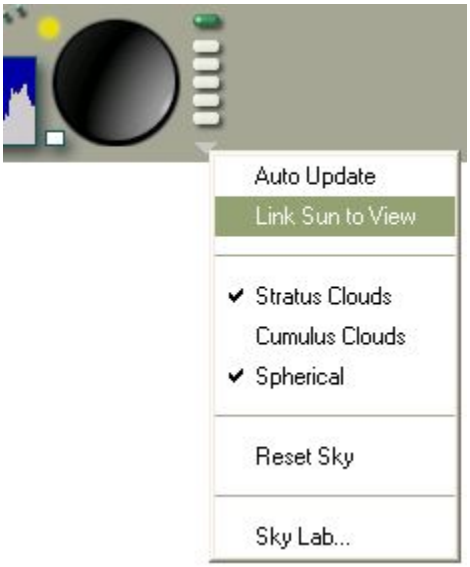
When this option is enabled, every change you make to the Sky & Fog Palette settings will start a render of your scene with the new sky settings.

Unless you have selected a small region to be updated, every change you make will begin a completely new render.

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Link Sun to View

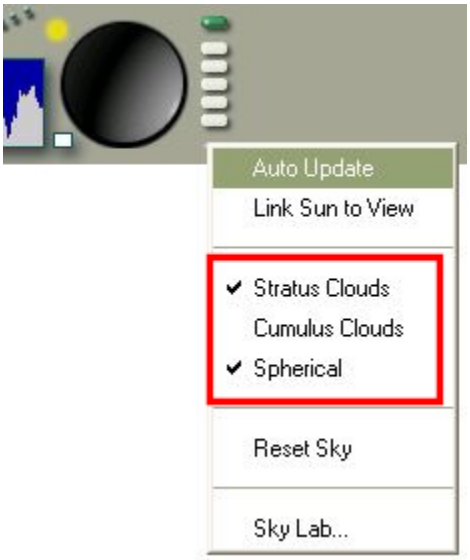
To link Sky & Fog attributes directly to your scene, click the triangle icon below the memory dots at the right edge of the palette and choose Link Sun to View from the menu.



Select Cloud Types

To select what cloud types to place in the scene or to choose spherical clouds, see the following pages for more information:

- Adding Cumulus Clouds
- Adding Stratus Clouds
- Spherical Clouds



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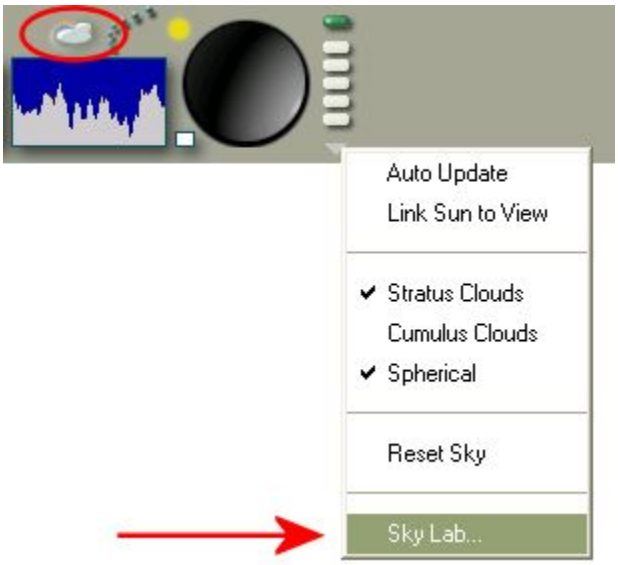
Reset Sky

To reset Sky & Fog Palette settings to their defaults, click the triangle icon below the memory dots at the right edge of the palette and choose Reset Sky from the menu.



Access Sky Lab

To access the Sky Lab, either click on the Sky Lab button or click the triangle icon below the memory dots at the right edge of the palette and choose Sky Lab from the menu.



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Saving Sky & Fog Settings

The Memory Dots in the Sky & Fog Palette let you store your favorite Sky & Fog settings. Using these dots you can safely explore many Sky & Fog configurations without losing your favorite settings along the way.

The Memory Dots appear along the right side of the palette.



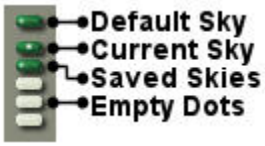
The Memory Dots in the Sky & Fog Palette mirror those inside the Sky Lab.



To save Sky & Fog settings in the Sky & Fog Palette, click on an empty dot (empty dots are gray). All the current Sky & Fog Palette and Sky Lab settings (except for IBL settings) are stored in the selected dot.



The dots let you store up to seven different sky settings.



The uppermost dot, slightly separated from the rest, is a quick way to return to the default Bryce sky.

There is no way to clear this dot. It will always contain the default Sky settings.

Memory Dots are saved with the scene, but not between sessions, so you may want to save your favorite skies as presets before ending a Bryce session.

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When you click on a full dot to activate it, the saved setting becomes the current Sky. When you no longer need a saved sky setting, you can delete it by clearing the dot it is saved to.

- To save a sky setting to a Memory Dots, click an empty dot.
    - Empty dots appear gray -
    - Full dots appear green (blue in Bryce 5/5.5, teal in Bryce 3/4) -
- To return to the default sky, click the top Memory Dot. The sky returns to the default, regardless of how many changes you've made.
- To switch between saved skies, click a full (green) dot.

  Active dots appear green with a white dot in the middle -
- To clear a full dot, Opt/Alt+click a full dot. The dot turns gray and a new sky setting can be saved to it.

Please note that if you select a saved sky, then use the Sky Presets Library to change the sky, the Memory Dot you clicked to load the previous sky will still be active even though a different sky has been loaded.

Randomizing Sky Settings

Randomizing skies is a very powerful way of exploring possibilities you may never find any other way. When you randomize the sky all the settings in the palettes are replaced by randomly generated values.

To randomize your sky, click on the Randomize Sky button.



When you click on the button, it will turn red to show it is being activated.



Each time you click on the Randomize Sky button, a random sky is generated and applied to the scene.

Remember, you can always return to the default settings by clicking on the top Memory Dot or choosing Reset Sky from the Sky & Fog Options menu.

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Working with Sky Modes

The Sky Modes act as the base of your sky. The Sky Modes control lets you set the base colors and light tones for your environment. There are four modes available: Soft Sky, Dark Sky, Custom Sky, and Atmosphere Off. As you switch between the modes, the thumbnail also changes to give you a preview of what the mode looks like.

To select a Sky Modes, either:

- Click the Sky Modes thumbnail to cycle through the four modes,
- Drag left or right inside the thumbnail to cycle through the modes, or
- Click the triangle icon next to the thumbnail and choose a mode from the menu.



Soft Sky

Soft Sky is the default state of the sky. It features softer shades of blue and lighter tones

To set the sky to soft, click the triangle icon next to the Sky Mode thumbnail and choose Soft Sky from the menu.



The thumbnail changes to the Soft Sky control.

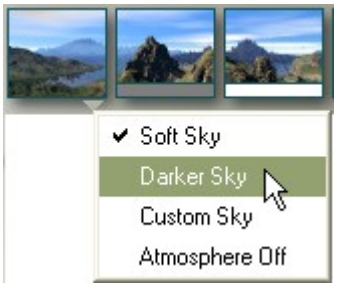


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Darker Sky

Darker Sky is a darker version of Soft Sky. It uses darker shades of color and tones. This mode is good for creating more brooding skies.

To set the sky darker, click the triangle icon next to the Sky Mode thumbnail and choose Darker Sky from the menu.



The thumbnail changes to the Darker Sky control.



Custom Sky

Custom Sky lets you choose your own colors for the sky; this way you can create some truly alien environments. When this mode is selected, the standard behavior of colors in the sky with respect to sun position is disabled.

To set custom sky colors:

1. Click the triangle icon next to the Sky Mode thumbnail and choose Custom Sky from the menu.

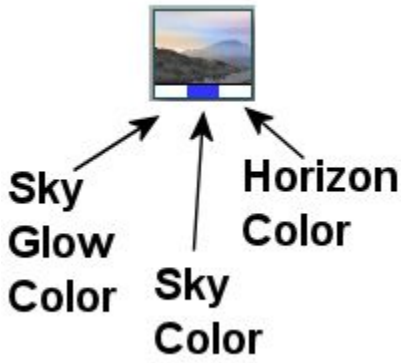


The thumbnail changes to the Custom Sky control.



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2. Click the Sky Color swatch and choose a color from the color picker. The Sky Color is the main sky color in this mode, regardless of sun position.



3. Click the Sun Glow Color swatch and choose a color from the color picker. This is the color of the halo around the sun.
4. Click the Horizon Color swatch and choose a color from the color picker.

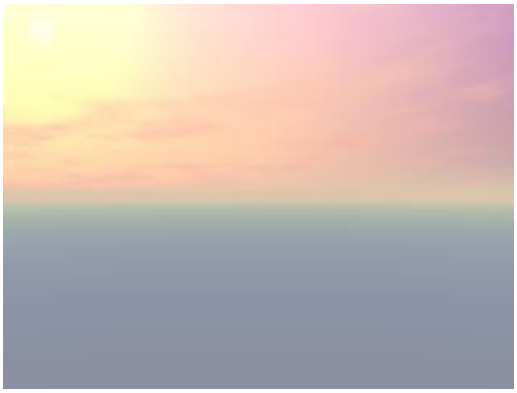
This color will, in certain cases, affect your scene below ground level if you have a haze setting of greater than zero. It will also impact the color of Stratus clouds near the horizon.

In most cases, this will be the least obviously used color in your scene; unless you are making outer space scenes, in which case this could be very useful for you.

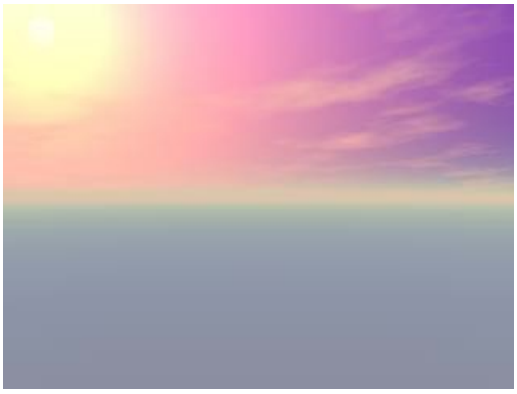
Sky Mode Comparison

Comparison images between Sky Modes, using the "Standard Daylight" sky setting:

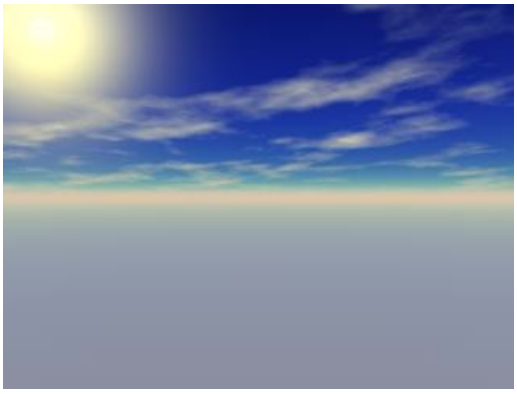
- Soft Sky:



- Darker Sky:



- Custom Sky:



Atmosphere Off

Atmosphere Off disables the standard sky color behaviors, relative to sun position, and uses a single color for the sky. This mode is useful when you need to render objects against a simple colored (or black or white) background. The Sun color still affects objects in this mode. If you have red sunlight, for instance, objects in your scene will reflect red light.

To render objects against a plain background:

1. Click the triangle icon next to the Sky Mode thumbnail and choose Atmosphere Off from the menu.

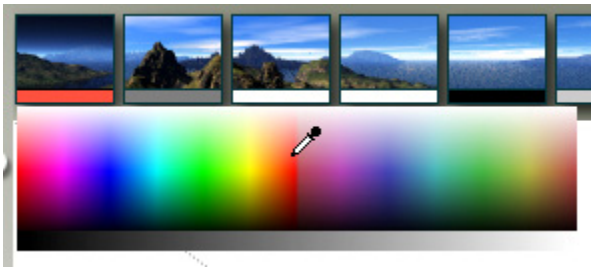


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The thumbnail changes to the Atmosphere Off control.



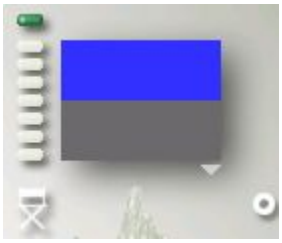
2. Click the Atmosphere swatch and choose a color from the color picker.



3. Drag left inside the Haze control and set the value to 0. This setting eliminates the suggestion of a horizon.



And the result as seen in the Nano Preview:



Setting Sky Attributes

Once you've selected a Sky mode, you have the basis for your virtual environment. All the other atmosphere effects you add later will interact with the base mode.

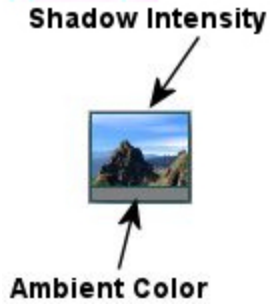
There are two other attributes that affect how all the other effects will appear:

- Shadows

  and

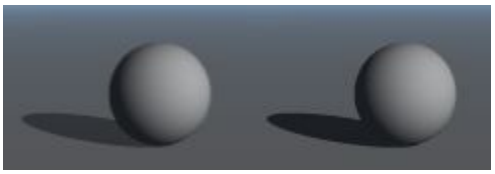
- Ambient Color.

Shadows



All the objects in your scene cast shadows. Using the Shadow control you can set the intensity and color of all the shadows in your scene.

As you change the value of the Shadow control, the brightness of shadows changes. In the images below, the shadow on the left is set to 25%, the one on the right to 90%.



The Shadow control is not the only control for shadows. The position of shadows is dependent on the position of the sun. Since the sky interacts directly with objects in the scene, the color of the sun also affects the color of shadows.

The object's material properties also affect the color of shadows. Semi-transparent or transparent objects with a transparency color will change the color of the object's shadow. In addition, volume materials can dramatically change the shape and color of shadows. Use the Shadows control to set the color and intensity of shadows in your scene.

By default, the clouds in Bryce do not cast shadows. If you want the cloud layer to cast shadows on the ground below, enable the Cloud Shadows option.

To set shadow intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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2. Drag left or right inside the Shadow control thumbnail. Dragging left decreases the intensity and dragging right increases it. The cursor changes to a two headed arrow as you drag over the control.



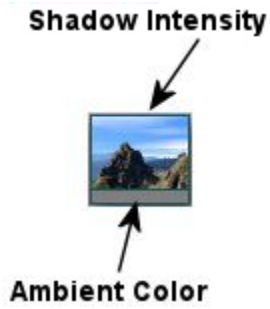
Keep an eye on the Text Display Area as you drag in the Shadow Control thumbnail. The numbers will change as you drag back and forth on the thumbnail.



You can also set the Shadow strength on the Sun & Moon tab in the Sky Lab.



Ambient Color



The Ambient Color is the color of all the light that surrounds the objects in your scene. Light from the sun interacts with ambient color to produce the color for both highlights and shadows.

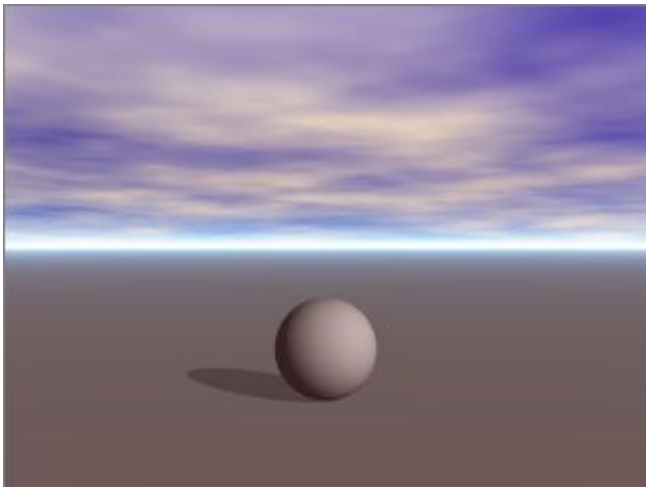
Ambient Color is used as the source color for material Ambience. The Ambient Color tints the surfaces of all objects in your scene that have some level of ambience. Any other color you apply to the object's surface is mixed with the Ambient Color to create the final surface color. For example, if the Ambient Color is red, any color you assign to an object's surface ambience is mixed with red.

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To set Ambient Color, click the color swatch below the Shadow control thumbnail and choose a color from the color picker.



For realistic effects, at noon, or in the afternoon, Ambient Color should be a little blue to get nice blue-ish shadows. At dawn, you can set Ambient Color to red or pink, and at night you can set it to gray-blue.



You can also set the ambient color by using the Ambient Color Swatch in the Sky Lab.

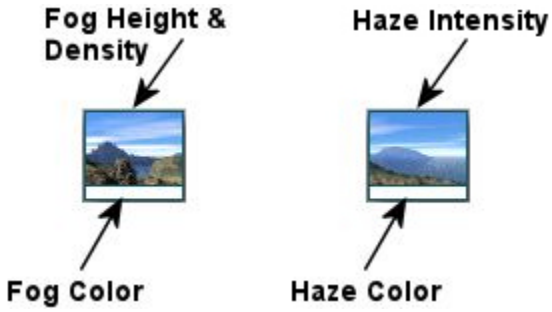


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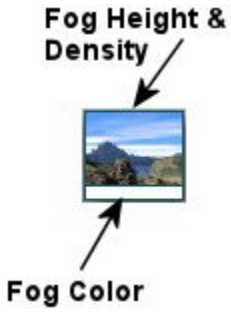
Adding Fog & Haze

Fog and Haze are two atmospheric effects that can add realistic depth to your scene. Fog can make objects appear to disappear the farther they get from the camera. Haze can add the illusion of a distant horizon.

The Fog and Haze controls in the Sky & Fog palette let you control the color and intensity of these effects.



Fog



Fog can add an element of sensuality, mystery, and realism to your scenes. It acts like a thin layer of cloud close to the ground.

Using Fog you can create the illusion of depth without having to add distant objects. Fog can create a sense of depth in your scene.

Fog Density

To set the density/amount of Fog:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.



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2. Drag horizontally inside the Fog thumbnail to increase or decrease the density of the fog in your rendered scene. Drag to the left to decrease the density of the fog and to the right to increase it.



The density value is displayed in the Text Display Area of the Control Palette as you drag.



You can also set the fog density on the Atmosphere tab in the Sky Lab.



Examples:

- Fog Density = 3; Fog Thickness = 56



- Fog Density = 75; Fog Thickness = 56



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Fog Thickness

To set Fog thickness/height:

1. Display the Sky & Fog palette by clicking the Sky & Fog text button.

2. Drag vertically inside the Fog control to increase or decrease the height of your fog. Drag up to increase the height and down to decrease it.

   The thickness value is displayed in the Text Display Area of the Control Palette as you drag.

You can also set the fog thickness on the Atmosphere tab in the Sky Lab.



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Examples:

- Fog Density = 5; Fog Thickness = 56



- Fog Density = 5; Fog Thickness = 100



Fog Color

To set Fog Color:

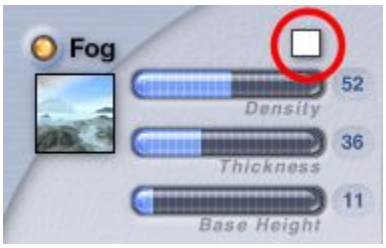
1. Display the Sky & Fog palette by clicking the Sky & Fog text button.



2. Click the color swatch beneath the Fog thumbnail and choose a color from the color picker.



Fog color can also be set on the Atmosphere tab in the Sky Lab.



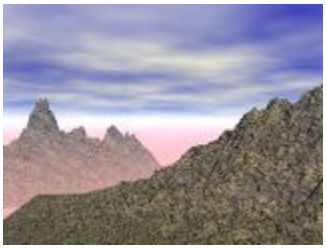
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Examples:

- Fog Color = White



- Fog Color = Salmon



Haze



Haze is the natural effect you see when a plane (like the ocean) stretches out towards the horizon. At this distant point a different color appears over the horizon and light becomes fuzzy. Haze creates the illusion of a distant horizon.

The Haze control lets you set the intensity and color of the Haze effect in your Bryce scene.

With haze set to zero, your horizon will have an unnaturally hard edge. Also note that the Cloud Altitude control will affect the height of this band of haze. The higher the altitude of the atmosphere, the wider the band of haze at the horizon.

Haze is applied to the entire scene equally and always appears at the horizon.

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Haze Density

To set Haze density/intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Drag horizontally inside the Haze thumbnail to increase or decrease the degree of haze in your scene. Drag to the left to decrease the density of the haze and to the right to increase it.

   The density value is displayed in the Text Display Area of the Control Palette as you drag.

You can also set the haze density on the Atmosphere tab in the Sky Lab.



Examples:

- Haze Density = 8

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- Haze Density = 85



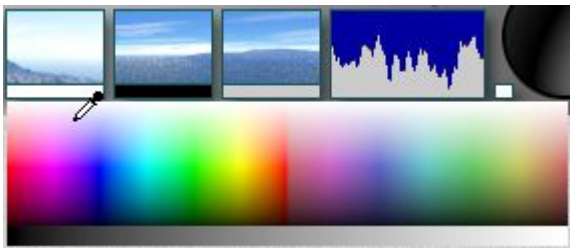
Haze Color

To set Haze color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the color swatch beneath the Haze thumbnail and choose a color from the color picker.



Fog and Haze colors should be the same, or almost the same. For realism, the haze should be a little brighter and bluer than the fog. At nighttime, you have less illumination, so an effective nocturnal haze color could be dark blue-gray.

Haze color can also be set on the Atmosphere tab in the Sky Lab.



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Examples:

- Haze color = White



- Haze color = Lavender



Clouds in Bryce

There are two kinds of clouds in Bryce: clouds in the environment and cloud planes. Clouds you add to your sky interact with the light in your scene. They can block out the light of the sun and change the color of the light that hits the objects in the scene. These clouds are infinitely distant so you cannot fly through the clouds in the sky. If you want to have this effect, use a cloud plane. Sky clouds can also cast shadows on the ground below.

The clouds in this scene were created using Cumulus clouds from the Sky & Fog palette.



You can change the look of the clouds by editing the texture used to create them. By changing the texture you can alter the shape and position of the clouds within the sky.

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Cloud planes are infinite planes that act as objects in your scene. They cast shadows and can interact with other objects. An infinite cloud plane was used to create the mist above the water in this scene.



Both types of clouds can be animated. The clouds in the sky can be animated by changing their color, position or frequency, and cloud planes can be animated just like other objects. They can also be animated using the Cloud Motion controls. These controls let you set parameters for automatically animating clouds. Refer to "Animating Skies" for more on animating clouds.

Adding Clouds

The Sky & Fog Palette provides several controls that set the attributes of clouds in your sky. The Cloud Coverage, Cloud Altitude, and Cloud Frequency and Amplitude controls let you set the general appearance of your clouds. The Cloud Color sets the color of the clouds.

You can add clouds to your scene in five easy steps:

1. Select the type of cloud
2. Adjust the cloud texture
3. Set the cloud coverage and color
4. Set cloud height
5. Set the frequency and amplitude of clouds

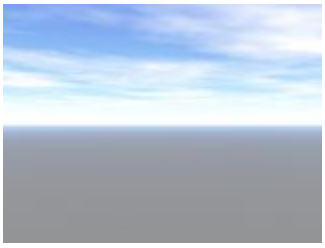
Cloud Types

There are two types of clouds you can add to your Bryce environment: Cumulus and Stratus.

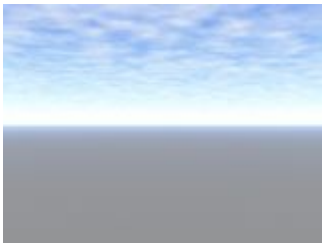
Cumulus clouds are generally found at lower altitudes and appear thicker and fluffier.

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The sky in this scene uses Cumulus clouds.



Stratus clouds appear at higher altitudes and appear thinner and more wispy. The sky in this scene uses Stratus clouds.



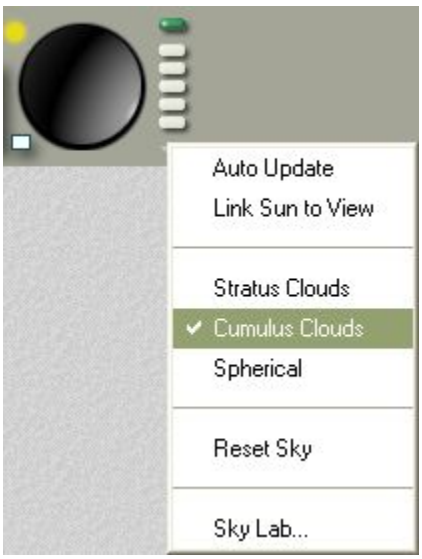
Adding Cumulus Clouds

To add Cumulus clouds to a sky:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

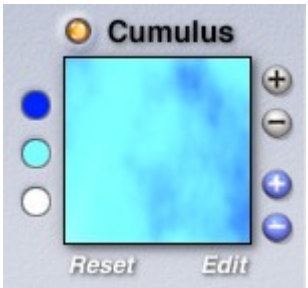
2. Click the triangle in the corner of the palette and choose Cumulus Clouds.

Cumulus clouds are thicker, darker clouds at a lower altitude. These clouds will take on tints of Sunlight color, Ambient color, or Cumulus color. You can also choose both cloud types, or neither. Selecting neither cloud type creates a clear sky.

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Cumulus Clouds can also be enabled in the Sky Lab on the Cloud Cover tab:



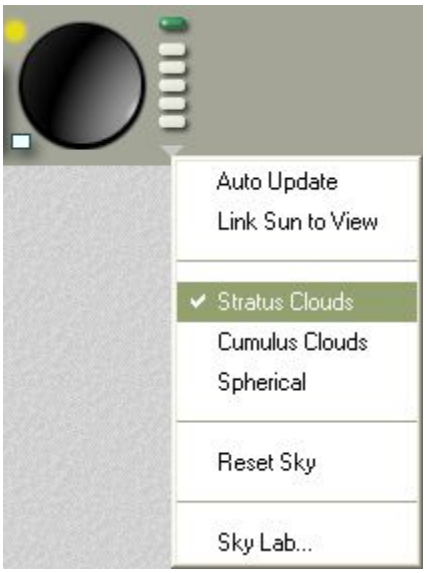
Adding Stratus Clouds

To add Stratus clouds to a sky:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

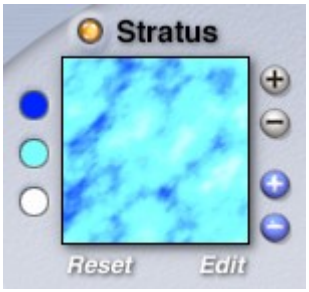
2. Click the triangle in the corner of the palette and choose Stratus Clouds.

Stratus clouds are bright white, thin, clean clouds that appear at high altitudes. These clouds are very responsive to Sunlight color and Sky Dome color, and less responsive to Cumulus color or Ambient color. You can also choose both cloud types, or neither. Selecting neither cloud type creates a clear sky.

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Stratus Clouds can also be enabled in the Sky Lab on the Cloud Cover tab:



Spherical Clouds

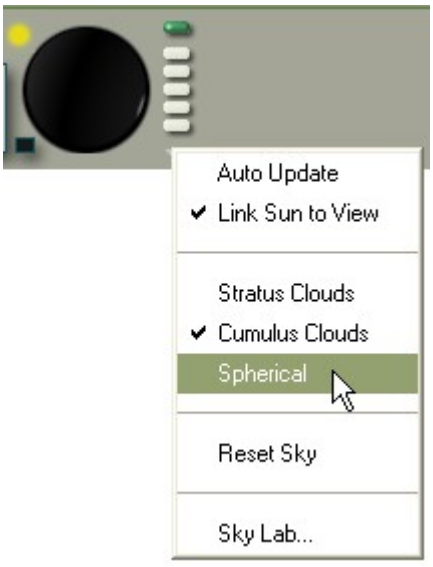
The default clouds in Bryce are fairly flat, like you'd see over a desert. To get puffier clouds, a Spherical Clouds option is provided. This option basically consolidates high frequency clouds, creating rounder, more dense clouds.

To enable spherical clouds:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the triangle in the corner of the palette and choose Spherical from the menu.

Spherical Clouds can also be enabled in the Sky Lab on the Cloud Cover tab:



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Examples:

- Stratus Clouds with Spherical Clouds disabled:



- Stratus Clouds with Spherical Clouds enabled:



- Cumulus Clouds with Spherical Clouds disabled:



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- Cumulus Clouds with Spherical Clouds enabled:



Cloud Height



The height of your clouds has an impact on the appearance of your sky. Greater heights will result in smaller, more distant cloud formations, as well as a thicker band of haze at the horizon. Lower heights result in larger, more languorous cloud formations and a thinner band of haze at the horizon. The Cloud Height controls in the Sky &Fog palette let you interactively set the height of the cloud layer in the sky.

There are two things to remember when working with this control.

First, the Cloud Height will affect the size of your Haze band if you have a haze setting greater than zero. The higher the altitude, the wider the haze region will be on the horizon.

Second, remember to lower your altitude setting if you are creating a nighttime scene. Since high altitudes increase the size of the horizon Haze region, the sky will be too unnaturally bright for realistic night scenes.

To set cloud height:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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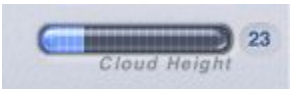
2. Drag horizontally inside the Cloud Height control thumbnail. Drag left to decrease altitude and right to increase it.



The cloud height value is displayed in the Display Text Area of the Control palette as you drag.



You can also set the cloud height on the Cloud Cover tab in the Sky Lab.

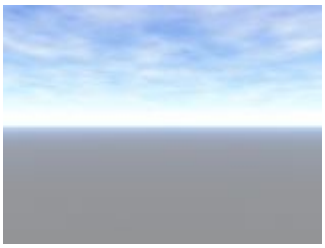


Examples:

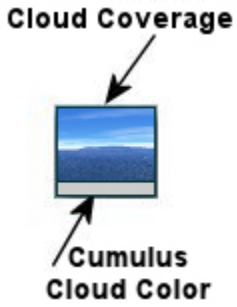
- Cloud Height = 10%



- Cloud Height = 90%



Cloud Cover



Cloud Cover controls the quantity of clouds you can see in the sky. A high coverage means that there is a very dense cloud layer and a low setting means that there are very few clouds in the sky.

Cloud Cover also indirectly controls the brightness of the environment. The more cloud coverage you have in a sky, the darker the environment since less sunlight can pass through the clouds. Adjusting cloud coverage changes the quantity of clouds but not the frequency. You can think of it as adjusting the volume on a radio without changing the station.

The Cloud Coverage control in the Sky & Fog palette lets you interactively set the quantity of clouds in the sky.

To set cloud coverage:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Drag left or right inside the Cloud Coverage control thumbnail. Drag left to decrease coverage and right to increase it.

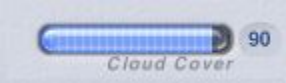
   The cloud coverage value is displayed in the Text area of the Control palette as you drag.

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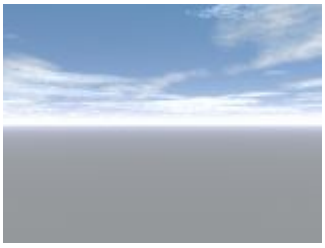
3. Set "Cumulus Cloud Color."

You can also set the Cloud Coverage on the Cloud Cover tab in the Sky Lab.



Examples:

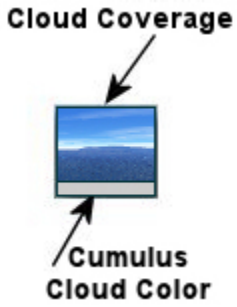
- Cloud Cover = 10%



- Cloud Cover = 90%



Cumulus Cloud Color



Cumulus Cloud Color affects only the Cumulus Clouds, so if Cumulus Clouds are disabled, this color swatch will have no effect on the scene.

To set Cumulus Cloud color:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

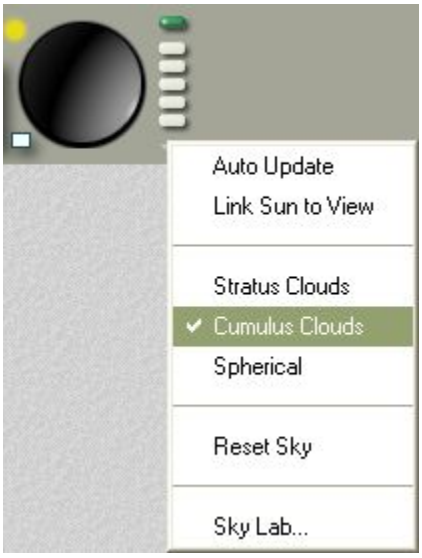


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2. Click the color swatch beneath the Cloud Coverage thumbnail and choose a color from the color picker.



3. Choose Cumulus from the Sky & Fog Options menu.



Note: Cumulus Cloud color can only be selected in the Sky & Fog Palette. It cannot be set in the Sky Lab.

Examples:

- Cumulus Cloud Color = White

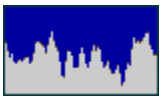


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- Cumulus Cloud Color = Pink

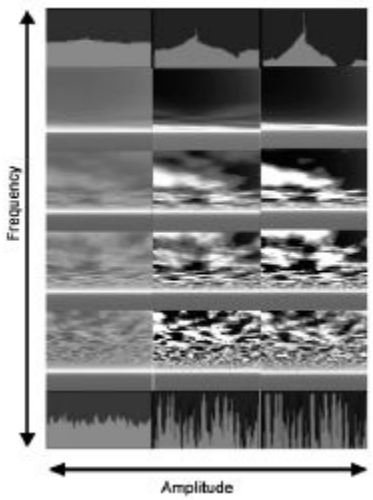


Frequency & Amplitude



The Frequency and Amplitude control lets you set the types of cloud formation you'll see in your sky. By combining these two controls you can change your clouds from light and fluffy to dark and brooding. Use Frequency and Amplitude to control the types of cloud formations in your scene.

This graph shows the effects of different Frequency and Amplitude settings on a sky. Frequency values range from 2 at the top to 150 at the bottom. The Amplitude values range from 50 at the left to 500 on the right.



Frequency

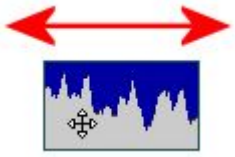
To set Cloud Frequency:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

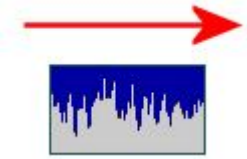


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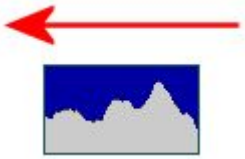
2. In the Cloud Frequency and Amplitude control, drag horizontally to control the frequency of your cloud formations.



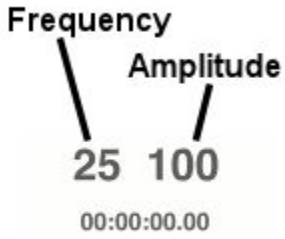
- Drag right, and the "spikes" will get closer together, resulting in smaller formations.



- Drag left for larger, more luxurious formations.



The Text Display Area shows you the numerical value of the amplitude and frequency as you drag.



You can also set the cloud amplitude on the Cloud Cover tab in the Sky Lab.



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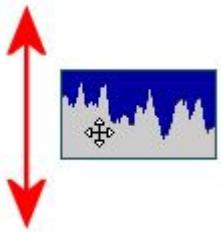
Amplitude

To set Cloud Amplitude:

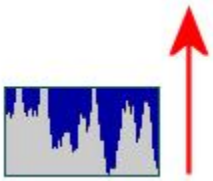
1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

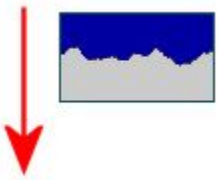
2. Drag vertically to control the amplitude of your cloud formations.



- Drag away from the horizontal center (up), and the spikes increase in height, resulting in formations with harder edges.



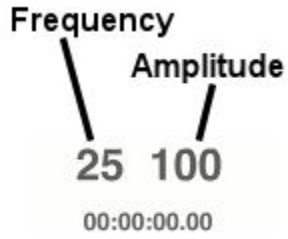
- Drag toward the horizontal center (down) for softer-edged formations.



It is possible to invert the spikes. This means that you can exchange positive and negative spaces in your sky. If you invert the amplitude, everything that was previously clear sky will be clouds, while everything that was cloud will be clear sky.

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The Text Display Area shows you the numerical value of the amplitude and frequency as you drag.



You can also set the cloud amplitude on the Cloud Cover tab in the Sky Lab.



Sky Dome Color



Sky Dome Color lets you create a color wash over your scenes, even if there is no sunlight present. This color simulates the natural effect that occurs when you have color in the sky even though the sun has set. Sky DomeColor lets you create late afternoon or evening scenes. The Sky Dome Color control in the Sky & Fog palette lets you choose a color from either the color picker or the color dialog.

For late afternoon and early evening realism, try using a touch of orange or yellow. This will create a cast of color over your entire scene, regardless of the position or color of the sun or moon.

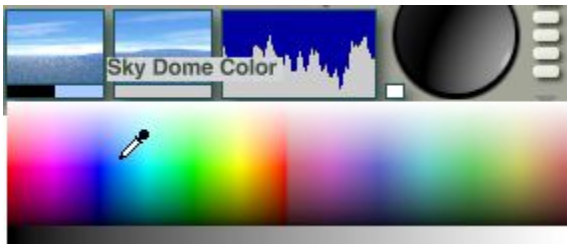
To set Sky Dome color:

1. If it's not already visible, display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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2. Click the color swatch beneath the Cloud Height control thumbnail and choose a color from the color picker.

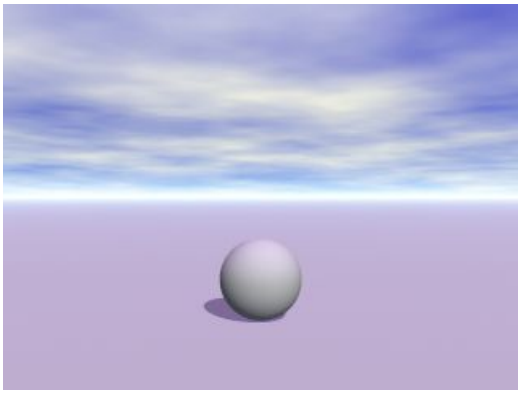


The Sky Dome Color can also be set on the Sun & Moon tab in the Sky Lab.

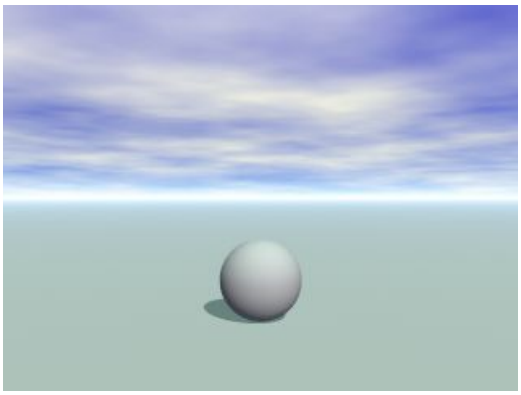


Examples:

- Sky Dome = Purple



- Sky Dome = Green



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Working with the Sun & Moon

The Sun

The sun is the source of all natural light in your scene. Its attributes have a profound effect on the look of your scene. The color of the sun affects all the colors of all the objects in the scene; Sunlight color tints all the other visible colors.

The position of the sun controls the time of day in your scene. If the sun is above the horizon, it is day; if it is below, it is night, and if it is at the horizon, it is sunrise or sunset.

The sun can be animated just like all the other elements of your Bryce scene. You can create time-elapsed effects by changing the position of the sun over the course of an animation. Refer to "Animating Sun or Moon Position" for more on animating the sun.

See "Positioning the Sun" for more on positioning the sun.

The Moon

The moon is normally the most prominent object in the night sky. In a night scene it provides all the natural light in the environment. Like the sun, the moon's attributes can greatly affect the final look of your scene. Its position in the sky affects all the angles and intensities of all the shadows in the scene.

The brightness is affected by the illumination reflected off the earth. The brighter the earthshine, the brighter the moon appears. Unlike the sun, the moon has phases which simulate the effects of the moon's shadow becoming more or less prominent during a month.

The moon's position and phases can be animated using the Animation controls and the timeline. Refer to "Animating Sun or Moon Position" for more on animating the moon.

See "Positioning the Moon" for more on positioning the sun.

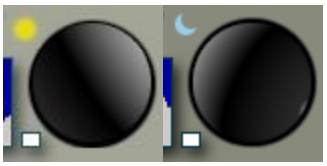
See also:

- Day and Night
- Sunrise/Sunset
- Sun/Moon Color

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Positioning the Sun

The sun position control sets the direction your natural light is coming from whether it is sunlight or moonlight. The position can be set using the Sun Control in the Sky & Fog palette. The control works like a trackball, with the sun (bright) at one end and the moon (dark) at the other.



You can think of the control as a compass: if the highlight on the Sun Control sphere is positioned at 12 o'clock, the light comes from the north, and so on. As you change the position of the sun, the "time of day" changes. When the sun position is closer to the edges of the control, the sun appears closer to the horizon, making the scene darker. When the sun is in the center of the control, the sun shines from directly above the sun, like it would at high noon.

The colors in your sky will change depending on the position of the Sun Control, or the "time of day..." just like in the real world. The angle of the shadows changes as the sun changes. If your object is shiny, and there are no other light sources, the position of the sun controls where the highlight appears. In this example, you can see the effects of the sun's position on several reflective and shiny objects.

You can position the sun manually and with precision on the Sky & Fog Palette and in the Sky Lab. You can also position the sun numerically in the Sky Lab.

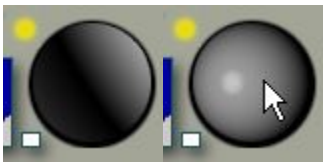
Positioning the Sun Manually

To position the sun manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Drag the larger highlight area in the Sun Position Controls to the position where you want the light to originate. You can position the sun on the horizon as you like by nudging the Sun Control until the light is visible in your scene.

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Positioning the Sun with Precision

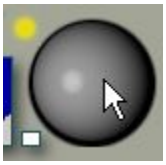
To position the sun with precision:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

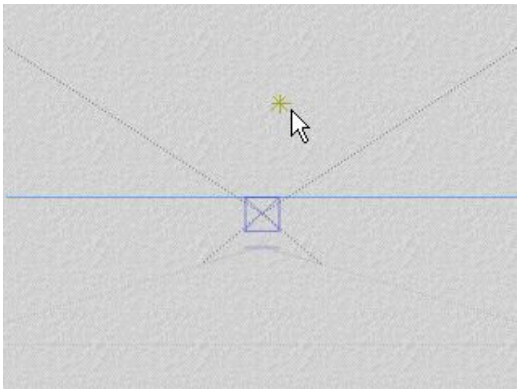
   

2. Hold down Ctrl+Opt/Alt and double-click the Sun Control (either the sun or moon toggle can be active).

   Do not let up on the Ctrl+Opt/Alt keys.

3. Continue holding down Ctrl+Opt/Alt and in the working window, click where you want to position the sun. A yellow asterisk will show up where you click indicating where you placed the sun.

   And the result:

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Please note that if you move the sun using the Sun Position Control, the "wireframe" sun will not move with it but will stay where you clicked in the working window, even though the sun will move in the scene.

Positioning the Sun Numerically

To position the sun numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. If the sun is not showing, click the Day/Night toggle to display the sun icon.



4. In the Sun Controls area, type a value into the Azimuth field. The Azimuth field controls the east-to-west position of the sun. The range is 0 to +360.



5. Enter a value in to the Altitude field. The Altitude field controls the height of the sun relative to your scene. The range is -90 to +90. Positive values are above the horizon, negative values below.



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6. Check the results to see if any further changes are needed.

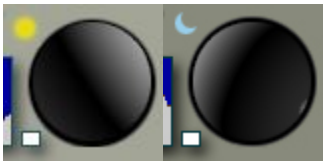


7. Click the OK icon to exit the dialog.

Positioning the Moon

Positioning the Moon

The moon is positioned at the same time as the Sun. The two are always at opposite ends of the sky, so wherever the sun is positioned, the moon is directly opposite. In the Sun/Moon control on the Sky & Fog palette, the moon's position is represented by the smaller highlight portion of the Sun Position trackball.



You can position the moon manually and with precision on the Sky & Fog Palette and in the Sky Lab. You can also position the moon numerically in the Sky Lab.

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Positioning the Moon Manually

To position the moon manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Drag the larger highlight area in the Sun Position Controls to the position where you want the light to originate. You can position the moon on the horizon as you like by nudging the Sun Control until the light is visible in your scene.

Positioning the Moon with Precision

To position the moon with precision:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

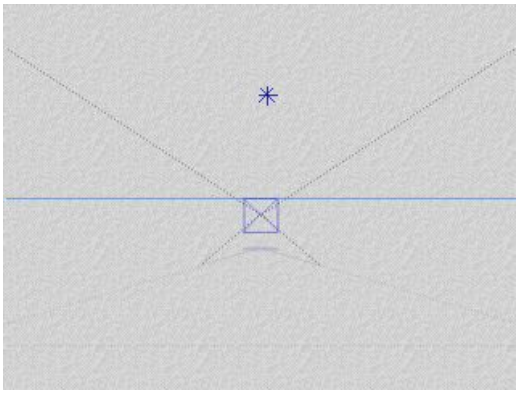
2. Hold down Ctrl+Opt/Alt and quickly double-click on the Sun Control (either the sun or moon toggle can be active).

   Do not let up on the Ctrl+Opt/Alt keys.

3. While still holding down Ctrl+Opt/Alt , press the Shift key and, in the working window, click where you want to position the moon. A blue asterisk will show up where you click indicating where you placed the moon. If you have trouble placing the moon this way, place the sun, then click on the Day/Night Toggle to switch to the moon.

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And the result:



Please note that if you move the moon using the Sun Position Control, the "wireframe" moon will not move with it but will stay where you clicked in the working window, even though the moon will move in the scene.

Positioning the Moon Numerically

To position the moon numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. If the moon is not showing, click the Day/Night toggle to display the moon icon.



4. In the Sun Controls area, type a value into the Azimuth field. The Azimuth field controls the east-to-west position of the sun/moon. The range is 0 to +360, and the default value is 60. The moon will be positioned exactly opposite these values, so you can invert them to position the moon numerically or place the Sun behind the camera so that the moon appears in front of it.



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5. Enter a value into the Altitude field. The Altitude field controls the height of the sun/moon relative to your scene. The range is -99 to +99. Positive values are below the horizon, negative values above.



6. Check the results to see if any further changes are needed.



7. Click the OK icon to exit the dialog.

Day and Night

Your sky normally contains two bodies: the sun and the moon. There is always one body visible in your sky. At night it is the moon and in the day it is the sun. The two bodies are connected and always remain at opposite ends of the sky. As you move the sun you're also moving the moon. This means that when the sun dips below the horizon in front of you, the moon is rising behind you.

The link between the sun and the moon can be seen by positioning the sun at the horizon in front of the camera. If you turn the camera 180°, you'll see the moon just rising over the horizon as well.

To switch between night and day:

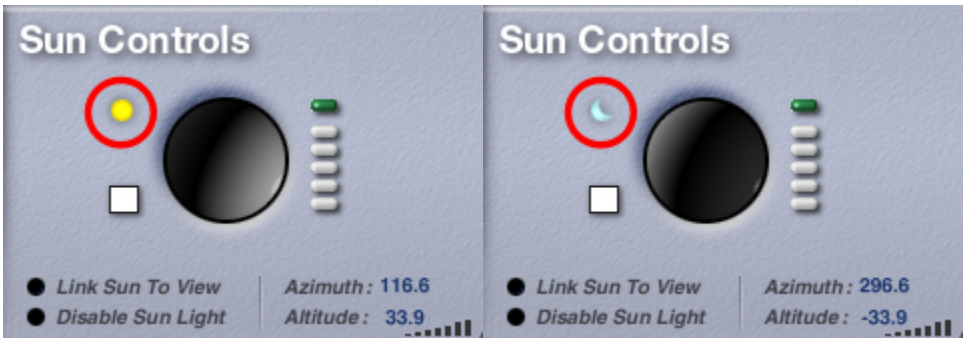
1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Day/Night toggle button in the top-left corner of the sun position controls.

The Sun/Moon Control in the Sky & Fog Palette is linked to the same controls in the Sky Lab.



Sunrise/Sunset

You can create a sunset or sunrise by positioning the sun so that it is visible on your horizon.

You can position the sun manually by using the Sun/Moon control, or numerically by specifying values in the Sky Lab. You can also position the sun exactly where you want it to appear in your scene. Sunsets or sunrises can be created by moving the sun closer to the horizon.

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The colors in the sky automatically change to create the illusion of the sunrise or sunset colors. You can also use the Sky Dome color to give your sunset/sunrise added color.

For a more realistic sunset you may want to link the fog and haze to the sun so that they react to the sun color as it approaches the horizon. Refer to "Blend with Sun" for more on this feature.

You may also want to enable the Horizon illusion for the sun. This feature makes the sun appear larger as it approaches the horizon. Refer to "Sun/Moon Size" for more on this effect.

Sun Color

Light in nature is not usually visible until it strikes an object. When you're using normal light, a purple sunlight color will not paint your entire sky purple, but objects in your scene will reflect purple. When you're using Visible World, choosing purple will paint your entire scene purple.

The grayscale bar at the bottom of the color palette lets you set the intensity of the sun. Black turns the sun off and white sets the sun to its brightest intensity.

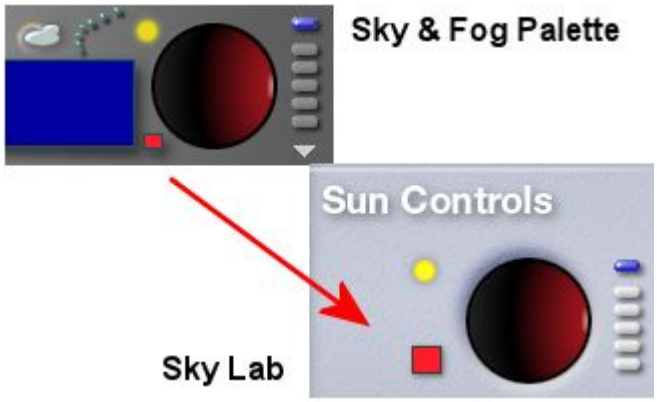


To set the Sun Color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

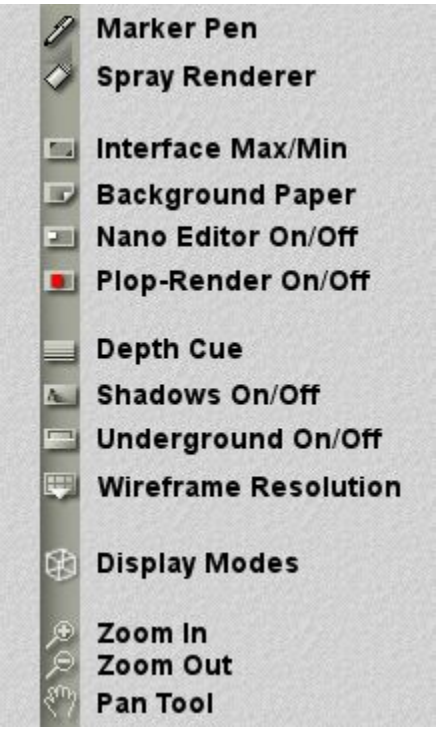
2. Click the Sun Color swatch and choose a color from the color picker. You can also set the sun color in the Sky Lab:



Advanced Display Palette

The Advanced Display palette contains tools for controlling the display of the interface and enabling/disabling the Nano-Preview and Plop Render features.

The Advanced Display appears on the far right side of the Working window. Click on the links on the right to learn more about each tool.



Marker Pen

The Marker Pen adds the functionality of a white board to your scene. When you're using the Marker Pen, you can draw anywhere in the Bryce environment without affecting your scene. Deselecting the Marker Pen tool erases all the marker pen lines.



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To draw with the marker tool:

1. Click the Marker Pen tool or press the M key.



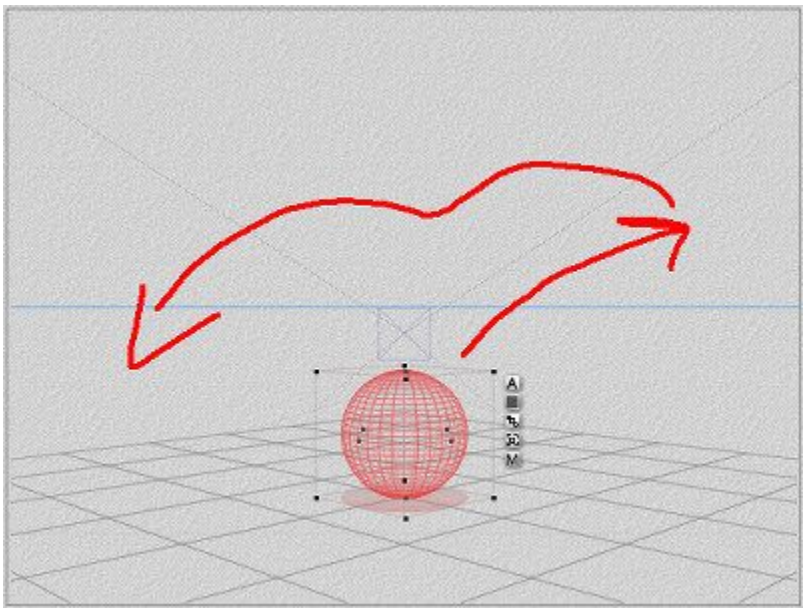
2. The Marker Pen tool will change to show a red tip:



and the cursor will change to look like the Marker Pen tool:



3. Left-click hold and drag the marker anywhere on your Bryce screen.



4. By default, the marker color is red and fairly thin. To change the color and line size, see "Changing Marker Options."

To erase marker pen lines, click the Marker Pen tool again or press the M key again.

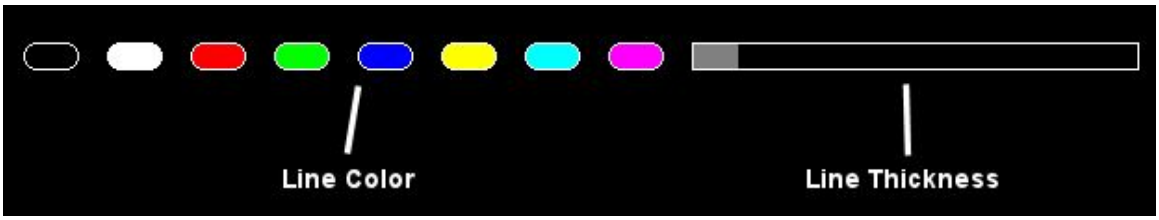
Note: While the Marker Pen is active, you will not be able to access the Windows toolbar without doing one of the following:

- clicking on the tool again to deselect it
- pressing the Windows key
- pressing the Escape key

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Changing Marker Options

The default line color for the Marker Pen is red with the line being fairly thin, however, sometimes the color and/or thickness of the line needs to be different (for example, when explaining how to do something). Bryce provides a small palette with color swatches and a line bar where these options can be modified.

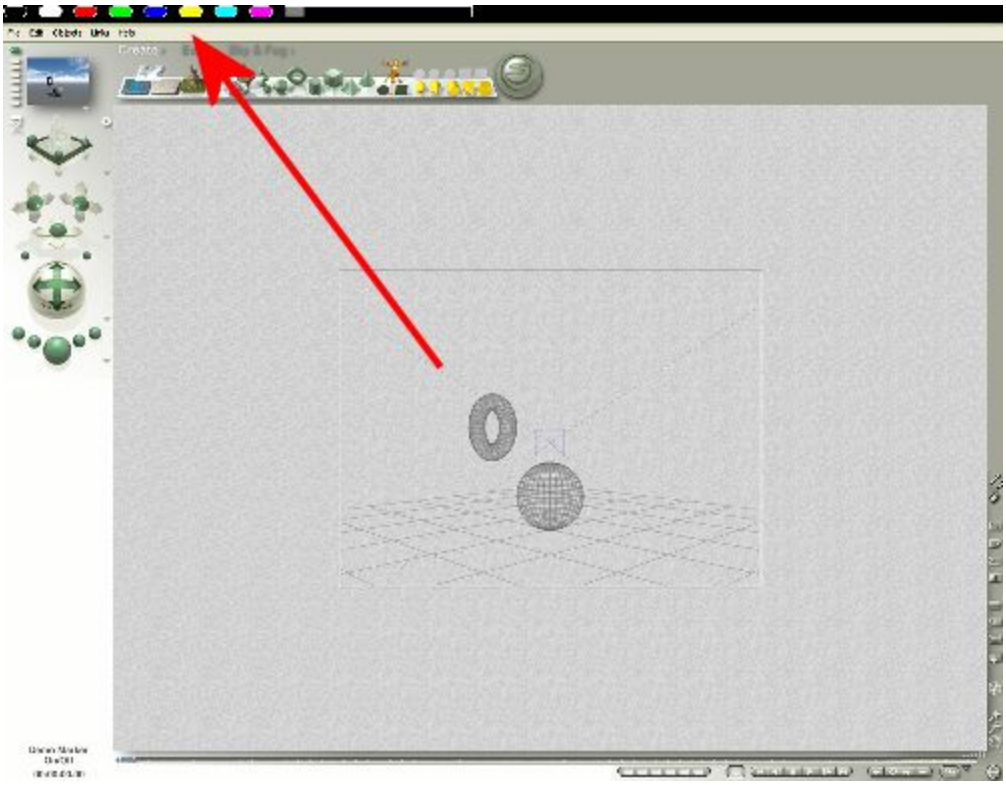


To change the Line Color and Size of the Marker Pen:

1. Click the Marker Pen tool or press the M key.



2. Right-click+hold on the Marker Pen tool again. The Marker Palette will come up in the top left-hand corner of the Bryce window.

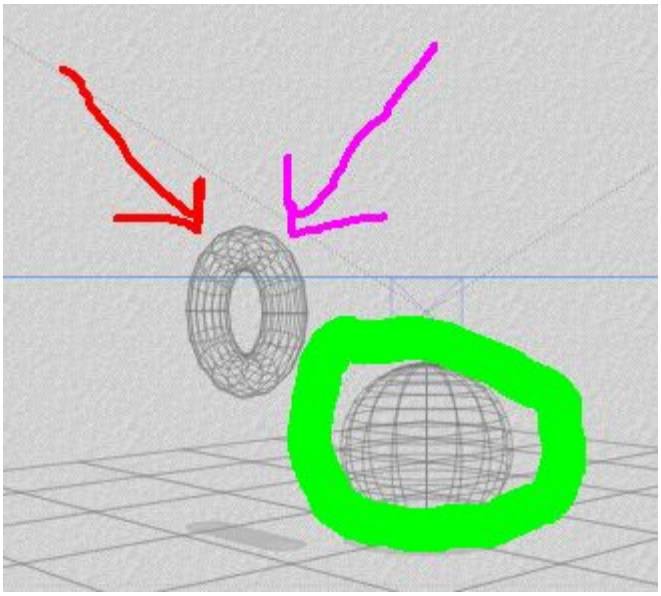


3. While still holding down the right mouse button, drag the marker pen up to the palette and place the Marker cursor over the color swatch you want to use.

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4. Let up on the mouse, then left-click+hold and drag the marker anywhere on your Bryce screen.
5. Repeat to change the marker thickness but drag over the Line Thickness bar to increase or decrease the size.

Examples of color and size changes:



Remember that the marker lines disappear once you deselect the Marker Pen tool so if you want to save the sketches you made, you'll need to make a screen capture and paste it into your paint program.

Spray Rendering

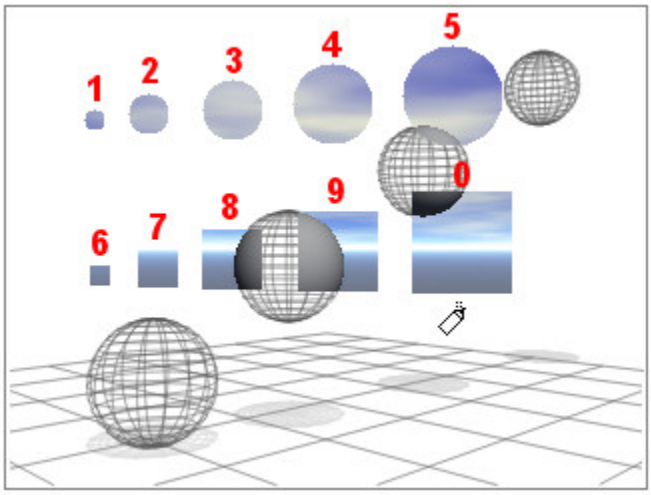
In addition to using the Render Controls, you can also paint an area of your scene to render it. Use Spray Rendering to preview a specific area of your scene. If you render the entire scene after doing a spray render of a specific section, that area will not be re-rendered.



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The Spray Rendering controls include five circular and five square spray nozzles.

While in Spray Rendering Mode, use the 1 through 5 keys to select the circular spray sizes and the 6 through 0 keys to select the square nozzles.



To render using Spray Rendering:

1. Click the Spray Rendering tool on the Advanced Display palette.



The tool will change to a spray can with a red tip:

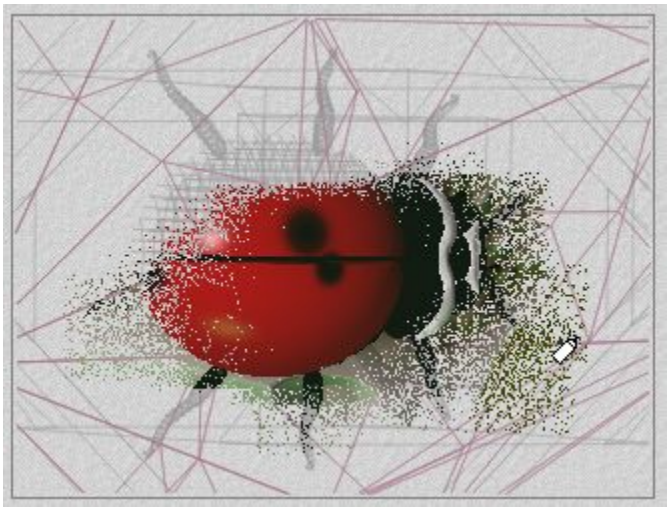


and the cursor will change to the Spray Can:



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2. Use the tool to paint over the area of your scene that you want to render.



3. Adjust the brush size and shape using the 1 through 0 keys to more easily paint a larger or smaller area.

You can also render a portion of your wireframe or rendered image to quickly see any modifications made to your scene. You can render from Wireframe mode or from Render mode. Spray Rendering from Wireframe mode is a preview render that is lost when you press the Escape key. Spray Rendering from Render mode is a true render and can be continued by using Resume Render.

Spray Rendering From Wireframe

To spray render from Wireframe mode:

1. Select the Default Wireframe mode from the Display Modes tool.

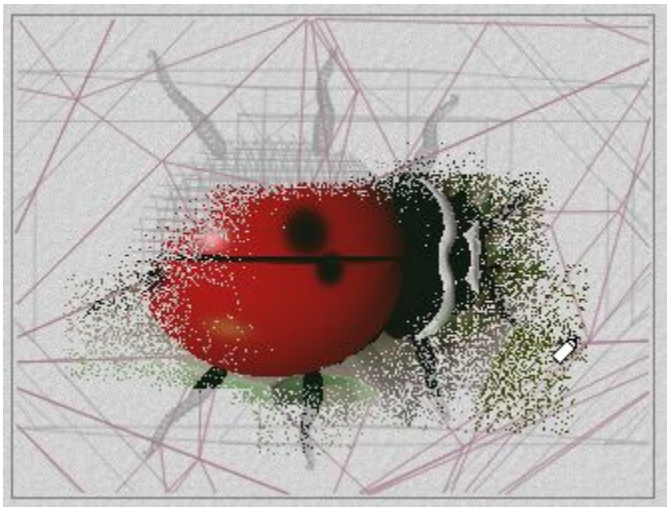


2. Click the Spray Rendering tool on the Advanced Display palette.



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3. Use the tool to paint over the area of your scene that you want to render.



4. Press the Spray Rendering tool again or press the Escape key to dismiss this render and return to Wireframe mode. This doesn't affect any previous render.

Spray Rendering From Render Mode

To spray render from Render mode:

1. Press the Escape key to switch from Wireframe to Render mode or select the Default Render mode from the Display Modes tool.



Your rendered scene will be displayed. If the scene has not yet been rendered, you'll see a blank "render."

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2. Click the Spray Rendering tool on the Advanced Display palette.



3. Use the tool to paint over the area of your scene that you want to render.



4. Click the Spray Rendering tool to put the tool away and remain in render mode.
5. Press Escape again to return to Wireframe mode yet not lose your paint rendered area.
6. If you Resume Render your scene, Bryce continues to render the un-rendered portions of your scene.

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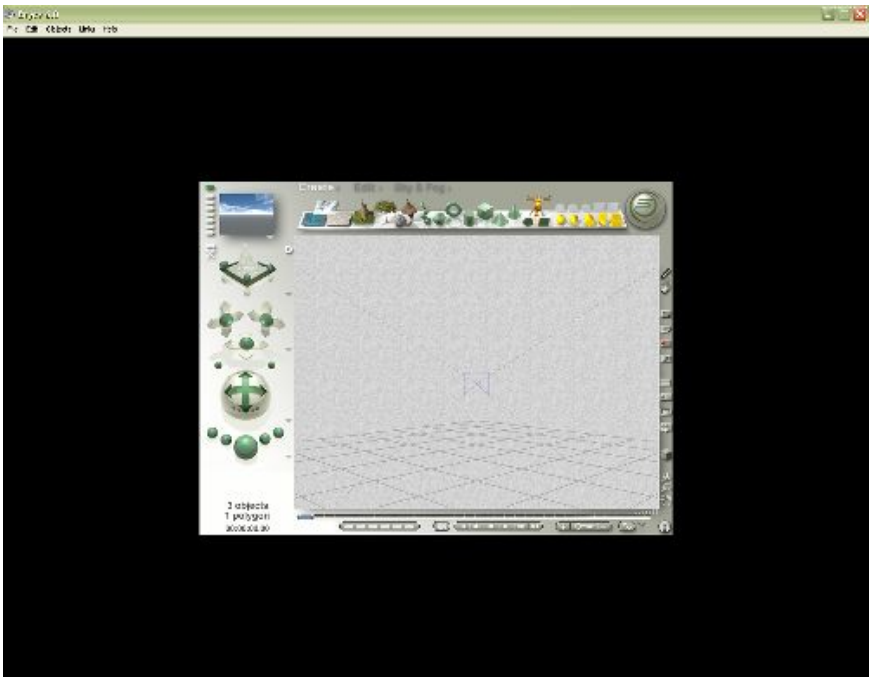
Interface Max/Min

When you first launch Bryce, the interface snaps to the edges of your Working window and other applications are hidden behind Bryce. This setup lets you work with an uncluttered desktop.



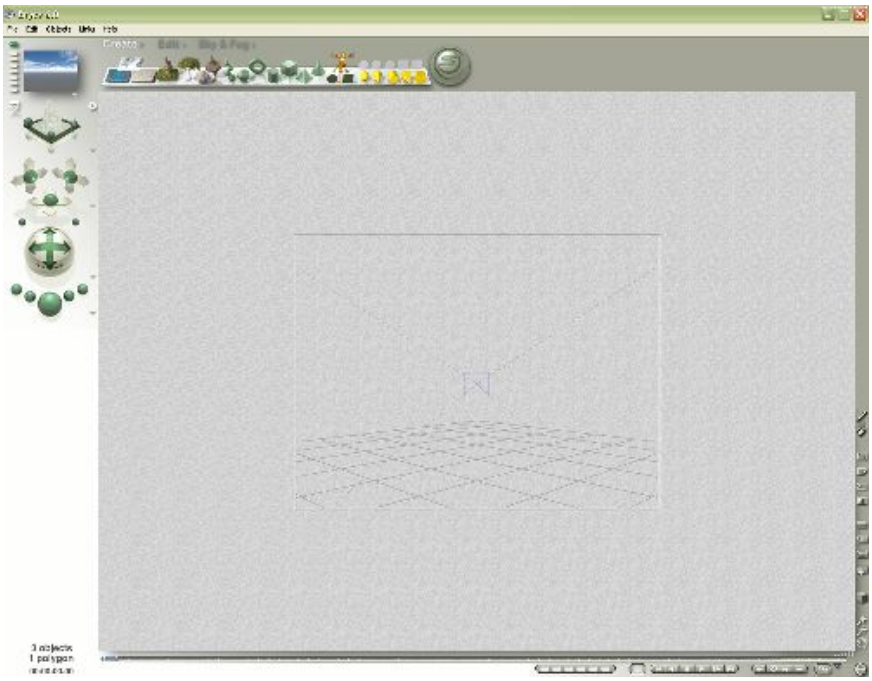
Use the Interface Max/Min tool to increase or decrease the screen coverage of the Bryce window. The current size of the working window will determine the amount of "black space" around the minimized Bryce Window.

The image below shows the minimized Bryce Window with the Working Window set to Default 540:405:

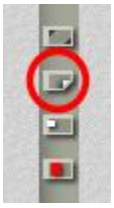


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And the same window, maximized. If the Working Window is set to Max Recommended, you won't see much difference between minimum and maximum.



Background Paper



The background texture of the working window can add a great deal to the overall look of the interface. It makes it easier to see wireframes and selected objects.

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To select a background texture, click the Background Paper button and choose a background from the menu (see examples at bottom of page).



Adding a background texture may slow down some machines so if you need more speed for any reason, select No Texture and you will get a simple, clean background with no texture.

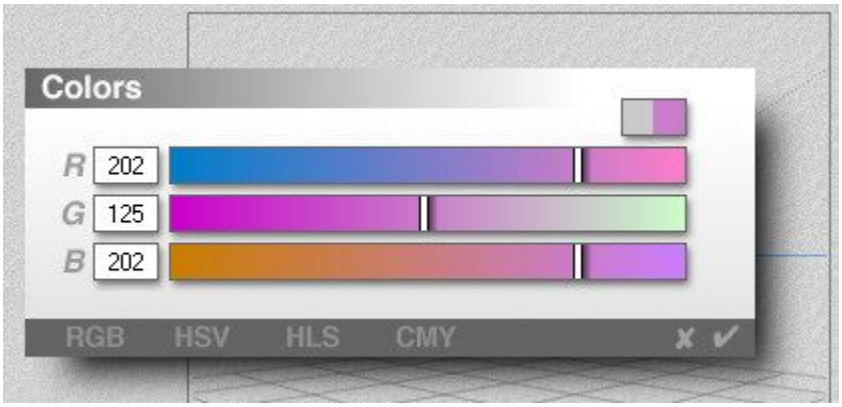
To select a background color:

1. Click the Background Paper button and choose Select Color from the menu.

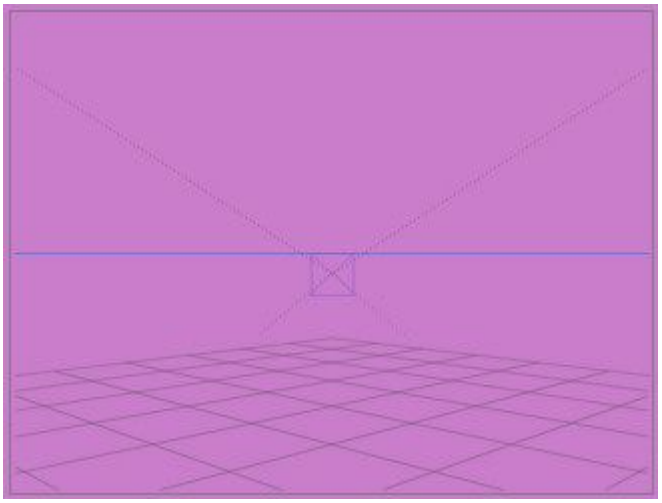


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2. Use the color picker to select a color.



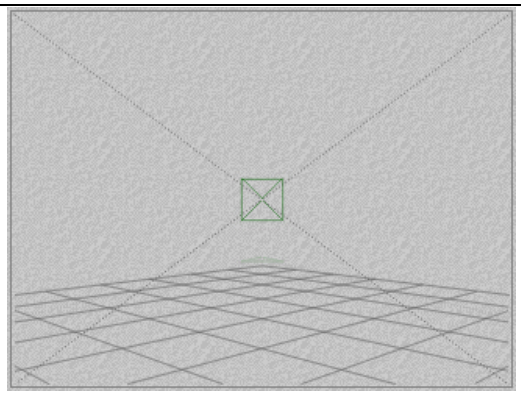
3. Click on the OK icon to accept the color change, the background will change to the selected color.



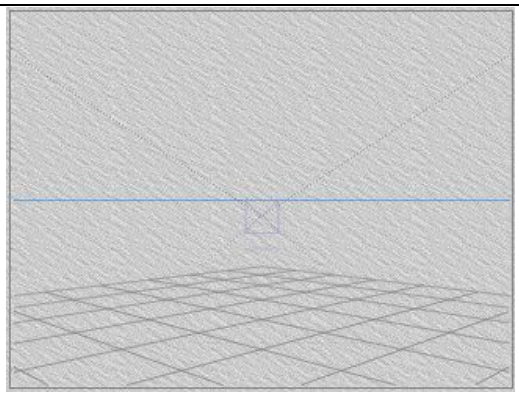
To revert to the default gray, click on the Background Paper button again and choose Select Color from the menu. The default gray color will be selected, then click on the OK icon to accept the color.

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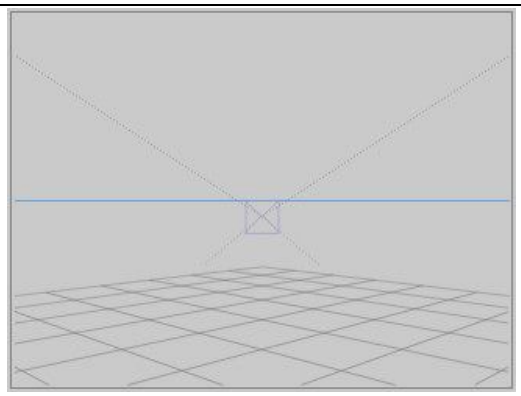
Examples of Background Textures:



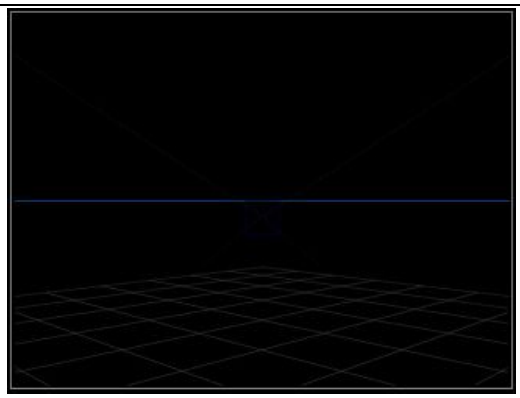
Paper



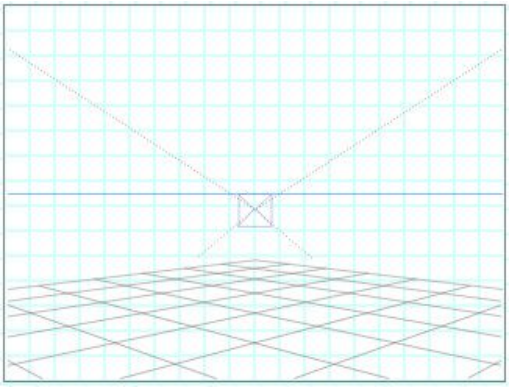
Streak Paper



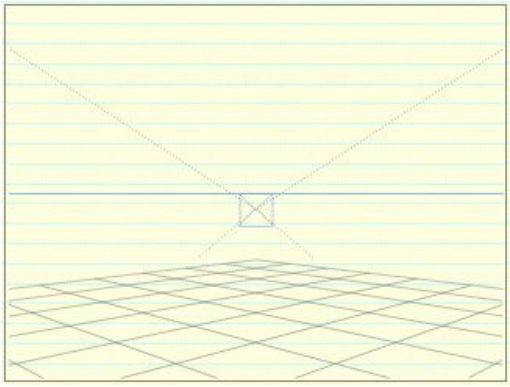
Gray



Black

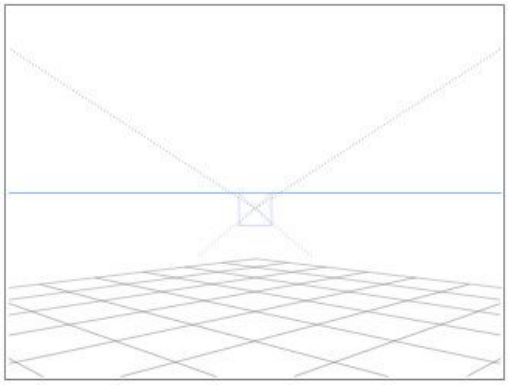


Grid

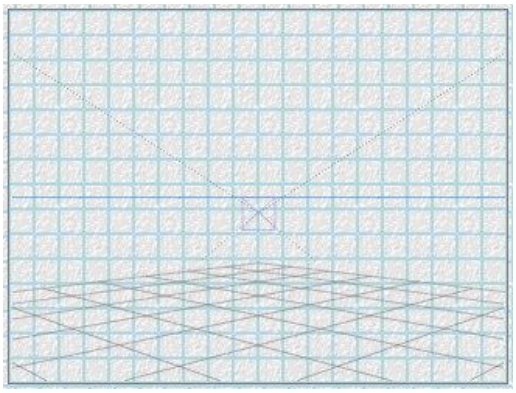


Legal Pad

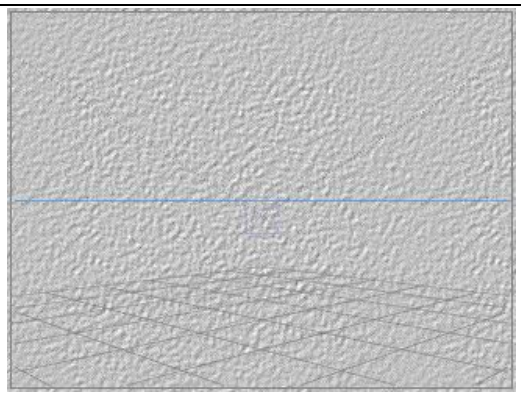
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White



Paper Grid



Grain

Nano Editor On/Off

Nano-Edit Mode activates the Nano-Editor which lets you perform camera transformations on a small preview of your scene, instead of the full scene.

When this mode is active, the Nano-Editor appears any time you perform a camera transformation. The Nano-Editor window displays a small preview of your scene. The transformation is applied to the preview. When you close the editor, the transformation is applied to the full scene.

> Note: It may be useful to save the current camera setting before using the Nano-Editor, just in case you aren't happy with the results since using the Undo feature will not reset the camera view.

Use the Nano-Edit Mode to quickly see the effects of a transformation on a preview of your image. This mode is useful when you're working on a large scene as it saves on redraw time since only the preview window shows the changes instead of the entire Working Window.

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To activate Nano-Edit Mode:

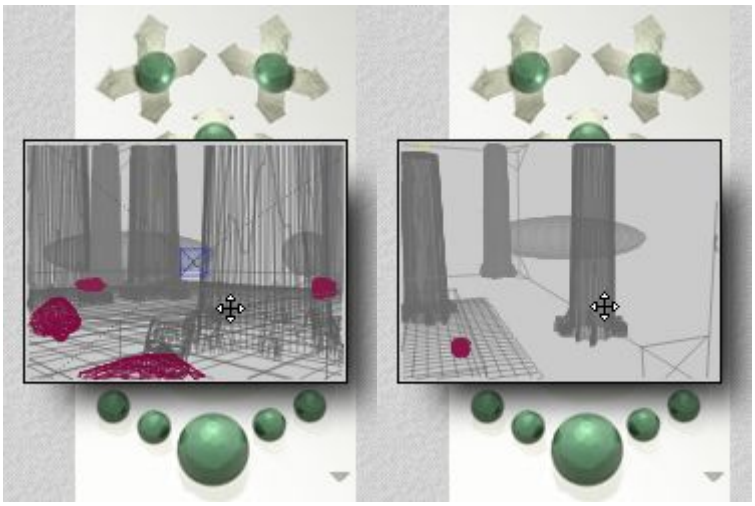
1. Click the Nano-Edit button on the Display palette.



When the smaller square inside the icon (which represents an active Nano-Editor) is red, the Nano-Edit Mode is on; when it is white, it is off.



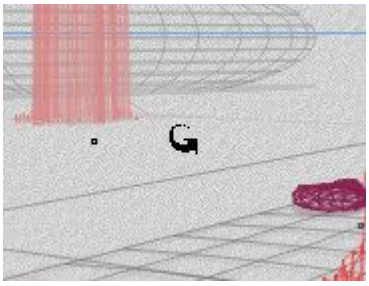
2. Move the cursor over any of the Camera Controls, left-click hold and drag on the control to reposition the camera. Let up on the control to apply the changes to the scene.
3. Let up on the mouse and the changes will be applied to the scene.



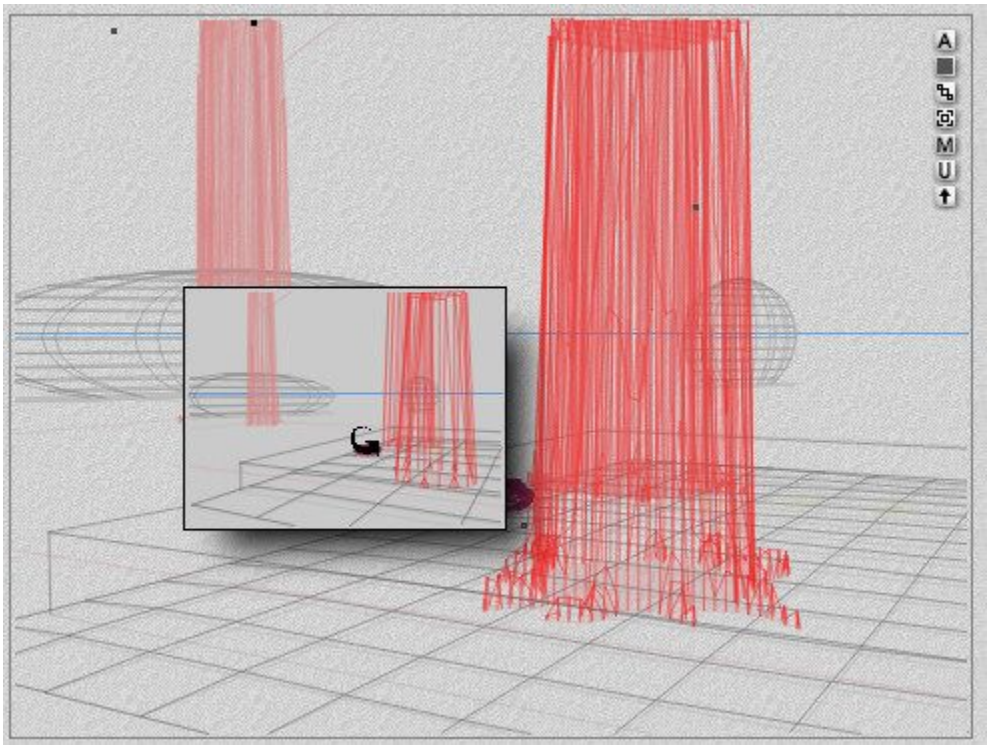
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To temporarily activate Nano-Edit Mode, hold down Opt/Alt+Spacebar before you perform transformations. The Nano-Editor appears only during the operation and can be used without actually clicking on the camera controls.

1. Press Opt/Alt+Spacebar and move the cursor over the working window. You'll see the rotate cursor in the window:



2. Left-click on the working window and rotate the scene just as if you were using the camera controls:



3. Let up on the mouse and the changes will be applied to the scene.

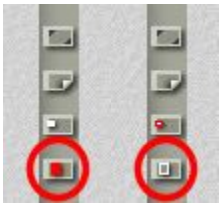
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Plop-Render On/Off

If you've begun rendering your image, you can use the Plop-Render controls to render specific areas of your image. You can use this mode to quickly see the results of repositioning and transformation operations.

Plop-Render mode is enabled by default but can be turned off using the Display palette.

To enable/disable Plop-Render mode, click the Plop-Render On/Off toggle in the Display palette. When the small rectangle inside the icon (which represents an active Plop-Render tool) is red, Plop-Render mode is on. When it is white, the mode is off.



To render an area of your scene:

1. Make sure Plop-Render mode is enabled.
2. Begin rendering your scene by clicking the Render All button in the Render controls.



3. Pause rendering by clicking the Render All button again or clicking in the working window.
4. Drag a marquee around an area of your image. The selection is outlined in a thin white line and is separated from the rest of the image by a drop shadow. A series of buttons appear beside the marquee selection.

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5. Click the top button that appears beside the selection, this is the Clear and Render button. You can interrupt the rendering by clicking the mouse.



6. To resume a render, click the second button (Resume Render) that appears beside the selection.



The following sections discuss additional Plop Render options

Zoom to Selection

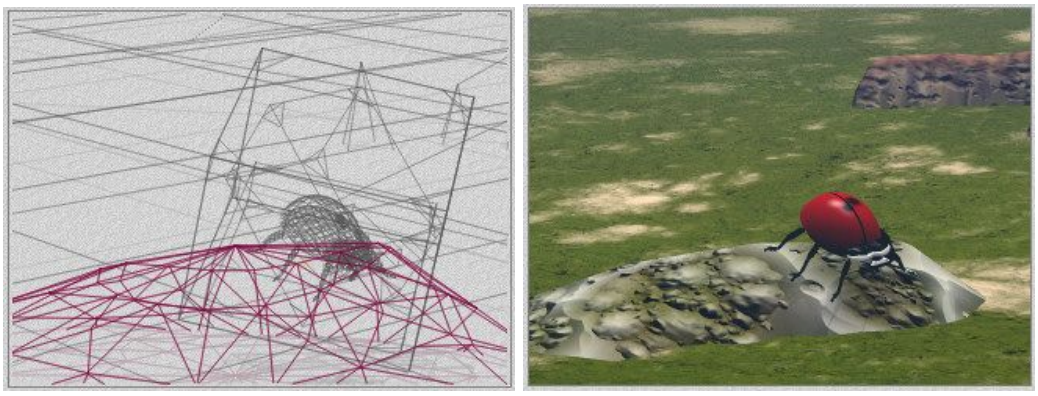
To scale the selected area to fill the working window, click the triangle icon beside the Render Controls and choose Zoom to Selection from the menu.



The command centers the selected portion of your wireframe scene and scales it up to fit your window. This is a pan and zoom operation and therefore does not affect your camera position, however, it will clear any previous render you performed.

Note: You may want to save the camera position prior to performing this function so that you can view the entire scene after completing the plop-render.

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Hide Selection

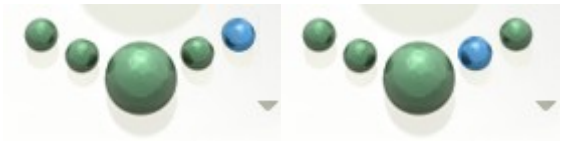
To hide the Plop-Render selection but still use it, click the triangle icon beside the Render controls and choose Hide Selection from the menu.



The frame around the selection will disappear but the selection can still be rendered without rendering the entire scene.



Click on the Clear and Render button or on the Resume Render button in the Render controls:



Do not click on the Render All button (large center one) as that will disable the Plop-Render and render the entire scene.

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Collapse Selection

To completely get rid of the Plop-Render selection, click the triangle icon beside the Render Controls and choose Collapse Selection from the menu.



This will remove the selection and you can render the full scene.

Wireframe Attributes

When you're in Wireframe mode, there are several options you can set to make the display more helpful. Disabling some of these options may speed up drawing time.

There are four Wireframe Attributes:

- Depth Cue
- Shadows On/Off
- Underground On/Off
- Resolution

Depth Cue

Depth cueing allows you to see which objects are further away from the camera based on how light or dark the mesh is and not on the size of the mesh.

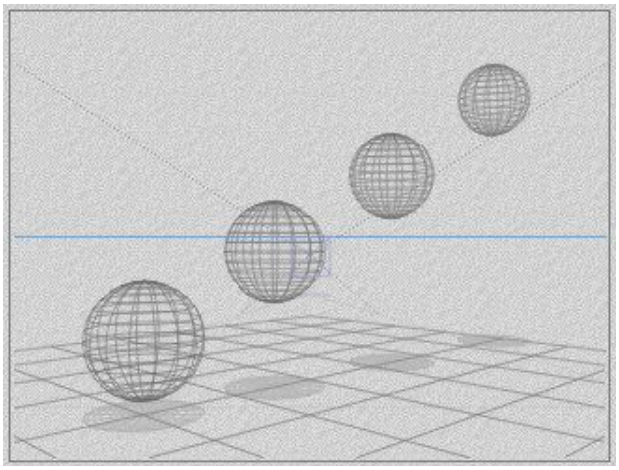


To use Depth Cue, left-click-hold on the Depth Cue control and drag up or down.

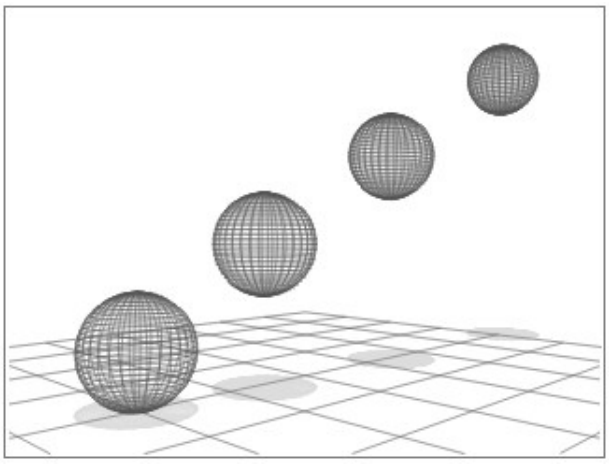


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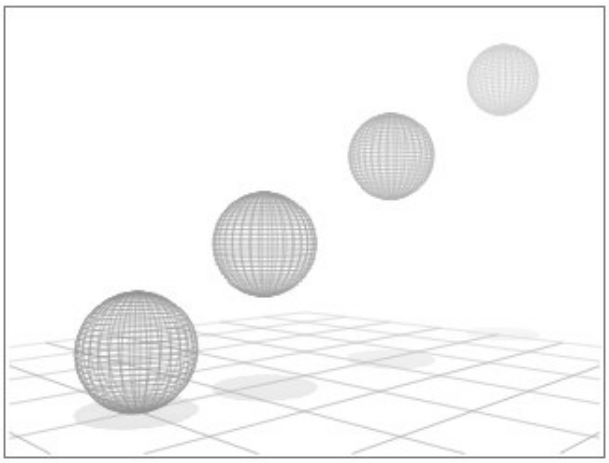
The image below shows the default setting for depth cue.



Drag up to increase the intensity of the depth cueing effect.

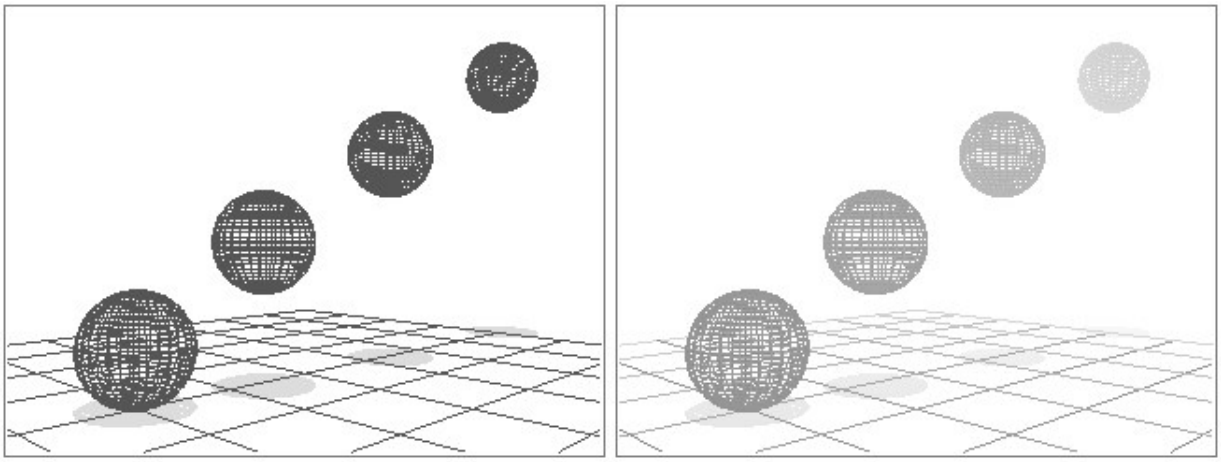


Drag down to decrease the intensity of the depth cueing effect. When depth cueing is active, the wireframe appears lighter the farther it is from the camera.



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If you hold down the Ctrl or Ctrl+Alt keys and click on the Depth Cue icon, Bryce will turn anti-aliased wireframes on or off.



Shadows On/Off

In Wireframe mode, shadows are designed to help you determine object placement in your scene. For this reason, shadows appear even when there is no ground plane or when the object is below the ground plane. This feature may slow down your system when working with a complex scene on slower machines.



By default, shadows are turned on in Bryce.

To turn off Shadows:

- Click the Shadows On button.

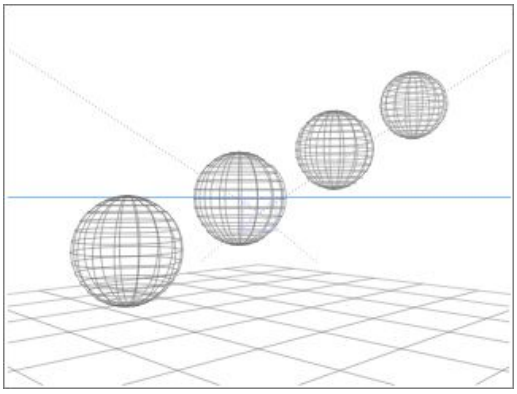


- The tool will change to the Shadows Off button.



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- The shadows for the objects will disappear from the scene.



To turn on Shadows:

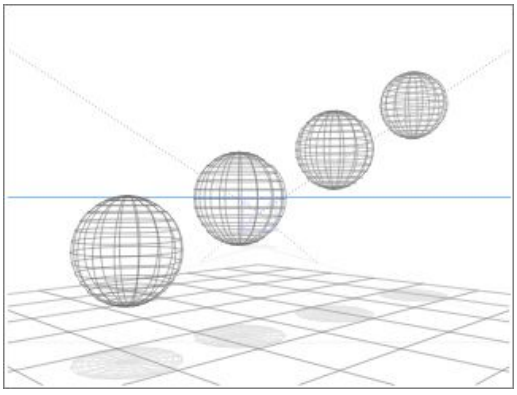
- Click the Shadows Off button.



- The tool will change to the Shadows On button.



- The shadows for the objects will appear in the scene.



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Underground On/Off

By default, any part of the scene below ground level is hidden for easy visualization and composition. However, you might overlook an object that is hidden underground. In addition, sometimes it is useful to see these objects especially when the scene doesn't use a ground plane, for example, space scenes.



By default the underground is turned on.

To turn off the Underground:

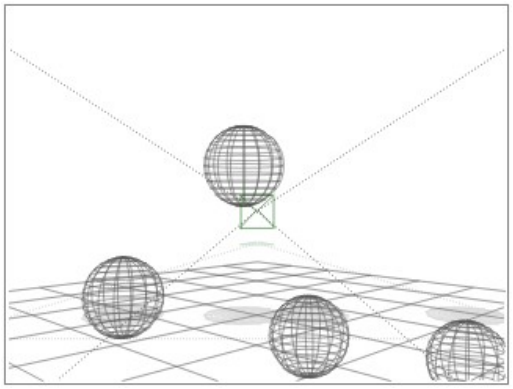
- Click the Underground On button.



- The tool will change to the Underground Off icon.



- The scene will show the objects or parts of objects that are below ground level.



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To turn on the Underground:

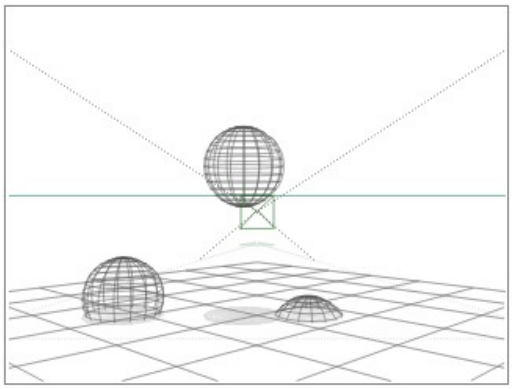
- Click the Underground Off button.



- The tool will change to the Underground On icon.



- The scene will hide the objects or parts of objects that are below ground level.



Resolution

Wireframe Resolution can be set manually to suit your preferences using the Resolution tool. Reduce the resolution if Bryce slows down when a large scene is being worked on.



Click the Resolution tool and choose Static, Selected, or Motion. Then choose a resolution for the wireframe mode.

- Static lets you define the resolution of the wireframe when the object is not moving and not selected.

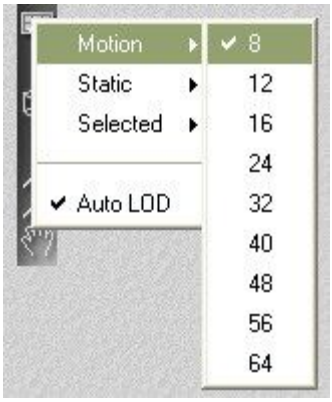
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- Selected lets you define the resolution of the wireframe when the object is selected.
- Motion lets you define the resolution of the wireframe when the object is being moved.
- Selecting Auto LOD (Level of Detail) will allow Bryce to automatically force a box display of objects while moving objects or the camera if your computer cannot handle the selected settings.

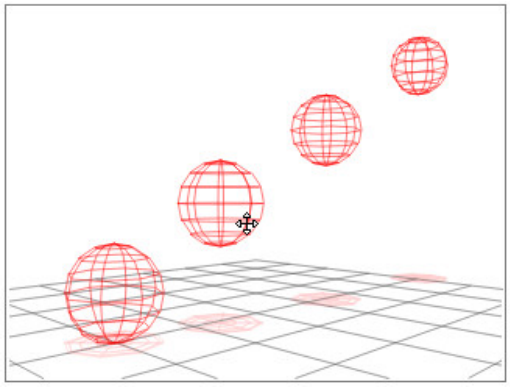
The new "Convert Boolean to Mesh" function depends on the Selected Resolution so if the Selected Resolution is set to 8, then the converted mesh will be "chunky" but if the Selected Resolution is set to 32, then the converted mesh will be much smoother.

Below are examples of each setting, with the menu setting shown first and the result shown second.

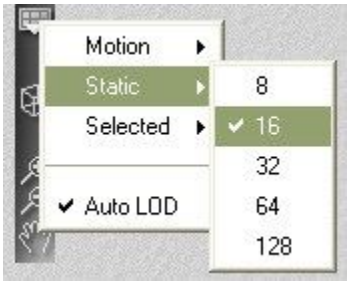
- Motion set to 8:



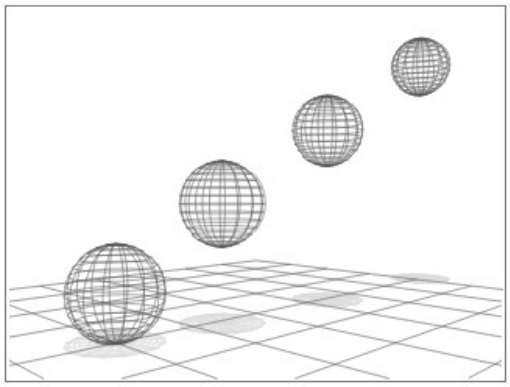
- Example of objects in motion at 8:



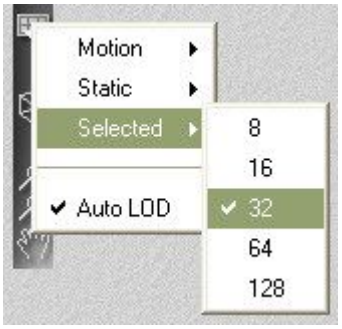
- Static set to 16:



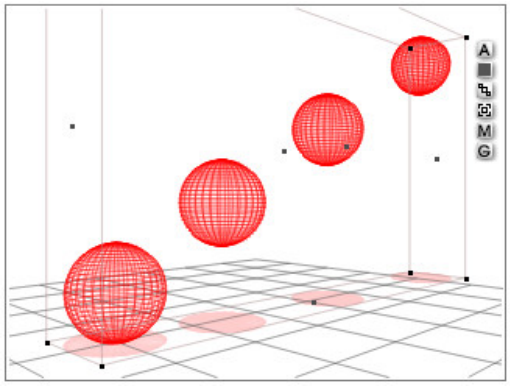
- Example of static (non-selected) objects at 16:



- Selected set to 32:



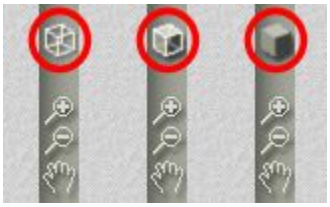
- Example of selected objects at 32:



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Display Modes

The Display Mode tool, at the bottom-right corner of your Working window, toggles through the available display modes. This tool appears as a cube that is either wireframe or shaded, depending on the selected display mode.



Default Display Modes

By default, the Display Mode tool lets you cycle through three display modes by clicking on the Display Mode tool multiple times:

- Default Wireframe, WireFrame, Lit WireFrame, Hidden Line, Wire Shaded, Wired Textured Shaded



- Default Mixed



- Default Rendered, Textured Shaded, Smooth Shaded



Clicking and holding the mouse button on the Display Mode tool for a moment opens a menu allowing you select one of the default display modes without clicking multiple times on the Display Mode tool. Once you choose a type of mode (default or OpenGL)

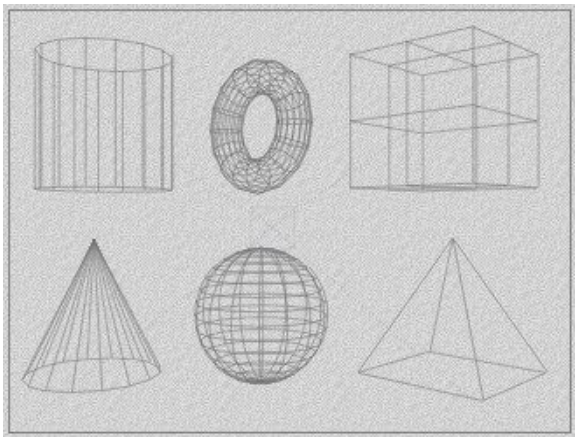
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from the menu, clicking on the Display Modes icon will cycle through the available options.

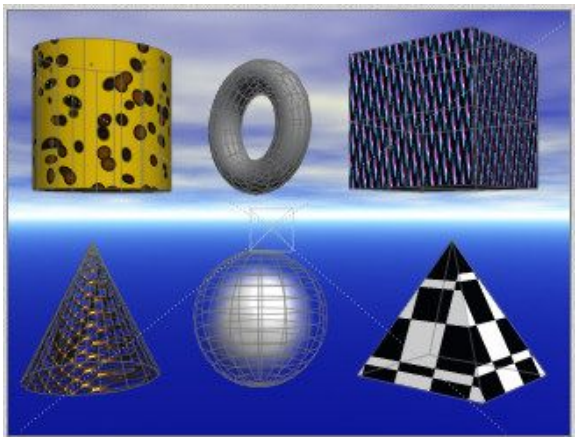


Examples:

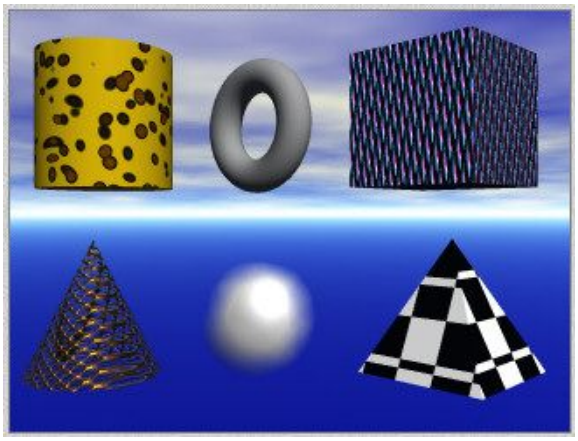
- Default Wireframe



- Default Mixed



- Default Rendered



OpenGL Display Modes

Clicking and holding the mouse button on the Display Mode tool for a moment opens a menu allowing you select one of the following OpenGL display modes.

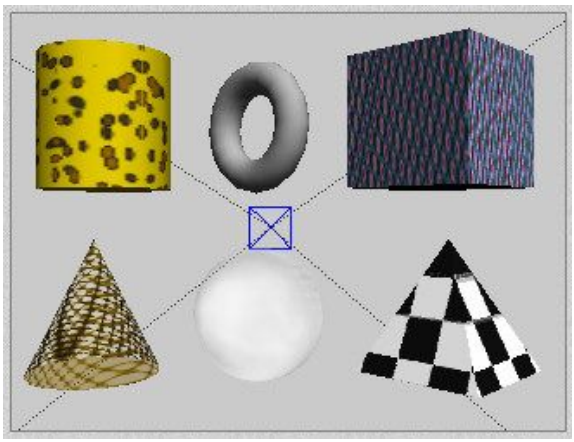


Once you select an OpenGL Mode, clicking the Display Mode tool cycles through the available OpenGL Display Modes.

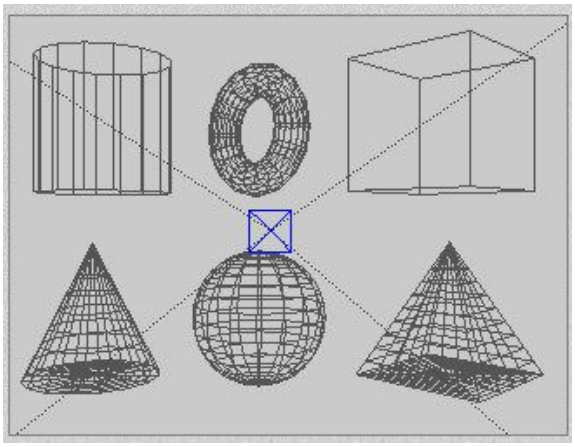
To switch between display modes:

1. Click on the Display Mode tool in the corner of the Working Window.
2. Click the button until you're in the desired mode. There are seven modes available:
    - Texture Shaded uses OpenGL (if available) to show all objects with textures and shadows.

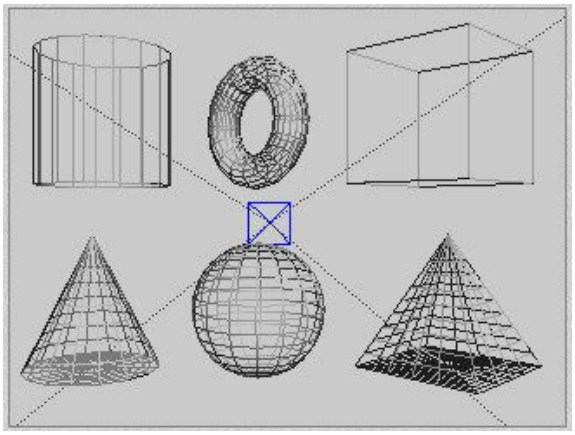
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- Wireframe shows all objects as wireframes.

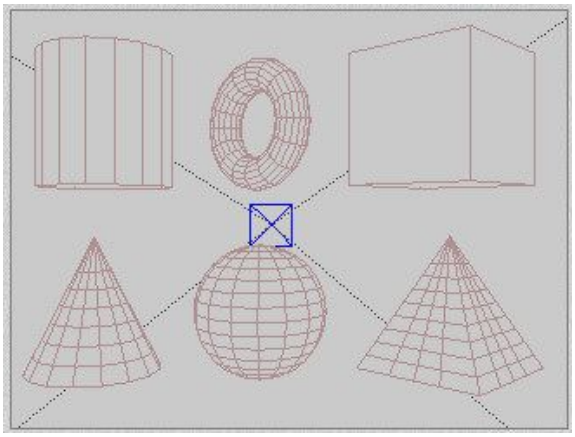


- Lit Wireframe shows all objects as wireframes and also displays areas of light and shadow.

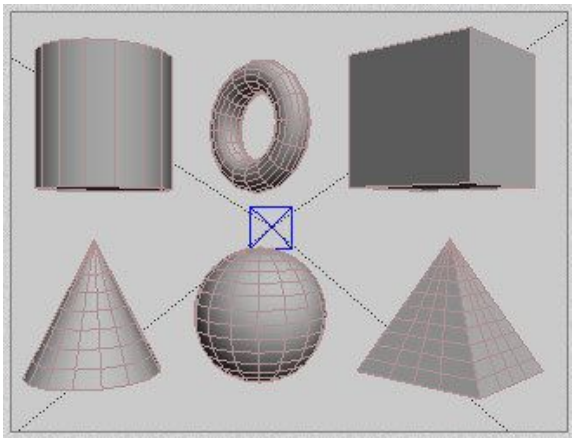


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- Hidden Line shows all objects as wireframes but hides portions of the objects that are not visible from the camera location/angle.

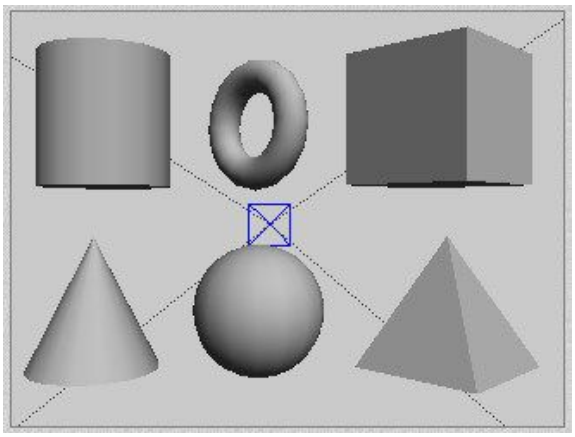


- Wire Shaded shows all objects as a solid while also displaying the wireframes.

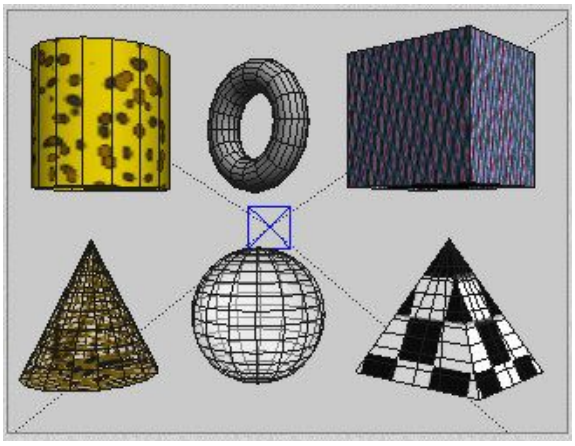


- Smooth Shaded shows all objects as a solid but does not display the wireframes. This preview mode is only available if your system contains hardware that supports OpenGL®. When this mode is active your objects appear as flat shaded solids, without materials, instead of wireframes, and you can see the effects of light sources on object surfaces.

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- Wire Texture Shaded uses OpenGL (if available) to display all objects with textures, shadows, and wireframes.



Selecting Default Wireframe disables all advanced display modes.

Note: If you have trouble opening scene files, such as the scene taking a long time to open without any obvious reason or the scene crashing on opening, then check the display options to see if any of the OpenGL options are selected. If they are, change to one of the default display options and try opening the scene again. This is a possible solution and not the only reason why a scene may take a long time to open or cause Bryce to crash.

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Zoom In/Out



In Bryce, there is a difference between moving the camera and using the zoom tools. When you move the Camera, you're moving in 3D space. When you use the pan and zoom controls, you're transforming a 2D projection of your 3D scene - your camera position does not change.

When you use the Zoom tool, you are essentially making the 2D projection larger or smaller. Your camera position in 3D space does not change.

- To zoom in, click on the Zoom In tool - Magnifying Glass with plus (+) sign. Bryce scales the 2D projection of your scene larger, creating the illusion of zooming into your 3D scene; your camera position remains unchanged.

  Keyboard shortcut: plus (+)

- To zoom out, click the Zoom Out tool - Magnifying Glass with minus (-) sign. Bryce scales the 2D projection of your scene smaller, creating the illusion of zooming out of your 3D scene. Your camera position remains unchanged.

  Keyboard shortcut: minus (-)

- To zoom into a specific area, hold down Cmd/Ctrl+Spacebar and drag a marquee around an area of your scene. Your cursor changes to a Zoom tool and Bryce centers and scales up the area in the marquee to fit your window. See "Zoom to Selection" to see this in action.

- To zoom using the mouse, hold down Cmd/Ctrl+Opt/Alt+Spacebar and drag the mouse left or right in your scene.

  Dragging left zooms in and dragging right zooms out.

- To zoom numerically:

  1. Double-click the Trackball in the Control palette. The Camera & 2D Projection dialog appears.



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2. Enter a value in the Scale field. The default value is 100%. You can only zoom numerically when you are working in either Director's View or Camera View.



- To reset the zoom value, press the Opt/Alt key and click on the Zoom tool. The view of your scene resets to 100%.
- To zoom in or out while rendering, see "Zoom While Rendering."

Zoom While Rendering

The Zoom tool can also be used while the scene is rendering. This allows you to see more or less of the scene during the render without affecting the final render.

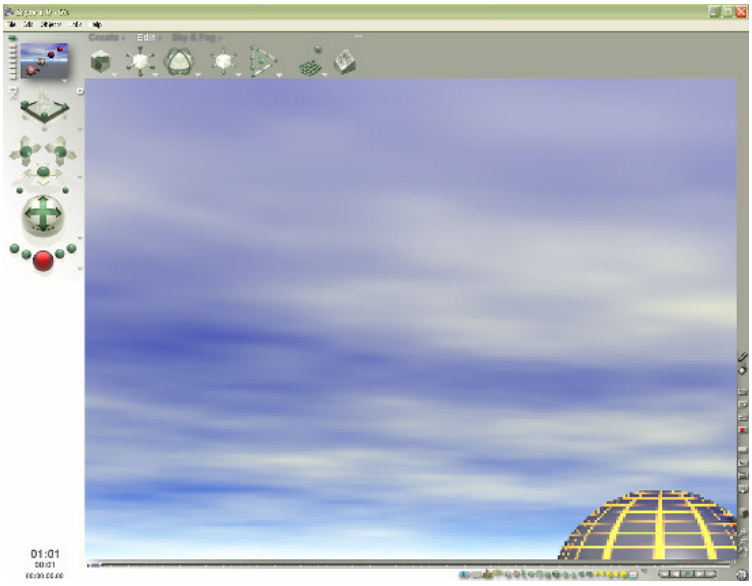
To zoom while rendering:

1. Set up the render size of the scene to a large size as needed.
2. Click on the Render button.
3. Once the render has started:
    - Click on the Zoom In tool or press the plus (+) key to zoom in.
    - Click on the Zoom Out tool or press the minus (-) key to zoom out.

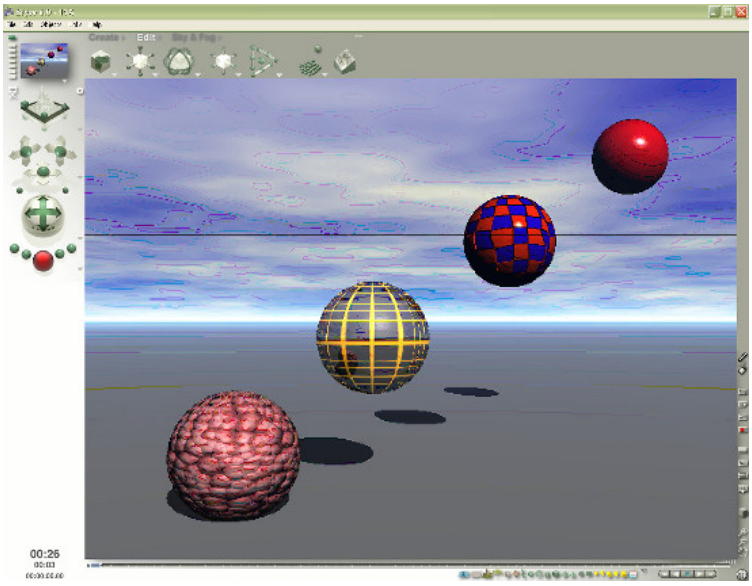
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Examples:

- Render large started:



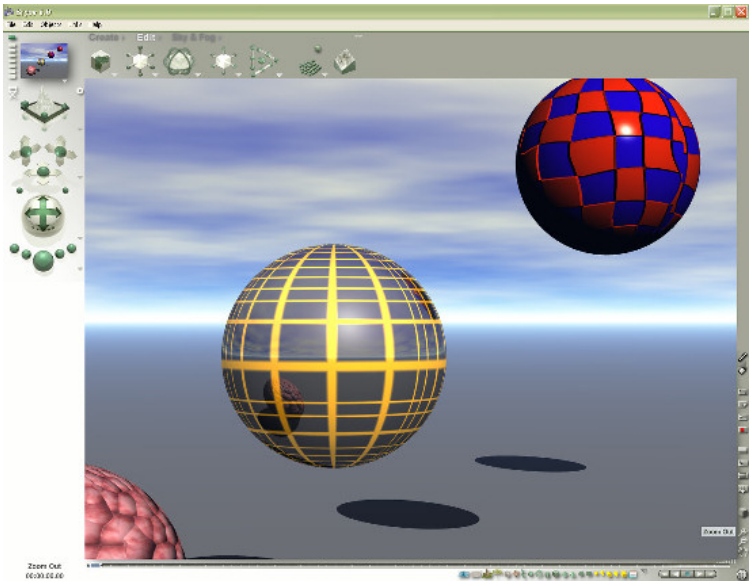
- Zoomed out while rendering:



The image may look odd but this is because the image is zoomed out. If you zoom in (see below), you'll see that the image looks fine.

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- Zoomed in while rendering:



Pan Tool



Panning works the same way as zooming. When you use the Pan tool, you are moving a 2D projection of your scene right and left, up and down, in front of the camera. The actual camera position in 3D space does not change.

The Pan tool can be very useful when you need to move the horizon up or down without affecting the view of the scene like zooming in or out would do.

Note: It may be useful to save the current camera setting before using the Pan tool, just in case you aren't happy with the results since using the Undo feature will not reset the camera view.

The Pan tool can be used with or without the Nano-Editor.

There are three ways to Pan:

- Clicking on the Pan tool
- Using the Spacebar and the Pan tool
- Using the Camera & 2D Projection dialog

Once you've finished looking around your scene, you can reset the Pan tool if needed.

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To reset the Pan tool to the default view:

- Mac: Press Opt+ left-click on the Pan tool.
- PC: Press Ctrl+Alt+left-click-drag on the Pan tool.

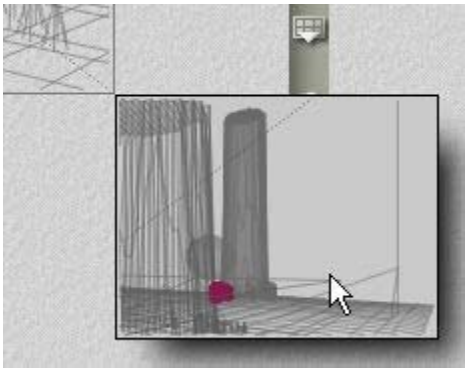
Using the Pan Tool

To pan your scene using the Pan tool, left-click+hold on the Pan tool and drag over the tool in the direction you want your scene to move.

- With the Nano-Editor On:



If the Nano-Editor is on, you'll see the preview window show up over the Pan tool button. The scene will pan inside the preview window and when you let up on the mouse, the scene itself will change to match the preview window.



- With the Nano-Editor Off:



If the Nano-Editor is off, the entire scene will move as you drag over the Pan tool button. When you let up on the mouse, the scene will stop at the same place where you panned to.

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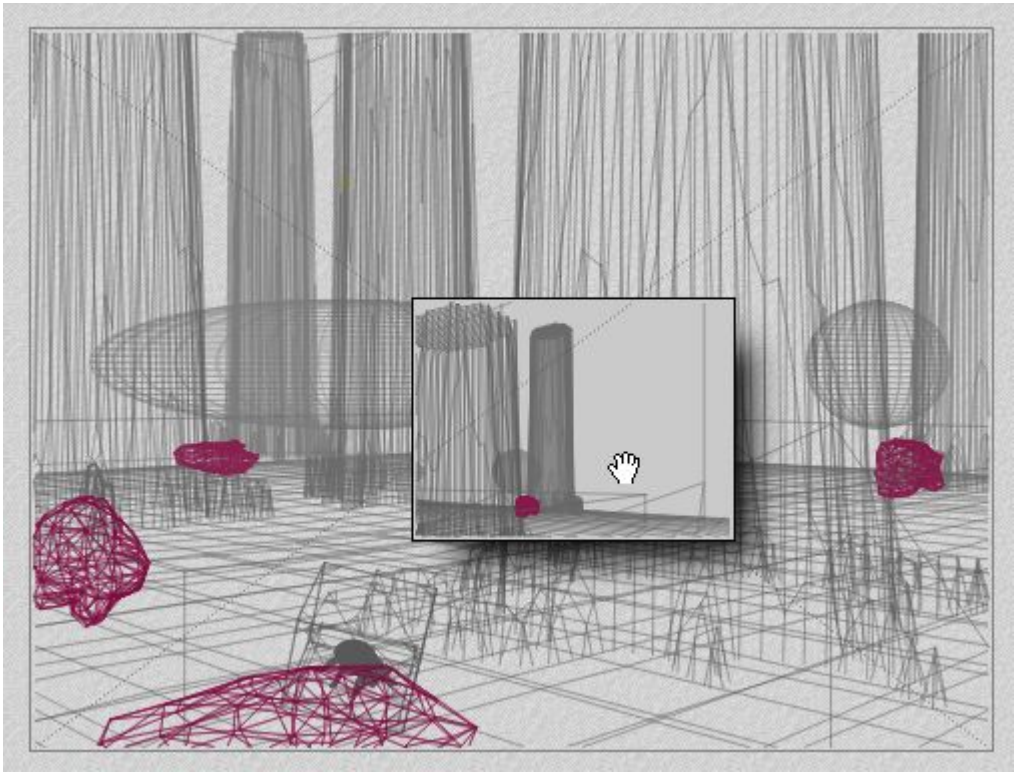
Using the Spacebar to Pan

To pan your scene using the Spacebar, hold down the Spacebar and left-click+drag in your scene in the direction you want the scene to move.

- With the Nano-Editor On:



If the Nano-Editor is on, you'll see the preview window show up over the working window where you clicked in the scene. The scene will pan inside the preview window and when you let up on the mouse, the scene itself will change to match the preview window.



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- With the Nano-Editor Off:



If the Nano-Editor is off, the entire scene will move as you drag over the Pan tool button. When you let up on the mouse, the scene will stop at the same place where you panned to.

Panning Numerically

To pan your scene numerically using the Camera and 2D Projection dialog:

1. Double-click the Trackball in the Control palette.



The Camera & 2D Projection dialog appears.



2. Enter a value in the Pan V (Vertical) field (default value is 0).
3. Enter a value in the Pan H (Horizontal) field (default value is 0).

4. Click on the OK icon to close the dialog.

   The camera will move to the selected location.

Note: You can only pan numerically when you are working in either Director's View or Camera View.

Time/Selection Palette

The Time/Selection Palette is located at the bottom of the Bryce window.



Click on the toggle to switch between the Selection Palette and the Animation Controls.

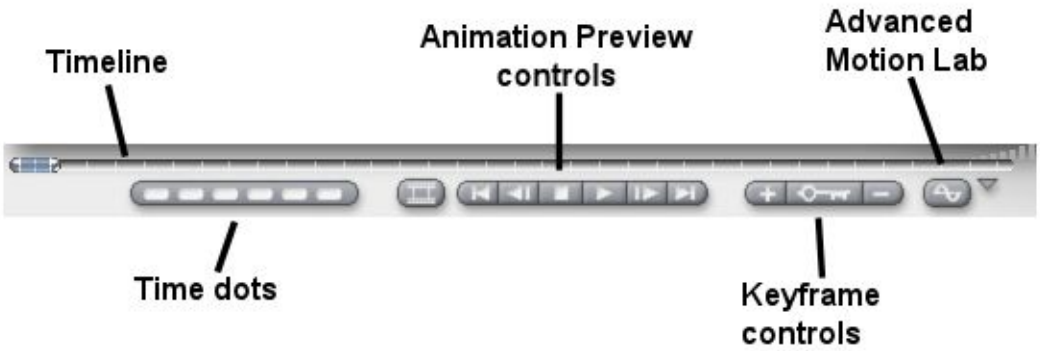


Animation Palette

The Animation Palette contains controls that let you set up key frames and edit the timeline of your animation.

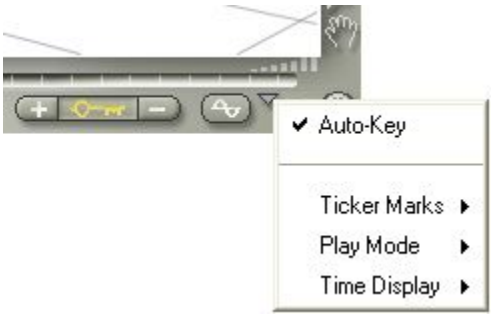
These controls also let you preview your animation, add and delete key frames, and access the Advanced Motion Lab. Refer to the "Animation" section for more on using the Animation controls.

While all animation palettes are almost the same, the one shown below is the one you see in the main working window.



Animating Transformations

When you're in Auto-Key mode, every transformation you apply to an object is recorded as a key frame.



In the Hierarchy area you can see where the key frames for these transformations appear in the timeline. By moving these key frames you can control the order in which transformations are applied. For example, you can take an object that grows larger and then moves left, and turn it into an object that moves left and then grows. Several animation techniques, like squash and stretch, can be simulated using transformations.

See "Animating Transformations" for more on animating transformations.

Animating Materials

The Materials Lab has its own set of animation tools that let you animate material properties. You can animate almost any property or texture.



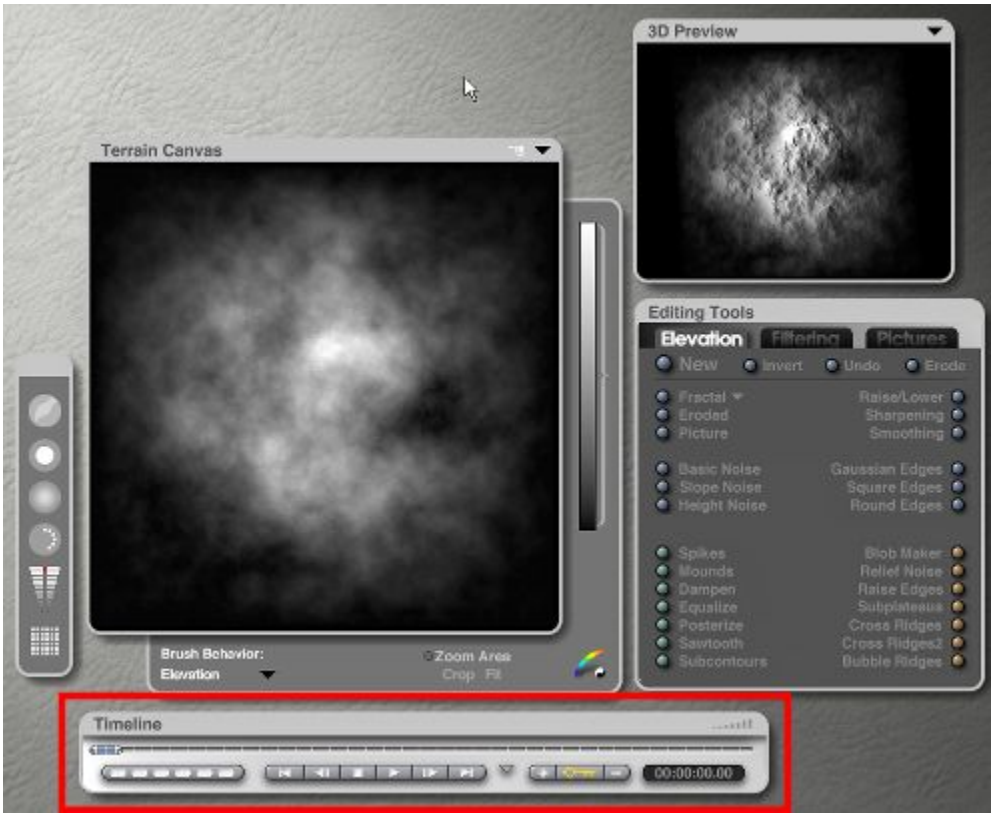
When you're animating between textures, Bryce interpolates between patterns and colors over time. You can have a rocky terrain turn into a desert during the course of your animation.

Refer to "Animating Materials" for more on animating materials.

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Animating Terrains

The Terrain Editor has a set of animation tools that let you animate a terrain over time.



You can animate the shape of the terrain or the filtering effects like Erosion or Mounds. Using these tools, you can create a terrain that changes shape as time passes.

Refer to "Animating Terrains" for more on animating terrains.

Animating Skies

The Sky & Fog palette and the Sky Lab dialog have a number of controls that let you set the properties of your environment. By changing these properties over the course of an animation, you can animate your environment. For example, you can make clouds move or gradually change the time of day.

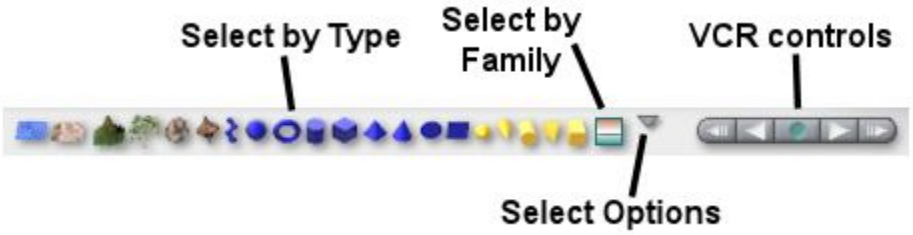
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Refer to "Animating Skies" for more on animating skies.

Selection Palette

The Selection Palette contains tools for selecting specific types of objects in your scene.



When you first open Bryce, you do not see this palette in the default Working window.

To view it, you must use the Time/Selection Palette Toggle at the far bottom right of your Working window to replace the Animation Controls with the Selection Palette.



Select by Type

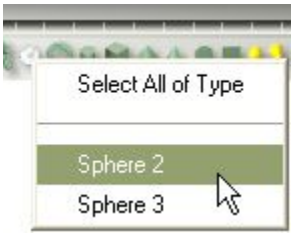
The Select by Type icons let you select all the objects in your scene that are of a particular type. For instance, if you click on a sphere here, Bryce will select all spheres and sphere derivative objects in your scene.

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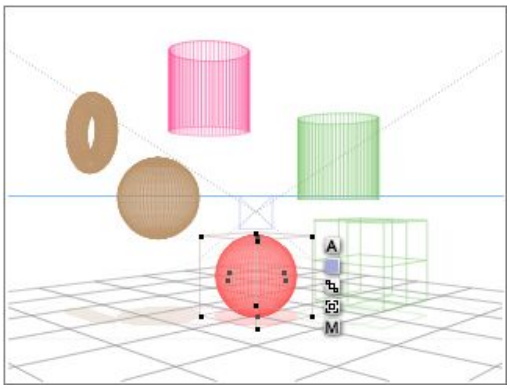
All of the selection controls below respect the previously described Shift-click techniques for multiple selections and deselections.

To select a specific object by type, hold down the cursor over the tool for the type of object you want to select and choose the name of the object from the menu that appears.

By default, objects will be named with the object type followed by a sequential number based on when you placed that object in the scene, for example, Sphere To make it easier to select a particular object, you can give objects unique names that will appear in this menu.

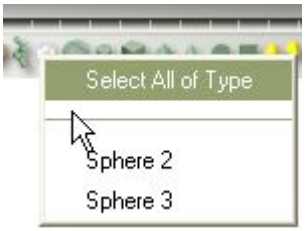


The selected object or objects will be selected.



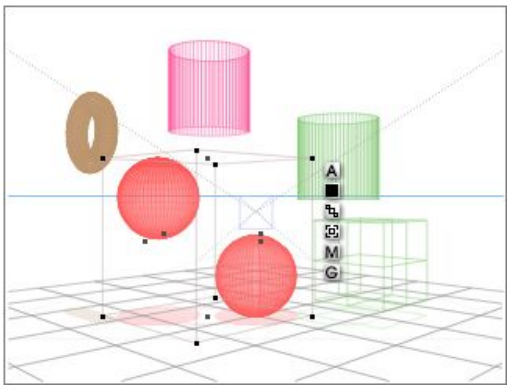
Select All of Type

To select all objects of a specific type, hold down the cursor over the tool for the type of object you want to select and choose Select All of Type from the menu that appears.



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All objects of the selected type will be selected.



Select by Family

To select objects by family:

1. Click the Families tool.

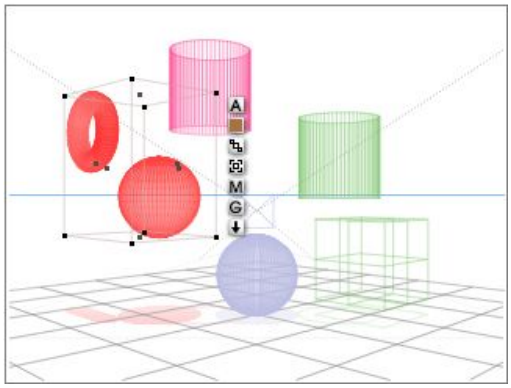


2. Choose the name of the family you want to select from the menu.



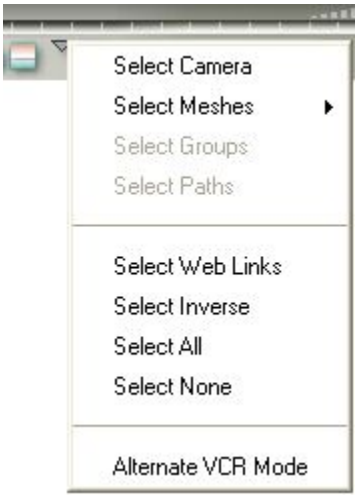
All objects that have been set as a member of the selected family will be selected. For Mac users, if selecting by family crashes Bryce, make sure you have Bryce 6.1.13.1 or later installed.

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Select Options

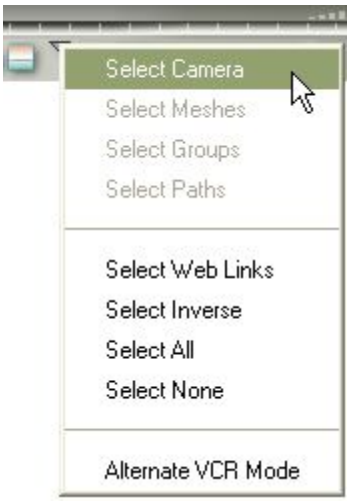
The Select Options menu on the Selection Palette allows additional selections to be made. From this menu you can select meshes, groups, and paths. You can also select all objects, select none, or invert the selection.



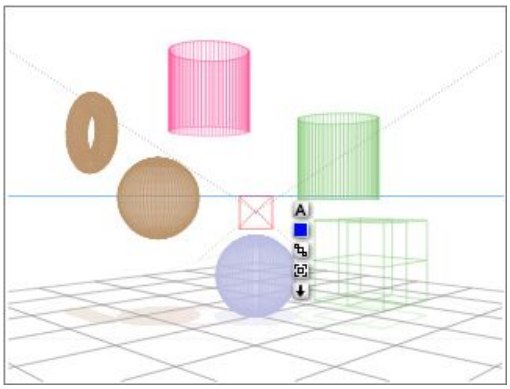
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Select Camera

To select the camera, click the triangle icon next to the Selection Palette and choose Select Camera.



The camera will be selected.



This option is most useful when the camera has been hidden and cannot be selected any other way.

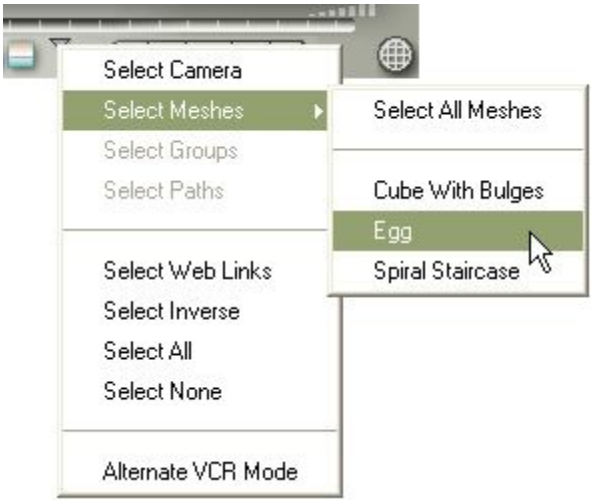
Choosing this option will automatically unhide the camera if it was previously hidden via the Objects Attribute dialog.

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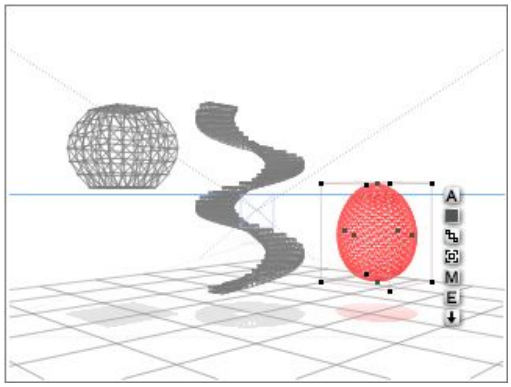
Select by Mesh

To select Mesh objects, click the triangle icon next to the Selection Palette and choose Select Meshes, then the particular mesh(es).

- To select all meshes in the scene, choose Select All Meshes.
- To select a specific mesh, choose that mesh from the listing.
- To select multiple meshes, press Shift while selecting the meshes from the listing.



The selected mesh or meshes will be selected.

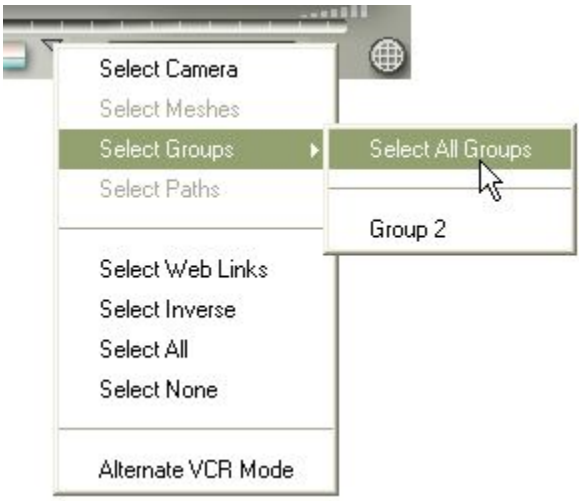


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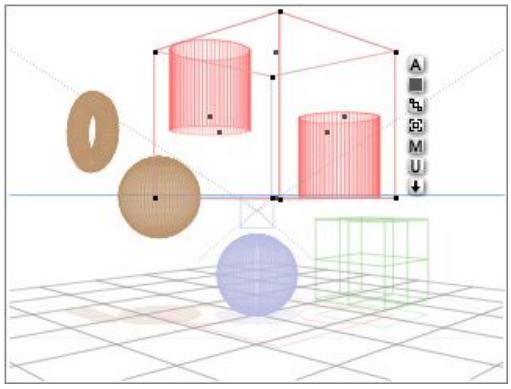
Select by Group

To select Group objects, click the triangle icon next to the Selection Palette and choose Select Group, then the particular group(s).

- To select all groups, choose Select All Groups from the menu.
- To select a specific group, choose that group from the listing.
- To select multiple groups, press Shift while selecting groups from the listing.



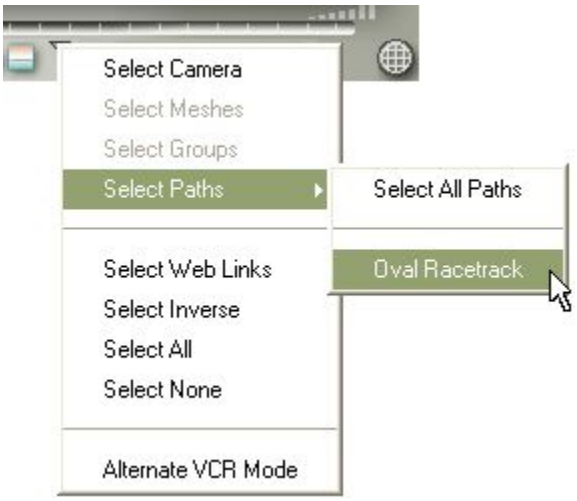
The selected group or groups will be selected.



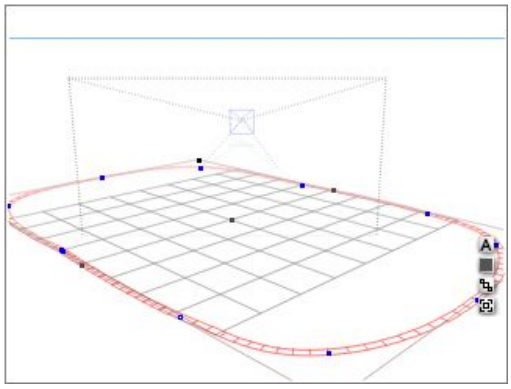
Select by Path

To select Path objects, click the triangle icon next to the Selection Palette and choose Select Paths, then the particular path(s).

- To select all paths in the scene, choose Select All Paths.
- To select a specific path, choose that path from the listing.
- To select multiple paths, press Shift while selecting paths from the listing.



The selected path or paths will be selected.

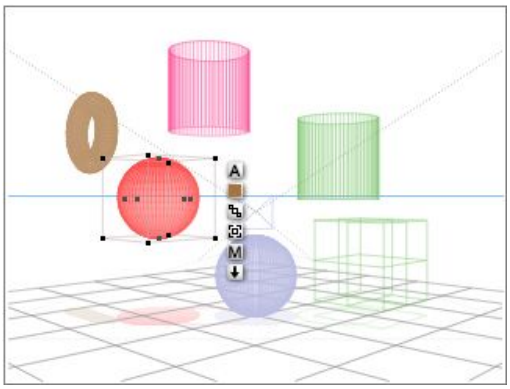


Select Web Links

To select objects that have a Web Link attached to them, click the triangle icon in the Selection Palette and choose Select Web Links from the menu.



All objects that have a web link associated with them will be selected.







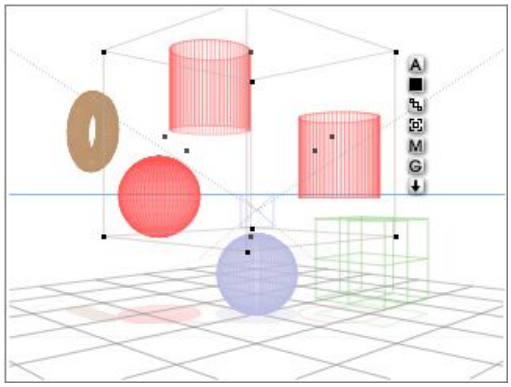
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Select Inverse

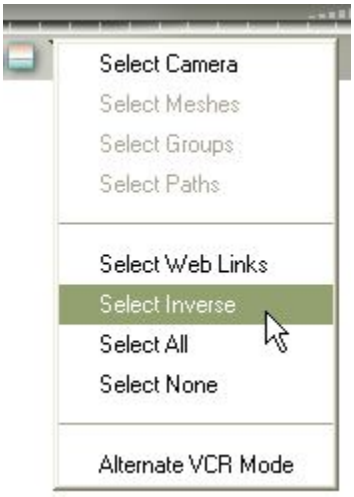
There are two methods to select the inverse of the current selection.

To select all objects except a specific type:

1. Click the tool for the object you want to exclude from the selection. All the objects of that type are selected.

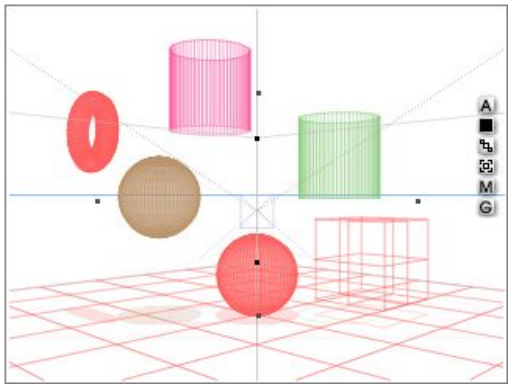


2. Click the triangle icon in the Selection Palette and choose Select Inverse from the menu.



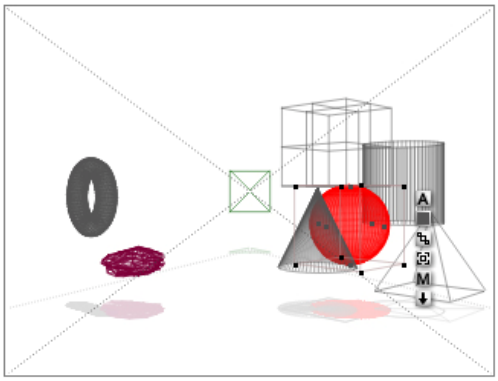
3. The objects that were selected will be deselected while the objects that weren't selected will now be selected.

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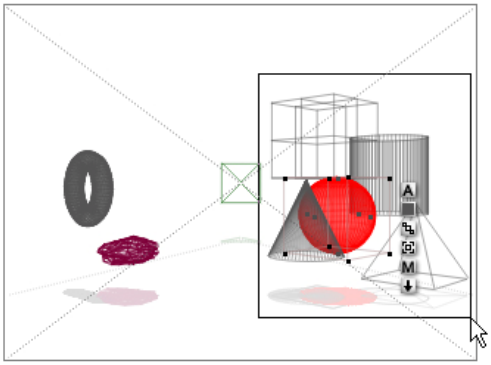


You can also Select Inverse by doing the following:

1. Select the object(s) you don't want selected.

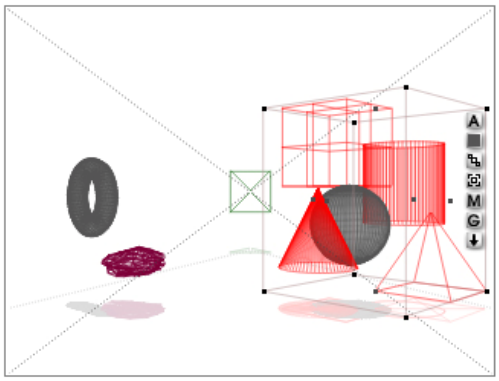


2. Press Shift and drag a marquee around the objects you want to be selected. Note that the marquee is not being dragged around all objects in the scene as we don't want the other two objects to be selected.



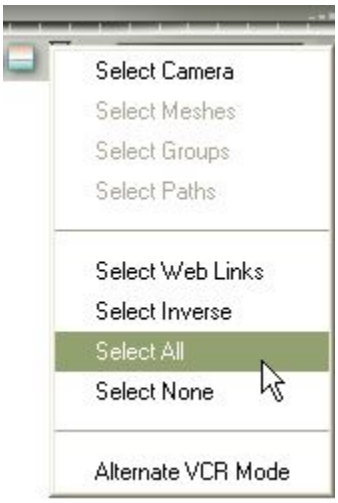
The unselected objects within the marquee will be selected, while the object(s) that were selected will be deselected. The objects that were outside the marquee remain unselected.

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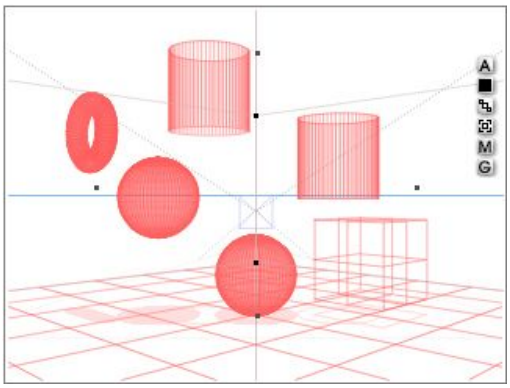


Select All

To select all the objects in your scene, click the triangle icon in the Selection Palette and choose Select All from the menu.

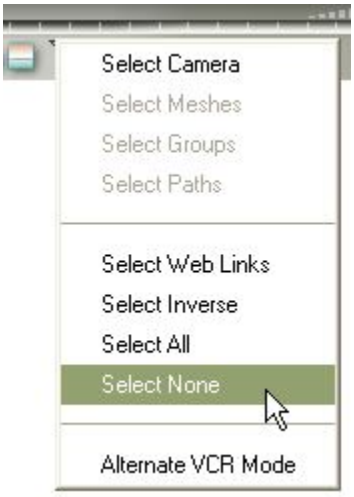


This will select all objects in the scene.



Select None

To deselect all selected objects, click the triangle icon in the Selection Palette and choose Select None from the menu. All selected objects in the scene will be deselected.



This option is most useful when the boundaries of your objects overlap and you can't find a spot in the working window to click on to deselect all objects.

VCR Controls

The VCR Controls let you step through the various selection tools and activate Solo Mode.

If the Selection palette is not showing, click the Time/Selection Palette Toggle in the lower-right corner of the Working window.



The Selection Palette appears and the VCR Controls are on the far right of the Selection Palette.



Step Sequentially Through Object Types

To step forward and backward through the object types in your scene:

1. Click on the larger forward arrow to step forward through object types within the current scene. The first object of its type is selected.

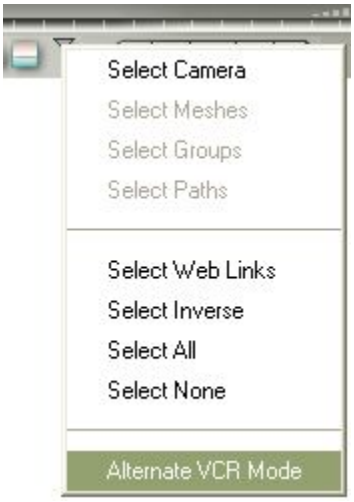
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2. Click on the larger backward arrow to step back through object types.

   If you watch the Select By Type icons, the object type you are stepping to will highlight momentarily.



If you notice that Bryce is stepping through all objects in the scene instead of selecting the object type, click the triangle icon in the Selection Palette and deselect Alternate VCR Mode.



Step Sequentially Through Objects of Selected Object Types

To step forward and backwards through the object in a selected object type:

1. Click on the smaller forward arrow to step forward through each object of the type in a selection. For example, you can use the large arrows to step to the first sphere created in your scene



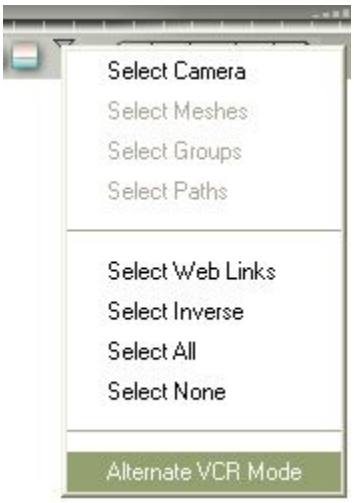
2. and then the smaller forward and backwards arrows to step through all other spheres in your scene.



One advantage to making selections with this technique is that you can select objects within a Group. Simply clicking on a grouped object will not necessarily select the entire group; using the VCR Controls to select within a Group allows you to reposition objects or assign textures to objects within a Group without having to first Ungroup them.

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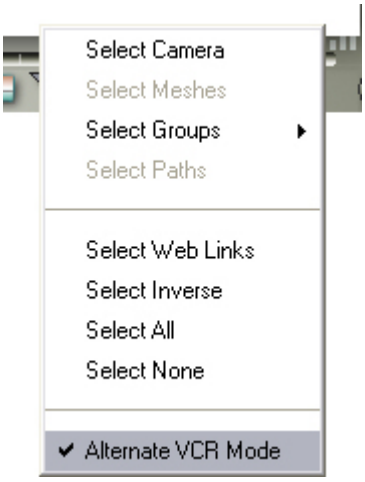
If you notice that Bryce is stepping through families instead of objects, click the triangle icon in the Selection Palette and deselect Alternate VCR Mode.



Step Sequentially Through all Objects in Scene

To step sequentially through every object in your scene:

1. Click the triangle icon in the Selection Palette and choose Alternate VCR Mode.



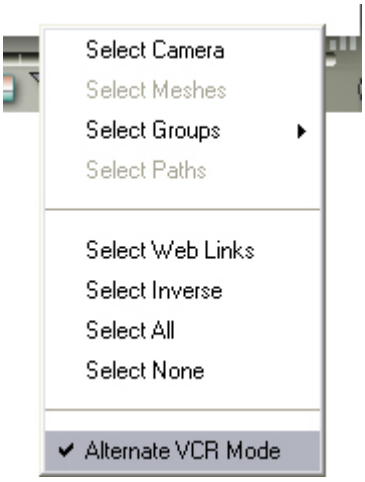
2. Click the larger backward or forward arrow.



Step Sequentially Through Families

To step sequentially through families:

1. Click the triangle icon in the Selection Palette and choose Alternate VCR Mode.



2. Click the smaller backward or forward arrow.

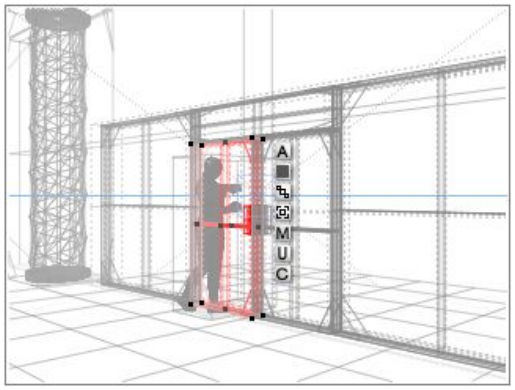


Working in Solo Mode

Solo Mode is a very useful option when working in complex scenes. It allows you to isolate groups of objects without being distracted by other objects. Solo Mode also speeds up your work significantly as Bryce does not have to calculate and draw extraneous wireframe objects.

To work in Solo Mode:

1. Select an object, several objects, or group(s).



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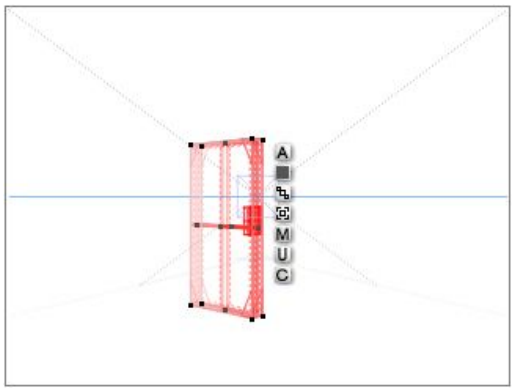
2. Click the Solo Mode button in the center of the VCR Controls.



The button color changes to red.



3. Solo Mode will now be activated and the selected object(s) will show up in the working window without the rest of the scene showing. Modify the object(s) as needed.



4. Once you have completed the edits in Solo Mode, click on the red Solo Mode button to return to the full scene. Any changes you made to the camera while in Solo Mode will be reflected in the full scene so be careful about using the camera in Solo Mode. It may be useful to save the camera setting before entering Solo Mode.



Control Palette

The Control Palette contains tools for positioning the camera and viewing your scene. When working in Bryce, you position objects in three-dimensional space while looking at a two-dimensional display.

You may find that your scenes become rather large and you might not be able to see the entire landscape in the Working Window. Bryce has several tools that can help you position elements and see every inch of your new world from all angles.

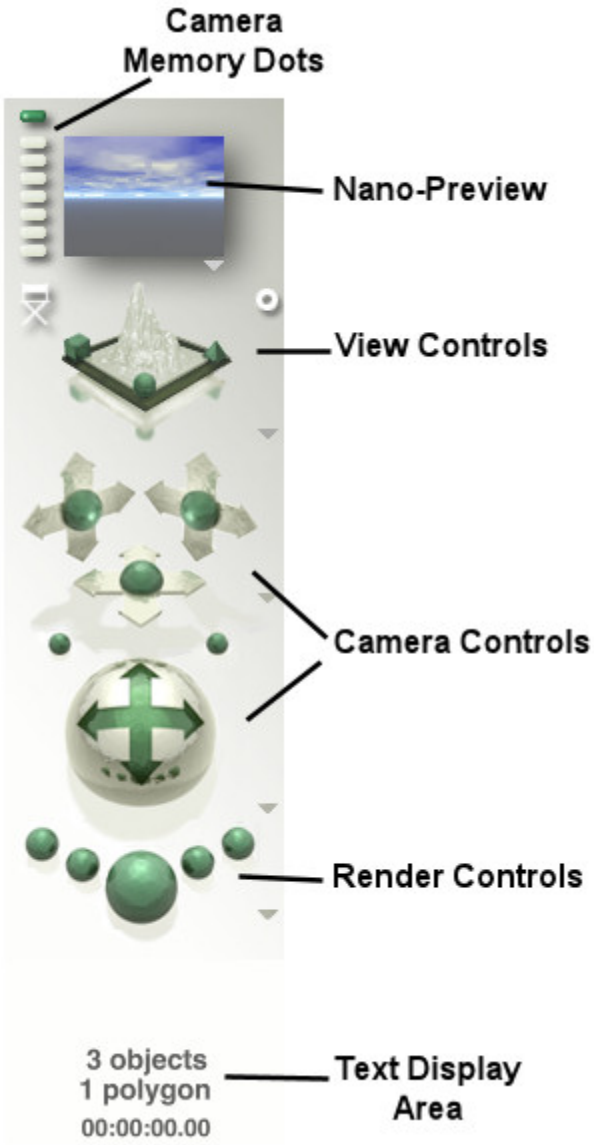
You can also control how individual objects are displayed in the Working Window, and how your scene is displayed in the Nano-Preview.

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The tools available in the Control Palette are:

- Nano-Preview
- Camera Memory Dots
- View Controls
- Camera Controls
- Render Controls
- Text Display Area

These tools are found in the Control Palette located on the far left side of the Working Window.



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Nano-Preview

The Nano-Preview is where your object is displayed before you render it. The Nano-Preview can display your scene from a number of different angles without affecting the position of the camera.

To display your scene from different angles in the Nano-Preview, click the triangle icon below the Nano-Preview and choose a preset display angle. The view of your scene does not change in the Working Window.



To set Nano-Preview options, click the triangle icon below the Nano-Preview and choose a display option:



- Sky Only previews only your sky settings.
- Full Scene previews your actual scene. This is the default setting for the Nano-Preview.

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- Wireframe Only previews your wireframes only, as opposed to a rendered preview.
- Auto Update will automatically update the preview render with every single change you make during your session. In most cases, this gives you almost immediate feedback after any action. On slower machines, or when working with highly complex scenes, you can deselect this option.
    - With this option deselected, you'll need to click in the Nano-Preview window to update the render.
- To set what view is shown in the Nano-Preview, select one of the View options:
    - Current View - will always show the same view as currently shown in the Working Window
    - Director's View - will always show the Director's View no matter what view is used in the Working Window Camera View - will always show the Camera's View no matter what view is used in the Working Window From Top - will always show the view from Top View no matter what view is used in the Working Window
    - From Right - will always show the view from Right View no matter what view is used in the Working Window
    - From Front - will always show the view from Front View no matter what view is used in the Working Window
    - From Left - will always show the view from Left View no matter what view is used in the Working Window
    - From Back - will always show the view from Back View no matter what view is used in the Working Window
    - From Bottom - will always show the view from Bottom View no matter what view is used in the Working Window
- Select either Fast Preview or Full Rendering to adjust the quality of the rendered preview. With Full Render selected, every pixel is ray-traced and anti-aliased. Fast preview mode skips pixels to achieve faster updates. This can cause small objects to be partially or completely missing.

Camera Memory Dots

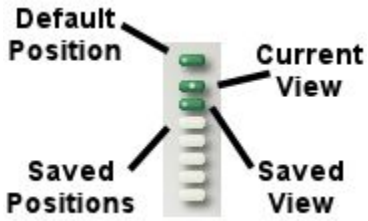
You can use the preset viewing positions to see your scene from different angles or you can use the Memory Dots to store and retrieve your favorite camera positions. The Camera Memory Dots are located at the top left of the Working Window next to the Preview Window.

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The Camera Memory Dots are located at the top left of the Working Window next to the Preview Window.



The dots let you store up to seven different views of your scene.



The uppermost dot, slightly separated from the rest, is a quick way to return to the default Bryce camera position.

There is no way to clear this dot. It will always contain the default Camera settings.

Dot settings are saved with your scene file, so if you open a previously saved scene, your dot settings from the previous session remain in place.

When you click on a full dot to activate it, the saved position becomes the current Camera View. When you no longer need a saved camera position, you can delete it by clearing the dot it is saved to.

- To save a camera position to a memory dot, click an empty dot.
  - Empty dots appear gray -
  - Full dots appear green (blue in Bryce 5/5.5, teal in Bryce 3/4) -
- To return to the default camera position, click the top memory dot. The view returns to the default, regardless of how many changes you've made.
- To switch between saved positions, click a full (green) dot.
- Active dots appear green with a white dot in the middle -
- To clear a full dot, Opt/Alt-click a full dot. The dot turns gray and a new camera view can be saved to it.

View Controls

Bryce lets you view your scene from several preset positions: Top, Front, Side, Bottom, Right, Left, and Back. All these views, with the exception of the Perspective View, are special Orthogonal projections which allow perspective-free views well-suited for alignment operations.

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Refer to "Orthogonality and Views" for an explanation of how and why Bryce uses Orthogonal projections.

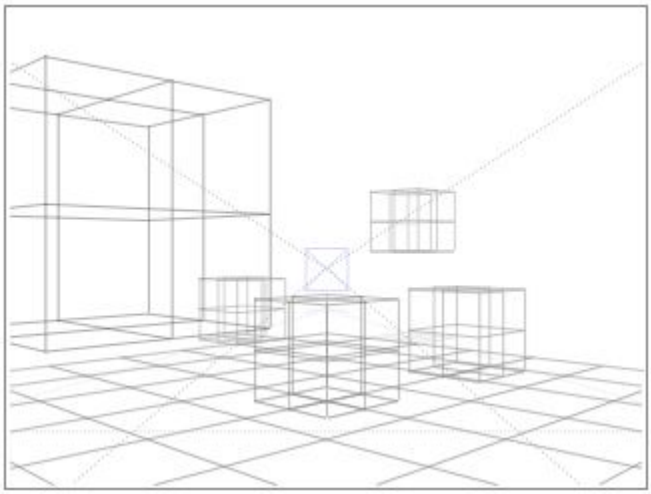


Orthogonality and Views

When you view a scene from the side, front, top, or bottom using the Camera, you'll see certain amounts of perspective distortions. These distortions can make precise visual alignments difficult.

For instance, if you have a dozen cubes in different locations and you place the camera so that it looks down on the scene from above, you will find it very difficult to place the cubes on top of one another. Cubes further from the camera would be slightly smaller than cubes close to the camera, resulting in a confusing array of lines.

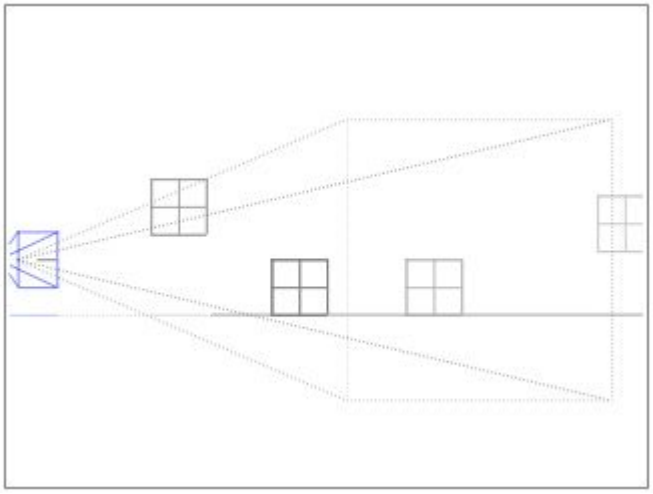
The more complex the scene, the more confusing and difficult this kind of alignment becomes. If, for example, you viewed objects from above through a real-world camera, the perspective distortions would make alignment or placement difficult.



To solve this problem, Bryce uses a perspective free, drafting board kind of view in which like sized objects far away appear exactly the same as those up close. This perspective-free view is called an Orthogonal Projection. In Bryce, all views other than your Main View (that is, Top, Bottom, Right, Left, Front, and Back) are orthogonal

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projections. They are not generated by the camera, and so do not contain the perspective distortion that would necessarily come with a camera view.



As a result, Camera Controls do not work in these views and will be shaded to show they are not available in these views.

- Camera Controls in Director's or Camera View :



- Camera Controls in Orthogonal Views:



You can, however, navigate within the orthogonal views using the Zoom and Pan tools.

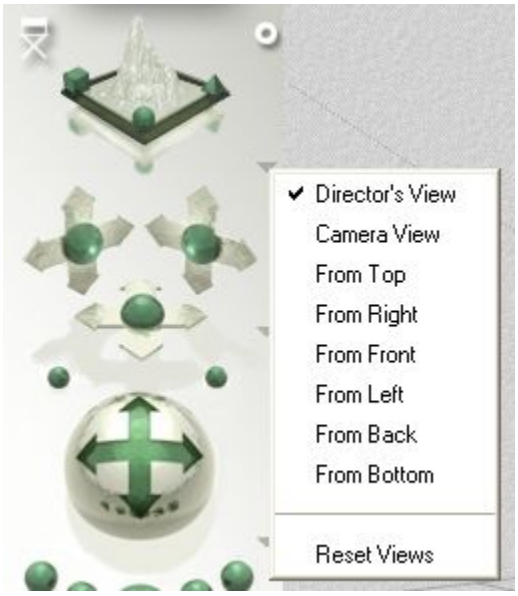
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If you press the Render button while in an orthogonal view, Bryce will quickly set up the camera position you need and render your image. There may be slight differences between what you see in the wireframe projection and what you see in the rendered image as a result of the added perspective distortion in the rendered image.

Select Views & View Options

The Select View control is an interactive way of cycling through the various preset views. The current position of the Select Views control indicates the view you're seeing in the Working window.

- To switch views using the Select Views control, click or drag the Select Views control until you reach the view you are looking for. Every time you click the control, Bryce displays a different preset view (see images below).
- To switch views using the Select Views control menu, click the triangle icon next to the Select Views control and select a view option:



See "Orthogonal Views" for more on these views.

- To switch views using the keyboard, select a preset view shortcut:
  - Director's View = ~ (apostrophe key, no Shift)
  - Camera View = 1
  - Top View = 2
  - Right View = 3
  - Front View = 4
  - Saved views = 5 through 9

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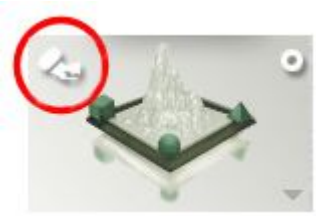
Perspective Toggle

The Perspective Toggle allows you to quickly switch between the Director's and Camera Views without having to select the views from the View Control menu.

The default view is the Director's View and the toggle shows as a director's chair.



To change to the Camera View, click on the Perspective Toggle. The toggle will change to a camera and the scene view will switch to the current Camera View.



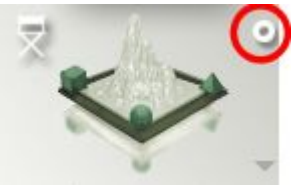
To switch back to the Director's View, click on the toggle again.

While in an Orthogonal View, the Perspective Toggle will be hidden. In order to switch to Director's View or Orthogonal View, select the view from the View Options menu.



Fly-Around View

You may have noticed a tiny circular icon above and to the right of the Select Views icon. If you click here, you will This view gives you a sense of context in your Bryce world. If you're working close to the ground, or stuck in the midst of a clump of trees, or you've lost a cube you know you created a half an hour ago, you can use the Fly-around View to see your entire scene all at once.

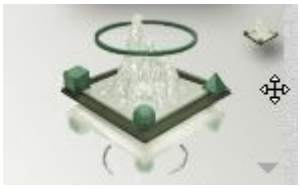


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In Fly-around View, Bryce positions the Camera on an imaginary monorail track above and away from your scene so that you can see the whole scene from all sides as the camera moves around it.

- To switch to Fly-around View, click the Fly-around View icon next to the Select Views control, or choose Objects > Fly-around, or press Cmd/Ctrl+Y.

  The Select View control changes to the Fly-around control.

- To switch back to Camera view, click on the Select Views control icon next to the Fly-around control.
- To change the angle of your scene in Fly-around view, drag your mouse in your scene. The scene rotates in the direction you drag.
- To zoom in and out in Fly-around view, hold down the Cmd/Ctrl key and move the mouse up or down in the window - do not click in the scene, just move the mouse itself. Moving the mouse up zooms in and moving the mouse down zooms out.
- To slow the Fly-around, hold down the Shift key.
- To pause the Fly-around, press the Spacebar. Press the Spacebar again to resume the Fly-around.
- To end the Fly-around and return to the last active view, click anywhere in the Bryce window. The view switches back to the view that was active when Fly-around was activated. To end the Fly-around and save the Fly-around position, press Return/Enter. The last Fly-around position becomes the new Current View.

The View of Your Scene

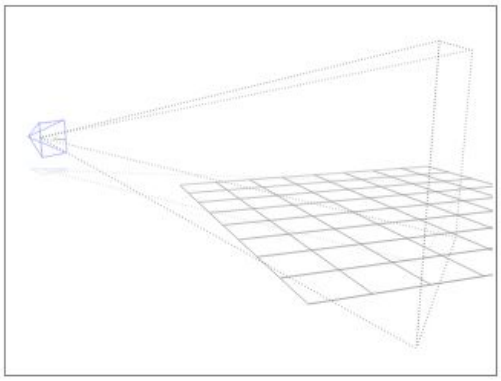
The view of your scene refers to the portion of the scene visible in the Working window. There are eight views of your scene available in Bryce: the Camera View, which is the view produced by the Camera in the scene; the Director's View, which shows your scene from the perspective of a director sitting outside of the scene; and the Orthogonal Views (Top, Bottom, Left, Right, Back and Front) which are perspective-free views of your scene.

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Camera View

Camera View is produced by the Camera in 3D space, meaning that you can view your scene from anywhere within your Bryce environment - even from underneath it. The Camera View can be positioned using the positioning tools or by repositioning the Camera in the scene.

The Camera has a wireframe, which can be dragged in the Working window and its motions recorded as an animation. However, the wireframe is visible only in the Director's View or one of the Orthogonal Views.

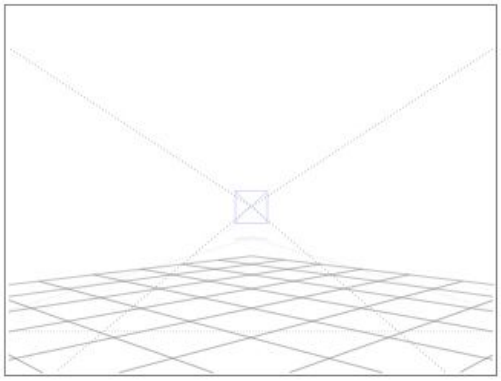


Director's View

The Director's View gives you the freedom to look at your scene from any perspective while still being able to manipulate the Camera as an object.

The Director's View motions are not recorded as part of an animation. This means that you can move to any position without inadvertently changing the view of your scene in the animation.

The Director's View can also be an invaluable tool for animating the view of your scene. While in this view, you can select the Camera and reposition it anywhere in the scene to create camera motions. Director's View is the default view of the scene.



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Orthogonal Views

These six views let you see the scene from all sides. They do not show you any perspective, but you can see all the objects in the scene, including the camera. These views are only flat projections of the scene, so you can't move around them using the camera controls.

Setting Up View of Your Scene

Setting Up the View of Your Scene

There are eight different views of your scene available in Bryce: Camera View, Director's View, and the six Orthogonal Views.

The Camera View and Director's View let you see the scene from any perspective, while the Orthogonal Views let you see projections of the scene from the top, bottom, left, right, front, and back.

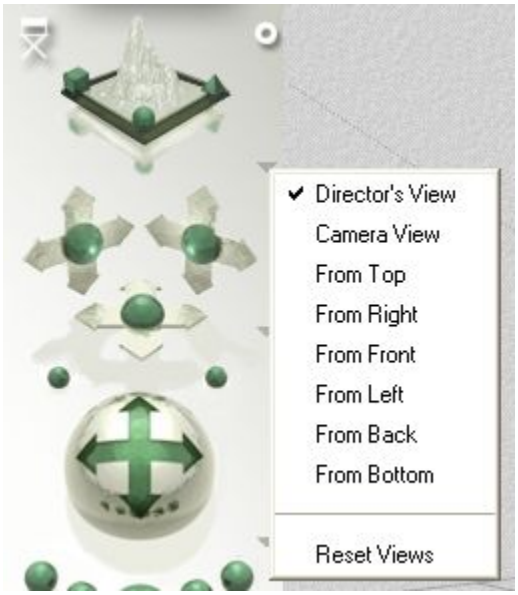
See "Reset Views" to reset the views back to their default settings.

To choose a view:

1. Click the triangle icon next to the View Controls icon.



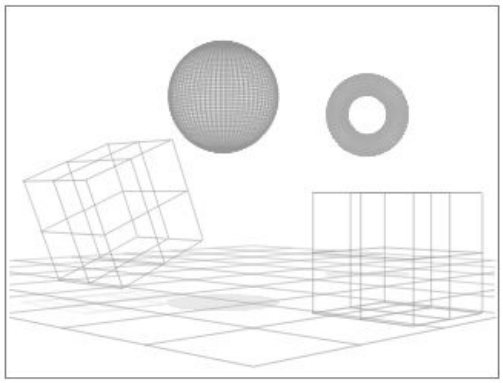
2. Choose a view from the menu.



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Camera View

This view of your scene in the Working window is seen through the lens of the Camera object in your scene.



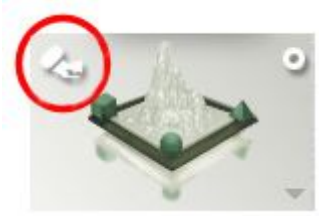
Since your scene exists in 3D, you can view it from any vantage point: above, below, or even from inside an object. To see from these different perspectives, you change the position of the Camera. The positioning tools available in the Control palette let you position the Camera along specific axes and change its orientation.

As you create and position the objects in your scene, you can use the position and orientation of the camera (called Camera Space) as a reference for several transformation operations. You can rotate, position and resize objects using Camera Space.

When you've completed your scene, the Camera View can be used to create the final rendered image or animation. You can reposition the camera and render the scene from several different viewpoints.

The camera can also be animated just like any other object. You can record changes in its position at different points along the timeline. When you run the animation, the view from your camera appears to change like the view seen from an airplane as it flies through a landscape.

When you're in Camera View, a small camera icon appears in the View control.



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To switch to Camera View, do one of the following:

1. Click the triangle icon next to the View Control icon and choose Camera View from the menu.



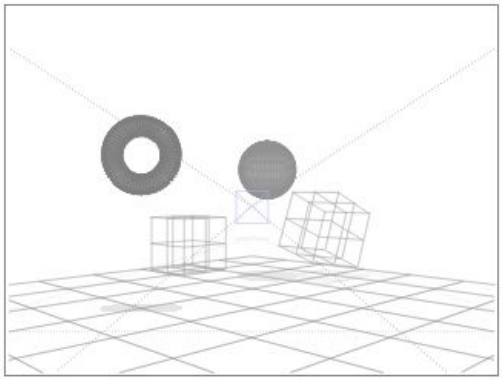
2. Click or Click+drag over the View Control until the Camera icon appears.
3. If Director's View is active, click on the Director's Chair icon (Perspective Toggle) to switch to Camera View.



Director's View

Director's View lets you view your Bryce environment through the eyes of a director sitting outside the scene and directing the action of all the objects - including the camera. The camera that generates the Director's View cannot be seen or positioned like an object. You have to use the positioning controls to move this view. Unlike the Camera View, the motion of this view cannot recorded as part of an animation.

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When you're working on a still image, you can use Director's View to get a second perspective on your scene. You can also render the Director's View of your image. In a still image, you can use both the Director's View and the Camera View to get different perspectives of your scene.

The real power of the Director's View becomes obvious when you're working on camera animations. Animating camera motions while in Camera View (top, image) can be tricky. However, in Director's View (bottom, image) you can see the camera as an object, which means that you can set up camera motion just as you would any other object.

When you're in Director's View, a small director's control icon appears in the Select Views control.



To switch to Director's View, do one of the following:

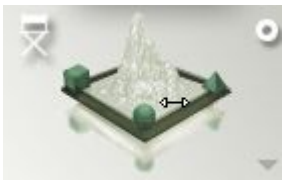
1. Click the triangle icon next to the View Control icon and choose Director's View from the menu.

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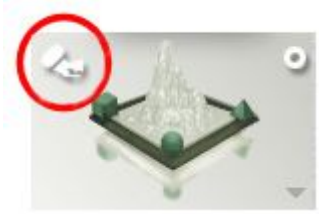
OR

2. Click or Click+drag over the View Control until the Camera icon appears.



OR

3. If the Camera View is active, click on the Camera icon (Perspective Toggle) to switch to Director's View.

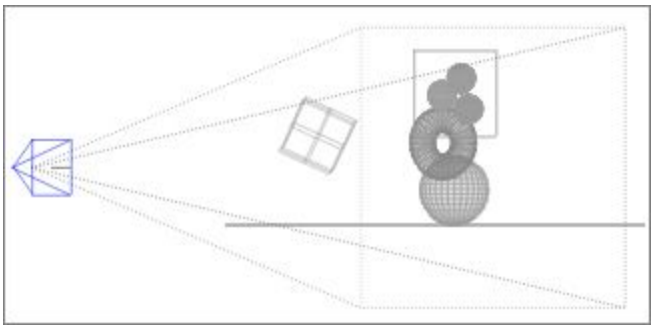


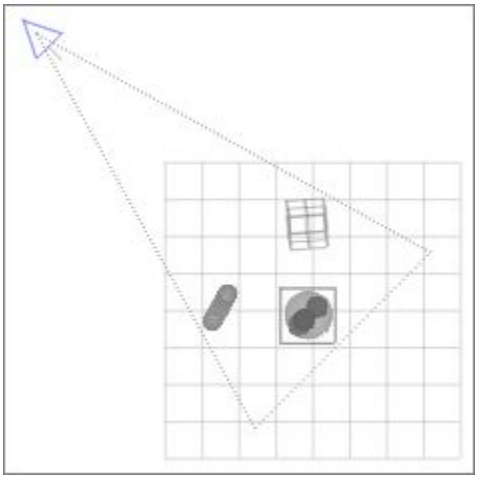
Orthogonal Views

There are six other views available through the View controls, but these views are not generated by any camera. The views (Top, Bottom, Left, Right, Back, and Front) are perspective-free views of your scene called orthogonal projections. When you're using one of these views, you cannot use the Camera controls.

The Orthogonal Views are another way of seeing the camera as an object in the scene. This can be invaluable when you're animating the camera, or setting up a complex scene. Using the orthogonal views, you can quickly move to different views of your scene. These views also let you see the camera as an object.

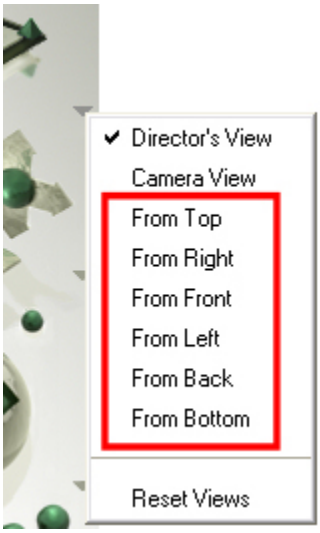
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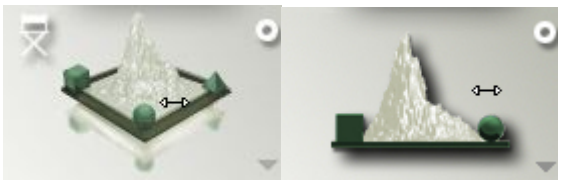
To switch to an Orthogonal View, do one of the following:

1. Click the triangle icon next to the View Control icon and choose the Orthogonal View you want from the menu.

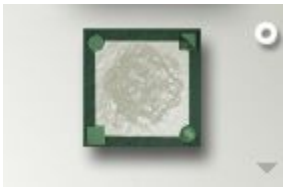


OR

2. Click or Click+drag over the View Control until the Orthogonal View you want appears.



- From Top: select this option to view a perspective-free orthogonal projection of your scene as seen from above (based on absolute world coordinates).



- From Right: select this option to view a perspective-free orthogonal projection of your scene as seen from the right (based on absolute world coordinates).



- From Front: select this option to view a perspective-free orthogonal projection of your scene as seen from the front (based on absolute world coordinates).



- From Left: select this option to view a perspective-free orthogonal projection of your scene as seen from the left (based on absolute world coordinates).

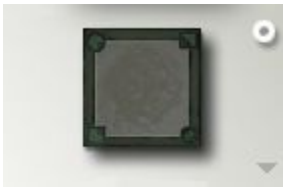


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- From Back: select this option to view a perspective-free orthogonal projection of your scene as seen from behind (based on absolute world coordinates).



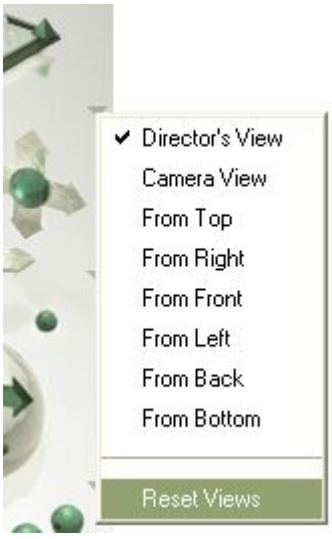
- From Bottom: select this option to view a perspective-free orthogonal projection of your scene as seen from below (based on absolute world coordinates).



Reset Views

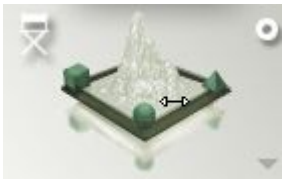
To reset ALL views to their default setting, do one of the following:

1. Click the triangle icon next to the Select Views control icon and choose Reset Views from the menu.



or

2. Press the Opt/Alt key and click on the Select Views icon.



Caution: This option reverts all views back to their original Bryce defaults and not back to a previous view you set earlier. Once you reset the views, you cannot undo this option if you selected it by accident. In order to revert back to a previous view, save the view in a Camera Memory Dot then click on the dot later to revert to that view.

Camera Controls

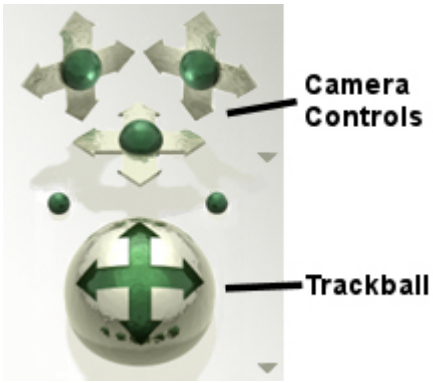
You can think of the view of your scene as a window to a whole new world. The view you see through this virtual window is determined by the orientation and position of a camera. As you move the camera, you get a different view of your world.

Positioning the View of Your Scene

When you position a view, you're affecting the location and orientation of a camera, not the scene itself. The scale and position of objects remains constant; only your view of the scene changes.

The controls described in this section can be used to position either the Camera View or the Director's View. However, some controls, like the Trackball, are limited when you're in Camera View.

Bryce has two sets of controls for positioning your view of the scene: the Trackball and the Camera Controls. The Trackball lets you adjust the position of the camera, as well as its orientation. The Camera Controls change the position of the camera along the X, Y, and axes.



Camera Modes

The cameras in Bryce have four modes that affect the behavior of the Trackball:

- Trackball
- Center to Selection
- Tripod
- Free Camera

All four of the modes are available when you're in Director's View.



The only mode available in Camera View is Free Camera.



Trackball Mode

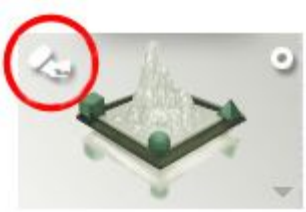
In Trackball Mode, the camera orbits around your scene. The center of the orbit, or origin, is the center point of a box that encompasses all the objects in your scene.

As the size of your scene changes, so does the size of the box, which changes the box's center point. As a result, the center of rotation for the camera also changes as you change the size of your scene. In fact, in this mode the camera's center of rotation is constantly updated, so that it always remains in the center of the scene.

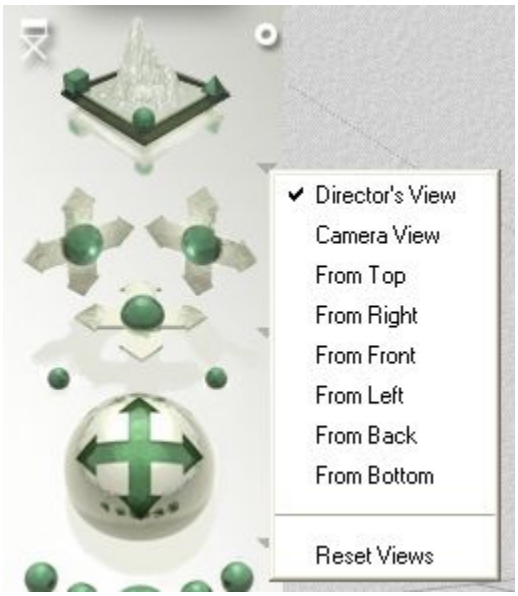
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To change to Trackball Mode:

1. If the Camera View is active, click on the Camera Perspective Toggle to switch to Director's View.



2. If any of the Orthogonal Views are active, click on the triangle next to the Select Views control and choose Director's View from the menu.



3. Click on the triangle next to the Trackball and choose Trackball from the menu.



OR

4. Double-click either the Trackball or one of the Camera Controls. The Camera & 2D Projection dialog appears.

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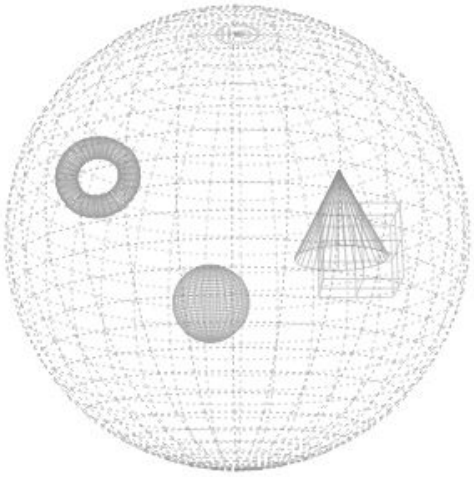
5. Click the Trackball mode button at the top of the dialog.



6. Click on the OK icon to close the dialog.
7. Use the Trackball to move the camera around your scene. The objects in the scene will remain in the center of the scene with the Director's View moving around the objects in a spherical orbit.

   If you move any of the objects so that the scene bounding box is decreased or increased, the view rotation will decrease or increase to match.

   The image below shows a sphere to give an example of where the camera will potentially rotate around the entire scene:



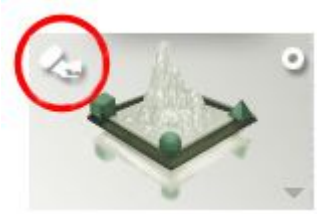
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Center to Selection Mode

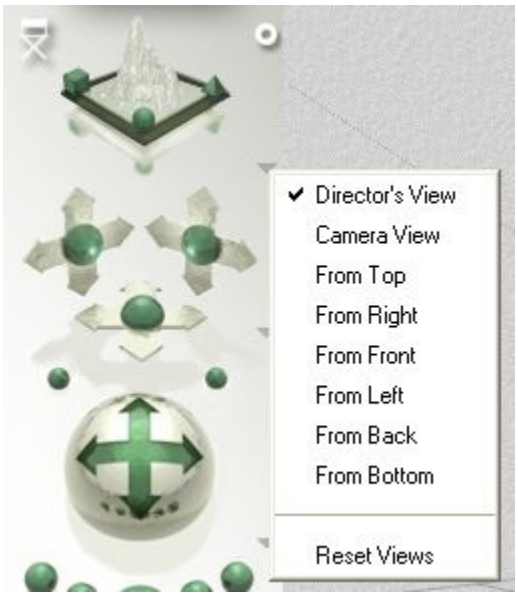
In this mode the camera also orbits around the scene. The center of the orbit, in this mode, is a selected object. As the object moves, so does the camera's center of rotation. This mode is the best way of making sure that specific objects always remain in view.

To change to Center to Selection Mode:

1. If the Camera View is active, click on the Camera Perspective Toggle to switch to Director's View.



2. If any of the Orthogonal Views are active, click on the triangle next to the Select Views control and choose Director's View from the menu.



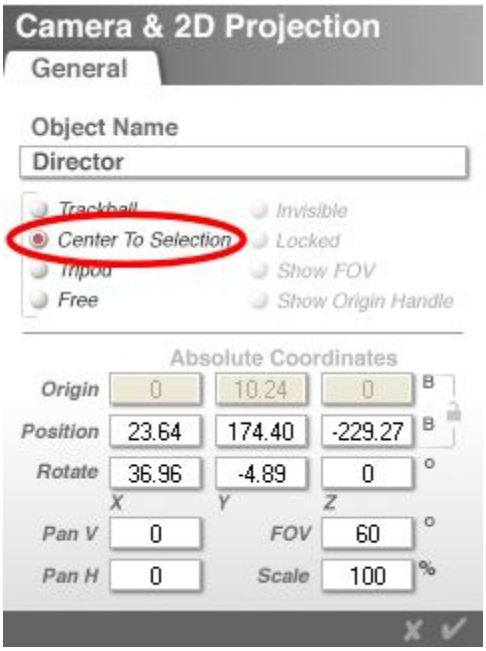
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3. Click on the triangle next to the Trackball and choose Center to Selection from the menu.



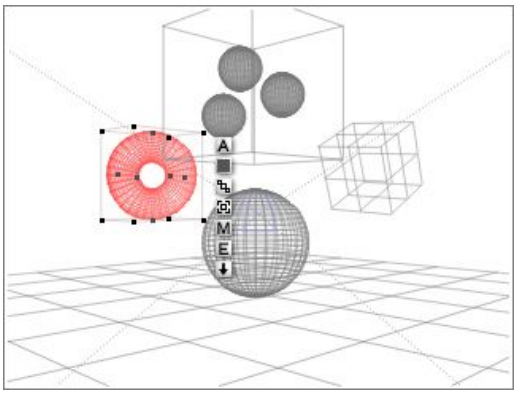
OR

4. Double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears. Click the Center To Selection mode button at the top of the dialog. Note that the Origin fields are not available while in this mode.



5. Click on the OK icon to close the dialog.
6. In the scene, select the object to rotate the view around. If you don't select an object (or objects), then the Center to Selection mode will work like the Trackball Mode.

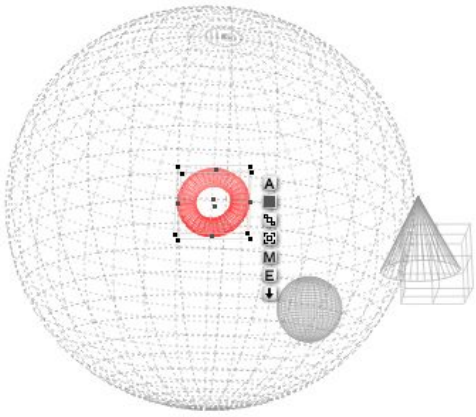
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7. Use the Trackball to move the camera around your scene. The Director's View will rotate around the selected object in a spherical orbit. If you move the selected object, the view will move with it.

   You can select another object to change which object the view centers around.

   The image below shows a sphere to give an example of where the camera will potentially rotate around the selected object:



Tripod Mode

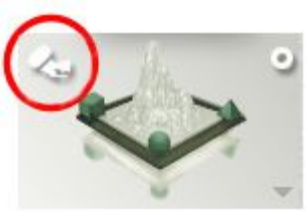
In Tripod Mode, the center of rotation is fixed at the center of the camera, so it actually pivots in place. As the name suggests, the camera acts as though it's on a tripod. It can rotate around, or tilt up and down, but it always remains in place.

Use the Tripod mode in conjunction with the Eye Level Camera command to get a sense of height.

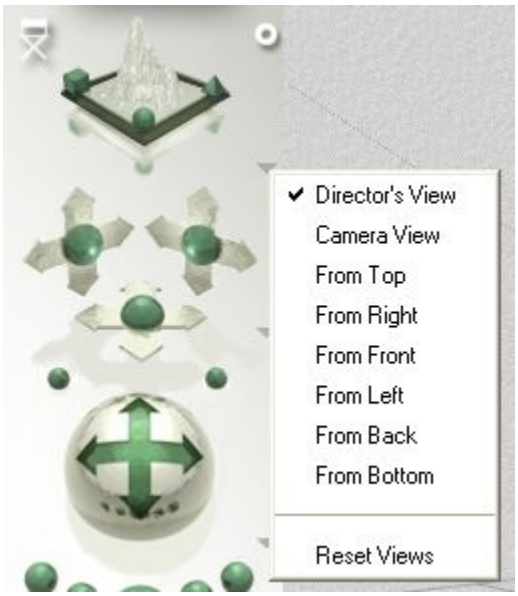
©2007 DAZ 3D, Inc.

To change to Tripod Mode:

1. If the Camera View is active, click on the Camera Perspective Toggle to switch to Director's View.



2. If any of the Orthogonal Views are active, click on the triangle next to the Select Views control and choose Director's View from the menu.



3. Click on the triangle next to the Trackball and choose Tripod from the menu.



OR

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4. Double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears. Click the Tripod mode button at the top of the dialog.



5. Click on the OK icon to close the dialog.
6. Use the Trackball to rotate the camera. The Director's View will pivot around the current location of the Director's View camera. If you move the camera location, the view will move with it.

Free Camera Mode

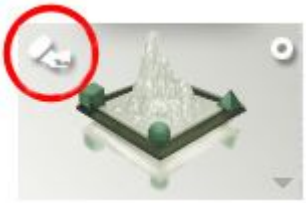
In this mode the camera is completely unconstrained. Its center of rotation can exist anywhere, from its center to a point somewhere in the scene. Since the placement of the camera's center of rotation is not limited, this mode can simulate any of the other modes.

For example, if you place the camera's origin point in its center, it acts as though it's on a tripod. Refer to "Manually Positioning the Camera" for more on positioning the camera's origin point.

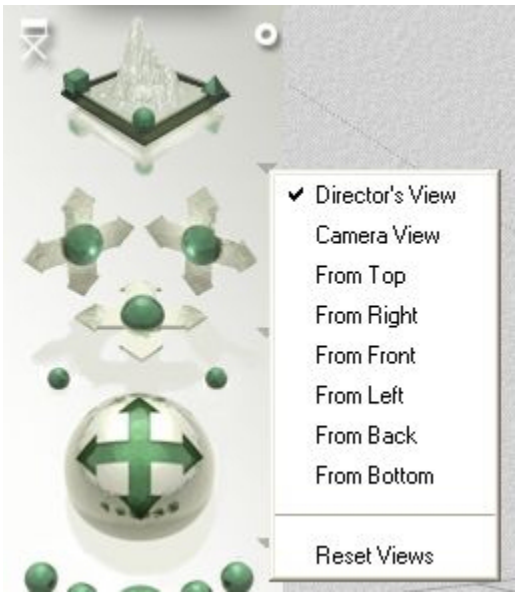
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To change to Free Camera Mode:

1. If the Camera View is active, you are already in Free Camera Mode.
2. To change to Director's View, click on the Camera Perspective Toggle to switch to Director's View.



3. If any of the Orthogonal Views are active, click on the triangle next to the Select Views control and choose Director's View from the menu.

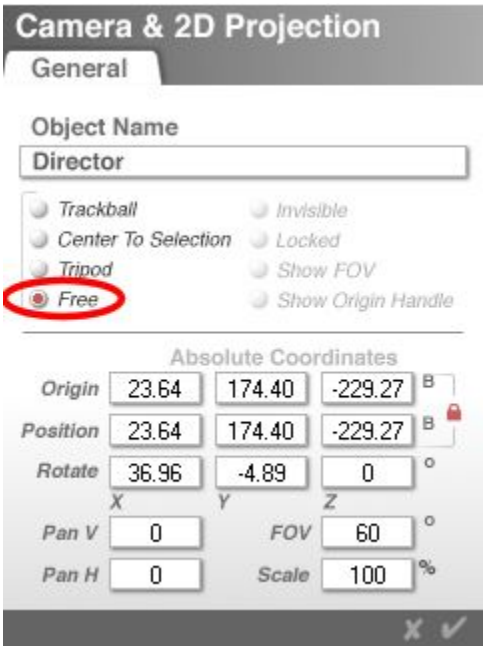


4. Click on the triangle next to the Trackball and choose Tripod from the menu.



OR

5. Double-click either the Trackball or one of the Camera Controls. The Camera & 2D Projection dialog appears. Click the Free mode button at the top of the dialog.



6. Click on the OK icon to close the dialog.
7. Use the Trackball or Camera Controls to move the camera. The camera will move freely around the scene.

Setting Camera Object Properties

Since the Camera acts as an object, there are several object properties you can use to set how it's displayed, linked, or animated.

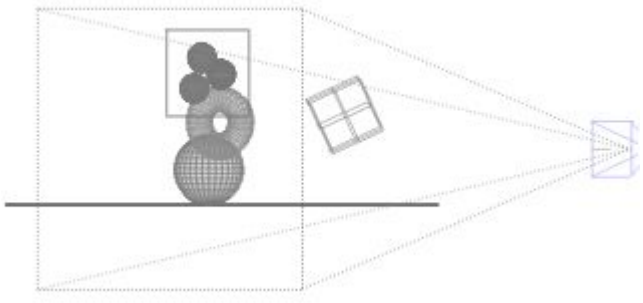
You can hide the camera wireframe to get a better view of objects in your scene. When you want to change the camera properties, you can display the hidden camera wireframe. You can also lock the position of the camera.

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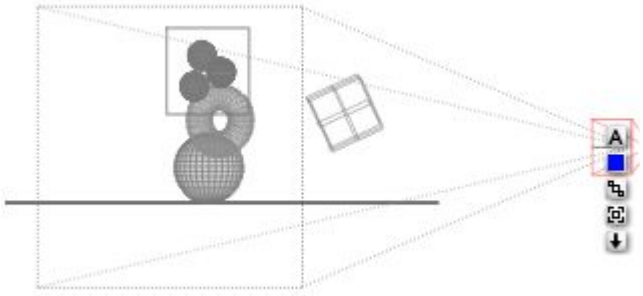
Hiding the Camera Wireframe

To hide the camera wireframe:

1. Switch to Director's View or an Orthogonal View so you can see the camera's wireframe.



2. Select the Camera in the Working window.

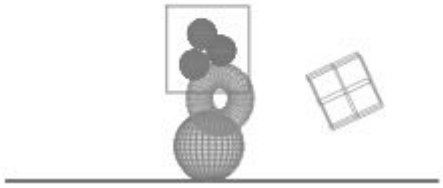


3. Click the A icon that appears next to it. The Camera & 2D Projection dialog appears.
4. Enable the Invisible option.



5. Click on the OK icon to close the dialog. The camera will now be hidden in the scene.

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Unhide the Camera Wireframe

To display the hidden Camera Wireframe:

1. If the Selection palette is not currently active, click the Time\Selection Palette Toggle at the bottom-right corner of the Working window to display the Selection palette.



2. Click the triangle icon on the Selection palette and choose Select Camera. The camera will automatically be set to visible.

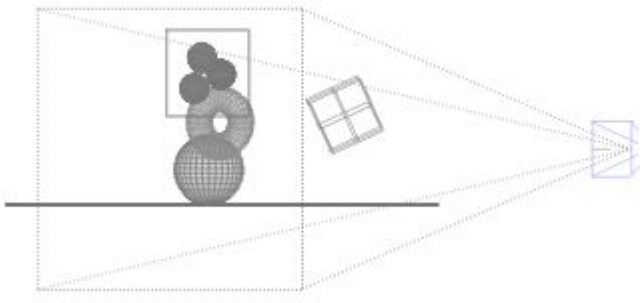


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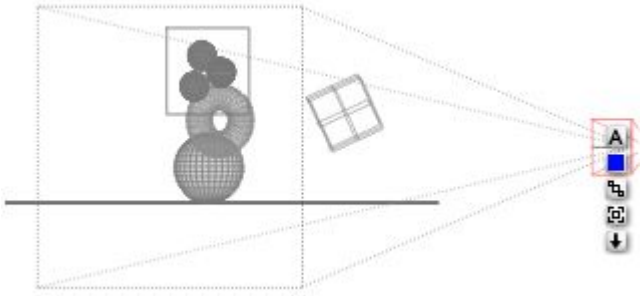
Locking the Camera Position

To lock the Camera Position:

1. Switch to Director's View or an Orthogonal View so you can see the camera's wireframe.



2. Select the Camera in the Working window.



3. Click the A icon that appears next to its bounding box. The Camera & 2D Projection dialog appears.
4. Enable the Locked option.



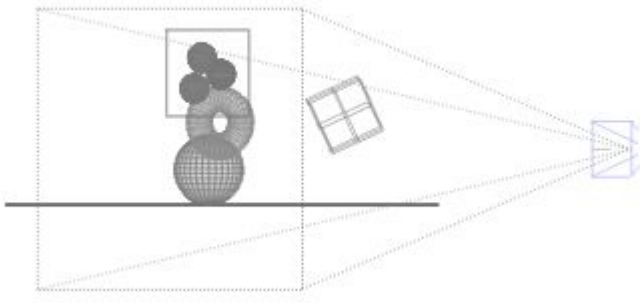
5. Click the OK icon to close. The camera position will now be locked so that the camera cannot be moved.

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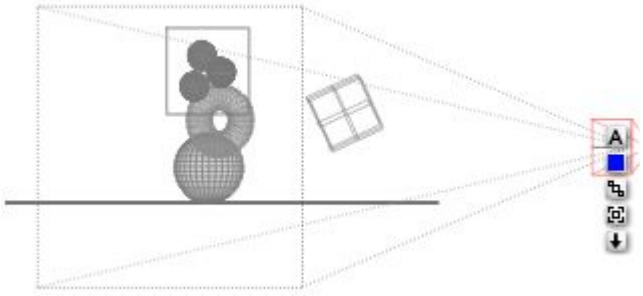
Unlocking the Camera Position

To unlock the Camera position:

1. Switch to Director's View or an Orthogonal View so you can see the camera's wireframe.



2. Select the Camera in the Working window.



3. Click the A icon that appears next to its bounding box. The Camera & 2D Projection dialog appears.
4. Disable the Locked option.



5. Click the OK icon to close. The camera position will now be unlocked allowing you to move the camera.

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Using the Camera Axes Controls

The Camera Axes Controls let you move the view of your scene along specific axes. When you're using these controls, the view does not tilt or rotate from its original position. It only moves up, down, back, or forward. The Camera Axes Controls affect your camera's location (Offset) only, not its orientation (Rotation).

One thing to remember when using the Camera Axes Controls is that the movement along an axes is affected by the current camera rotation/angle so Bryce will move along all affected axes in order to move the required amount along the selected axes. In the working window, however, the scene moves in the exact direction you selected.



The Camera Axes Controls are not available if you are in any Orthogonal View. When unavailable, these controls turn dark grey. If you are in an Orthogonal View, you must use the Zoom and Pan tools for navigation.

Refer to "Orthogonality and Views" for more on these views.

There are three Camera Axes Controls available:

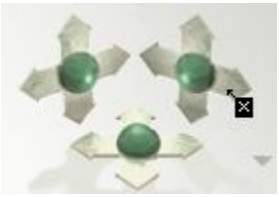
X-Y Camera Control

The X-Y Camera control provides control for horizontal and vertical motion. The sphere at the center of the camera control lets you move the camera along both the X and Y axes. The arrows let you constrain movement either horizontally or vertically.

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To move the camera along the X-axis:

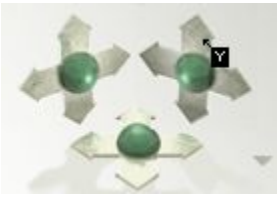
1. Move the mouse over the horizontal arrows on the X-Y Camera control until the cursor changes to an X with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the +X direction.
3. Drag left or down to move the camera in the -X direction.

To move the camera along the Y-axis:

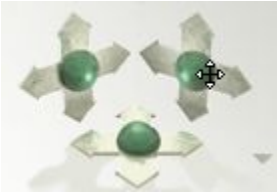
1. Move the mouse over the vertical arrows on the X-Y Camera control until the cursor changes to a Y with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the +Y direction.
3. Drag left or down to move the camera in the -Y direction.

To move the camera along the X and Y-axes at the same time:

1. Move the mouse over the center sphere on the X-Y Camera control until the cursor changes to a four-way arrow.



2. Left-click-hold on the button and drag up, down, left, or right to move the camera on the positive and negative X and Y-axes.

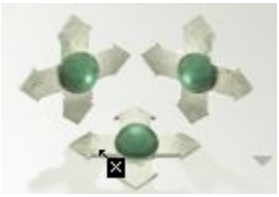
X-Z Camera Control

The X-Z Camera control provides control for horizontal and depth motion. The sphere at the center of the camera control lets you move the camera in both the X and Z-axes.

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To move the camera along the X-axis:

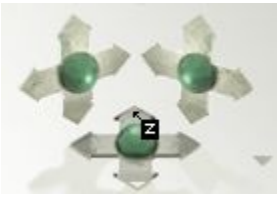
1. Move the mouse over the horizontal arrows on the X-Z Camera control until the cursor changes to an X with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the +X direction.
3. Drag left or down to move the camera in the -X direction.

To move the camera along the Z-axis:

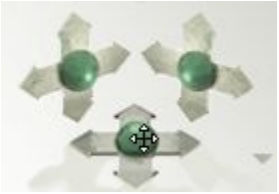
1. Move the mouse over the vertical arrows on the X-Z Camera control until the cursor changes to a Z with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the -direction.
3. Drag left or down to move the camera in the +direction.

To move the camera along the X and Z-axes at the same time:

1. Move the mouse over the center sphere on the X-Z Camera control until the cursor changes to a four-way arrow.



2. Left-click-hold on the button and drag up, down, left, or right to move the camera on the positive and negative X and Z-axes.

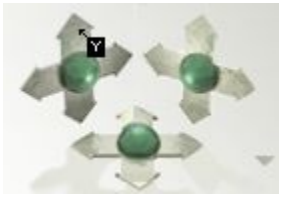
Y-Z Camera Control

The Y-Z Camera control provides control for vertical and depth motion. The sphere at the center of the camera control lets you move the camera in both the Y and Z-axis.

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To move the camera along the Y-axis:

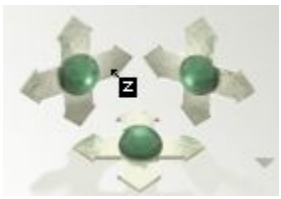
1. Move the mouse over the vertical arrows on the Y-Z Camera control until the cursor changes to a Y with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the +Y direction.
3. Drag left or down to move the camera in the -Y direction.

To move the camera along the Z-axis:

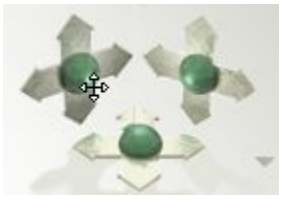
1. Move the mouse over the horizontal arrows on the Y-Z Camera control until the cursor changes to a with an arrow.



2. Left-click-hold on the arrow and drag right or up to move the camera in the -direction.
3. Drag left or down to move the camera in the +direction.

To move the camera along the Y and Z-axes at the same time:

1. Move the mouse over the center sphere on the Y-Z Camera control until the cursor changes to a four-way arrow.

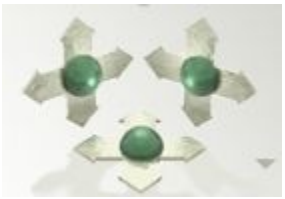


2. Left-click-hold on the button and drag up, down, left, or right to move the camera on the positive and negative Y and Z-axes.

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Camera Axes Control Options

The Camera Axes controls have options that let you move the camera to create specific views.



To choose a Camera Axes control option, click the triangle icon next to the Camera Axes controls and choose an option from the menu:



- Center Scene
- Center Selection
- Eye-Level Camera
- Choose Camera to Director or Director to Camera to select either the Director or Camera View. See "Swapping Director's & Camera Views" for more on this option.
- Edit Current Camera: Brings up the Camera & 2D Projection dialog that allows you to enter current camera information. This is the same dialog that comes up when you double-click on the Trackball or Camera Axes controls. Refer to "Positioning the Camera Numerically" for more information.

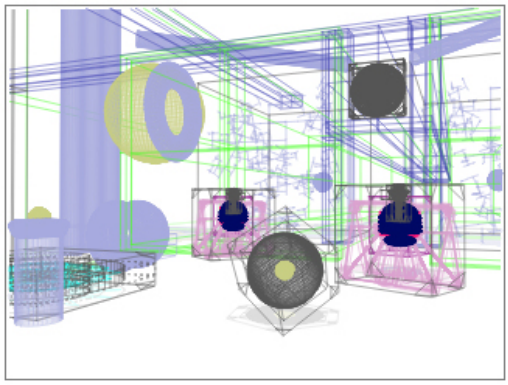
Center Scene

Selecting Center Scene from the Camera options menu, rotates the camera so that all items in your scene are centered in the Working window. This option affects only the camera's rotation, not its offset. If you can't see all the objects in your scene after using this option, try pulling your camera back a bit with one of the controls.

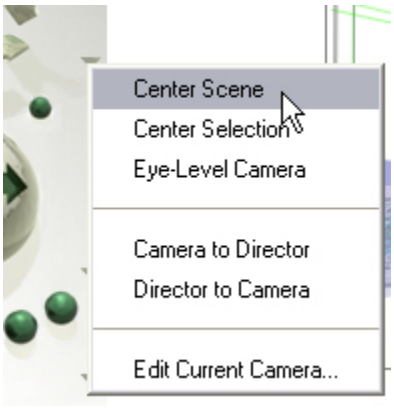
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To center the scene:

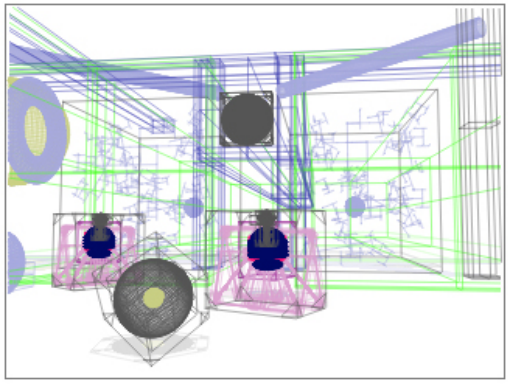
1. Create a new scene or open a scene from disk.



2. Choose Center Scene from the Camera Options menu.



The camera will move to center the scene in the camera's view.



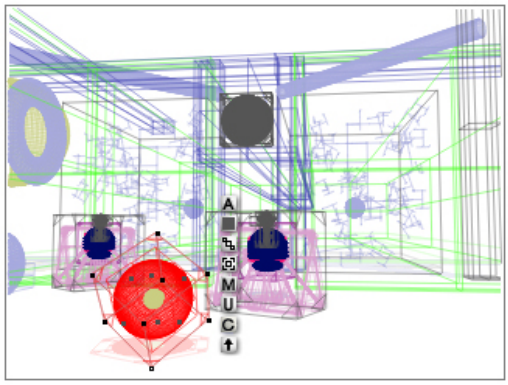
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Center Selection

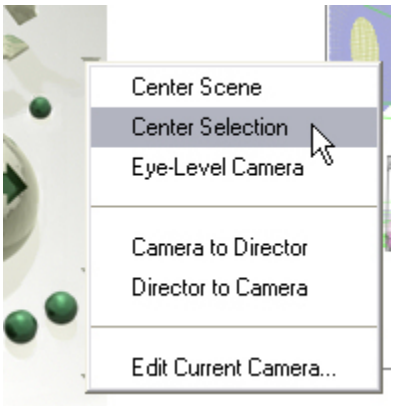
Selecting Center Selection from the Camera Options menu rotates your camera so that any selected object or objects will be centered in your view. This option does not reposition the object itself, only the camera's rotation relative to the selected object.

To center the scene to the current selection:

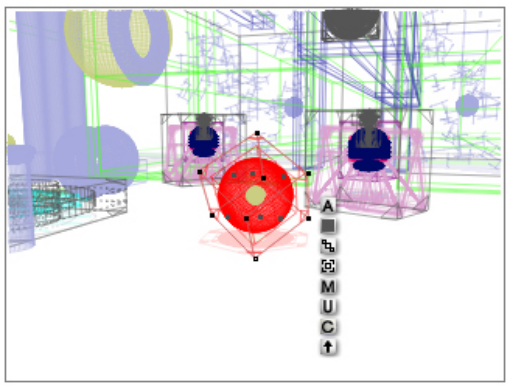
1. Select an object in the scene.



2. Choose Center Selection from the Camera Options menu.



The camera will move to center the selected object in the scene.



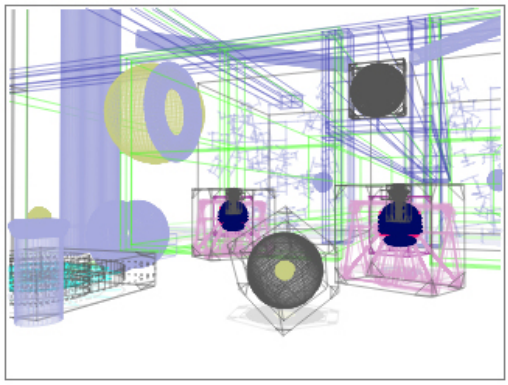
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Eye-Level Camera

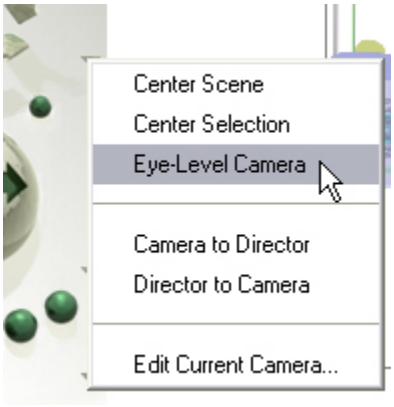
Selecting Eye-Level Camera from the Camera Options menu repositions the camera to just above ground level. Use this command (especially in conjunction with the Trackball's Tripod mode) to create the feeling of large, looming mountains or other objects. This is also effective in concert with the Field of View control.

To set the camera to eye-level:

1. Create a new scene or open a scene from disk.

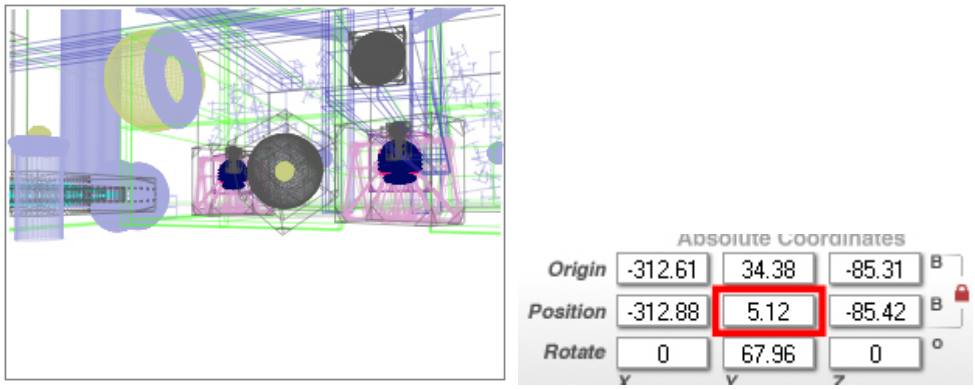


2. Choose Eye-Level Camera from the Camera Options menu.



The camera will move so that the camera is at "eye-level" or 5.12 BU above the ground.

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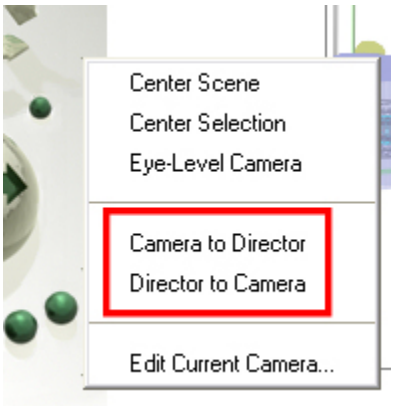


Swapping Director's & Camera Views

The Director’s View and the Camera View are interchangeable. So you can move the Camera View to the position of the Director’s View, or vice versa.

Even though you can’t directly position the camera that produces the Director’s View in the Working window, you can set up a Director’s camera position by dragging the Camera to a position in the scene and then swapping the Camera position with the Director’s View position.

To swap the Director’s View position for the Camera View position, click the triangle icon next to the Camera Axes controls and choose either Camera to Director or Director to Camera from the menu.



Banking Controls

The Banking control sphere tilts your Camera (actually rotating the camera on the Z-axis), creating the effect of a tilted horizon. This control is great for creating tilted airplane cockpit views. Banking simulates a Roll action.

Banking only works in Director's or Camera View.

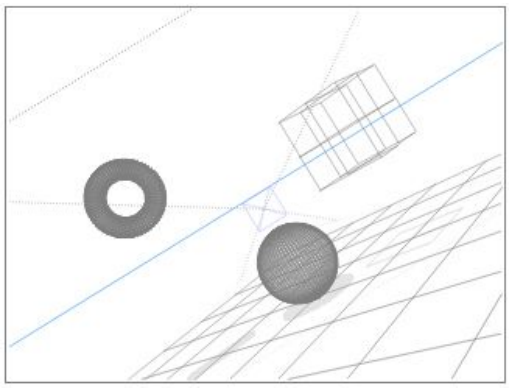
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To bank the camera,

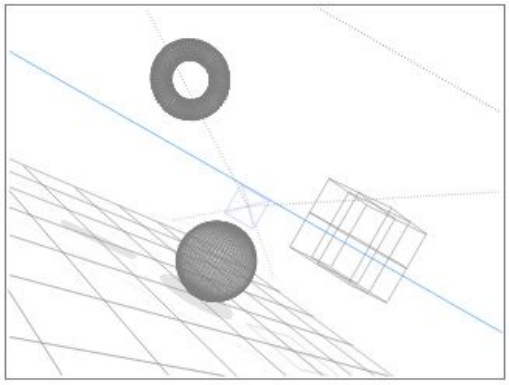
1. Drag the Banking control, which is located to the top left of the Camera Trackball.



2. Drag right to bank to the right.



3. Drag left to bank to the left.



Press Opt/Alt+click on the Banking control to reset it to normal. The normal (default) setting is zero.

Field of View Control

The Field of View (FOV) control sphere acts like a zoom lens control. The higher the setting, the wider the field of view for your lens.

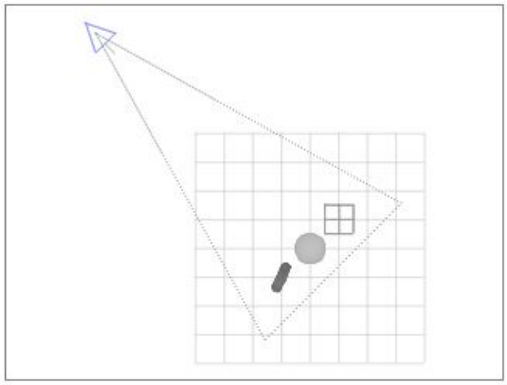
Because you are admitting more information into your lens, it will create the illusion that objects are receding from view, or getting smaller. That is not the case. Since you're

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admitting more information, existing objects necessarily occupy a smaller percentage of space within your field of view.

If you drag the Camera control to bring your "receding" objects back up to a larger area in your view, perspective distortion effects appear. This is particularly effective for creating broad, swooping cloud scenes.

When you view the camera in Director's View or one of the Orthogonal Views, you'll be able to see the camera's Field of View displayed as a 3D pyramid that extends from the camera wireframe. The large triangle that extends from the camera's wireframe represents its field of view. As the field of view changes, so does the shape of the triangle.



By default, the camera's field of view projection is visible.

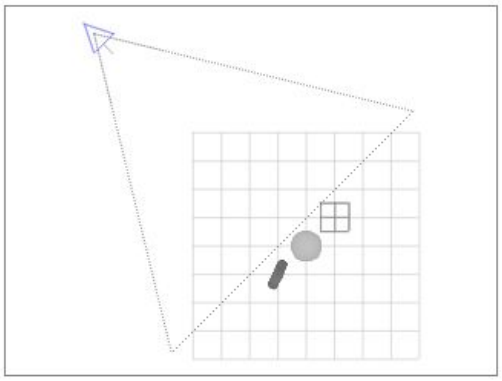
Changing the Field of View only works in Director's or Camera View.

To increase/decrease the Camera's Field of View, drag the Field of View control, which is located to the top right of the Camera Trackball.

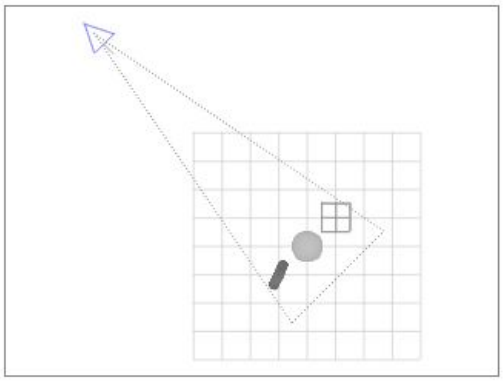


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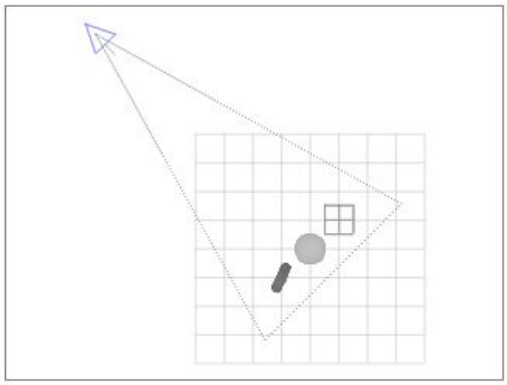
- Drag right to increase the field of view.



- Drag left to decrease it.



- Opt/Alt+click on the Field of View control to reset to normal. The normal, or default, setting is 60°.



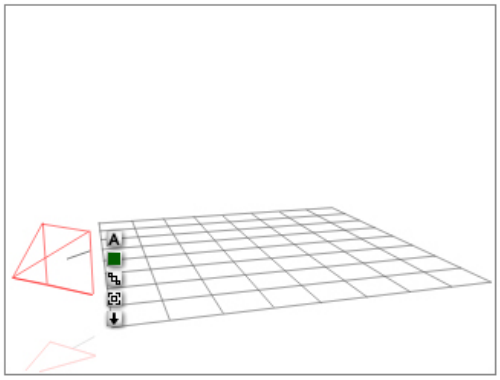
To change the Field of View numerically, see "Set Field of View Numerically."

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Displaying the Camera's Field of View

To display the Camera's Field of View:

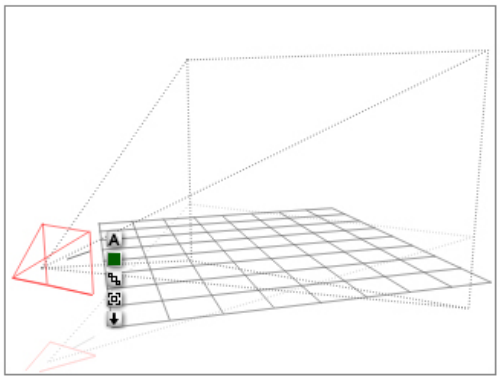
1. Switch to Director's View or an Orthogonal View so you can see the camera's wireframe.
2. Select the Camera in the Working window.



3. Click the A icon that appears next to the camera object. The Camera & 2D Projection dialog appears.
4. Enable the Show FOV option.



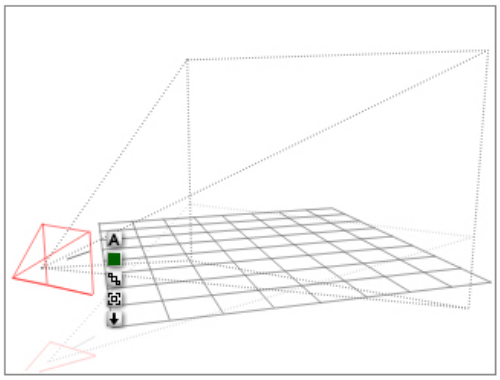
5. Click on the OK icon to close the dialog. The Camera Field of View will now be visible.



Hiding the Camera's Field of View

To hide the Camera's Field of View:

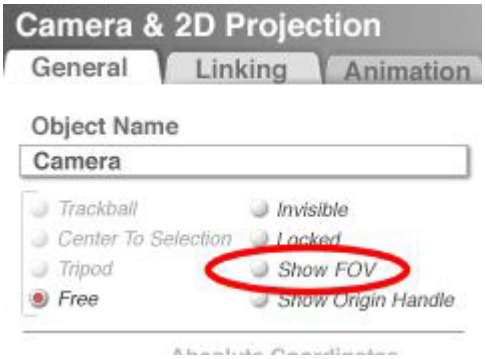
1. Switch to Director's View or an Orthogonal View so you can see the camera's wireframe.
2. Select the camera in the Working window.



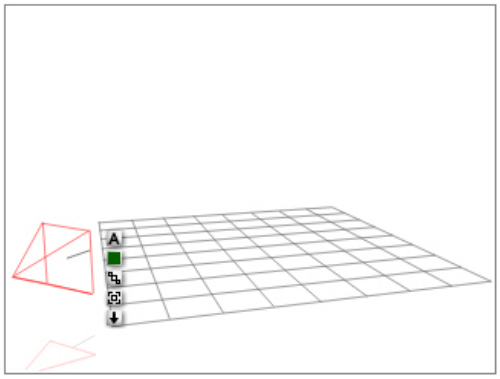
3. Click the A icon that appears next to the camera object. The Camera & 2D Projection dialog appears.

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4. Disable the Show FOV option.



5. Click on the OK icon to close the dialog. The Camera Field of View will now be hidden.



Using the Trackball

The Trackball lets you rotate the camera around its origin point. The position of the origin depends on the Camera mode you select.

Refer to "Camera Modes" for more on these modes.

The Trackball doesn't rotate the scene, it only changes the camera's location (Offset) and orientation (Rotation) relative to your scene.

To move the camera using the Camera Trackball:

1. Move the cursor over the Camera Trackball control. The cursor will change to a cross with arrows on each end.



2. Left-click-hold and drag the mouse over the Camera Trackball control. The Camera Trackball control will turn a darker grey and as you drag the mouse, the view of your scene moves in the direction you drag.



Positioning the Camera

The most precise way of positioning the view of your scene is by using the Camera & 2D Projection dialog. This dialog lets you enter values to set the camera position, the position of the camera's origin point, rotation, and field of view. The dialog can be used to adjust either the Camera View or the Director's View. When you display the dialog, you can see the numerical position of the camera and the position of its origin point. You can also see the active Camera Mode.

There are different options available in the dialog depending on whether you're in Camera View or Director's View. When you're in Camera View, the only Camera Mode available is Free Camera. In addition, the Origin fields are only available if you're using Free Mode.

Since the camera is an object, there are several more controls available when you're in Camera View. These controls let you set linking and animation options. Refer to "Camera Modes" for more information.

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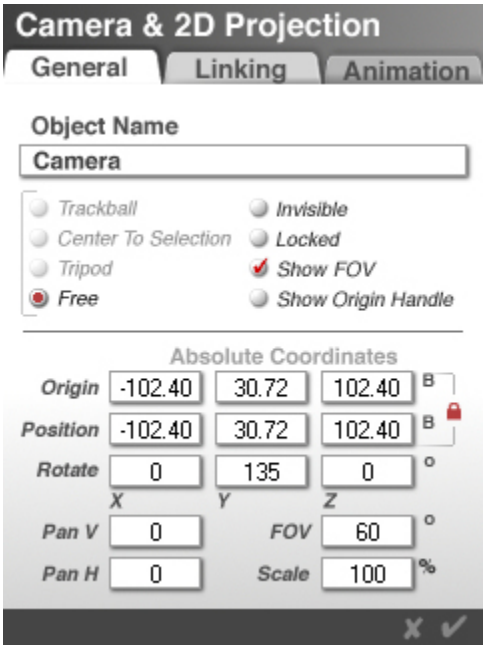
Position Camera Numerically

To set the position of the camera numerically:

1. To position the Director's View camera, double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears.



2. To position the Camera View camera, select the camera and click on the A icon next to the selected camera. The Camera & 2D Projection dialog appears. Make sure the General tab is active before continuing.



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3. Enter values in the Position X, Y, and fields. You can enter negative values here.



4. Click on the OK icon to exit the dialog.

Technically, since the Bryce environment is infinite, the range is infinite as well, but higher values can create unpredictable results.

The default values are 102.40, 30.72, and 102.40, respectively for the Director's View camera and -102.40, 30.72, 102.40, respectively for the Camera View camera.

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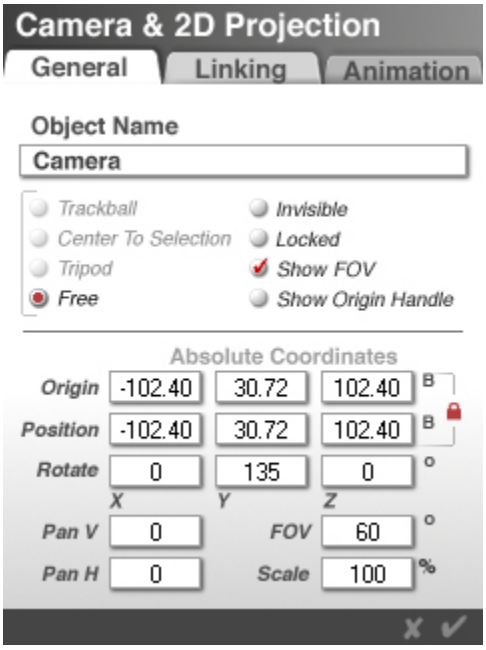
Rotate Camera Numerically

To rotate the camera numerically:

1. To rotate the Director's View camera, double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears.

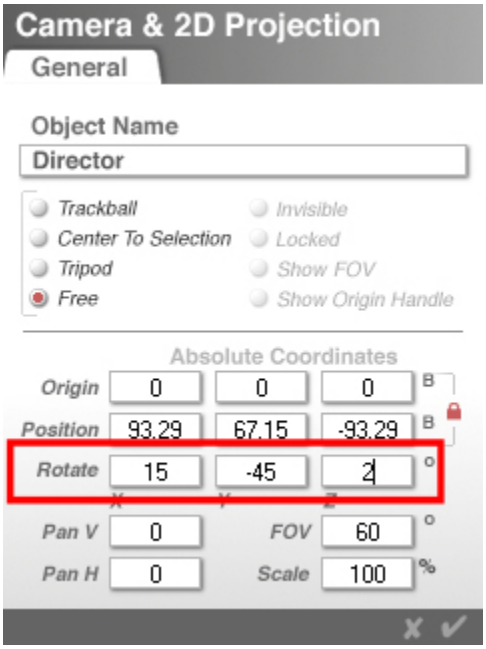


2. To rotate the Camera View camera, select the camera and click on the A icon next to the selected camera. The Camera & 2D Projection dialog appears. Make sure the General tab is active before continuing



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3. Enter values in the Rotate X, Y, and Z fields. Values are expressed in degrees. X, Y, and Z rotations are also known as Yaw, Pitch, and Roll. The rotation, or Roll field, displays the current value for the Banking control. You can enter negative values in these fields. The effective range is +/- 99. The default values for the Director's View camera are 0, -45, and 0°, respectively while the default values for the Camera View camera are 0, 135, and 0°, respectively.



4. Click on the OK icon to exit the dialog.

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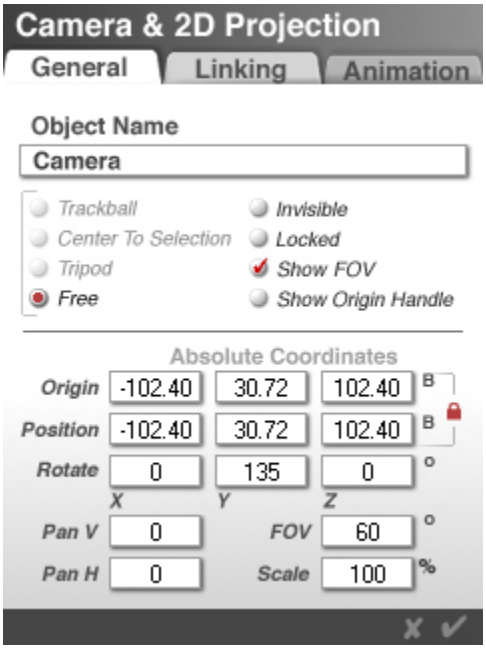
Set Field of View Numerically

To set the Field of View (FOV) numerically:

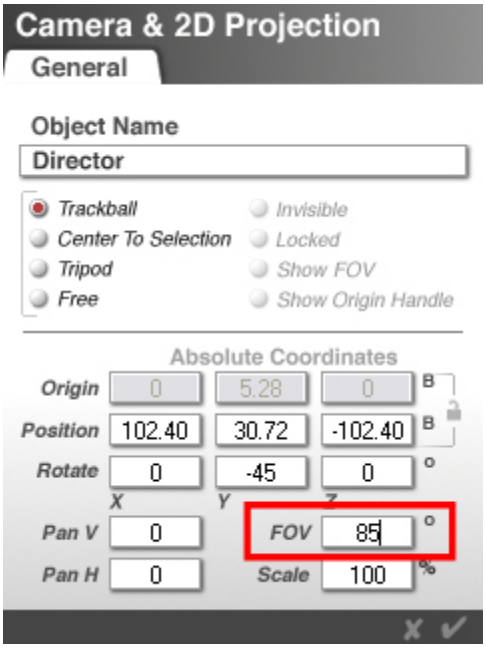
1. To set the FOV for the Director's View camera, double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears.



2. To set the FOV for the Camera View camera, select the camera and click on the A icon next to the selected camera. The Camera & 2D Projection dialog appears. Make sure the General tab is active before continuing



3. Enter a value in the Field of View field (FOV). The value in this field, expressed in degrees, describes current settings for the Field of View control. The effective range is 1 to 180°, and the default value is 60°.



4. Click on the OK icon to exit the dialog.

Position Camera Manually

You can manually position the camera by adjusting the position of the camera wireframe in the Working window. The camera wireframe is visible only when you're in Director's View or one of the Orthogonal Views.

In the Director's View or an Orthogonal View, you will see a blue Camera wireframe, which represents the location of your Camera. You can then drag the Camera wireframe to change the Camera position. The Nano-Preview updates to reflect your changes.

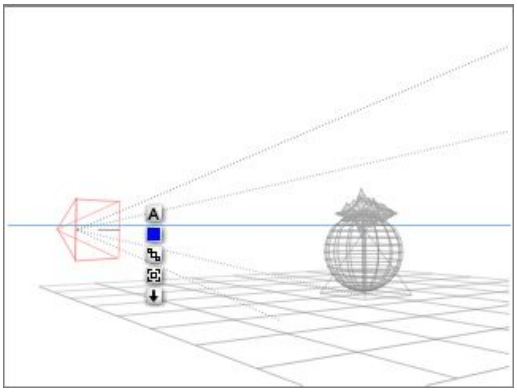
There are two ways to manually position the camera:

- Select the camera an drag it to a new location
- Change to Camera View and use the Camera Controls to move the camera

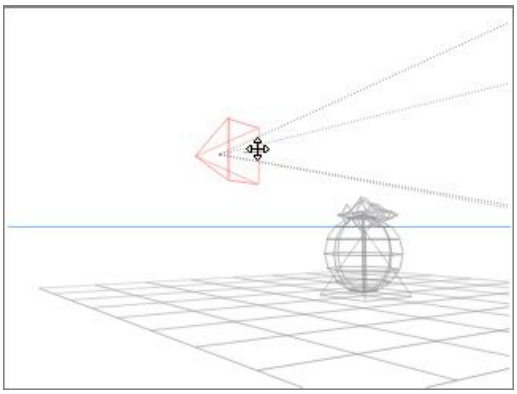
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To manually position the Camera by dragging:

1. Change to the Director's View or one of the Orthogonal Views.
2. Click on the Camera wireframe to select it.

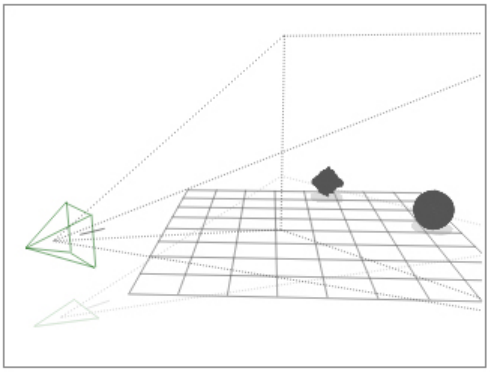


3. Left-click-hold on the camera and drag it to the new position.



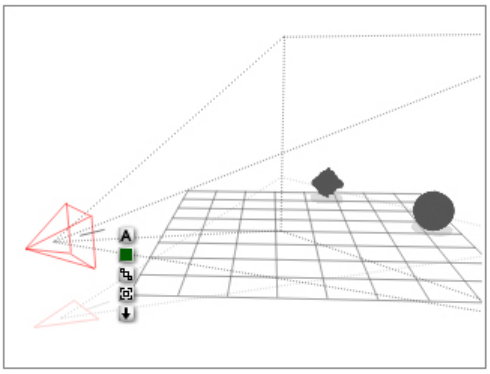
To manually position the Camera by using the Camera Controls:

1. Change to the Director's View or one of the Orthogonal Views.

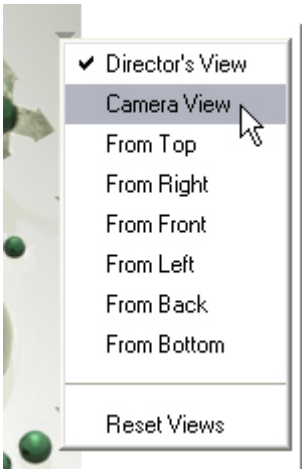


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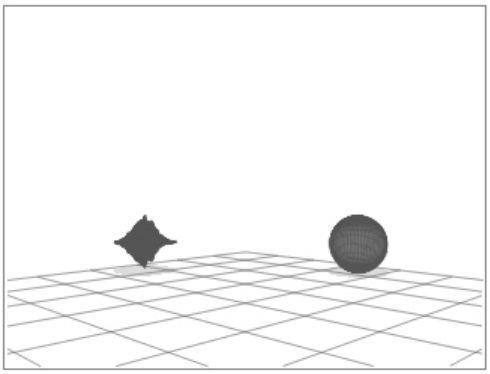
2. Click on the Camera wireframe to select it.



3. Select Camera View from the View Controls Options.

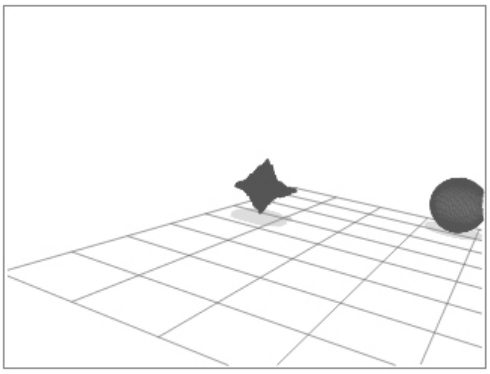


The view will now switch to the view from the camera.

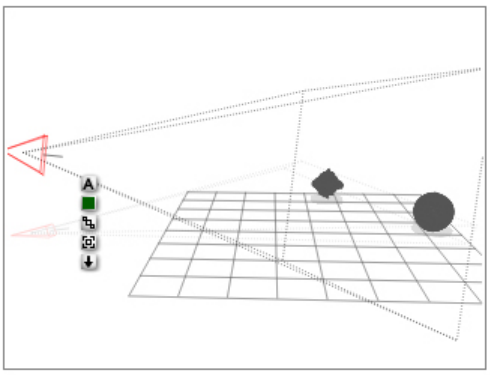


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4. Use the Camera Axes Controls and the Trackball to move the view of the scene. Since the camera is selected, you are actually moving the camera around in the view.

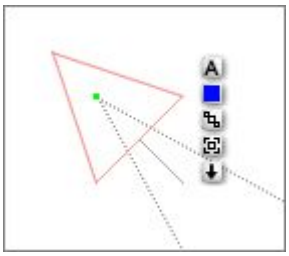


5. View the scene from the Director's View to see how the camera has moved.



Camera Origin Point

In its default state, the Camera's Origin Point is not visible and is located at its center. When the Camera's Origin Point is visible, it appears as a green dot in the center of the camera's wireframe.



You can simulate any of the camera modes by dragging the Camera's Origin Point to different locations in the scene:

- If you position the origin point in the center of the scene, the camera acts as though it's in Trackball mode. When you rotate the camera, it moves around the origin point.

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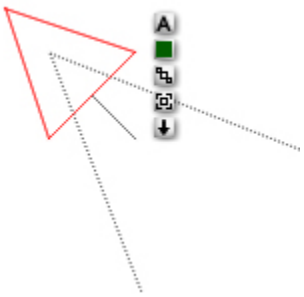
- If you position the origin point over an object in the scene, it acts as though it's in Center to Selection mode. When you rotate the camera object, it will pivot around the object under the origin point.
- If you leave the origin point positioned at the center of the camera object, it acts as though it's in Tripod mode.

Once you offset the origin point, all the camera's movements will be altered. If you offset the origin point, then switch to Camera View, the camera may not move as expected.

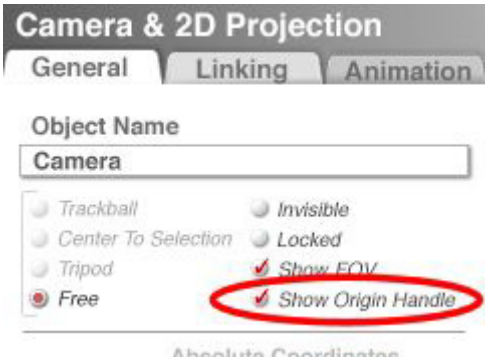
Display Origin Point

To display the Camera's Origin Point:

1. Switch to one of the Orthogonal Views or Director's View so you can see the camera wireframe.
2. Click the camera wireframe to select it.

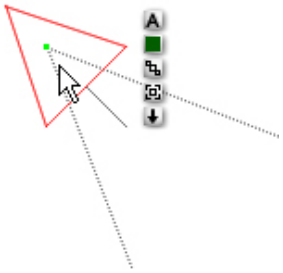


3. Click the A button that appears next to the camera's wireframe. The Camera & 2D Projection dialog appears.
4. Click the General tab and enable the Show Origin Handle option.



5. Click on the OK icon to accept the changes. The Camera's Origin Point will now be visible.

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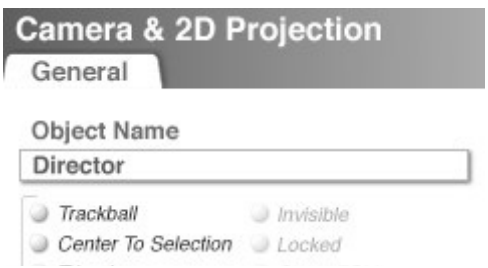
Position Origin Point Numerically

To position the camera's origin point numerically:

1. To position the origin of the Director's View camera, double-click either the Trackball or one of the Camera controls. The Camera & 2D Projection dialog appears. Note that if in Trackball, Center to Selection, or Tripod mode, the Origin fields for the Director's camera are not active.

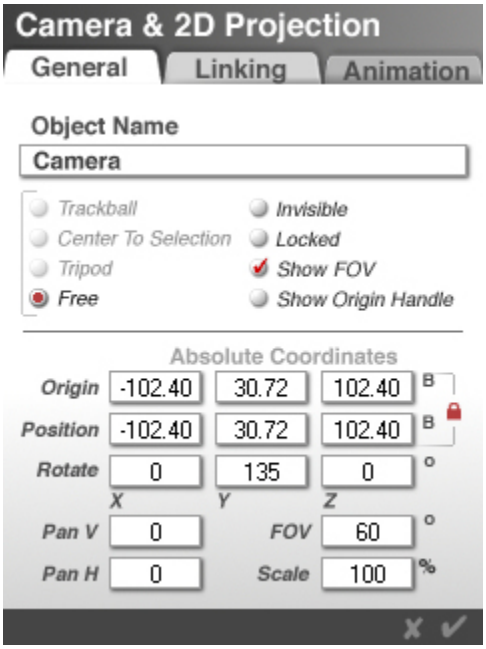


2. Select the button next to the Free mode, if needed to enable the Origin fields.



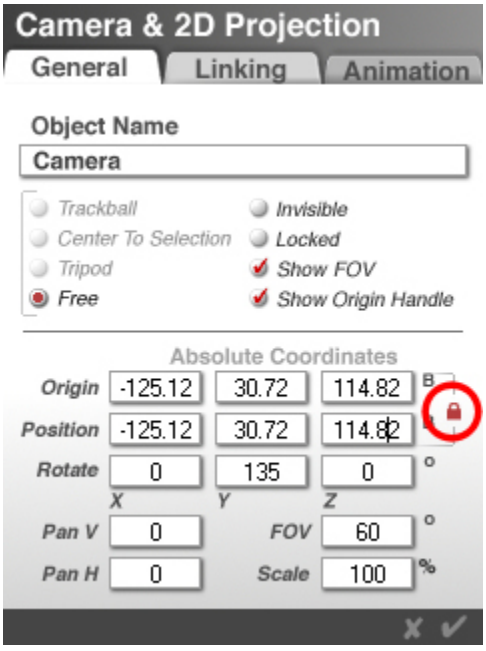
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3. To position the origin of the Camera View camera, select the camera and click on the A icon next to the selected camera. The Camera & 2D Projection dialog appears. Make sure the General tab is active before continuing.



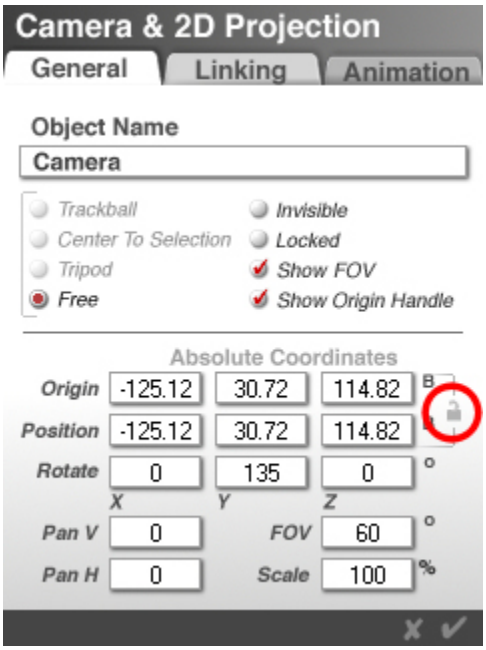
4. Before you can move the origin point, you will need to unlock the link between the Origin fields and the Position fields. If you change the Origin values while they are linked, you will be moving the camera and the origin point which defeats the purpose.

   Click on the red padlock icon next to the Origin and Position fields.



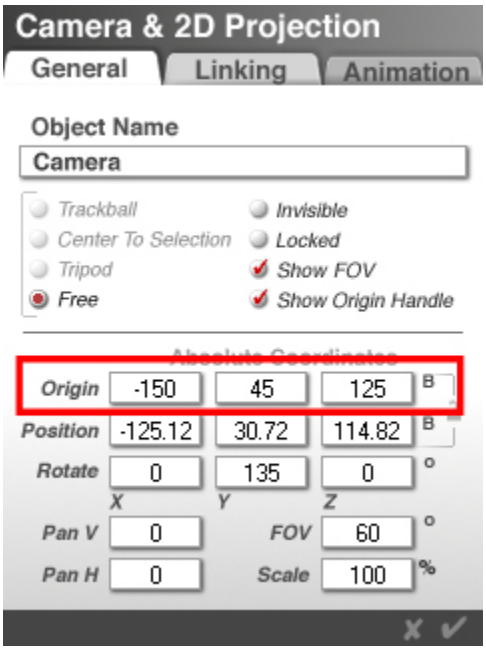
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The icon will change to a gray padlock with the shackle open.



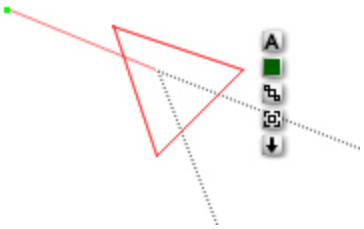
You can now change the Origin values without moving the camera.

5. Enter values in the Origin X, Y, and fields.



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6. Click on the OK icon to exit the dialog. The new Origin Point location can be seen in the scene. Note that if you changed the Origin of the Director's Camera, then you will not see anything different until you actually try to move the camera.

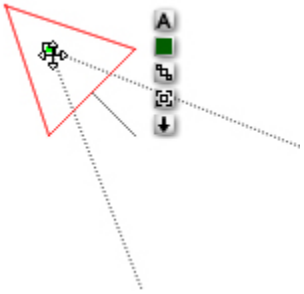


To reset the camera's origin point, hold down Shift and click the origin point or enter the Camera & 2D Projection dialog, unlock the padlock, set the Origin values to match the Position values, click on the unlatched lock to lock the fields, then click on OK to exit the dialog.

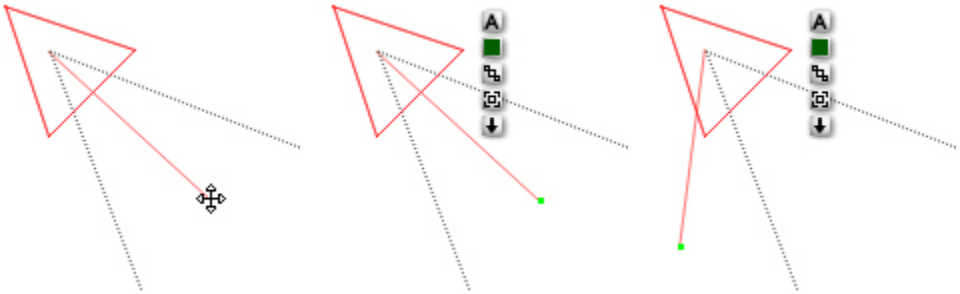
Position Origin Point Manually

To position the Camera's Origin Point manually:

1. In the Camera & 2D Projection dialog, display the Camera's Origin Point.
2. Move the mouse over the camera origin point. The cursor changes to a four-way arrow.



3. Drag the green point to a location in the scene.



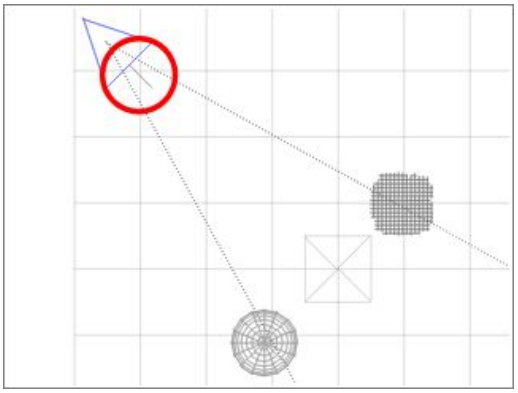
To reset the camera's origin point, hold down Shift and click the origin point.

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Aiming the Camera

The only problem with positioning the Camera using the Orthogonal or Director's View is that the view from the Camera remains fixed as you adjust its location, so you may inadvertently lose the objects you were looking at when the position of the Camera changes.

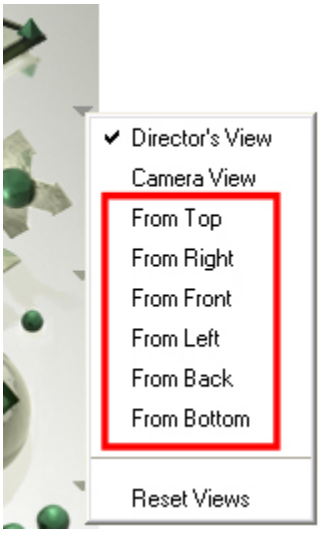
When you look at the Camera as an object, you'll see that there is a control handle extending from the front of the object. This handle represents the Camera's current aim. By dragging this handle to a point in your scene, you can change the Camera's aim.



When you change the aim of the Camera, it rotates to face the new target, but remains in the same position.

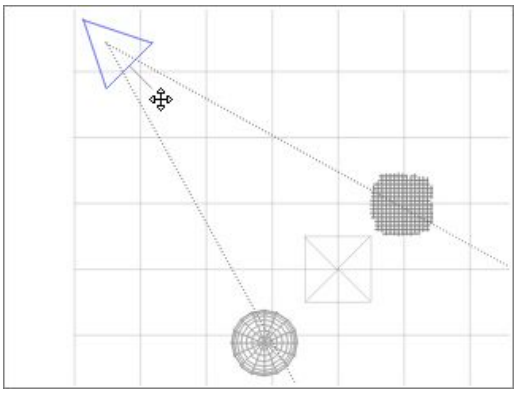
To change the Camera's aim in an orthogonal view:

1. In the Working Window, click the triangle icon next to the View Control and choose top, left, right, bottom, front, or back from the menu.

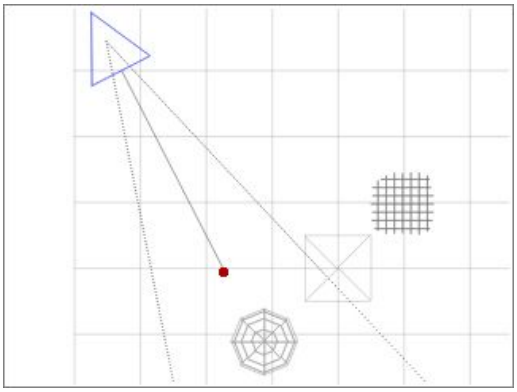


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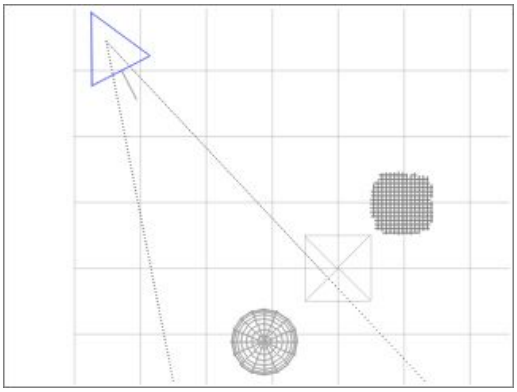
2. Move the cursor over the end of the control handle. The cursor changes to a four-way arrow.



3. Drag the end of the control handle to the point in you scene where you want the camera to aim. As you drag, the end of the handle changes to a red dot so you can see the aiming point better.



4. When the camera is pointing in the right direction, let up on the mouse. The control handle will revert to its default size and the camera will be pointing in the direction you selected.

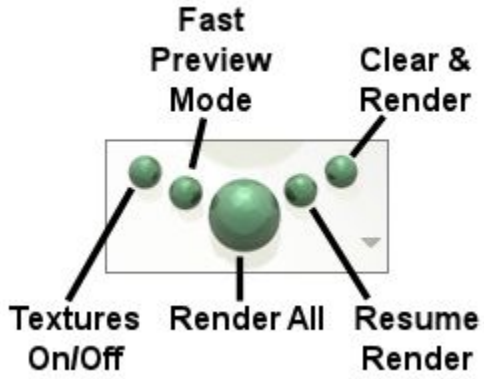


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Render Controls

Once you've selected the rendering options you want to use and chosen a rendering mode, you're ready to start rendering. You render your entire image using the Render Controls or use the Plop Render Controls to render areas of your image.

The Render Controls let you start and resume a rendering of your image. There are controls for enabling two types of fast renders. Use the Render Controls to control the rendering of your scene.



Render All

To start a rendering of the entire scene, click the Render All button or press Cmd/Ctrl+R. If you have already rendered any portion of your scene but not changed anything in the scene itself, the render will start where it left off earlier. If any settings were changed after stopping the render, this will start the render over from the top.



You can interrupt any rendering by clicking the mouse anywhere in the Working window.

Please note that when rendering to screen, you may experience reduced multi-tasking capabilities due to the way Bryce uses CPU time during rendering. You may want to reduce using other programs while rendering to screen, specifically during the anti-aliasing portion.

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Resume Render

To resume a rendering, click the Resume Render control or press Cmd/Ctrl+R . If any settings were changed after stopping the render, this will start the render over from the top.



You can interrupt any rendering by clicking the mouse anywhere in the working window.

Clear and Render

To restart a rendering from the top, click the Clear and Render control or press Cmd/Ctrl+Opt/Alt+R. This control restarts a render of the scene or any selected region.

Refer to "Plop-Render Mode" for more on rendering regions.

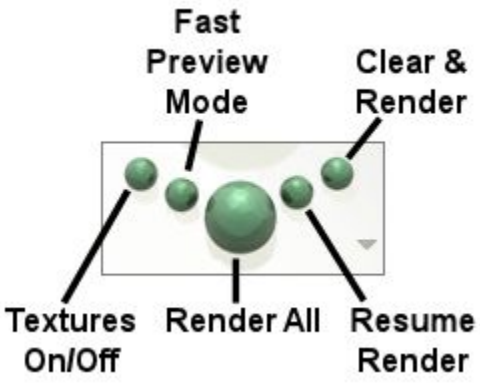


You can interrupt any rendering by clicking the mouse anywhere in the Working window.

Preview Rendering

Preview Render Modes are accessed using the Render Controls or the Render Options dialog and provide lower quality renders that you can use to preview your image.

There are two Preview Render Modes: Textures On/Off and Fast Preview.



Fast Preview

When Fast Preview Mode is enabled, the render engine ignores areas of low frequency and only ray-traces areas of high frequency. This results in accelerated renders that are great for previewing during a session. However, it also results in some patchiness in certain mid-frequency areas, so it should not be used for final output.

- To enable Fast Preview Mode, click the Fast Preview button in the Render Controls.
    - When the button turns a silvery green, the mode is enabled.



    - When the button is light green, the mode is off.



- Alternatively, click the triangle beside the Render Controls and choose Render Options from the menu.



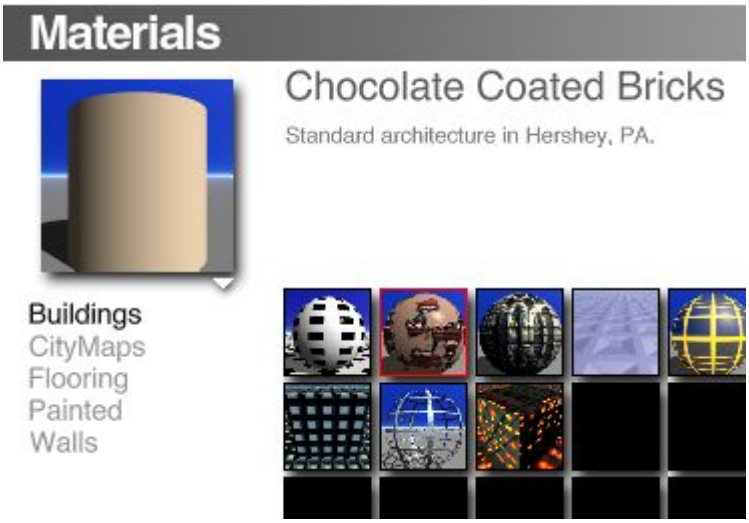
- Select the Preview Render option to enable Fast Preview Mode; select the Full Render option to disable it.



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Textures On/Off

When this mode is enabled, all textural parameters are disabled, including textures in the Materials Library and Materials Lab.



This mode performs the following procedures to speed up a render:

1. Objects with properties like transparency, reflection, and bumpy textures are rendered in flat opaque shades.
2. Fog, Haze and Clouds are disabled.
3. Any item with a procedural texture is rendered with a color drawn from the ambient color channel in the Materials Lab.
4. Any item with a simple color texture is rendered in that color. The Textures On/Off mode is available in any mode.

- To enable Textures On/Off mode, click the Textures On/Off button in the Render Controls.
    - When the button turns a silvery green, the mode is enabled.



    - When the button is green, the mode is disabled.



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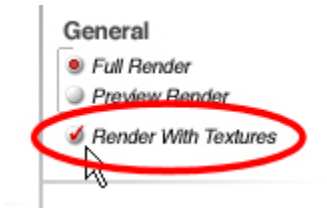
- Alternatively, click the triangle beside the Render Controls and choose Render Options from the menu.



- Click on the radio button/checkmark next to Render With Textures to enable the Textures Off mode.



- Click the radio button next to Render With Textures to enable the Textures On mode.



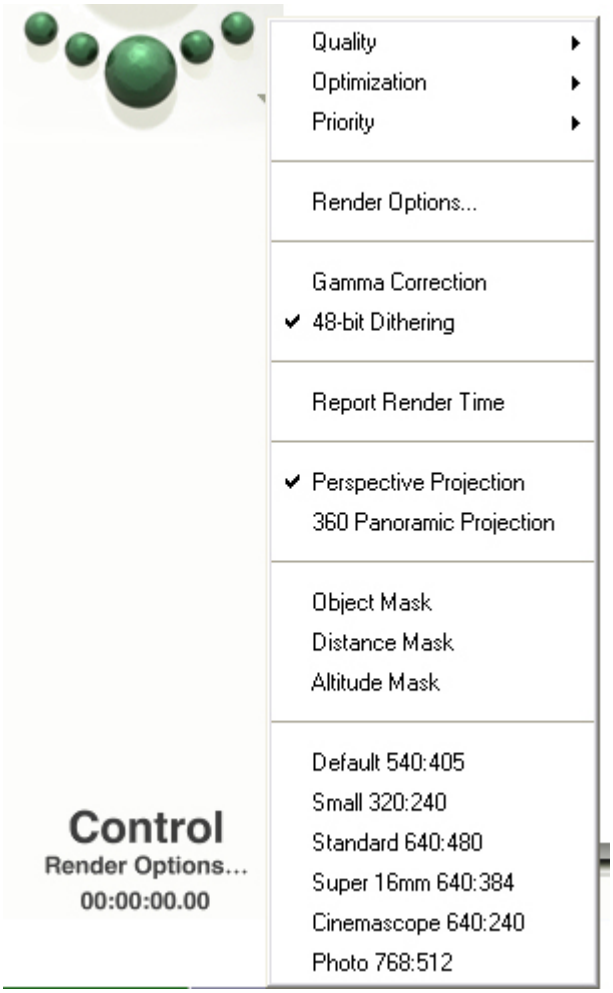
Render Options Menu

Bryce offers a number of options and controls that let you control rendering. As you work on a scene, you can use settings that produce fast renders. When you're ready to produce your final image, you can choose settings that produce the highest quality image.

The Render Options menu is available by clicking the triangle to the right of the Render Controls.



Once you click on the triangle the menu comes up.



Render Quality

The Render Quality options let you control the quality of the rendered image by setting the level of anti-aliasing. Anti-aliasing removes the jaggies on the edges of objects within the image. In Bryce, Anti-aliasing is performed using a super-sampling method. This means that for every pixel that's ray-traced, more than one ray is used to determine the pixel's color. The increase in rays increases the quality of the ray-traced object and the render time as well.

Anti-aliasing can greatly improve the quality of your image, but it is time-consuming. It can also eliminate some desired roughness from high frequency textures. Anti-aliasing is performed on the last pass of the rendering process.

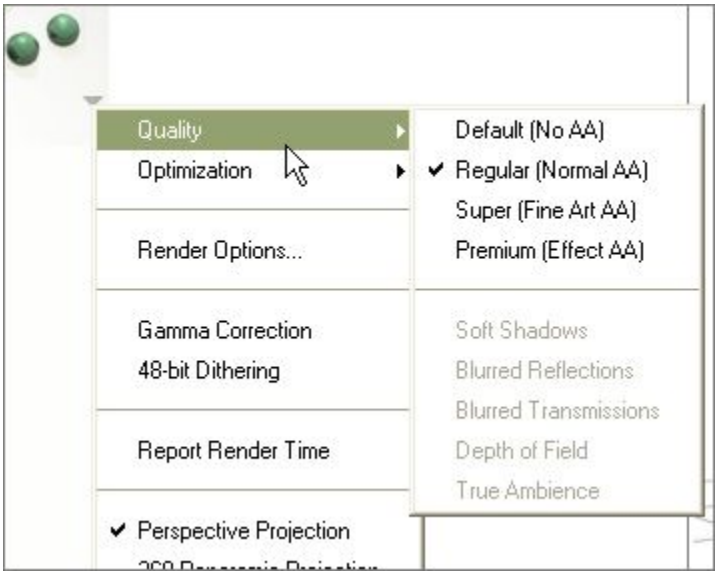
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There are four quality modes available in Bryce:

- Default
- Regular
- Super
- Premium

To set the quality mode:

- Click the triangle icon beside the Render controls, point to Quality, and choose a quality mode from the menu.

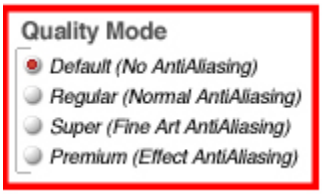


- Alternately, click the triangle icon beside the Render controls and click Render Options.



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- Click one of the quality modes at the top-left corner of the dialog, then click on the OK icon to exit the dialog.



Default (No Anti-Aliasing)

In this mode there is no Anti-Aliasing performed on the image. In the image below, you can see jagged edges around the sphere and around some of the spots.



To turn on default render quality:

- Click the triangle beside the Render Controls, point to Quality and select the Default (No AA) quality mode.

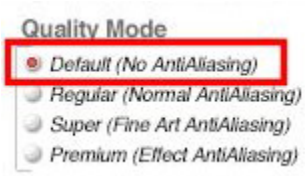


To turn on default render quality using the Render Options dialog:

1. Click the triangle beside the Render Controls and click Render Options.



2. Select the Default (No Anti-Aliasing) quality mode.



3. Click on the OK icon to exit the dialog.

Regular (Normal Anti-Aliasing)

In this mode, after the image is rendered, Bryce scans the entire bitmap to determine which areas require anti-aliasing. Only the areas of high concentration are anti-aliased.



To turn on regular render quality:

- Click the triangle beside the Render controls, point to Quality and select the Regular (Normal AA) quality mode.

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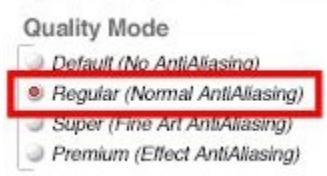


To turn on default render quality using the Render Options dialog:

1. Click the triangle beside the Render controls and click Render Options.



2. Select the Regular (Normal Anti-Aliasing) quality mode.



3. Click on the OK icon to exit the dialog.

Super (Fine Art Anti-Aliasing)

In this mode, you can control the number of rays Bryce uses to trace every pixel in the image. Higher values produce a higher quality image, but can slow down the entire rendering process. You should probably only use this mode to render showcase type artwork - not normal working images.

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To turn on super render quality:

- Click the triangle beside the Render controls, point to Quality and select the Super (Fine Art AA) quality mode.

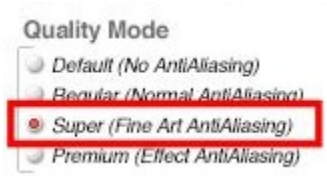


To turn on default render quality and set the number of rays per pixel using the Render Options dialog:

1. Click the triangle beside the Render controls and click Render Options.

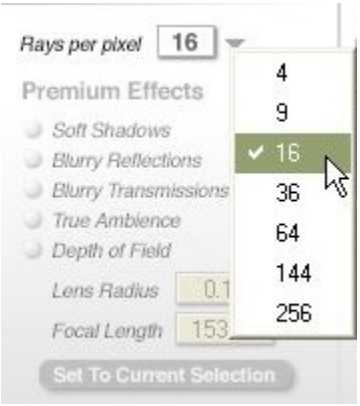


2. Select the Super (Fine Art Anti-Aliasing) quality mode.



3. Click the triangle beside Rays per pixel and choose a value from the pull-down list. The default value is 16.

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4. Click on the OK icon to exit the dialog.

Premium (Effect Anti-Aliasing)

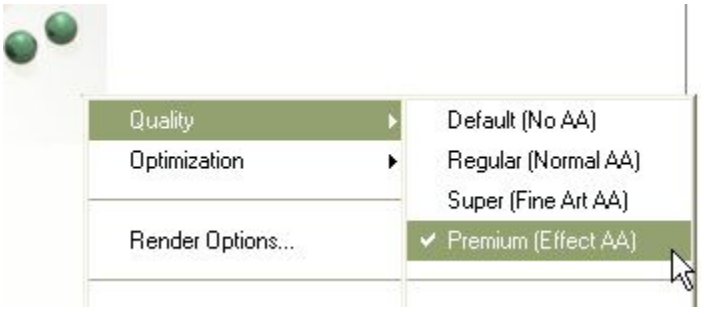
In this mode, you can use a variety of premium effects, such as Soft Shadows, Blurry Reflections, Blurry Transmissions, True Ambience, and Depth of Field.

Premium effects include:

- Soft Shadows
- Blurry Reflections
- Blurry Transmissions
- True Ambience
- Depth of Field

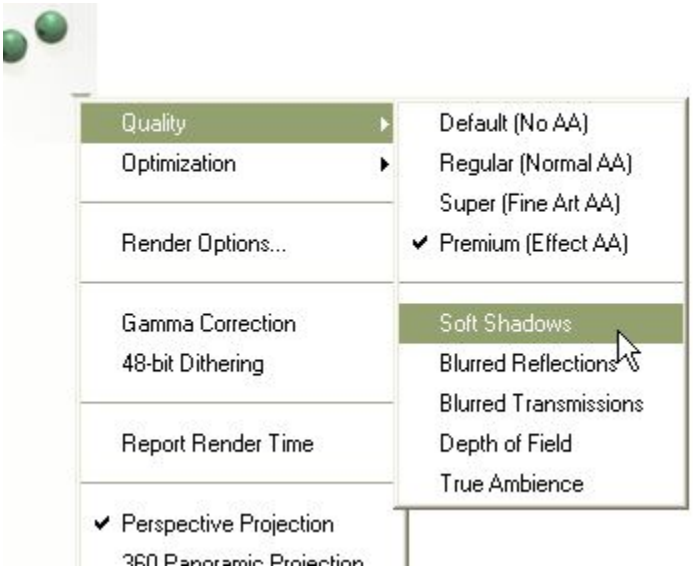
To turn on premium effects from the Render Options menu:

1. Click the triangle beside the Render controls, point to Quality and select the Premium (Effect Art AA) quality mode.



2. Click the triangle beside the Render controls again to select a premium effect. All effects can be selected at the same time.

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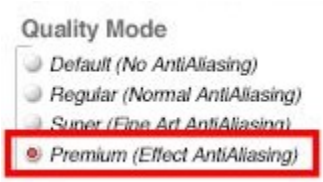


To turn on premium effects, set the number of rays per pixel, and select a premium effect using the Render Options dialog:

1. Click the triangle beside the Render controls and click Render Options.

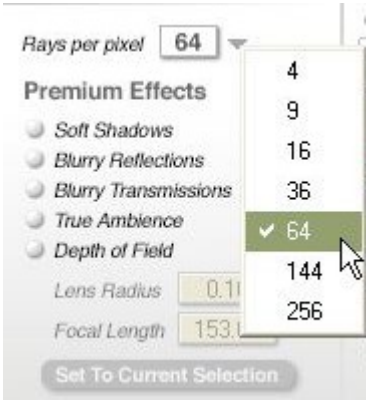


2. Select the Premium (Effect Anti-Aliasing) quality mode.

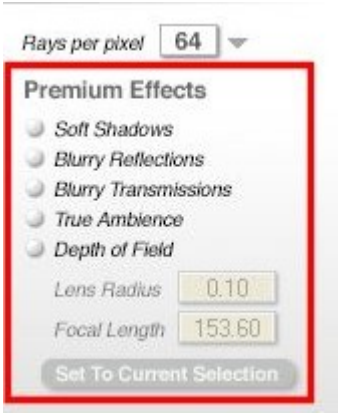


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3. Click the triangle beside Rays per pixel and choose a value from the pull-down list. The default value is 64 for Premium effects.



4. Select a premium effect.



5. Click on the OK icon to exit the dialog.

Soft Shadows

When you adjust the softness of a shadow, you blur or sharpen the shadow's edges. Soft shadows blend more smoothly with the background.

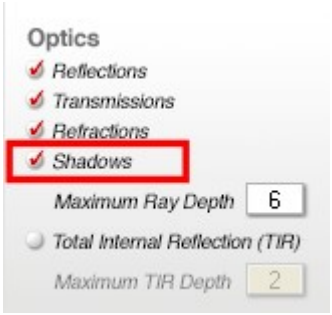
To enable Soft Shadows when rendering using the Premium Quality Mode:

1. In Render Options, enable the Premium Quality mode, then enable Soft Shadows.

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2. Ensure that Shadows is enabled under the Optics options. If this option is not selected, then shadows will not render.



3. Click on the OK icon to close the dialog.
4. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



5. Click the Sky Lab button. The Sky Lab appears.

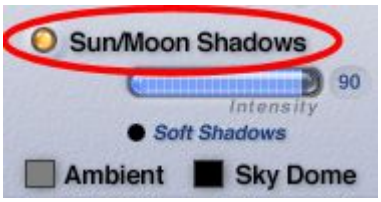


6. Click the Sun & Moon tab.



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7. Enable the Sun/Moon Shadows option. If this option is not selected, then the objects in the scene will not cast any shadows.



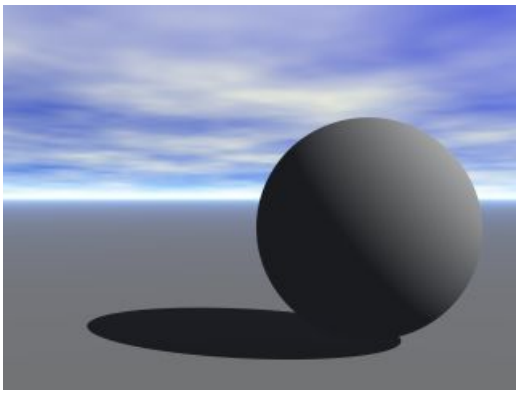
8. Enable the Soft Shadows option.



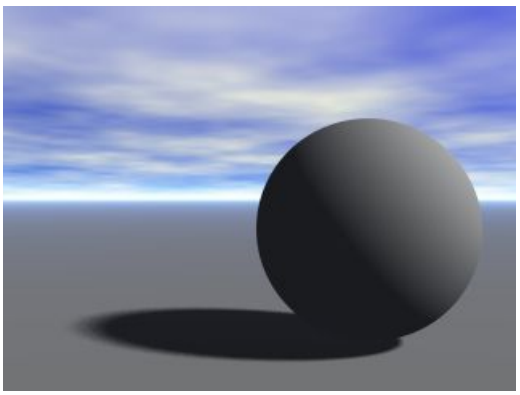
9. Click the OK icon to exit the dialog.
10. Render the scene.

Examples:

- Soft Shadows disabled:



- Soft Shadows enabled:



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- Difference between Soft Shadows with Normal AA and with Premium AA:

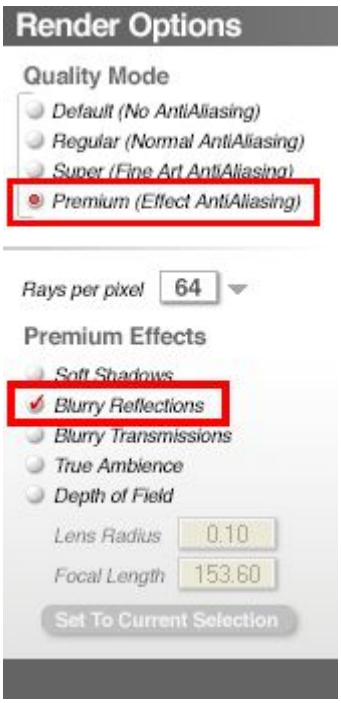


Blurry Reflections

Blurry Reflections blurs reflections in glass, metal, and other reflective surfaces.

To enable Blurry Reflections when rendering using the Premium Quality Mode:

1. In Render Options, enable the Premium Quality mode, then enable Blurry Reflections.



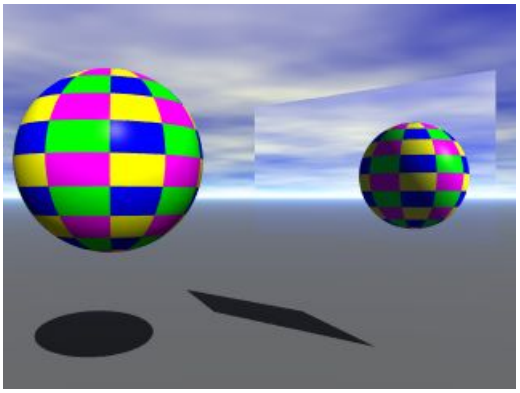
2. Ensure that Reflections is enabled under the Optics options. If this option is not selected, then reflections will not be rendered.



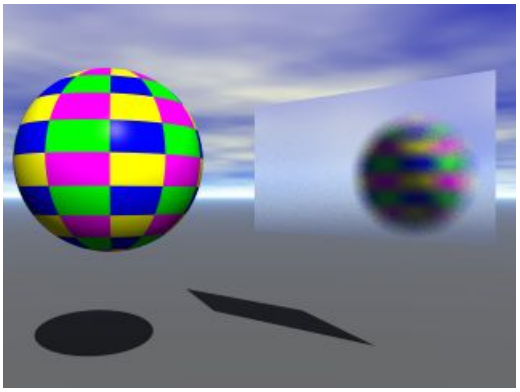
3. Click on the OK icon to close the dialog.
4. Render the scene.

Examples:

- Blurry Reflections disabled:



- Blurry Reflections enabled:



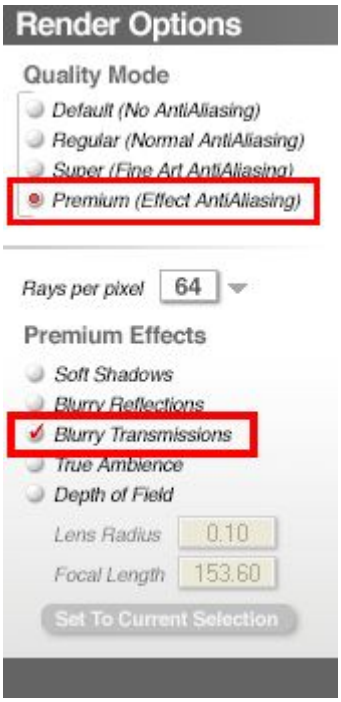
Blurry Transmissions

Blurry Transmissions blurs the transmission of light, for example, when light passes through frosted glass.

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To enable Blurry Transmissions when rendering using the Premium Quality Mode:

1. In Render Options, enable the Premium Quality mode, then enable Blurry Transmissions.



2. Ensure that Transmissions is enabled under the Optics options.

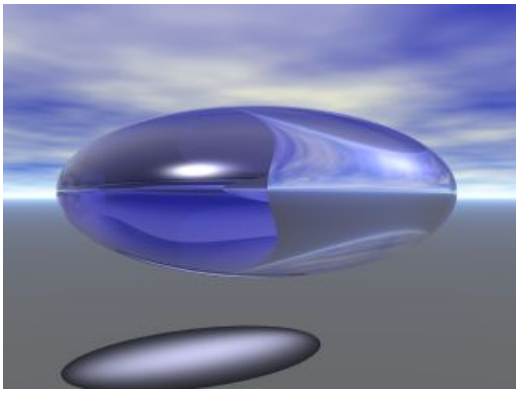


3. Click on the OK icon to close the dialog.
4. Render the scene.

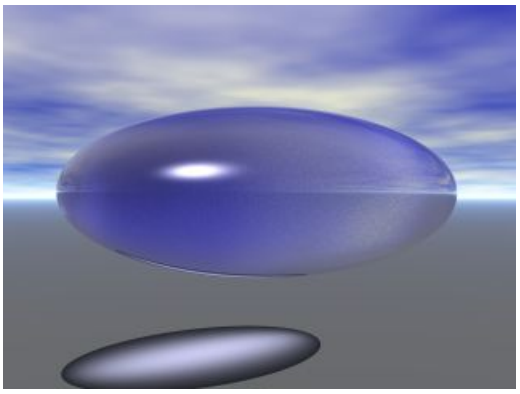
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Examples:

- Blurry Transmissions disabled:



- Blurry Transmissions enabled:



True Ambience

True Ambience computes the ambient light for a surface using the color and intensity of nearby surfaces, resulting in color blending from one surface to another.

To enable True Ambience when rendering using the Premium Quality Mode:

1. In Render Options, enable the Premium Quality mode, then enable True Ambience.

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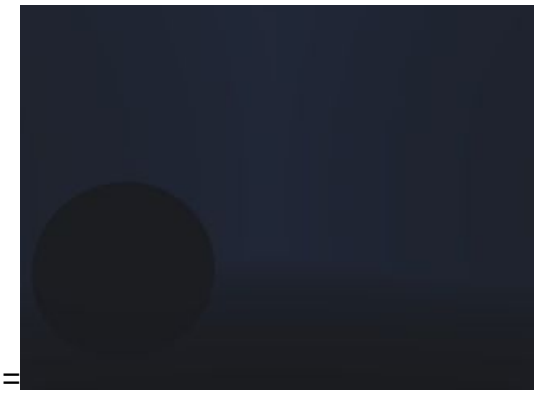


2. Click on the OK icon to close the dialog.

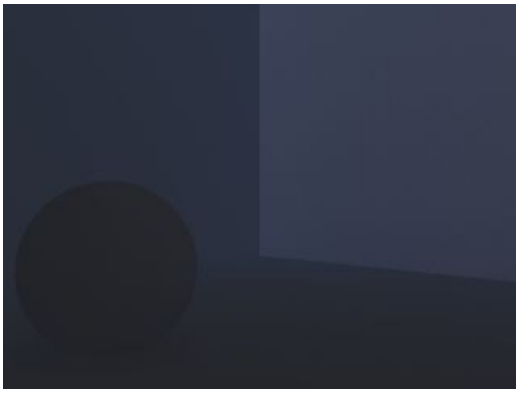
Render the scene.

Examples:

True Ambience disabled

=

True Ambience enabled



Depth of Field

Depth of Field (DOF) lets you focus the camera on a particular object, blurring those closer and further away from the camera's focal point. You can control the Lens Radius and Focal Length numerically or you can have Bryce calculate these values based on a selected object.

The Lens Radius determines how much or little of the scene is rendered with DOF. The larger this number, the more of the scene is blurred. The default Bryce Lens Radius is 0.10 which is usually too large for most renders. You'll probably find that 0.01 or 0.02 is more than enough DOF.

Focal Length determines the focus of the DOF - what the camera focuses on. You can set the focal length automatically by selecting an object and clicking on Set To Current Selection. To set the focal length manually, you need to determine how far the object is from the current camera.

Set Focal Length Automatically

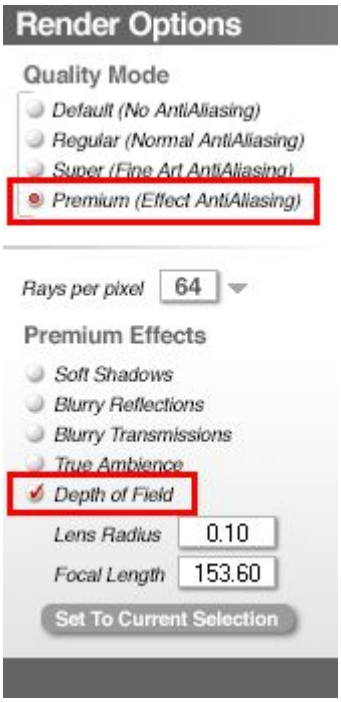
To set the focal length automatically:

1. Before entering the Render Options dialog, select an object or group in the scene to be the focus of the scene.
2. Click the triangle beside the Render Controls and click Render Options.



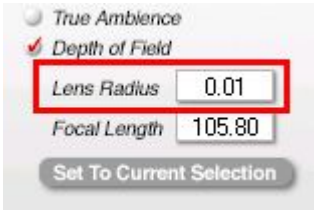
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3. In Render Options, enable the Premium Quality Mode, then enable Depth of Field.

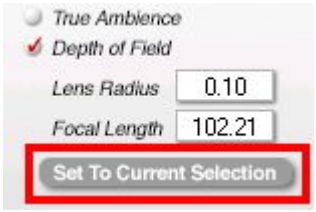


(Note: if the final render is too grainy, increase the Rays per pixel.)

4. To set the Lens Radius, enter a value in the Lens Radius field. Remember that the larger this number is, the more of the scene will be blurred.



5. To set the Focal Length automatically click on the Set To Current Selection button. The Focal Length field will change based on the currently selected object. Make sure you have an object or a group selected before selecting this.



6. To set the Focal Length manually, refer to "Setting Focal Length Manually."
7. Click on the OK icon to close the dialog.

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Examples:

- Depth of Field disabled:



- Depth of Field enabled, set to current selection (ladybug):



Set Focal Length Manually

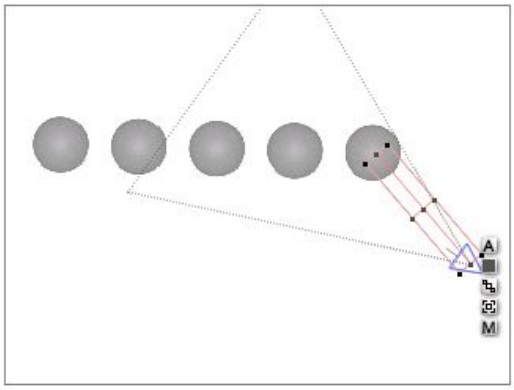
To set the focal length manually (best if you have one than one object as the focal point):

1. Before entering the Render Options dialog, make sure that the perspective camera is the current camera. If using the Director's Camera as the main view, click on the triangle next to the camera controls and choose Camera to Director from the Camera Options menu.

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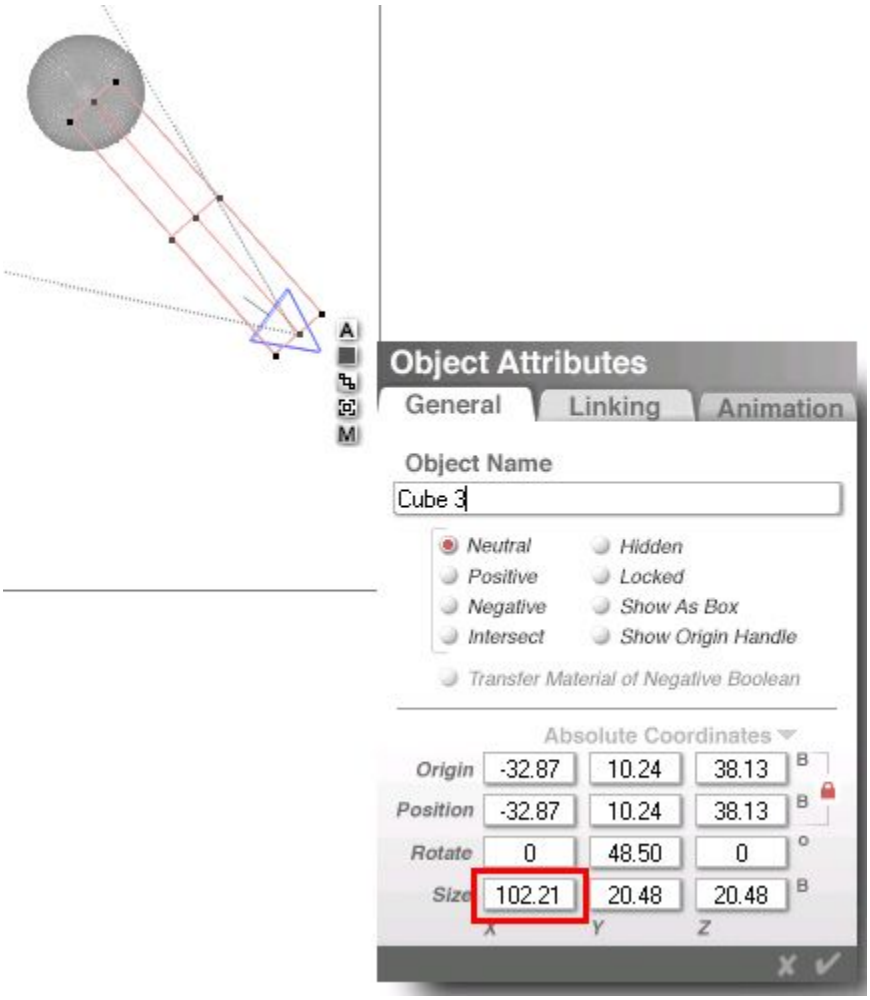


2. Change the camera view to the top view (press the 2 key) and center the scene in the view.
3. Create a cube, resize it along one axis, and rotate the cube until it lines up between the camera and the focal object/point. Continue resizing the cube until one end is at the center of the object/point and the other is at the tip of the camera focus.



4. Click on the A button next to the selected cube and note down the size of the side you resized. In this case, 102.2.

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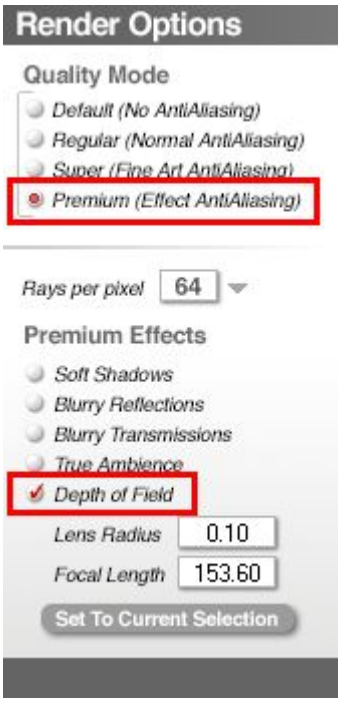


5. Click the triangle beside the Render Controls and click Render Options.

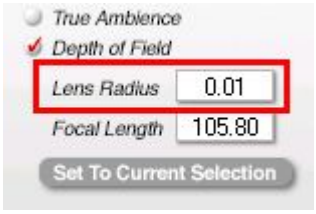


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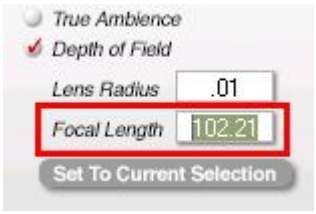
6. In Render Options, enable the Premium Quality Mode, then enable Depth of Field.



7. To set the Lens Radius, enter a value in the Lens Radius field. Remember that the larger this number is, the more of the scene will be blurred.



8. Enter the cube length you noted earlier into the Focal Length field.

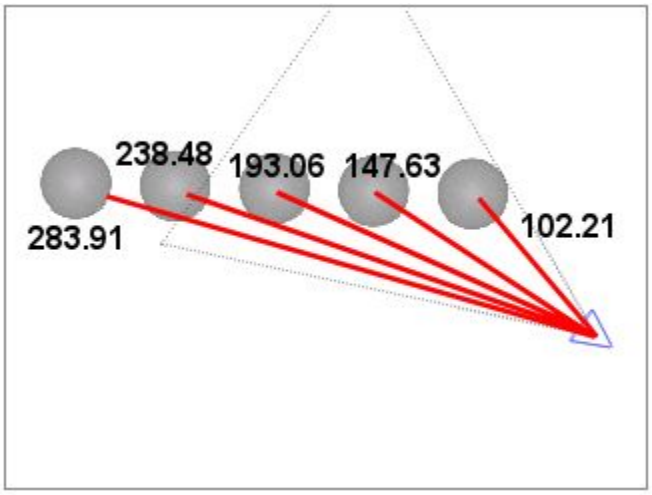


9. Click on the OK icon to close the dialog.
10. Render the scene.

One caveat here is that as an object moves further from the camera, the focal point that Bryce uses shifts from the object center to the edge of the object nearest the camera. You can check this out by selecting each object and setting the Focal Length automatically, then using a cube to check the distance between the camera and object.

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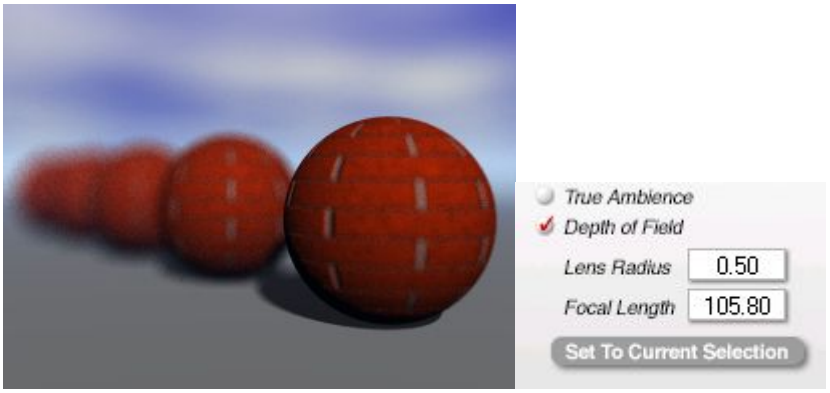
This is also helpful for finding what the focal length would be between two objects or in the middle of a wasteland.



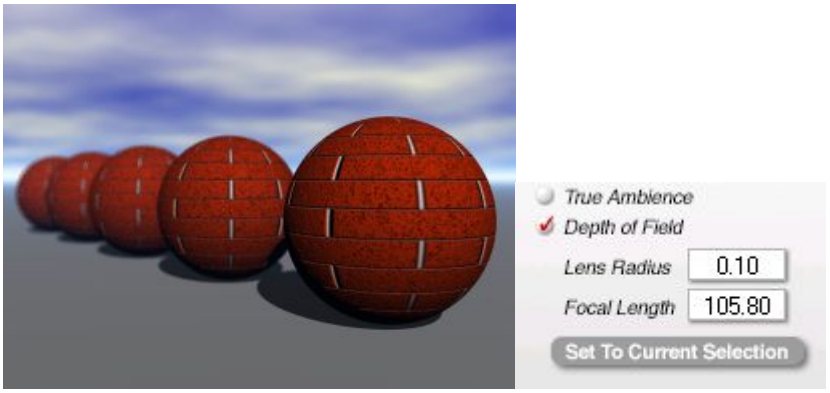
Depth of Field Examples

Focal point of sphere 1 (closest to camera):

- Lens Radius = 0.50

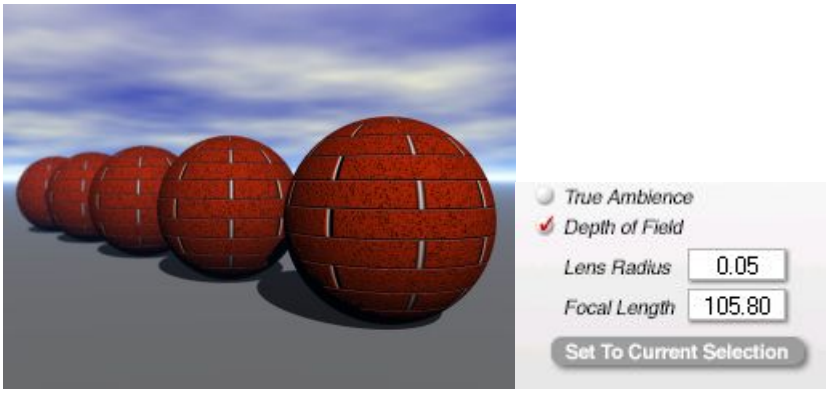


- Lens Radius = 0.10

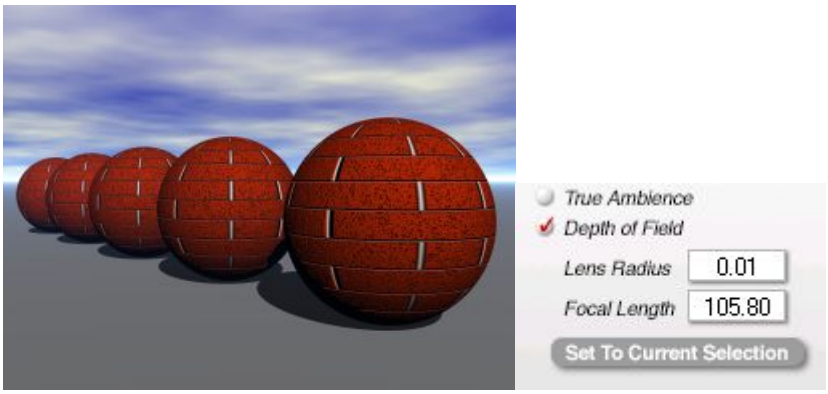


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- Lens Radius = 0.05

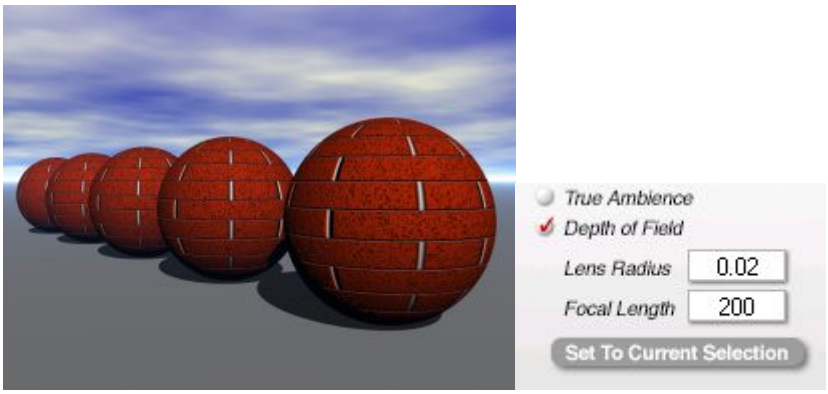


- Lens Radius = 0.01



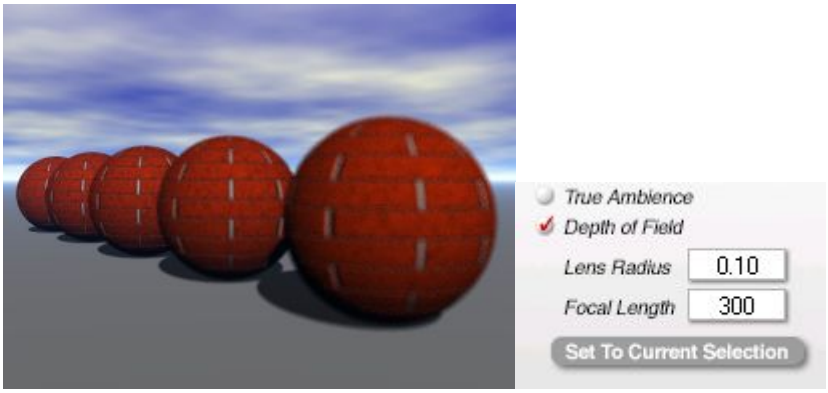
Random focal point:

- Lens Radius = 0.02, Focal Length = 200

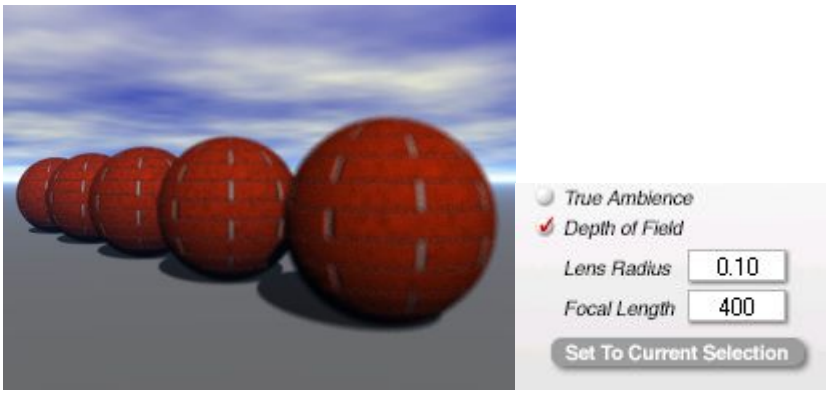


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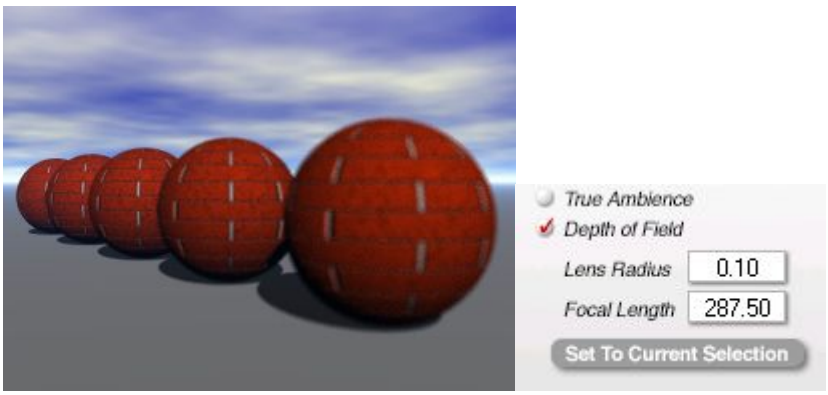
- Lens Radius = 0.10, Focal Length = 300



- Lens Radius = 0.10, Focal Length = 400



- Focal point of Sphere 5 (furthest from camera), set manually using a resized cube:



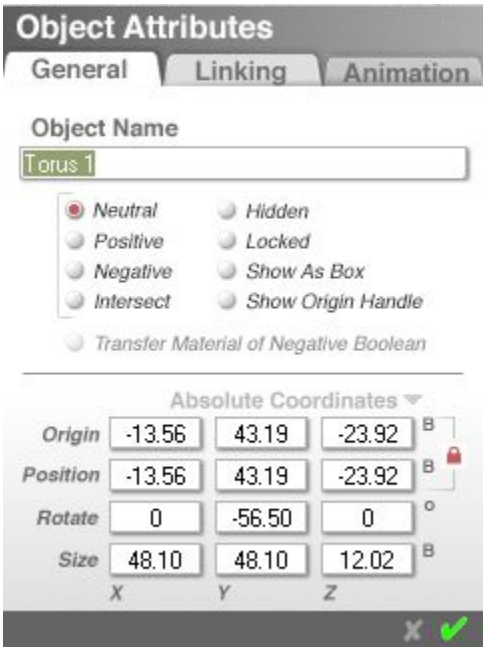
Turn AA Off for Single Object or Group

Sometimes a particular object or group needs to have the Anti-Aliasing turned off while leaving the rest of the scene with the AA turned on. This is especially useful for rocks or areas with grass and dirt that look better with no AA.

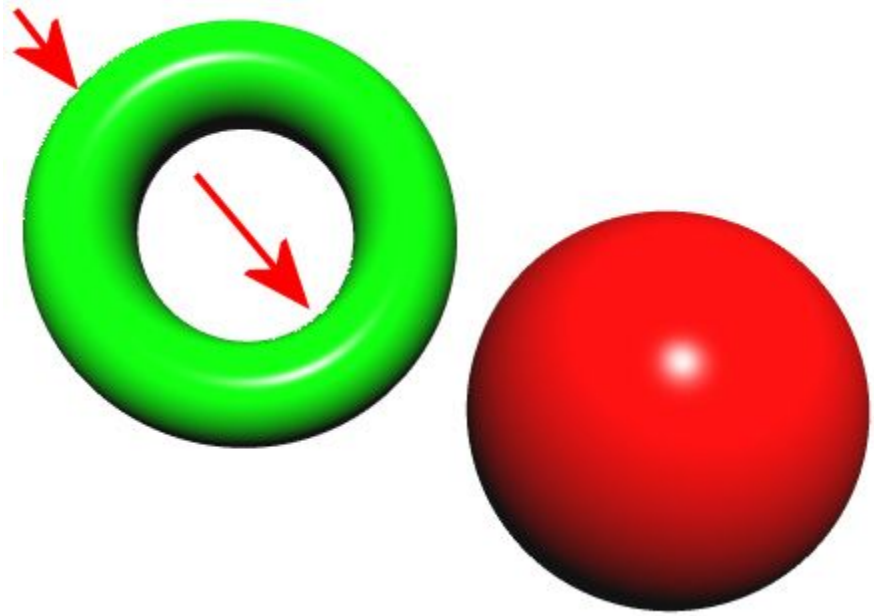
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To turn off AA for a single object or group:

1. Select the object or group.
2. Click the A button next to the object/group. The Object Attributes dialog will come up.
3. Press Ctrl+Shift+Alt and click on the OK icon in the Object Attributes dialog.



4. Render the scene. The object with the AA turned off will have rougher edges than other objects.

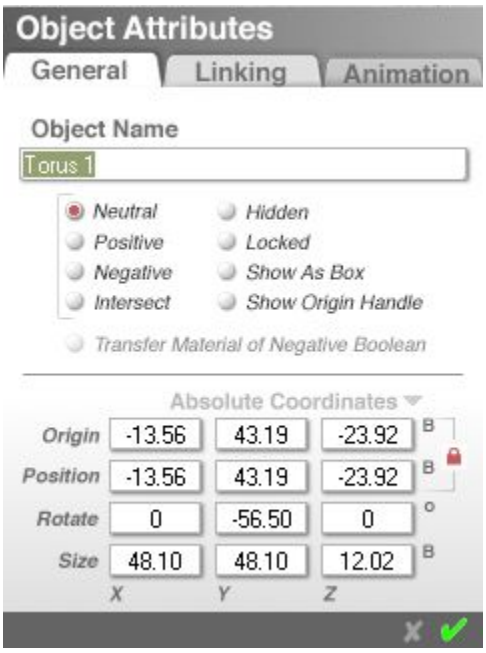


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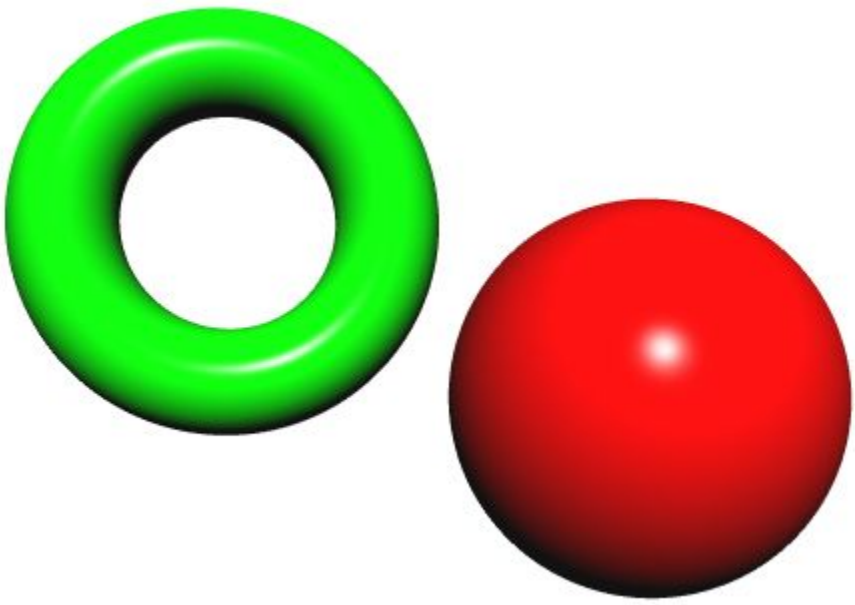
Turn AA On for Single Object or Group

To turn AA back on for a single object or group:

1. Select the object or group.
2. Click the A button next to the object/group. The Object Attributes dialog will come up.
3. Press Shift and click on the OK icon in the Object Attributes dialog.



4. Render the scene. The object/group will render more smoothly.

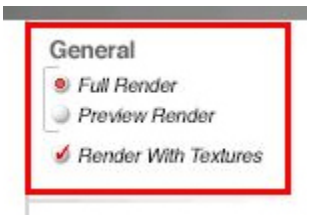


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General Render Options

The General Render Options provide an alternate method of turning the Plop Render and Textures On or Off.

- Full Render - turns Fast Preview off
- Preview Render - turns Fast Preview on
- Render With Textures - Turns Textures on or off



See "Preview Rendering" for more on these options.

Optimizations

Bryce includes several optimization options. These options change the mathematical algorithm used by Bryce to ray-trace your image depending on the contents of your scene. There are two types of optimization: BSP and Grid, and each has three levels of optimization to choose from.

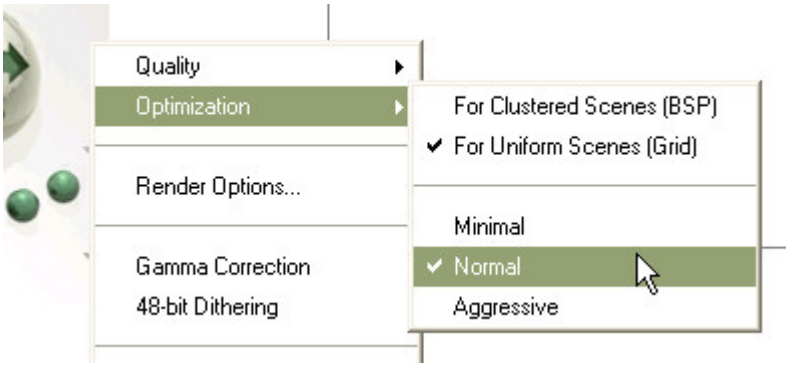
There are three Levels of Optimization to choose from for each of the above optimization types:

- Minimal: This mode is best used for very simple scenes with less than five objects. In this mode, Bryce predetermines the areas where your objects reside and shoots rays only through that area.
- Normal: This is the best mode for most scenes. In this mode, Bryce determines where your objects reside and then examines the concentration of objects within the larger area. This eliminates the computation of unnecessary rays.
- Aggressive: This is a more extreme version of Minimal mode. It is best used for complex scenes with localized concentrations of objects. If you have imported DXF objects in your scene, this mode will speed up rendering considerably.

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To set Optimization Options:

1. Either click the triangle icon next to the Render Controls, choose Optimization from the menu, then the optimization type (BSP or Grid) and level.

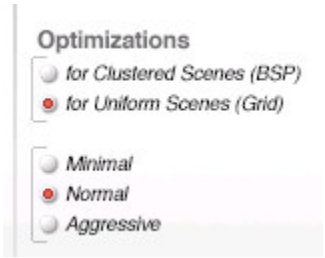


OR

2. Click the triangle beside the Render Controls and click Render Options.



3. Choose an optimization type and level from the Render Options dialog.



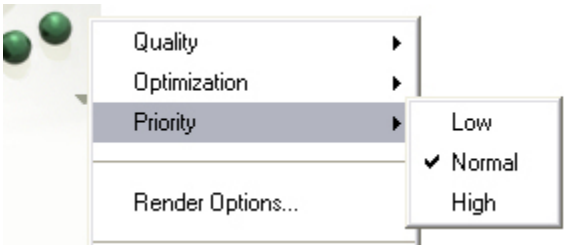
4. Click on OK to close the dialog.

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Render Priority

New in Bryce 6.1 is the option to set the render priority on systems with multiple processors.

To set the render priority, click the triangle icon next to the Render Controls and Priority, then Low, Normal, or High. The default setting is Normal.



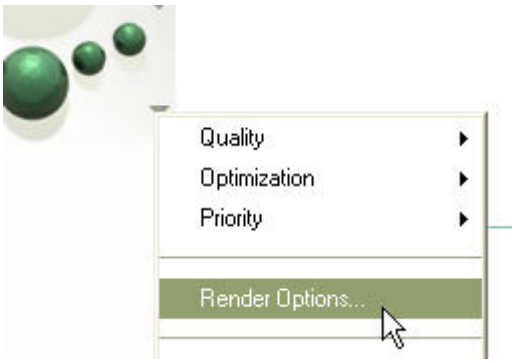
This allows you to determine whether Bryce runs at maximum capacity or at a more restrained rate to allow you to more easily work with other CPU intensive applications at the same time. With this feature, you can have Bryce 6.1 run 170% faster than under Rosetta.

If you only have a single processor, then you will not have this option available.

Render Options Dialog

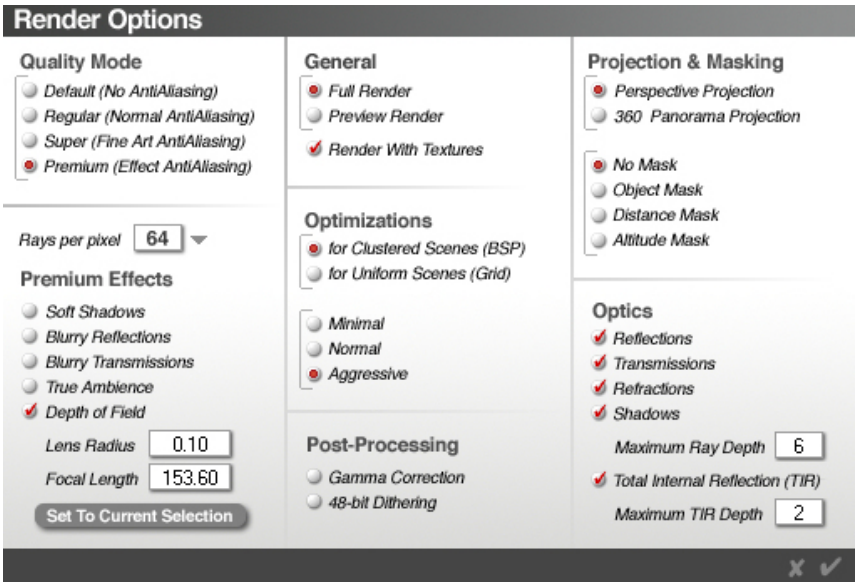
The Render Options Dialog provides access to most of the render settings plus options to set the premium and optic effects.

To access the dialog, click the triangle icon next to the Render Controls and choose Render Options from the menu.



The Render Options dialog will come up.

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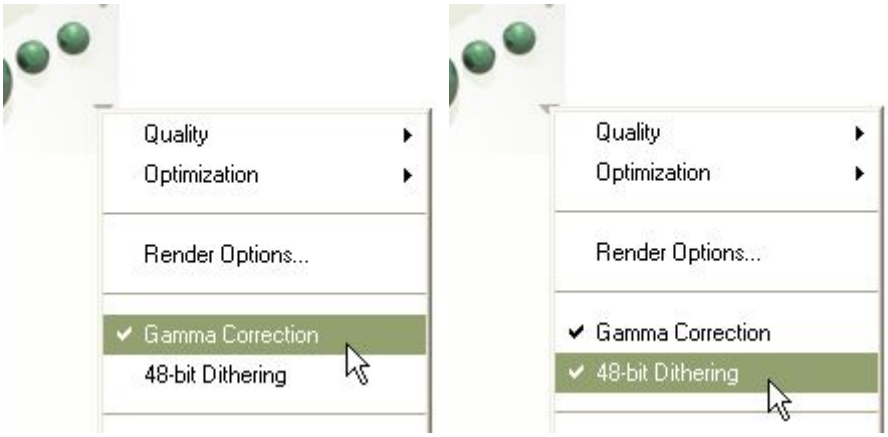
Setting Post-Processing Options

Bryce includes two post-processing options to compensate for the differences between viewing images on a computer display and on paper.

- 48 Bit Dithering: Helps you work around the limitations of computer displays. It is a process that allows you to avoid color bands by smoothing. Evening skies or moon rings are good candidates for this option.
- Gamma Correction: Allows Bryce to compensate for some of the shortcomings of computer displays. Your images will be brighter and contain colors that are more true to nature. For many images, however, Gamma Correction will more than likely wash out your image more than you like, so if the image seems faded or washed out, turn off Gamma Correction and re-render.

To set post-processing options:

1. Either click the triangle icon next to the Render Controls and click the desired post-processing option



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OR

2. Click the triangle icon next to the Render Controls and choose Render Options from the menu, and



3. Enable the desired post-processing options from the Render Options dialog.



Render Reporting

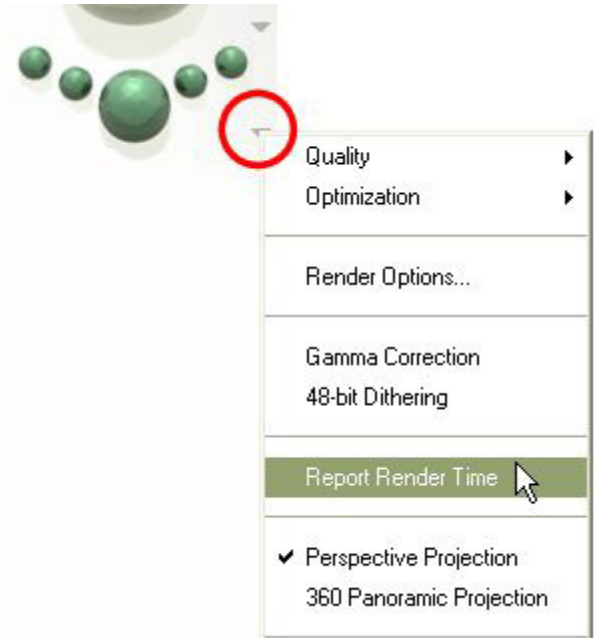
This option, when selected, produces a summary report when your image is finished rendering.

The report tells you how long the render took, including the anti-aliasing pass. It also provides statistics on how many rays were shot to create the image and breakdowns for the different types of rays, including a per-pixel breakdown.



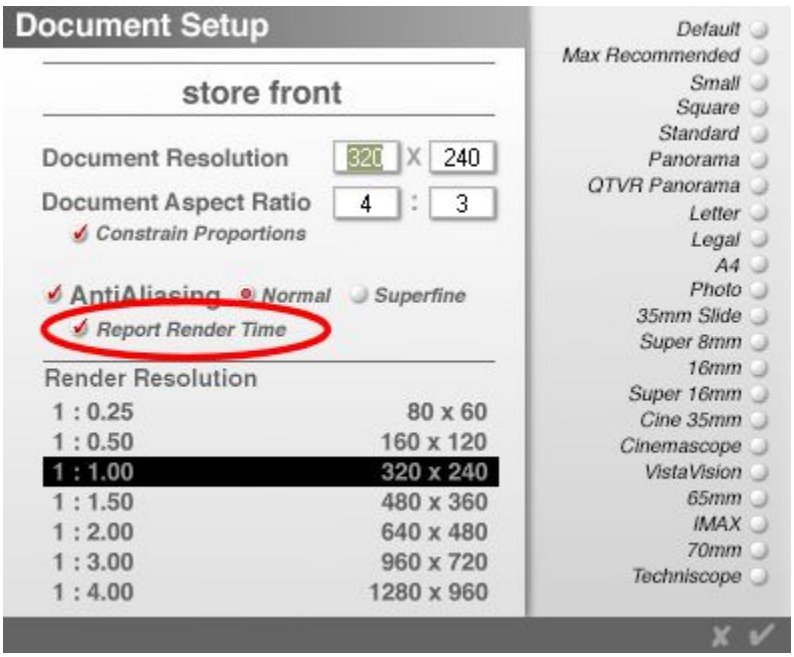
To produce a render report, do one of the following:

1. Click the triangle beside the Render Controls and choose Report Render Time.



OR

2. Choose File > Document Setup and enable Report Render Time in the dialog.



3. Once you've selected to report the render time, start your render. At the completion of the render, you'll hear a short beep and the render report will be visible in the working window.

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4. Close the report by clicking on the OK icon.

Projection Types

There are two projection types available in Bryce:

Perspective Projections: Renders a fully ray-traced color image, based on your current camera's position and view.

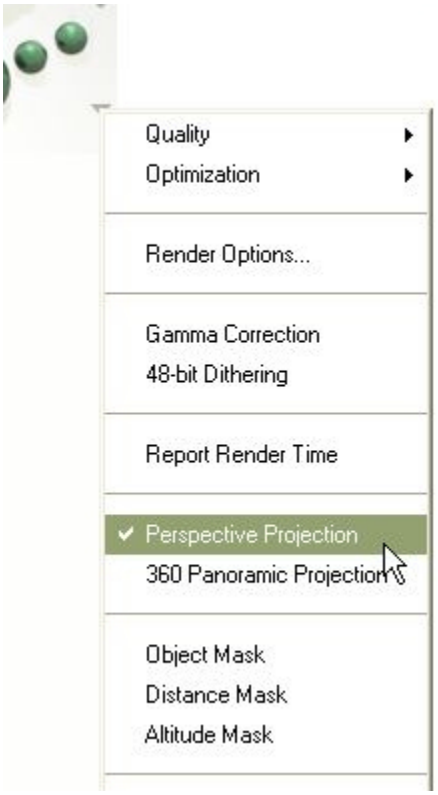
360° Panorama Projection: Produces an image that looks as if your camera has a 360° lens. The left and right edges of the resulting image join seamlessly. 360° Panorama Projection is intended for use with the Bryce 360° scrolling screensaver, or QuickTime™ VR technology.

Perspective Projection

Perspective Projection is the default rendering mode for Bryce. Unless you are rendering a panoramic image, this option should be selected.

To select Perspective Projection from the Render Options menu:

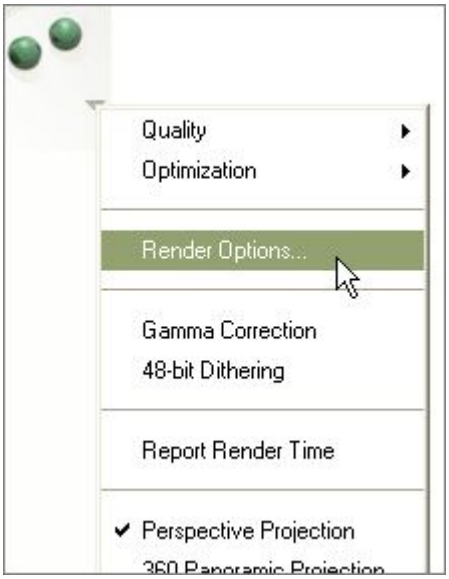
- Click the triangle beside the Render Controls and select the Perspective Projection.



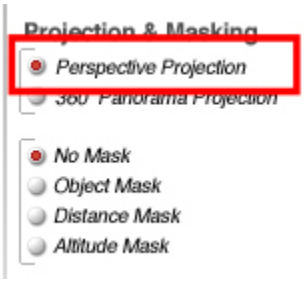
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To select Perspective Projection using the Render Options dialog:

1. Click the triangle beside the Render Controls and select Render Options.



2. Select the Perspective Projection mode.



3. Click on the OK icon to exit the dialog.

360° Panorama Projection

Rendered 360° images will have little resemblance to the wireframe working window behind it; this makes flipping back and forth between wireframe and bitmap modes during composition fairly difficult. For this reason, it is recommended that you work in standard Perspective Render mode as you compose your image.

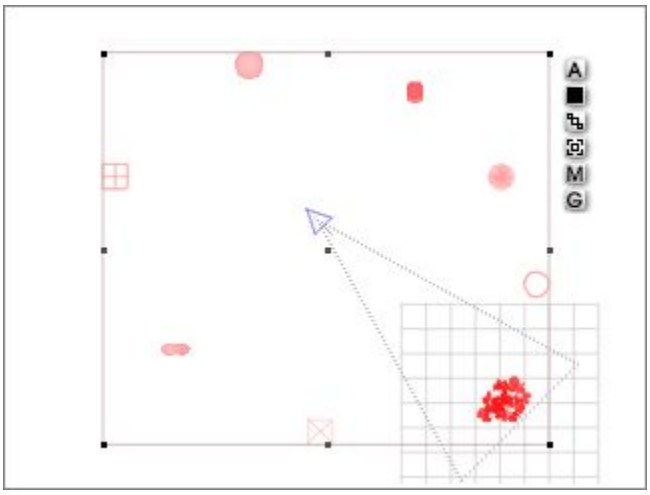
For a good 360° panoramic image, you need a natural distribution of objects on all sides of the camera.

To render a QuickTime VR Panorama, see "Creating Quicktime VR Panoramas."

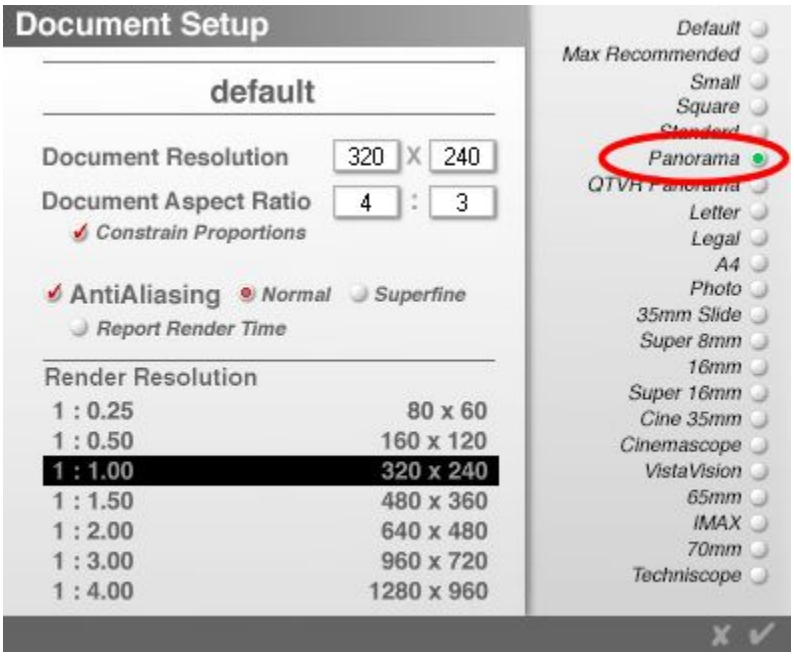
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To prepare a 360° panoramic render:

1. While in Perspective Render mode, switch to the Top view using the View Controls and position objects around the camera.

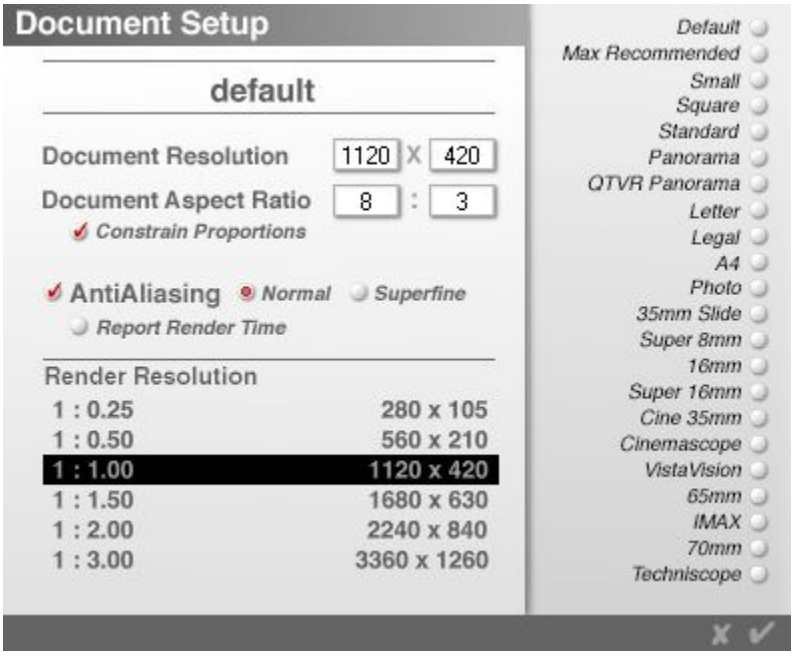


2. Display the Document Setup dialog using File > Document Setup and either select the Panorama preset aspect ratio or type in the dimensions that you want.

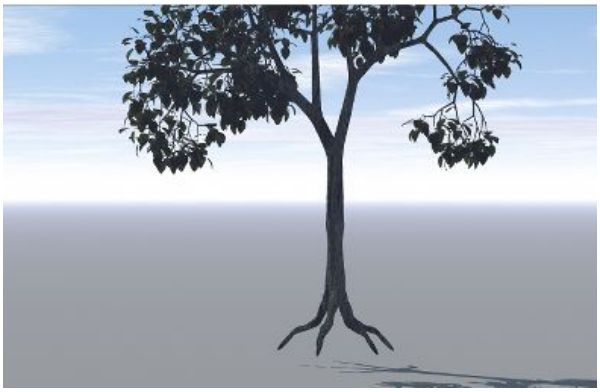


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3. The image below shows the dimensions for the default Panorama render:

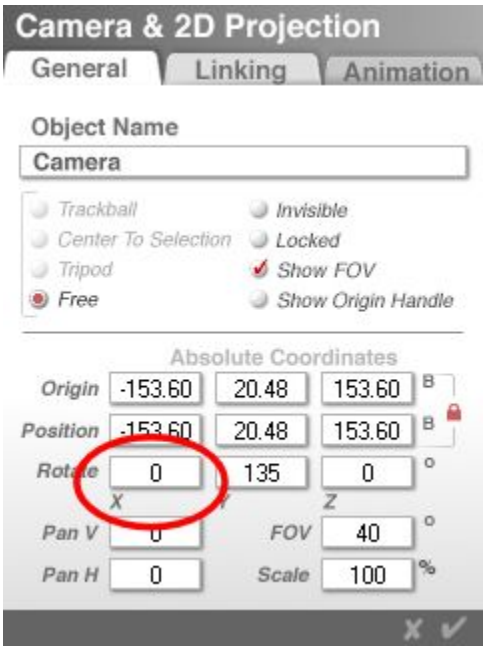


4. Do a quick test render in Perspective Render mode to check composition. Render from different views as needed.

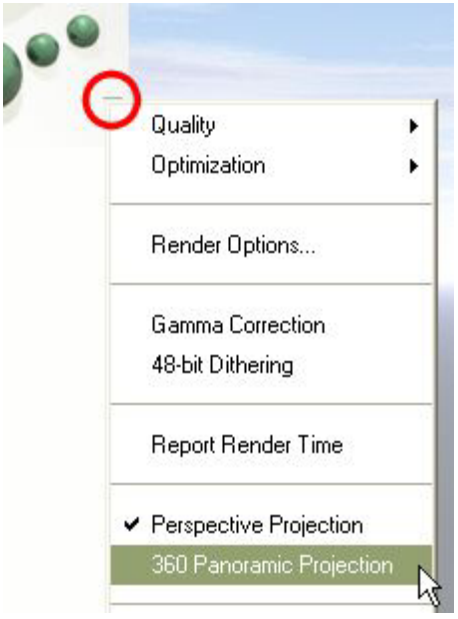


5. The horizon should be level at the vertical midpoint of your window. If it is not, double-click the Trackball, enter "0" in the Rotate X field and exit the dialog.

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6. Adjust your camera position and Y-rotation as needed.
7. When you are ready to render, click on the triangle next to the Render Controls and choose 360 Panoramic Projection from the menu.

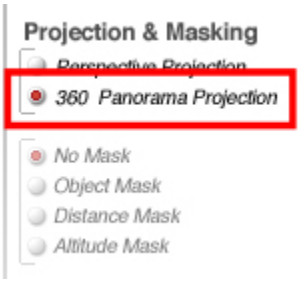


OR

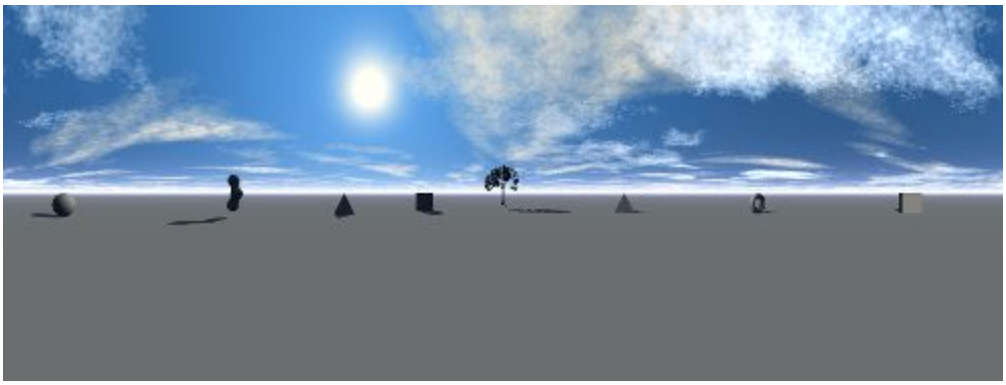
8. You can also select the panoramic render by clicking the triangle beside the Render Controls and selecting Render Options.



9. In the Render Options dialog, click on the button next to 360 Panorama Projection. Note that when this option is selected, the mask options are not available.



10. Click on the OK icon to close the dialog.
11. Render the scene and when the render is complete, save the image.



Creating Quicktime VR Panoramas

QuickTime VR allows you to take a 360° panoramic image, and make it into a VR Movie; this unique movie will display a 2D panoramic representation of your 3D world, and allow point and click navigation through the world. You can look up, down and around your rendered scene as though you were a camera on a tripod.

Further, QuickTime VR lets you create "Nodes," or hotspots in the movie where you can click and go to another linked movie. This means you can look around a landscape, and

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seeing an interesting rock formation in the distance, click on it to view the entire landscape from that new vantage point.

These nodes can also contain "Object Movies;" another specialized technology from Apple that allows you to click and drag to, in effect, "pick up" any object in the VR movie and examine it from all sides, as if you literally picked it up and turned it around and around in your hands.

The process of creating a panorama involves completing a few easy steps.

To create QuickTime VR Panoramas:

1. Choose Default in the Document Setup dialog.
2. Click on the uppermost Views Memory Dot in the control palette, to make sure your camera is level.
3. Set up your scene. The important thing to remember is that for a successful 360° scene, you need interesting objects all around your camera. The best way to work on this is to go to the Top View, and position objects all the way around the camera.
4. Keep the Nano-Preview in Camera View mode to check your view while you are working in Top View.
5. Drag the tip of the camera around in the Working window to check the view of your scene from all directions.
6. Once you have a good distribution of objects in a visually interesting scene, switch back to Camera View and do a quick test render.
7. After the render, make any required position changes.
8. Choose File > Document Setup and select QTVR Panorama. This aspect ratio is optimized for use with Apple's Make QTVR Panorama tool, though many aspects will work. The preferred aspect is 13:Width must be divisible by 96, and height must be divisible by The QTVR Panorama option ensures that your image meets these criteria.
9. Click the triangle icon next to the Render Controls and choose 360° Panorama from the menu.
10. Click the Render button to do a quick test render. The panoramic render mode necessarily introduces some distortion into your image, and this may change the way you want your objects to appear.
11. Make any position changes you like. When you do a panoramic render, your wireframe scene will bear little resemblance to the rendered scene. This is why you should work on your scene in standard Default mode and switch to Panoramic rendering after everything is set up.
12. Choose File > Render To Disk. The Render to Disk dialog appears.
13. Leave the default settings. The Output Size in Pixels was set by the QTVR Panorama option in the Document Setup dialog. The Print Resolution defaults to 72dpi, which is the only acceptable setting for the screen-resolution VR movies;

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and the Output Size in Inches is extra information. You can, however, use these features to your benefit if you need to print out a 2D version of your VR scene.

14. Click the OK icon.
15. In the Save dialog, choose QuickTime VR, then click the Save button.
16. Specify the location and file name for your rendered QuickTime VR panorama.

To export a QuickTime VR Panorama:

1. Follow the steps above through step 11.
2. Click the Render button if you made any changes after your test render.
3. When the rendering is done, choose File > Export Image and choose QuickTime VR from the list.
4. Specify a location for the saved panorama, then click Save.

Further VR Exploration

This is a quick way to get started with simple, single-node QTVR movie-making. To create movies with other embedded nodes, or to get deeper into the world of QuickTime VR, contact Apple Computer.

Masking Modes

Bryce offers several rendering modes that can be used to create different effects. For example, the Mask Render Mode lets you produce an image that can be used as an Alpha Channel in other graphics applications.

To choose a mask mode, either click the triangle icon next to the Render Controls and choose a mask mode from the menu or click the triangle icon next to the Render Controls, click Edit Rendering, and choose a mask mode from the Render Options dialog.

There are three different kinds of Mask Render Modes for rendering available in Bryce:

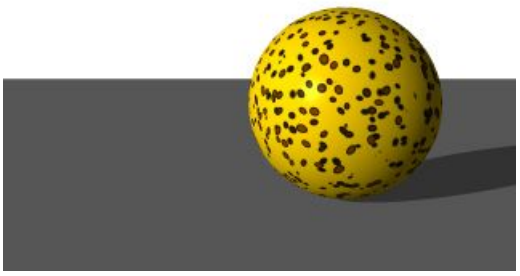
Object Mask

In Object Mask mode, Bryce renders any selected objects as anti-aliased white shapes against a black background. You can use the resulting image as a mask or alpha channel in other 2D image editing programs.

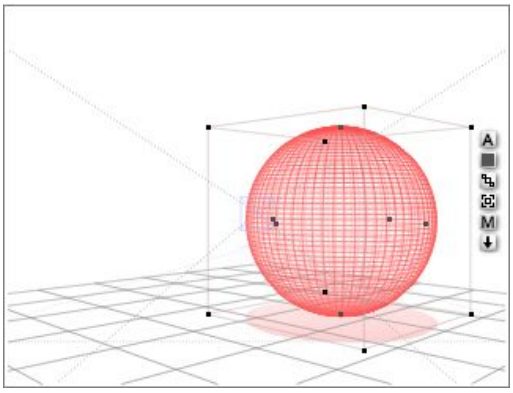
©2007 DAZ 3D, Inc.

To render an object mask:

1. Render the scene by rendering to screen or disk or as an animation.

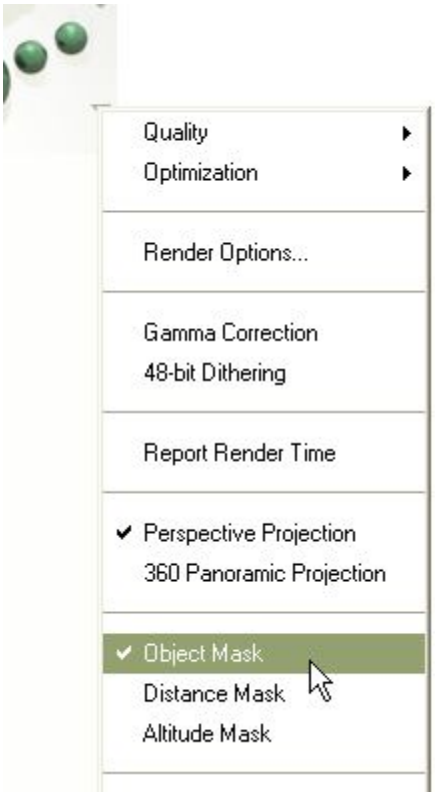


2. Select the object(s) or group(s) you want to mask out of the scene.



3. Click on the Render Options triangle next to the Render Controls and choose Object Mask from the menu.

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Alternately, you can select the Object Mask option from the Render Options dialog.

- Click on the Render Options triangle next to the Render Controls and choose Render Options from the menu. The Render Options dialog will come up.

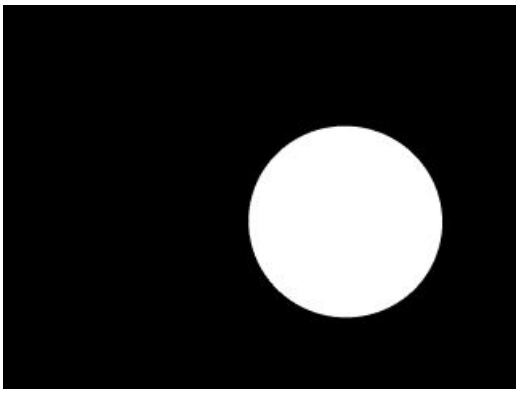


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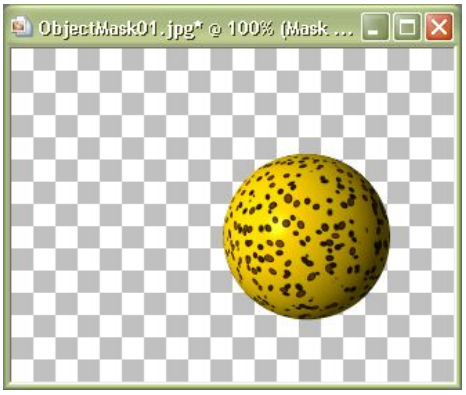
- Enable the Object Mask option under Projection & Masking.



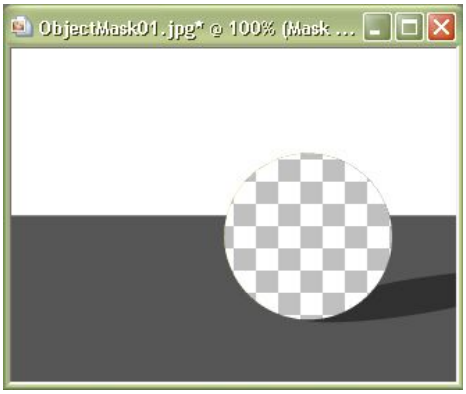
4. Render the scene. The selected object(s) or group(s) will render as white, with the non-selected objects and rest of the scene rendering as black.



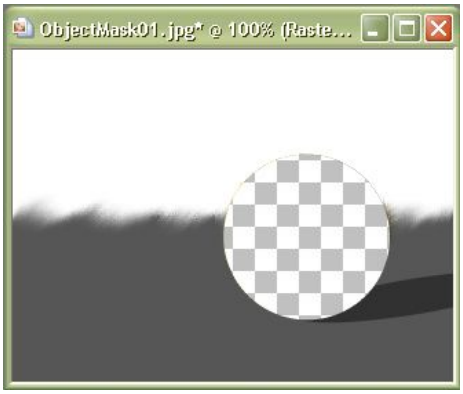
5. Save the mask render to disk.
6. Open the original Perspective render and the mask render in your favorite paint program.
7. Consult the Help file for the paint program on creating Alpha Channels from images and apply the mask as an alpha channel in the Perspective render.



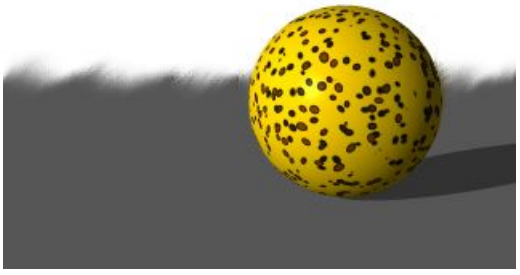
Invert the alpha channel if needed.



8. Once the mask has been applied as an Alpha Channel, modify the image as needed using the image and mask layers to select which sections to modify.



The final example image:



Distance Mask

This mode results in a grayscale image, with objects represented in shades of gray based upon their distance from the camera. Nearby objects are black, distant objects are white, and objects in between are progressive shades of gray. You can use the Distance Mask image to produce depth-of-field effects using a 2D graphics application.

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This mode can be used to create several distance effects.

Distance Mask Render mode produces an image that can be used as a distance mask in most image-editing applications. The Distance Render image contains grayscale representations of all the images in your scene. Objects closer to the camera appear black, while those furthest away appear white. The objects in between are various shades of gray depending on their distance from the camera.

This grayscale information can be used to create photographic depth of field effects. For example, if you take an image that has a lighthouse in the foreground and a fishing village in the background and render it using Distance Mask Render mode, you can take the image into Photoshop and create an image where the lighthouse is in sharp focus while the village is blurred.

Do this by rendering the image as distance mask, using Distance Mask Render mode, and then using an image editing application to place the distance mask into the original image's alpha channel. Once the Distance Render is in the alpha channel, you can apply filters to create photographic depth of field.

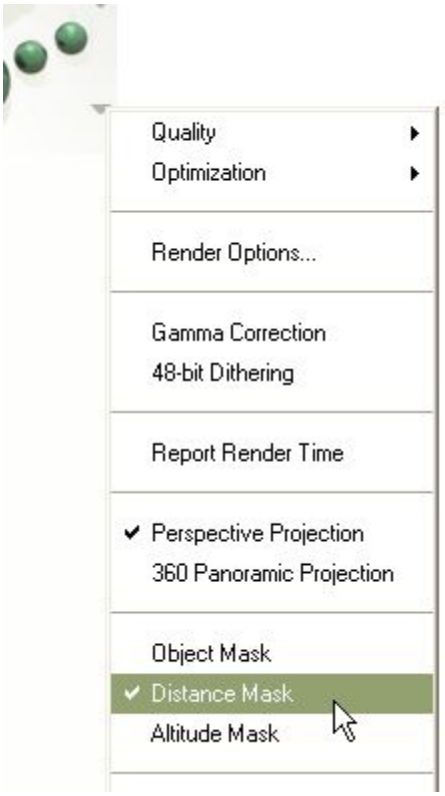
To render a scene as a distance mask:

1. Render the scene by rendering to screen or disk or as an animation.



2. Click on the Render Options triangle next to the Render Controls and choose Distance Mask from the menu.

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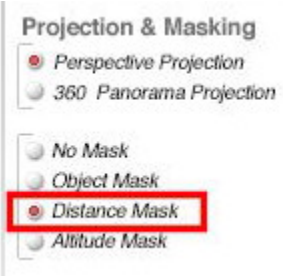
Alternately, you can select the Altitude Mask option from the Render Options dialog.

- Click on the Render Options triangle next to the Render Controls and choose Render Options from the menu. The Render Options dialog will come up.

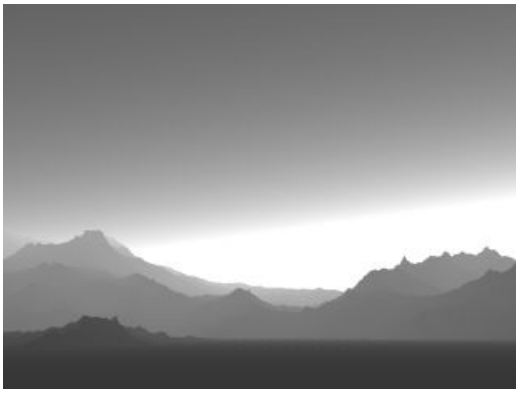


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- Enable the Distance Mask option under Projection & Masking.



3. Render the scene. The scene will render in grayscale.



4. Consult the Help file for the paint program on creating Alpha Channels from images and apply the mask as an alpha channel in the Perspective render. You can also place the mask render in a new layer. Apply a Gaussian filter to the mask layer/channel and adjust the transparency if needed.



Objects close to you will appear sharp while objects farther away will become progressively more out of focus.

You can also invert the selection and apply Motion Blur to the image. In this case, objects in the foreground would be motion blurred, and the background would be sharp, as if you took a picture from a moving car.

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You could determine very specifically which objects in your scene are in focus and which are not. Select the Distance Rendered alpha channel and remap the gray values in the Curves dialog in Photoshop. Remap black input to lighter output and the gray value of the desired focal object to black.

Altitude Mask

This mode results in a grayscale image, with objects represented in shades of gray based upon their height. You can use Altitude Mask images in the same way you can use Distance Mask images to create special effects in other applications.

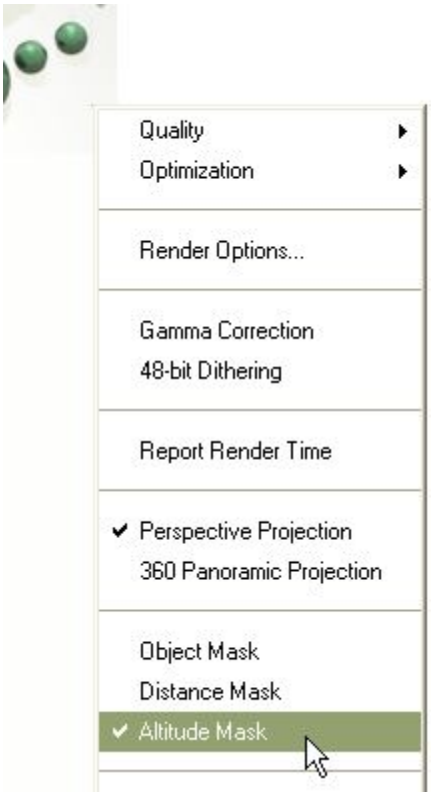
To render a distance mask:

1. Render the scene by rendering to screen or disk or as an animation.



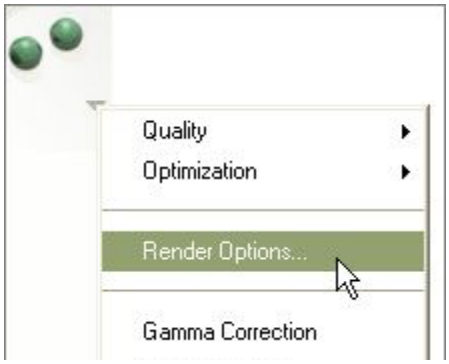
2. Click on the Render Options triangle next to the Render Controls and choose Altitude Mask from the menu.

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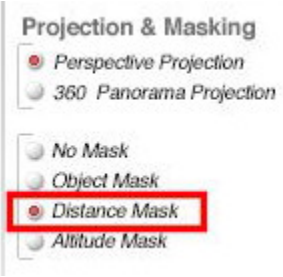
Alternately, you can select the Altitude Mask option from the Render Options dialog.

- Click on the Render Options triangle next to the Render Controls and choose Render Options from the menu. The Render Options dialog will come up.



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- Enable the Altitude Mask option under Projection & Masking.



3. Render the scene. The scene will render in grayscale.



4. Open the original Perspective render and Altitude render mask in your favorite paint program.
5. Consult the Help file for the paint program on creating Alpha Channels from images and apply the mask as an alpha channel in the Perspective render. You can also place the mask render in a new layer. Apply a Gaussian filter to the mask layer/channel and adjust the transparency if needed.

=

Optics Options

Bryce includes a number of Optics options that can help increase the realism of a rendered scene. While these options can be used by themselves, most of them work best when used with the other options enabled.

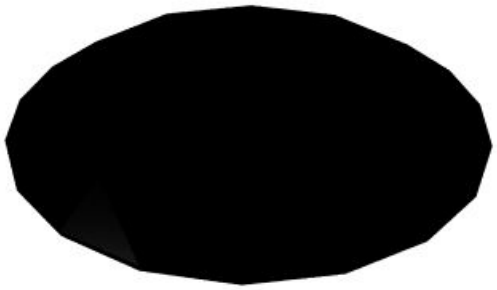
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The Optics options include:

- Reflections
- Transmissions
- Refractions
- Shadows
- Maximum Ray Depth
- Total Internal Reflection

Examples of how the options work together:

- Refractions only:



- Transmissions only:



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- Reflections + Transmissions:



- Reflections + Transmissions + Refractions:



- Reflections + Transmissions + Refractions + TIR:



Reflections

Reflections let you choose whether to render reflections in a scene or not. Reflections are necessary for natural reflections in windows and metallic objects (like mirrors).

The number of reflections rendered are controlled by the Maximum Ray Depth setting.

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To enable or disable Reflections:

1. Click the triangle icon next to the Render Controls and select Render Options.



2. Click on the Reflections option to enable or disable it. When a checkmark appears beside the option, it is enabled. When there is no checkmark, the option is off.



3. Enable Shadows and set the Maximum Ray Depth.

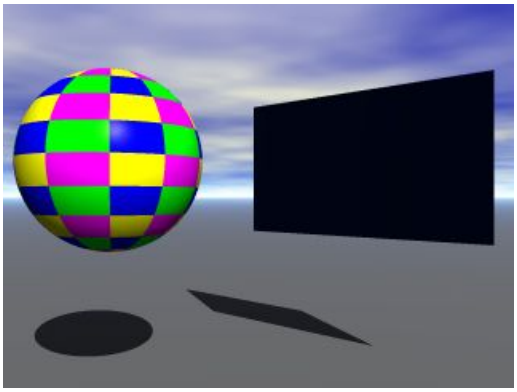


4. Click on the OK icon to accept the changes.
5. Render the scene.

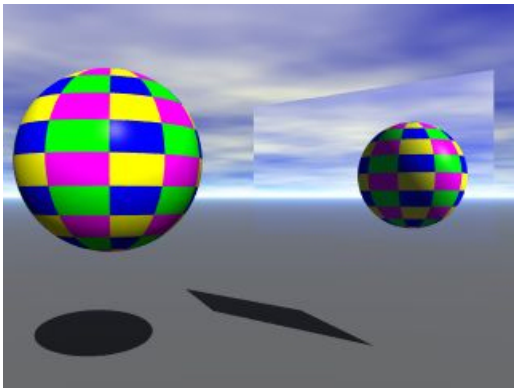
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Examples:

- Reflections Disabled:



- Reflections Enabled:



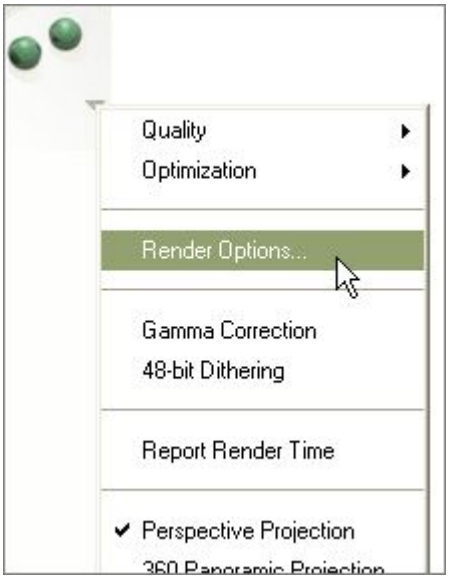
Total Internal Reflection

Total Internal Reflection (TIR) lets you control the amount of TIR in a scene. When you have reflective objects such as prisms or mirrors in a scene, you can encounter situations where light rays bounce back and forth an infinite number of times within the object or between two objects. By limiting the TIR depth, you can produce realistic scenes that include a certain amount of TIR. This lets you avoid creating an infinite number of internal reflections, thus speeding up the rendering time.

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To enable or disable Total Internal Reflection:

1. Click the triangle icon next to the Render Controls and select Render Options.



2. Since TIR is affected by the other Optics options, make sure they are enabled. When a checkmark appears beside the option, the option is enabled. When there is no checkmark, the option is off.



3. Click on the Total Internal Reflection (TIR) option to enable it.
4. Type a value in the Maximum TIR Depth field or leave it at the default setting of 2.



5. Click on the OK icon to accept the changes.

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6. Render the scene.

For a good explanation of TIR, go to Robin Wood's site, click on Tutorials and select General 3D from the list. In addition, Robin has a "Refraction Index of Various Substances for 3D modelers." Another site with a nice listing of refraction indices is 3D Lapidary where you can also download 3D models of gemstones in a variety of cuts (one of which is used in the examples below).

Examples:

- TIR = 4



- TIR = 8



- TIR = 12



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Transmissions

Transmissions lets you choose whether to render light transmissions in a scene. For transparent objects with a light source behind them, you must render transmissions for light to shine through the objects.

The number of reflections rendered are controlled by the Maximum Ray Depth setting.

To enable or disable Transmissions:

1. Click the triangle icon next to the Render Controls and select Render Options.



2. Click on the Transmissions option to enable or disable it. When a checkmark appears beside the option, it is enabled. When there is no checkmark, the option is off.

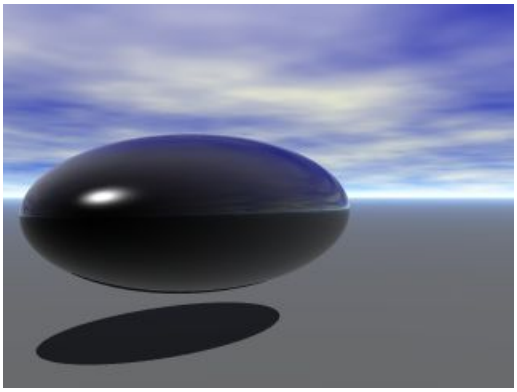


3. Enable Shadows and set the Maximum Ray Depth.
4. Click on the OK icon to accept the changes.
5. Render the scene.

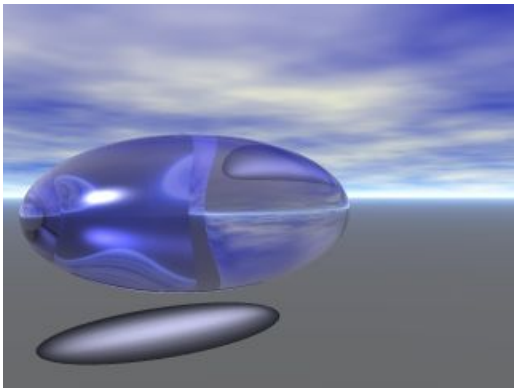
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Examples:

- Transmissions Disabled:



- Transmissions Enabled:



Refractions

Refractions lets you choose whether to render light refractions in a scene. When light is bent by an object such as a prism or a glass of water, you can see distorted views of the environment behind or to the side of the object due to the refraction of light. For Bryce to render these refractions, you must enable this option.

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To enable or disable Refractions:

1. Click the triangle icon next to the Render Controls and select Render Options.



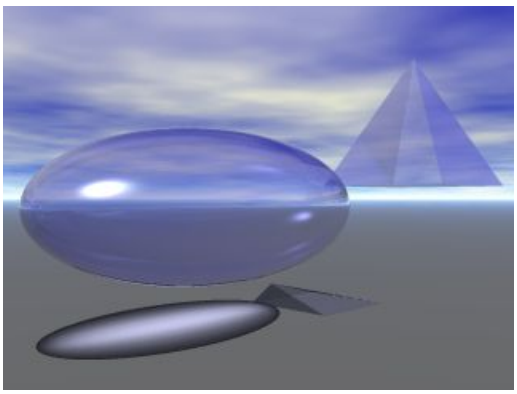
2. Click on the Refractions option to enable or disable it. When a checkmark appears beside the option, it is enabled. When there is no checkmark, the option is off.



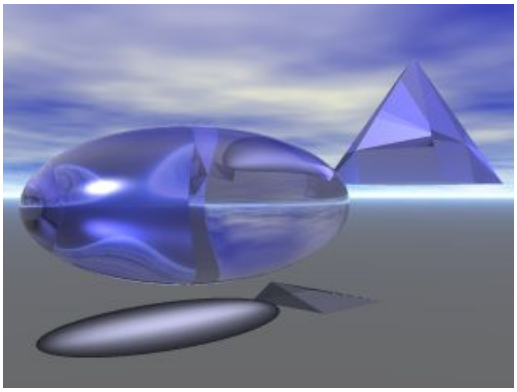
3. Click on the OK icon to accept the changes.
4. Render the scene.

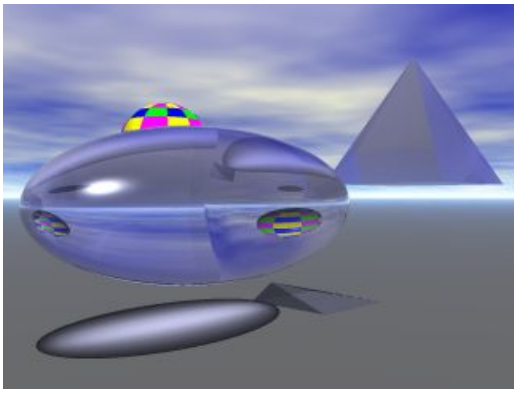
Examples:

- Refractions Disabled:



- Refractions Enabled, without and with an object behind:





Shadows

Shadows lets you choose whether to render shadows in a scene. Enabling Shadows also enables the Maximum Ray Depth setting.

To enable or disable Shadows:

1. Click the triangle icon next to the Render Controls and select Render Options.



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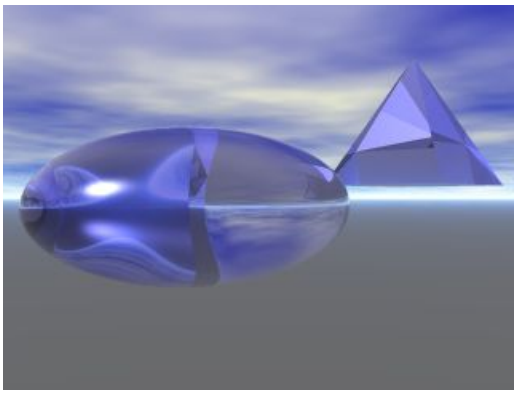
2. Click on the Shadows option to enable or disable it. When a checkmark appears beside the option, it is enabled. When there is no checkmark, the option is off.



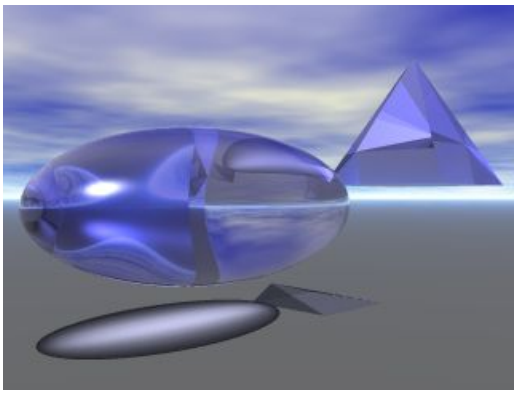
3. If needed, adjust the Maximum Ray Depth to control Reflections and/or Transmissions.
4. Click on the OK icon to accept the changes.
5. Render the scene.

Examples:

- Shadows Disabled:



- Shadows Enabled:



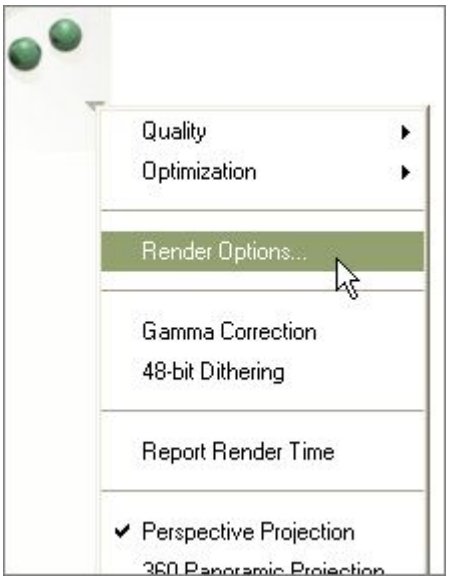
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Maximum Ray Depth

Maximum Ray Depth lets you control the depth of rays during rendering. For example, if you place a series of transparent objects one in front of the other, the Maximum Ray Depth setting determines how many of these objects the light will pass through (transmissions). This setting also determines the number of times Bryce renders reflective "bounces" (reflections).

To enable or disable Maximum Ray Depth:

1. Click the triangle icon next to the Render Controls and select Render Options.

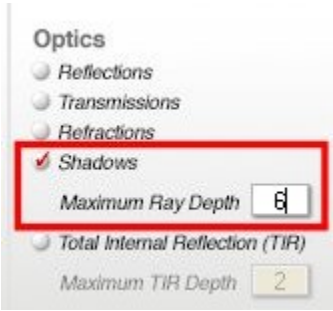


2. Click on the Shadows option to enable or disable it. When a checkmark appears beside the option, it is enabled. When there is no checkmark, the option is off.



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3. Enter a number in the Maximum Ray Depth field. Enter 0 in the field to disable Maximum Ray Depth.

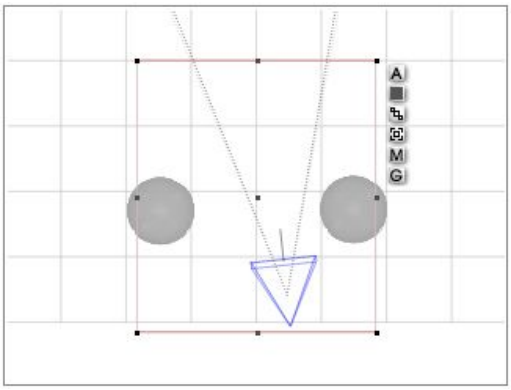


4. Click on the OK icon to accept the changes.
5. Render the scene. See the following pages for examples of using Maximum Ray Depth.

Maximum Ray Depth and Reflections

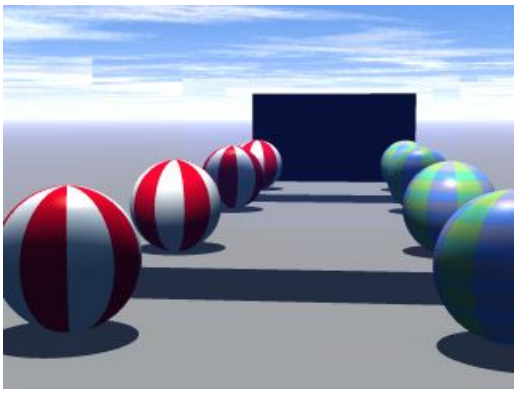
Reflections are controlled by the material reflection setting and by the Maximum Ray Depth setting. Prior to Bryce 5, reflections were limited to six levels and this couldn't be lowered or raised. Bryce 5 introduced the Maximum Ray Depth setting which allows you to determine how many levels of reflection are rendered. Just remember when using this feature that the more levels of reflection you select, the more the render times are increased.

The examples below use two "mirrors" set opposite each other with two spheres placed between the mirrors.

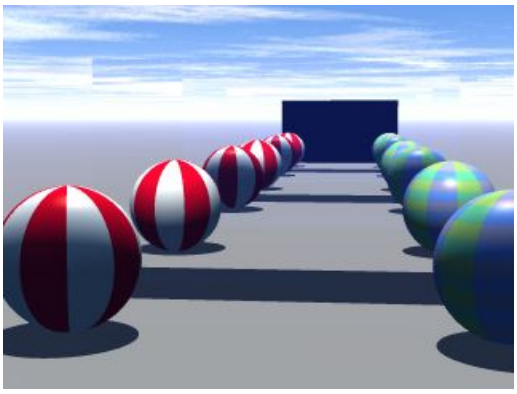


For brevity's sake, "MRD" will be used instead of "Maximum Ray Depth."

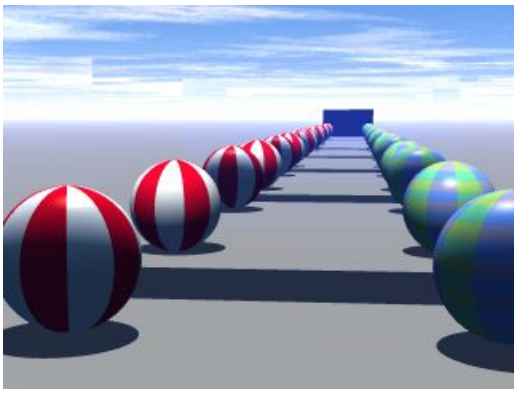
- With the MRD set to 4, Bryce renders four levels of reflection. The fifth level isn't rendered and shows as black.



- With the MRD set to 6 (the default), Bryce renders six levels of reflection.

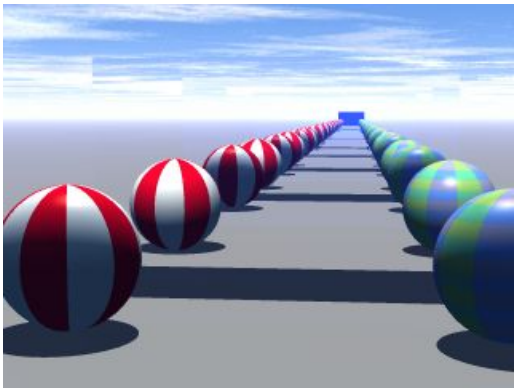


- With the MRD set to 15, we get fifteen levels.



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- And with the MRD set to 30, thirty levels are rendered. and so on.



Maximum Ray Depth and Transmissions

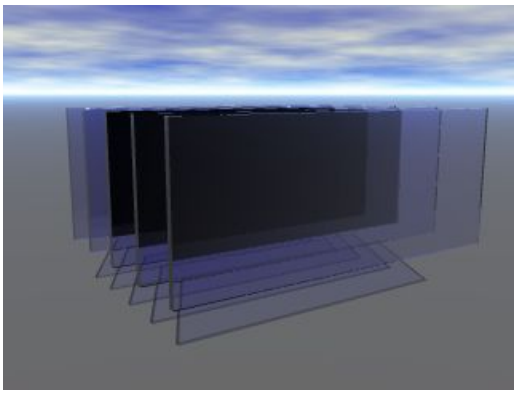
Transmissions are controlled by the Maximum Ray Depth setting which determines how far light travels through transparent objects. The levels rendered include each side of the object. So, if you use a cube, remember that it has two sides for transmissions to go through. If you use a 2D Face, only one side is used for transmissions.

Just remember when using this feature that the more levels of transmission you select, the more render times are increased.

The examples below use five thin cubes placed one behind the other (remember, two sides per cube).

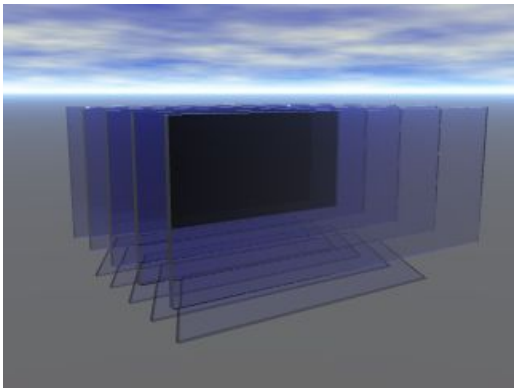
For brevity's sake, "MRD" will be used instead of "Maximum Ray Depth."

- With the MRD set to 5, Bryce renders five levels of transmission. Since the cubes have two sides, light only goes through the first two cubes and half of the third cube. The levels behind that render black. The edges of the cubes show the same levels of transmission depending on their placement.

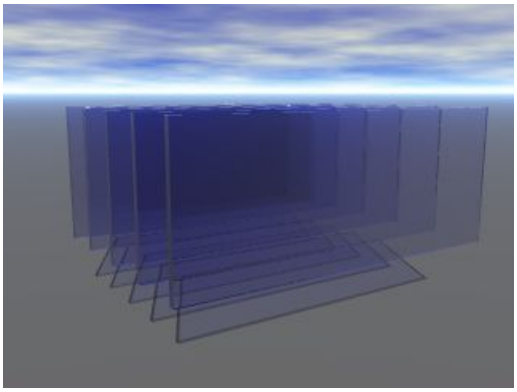


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- With the MRD set to 8, you can see clearly through four complete cubes.



- With the MRD set to 10, you can see clearly through all five cubes.



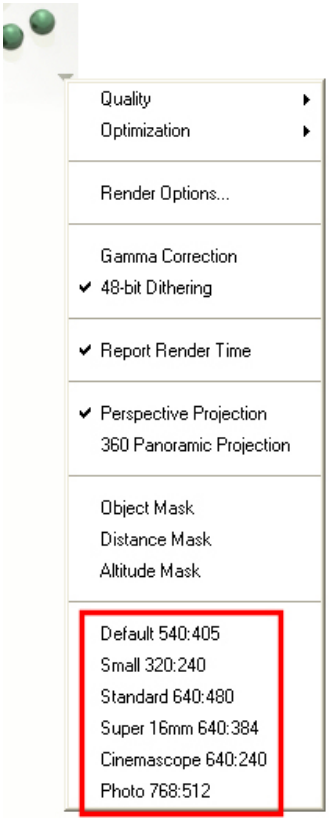
Document Setup

The menu commands at the end of the Render Options menu are quick ways to resize your document. Values shown are expressed in pixels and are for customizing the size and aspect of your document and the resulting render.

The render resolution options control the resolution of your final image. These options do not affect the resolution of your working document; they affect only the final rendered image.

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To choose a document size, click the triangle icon beside the Render Controls and choose a document size from the bottom of the menu.



Render Resolution

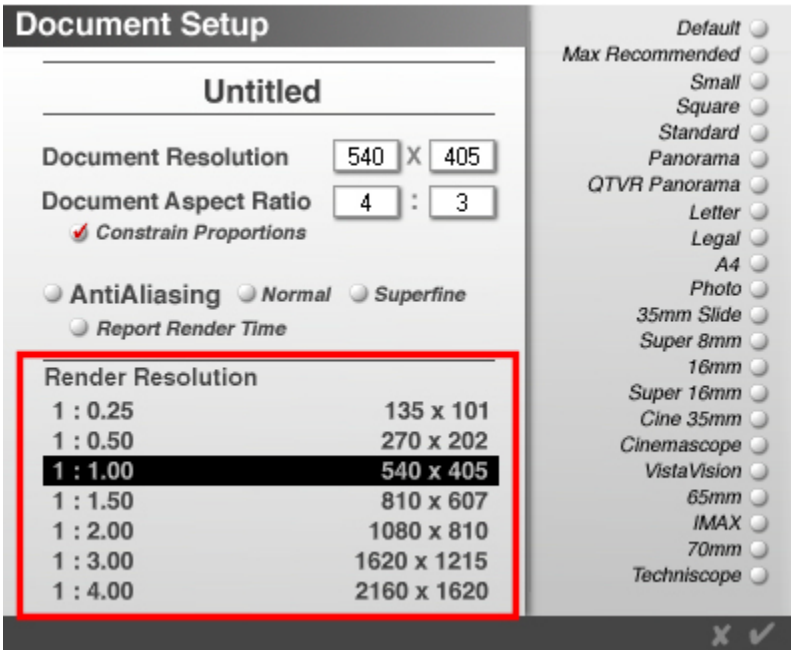
To choose a render resolution:

1. Double-click any of the Render controls or choose File > Document Setup from the menu.



2. Click one of the render resolutions at the bottom of the dialog. The selected resolution appears highlighted.

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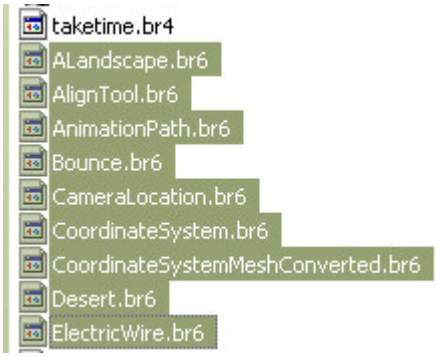
3. Click the OK icon.

Batch Rendering

Batch Rendering lets you render a number of files at the same time. This way, instead of rendering each scene as you create it, you can set up a number of scenes, save them, and then render them all at once at a convenient time.

To perform a batch render:

1. Save a number of scenes to a folder, then select the files.



2. Drag all the files to the Bryce application.



Bryce opens each file, renders it, saves it, and then opens and renders the next file. You can render any number of files this way.

Mac users: Currently, Mac Bryce scene files must have the .BR6 extension (must be in all caps) in order for batch rendering to work correctly. If the files do not have the extension, Bryce 6 will render the default scene for the first queued scene file, then render the remaining scenes correctly. You must add the .BR6 extension in the folder where the files are saved, not when saving the scene file.

Patch Rendering

Using the Plop-Render mode, you can do a patch render of image. Patch rendering involves the rendering of background and flat elements using normal rendering and then using the Plop-Render controls to render areas that contain more complex elements.

There are two things you should remember when using patch rendering:

1. Make sure you use the Clear and Render button when you make changes to a partially rendered image.
2. If you stop a rendering, make changes and then click Resume Render, you'll end up with noise instead of an image.

If you change elements that don't affect a large area of your scene, you don't have to render the entire scene again. For example, if you render a scene with a floating sphere and then delete the sphere, you don't need to re-render the scene, only the area where the sphere was.

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To patch render your image:

1. Start a render as normal.
2. Let the rendering proceed for two or three passes and then click the mouse.
3. Switch to Bitmap display mode.
4. Drag a marquee around key portions of your scene and then render those areas using the Plop-Render controls.

See "Plop Render On/Off" for more on using this option.

Speeding Up Renders

There are several techniques you can use to speed up the rendering process. These techniques are most useful when rendering animations, where you may have a large number of images to render.

You can greatly increase the speed of a render just by using the Preview Render modes. Here are the percentages of time it takes to a render a scene, containing complex materials and lights, using normal and preview modes.

- Normal Render: 100% Fast Render: 41.7% Textures Off: 35.4%
- Fast Render w/Textures Off: 8.3%
- Fast, Textures Off, anti-aliasing Off: 2.1%

You can also speed up rendering using these techniques:

- Limit the number of lights.
- Keep background objects simple.
- Limit the number of volume materials you apply.
- Limit the number of transparent and reflective objects.
- Limit the number of frames per second to 15 for QuickTime movies.
- Divide animations into smaller files and eliminate objects that won't be seen in the rendered frames.
- Turn off anti-aliasing when previewing animations.
- Group objects near each other to lessen how many objects Bryce has to calculate.

Text Display Area

The area just below the Render Controls is reserved for momentary display of text information. When you pass your pointer over interface elements, this area displays the name of the interface element, and in some cases, it also displays the element's current settings. The Text Display Area also displays information about the total number of polygons in an object or a scene and information about current control settings.

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To display information about the interface:

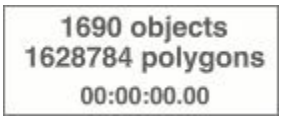
- Pass the pointer over any interface element.

  The name of the element is displayed. In some cases, the element's current settings are also displayed.



To display statistics about the objects in your scene:

1. Switch to Wireframe display using the Display Mode tool.
2. Pass the pointer over the Working window.
   - If no objects are selected, the Text Display Area displays a count of all of the objects in your scene, as well as a total polygon count.

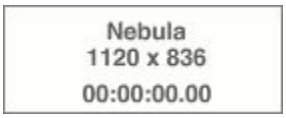


   - If an object is selected, the Text Display Area displays object and polygon counts for the selected object.



To display information about rendered images:

1. Switch to Bitmap display using the Display Mode tool. If you have not rendered your image, the Working window is blank.
2. Pass the pointer over the Working window. The Text Display Area shows the scene filename and image pixel size.



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Libraries

Bryce contains several preset libraries where you can store objects, materials, skies, terrain brushes, and textures. The next several pages show how to add and delete presets, set up the preview, add and delete categories, and add presets to your scenes.

New in Bryce 6 are the following for preset libraries:

- Thumbnail preview sections expanded so more previews can be seen
- Titles and descriptions can now contain more information
- Ability to add and delete preset categories from within the library
- Sky Library now allows for multiple categories
- Each category can now have more than 14 sub-categories

Pictures Editor

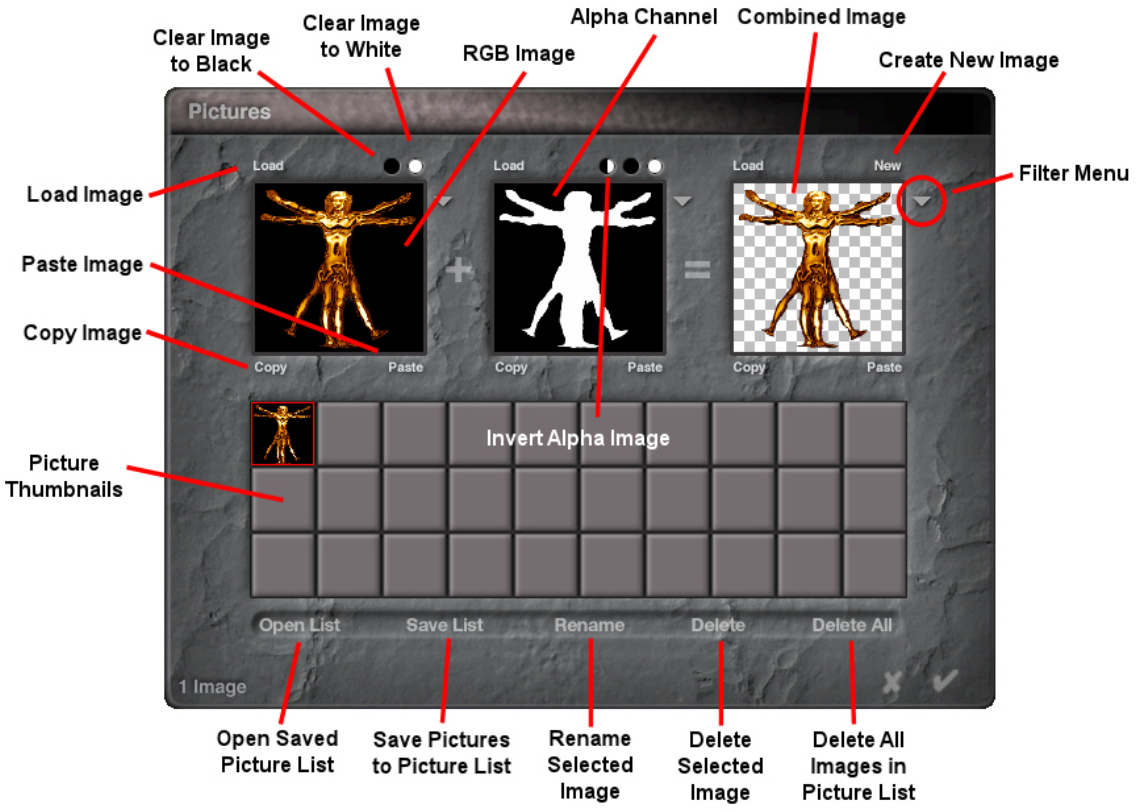
The Pictures Editor in Bryce, also known as the Pictures Library, stores all the images available in Bryce and can be used to catalog pictures. You can store and import any number of pictures in the library that your system memory and disk space will allow.

The Pictures Editor has three square previews at the top of the window. These three previews represent one image three different ways. The left image is the RGB information of the image, the middle one is the alpha channel, the right one is the combined image.

You can apply filters to each of the three parts independently, load new images, copy, and paste between the previews, save a picture list, rename images, and delete images.

There are several ways of accessing the Picture Library. The method you use depends on how you're going to use the image.

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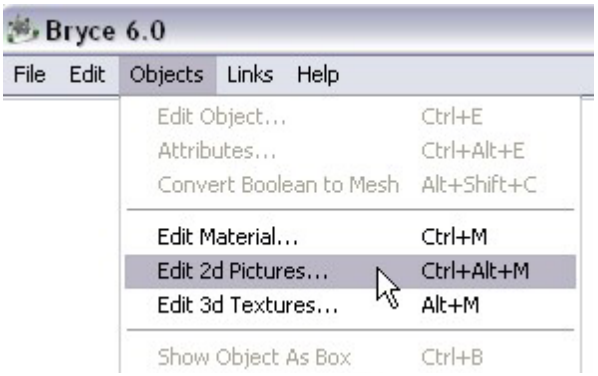
Accessing the Pictures Editor

The Pictures Editor can be accessed from the following locations:

From the Objects Menu

In the Objects menu, the Edit 2d Pictures command brings up the Pictures Library.

- To open the Pictures Library, choose Objects > Edit 2d Pictures from the menu or press Ctrl+Opt/Alt+M.



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From the Create Palette

To access the Pictures Editor from the Create Palette:

1. Make sure the Create palette is visible. If it's not, click the Create button at the top of the Bryce window.

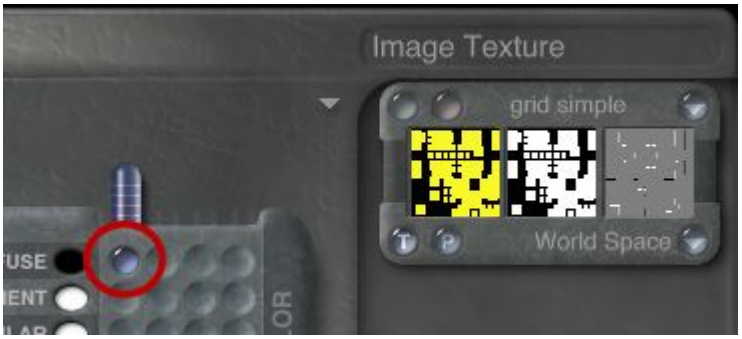
2. Click on the Pict Object tool (Leo object). The Pictures Editor will come up.

From the Materials Lab

To access the Pictures Editor from the Materials Lab:

1. Select an object.
2. Click on the M button next to the selected object. The Materials Lab will come up.
3. In the Materials Lab, click on one of the columns in the grid to activate a component window:

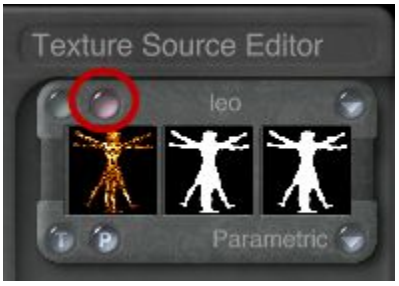
   

4. In the component window, click on the P button in the bottom-left corner. The default moon texture appears in the window:

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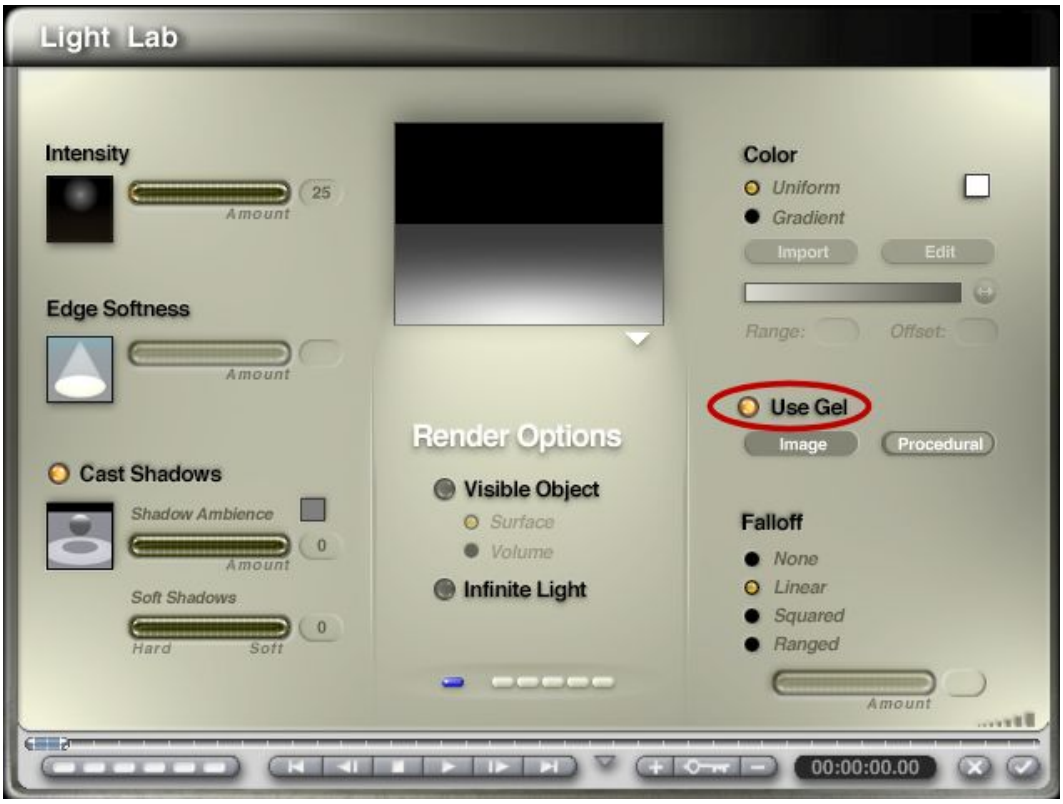
5. Click the Pink button at the top of the window, the Pictures Editor comes up.



From the Light Lab

To access the Pictures Editor from the Light Lab:

1. Select a light source.
2. Click the E button next to the selected light source. The Light Lab will come up.
3. Click the radio button next to Use Gel, the Image and Procedural buttons will activate.



4. Click on the Image button. The Pictures Editor comes up.

From the Tree Lab

You can use a uniform color, an image, or a material as the texture for leaves of a tree. All the leaves will have the same texture; you cannot vary the texture of leaves.

To use an image texture:

1. Click the Image button at the bottom of the Branch/Trunk or Foliage section.

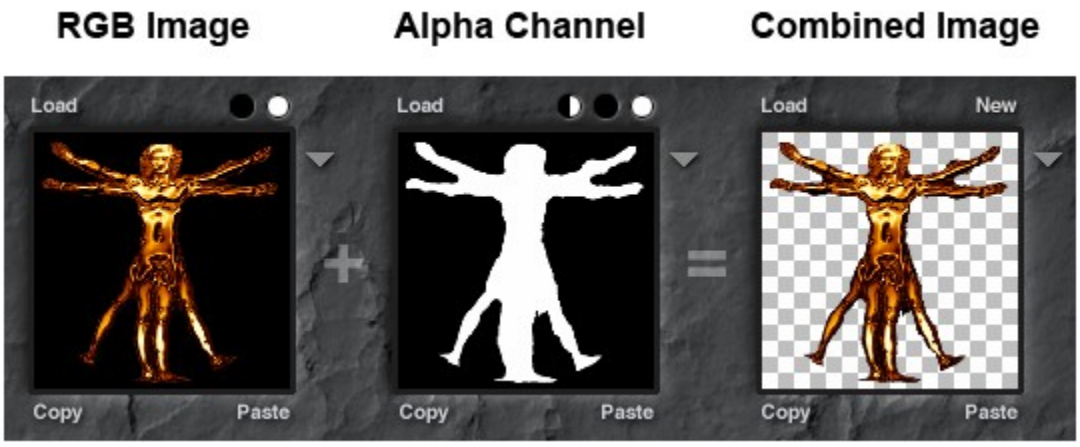


2. Click the Edit button to the right of the Image button. The Pictures Editor appears.



Previewing Pictures

The three most prominent items at the top of the library are the RGB Image (left), Alpha (middle), and Combined (right) preview windows. The first window displays the current picture, the second window displays the alpha channel associated with the picture, and the third displays the resulting picture after the alpha channel is combined with the picture.



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Alpha Channels

Every image contains a number of channels that store data about the makeup of the picture. For instance, channels can contain masks, colors, or bump information.

The Alpha Channel of an image is its second channel. The channel is like a grayscale map that accompanies an image that is used primarily as a "mask." Areas in the Alpha Channel that are black (appearing transparent) are ignored by the Bryce as it computes the picture. Bryce recognizes and computes areas that are white (appearing opaque).

The most common use for alpha channels is to mask the contours of a 2D object, separating it from any unwanted background information. For instance, you may import a picture of a dog. If you have created an Alpha Channel "mask" describing the area of the dog as white and the "non-dog" area as black, then unwanted cats and mail carriers in the original picture's background will not be seen in your rendered image. This example illustrates how the Alpha Channel mask (bottom) is used to eliminate the unwanted areas of an image.

In Bryce, Alpha Channels are also used when your picture is a component in a material. In this case the alpha channel can be used to determine everything from the bumps in a material to how a surface property is applied on an object.

If you want to use the picture in the library for multiple purposes, you'll need to make sure that all the pictures have an alpha channel.

Picture Thumbnails

Below the three preview windows are the picture thumbnails that display a small preview of each picture in the library. The gray thumbnails represent empty slots in the library. When you load images, they are added to the first available gray slot. If there are a large number of pictures in the library, you can use the scroll bar to scroll through all the thumbnails.

To display an image in the library, click on the picture's thumbnail. The picture and its associated alpha channel appear in the three preview windows at the top of the dialog.



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Loading Pictures into the Editor

You can load pictures into the library to create your own custom library. Pictures can be loaded into any of the three preview windows. If you want to add a new picture to the library, you need to load it into the last preview window, the Combined Image window.

When you load a picture into the first window, you're loading only the picture's RGB (Red, Green, and Blue) color information. The picture loaded into the first preview window replaces the currently selected picture in the library, so you're replacing a picture in the library with the picture you're loading. Be careful when replacing the RGB Image since this will replace the texture for all objects that currently use the same image.

When you load a picture into the second window, you're loading only the picture's alpha channel. The alpha channel determines which portions of the picture are visible. The areas of the picture that are transparent appear as a checkerboard pattern. Every picture should have an alpha channel assigned to it. If the picture does not have an alpha channel, the resulting Alpha image appears completely white.

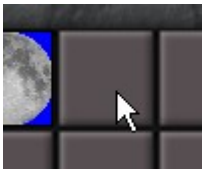
If your picture doesn't have an alpha channel, you can copy the image from the RGB Image window into the Alpha Channel window. This way your picture won't appear completely opaque.

The Alpha channel you load does not have to necessarily match the image. You can create some interesting clipping effects by combining different alpha channels and images.

Load New Picture

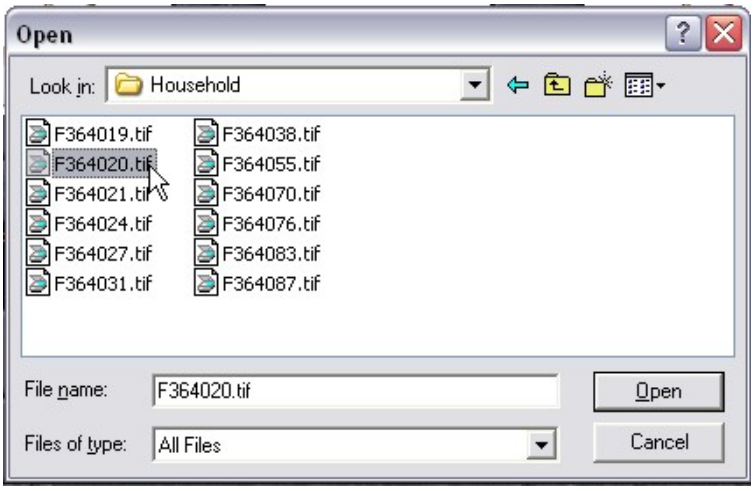
To load a new picture into the Library:

1. Click an empty picture slot in the bottom of the library where you want to load the new picture. The Load dialog appears.

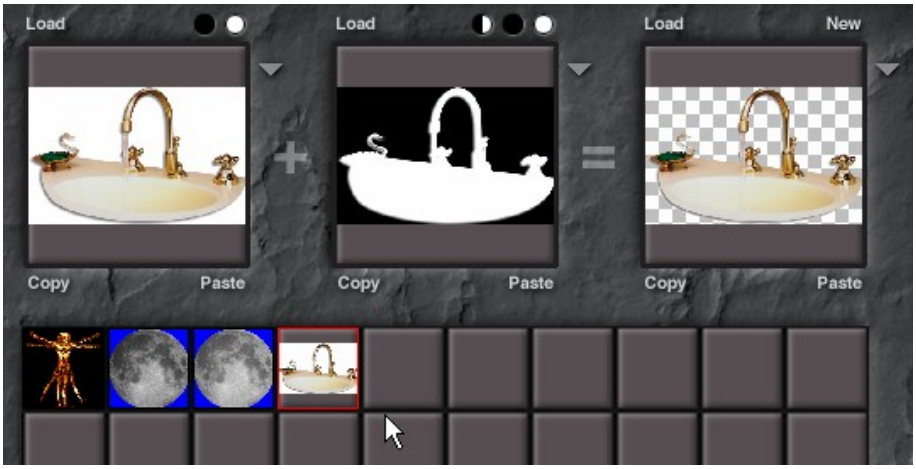


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2. Use the dialog controls to locate the desired image and click Open.



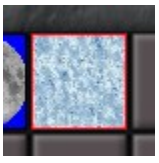
3. The picture's thumbnail appears in the picture slot and the image and any alpha channel are loaded in the RGB Image and Alpha Channel windows.



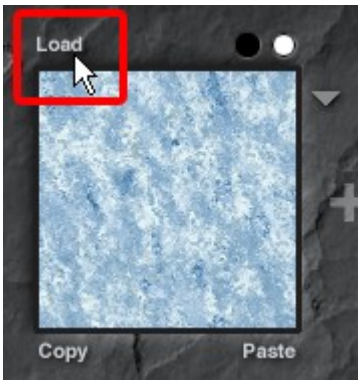
Replace Picture

To replace the RGB information in a picture:

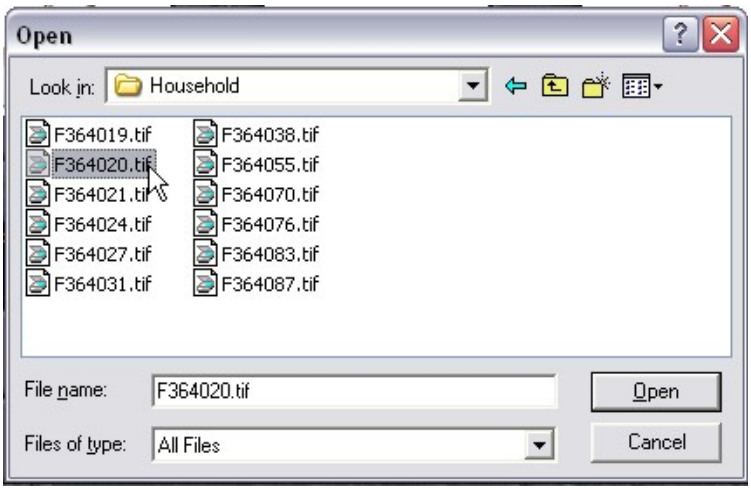
1. Click the thumbnail of the picture you want to replace.



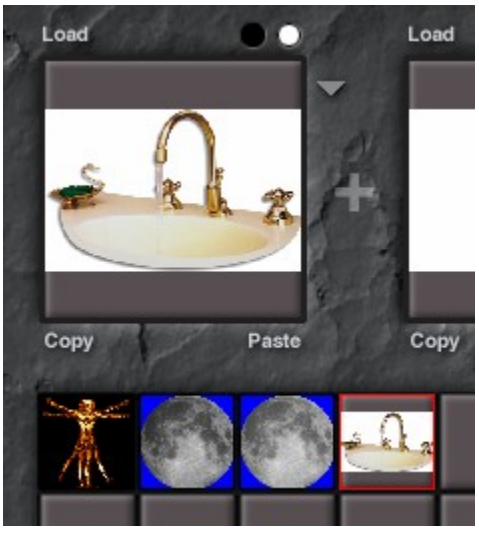
2. Click the Load button on top of the RGB Image window. The Load dialog appears.



3. Use the dialog controls to locate the desired image and click Open.



4. The picture appears in the first preview window.



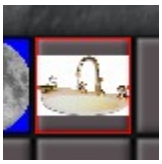
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Note: Replacing images over a previous image will not load any alpha channel layers. To load the alpha channel, load the replacement image into a new slot.

Replace Alpha Channel

To replace the Alpha channel information in a picture:

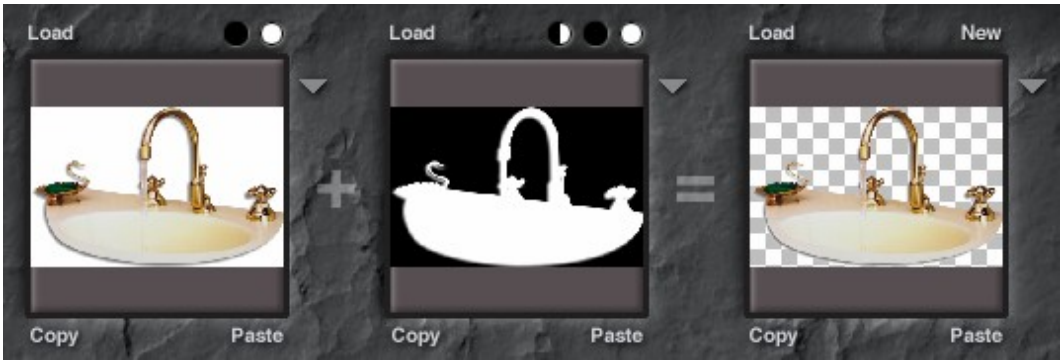
1. Click the thumbnail of the picture you want to replace.



2. Click the Load button on top of the Alpha Channel window. The Load dialog appears.



3. Use the dialog controls to locate the desired image and click Load. The picture's Alpha Channel appears in the second preview window.



Copying & Pasting Pictures

Copying and pasting in the Pictures Editor works differently for each of the three image windows.

When you copy and paste into the first window, you're pasting only RGB color information, so if you copy an image from the Combined window, only the color information is pasted into the RGB window. As with loading, any changes you make in the RGB Image window affects the selected image.

When you copy and paste into the second window, you're working with only the Alpha Channel information, so any image you paste into this window will appear as an alpha channel image (that is, black and white). Any changes you make in this window affect only the selected image.

When you copy an image from the Combined window the entire image is placed on the clipboard. Depending on where you paste it, only a portion of the image may be used.

When you paste a picture into the Combined window, it appears as a color image with transparent and solid areas. All pictures are treated as color. So if you paste a picture copied from the Alpha Channel window in this window, you'll get an RGB representation of the alpha channel image. As well, any image pasted into this window creates a new picture entry in the library.

To copy and paste RGB information in a picture:

1. Click the Copy button below the RGB Image window.
2. Click the Paste button below the window where you want the RGB image to appear.
    - If you paste the image into the Alpha Channel window, it is desaturated and used as an alpha channel.
    - If you paste it into the Combined Image window, the RGB image becomes a new entry in the library.

To copy and paste Alpha Channel information in a picture:

1. Click the Copy button below the Alpha Channel window.
2. Click the Paste button below the window where you want the Alpha Channel information to appear.
    - If you paste the image into the RGB Image window, an RGB representation of the alpha channel is placed in the window.
    - If you paste it into the Combined Image window, an RGB representation of the alpha channel is placed in an empty slot in the library.

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To create a new picture using RGB color information only:

1. Click the Copy button below the RGB Image window.
2. Click the Paste button below the Combined window. The RGB information is placed in an empty slot in the library.

To create a new picture using Alpha channel information only:

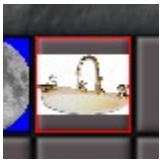
1. Click the Copy button below the Alpha Channel window.
2. Click the Paste button below the Combined window. The alpha channel information is placed in an empty slot in the library.

Deleting Pictures

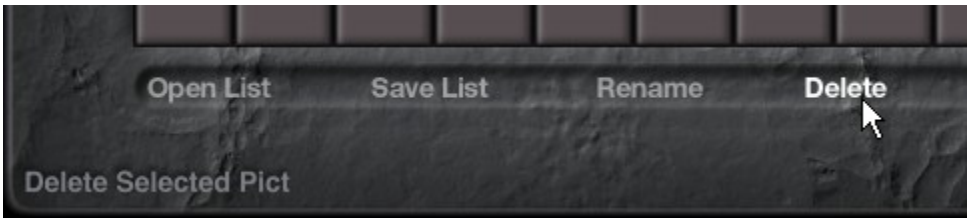
When you delete a picture, you remove all the image information (including color and alpha channel) from the library.

To delete a picture from the library:

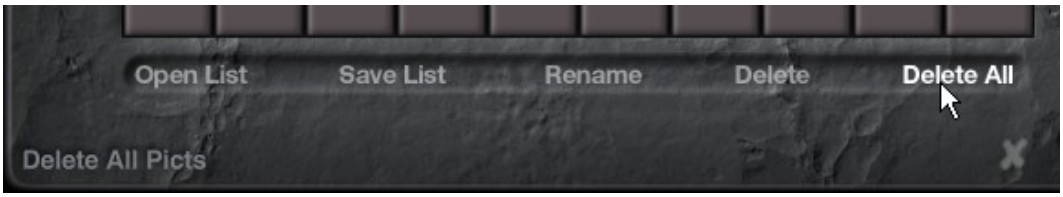
1. Click the thumbnail for the picture you want to delete.



2. Click the Delete button.



3. To delete all pictures from the library, click Delete All.



Note: You cannot select more than one thumbnail at a time in the Pictures Editor.

Renaming Pictures

To rename an image:

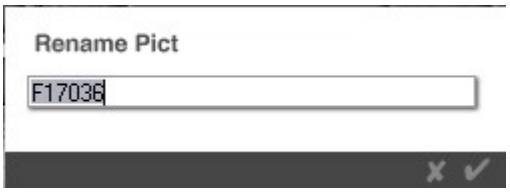
1. Click the thumbnail of the image you want to rename.



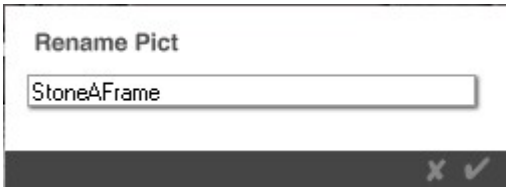
2. Click the Rename button.



3. The Rename Pict dialog will come up.

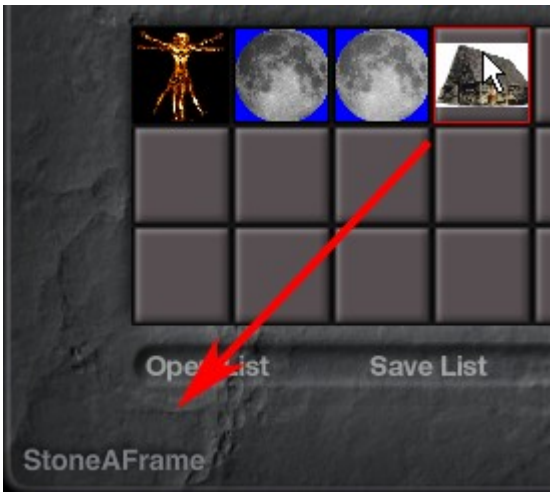


4. Type a new name for the image into the field and click on the OK icon.



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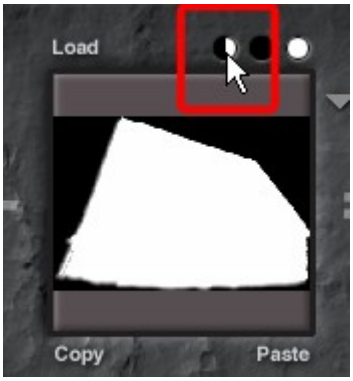
5. Move the mouse over the image thumbnail and the new name will show up in the bottom left-hand corner of the Pictures Editor.



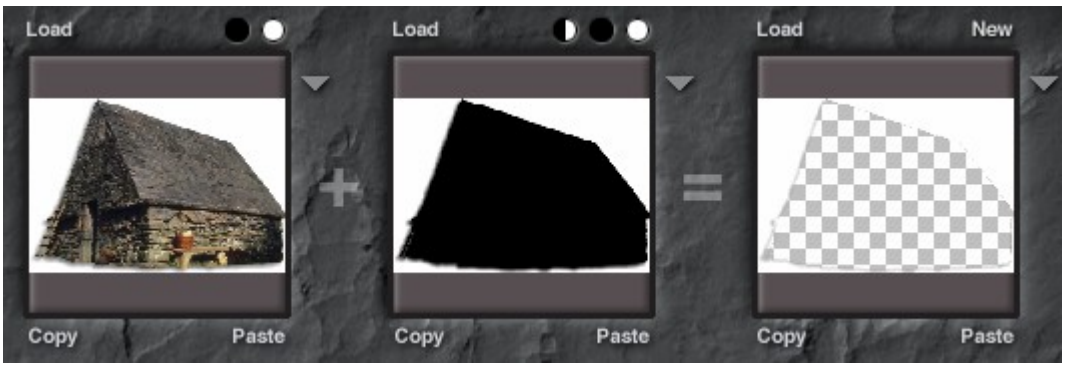
Inverting the Alpha Channel

When you invert an alpha channel all the black areas become white and the white areas become black. This means that all the areas that were transparent now become solid and vice versa.

To invert an alpha channel, click the Invert button above the Alpha Channel window.



Result:



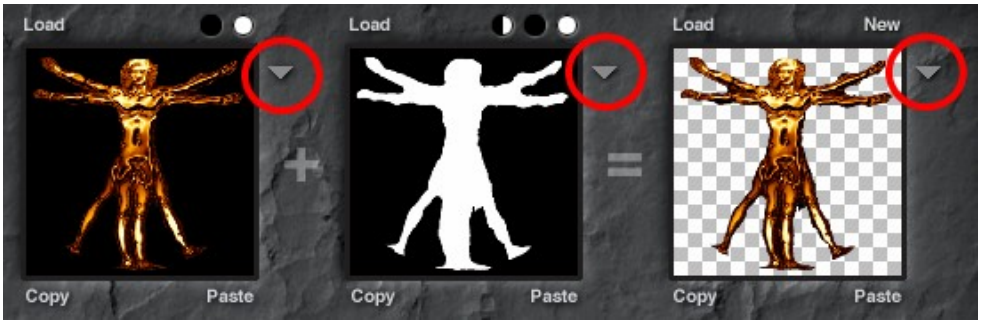
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Selecting a Plug-In Folder

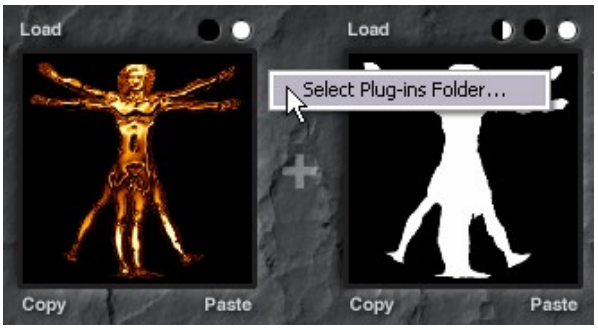
You can apply filters to each of the three parts independently.

How to select a plug-in folder:

1. Click on the triangle to the right of the desired preview type. If a plug-ins folder has been previously selected, a pull-down menu appears that displays the available Photoshop filters.



   If, for some reason, the Photoshop filters cannot be found, or you wish to select a new plug-ins folder, choose Select Plug-ins Folder at the bottom of the menu.



2. Select a folder for the plug-in and click on OK.



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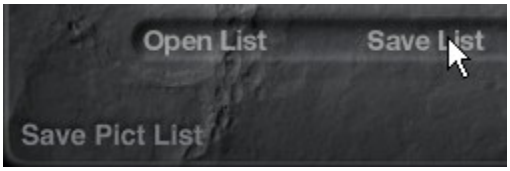
Picture Lists

A Picture List is a file that contains a group of pictures. A Picture List can be used to store all the pictures used in a given scene, or to store a series of

pictures you use most often. You should also use a picture list to store any pictures you've used as part of a material.

To open a picture list:

1. Click the Open List button at the bottom of the Picture Library. The Open dialog appears.
2. Use the dialog controls to locate the desired list and click Open. The pictures in the list appear in the library.
3. To save a picture list:
4. Click the Save List button at the bottom of the Picture Library. The Save dialog appears.



5. Enter a name for the list and click Save.

   Name the list the same as the scene. This way, you can easily find the list that belongs to a specific scene.

Preset Libraries

In Bryce, the libraries provide quick access to objects, materials, textures, pictures, brushes, and skies that can be added to the scene.

Bryce comes with two preset category folders in each library: Installed and User. The Installed preset category folder contains the presets that are installed with Bryce. The User preset category folder is empty by default.

Each preset category folder can contain as many preset categories as you want and each preset category can contain a virtually unlimited number of presets - at least as much as your computer can handle that is. You can also create additional preset category folders and preset categories to suit your needs.

In Bryce 6, the libraries were expanded to show more presets. This also allowed the preset titles and descriptions to contain more information, however, older presets copied into the preset libraries will still have the shorter titles and descriptions. See the issue in appendix c for more on this

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All the libraries can be added to, deleted from, imported into, or exported out of in the same way. What differs is what is or is not selected and what gets added to the library.

- The Objects Library contains all the preset objects distributed with Bryce as well as presets you add. Objects in the library are either 3D models or geometric paths. Objects added to the library include any applied materials and textures.
- The Materials Library contains all the material presets available in Bryce.
- The Textures Library contains procedural 3D textures generated by Bryce in the Deep Texture Editor.
- The Skies Library contains all the preset skies available in Bryce. You can apply them to your scene and edit them just as you would another sky.
- The Brush Library contains all the brushes available for use in the Terrain Editor.
- The Pictures Editor contains the current imported textures for use in the scene.

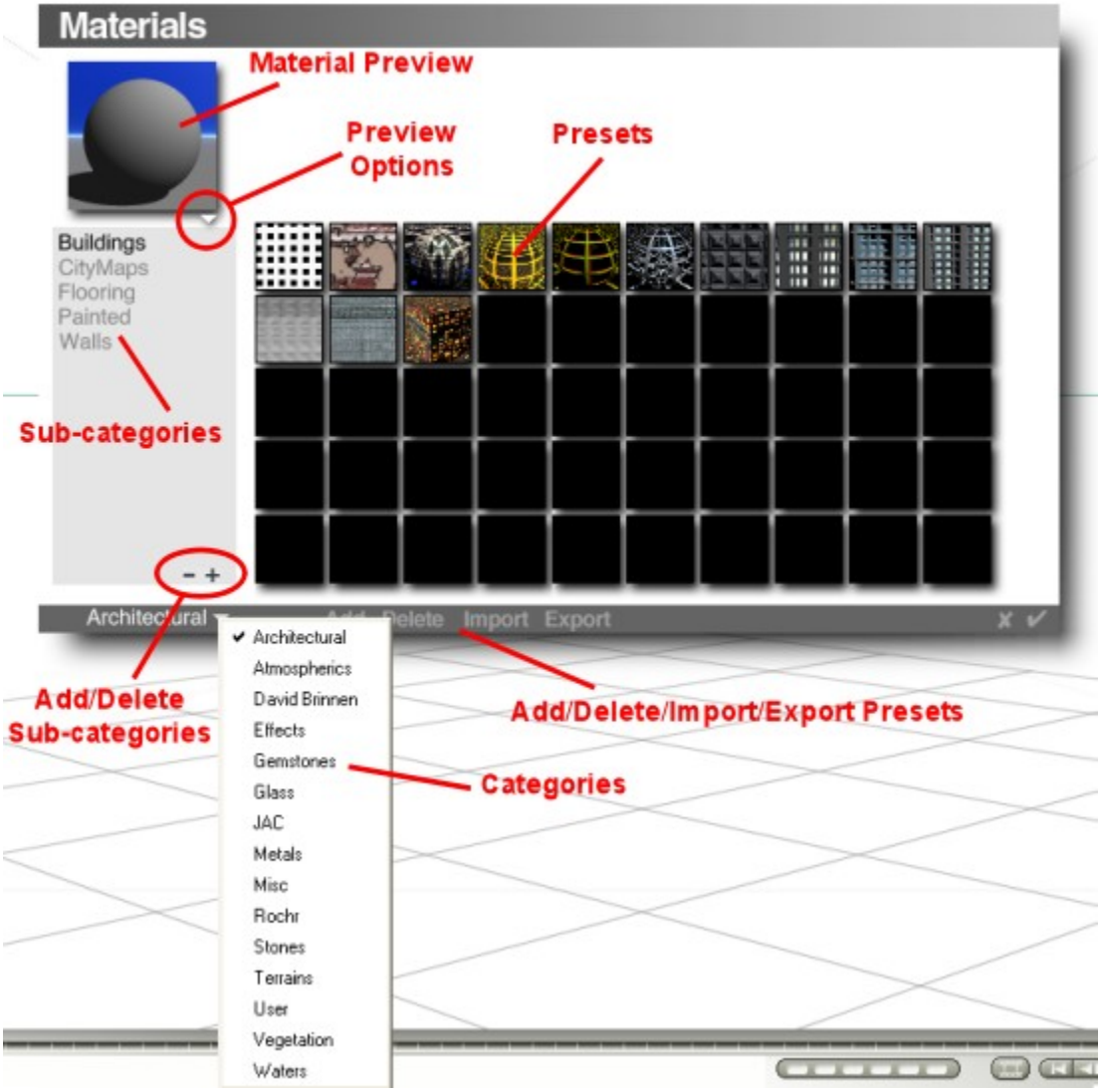
Working with Categories & Presets

Each library contains categories for presets with each category containing sub-categories which hold the actual presets.

Each library can contain as many categories as you want, each category can contain as many sub-categories as you want, and each sub-category can contain as many presets as you want. The only limit is what your computer can handle.

That being said, if sub-category gets too large and something happens, that sub-category could become corrupted and you'll lose all the presets in that sub-category. So, a periodic backup of all preset categories might be a good thing to do.

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Changing Preset Category Folders

To change to a different preset category folder:

Open any of the Preset Libraries.

1. Click the triangle icon next to the preset category folder name at the bottom left of the Preset Library and choose a preset category folder from the drop-down menu.



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2. The library opens that preset category folder and displays the categories and presets found in that folder. Click on any sub-category to access the presets stored there.



Adding Categories

Bryce 6 adds the ability to add or delete sub-categories from within the libraries themselves. Of course, categories and sub-categories can also be added and deleted from within the directory folders themselves

As you add new categories, the category listing will continue to grow. Fourteen categories can be seen in the listing so if there are more than 14 categories, a scroll bar will be added to the listing allowing you to scroll up and down within the listing.



There are three ways to add new categories to the libraries:

- By creating a new category inside a library
- By exporting presets out to a new category
- By creating new folders inside the Preset folder

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Inside a Library

To add a preset category to the Preset Libraries from within the library:

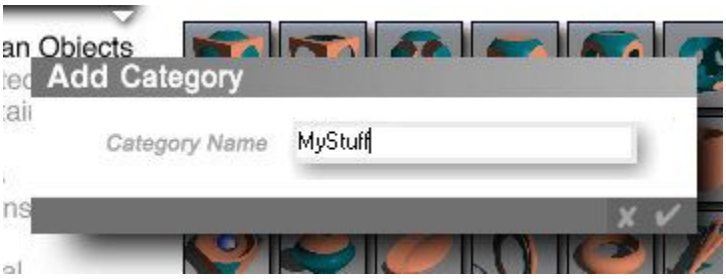
1. Open any of the libraries.
2. Open the main category (i.e., Installed, User, etc.) to add the new preset category to.



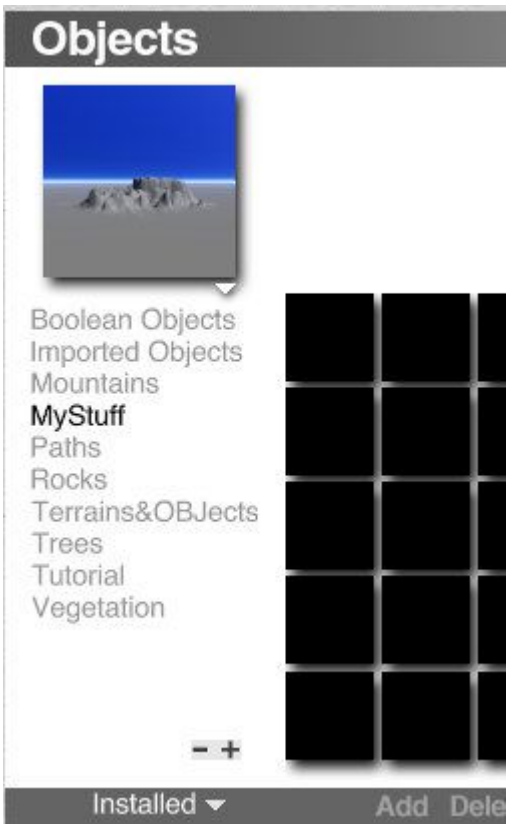
3. Click on the plus sign (+) just above the category triangle:



4. The Add Category dialog will come up, enter the new category name in the field:



5. The new category will be created, ready for new objects, materials, brushes, skies, or textures:



By Exporting

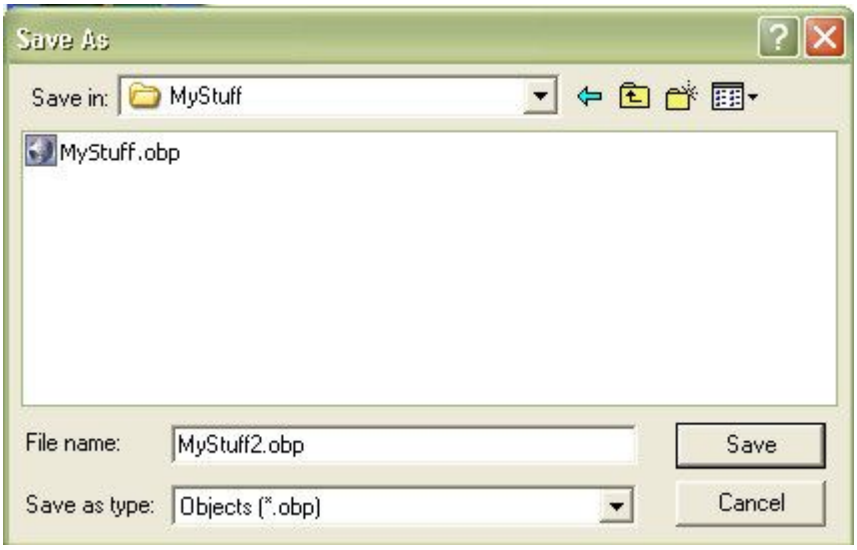
To add a preset category by exporting presets:

1. Open any Preset Library.
2. Select any preset object or multiple objects.
3. Click the Export button at the bottom of the dialog. The save file dialog appears.

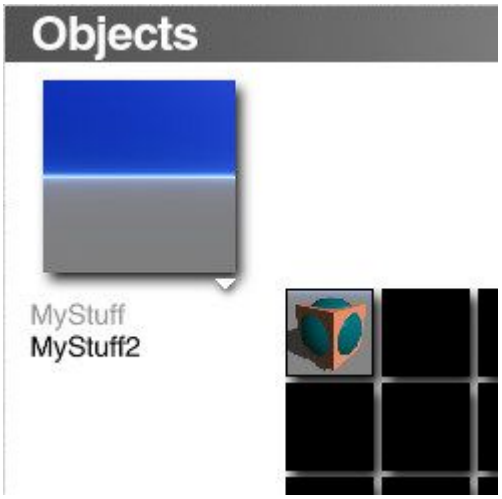


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4. Change directories to the category folder you want to add the new preset category to, enter a name for the file, and click Save. The file will be saved to the location you selected.



5. Back in Bryce, the new preset category will now be in the selected category folder, ready for new presets to be added to.



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Inside a Preset Folder

To add a preset category folder to any library:

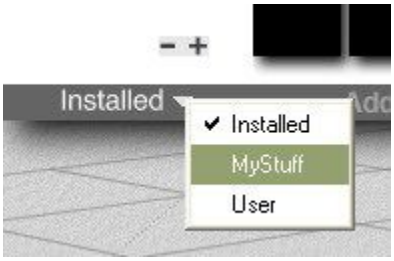
1. Navigate to the folder where Bryce is installed.
2. Open the Presets folder.
3. Open the preset folder where you want to add a new library category.



4. Create a new folder and give it a name.

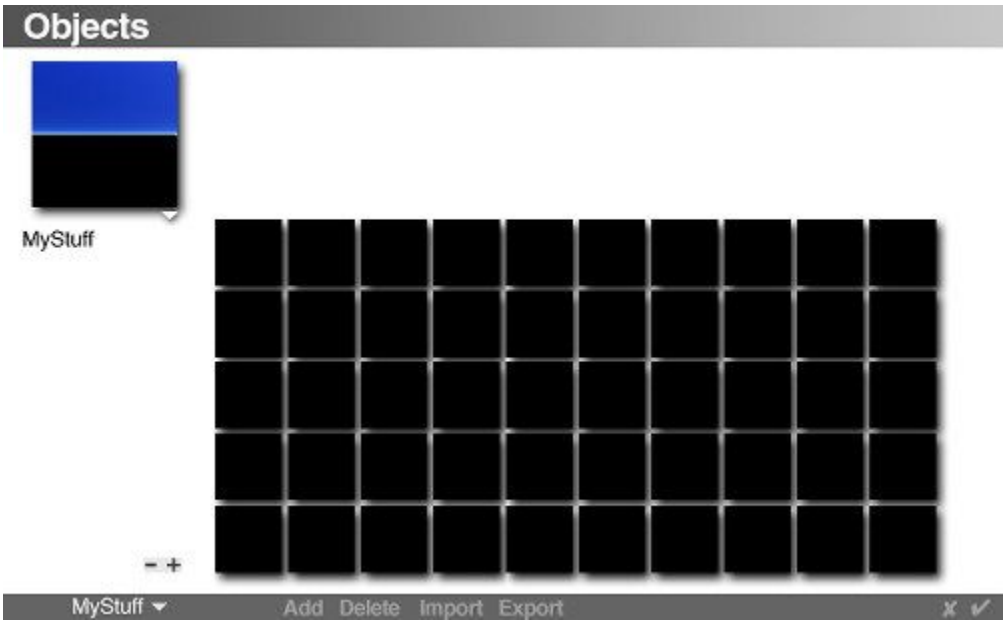


5. In Bryce, open the library and click on the triangle next to the current category name at the bottom left of the library window. The new category will now be in the list.



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6. Select the new category to open it, you can now add new presets to the category or create new sub-categories.



7. If you go back into the library folder, you'll see a preset file with the same name as the category. You can rename the file, duplicate it to create new sub-categories, or even delete them from the folder.



Deleting Categories

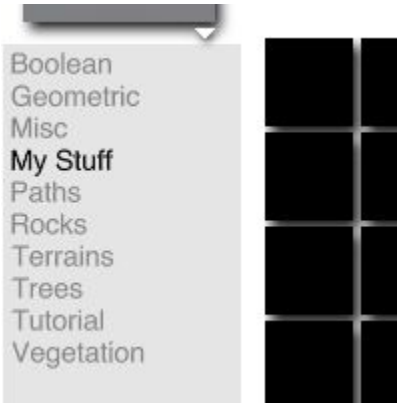
Bryce 6 adds the ability to add or delete sub-categories from within the libraries themselves. Of course, categories and sub-categories can also be added and deleted from within the directory folders themselves.

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Inside a Library

To delete a preset category folder from within any library:

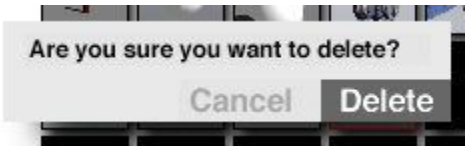
1. Open any of the libraries.
2. Select the main category where you want to delete a preset category from.



3. Click on the minus sign (-) just above the category triangle:



4. The Confirm dialog will come up, choose Delete to remove the category from the library or Cancel to leave it in.



5. The category will be completely removed from the main category.



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Inside a Preset Folder

Both category folders and sub-category files (.mat, .obp, etc.) can be deleted from within the preset folders.

Deleting a Category Folder

To delete a preset category folder from any library:

1. Navigate to the folder where Bryce is installed.
2. Open the Presets folder.
3. Open the preset folder where you want to delete a library category.



4. Select the category folder you want to delete and cut/delete it from the folder. When you return to Bryce, the category will be gone.



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Deleting a Sub-Category File

To delete a preset sub-category from any library:

1. Navigate to the folder where Bryce is installed.
2. Open the Presets folder.
3. Open the preset folder where you want to delete a library category.



4. Open the category folder containing the sub-category you want to delete.
5. Select the category you want to delete and cut/delete it from the folder. When you return to Bryce, the category will be gone.



Adding Presets

You can add presets to any library by either clicking on the Add button or importing new presets.

Objects

You can add preset objects to the Object Presets Library. The Objects Library retains all Boolean, grouping, and textural properties of the objects placed within it.

When adding an object or group to the library, keep the following in mind:

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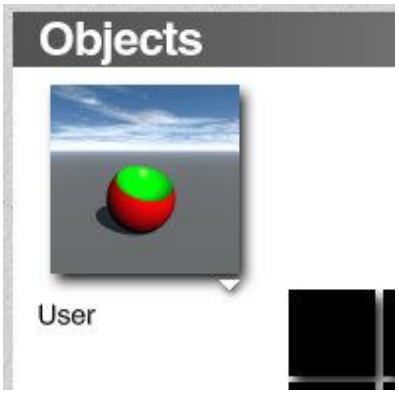
- Only single primitives or groups can be added to the library. If you select more than one group, only the first group will be added to the library. To add both, either group them into one group or add them separately to the library.
- The Perspective Camera cannot be added to the library.
- All applied materials and images are saved with the object.
- In Bryce 5 and 5.5, grouped Bryce Trees could be added to the library, but tended to crash Bryce when you tried to load them in the scene or import the saved OBP file. Bryce 6 has fixed this issue and grouped trees in the library no longer crash Bryce.
- Some Bryce 4 objects will crash Bryce 6 when the thumbnail is selected. This can only be fixed by importing the object into the Bryce 5/5.5 Objects Library, exporting, then importing into Bryce 6.

To add an object preset:

1. Select the object or group in your scene that you want to add to the library.
2. Click the Triangle icon next to the Create button at the top of the Bryce window.



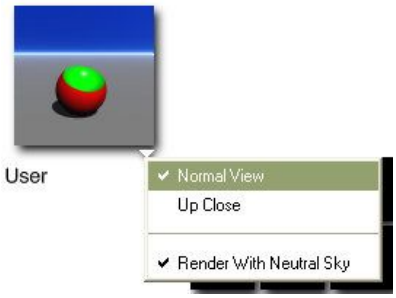
3. The Objects Library comes up with the selected object appears in the preview area of the Presets Object Library dialog.



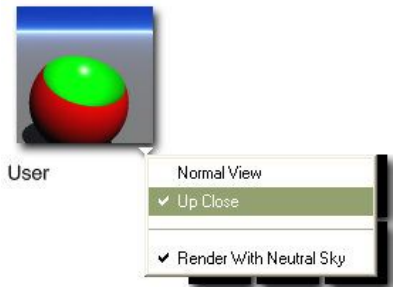
4. Click a category name. The library switches to the category you selected. The new preset will be added to the category you select.

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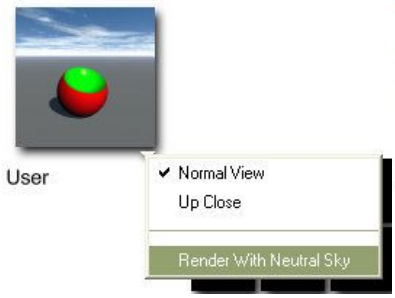
5. Click the Triangle icon in the bottom-right corner of the thumbnail preview and choose a view option from the menu.
    - Normal: is the default view of your selected object.

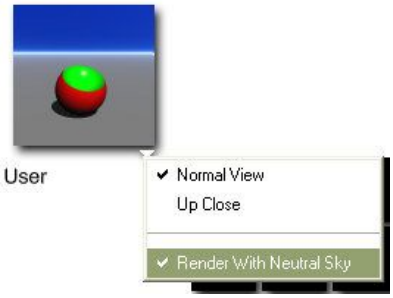


    - Up Close: displays a close-up of your object.



    - Render With Neutral Sky: displays your object with a flat sky, instead of the sky applied to your scene. When deselected, the current sky in the scene will affect the thumbnail preview.



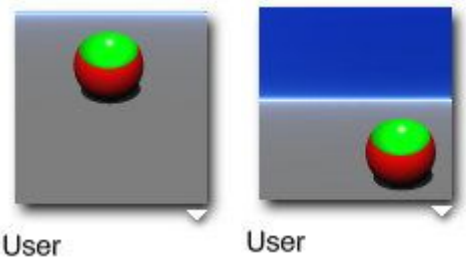


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6. Set up the object location:
    - Drag in the preview area to rotate the view of the object:



    - Hold down the Spacebar and drag up, down, right, or left to pan the object preview:



    - Hold down Cmd/Ctrl and drag in the preview area to zoom in and out of the preview:

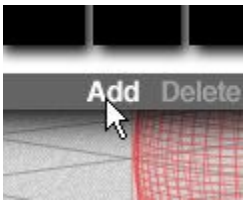


    - Press Alt and click in the preview area to reset the preview to the default:

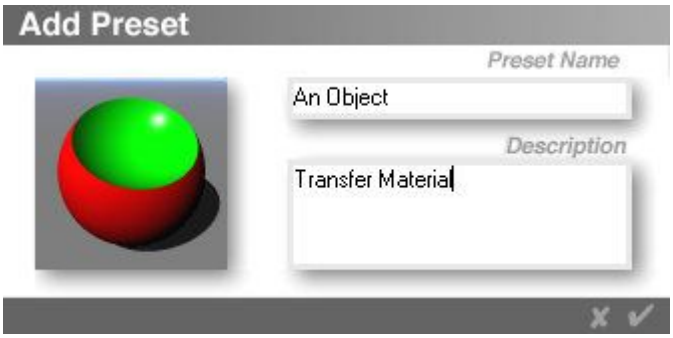


    - Once you're happy with the preview image, click on Add to add the object

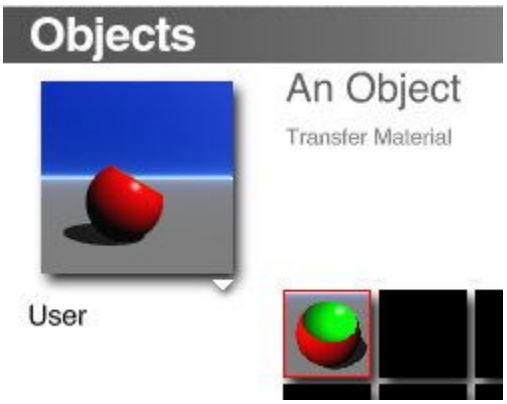
7. Once you're happy with the preview image, click the Add button at the bottom of the dialog. The Add Preset dialog appears.



8. Enter a name for the new preset in the Preset Name field.
9. Enter a description of the preset in the Description field. This name and description will appear beneath the object preview whenever the preset is selected.



10. Click the OK icon. Your preset is added to the first available space within the current category.



Materials

To add a material preset to the Materials Presets Library along with any imported textures:

1. Select the object in your scene that has the material applied that you want to add to the library or click on the Edit Materials tool in the Edit Palette.



2. Click the Triangle icon next to the Edit button at the top of the Bryce window.



3. The Materials Library comes up with the selected material in the Preview window.

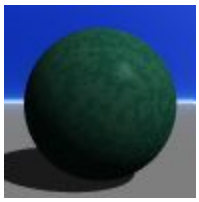


4. Set up the preview of the material:
5. Click the Triangle icon in the bottom-right corner of the thumbnail preview and choose a view option from the menu.

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- Normal: is the default view of your selected material.

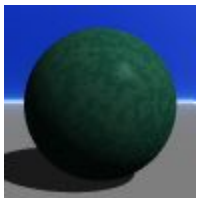


- Up Close: displays a close-up of your material.

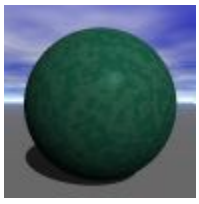


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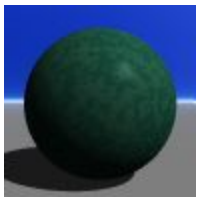
- Render With Neutral Sky: displays your object with a flat sky, instead of the sky applied to your scene.



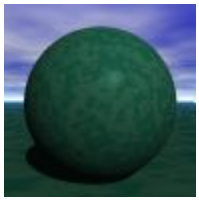
- When deselected, the current sky in the scene will affect the thumbnail preview, including haze and the sun's location.



- Render with Neutral Ground: displays the material with a gray ground plane.



- When deselected, the material is applied to the ground plane as well as to the selected object.



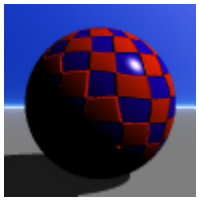
- Current Selection: displays the material on the same object type that is selected in the Working window. If the current selection is an imported mesh, the thumbnail preview will default to a sphere.
- Actual Selection: displays the material on the actual object selected in the Working window.



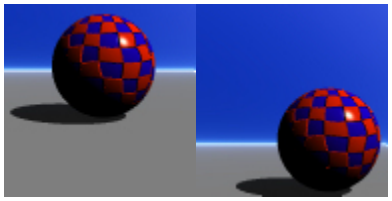
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- Box: displays your material applied to a cube.
- Sphere: displays your material applied to a sphere.
- Cone: displays your material applied to a cone.
- Cylinder: displays your material applied to a cylinder.
- Terrain: displays your material applied to a terrain. You might want to disable Render With Neutral Ground as terrain materials look better when placed on a ground plane with the same material.
- Ground: displays your material applied to an infinite plane.
- Torus: displays your material applied to a torus object.
- Pyramid: displays your material applied to a pyramid object.
- Circle: displays your material applied to a 2D circle object.
- Square: displays your material applied to a 2D square object.

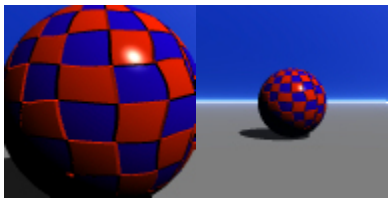
6. Set up the preview of the object:
   - Drag in the preview area to rotate the view of the material.



   - Hold down the Spacebar and drag up, down, right, or left to pan the material preview.



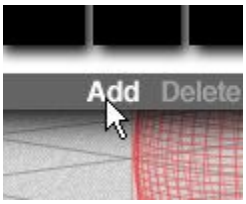
   - Hold down Cmd/Ctrl and drag in the preview area to zoom in and out of the preview.



   - Press Alt and click in the preview area to reset the preview to the default.

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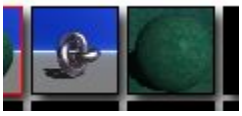
7. Once you're happy with the preview image, click the Add button at the bottom of the dialog. The Add Preset dialog appears.



8. Enter a name for the new preset in the Preset Name field.
9. Enter a description of the preset in the Description field. This name and description will appear beneath the object preview whenever the preset is selected.



10. Click the OK icon. Your preset is added to the first available space within the current category.



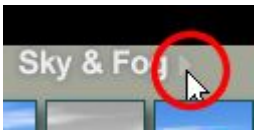
Skies

To add a sky preset to the Sky Presets Library:

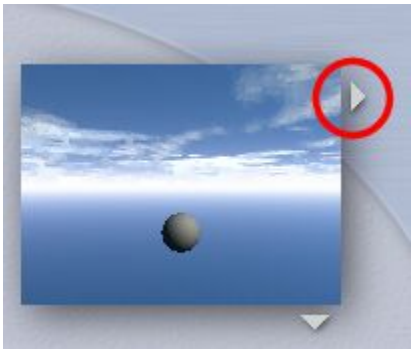
1. Create a new sky in the Sky Lab and using the Sky & Fog Palette.

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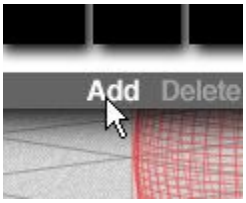
2. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce window



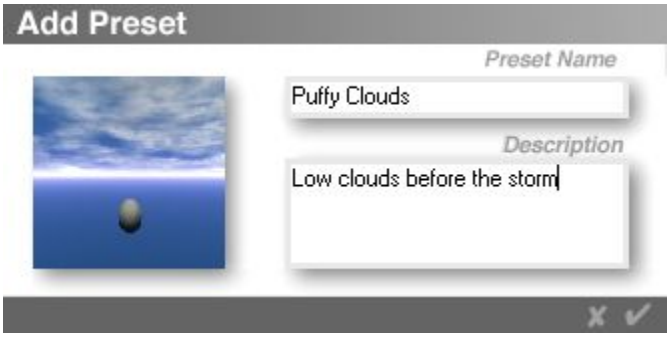
3. or click the arrow next to the preview area in the Sky Lab dialog. The Preset Skies Library appears.



4. Click a category name. The library switches to the category you selected. The new preset will be added to the category you select. Click the Add button at the bottom of the dialog. The Add Preset dialog appears.

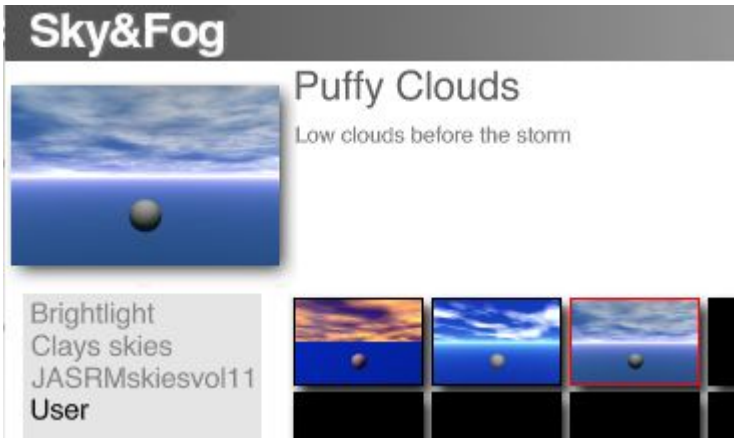


5. Enter a name for the new preset in the Preset Name field.
6. Enter a description of the preset in the Description field. This name and description will appear beneath the object preview whenever the preset is selected.



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7. Click the OK icon. Your preset is added to the first available space within the current category.



Textures

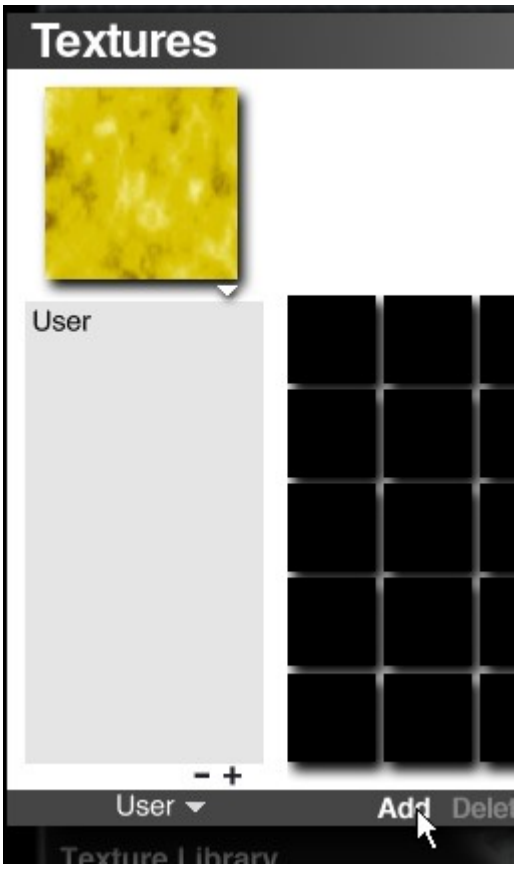
The Textures Library contains textures created in the Deep Texture Editor and can be used to create complex materials.

To add a texture preset to the Textures Library:

1. Access the Deep Texture Editor and generate a new texture.
2. Click on the Texture Library knob to the right of the Combination panel.



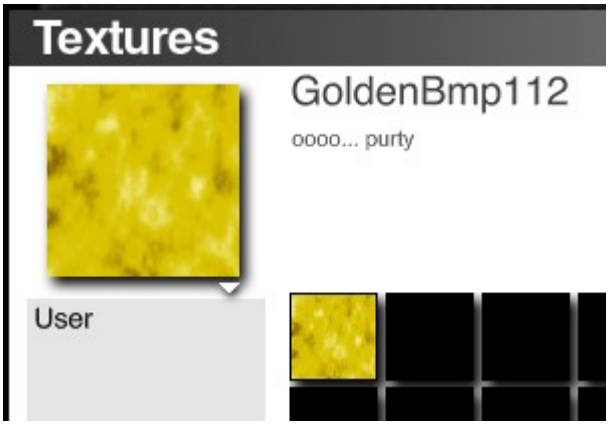
3. The Textures Library will come up. Select the category to save the texture to, then click on Add.



4. Enter a name and description for the texture then click on the OK icon.



The texture will be added to the library.

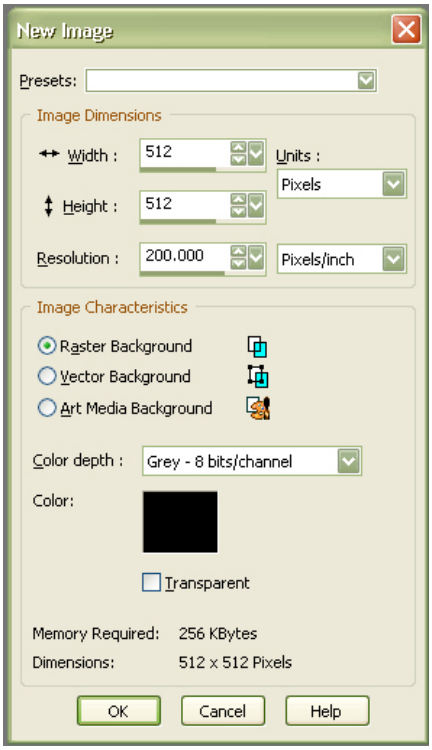


Brushes

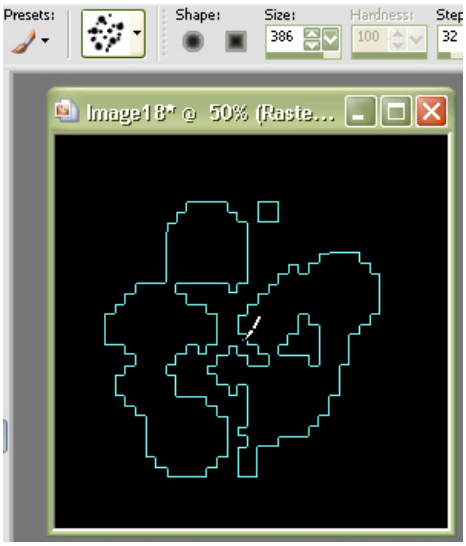
The Brush Presets Library is new in Bryce 6 and is accessed from within the Terrain Editor. The brushes allow you to add frequently used shapes or special brushes to be used to paint terrains.

To add a brush preset to the Brush Presets Library:

1. In your paint program, create a new square image (i.e., 256x256, 512x512, etc.) with a black background. You can build a brush in color, but it will be converted to grayscale when imported into the Brush Library.



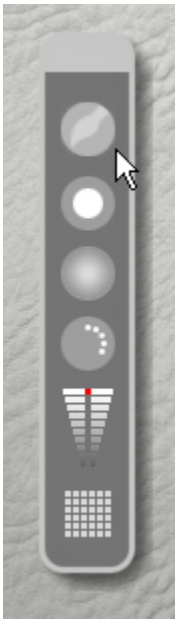
2. Select a brush preset from the program or create your own image. The brush color should be set to white or a light gray.



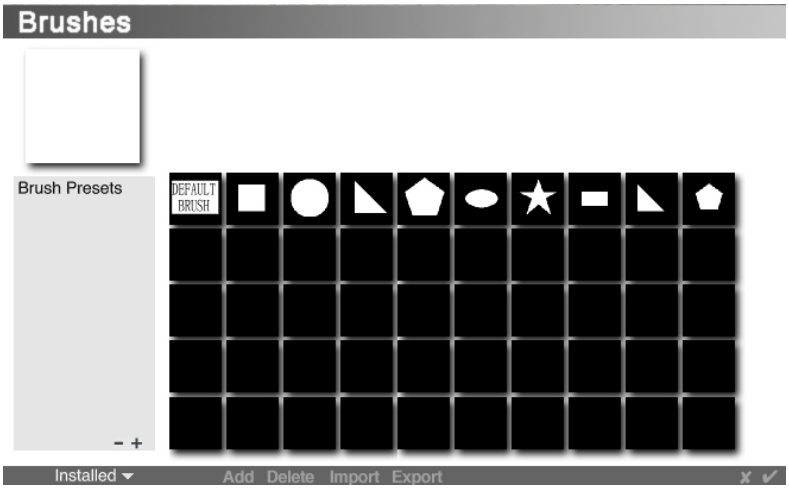
3. Save the image in one of the following formats:
    - .SGI
    - .BMP
    - .DIB
    - .EMF
    - .FPI
    - .FPX
    - .GIF
    - .JP2
    - .JPE
    - .JPG
    - .MAC
    - .PCT
    - .PSD
    - PIC
    - .PNG
    - .PNT
    - .TIF
4. In Bryce, create a new terrain or symlat.

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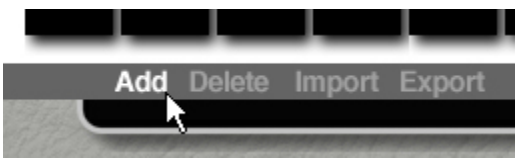
5. Click on the E button next to the selected terrain to enter the Terrain Editor.
6. Click on New to load a new terrain.
7. In the Brush Palette, click on the Brush Tool.



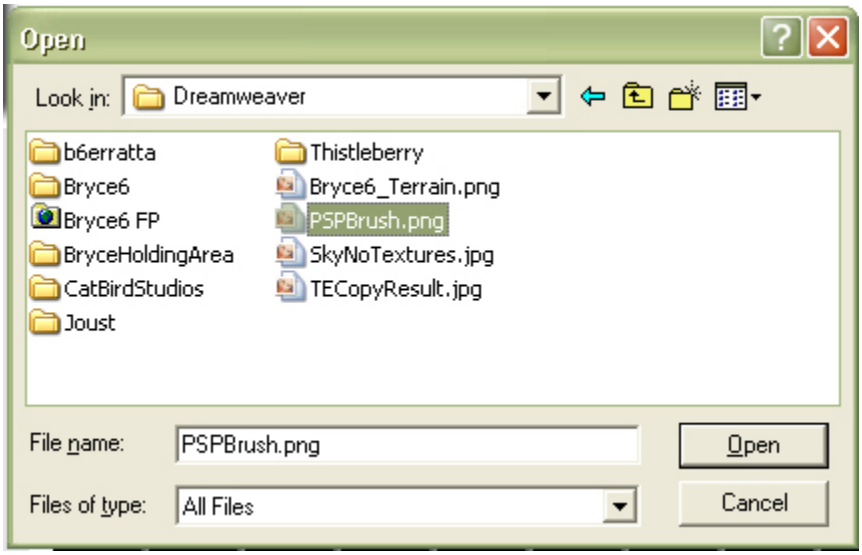
8. The Brushes Library will open up.



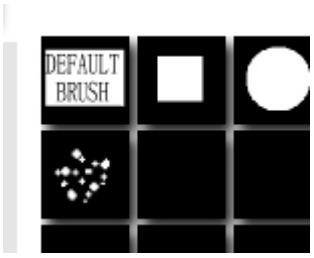
9. Click on Add at the bottom of the library.



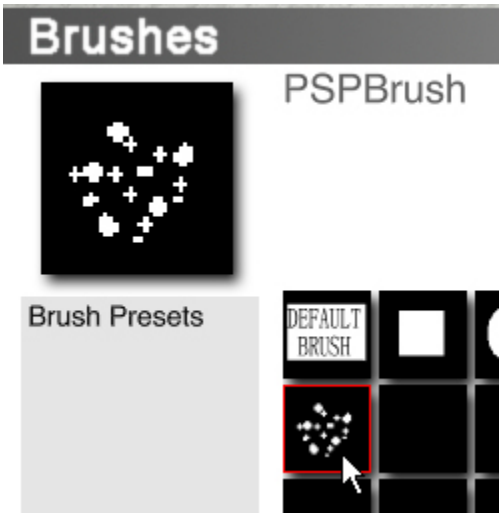
10. The Open File dialog will come up. Locate your brush image, select it, and click on Open.



11. The brush will be imported into the library, ready to use.

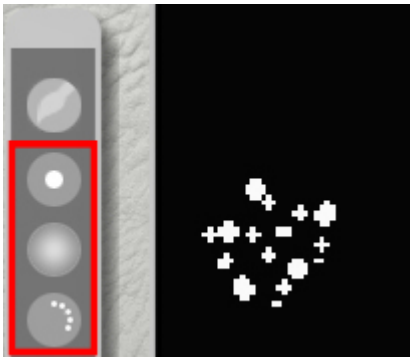


12. To use the brushes, select the brush and click on the OK icon.

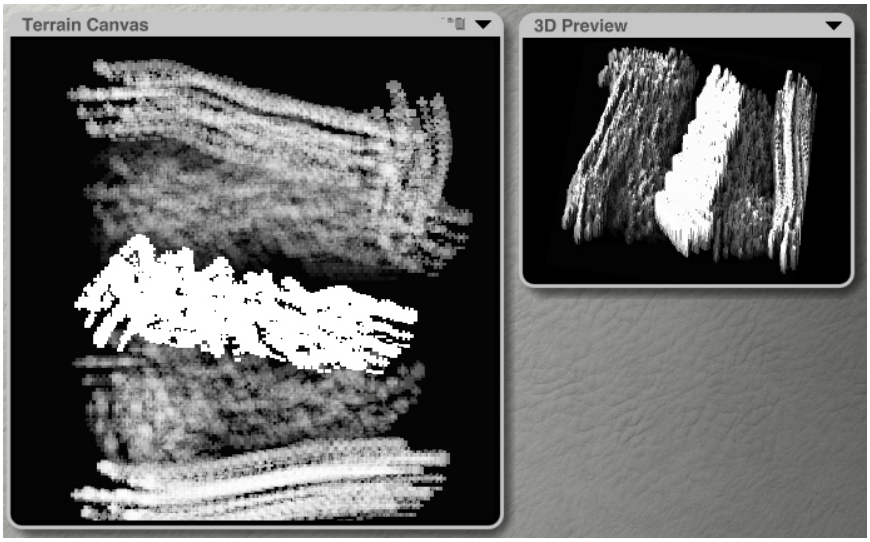


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13. Back in the Terrain Editor, adjust the brush size and flow as needed.



14. Paint on the Terrain Canvas or use the brush as a stamp to stamp the design on the Terrain Canvas.



Refer to the "Terrain Editor" section for more on working in the Terrain Editor.

Importing

Importing presets into the libraries is another way to add presets to your libraries.

To import a preset to any library:

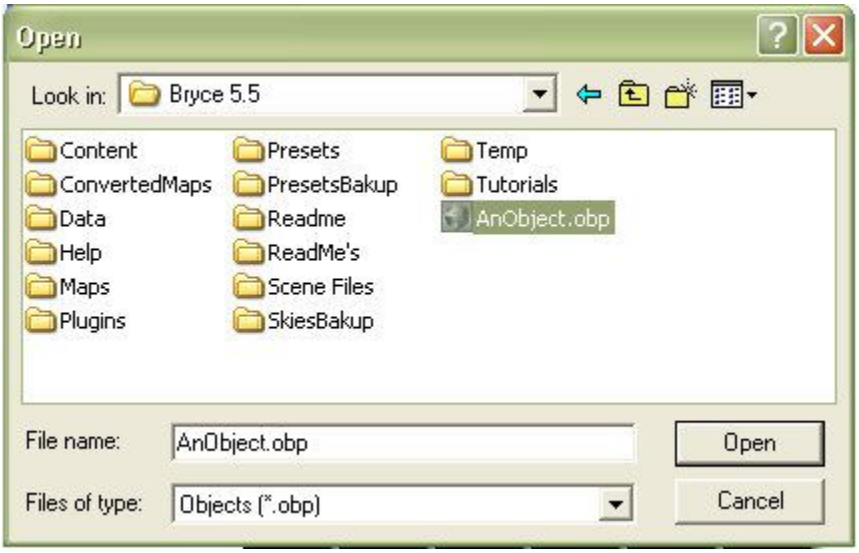
1. Open the preset library you want to import into: Objects, Materials, Skies, Textures, or Brushes.
2. Select the category to which you want to import presets.



3. Click the Import button at the bottom of the dialog. The file Open dialog appears.

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4. Locate the file that you would like to import and click on Open.



5. The contents of the file are placed into the first available space in the current category if no object was selected



or in front of any object selected when you clicked on Import:



6. Click on the OK icon to close the library.

Deleting Presets

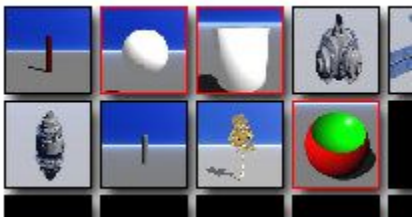
To delete a preset from any library:

1. Open the preset library you want to delete from: Objects, Materials, Skies, Textures, or Brushes.
2. Select the category from which you want to delete presets.

3. Click on the preset you want to delete:



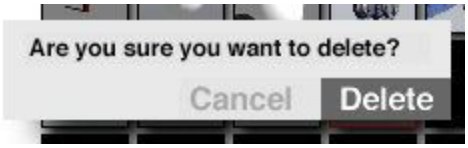
4. or hold down Shift and select a continuous series of presets or hold down Cmd/Ctrl and select a discontinuous set of presets:



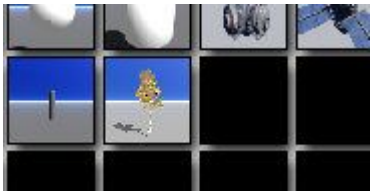
5. Click the Delete button at the bottom of the dialog.



6. The Confirm dialog will come up, choose Delete to remove the preset from the library or Cancel to leave it in.



7. Once deleted, the preset will no longer show up in the library, however, in the Objects Library, the object data is still in the OBP file for that category. If the category OBP file is too large after deleting several presets, you can export the remaining objects then replace the original OBP with the exported one to reduce the file size.



8. Click on the OK icon to close the library.

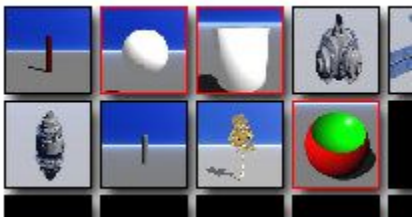
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Exporting Presets

Importing and exporting presets is a handy way to exchange custom presets with other users and to store objects for later use. It can also be used to reduce the file size of a category when several presets have been deleted from the library.

To export a preset from any library:

1. Open the preset library you want to delete from: Objects, Materials, Skies, Textures, or Brushes.
2. Select the category from which you want to export presets.
3. Select the preset or presets you wish to export. Hold down Shift and select a continuous series of presets or hold down Cmd/Ctrl and select a discontinuous set of presets.

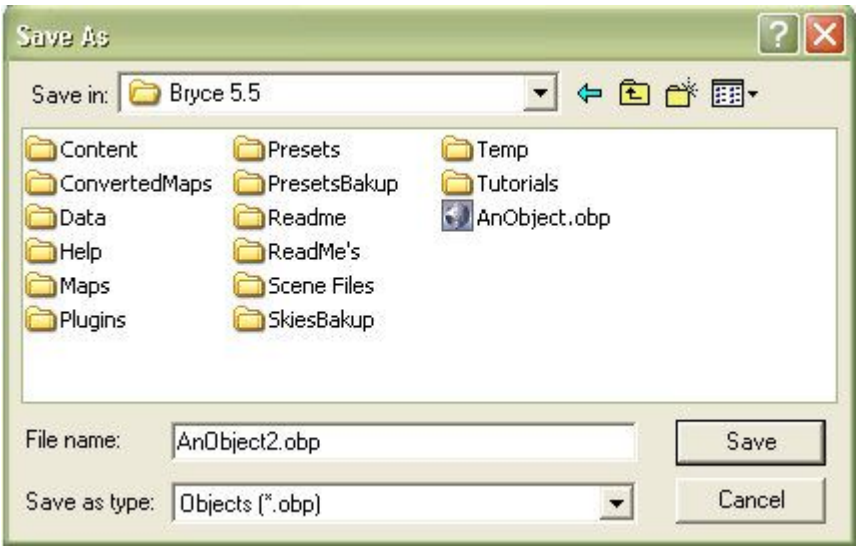


4. Click the Export button at the bottom of the dialog. The save file dialog appears.



5. Enter a name for the file, navigate to where you want to save it, and click on Save. The file will be saved to the location you selected with the correct extension for the preset type. If exporting objects to reduce the file size, name the exported file the same name as the one it will be replacing.

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6. Click on the OK icon to close the library.

To replace a category OBP file with one you just exported, refer to "Recovering Disk Space in the Libraries."

Recovering Disk Space

When you delete a preset from a library, the preset is removed from the thumbnail previews, but not from the actual preset file. In order to reduce the file size and get rid of the deleted data, the remaining presets need to be exported in order to replace the original preset file.

There are two basic ways to recover disk space in the libraries:

1. Export presets, then cut and paste it over the original preset file
2. Export presets with new name, delete original sub-category, then rename new file

Export and Paste Over Original

To recover disk space by exporting and pasting over the original file:

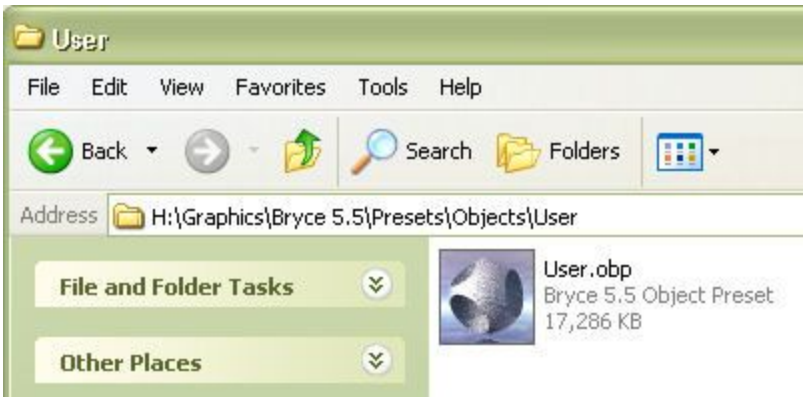
1. Select and export the presets that you want to keep into a temporary folder, saving the file with the same name as the original file.
2. Navigate to the folder where you saved the exported preset file, select the file, and cut or copy it.



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3. Notice the file size on the example above is just over 13 MB. Navigate to the Bryce Presets folder then to the folder where the original file is located.

   Paste the new file into the folder, confirming on any replace messages.

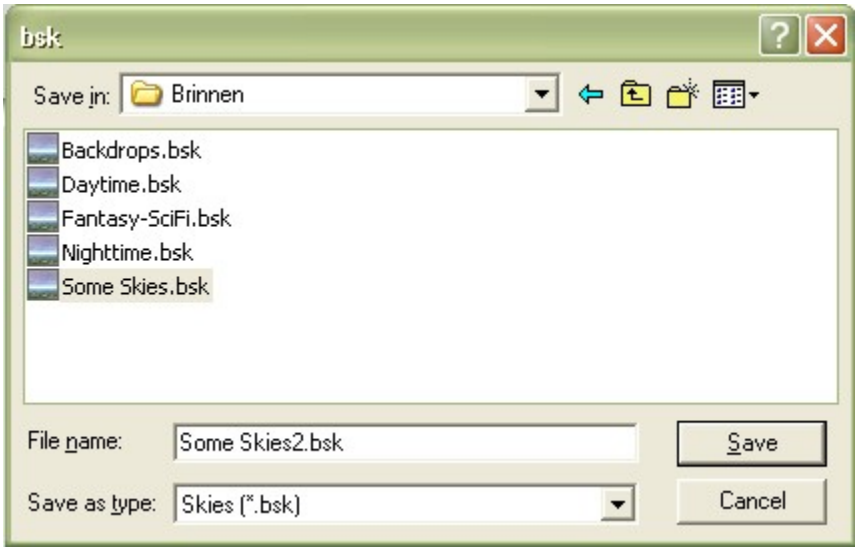


   In the example, the User.obp file is being replaced. Notice that the file size on the current version is over 17 MB. By exporting out the objects in the User category and copying it over the old version, 4 MB of disk space has been recovered. This may not seem like a lot, but a MB here and a MB there can start adding up very quickly.

Export and Delete Original

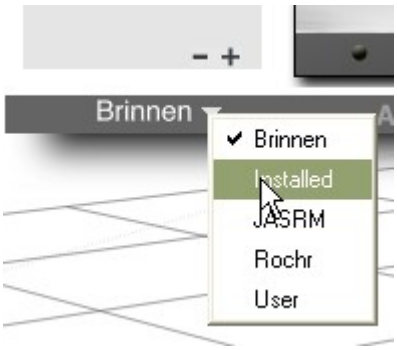
To recover disk space by exporting and pasting over the original file:

1. Select the presets that you want to keep and click on Export.
2. Navigate to the presets folder where the original file is located. Name the file the same as the original file but add a number to it. Click on Save.

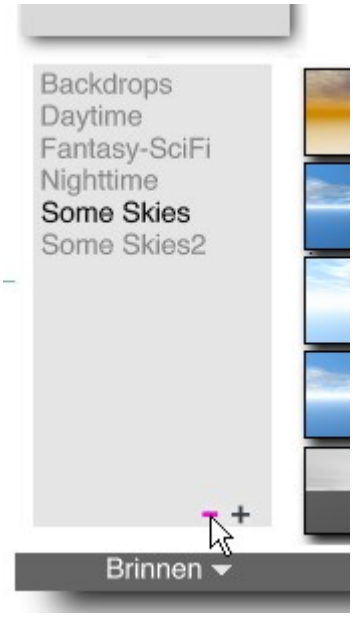


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3. Quickly select another category, then switch back to the category you were just in. This refreshes the sub-category listing.

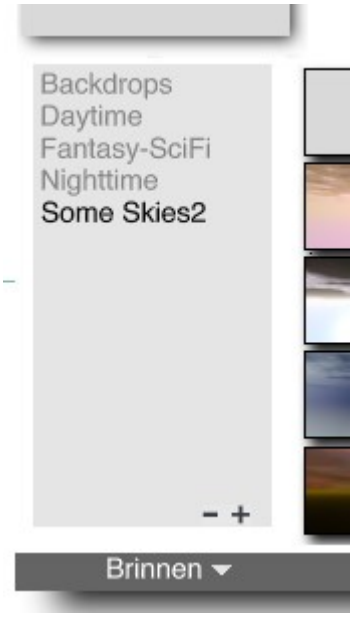


4. Select the original sub-category and click on the minus sign at the bottom of the listing. Confirm on Delete.

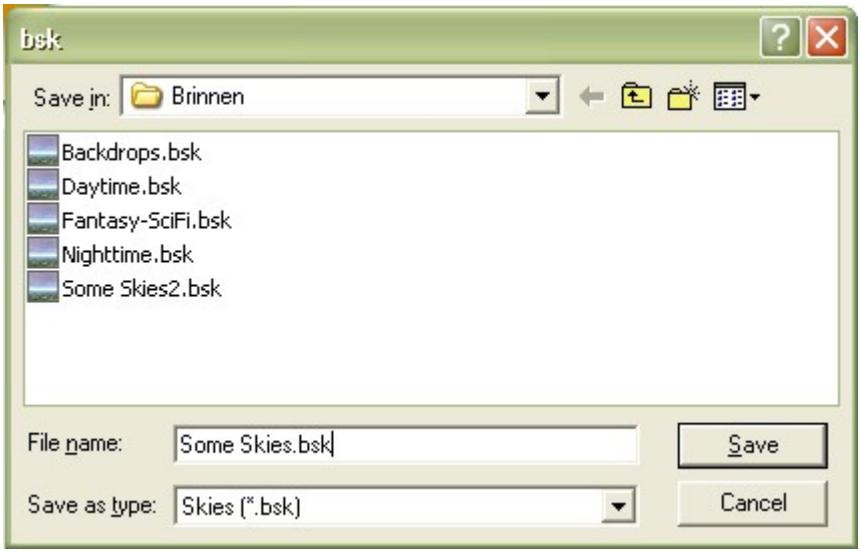


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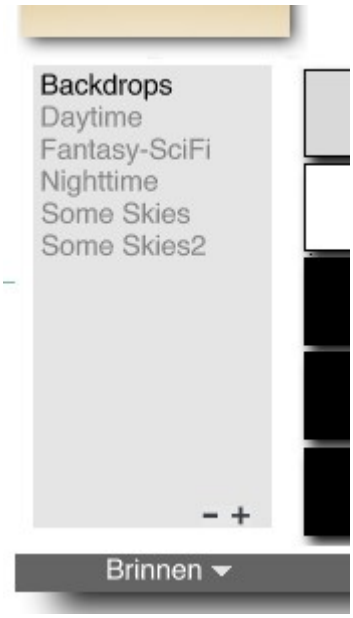
5. The original sub-category will be gone and the new one left in the listing.



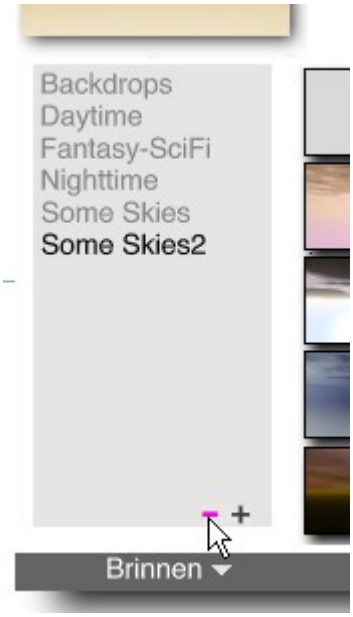
6. Since Bryce exports presets backwards, you may want to re-export the new file, so select all the presets in the new sub-category, click on Export, and give the file the same name as the original file. Click on Save.



7. Change categories, then change back to the one you're working with. Both versions of the new sub-category will be listed.

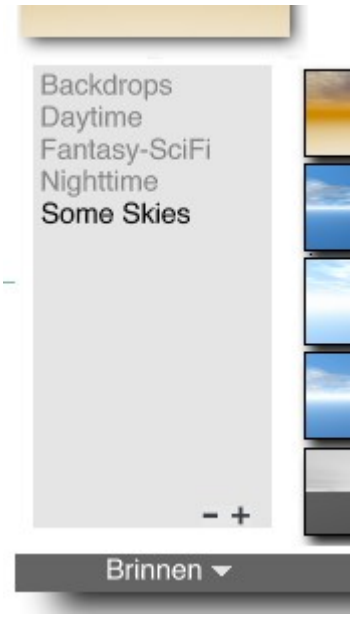


8. Click on the first exported sub-category and click on the minus sign at the bottom of the listing. Confirm on Delete.



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9. Refresh the listing by switching categories and the new sub-category will be listed.



Thumbnail Preview Options

The preview thumbnails in the Objects and Materials Libraries can be modified using various options in the library and by the selected sky and sun/moon settings.

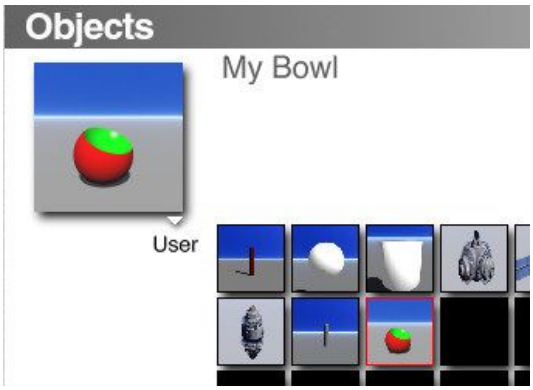
The number of thumbnails viewable in the libraries has been increased in Bryce 6, with the Skies Library increased from six thumbnails across to seven across and the remaining libraries increased from six to ten thumbnails across.

Objects Library

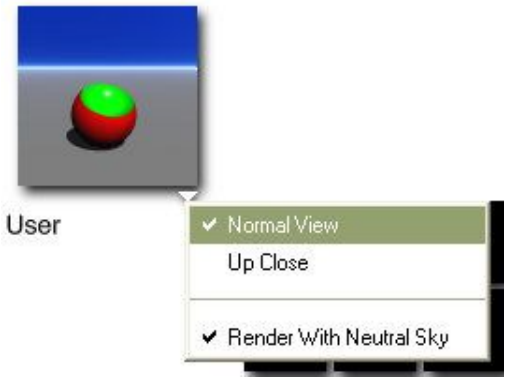
In the libraries, you can change the thumbnail preview either before or after adding the item to the library.

1. Select the object in the working window and open the Objects Library
2. OR
3. Open the Objects Library and select the item you want to change the thumbnail for.

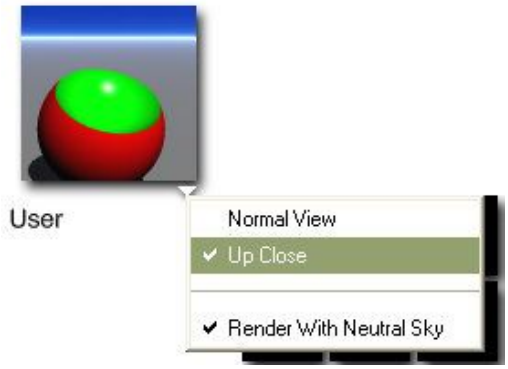
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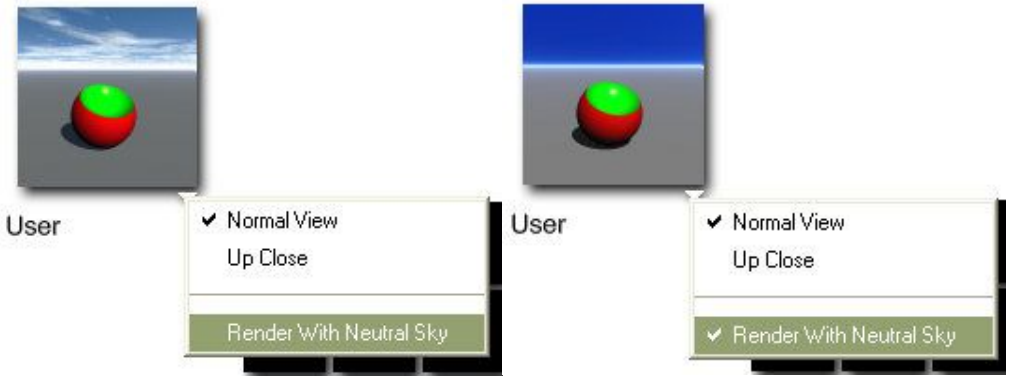
4. Set up the preview of the object:
    - Click the Triangle icon in the bottom-right corner of the thumbnail preview and choose a view option from the menu. Normal: is the default view of your selected object.



    - Up Close: displays a close-up of your object.



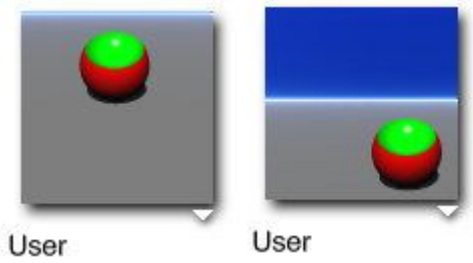
- Render With Neutral Sky: displays your object with a flat sky, instead of the sky applied to your scene. When deselected, the current sky in the scene will affect the thumbnail preview.



5. Set up the object location:
   - Drag in the preview area to rotate the view of the object:



   - Hold down the Spacebar and drag up, down, right, or left to pan the object preview:



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- Hold down Cmd/Ctrl and drag in the preview area to zoom in and out of the preview:



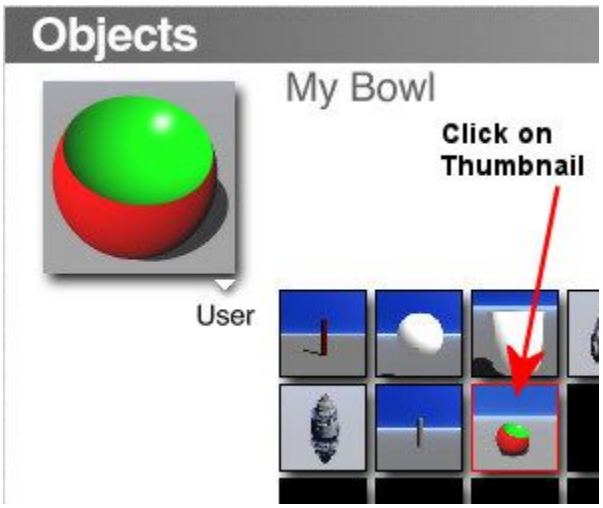
- Press Alt and click in the preview area to reset the preview to the default:



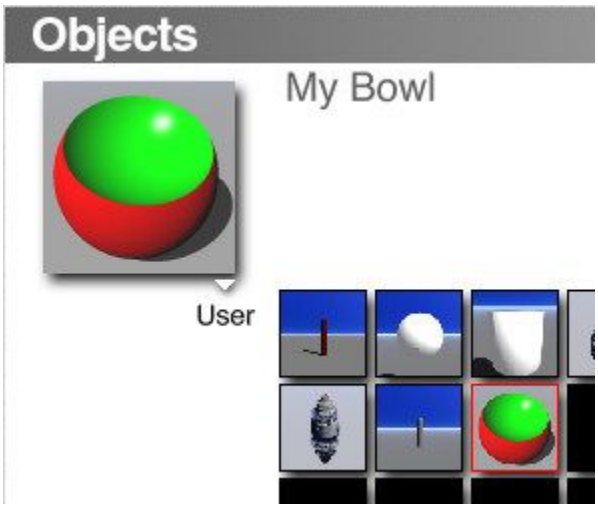
6. Once you're happy with the preview image, click on Add to add the object

   OR

7. If you are changing the thumbnail of an item already in the library, press Ctrl+Shift+click on the thumbnail in the library



   and the thumbnail preview will be replaced with the new one:



Materials Library

In the libraries, you can change the thumbnail preview either before or after adding the item to the library.

1. Select the object with the material applied to it in the working window and open the Materials Library

   OR

2. Open the Materials Library and select the preset you want to change the thumbnail for.

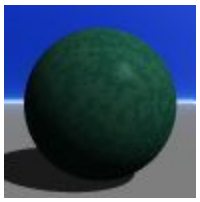


3. Set up the preview of the material:
   - Click the Triangle icon in the bottom-right corner of the thumbnail preview and choose a view option from the menu.

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- Normal: is the default view of your selected material.

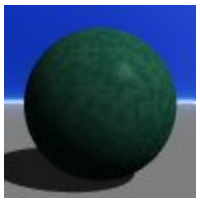


- Up Close: displays a close-up of your material.

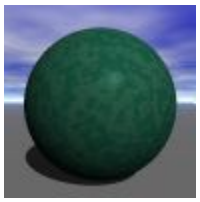


- Render With Neutral Sky: displays your object with a flat sky, instead of the sky applied to your scene.

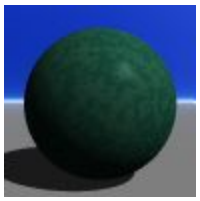
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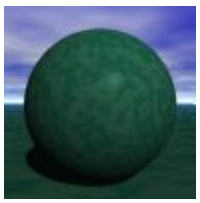
- When deselected, the current sky in the scene will affect the thumbnail preview, including haze and the sun's location.



- Render with Neutral Ground: displays the material with a gray ground plane.



- When deselected, the material is applied to the ground plane as well as to the selected object.



- Current Selection: displays the material on the same object type that is selected in the Working window. If the current selection is an imported mesh, the thumbnail preview will default to a sphere.
- Actual Selection: displays the material on the actual object selected in the Working window.

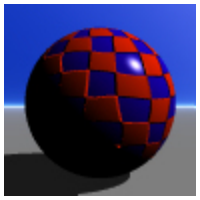


- Box: displays your material applied to a cube.

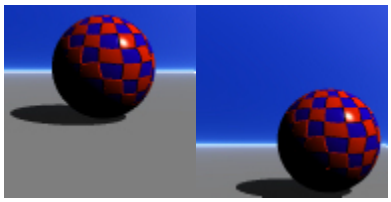
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- Sphere: displays your material applied to a sphere.
- Cone: displays your material applied to a cone.
- Cylinder: displays your material applied to a cylinder.
- Terrain: displays your material applied to a terrain. You might want to disable Render With Neutral Ground as terrain materials look better when placed on a ground plane with the same material.
- Ground: displays your material applied to an infinite plane.
- Torus: displays your material applied to a torus object.
- Pyramid: displays your material applied to a pyramid object.
- Circle: displays your material applied to a 2D circle object.
- Square: displays your material applied to a 2D square object.

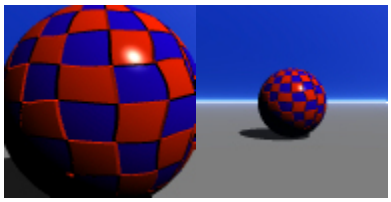
- Set up the preview of the material (see examples at bottom of page):
  - Drag in the preview area to rotate the view of the material.



  - Hold down the Spacebar and drag up, down, right, or left to pan the material preview.



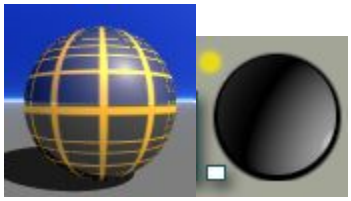
  - Hold down Cmd/Ctrl and drag in the preview area to zoom in and out of the preview.



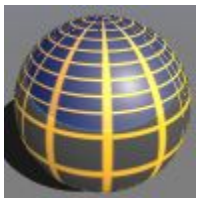
  - Press Alt and click in the preview area to reset the preview to the default.

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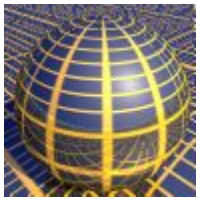
- Example preview thumbnails:
    - Default view with sun control setting:



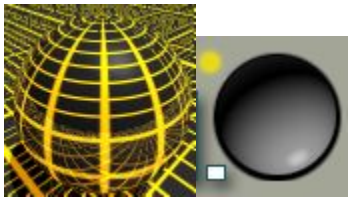
    - Up Close:



    - Up Close and Render with Neutral Ground deselected:

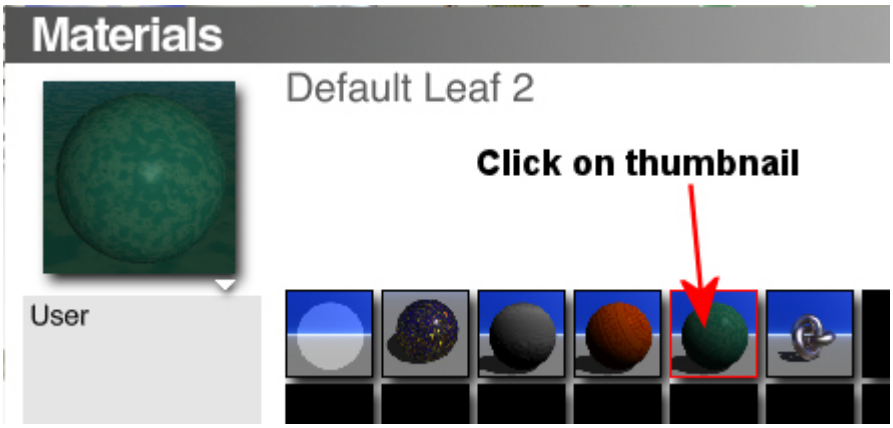


    - Up Close, Render with Neutral Ground/Sky deselected, Plain Black Background sky applied, and sun moved:



4. Once you're happy with the preview image, click on Add to add the material to the library
5. OR
6. If you are changing the thumbnail of an item already in the library, press Ctrl+Shift+click on the thumbnail in the library

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and the thumbnail preview will be replaced with the new one:



Using Presets

The different types of presets all have their own use in Bryce. The following pages will show you how to use the presets.

Adding Preset Objects to the Scene

To add an object from the Presets Object Library to your scene:

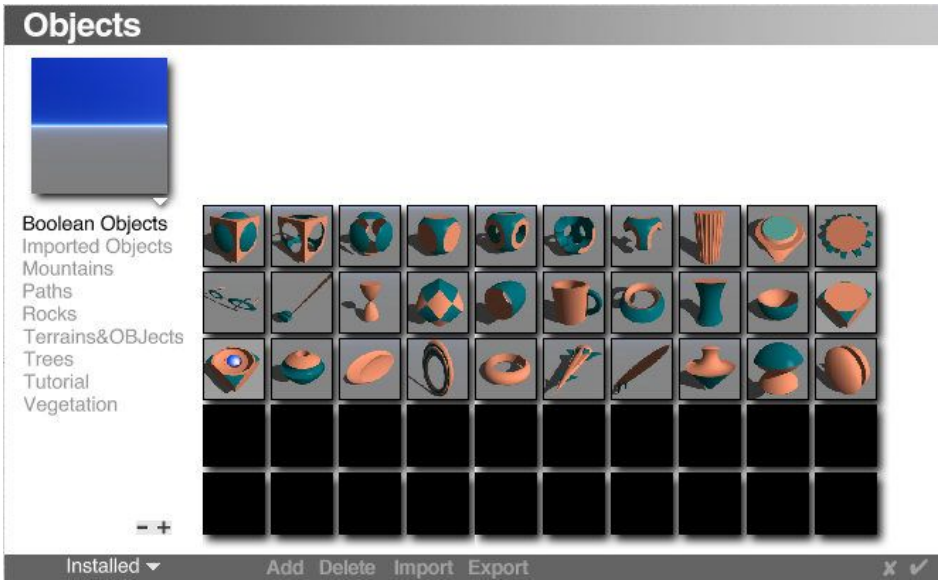
1. Click the Triangle icon next to the Create button at the top of the Bryce environment.

   The Create Palette does not have to be active in order to do this.

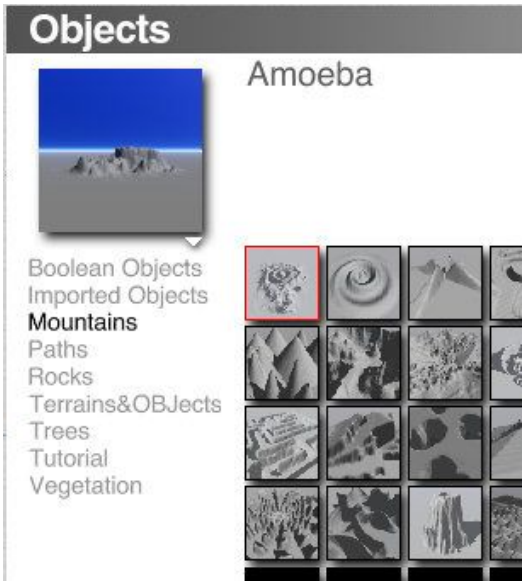


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2. The Presets Object Library appears.



3. Click on the name of a category (to the left of the thumbnails) to access the different libraries.
4. Click on the preset thumbnails to view preset names and descriptions.



5. Once you've decided which object to use, click on the OK icon to add the selected object to your scene.

Remember, the Create palette does not need to be active for you to access the Objects Library.

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Applying Materials to Objects

The Materials Presets Library contains all the material presets available in Bryce. You can place them on your objects directly and edit them just as you would any other material.

To add a material from the Materials Presets Library to an object:

1. Select an object.
2. In the Working window, click the triangle icon next to the Edit text button at the top of the Working window. The Materials Presets Library appears.

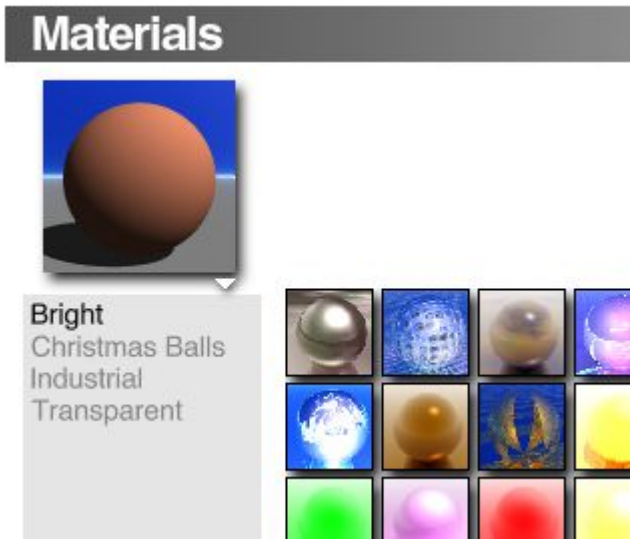


3. Or, in the Materials Lab, click the triangle icon at the top-right of the Material Preview window.



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4. Click one of the Category names along the left side of the dialog.



5. Click the thumbnail of the preset you want to add.



When you click on a preset thumbnail, you may notice that the preset thumbnails look different than the preview window. This is because the preset thumbnails may have added with the neutral sky deselected so that the current scene sky settings would affect the material.

Refer to "Thumbnail Preview Options - Materials Library" for examples showing the difference using a neutral sky or a sky preset can make to the preview.

6. Click the OK icon to add the selected material to your object.

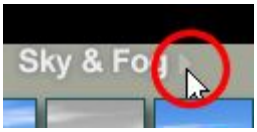
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You can also select presets in one motion by clicking the Materials Presets icon then dragging directly to the desired material preset and releasing the mouse button. You can also drag over the category names to change categories into the category's presets, and then release the mouse button.

Applying Skies to the Scene

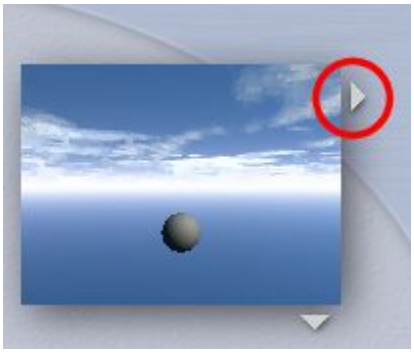
To add a sky from the Preset Skies Library to your scene:

1. Click the triangle icon next to the Sky & Fog text button at the top of the Bryce window.



OR

2. Click the arrow next to the preview area in the Sky Lab dialog.



The Preset Skies Library appears.

3. Click on the preset thumbnails to view preset names and descriptions until you find the sky you want to use in your scene.
4. Click the OK icon to add the selected sky to your scene.

The Sky & Fog palette does not need to be active for you to access the Preset Skies Library.

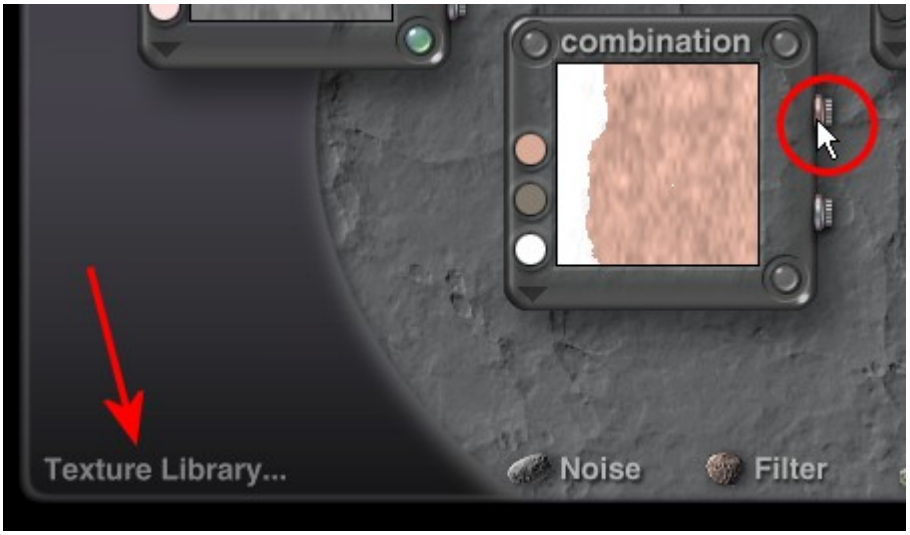
You can also select presets in one motion by clicking and holding the triangle icon, dragging directly to the desired preset, and releasing the mouse button.

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Applying Textures in the DTE

To apply a texture from the Textures Library in the Deep Texture Editor:

1. In the Deep Texture Editor, click on the top button on the right-hand side of the combination window. The "Texture Library" tool tip will show in the bottom left corner of the Deep Texture Editor.

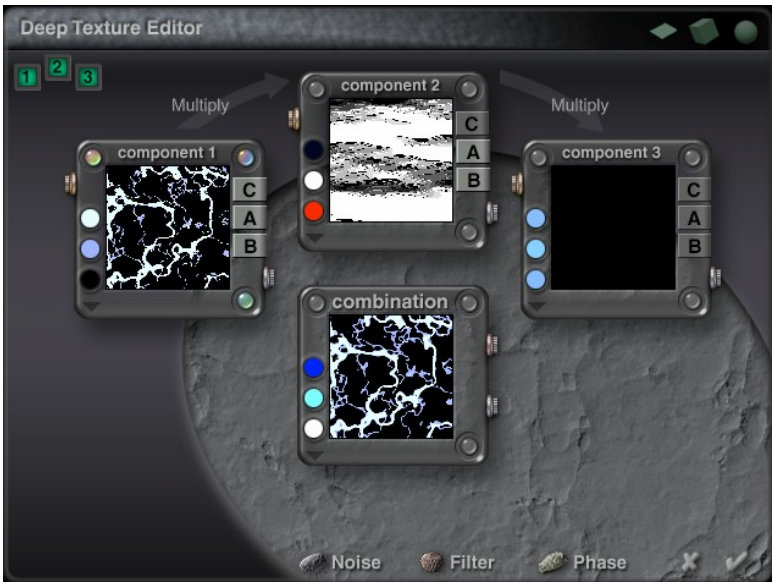


2. The Textures Library will come up. Select a texture and click on the OK icon.



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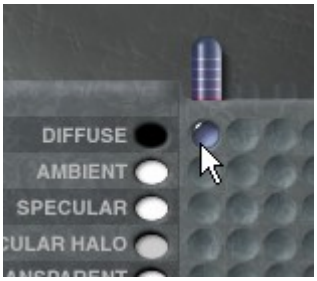
3. The selected texture will be loaded in the Deep Texture Editor. Click on the OK icon to return to the Materials Lab.



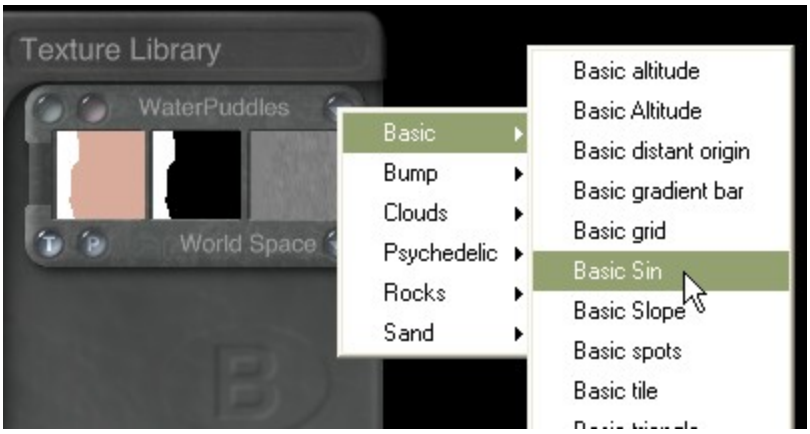
Applying Textures in the MatLab

To apply a texture from the Textures Library in the Materials Lab:

1. In the Materials Lab, click in a channel to load a random texture.

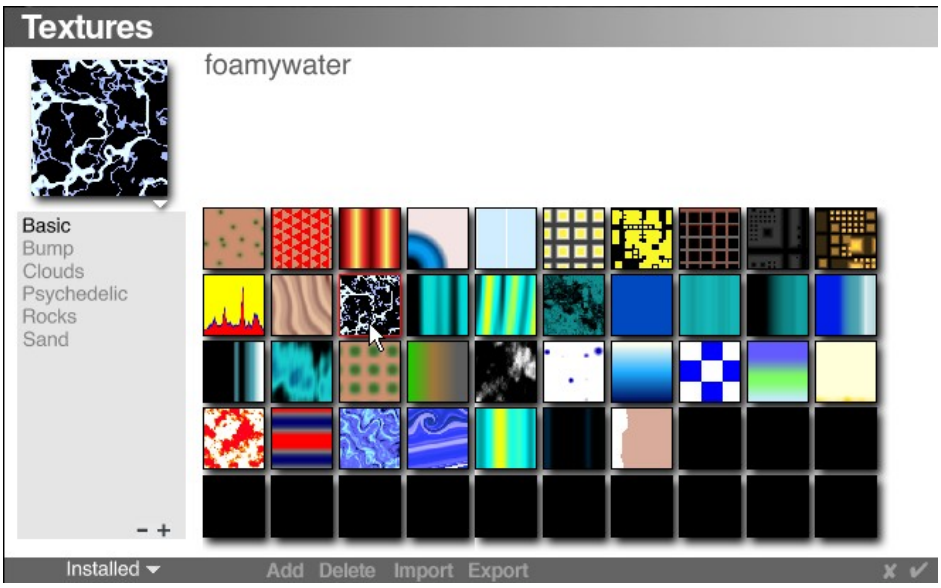


2. Click on the top right button of the component window and select a texture from the fly-out menu.



OR

3. Press Shift and click on the same button to open the Textures Library.
4. In the Textures Library, select a texture and click on the OK icon.



5. The selected texture will be loaded in the Materials Lab.



6. Click on the OK icon to return to the Working window.

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Using Preset Brushes in the TE

See "Using the Preset Brushes" for information on how to use the brushes in the Terrain Editor and "Adding Presets to the Brushes Library" for information on creating and adding your own brushes.

Laboratories & Editors

Bryce has several laboratories and editors that let you do everything from creating terrains to editing the speed of animations. Each editor is like a separate room in Bryce. When active, the lab/editor takes over the interface, completely replacing the Working window (except for the torus and mesh editors).

Materials Lab

The Materials Lab (also known as the MatLab) is where you'll create and edit the materials to apply to your objects. This unique editor lets you combine a wide variety of components and channels to create an infinite number of different surfaces and volumes.

There are two types of materials you can create: Surface materials, which define the surface properties of an object, and Volume materials, which define the properties of an object's volume as well as its surface.

When you're creating volume materials, the settings in the Materials Lab change. Some of the surface material settings are replaced by volume effects settings.

To display the Materials Lab:

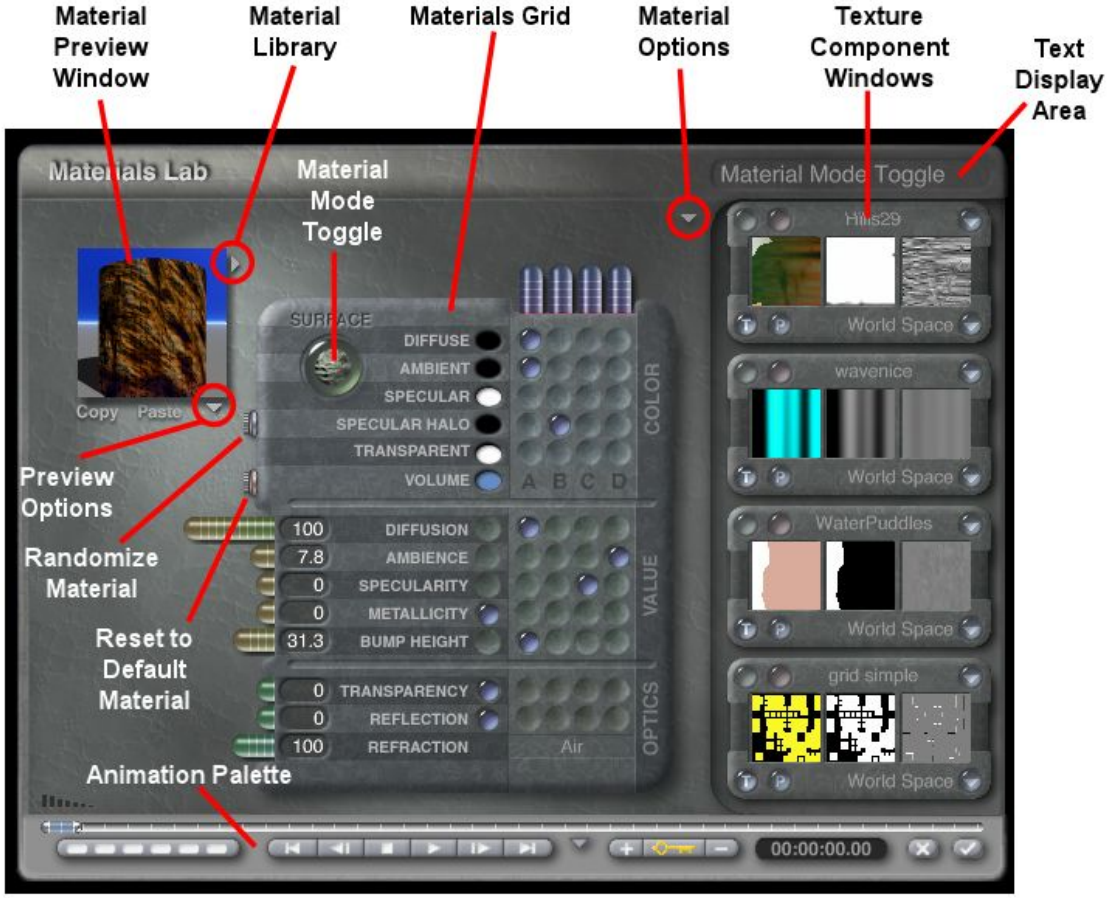
1. Create an object.
2. Access the Materials Lab:
    - Click the M button next to the selected object.
    - OR choose Objects > Edit Material from the menu.
    - OR click on the Edit Material tool in the Edit Palette.

The contents of the composer depend on the material currently applied to the object. If there is no material, the default material's settings appear.

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A Quick Tour of the Materials Lab

The Materials Lab is set up like a visual chart that lets you see all the different channels that make up your material. At a glance, you can see all the settings for each material channel and the texture components used to drive channel values.



Material Mode Toggle

In the top left corner is the mode toggle button. This button lets you switch between surface material and volume material. The buttons also indicates what type of material you're creating. Surface is enabled by default. When you toggle to Volume, the channels in the lab change to display the volume channels.

Material Preview Window

On the left side of the Materials Lab is the Material Preview. This little window shows you what your material will look like when it is applied to an object. The preview updates as you adjust the channels.

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The Materials Grid

The center of the Materials Lab is called the Materials Grid. This is where you combine values, colors and textures to set channel values. The Materials Grid is divided into three sections each containing logical groups of channels.

- The Color channels group contains all the material channels that define the colors that appear on the object surface when it's struck by light. Each channel in the Color group has a color oval next to its title. This oval lets you quickly set a color for the channel.
- The Value group contains all the channels that define how the object's surface or volume reacts to light. In other words, they control whether the object is shiny, metallic, bright or dark.
- The Optics group contains all the channels that define any optical effects associated with the object. When you're creating volume materials, the Optics group is replaced by the Volume group. This group contains all the channels that define the appearance of an object's volume.

All of the channels in these three groups have sliders on the left side of each row. The sliders let you quickly set the value of each channel. Values can be used in conjunction with textures or on their own. In the case of the Refraction channel, you must use a value. Each channel is divided into four columns: A, B, C, and D. These columns represent texture components you can use to set the value of the channel. At the top of each column is a Frequency slider. This slider lets you quickly set the frequency of a texture component. Setting the frequency is the same as scaling the texture.

When a texture component indicator appears in a column, it means that a component is being used to drive the value of the channel. The column in which the indicator appears indicates which texture component is being used. For example, if a texture component indicator appears in column A of the Ambience channel, component A is being used to drive the Ambience value.

Texture Component Windows

Along the right side of the lab are the Texture Component windows. These four windows are labeled A, B, C, and D (shown from top to bottom in this image). When a texture component is active, these windows display a preview of the texture and provide access to texture editing tools. The four Texture Component windows correspond to the four columns in each channel in the Materials Grid.

Animation Controls

Along the bottom of the Materials Lab are the Animation controls. These controls let you animate between textures or animate the properties of a single texture over time

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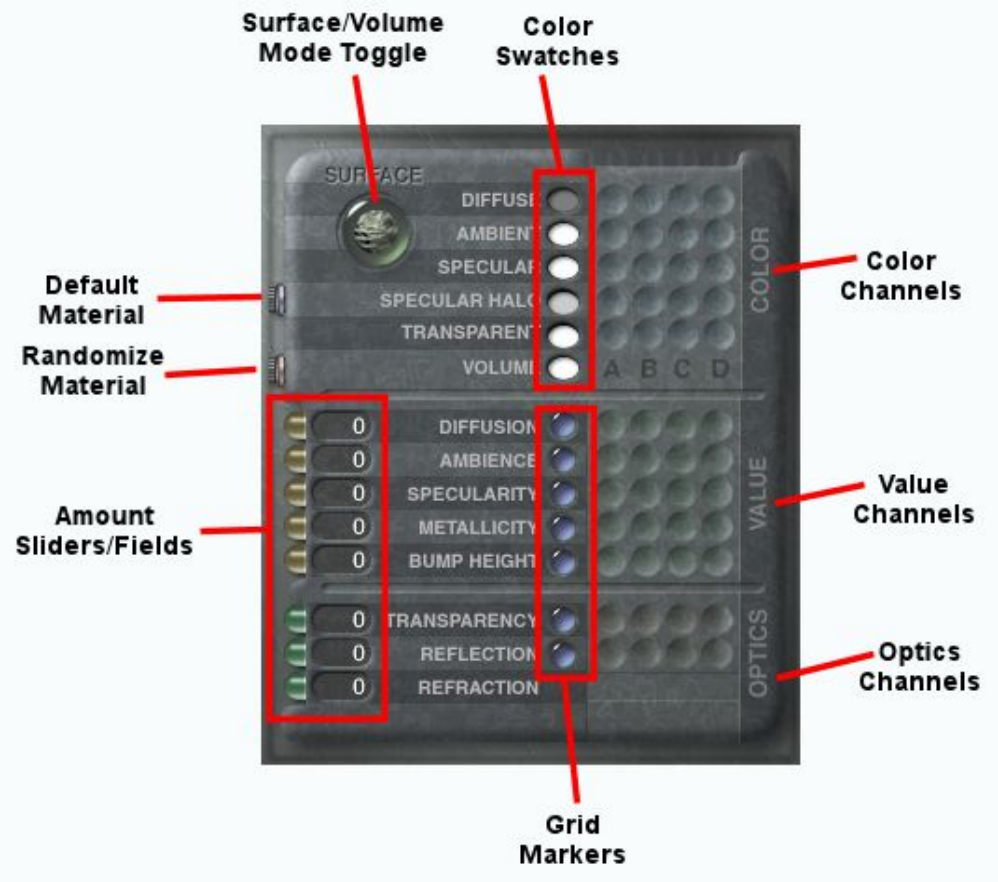
Working in the MatLab

This section describes how to use the Materials Lab to create and store materials.

Building Materials

A material is a combination of values, colors and textures applied through fourteen different channels. You build materials by selecting components (colors, values, or textures) and combining them on the Materials Grid.

Creating a New Surface Material



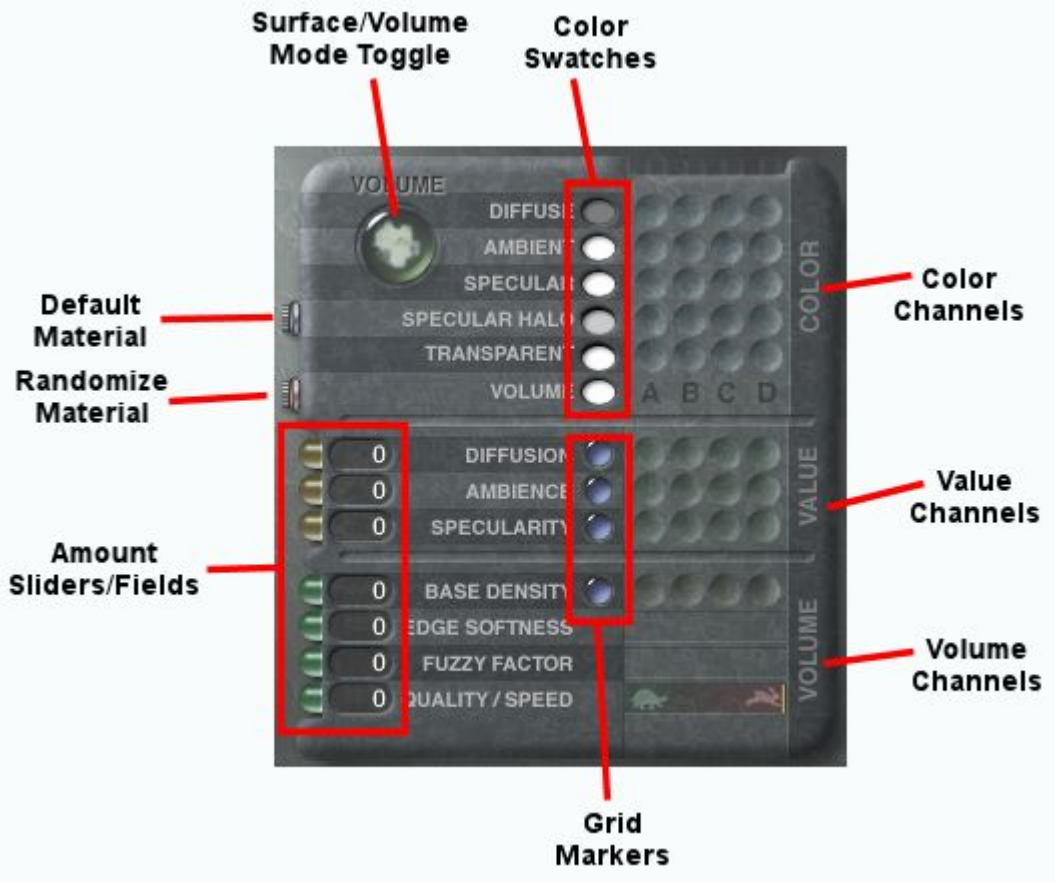
To create a new surface material:

1. Select an object and click on the E button next to the object. The Materials Lab will come up.
2. Set the material channels to define the properties of your material. Remember, channels can be set using values, colors or texture components. You may want to experiment with different setting to see the results of your changes.

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3. If you're using texture components, you can:
    - Edit the scale, position or rotation of the texture using the texture transformation controls.
    - Edit the makeup of the texture using the Deep Texture Editor.
    - Set a mapping mode for the texture.
4. Choose a shading mode for the material by clicking the triangle icon at the top of the Materials Lab and choosing a mode from the menu.
5. Click the OK icon. The new material is applied to the selected object.

Creating a New Volume Material



To create a new volume material:

1. Select an object and click on the button next to the object. The Materials Lab will come up.
2. Click the toggle button to switch to Volume.
3. Set the material channels to define the properties of your material. Remember, channel values are applied to the object's volume not its surface, so adjust the material's channels accordingly.

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4. If you're using texture components, you can:
    - Edit the scale, position or rotation of the texture using the texture transformation controls.
    - Edit the makeup of the texture using the Deep Texture Editor.
    - Set a mapping mode for the texture.

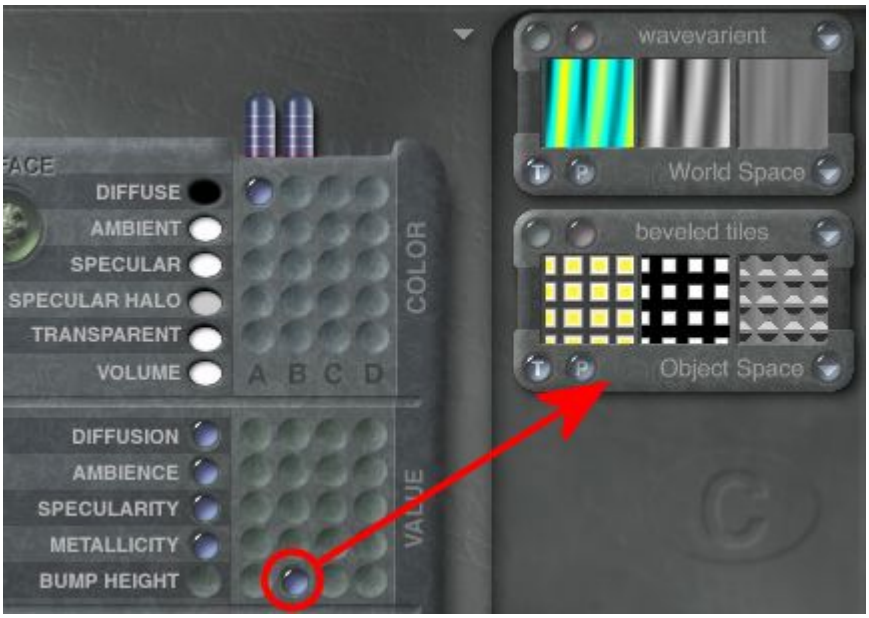
    You should always use a texture component in the Base Density channel.
5. Choose a shading mode for the material by clicking the triangle icon at the top of the Materials Lab and choosing a mode from the menu. The shading modes for volume materials are different from those for surface materials.
6. Click the OK icon. The new material is applied to the selected object.

Using and Activating Components

To activate a component in the Materials Grid, click an empty channel column. A component window appears.

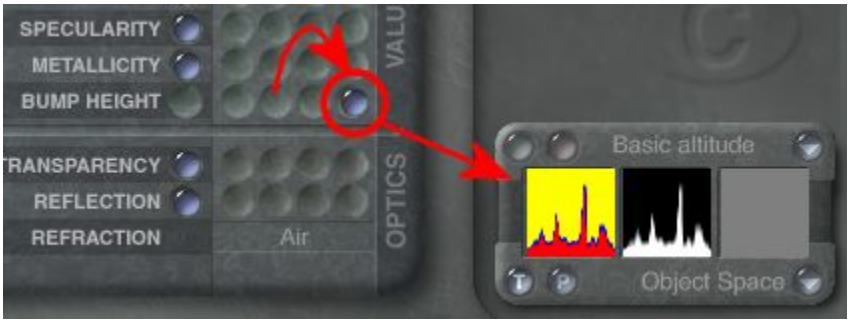


To use a component in a specific channel, in a material channel, click the column that corresponds to the component you want to use.



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To switch between components, click in a new column.



To combine a component with a value:

1. In a material channel, click an empty column.
2. Drag over the value control for the channel or enter a new value in the value field.



Copying and Pasting Materials

The Materials Lab has its own dedicated clipboard that lets you store materials. You can have an object in your clipboard then enter the Materials Lab and copy a material without disturbing the contents of your objects clipboard.

To copy a material to the Materials clipboard, click the Copy button below the Material Preview window.



To paste a material to the Materials clipboard, click the Paste button below the Material Preview window.



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Using the Material Preview Area

There are several different ways you can see the effects of your material on an object.

To switch preview modes, click the triangle at the bottom of the material preview and choose an option from the menu:

- Normal: displays your object as it looks in your scene. This is the default view of your selected object.

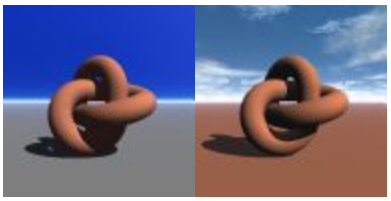


- Up Close: displays a zoomed-in view of your object.



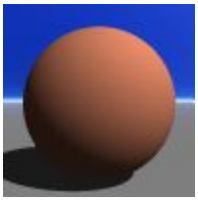
- Render With Neutral Sky: displays your object against a plain sky. When this option is disabled, your preview contains the current sky settings. This option makes it easier to see the material without being distracted by patterns in the sky.
- Render With Neutral Ground: displays your object with a plain ground. When disabled, the ground in your preview has the same texture as the object.

  First image below is with the neutral sky and ground option selected, second image is with both options deselected.



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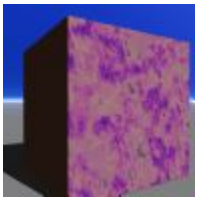
- Current Selection: displays the material on the currently selected object type (i.e., box, sphere, etc.). This is the default object selected when you enter the Materials Lab.



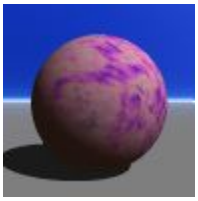
- Actual Selection: displays the selected object exactly as it appears in the your scene.



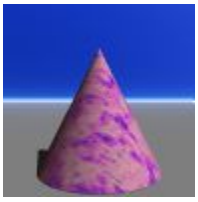
- Cube: displays the material applied to a cube.



- Sphere: displays the material applied to a sphere.

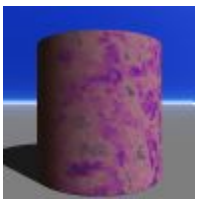


- Cone: displays the material applied to a cone.



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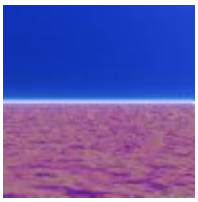
- Cylinder: displays the material applied to a cylinder.



- Terrain: displays the material applied to a randomly generated terrain object.



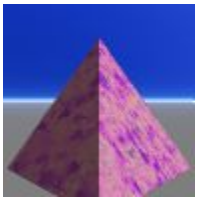
- Ground: displays the material applied to an infinite plane.



- Torus: displays the material applied to a torus object. Torus objects are good for displaying material properties like altitude changes, slope and height changes, and metallicity.

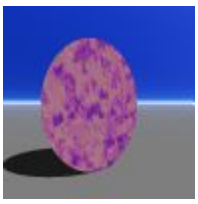


- Pyramid: displays the material applied to a pyramid.

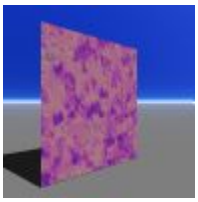


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- Circle: displays the material applied to a 2d disc.



- Square: displays the material applied to a 2d face.



To change the view angle of the preview area, drag the Preview area in the direction you want to view it from. The preview switches to wireframe as you move it. The angle of the preview does not affect the angle of the object in your scene.

Materials Presets Library

Material presets are predefined materials. Presets contain channels values that simulate a wide variety of commonly used surfaces. Presets are stored in the Material Presets Library.

Presets are a great way of understanding how materials are made. You can open one of the presets and see what channel and components were used to create the final material.

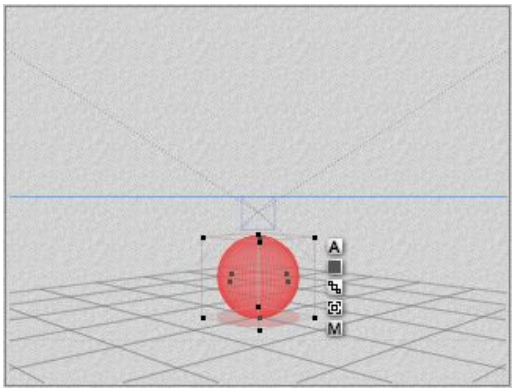
Using the Materials Presets Library

The Materials Presets Library contains all the material presets available in Bryce. You can place them on your objects directly and edit them just as you would any other material.

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To add a material from the Materials Presets Library to an object:

1. Select an object.



2. Access the Materials Library in one of the following ways:
    - In the Working window, click the triangle icon next to the Edit text button at the top of the Bryce environment.



The Materials Presets Library appears.

    - Or, click on the Edit button, then on the Edit Materials tool.



The Materials Lab will come up, click the triangle icon at the top-right of the Material Preview window.



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- Or, click on the M button next to the selected object.

  The Materials Lab will come up, click the triangle icon at the top-right of the Material Preview window.



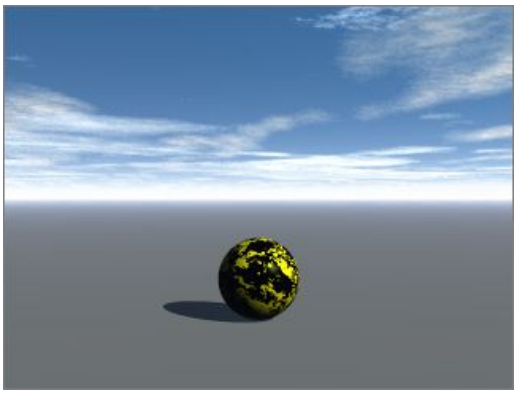
3. Click one of the Category names along the left side of the dialog or click on the triangle icon at the bottom left of the library to choose a different category.



4. Click the thumbnail of the preset you want to add.



5. Click the OK icon to add the selected material to your object.
6. Render to see the result.



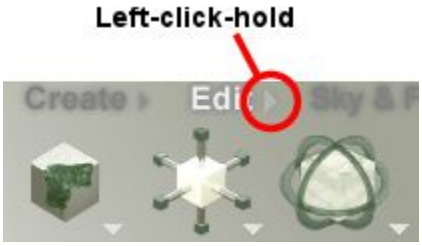
Material Quick-Select

You can also select presets in one motion by left-clicking then holding on the Materials Presets icon, then dragging directly to the desired material preset and releasing the mouse button. You can also drag over the category names to change categories into the category's presets and then release the mouse button.

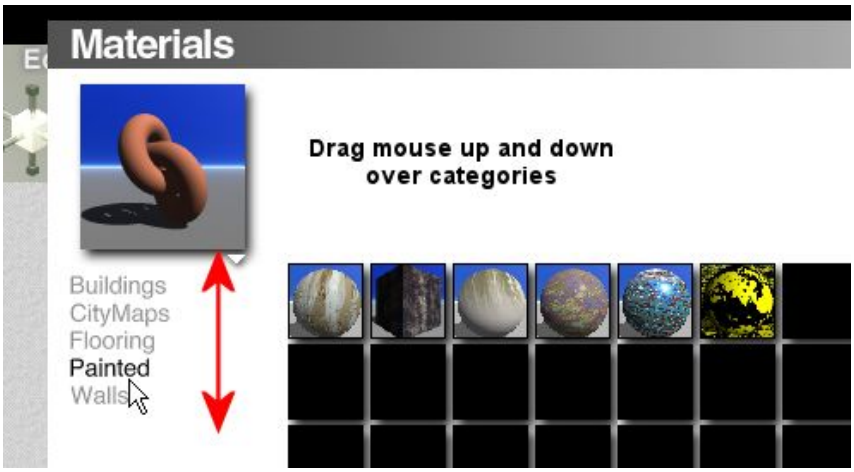
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To Quick-Select a material:

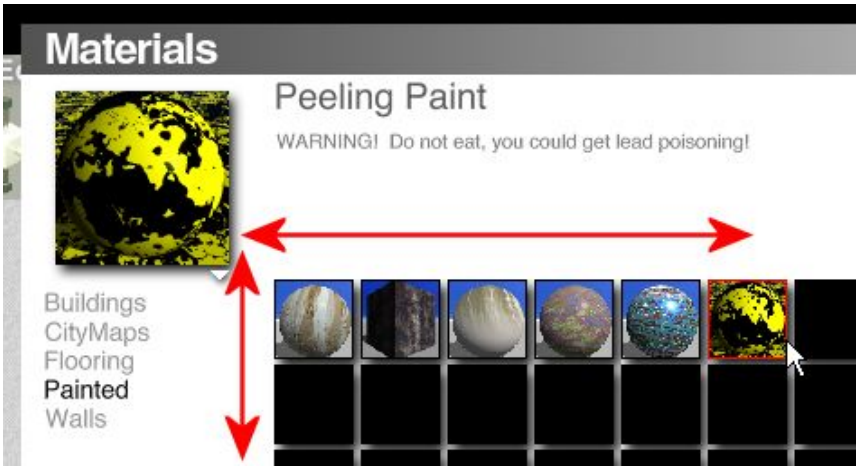
1. Select an object in the scene.
2. Left-click-hold on the Material Presets triangle. The Materials Library will come up.



3. Without letting up on the mouse, drag the cursor over the categories until the one you want is displayed.



4. Still holding down on the mouse, drag the cursor over the preset thumbnails, then let up on the mouse when the material you want to apply is selected.



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The material will be applied to the object.



Please note that you cannot change between main categories using this method.

Animating Materials

Animating Materials can add an exciting new dimension to your materials - time. Using the Animation Controls, you can interpolate between textures over time or change the properties of a single texture over the course of an animation.

The animation tools are a great way of adding life to your scene. Instead of creating an animation with simple motion, you can create subtle effects like changing a cube from water to ice or changing the seasons on a mountain.

Refer to "Animating Materials" for complete instructions on animating materials.

Materials

Materials are what brings your Bryce environment to life. A material defines the surface properties of an object in your scene. It has the power to turn a bunch of polygons into an island or the peaks of the Himalayas. You can also alter the basic function of an object. A simple cylinder becomes a pillar, a tree trunk or a metal pipe, just by adjusting the properties of the material applied to it.

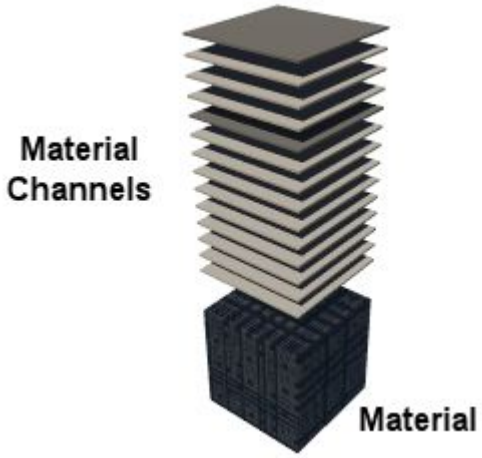
In Bryce, a material isn't just a picture that's wrapped around an object; it's a truly 3D surface. The material properties you assign to an object are applied to the whole object - inside and out.

Bryce's volume materials let you apply a material to the interior of the object as well as to its surface. The Volume Material controls let you set how the entire object's volume reacts to its environment.

Material Structure

A material is made up of fourteen channels. Each of these channels defines a different property of an object's surface. When you combine all the channels together you get a material. New materials are created by adjusting the values for each channel.

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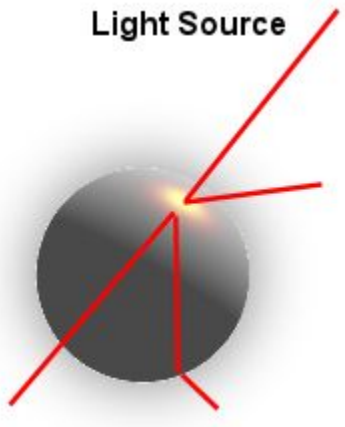
There are two types of materials you can create in Bryce: surface materials, which define the properties of an object's surface, and volume materials, which define the properties of an object's volume.

Understanding Surface Material Channels

The fourteen channels of a surface material each represent a different surface property. These properties simulate different physical properties of a surface and the combination defines how the object's surface interacts with light in the Bryce environment. To understand how the channels work, you need to understand a little about how you perceive light and color.

The color and size of an object are determined by how the light that hits the object is reflected back to your eye. Objects appear green because they reflect green light. An object appears shiny because it reflects light back at you.

An object appears transparent because light passes through its surface, hits the objects behind it, and is reflected back through the surface. Bryce's material channels simulate all these behaviors.



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When you set a channel value, you're setting how your object's surface interacts with the light that hits it, whether that light is from a direct source like the sun, or an indirect source like light reflected off other surfaces.

When you're creating volume materials, your settings not only control how light interacts with the surface of the object, but also how it interacts with the object's volume.

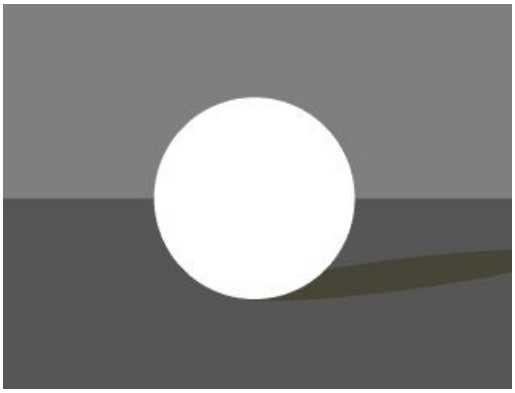
The effects of the channels are additive, meaning that each value you set directly affects all the other values. So, if you set the Diffuse Color to yellow and the Ambient Color to blue, the object will have a greenish tint.



Channels are interdependent. For example, you won't see the effects of the Transparent Color if the object is not transparent or doesn't have a transparency map applied in the Alpha Channel.

When you're using these channels, it's important to understand the physical property they're simulating. Only then can you make meaningful adjustments to the component values.

For example, if you set both Transparency and Reflection to 100, you'll get an unusually bright object that doesn't look very realistic. The reason for this is that the object is emitting more light than it is receiving, something it couldn't do in reality.



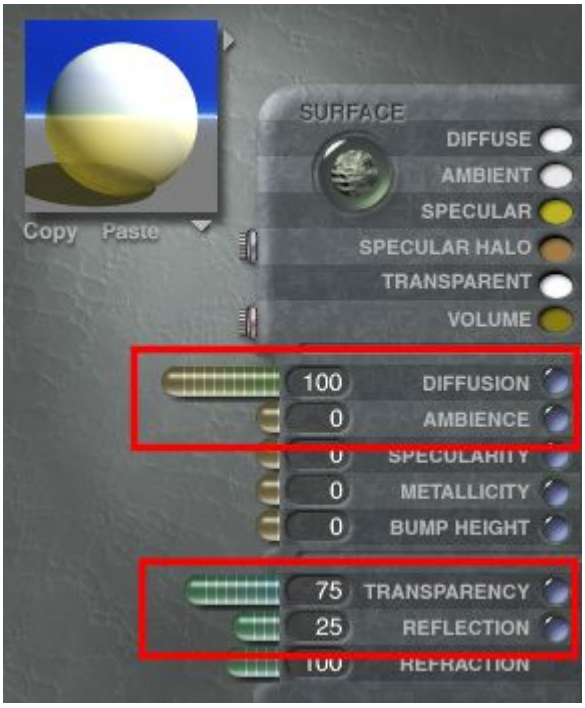
Since material channels simulate real-world surface properties, you should try to keep channel values within a realistic range. For example, in the image above, Transparency and Reflection are both set to 100. With these settings you're saying that 100% of the

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light that hits the object passes through its surface and 100% of the light that hits the object is also reflected off its surface. The result is an object that emits more light than it receives because it is reflecting the light that hits it as well as the light from behind it.

In reality, an object can only reflect a portion of the light that is passing through it. So, Transparency and Reflection values should always add up to 100.

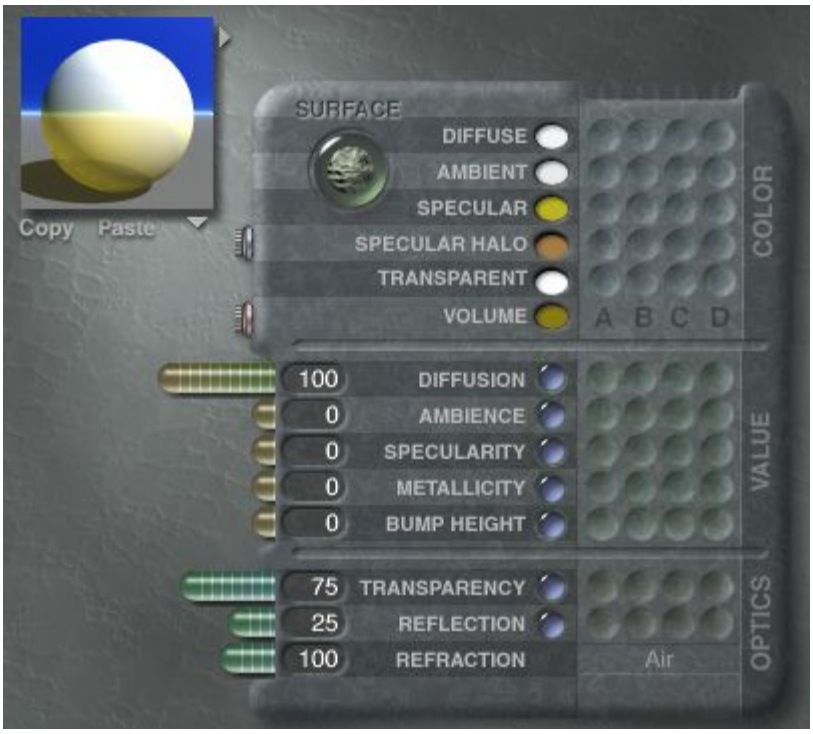
A good rule of thumb to keep in mind while you're setting these channels is that the Transparency and Reflection channels should always add up to 100 and the Diffusion and Ambience values should also always add up to 100.



Each surface material is made up of fourteen channels, divided into three groups:

- Color Channels
  - Diffuse Color
  - Ambient Color
  - Specular Color
  - Transparent Color
  - Specular Halo
  - Volume Color
- Value Channels
  - Diffusion
  - Ambience
  - Specularity
  - Metallicity

- Bump Height
- Optics Channels
  - Transparency
  - Reflection
  - Refraction



Color Channels

The Color group contains all the channels that control the color reflected off an object's surface.

The channels in the Color group are Diffuse Color, Ambient Color, Specular Color, Transparent Color, and Volume Color.



Diffuse Color, Ambient Color, and Specular Color define the colors the surface reflects when direct light hits it. For example, Diffuse Color defines the color that is reflected in all directions when direct light hits the object and Specular Color is the color that appears in the object's highlight.

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These color channels are directly related to the Diffusion, Ambience, and Specularity channels. Diffusion, Ambience, and Specularity control how light reflects off the object, while Diffuse Color, Ambient Color, and Specular Color control the color of that light. So, for example, if you selected yellow as the Diffuse Color, the object appears yellow. The intensity of the yellow color is controlled by the Diffusion channel.

Refer to "Diffuse Color," "Ambient Color," and "Specular Color" for more information.

Transparent Color sets the color of any light that passes through the surface of the object and Specular Halo controls the size of the highlight that appears when an object has a shiny surface.

Refer to "Transparent Color" and "Specular Halo" for more information.

The remaining color channel, Volume Color, controls the color of the interior of the object. Refer to "Volume Color" for more information.

Value Channels

The second group of channels, the Value group, controls how much light affects an object. The channels in the Value group are Diffusion, Ambience, Specularity, Metallicity, and Bump Height.



Diffusion, Ambience, and Specularity define how the surface interacts with direct light. They let you control how much direct light affects the surface of an object. In a physical environment, these channels control how shiny, dark, or bright the object appears.

Refer to "Diffusion," "Ambience," and "Specularity" for more information.

Metallicity is related to Reflection. It determines how much reflected light is filtered through the Diffuse Color.

Refer to "Metallicity" for more information.

Bump Height controls the height of any bumps or dents on the object's surface.

Refer to "Bump Height" for more information.

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Optics Channels

The Optics group of channels controls the intensity of optical effects produced by the object's surface. The channels in the Optics group are Transparency, Reflection, and Refraction.



Transparency and Reflection channels control how indirect light interacts with the object's surface. In a physical environment, these channels control how transparent or reflective the object appears.

Refer to "Transparency" and "Reflection" for more information.

Refraction is directly related to Transparency. The Refraction channel sets how much the light that passes though the object is bent.

Refer to "Refraction" for more information.

Understanding Volume Material Channels

Surface Materials define the properties of the surface of an object. The interior of the object is empty. If you were to fly through the object you would see one layer of material, emptiness, and then another layer of material. A Volume Material is applied to the entire object, both inside and out. If you were to fly through a volume material you would be surrounded by material.

When you're setting channel values for a Volume Material, you're setting up how light will interact with the object's volume. Channels control whether the interior of an object is bright, dark, shiny, or transparent.

In most cases the interior of an object will be filled with a texture. If so, the channels control the surface properties of the elements within the texture.

For example, if you apply blue spots as a Volume Material, you get a volume filled with blue spheres. The channels then control whether those spheres are bright, dark, shiny, or dull. When the interior of an object is filled with a texture, the material channels control the surface properties of the elements within the texture.

Volume Materials are made up of thirteen channels, divided into three groups:

- Color Channels
  - Diffuse Color
  - Ambient Color
  - Specular Color
  - Transparent Color

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    - Specular Halo
    - Volume Color
- Value Channels
    - Diffusion
    - Ambience
    - Specularity
- Volume Channels
    - Base Density
    - Edge Softness
    - Fuzzy Factor
    - Quality/Speed

The channels in the Color and Value groups work exactly as they do for surface materials, except that the channel settings are applied to the object's volume instead of its surface.



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Volume Channels

The Volume channels control special volume properties of the object's interior.



Base Density controls the density of the object. This channel defines how much material there is in the interior of an object. As a result, Base Density controls how much light passes into the object. A solid object doesn't allow any light to pass through it, while less dense objects allow more light in.

Refer to "Base Density" for more information.

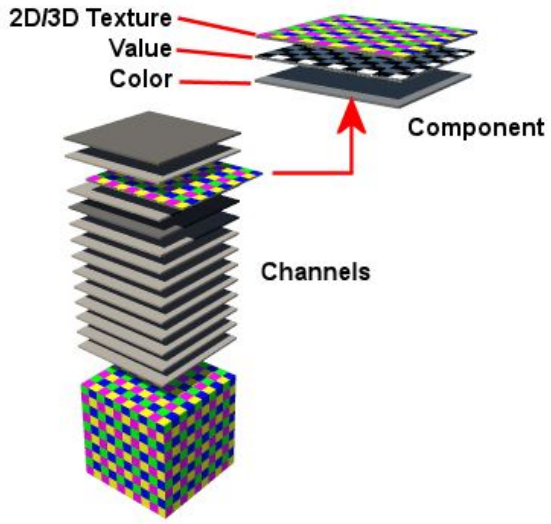
Edge Softness, Fuzzy Factor, and Quality/Speed control the appearance of texture elements within the material. Edge Softness and Fuzzy Factor control the quality of the edges and sharpness of the texture, while Quality controls the render quality of the material.

Refer to "Edge Softness," "Fuzzy Factor," and "Quality/Speed" for more information.

Understanding Material Components

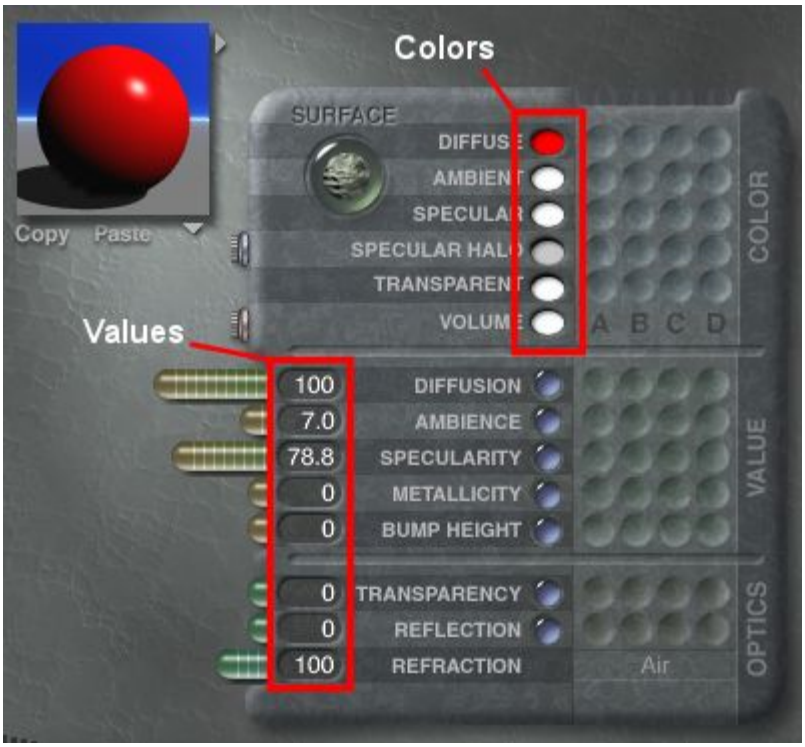
Each Bryce material channel can contain up to three components that determine the channel's setting. A component can be a color, a texture or a numerical value. A texture can be either a 2D texture (picture) or a 3D texture.

Each Bryce material channel contains components that determine its settings. You can have up to three texture components in a channel, and some channels let you use four textures and a value as components.

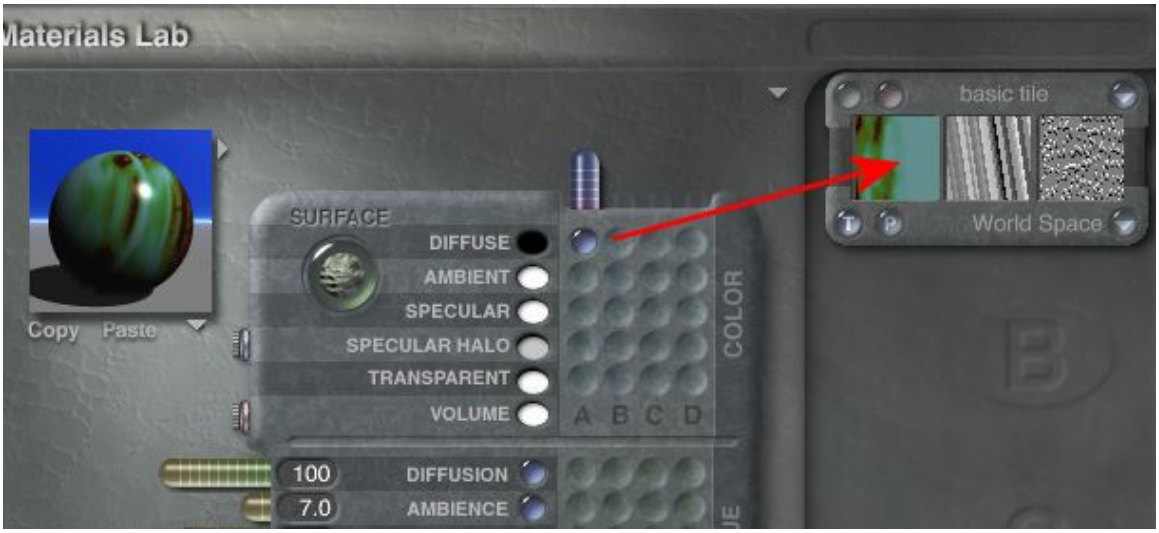


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Colors can only be used in the Diffuse, Ambient, Specular, Specular Halo, Transparent, and Volume channels. Values are used in the Diffusion, Ambience, Specularity, Metallicity, Bump Height, Transparency, Reflection, Refraction, Base Density, Edge Softness, Fuzzy Factor, and Quality/Speed channels.



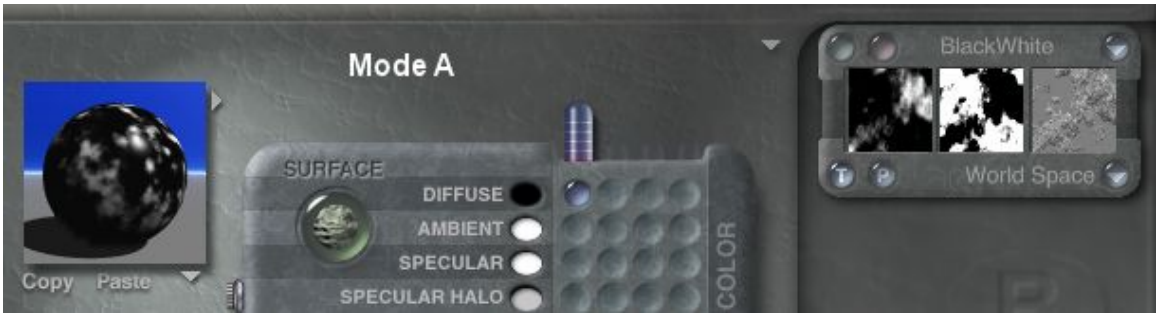
When you're using a texture as a component, the information in the texture's channels is used as the value of the material channel. For example, if you're using a texture to set Diffuse Color, the texture's color channel is used.

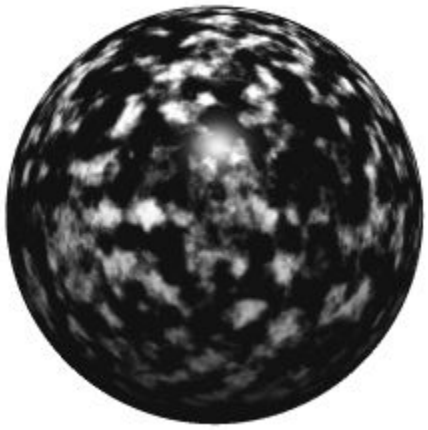


If you're using a texture to set the Diffusion value, the texture's alpha channel determines the Diffusion intensity.

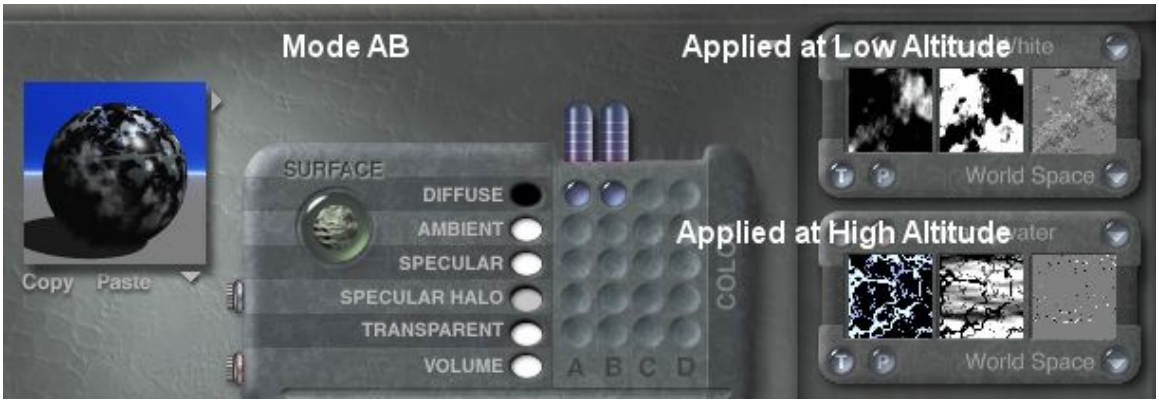


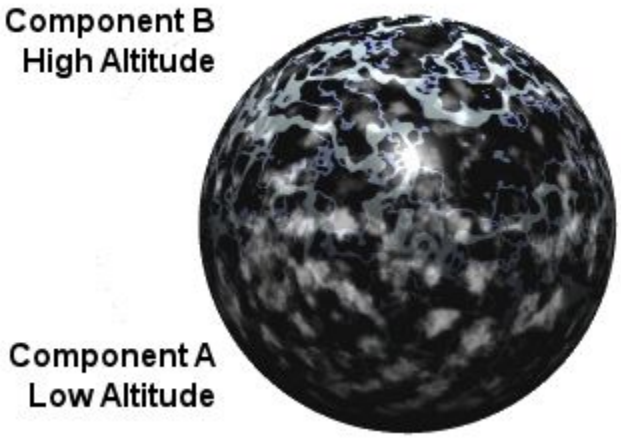
Components are combined using one of three modes: Mode A, Mode AB, and Mode ABC. In Mode A, only one component is used to set the channel's value.





In Mode AB, two components are combined to set the channel's value, based on altitudes. The values from texture A are applied at low altitude and values from texture B are applied at higher altitude.





In Mode ABC, the values of two textures, A and B, are blended based on the alpha channel of texture C.



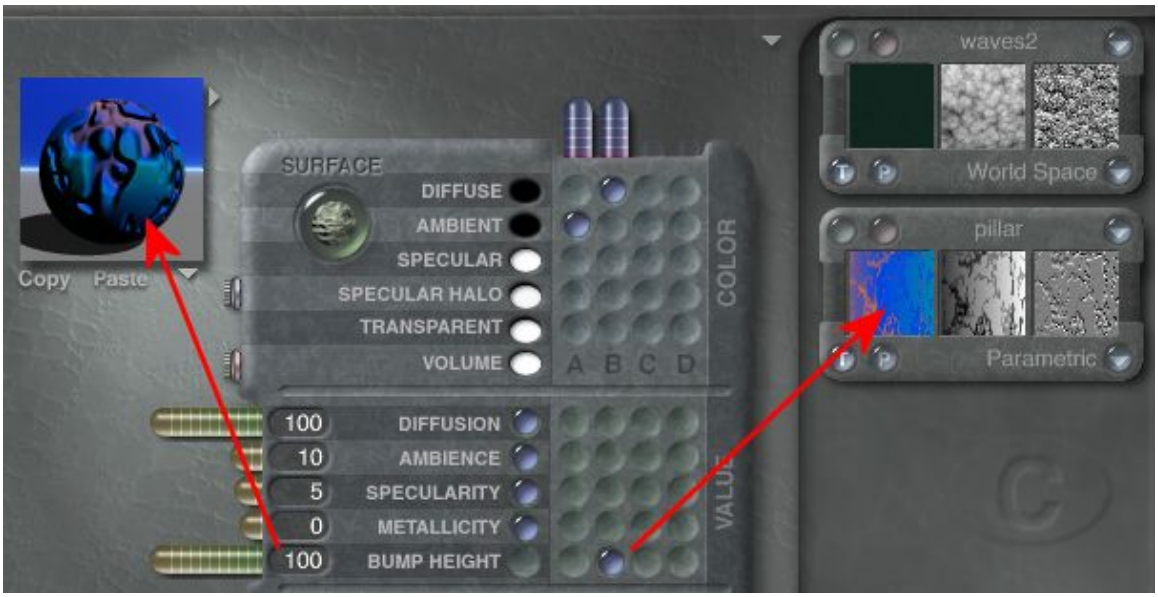
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When you're using textures as a component, you can choose from a number of preset textures or you can open the Deep Texture Editor and create your own textures.

In some channels, you can use both a texture and a value. In this case, the value determines how much of the texture's value is used to drive the channel. For example if you apply a texture to the Bump Height channel, the texture sets the shape of the bumps and the value sets how prominent those bumps appear.

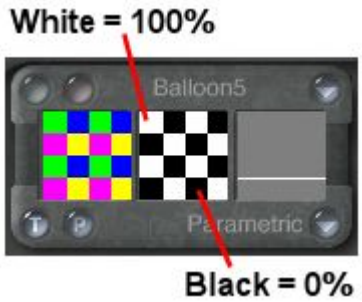
In this example the shape of the bumps on the object is set by the texture component in the Bump Height channel, but the height of those bumps is set by the Bump Height value of 100.



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Alpha Channels

One of the outputs a texture component can produce is an Alpha channel. The Alpha channel is a grayscale representation of the texture pattern or grain. When you use a texture as a component in a material channel, these grayscale values are used to map surface properties. White areas in the Alpha channel represent 100% of the effect and black areas represent 0%.



Images, or 2D textures, also contain an Alpha channel. In images, the Alpha channel acts as a mask for the image. The image's Alpha channel is used in the same way as a texture's Alpha channel.





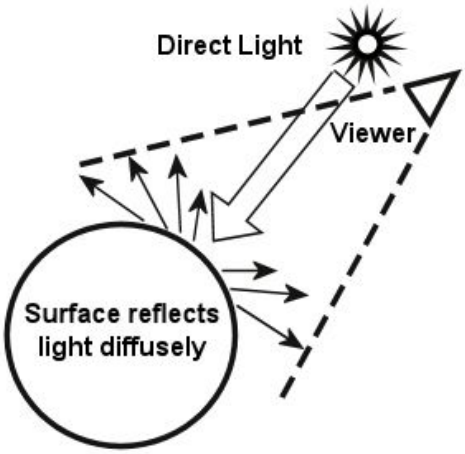
Surface Material Channels

This section provides details on each of the Surface Material Channels.

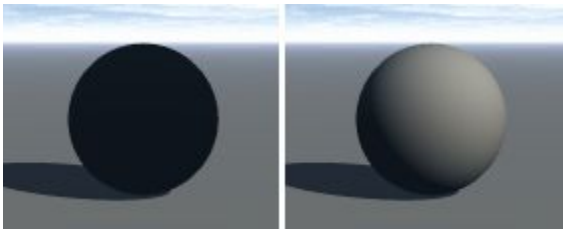
Diffusion

Diffusion determines how much direct light is reflected diffusely, or scattered, in all directions. The small arrows projecting off the surface of the object illustrate how diffusion works.

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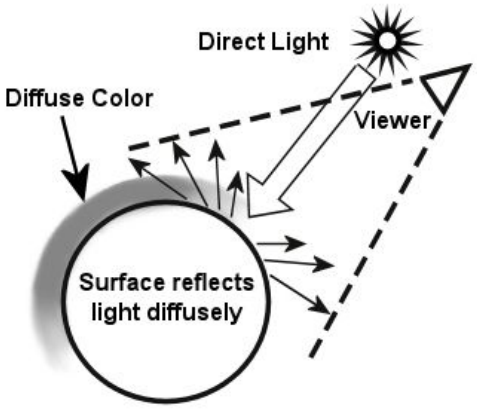
When light hits an object with diffusion set to 100% (right image), all the light that hits it is reflected back scattered in all directions. This gives the object a flatly lit appearance. If the object's diffusion is set to 0% (left image), no light is reflected off its surface so the object appears black. Diffusion controls how much light is diffusely reflected off the object's surface.



Setting Diffuse Color

Diffuse Color acts like a filter through which all diffuse light passes. When light hits the object, the amount of light that's reflected diffusely is determined by the Diffusion channel setting, and the color of that light is set by the Diffuse Color channel.

This graphic shows how diffuse light passes through the Diffuse Color.



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When Diffusion is set to a value greater than zero, the Diffuse Color appears wherever the object is hit by direct light. Diffuse Color is the color of diffusely reflected light.

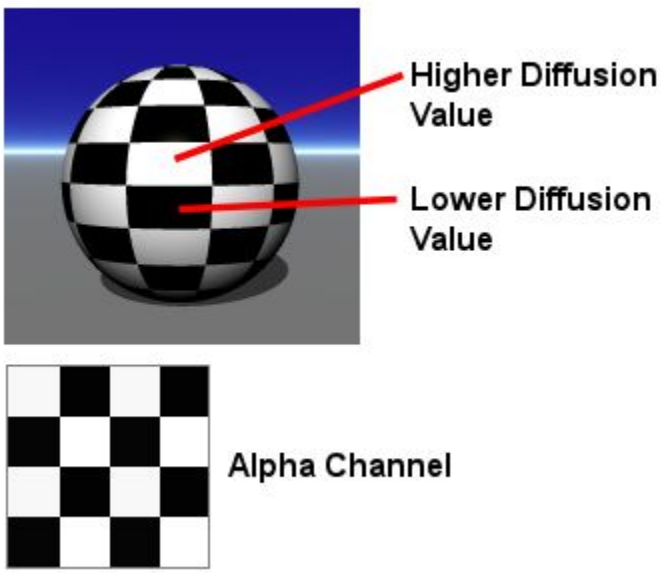


Be careful when using pure constant colors as the Diffuse Color because you may not get the results you're expecting. If you use a pure color, only that color is reflected off the object. So if you're using 100% green, only green light is reflected off the surface. This doesn't cause a problem when the object is hit by white light because there is green in white. However, if you use 100% red light on the object, it will appear black, since there is no green in 100% red, so no light is reflected off the object.

Setting Diffusion Using a Texture

When you assign a texture to the Diffusion channel, the texture's alpha channel determines which areas of the surface have high diffusion and which have low diffusion. Bright areas in the alpha channel have a high diffusion value and darker areas have low diffusion values.

When you use a texture to set the Diffusion channel, the grayscale values in the texture's alpha channel determine the diffusion of the objects.

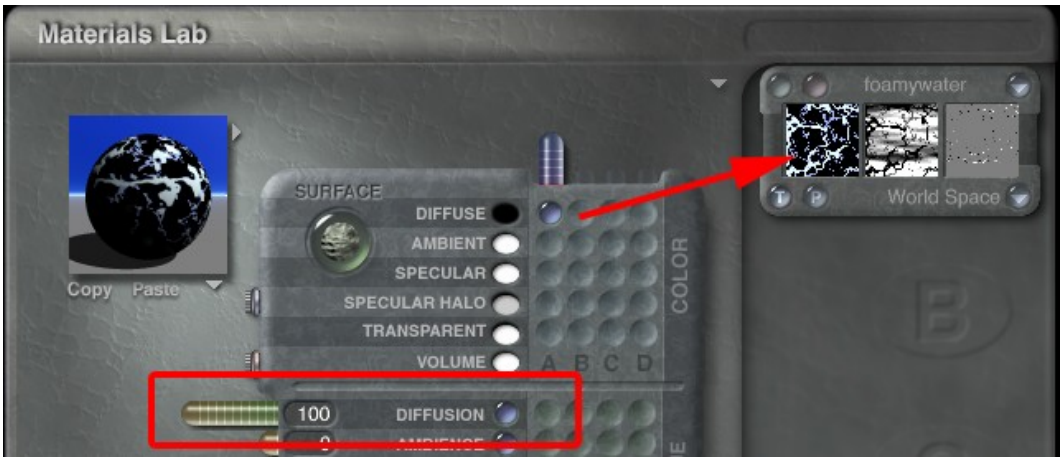


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If you're using a texture to set Diffuse Color, the texture's color channel is used and the value in the Diffusion value determines the intensity.

Examples:

- Diffusion value = 100



- Diffusion value = 50



- If you're using a texture to set the Diffusion value, the texture's alpha channel determines the Diffusion intensity.

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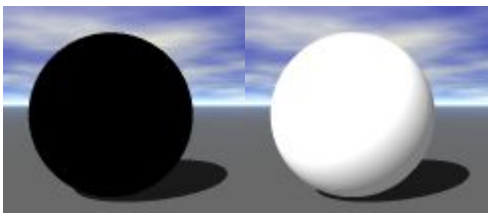
Ambience

Ambience simulates the effects of light hitting the object from all directions. The Ambience value controls the amount of light that is reflected off the surface uniformly. The large arrows represent ambient light hitting the object's surface. The smaller arrows represent the light reflected off the object's surface.



When Ambience is set to a value higher than zero, the object will reflect light from all over its surface, not only from the area hit by light. This makes the object look brighter.

The higher the Ambience value, the brighter an object appears. At 100% (right example), the object appears unnaturally bright, regardless of the light source. If you want to create a realistic effect, the sum of the Ambience and Diffusion values should add up to 100. The left example has Ambience set to 0%.



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An object's Ambience is directly related to the general ambience of the environment. So, the ambient value you set for the object is directly affected by the Ambient Color you set in the Sky & Fog palette.

The Ambient Color in the Sky & Fog palette controls how much ambient light is available in the environment. The Ambience channel controls how much of the available ambient light is reflected off the object's surface.

So, if you set the Ambient Color in the Sky & Fog palette to black, or 0% ambience, then the Ambience channel value has no effect. If you set the Ambient Color to white, or 100% ambience, the Ambience channel value will control how much of the available light is reflected off the object's surface.

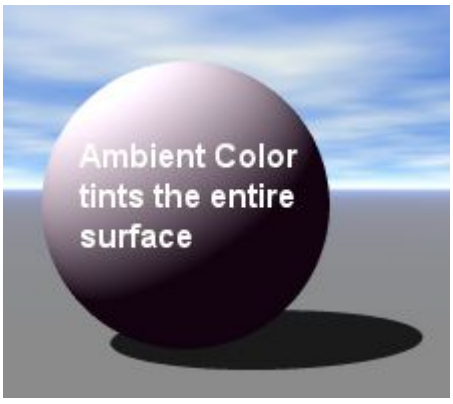
Setting Ambient Color

Ambient Color is the color that is reflected off the surface of an object regardless of where the light source hits the object. The Ambient Color is directly linked to the Ambience channel setting. If the Ambience is set to zero, the Ambient Color is invisible.

Ambient Color is the color that appears no matter where light strikes the object.



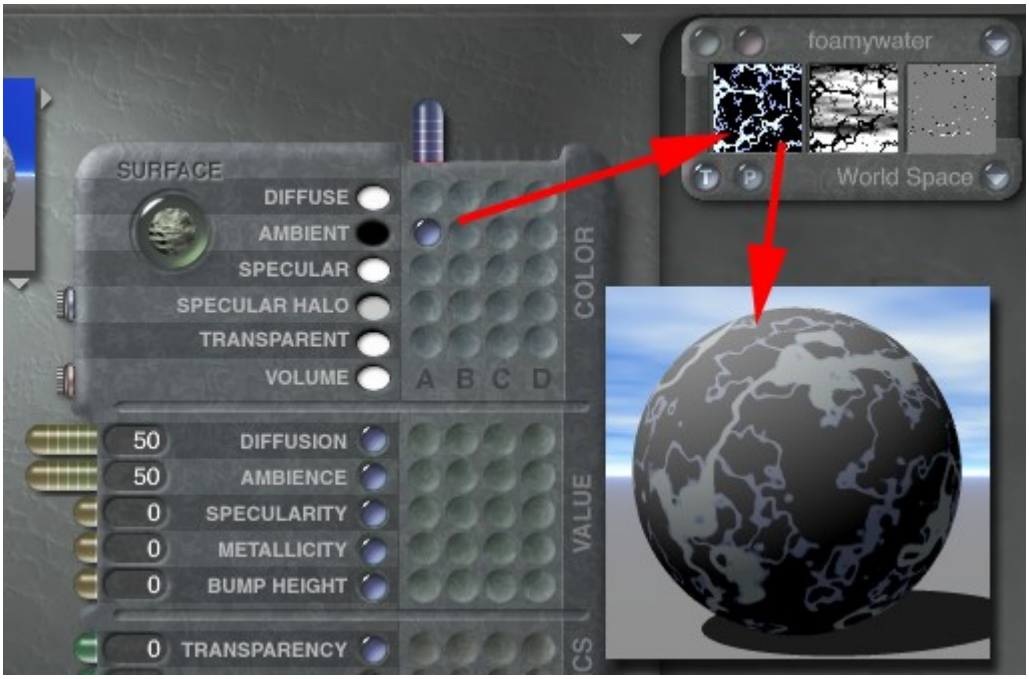
The Ambient Color channel is also related to the Ambient Color you set in the Sky & Fog palette. The Ambient Color of the environment is added to the Ambient Color of the object, so if your environment is blue and your object's Ambient Color is yellow, your object appears green.



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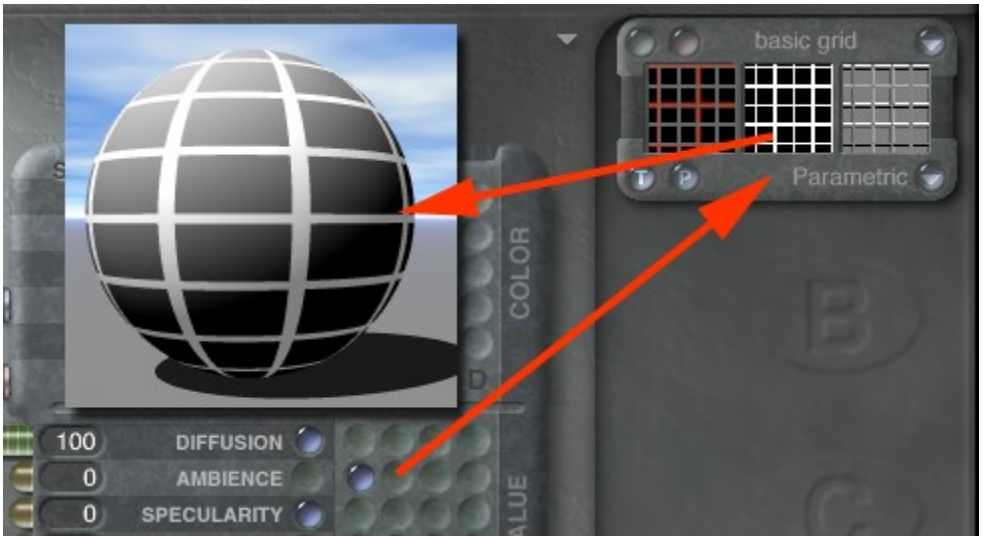
Setting Ambient Color Using a Texture

When you assign a texture to the Ambient Color channel, the color channel in the texture is used as the Ambient Color. In other words, the texture's color is applied to any area of the object that's in shadow.



Setting Ambience Using a Texture

When you assign a texture to the Ambience channel, the grayscale values from the texture's alpha channel determine which areas of the surface have high ambience and which have low ambience. Bright areas in the alpha channel have high ambience values, and darker areas have low ambience values.

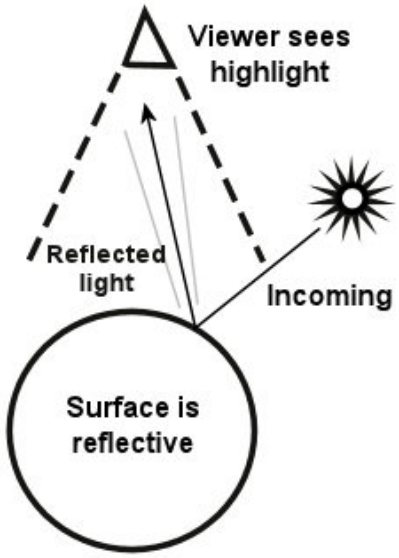


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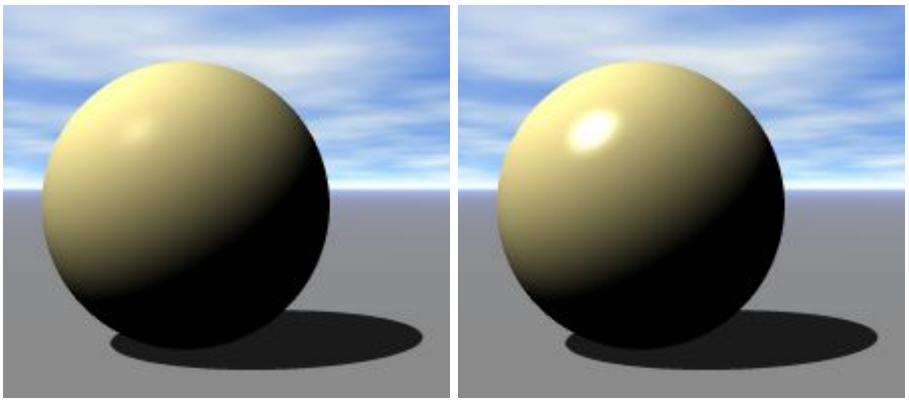
Generally, it's best to set Ambience using a value. However, you can get some interesting effects using textures instead. For example, if you use a splotchy texture, you'll get, mixed in with normal surface areas, areas that appear to glow regardless of external light.

Specularity

Specularity controls how much light is reflected back from the surface of the object directly at the viewer. Since the direct reflection creates a highlight on the object, you can think of Specularity as the channel that determines the intensity of the highlight that appears on the object or the "shininess" of the object.



The higher you set the Specularity, the shinier the object appears. When the Specularity is set to zero, the object appears dull. This example shows Specularity set to 0% (left) and 100% (right).



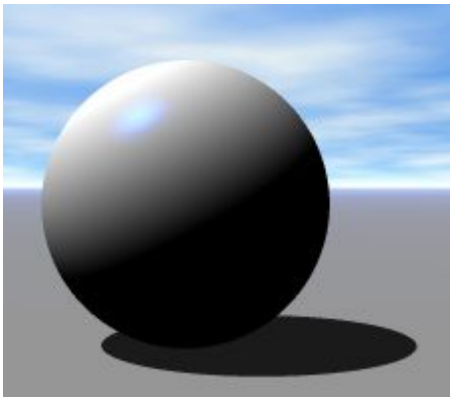
Setting Specular Color

Normally, the color of an object's highlight would reflect the color of the light source. However, using Specular Color you can set a specific color for your highlight, as shown

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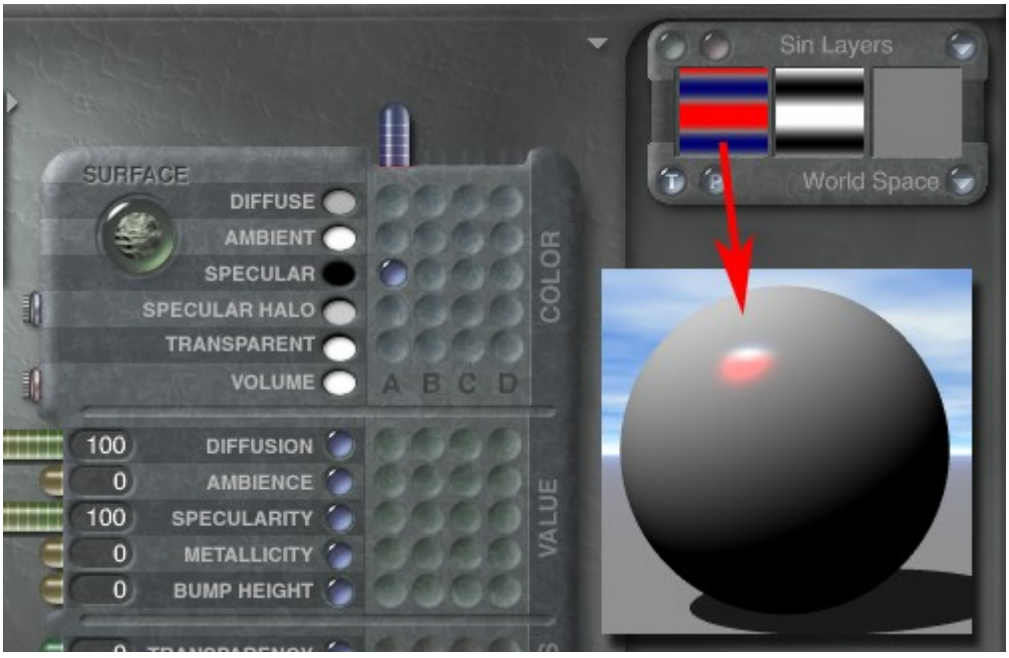
here. Specular Color is directly linked to the Specularity channel. If the Specularity is set to zero, the Specular Color is invisible.

By adding Specular Color, you can make it appear as though a colored light is shining on the object.



Setting Specular Color Using a Texture

When you assign a texture to the Specular Color channel, the texture's color channel is used as the Specular Color. In other words, the texture's color is applied to the object's highlight.

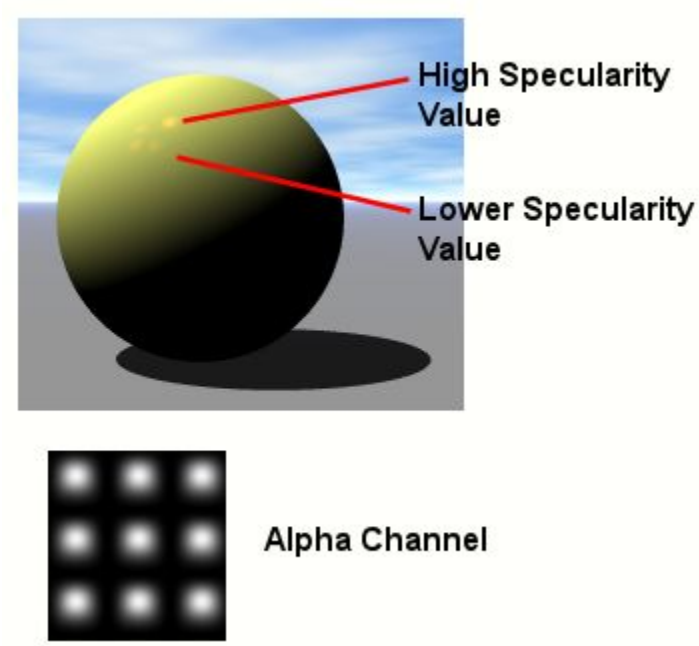


Setting Specularity Using a Texture

When you assign a texture to the Specularity channel, the grayscale values in a texture's alpha channel are applied to the object's highlight. Bright areas of the alpha channel increase the intensity of the highlight, and darker areas decrease the intensity. The alpha channel may also create patterns in the highlight.

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When you use a texture to set the Specularity channel's value, the highlight's intensity is determined by the texture's alpha channel values.



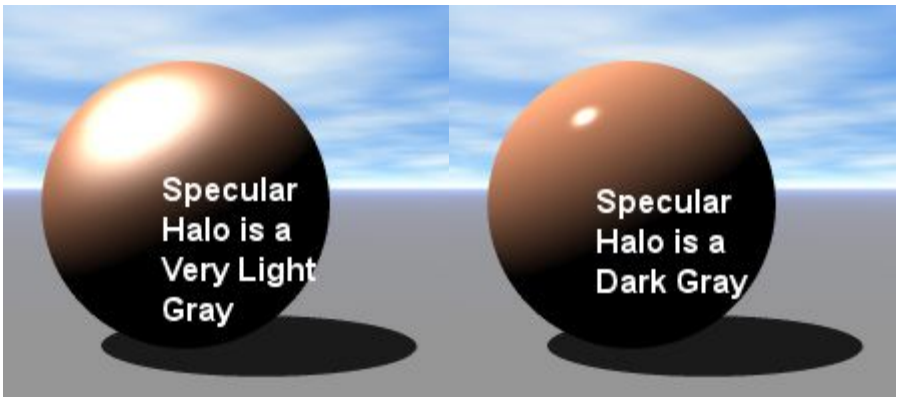


Specular Halo

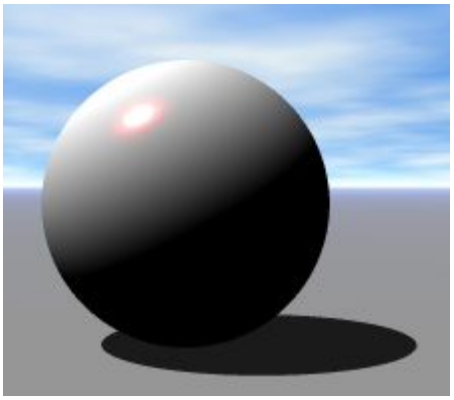
The Specular Halo channel lets you control the size of the Specular highlight.

The size is controlled by the luminance value of the component you select. Brighter colors (left) create larger highlights and darker colors (right) create smaller highlights.

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Colors are expressed as RGB (Red, Green, and Blue) values. Specular Halo channels use the values from each of these channels to set the size of the highlight. If the values are all in balance (that is, all the same), the highlight appears uniform. However, if one value is higher that the rest (for example, R=200, G=100, B=100), you'll get a highlight with a slightly colored ring (for example, a red ring).

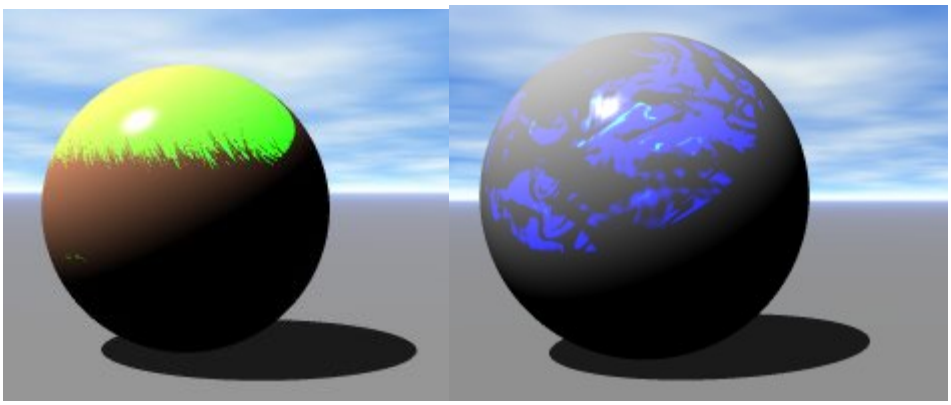


Depending on the component you use in this channel, you may be able to set each color value differently to create different highlight effects. The easiest way to use this channel is with a color. When using a color, try picking more desaturated colors. These colors produce more predictable results because the difference between RGB values is less. Check out the Specularity Lesson series in the Misc > Basic category in the Preset Materials Library to see Specular Halo in action.

Setting Specular Halo Using a Texture

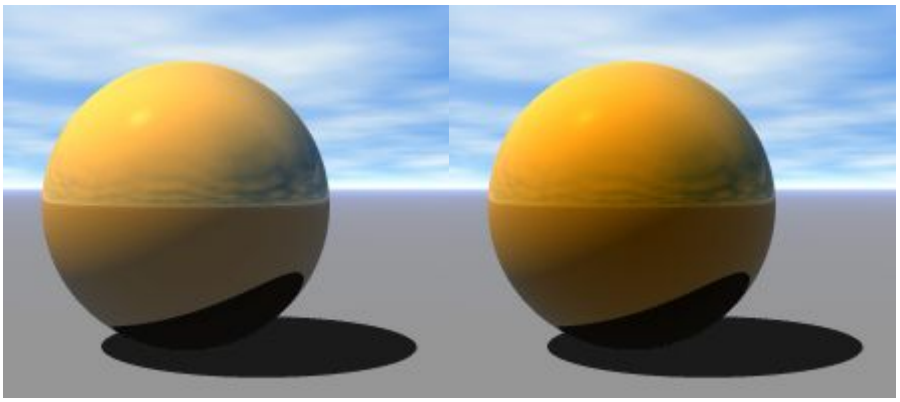
When you assign a texture to the Specular Halo channel, the RGB value of the texture's color channel is used for the Specular Halo.

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Metallicity

The Metallicity channel value acts as a filter for reflected light. This value controls how much of the reflected light is filtered through the Diffuse Color. At 50% (left), half the reflected light is tinted with the Diffuse Color; at 100% (right), all the light that's reflected is tinted.



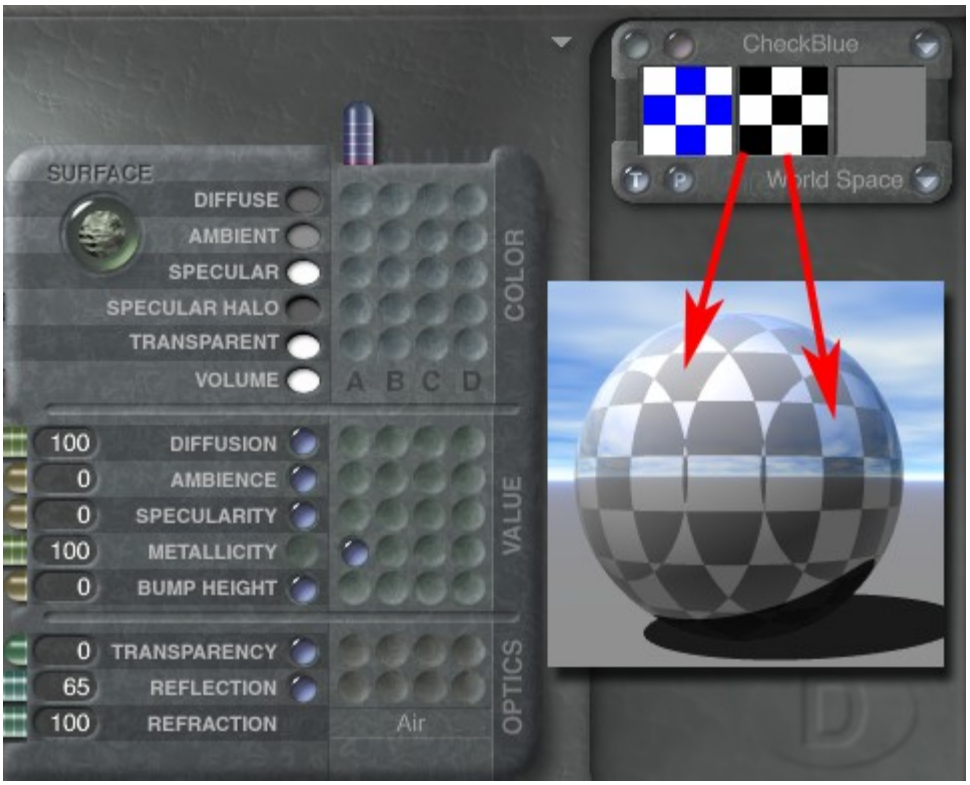
Metallicity is linked to Reflection. If Reflection is set to zero, the Metallicity channel has no effect.

Metallicity makes objects look metallic because it tints the color of reflections. If you want to create specific types of metals, you need to adjust the Diffuse Color. For example, to create gold use a yellow Diffuse Color.

Setting Metallicity Using a Texture

When you apply a texture to the Metallicity channel, the texture's alpha channel is used to determine the intensity of the Diffuse Color. Lighter areas of the alpha channel increase the intensity of the color, and darker areas decrease the intensity.

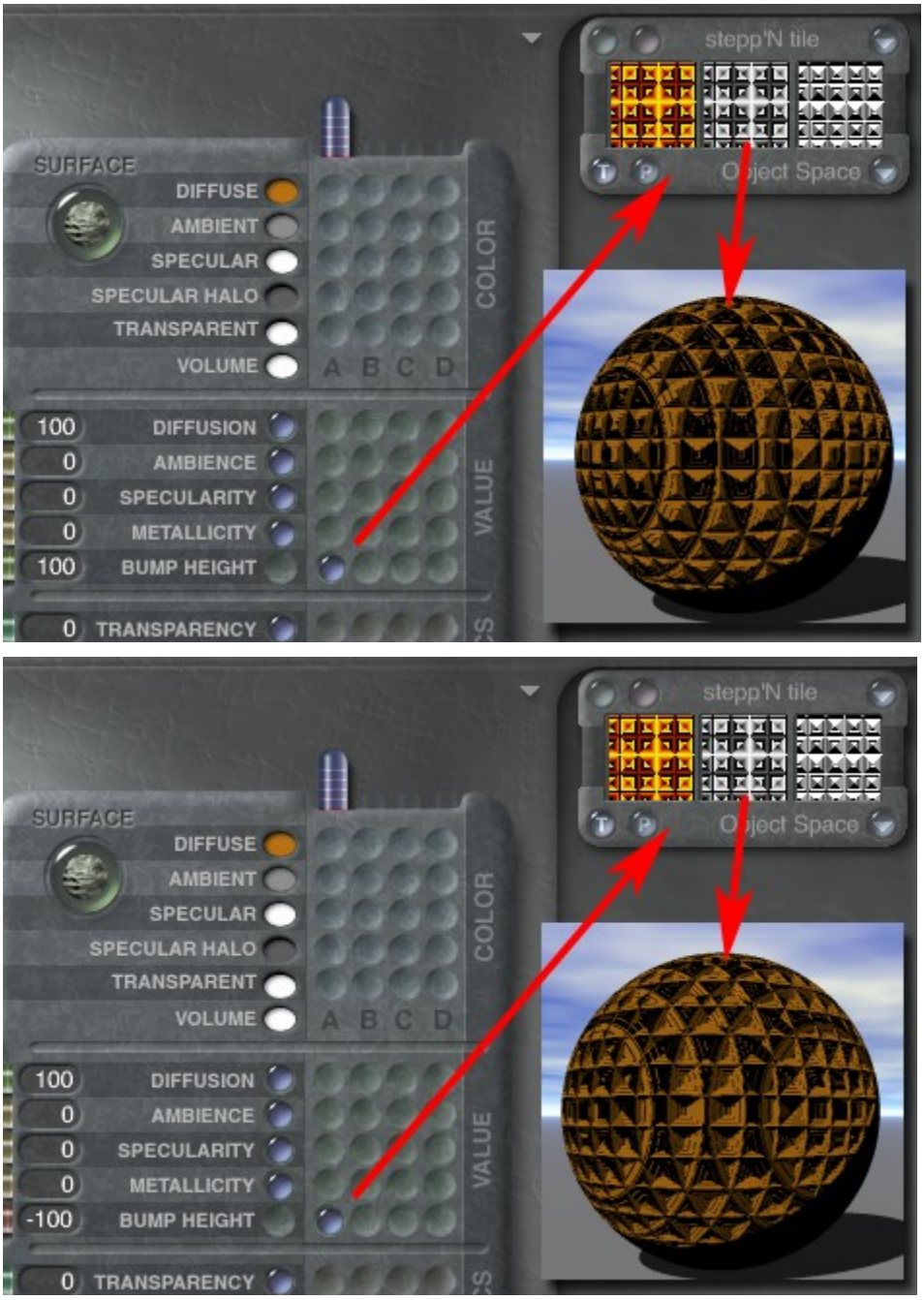
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Bump Height

The Bump Height controls the height of bumps in an object's surface. The bumps on an object's surface are determined by the texture's Bump channel. The Bump Height channel is linked to the Bump channel in the texture. If you use a texture without a Bump channel, the Bump Height channel has no effect. You can enter negative values (bottom image shows Bump = -100%) in this channel, which turns bumps into dents.

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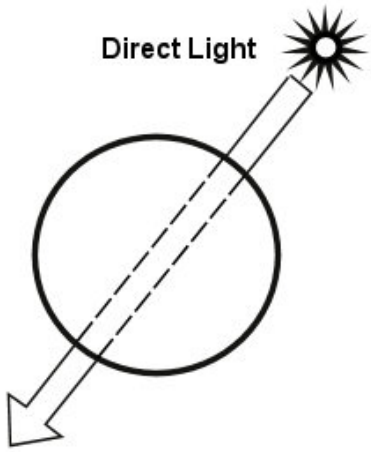


Transparency

The Transparency channel controls how much light can pass through the object's surface.

The higher the Transparency value, the more of the surrounding environment is visible through the object's surface. If there is no other light being reflected, an object set at 100% Transparency appears invisible.

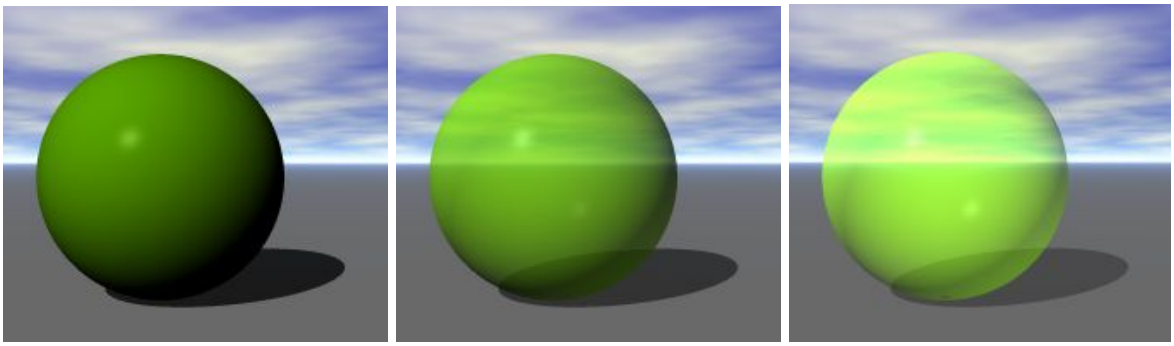
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Transparency controls how much of the surrounding environment is visible through the object's surface. To create a realistic transparent object, you need to pay attention to details. You'll need to combine the effects of the other channels to simulate a realistic object.

For example, transparent bubbles all have highlights, so you'll need to add Specularity. Balloons have a flatter surface so you'll need to add more Diffusion to the surface. Glass has a refraction effect associated to it, so you'll need to add Refraction to the surface.

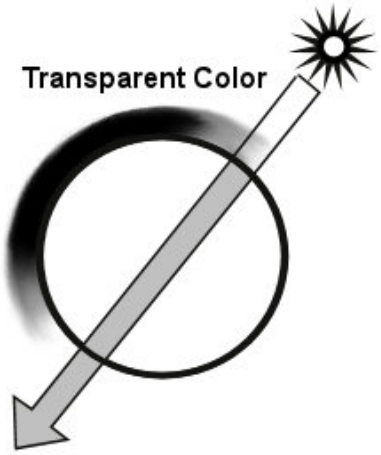
These examples show an object with 0% (left), 50% (middle), and 75% (right) transparency.



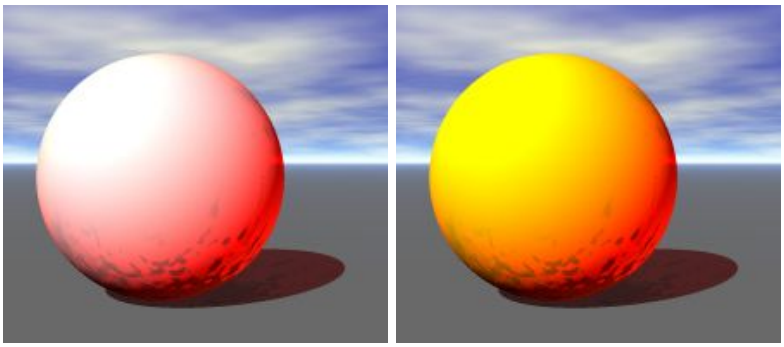
Setting Transparency Color

The Transparent Color channel determines the color of the transparent areas of your object. Light is filtered through this color as it passes through the object's surface. As a result, anything you can see through your object is tinted with the Transparent Color you select.

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Keep in mind that the Transparent Color interacts with the other colors in the material. If the Diffuse Color is white, then the Transparent Color takes precedence. If the Diffuse Color is yellow, and the Transparent Color is red, the object appears orange. However, when you're using Refraction, the Transparent Color blends with the Diffuse Color. The Transparent Color tints everything you see through the surface of your object. This sample shows Transparent Color applied to the object.

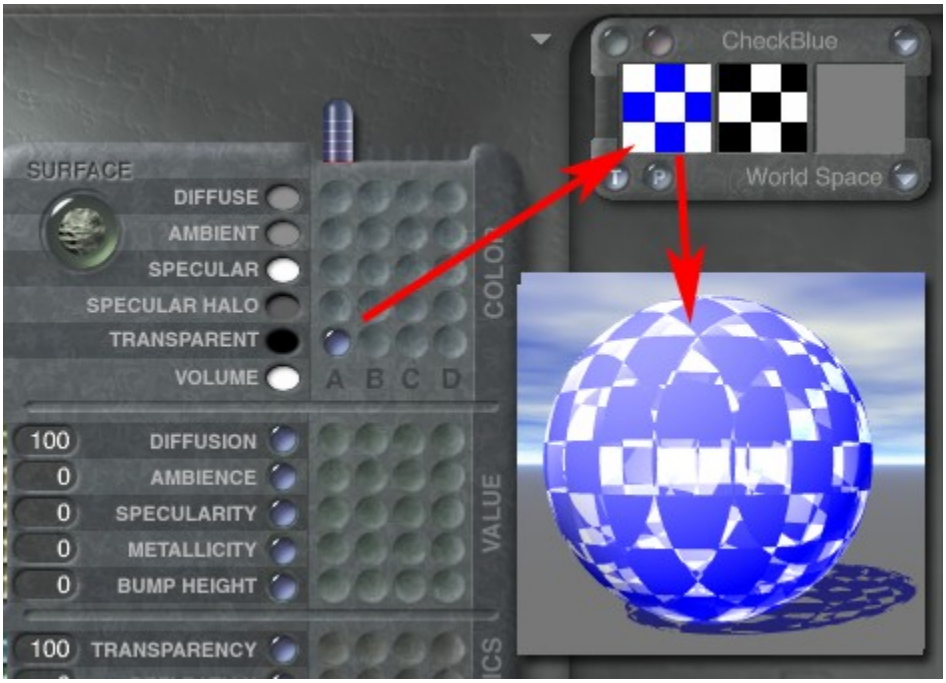


Transparent Color is linked to the Transparency channel. If the Transparency is set to zero, the Transparent Color is invisible.

Setting Transparency Color Using a Texture

When you assign a texture to the Transparent Color channel, the texture's color channel is applied to the transparent areas of your object.

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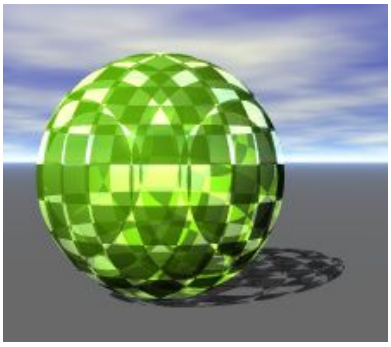


Setting Transparency Using a Texture

When you apply a texture to the Transparency channel, the texture's alpha channel is used to determine which areas of the object are transparent. Lighter areas of the alpha channel are not transparent while darker areas are.

You can create some interesting effects using textures. For instance, a checkerboard texture will result in an object that's alternately transparent and solid. This example shows a checked texture applied to the Transparency channel.

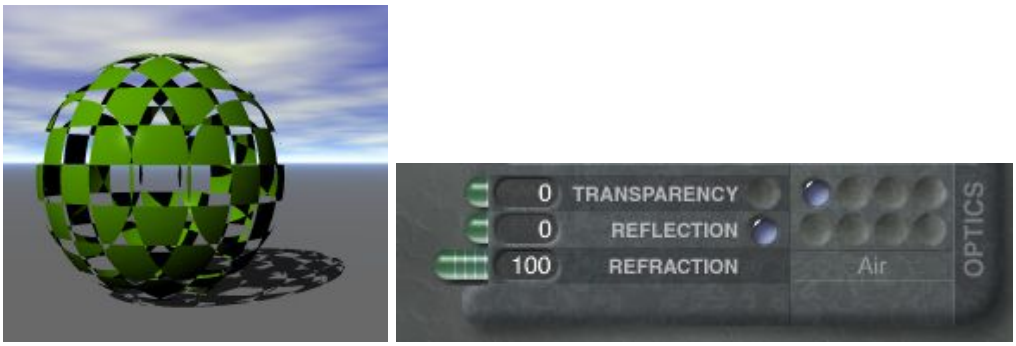
The final look of the Transparency channel is determined by the Shading mode. When the material is applied using normal shading, Transparency creates an optical effect.





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When the material is applied using Blend Transparency mode, Transparency creates a punch-out effect, as shown here. The areas of the surface that are 100% transparent are completely ignored during shading so that they appear as gaps or holes it the surface. Any areas that are less than a 100% result in a normal transparency effect.



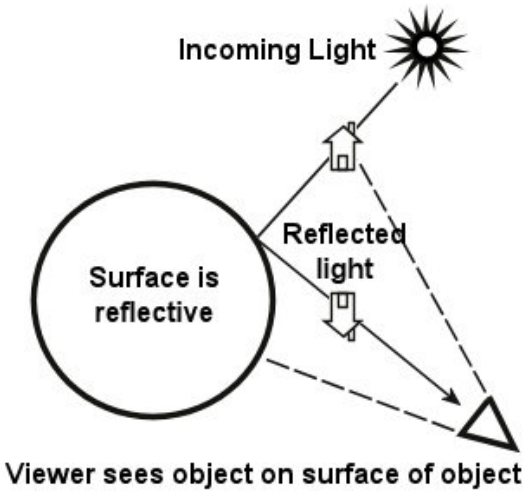
Note that when using Blend Transparency, the Transparency value is set to 0.



Reflection

The Reflection channel controls how much light, direct or indirect, is reflected off the object's surface. Unlike diffusion, which scatters light, reflection directs light back at its source, giving the object a mirror-like appearance.

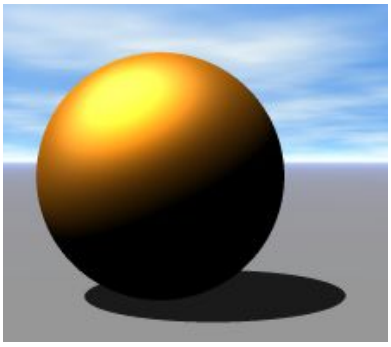
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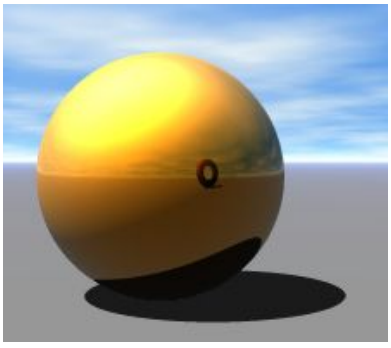
The higher the Reflection setting, the more reflective the surface. At 50%, half the light that hits the object's surface is reflected; at 100% all light is reflected. As you increase the Reflection value, the color of the object changes, since you can see more of the environment in the object's surface.

Examples:

- Reflection = 0

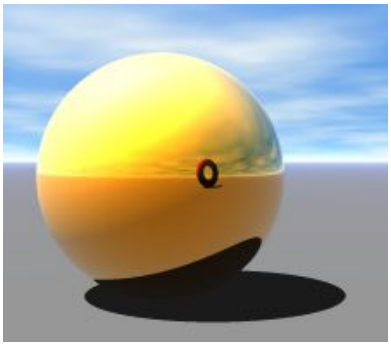


- Reflection = 50



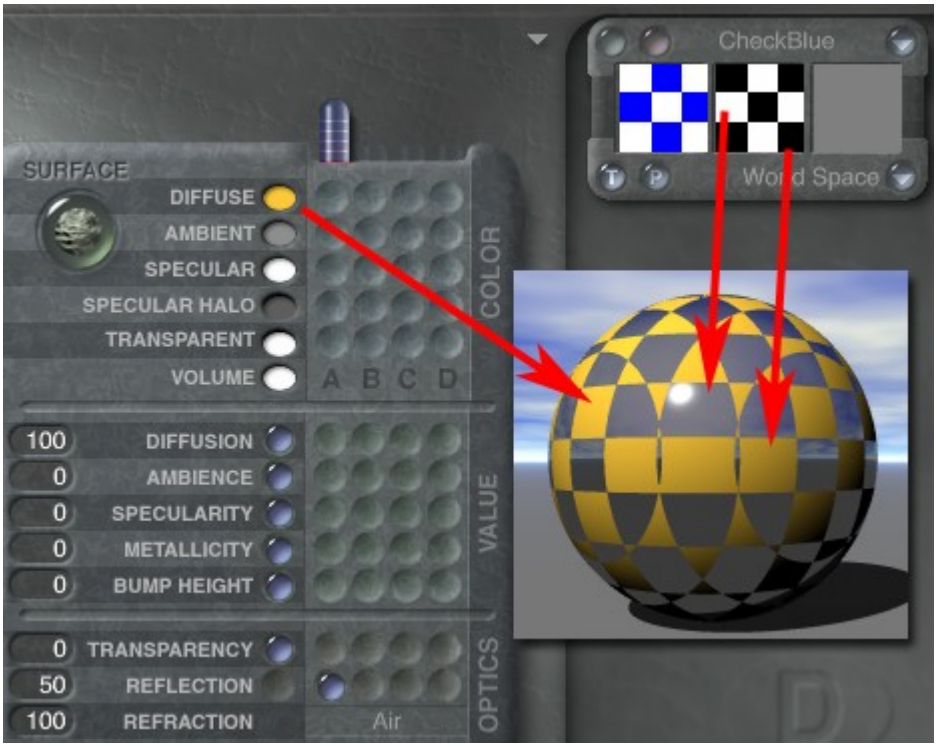
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- Reflection = 100



Setting Reflection Using a Texture

When you apply a texture to the Reflection channel, the texture's alpha channel is used to determine which areas of the object are reflective. Lighter areas of the alpha channel are reflective, while darker areas are not.

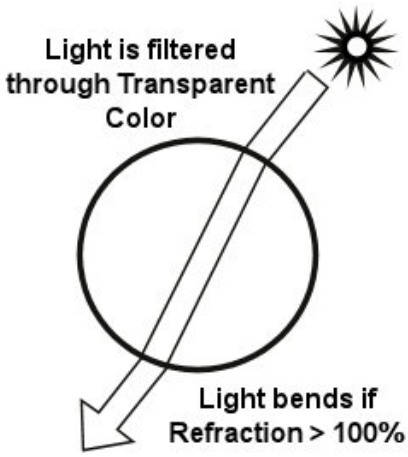


Refraction

The Refraction channel determines whether light bends when it passes through the surface of an object. Higher Refraction settings produce slight reflections as some of the light is bent directly back at its source. Higher Refraction settings also change the color of the object's surface as the colors reflected from the environment affect the object's color.

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The Refraction value is what makes transparent surfaces look like glass. As you increase the Refraction value, the edges of the object will become reflective. This simulates the effect of light being refracted so sharply that it does not penetrate the object's surface.



In these examples you can see how the edges become more reflective as you increase the Refraction value. The higher you increase the Refraction value, the more the Diffuse Color is blended with the Transparent Color. The higher the value, the more Diffuse Color is visible in the object's surface. Any light that's visible through the surface of the object is then tinted through both the Diffuse Color and the Transparent Color. The examples below show a range of Refraction values from 0% to 300%.

Refraction values are expressed as 100 x Refraction Index value. The Refraction Index contains refraction values for specific types of surfaces. For example, the Refraction Index of water is 1.3; this value is expressed as 130 in the Materials Lab.

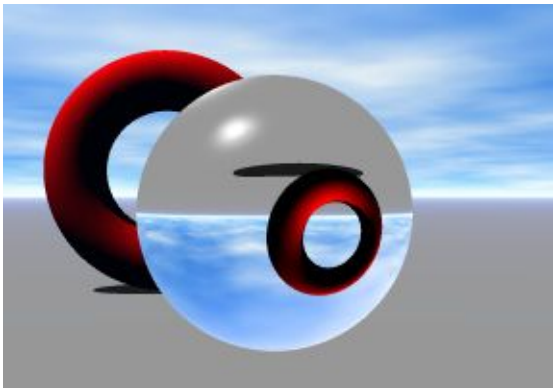
Robin Wood has an excellent tutorial on refraction along with a nice listing of the refraction index of gemstones, metals, liquids, and other transparent objects. Once at her site, click on Tutorials, then select General 3D from the popup listing. Link to her site is located in appendix E.

Refraction is linked to Transparency. If Transparency is set to zero, the Refraction channel has no effect.

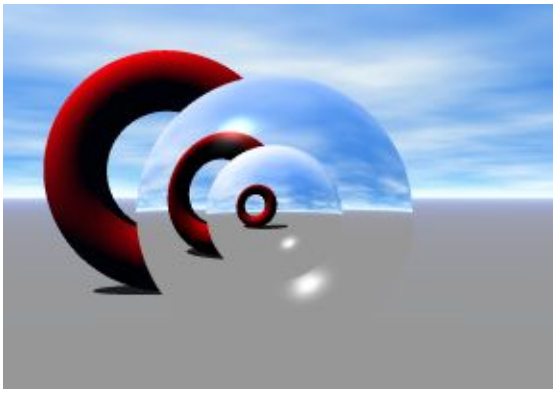
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Examples:

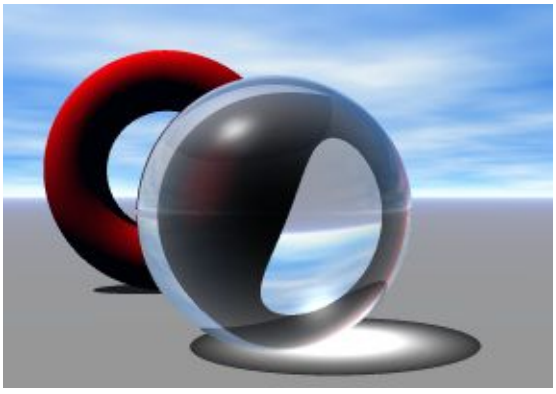
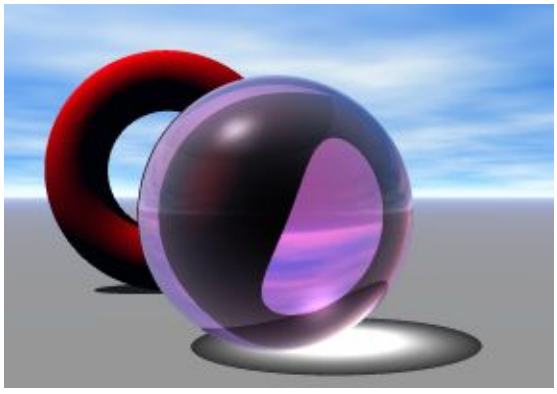
- Refraction = 0



- Refraction = 50

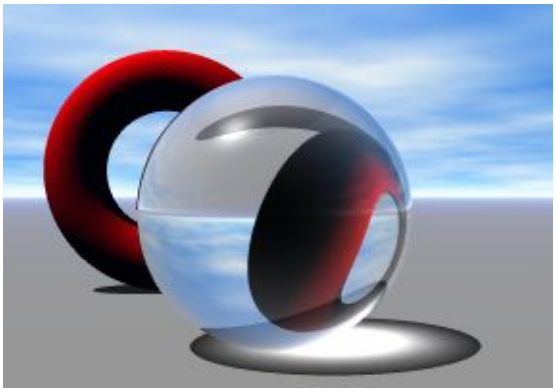
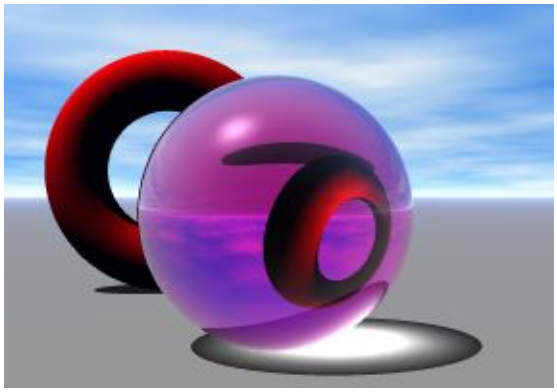


- Refraction = 120 (both); Diffuse Color = Pink (right)

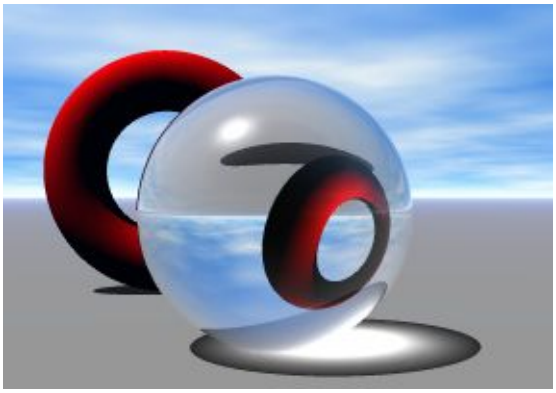



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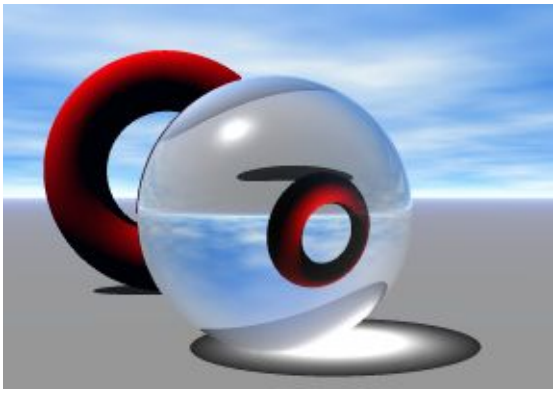
- Refraction = 150 (both); Diffuse Color = Pink (right)

- Refraction = 200



- Refraction = 300



Volume Material Channels

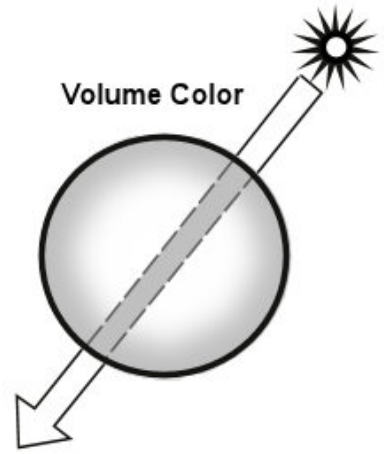
Volume Materials use most of the same channels as surface materials. These channels all work the same as they do for surface materials. The only difference is that the channels control the properties of the object's volume, not its surface.

In addition to the channels already discussed, Volume Materials have several specialized channels.

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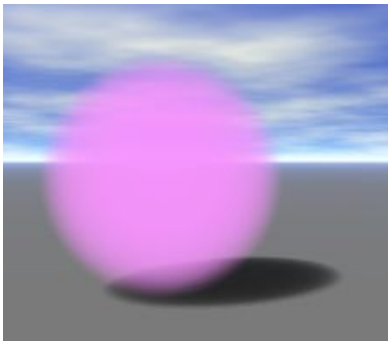
Volume Color

The Volume Color channel controls the color applied to the interior of an object. Everything inside the object will appear tinted with this color as all light is filtered through the Volume Color.



The Volume Color interacts with the Transparent Color. If your surface is transparent, light is tinted by the Transparent Color and the Volume Color.

The Volume Color tints everything inside the object. This is an example of Volume Color applied to the object's interior.



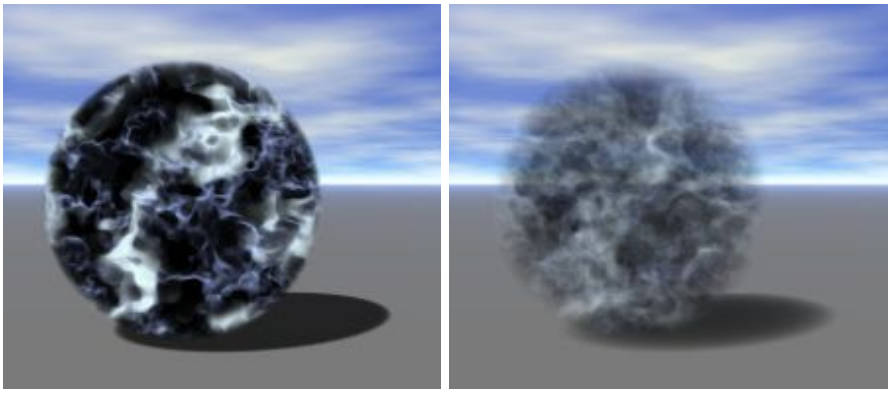
Volume Color is an excellent way of creating underwater light effects.

Base Density

Base Density controls how dense the object is. In areas where the object is very dense, no light passes through the object. Where the object is less dense, more light passes through its volume. Base Density works like Transparency in 3D space. Areas that are less dense appear to be more transparent.

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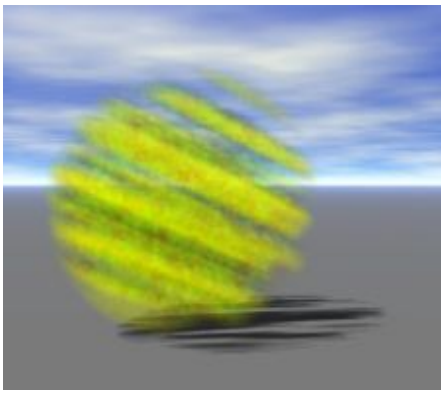
This example shows Base Density set to 100% (left) and 10% (right).



High values create very solid objects like rocks, while lower settings create less dense objects like clouds. You should use this channel cautiously. The more transparent objects are, the more time they take to render.

Setting Base Density Using a Texture

When you use a texture to set the Base Density channel, the Alpha channel is used to determine which areas of the object are solid and which are empty.

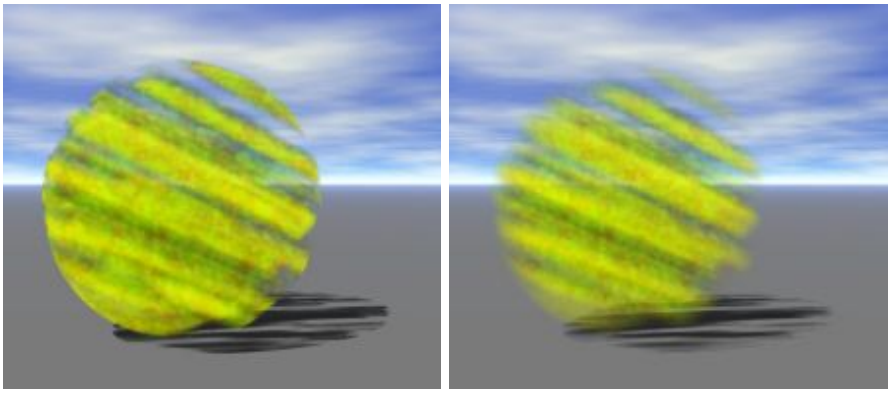


Edge Softness

Edge Softness controls the softness of the edges of the silhouettes of objects with a volume material. For example, a sphere with a low Edge Softness value will have a "hard" silhouette, meaning that you'll be able to clearly see the edges of the sphere. A high Edge Softness value will almost totally obscure the edges of the sphere.

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This example shows an object with an Edge Softness of 0% (left) and 100% (right).



This channel is useful for obscuring the general shape of an object.

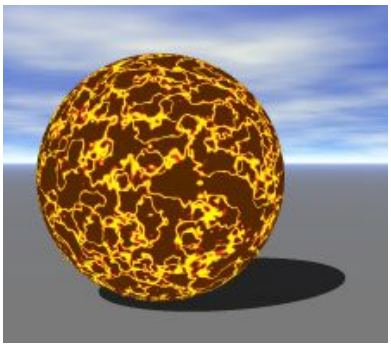
Fuzzy Factor

Fuzzy Factor controls the dullness or sharpness of a material. Values greater than 100 adjust the dullness of the material and values less than 100 adjust the sharpness of a material. At 100 there is no dullness or sharpness applied.

As you increase the dullness of your object, it becomes less dense, so you may have to increase the Base Density to compensate. Likewise, as you increase the sharpness of the object it becomes more dense. You can use this channel to smooth sharp-looking clouds or sharpen dull stone textures.

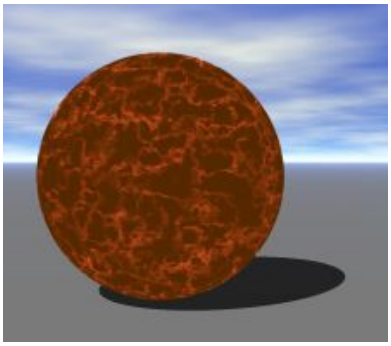
Examples:

- Fuzzy Factor = 0

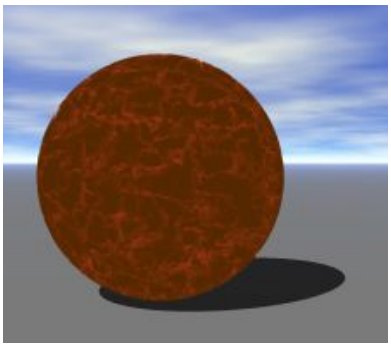


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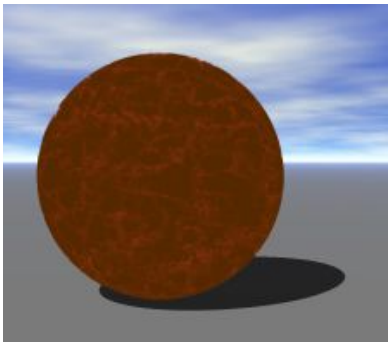
- Fuzzy Factor = 100



- Fuzzy Factor = 200



- Fuzzy Factor = 300



Quality/Speed

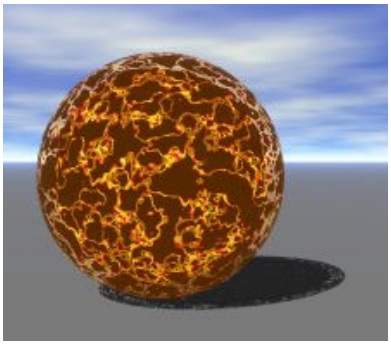
Quality/Speed controls the render quality of the texture. This channel represents the inverse relationship between render quality and rendering speed. As you increase the render quality of the material, you decrease the speed at which it's rendered. As you increase the speed at which a material is rendered, you decrease its quality.

The material loses detail as the quality decreases. Detail is introduced as quality increases. For still images you probably want to increase the quality of the material and sacrifice speed, since the scene only has to be rendered once. For animations, you probably want to sacrifice quality since the scene will have to be rendered once for each frame in the movie.

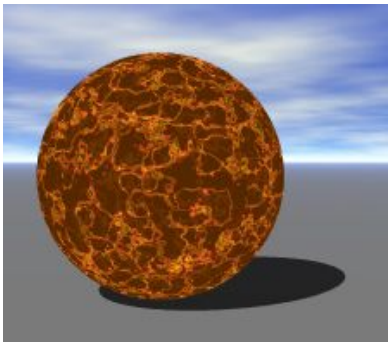
©2007 DAZ 3D, Inc.

Examples:

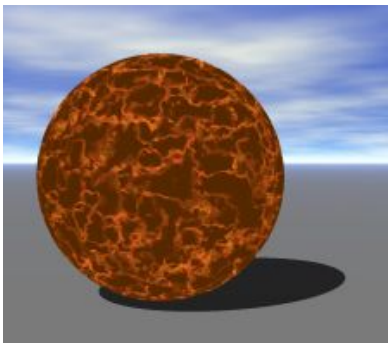
- Quality/Speed = 0



- Quality/Speed = 50



- Quality/Speed = 100



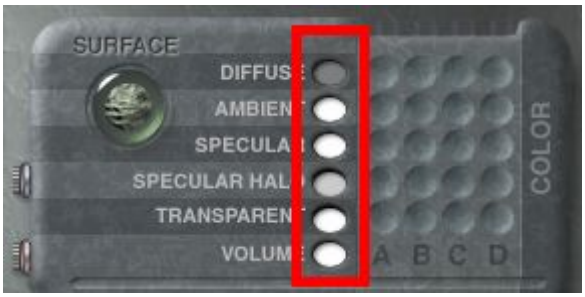
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Material Components

This section describes the various components you can use to set a Material Channel Value. It also describes how to set the parameters for each component.

Color Components

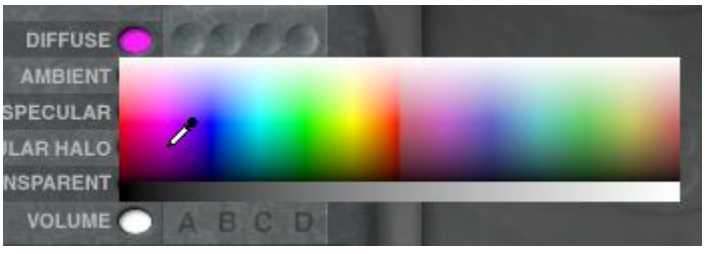
A Color Component is an RGB color that is directly applied to a channel. Colors can only be used in the Color channels: Diffuse, Ambient, Specular, Specular Halo, and Volume.



When you're using a color in these channels you cannot combine it with a texture. If you choose a texture component for any of the Color channels, the color oval appears blank. The Volume channel can only be set with a color.



To use a color as a component, in the Materials Lab, click the color oval in one of the channel rows on the Material Grid and choose a color from the palette.



The selected color appears in the color oval.

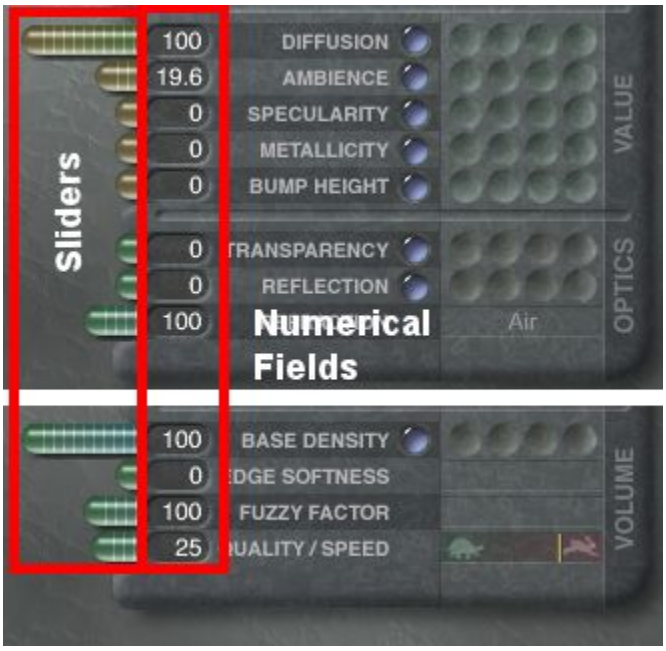


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Value Components

Value components are numerical values you use to set the intensity of a channel. Values can only be used in the Value, Optics, or Volume channels.

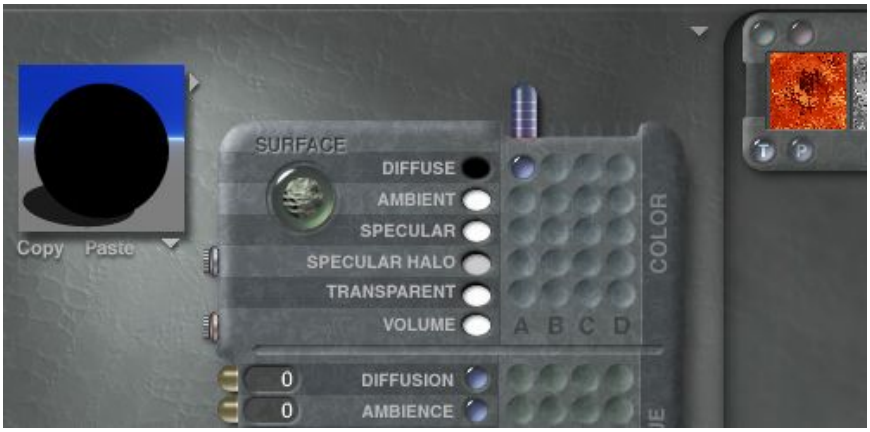
A value is indicated by either the numerical field in the left side of the channel in the Material Grid, or the slider that extends out from the channel. The sliders let you quickly set the value of a channel, and the numeric field shows the current setting.



Values can be used with textures. In this case the value sets how much of the texture is applied to the channel. For example, if you use an orange-colored texture to set the Diffuse Color channel, the value would indicate how much of the texture color is used as the Diffuse Color.

A value of 100 means that all the texture information is used in the channel; a value of 0 means that none of the texture is used.





Not all channels use values. The Color channels only use colors or textures. The Refraction channel can only be set with a value.



To use a value as a component, in the Materials Lab, drag the slider next to the channel whose value you want to set. As you drag, the numerical value appears in the number field. The Bump Height channel let you set negative values.



You can also click in the numeric field and manually enter a value.



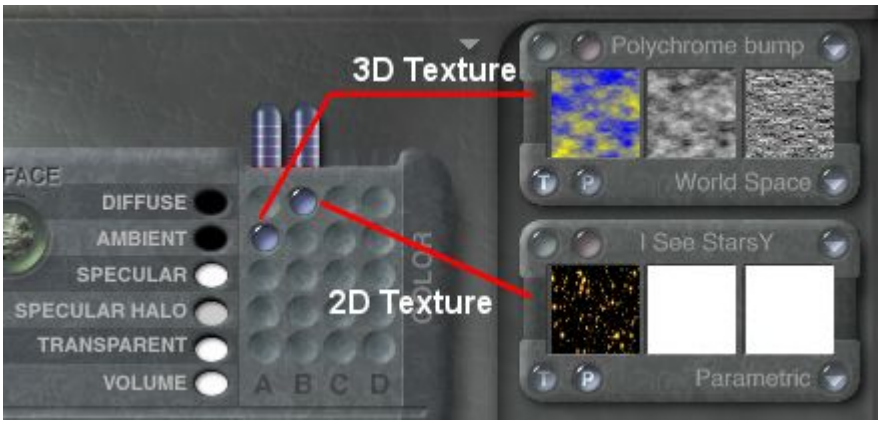
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Texture Components

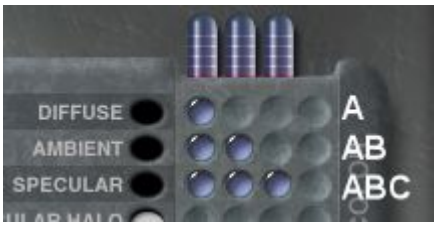
When you use a texture as a component, Bryce extracts values from the texture to use as a value for the material channel. There are two types of texture components you can use: pictures and 3D textures.

Pictures are images you import from either the Pictures Editor or from another application. 3D textures are procedural textures generated by Bryce and stored in the Texture Library.

You can assign up to four textures as components for a material. These textures can be any combination of pictures and 3D textures. Each texture component is assigned a letter: A, B, C, or D. The texture you assign to a component is used throughout the material, so the texture you assign as component A in the Diffusion channel is the same component A used in the Ambience channel and so on.



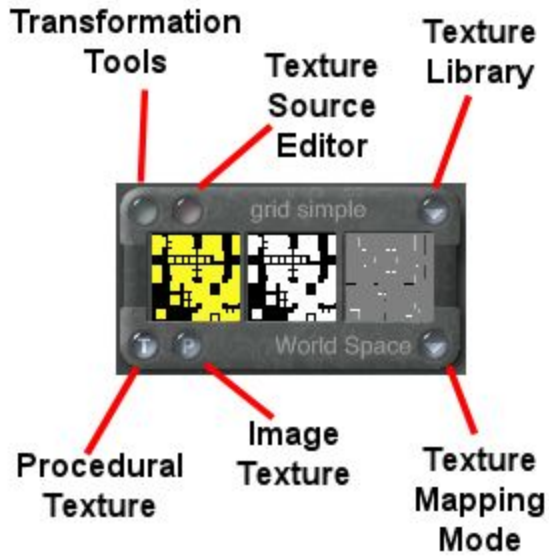
When you're setting channel values, you can mix and match components. For example, you can assign component A to Diffusion and component D to Ambience. You can also combine textures within the same channel using the blend modes AB and ABC. In this case the texture you assigned to A is blended with the textures assigned to B and C to set a material channel value.



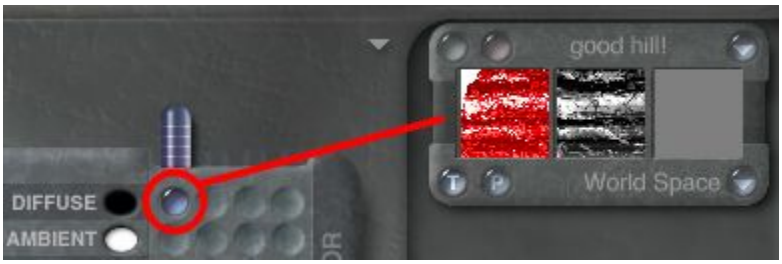
The Texture Component Window

The Texture Component Window displays the attributes of a selected texture component. You can have up to four windows visible in the Materials Lab. The six buttons on the Texture Component Window let you set the type of component, the texture mapping mode, and access the texture transformation controls and the Deep Texture Editor.

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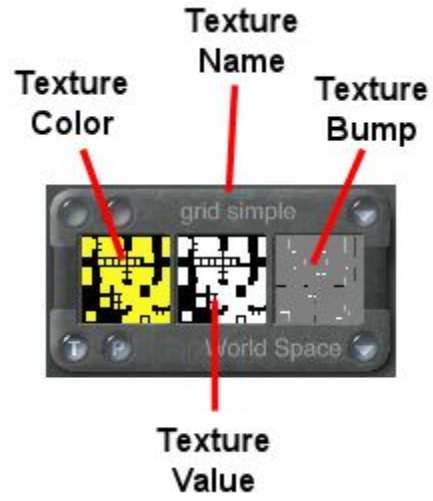
To use a Texture as a component, click a column in the material grid. A Texture Component Window appears. The component window corresponds to the columns in the grid, so if you click in column A in the grid, texture component A becomes active.



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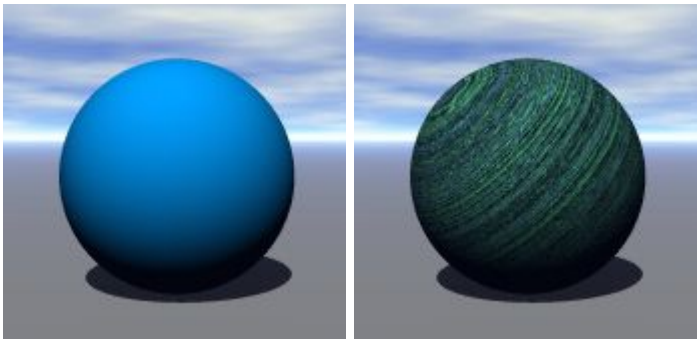
3D Textures

3D Textures have three different types of outputs: Color, Alpha channel (value), and Bump. These outputs are used differently by the material channels.



Color channels use the texture's color to set the value of the channel. For example, if you use a texture in the Diffuse channel, the colors in the texture appear wherever the object reflects light diffusely.

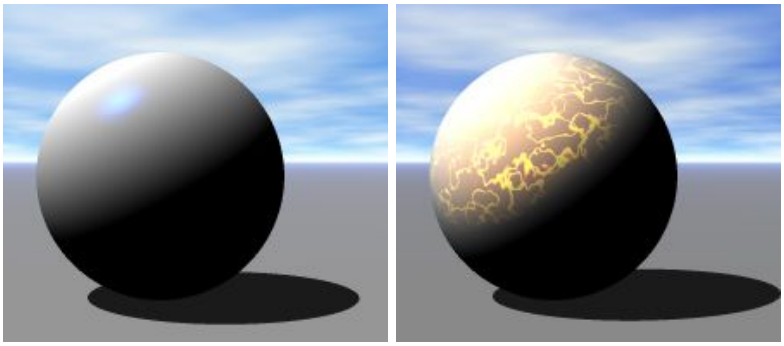
When you use a texture to set the value of a Color channel, the color information is used to set the material channel value. The example below shows Diffuse Color set using a color (left) and using a texture (right).



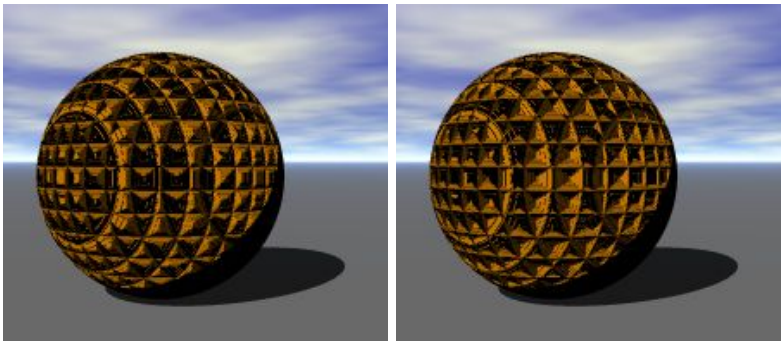
Value, Optics, and Volume channels use the Alpha channel information from a texture to set the value of the material channel. For example, when you use a texture to set Specularity, the texture's Alpha channel information determines which areas of the object are shiny. As a result, you'll see the pattern of the texture on the object.

When you use a texture to set the value of an Intensity channel, the Alpha channel information is used to set the material channel value. In the example below, Specularity was set using a color (left) and a texture (right).

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The Bump information in a 3D texture is used only by the Bump Height channel. The Bump channel in the texture determines the pattern of bumps or dents in the object. In fact, you won't be able to see the effects of the Bump Height value unless you assign a texture to the channel. Bump channel information from a texture is used to determine the pattern of bumps or dents in an object. You must assign a texture to the Bump Height channel to see the bumps or dents.



Using a 3D Texture as a Component

To use a 3D Texture as a component:

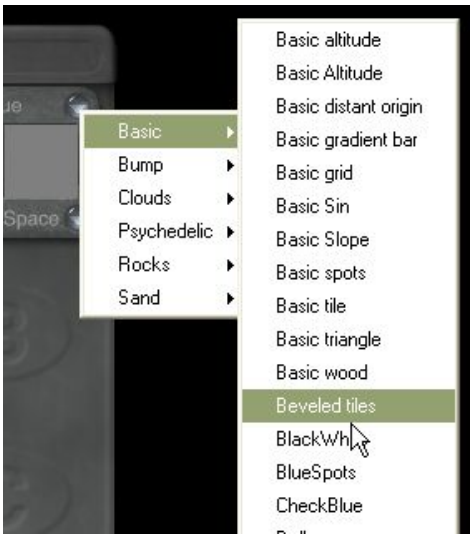
1. Load an object and click on the M button to enter the Materials Lab.
2. In the Materials Lab, click in a channel column. A randomly selected texture appears in the Texture Component Window.



3. If you want to change this texture, click the triangle button next to the texture name at the top of the window



and choose a preset texture from the menu. You can also press Shift+click on the triangle to access the Texture Library directly instead of a listing of the textures.

4. 

Note: To access a different main category from the Texture Library via the menu, you will need to enter the Texture Library, select a category, then exit the library. The new category will then be available from the menu.

The texture you selected appears in the Component window.



OR

5. Click on the pink Texture Source Editor button on the left-hand side of the window to enter the Deep Texture Editor.

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2D Textures

2D Textures are pictures you've created in another application or ones you select from the Pictures Editor. The data in the channels of these pictures are used as values in the material channels.

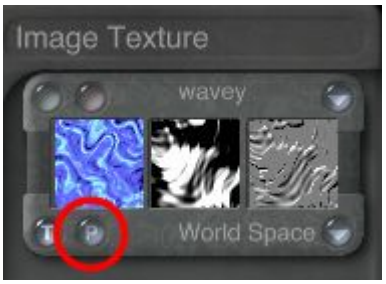
Loading a New 2D Texture

To load a new 2D texture as a component, without overwriting one already in the editor:

1. Load an object and click on the M button to enter the Materials Lab.
2. In the Materials Lab, click in a channel column. A texture appears in the texture component window.



3. In the Component window, click the P button at the bottom of the Component window. The button changes the component to a 2D picture.



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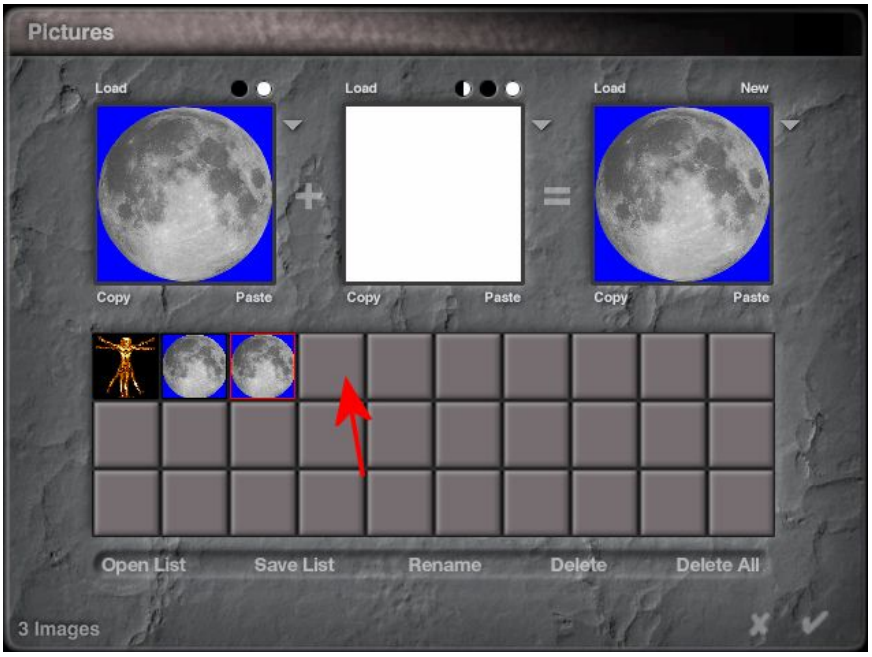
4. A default picture appears in the Component window.



To change the picture, click the pink button at the top of the Component window. The pink button displays the Pictures Editor.

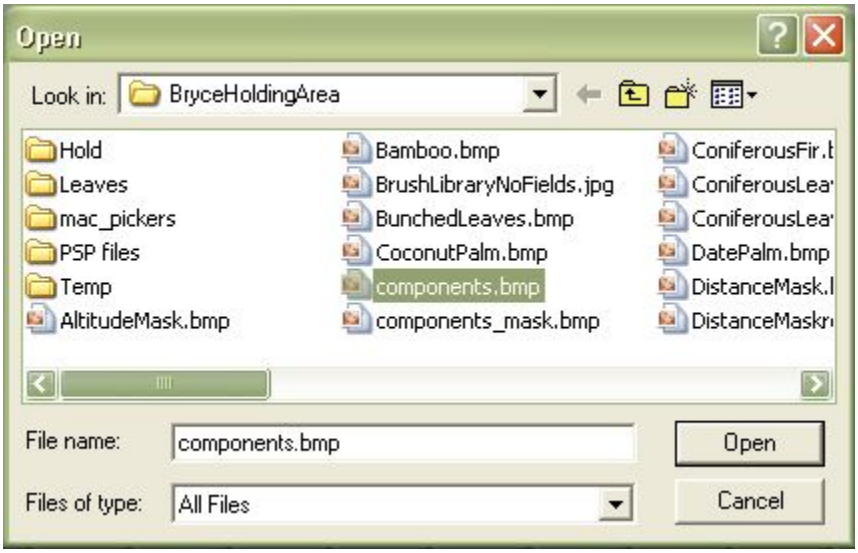


5. Click an image square to load an image or if the image you want is not in the library: Click in an empty square.

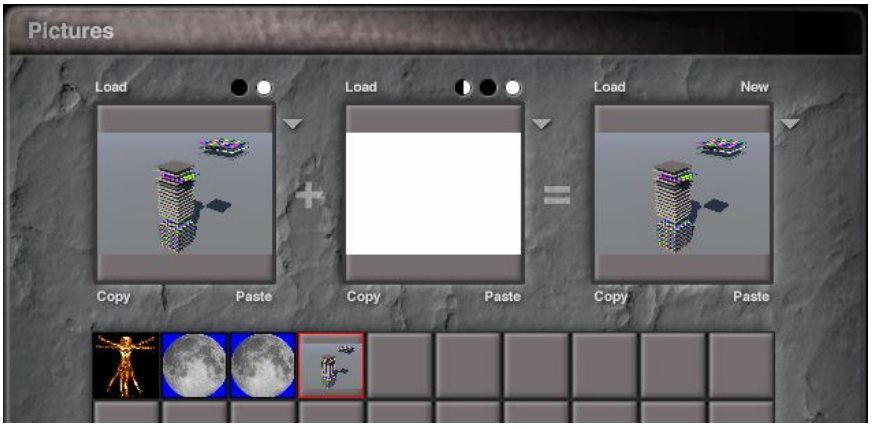


The Load Image dialog appears.

6. Navigate to the folder where the image is located, select it, and click on Open.



The image will be loaded in the into the first image box. If an alpha channel is saved with the image, it will be loaded into the second image box.

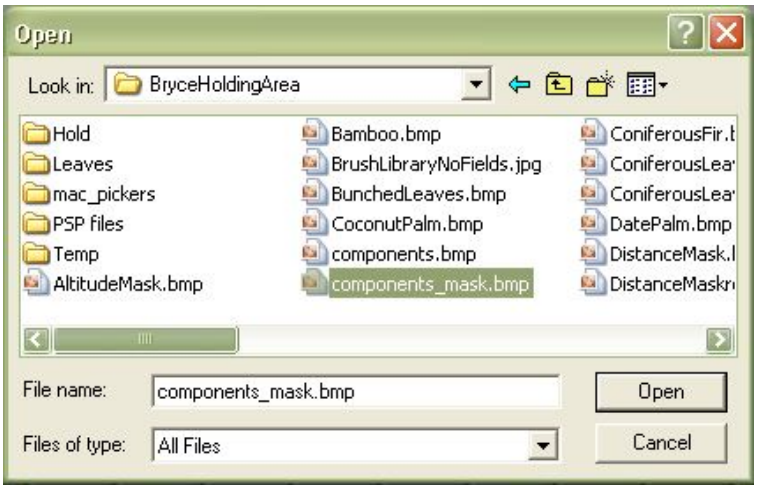


7. To load an alpha channel separately, click on the Load button above the middle box.

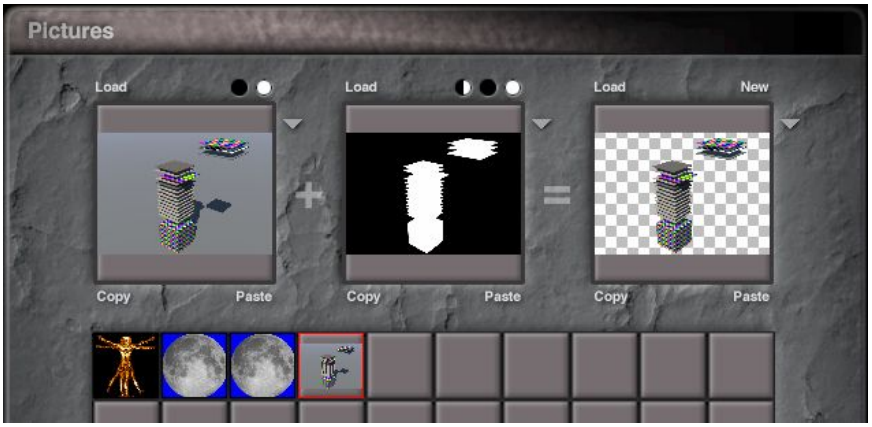


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8. The Load Image dialog appears. Find the alpha channel image, select it, and click on Open.



The alpha channel/mask will be loaded into the second image box.

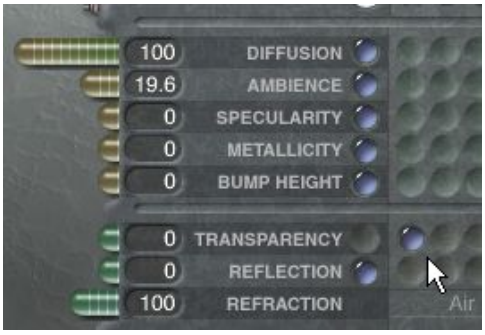


9. Click on the OK icon to exit the Pictures Editor. You'll be returned to the Materials Lab where you'll see the image in the component window. Notice that the alpha channel/mask is not "working" but that is easy to fix.
10. If you loaded an image in the alpha channel, click in the column next to Transparency.

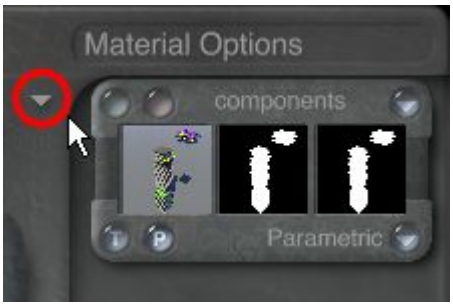


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Make sure the amount is at zero (0).



11. Click on the Material Options triangle to access the menu.



12. Select Blend Transparency from the menu.

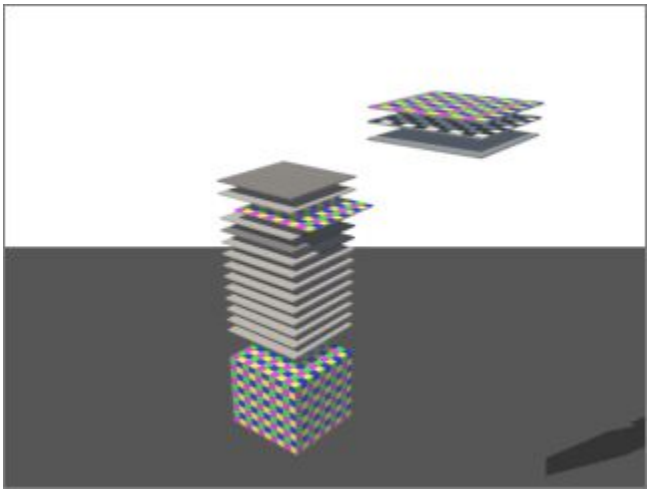


13. The Material Preview should now show the texture with the alpha channel applied. Click on the OK icon to exit the Materials Lab.



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14. Render the scene to see the result.

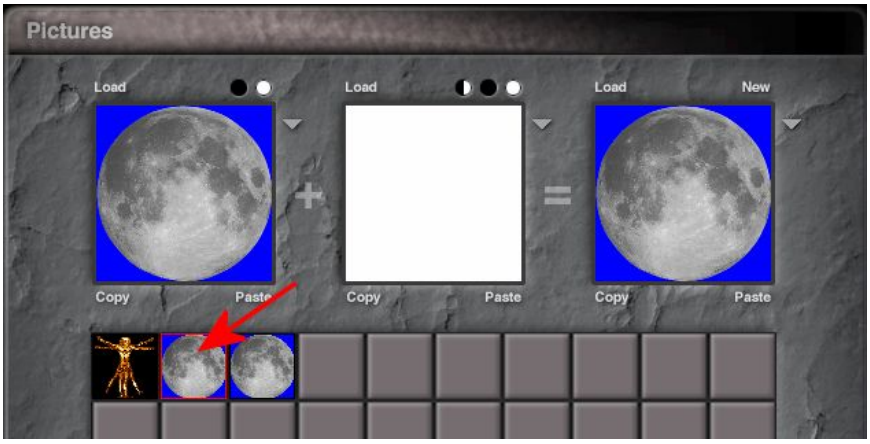


Replace Current 2D Texture Using Load Button

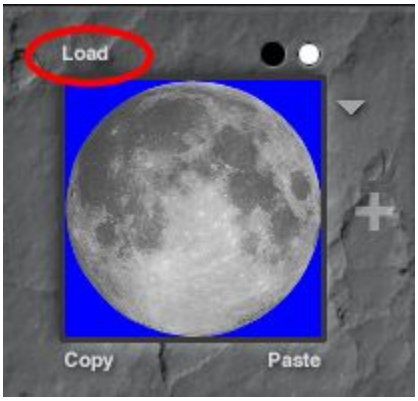
While clicking on a blank square adds a new Pictures Editor texture, a texture already in the editor can also be replaced by either loading a new texture or by copying an image from a paint program and pasting into the editor.

To replace a 2D texture using the Load button:

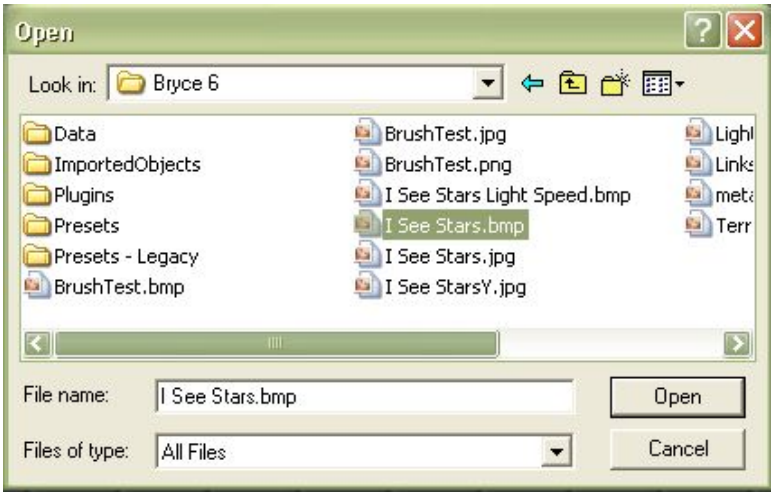
1. In Bryce, open the Pictures Editor, click on the square containing the image you want to replace.



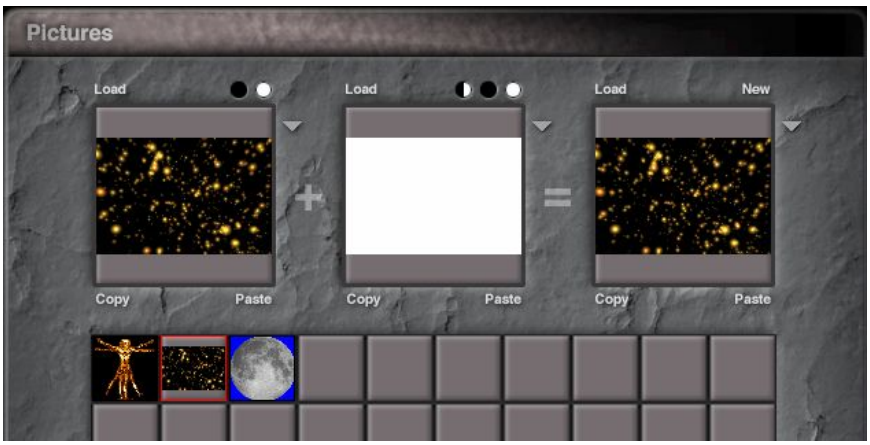
2. Click on Load above the image window. The Open dialog will come up.



3. Locate and select the image you want to load. Click on Open.



4. The image will be loaded into the window you selected. Notice that the image was replaced in the square below.



5. Click on the OK icon to exit the editor or load an image in the alpha channel if needed.

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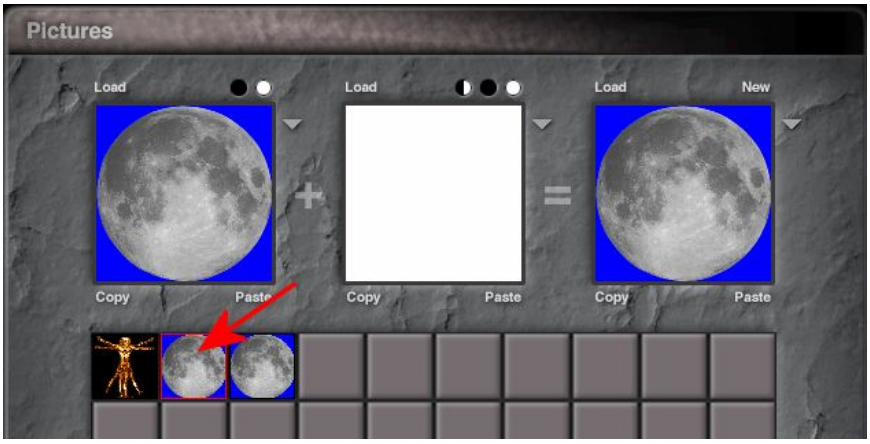
Caution: Once you load the image, you cannot get the original image back by clicking on the Close icon and canceling the operation. So be sure this is what you intend to do before you do this.

Replace Current 2D Texture Using Copy/Paste

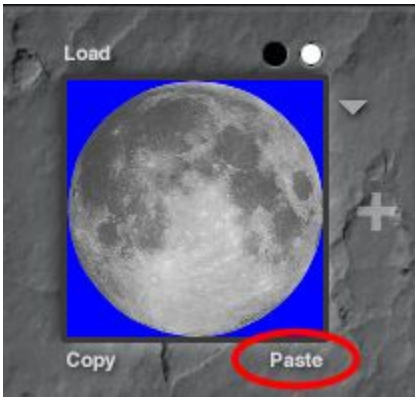
While clicking on a blank square in the Pictures Editor adds a new texture, a texture already in the editor can also be replaced by either loading a new texture or by copying an image from a paint editor and pasting into the editor.

To load a new 2D texture as a component, by copying from a paint program and pasting into the editor:

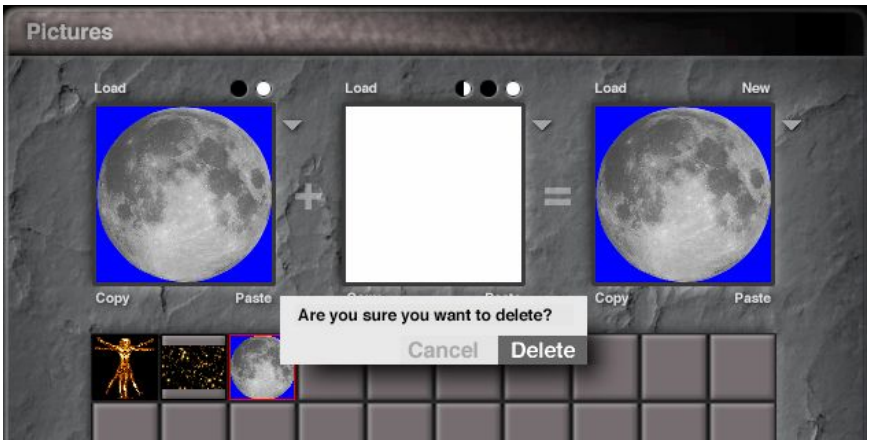
1. Load or make an image in your favorite paint program (i.e., Paint Shop Pro, Photoshop, Painter, Dogwaffle, etc.).
2. Copy the image to place it in the clipboard.
3. In Bryce, open the Pictures Editor, click on the square containing the image you want to replace.



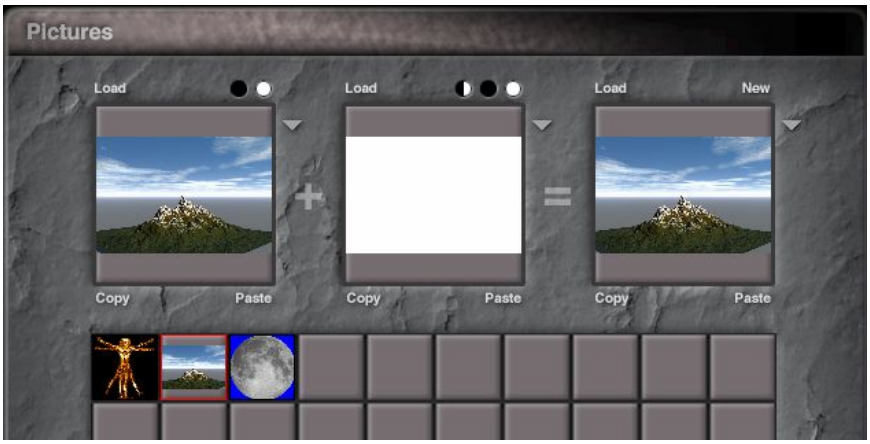
4. Click on Paste below the image window.



5. A popup will come up asking if you are sure you want to delete the image. Click on Delete.



The image will be loaded into the window you selected. Notice that the image was replaced in the square below.



6. Click on the OK icon to exit the editor or load an image in the alpha channel if needed.

Caution: Once you click on Delete and load the image, you cannot get the original image back by clicking on the Close icon and canceling the operation. So be sure this is what you intend to do before you confirm the deletion.

Combining Components

Combining Components

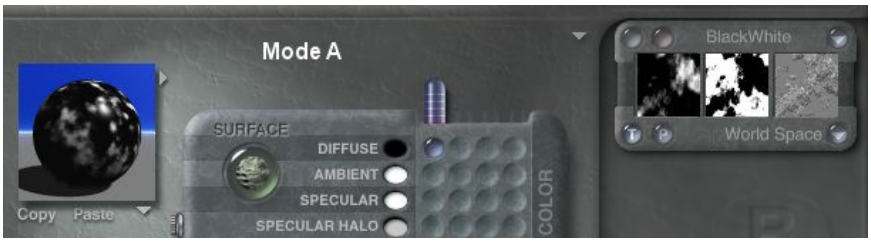
You can combine material components using one of three blending modes:

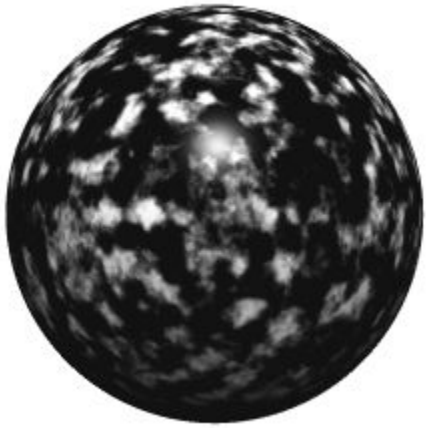
- Mode A
- Mode AB
- Mode ABC
- What About D?

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Mode A

In Mode A, only one component is used to set the value of a channel. The component can be a value, a picture, or a 3D texture.





Mode AB

In Mode AB, two textures are blended together based on altitudes. At the lowest altitudes, the values from texture A are used; at higher altitudes, texture B is used to set the value of the channel.

Altitude is based on the distance between the ground level and the highest object in your scene.

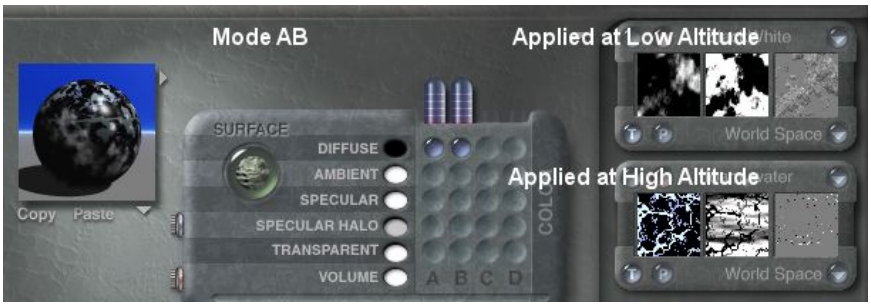
When you use this mode, an object's surface material is a blend between two texture components. Texture B appears at the bottom of the object and Texture A appears at the top. In between is a blend between texture B and texture A. Bryce creates the blend by interpolating between the two textures.

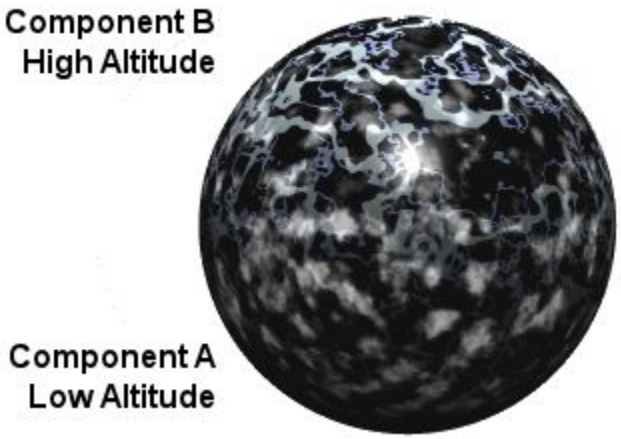
For example, if you use Mode AB in the Diffuse Color channel, the color in texture A appears at the bottom of an object's surface, and the color from texture B appears at the top. A color gradient between color A and color B appears in the middle of the object

Mode AB can be used to create snow covered peaks on terrains or murky depths in infinite water slabs.

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To use Mode AB to blend textures, in the Materials Lab, Ctrl+click the B column of a channel. Component indicators appear in both the A and B columns of the channel.





Mode ABC

In Mode ABC, two textures, texture A and texture B, are blended based on the alpha channel of texture C.

In this mode, the alpha channel from texture C acts like a map that tells Bryce where to apply the values from texture A and texture

B. The white areas of the alpha channel use values from texture A. Black areas in the alpha channel use values from texture B. Gray areas in the alpha channel use a combination of both textures.

To use Mode ABC to blend textures, in the Materials Lab, Ctrl+click the C column of a channel. Component indicators appear in the A, B, and C columns of the channel.

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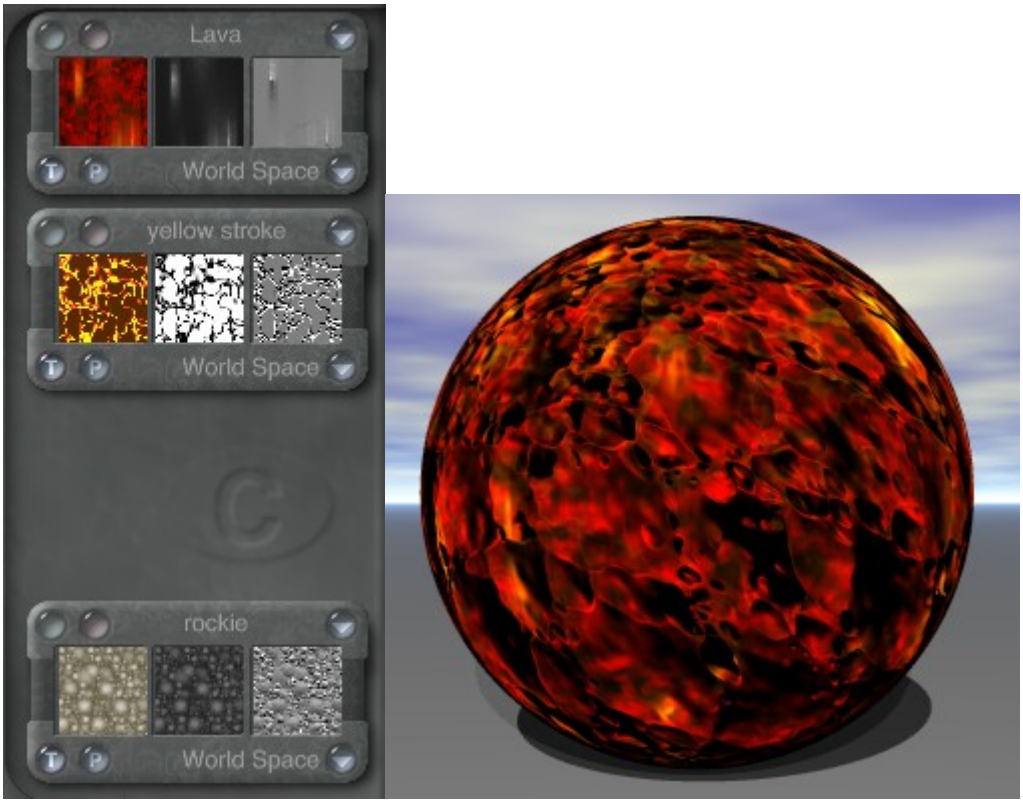
What About D?

When Component D is used along with any other combination of textures, it is used to add a new element to the material. It is not combined with the other components.

This allows you to use Components A, B, and C to drive the color of the material and use Component D to drive a different value, such as bump or transparency.

The example below shows a material with the Diffuse color driven by A and B, and an entirely different texture in D driving the bump.

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Texture Mapping Modes

Once you've decided on a texture to use as a component, you need to decide how the texture is mapped onto your object. The appearance of the texture can change dramatically depending on how it's applied to the object.

Each texture you apply can have a different mapping mode. When you're mixing textures (Mode AB or Mode ABC), you can choose which portions of your textures you want to combine.

To select a mapping mode for a texture:

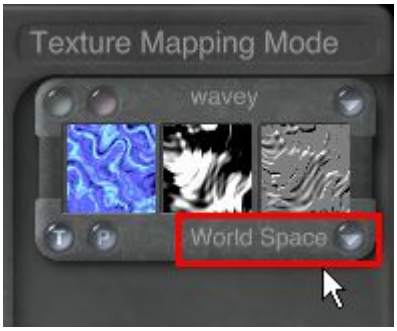
1. In the Materials Lab, click a channel. A random material will be applied.



2. If you'll be using a 2D image, load a 2D Texture to replace the 3D one.

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3. Click the current Mapping Mode title to access the Mapping Mode Options.



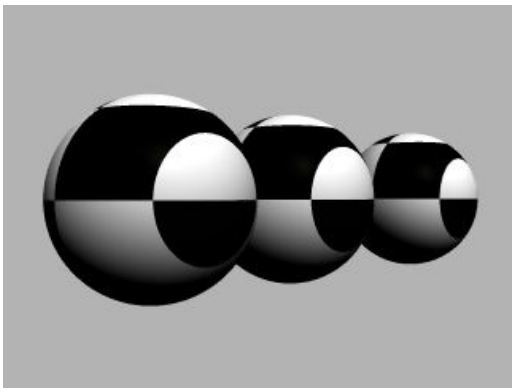
4. Choose a mapping mode from the menu.



Object Space

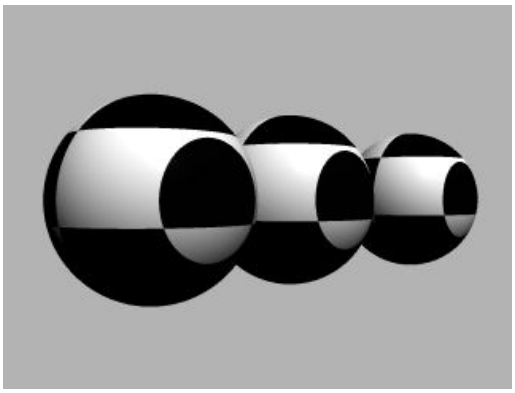
In this mapping mode, textures are scaled proportionally to the size of your object. If you change the size of your object, the texture scale changes with it. The texture also rotates along with the object. This means that the texture does not appear to move as you reposition or rotate the object.

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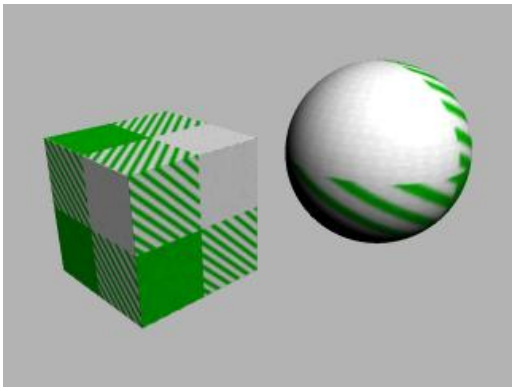
World Space

In this mode, the texture is applied throughout infinitely large 3D space, and only a small portion is applied to your object. This means that the texture appears to change as you move your object, since the object is moving through the texture in 3D space.



Parametric

In this mode, the texture is applied onto the object as if it were a decal. For example, if you use this mapping mode on a cube, one iteration of the texture is placed on each face.

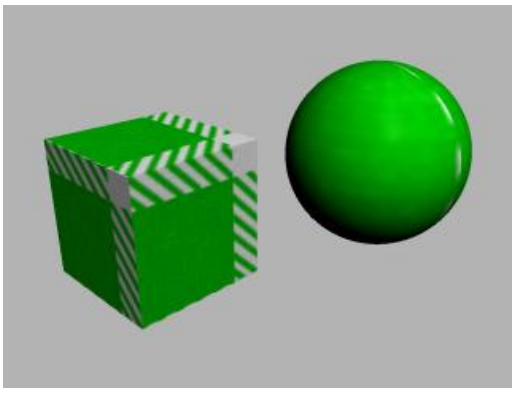


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Parametric mode applies the texture as a 2D decal. The texture is mapped onto the object so it rotates and scales as the object is scaled or rotated. This mode works best with 2D Pict textures.

Parametric Scaled

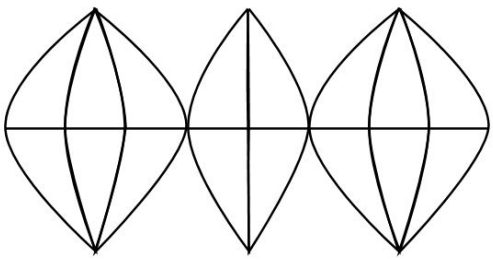
This mode works like the World Space mode, only in 2D. Textures mapped using this mode are not scaled with the object.

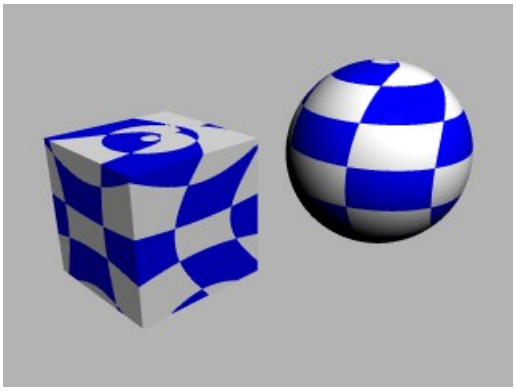


Use this mode when you want to map a 2D picture onto constructed objects like buildings.

Sinusoidal

In this mode, the texture is applied as in a map projection usually used to show the entire surface of a spherical object, such as the earth, moon, or celestial map.

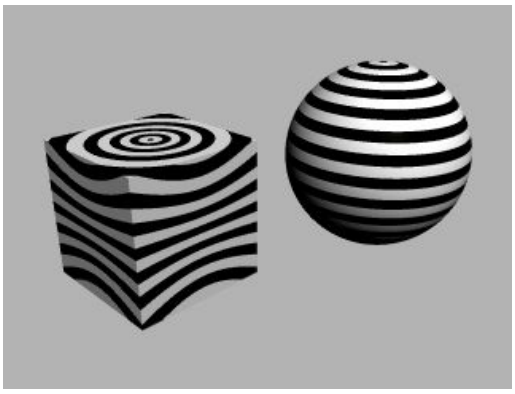


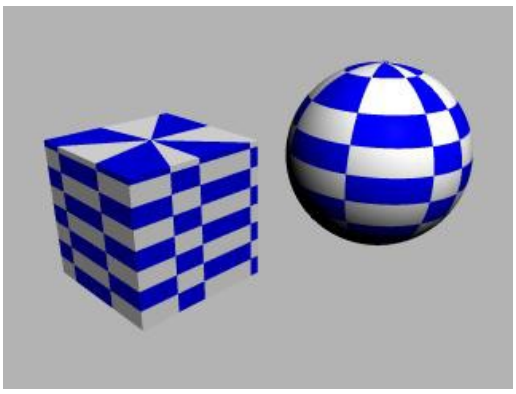


Spherical

In this mode, a 2D projection of your texture is mapped onto a virtual sphere that surrounds your object. It is then projected from the sphere onto your object.

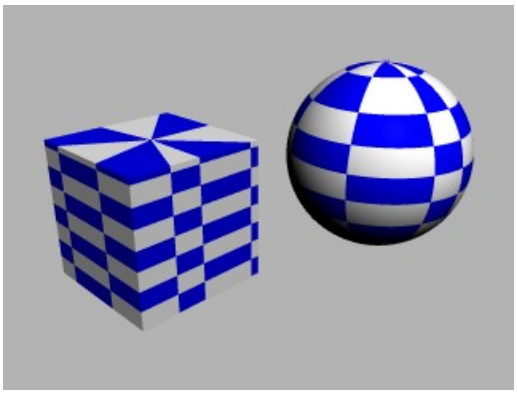
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Cylindrical

In this mode, your texture is mapped onto the front of your object, wrapping around the right and left sides all the way to the back. Edge pixels going to the center appear on the top and bottom of your object.



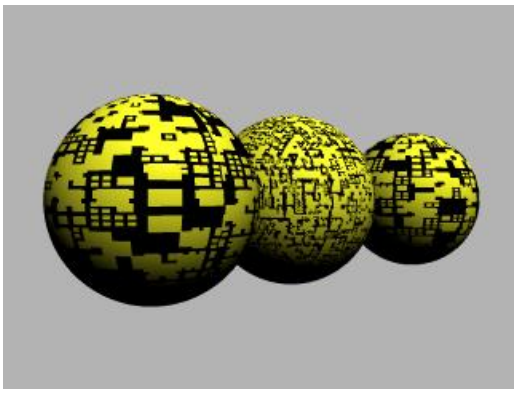
Reflection Map

In this mode, a 2D projection of your texture is applied to a virtual sphere that surrounds your scene. The texture is then reflected off of the sphere and onto your object.

This mode works best on objects with irregular surfaces. It also works well with terrains.

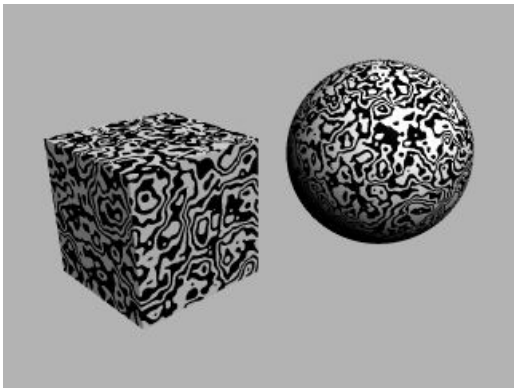
The image below shows a sphere with reflection mapping (left), world space (middle), and parametric (right) mapping applied

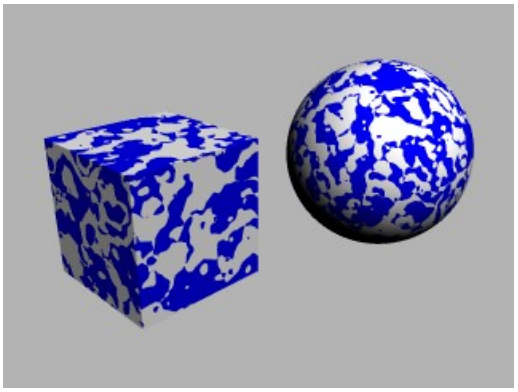
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Random

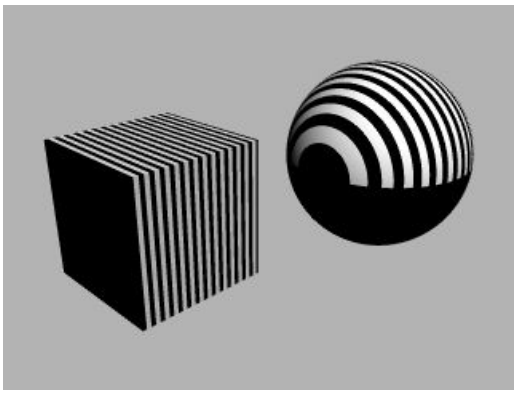
This mode randomly applies a 2D projection of the texture all over the surface of your object.





Object Top

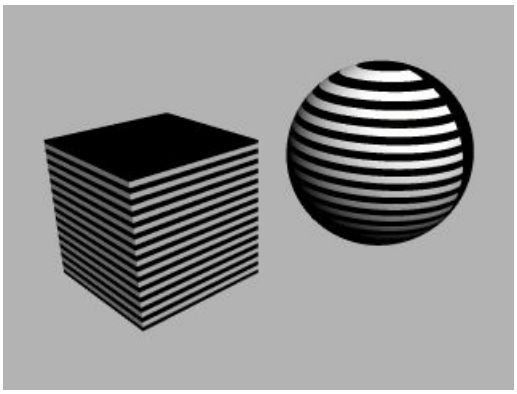
This mode applies a 2D projection of the texture to the top of your object. The texture rotates and scales along with the object.



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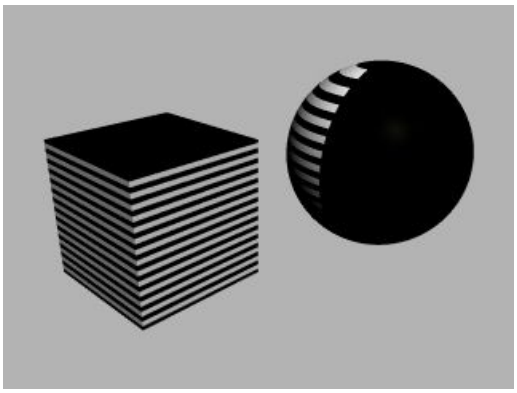
Object Front

This mode applies a 2D projection of the texture to the front of your object. The texture rotates and scales along with the object.



Object Side

This mode applies a 2D projection of the texture to the side of your object. The texture rotates and scales along with the object.

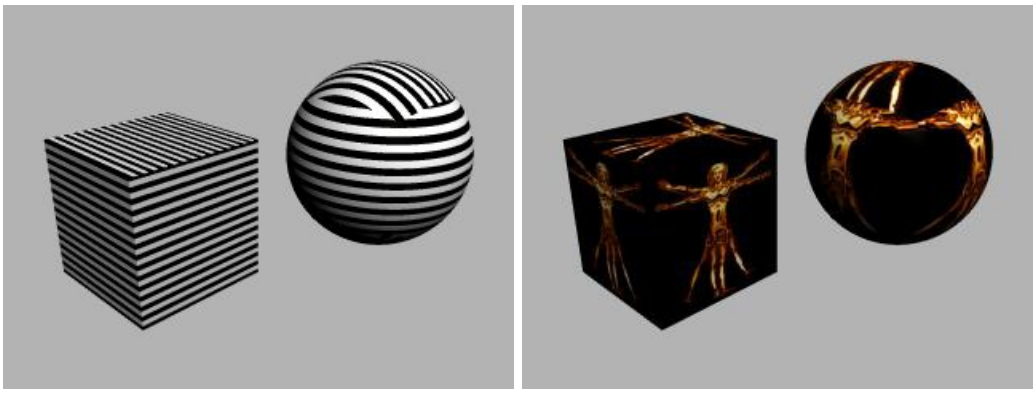


Object Cubic

This mode applies a 2D projection of the texture to all sides of your object. The texture rotates and scales along with the object.

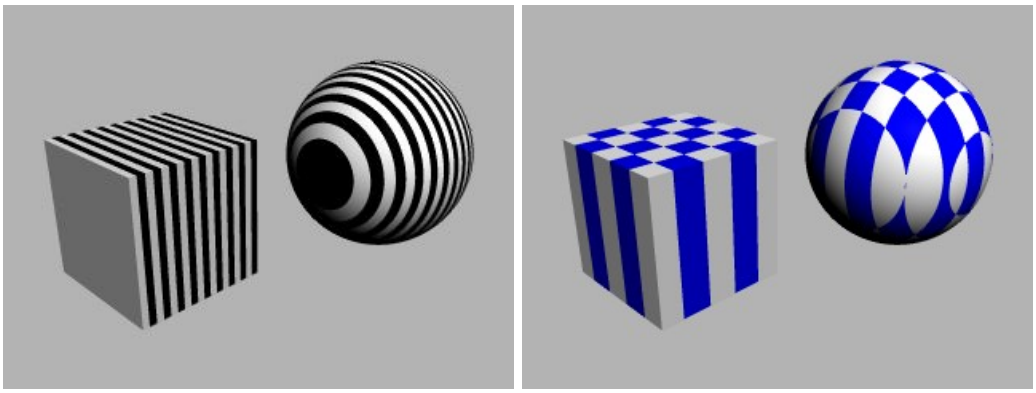
This is most clearly seen in the second image below where the Leo image is applied using Object Cubic mode. The image is seen in its entirety on all sides of the objects.

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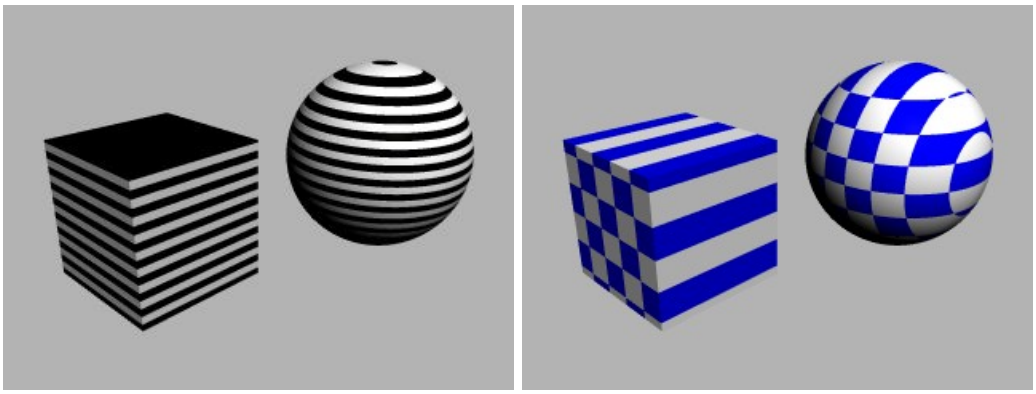
World Top

In this mode a 2D projection of the texture is applied to the object from directly above it. If you move your object or rotate it, the texture does not move with the object; it remains constant while the object moves through it.



World Front

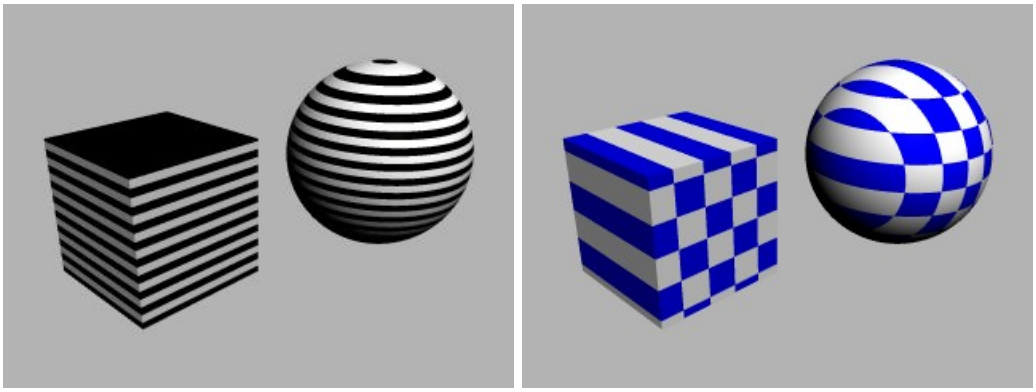
In this mode a 2D projection of the texture is applied to the object from the world front. If you move your object or rotate it, the texture does not move with the object; it remains constant while the object moves through it.



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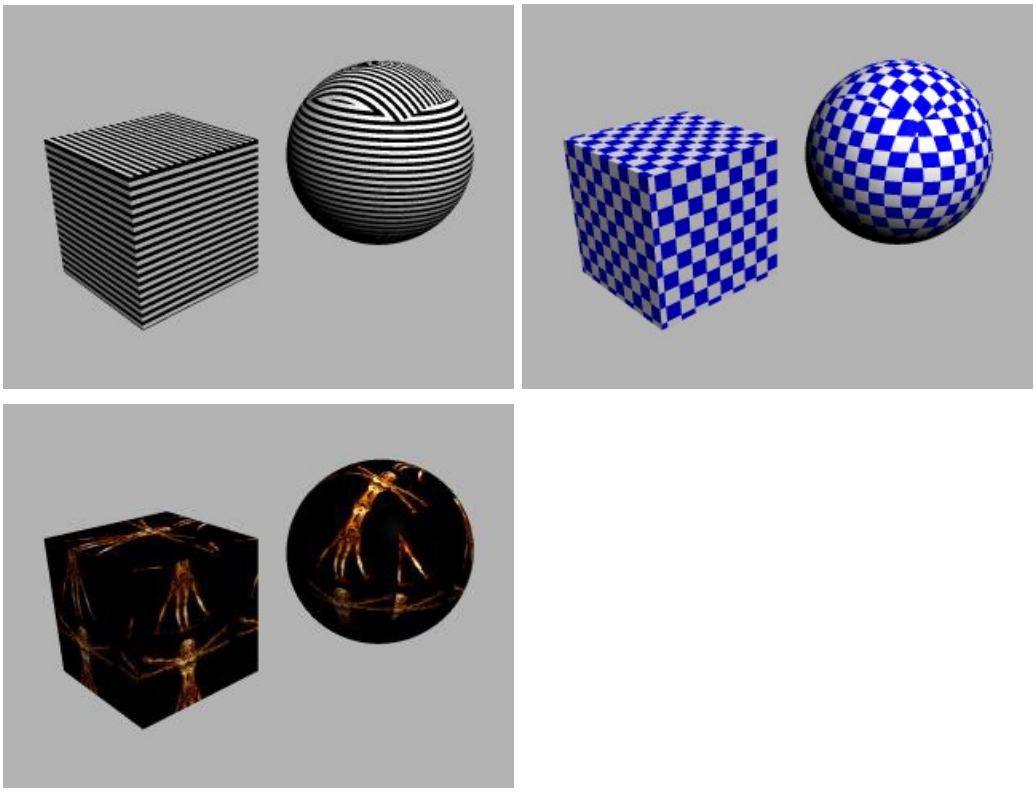
World Side

In this mode a 2D projection of the texture is applied to the object from the world side. If you move your object or rotate it, the texture does not move with the object; it remains constant while the object moves through it.



World Cubic

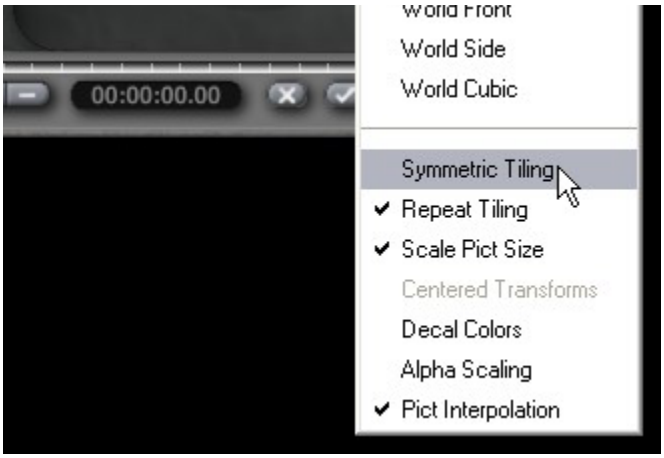
In this mode a 2D projection of the texture is applied to the object from all world sides. If you move your object or rotate it, the texture does not move with the object; it remains constant while the object moves through it.



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Mapping Mode Modifiers

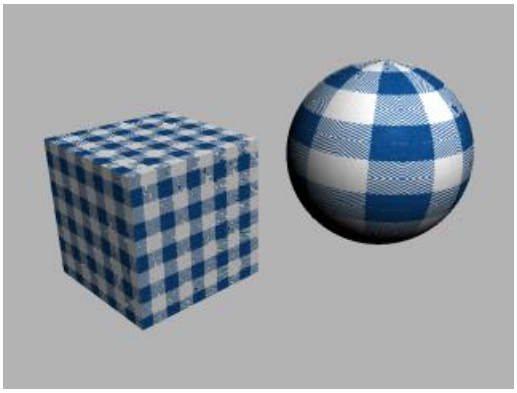
You can modify the mapping modes in the following ways:



Symmetric Tiling

When you tile a texture onto an object in symmetrical tiling mode, each repeated instance of your texture is tiled horizontally and vertically. as needed to seamlessly produce a symmetrical pattern over the surface of the object.

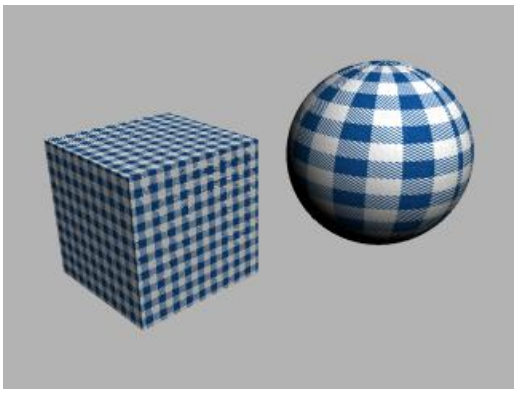
In Symmetrical Tiling mode, textures are seamlessly tiled across the object.



Repeat Tiling

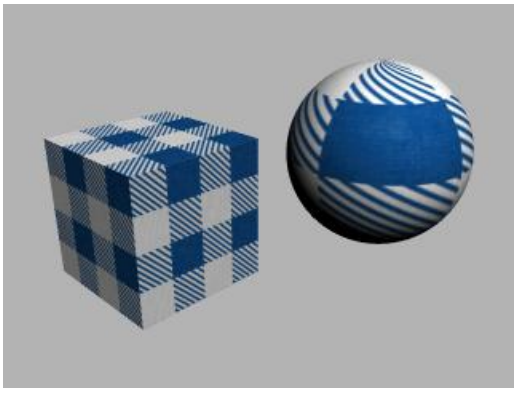
Unlike symmetrical tiling, in which a seamless tiled pattern is achieved by flipping the texture horizontally and vertically, Repeat Tiling repeats your texture across the surface of your object without any alteration in orientation. The number of instances of the texture depends on the scale applied to the texture.

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Scale Pict Size

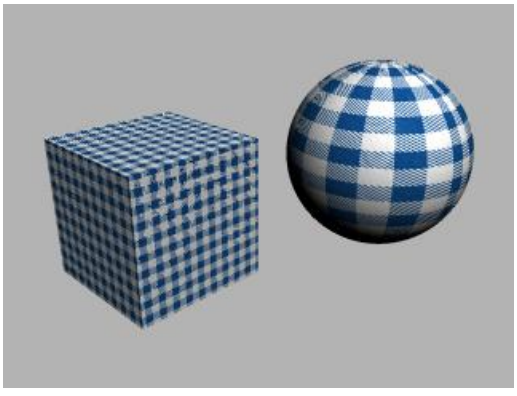
This mode modifier only affects picture textures. When selected, the image behaves like a sticker placed on the surface of the textured object. Unless Scale Pict Size is selected, the picture will repeat itself across the surface in a similar way to Repeat Tiling.



Centered Transforms

Centered Transforms works with parametric mapping modes to force the transformation of the textures to be applied around the center of the object surface.

This option is not available ("greyed out") unless a parametric mapping mode is selected.

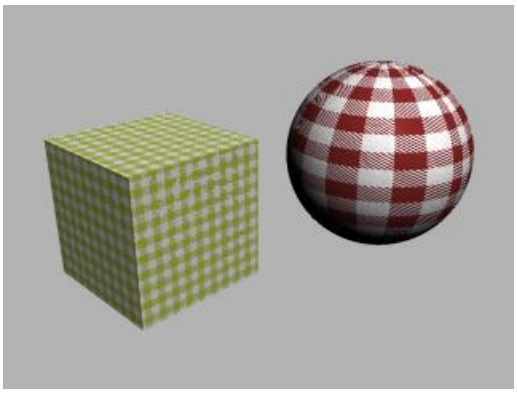


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Decal Colors

Decal Colors blends the color of a texture with the affected component's base color. It uses the texture's alpha channel to control the amount of blending. This can make decalcomania effects easier to achieve.

The image below shows the same checked pattern used on previous pages, but with Decal Colors selected.

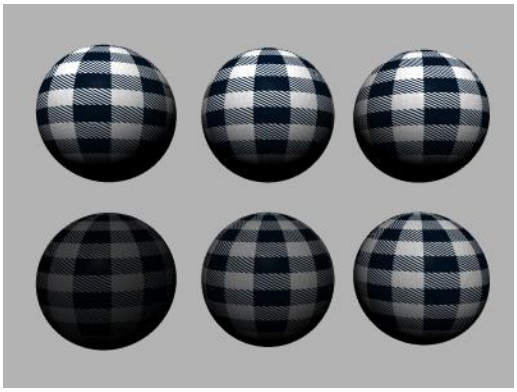


Alpha Scaling

Normally, if you drive a component's value with a texture, the texture's alpha channel will set the value without regard to the amount that was set using the component's slider. With Alpha Scaling turned on, the amount set with the slider will "scale" the amount provided by the texture's alpha channel. This gives you more subtle control over the influence of the texture on the material component's value.

Alpha Scaling works with Diffusion, Ambience, Specularity, Metallicity, Transparency, and Reflection. It has no effect on Bump Height since bump is not driven by alpha channels.

The image below shows Diffusion set at 25, 50, and 75, with the second row using Alpha Scaling. Notice how the top row doesn't show any difference in diffusion without Alpha Scaling selected.



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Pict Interpolation

This mode modifier is enabled by default. It interpolates the pict file you are using, allowing the pict file to be applied smoothly to an object. With Pict Interpolation disabled, the image may appear to be pixelated or jagged.

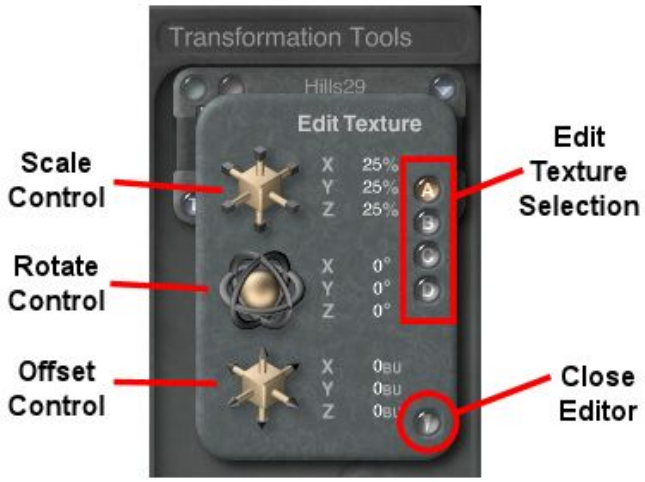
The image below shows two cubes with the same texture applied. The cube on the right has Pict Interpolation deselected.



Transforming Textures

Since a 3D texture exists in three-dimensional space, it can be transformed along the X, Y, or Z axis - just like a 3D object. Using the texture Transformation Tools, you can scale, position, or rotate your texture.





The final look of the transformation depends on the mapping mode you use to apply the texture to the object. In some modes, texture transformations may not be very noticeable, while in others, like Parametric, transformations can have a large impact on the look of the material.

You may find it necessary to experiment with different settings to get the results you want. If you find that the texture isn't reacting the way you want it to, try changing the mapping mode.

The transformation tools give you very fine control over the final appearance of the texture.

Texture Scale

Using the Scale Control, you can control the frequency of the texture. Increasing the scale of a texture decreases the frequency of the pattern, since it doesn't have to be repeated as many times to cover the surface of the object.



Since a 3D texture exists in 3D space, you can change its size in all three axes.

- Adjusting the scale in X changes the size of the texture along the X axis.
- Adjusting the scale in Y changes the size of the texture along the Y axis.
- Adjusting the scale in Z changes the size of the texture along the Z axis.

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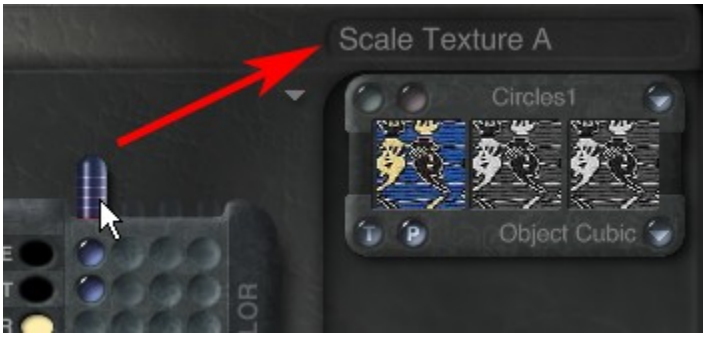
This example shows the X axis (top row), Y axis (middle row), and Z axis (bottom row). From left to right on each row, the scale values are 0%, 45%, and 90%.







The texture can also be scaled by dragging the channel slider up or down. Dragging the slider up increases the texture size while dragging it down decreases the texture size.



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Texture Rotation

Using the Rotation Control, you can control the angle of the texture on the object's surface. You can create very different texture effects depending on the texture's orientation.



Since a 3D texture exists in 3D space you can change its orientation in all three axes.

- Adjusting the rotation in X changes the angle of the texture along the X axis.
- Adjusting the orientation in Y changes the angle of the texture along the Y axis.
- Adjusting the orientation in Z changes the angle of the texture along the Z axis.

This example shows the X axis (top row), Y axis (middle row), and Z axis (bottom row). From left to right on each row, the rotation values are 0°, 45°, and 90°.



Texture Position

Using the Rotation Control, you can control the angle of the texture on the object's surface. You can create very different texture effects depending on the texture's orientation.

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Since a 3D texture exists in 3D space you can change its orientation in all three axes.

- Adjusting the rotation in X changes the angle of the texture along the X axis.
- Adjusting the orientation in Y changes the angle of the texture along the Y axis.
- Adjusting the orientation in Z changes the angle of the texture along the Z axis.

This example shows the X axis (top row), Y axis (middle row), and Z axis (bottom row). From left to right on each row, the rotation values are 0°, 45°, and 90°.



Shading Modes

Shading refers to the process of applying material channel values to an object. When an object is shaded, the different values in the material are applied to the object. The shading modes available in Bryce determine how material channels are applied to create different effects.

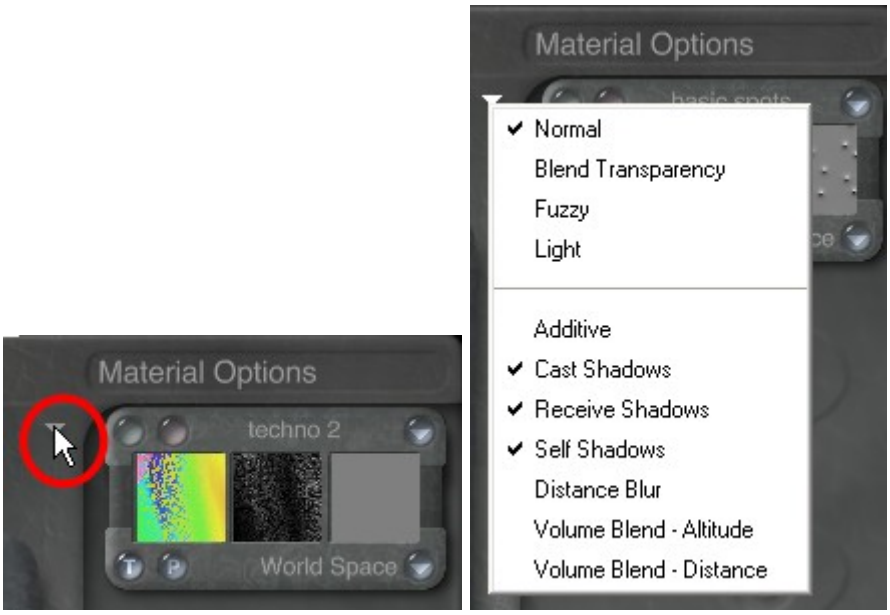
Using a material, you can define whether a surface is shiny, smooth, or opaque.

Using a shading mode, you determine how those properties are applied to the object.

The shading mode can not only determine how the material is applied to the surface of the object, but how it's applied to the object's volume as well.

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To choose a shading mode, click the triangle icon next to the material type buttons at the top of the Materials Lab.



Surface Material Shading Modes

This section explains the Surface Material Shading Modes.

Normal

Normal mode applies the values of the material without modifying them in any way. Objects are shaded according to the values you set in the material channels. This mode has no special effects; it simulates a real-world appearance using the material channel values. This is the default mode and is appropriate for most objects.



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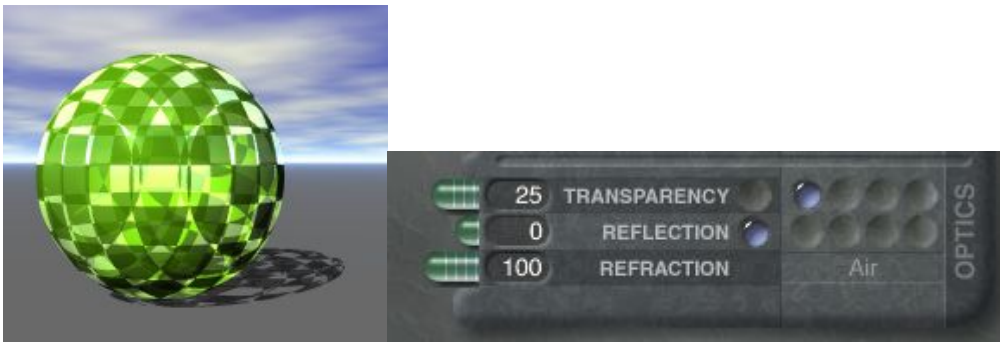
Blend Transparency

In Blend Transparency mode, visibility is controlled by Transparency. When this mode is active, areas of the object that are 100% transparent are ignored. Transparent areas are not shaded and do not cast shadows. These areas appear as gaps or holes in the object's surface.

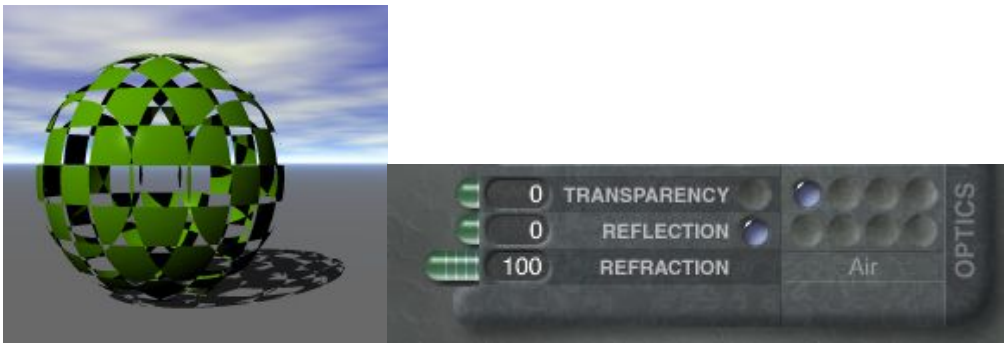


This mode lets you create punch-outs when using a texture. The lower cage in this example was created by using blend transparency to "punch-out" areas of the object's surface (the upper was created using normal shading).

When the material is applied using Normal mode, Transparency creates an optical effect.



When the material is applied using Blend Transparency mode, Transparency creates a punch-out effect, as shown here. The areas of the surface that are 100% transparent are completely ignored during shading so that they appear as gaps or holes it the surface. Any areas that are less than a 100% result in a normal transparency effect.



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Fuzzy

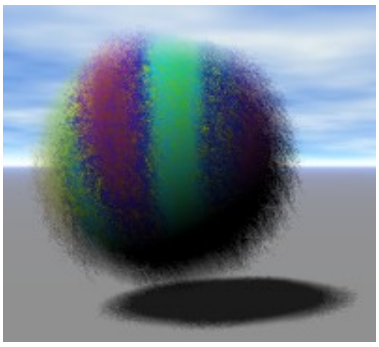
Fuzzy mode changes the effective transparency based on the thickness of the object. As a result, objects appear fuzzy on the edges and solid at the center.

Since Bryce uses depth information to synthesize this blurry effect, it is not available for 2D objects such as Squares or Disks.

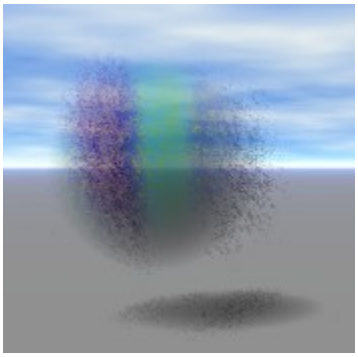
Use the Transparency setting to adjust the degree of fuzziness.



The image below shows the material with Transparency at 0:



And with transparency increased to 15:



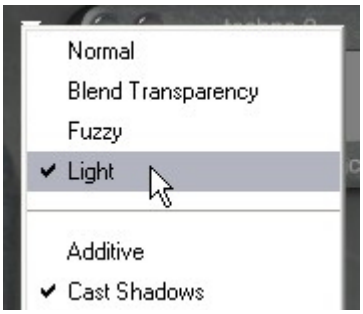
Light

Light is a very specialized shading mode best used to create visible lighting effects. Objects shaded with this mode appear transparent and self-illuminating.

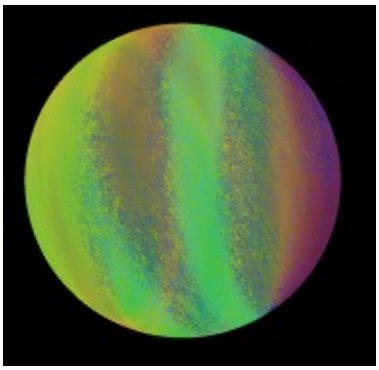
Only the Diffuse, Ambient, and Transparent Color channels are used to determine the color of the light. All other channels are ignored.

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This mode is useful for creating point lights without the rendering overhead that comes with true volume light objects (that is, light-sensitive volume materials).



The image below shows a material applied to the Diffuse Color channel with the Light shading mode selected:



Volume Material Shading Modes

This section explains the Volume Material Shading modes.



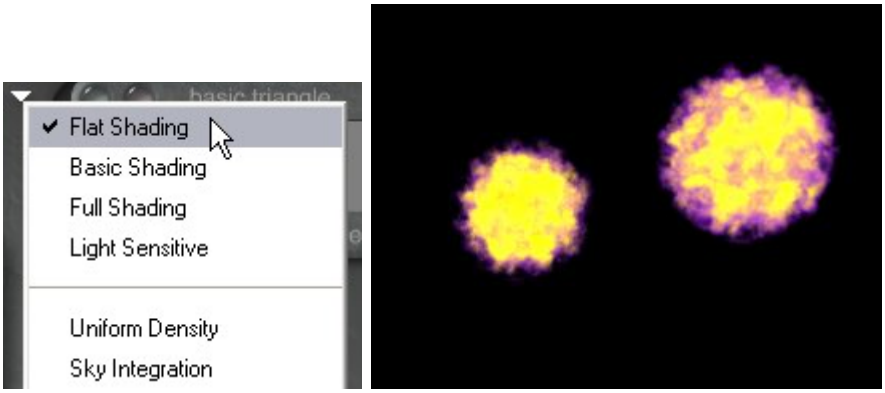
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Flat Shading

Flat Shading mode is designed for clouds, gases, and other self-luminous gaseous materials. Flat Shading mode does not shade an object, meaning that light sources have no effect on the color or brightness of the object.

When this mode is active, Diffusion, Ambience, Specularity, Ambient Color, Specular Color, and Transparency Color have no effect.

The color of the material is determined entirely by the Diffuse Color channel.



Basic Shading

Basic Shading mode is designed to apply shading and light effects to the exterior surface of a volumetric object without affecting the interior. When this mode is active, volumetric objects are shaded as if they have a surface material applied to them rather than the actual volume material.

In this mode, light sources have a limited effect on the color and brightness of an object. Only the exterior surface of the object will be affected by light sources; light and shadows will not be generated within the object.

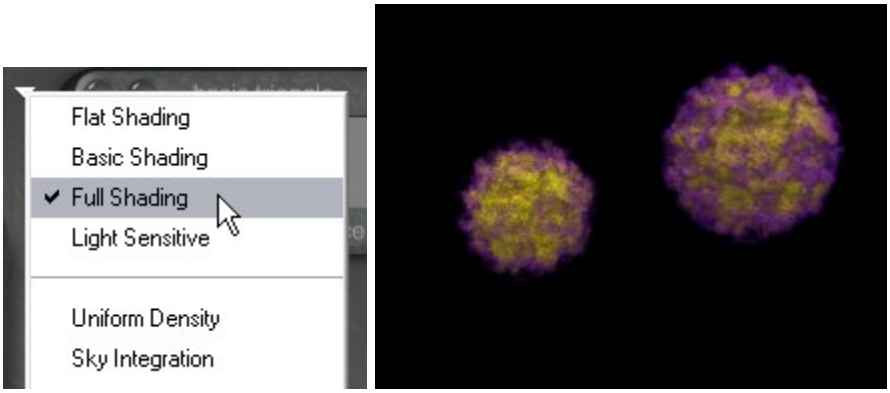


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Full Shading

Full Shading mode is designed for hard edged, sharp objects like rocks. When Full shading mode is active, the visible portions of the material are shaded and can be affected by light sources.

Since light sources can affect portions of your material, shadows will appear within the object. This can greatly increase rendering time. If you don't need to see shadows in the object, make sure the Receive Shadows filter is disabled. Usually you should disable this filter unless you're creating very specialized effects.



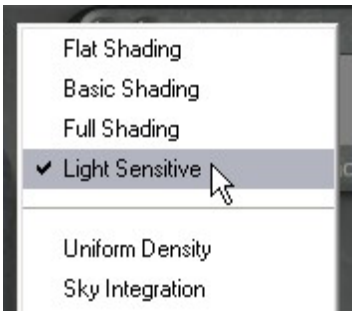
Light Sensitive

Light Sensitive mode is designed for creating visible light effects such as light beams. Light Sensitive mode does not shade objects, but the particles in your material are sensitive to light.

In this mode, Density doesn't control density as much as it sets the light sensitivity of material particles. Higher values create brighter particles and lower values create darker particles. To get the best results for light objects, use the Additive blend mode.

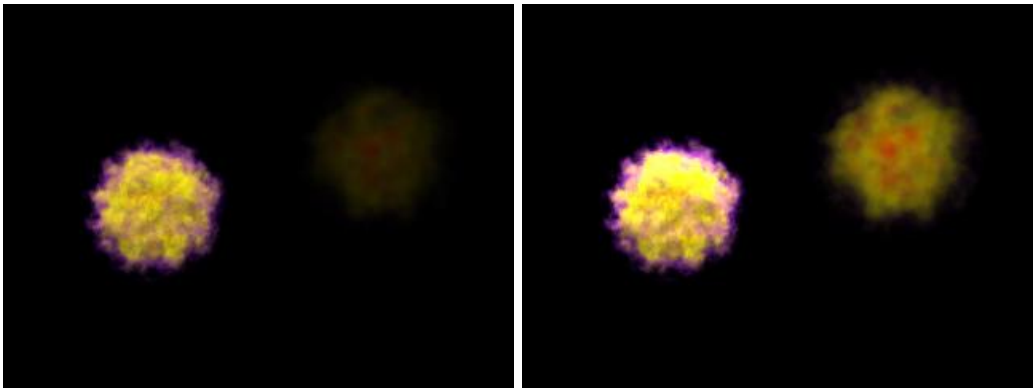
The color of the particles is determined entirely by the Diffuse Color channel. The result is like shining a light through a volume. If you were shining a light through a cloud material, you would be able to see the clouds within the light cone.

When this mode is active, Diffusion, Ambience, Specularity, Ambient Color, Specular Color, and Transparency Color have no effect.



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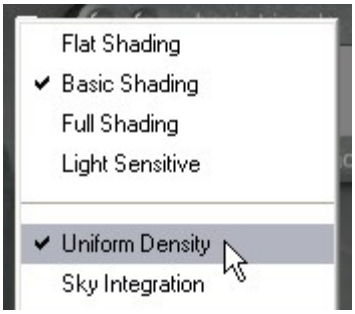
In this example, the Light Sensitive mode was used to apply material inside the sphere on the right (left image). When the sphere is lit by a light source, the particles of the material become visible (right image).



Uniform Density

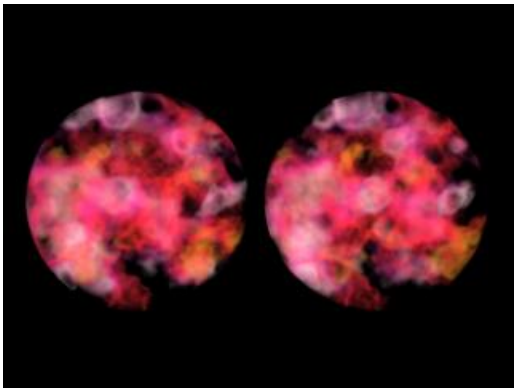
Objects can have varying densities. By default, objects have a density that varies from center to surface. The object is most dense at the center and becomes less dense as you approach the surface. You can control the starting point of this variation in density by using the Edge Softness control.

However, you may want to create objects that do not vary in density. Uniform Density mode sets the object to have a consistent density throughout the object. The density at the starting point is used throughout the object. This results in harder-looking objects and faster rendering times.



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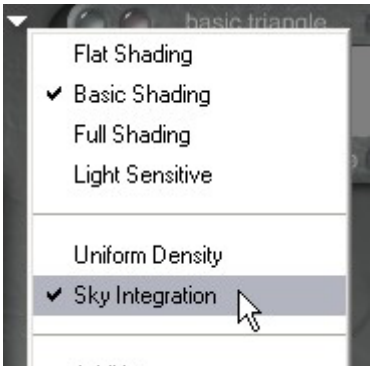
The image below shows two spheres with Uniform Density selected. The sphere on the left has the Edge Softness set to 100, while the sphere on the right has the Edge Softness set to 5.



Sky Integration

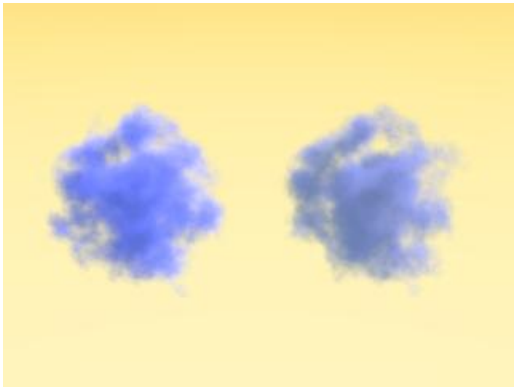
Sky Integration mode is designed to increase the realism of volume objects in scenes that have hazy or foggy atmospheres. When Sky Integration mode is active, the sky effects such as haze and fog are taken into account when the volume object is rendered. This helps blend objects realistically into the atmosphere.

This mode is very useful for creating realistic cloud objects or fog objects.



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The image below shows two spheres with a cloud texture applied. The sphere on the right has Sky Integration enabled. On these small objects, it's not easy to see the difference, but the sphere on the right shows a slight difference in how it is blended into the sky.



Shading Mode Modifiers

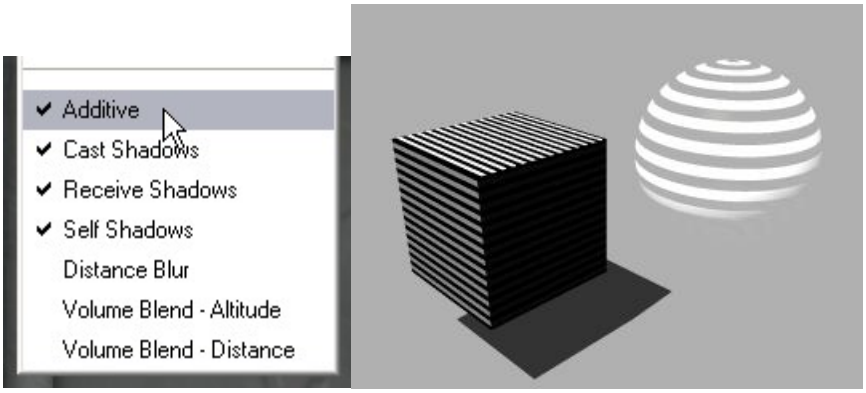
Shading Mode Modifiers are not shading modes, but they modify an existing shading mode. When you select a modifier it remains enabled until you disable it. You can also apply more than one modifier at the same time.

Additive

When the Additive modifier is active, material channels are applied to the environment behind the object instead of to the object's surface.

If you put an object on a bright background, it appears almost white. For best results, set your Ambient Color control to zero and render against a dark, plain background. Objects with this shading mode modifier selected will not cast shadows.

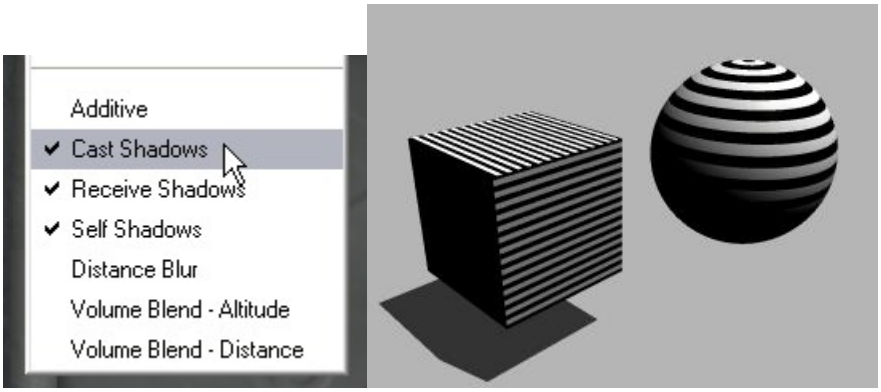
This mode is very useful for creating planets and quarter moons, light beams, and ghost images.



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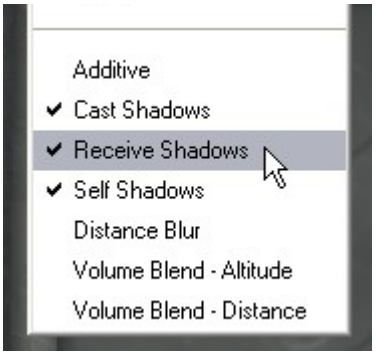
Cast Shadows

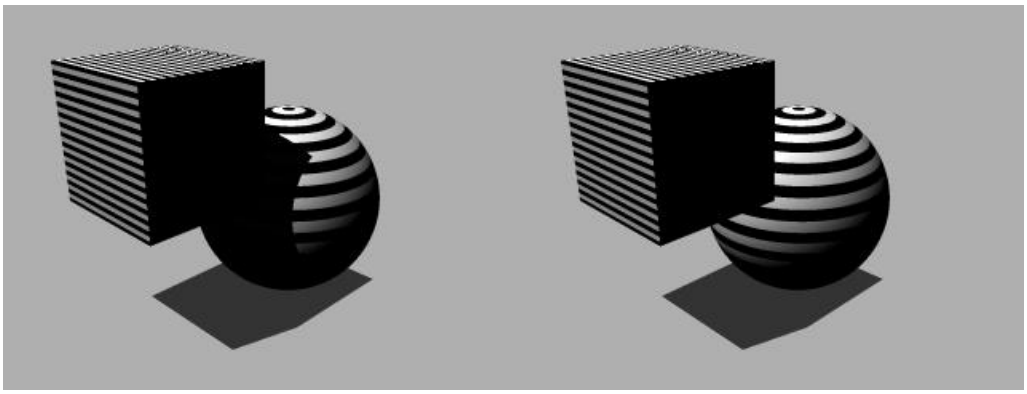
The Cast Shadows modifier prevents an object from casting shadows. The object's surface still reacts normally with light but it does not cast any shadows.



Receive Shadows

The Receive Shadows modifier prevents an object's surface from accepting shadows cast by objects around it. The object itself will cast a shadow, but it won't accept shadows from other objects.

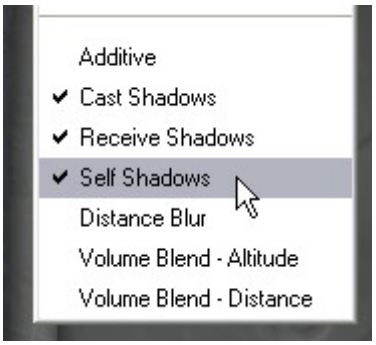




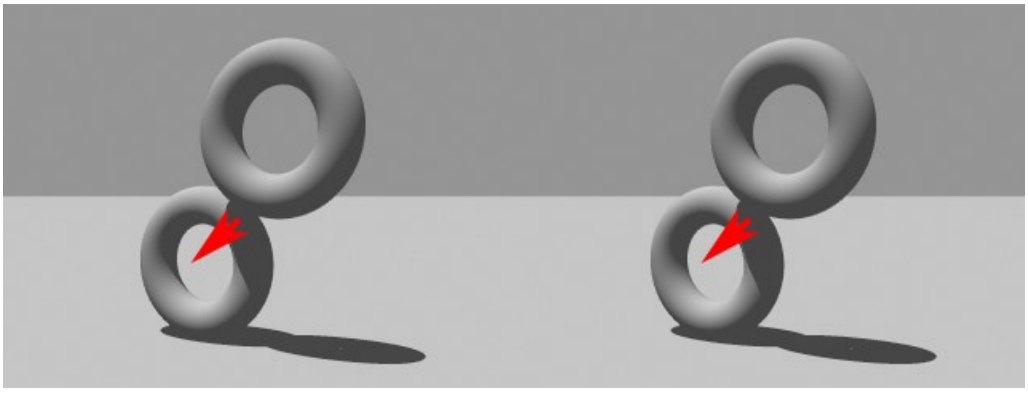
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Self Shadows

The Self Shadows modifier prevents an object from casting a shadow onto itself, yet still shadow all the other elements of the scene.

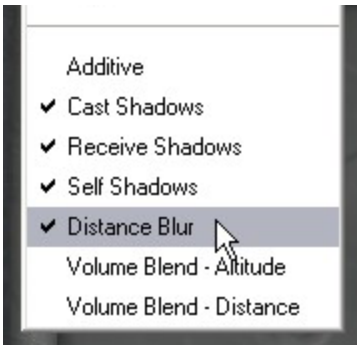


The image on the left shows the bottom torus with Self Shadows enabled while the image on the right shows the same torus with Self Shadows disabled. The arrow shows where the difference is between the two.



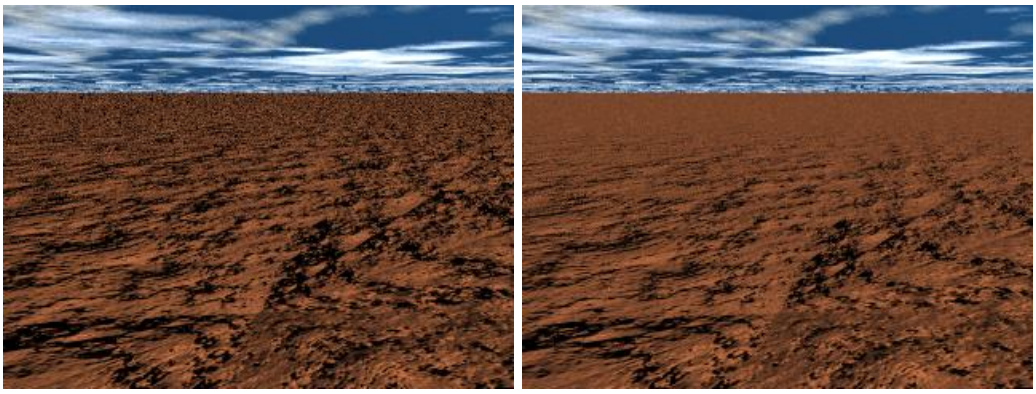
Distance Blur

The Distance Blur modifier is designed to minimize the problem created by highly bumpy textures fading into infinity (i.e., the horizon). Often, moiré-like patterns appear in these cases as the pixels try to resolve the infinitely receding high frequencies of bumpy water or grooved sand, and so on. The Distance Blur modifier fades the bumpiness well before it hits the horizon.



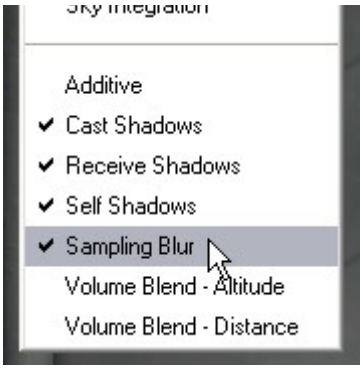
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The images below show the same material on the ground plane, but the image on the right has Distance Blur enabled.

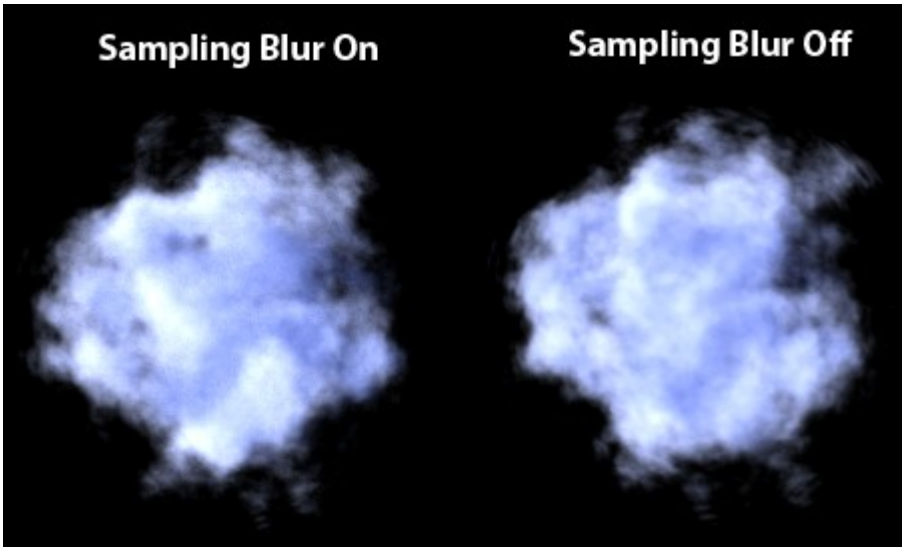


Sampling Blur

The Sampling Blur mode is only available when using a Volume Material and helps to reduce rendering artifacts. This option should always be selected when using Volume Materials.



Example:

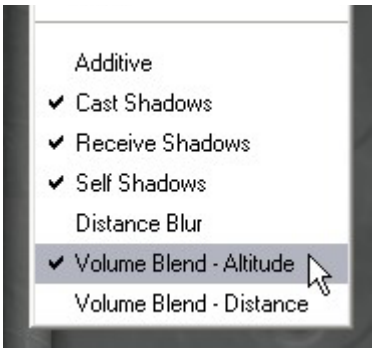


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Volume Blend-Altitude

The Volume Blend - Altitude modifier gradually blends in the Volume color based on Altitude. Areas at lower altitudes are tinted with the 100% Volume Color; as you move higher up, less of the Volume Color is added.

This modifier can be used to create a sense of depth in an infinite water slab. If you blend between a light Diffuse Color and a darker Volume Color, you can create the illusion of depth as you sink deeper into the water.



The images below show a water slab with the Volume Blend - Altitude enabled in the image on the right.



Volume Blend-Distance

The Volume Blend - Distance modifier blends the Diffuse and Volume Colors of your material based on the distance from the camera.

Areas that are closer to the camera will be tinted less with the Volume Color. As you move further away, more of the Volume Color is visible. This modifier is excellent for creating underwater depth effects. If you blend a darker Diffuse Color with a lighter Volume Color in an infinite slab, you can simulate the effects of murky water on distant objects.

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The images below show a water slab with the Volume Blend - Distance enabled in the image on the right.



Deep Texture Editor

You can edit the makeup of an existing texture or create a completely new texture using the Deep Texture Editor. This editor uses some rather complex texture-generation concepts to create textures for Bryce. You can either choose to learn all these concepts to create your textures precisely, or use the editor as a type of lab where you combine random settings and see the results.

The Deep Texture Editor (DTE) can be used in two ways: by working with equations and algorithms or by exploring and experimenting.

If you're comfortable with equations and algorithms, the Deep Texture Editor gives you the freedom to create any textural pattern or surface you can imagine.

For those who don't want to calculate, the Deep Texture Editor can be used as a large palette. Take a little of this and little of that, blend them all together and see if you like the result. You will find that experimenting with these deep functions can produce unexpected results.

When experimenting with the Deep Texture Editor, you may inadvertently create a very complex texture that could add considerably to your rendering time. However, this is an easy pitfall to avoid. The last section of this chapter gives you some tips on reducing the complexity of your textures. Refer to "Tips for Speeding up Textures" for more.

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A Quick Tour of the DTE

The layout of the Deep Texture Editor is a visual representation of the texture creation process. The three components along the top combine to form the final texture, shown in the middle. The layout makes the editor very easy to use. Along the top of the editor you'll see the preview options. These three icons let you choose how you want to display the component.

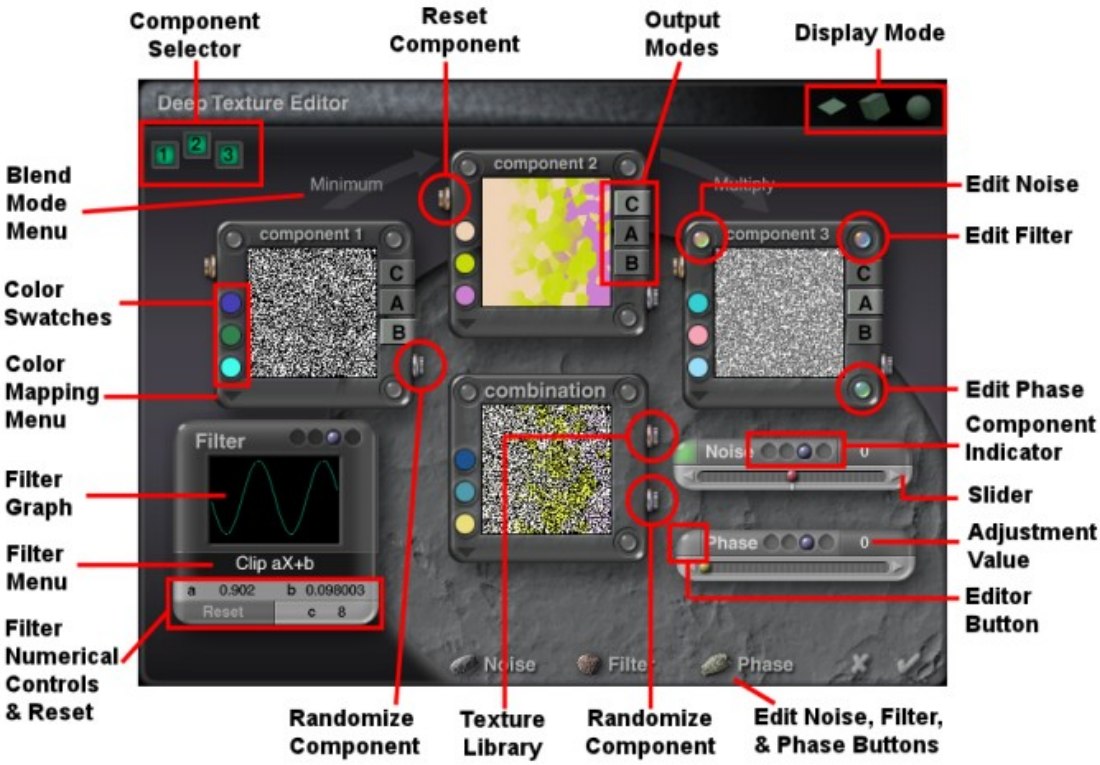
Below the preview control on the left, you'll see the Component Selector. This tool lets you choose the number of components you want to use to build your texture.

The rest of the editor displays the component window. The three windows along the top represent the three components you can use in a texture and the center window represents the combined texture.

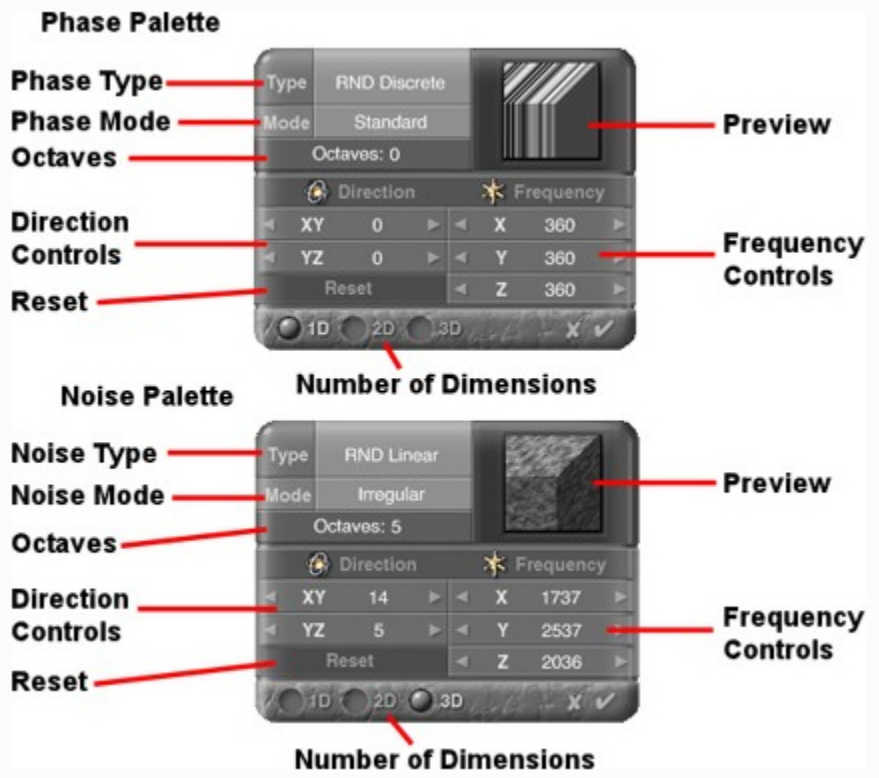
TIP: When you're just exploring the editor, set all the component outputs to Alpha. This lets you see the effects of your changes more clearly.

The three buttons along the bottom of the editor let you display the three editing palettes.

The palettes let you control the noise, phase, and filtering applied to the texture.



You can access the Noise and Phase Editors from within the Noise and Phase Palettes.



Accessing the DTE

The Deep Texture Editor can be accessed from multiple locations depending on what is selected or what lab is currently active.

From the Edit Palette

To access the Deep Texture Editor from the Edit Palette:

1. Make sure the Edit palette is visible. If it's not, click the Edit button at the top of the Bryce window.

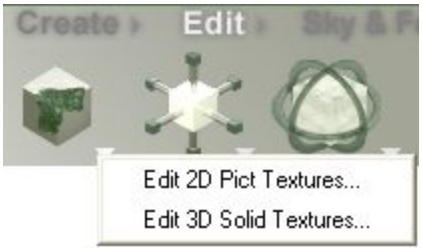
2. Click on the Edit Materials tool to open up the Materials Lab. If an object is selected, you can modify its material.

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OR

3. Click on the triangle next to the Edit Materials tool and choose Edit 3D Solid Textures from the menu.



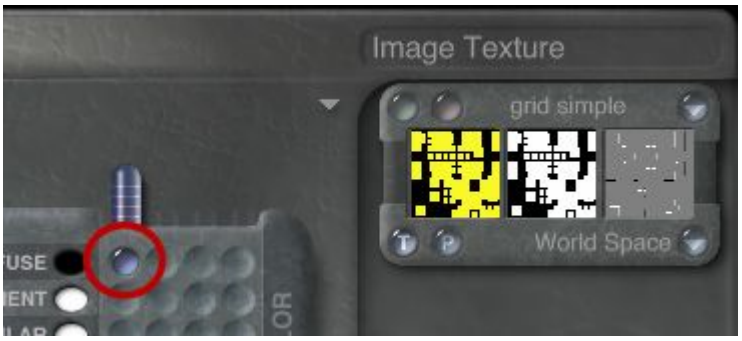
From the Light Lab

To access the Deep Texture Editor from the Light Lab:

1. Select a light source.
2. Click the M button next to the selected light source. The Light Lab will come up.
3. Click the radio button next to Use Gel, the Image and Procedural buttons will activate:

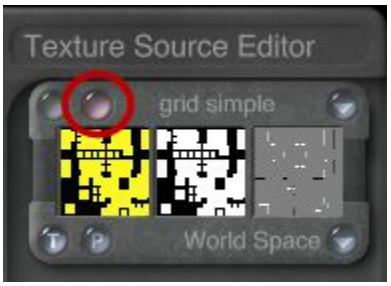


4. Click on the Procedural button, the Materials Lab will come up.
5. In the Materials Lab, click on one of the columns in the grid to activate a component window:



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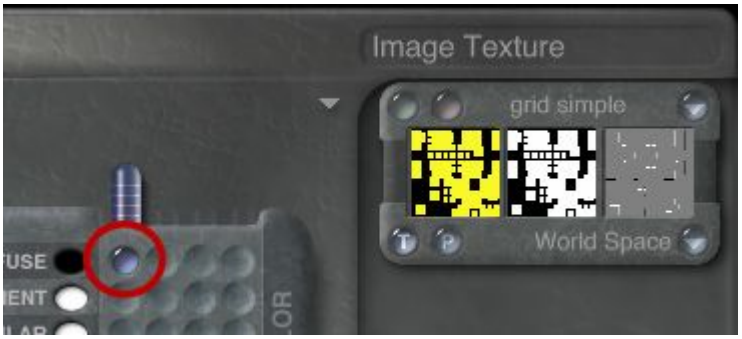
6. Click the Pink button at the top of the window, the Deep Texture Editor comes up.



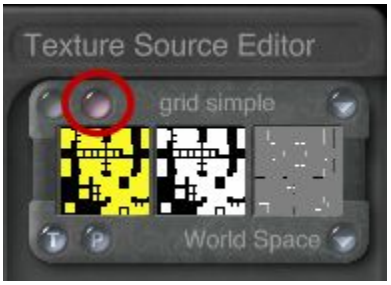
From the Materials Lab

To access the Deep Texture Editor from the Materials Lab:

1. Select an object.
2. Click on the M button next to the selected object. The Materials Lab will come up.
3. In the Materials Lab, click on one of the columns in the grid to activate a component window:



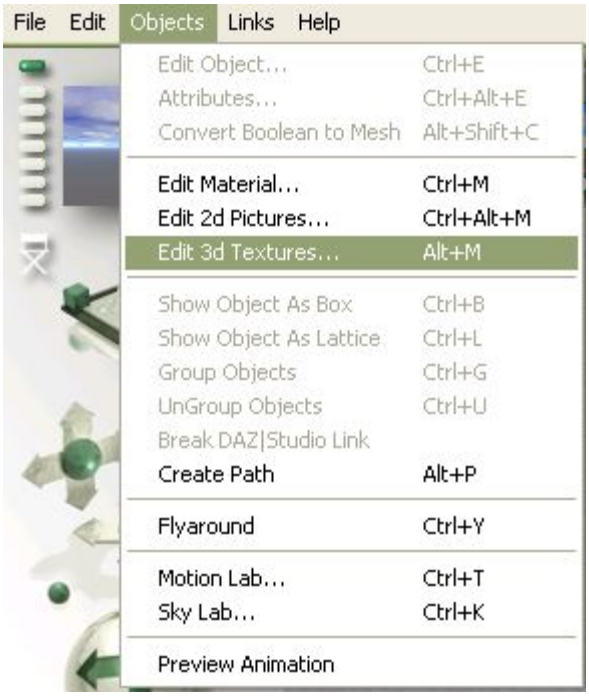
4. Click the Pink button at the top of the window, the Deep Texture Editor comes up.



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From the Objects Menu

To access the Deep Texture Editor from the Objects Menu, choose Objects > Edit 3d Textures from the menu or press Opt/Alt+M. The Deep Texture Editor will come up.



You do not have to have an object selected before choosing this command.

From the Sky Lab

To access the Deep Texture Editor from the Sky Lab:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

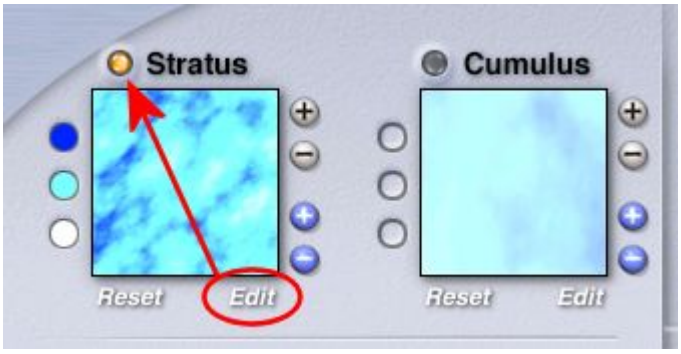
   

3. Click on the Cloud Cover tab.

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4. On the Cloud Cover tab, click on Edit under the selected cloud layer type: Stratus or Cumulus. The radio button next to the cloud type must be selected for the Deep Texture Editor to come up for that cloud type.



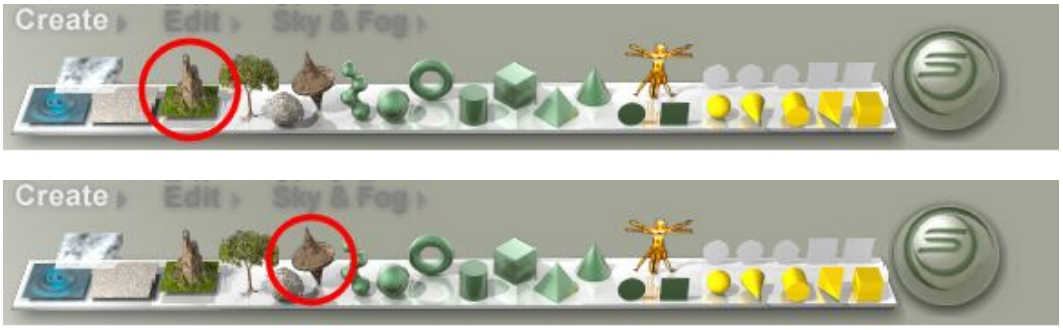
From the Terrain Editor

To access the Deep Texture Editor from the Terrain Editor:

1. Select a terrain or symlat object in your scene. If none are available, display the Create palette by clicking the Create button at the top of the Bryce window.



2. Click the Terrain tool or the Symmetrical Lattice tool. The default terrain or symlat appears in your scene.



3. Click on the E button next to the selected terrain/symlat. The Terrain Editor appears.
4. In the Editing Tools dialog, make sure that the Elevation tab is selected.

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5. Press Shift+click on the Picture button. The Deep Texture Editor comes up.



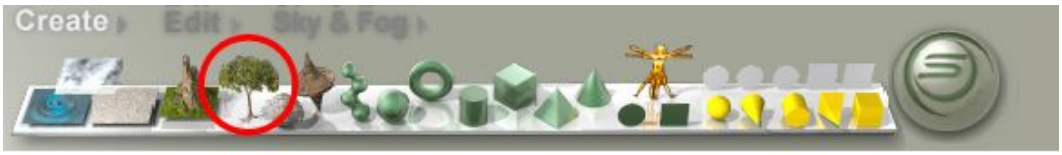
From the Tree Lab

To access the Deep Texture Editor from the Tree Lab:

1. Select a tree object in your scene. If no trees are available, display the Create palette by clicking the Create button at the top of the Bryce window.



2. Click the Tree Object tool. The default tree appears in your scene.



3. Click on the E button next to the selected tree. The Tree Lab appears.
4. Click the Material button at the bottom of the Branch/Trunk or Foliage section.

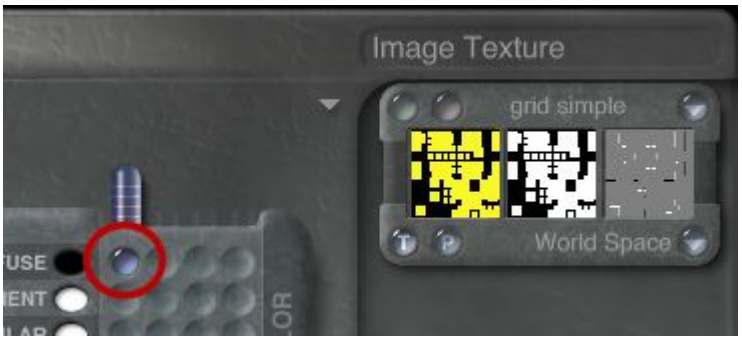


5. Click the Edit button to the right of the Material button. The Materials Lab appears.

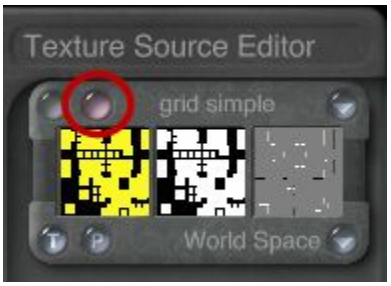


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6. In the Materials Lab, click on one of the columns in the grid to activate a component window:



7. Click the Pink button at the top of the window, the Deep Texture Editor comes up.



Working in the DTE

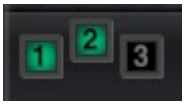
This section describes how to use the Deep Texture Editor to create and store textures.

Building Textures

A texture is a combination of components. You build textures by designing or editing components (i.e., colors, noise, phase, or filters) and combining them using Blend Modes.

To build a texture:

1. Display the Deep Texture Editor.
2. Click the Component Selector to choose the number of components you want to use to build the texture. The component windows become active.



3. In the first component window, click one or more of the Output buttons to choose an output type.



4. If your component contains color, click one of the color circles and choose a color to apply to the texture. You can choose up to three colors for each component.

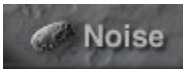


5. Click the triangle icon below the color circles and choose a Color Blending Mode for your colors.



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6. Click the Noise button at the bottom of the editor. The Noise Palette appears.



7. Adjust the noise in the component by:
    - Dragging the Noise Slider on the Noise Palette to increase or decrease the amount of noise in the component.



    - Click the top left corner of the palette to display the Noise Editor, then use the editor controls to design or edit the noise in the component.



8. Click the bottom-right button on the Component Window. The Phase Palette appears.



9. Adjust the phase in the component by:
    - Dragging the Phase Slider on the Phase Palette to increase or decrease the amplitude of the phase in the component.

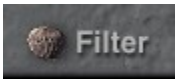


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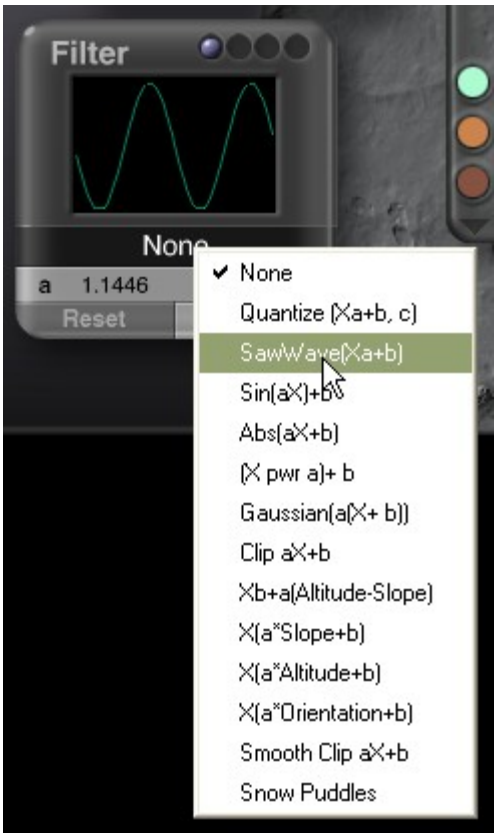
- Click the top left corner of the palette to display the Phase Editor, then use the editor controls to design or edit the phase in the component.



10. Click the Filtering Button at the bottom of the editor. The Filtering Palette appears.

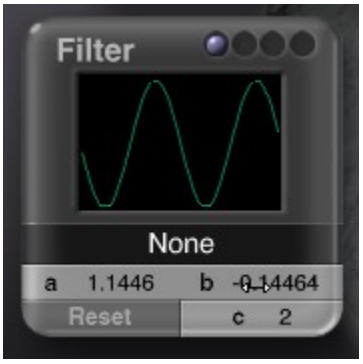


11. Choose a filter to apply the component noise.



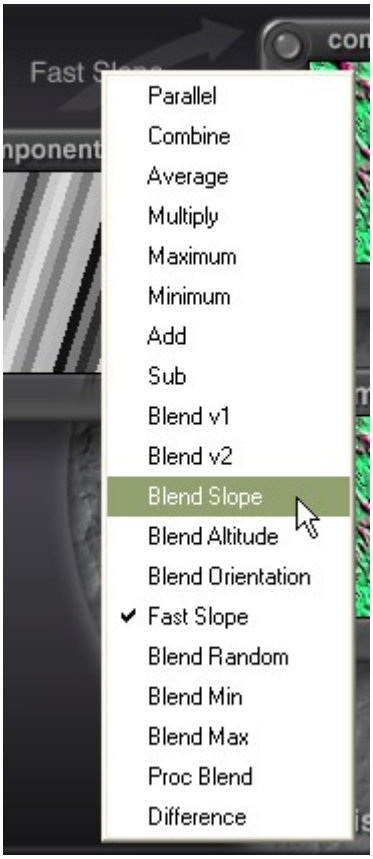
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12. Adjust that filter's variables.



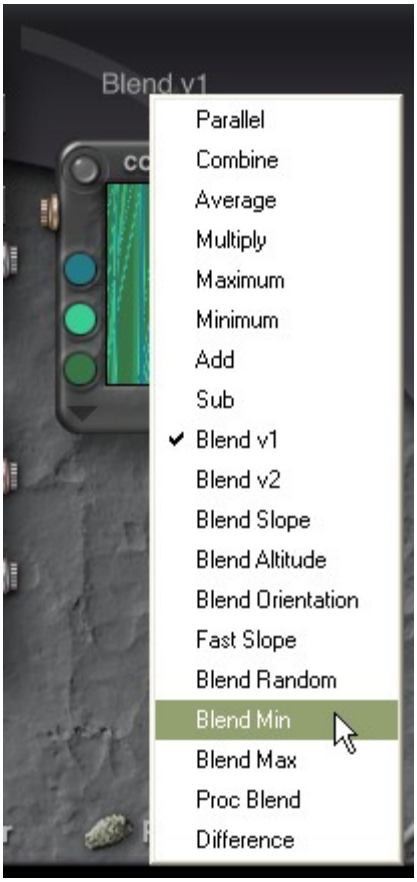
13. Repeat steps 3 through 12 for each component in the texture. As you edit the noise, phase, or filter of the remaining components, make sure you move the component indicator at the top of each palette to be sure you're editing the right component's attributes.

14. Click the text above Component 1 and choose a Blend Mode from the menu.



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15. If you have more than two components, click the text above Component 2 and choose a second blend mode. The result of blending all the components appears in the Combination Window.

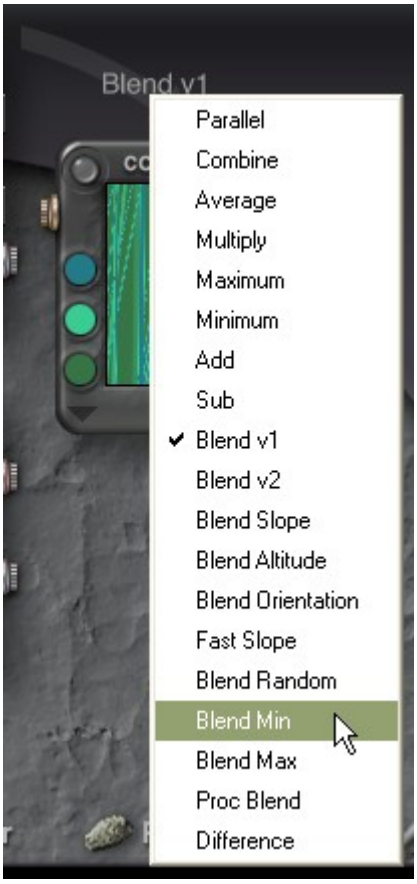


16. Click the color circles in the Combination Component Window, and choose colors for the final texture.



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17. You can also choose a Blending Mode.



18. If you want to change the noise of combined component, display the Noise Palette. If it's already displayed, make sure the component indicator is on the fourth component.

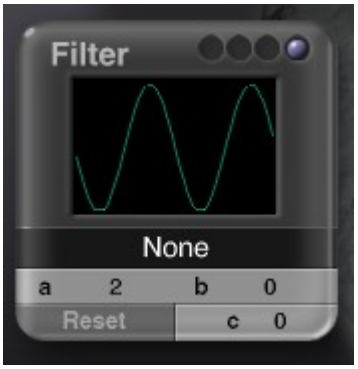


19. If you want to change the phase of combined component, display the Phase Palette. If it's already displayed, make sure the component indicator is on the fourth component.



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20. If you want to change the filter of combined component, display the Filtering Palette. If it's already displayed, make sure the component indicator is on the fourth component.



21. Click the OK icon at the bottom of the editor. The texture appears in one of the component windows in the Materials Lab.

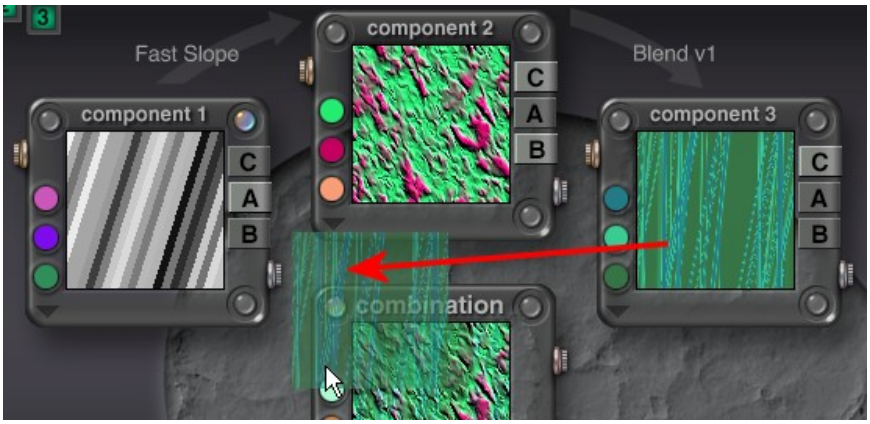


Using Drag & Drop in the DTE

The Deep Texture Editor lets you drag and drop component elements between component windows. This a quick way of copying elements between components. For example, if you were setting up a red, green, and blue separation of the colors in your texture, you could drag the same elements to all three component windows and change the Color Blending mode.

To drag and drop between windows, drag from the window you want to copy to the window where you want the elements to appear. Release the mouse button to drop the component elements. The elements you drop into a window replace the existing elements.

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Changing Component Preview

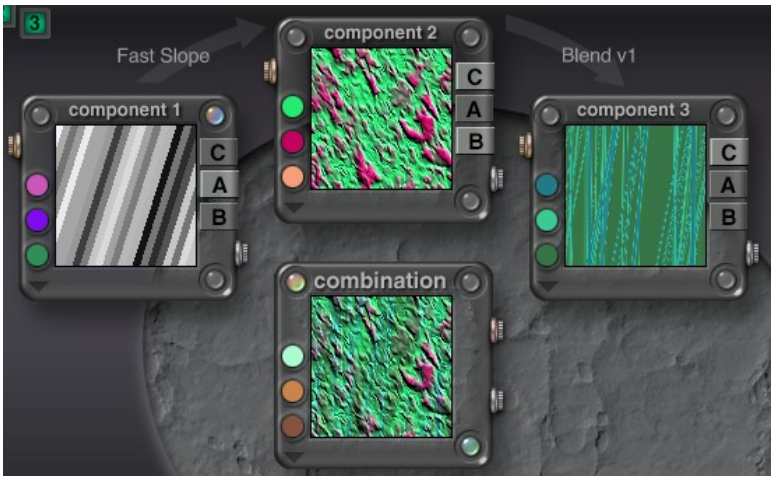
Each component window has a preview of the component's elements. You can choose to display the elements mapped onto a flat surface, a cube or a sphere. Displaying the component on a cube makes it easier to see 3D noise and phase changes.

To choose a preview mode, click the flat surface, cube, or sphere in the top-right corner of the editor.

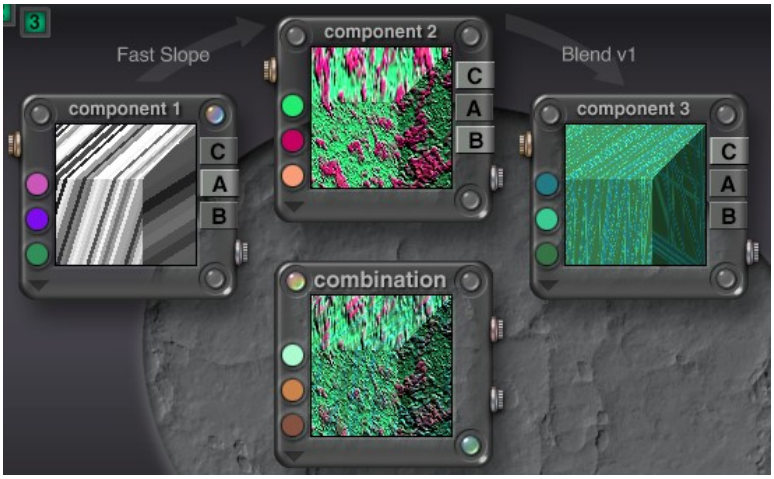


Examples:

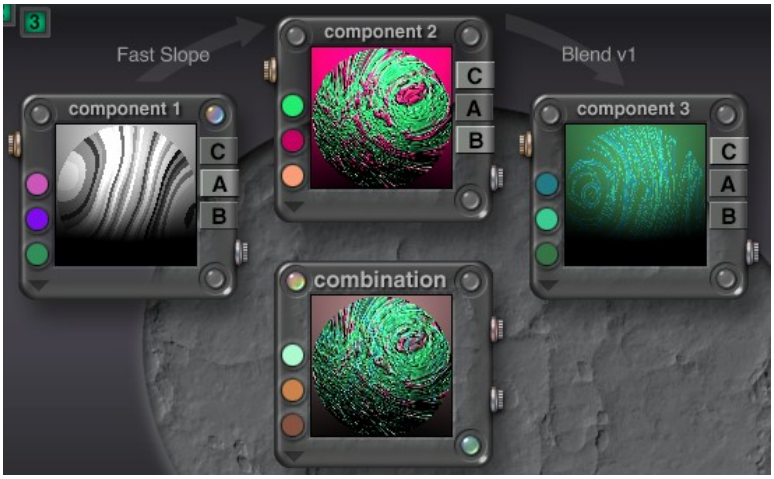
1. Flat (default):



2. Cube:



3. Sphere:



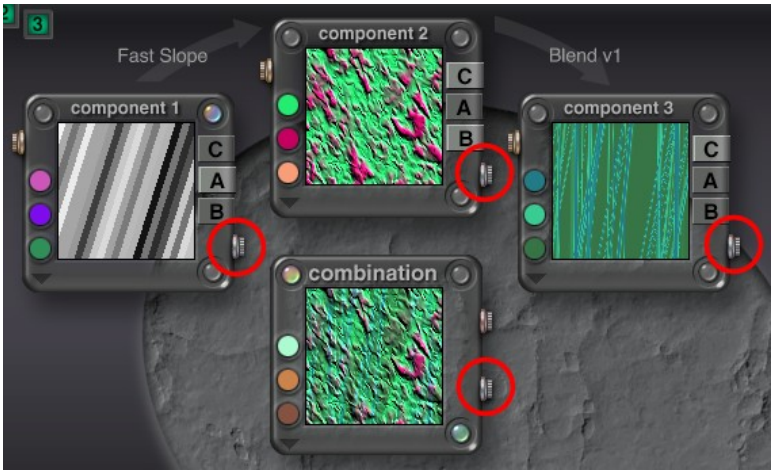
Randomizing Textures

A quick way of designing a texture without going into designing noise or filters is to create random components. The Randomize Buttons in the component windows let you randomize the elements in the component window. The type of output you choose for the component determines what part of the component is randomized.

This is an excellent way of exploring the editor. Just randomize the components elements and combine them to see what happens.

To randomize component elements, click the knob in the bottom-right corner of the component window.

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Previewing Textures

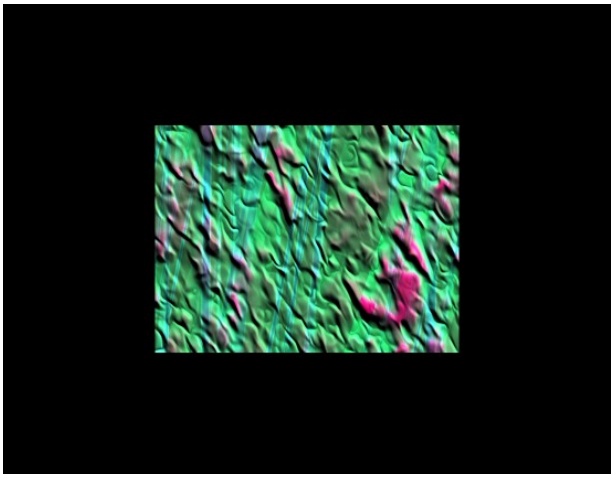
Textures can be previewed in a larger format in the Deep Texture Editor. You can preview the texture in a small preview or over the entire screen.

To preview the texture in small format:

1. Click in the Combination Component window.



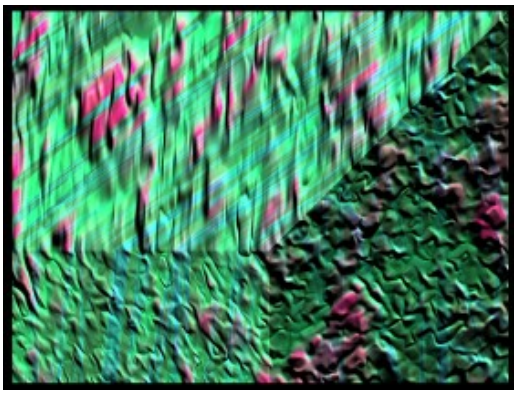
The preview will come up covering the Deep Texture Editor area.



2. Click on the window to close the preview.
3. To change the Display Mode, click on one of the Display Mode buttons at the top right of the Deep Texture Editor.



4. Then click in the Combination Component window.



To preview the texture over the entire window:

1. Press the Spacebar and quickly click in the Combination Component window, letting up on the Spacebar immediately after clicking in the window. This may take a bit of practice to get the preview to show and stay up. Change the Display Mode if needed.

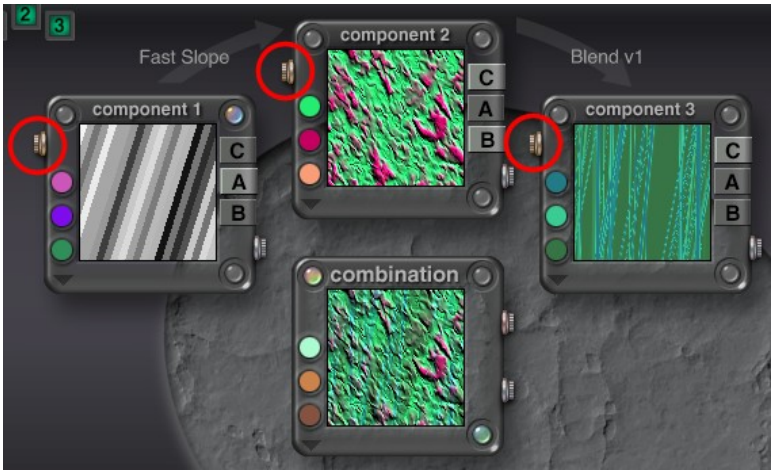
   The preview will come up covering the entire screen.
2. Click on the window to close the preview.

Undoing Changes

The Reset Control lets you undo all the changes you've applied to a component and returns to the component displayed when you first entered the editor.

To reset a component, click the knob in the top-left corner of the component window. You can also click on the Cancel icon to exit the Deep Texture Editor without applying the changes.

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Saving Textures

You can save your texture as part of texture list so you can access it quickly from the Materials Lab.

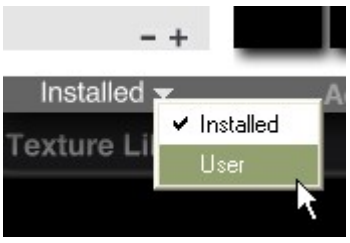
To save a texture:

1. In the Combination Component Window, click the knob in the top-right corner of the component window.

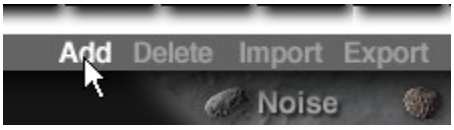


   The Textures Library appears.

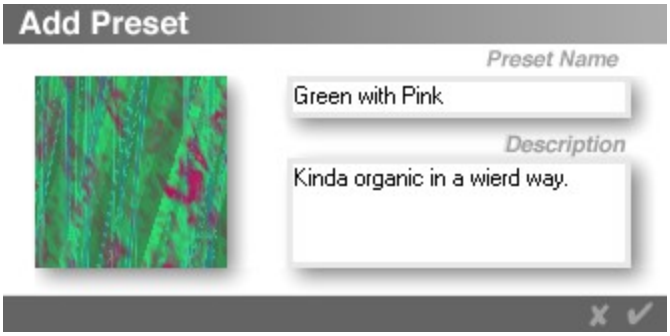
2. Change categories if needed and select the sub-category to save the texture to.



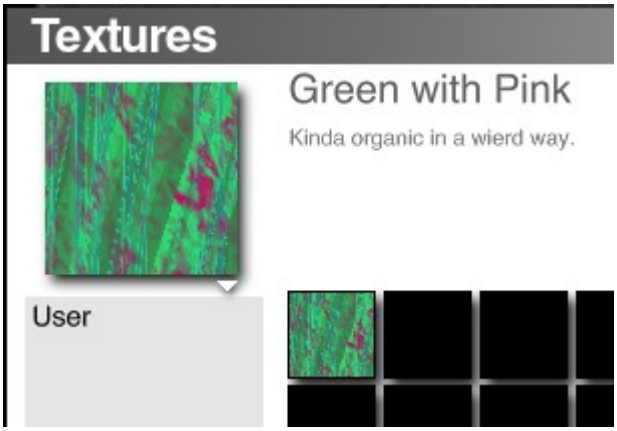
3. Click on Add. The Add Presets dialog comes up.



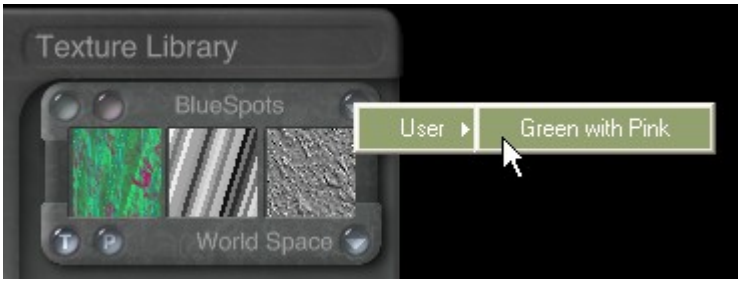
4. Enter a name for the new texture, and a description if you want, then click on the OK icon.



The new texture is added to the library.



The texture list can then be accessed from the Materials Lab.



Please note that if you need to access the Installed texture category or another category from the Texture Library, you will need to change categories in the library before it can be accessed from the texture list in the Materials Lab.

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Textures

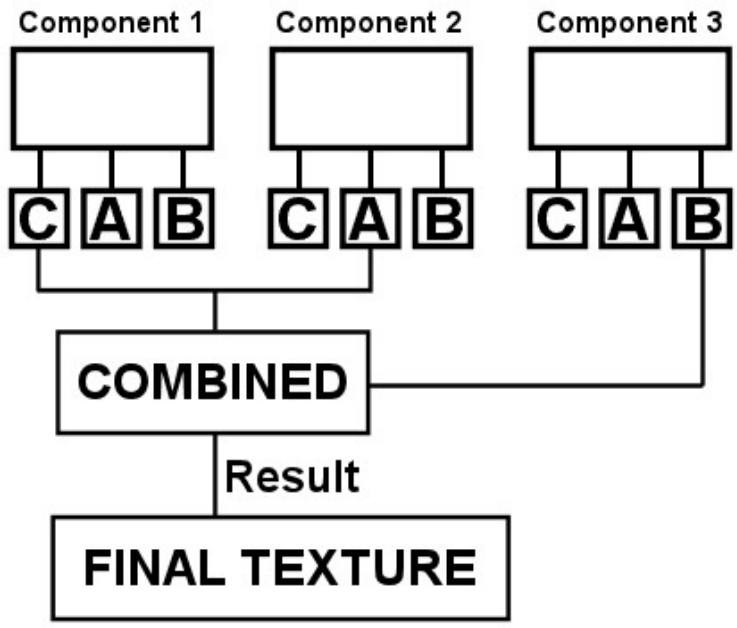
One of the things that makes Bryce so unique is its Materials. A Material can bring any object to life, and Textures are the power behind the Material. A Material can make your object shiny, dull, or transparent, but the Textures within that Material are what make it look like wood, rock, water, or clouds.

Textures define the color, pattern, or bumps within a Material. A Material can contain up to four Textures. By altering the make-up or pattern of a Texture you can dramatically alter the appearance of a Material.

Texture Structure

A Bryce Texture can be made up of three Components. These Components contribute the raw patterns or Textures within a Texture. Each Component can then contribute one of three types of Output to the final Texture. These Outputs are then combined to create the final Texture.

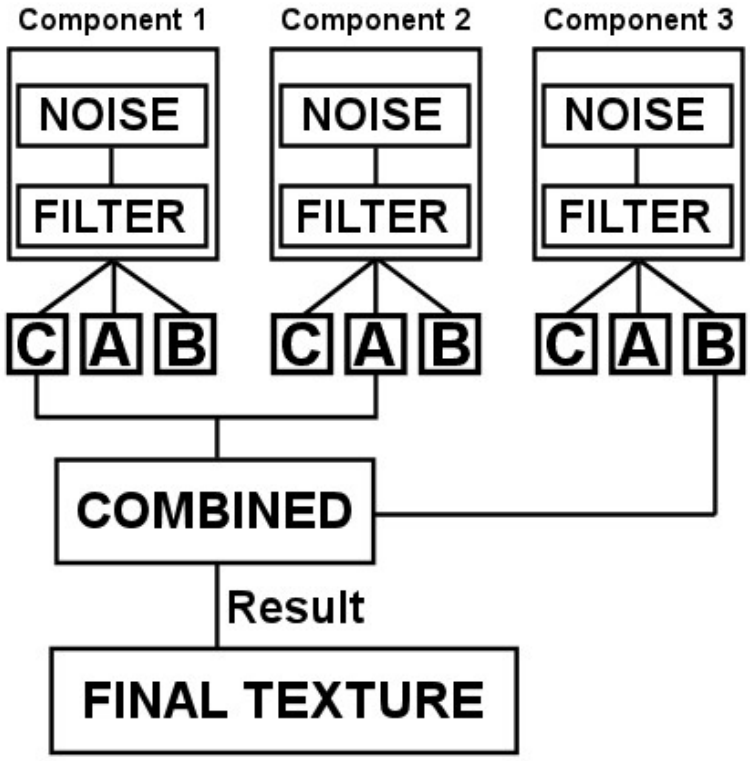
The following diagram shows the structure of a Texture.



Within each Component is a combination of colors and noise that create a pattern. The shape of the noise inside a Component is determined by the phase of the noise and the filter applied to it. The filter can create coherent patterns, random spots, or anything in between. Refer to "Noise," "Phase," and "Filtering" for more on noise, phase, and filtering.

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The following diagram shows the structure of a Texture including the structure of a Component.



A Component can contribute one of three types of output to the final Texture: Color output, which determine the colors in a Texture, Alpha output, which determines the bright and dark areas in a Texture, and Bump output, which determines the size and pattern of bumps in the Texture.

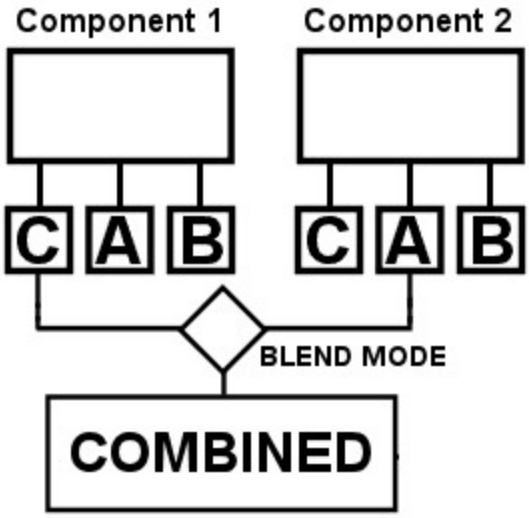
The Component can contribute any combination of outputs. So you can have a final Texture that contains Color output, Alpha output, and Bump output, or it can have all Color output or all Bump, or any combination of the three.

The outputs in a Texture are used by the material, so the type of output you have in a Texture depends entirely on how you want to use the Texture in the material. For example, if you're using the Texture as a bump map for the Bump Height channel in a material, you'd probably want all the Components to contribute only Bump output.

A Texture can contain up to three Components. It can be made up of all three Components or just one, depending on the type of Texture you want to create. The more Components you use, the more complex your Texture.

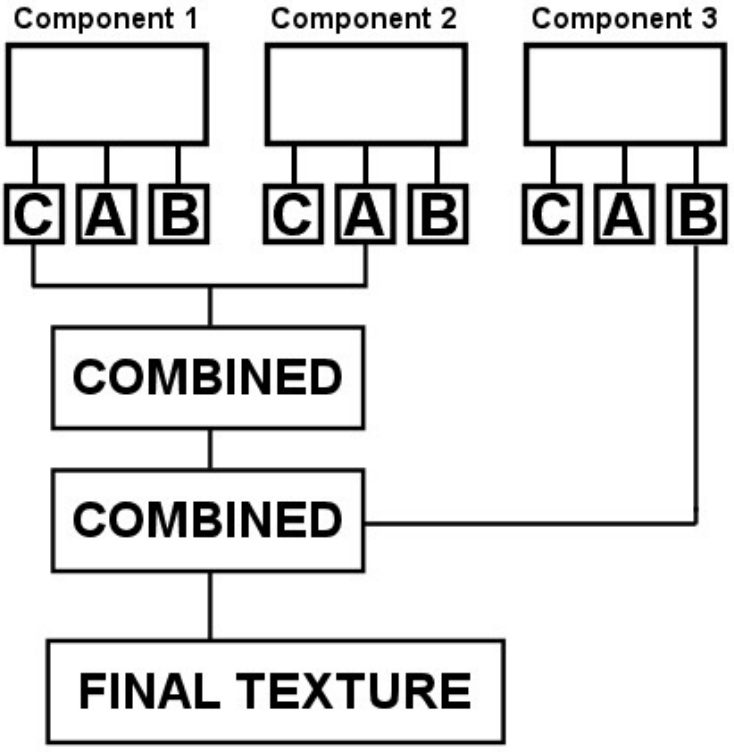
Components are combined using Blend Modes. These modes can create a wide range of effects. The way Components are combined to create the final Texture is determined by the Blend Mode you select.

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Components are combined differently depending on how many you use. If you use one or two they are combined according to the blend method you select. If you use three, the first two Components are combined, and the resulting Texture is then combined with the third Component to create the final Texture.

When you use three Components, the first two Components (C1 and C2) combine to create a hybrid Texture which is then combined with the third Component (C3) to create the final Texture. So they're combined using the formula (C1+C2)+C3=FINAL.



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The Texture Components are combined together to form the final Combination Texture. The final Texture can have its own color scheme, noise, phase, or filter. Any changes you make to the combination Texture changes the final Texture. These types of operations are called Global changes. Refer to "Global Changes" for more on global changes.

The end result of the Global changes is the final Texture which can then be used in the Materials Lab to create a Material.

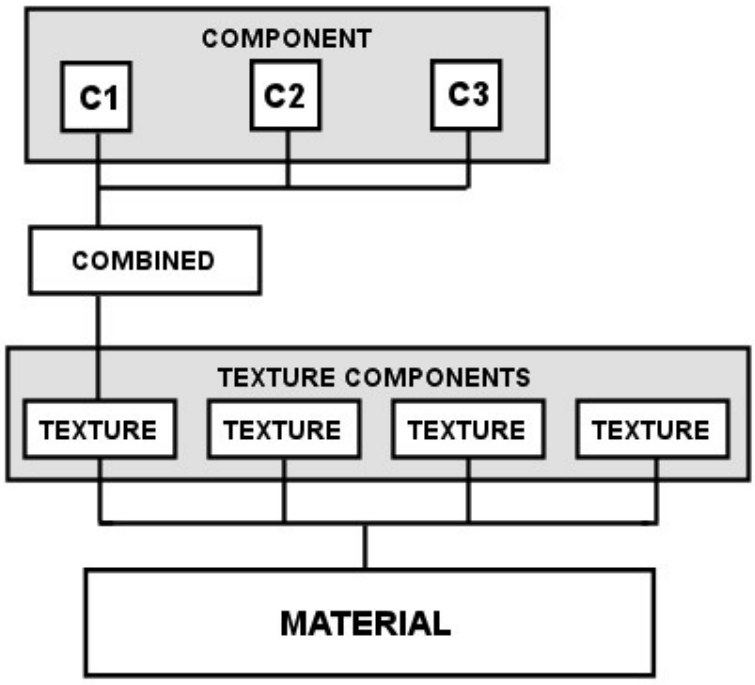
Components vs. Texture Components

Before you get any deeper into the discussion of texture structure you should understand a little terminology.

A texture is a part of a material. It can be used to drive any of the material's channels. When you use a texture in a material, it's called a material component.

The texture itself also has components. It can be made up of up to three components that determine the look and color of the texture. The components that make up a texture are called components.

The difference between components and texture components may be a bit confusing. Just remember that when you're talking about a texture, you're dealing with components. When you're working with materials, you're using texture components.



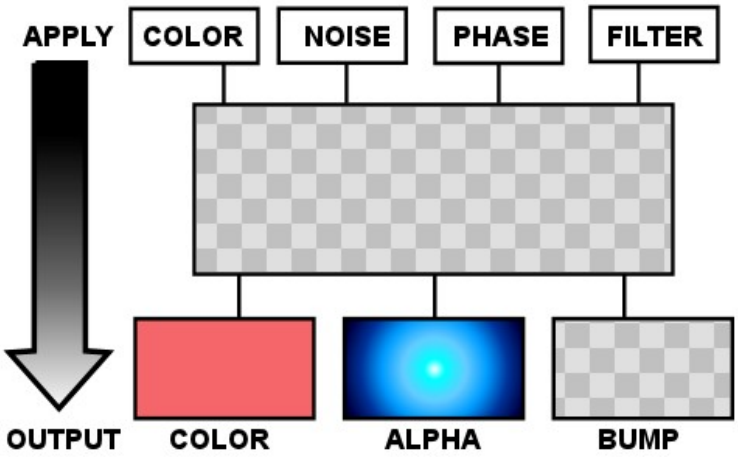
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Understanding Component Structure

A texture can have up to three components. When combined, the components create the final texture. A component consists of noise and color.

A component can have up to three colors. The combined texture can also have a different set of three colors which is added to the colors from the components. In total your texture can contain up to twelve colors.

The noise in a component is made of base Noise which is modified by the Phase, which controls the complexity of the noise, and the Filter, which determines the shape or pattern of the noise.



Components and Output

A component's output type determines what type of information it's going to contribute to the final texture.

The Output type also determines the component's structure. A component that does not have a Color output won't contain any color information. The same is true for the two other types of output. If there's no Alpha or Bump output, then there's no Alpha or Bump information in the component.

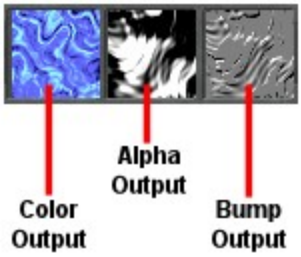
Component Output

The main purpose of creating a component is to use it as part of a material which will then be applied to an object. How and what a texture contributes to a material is determined by the type of output it produces.

A texture can produce three different types of output: Color, Alpha, and Bump.

When you apply a texture to a material, you can see the output types in the Texture Component Window in the Materials Lab.

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The three boxes in the Texture Component Window in the Materials Lab represent the three output types available for a texture.

If a texture does not produce a particular output, the box appears gray. Refer to "Texture Components" for more on using textures in materials.

In the Deep Texture Editor, the output type for a component is indicated by the three output buttons along the right side of the Component Window.



Assigning Output Types

A texture can produce all three output types or only one. The number of output types for the final texture depends on the output you assign to the components. A component can produce one or all three types of outputs.

You can assign more than one component to the same output type. If you do have more than one component with the same output type, the output information will be blended to produce a final output. For example, if you have two components that produce color output, when you combine them the colors from both components are blended together and the result is applied to the final texture.

In order to produce an output type, a final texture must contain at least one component that produces the type of output you want. For example, if you want your final texture to contain color output, at least one of its components must produce color output.

Each output type contributes something different to the final material.

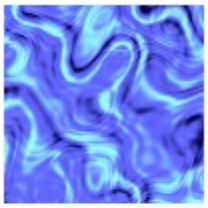
Color Output

Color output is used by the color channels of a material. The color values you assign to a texture's components are combined to form a final texture. The combined values are then used to drive the Diffuse, Ambient, Specularity, Specular Halo, or Transparency Color channels.

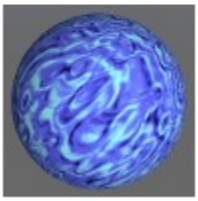
The colors in a texture usually appear in the form of a pattern or grain. When you assign the texture to a material, this pattern appears in the final material.

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The texture in this example was applied to the Diffuse Color and Ambient Color channels of the object's material. You can see how the color pattern in the texture appears in the material.



Original Texture



Material containing texture

To assign Color output to a texture:

1. Display the Deep Texture Editor.
2. In the desired component window, click the C button on the right side of the component window. The output mode is active when it is a light gray color.



Alpha Output

Alpha Output is used by the various Intensity and Optic channels of the material. When a texture's Alpha Output is assigned to a material, it's used either to determine an effect's intensity or as a guide map for combining multiple textures.

When there is only one texture component in a material channel, the texture's Alpha Output is usually used to determine the intensity of a channel effect. For example, if you assign a texture to the Diffuse channel, the texture's Alpha Output is used to determine which areas are the most diffuse and which are the least diffuse. The texture in this example was applied to the Diffuse channel of the object's material. You can see how the alpha pattern in the texture controls the diffuse intensity on the object's surface.

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To assign Alpha output to a texture:

1. Display the Deep Texture Editor.
2. In the desired component window, click the A button on the right side of the component window. The output mode is active when it is a light gray color.



Bump Output

The Bump Output is used only by the Bump Height material channel to determine the pattern and height of the bumps in a material. The texture in this example was applied to the Bump Height channel of the object's material. You can see how the bump output in the texture controls the pattern of bumps on the object's surface.

To assign Bump output to a texture:

1. Display the Deep Texture Editor.
2. In the desired component window, click the B button on the right side of the component window. The output mode is active when it is a light gray color.



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Component Elements

A Texture is made up of Components. Each of those Components can contain several elements that determine the color, pattern, grain, or bumps in the Component.

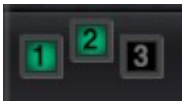
The Component Window

You can have up to three components in your texture. As you activate components, a Component Window becomes active. Each window displays a preview of the component elements. The Component window displays the selected component and its current attributes.

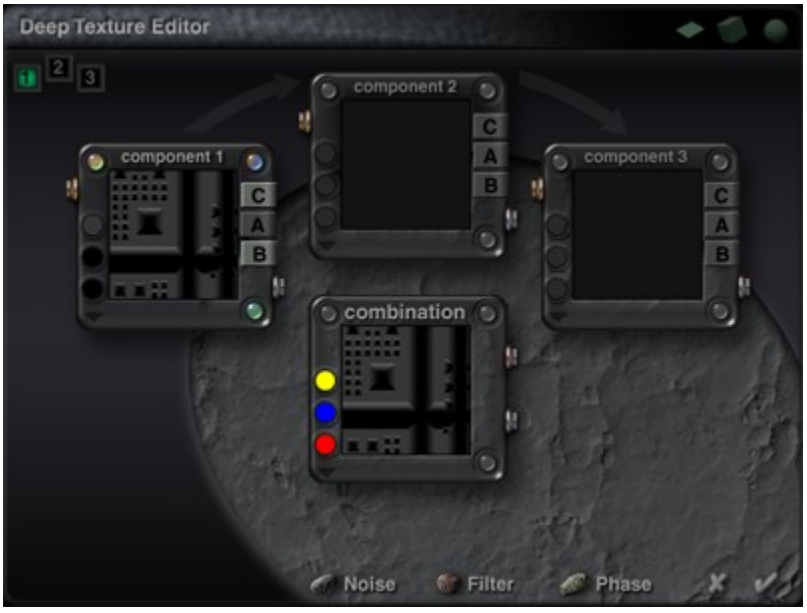
The three buttons on the Component Window let you access the Noise Palette, the Filtering Palette, and the Phase Palette. The buttons along the right side of the window indicate the type of output produced by the component.

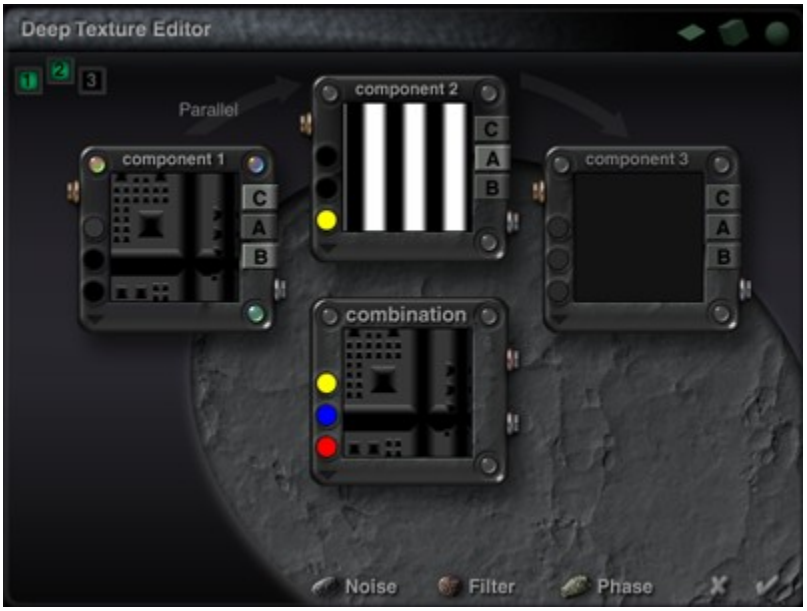
To activate a component:

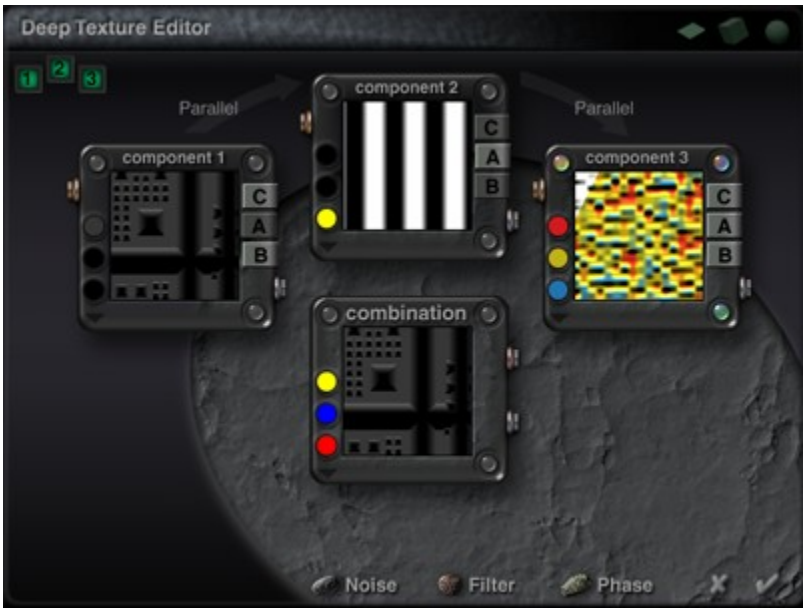
1. Display the Deep Texture Editor.
2. Click the Component Selector in the top-left corner of the editor.



The Component Selector lets you pick how many components you want to use to build your texture. The selector lets you choose from 1, 2, or 3 components.







Color

The Colors in a component determine its color scheme. Each component can have up to three colors. Colors can be chosen using the Color Picker or the Color Dialog.

The color in a component is affected by the noise, filter and phase. You can create some very interesting patterns of color by modifying the noise. The color pattern created by the changes in the noise is applied directly to the final texture. So even if Color is the only output type for the component you'll still see a pattern in your final texture.

When the Color Output is selected for a component, only the color information is combined with the other components. Also, when you apply the texture to a material,

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the colors in the component contribute to the colors used in the Color channels of the material.

If the Color Output is not active for a component, changing the colors or Color Blending Modes has no effect.

Activate Color Output

To activate Color Output for a component:

1. Display the Deep Texture Editor.
2. In the desired component window, click the C button.



An output type is active when the button appears light gray.

Choosing a Color Model

There are two color models you can use to create colors in the components: RGB and HLS. RGB combines red, green, and blue to create color. HLS combines Hue, Lightness, and Saturation values to create color. The method you choose depends on the final output of your Bryce scene. RGB works best for most types of output.

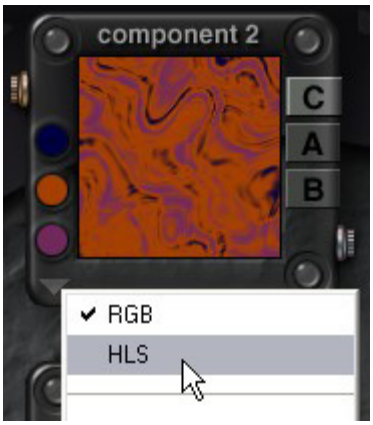
To choose a color model:

1. Display the Deep Texture Editor.
2. In the desired component window, make sure the C button is active.



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3. Click the triangle icon in the lower left corner of the window and choose a either RGB or HLS from the menu.



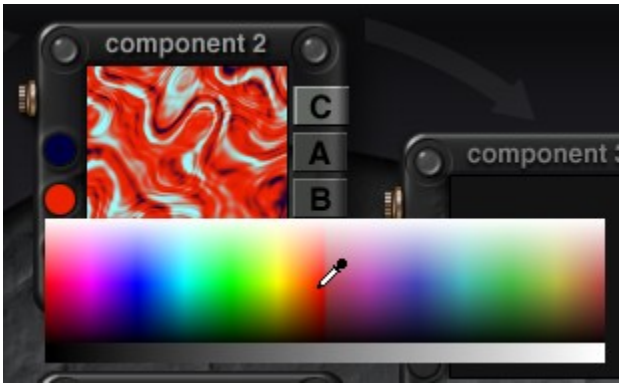
Choosing Colors

To choose colors for a component:

1. Display the Deep Texture Editor.
2. In the desired component window, make sure the C button is active.



3. Click one of the color indicators along the left side of the component window and choose a color from the palette. The three color indicators along the left side of the window display the colors used in the component.



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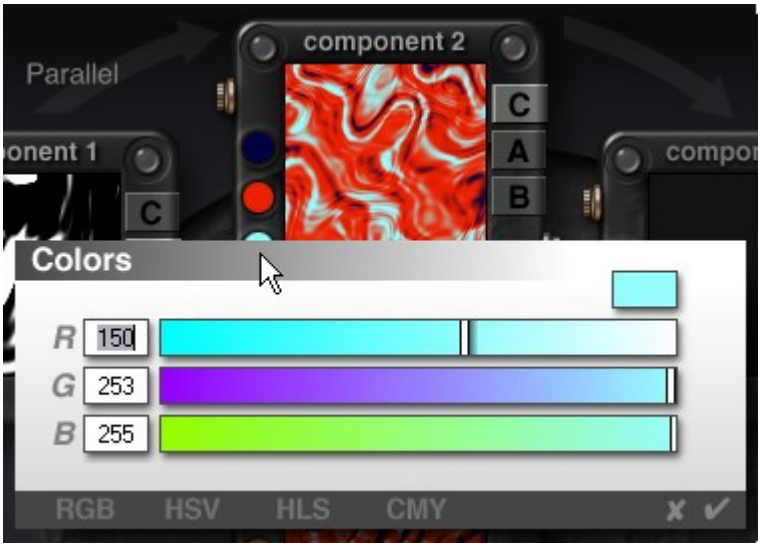
Mixing Colors

To mix colors for a component:

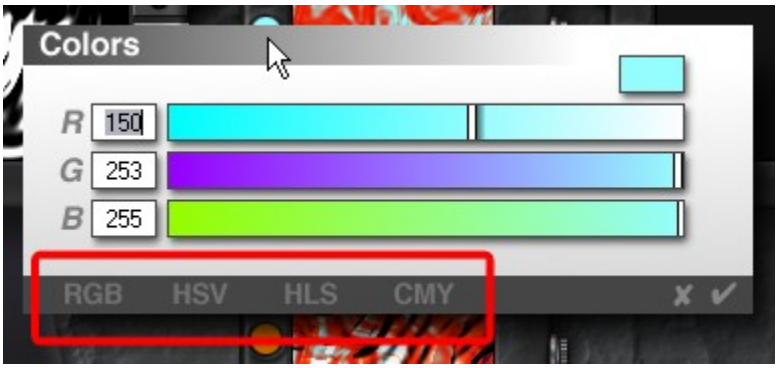
1. Display the Deep Texture Editor.
2. In the desired component window, make sure the C button is selected.



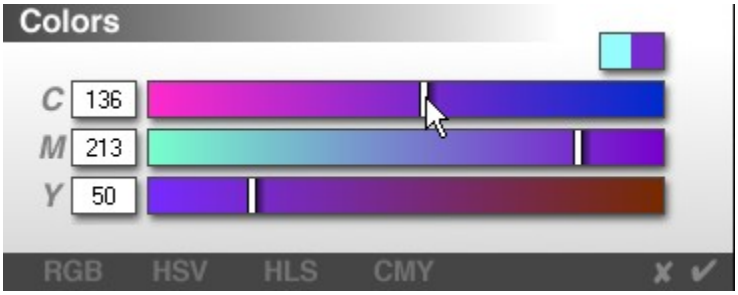
3. Opt/Alt+click the one of the color indicators along the left side of the component window. The Color dialog appears.



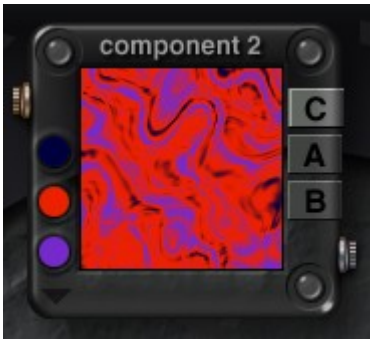
4. Choose a color model by clicking one of the buttons along the bottom of the dialog.



5. Enter color values or adjust the sliders to mix a new color.



6. Click the OK icon.



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Color Blending Modes

There are several blending modes you can use to create a color scheme.

To choose a Color Blending Mode:

1. Display the Deep Texture Editor.
2. In the desired component window, make sure the C button is active.



3. Click the triangle icon in the lower left corner of the window and choose a blending mode from the menu.



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See the following for examples of each color mode:

None

This option deactivates the color blending mode. No blending is applied to the components.



Red or Hue

When the RGB model is used, this mode outputs only red color values.



When the HLS model is used, only Hue values are output.



This mode, and the Green or Light and Blue or Saturation mode, are available so that you can separate color values among the components. For example, you could set each component to output one of the different color values.

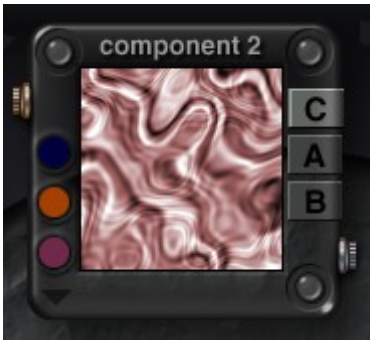
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Green or Light

When the RGB model is used, this mode outputs only green color values.



When the HLS model is used, only Lightness values are output.



Blue or Saturation

When the RGB model is used, this mode outputs only blue color values.



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When the HLS model is used, only Saturation values are output.



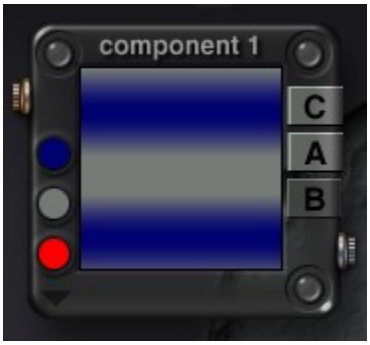
Spline Interpol

This mode creates a blend between all the colors in the component. This is what a color blend looks like using Spline Interpol.



Linear Interpol 2

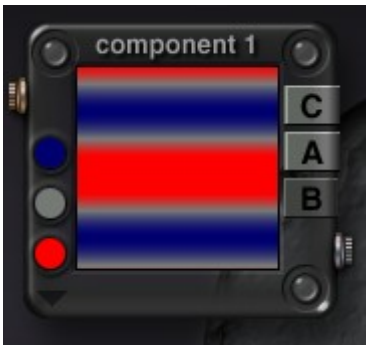
This mode creates a linear blend between the first two colors selected for the component. This is what a color blend looks like using Linear Interpol 2.



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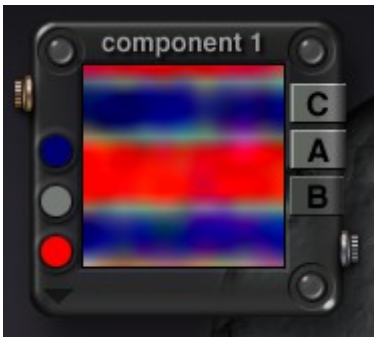
Linear Interpol 3

This mode creates a linear blend between all the colors in the component. This is what a color blend looks like using Linear Interpol 3.



Randomized

In this mode the three colors are blended and then applied randomly throughout the component. This is what a color blend looks like using Randomized.



Earth Map

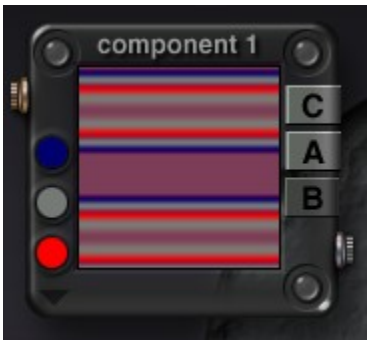
In this mode extra colors are generated according to the contours of the component's bump map. The three colors you selected for the component are applied to the middle range of the bump map. Blue is applied to the lowest bump values and white is applied to the highest values to simulate polar caps. Earth Map is excellent for creating planets. This is what a color blend looks like using Earth Map.



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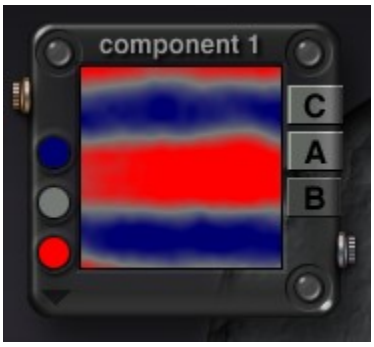
Banded

In this mode colors are applied in bands. The bands are determined by color values. Colors with the lowest value (i.e., dark colors) are applied to the bands furthest from the center, colors with middle range values are applied next and colors with the highest values (i.e., bright colors) are applied closest to the center. This is what a color blend looks like using Banded.



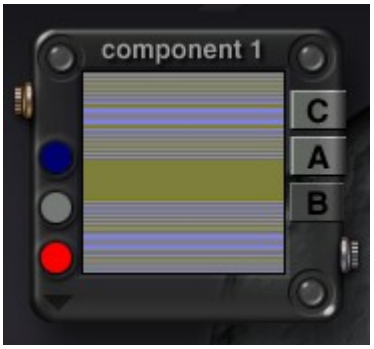
Perturbed

In this mode colors are applied in irregular patterns. This is what a color blend looks like using Perturbed.



Interferences

In this mode the red, green, and blue values of the first color in the component are used to create a repeating pattern around the contours of the component's noise. This is what a color blend looks like using Interferences.



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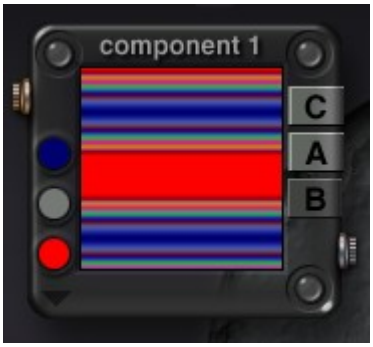
Altitude

In this mode, a white layer is added above the colors at high altitudes. Any portion of the object below ground is automatically colored blue. Altitudes are based on the object's height. This is what a color blend looks like using Altitude.



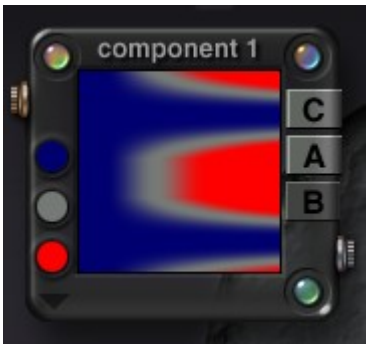
Interpol + Interferences

This mode is a combination of Linear Interpolation and Interferences. This is what a color blend looks like using Interpol + Interferences.



Slope

In this mode the three colors are applied to the object depending on its slope. This is what a color blend looks like using Slope.



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Spline with Snow

This mode performs a spline interpolation of the colors in the component, but adds a white layer above the colors at high altitudes. Altitudes are based on the object's height. This is what a color blend looks like using Spline with Snow.



Orient

In this mode the three colors are applied to the object according to its eastwest orientation. This is what a color blend looks like using Orient.



Noise

Noise is the background turbulence that creates the basis for texture patterns. In audio terms you can think of noise as the background static that you hear on old recordings. Sound is layered on top of this noise to create music. Like in audio, you layer other functions on top of the noise in your texture to create the final pattern or look of your texture.

There are two ways of creating noise: the Noise Palette or the Noise Editor. The Noise palette can increase or decrease the amount of noise in any of the texture components. However, using the palette, you can only edit the existing noise. The Noise Editor is much more powerful than the Noise palette. It contains controls for creating noise from scratch.

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Noise Palette

To display the Noise palette and adjust the current noise:

1. Display the Deep Texture Editor.
2. Either click the Noise button at the bottom of the editor or click the Noise button in the top-left corner of on any of the component windows.



The Noise palette appears.



3. Select which component to adjust by clicking in one of the indentations of the Component Indicator. The first three indentations are for Components 1, 2, and 3, while the fourth one is for the Combination (final) Component.



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4. Move the mouse over the red ball in the Frequency slider. The cursor changes to a double-ended arrow.



5. Left-click on the ball and drag right to increase the noise.



If you reach the end of the slider and the noise is still not enough, let up on the ball and it will return to the center (or 0). The new setting becomes the baseline and you can drag the ball again to increase the noise frequency even more.

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6. Left-click on the ball and drag left to decrease the noise.



If you reach the start of the slider and the noise is still not enough, let up on the ball and it will return to the center (or 0). The new setting becomes the baseline and you can drag the ball again to decrease the noise frequency even more.

7. You can also click on the arrows at each end of the Noise Frequency slider to adjust the frequency without having to let up on the mouse continually, however, the numeric indicator will always show 1 or -1.



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Noise Editor

To display the Noise Editor:

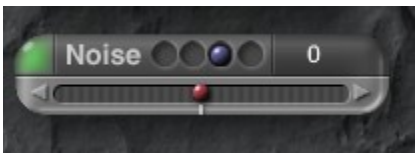
1. Display the Deep Texture Editor.
2. Either click the Noise button at the bottom of the editor or click the Noise button in the top-left corner of on any of the component windows.



The Noise palette appears.



3. Select which component to adjust by clicking in one of the indentations of the Component Indicator. The first three indentations are for Components 1, 2, and 3, while the fourth one is for the Combination (final) Component.

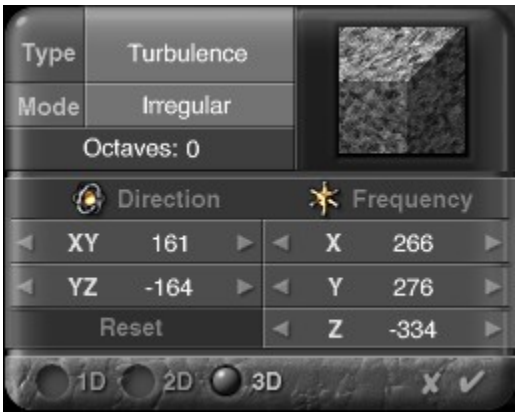


4. Click the top-left corner of the palette. The corner turns a slightly brighter green as you pass your cursor over it.



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The Noise Editor comes up.



Creating Noise

The Noise Editor is the tool you'll use to create noise with a component or combined texture. The noise creation process involves several steps:

1. Choose the number of dimensions in the noise.
2. Choose a Noise Type. This will give the basis for creating a noise pattern or grain.
3. Adjust the frequency of the noise.
4. Adjust the direction of the noise.
5. Apply a modifier to your noise, by choosing a Noise Mode.

The following sections describe the various parts of the editor and how to use them in the noise creation process.

Noise Dimensions

Textures in Bryce can exist in 3D so your noise can have up to three dimensions. Noise dimensions determine which axes you can use to adjust the orientation and frequency of the noise. It's easier to see the number of dimensions for your noise if you use a cube in the Noise Preview. These three examples show the difference between 1D (left), 2D (middle) and 3D (right) noise.

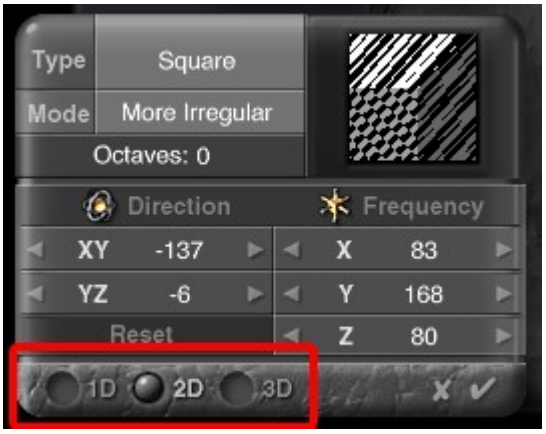


To choose the number of dimensions for your noise:

1. Display the Deep Texture Editor.
2. Display the Noise Editor.

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3. Click one of the Dimension buttons at the bottom of the editor.



Noise Type

There are 50 different types of noise available in the Noise Editor. Random noise is the default (RND). Each noise
type provides you with a different basic pattern to start your texture. Some are more linear or geometric while others are
more random.

More complex noise types require more rendering time. The time it takes to render the preview is a good indication of

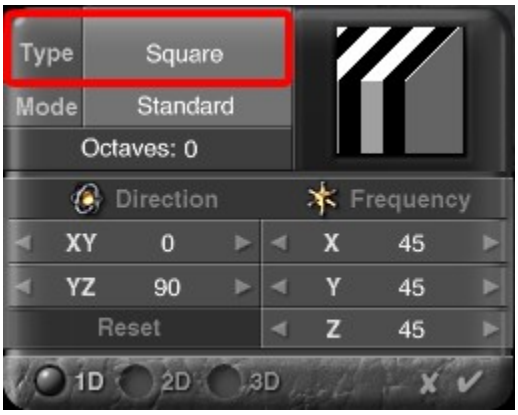
how long the final texture will take to render. You should use the more complex noise types cautiously.
The best way of choosing a noise type is to apply a few to your component and see how they look. Remember that this
noise is only the basis of the texture. You can still edit this noise using the other controls in the editor, so don't discard a
noise type because it's not perfect. The other controls can help you fine-tune the noise.

To choose a noise type:

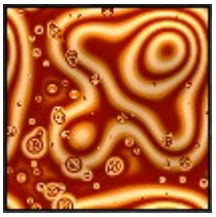
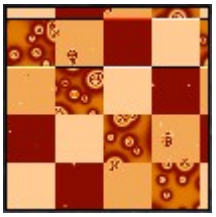
1. Display the Deep Texture Editor.
2. Display the Noise Editor.

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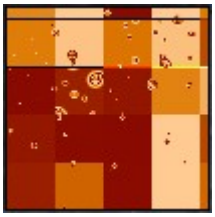
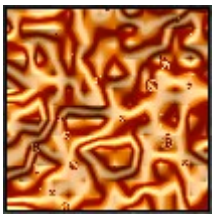
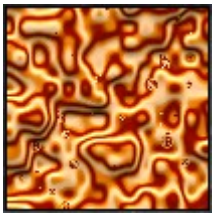
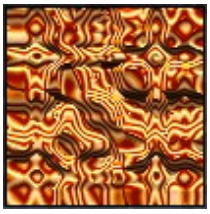
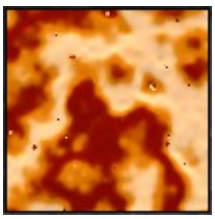
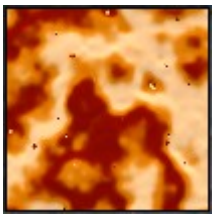
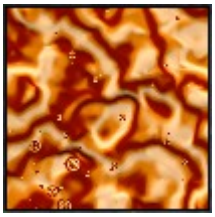
3. Click the Type field at the top of the editor and choose a noise type from the menu.



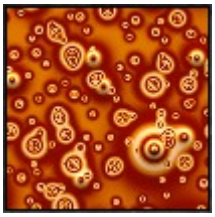
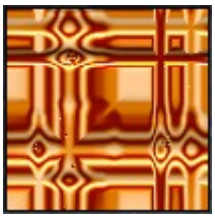
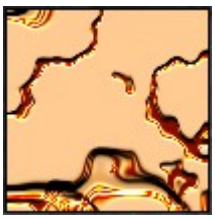
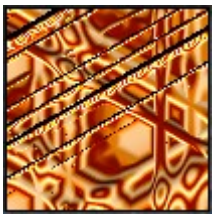
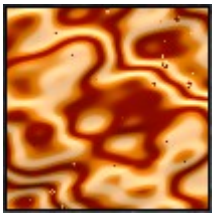
Below are examples of the 50 Noise Types available along with examples:

Nothing	
Sine	
Square	
Triangle	

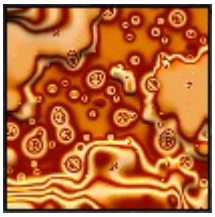
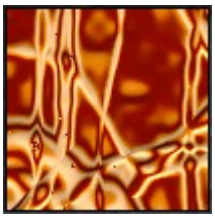
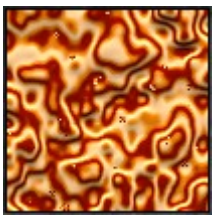
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RND Discrete	
RND Linear	
RND Continuous	
RND Saw	
Vortex Noise	
Fractal	
Turbulence	

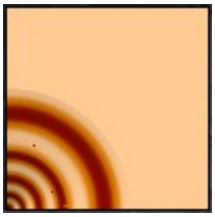
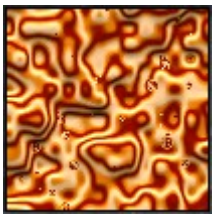
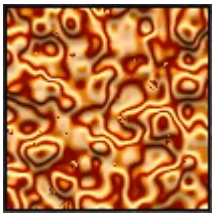
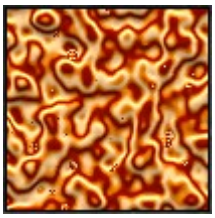
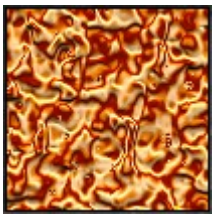
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Spots	
Fract Stone	
Triangles Discrete	
Square Lines	
Sparse RND Paths	
RND Lines	
Waves	

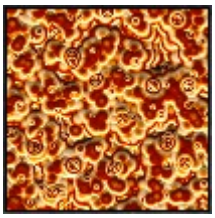
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Liquid	
Linear Sine	
Stucco Noise	
Stone Cliff	
Multifractal	
Leopard	
Techno	

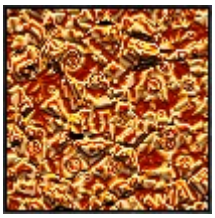
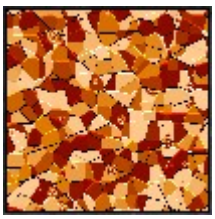
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Distance Origin	
Time Random	
Value	
Gradient	
Weird Value	
Weird Gradient	
Voronoi Distance1	

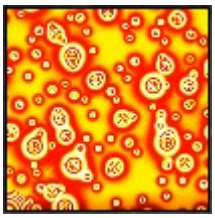
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Voronoi Distance2	
Voronoi Distance3	
Voronoi Distance4	
Voronoi DistSq1	
Voronoi DistSq2	
Voronoi DistSq3	
Voronoi DistSq4	

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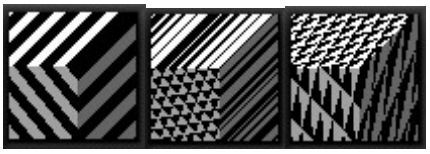
Voronoi D2-D1	
Voronoi D2sq-D1sq	
Voronoi D3-D2	
Voronoi D3sq-D2sq	
Voronoi D4-D3	
Voronoi D4sq-D3sq	
Voronoi ID1	

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Voronoi ID2	
Voronoi ID3	
Voronoi ID4	
Distance Squared	

Noise Orientation

Noise Orientation controls the direction of the noise. When you adjust the noise orientation, you change how the noise is laid out within the texture. When you apply a texture, the direction of the noise within the texture remains constant regardless of the orientation of the object. Since noise can exist in three dimensions, you adjust the direction of the noise in the X, Y, or Z axis. This example shows rotation in X (left), XY (middle), and XY (right).



The number of dimensions in the noise determines how many axes you can use to adjust the orientation. For 1D noise you can only use the X axis. With 2D noise you can use both the X and Y axes. For 3D noise you can use all the axes.

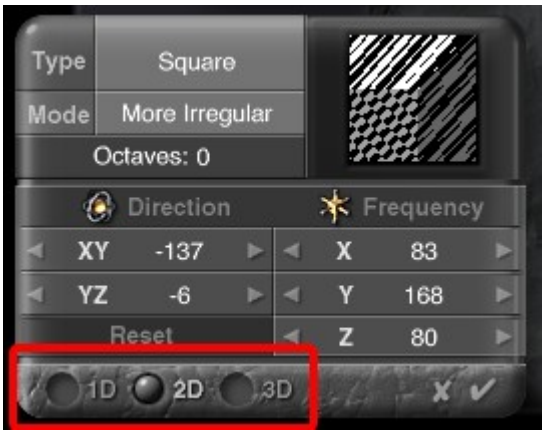
You can edit the noise orientation using the Direction numerical fields. The fields let you enter precise angles for noise orientation. You can also use the scroll arrows to set the angle in increments. Changing noise orientation can dramatically change the look of

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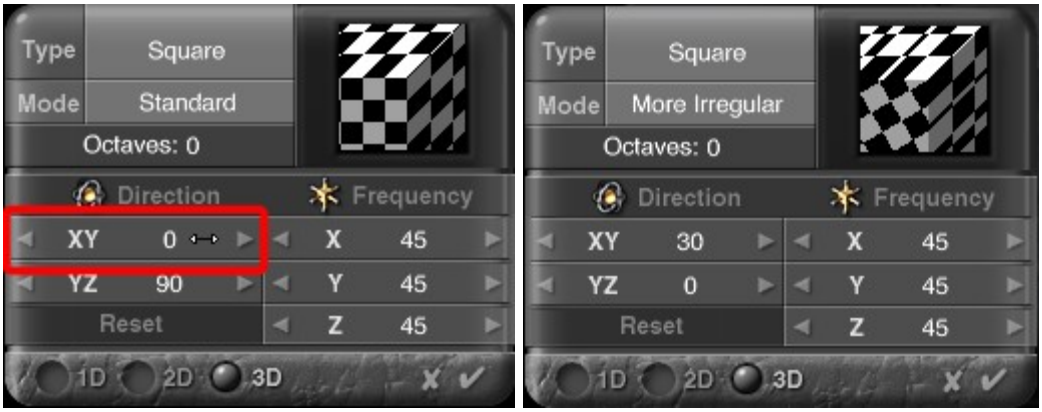
your noise. You'll see just how different your noise can look when you rotate it along a single axis.

To change the orientation of noise:

1. Display the Deep Texture Editor.
2. Display the Noise Editor.
3. Click one of the Dimension buttons at the bottom of the editor.



4. Drag over the XY field in the Direction area to set the noise angle in the X and Y axes. Drag left to decrease the value or right to increase it.



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5. Drag over the YZ field in the Direction area to set the noise angle in the Y and Z axes.



6. You can also drag over the scroll arrows to speed up the increase/decrease or click on the arrows to increment the values by one number at a time.

Noise Frequency

Noise Frequency determines how often the pattern within a texture repeats. Frequency is like scaling the noise. Higher frequencies decrease the scale of the noise so you can see the pattern more often. Lower frequencies increase the scale of the noise so the pattern repeats less often.

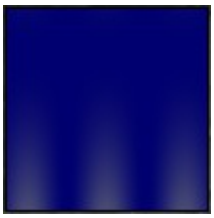
You can change noise frequency using the Frequency fields. The fields let you enter numerical values to adjust the noise frequency along the X, Y or axis. You can also adjust the values using the scroll arrows. The number of dimensions in the noise determines how many axes you can use to adjust the frequency. For 1D noise you can only use the X axis. With 2D noise you can use both the X and Y axes. For 3D noise you can use all the axes. If you try to adjust the axis frequency for a 2D noise, your changes will have no effect.

Adjusting the frequency can radically change the look of your noise. If you adjust the frequency in separate axes, you can achieve even more interesting effects. This example shows frequency settings of 10 (left), 50 (middle), and 100 (right).



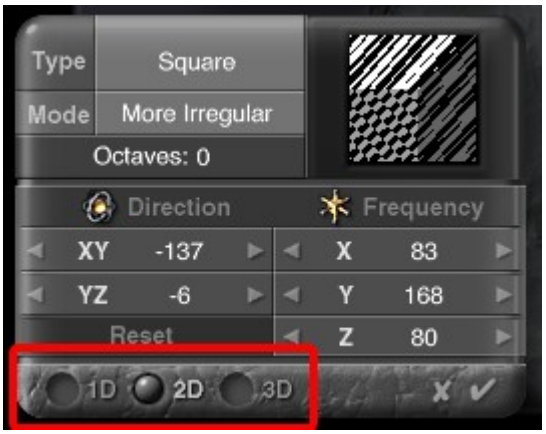
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In this example, the noise frequency was changed in only the Y axis (X=10, Y=80, Z=10).



To change the frequency of noise:

1. Display the Deep Texture Editor.
2. Display the Noise Editor.
3. Click one of the Dimension buttons at the bottom of the editor.



4. Drag over the X field in the Frequency area to set the noise frequency in the X axis. Drag left to decrease the value or right to increase it.



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5. Drag over the Y field in the Frequency area to set the noise frequency in the Y axis.



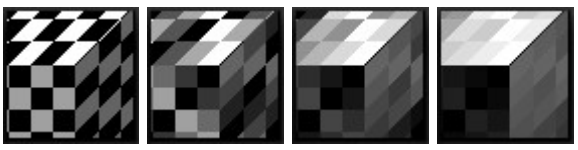
6. Drag over the field in the Frequency area to set the noise frequency in the axis.



7. You can also drag over the scroll arrows to speed up the increments.

Noise Octaves

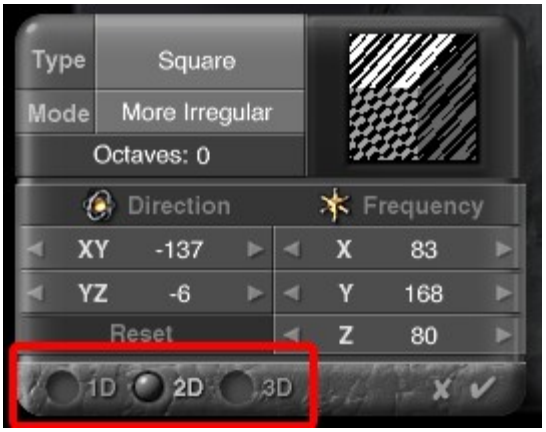
Noise Octaves are like musical octaves. In a musical scale, if you play F and then F an octave down, you're playing the same note, only it sounds lower. If you play both notes at the same time, the sound is more complex than if you played only one note. The same is true of noise. When you add an octave to noise it becomes more complex but the type of noise remains the same. These examples use Square noise to show the effects of increasing octaves from 0 (far left) 1 (second from left) to 2 (second from right) and 3 (far right). Increasing the octaves adds processing time to the component.



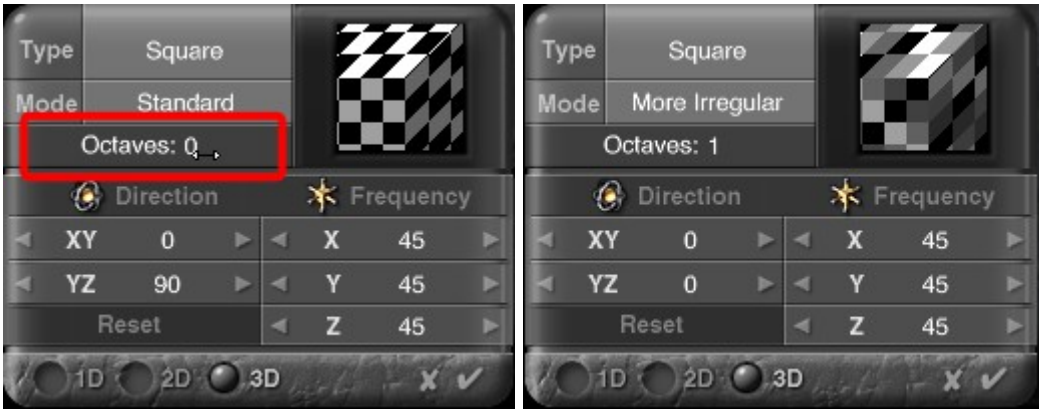
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To change the number of octaves:

1. Display the Deep Texture Editor.
2. Display the Noise Editor.
3. Click one of the Dimension buttons at the bottom of the editor.



4. Drag over the Octaves field.



Noise Modes

Noise Modes modify the octaves of a noise. As you add complexity by increasing the octaves, the Noise Modes let you modify the additional noise so that it produces different effects.

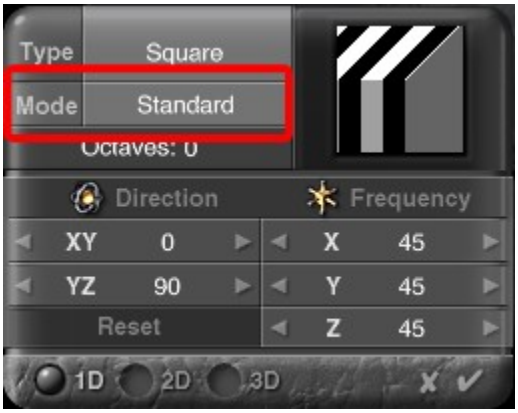
Many of the Noise Modes use dark and light values to modify the existing noise. Also, you may not see the effects of the modes if the Octave is set to 0.

To choose a Noise Mode:

1. Display the Deep Texture Editor.
2. Display the Noise Editor.

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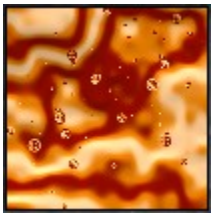
3. Click the Mode field at the top of the editor and choose a mode from the menu.



There are 13 noise modes available:

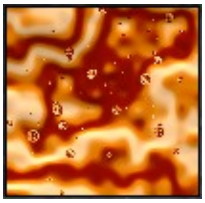
Standard

Standard mode adds a new octave to the noise at half the frequency and twice the amplitude. This is the default mode. In this example, Standard mode was applied to RND Continuous noise.



Irregular

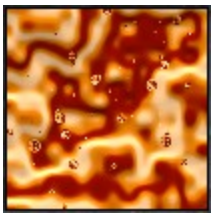
Irregular mode adds a new octave to the noise at half the frequency and twice the amplitude. However, in this mode higher frequency noise is modified more than the rest. The end result is that more detail is added to the noise. In this example, Irregular mode was applied to RND Continuous noise.



More Irregular

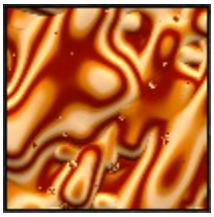
More Irregular mode works exactly like Irregular except that this mode is more intense. In this example, More Irregular mode was applied to RND Continuous noise.

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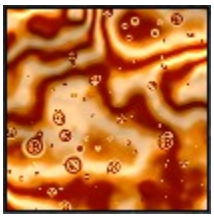
Maximum

When two components are combined using Maximum, the two components are compared and the one that's lighter becomes the result.



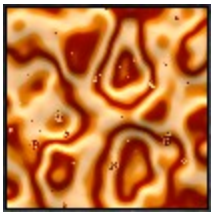
MultiFractal

In MultiFractal mode, lighter areas create higher contrast noise. In this example, MultiFractal mode was applied to RND Continuous noise.



With Rotation

In With Rotation mode, each additional octave is rotated. With Rotation mode it’s easier to see linear noise types. In this example, With Rotation mode was applied to RND Linear noise.



Minimum

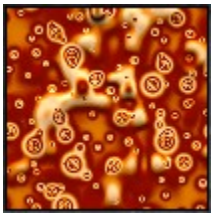
Minimum mode uses only the lowest values, or darkest areas, to produce the modified noise. In this example, Minimum mode was applied to RND Continuous noise.

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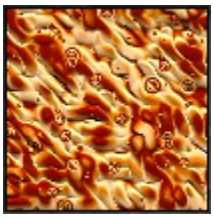
Multiply

In Multiply mode all the values in the noise are multiplied together. The results is a darker noise. In this example, Multiply mode was applied to RND Continuous noise.



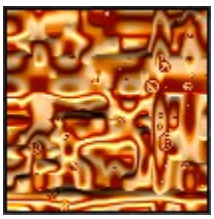
Difference

In Difference mode all the values in the noise are evaluated. All the values that are equal create black areas. When the values are different, the lower value becomes darker. The more octaves you have in the noise, the darker the modified noise. Difference works even at 0 octaves. In this example, Difference mode was applied to RND Continuous noise.



Minimum90

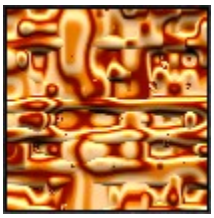
Minimum90 mode repeats the noise at a 90° angle from its original orientation and combines the original and copy using only the lowest values. In this example, Minimum90 mode was applied to RND Continuous noise.



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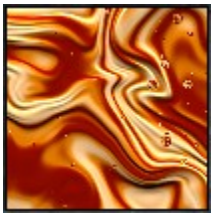
Maximum90

Maximum90 mode repeats the noise at a 90° angle from its original orientation and combines the original and copy using only the highest values. This mode is good for creating woven patterns. In this example, Maximum90 mode was applied to RND Continuous noise.



Auto-Phased

Auto-Phased mode automatically introduces phase shifts into the noise. In this example, Auto-phased mode was applied to RND Continuous noise.



Displaced Max

Displaced Max mode creates a copy of the noise, displaces noise by a small amount, and then lightens any areas where the two overlap. This mode is good for creating stone textures. In this example, Displaced Max mode was applied to RND Continuous noise.



Phase

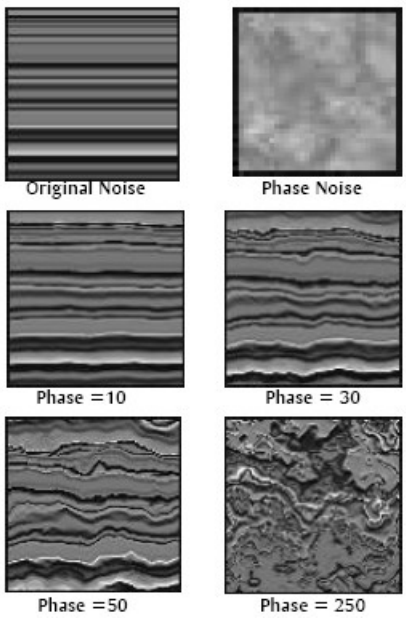
Phase introduces turbulence into your noise. The phase displaces the grain or patterns within the noise. When you design the phase, you're creating a displacement map along which the noise will be modified.

You can control how the phase interacts with your noise using the Phase Palette. You can design your phase using the Phase Editor. The Phase palette controls the amplitude. The Phase Amplitude controls the intensity of the displacement. As the amplitude is increased, there is more interference with the original noise.

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You won't have to increase the amplitude very much before you start seeing the phase pattern you designed interfere with the existing noise. In fact, it's probably a good idea to keep the phase amplitude low so that the phase pattern doesn't overwhelm the noise.

This graph shows how the phase interacts with the noise at different amplitude settings.



The Phase Editor looks a lot like the Noise Editor. It has the same type of tools and they work exactly like they do in the Noise Editor. The difference is that you're using noise patterns, orientations, frequencies, and modes to design how the basic Noise will be displaced. Using the Phase Editor you can perform several functions:

- Create 1D, 2D, or 3D phase
- Change the type of noise
- Change the frequency of the phase
- Change the orientation of the phase
- Change the noise octaves
- Change the noise modulations

While the Phase Editor lets you create the noise pattern or grain within the phase, the Phase Palette controls how that phase is applied to the component or the combined texture.

Phase Palette

To display the Phase palette:

1. Display the Deep Texture Editor.
2. Click the Phase button at the bottom of the editor or the bottom-right corner of any of the component windows.

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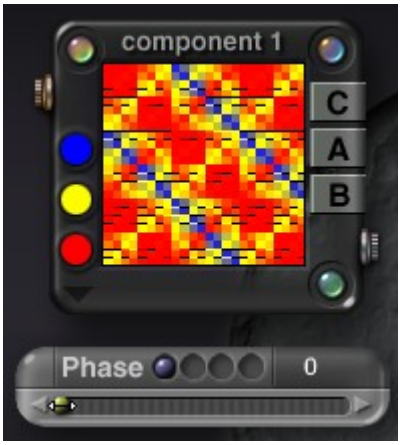
The Phase palette appears.



3. Select which component to adjust by clicking in one of the indentations of the Component Indicator. The first three indentations are for Components 1, 2, and 3, while the fourth one is for the Combination (final) Component.



4. Move the mouse over the green ball in the Amplitude slider. The cursor changes to a double-ended arrow.



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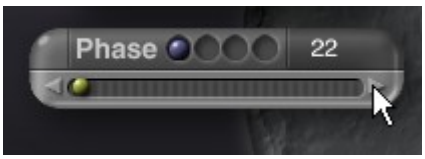
5. Left-click on the ball and drag right to increase the amplitude up to 1000.



6. Left-click on the ball and drag left to decrease the amplitude down to 0.



7. You can also click on the arrows at each end of the Amplitude slider to adjust the amplitude manually.



Phase Editor

To display the Phase Editor:

1. Display the Deep Texture Editor.
2. Click the Phase button at the bottom of the editor or the bottom-right corner of any of the component windows.

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The Phase palette appears.



3. Select which component to adjust by clicking in one of the indentations of the Component Indicator. The first three indentations are for Components 1, 2, and 3, while the fourth one is for the Combination (final) Component.

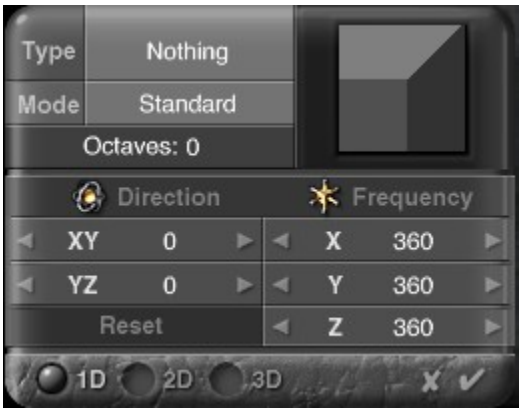


4. Click the top left corner of the palette. The corner turns green as you pass your cursor over it.



The Phase Editor comes up.

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Creating Phase

Phase is designed using the Phase Editor. The phase creation process involves several steps:

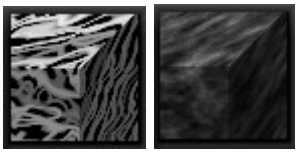
1. Choose the number of dimensions in the phase.
2. Choose a Noise Type. This gives the basis for creating a phase pattern or grain.
3. Adjust the frequency of the noise.
4. Adjust the orientation of the noise.
5. Apply a modifier to the noise by choosing a Noise Mode.

You'll notice that many of the steps for creating the phase are the same as those for creating noise. That's because you are creating noise. The difference is that instead of applying the noise to the texture, the noise you create for the phase is used to displace the existing noise.

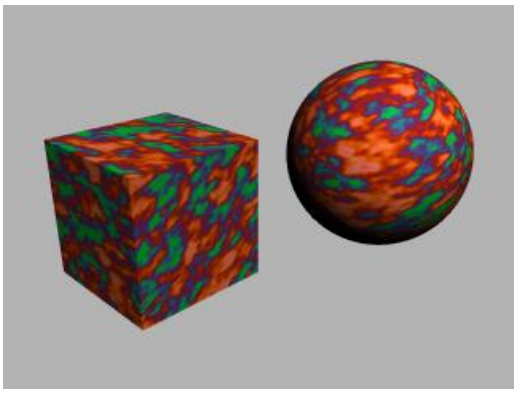
The following sections describe the various parts of the editor and how to use them in the phase noise creation process.

Phase Dimensions

Just like noise, you can set the dimensions of the phase. The number of dimensions determines which noise axes will be displaced when you apply the phase. For example, if you apply a one-dimensional phase to a three-dimensional noise, only the X axis of the noise will be displaced. It's easier to see the number of dimensions for your phase if you use a cube in the Phase Preview. In this example, a 1D phase (left) was applied to a 3D noise (right) to create the result (bottom).

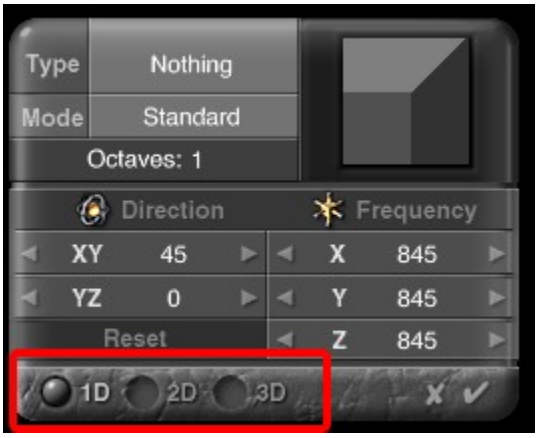


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To choose the number of dimensions for your phase:

1. Display the Deep Texture Editor.
2. Display the Phase Editor.
3. Click one of the dimension buttons at the bottom of the editor.



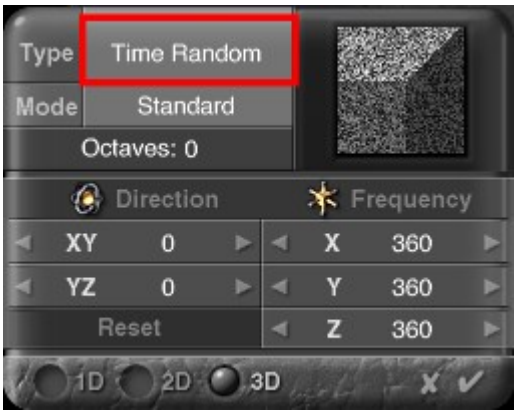
Phase Noise Type

There are 50 types of noise available in the Phase Editor. Random Noise is the default (RND). Each noise type provides you with a different basic pattern for the phase. The noise types available in the Phase Editor are the same as those in the Noise Editor.

To choose a noise type:

1. Display the Deep Texture Editor.
2. Display the Phase Editor.
3. Click the Type field at the top of the editor and choose a noise type from the menu.

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Below are the 50 Phase Noise Types available:

- Nothing
- Sine
- Square
- Triangle
- RND Discrete
- RND Linear
- RND Continuous
- RND Saw
- Vortex Noise
- Fractal
- Turbulence
- Spots
- Fract Stone
- Triangles Discrete
- Square Lines
- Sparse RND Paths
- RND Lines
- Waves
- Liquid
- Linear Sine
- Stucco Noise
- Stone Cliff
- Multifractal

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- Leopard
- Techno
- Distance Origin
- Time Random
- Value
- Gradient
- Weird Value
- Weird Gradient
- Voronoi Distance1
- Voronoi Distance2
- Voronoi Distance3
- Voronoi Distance4
- Voronoi DistSq1
- Voronoi DistSq2
- Voronoi DistSq3
- Voronoi DistSq4
- Voronoi D2-D1
- Voronoi D2sq-D1sq
- Voronoi D3-D2
- Voronoi D3sq-D2sq
- Voronoi D4-D3
- Voronoi D4sq-D3sq
- Voronoi ID1
- Voronoi ID2
- Voronoi ID3
- Voronoi ID4
- Distance Squared

Phase Noise Orientation

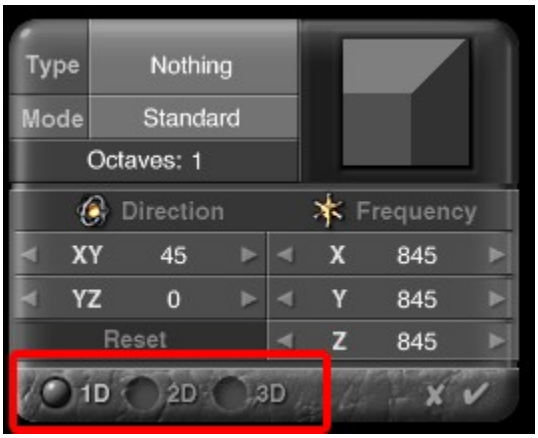
Phase Noise Orientation controls the direction of the noise within the phase. The number of dimensions in the phase determines how many axes you can use to adjust the orientation. You can edit the noise orientation using the Direction numerical fields. The fields let you enter precise angles for noise orientation.

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You can also use the scroll arrows to set the angle in increments. Like frequency, changing the orientation of the phase noise in only one or two axes can create some very interesting results. In this example, the phase noise orientation was changed in only the Y-axis and then applied to 3D noise.

To change the orientation of phase noise:

1. Display the Deep Texture Editor.
2. Display the Phase Editor.
3. Click one of the dimension buttons at the bottom of the editor.



4. Drag over the XY field in the Direction area to set the noise angle in the X and Y axes. Drag left to decrease the value or right to increase it.



5. Drag over the YZ field in the Direction area to set the noise angle in the Y and Z axes.

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6. You can also drag over the scroll arrows to speed up the increments.

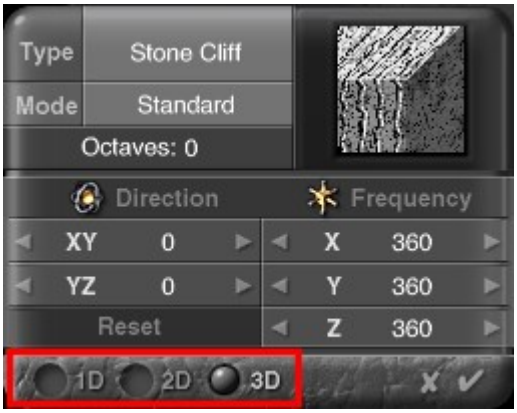
Phase Frequency

Phase Frequency determines how often the pattern within the noise repeats. Frequency is like scaling the noise. Higher frequencies decrease the scale of the noise so you can see the pattern more often. Lower frequencies increase the scale of the noise so the pattern repeats less often. You can change phase noise frequency using the Frequency numerical fields. The fields let you enter numerical values to adjust the noise frequency along the X, Y, or Z-axis. You can also adjust the values using the scroll arrows.

The number of dimensions in the phase determines how many axes you can use to adjust the noise frequency. For 1D phase you can only use the X axis. With 2D phase you can use both the X and Y axes. For 3D phase you can use all the axes. Adjusting the frequency of the Phase noise disproportionately can have some very interesting effects on your noise.

To change the frequency of phase noise:

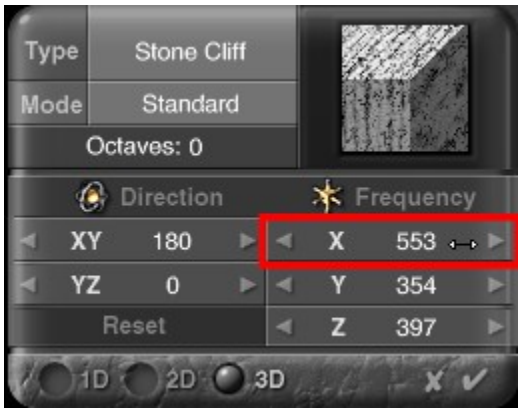
1. Display the Deep Texture Editor.
2. Display the Phase Editor.
3. Click one of the Dimension buttons at the bottom of the editor.



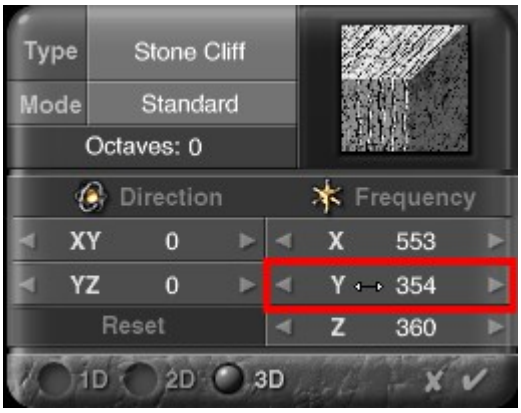
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4. Drag over the X field in the Frequency area to set the phase noise frequency in the X axis. Drag left to decrease the value or right to increase it.

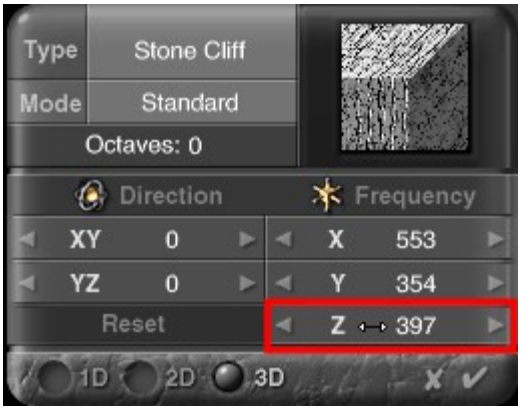




5. Drag over the Y field in the Frequency area to set the Phase noise frequency in the Y axis.



6. Drag over the Z field in the Frequency area to set the Phase noise frequency in the Z axis.



7. You can also drag over the scroll arrows to speed up the increments

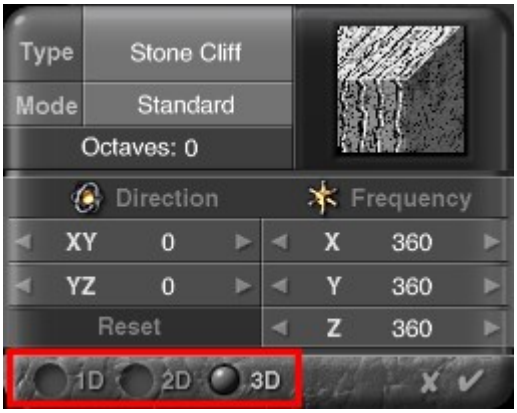
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Phase Noise Octaves

Phase Noise Octaves work exactly like the noise octaves. They introduce an extra level of complexity to the noise. Refer to "Noise Octaves" for more on octaves.

To change the number of octaves:

1. Display the Deep Texture Editor. Display the Phase Editor.
2. Click one of the dimension buttons at the bottom of the editor.



3. Drag right over the Octaves field to increase the octaves, drag left to decrease.





Phase Noise Modes

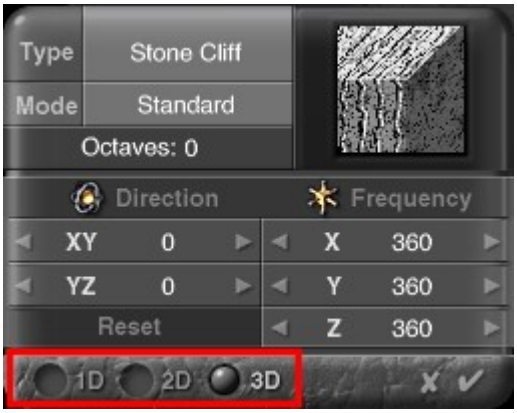
Phase Noise Modes work exactly like the noise modes. They modify the octaves of a noise. Refer to "Noise Modes" for more on modes.

To choose a Phase Noise Mode:

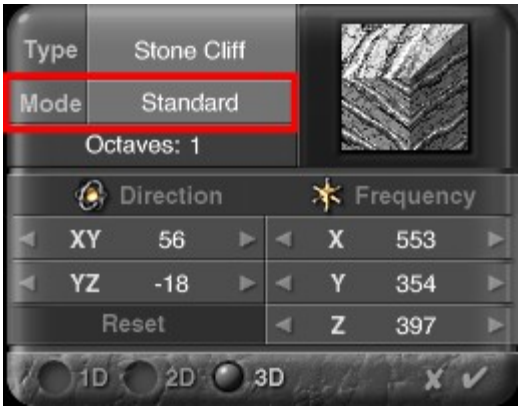
1. Display the Deep Texture Editor.
2. Display the Noise Editor.

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3. Click one of the dimension buttons at the bottom of the editor.



4. Click the Mode field at the top of the editor and choose a mode from the menu.



There are 13 noise modes available:

- Standard
- Irregular
- More Irregular
- Maximum
- Multi-Fractal
- With Rotation
- Minimum
- Multiply
- Difference
- Minimum90
- Maximum90
- Auto-Phased
- Displaced Max

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Filtering

The Filter you apply to the Noise in a component can change the entire look of the noise. The filter refines the noise so that it has more or less detail, increases its contrast, applies it only at high altitude, or changes its spatial orientation. Whatever the change, the filter has a profound effect on the final look of your texture.

Filters are expressed as equations with variables. When the equation is applied to the noise, it changes some aspect of the noise. You can control how the equation affects the noise by changing the values of the variables. The filter only affects the Noise.

The Phase cannot be altered using a Filter. The Phase is blended with the Noise.

Filters are edited using the Filtering Palette.

The palette displays the current filter and provides tools for editing the filter graph.

Filtering Palette

Filters are equations which have variables. Each equation can have up to three variables labeled a, b, and c. The values for each variable are displayed at the bottom of the palette.

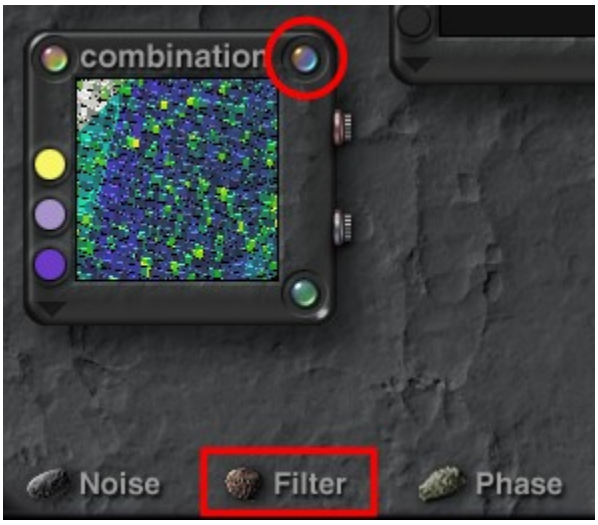
Generally, a controls the intensity of the filter effect while b controls the overall height. In some filters a and b may stand for other things. For those filters that use it (Quantize and Snow Puddles), c controls the number of steps between values or the height required for snow to appear.

There are two ways you can adjust a filter: by changing the variable values or by changing the shape of the graph (which automatically changes the variable values). The method you use depends on how much you know about a particular filter. If you're not sure what the filter does, change the graph - it's a much more intuitive way of working.

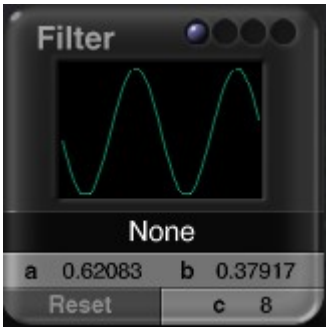
To display the Filtering palette and edit the current filter:

1. Display the Deep Texture Editor.
2. Click the Filter button at the bottom of the editor or the bottom-right corner of any of the component windows.

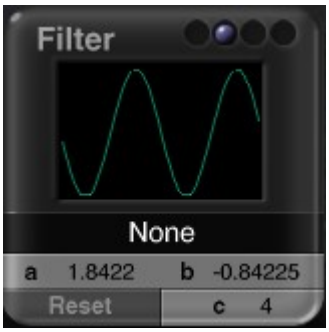
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The Filter palette appears.

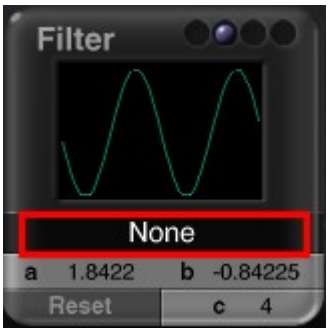


3. Select which component to adjust by clicking in one of the indentations of the Component Indicator. The first three indentations are for Components 1, 2, and 3, while the fourth one is for the Combination (final) Component

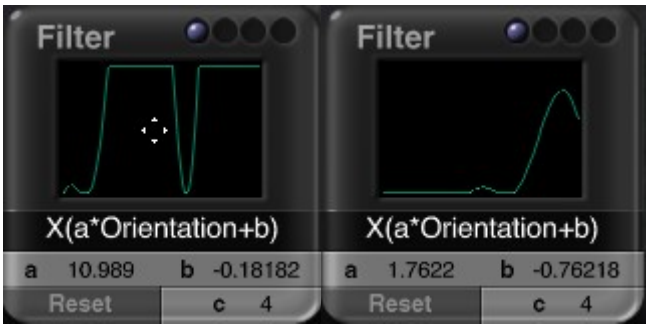


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4. If the current filter is set to None, left-click hold on the filter name and select a filter from the list. See "Choosing a Filter" for examples of each filter.



5. Left-click hold over the Filtering graph area. The cursor changes to a four sided arrow. Drag over the filter and the shape of the graph changes as you drag.

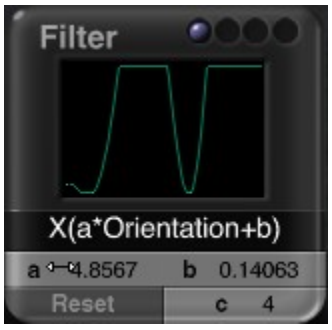


6. Notice that the variables also change as you move the graph.
    - Dragging horizontally changes the value of a.
    - Dragging vertically changes the value of b.



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7. To change variable values:
    - Display the Filtering palette.
    - Left-click hold over the variable field you want to change. The cursor changes to a double-ended arrow. Drag left to reduce the value or right to increase it. The shape of the graph changes as you adjust the values.



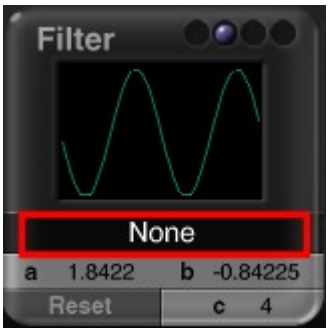
    - Please note that if the filter equation does not include the c value, then adjusting that value will not affect that particular filter.

Choosing a Filter

Each filter available in the Filtering palette offers something unique. The best way of choosing which filter you want to use is to apply it to a component and see what happens.

To choose a filter:

1. Display the Deep Texture Editor.
2. Display the Filtering palette.
3. Click the Filtering Equation area and choose a filter from the menu.

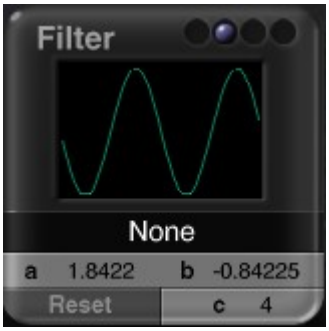


There are fourteen filters available.

None

This option deactivates the filter. No filtering is applied to the component.

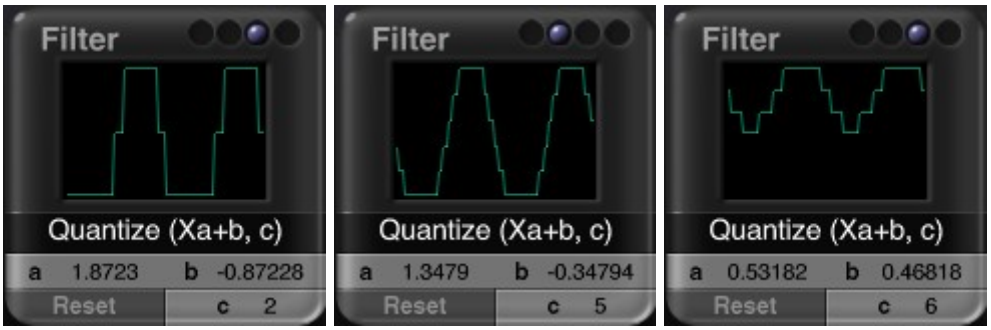
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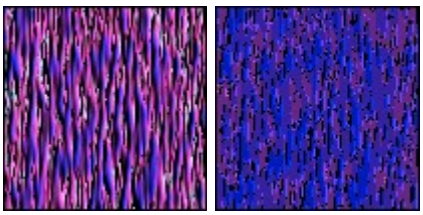
Quantize (Xa+b, c)

This filter works like a Posterize effect. When it's applied, gray values jump from one value to the next, creating a blocky stair-step type of effect.

In this filter, a and b control the contrast and height, while c controls the number of levels between white and black. Notice in the images below how the c value affects the levels.



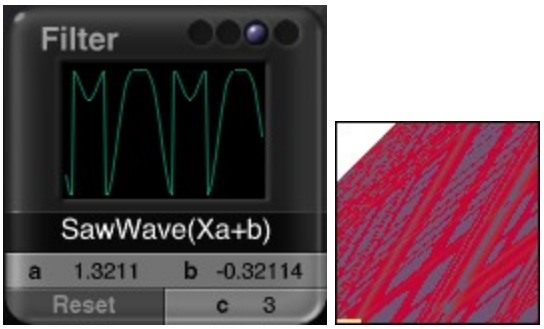
In this example, Quantize (right) was applied to RND Continuous noise (left).



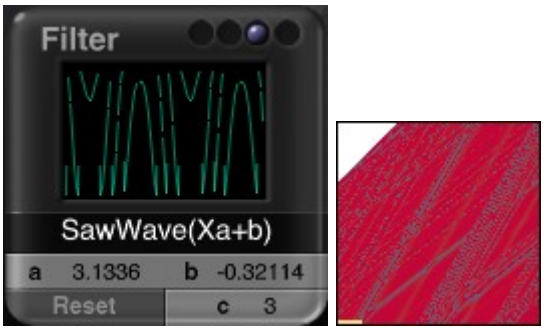
SawWave(Xa+b)

When the graph for this filter has only a small curve, it acts like a contrast filter. As it approaches the height limits (set by b), it bounces back on itself. This creates high-contrast breaks in the noise. For color output use this filter to get areas of high-contrast alternating color.

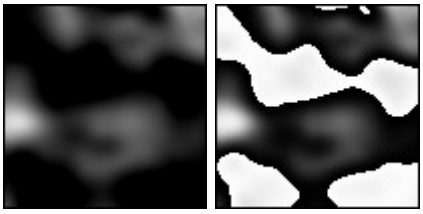
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When you set the value of a to a high number you'll get areas with a larger amount of noise.

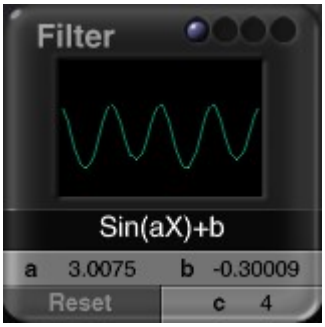


In this example, Saw Wave (right) was applied to RND Continuous noise (left).



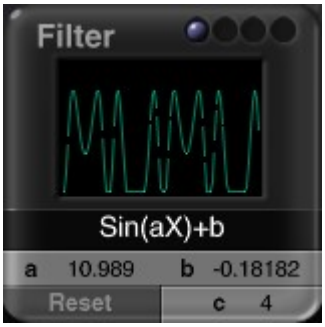
Sin(aX+b)

This filter creates noise that appears as large number of lines that are oriented in the same direction. Use this filter to generate wood grains.



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The a variable controls the number of lines. Higher values create a better effect.

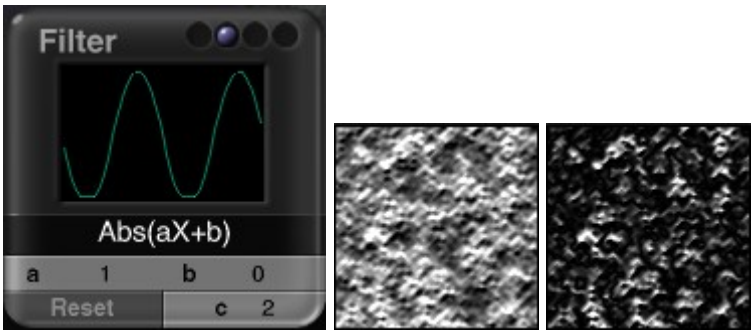


In this example, Sine Wave (middle) was applied to RND Continuous noise (left). In the far right example, the a variable for Sine Wave was increased.

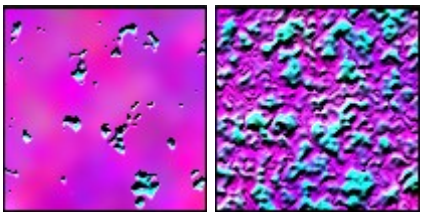


Abs(aX+b)

This filter works like a Difference effect. When it's applied, you'll get more light areas in your noise and a higher level of detail in a bump map.

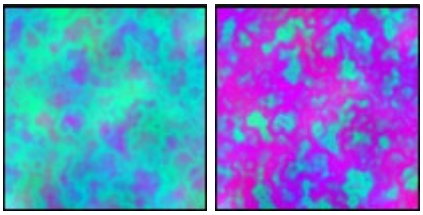


To get additional bump information using this filter, set a to 2 and b to -1.



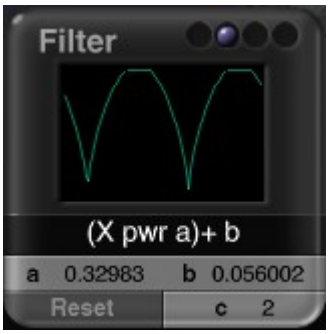
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In this example, Absolute (right) was applied to RND Continuous noise (left).

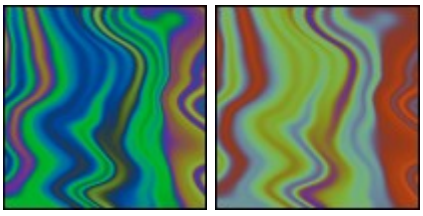


(X pwr a)+b

This filter smoothes out the darkest areas of your noise. However it has less effect on lighter areas and no effect on white.

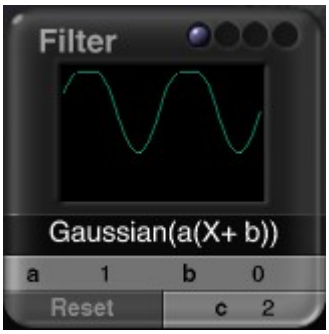


In this example, XPower (right) was applied to RND Continuous noise (left).



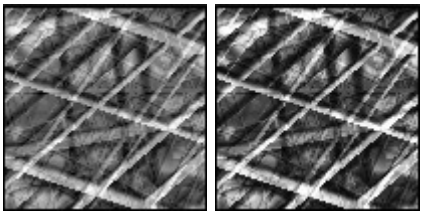
Gaussian(a(X+b))

This filter smoothes out darker areas of your noise and makes lighter areas noisier. White areas become the noisiest.



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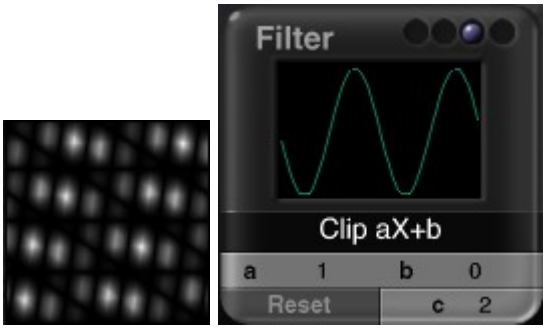
In this example, Gaussian (right) was applied to RND Lines noise (left).

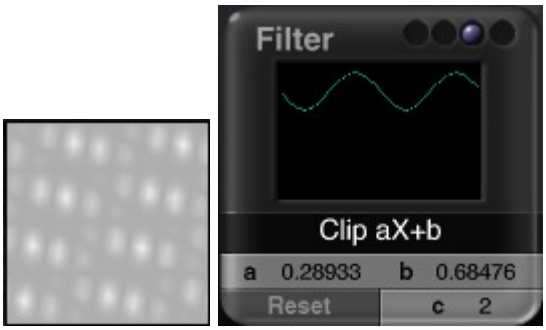


Clip aX+b

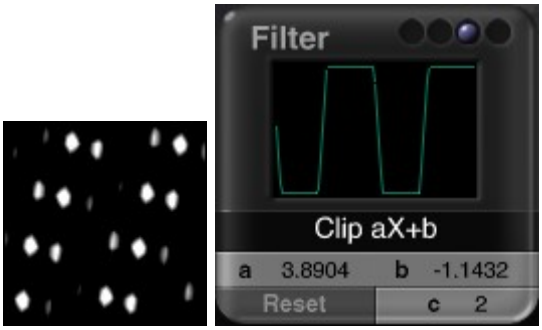
Clip is probably the filter you'll use most. It's a contrast filter. The a variable controls the contrast and b controls the overall brightness.

For a low contrast effect make the wave in the graph smaller. Decrease the value of a to reduce the size of the wave and increase b to move the wave up.



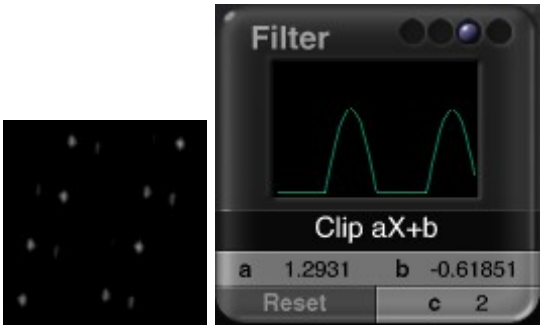


Using this wave, all the values will be expressed as mid-gray. For a high contrast effect, adjust the wave so that it hits both the top and bottom edges of the preview.

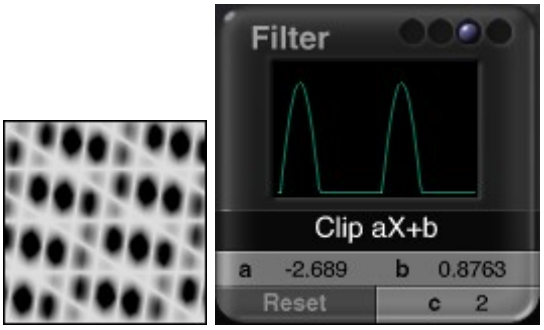


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Increase the value of a and make b negative to move the curve down.



To invert the colors in your noise, make a negative and increase b.

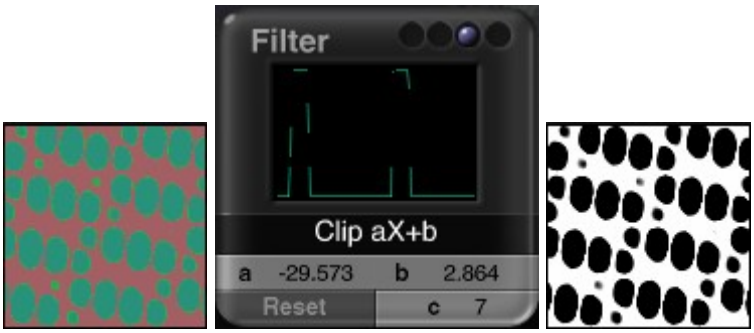


In these examples, different levels of Clip were applied to Linear Sine noise. The black and white versions show the contrast/brightness changes when Color is disabled.





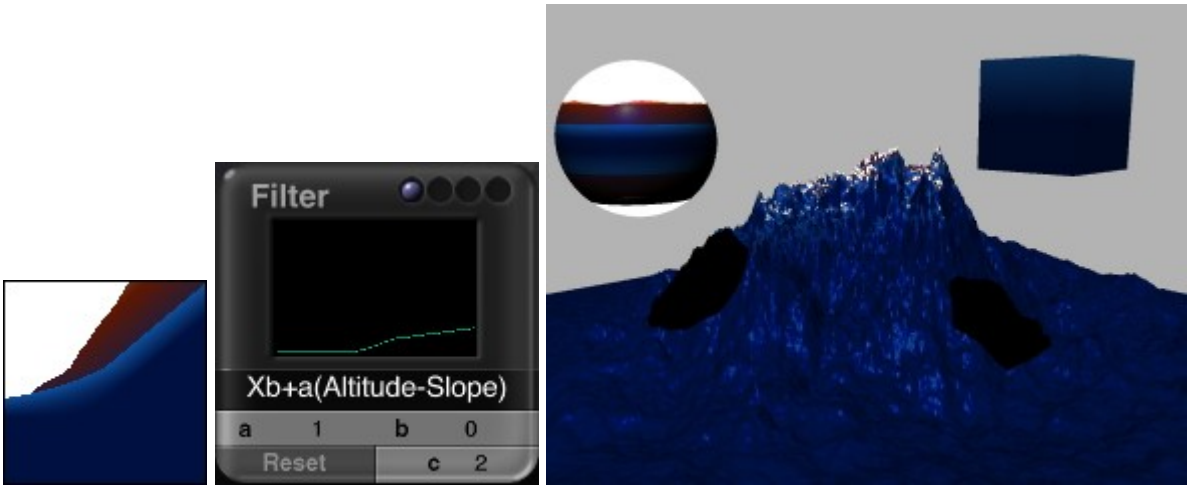
©2007 DAZ 3D, Inc.

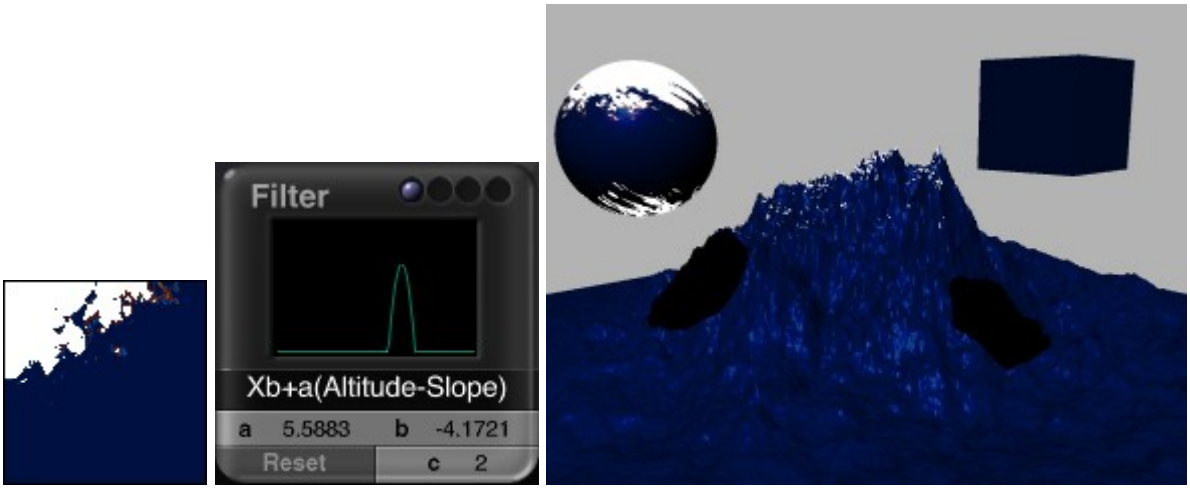


Xb+a(Altitude-Slope)

This filter applies noise only at certain combinations of slope and altitude. The Altitude Minus Slope filter works on the slope and altitude of an object in World Space. In these examples, Altitude Minus Slope was applied to Voronoi DistSq4 and then to objects in a scene.

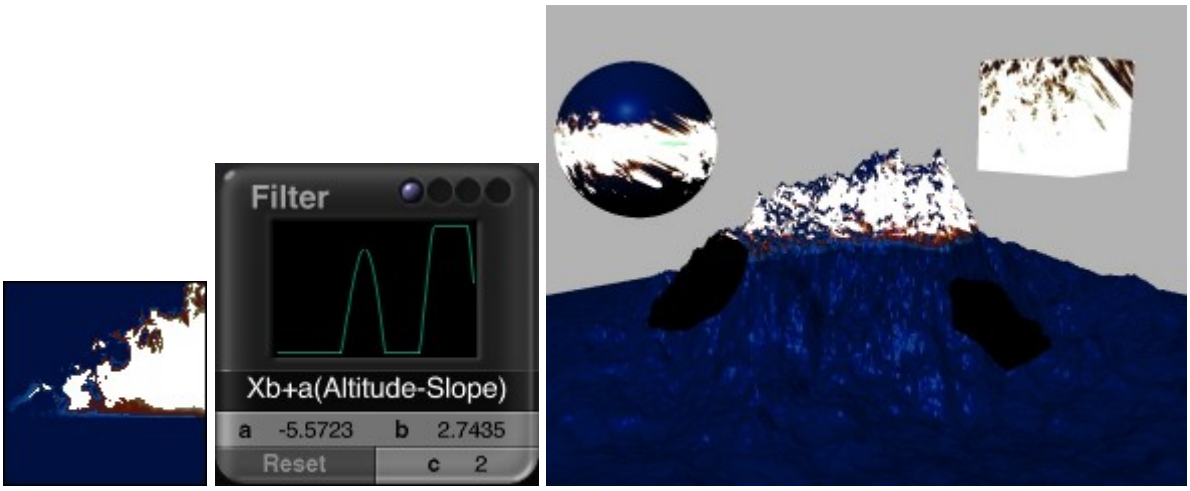
When a is positive and b is negative, noise is applied at high altitudes and on flat surfaces.





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When a is negative and b is positive, noise is applied at low altitudes and on steep slopes.

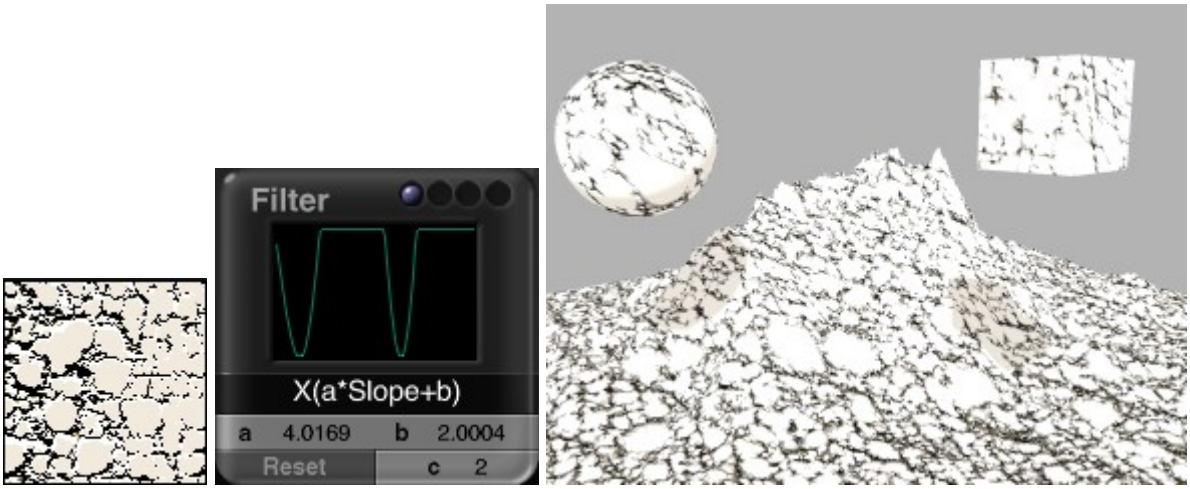


X(a*Slope+b)

This filter applies noise based on an object's slope. Slope can range anywhere from flat and horizontal to steep and vertical. This is an excellent filter to use if you want to isolate a texture to vertical cliffs or flat surfaces.

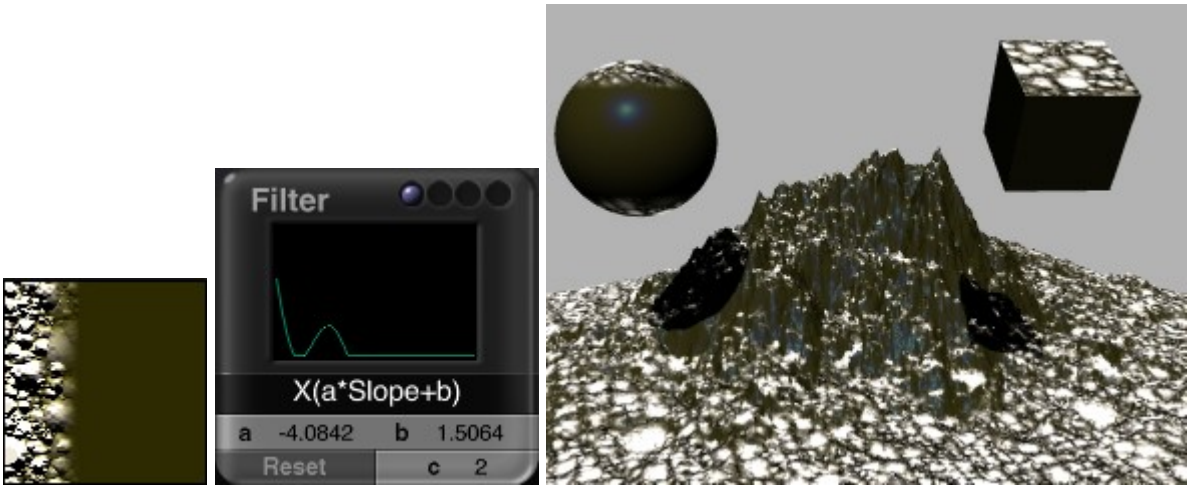
In this filter, a determines the steepness of the noise (-4 is flat, 4 is vertical). The b variable controls the starting point of the transition.

To place noise on vertical surfaces make a=4 and b=2.

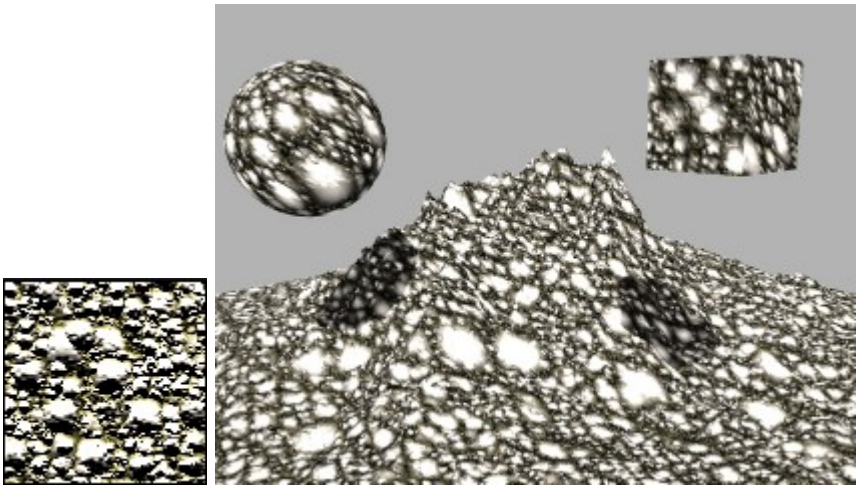


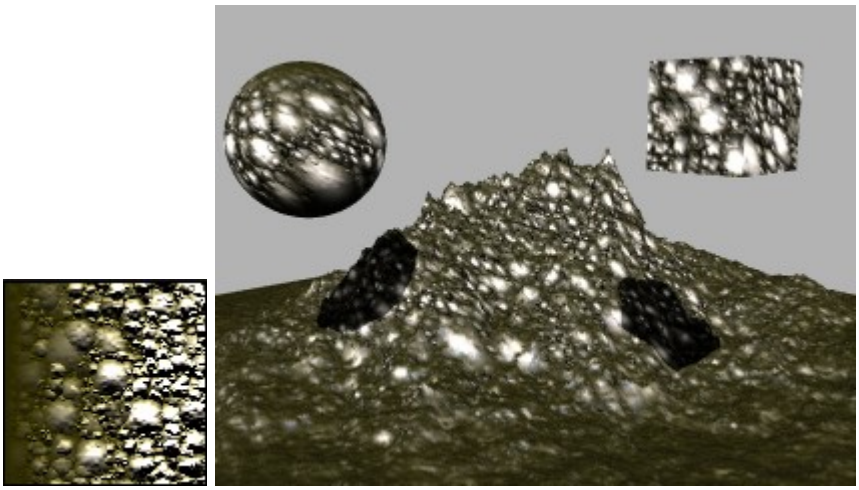
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To place noise on flat surfaces make a=-4 and b=1.5.



The Slope filter works on the slope of an object in World Space. In this example, the default Slope (bottom) was applied to Fract Stone noise (top) and then to objects in a scene.





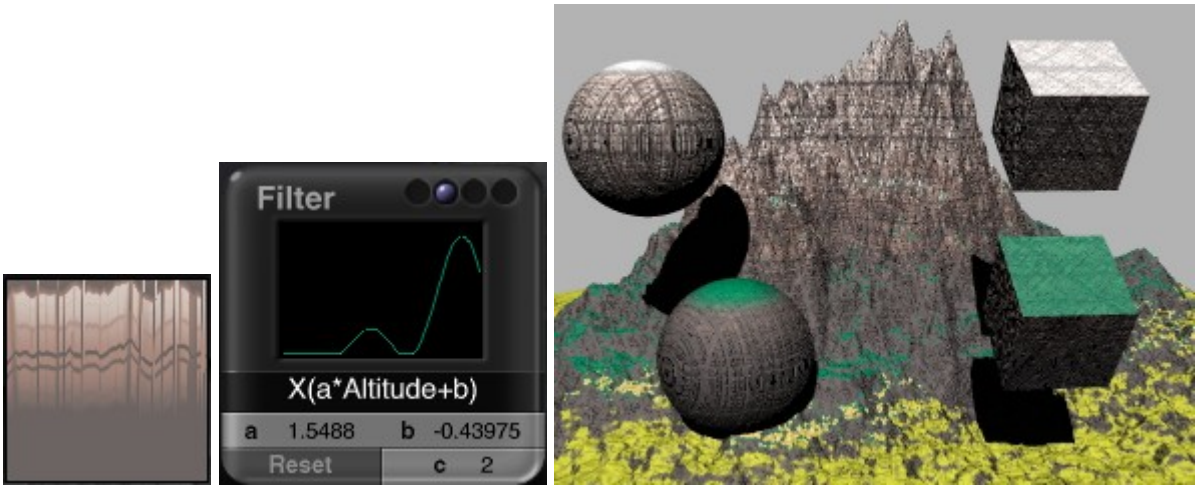
©2007 DAZ 3D, Inc.

X(a*Altitude+b)

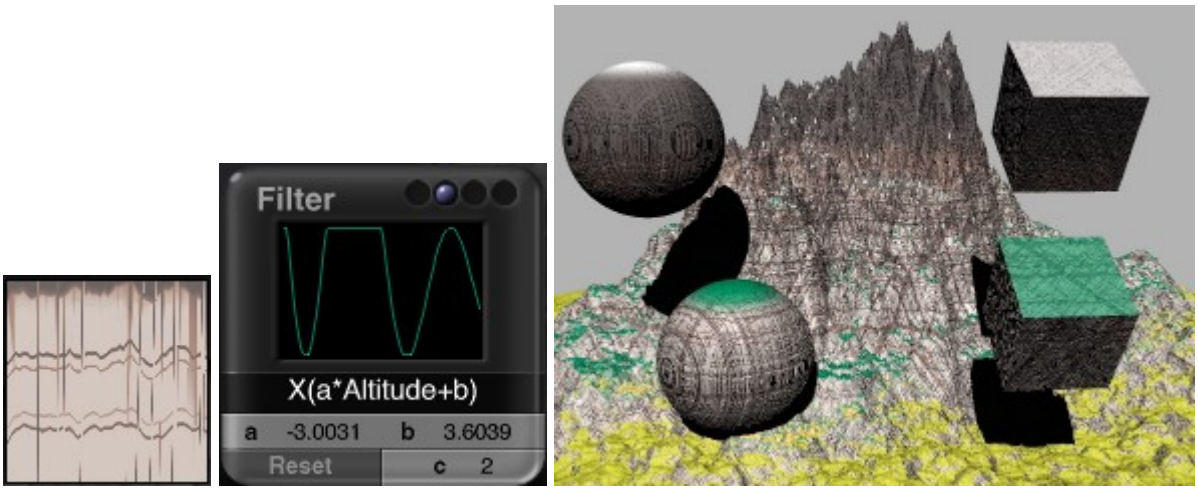
This filter modulates the scale of the noise according to an object's altitude.

In this filter, a determines how fast the noise is scaled by altitude. A lower value creates a gradual transition, while higher values create sharper transitions.

To apply noise at higher altitudes make sure a is positive. At high altitudes b controls the transition. The higher the transition, the lower the number. So, at high altitudes b should be a negative number.

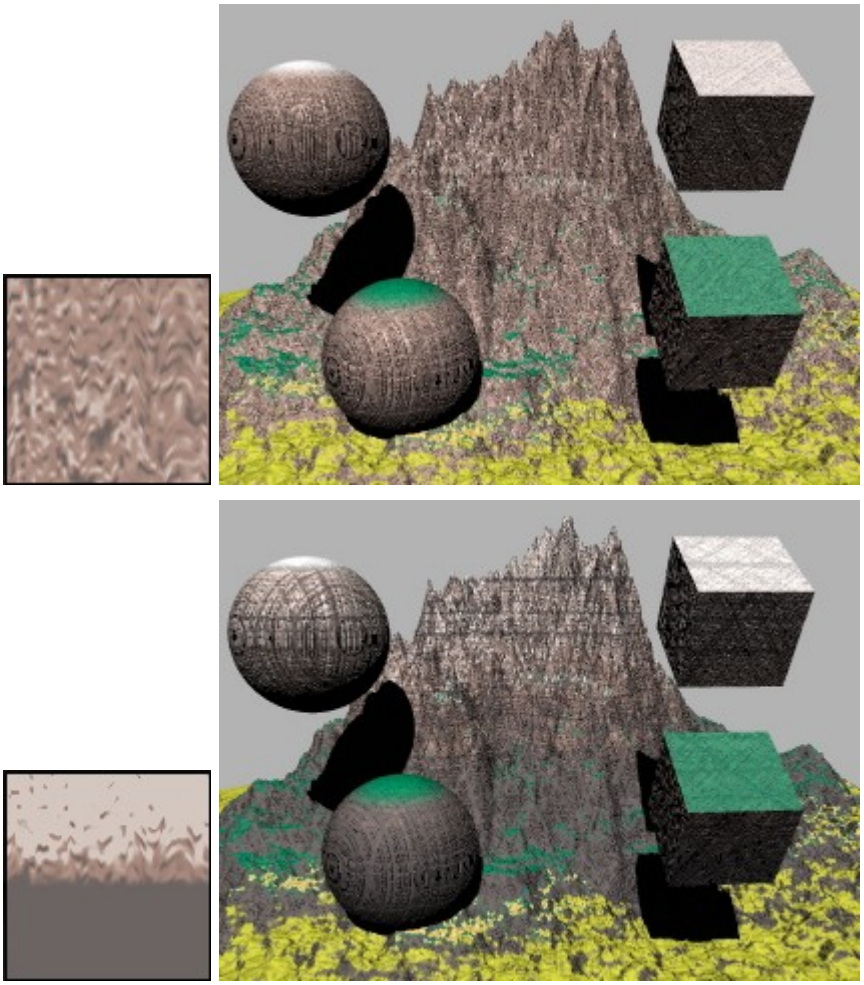


To apply noise at lower altitude, reverse the variables so that a is negative and b is positive.



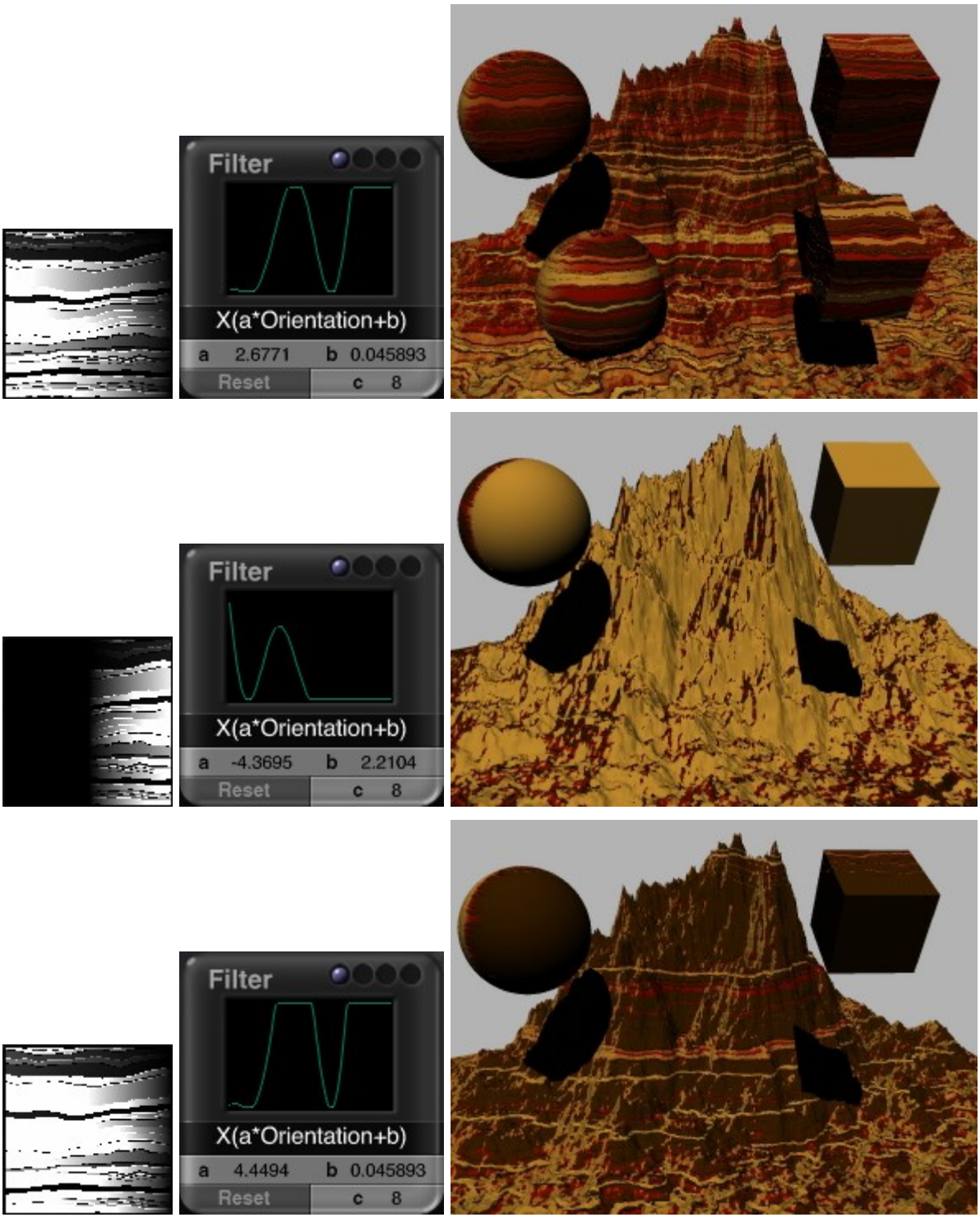
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The Altitude filter works on the altitude of an object in World Space. In this example, Altitude (bottom) was applied to RND Continuous noise (top) and then to objects in a scene.



X(a*Orientation+b)

This filter applies noise based on an object's east-west orientation.
In these examples, Orientation was applied to Voronoi ID2 noise and then to objects in a scene.

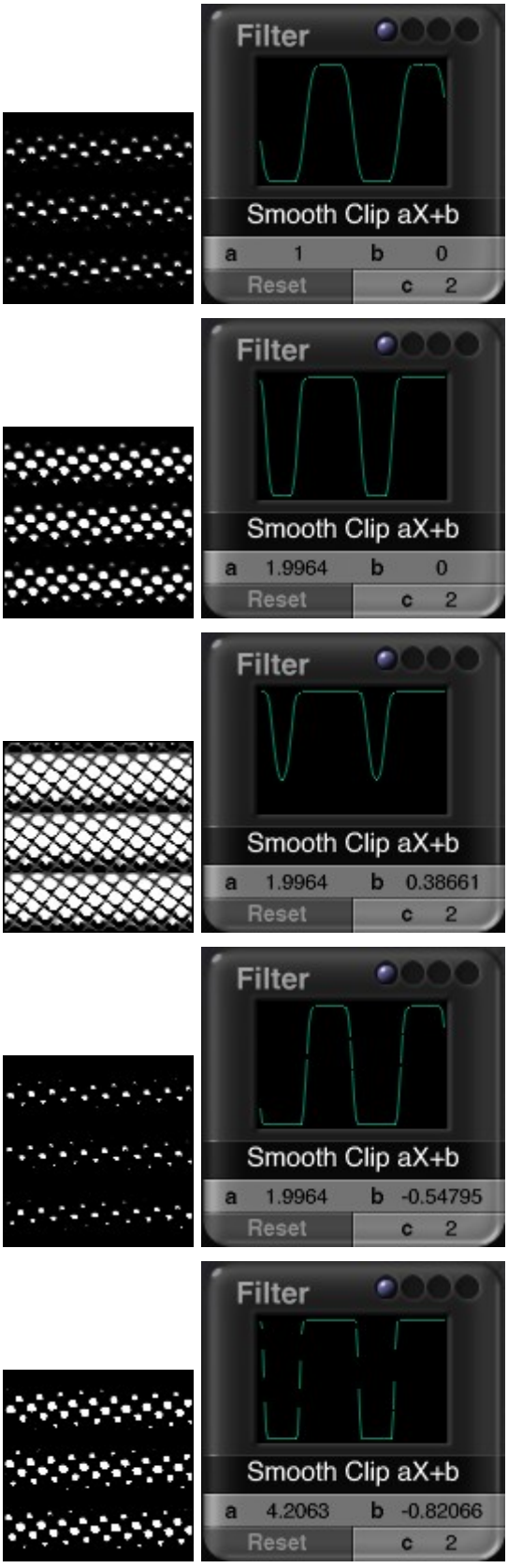


Smooth Clip aX+b

This filter works exactly like the Clip filter. It's also a contrast filter, except that this filter smoothes out the transitions between darks and grays. The a variable controls the contrast and b controls the overall brightness.

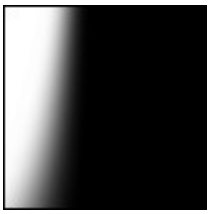
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In these examples, Smooth Clip was applied to Linear Sine noise.



Snow Puddles

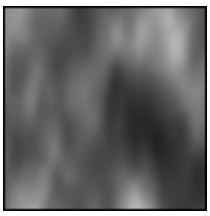
This filter turns noise into snow patches. Snow is applied according to an object's slope and altitude.
The a variable controls how much the noise interferes with the smoothness of the snow. When a=0 the noise doesn't interfere at all so the snow is perfectly smooth.

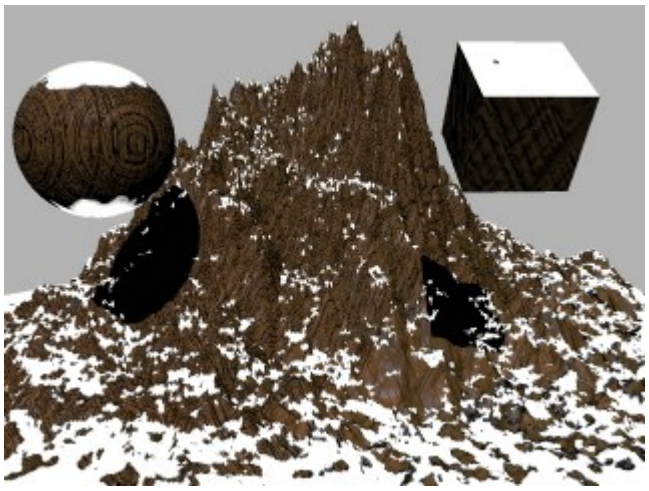





When the a value is higher, the snow starts looking like the noise. The b variable shifts the altitude or snow level. It sets where the snow begins. The c variable controls how steep an object has to be before the snow appears on its surface. The higher the number, the flatter an object has to be before snow appears on its surface.

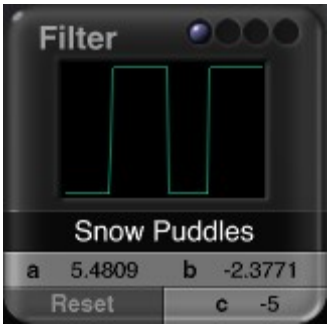
In these examples, Snow Puddles was applied to RND Continuous noise and then to objects in a scene. The a, b, and c variables are varied to show how different values affect the material.

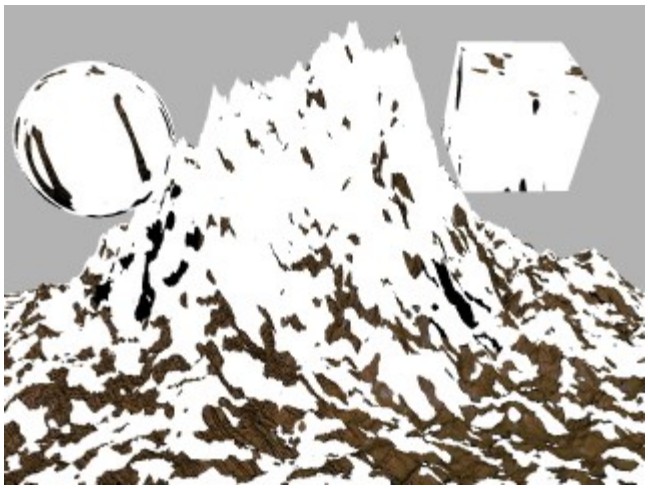




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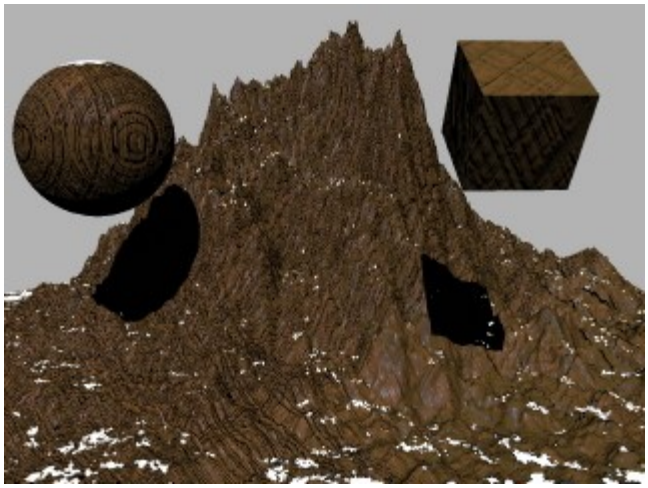


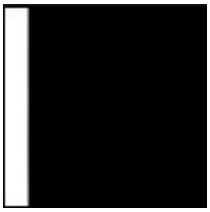




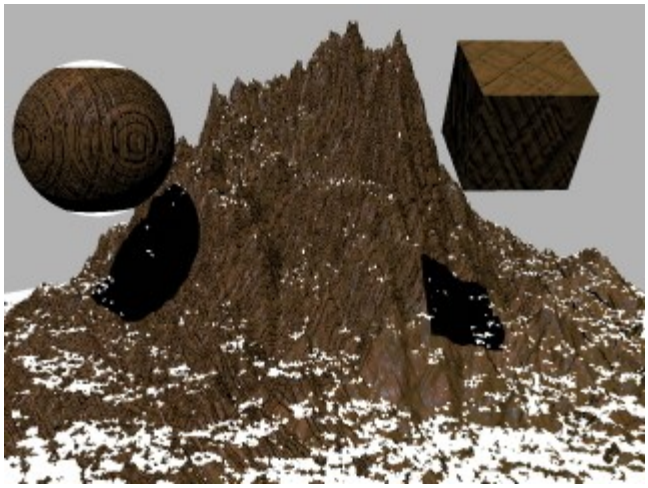




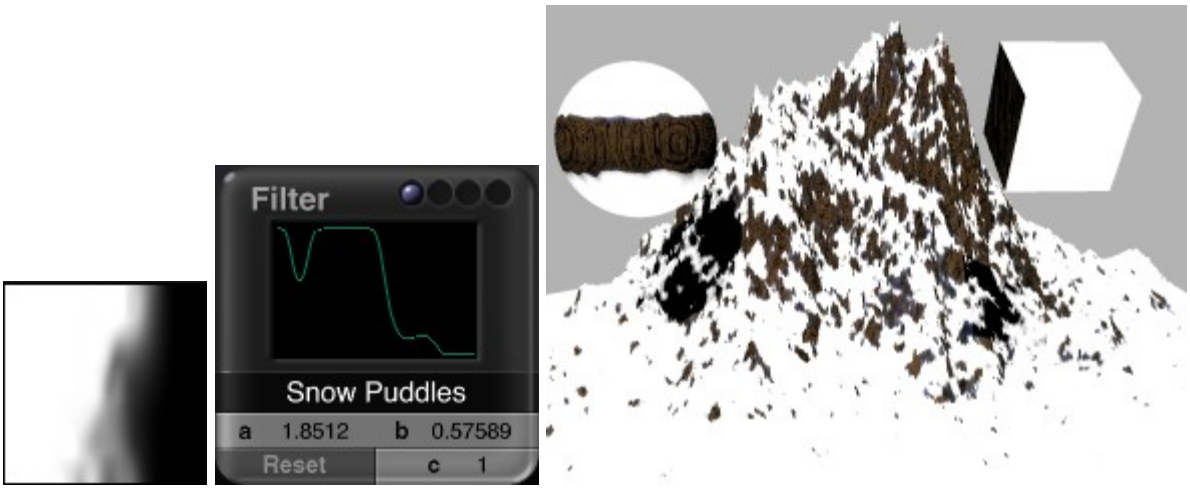








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Combining Components

The Deep Texture Editor gives you unparalleled control over the look and feel of each one of the components that make up a texture, but the control doesn't stop there. The Deep Texture Editor also lets you control how those components are combined to create the final texture.

Blend Modes

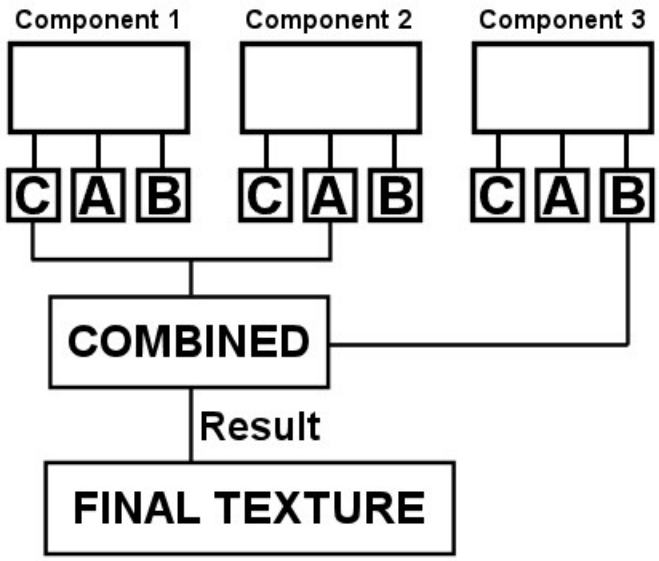
Components are combined using Blend modes. These modes are filters applied to the components to determine how the properties in each component are combined with the other components' properties to form the final texture.

The number of blend modes you can use varies depending on how many components you're using to build the texture. If you're using only one component, the properties in the component are applied directly to the final texture. When you're using two components, they're blended using a single blend mode, and the result is then applied as the final texture.

When you're using three components, the first two components are blended together using a blend mode, then the result of that blend is combined with the third component using a second blend mode. The result of all the blending is then applied as the final texture.

This diagram explains when the blend modes are applied as you combine components to form a texture.

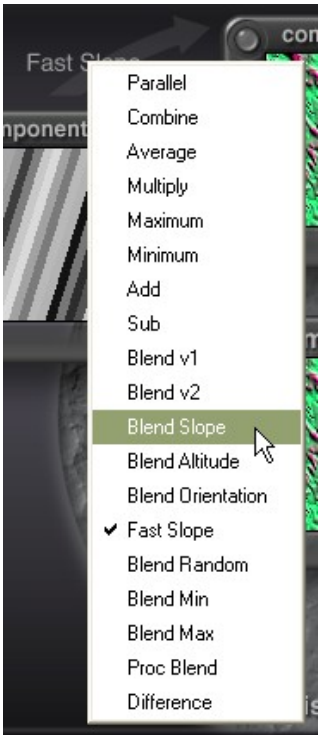
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Depending on the Blend mode, the different types of output can affect each other during the combination process. So its possible that the Bump output of one component may affect the Color output of another.

To apply a blend mode:

1. Display the Deep Texture Editor.
2. Click the text above Component 1 to choose a Blend Mode to combine components 1 and 2.



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3. Click the text above Component 3 to choose a Blend Mode to combine the results of Component 1 and 2 with 3.



There are nineteen blend modes you can use to combine your components:

Parallel

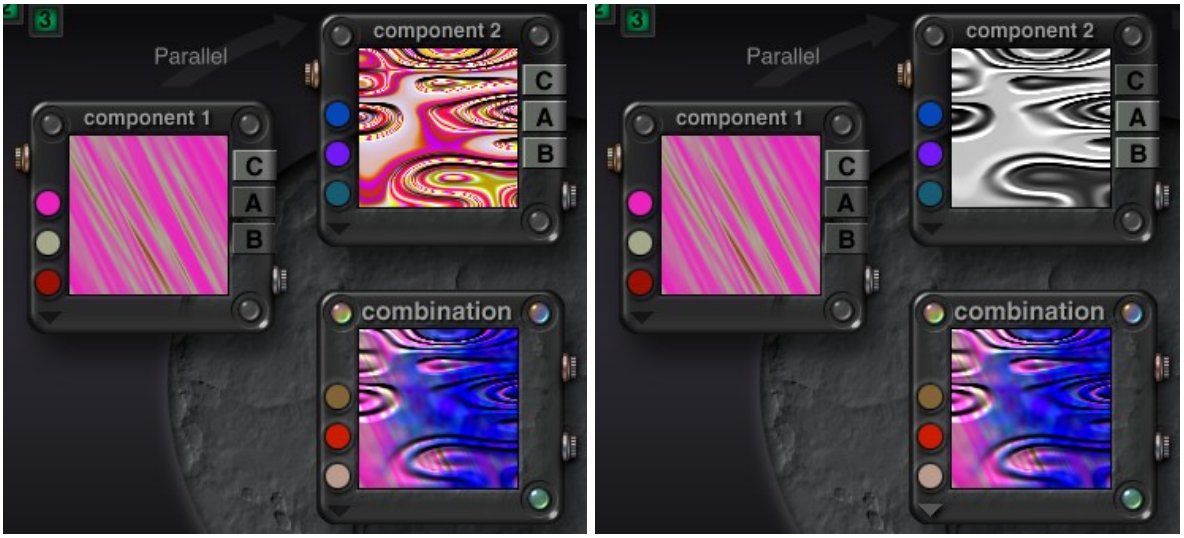
This mode does not blend components. Use it when each component has a different output type. If two components share an output type, only the first output will be applied to the final texture.

For example, if Component 1 has output = Color and Bump, and Component 2 has output = Color and Alpha, only the color from Component 1 will be applied to the texture.

The texture below shows an example of this with a randomized combination. Both Component 1 and 2 have the Color output but if the Color output is disabled, as in the second image, you can see that it makes no difference in the final output.

The Parallel mode took the color from Component 1 and the Alpha and Bump from Component 2, throwing out the color from Component 2.

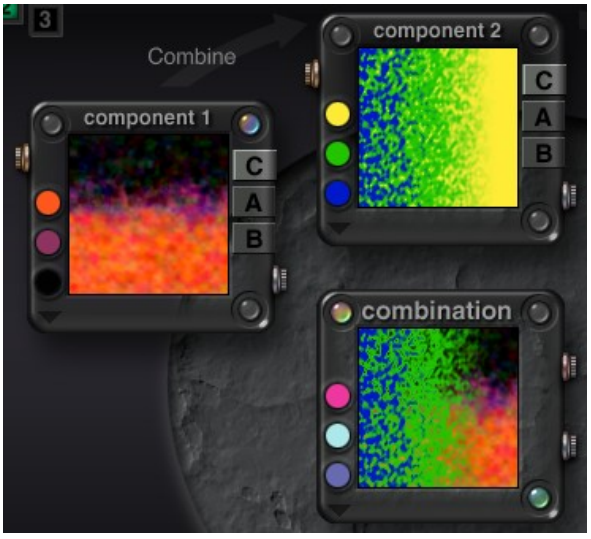
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Combine

Combine is a blend mode for colors only. When you use this blend mode, the first color in Component 2 is used as an alpha channel. Wherever that color appears in Component 2, it is replaced with the colors from Component 1.

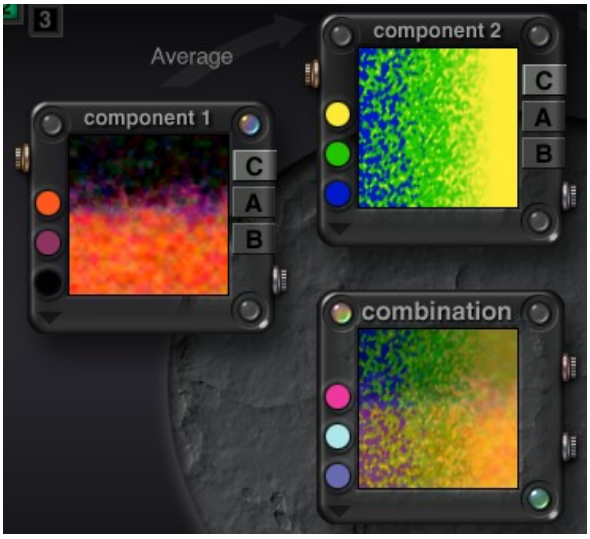
For example, lets say Component 2 has Yellow, Green, and Blue and Component 1 has Orange, Purple, and Black as its color scheme. When you combine them using the Combine blend mode, Yellow disappears from Component 2. Everywhere that Yellow appeared, you'll see Orange, Purple, and Black.



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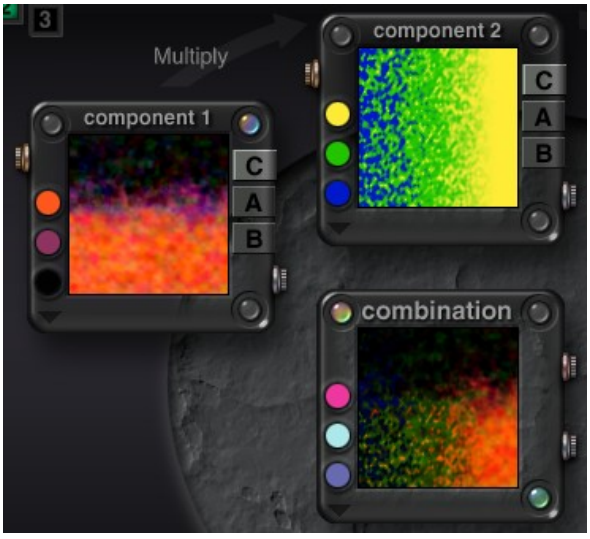
Average

Average is a normal blend mode where all the component values are mixed with equal weight. So if one component is white and the other is black, the result is gray. This is a good all-purpose blend mode to use for creating textures.



Multiply

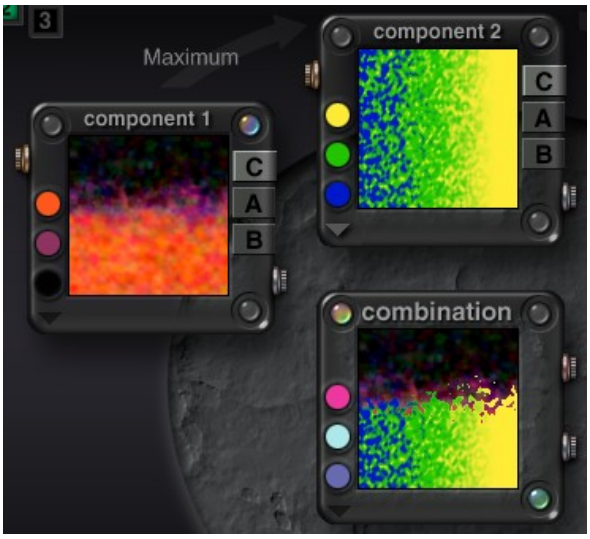
When you use this blend mode to combine components, you'll get a darker result. In this mode, when a black component is combined with a gray component, the result is black. When a gray component is combined with a white component, the result is gray. When two shades of gray are combined, the result is proportionally darker. In the case of Bump output, this mode will flatten most areas since black is flat and darker values create flatter bumps.



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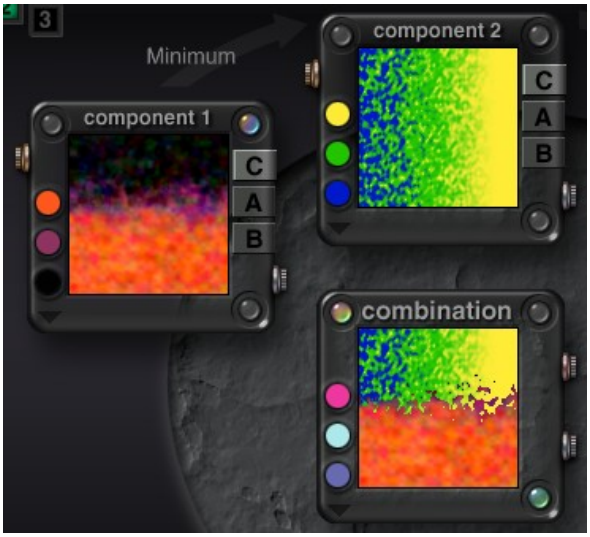
Maximum

When two components are combined using Maximum, the two components are compared and the one that's lighter becomes the result.



Minimum

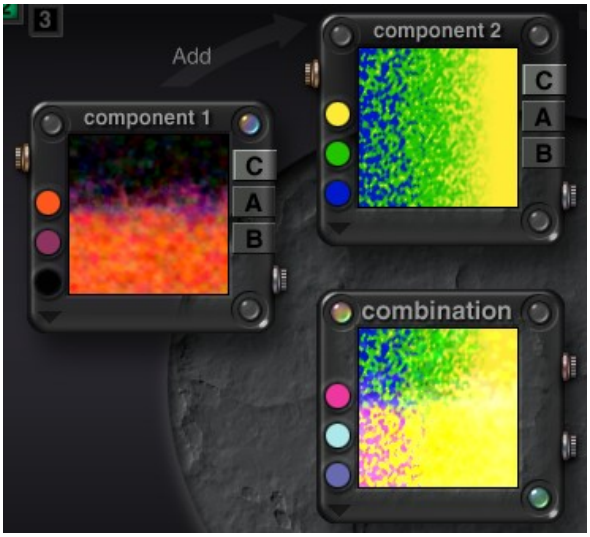
This mode is the opposite of Maximum. When two components are combined, they're evaluated and the darker areas of both are combined to produce the result.



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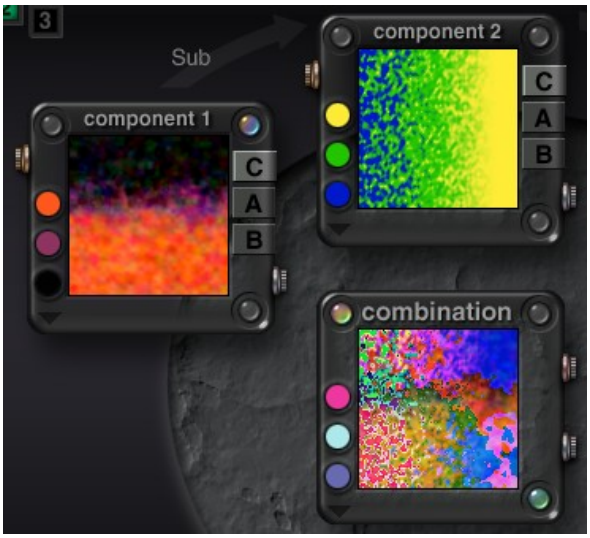
Add

Add combines colors so that they appear dramatically lighter. However, it doesn't have the same effect on Bump output.



Subtract

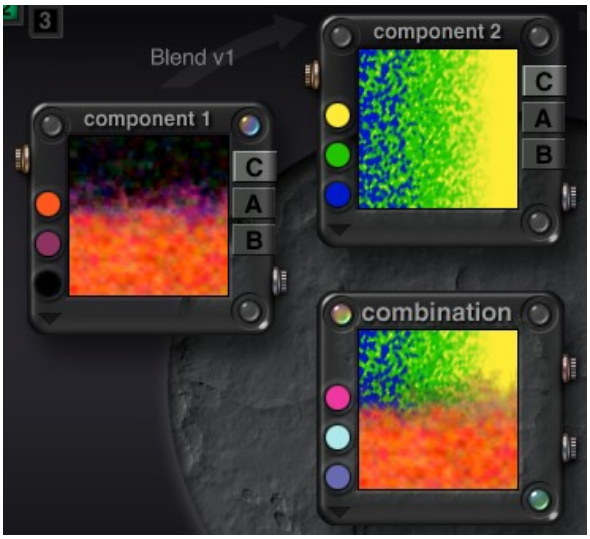
When you combine grayscale components using Subtract, they tend to turn out black or very dark. When you use it with colored components, the result is brilliant colors that tend to compliment the original colors.



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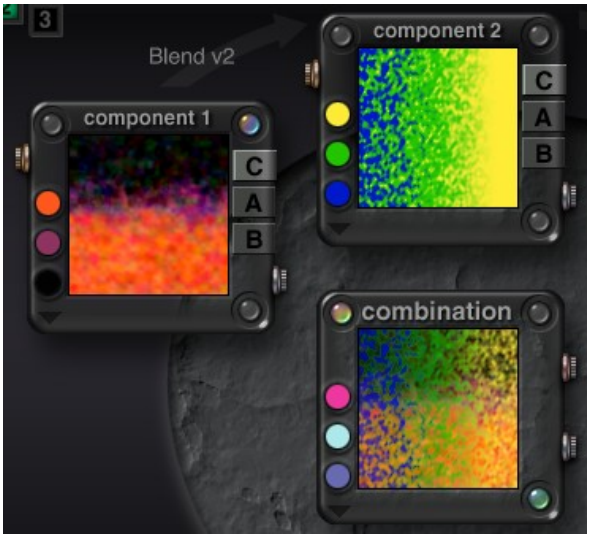
Blend V1

The Blend v1 blend mode lets you use the first component as an alpha channel for blending. When you choose Blend v1, the noise in the first component is used as an alpha channel to blend the two components. To use the noise in the second component instead, use Blend v2.



Blend V2

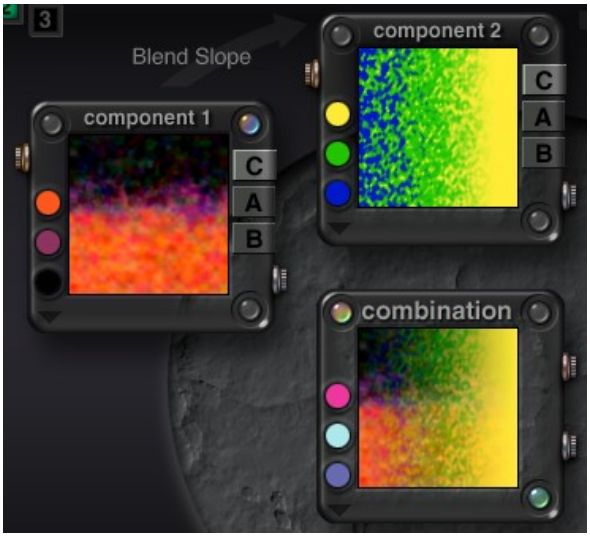
The Blend v2 blend mode lets you use the second component as an alpha channel for blending. When you choose Blend v2, the noise in the second component is used as an alpha channel to blend the two components. To use the noise in the first component instead, use Blend v1.



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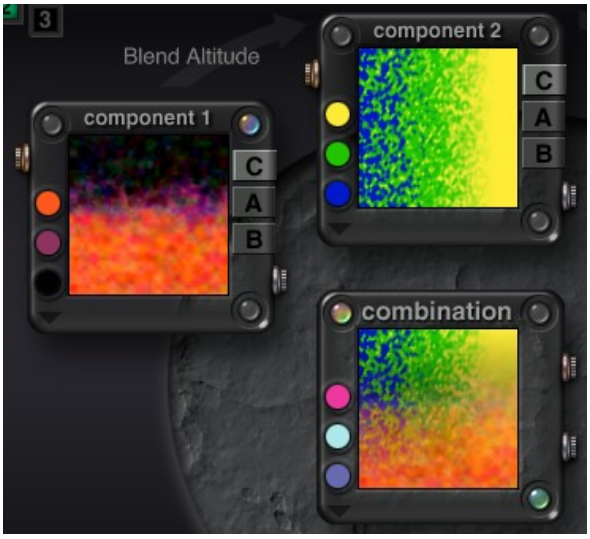
Blend Slope

Using Blend Slope, components are combined according to an object's slope. The first component is applied to areas that are flat and the other is applied to areas that are steep.



Blend Altitude

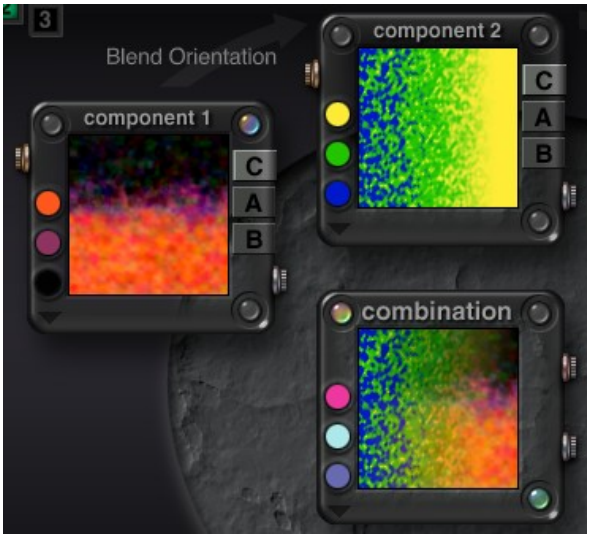
This mode blends components according to an object's altitude. The first component appears at low altitudes and the second appears at high altitudes.



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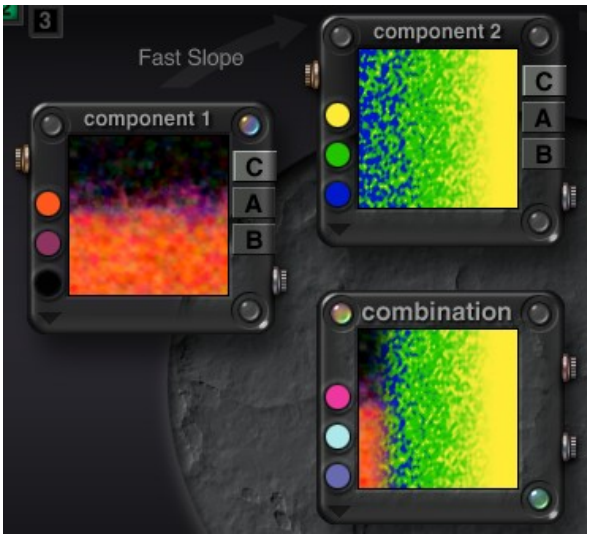
Blend Orientation

In this mode, one component is applied in all directions, while the other is applied in only one direction. You can use this mode to simulate things like moss that only grow on one side of a tree.



Fast Slope

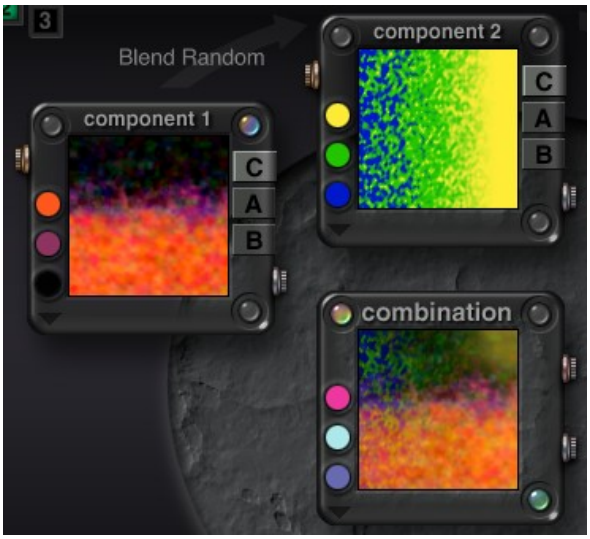
Fast Slope works exactly like Blend Slope except that the transition from one component to the other is more abrupt.



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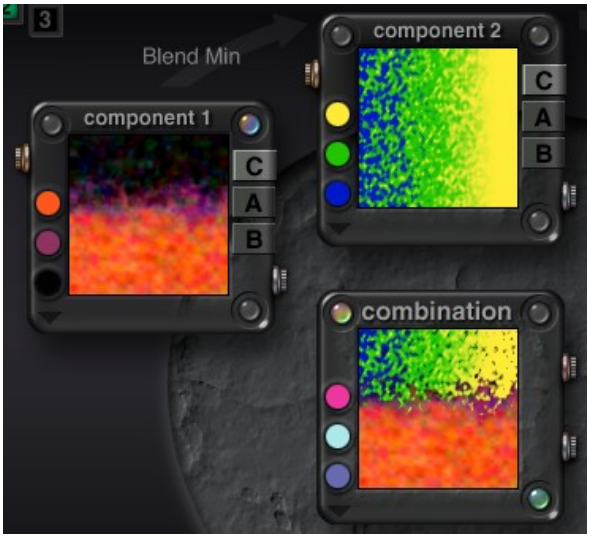
Blend Random

This mode introduces an extra layer of noise and uses it as an alpha channel for combining the two components. Component 1 appears in some areas of the new noise, and Component 2 appears in other areas. Since this mode adds another layer of noise, you're also adding more processing time.



Blend Minimum

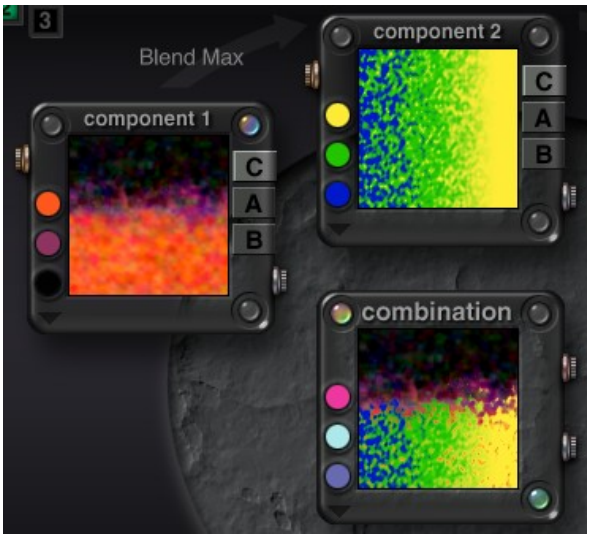
Blend Minimum works the same as Minimum except that it creates blurring at points of sharp transition. When Blend Maximum is applied to Bump output, the resulting bump map will have mostly low areas with very few high points.



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Blend Maximum

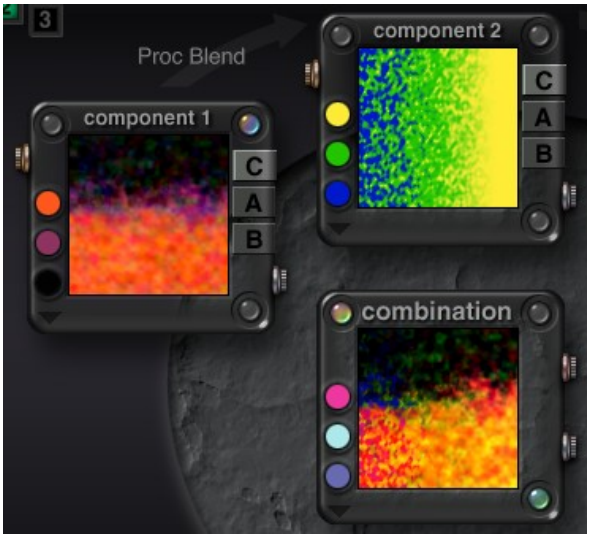
Blend Maximum works the same as Maximum, except that it creates blurring at points of sharp transition. When Blend Maximum is applied to Bump output, the resulting bump map will have many high points and few deep pits. This mode works best on Bump output.



Procedural

Procedural Blend combines two components so that the color and values of Component 1 are applied to Component 2 based on the gray values in Component 2. In essence, the Alpha output from Component 2 is used as a guide for blending.

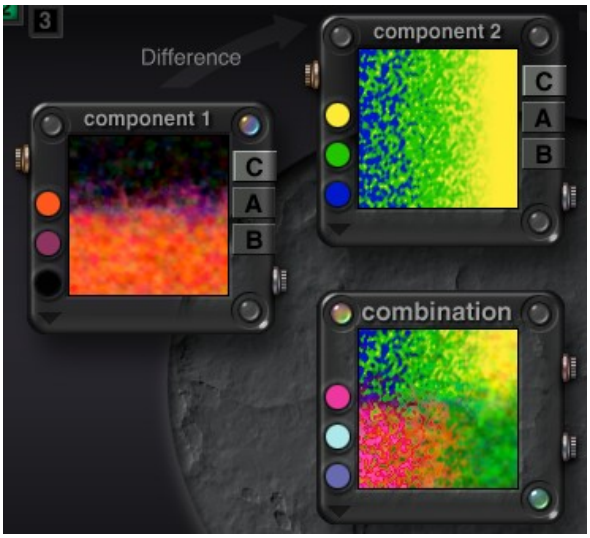
Where Component 2 is light, Component 1 is not applied. Where Component 2 is dark, Component 1 is made darker. Where Component 2 is gray, Component 1 is applied without change. This mode usually results in more saturated colors.



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Difference

Difference finds the difference between the noise in the two components and displays the result. This mode only works on output of like types. So if Component 1 has Alpha and Color output while Component 2 has only Alpha, the two Alpha outputs are combined and the Color output is left unchanged.



Global Changes

The component window in the center of the editor, called the Combination component, represents the final combined texture. Any changes you make to this final component are considered global changes since they affect the entire texture.



The Combination component can have its own color scheme, filter, noise pattern, or phase. These attributes are applied to all the component elements. For example, the Combination noise values affect the noise within each component.

Global changes give you a way of applying a last layer of complexity to your texture.

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Global Colors

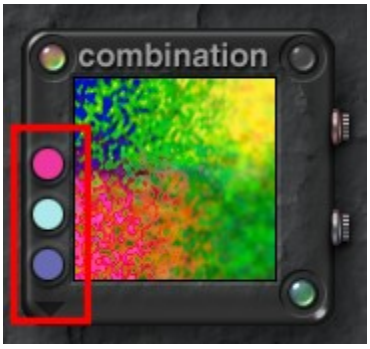
The colors in the Combination component interact with the combined colors in the three components. They act as a final color filter for the texture. After the colors in each component are combined, they are blended with the combination component colors to produce the colors in the final texture.

You can also apply a final Color Blending method to the combination component. The Blending method you apply to the combination component is applied on top of the other modes used in the components.

For example, if you choose Altitude in the Combination component, the texture color is applied using the blend modes in the components and then also applied by altitude. The example below shows a texture containing a texture with different Color Blending modes in it.

To add colors directly to a texture:

1. Click the top color circle in the Combination component window and choose a color from the palette. The color circles in the Combination component window let you apply colors directly to the final texture.



2. Repeat for each of the other two color circles.

Global Noise Filter

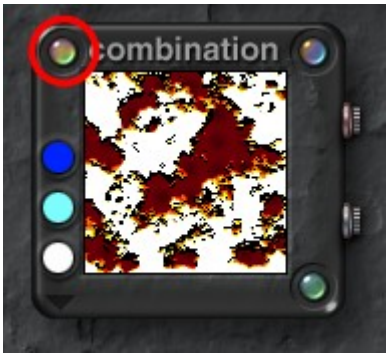
When you change the noise in the Combination component, (i.e., globally) it applies to all the components equally. So if you increase the noise in the final component, the noise in each of the components increases. Likewise, when you decrease the noise globally, the noise in each individual component decreases. Global noise can be different than component phase, so you can introduce a completely different type of noise into the texture.

Use this option cautiously. The more noise you introduce into your texture, the longer it takes to render and draw. If you introduce too much complex noise patterns into a texture, you may find your render time increased significantly. You can adjust global noise in the same way you would for a single component, using the Noise Palette or the Noise Editor.

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To adjust noise globally:

1. Click the top left button in the Combination Component window.



The Noise palette appears.

2. Either drag the slider to adjust the noise value



or click the top left corner of the Noise palette to display the Noise Editor.

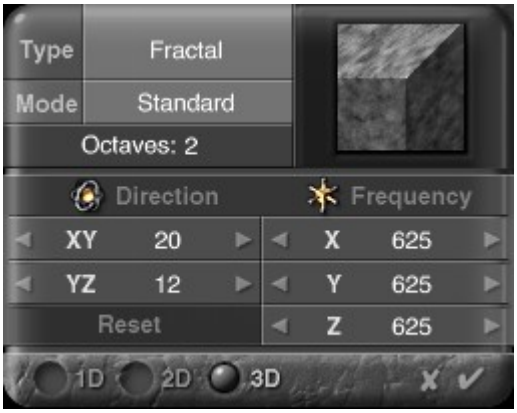


Note: If the Noise palette won't come up, click in the Component Indicator for one of the other Components, then click on the top left corner of the Noise palette. Once the Noise Editor comes up, move the Component Indicator back to the last position.



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3. Use the editor's controls to design the global noise pattern or grain.



Global Phase

As you adjust the Global Phase value, new phase is introduced into each of the components. Global phase can be different than component phase, so you can introduce a completely different type of phase into the texture.

You can adjust global phase in the same way you would for a single component using the Phase palette or the Phase Editor.

To adjust phase globally:

1. Click the bottom-right button in the Combination Component window.



   The Phase palette appears.

2. Either drag the slider to adjust the phase amplitude



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or click the top left corner of the Phase palette to display the Phase Editor.



3. Use the editor's controls to design the global phase.



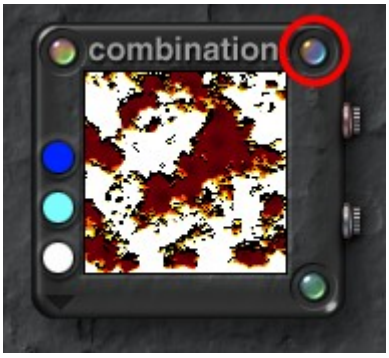
Global Filtering

The Filter affects the final look of the noise within a component. The Global Filter affects the look of the combined noise. The Global Filter is applied to the noise in the Combination component. The global filter only affects the noise, not the phase in the component. Any of the filters you used in the components can be used as the global filter.

Use this option cautiously. The more complex the noise in your texture, the longer it takes to render and produce. If you introduce too much complexity, you may find your render time increased significantly.

To filter noise globally:

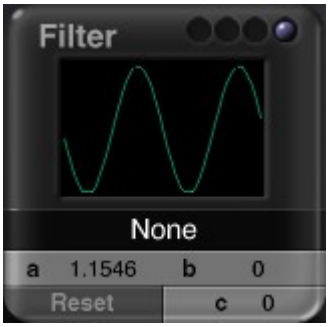
1. Click the top-right button in the Combination Component window.



The Filtering palette appears.

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2. Choose a filter and adjust its variables to create the desired effect.



Tips for Speeding Up Textures

Textures can be the most powerful effects you create in Bryce. They can also be the most costly. The more complex the texture, the longer it takes to calculate and the longer it takes to apply to an object, which finally increases the rendering time. When you're creating the texture, you always have to keep in mind that it's part of a material, which is part of an object. All these parts can contribute to the rendering time.

The material that contains the texture may have several complex attributes of its own, like Transparency and Reflection. The size of the object may also contribute to the rendering time.

Consider the effect of applying a complex texture to a complex material onto an infinite plane. The time to calculate this object would be staggering. A good rule of thumb when working with complex objects and textures is to make the texture element as simple as possible.

These tips are meant only as a precaution to prevent you from inadvertently creating a huge texture. That doesn't mean that you shouldn't use the more complex features as well, after all they were created for a reason. You should just use them cautiously.

Speeding Up Noise

Use a simpler noise type. Some noise types (like Vortex) require more time to process than others.

Restrict the amount of noise you add to each component. In fact, not all the components need to have noise.

Watch the frequency of the noise. Higher frequency noise requires more time to calculate then lower frequency
noise.

Watch the number of octaves in the noise. Each octave adds another level of complexity.

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Speeding Up Phase

When you're designing the phase, you may want to use simpler noise.

Cut down on the number of phase types you combine. If each component has a different type of phase, combining them can increase calculation times.

Watch the amplitude of the noise. Higher amplitude phase takes much longer to calculate.

Apply Global Phase cautiously. This is the quickest way of increasing the complexity of your texture because global phase introduces more complexity into each component simultaneously.

Speeding Up Filtering

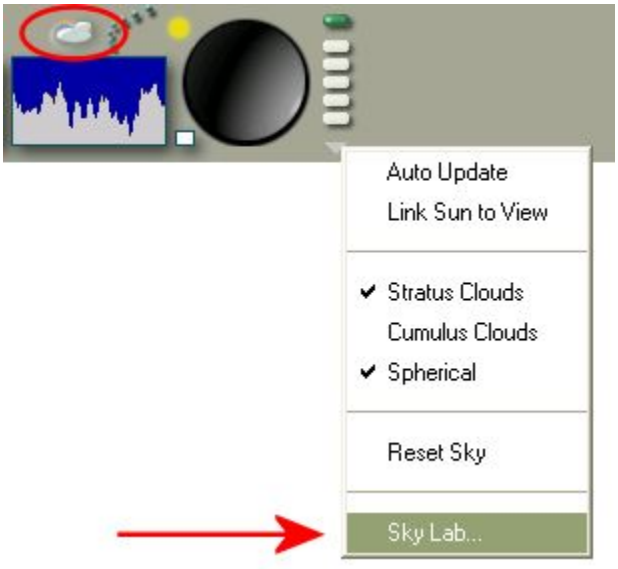
Filtering introduces complexity or detail into the noise of a component. Make sure that you aren't using a filter
unnecessarily. Not all noise needs filters.

Be careful when you apply a Global Filter as this adds even more complexity to the noise.

Sky Lab

The Sky Lab button provides access to the Sky Lab dialog. This dialog contains controls for fine-tuning environmental effects like clouds, rainbows, and sun and moon rings.

Click the Sky Lab button, which looks like a cloud with a rainbow, in the Sky & Fog palette to display the Sky Lab dialog. You can also click the triangle icon below the memory dots and choose Sky Lab from the menu.



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The dialog contains four tabs:

- Sun & Moon contains controls for positioning the sun and moon as well as adding effects like rings and horizon illusions.
- Cloud Cover contains controls for editing cloud textures and setting up cloud animations.
- Atmosphere contains controls for rainbows, visible lights, and color blending.
- IBL contains controls for adding an HDRI image and managing the effect.

You can preview your changes in the Sky Lab dialog.

To view the different preview options, click the downward pointing triangle at the lower corner of the preview area. You can also change the camera position in the preview area. To change the position of the camera, drag the preview. To orbit around the scene, drag the preview in the direction you want to move the view of your scene.



Sun & Moon Tab

The Sun & Moon tab contains controls for positioning the sun and moon as well as adding effects like star fields, rings, and horizon illusions.

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Star Fields

Bryce lets you create night skies complete with stars and comets by using the Sky Lab.

Stars appear in the night sky and are affected by the moon's brightness and color. They are also infinitely distant, i.e., they do not get closer as you move the camera. In this example, you can see how the moon affects the color and intensity of the stars around it.



You can create a star field that is based on a randomly generated star map or a star field based on the stars we see from the Earth.

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Random Star Field

To add a Star Field based on a random star map:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Celestial option.



5. Enable the Random Field option. This will create a star field based on a randomly generated star map.



6. You can get a different random configuration of stars by Opt/Alt+clicking the Random Field button. Pressing Shift+clicking the Random field button generates the default random star field.
7. Enable the Stars option. Adjust the Intensity and Amount as needed.



8. Set the Ambient and Sky Dome colors to black.



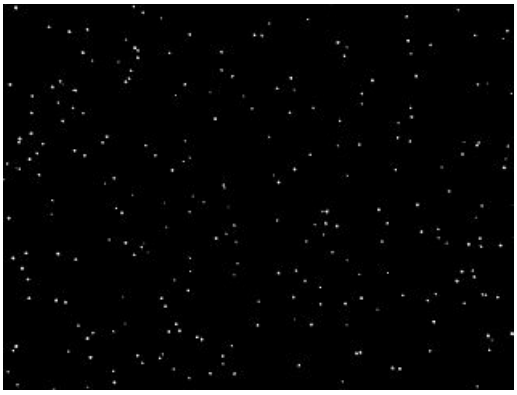
9. Click the OK icon to exit the dialog.

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Note: When selecting the Random Star Field, all stars will have the same brightness level.

Examples:

- Default Random Star Field:



- A Random Star Field (by using Option/Alt+clicking the Random Field button):



- Another Random Star Field:



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Earth-based Star Field

To add a Star Field based on Earth's star map:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Celestial option.



5. Enable the Custom Field option.



6. Enable the Star option. Adjust the Intensity and Amount as needed.



7. Set the Ambient and Sky Dome colors to black.



8. Click the OK icon to exit the dialog.

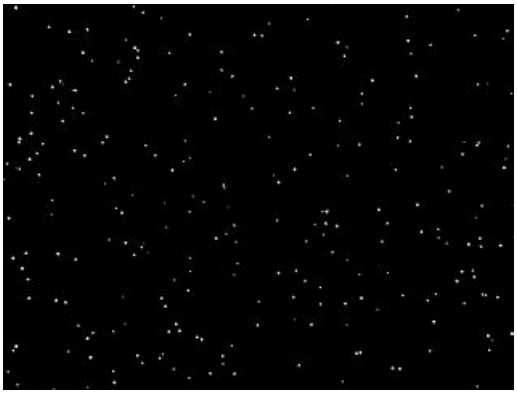
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Examples:

- Earth-based Star Field:



- Random Star Field with same Intensity and Amount settings:



Customizing Star Fields

After you have generated your star field, you can customize certain parameters of the star field. You can control the intensity of the stars, the amount of stars that are visible, and the portion of the star field that is visible in your scene.

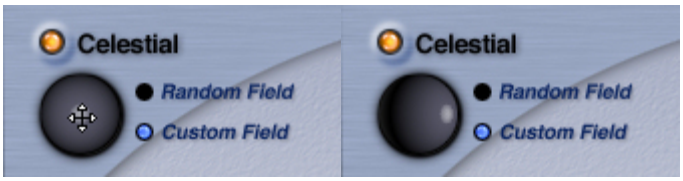
Star Field Position Control

The Star Field Position Control lets you choose which portion of the star field is visible in your scene. The control works like a trackball, with the stars of the northern hemisphere on one side and the stars of the southern hemisphere on the other. As you drag over the control, the star field moves in the direction you drag.

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To set the Star Field Position:

1. Apply the settings for either a Random or Earth-Based Star Field.
2. Move the mouse cursor over the Star Field Position Control then left-click and drag to change the position.



3. Render the scene to check the star position, modify as needed.

Setting Star Field Position for Earth-Based Star Fields

When you enable the Celestial option, the Star Field Position Control has the "sun" in the center. If you rotate the camera to have all rotation angles at 0°, you'll see the Earth sky at a Right Ascension (RA) of 6h (hours) with the horizon at a Declination of 0°. You will see the constellation of Orion near the center of the screen, the lower part of which is below the horizon. A bit higher up and to the right, you will notice the constellation of Taurus with the beautiful Pleiades.

If you push the Position Control upwards, the stars nearer to the North Pole appear. If the "Sun" just disappears over the top of the control, the sky of the North Pole is shown with Polaris - the North Star - in the center. Similarly, moving the control downwards opens up the sky to the south. Note that the star field is as you would see it on a cloudless dark night, not like on a star map, which shows the sky with left and right sides swapped as if seen in a mirror.

If you move the control from the center to the right, the RA decreases towards 0h and if you move the control to the left, the RA increases towards 12h. The faintest stars shown are those with a magnitude of 6. This is what we can see with the unaided eye on a clear dark night. The Milky Way and other rather bright Deep Sky objects like Nebulae or Galaxies are not in the star map and hence are not shown.

The image below is the star field generated with the position control in the center:



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The image below shows the change in the star field after dragging the trackball to the right:



And after dragging the trackball to the left and up:



Star Field Intensity

Changing the Intensity of a star field lightens or darkens the visible stars. When you are using a star field based on the stars we see from Earth, changing the intensity lightens and darkens the stars uniformly; their relative intensities do not change.

To change the Intensity of a star field:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.

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4. Enable the Celestial option.



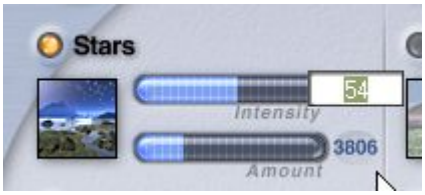
5. Enable the Random or Custom Field option.



6. Enable the Stars option.



7. Drag the Intensity slider or enter a value in the Intensity field.



8. Set the Ambient and Sky Dome colors to black.

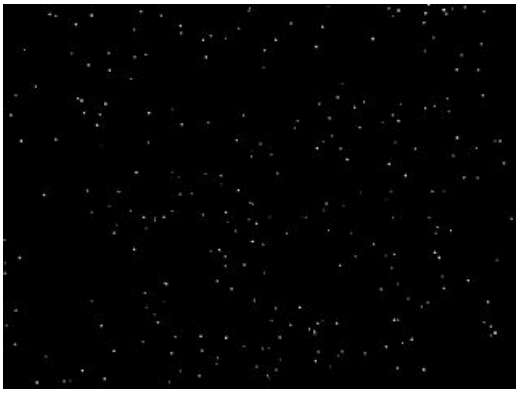


9. Click the OK icon to exit the dialog.

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Examples:

- Intensity = 54



- Intensity = 100



Star Field Amount

You can increase or decrease the number of stars in the star field by changing the Stars Amount. When you change the amount, new stars are not generated. Instead, stars that are usually too dim to see become more visible.

To change the Amount of visible stars in a star field:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



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4. Enable the Celestial option.



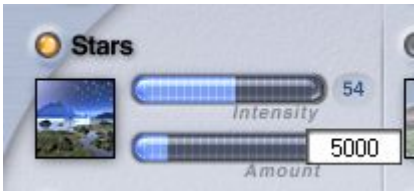
5. Enable the Random or Custom Field option.



6. Enable the Star option.



7. Drag the Amount slider or enter a value in the Amount field.



8. Set the Ambient and Sky Dome colors to black.



9. Click the OK icon to exit the dialog.

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Examples:

- Amount = 3000



- Amount = 6000



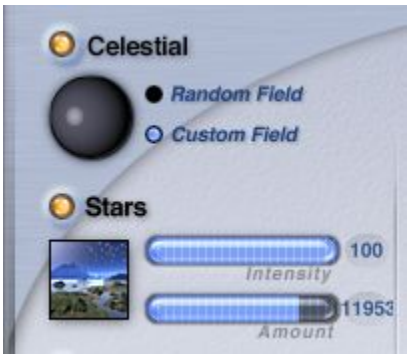
Star Field Glow

Haze and the Color Perspective directly affect the color of the glow around the stars. This allows you to find some really neat effects in the sky.

To add a glow around the stars, set up the star field as shown in the previous pages, then do the following:

1. Delete the ground plane.
2. On the Sun & Moon tab, set the Star Intensity to a fairly high amount, between 60 and 100, and the Amount to a very large number.

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3. Make sure that Sun/Moon Shadows are enabled and set the Ambient and Sky Dome colors to white.

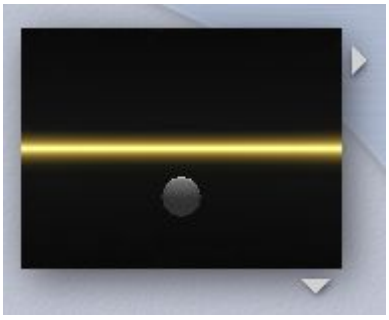


4. Change to the Atmosphere tab, then disable Fog and enable Haze and Color Perspective. Set the Haze color to white. Drag over the RGB buttons to adjust the colors. You'll need to know what the RGB settings are for the color you want, which you can get from some of the available color pickers.

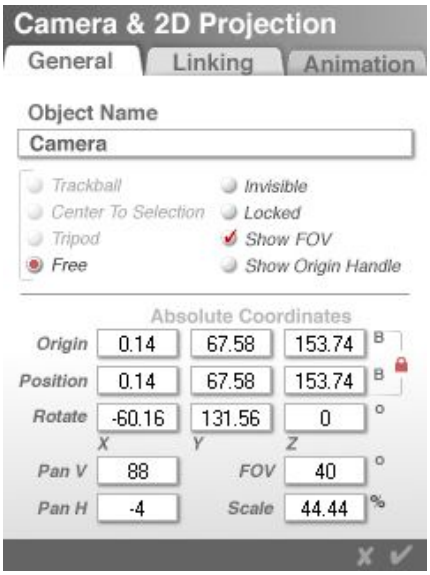


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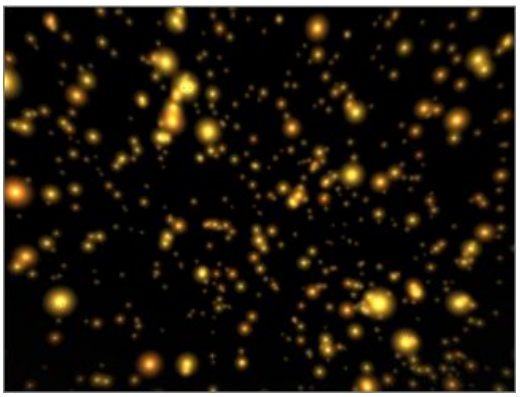
The Sky Preview should now look something like this:



5. Click on the OK icon to close the Sky Lab.
6. Double-click on the Trackball to open the Camera & 2D Projection dialog. Change the settings as shown below.

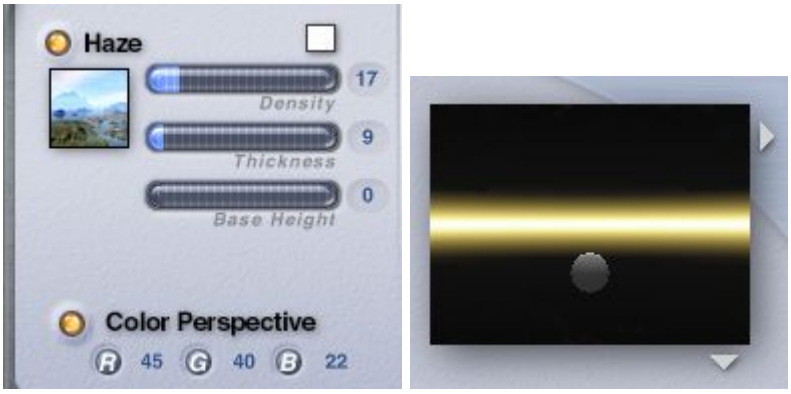


7. Click on the OK icon to close the dialog.
8. Render the scene.

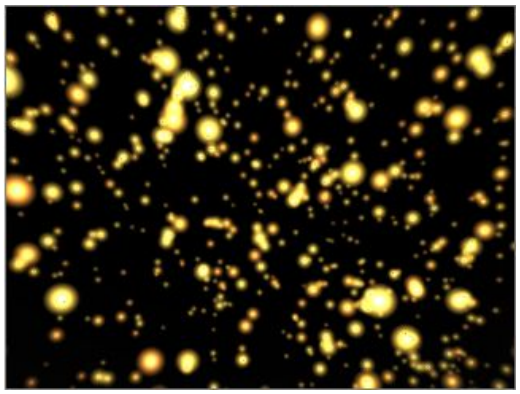


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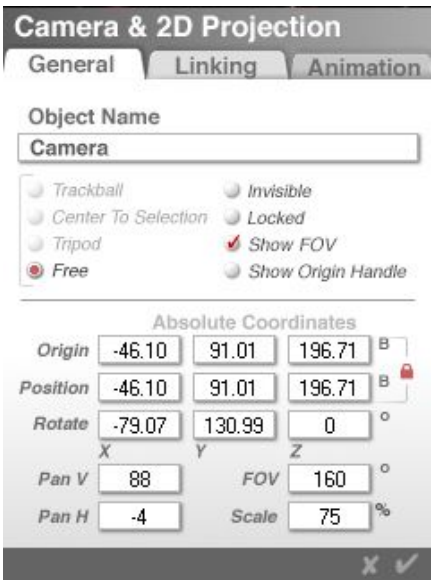
9. Adjust the Haze settings and Color Perspective colors to get a different view.



10. Render to see the differences.

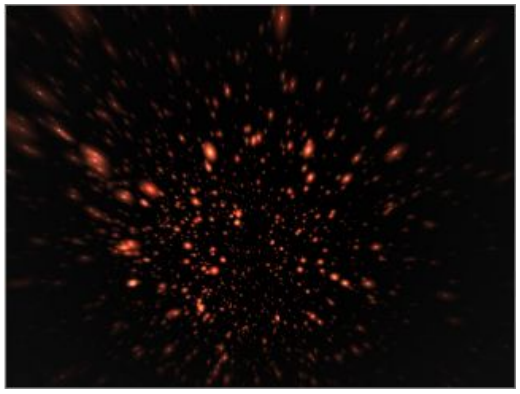


11. Adjust the camera settings to similar settings shown below to get a "warp speed" effect.



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12. Render to see the results.



Thanks to Clay Hagebusch for showing how to get this effect.

Comets

You can add Comets to your night skies but since comets are not a common sight in the night sky, you'll usually only

need one or two comets per star field.

To add Comets to a night sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Celestial option.



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5. Enable the Random Field option. This will create a star field based on a randomly generated star map. You can only add comets to a star field that is based on a randomly generated star map.



You can get a different random configuration of stars by Op/Alt+clicking the Random Field button. Shift+clicking the Random field button generates the default random star field.

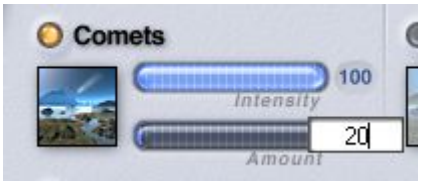
6. Enable the Stars option. Adjust the Intensity and Amount as needed.



7. Enable the Comets option.



8. Adjust the intensity and amount of comets by dragging the Intensity and Amount sliders or entering a value in the Intensity and Amount fields.



The number of comets is spread around the sky dome, so setting the amount to 1 or 2 means you'll need to adjust the Star Field Position Control until you find the comets. Setting the amount higher gives you a better chance of finding the comets faster.

9. Set the Ambient and Sky Dome colors to black.



10. Click the OK icon to exit the dialog.

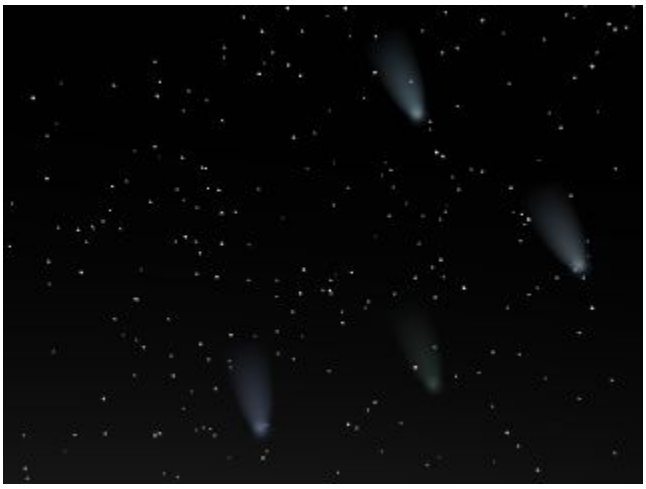
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Examples:

- Amount = 20



- Amount = 75



Moon Phases

The Moon Phases Control simulates different aspects of the moon as it orbits the earth. The moon phase is a visual clue

to the time of the month. In an animation, you can use the moon phase to simulate the passage of a time.

The phase is controlled using the Moon Phase Controls in the Sky Lab palette.

To set the Moon's Phase:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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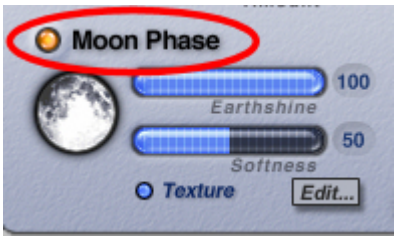
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Moon Phase option.



5. Left-click+drag over the Moon Phase control. The phase changes as you drag.

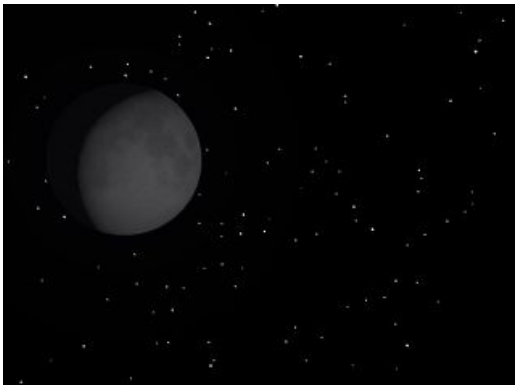


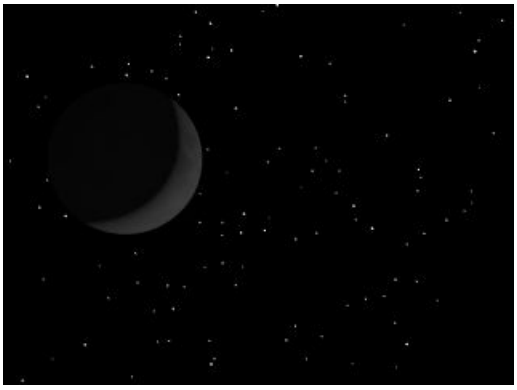
6. Adjust the Moon Brightness and Sharpness and Moon Texture if needed.
7. Click the OK icon to exit the dialog.

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Examples based on settings in step 5 above:







Moon Brightness and Sharpness

The moon is directly affected by the light reflected from the earth. The brighter the reflection, the brighter the moon's shadow. In Bryce this effect is controlled by the Earthshine setting which makes the moon brighter or darker.

A realistic moon does not have sharp edges and may appear blurry on hazy nights. The Softness control lets you set the moon's edge softness to give a more realistic feel.

Moon Shadow

To set the brightness of the moon's shadow:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

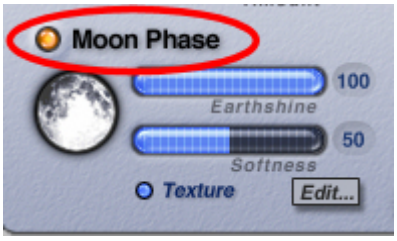
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.



4. Enable the Moon Phase option.



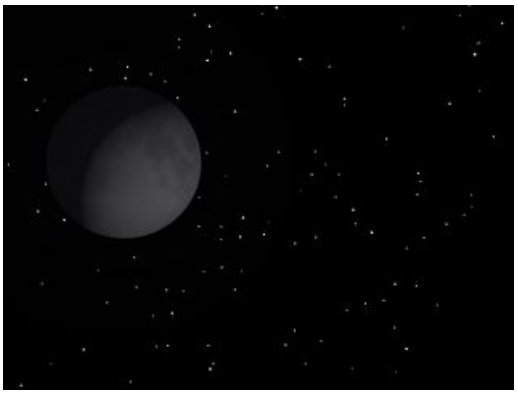
5. Drag the Earthshine slider right to increase the brightness and left to decrease it or enter a value in the Earthshine field.



6. Click the OK icon to exit the dialog.

Examples:

- Earthshine = 15



- Earthshine = 50



Moon Edge Softness

To set the moon's edge softness:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



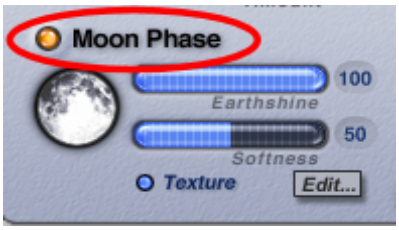
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Moon Phase option.



5. Drag the Softness slider right to soften edges or left to sharpen them or enter a value in the Softness field.

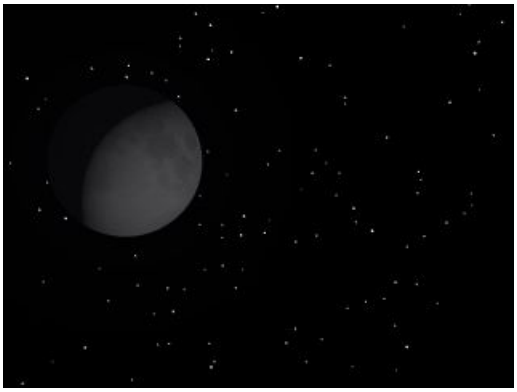


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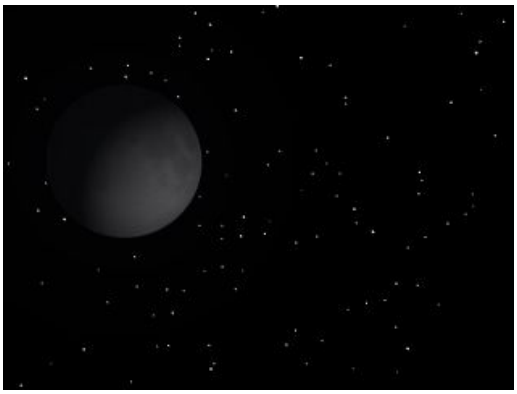
6. Click the OK icon to exit the dialog.

Examples:

- Softness = 30



- Softness = 100



Moon Texture

Previous versions of Bryce provided a default Moon texture that was applied by enabling the Texture option under Moon Phase. Bryce 6 includes this option but introduces the ability to add your own texture to the moon. This new feature means you could add a face to the moon or a texture that looks like a distant planet.

To add a texture to the moon:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.

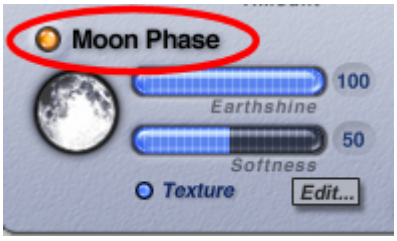


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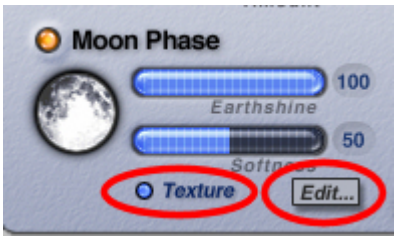
3. Click the Sun & Moon tab.



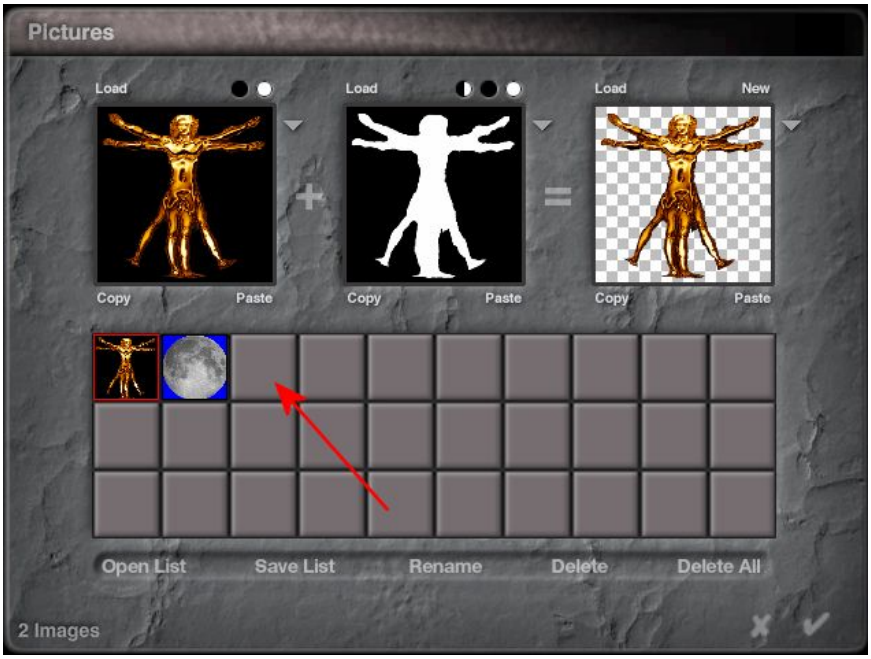
4. Enable the Moon Phase option. Adjust the moon phase if needed.



5. Under Moon Phase, enable the Texture option. This will load the default moon texture. To add a different image, click on the Edit button.



6. The Picture Editor will come up. Click on the first empty square.



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7. The Open file dialog will come up. Locate the texture you want to load and click on Open.



The image will be loaded in the Picture Editor.

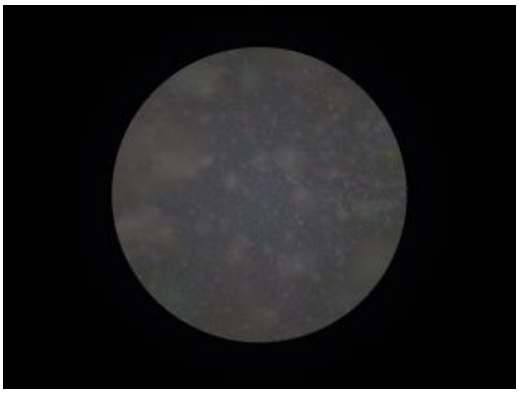


8. Click the OK icon to exit the dialog.
9. In the Sky Lab, make sure that the Sun/Moon Size is enabled and set a Disk Size.



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10. Click the OK icon to exit the dialog.
11. In the Bryce Working Window, adjust the moon's location until it is visible in the scene, then render.



Sun/Moon Visible

Showing the sun or moon in your scene can provide interesting scenes with beautiful colors, however, there may be times when you need the shadows that are visible when the sun or moon is up, but you don't want the sun or moon to actually be visible in the scene. You could disable the sun/moon but then the shadows would also be disabled. The solution to this is to disable the Sun/Moon Visible option. Of course, to show the sun or moon in the scene, enable the Sun/Moon Visible option.

To set the Sun/Moon visibility:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Sun/Moon Visible option to make the sun/moon visible or disable it to hide the sun/moon.



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Note: Disabling Sun/Moon Visible will automatically disable the Sun/Moon Size and Halo Rings options.

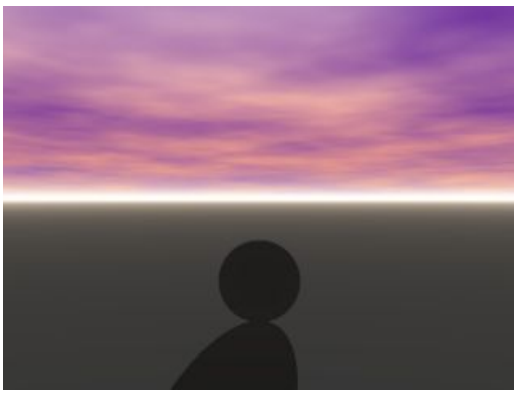
5. If the Sun/Moon Visible option is enabled, adjust the Disk Intensity and Glow Intensity as needed.
6. Click the OK icon to exit the dialog.

Examples:

- Sun/Moon Visible enabled.



- Sun/Moon Visible disabled - notice that shadows are still visible without having to add additional lights.



Disk Intensity

Disk Intensity controls the intensity of the interior portion of the sun/moon disk itself. A higher value will make the sun/moon disk more visible in your scene while lowering the intensity will make the disk fade into the sky dome or clouds. This setting only comes into play if the sun or moon is visible in the scene at the time of render. This also applies to reflections of the sun/moon that might be in the scene.

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To set the Sun/Moon Disk Intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Sun/Moon Visible option to make the sun/moon visible or disable it to hide the sun/moon.



5. Drag the Disk Intensity slider right to increase the intensity or left to decrease it or enter a value in the Disk Intensity field.



6. Click the OK icon to exit the dialog.
7. If you don't see any changes to the Disk Intensity when rendering, lower the Glow Intensity.

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Examples:

- Disk Intensity = 25; Glow Intensity = 50



- Disk Intensity = 75; Glow Intensity = 50



- Disk Intensity = 100; Glow Intensity = 50



* Thanks to Wolfiesden for the disk intensity description

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Glow Intensity

Glow Intensity controls the intensity of the halo or glow around the outside the sun/moon disk, not the interior portion of the disk. A higher value will bleed more of the glow color into the sky dome color. This has the effect of changing the dome color as it nears the location of the sun/moon disk.

A typical example of a high setting here is an average Earth sunset, the sky can fade from a yellowish near the sun to a deep blue/purple away from the sun. Another example, think about looking at headlights of an automobile at night under different haze situations. If the night air has a lot of moisture or haze there will be a glow around the actual lights because the moisture scatters some of the light in random directions, this equates to a high Glow Intensity. On a clear night, there will be limited glow, because of the lack of scattering, making the edges of the lights more defined which equates to a low Glow Intensity. At low settings, the sun/moon disk must be visible in the scene to see this effect, at higher settings, the Glow Intensity can affect the sky even when the sun/moon disks are not directly visible in the scene.

To set the Sun/Moon Glow Intensity:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.

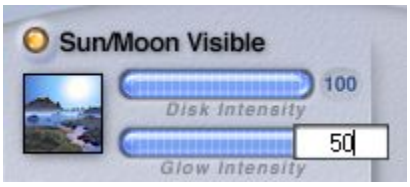
   

4. Enable the Sun/Moon Visible option to make the sun/moon visible or disable it to hide the sun/moon.

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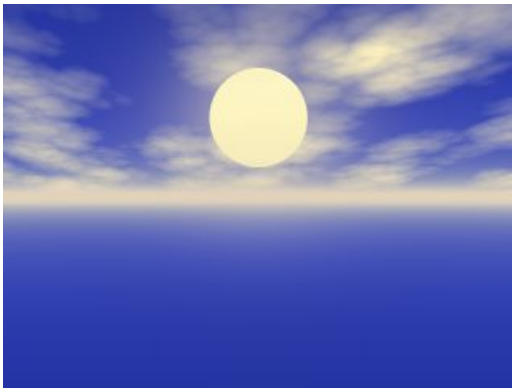
5. Drag the Glow Intensity slider right to increase the intensity or left to decrease it or enter a value in the Glow Intensity field.



6. Click the OK icon to exit the dialog.

Examples:

- Disk Intensity = 100; Glow Intensity = 50

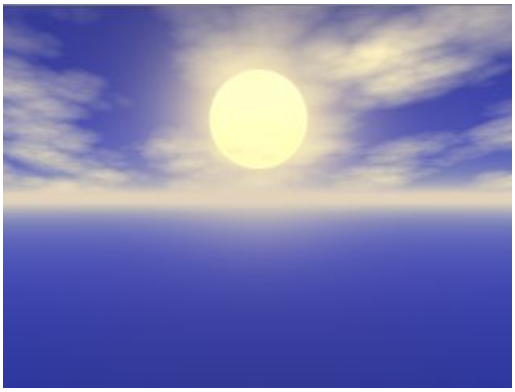


- Disk Intensity = 100; Glow Intensity = 75



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- Disk Intensity = 100; Glow Intensity = 100



* Thanks to Wolfiesden for the glow intensity description

Sun/Moon Size

The size of the sun or moon can affect the overall mood of your scene, especially when simulating a sunset's horizon illusion. The Disk Size can be used alone to modify the size of the sun and moon but the Horizon Illusion is dependent on the Disk Size.

If you've ever watched a sunset, you probably noticed that the sun appeared to get larger as it approached the horizon. The same is true for the moon. At certain times of the month it appears huge. This illusion can be simulated using Sun/Moon size. When the illusion is active, the sun or moon will appear to grow larger as it approaches the horizon.

To change the size of the Sun or Moon as it approaches the horizon:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.

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4. Enable the Sun/Moon Visible option to make the sun/moon visible or disable it to hide the sun/moon.



5. Enable the Sun/Moon Size option.



Note: To disable the Sun/Moon Size, disable Sun/Moon Visible to hide the sun/moon and disable the size option at the same time, or just disable the Sun/Moon Size option.

6. In the Sun/Moon Size area, enter a value in the Disk Size field or drag the slider to set the overall size of the sun/moon anywhere in the sky.



7. Enter a value in the Horizon Illusion field or drag the slider to set multiplier used to determine how much larger the sun or moon gets as it approaches the horizon.

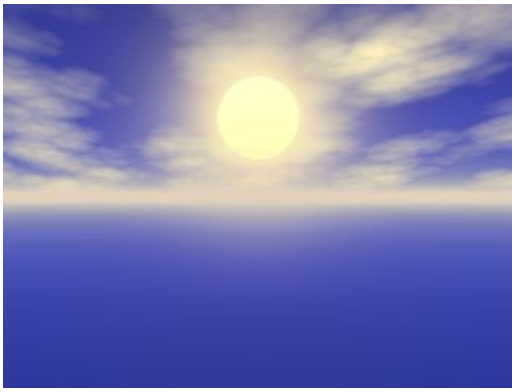


8. Click the OK icon to exit the dialog.

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Examples:

- Disk Size = 25; Horizon Illusion = 5



- Disk Size = 25; Horizon Illusion = 25



- Disk Size = 10; Horizon Illusion = 25



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- Disk Size = 35; Horizon Illusion = 25



Sun/Moon Rings

If you look directly at the sun on a hazy day, you'll be able to see rings surrounding it. These rings are created by the reflection off ice particles in the air. In Bryce, you can use the Sun/Moon Rings to create this effect.

This effect creates concentric circles around the image of the sun or moon. Using the Sky Lab palette, you can set the radius of the rings and add a secondary ring to increase the effect. The color of the rings is controlled by the color of the sun/moon.

To add Sun/Moon rings:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.

4. Enable the Sun/Moon Visible option to make the sun/moon visible or disable it to hide the sun/moon.

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5. Enable the Halo Rings option.



6. In the Rings area, enter a value in the Intensity field or drag the slider to set the brightness of the ring.



7. Enter a value in the Radius field or drag the slider to set the radius of the ring.



8. If you want to add a secondary Sun/Moon ring, enable the Secondary Ring option. (Issue)



9. Click the OK icon to exit the dialog.

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Examples:

1. Intensity = 50; Radius = 50



2. Intensity = 100; Radius = 25



3. Intensity = 100; Radius = 50



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4. Intensity = 100; Radius = 100

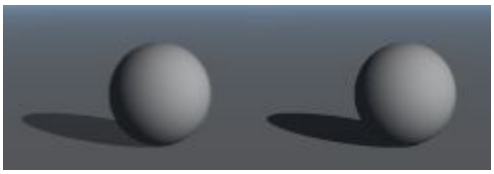


Shadows

All the objects in your scene cast shadows. Using the Shadow control you can set the intensity and color of all the shadows in your scene.

As you change the value of the Shadow control, the brightness of shadows changes.

In the images below, the shadow on the left is set to 25%, the one on the right to 90%.



The Shadow control is not the only control for shadows. The position of shadows is dependent on the position of the sun. Since the sky interacts directly with objects in the scene, the color of the sun also affects the color of shadows.

The object's material properties also affect the color of shadows. Semi-transparent or transparent objects with a transparency color will change the color of the object's shadow. In addition, volume materials can dramatically change the shape and color of shadows. Use the Shadows control to set the color and intensity of shadows in your scene.

By default, the Clouds in Bryce do not cast shadows. If you want the cloud layer to cast shadows on the ground below, enable the Cloud Shadows option. Refer to "Cloud Cover" for more on this option.

To set shadow intensity numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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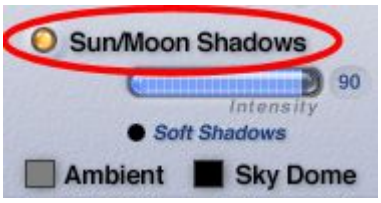
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Sun/Moon Shadows option.



Note that if you disable the Sun/Moon Shadows option, all shadows in your scene will also be disabled.

5. Click the Sun/Moon Shadows field, then enter a value or drag the slider. This field governs the intensity of shadows rendered in your image. The range is 0 to 100 and the default value is 90.



6. Enable Soft Shadows if needed.
7. Click the OK icon to exit the dialog.

You can also set shadow intensity and color using the Sky & Fog Palette:



Soft Shadows

When you adjust the softness of a shadow, you blur or sharpen the shadow's edges. Soft shadows blend more smoothly with the background.

To enable soft shadows:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



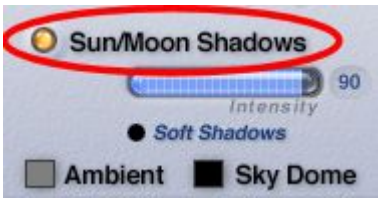
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



4. Enable the Sun/Moon Shadows option.



5. Enable the Soft Shadows option.

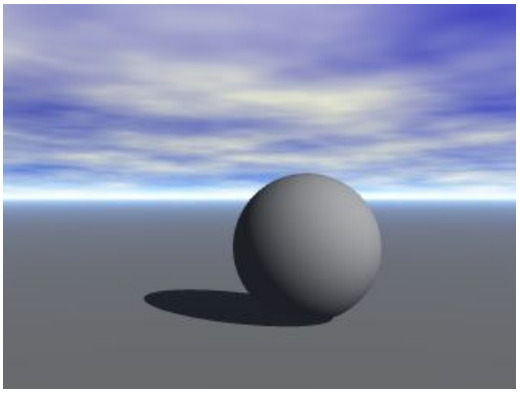


6. Click the OK icon to exit the dialog.

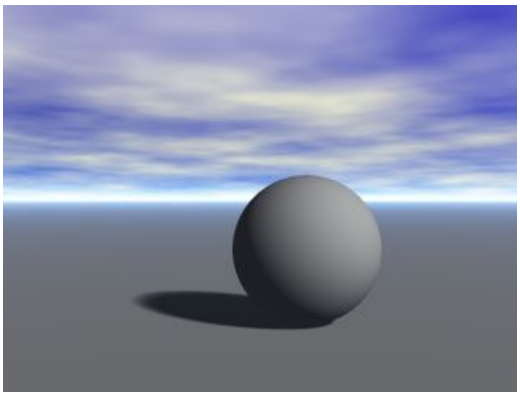
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Examples:

- Soft Shadows disabled:



- Soft Shadows enabled:



Ambient Color

The Ambient Color is the color of all the light that surrounds the objects in your scene. Light from the sun interacts with ambient color to produce the color for both highlights and shadows.

Ambient Color is used as the source color for material Ambience. The Ambient Color tints the surfaces of all objects in your scene that have some level of ambience. Any other color you apply to the object's surface is mixed with the Ambient color to create the final surface color. For example, if the Ambient Color is red, any color you assign to an object's surface ambience is mixed with red. Refer to "Ambience" for more on material ambience.

To set Ambient Color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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2. Click the Sky Lab button. The Sky Lab appears.



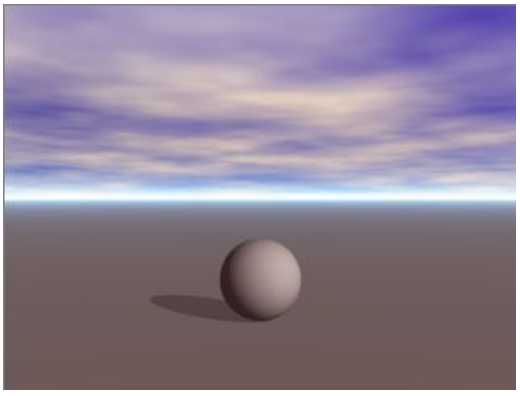
3. Click the Sun & Moon tab.



4. Click the Ambient color swatch below the Sun/Moon Shadows option and choose a color from the color picker.



For realistic effects, at noon or in the afternoon, ambient color should be a little blue to get nice blue-ish shadows. At dawn, you can set Ambient Color to red or pink, and at night you can set it to gray-blue.



5. Click the OK icon to exit the dialog.

You can also set the ambient color using the Sky & Fog Palette:



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Sky Dome Color

Sky Dome Color lets you create a color wash over your scenes, even if there is no sunlight present. This color simulates the natural effect that occurs when you have color in the sky even though the sun has set. Sky DomeColor lets you create late afternoon or evening scenes. The Sky Dome Color control in the Sky Lab lets you choose a color from either the color picker or the color dialog.

For late afternoon and early evening realism, try using a touch of orange or yellow. This will create a cast of color over your entire scene, regardless of the position or color of the sun or moon.

To set Sky Dome color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Sun & Moon tab.

4. Click the Sky Dome color swatch below the Sun/Moon Shadows option and choose a color from the color picker.

5. Click the OK icon to exit the dialog.

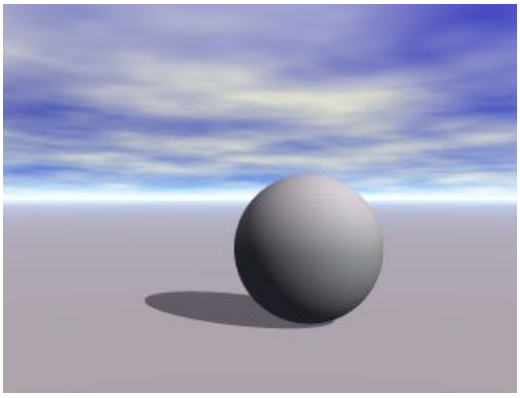
You can also set the sky dome color using the Sky & Fog Palette:



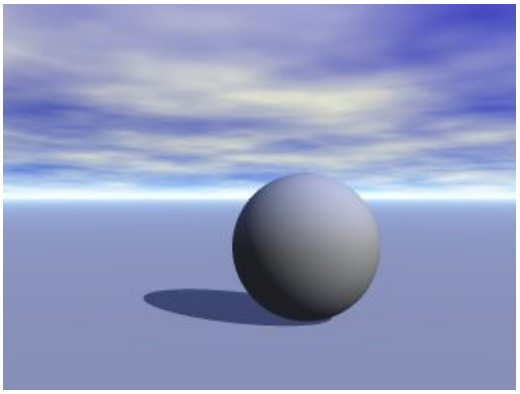
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Examples:

- Sky Dome Peach



- Sky Dome Blue



Working with the Sun & Moon

Working with the Sun

The sun is the source of all natural light in your scene. Its attributes have a profound effect on the look of your scene. The color of the sun affects all the colors of all the objects in the scene; Sunlight color tints all the other visible colors.

The position of the sun controls the time of day in your scene. If the sun is above the horizon, it is day; if it is below, it is night, and if it is at the horizon, it is sunrise or sunset. The sun can be animated just like all the other elements of your Bryce scene. You can create time-elapsed effects by changing the position of the sun over the course of an animation.

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Working with the Moon

The moon is normally the most prominent object in the night sky. In a night scene it provides all the natural light in the environment. Like the sun, the moon's attributes can greatly affect the final look of your scene. Its position in the sky affects all the angles and intensities of all the shadows in the scene.

The brightness is affected by the illumination reflected off the earth. The brighter the earthshine, the brighter the moon appears. Unlike the sun, the moon has phases which simulate the effects of the moon's shadow becoming more or less prominent during a month.

The moon's position and phases can be animated using the Animation controls and the timeline.

Refer to "Animating Sun or Moon Position" for more on animating the moon.

Positioning the Sun

The sun position control sets the direction your natural light is coming from whether it is sunlight or moonlight. The position can be set using the Sun control in the Sky & Fog palette or in the Sky Lab. The control works like a trackball, with the sun (bright) at one end and the moon (dark) at the other.

You can think of the control as a compass: if the highlight on the Sun Control sphere is positioned at 12 o'clock, the light comes from the north, and so on. As you change the position of the sun, the "time of day" changes. When the sun position is closer to the edges of the control, the sun appears closer to the horizon, making the scene darker. When the sun is in the center of the control, the sun shines from directly above the sun, like it would at high noon.

The colors in your sky will change depending on the position of the Sun Control, or the "time of day..." just like in the real world. The angle of the shadows changes as the sun changes. If your object is shiny, and there are no other light sources, the position of the sun controls where the highlight appears. In this example, you can see the effects of the sun's position on several reflective and shiny objects.

You can position the sun manually and with precision on the Sky & Fog Palette and in the Sky Lab. You can also position the sun numerically in the Sky Lab.

Positioning the Sun Manually

To position the sun manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

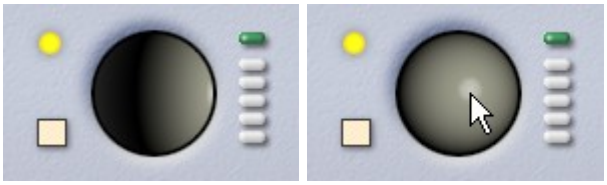


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2. Use the Sun Controls on the palette or click on the Sky Lab button. The Sky Lab appears.



3. In the Sun Controls area, drag the larger highlight area in the Sun Position Controls to the position where you want the light to originate. You can position the sun, or the moon, on the horizon as you like by nudging the Sun Control until the light is visible in your scene.



Positioning the Sun with Precision

To position the sun with precision:

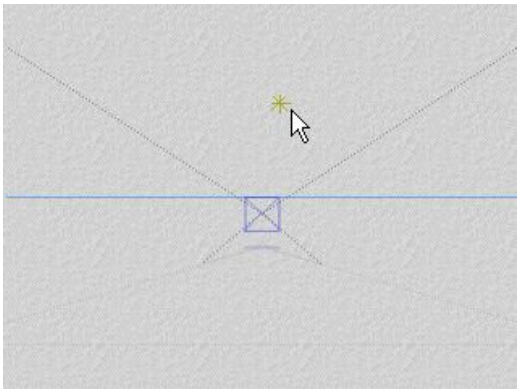
1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Hold down Ctrl+Opt/Alt and double-click the Sun control.



3. Continue holding down Ctrl+Opt/Alt and in the working window, click where you want to position the sun. A yellow asterisk will show up where you click indicating where you placed the sun.



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And the result:



Positioning the Sun Numerically

To position the sun numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. In the Sun Controls area, type a value into the Azimuth field. The Azimuth field controls the east-to-west position of the sun. The range is 0 to +360.



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4. Enter a value in to the Altitude field. The Altitude field controls the height of the sun relative to your scene. The range is 90 to +90. Positive values are above the horizon, negative values below.



5. Check the results to see if any further changes are needed.



6. Click the OK icon to exit the dialog.

Positioning the Moon

The moon is positioned at the same time as the Sun. The two are always at opposite ends of the sky, so wherever the sun is positioned, the moon is directly opposite. In the Sun/Moon control on the Sky & Fog palette and in the Sky Lab, the moon's position is represented by the smaller highlight portion of the Sun Position trackball.

You can position the moon manually by using the Sun/Moon control, or numerically by specifying values in the Sky Lab. You can also position the moon exactly where you want it to appear in your scene.

You can position the moon manually and with precision on the Sky & Fog Palette and in the Sky Lab. You can also position the moon numerically in the Sky Lab.

Positioning the Moon Manually

To position the moon manually:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Use the Sun Controls on the palette or click on the Sky Lab button. The Sky Lab appears.

3. In the Sun Controls area, drag the larger highlight area in the Sun Position Controls to the position where you want the light to originate. You can position the sun, or the moon, on the horizon as you like by nudging the Sun Control until the light is visible in your scene.

Positioning the Moon with Precision

To position the moon with precision:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

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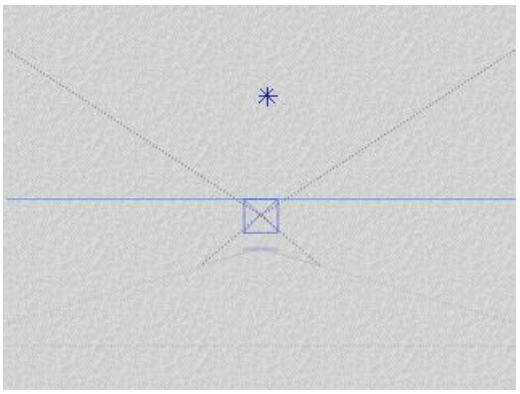
2. Click the Day/Night Toggle to display the moon icon.



3. Hold down Ctrl+Shift+Opt/Alt and quickly double-click on the Sun control.



4. Continue holding down Ctrl+Shift+Opt/Alt and in the working window, click where you want to position the moon. A blue asterisk will show up where you click indicating where you placed the moon. If you have trouble placing the moon this way, place the sun, then click on the Day/Night Toggle to switch to the moon.



And the result:



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Positioning the Moon Numerically

To position the moon numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Day/Night toggle to display the moon icon.



4. In the Sun Controls area, type a value into the Azimuth field. The Azimuth field controls the east-to-west position of the sun/moon. The range is 0 to +360, and the default value is 60. The moon will be positioned exactly opposite these values, so you can invert them to position the moon numerically or place the Sun behind the camera so that the moon appears in front of it.

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5. Enter a value into the Altitude field. The Altitude field controls the height of the sun/moon relative to your scene. The range is -99 to +99. Positive values are below the horizon, negative values above.



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6. Check the results to see if any further changes are needed.



7. Click the OK icon to exit the dialog.

Linking the Sun to the Camera

Normally, you'd have to reposition the sun every time you changed the camera to maintain a certain effect or sunlight angle. However, if you apply the Link Sun to Camera option, your sun will track the camera. The position of the sun relative to the camera remains the same no matter where the camera is positioned. This way you can set up the sun position once and then not worry about losing the effect as you move the camera. This feature can also be very useful when you're animating your scene.

To link the sun to the camera:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



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4. Click the Link Sun to View button. When this option is enabled, your sun will always remain in the same position relative to the camera. Wherever you move the camera the sun will follow. This is an easy way of seeing how a sunset will look against different skylines.



Disabling Sunlight

You can remove the sunlight in your scene by disabling it. When the sunlight is disabled, the sun remains in the scene, but does not throw light. The only light visible in your scene comes from individual light sources. (The scene will still be illuminated.)

When using image-based lighting, the sun will need to be disabled.

To disable the sunlight:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



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4. Click the Disable Sun Light button.



Sun/Moon Color

Light in nature is not usually visible until it strikes an object. When you're using normal light, a purple sunlight color will not paint your entire sky purple, but objects in your scene will reflect purple. When you're using Visible World, choosing purple will paint your entire scene purple.

The grayscale bar at the bottom of the color palette lets you set the intensity of the sun. Black turns the sun off and white sets the sun to its brightest intensity.



To set the Sun Color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Sun & Moon tab.



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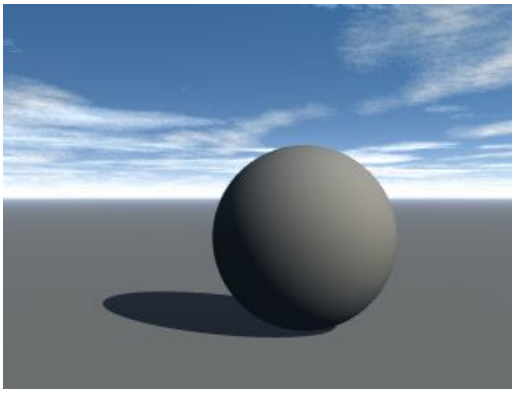
4. Left-click-hold on the Sun Color Swatch and select a color from the color palette that comes up.



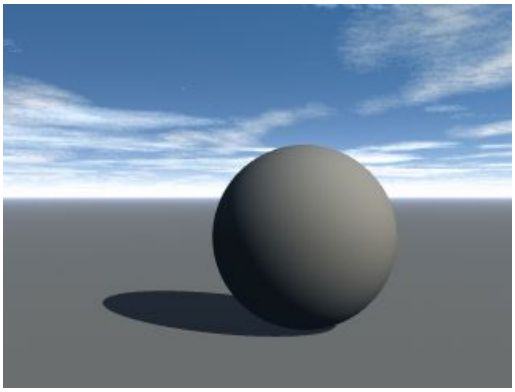
5. Click the OK icon to exit the dialog.

Examples:

- Sun Color = White

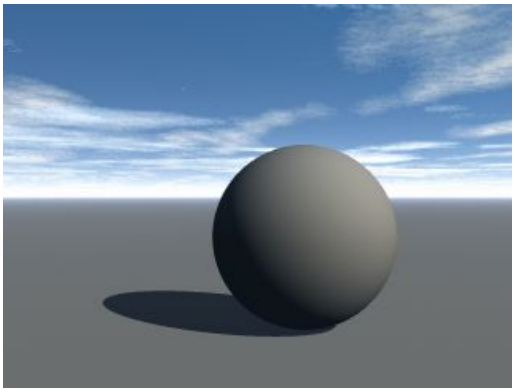


- Sun Color = Hot Pink

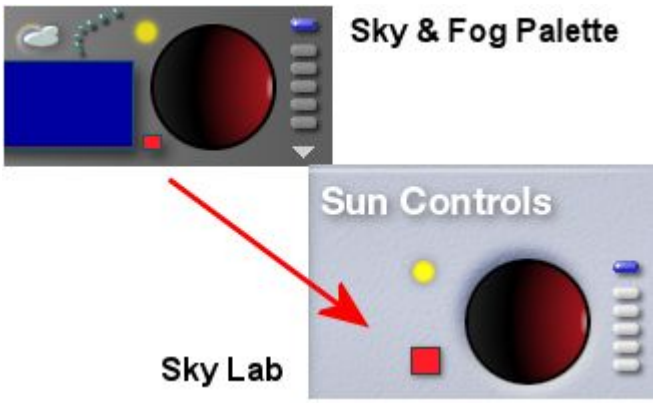


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- Sun Color = Bright Red



You can also set the sun/moon color using the Sky & Fog Palette:



Switching Between Sun & Moon

Your sky normally contains two bodies: the sun and the moon. There is always one body visible in your sky. At night it is the moon and in the day it is the sun. The two bodies are connected and always remain at opposite ends of the sky. As you move the sun you're also moving the moon. This means that when the sun dips below the horizon in front of you, the moon is rising behind you.

The link between the sun and the moon can be seen by positioning the sun at the horizon in front of the camera. If you turn the camera 180°, you'll see the moon just rising over the horizon as well.

To switch between night and day:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

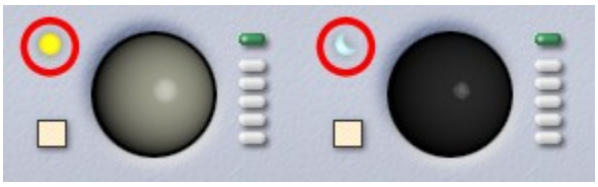
   

2. Click the Sky Lab button. The Sky Lab appears.

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3. Click the Day/Night Toggle button in the top-left corner of the Sun Position Controls.



The Sun/Moon Control in the Sky Lab is linked to the same controls in the Sky & Fog Palette.



Cloud Cover Tab

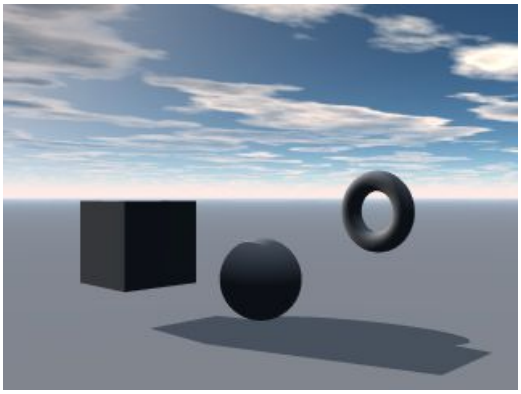
The Cloud Cover Tab contains controls for adding, controlling, and animating clouds.



Setting Cloud Types

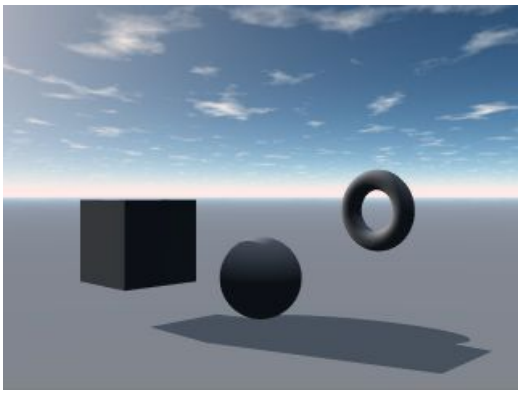
There are two types of clouds you can add to your Bryce environment: Cumulus and Stratus.

Cumulus clouds are generally found at lower altitudes and appear thicker and fluffier. The sky in this scene uses Cumulus clouds.



Cumulus clouds are thicker, darker clouds at a lower altitude. These clouds will take on tints of Sunlight color, Ambient color, or Cumulus color.

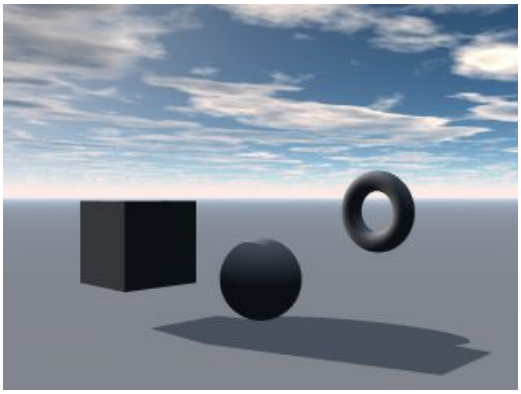
Stratus clouds appear at higher altitudes and appear thinner and more wispy. The sky in this scene uses Stratus clouds.



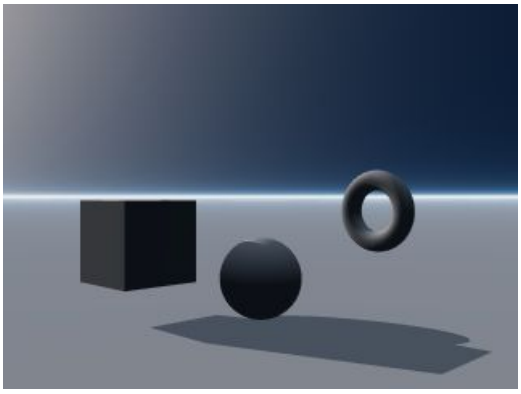
Stratus clouds are bright white, thin, clean clouds that appear at high altitudes. These clouds are very responsive to Sunlight color and Sky Dome color, and less responsive to Cumulus color or Ambient color.

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Using both cloud types at once creates a more realistic sky.



Deselecting both cloud types creates a clear sky.



Cumulus Clouds

Cumulus clouds are thicker, darker clouds at a lower altitude. These clouds will take on tints of Sunlight color, Ambient color, or Cumulus color.

To add Cumulus clouds to a sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

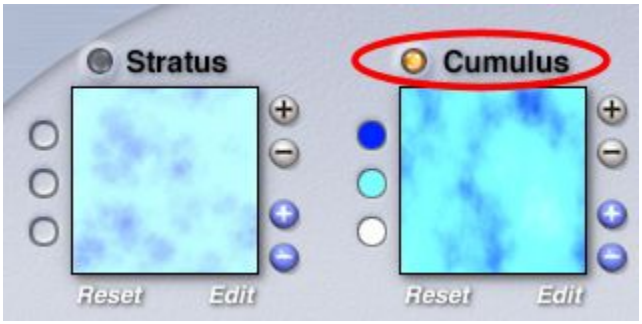
   

3. Click the Cloud Cover tab.

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4. Activate the Cumulus Clouds option.



Stratus Clouds

Stratus clouds are bright white, thin, clean clouds that appear at high altitudes. These clouds are very responsive to Sunlight color and Sky Dome color, and less responsive to Cumulus color or Ambient color.

To add Stratus clouds to a sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



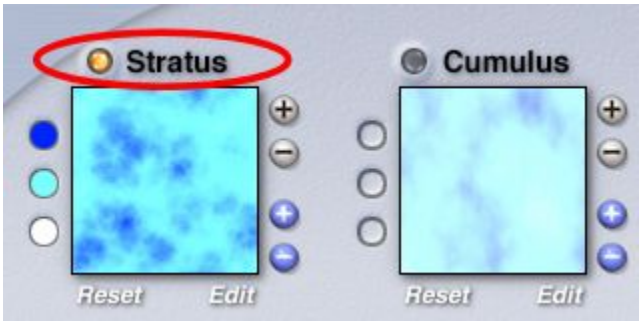
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Cloud Cover tab.



4. Activate the Stratus Clouds option.



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Editing Cloud Textures

Clouds in Bryce are created using a procedural texture with a cloud pattern. The color, position, size, and pattern within the texture determines the final look of the cloud in your sky. You can edit this texture using either the Sky Lab palette, or for more complex editing, you can use the Deep Texture Editor.

The texture used for a cloud can come from either the Bryce Texture Library or you can create your own.

In the Sky Lab

To edit cloud textures in the Sky Lab:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

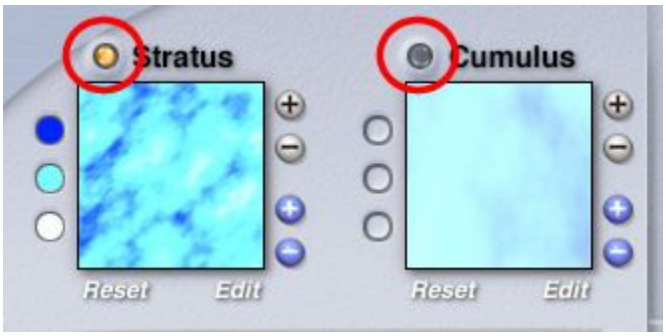
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Cloud Cover tab.

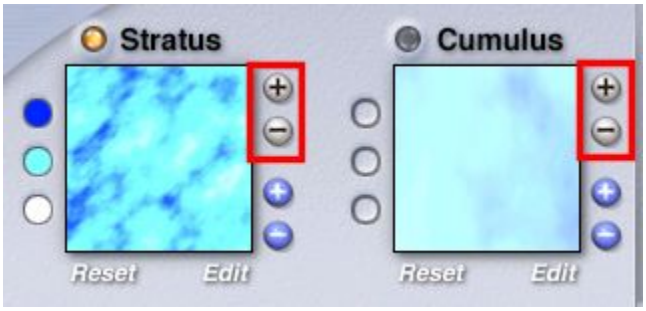
   

4. Activate either the Stratus or Cumulus cloud type, or both.

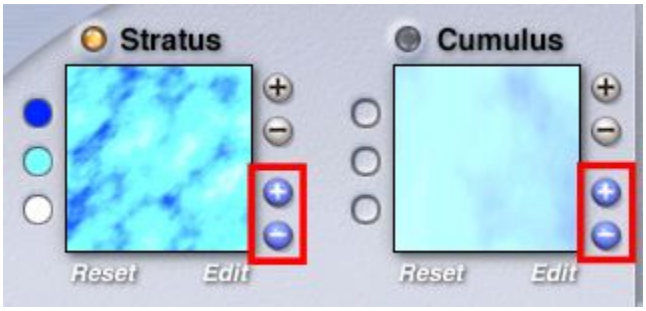
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5. Click the grey + or -Turbulence buttons to increase or decrease the amount of noise in the texture. Increasing the Turbulence creates a more dense pattern within the texture.



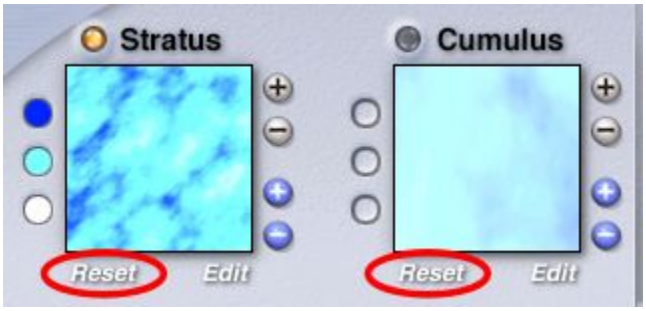
Note: The turbulence of the original texture is the lowest setting for that texture. The turbulence can only be increased then decreased back down to the original setting.

6. Click the blue + or -Complexity buttons to increase or decrease the amount of detail in the texture. Increasing the Complexity increases the complexity of the patterns within the texture.



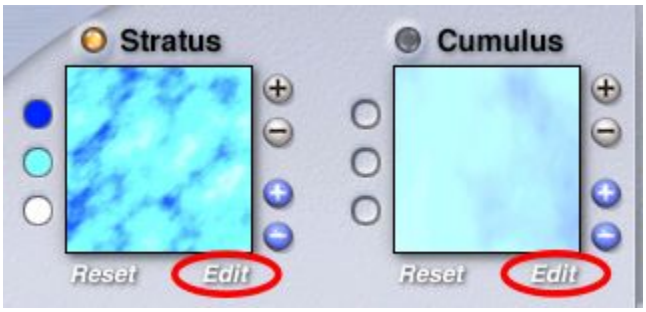
Note: The complexity of the original texture is the highest setting for that texture. The complexity can only be decreased then increased back up to the original setting.

7. Click the Reset button to restore the original settings if you want to start over.



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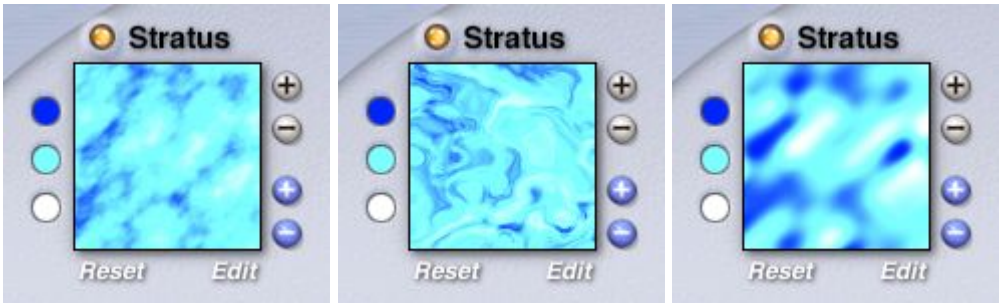
8. Click the Edit button to enter the Deep Texture Editor to adjust or change the cloud texture.



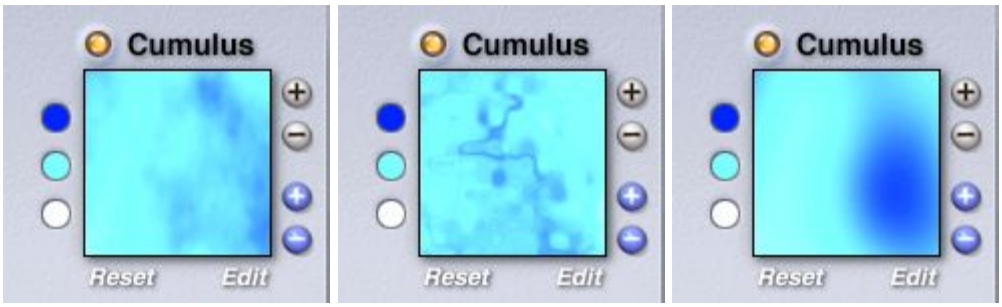
9. Click the OK icon to apply your changes.

Examples:

- Stratus - Original; Increased Turbulence; Decreased Complexity



- Cumulus - Original; Increased Turbulence; Decreased Complexity



In the DTE

To edit cloud textures in the Deep Texture Editor:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



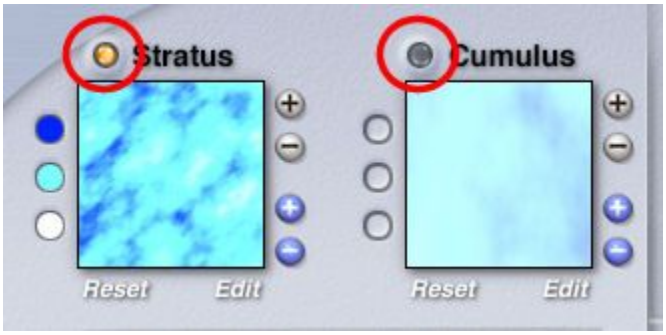
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Cloud Cover tab.



4. Activate either the Stratus or Cumulus cloud type, or both.



5. Click the Edit button below the type of clouds you want to edit.
6. Click the Edit button. The Deep Texture Editor appears. The cloud texture and its components appear in the component windows. If you're not familiar with using the Deep Texture Editor you may get some very unpredictable results which may result in clouds that don't look much like clouds. Before you start editing the clouds texture you may want to refer to "The Deep Texture Editor" for more instructions on how to use the editor.
7. If you want to add additional turbulence to the cloud texture, adjust the texture's Noise:
    - Click the Noise button at the bottom of the editor. The Noise control appears. The Noise control lets you adjust the frequency of the noise in any of the texture's components.
    - At the top of the Noise control, click the button associated with the component you want to edit.
    - Adjust the Noise slider to increase/decrease the frequency of the noise in the texture.
8. If you want to change the colors of a component, click one of the color indicators in the component window and choose a new color.
9. If you want to add more complexity to the texture, adjust its Phase:
    - Click the Phase button at the bottom of the editor. The Phase control appears. The Phase control lets you adjust the amplitude of the phase in any of the texture's components.
    - At the top of the Phase control, click the button associated with the component you want to edit.

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- Adjust the Phase slider to increase/decrease the amplitude of the phase.

10. If you want to change the pattern in the texture, apply a filter:
    - Click the Filter button at the bottom of the editor. The Filtering control appears. The Filtering control displays a graphical representation of the filter applied to your texture. By changing the equation of the filter to the value of the variables, you can change the patterns within the cloud texture.
    - At the top of the Filtering control, click the button associated with the component you want to edit.
    - Change the filter equation and variable values to adjust the filter applied to your texture. Filtering is a rather complex operation. Try experimenting with different equations and see what happens.
11. Click the OK icon to exit the editor.

Setting Cloud Motion

Setting Cloud Motion

When setting up animations, you can set the speed and turbulence of clouds as well as specify the direction of motion.

Please note that these controls only work during animations. They have no effect on still images.

Setting Cloud Speed

To set cloud speed for animations:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

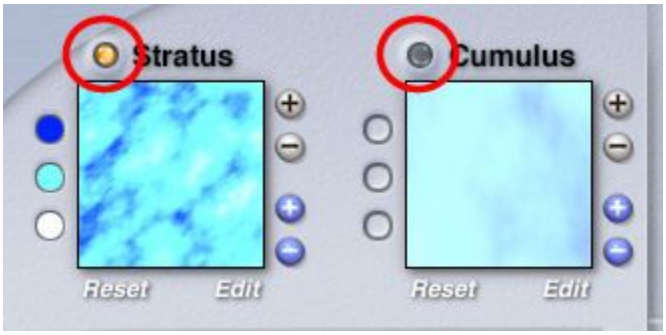
2. Click the Sky Lab button. The Sky Lab appears.

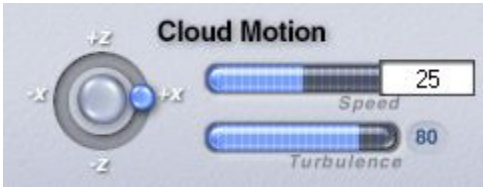
3. Click the Cloud Cover tab.

4. Activate either the Stratus or Cumulus cloud type, or both.



5. Drag the slider or enter a number in the Speed field.



Setting Cloud Turbulence

To set cloud turbulence for animations:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



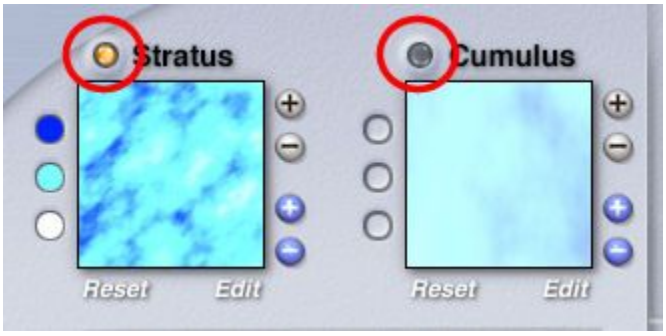
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Cloud Cover tab.

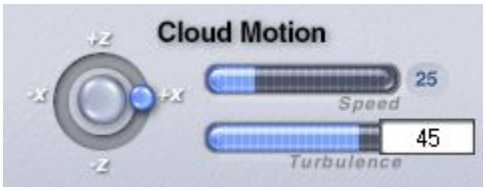


4. Activate either the Stratus or Cumulus cloud type, or both.



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5. Drag the slider or enter a value in the Turbulence field.



Setting Direction of Motion

To set the direction of motion for animations:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



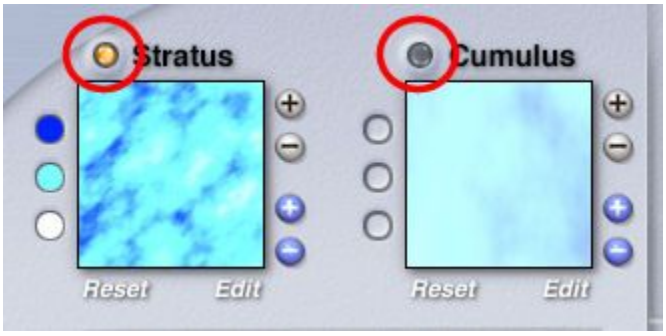
2. Click the Sky Lab button. The Sky Lab appears.



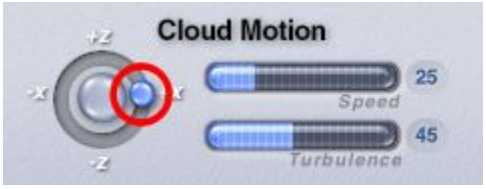
3. Click the Cloud Cover tab.



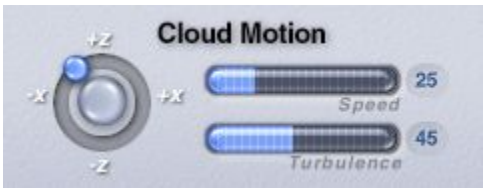
4. Activate either the Stratus or Cumulus cloud type, or both.



5. Drag the Cloud motion control to specify the angle of motion.



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Reset Cloud Speed & Turbulence

To reset the Cloud Speed & Turbulence to zero for animations:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

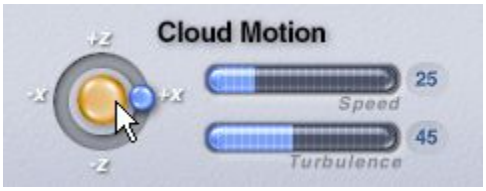
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Cloud Cover tab.

4. Click on the large center sphere in the Cloud motion control. Both Speed and Turbulence will be set to zero.

Setting Cloud Cover

Cloud Cover controls the quantity of clouds you can see in the sky. A high coverage means that there is a very dense cloud layer, and a low setting means that there are very few clouds in the sky.

Cloud cover also indirectly controls the brightness of the environment. The more cloud coverage you have in a sky, the darker the environment, since less sunlight can pass through the clouds. Adjusting cloud coverage changes the quantity of clouds but not the frequency. You can think of it as adjusting the volume on a radio without changing the station.

The Cloud Coverage control in the Sky Lab lets you interactively set the quantity of clouds in the sky.

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For example, you can see how the clouds change in these skies as the cloud coverage value changes.

To set cloud coverage numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



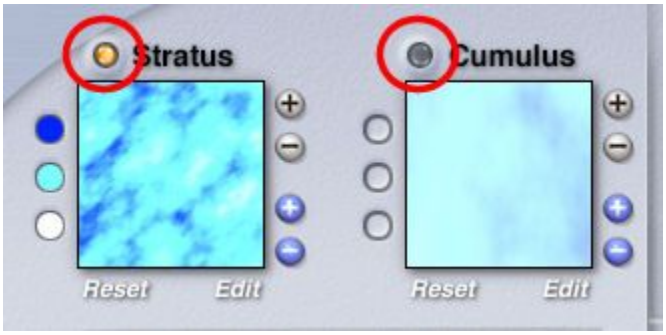
2. Click the Sky Lab button. The Sky Lab appears.



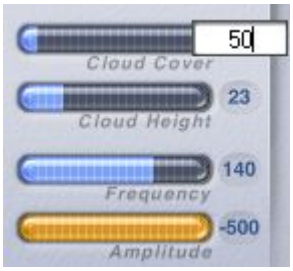
3. Click the Cloud Cover tab.



4. Activate either the Stratus or Cumulus cloud type, or both.



5. Drag the slider or enter a value in the Cloud Cover field.



You can also set Cloud Cover in the Sky & Fog Palette.



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Setting Cloud Height

The height of your clouds has an impact on the appearance of your sky. Greater heights will result in smaller, more distant cloud formations, as well as a thicker band of haze at the horizon. Lower heights result in larger, more languorous cloud formations and a thinner band of haze at the horizon. The Cloud Height controls in the Sky & Fog palette let you interactively set the height of the cloud layer in the sky. For example, you can see how the clouds change in these skies as the cloud altitude value changes from 10% to 90%.

There are two things to remember when working with this control. First, the Cloud Height will affect the size of your Haze band, if you have a haze setting greater than zero. The higher the altitude, the wider the haze region will be on the horizon. Second, remember to lower your altitude setting if you are creating a nighttime scene. Since high altitudes increase the size of the horizon Haze region, the sky will be too unnaturally bright for realistic night scenes.

To set cloud height numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

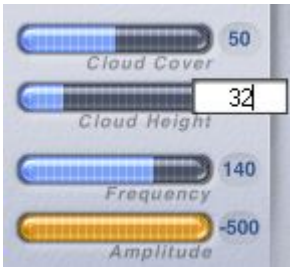
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Cloud Cover tab.

4. Drag the slider or enter a value in the Cloud Height field.

You can also set Cloud Height in the Sky & Fog Palette.



Setting Frequency & Amplitude

The Frequency and Amplitude control lets you set the types of cloud formation you'll see in your sky. By combining these two controls you can change your clouds from light and fluffy to dark and brooding. Use Frequency and Amplitude to control the types of cloud formations in your scene.

This graph shows the effects of different Frequency and Amplitude settings on a sky. Frequency values range from 2 at the top to 150 at the bottom. The Amplitude values range from 50 at the left to 500 on the right.

To set Frequency and Amplitude numerically:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

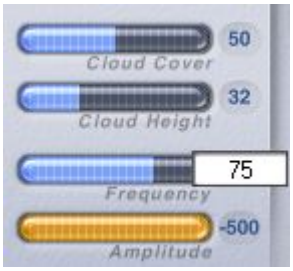
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Cloud Cover tab.

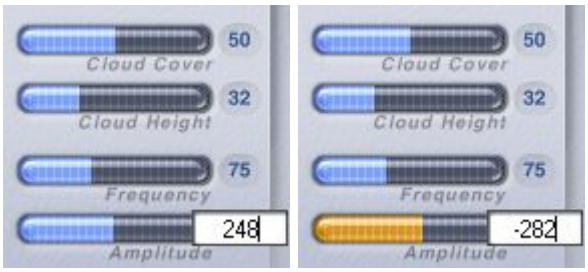
4. Drag the slider or enter a value in the Frequency field. The Frequency field controls the frequency (scale) of cloud formations in your scene.

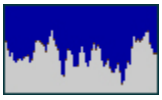
5. Drag the slider or enter a value in the Amplitude field. The Amplitude field controls the amplitude (edge softness) of clouds in your scene.

   Drag right to increase the Amplitude amount, drag left to decrease the amount.

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You can also set Cloud Frequency & Amplitude in the Sky & Fog Palette.



Cast Shadows

By default, the Clouds in Bryce do not cast shadows. If you want the cloud layer to cast shadows on the ground below,

enable the Cloud Shadows option.

To have the clouds cast shadows:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

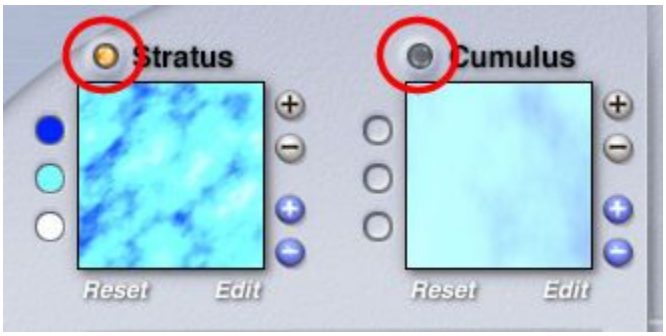
2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Cloud Cover tab.

4. Activate either the Stratus or Cumulus cloud type, or both.

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5. Enable the Cast Shadows option.



Linking Clouds to the Camera

If you move the camera view during an animation, the clouds in your environment will appear to zoom by, creating a kind of time-lapsed effect. If you want the clouds to appear fixed as you move the camera, link the cloud in the sky to the camera view. This way, wherever the camera moves the clouds will follow so that they seem to remain stationary.

To link clouds to view:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



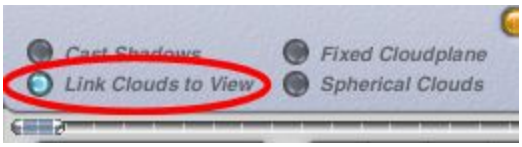
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Cloud Cover tab.



4. Click the Link Clouds to View button.



Refer to "Animating Skies" for more on animating skies.

Using a Fixed Cloud Plane

As you move higher up in a Bryce environment, the cloud pattern shifts, so that it appears as if you're getting closer to the clouds. If you want to counter this effect, you can use the Fix Cloud Plane option to freeze the cloud pattern so that it doesn't change as you move higher up.

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To use a fixed cloud pattern in your sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



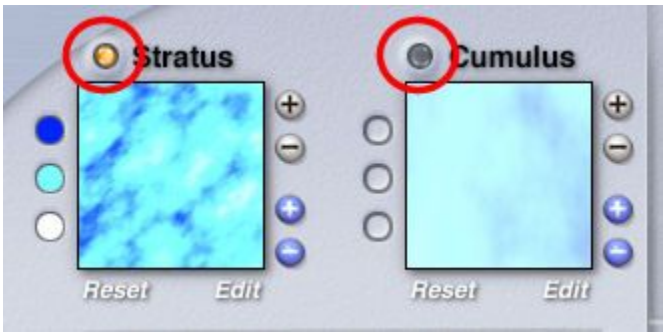
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Cloud Cover tab.



4. Activate either the Stratus or Cumulus cloud type, or both.



5. Enable the Fixed Cloud Plane option.



Spherical Clouds

Selecting Spherical Clouds consolidates high frequency clouds, creating rounder more dense clouds. Works for both

stratus and cumulus.

To enable Spherical Clouds:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



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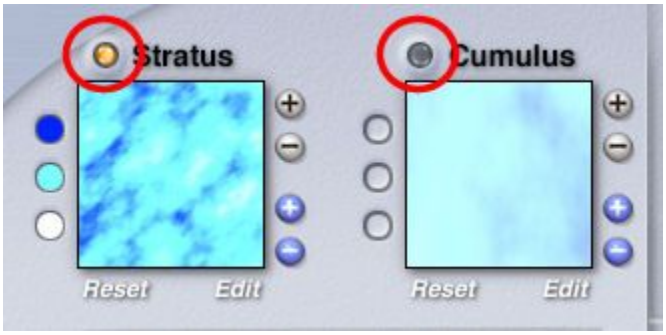
2. Click the Sky Lab button. The Sky Lab appears.



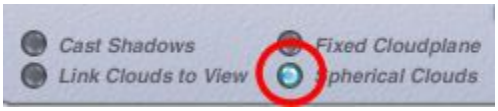
3. Click the Cloud Cover tab.



4. Activate either the Stratus or Cumulus cloud type, or both.



5. Enable the Spherical Clouds option.



6. Click the OK icon to exit the dialog.

Examples:

- Stratus Clouds, Spherical Clouds disabled:



- Stratus Clouds, Spherical Clouds enabled:



- Cumulus Clouds, Spherical Clouds disabled:



- Cumulus Clouds, Spherical Clouds enabled:



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- Stratus & Cumulus Clouds, Spherical Clouds disabled



- Stratus & Cumulus Clouds, Spherical Clouds enabled:



Atmosphere Tab

Environmental effects controls are located on the Atmosphere tab of the Sky Lab dialog.

The elements in a sky aren't constant; the sky is always changing, reflecting weather patterns or the time of day. If it rains, there's a rainbow. If it's night, there are stars. If it's sunset, the sun looks bigger. If you look right at the sun on a hazy day, you'll see rings around it. Sometimes, if it's hazy enough you can even see the sunlight streaking out of the clouds. All these illusions are called environmental effects and the Sky Lab palette contains all the controls you'll need to add them to your scene.

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Fog

Fog can add an element of sensuality, mystery, and even realism to your scenes. It acts like a thin layer of cloud close to the ground.

Using Fog you can create the illusion of depth without having to add distant objects. Fog can create a sense of depth in your scene.

In this scene, the fog was used to add depth to the road as it moves away from the camera. Notice how the feeling of depth was created without the addition of background objects.



You can set intensity, height, and color attributes for the fog.

The fog acts as a global layer covering the entire scene. Its color and intensity are the same throughout the scene. Localized fog can be created by adding a volume cloud material to a plane or sphere within the scene.

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To enable Fog:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Fog option.



5. Adjust the Fog Color, Density, Thickness, and Base Height as needed.
6. Click the OK icon to exit the dialog.

Fog Color

To set Fog color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



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4. Enable the Fog option.



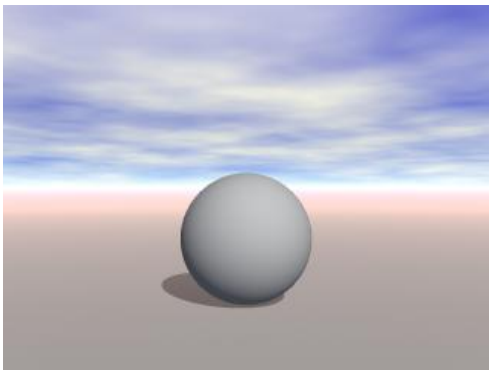
5. Click the color swatch above the Density slider and choose a color from the color picker.



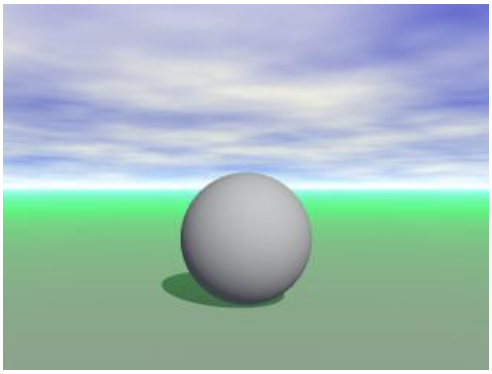
Refer to "Blend with Sun" for information on blending the fog color with the sun.

Examples:

- Fog Color = Peach



- Fog Color = Green



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Fog Density

Fog Density sets the amount of fog rendered in the image. It works along with Fog Thickness to create the fog. Fog Density can be set from 0 to 100% with a default value of 0%.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



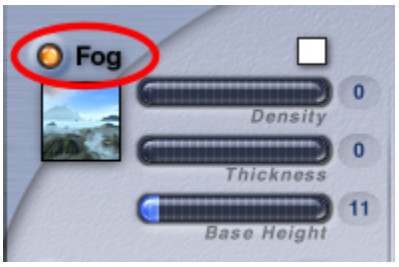
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Fog option.



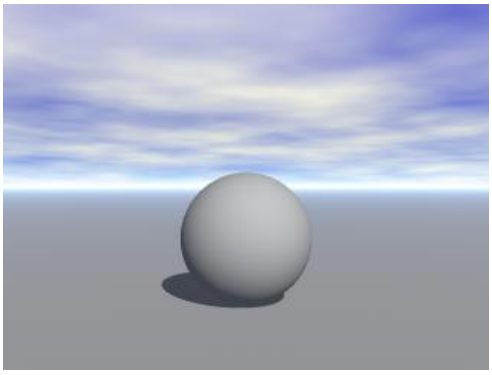
5. Drag the Density slider or enter a value in the Density field.



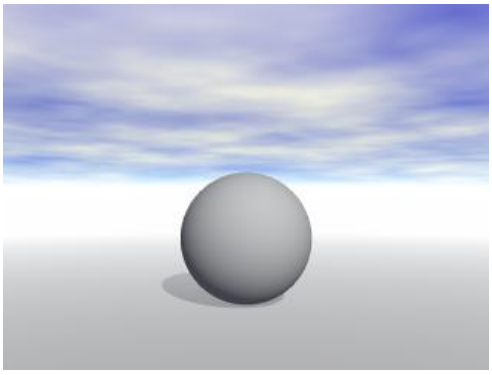
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Examples:

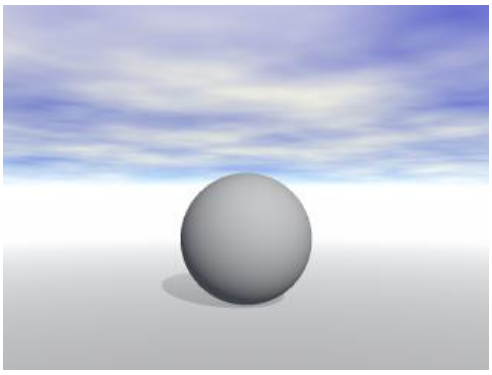
- Fog Density = 0



- Fog Density = 15, Thickness = 5

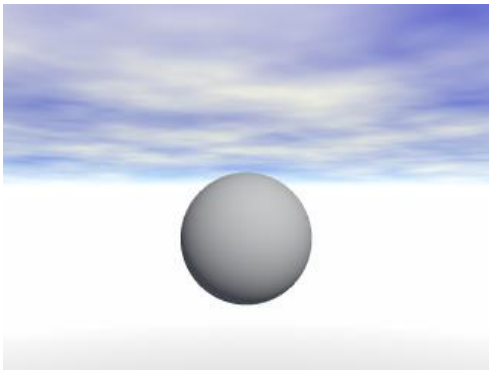


- Fog Density = 25, Thickness = 5

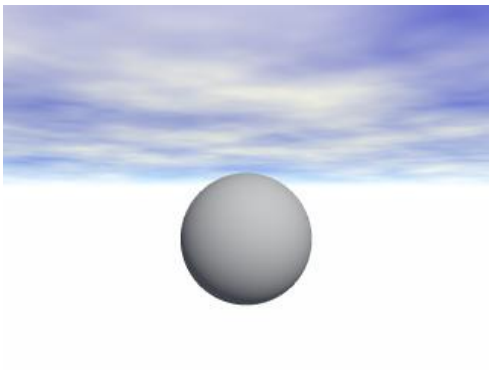


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- Fog Density = 75, Thickness = 5



- Fog Density = 100, Thickness = 5



Fog Thickness

Like Fog Density, Fog Thickness sets the amount of fog rendered in the image. It works along with Fog Density to create the fog. Fog Thickness can be set from 0 to 100% with a default value of 0%.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



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4. Enable the Fog option.

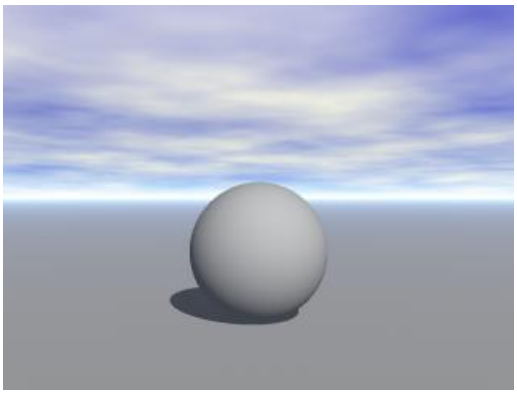


5. Drag the Thickness slider or enter a value in the Thickness field.

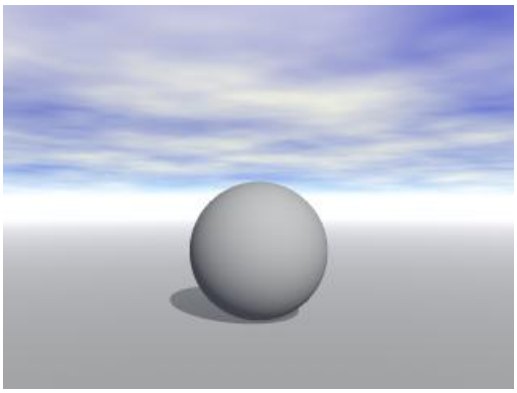


Examples:

- Fog Thickness = 0, Density = 0

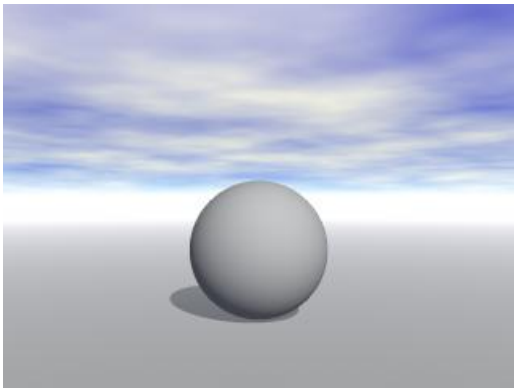


- Fog Thickness = 5, Density = 5

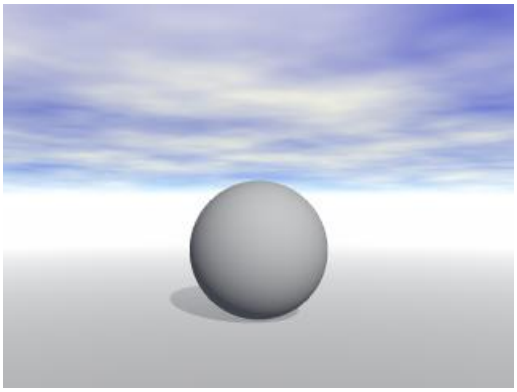


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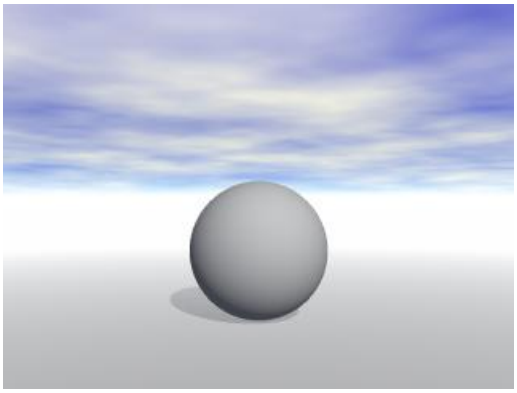
- Fog Thickness = 5, Density = 10



- Fog Thickness = 10, Density = 10

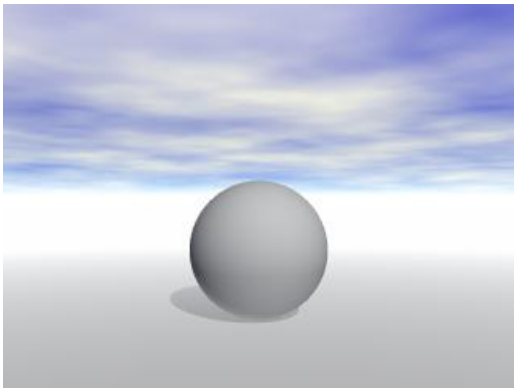


- Fog Thickness = 15, Density = 10

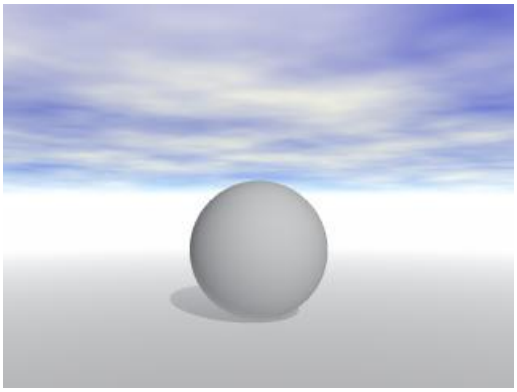


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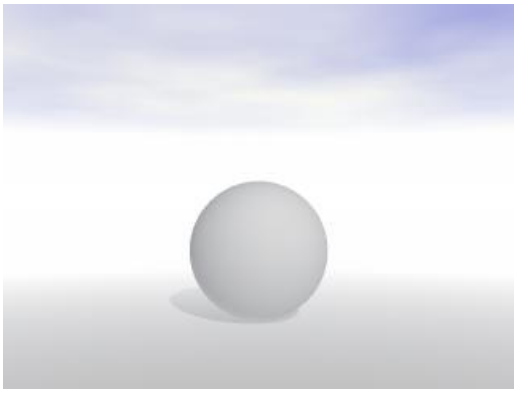
- Fog Thickness = 15, Density = 50



- Fog Thickness = 15, Density = 75



- Fog Thickness = 15, Density = 100



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Fog Base Height

Fog Base Height sets the height of the fog in your scene, assuming there is a value greater than zero in the field. The range is 0 to 100%, and the default value is 0%. It translates the entire atmospheric effect up or down without changing the density or thickness, however, the effect is more obvious with changes in thickness in addition to the height changes. Base Height provides control over density at low altitudes, such as in valleys. In early versions of Bryce, you had to move the entire scene up or down relative to the atmosphere.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Atmosphere tab.

4. Enable the Fog option.

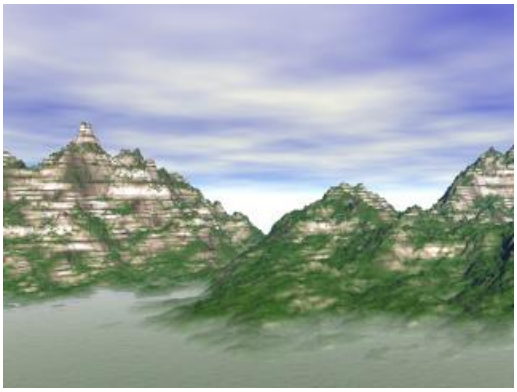
5. Drag the Base Height slider or enter a value in the Base Height field.

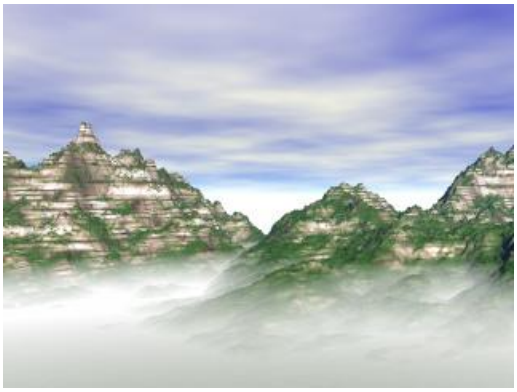
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Examples:

- Fog Density = 5, Thickness = 25, Base Height = 25



- Fog Density = 5, Thickness = 45, Base Height = 50



- Fog Density = 5, Thickness = 65, Base Height = 75



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- Fog Density = 5, Thickness = 85, Base Height = 100



Haze

Haze is the natural effect you see when a plane (like the ocean) stretches out towards the horizon. At this distant point a different color appears over the horizon and light becomes fuzzy. Haze creates the illusion of a distant horizon. In this scene, the haze is used to create the distinction between the water plane and the sky.

The Haze control lets you set the intensity and color of the Haze effect in your Bryce scene.

With haze set to zero, your horizon will have an unnaturally hard edge. Also note that the Cloud Altitude control will affect the height of this band of haze. The higher the altitude of the atmosphere, the wider the band of haze at the horizon.

Haze is applied to the entire scene equally. The haze always appears at the horizon.

To enable Haze:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Atmosphere tab.

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4. Enable the Haze option.



5. Adjust the Haze Color, Density, Thickness, and Base Height as needed.
6. Click the OK icon to exit the dialog.

Haze Color

To set Haze Color:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Haze option.



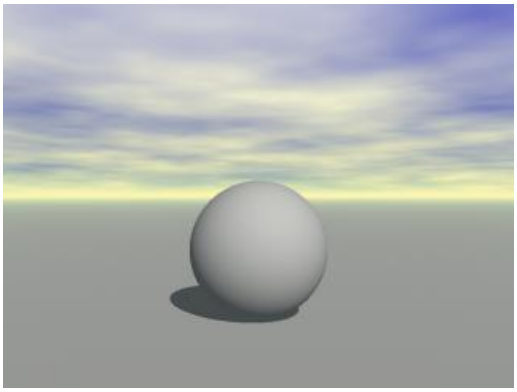
5. Click the color swatch above the Density slider and choose a color from the color picker.



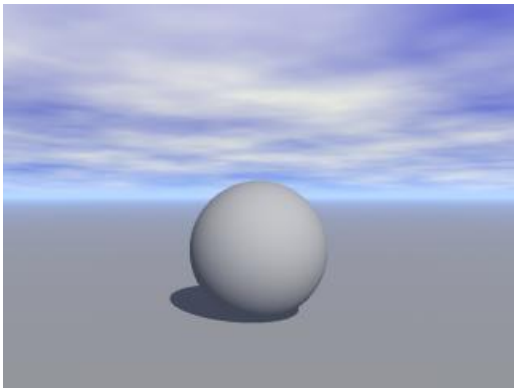
Refer to "Blend with Sun" for information on blending the haze color with the sun.

Examples:

- Haze Color = Yellow



- Haze Color = Blue



Haze Density

Haze Density, along with Thickness and Base Height, govern the amount of haze rendered into your scene. The range is 0 to 100, and the default value is 4. Density controls the density of the lower part of the atmosphere and affects the scattering of light around the sun.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



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3. Click the Atmosphere tab.



4. Enable the Haze option.

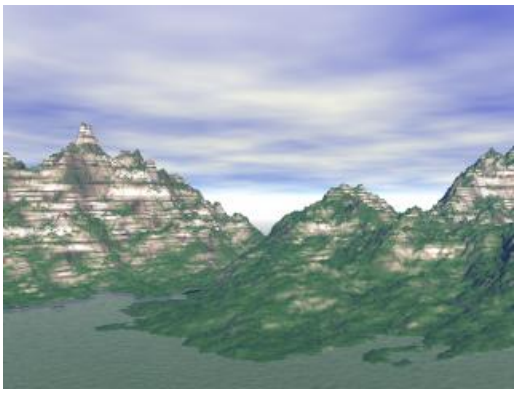


5. Drag the Density slider or enter a value in the Density field.

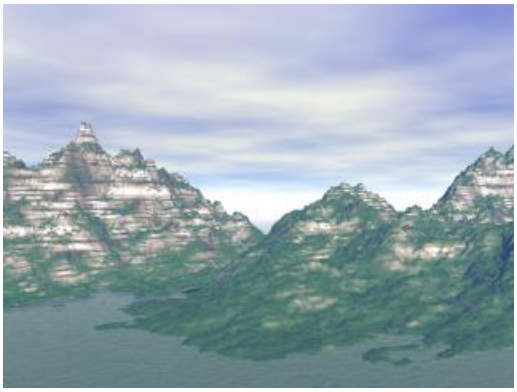


Examples:

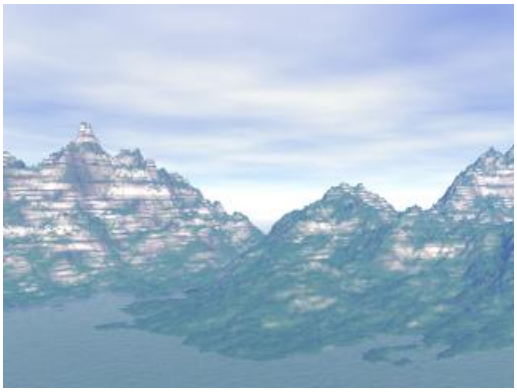
- Haze Density, Thickness, & Base Height = 25



- Haze Density = 50, Thickness & Base Height = 25



- Haze Density, Thickness, & Base Height = 50



- Haze Density = 75, Thickness & Base Height = 50



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- Haze Density = 75, Thickness =50, Base Height = 100



Haze Thickness

Haze Density, along with Thickness and Base Height, govern the amount of haze rendered into your scene. The range is 0 to 100, and the default value is 4. Thickness scales the whole atmosphere up or down, with the density at "sea level" remaining unchanged. In earlier versions of Bryce, you had to move the entire scene up or down relative to the atmosphere.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Haze option.



5. Drag the Thickness slider or enter a value in the Thickness field.



See "Haze Density" for examples of Haze Thickness used in conjunction with Density and Base Height.

Haze Base Height

Haze Base Height, along with Density and Thickness, govern the amount of haze rendered into your scene. The range is 0 to 100, and the default value is 4. Base Height provides control over density at low altitudes, such as in valleys. It translates the entire atmospheric effect up or down without changing the density or thickness. In earlier versions of Bryce, you had to move the entire scene up or down relative to the atmosphere.

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Haze option.



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5. Drag the Base Height slider or enter a value in the Base Height field.



See "Haze Density" for examples of Haze Base Height used in conjunction with Density and Thickness.

Rainbows

In the real world rainbows appear after rainstorms as arcs of light displaying all the color in the spectrum. In Bryce a rainbow is an atmospheric effect that can be added to any sky. A rainbow is only visible if the sun is visible, meaning you can't have a rainbow at night. As well, you can add a secondary rainbow to create the illusion of reflection.

Rainbows are linked to the sun. As the color or intensity of the sun changes, so does the rainbow. In addition, the position of the rainbow in the sky is dependent on the position of the sun. Rainbows appear to be infinitely distant from the camera. You can't approach them by moving the camera, so the pot of gold is always just out of reach.

To add a rainbow to your sky:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Enable the Rainbows option.



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5. Drag the slider or enter a value in Radius field in the Rainbow area. This value sets the width of the rainbow and can be set from 0 to 100 with the default value of 33.33.



6. Drag the slider or enter a value in the Opacity field. This controls the rainbow's transparency and can be set from 0 to 100 with the default value of 30.



7. If you want to add a secondary rainbow to your sky, enable the Secondary Bow option. By default, the Secondary Bow option is enabled when you enable the Rainbow option. Disable it to only have one rainbow in the scene.



Examples:

- Radius = 33.33, Opacity = 30



- Radius = 45, Opacity = 45



- Radius = 75, Opacity = 65



- Radius = 100, Opacity = 100



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- Radius = 45, Opacity = 75, Secondary Bow enabled



Blend with Sun

Since fog remains constant throughout the scene, you may get some odd looking results when you're creating a sunset or sunrise. In these cases the sun is very close to the ground plane where the fog exists, so the fog should react to the sunlight. The Blend with Sun feature lets you create exactly this effect. As the sun approaches the Fog, the color and intensity of the fog changes to interact with the color of the sun.

Since the Haze always appears at the horizon it should change color as the sun sets or rises. The Blend with Sun feature lets you simulate this effect. When the two elements are linked, the haze color and brightness change depending on the position of the sun. This creates very realistic looking sunsets. When you're using this feature to create sunsets, you should choose the haze color carefully so as to create a natural-looking color scheme.

To blend the fog and haze with the sun:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Atmosphere tab.

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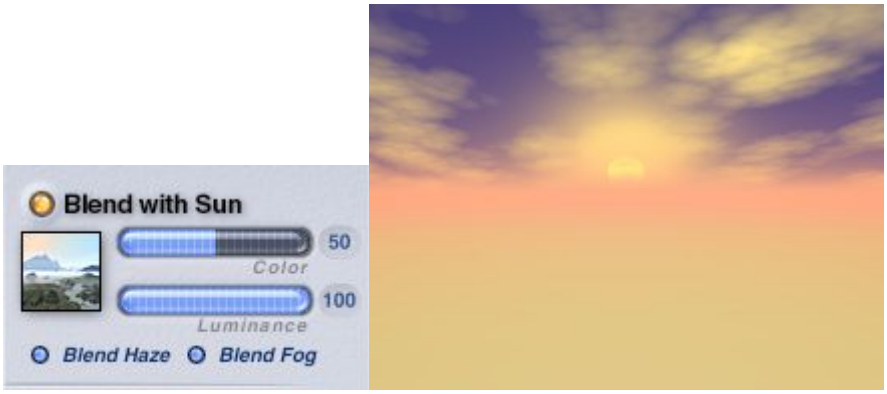
4. Enable the Blend with Sun option. Blend Haze and Blend Fog will be automatically enabled.



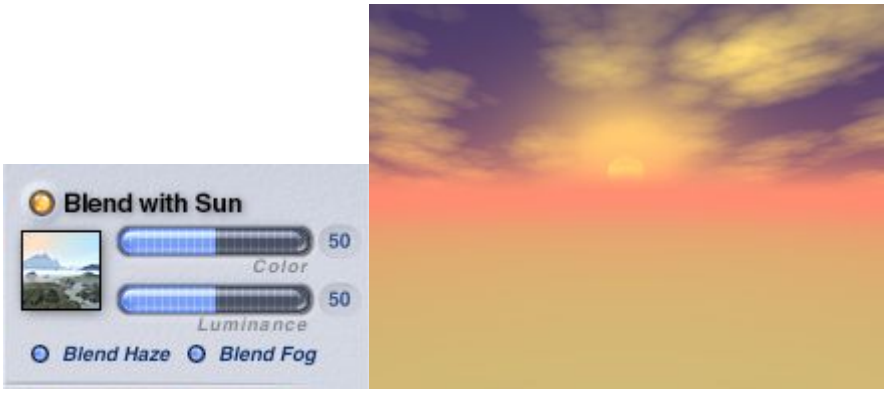
5. Enter a value in the Color field or drag the slider to set how much of the fog and haze color is blended with the sun.
6. Enter a value in the Luminance field or drag the slider to set the intensity of the fog and haze color when it's blended. To get the best effect, set both these fields to 100.

Examples:

- Blend Color with Sun = 50; Blend Luminance with Sun = 100

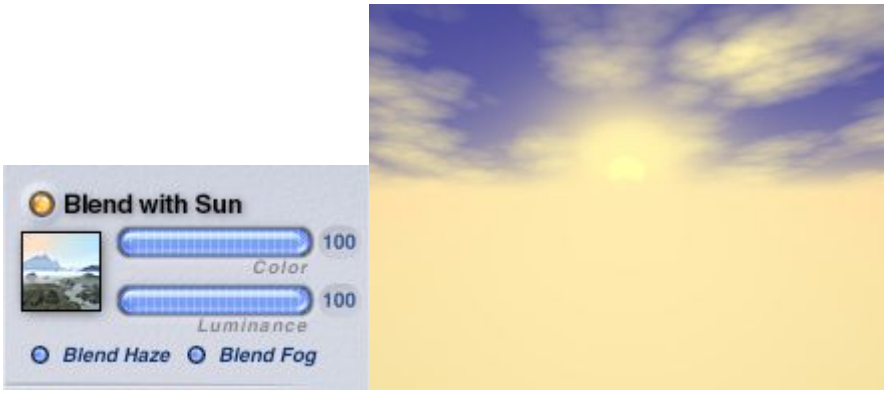


- Blend Color and Luminance with Sun = 50:



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- Blend Color and Luminance with Sun = 100



Blend Haze

To link Haze to the Sun controls:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.

2. Click the Sky Lab button. The Sky Lab appears.

3. Click the Atmosphere tab.

4. Click the Blend with Haze button. Blend Haze and Blend Fog will be enabled automatically. Leave the Blend Fog enabled to increase the haze effect.

5. Enter a value in the Color field, or drag the slider, to set how much of the haze color is blended with the sun.
6. Enter a value in the Luminance field, or drag the slider, to set the intensity of the haze color when it's blended. To get the best effect, set both these fields to 100.
7. Enable the Haze option, change the color of the haze if you want (the better to see the effect). Enable the Fog option as well if the Blend Fog option was left enabled under Blend with Sun.

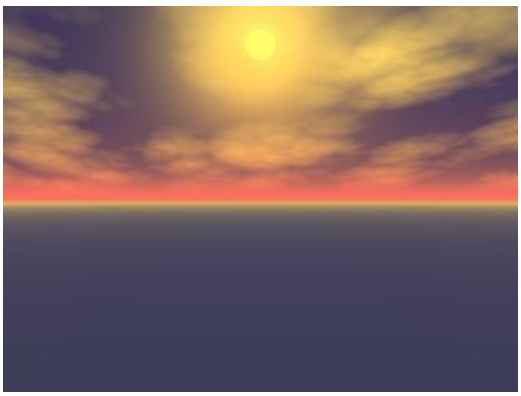
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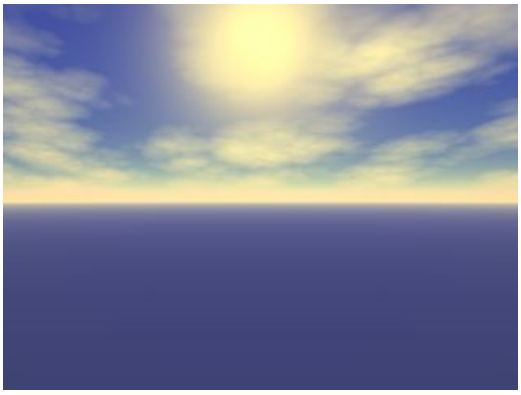
8. Adjust Fog and Haze Density, Thickness, and Base Height as needed.
9. Click on the OK icon to close the dialog.

Examples:

- Blend with Sun disabled:

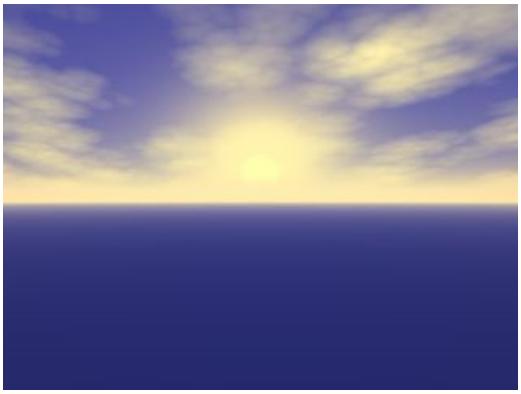


- Blend with Haze enabled:



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- Blend with Haze enabled, sun lower over horizon:



Blend Fog

To link Fog color to the Sun controls:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



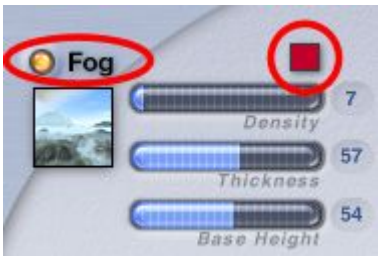
4. Click the Blend with Sun button. Blend Haze and Blend Fog will be enabled automatically. Disable Blend Haze if you wish.



5. Enter a value in the Color field or drag the slider to set how much of the fog color is blended with the sun.
6. Enter a value in the Luminance field or drag the slider to set the intensity of the fog color when it's blended. To get the best effect, set both these fields to 100.

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7. Enable the Fog option, change the color of the fog if you want (the better to see the effect).



8. Adjust Fog Density, Thickness, and Base Height as needed.
9. Click on the OK icon to close the dialog.

Examples:

- Blend with Fog disabled:

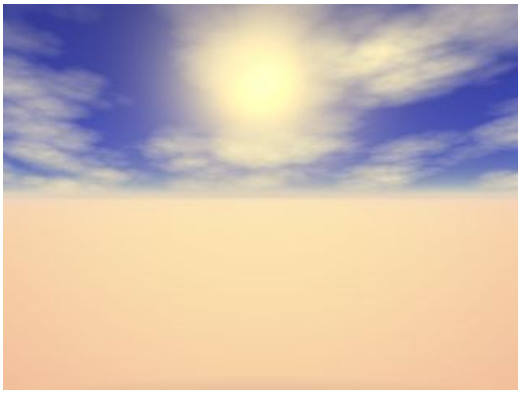


- Blend with Fog enabled:



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- Blend with Fog enabled, sun higher over horizon:



Volumetric World

The Volumetric World effect simulates the effects of particles in the air being illuminated by light sources. In Bryce this effect turns all the light sources in your scene into visible light sources.

Sunlight also becomes visible so that any color you applied to the sun appears everywhere in the scene. Visible sunlight is volumetric, meaning that it is affected by all the objects within it.

Although Volumetric World is a very beautiful effect, it's also a time consuming one. It will add considerably to your scene's rendering time.

To add visible sunlight to your scene:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.

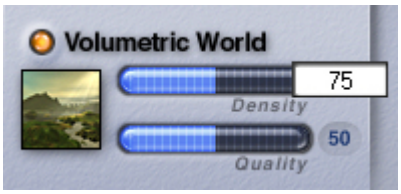


4. Enable the Volumetric World option.

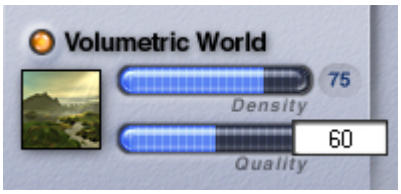


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5. Drag the Quality slider or enter a value in the Quality field. Values can be set from 0 to 100 with the default value of 50.



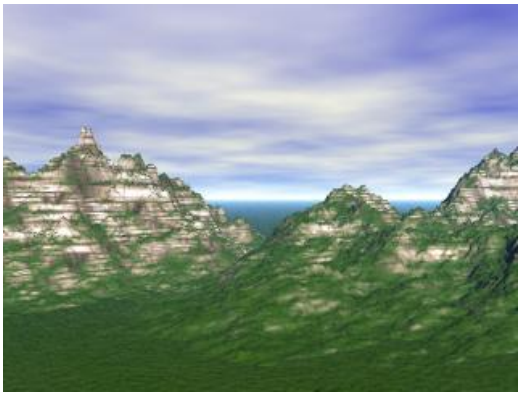
6. Drag the Density slider or enter a value in the Density field. Higher values result in brighter, more visible sunlight. Values can be set from 0 to 100 with the default value of 50.



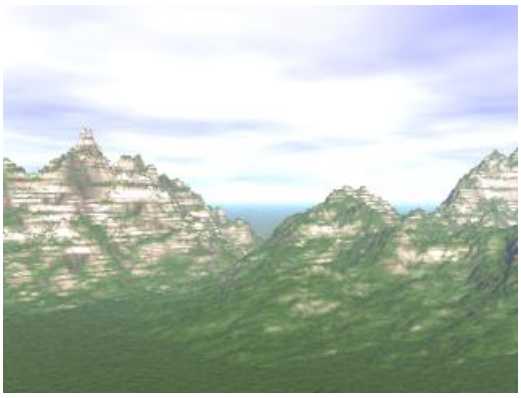
7. Click the OK icon to exit the dialog.

Examples:

- Volumetric World disabled, Render Time = 0:11

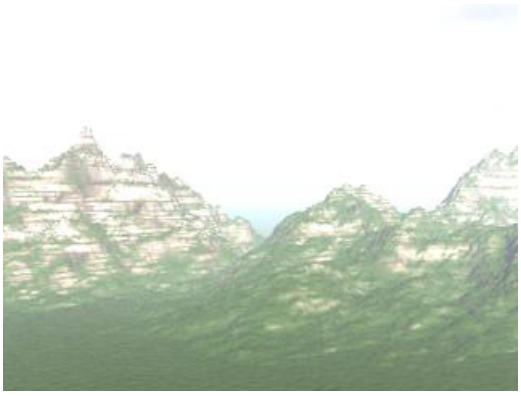


- Volumetric World enabled, Density & Quality = 50, Render Time = 3:45

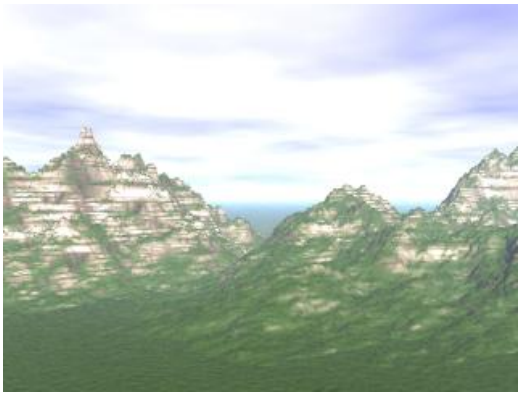


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- Volumetric World enabled, Density = 100, Quality = 50, Render Time = 3:26



- Volumetric World enabled, Density =50, Quality = 100, Render Time = 7:20



Color Perspective

Color perspective is the change in color with distance that characterizes the appearance of distant scenes in Nature: Dark areas turn blue and light ones yellow to orange to red.

In Bryce you can make things change any color you like with distance. Color perspective is half of aerial perspective, while the other half is the loss of contrast with distance. Color perspective controls the rate at which the red, green, and blue components of the atmosphere come in with distance.

In Nature, the atmosphere is white or a pale shade of gray. The blue component of that shade comes in faster than the green, which in turn comes in faster than the red. This is because the Earth's atmosphere scatters blue light more efficiently than green, and red least efficiently of all. The net result is that as a dark area recedes into the distance, it will turn blue before it turns white or pale gray in the far distance. Similarly, white areas will turn yellow, then orange, then red with increasing distance.

The default values of color perspective are very delicate: if you change them, expect unpredictable results!

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To set the color perspective:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



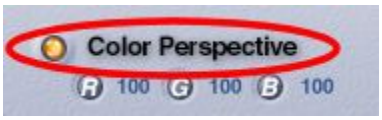
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the Atmosphere tab.



4. Click the Color Perspective button.

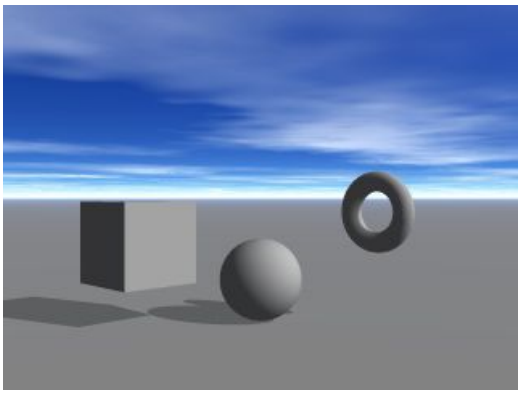


5. Drag over the RGB controls or enter a number in the field to control the rate at which the red, green, and blue components of the atmosphere come in with distance.



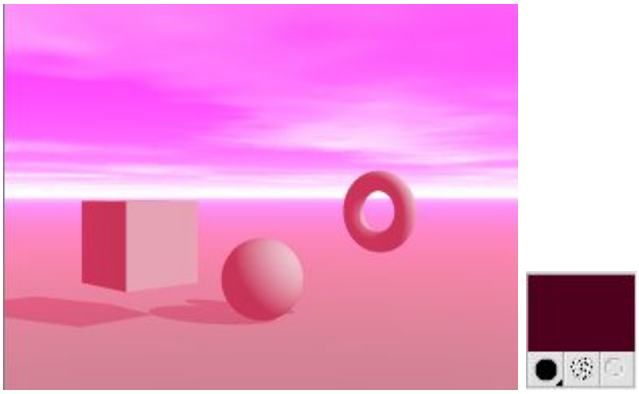
Examples:

- Color Perspective Disabled:



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- RGB = 79 2 30:



- RGB = 0 1 88:

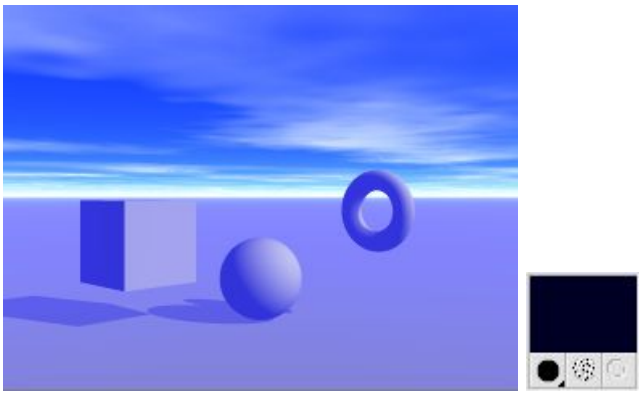


Image Based Lighting Tab

Bryce 6 introduces Image-Based Lighting (IBL) which uses an image to light your Bryce scene in addition to traditional Bryce lighting. Bryce 6.1 added the Orientation Control, Falloff options, Radius slider, and a completely different IBL algorithm.

Please note that because of the extreme differences between the Bryce 6 and Bryce 6.1 algorithms, there is no easy conversion method from HDRI scenes created in Bryce 6 to the same scene in Bryce 6.1.

The IBL Tab contains controls for adding an HDRI image, setting the quality and intensity, the HDRI Effect, Falloff and Radius, and whether to render the image as the scene background or not.

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Links to sites providing HDRI Maps/Information:

- HDRI FAQs
- Wikipedia article - has links to other sites on HDRI, some with maps for download
- HDRIMaps.com
- Thread at C4D Cafe with lots of links and text
- Debevec Light Probes - several free HDRI files that can be used in Bryce
- {E}-vermotion - free HDRI images - can be converted to the format Bryce needs using the free HDRShop program - see tutorials at the end of this section on how to convert the images.

IBL in a Nutshell

Traditionally, a scene is lit by the sun and/or one or several additional lights. The Light Lab lets you configure the properties of those lights. The appearance of materials may change dramatically depending on the setup of the lights, their position, color, and intensities.

Image based lighting is a completely different approach to illuminating a scene. Here, a radiance picture - a picture with a very high dynamic range - is mapped on the inside of an imaginary sphere surrounding the whole "world.". It is a spherical panorama, 360°

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wide and 180° high, all around the scene, including sky and ground. The bright parts of the picture are so bright that they actually radiate light and thus illuminate the scene and can even throw shadows. It doesn't matter whether that sphere is invisible in the render or the HDR image is rendered as a backdrop.

Image based light simulates the physics of light much more accurately than the light sources traditionally available in Bryce. When image based light is used exclusively to light a scene, the effect of some channels in the Materials Lab change. The Specularity channel in particular becomes almost ineffective because specularity is an artificial property used to simulate blurry reflection from a light source. In nature, there is no specularity as such - what we perceive as a quality of glossiness on a body is in fact a blurred, defocused reflection from a bumpy surface that disperses the light reflected on it. Consequently, you'll have to substitute specularity with the Reflection channel.

Image based light can nicely simulate light with scientifically correct properties but there are moments when you want to pursue your own visions and such correctness is not an issue for you at all. You need that bright specularity on a body to make a point in your artwork and doing it with the Reflection channel might prove a bit of a challenge at times. You may have to resort to mixed light.

Just as a scene lit by no other means than the Bryce sun may give very pleasing results, the same is true when using image based light exclusively. However, this exclusivity also means limitation. Consider using image based light in conjunction with the traditional Bryce light sources. Then you have all the options you need to make your work look as extraordinary as you wish.

If you render the HDRI as background you might be disappointed by its blurriness. It is blurred because it is too small. If your document is 800 pixels high and the camera FOV set to 30°, you'll need an Angular Map of 7,700 x 7,700 pixels to get it well focused. Even the most state of the art home computers of today will start to labor under this load.

Using IBL

Bryce 6 introduces Image Based Lighting (IBL) which uses a High Dynamic Range Image (HDRI) to light your Bryce scene in addition to traditional Bryce lighting. Currently, Bryce will only import .hdr format HDRI images created using a light probe (spherical).

If you try to open a .hdr file in a format that Bryce can't use (non-probe), you will get the following error message:



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Click on OK and load an HDR file compatible with Bryce.

To use Image Based Lighting:

1. Display the Sky & Fog palette by clicking the Sky & Fog button at the top of the Bryce window.



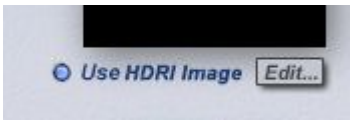
2. Click the Sky Lab button. The Sky Lab appears.



3. Click the IBL tab.

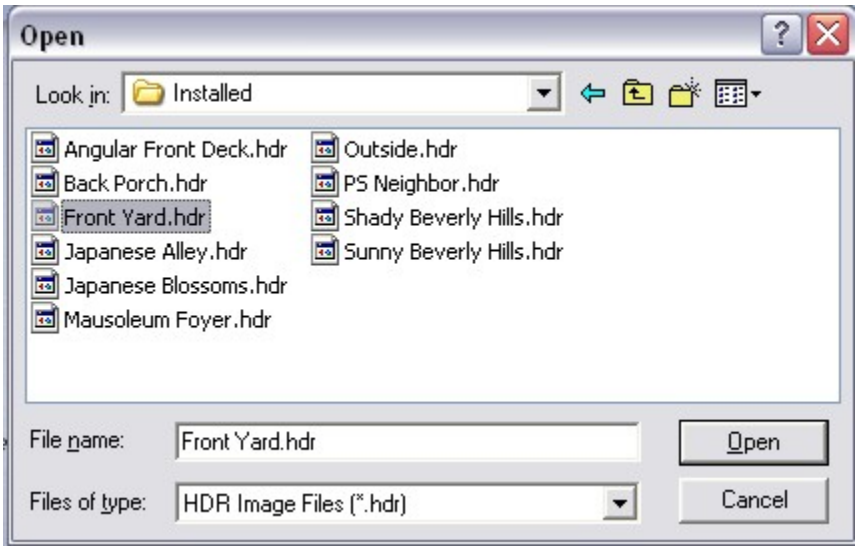


4. Enable the Use HDRI Image option.



By default, when you enable the use of an HDRI image, Bryce disables the Sunlight and turns off any Atmospherics that were selected, like Fog and Haze.

5. Click on Edit, the Open dialog comes up. Locate and select a .hdr image, click on Open.



Please note that In the current version, Bryce accepts pictures in a square aspect ratio in the radiance .hdr format. It can correctly map "Angular Map" or - as they are also called "Light Probe" - projections.

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The HDRI preview thumbnail will look similar to the following, along with the image showing in the Sky preview thumbnail:



- The Sky Preview shows the HDRI as seen from the Directors camera because it is set to "Render Against Neutral" by default. If set to "Render in Scene", it will show the HDRI as seen by the camera selected.
- The Sky Preview is rendered with only 16 lights and at a higher quality setting, things may not appear in the right light. Because of this, the view in the Sky Preview may not be exactly the same as the actual scene.

6. If the HDRI preview thumbnail doesn't show the image, disable the Use HDRI Image option, then enable it again.
7. If the Sky preview thumbnail doesn't show the image, disable the Render HDRI Image as Background option, then enable it again.



8. To use the IBL but not render the image as the background, disable the Use HDRI Image as Background option.



9. The Disable Sun Light option will automatically be disabled when an HDRI image is loaded, as will Fog and Haze. To use Fog and Haze, click on the Atmosphere tab and re-enable the options. Re-enabling Fog and Haze will help add more realism to the scene.
10. Adjust the IBL settings as needed.
    - Orientation Control - Controls the orientation of the HDRI around the X and Y-axes.
        - X - degrees of rotation around X axis
        - Y - degrees of rotation around Y axis
        - The "cross" on the Roller Ball indicates where the horizon is on the HDRI sphere in the North position. The sun spot indicates the center of the light probe. Rotate the Roller Ball to rotate the HDRI

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around the light probe sphere. Holding down Cmd/Ctrl while rotating the ball to constrain the rotation to around the Y-axis only. The X and Y values update as the ball is rotated and changing the numbers moves the ball to the appropriate orientation.







- Quality -The number of lights used to render IBL. This control ranges from 16 to 4096.
- Intensity - This controls the exposure level of the HDRI. This affects both the light emitted from the
- HDRI for lighting with IBL and the image when rendered in the background. Exposure is not linear, rather it is exponential. See this website for a better explanation: http://freespace.virgin.net/hugo.elias/graphics/x_posure.htm. This control ranges from 0 to 100.
- HDRI Effect - This controls the intensity of lights when using an HDRI for IBL. This is just like changing the intensity of any light object in Bryce. This will only affect light intensity during IBL. It will NOT affect the look of HDRI rendered in the background. This control ranges from 0 to 100.
- A large HDRI needs considerable computer power and the controls may appear to react very sluggishly or not at all. Be patient or use a smaller

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HDR image (800 x 800 instead of 1600 x 1600, for example).

Any objects with specularity will need to be modified to use reflection instead. Either that or increase the specularity range of the material. Refer to "IBL in a Nutshell" for more information on this.

- Falloff - Determines the type of light falloff to be used.
  - None – light never falls off due to distance (Radius becomes irrelevant) - Default
  - Linear – light falls off as a function of distance
  - Squared – light falls off as a function of distance squared (much faster than Linear)
- Radius - This controls the distance of the lights (used for IBL) from the center of the Bryce universe. This is only important if falloff is set to Linear or Squared. The radius will have to be quite small if falloff is used at all since light falls off rather quickly with both of these formulas. Play with the control and see how low it needs to be to get some light with a default Bryce scene.



11. Periodically, exit the Sky Lab and check the scene in the Working window to see how it looks. It may take sometime to get the right settings for your particular scene. Bryce lights can also be used to enhance certain areas of the scene.

    When checking the scene in the Working window, do not rely on the Nano-Preview for the lighting since it may not accurately preview the IBL-enabled image. Instead, render the scene, with or without AA, to get a better idea of the current settings.

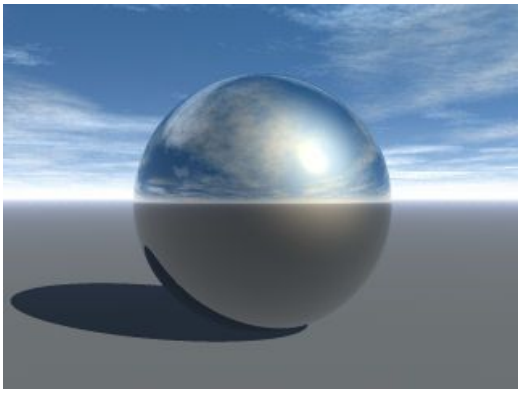
Something else to be aware of:

- The Gamma between the Mac and PC differ slightly so sky settings from one system may not look the same on the other one. Selecting or deselecting the Gamma Correction in the Render Options dialog may help even up the gamma when rendering.

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IBL Examples

HDRI disabled, Sunlight enabled - base scene



HDRI enabled, Render Image as Background enabled, Sunlight disabled; Render time = 3:10:



HDRI enabled, Render Image as Background disabled, Sunlight enabled; Render time = 1:45:



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Comparison (from Bryce 6.0):

HDRI Disabled, Simple Black Background sky with sun moved to front; Render time = 2:00



HDRI Enabled, Render Image as Background enabled, Sunlight disabled; Render time = 24:34



Converting HDRIs using HDRShop

Currently, Bryce only supports Radiance Image Maps. If you try to import an HDR file that Bryce doesn't support, it will give you an error message. Some HDR files will give an infinite error loop (like those generated from Artizen) and the only way to get out of the loop is to close Bryce using the File Manager.

Fortunately, HDRShop provides a quick way to convert between different HDR file types. HDRShop is available in a free version (v1) which can only be used for personal use and a commercial version which allows you to create HDR files and use/sell them.

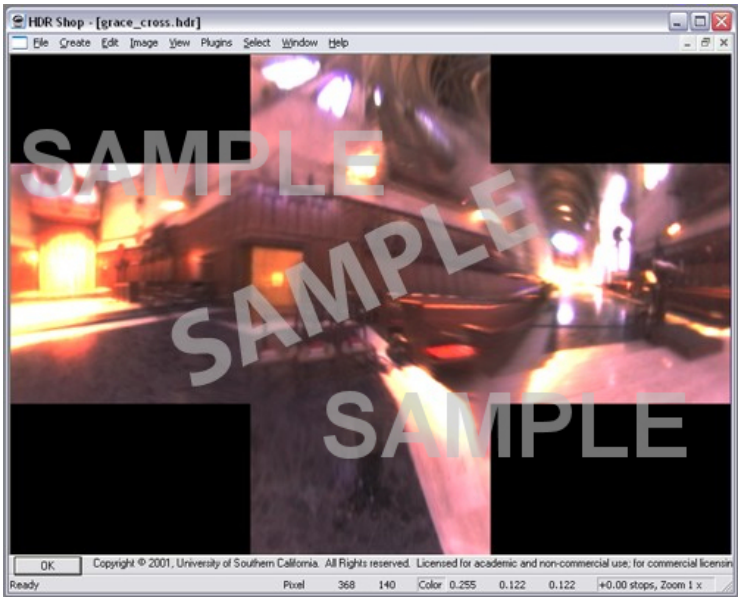
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To get you started, we'll show you how to convert a cross probe into a mirrored ball probe. The same basic procedure is used to convert other types as well.

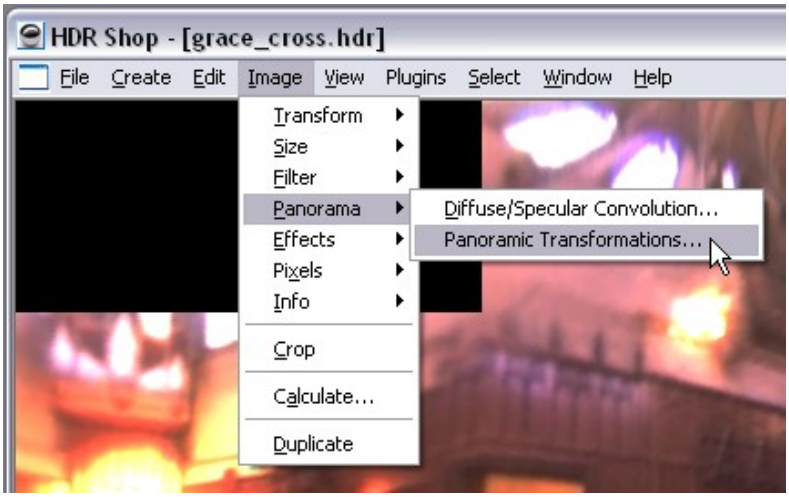
First, download the free version of HDRShop if you haven't already. The executable file runs the program so there is no need to install it.

Second, download the HDR file that you want to convert. The one used for this tutorial is the Grace cross downloaded from the Debevec website.

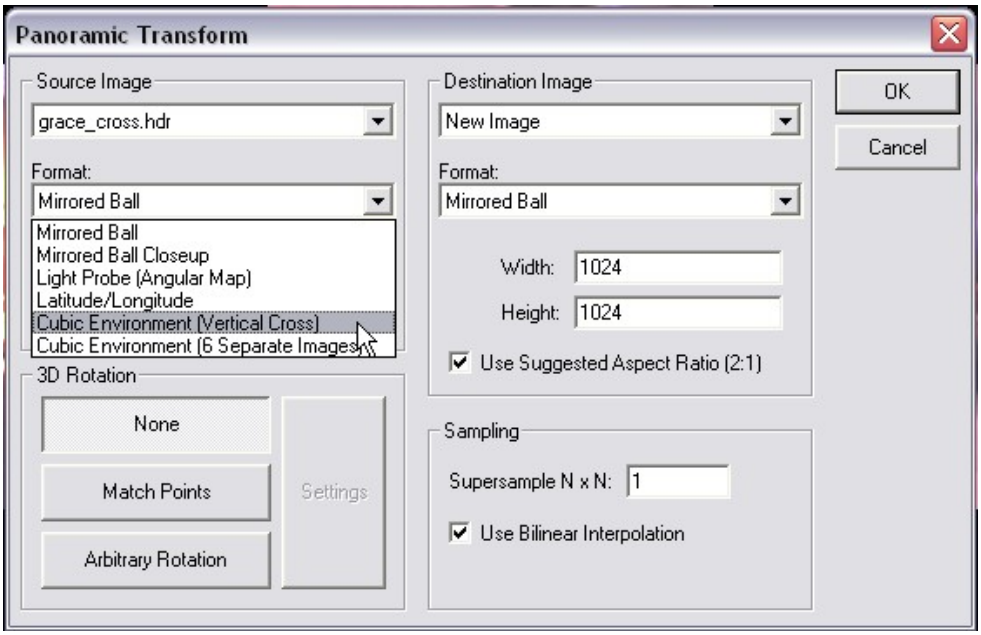
1. Open HDRShop and choose File > Open from the menu. Locate and load the HDR file you want to convert.



2. Choose Image > Panorama > Panoramic Transformations from the menu.



3. In the Panoramic Transform dialog, select the type of HDR file you loaded from the first Format field, in this case, a Cubic Environment (Vertical Cross).

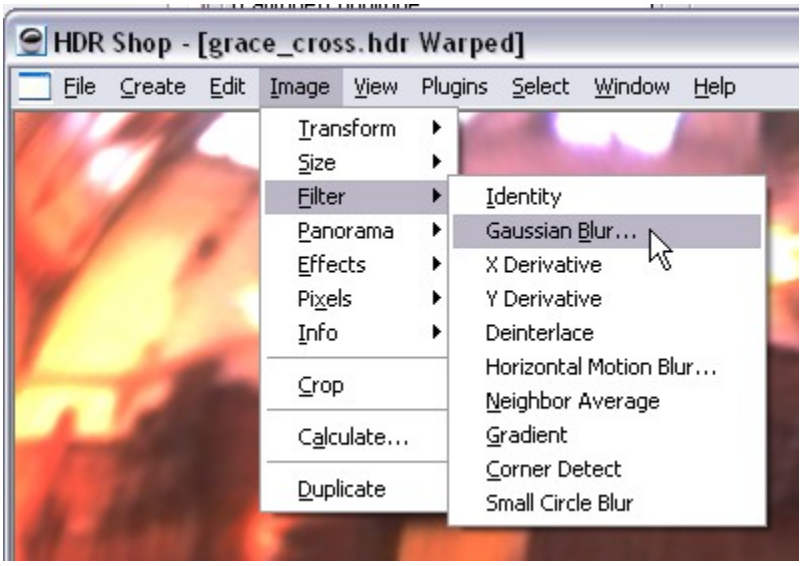


4. The default Destination Image is New Image while the default Format is Mirrored Ball. Do not change these options. Click on OK.
5. Once the image is converted, check it for seams. The red arrows point to the seams in this version.



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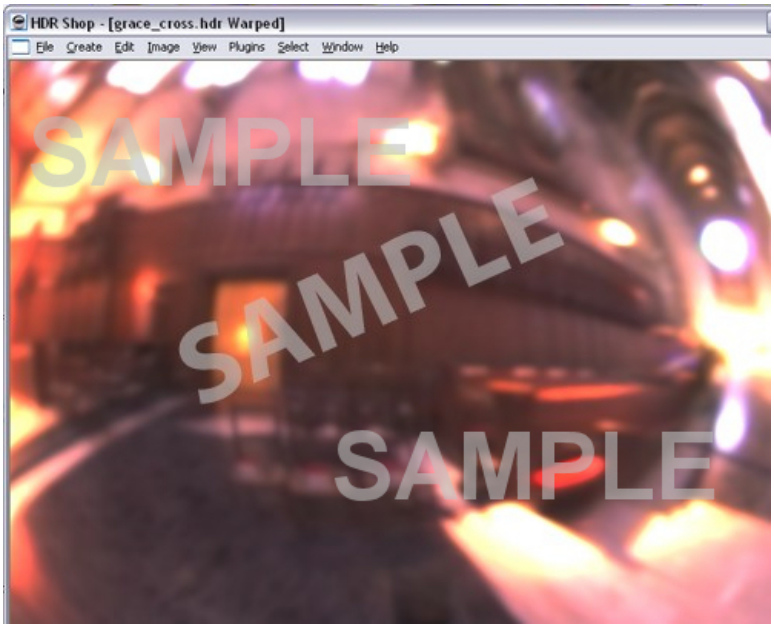
6. To get rid of the seams, HDRShop provides a Gaussian Blur filter. Choose Image > Filter > Gaussian Blur from the menu.



7. Enter a Blur Width (default is 4) and click on OK.



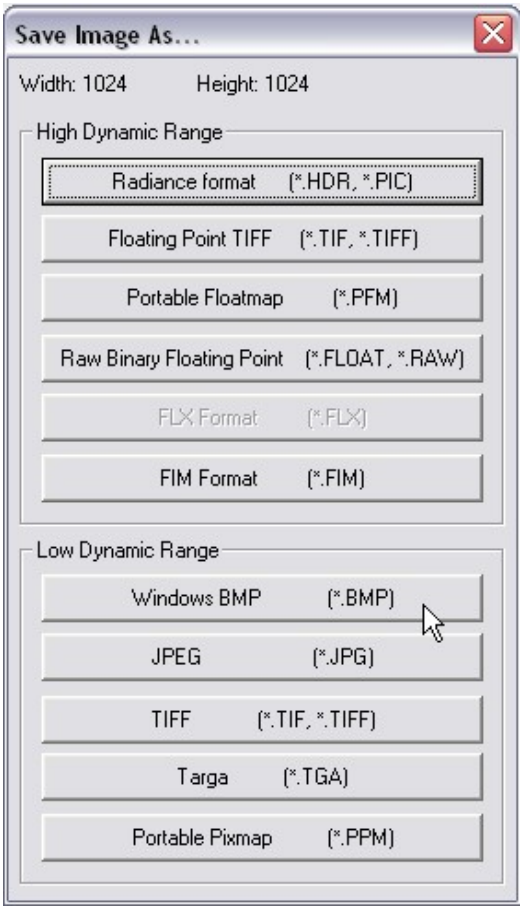
If the blur is too much, you'll need to start over as there is no working undo for many of the functions.



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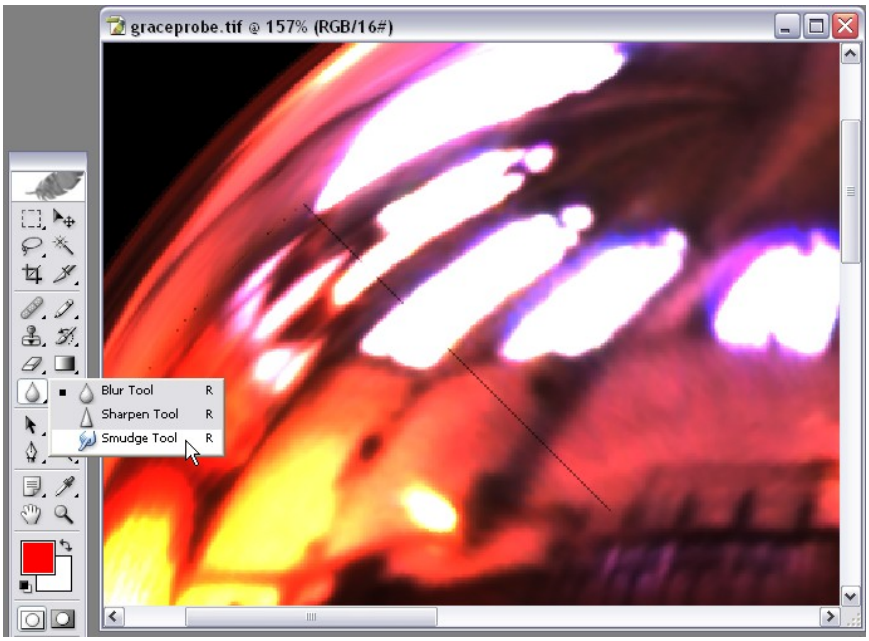
If you would rather correct the seams in your favorite paint program, you can save the image in a format the program can open and make the changes there.

8. To do this, choose File > Save As from the menu and click on the Low Dynamic Range button corresponding to the format you want to work with. Name and save the file to your computer.

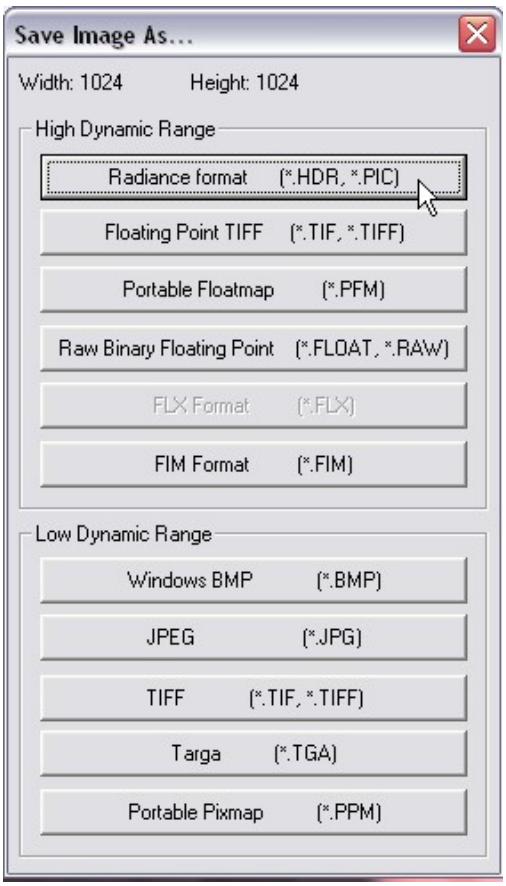


9. Open the image in your paint program and use the Smudge Tool to clean up the seams. Save the file.

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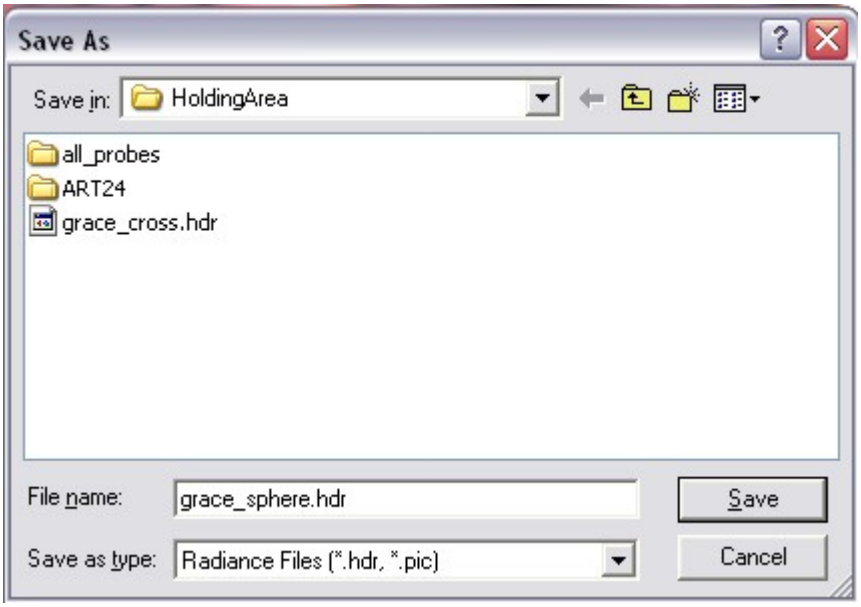


10. Reopen the image in HDRShop and choose File > Save As from the menu. Click on the Radiance format button.

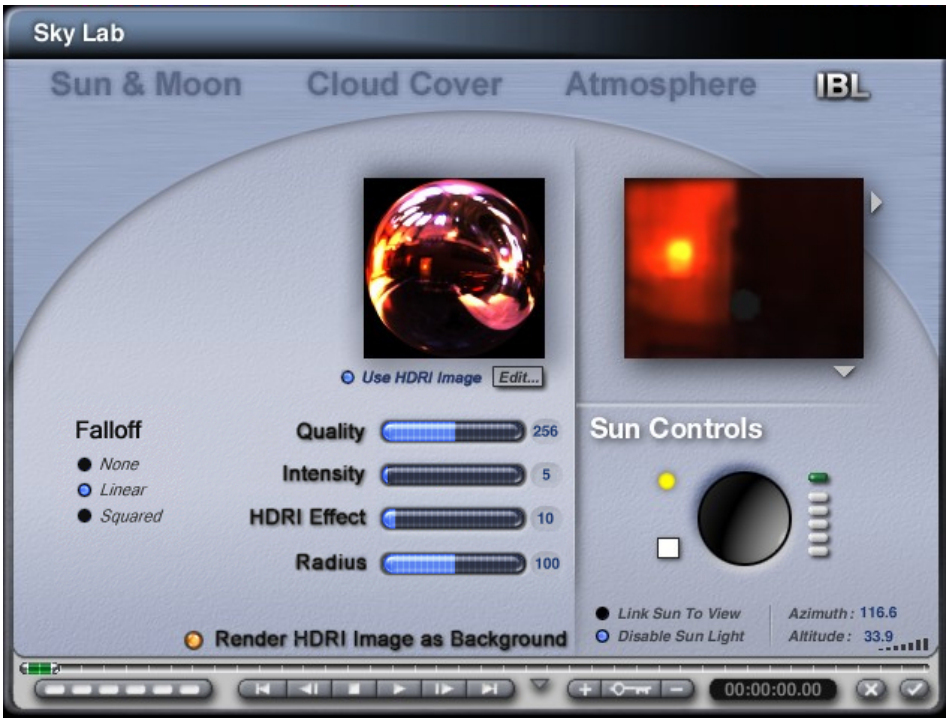


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11. Enter the file name, making sure to add the extension of .hdr.

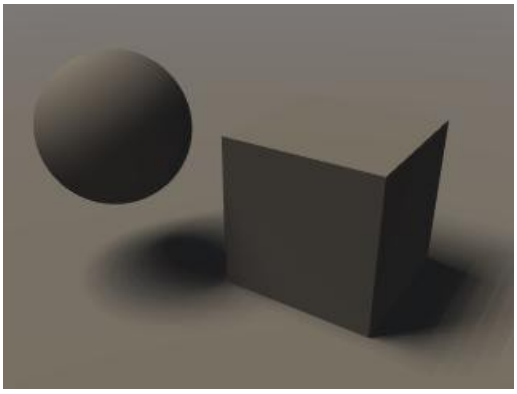


12. In Bryce, load the new HDR file in the IBL tab of the Sky Lab. Adjust the IBL settings as needed.



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13. Render your scene.



Animating Skies

All the properties of a Bryce sky can be animated. This means that any attribute you can set in the Sky & Fog palette or the Sky Lab dialog can be animated using the Animation controls on the Timeline. This section assumes that you're familiar with the concepts and procedures involved in creating skies.

By changing the attributes in the Sky & Fog palette at different points in the timeline, you can animate everything from the position of the sun to the color of the clouds. For example, you can simulate changes in the time of day by changing the position of the sun over time.

There are several techniques you can use to add motion to your skies. You can animate all or some of the properties of your sky. You can activate and deactivate sky effects at different points in the animation. You can also animate the position of the sun or moon.

Sky animations are created using the Animation tools in the Working window and the Sky Lab dialog.

Sun & Moon

One of the most spectacular effects you can create using the scene's sky is elapsed time. In the great outdoors we perceive time in relation to the position of the sun and the brightness of the sky. By changing the position of the sun or moon you can simulate time passing in terms of days or months. In this example, the passage of time is simulated by the change in the sun's position.

Since all the elements in the sky are linked, the other properties of the sky like Ambient Light change as the position of the sun changes, adding to the realism of the effect.

For the moon, you can also change its phases, so you simulate the passage of an entire month just by adjusting the moon attributes.

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To animate Sun or Moon position:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.
2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.
3. Adjust the position of the sun or moon using the Sun Position control in the Sky & Fog palette.
4. Move the Current Time Indicator to a different point on the timeline.
5. Change the position of the sun or moon again.
6. Continue moving the Current Time Indicator and changing the sun or moon position until you achieve the desired effect.

Clouds

You can create the effect of wind in your environment by setting up cloud motion parameters. Based on your settings,

Bryce automatically moves the clouds in your environment to create motion.

Cloud motion parameters are set in the Sky Lab dialog. The Cloud Direction control lets you set the direction for cloud motion, while the other controls set the speed and distortion of the clouds.

To animate clouds:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.
2. In Sky & Fog palette, click the Sky Lab button. The Sky Lab dialog appears.
3. Click the Cloud Cover tab.
4. Move the direction indicator in the Cloud Motion controls to set a direction for the clouds as they move in the animation.
5. Adjust the speed control to set how fast the clouds move. You can also enter a speed value.
6. Adjust the Turbulence control to set how much the clouds will distort as they move. You can also enter a turbulence value.

Sky & Fog Settings

Animating Sky & Fog settings changes the properties of a sky over time. For example a scene can become cloudier, or darker during an animation. The intensity of the change depends on how many properties you adjust and the amount of each adjustment. In this example, the animation of approaching storm clouds was created by changing the Cloud Frequency and Amplitude value and the Cloud Color at different points in the Timeline.

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Most Sky & Fog properties can be changed using the thumbnail controls. Other settings are available in the Sky Lab dialog.

You won't be able to see the effects of a sky animation until you render the entire animation.

To animate Sky & Fog settings:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.
2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.
3. Adjust the sky's properties using the Sky & Fog palette controls.
4. Move the Current Time Indicator to a different point on the Timeline.
5. Change the properties of the sky again.
6. Continue moving the Current Time Indicator and changing the sky's properties until you achieve the desired effect.

Environmental Effects

Many environmental effects like rainbows and fog are not permanent features of a sky. They appear for a brief time and then fade way. You can simulate this action by changing the properties of the environmental effects at different points along the Timeline.

Environmental effects controls are located on the Atmosphere tab of the Sky Lab dialog. You can also animate the various settings for an effect. For example, the radius of moon rings can increase or decrease during the course of your animation.

To animate environmental effects:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.
2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.
3. Display the Sky Lab dialog: Atmosphere tab and change the properties of an effect.
4. Move the Current Time Indicator to a different point on the Timeline.
5. Change the properties of the effect again.
6. Continue moving the Current Time Indicator and changing the effect's properties until you have the desired effect.

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Terrain Editor

The Terrain Editor can be used to generate a grayscale image that is converted into a terrain object. It can also be used to edit an existing terrain.

Creating terrains in the Terrain Editor is a two-step process. First, generate the source of your terrain image by using the preset effects, painting an image using the paintbrush, or importing a picture. Then, use the Terrain Editor's filtering tools to fine-tune the grayscale values in your terrain.

To access the Terrain Editor, you must have a terrain object in your scene. When the Terrain Editor opens, it temporarily replaces the screen and displays the current terrain in a two-dimensional preview and a three dimensional preview. The height map that was used to create the terrain is displayed in the Terrain Canvas.

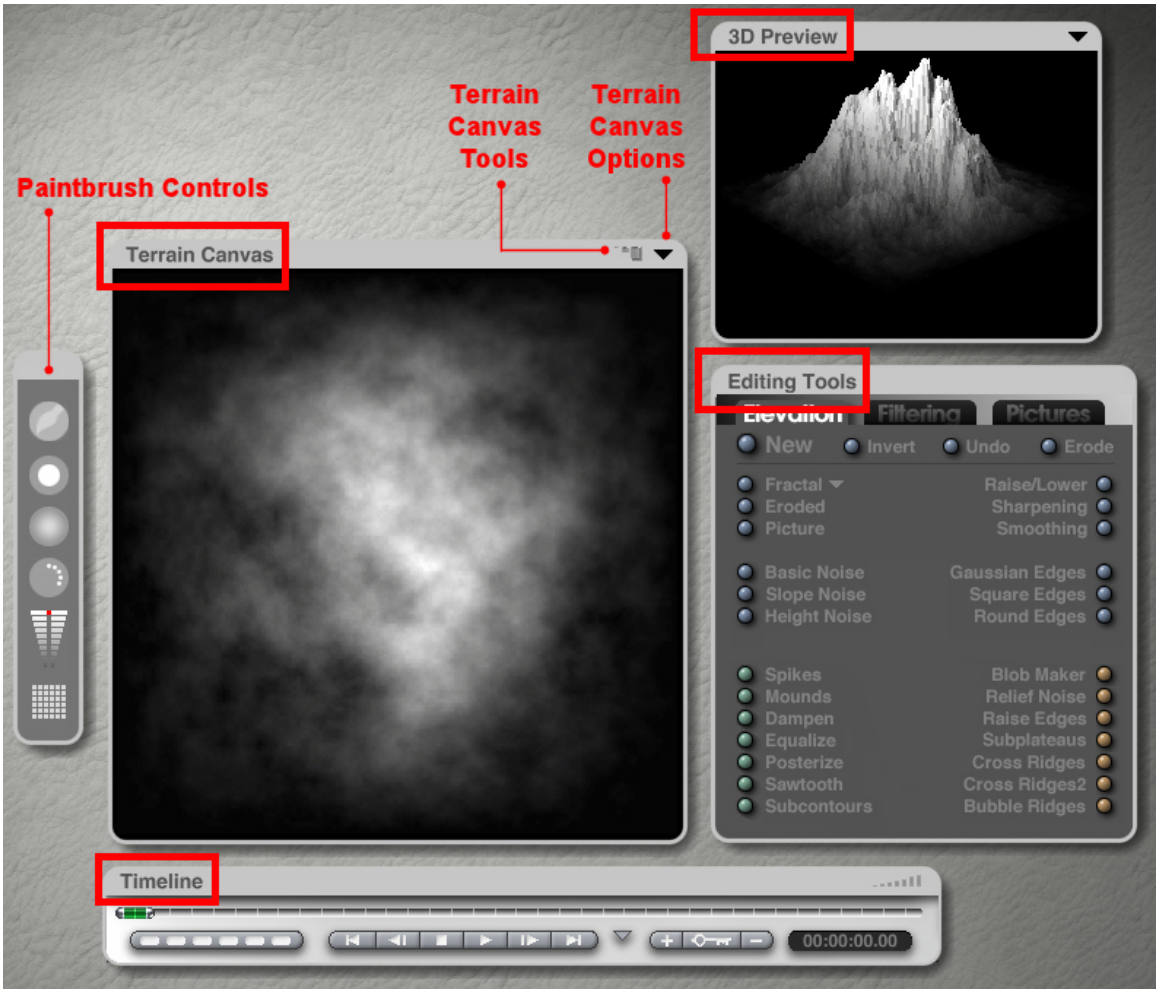
You can also animate the creation of a terrain. Using the Animation controls available at the bottom of the editor, you can change the shape of your terrain object over time.

A Quick Tour of the TE

The Terrain Editor is divided into five sections:

- Terrain Canvas: displays the grayscale image used as a height map
    - Terrain Canvas Tools: contains a Gradient Strip and Bracket for clipping operations, and controls for Color Mapping
    - Terrain Canvas Options: contains options for setting the preview size and exporting the image and terrain mesh
- 3D Preview: displays a three-dimensional preview of the terrain you're working on
- Paintbrush Controls: let you adjust the paintbrush
- Editing Tools: let you generate and edit the terrain's height map
- Animation Controls: let you set up key frames for animating the terrain

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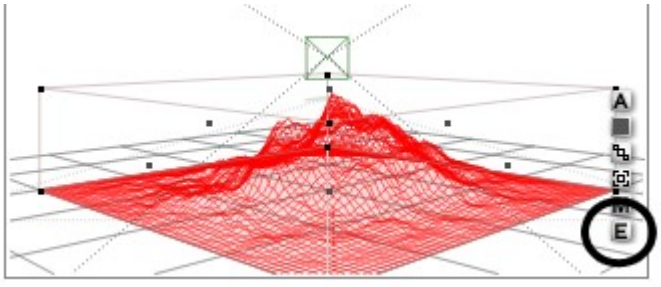


Accessing the TE

To open the Terrain Editor:

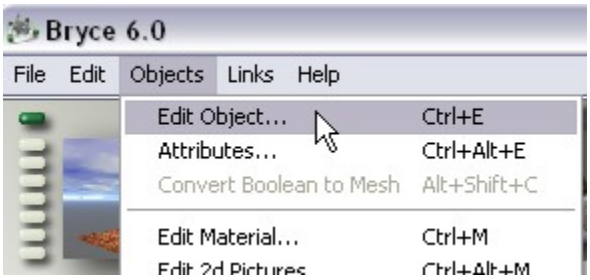
Select a terrain object in your scene and do one of the following:

1. Click the E button that appears next to the terrain object.



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2. Choose Objects > Edit Object.



3. Click the Edit button to open the Edit palette, and then click the Edit Terrain tool.



4. Press Cmd/Ctrl+E.

Terrain Canvas

The Terrain Canvas displays the grayscale image that is used to create the terrain object. You can think of the Terrain Canvas as a top view of the terrain object you're creating. The Terrain Canvas is where you paint the height map for your terrain.



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You can also access a number of tools in the Terrain Canvas, including the Gradient Strip, the Clipping Bracket, controls for Color Mapping, the Zoom Area control, and the Brush Mode selector.

Terrain Canvas Tools

To access a Terrain Canvas Tool on the Terrain Canvas, click the menu icon at the top right of the Terrain Canvas.



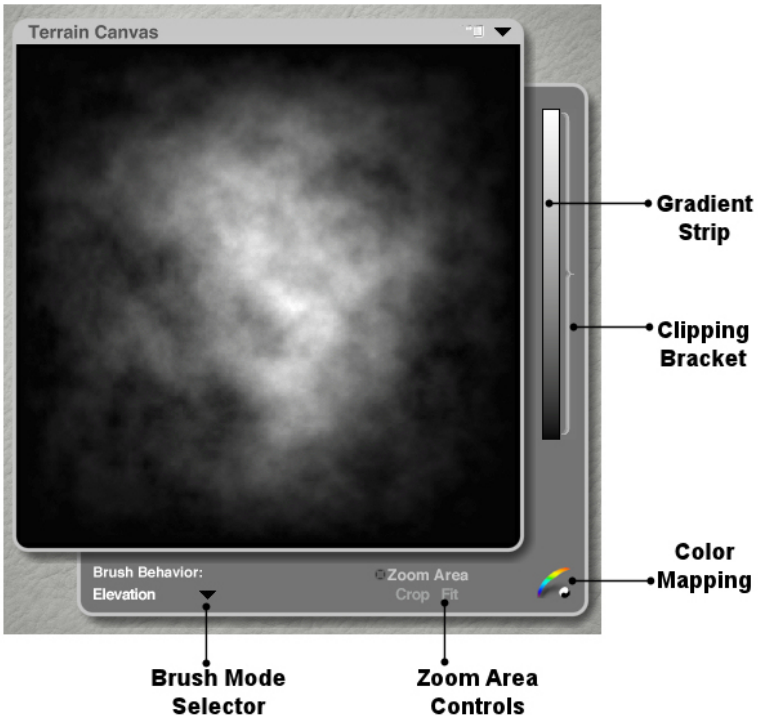
The Terrain Canvas Tool area will open up.

The right side of the Terrain Canvas tool area contains a Gradient Strip and Bracket for clipping operations. In the bottom right corner, you will find controls for Color Mapping.

Refer to "Adding Color to Terrains" and "Clipping Terrains" for more on these tools.

Across the bottom of the Terrain Canvas tool area, you will find a Brush Mode selector and the Zoom Area controls.

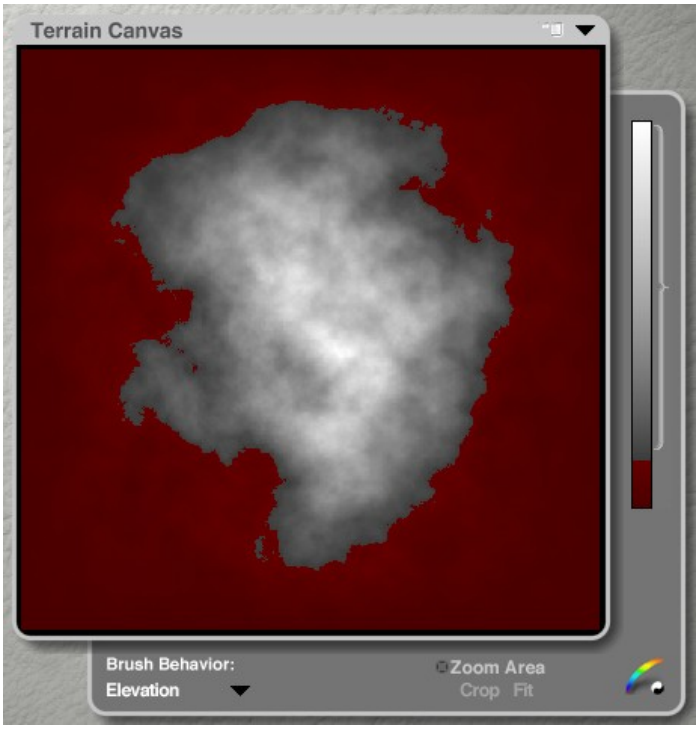
Refer to "Brush Behavior" and "Using the Zoom Area" for more on these tools.



Clipping Terrains

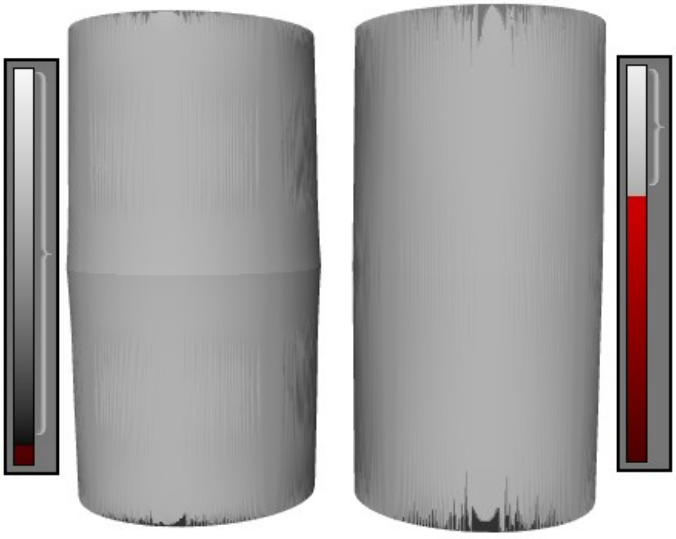
Using the Terrain Editor's Clipping Controls, you determine which values in your terrain are rendered as the final terrain object. The Clipping Controls next to the Gradient Bar represent the render range for the terrain. Anything outside the range included in the brackets will not be rendered.

You can use these controls to eliminate unwanted information from the terrain without altering its basic shape. For example, you can keep the main terrain while eliminating the black square on which it sits to create islands.



The clipping feature is particularly useful when editing a Symmetrical Lattice. The maximum lower range of the Clipping Bracket determines where the two halves of the Symmetrical Lattices are joined. The higher the clipping bracket, the smoother the seam.

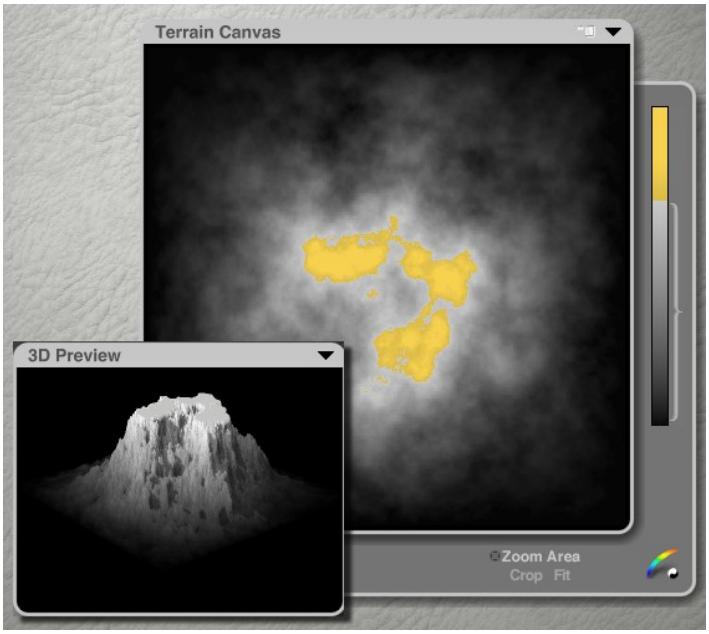
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Setting the Clipping Range

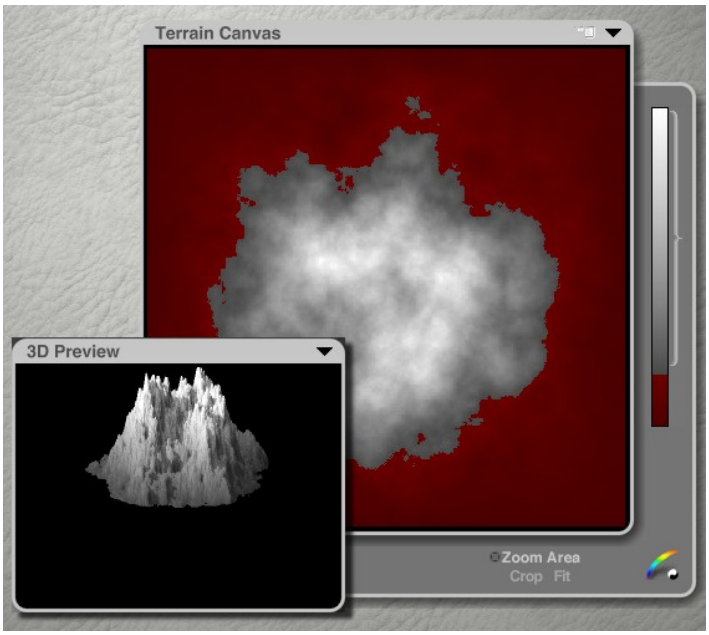
To set the clipping range:

1. Drag the top of the Clipping Bracket to set the maximum upper range. Any areas in the Terrain Canvas whose gray levels fall outside the bracket's maximum upper range will appear colored to indicate they will be omitted from rendering.



2. Drag the bottom of the Clipping Bracket to set the maximum lower range. Any areas in the Terrain Canvas whose gray levels fall outside the bracket's maximum lower range will also appear colored to indicate they will be omitted from rendering.

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The out-of-range colors for upper and lower limits are different, to better enable you to distinguish upper and lower clipped areas at a glance. Upper out-of-range color is usually yellow and lower out-of-range is usually red, though the colors change for many of the color maps.

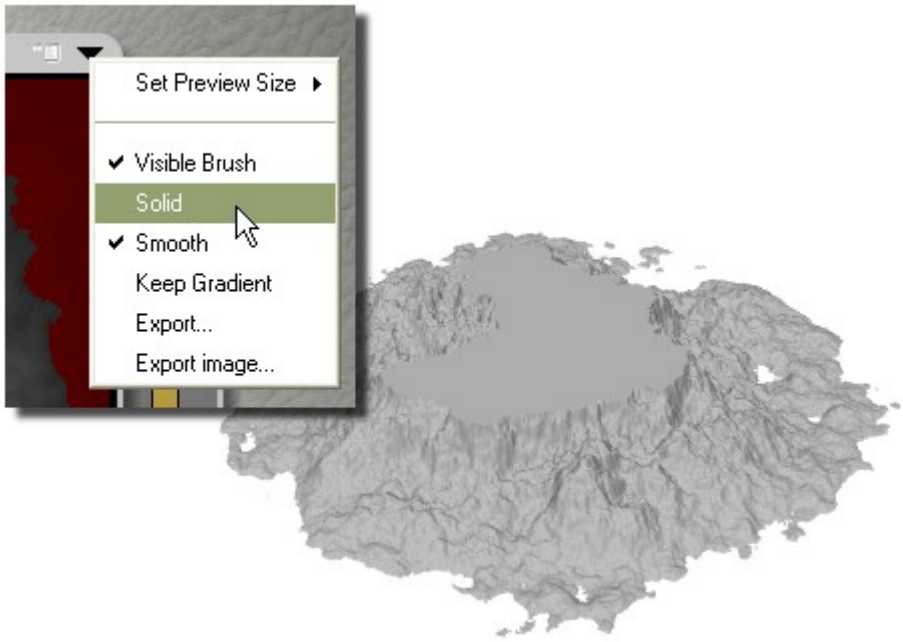
Setting Terrain Solid

Terrain objects are hollow, so if you clip the upper range off your terrain, you'll be able to see through the top of the terrain to whatever is underneath. This is good for crater lakes but not good for a desert plateau.

To make the top solid, you should select Solid from the drop-down menu at the top right of the Terrain Canvas.



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Reset or Move the Clipping Bracket

To reset the Clipping Bracket. hold down Opt/Alt and click the bracket.

To move the entire Clipping Bracket at once, click the center of the Clipping Bracket and drag up or down.

If the Clipping Bracket has not been shortened, then it won't move, you'll need to drag the bracket up or down and then move the entire bracket.



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Adding Color to Terrains

Color in the Terrain Editor is used as a visual aid to help you see the relationship between color values and altitude.

This color only exists in the Terrain Editor and is not applied to the terrain object.

When you apply color in the editor, it maps a Gradient to the altitudes in your Terrain Canvas. For example, if you apply a gradient from blue to yellow, blue might represent the lowest altitude while yellow may represent the highest. Which colors are mapped to which altitudes is left completely up to you.

Gradients can be extremely useful when you're filtering terrains, as they emphasize the differences between gray levels.

Mapping Color to Terrains

The Terrain Editor's color picker contains all the gradients you can apply to your terrain. The gradient you select is applied to both the Terrain Canvas and the 3D Preview.

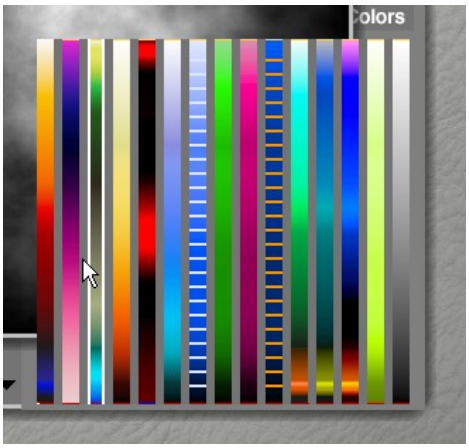
Use the Color Picker button to choose a Color Gradient and the Gradient Bar to set Color Mapping.

To map colors to your Terrain Canvas:

1. Left-click hold on the Color Picker button in the bottom right corner of the Terrain Canvas Frame.

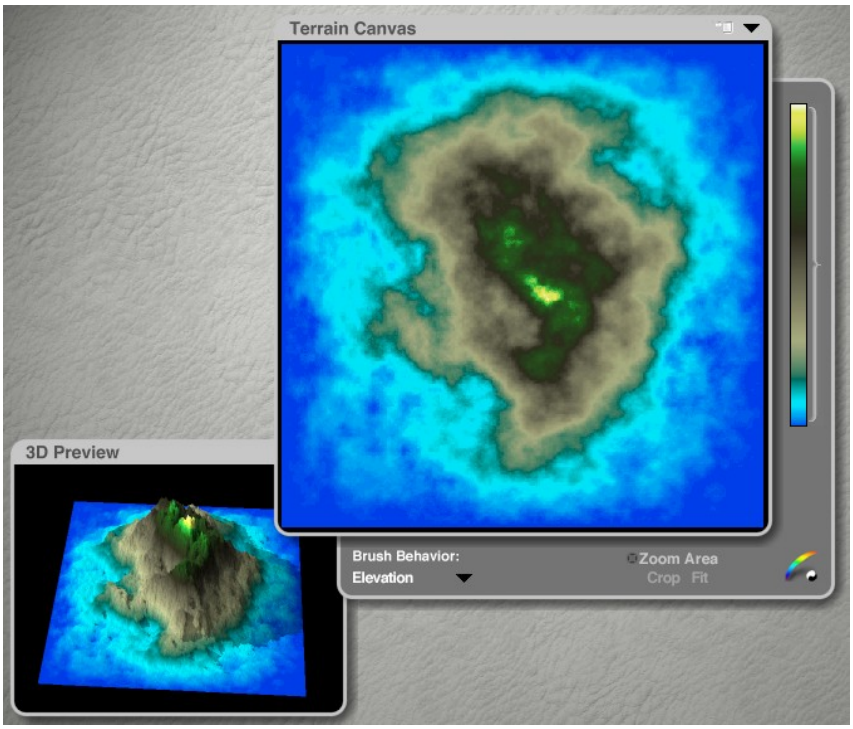


and drag over a gradient in the palette. As you drag over the Gradient Bars, the current bar is highlighted with a white border.

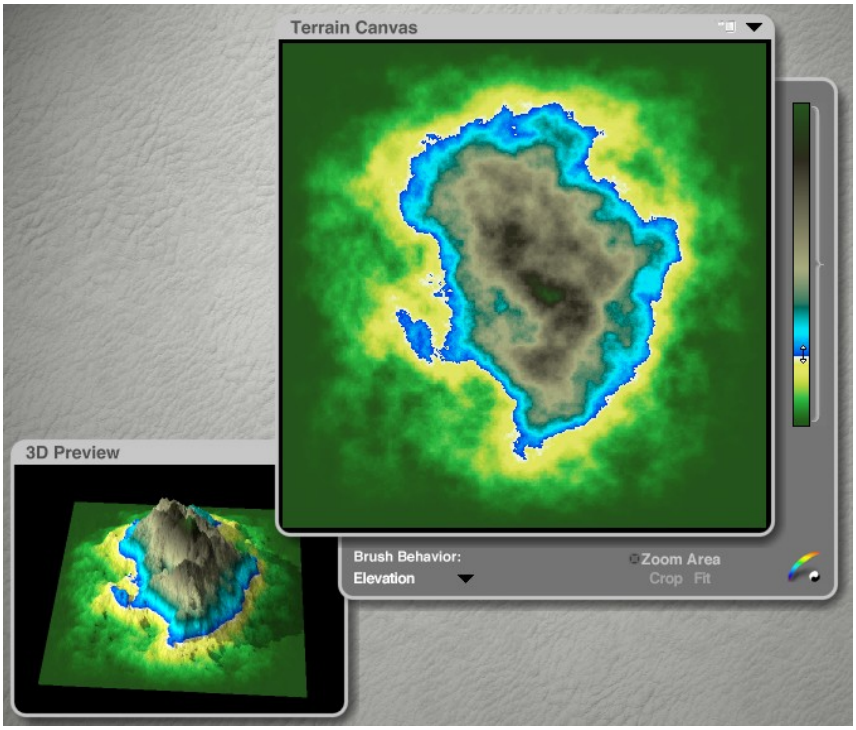


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The gradient you select appears in the Gradient Bar and is mapped to the Terrain Canvas and the 3D Preview.



2. Drag the Gradient up or down to map the colors to altitudes. The colors at the bottom of the gradient represent the lowest altitude and those at the top represent the highest.



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3. To return to grayscale, click the Color/Grayscale toggle to switch back to the default gray gradient.



Applying Gradient to Diffuse Channel

Although gradients are meant to be used only in the Terrain Editor, you can apply the gradient to the terrain's Diffuse channel. The gradient then becomes the terrain's Diffuse color. This allows you to render the gradient with the terrain.

To add a gradient to a terrain's Diffuse channel:

1. Apply a gradient to the terrain in the Terrain Editor.
2. Select Keep Gradient from the drop-down menu at the top right of the Terrain Canvas.

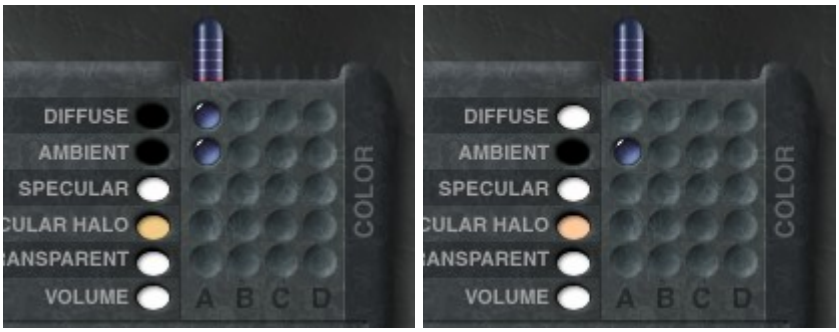


3. Exit the Terrain Editor and go into the Materials Lab.

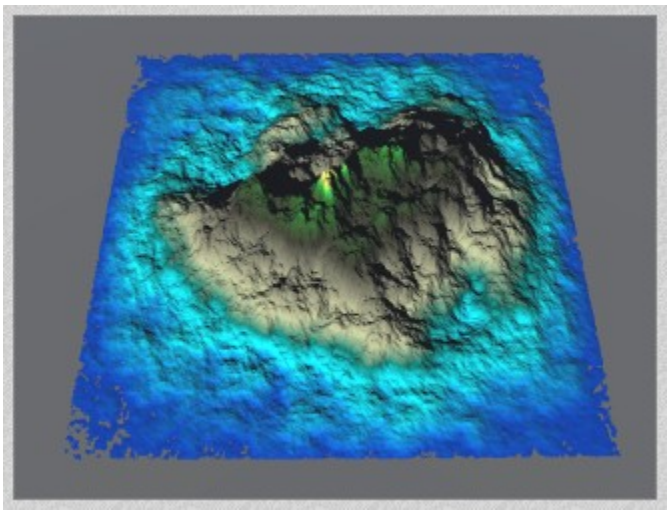
   Terrains are created with a random material applied and in order to get the gradient to render on the terrain, the material has to be removed from the Diffuse channel.

4. Remove any dot (or dots) from the Diffuse channel(s). You don't have to remove the other dots unless you don't want the original texture applied to those channels.

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5. Exit the Materials Lab and render. The gradient will render on the terrain.



Some items to note about applying Terrain Editor gradients to the diffuse channel:

1. The original diffuse color will show in the color dot, not the gradient.
2. Once applied, the gradients can be added to the Materials Library and applied to other terrains - Macs only. (PCs - Issue)

Removing Gradient

To remove a gradient from a terrain's Diffuse channel:

1. Open the terrain in the Terrain Editor.
2. Click the Color/Grayscale toggle.

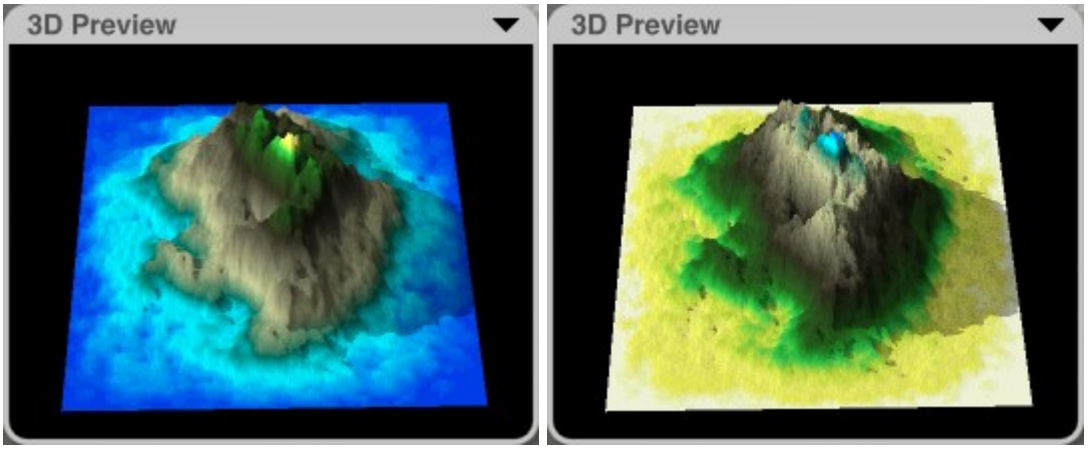


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Gradient Bar Modifiers

The Gradient Bar has two modifiers:

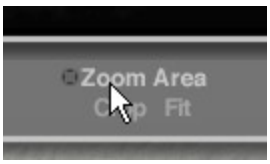
1. Opt/Alt+Click Gradient Bar resets the Gradient Bar.
2. Cmd/Ctrl+F flips the colors in the gradient.



Using the Zoom Area

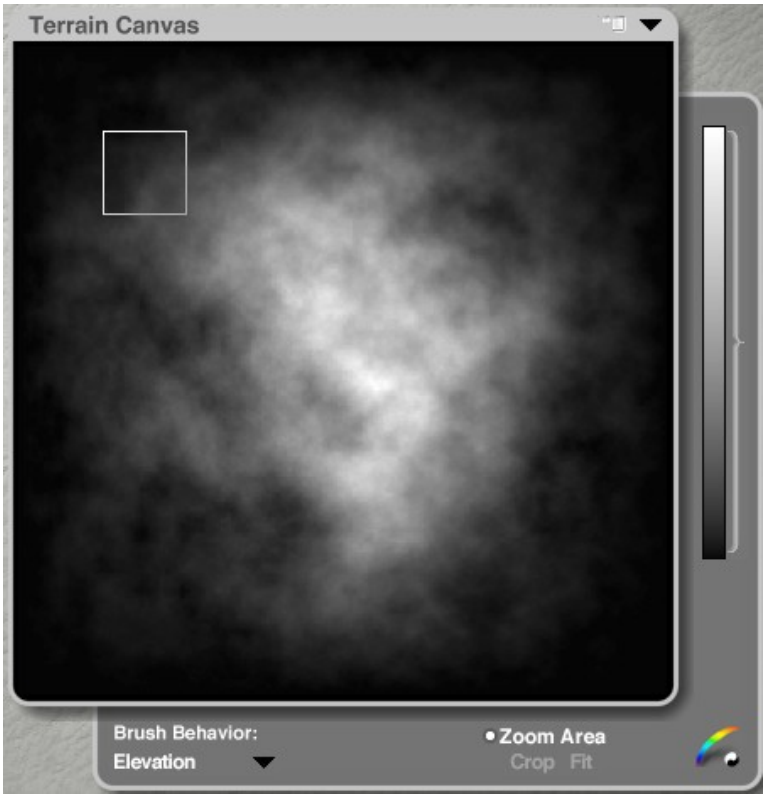
When the Zoom Area is active, only a small portion of your terrain is displayed in the 3D Preview. The 3D Preview displays the zoomed-in portion of your Terrain Canvas. You can use this feature to see small variations in the surface of your terrain. The Zoom Area can be moved to any point on your Terrain Canvas. You can always paint while the Zoom Area is active; in fact this is a nice way to paint in the Terrain Canvas while previewing a small section in the 3D Preview to observe details.

To turn the Zoom Area on or off, click the Zoom Area button in the Terrain Canvas tool area.

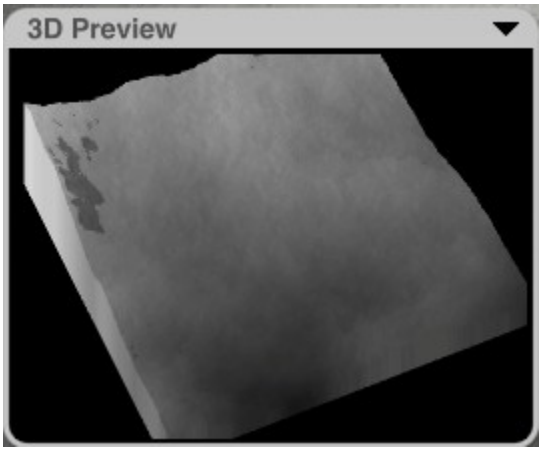


The Zoom Area button will change to white and toggles a marquee on your Terrain Canvas.

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The area within the marquee will be displayed in the 3D Preview.

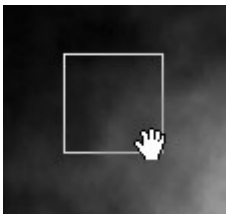


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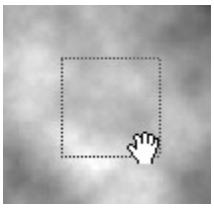
Moving Zoom Area

To move the Zoom Area:

1. Move your pointer over an edge of the Zoom Area marquee. The pointer changes to a hand tool.



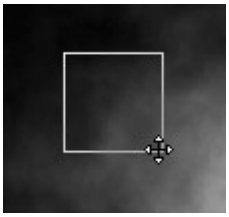
2. Drag the marquee to a different area in the Terrain Canvas.



Resizing Zoom Area

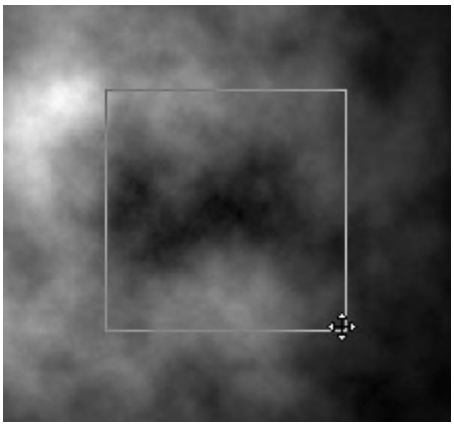
To resize the Zoom Area:

1. Move the pointer over a corner of the Zoom Area marquee. The pointer changes to an arrowhead cursor.



2. Drag away from the center of the marquee to enlarge the Zoom Area or towards the center to shrink the area.

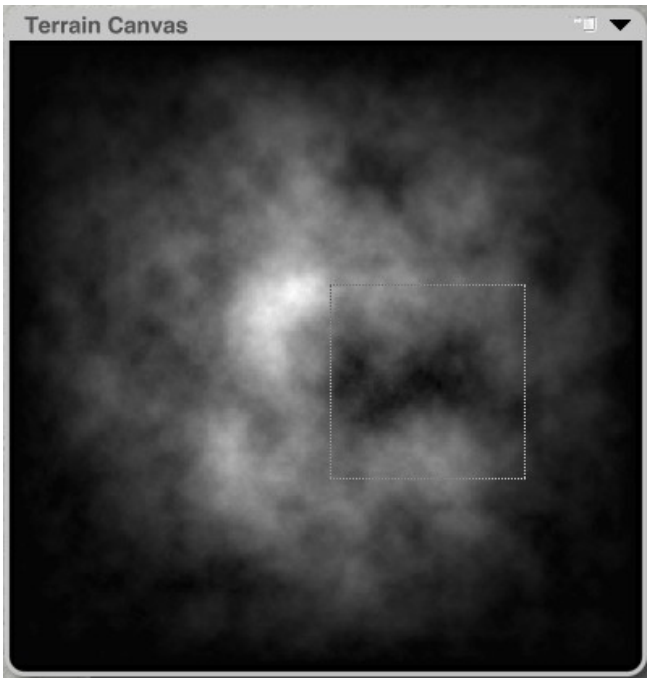
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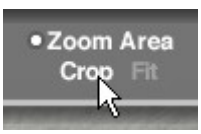
Scale Zoom Area to Fill Canvas

To scale the Zoom Area to fill the Terrain Canvas,

1. Activate the Zoom Area and move/resize it to where you want it on the Terrain Canvas.

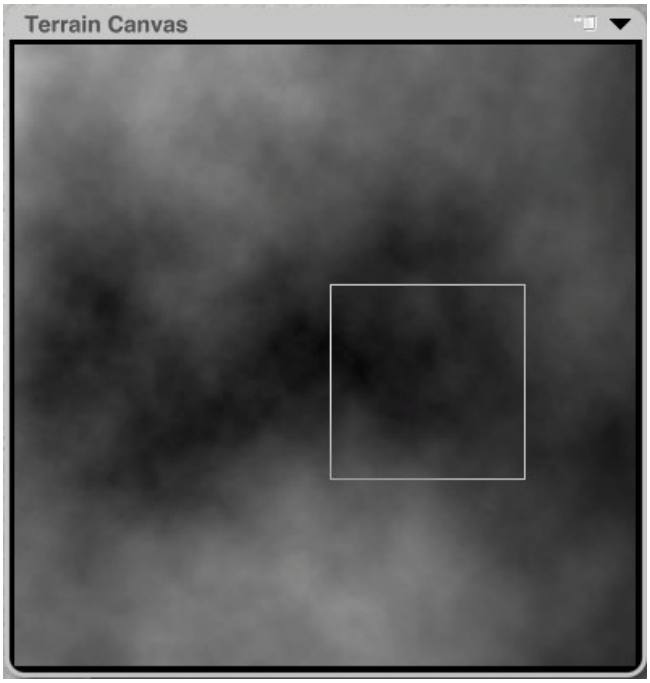


2. Click the Crop button below the Zoom Area button in the Terrain Canvas tool area.



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3. The contents of your Zoom Area are scaled to fill the entire Terrain Canvas area. The Zoom Area contents replace the existing contents of the Terrain Canvas. This feature can be useful for creating new terrains from larger high-resolution terrains.



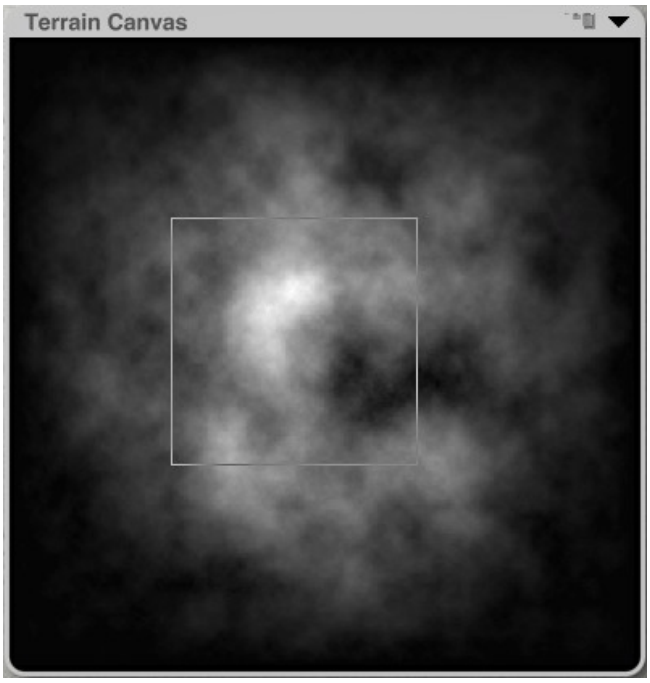
4. Deactivate the Zoom Area tool so you can work on the new terrain.

Scale Terrain to Zoom Area

To fit the contents of the Terrain Canvas into the Zoom Area:

1. Activate the Zoom Area and move/resize it to where you want it on the Terrain Canvas.

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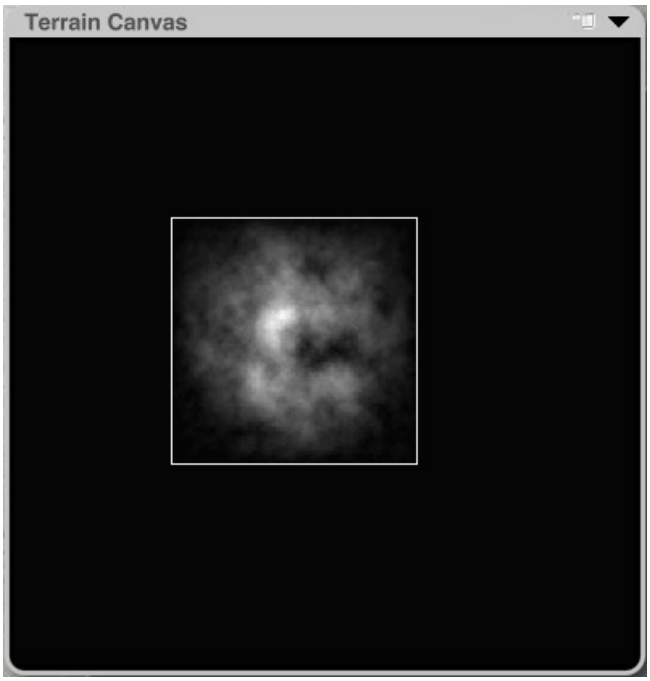


2. Click the Fit text button below the Zoom Area button in the Terrain Canvas tool area.



The entire contents of your Terrain Canvas are scaled down to fit into the Zoom Area marquee. The rest of the Terrain Canvas is filled with black.

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The resulting terrain will be shown in the 3D Preview:

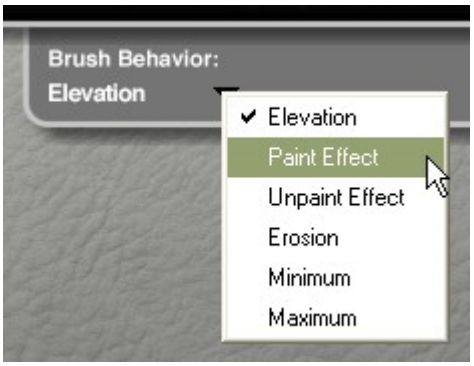


Brush Behavior

The Paintbrush in the Terrain Editor paints elevations by default, but this is not the only way of painting using the brush. You can also set the brush to paint effects. This lets you apply elevation effects locally, or to increase/decrease existing gray levels in your Terrain Canvas.

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The Brush Behaviors are located at the bottom left of the Terrain Canvas Tool. The Brush Behaviors are discussed a bit further down in the "Paintbrush Controls" section.



Terrain Canvas Options

To set the Terrain Canvas options:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



2. Choose an option from the menu. Click on the topic links below for more on using each option.



Set Preview Size

Set Preview Size: lets you change the size of the Terrain Canvas frame. You can choose from six preview sizes.

Changing the preview size allows you to work on the terrain in a variety of sizes. Just remember that as the canvas increases, so does the brush size so adjust the size of the brush before you start painting on a larger or smaller canvas.

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To set the canvas preview size:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



2. Choose the Set Preview Size option from the menu, following the arrow to access the sub-menu where you can choose a size option.

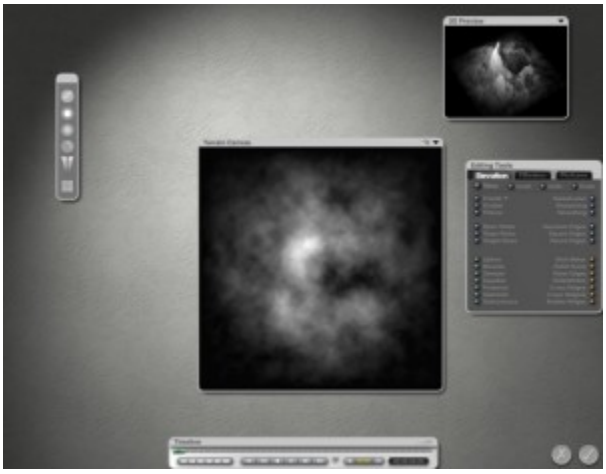


Examples (size relative to a 1024x1280 monitor):

- 384x384



- 512x512



- 960x960



Visible Brush

Visible Brush lets you turn the circle of the brush on and off. Sometimes the circle can get more in the way than a help but turning off the brush circles does not change the actual brush size, so remember that as you work.

By default, the brush circle is set to visible.

To turn off the brush circle:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



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2. Select the Visible Brush option from the menu to deselect it.



The brush circle will disappear leaving only the cursor cross visible.



3. Select Visible Brush again to turn the brush circle back on.



Solid

Solid sets the terrain to a solid object instead of the default hollow setting. This is useful for plateaus and other terrain objects that you don't want to be hollow. See "Setting Terrain Solid" for help on using this option along with the Clipping Bracket.

To set a terrain to solid:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



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2. Choose the Solid option from the menu.



Smooth

Smooth allows a smooth rendering of the terrain. If this is not selected, the terrain is faceted, which may help create a more detailed terrain if needed.

By default, Smooth is selected.

To turn off the terrain smoothing:

1. Click the triangle icon in the top right corner of the Terrain Canvas.

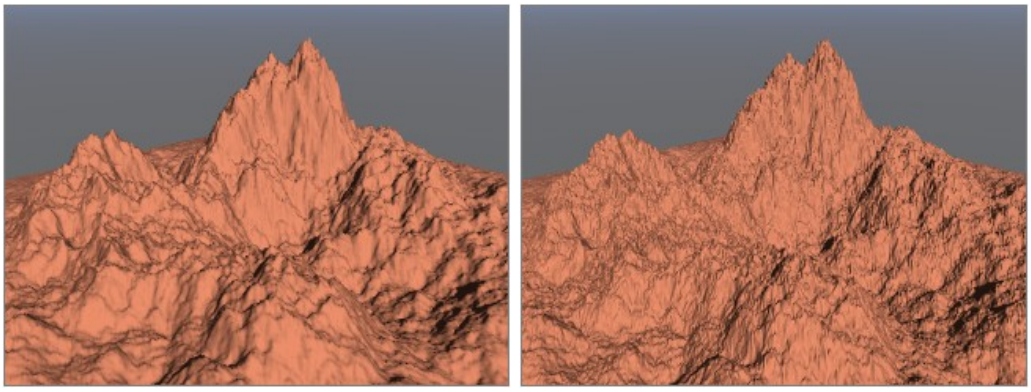


2. Choose the Smooth option from the menu.



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The following images show the difference between a smoothed (left) and unsmoothed (right) terrain:



Keep Gradient

Keep Gradient sets the current applied gradient to be the terrain's diffuse color. This also allows the gradient to remain selected when you exit, then re-enter the Terrain Editor.

Refer to "Applying Gradient to Diffuse Channel" for more information on using this feature.

To enable the gradient as the diffuse color:

1. Apply a gradient to the Terrain Canvas.
2. Click the triangle icon in the top right corner of the Terrain Canvas.



3. Choose the Keep Gradient option from the menu.



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Exporting the Terrain

Terrain objects in Bryce can be exported and used in other programs. The next few pages will provide details on exporting terrains along with images and detailed descriptions of the different features of the Export Terrain Lab.

To export a terrain:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



2. Choose the Export option from the menu.



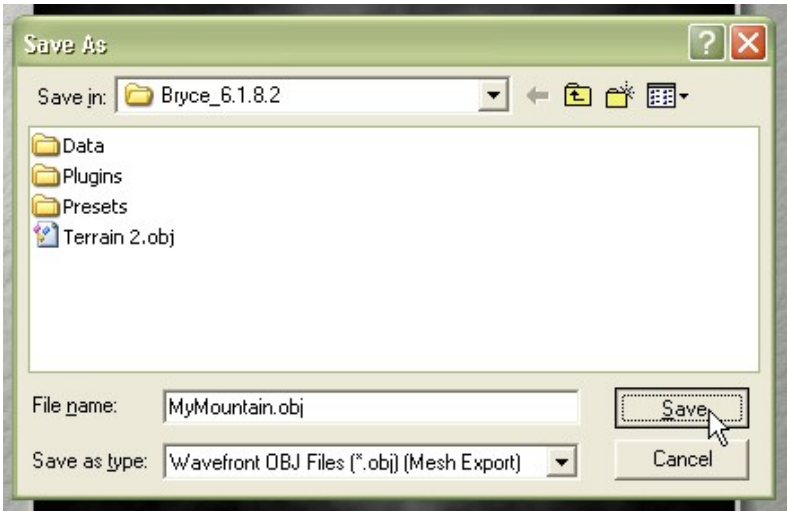
The Save As dialog will come up.

3. Select a file type from the Save as type menu. Selecting the OBJ format will export an material file (MTL) with the textures linked to the terrain. This allows you to import the OBJ file into another program without having to manually locate and apply the textures.

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4. Change the File name and click on Save.



The Export Terrain Lab will come up. The "Features of the Export Terrain Lab" will explain the different features of the lab so you can decide which options to use when exporting your terrain.

Export Terrain Lab

The Export Terrain Lab allows you to convert Bryce terrains into polygonal meshes. The Lab provides you with full control over the level of detail in the polygonal mesh. You can

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adjust the number of polygons with real-time feedback so you can instantly see the resulting change to your mesh. In addition, the Lab allows you to manage the all-important texture maps so that your exported meshes retain the cool look as generated within Bryce.

To export a terrain:

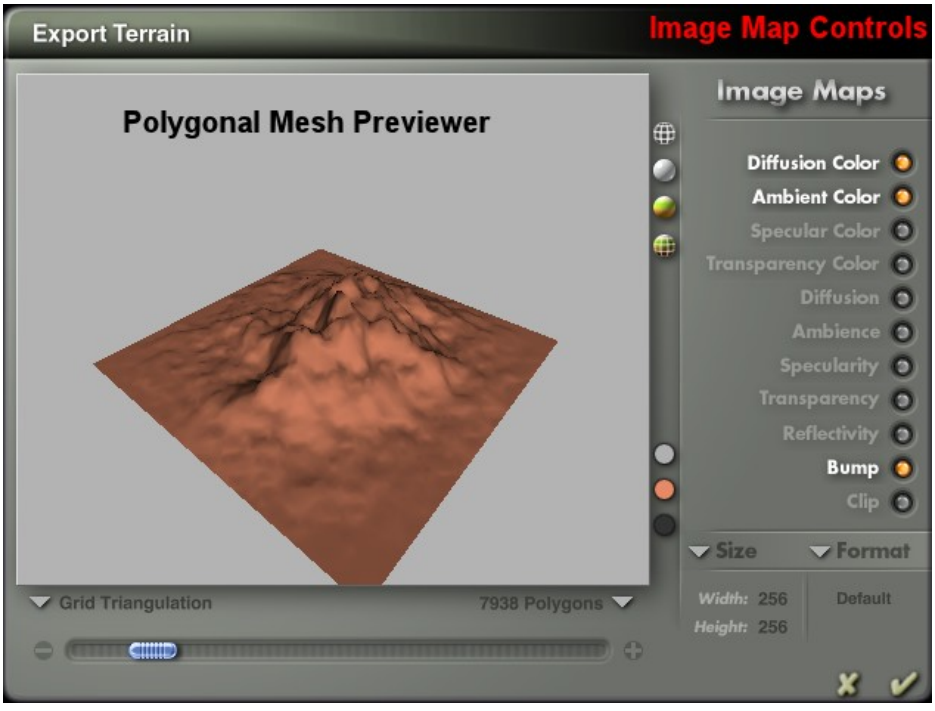
1. Create a terrain and apply materials.
2. Either select the terrain and go to File > Export Object or enter the Terrain Editor and click Export or press Ctrl+D (PC only).
3. Choose the desired file format and target folder.

   Please note that four of the file formats do not export via the Export Terrain Lab, they export immediately once you click on Save: RGM, Rayshade, DEM, and Videoscape.
4. Adjust the complexity of the mesh.
5. Select material properties to be exported as image maps.
6. Select image map size.
7. Click the OK icon to cause the tessellated mesh to be written to the exported file.

Features of the Export Terrain Lab

The Export Terrain Lab is divided into two areas:

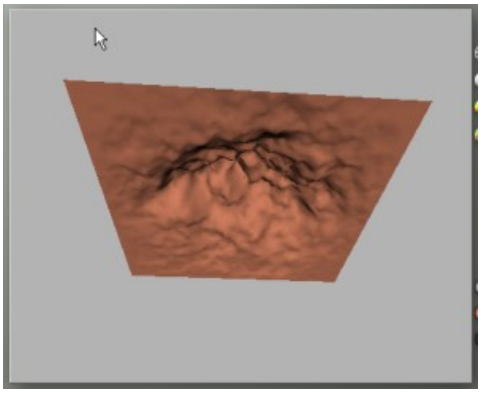
- The Polygonal Mesh Previewer with Polygon Count Slider
- The Image Map Controls



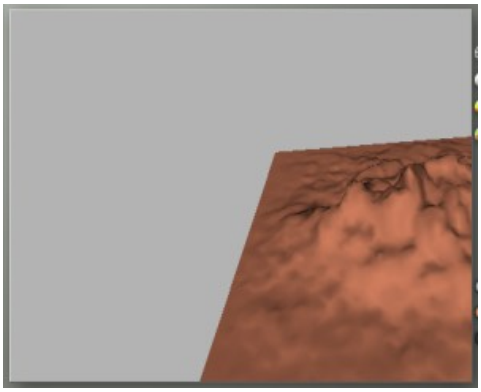
Mesh Previewer Inspection

The Mesh Previewer allows you to instantly examine the quality of the current tessellation by rotating the mesh, zooming in and out, and changing the display mode.

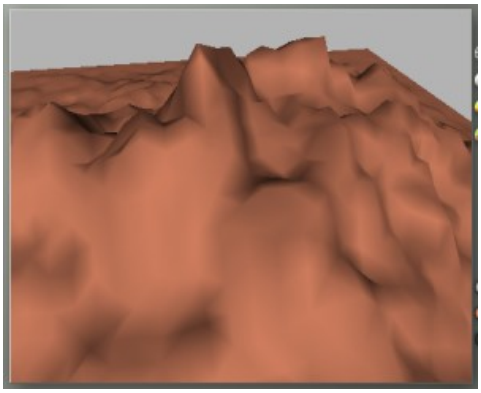
- To rotate the mesh, click and drag in the previewer.



- To move the terrain in the preview window, press Spacebar+drag in the previewer.

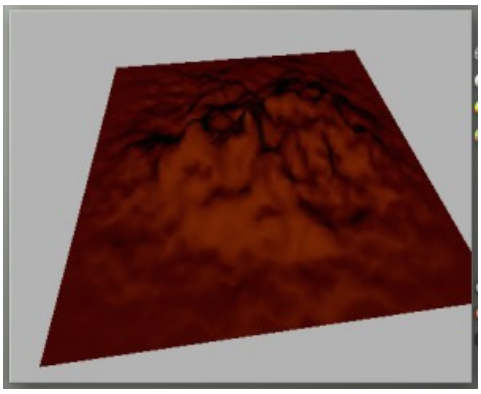


- To zoom the mesh in and out, press Cmd/Ctl+click and drag forward to zoom in, back to zoom out.

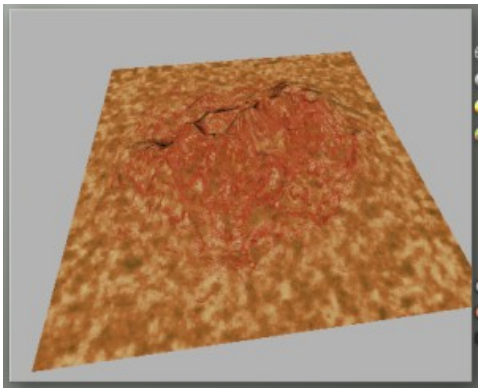


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- To adjust the contrast of the mesh color, press Cmd/Ctrl+Opt/Alt+drag left to increase the contrast, drag right to decrease the contrast.



- To adjust the lighting in the previewer, press Cmd/Ctrl+Shift+drag left to decrease the brightness, drag right to increase the brightness.



Previewer Display Modes

To change the Previewer Display Mode, select one of the buttons to the right of the previewer.

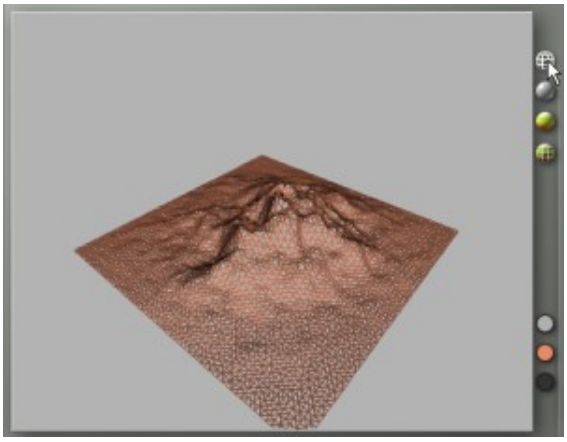
Available preview modes are: Wireframe, Shaded, Textured, and Textured With Wireframe Overlay.



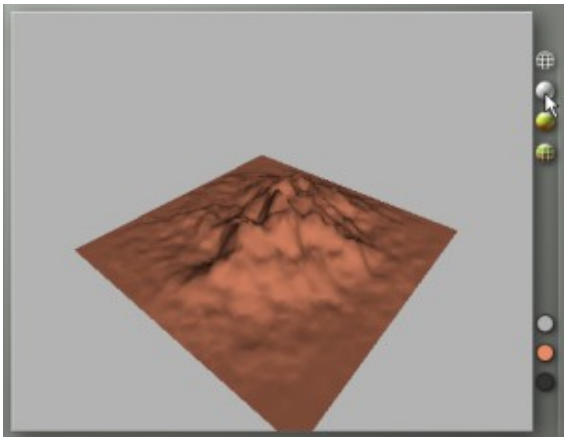
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Examples of the Preview Modes are shown below.

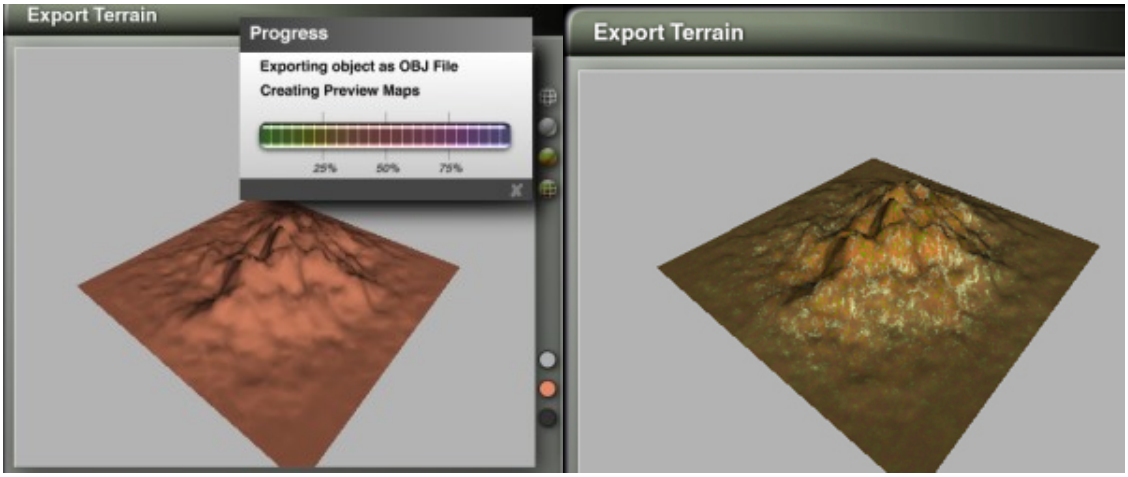
- Wireframe:



- Shaded:



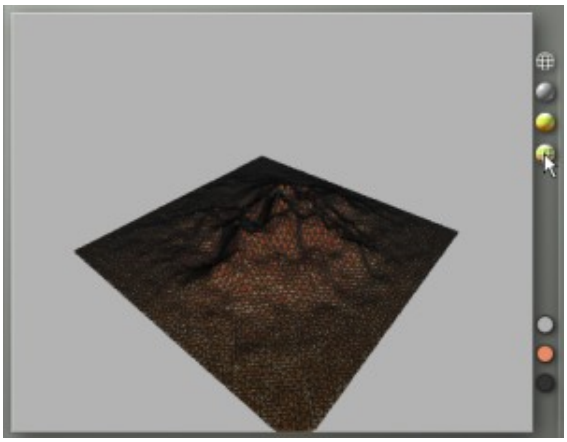
- Textured:



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Depending on the terrain size and material complexity, creating the preview maps can take a few seconds to several minutes.

- Textured with Wireframe Overlay:



Wireframe Overlay can be used with either the Shaded or Textured preview. To turn off the wireframe overlay, click on the button again.

Previewer Color Options

The Color Swatches under the preview buttons adjust the color of the previewer background, the wireframe and shaded color, and the wireframe color for the wireframe overlay.

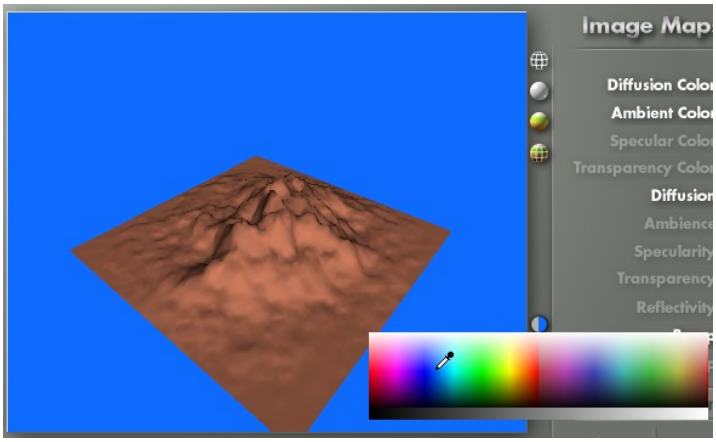


Examples of the Color Adjustments are shown below.

To adjust the colors of the preview background, wireframe, and the shaded preview, select the color swatches underneath the preview mode buttons.

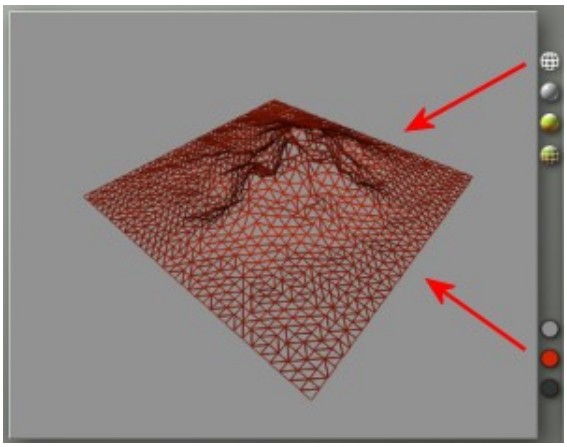
- Background Color - The top color swatch adjusts the color of the previewer background. Left-click-hold on the color swatch and select a color from the color picker. Note that the color swatch shows the original color on the left side and the new color on the right side. If you decide to revert back to the original color, move the eyedropper over the left side of the swatch.

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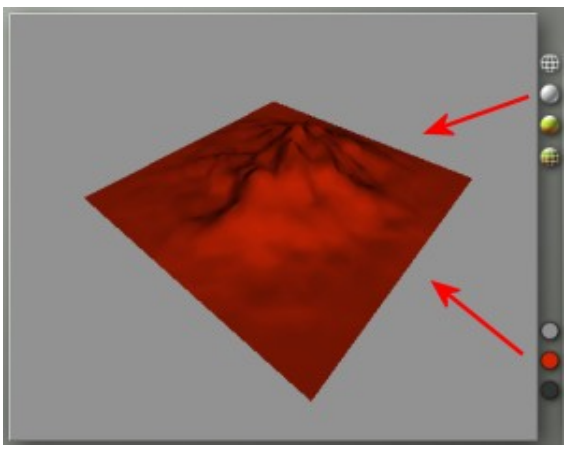


Please note that you will only get the default color picker here. Wireframe and Shaded Color - The middle color swatch adjusts the color of the wireframe and the shaded preview.

- Wireframe Preview Color - When in Wireframe preview, the middle color adjusts the wireframe color.

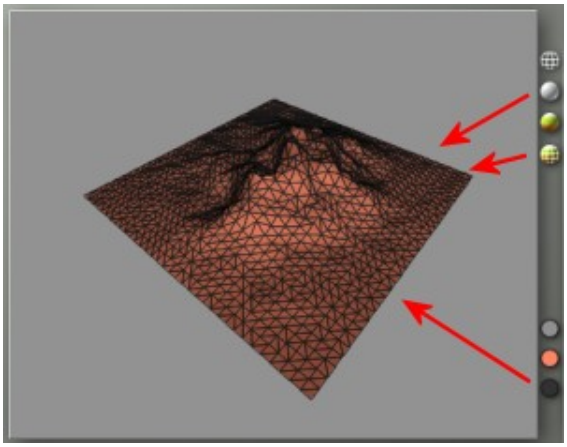


- Shaded Preview - The same color swatch adjusts the color of the shaded preview.

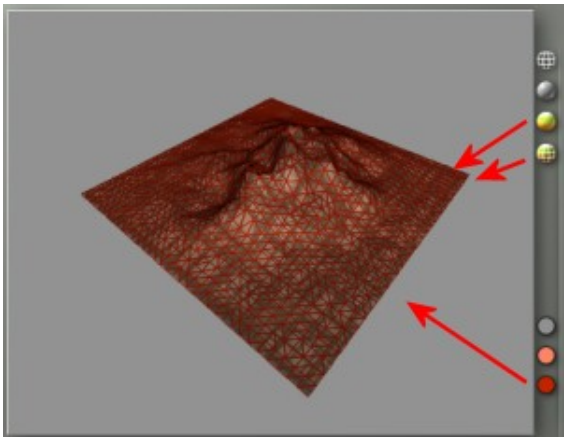


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- Wireframe Overlay Color - The last color swatch adjusts the color of the wireframe when used as an overlay.
- Shaded Preview with Wireframe Overlay - The simplest wireframe overlay is used over the shaded preview. In the image below, you can see the default terra cotta shaded mesh overlaid with the dark grey wireframe color.



- Textured Preview with Wireframe Overlay - When in textured preview mode, the wireframe overlay is shown over the applied texture. The texture applied to the mesh will determine the color of the wireframe, so take a few moments to find the best overlay color.



Adjust Triangulation

Webster's Dictionary defines tessellation as:

1 a: mosaic b: a covering of an infinite geometric plane without gaps or overlaps by congruent plane figures of one type or a few types

2: an act of tessellating : the state of being tessellated

Any shape can be used to create a tessellation, a triangle, square, hexagon, octagon, or a non-geometric shape (think Escher). Bryce uses triangles so "triangulation" and "tessellation" can be used interchangeably within Bryce.

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You can create two types of tessellations in the Export Terrain Lab: Grid and Adaptive.

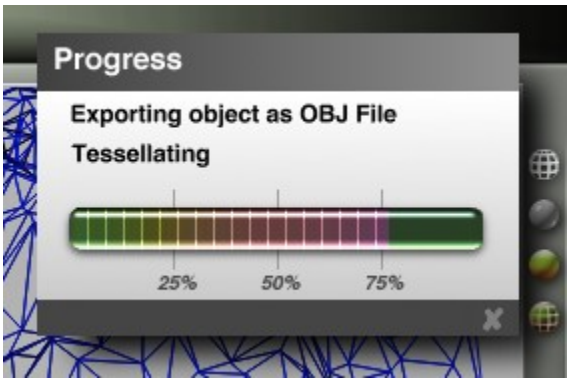
Grid tessellates the original height field with a grid. In order to achieve a good mesh representation of the source terrain, selecting Grid requires a large number of polygons. This method is suitable for geometric shapes.

Adaptive achieves much lower polygon counts with good representation of the terrain. This is an excellent choice when the terrain models natural landscapes. The default triangulation method is Grid Triangulation. The initial tessellation is set to 7,938 polygons for the default terrain resolution (512). The default number of polygons and the range of polygons differs depending on the terrain resolution. For Adaptive, the allowable range of polygons is shown on the far left and right of the polygon slider.

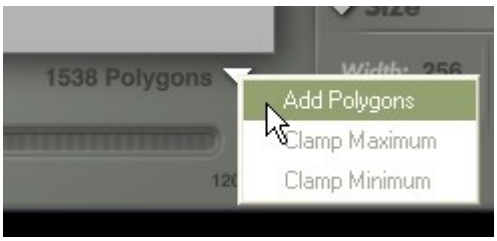
To switch between Grid and Adaptive tessellations, click on the triangle to the left of the previewer and select the tessellation type.



You will get a Tessellating Progress dialog as the mesh is converted:

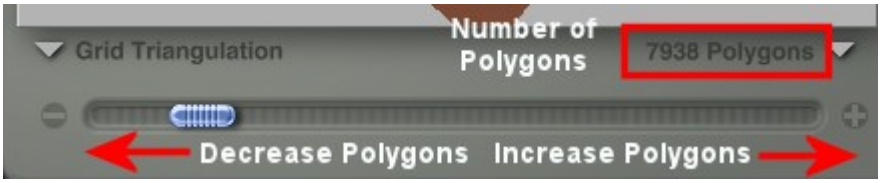


When using Adaptive Triangulation, you can effectively double the number of polygons by selecting Add Polygons in the drop down menu at the right bottom corner of the previewer.



To adjust the polygon count, move the slider below the previewer. This changes the quality of your mesh. The number of polygons in the mesh is displayed in the right bottom corner of the previewer. Please note that the plus and minus symbols are not active and cannot be used to adjust the polygon count.

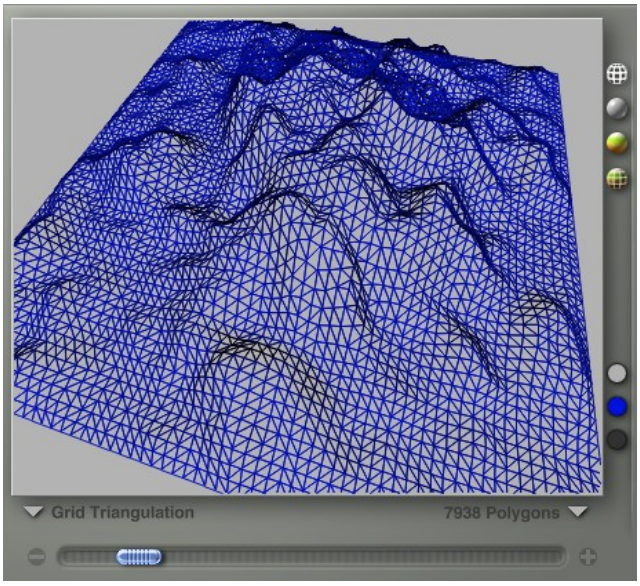
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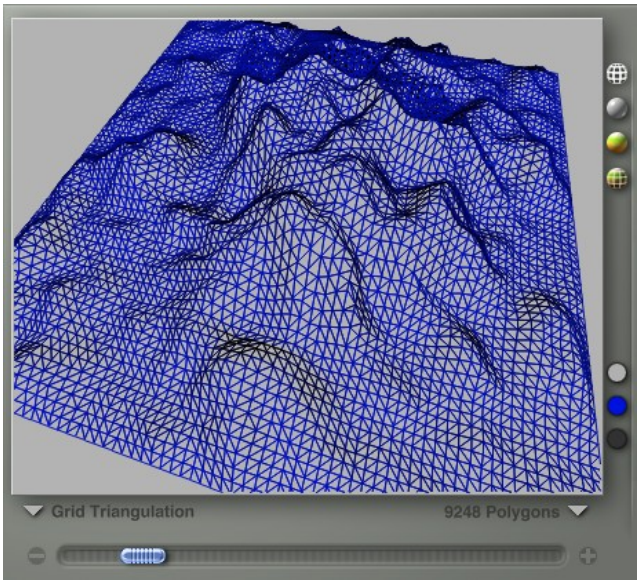
Tessellation Examples

Examples of Grid and Adaptive Triangulation:

- Default Terrain, Grid Triangulation, 7938 Polygons:

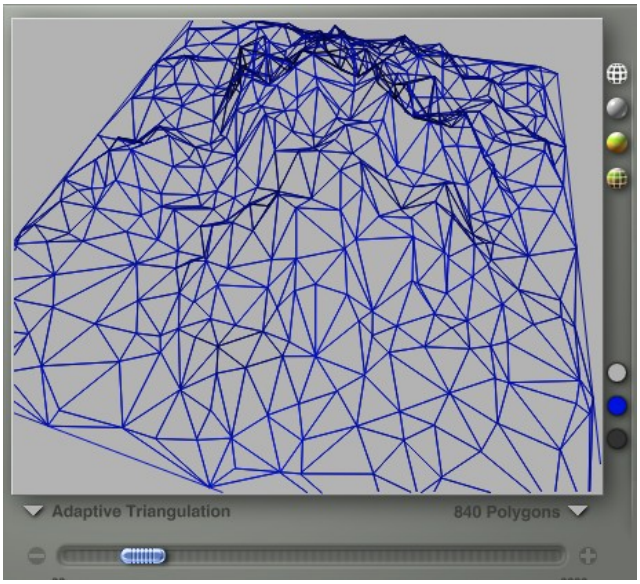


- Number of polygons increased to 9248:

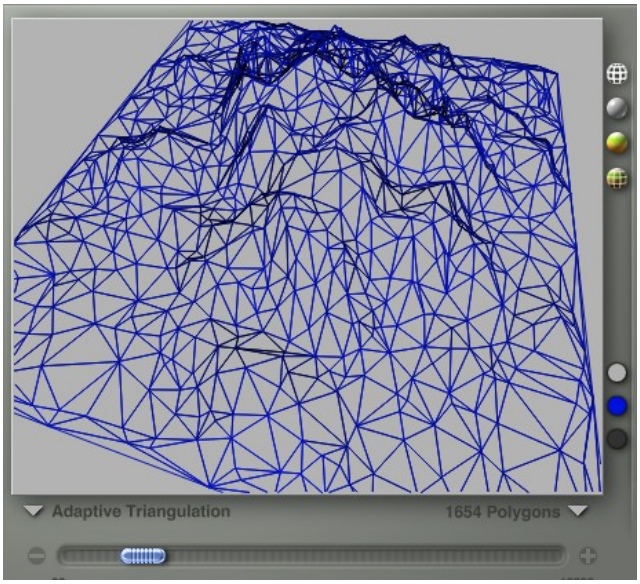


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- Changed to Adaptive Triangulation reduces polygon count to 840:

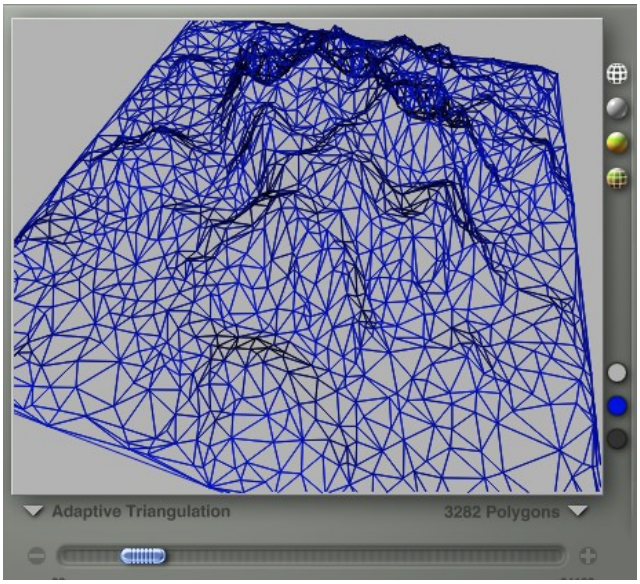


- Selecting Add Polygons increases count to 1654:

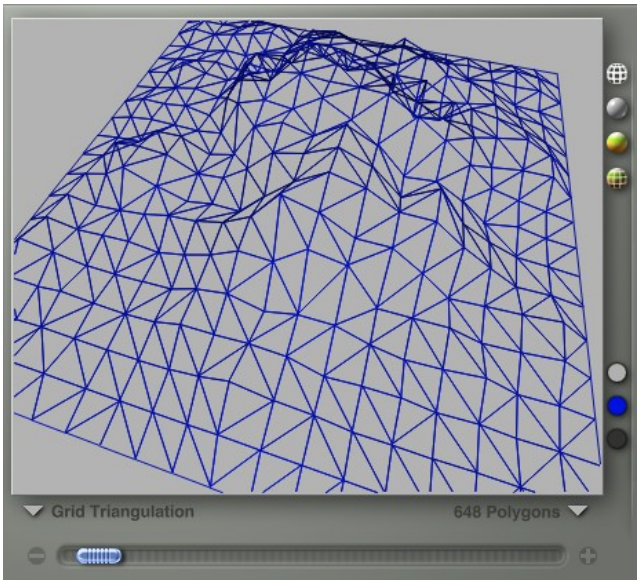


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- Selecting Add Polygons again increases the count to 3282:



- And decreased to 648 polygons:



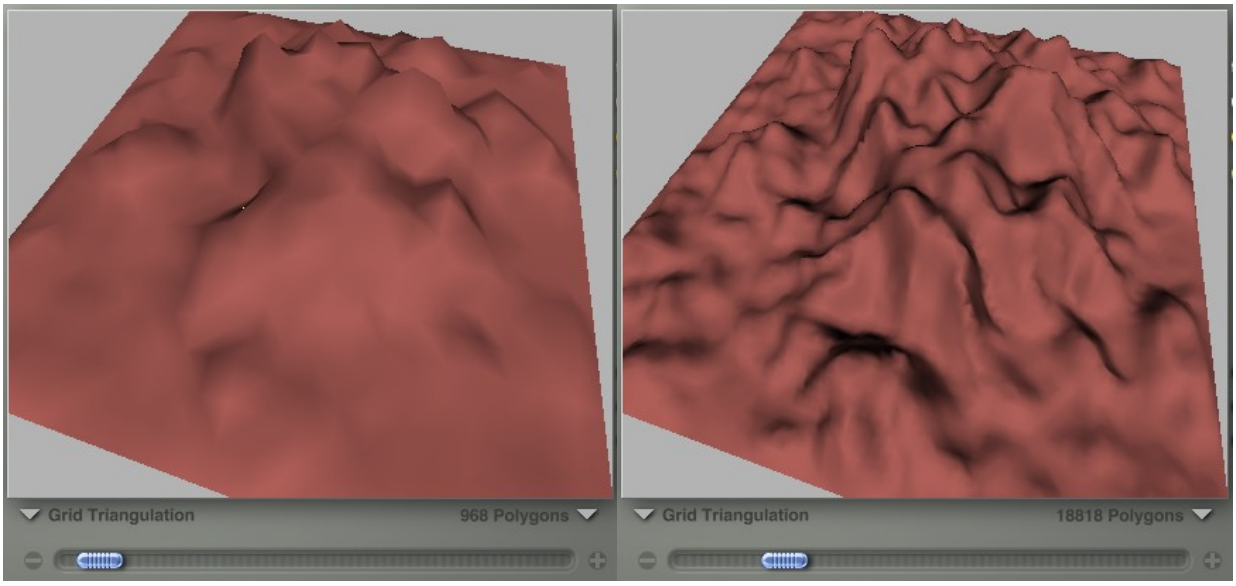
Shaded Tessellation Examples

Below are examples of different levels of triangulation for both Grid and Adaptive on a default terrain (512).

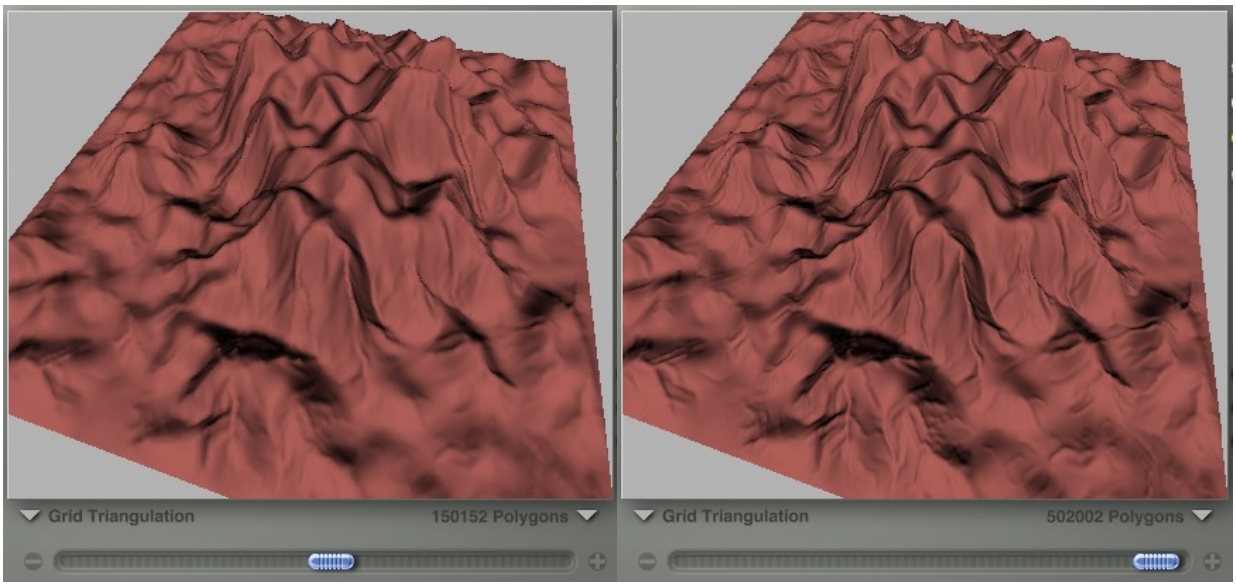
A quick way to view the results of increasing or decreasing the polygon count is to drag the slider left and right. You'll get a quick "animation" of the terrain as it is modified.

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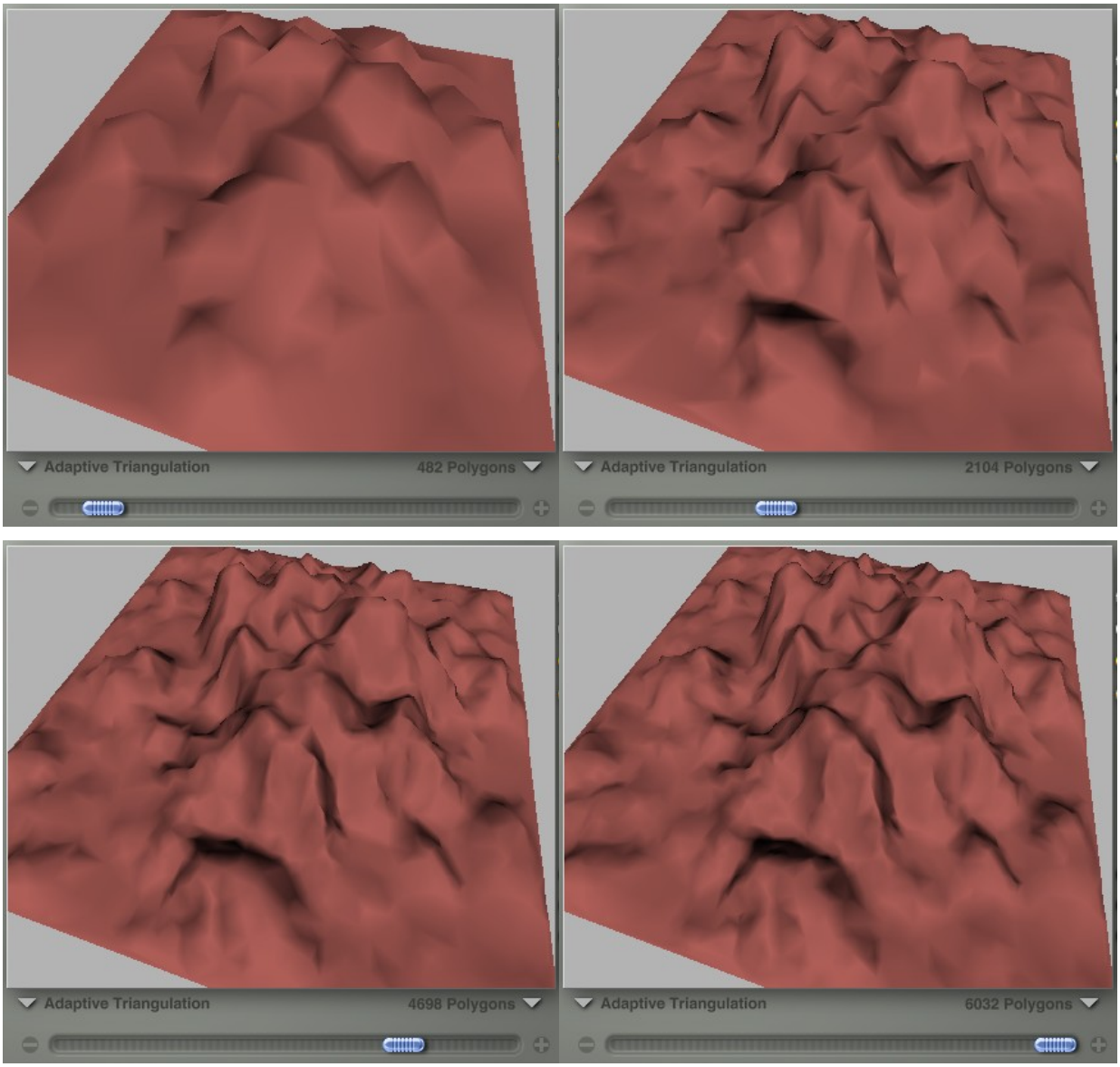
Grid:



Adaptive:



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Handling Image Maps

The second area of the Export Terrain Lab deals exclusively with handling image maps. A large part of the appeal of Bryce terrains are Bryce materials, which consist of different significant properties. Each of these properties can be exported, along with their geometry, through the Export Terrain Lab.

The image map controls let you refine which of the material properties you wish to export by selecting out of the list of ten. By default any material properties of the terrain that use image maps will be exported. The image below shows the image map controls with the Diffusion Color, Ambient, Color, Diffusion, and Bump selected. If we go back into the Materials Editor, we'd see that the material is applied to these four channels.

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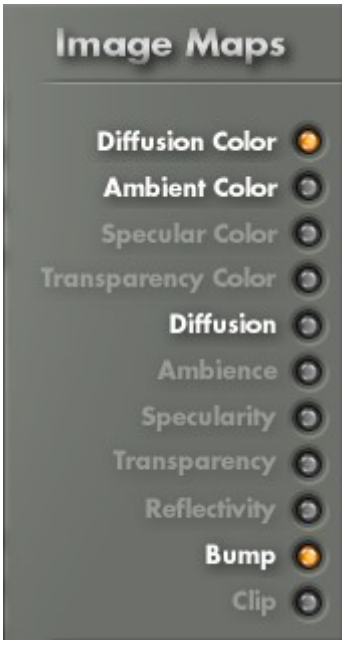


Depending on the selected export file format, the image maps will be embedded within the export file. If, however, the export file format does not support embedding of image maps, they will be saved as separate image files in the same folder as the export file (such as an MTL file for OBJs). The filename of each separated image will be the name of the export file appended with the name of the appropriate material property.

Next steps:

1. Add or remove channels - In our example, there is only one material applied to four channels. If the program you will be importing the terrain into doesn't need some of the channels, click on the orange dot to deselect the channel you don't need. In most cases, the Diffusion Color and Bump are sufficient. In the image below, the Ambient Color and Diffusion have been deselected but notice that they are still white. This means that if you change your mind, you can reselect them. The greyed out items cannot be selected for this terrain since the Bryce material applied isn't applied to those channels.

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What About Clip?

2. Select an image size/resolution from the Size menu. The default is 512x512.

   Next, select what format to export the image as from the Format menu. The default is bitmap (BMP) but you can also select from JPEG, Mac PICT, Photoshop, and TIF formats



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3. The final step is to save the terrain and the image maps, so click on the OK icon (or click on the Cancel icon to cancel the export). Bryce will save the mesh and images to your selected storage directory.



What About Clip?

Good question. Clip was originally meant to be used for specific CAD output formats, unfortunately, the knowledge of how to use this option has been lost to time.

Exporting to MetaStream

MetaStream is format developed by MetaCreations allowing users to view objects in a browser and rotate the object within the viewer.

When exporting to MetaStream, you can select additional options: Clamp Minimum and Clamp Maximum.

These options define the lowest and highest polygon counts within the multi-resolution mesh.

To export as MetaStream and apply the Clamps:

1. Click the triangle icon in the top right corner of the Terrain Canvas.



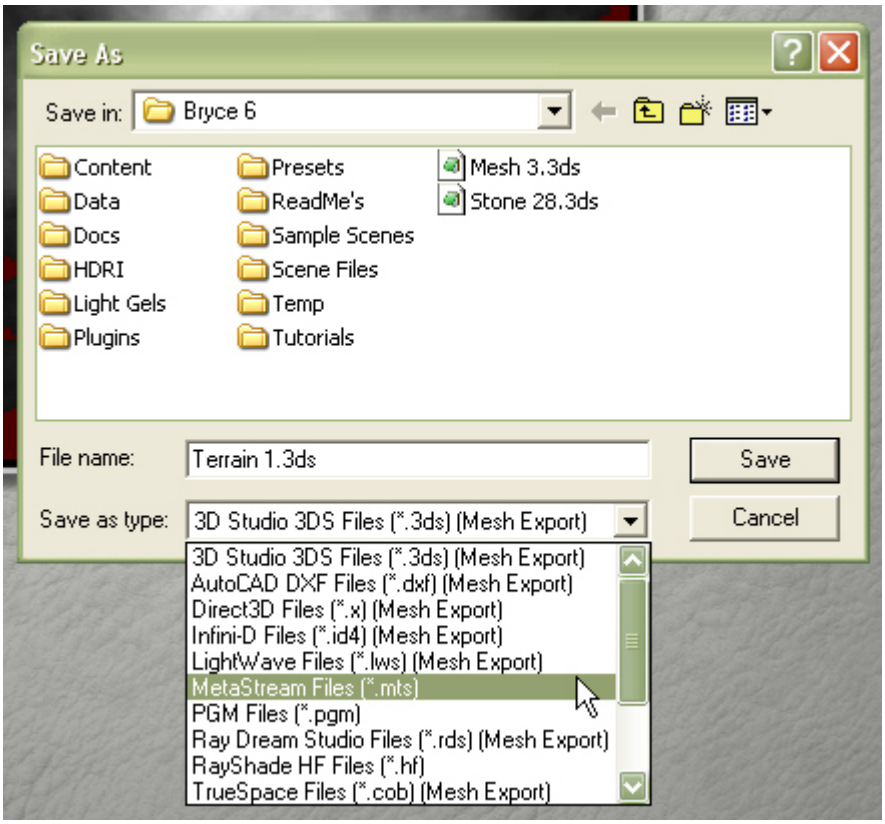
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2. Choose the Export option from the menu.



The Save As dialog will come up.

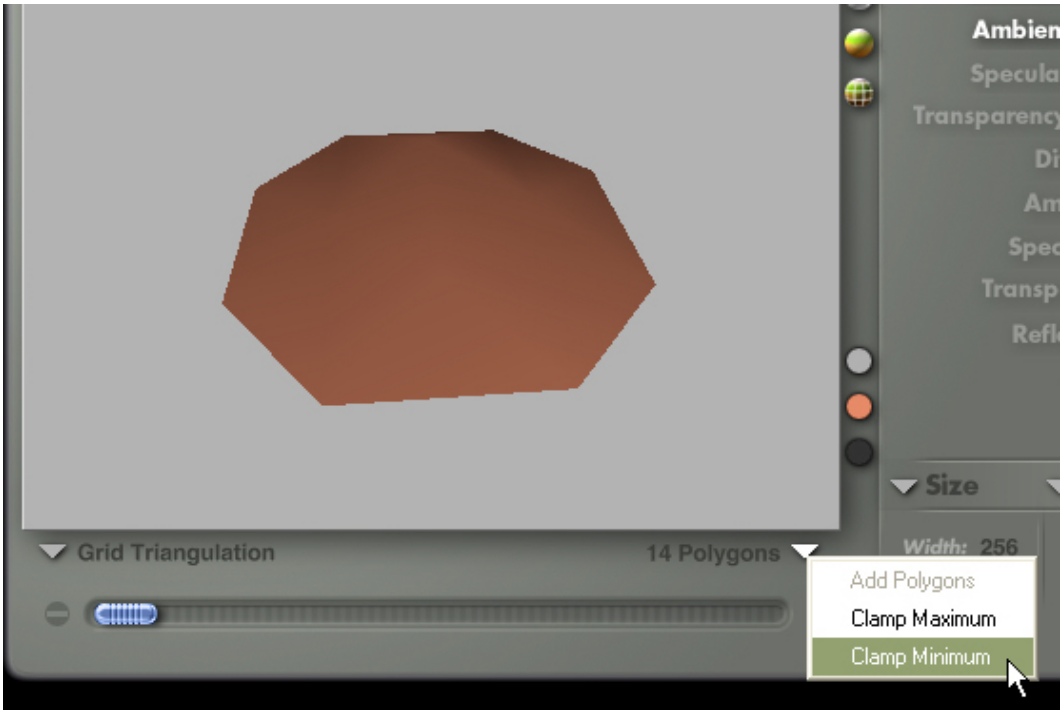
3. Select the MetaStream file type from the Save as type menu.



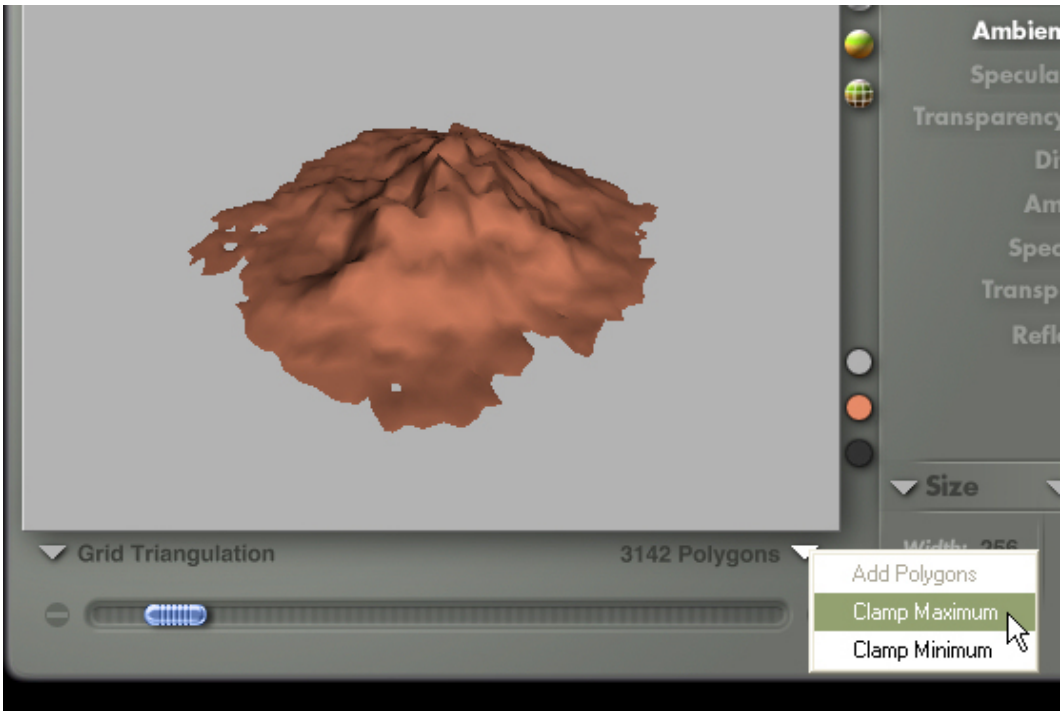
4. Use the slider to set the desired lower polygon count.

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5. Select Clamp Minimum from the options menu.



6. Use the slider to set the desired higher polygon count.
7. Select Clamp Maximum from the options menu.



8. Click on the OK icon to accept the changes and export the MetaStream file.

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If Clamp Minimum and Clamp Maximum are set to the same amount, the MetaStream file will contain a single resolution.

To reset the Clamp Minimum and Clamp Maximum, select Reset Clamps within the Options menu.

Export Image

Export Image is a new feature in Bryce 6 and lets you export the terrain grayscale image for use in other programs.

Refer to "Exporting 8-bit and 16-bit Pictures" for more on using this option.

3D Preview

The 3D Preview displays a terrain object based on the image in the Terrain Canvas. As you edit the terrain image, the preview updates to show the result of your changes.

The preview of your terrain can be rotated so that you can see your terrain object from different angles.

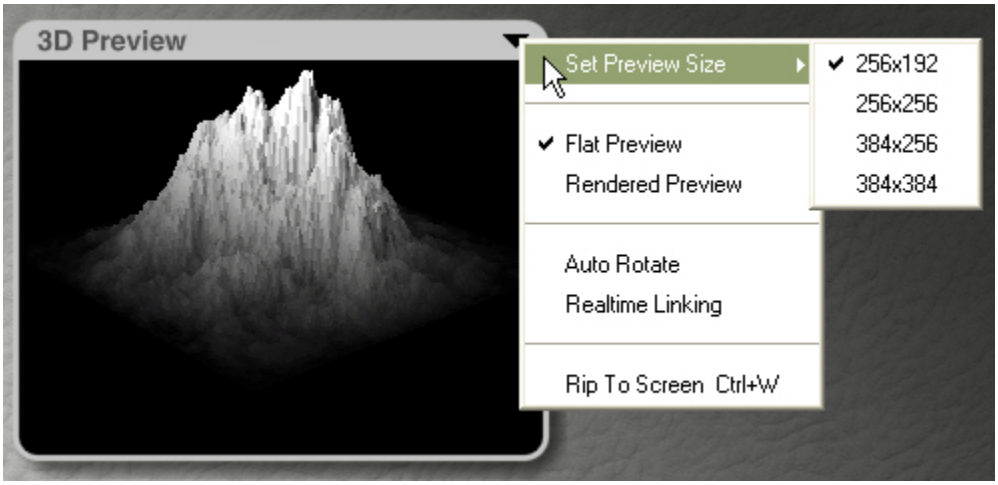
3D Preview Options

The 3D Preview has several options that control how the preview updates and displays. To set 3D Preview options, click the triangle icon in the top right corner of the 3D Preview and choose an option from the menu.



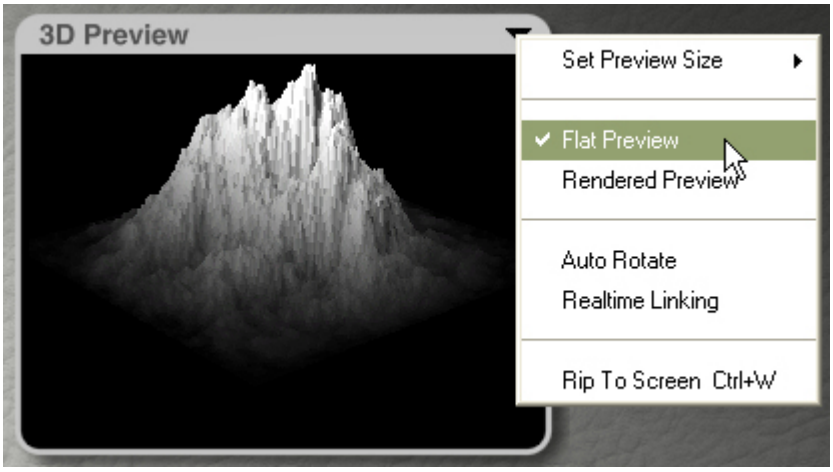
Set Preview Size

Set Preview Size lets you change the size of the 3D Preview frame. You can choose from four preview sizes although the default size is 256x192



Flat Preview

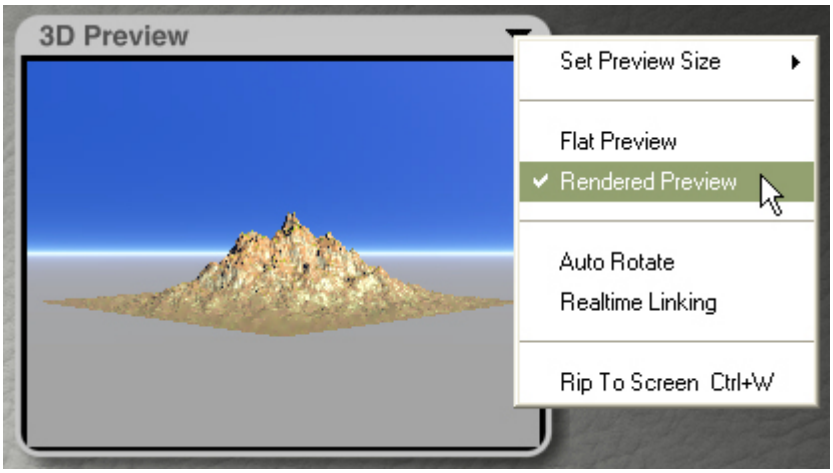
Flat Preview is the default preview type. In Flat Preview, you see a basic rendered preview of the terrain using a plain grayscale material with basic shading and lighting.



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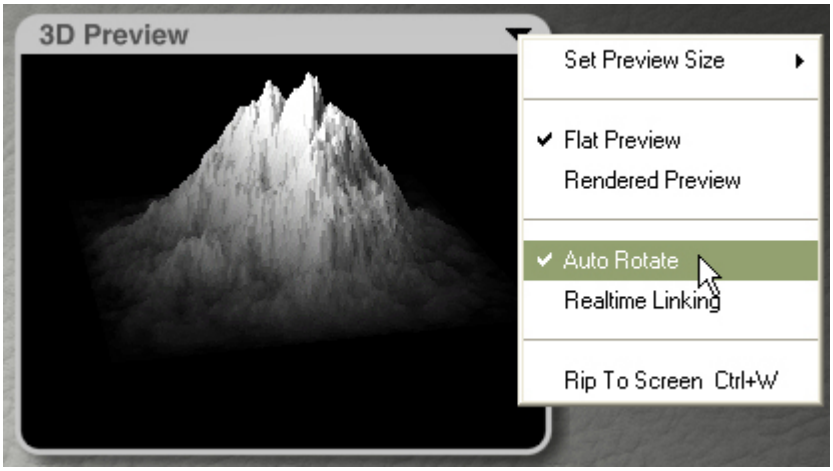
Rendered Preview

Rendered Preview displays a fully rendered view of the terrain, including any materials you have applied.



Auto Rotate

Auto Rotate sets the 3D Preview to rotate when it is in Flat Preview mode. The 3D Preview updates as it turns. To stop the Auto Rotate, deselect Auto Rotate from the menu.



If Rendered Preview is selected, the Auto Rotate will not go into effect until you select Flat Preview.

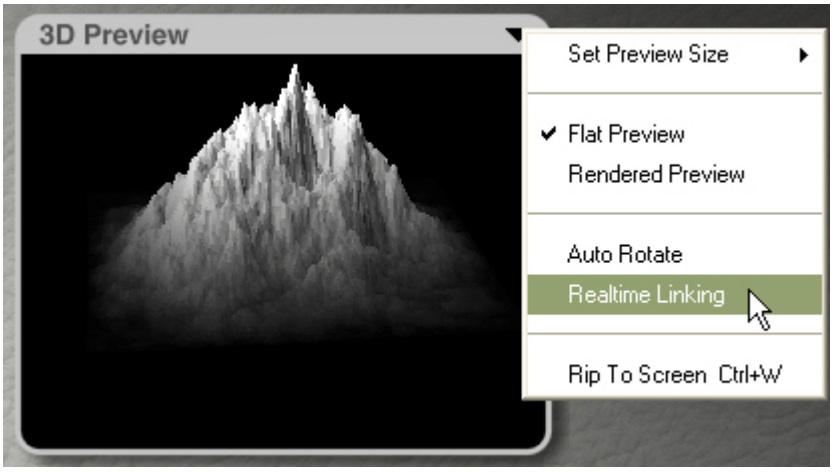
To rotate the preview manually, see "Manual Rotation."

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Realtime Linking

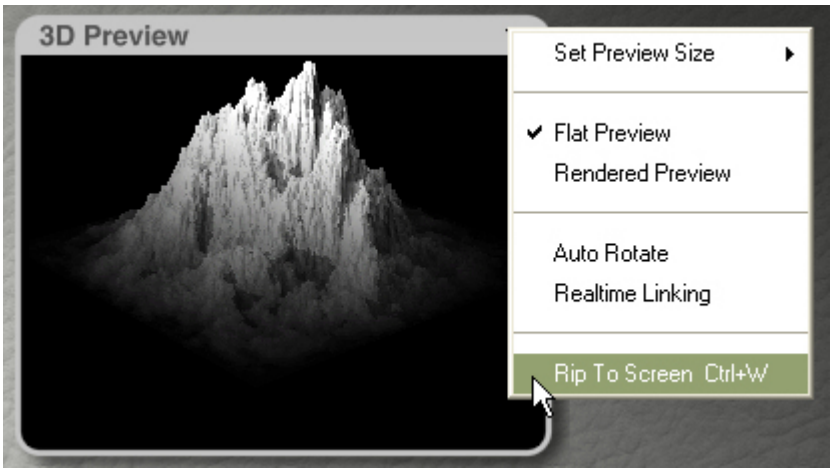
Real-time Linking connects all terrain editing to the 3D Preview. Every change you make is applied simultaneously to the Terrain Canvas and the 3D Preview.

When this option is not active, any updates you make to the terrain aren't shown in the 3D Preview window until after you let up on the mouse.



Rip to Screen

Rip To Screen displays a full-screen preview of your terrain.

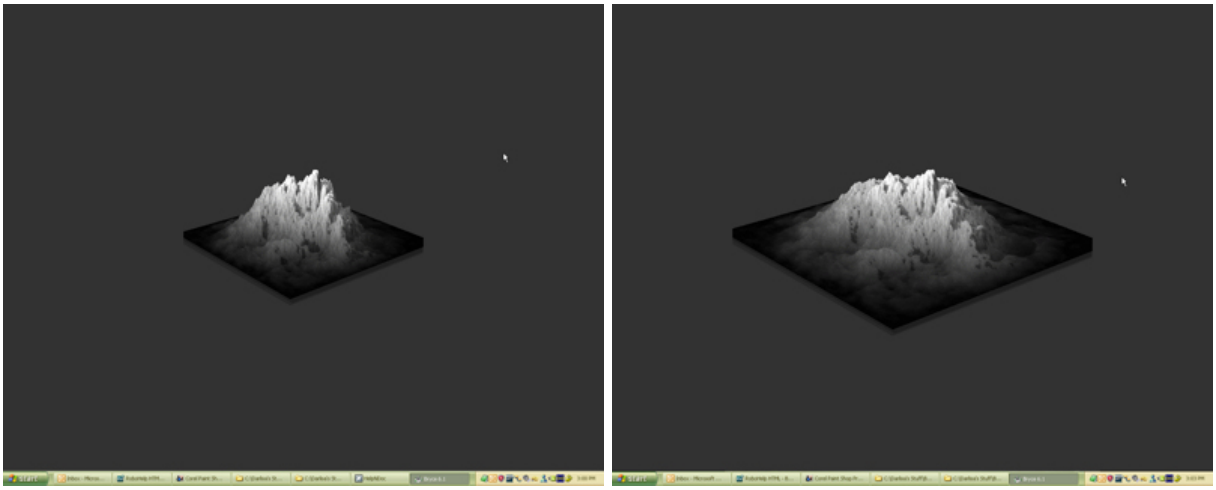


Clicking anywhere on the screen will return you to the main Terrain Editor.

Use Cmd/Ctrl+W to toggle in and out of this mode.

The 3D Preview size will affect the size of the terrain when ripped to screen.

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Please note that if you rip the 3d preview to screen then change to a different program, you will not be able to return to Bryce without manually shutting down the program and reopening it. Remember to click on the screen to reset the preview before changing to another program.

Manual Rotation & Zooming

In addition to using the Auto-Rotate in the 3D Preview window, you can also rotate and zoom the 3D preview manually.

- To rotate the preview, left-click in the preview window and drag the mouse up, down, left, and right.
- To rotate the preview in a continuous circular rotation, press Shift then left-click hold in the preview window.
- Drag left slightly to rotate the preview to the left, drag right slightly to rotate the preview to the right.
- To rotate the preview in small increments, left-click-drag in short motions in the preview window. This rotates the preview in short jerky motions. To smooth it out, press Shift while dragging in short motions in the preview window.
- To zoom the preview in and out, press Ctrl+drag forward and back.
- To reset the zoomed preview, press Alt+click in the preview window. Please note that if you rotated the preview prior to zooming, this will only reset it to the default size, not the default rotation.

Paintbrush Controls

Although you can create some very spectacular terrains using just the elevation tools, there are times when you want to create a precise Terrain Canvas. The Terrain Editor's Paintbrush lets you paint any type of terrain you wish. Using the Paintbrush, you can recreate real-world topographical maps or design landscapes with specific contours.

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The Paintbrush Controls let you select the size, hardness, flow, and level of the Paintbrush, as well as control the resolution of the grayscale data.



Brush Control

Size Control

Hardness Control

Flow Control

Level Control

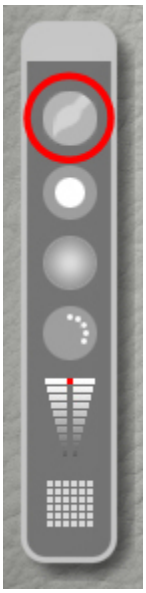
Grid Selector

Preset Brushes

Preset Brushes

The Brush Presets Library is new in Bryce 6 and is accessed from within the Terrain Editor. The brushes allow you to add frequently used shapes or special brushes to be used to paint terrains.

To access the Brush Library, left-click on the Brush Control.



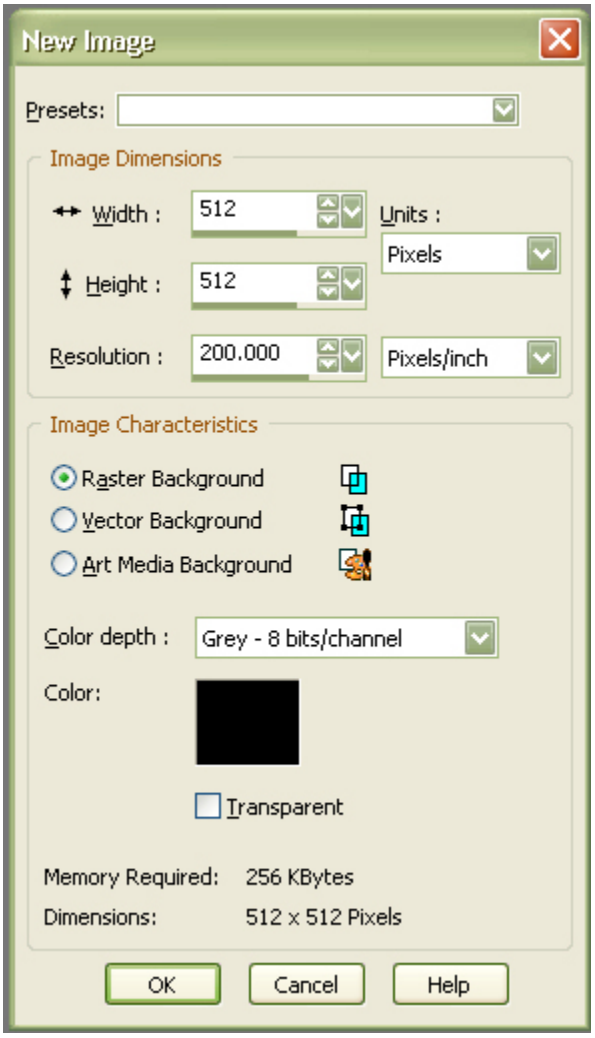
See "Libraries" for information on importing, exporting, and deleting brush presets.

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Adding a New Brush

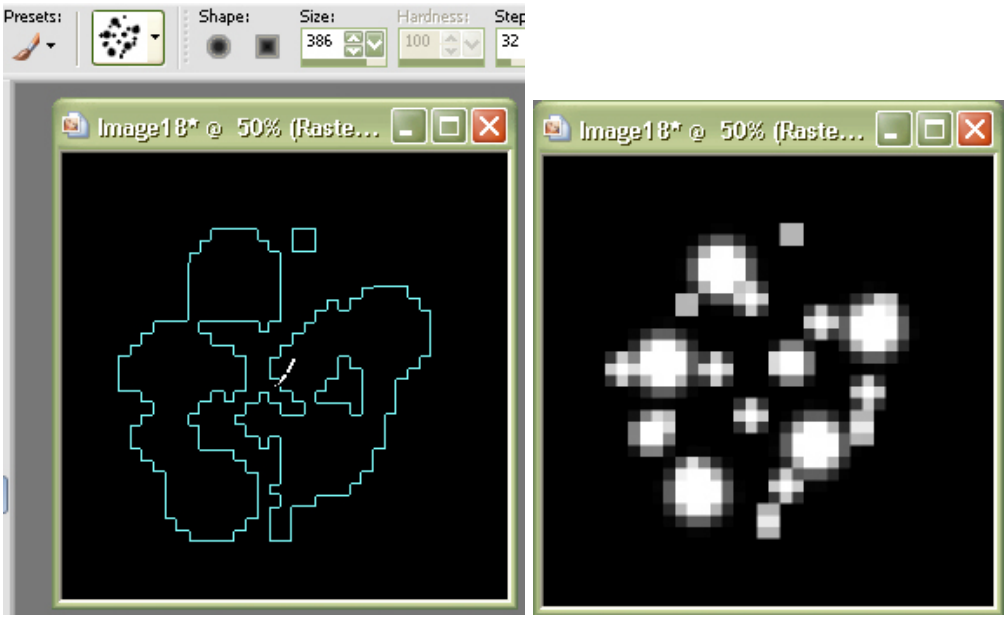
To add a brush preset to the Brush Presets Library:

1. In your paint program, create a new square image (i.e., 256x256, 512x512, etc.) with a black background. You can build a brush in color, but it will be converted to grayscale when imported into the Brush Library.

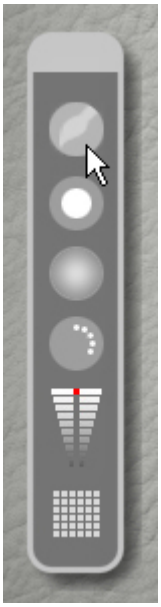


2. Select a brush preset from the program or create your own image. The brush color should be set to white or a light gray.

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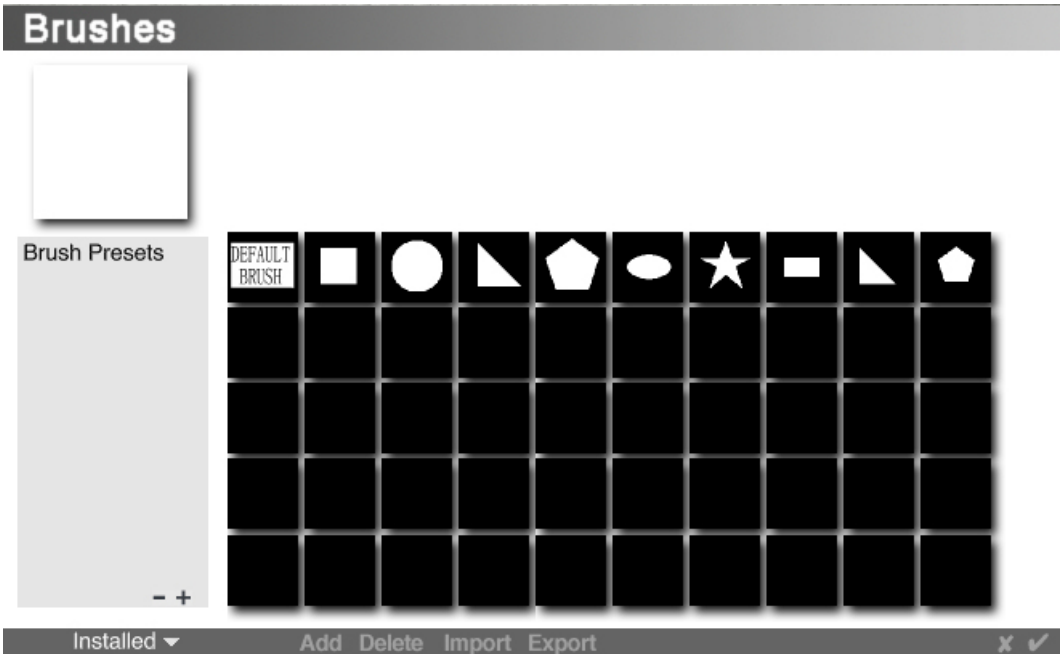


3. Save the image in one of the following formats: .SGI .BMP .DIB .EMF .FPI .FPX .GIF .JP2 .JPE .JPG .MAC .PCT .PSD .PIC .PNG .PNT .TIF
4. In Bryce, create a new terrain or symlat.
5. Click on the E button next to the selected terrain to enter the Terrain Editor.
6. Click on New to load a new terrain.
7. In the Brush Control Tools, click on the Brush Tool.

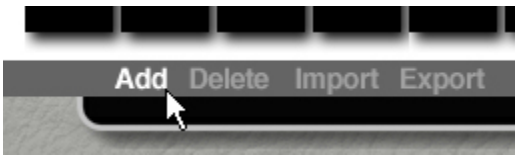


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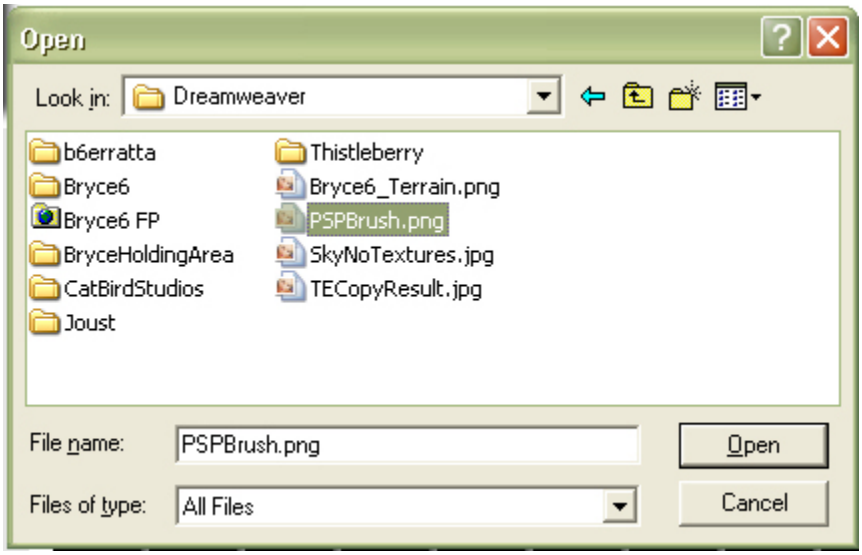
The Brushes Library will open up.



8. Click on Add at the bottom of the library.

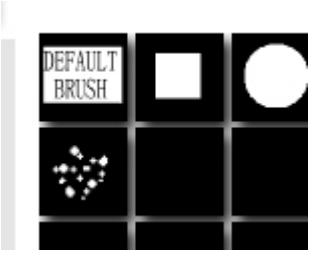


9. The Open File dialog will come up. Locate your brush image, select it, and click on Open.



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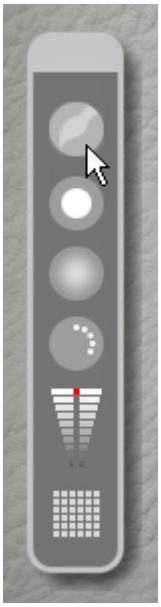
The brush will be imported into the library, ready to use.



Using the Preset Brushes

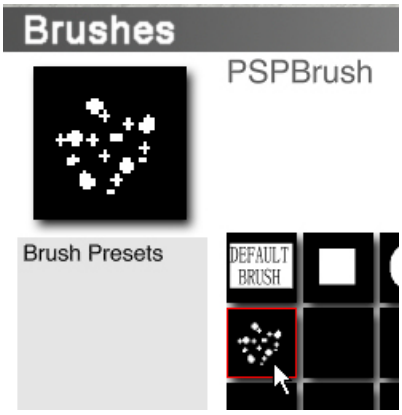
To use a preset brush:

1. In Bryce, create a new terrain or symlat.
2. Click on the E button next to the selected terrain to enter the Terrain Editor.
3. Click on New to load a new terrain.
4. In the Brush Tools, click on the Brush Tool. The Brushes Library will open up.

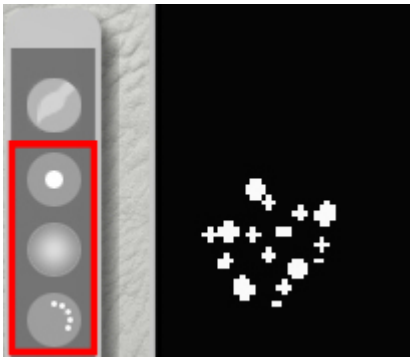


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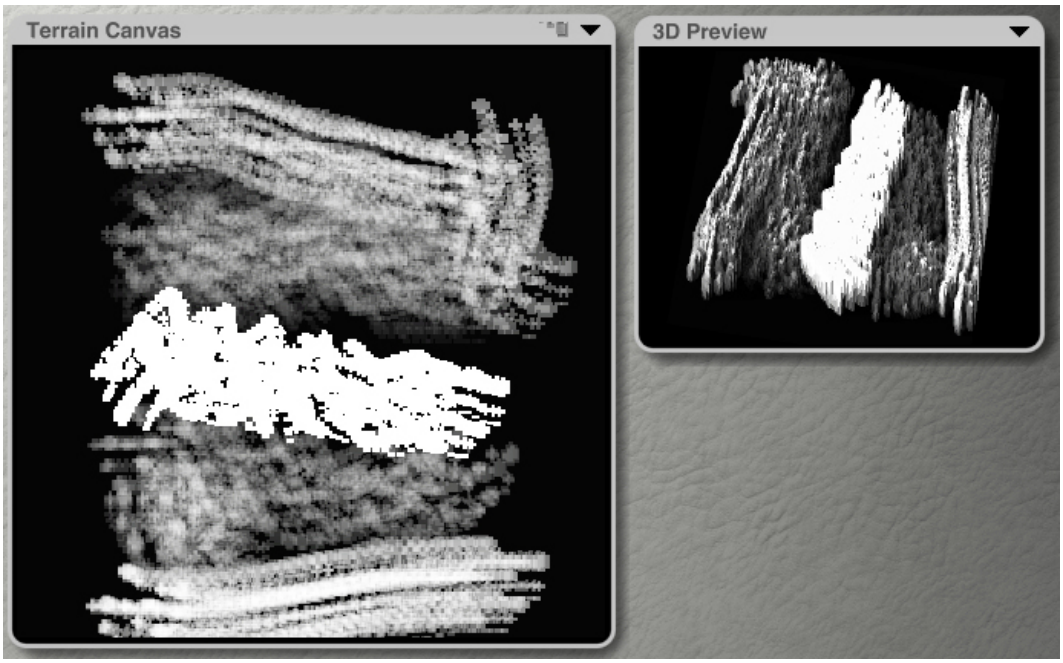
5. Select the brush you want to use and click on the OK icon to close the library.



6. In the Terrain Editor, adjust the brush size and flow as needed.



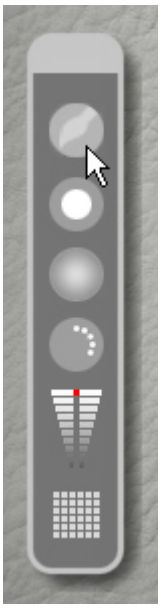
7. Paint on the terrain or use the brush as a stamp to stamp the design on the terrain.



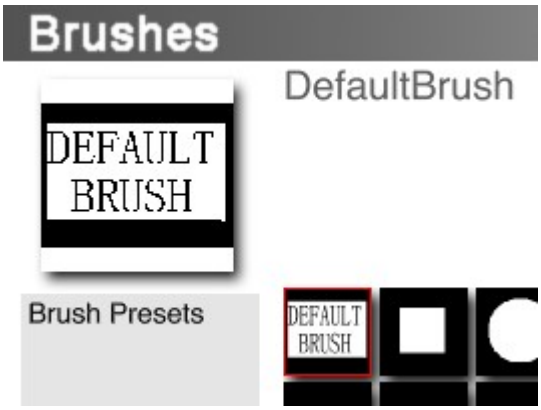
Reverting to Default Brush

To revert to the default brush:

1. In the Brush Control Tools, click on the Brush Tool. The Brushes Library will open up.



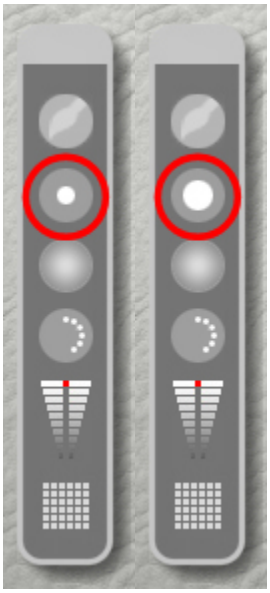
2. Select the Default Brush and click on the OK icon. The brush will revert to the default paintbrush.



Size

The Paintbrush Size Control lets you select the size of the Paintbrush.

To change the Paintbrush size, drag left or right over the Paintbrush size control. Dragging towards the center decreases the Paintbrush size while dragging away from the center increases the Paintbrush size.



This control is hard to adjust precisely so take your time increasing and decreasing the brush size until you get the size you need.

Examples:

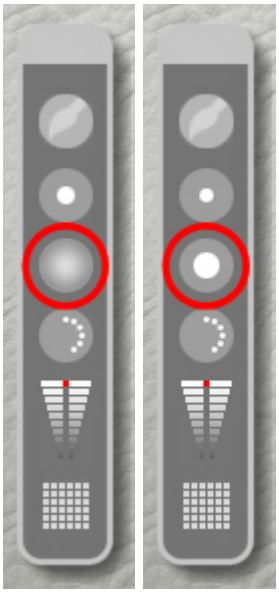


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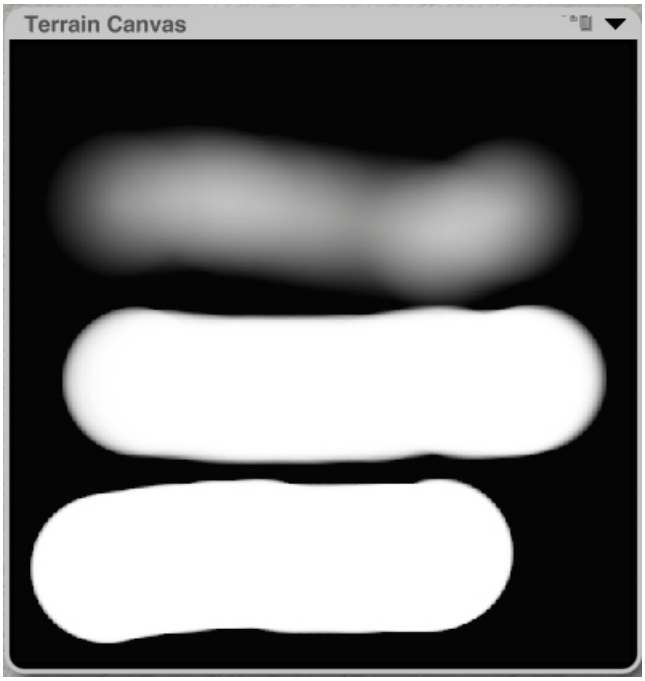
Hardness

The Paintbrush Hardness Control lets you choose how hard to make the edges of the Paintbrush. A hard Paintbrush has sharp edges and will create a very vertical effect such as a cliff edge. A soft Paintbrush has feathered edges and will blend more with the existing terrain, providing a more gently sloping effect.

To change the paintbrush hardness, drag left or right over the Paintbrush Hardness Control. Dragging towards the center increases the hardness of the Paintbrush, while dragging away from the center makes the Paintbrush softer.



Examples:

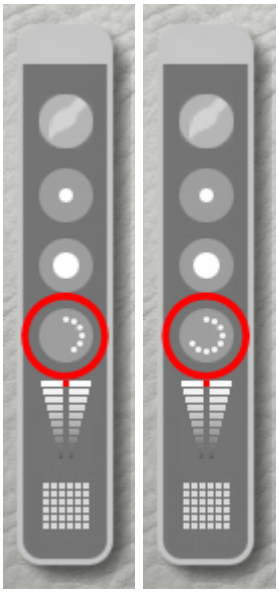


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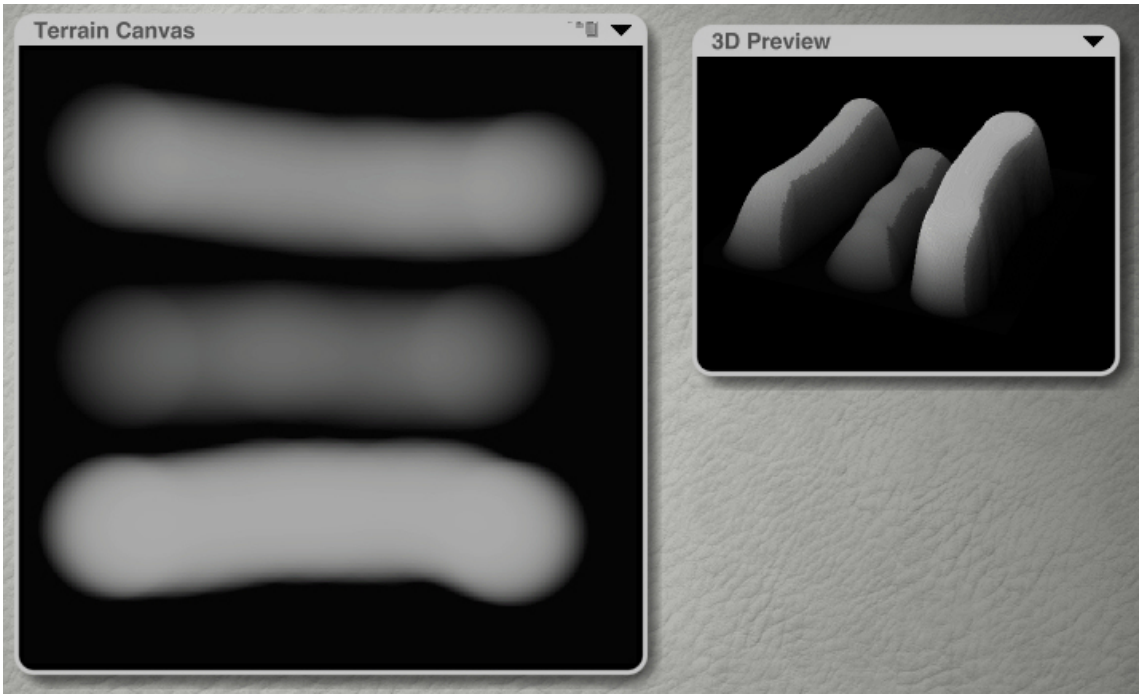
Flow

The Paintbrush Flow Control lets you set the density of the grayscale value being applied by the Paintbrush.

To change the Paintbrush Flow, drag left or right over the Paintbrush Flow Control. Dragging left decreases the flow, while dragging right increases the flow.



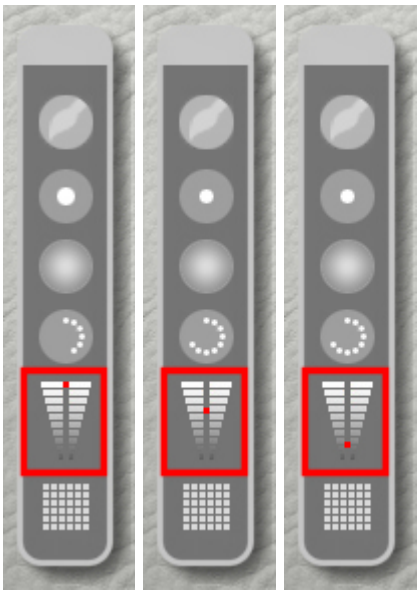
Examples:



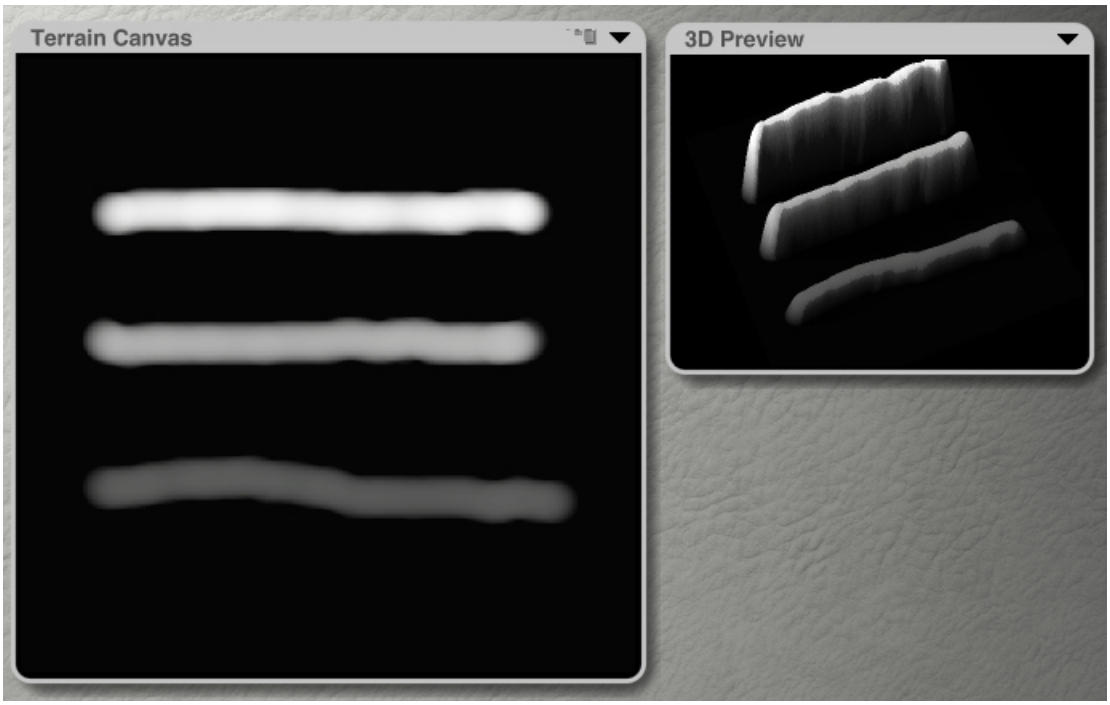
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Level

The Paintbrush Level Control lets you set the grayscale value of the Paintbrush. Darker values produce lower terrain while lighter values produce higher terrains. To change the Paintbrush Level, drag up or down over the Paintbrush Level Control. A small red dot in the middle of the control indicates the current level.



Examples:



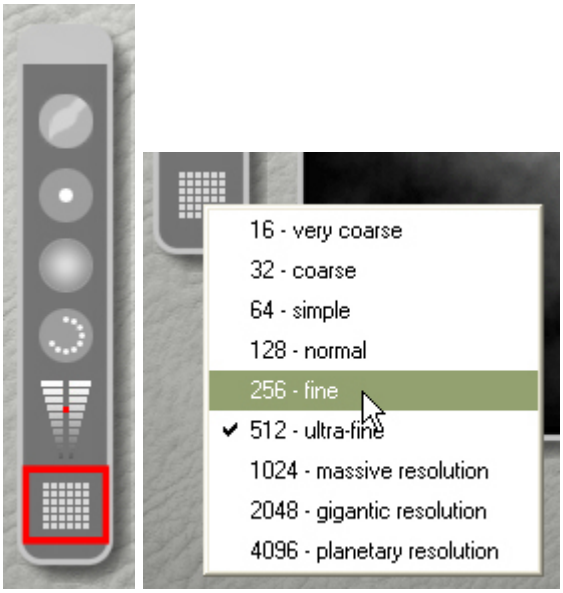
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Grid Selector

The Grid Selector controls the resolution of the grayscale data in the terrain. The terrain's resolution determines the amount of detail in your terrain. The higher the resolution, the more detail appears in your terrain's surface. However, higher resolution values also increase the rendering time for your scene and require more memory.

The highest resolutions should be reserved for terrains that are very close to your camera or where detail is important. For terrains that are far away, or where detail is not so important, lower resolutions are more appropriate.

To set the Terrain resolution using the Grid Selector, click the Grid Selector icon at the bottom of the Paintbrush Controls and choose a resolution from the menu. Brush sizes may appear to vary depending on your resolution, but in fact they remain proportional to the size of the Terrain Canvas.



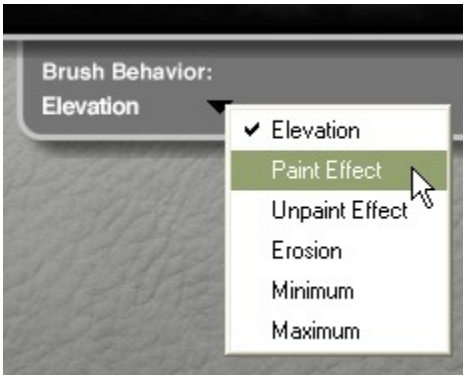
Brush Behaviors

The Paintbrush in the Terrain Editor paints elevations by default, but this is not the only way of painting using the brush. You can also set the brush to paint effects. This lets you apply elevation effects locally, or to increase/decrease existing gray levels in your Terrain Canvas.

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The Brush Behaviors are located at the bottom left of the Terrain Canvas Tool.

To access the Brush Behaviors, click on the triangle icon under Brush Behavior:.



Modifying Brush Behavior

The Opt/Alt key can modify the behavior of the paintbrush on-the-fly.

- In Elevation mode, Opt/Alt inverts the gray level. For example, if you're painting white, holding down Opt/Alt will paint black.
- In Paint Effect mode, the Opt/Alt key will toggle to Unpaint Effect mode.
- Hold down Shift to constrain the pen movements to 45 degree steps. The default is to paint vertical, but with a bit of playing around, you can get it to paint horizontally and diagonally, but how it works is not as consistent as it should be.
    - Click and hold down the mouse on the canvas then press Shift and drag up and down to paint a vertical line.
    - Drag brush horizontally a short distance, then press Shift to continue painting horizontally. Do not let up on the mouse or it will start painting diagonally.
    - Press Shift, then drag from left to right or right to left on the canvas to paint a diagonal line.



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Rendered with edges visible:



Rendered with edges solid:



Painting Elevations

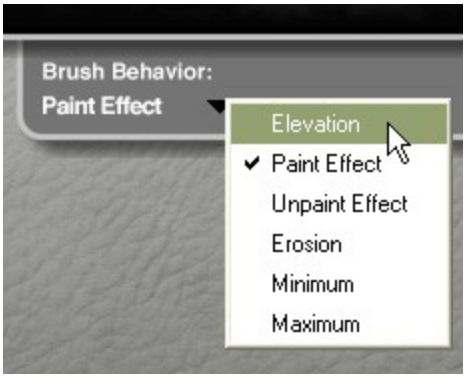
To paint elevations:

1. Click the Menu icon on the Terrain Canvas to bring up the Terrain Canvas Tools.



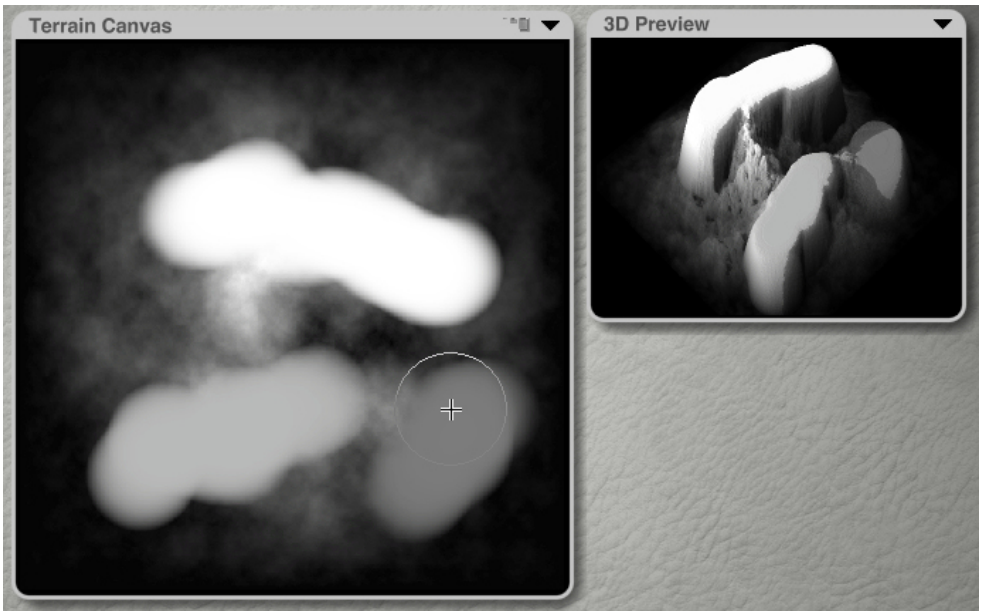
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2. Click the triangle icon below the Brush Behaviors heading and choose Elevation from the menu. The brush paints in shades of gray that are then used to generate altitudes. This is the default brush behavior.



3. Press Opt/Alt and paint on the canvas to invert the gray levels.

Examples:



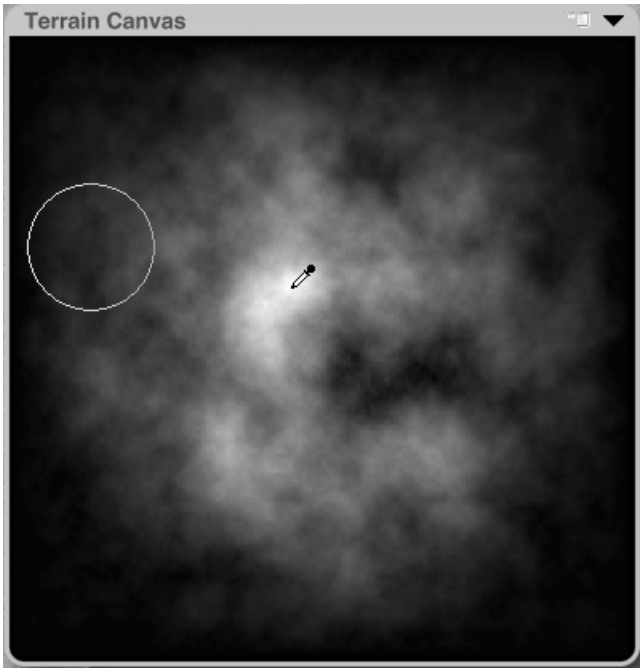
Picking up Gray Levels from the Terrain

While you're painting, you may want to re-create a specific altitude in different parts of the terrain. If you've changed the brush settings, re-creating a specific altitude can be quite difficult. However, using the Height Picker tool, you can quite easily re-create altitudes by picking up gray levels from different parts of your image and applying them to the brush.

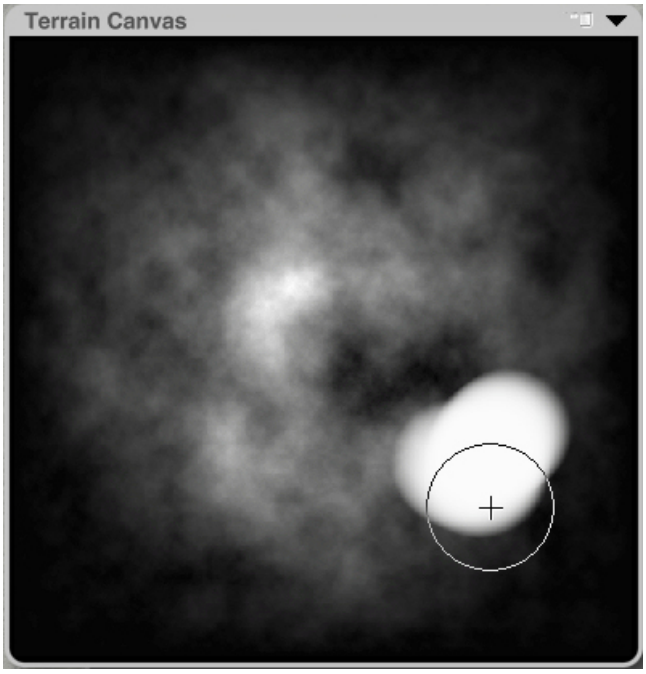
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To pick up gray levels from the terrain image:

1. While holding down the spacebar, move the cursor over the Terrain Canvas and click the desired altitude color. The color is applied to the brush and the Level tool will update to reflect the new color.



2. Drag the brush over a different area of the canvas. The altitude color you picked up is applied to the new area.

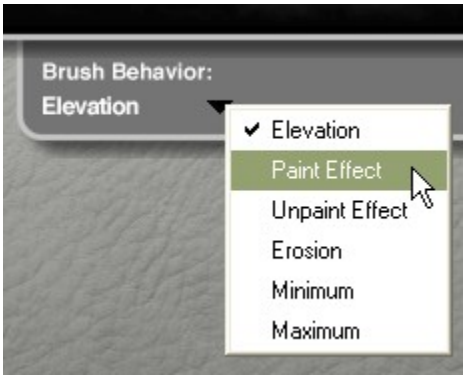


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Paint

To apply an effect locally using the Paint Effect:

1. Click the Menu icon on the Terrain Canvas.
2. Click the triangle icon below the Brush Behaviors heading and choose Paint Effect from the menu.



3. Select a paint level from the Level tool.



4. Click the Elevation tab in the Editing tools palette.



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5. Hold down the Spacebar and click the Elevation effect you want to paint.



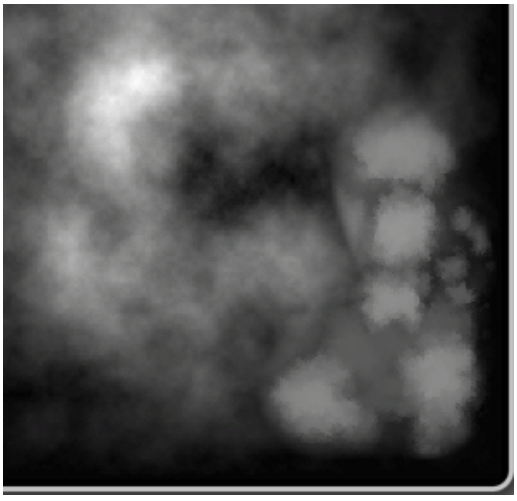
The button next to the effect will turn yellow and the paintbrush will change to a circle with a double-cross in the center.



OR

Click once on the effect you want to use, then press Cmd/Ctrl+Z to undo.

6. Drag the paintbrush over an area of your canvas. The chosen effect will be painted on the canvas.



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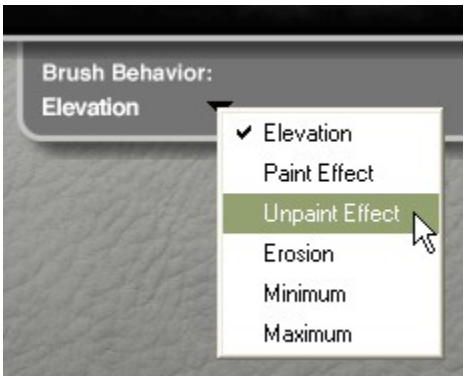
7. Press Opt/Alt and drag on the canvas to switch to the Unpaint Effect.
8. Click the effect button again then press Cmd/Ctrl+Z to undo the last effect and turn off the effect but retain the changes you painted on the terrain.

   Please note that if you turned on the paint effect by clicking on the effect then pressing Cmd/Ctrl+Z, you cannot turn off the paint effect using the above method. Instead, you must either choose another effect or change to a different brush behavior, neither of which will actually turn off the effect, or turn on painting as in step 4 and disable as in step 6.

Unpaint

To remove an effect locally using the Unpaint Effect:

1. Paint an effect on the canvas following the instructions in "Paint."
2. Click the triangle icon below the Brush Behavior heading and choose Unpaint Effect from the menu.



3. Drag the paintbrush over an area of your canvas where you applied an effect locally. The terrain in that area will begin reverting to its original shape.

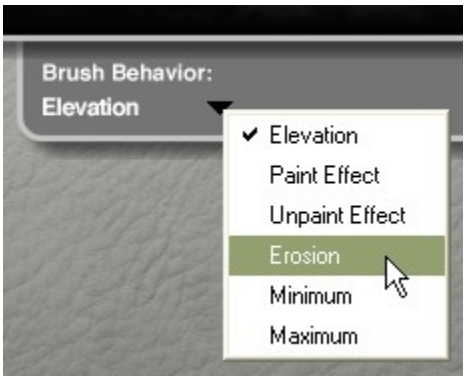
   If you drag over an area where you did not paint an effect, nothing will happen.

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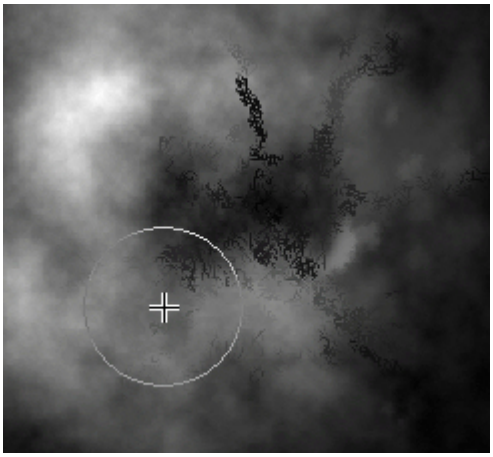
Erode Terrains

To erode areas of your terrain:

1. Click the Menu icon on the Terrain Canvas.
2. Click the triangle icon below the Brush Behaviors heading and choose Erosion from the menu.



3. Drag the paintbrush over the area you want to erode. The paintbrush applies the erosion effect to the area painted over. The erosion effect will increase as you continue to paint over an area.



Minimum

The Minimum brush behavior uses the current gray level and darkens levels above that level to match the current level. Values below the current level setting are untouched.

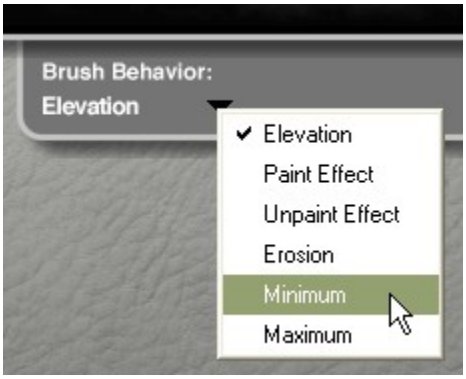
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To darken gray levels use the Minimum effect:

1. Select a paint level from the Level tool.



2. Click the Menu icon on the Terrain Canvas.
3. Click the triangle icon below the Brush Behavior heading and choose Minimum from the menu.



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4. Drag the paintbrush over an area you want to darken.



Maximum

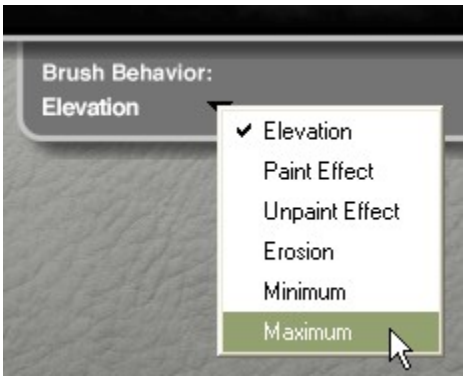
To lighten gray levels using the Maximum effect:

1. Select a paint level from the Level tool.

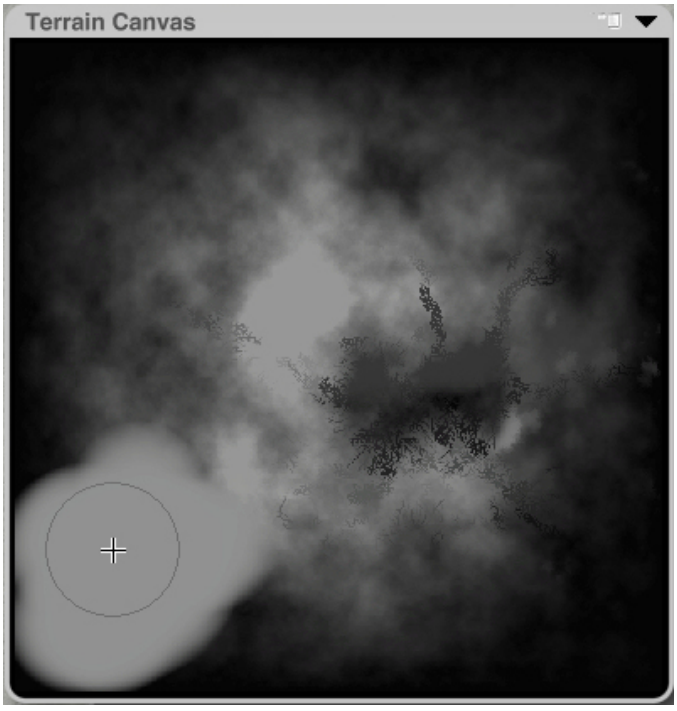


2. Click the Menu icon on the Terrain Canvas.

3. Click the triangle icon below the Brush Behavior heading and choose Maximum from the menu.



4. Drag the paintbrush over an area you want to lighten. In this mode, gray levels in your canvas that are below the current gray level are lightened to match the current level. Values above the current level setting are untouched.

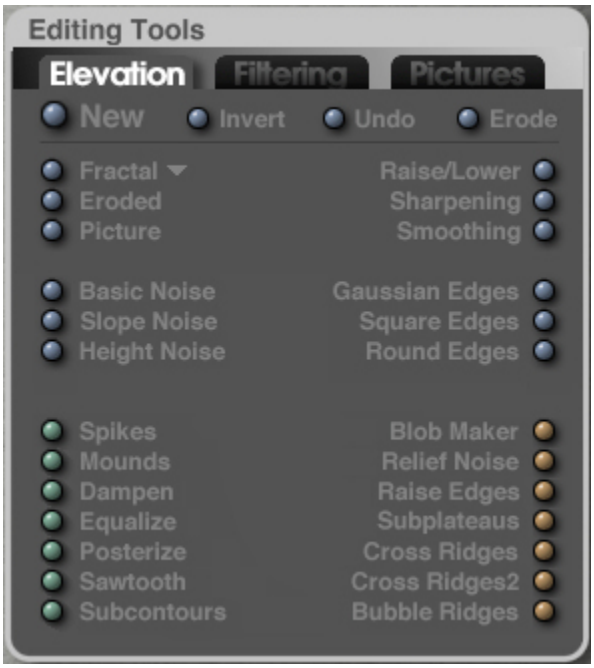


Editing Tools

The Editing Tools let you generate and edit the terrain's height map and are organized into three tabs: Elevation: contains tools for generating terrains, and applying effects. Filtering: contains tools for fine-tuning the gray levels in your Terrain Canvas. Pictures: contains tools for importing a picture to use as a height map.

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To access a tab, click the tab label. The tools associated with that tab move to the front. By default, the Elevation tools are in front.



Most of the tools in the Terrain Editor are displayed as control dots. These dots let you apply an effect or operation to the terrain gradually or at 100%.

To apply an editing tool to the Terrain Canvas:

1. Move the cursor over the tool you want to use.
2. Do one of the following:
    - To apply an effect or operation at full strength, click the control dot once. Clicking a tool more than once applies the effect in 100% increments.
    - To apply an effect gradually, click and drag left or right over the control dot.

Elevation Tab

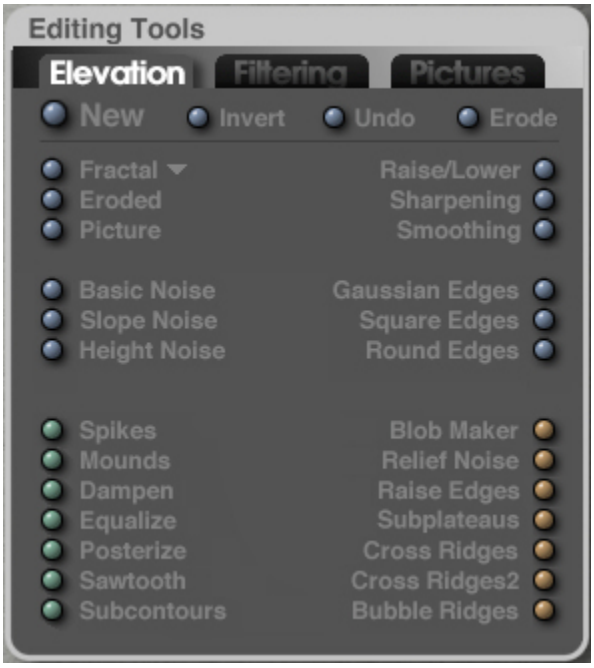
The Elevation Tools are preset effects that apply calculations to your Terrain Canvas.

The tools are divided into three categories on the Elevation tab along with general tools along the top:

- General Tools: create new grayscale image, invert, undo, and erode
    - Starting a New Terrain
    - Inverting Terrains
    - Undoing Operations
    - Eroding Terrains

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- Source Generators: create basic terrain surfaces.
- Basic Tools: edit the overall shape of your terrain.
- Special Effects: add realism to your terrain's surface.



You can create a terrain by combining effects. For example, you can start off creating a basic terrain using the Fractal tool, then create realistic ridges by applying the Erode tool. From there you can fine-tune your terrain by applying Spikes, creating Mounds or adding Cross Ridges. Finally, you can define the basic shape of your terrain by blurring the edges.

To use an elevation tool:

1. Click the Elevation tab.
2. Click an Effect tool. 100% of the effect is applied to the Terrain Canvas.
3. Click the tool again to increase the intensity of the effect.

Most elevation effects can also be applied gradually.

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To apply an elevation effect gradually:

1. Move the pointer over an Elevation tool. The pointer changes to a two-headed arrow.
2. Click and drag to the left to increase the effect or click and drag to the right to decrease it.



Starting a New Terrain

By default, when you open the Terrain Editor, the terrain you selected in the Working window appears in the Terrain Canvas. If you want to begin with a new, flat Terrain Canvas, use the New button.

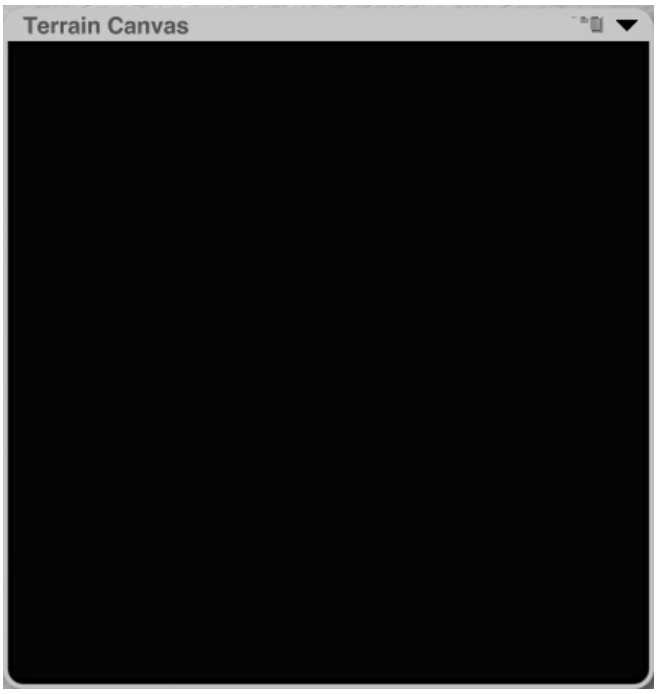
To create a new Terrain Canvas:

1. Click the Elevation tab.
2. Either click the New button, or press Cmd/Ctrl+N.



A flat black image appears in the Terrain Canvas.

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To gradually flatten your terrain, click and drag to the right over the New button.

The existing Terrain Canvas gradually fades to black. Many of the effects in the Elevation tab require grayscale values. If you apply these effects to a black map they may have no effect.

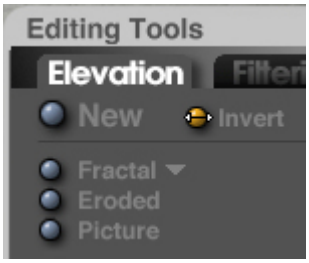
To reset your terrain, hold down Ctrl and click the New button. The Terrain Canvas is reset to the terrain that appeared when you first opened the editor.

Invert

Since the Terrain Editor uses brightness to determine altitude, you can change mountains into canyons by inverting the black and white values in your image.

To invert your terrain image:

1. Click the Elevation tab.
2. Click the Invert button, or press Cmd/Ctrl+I.

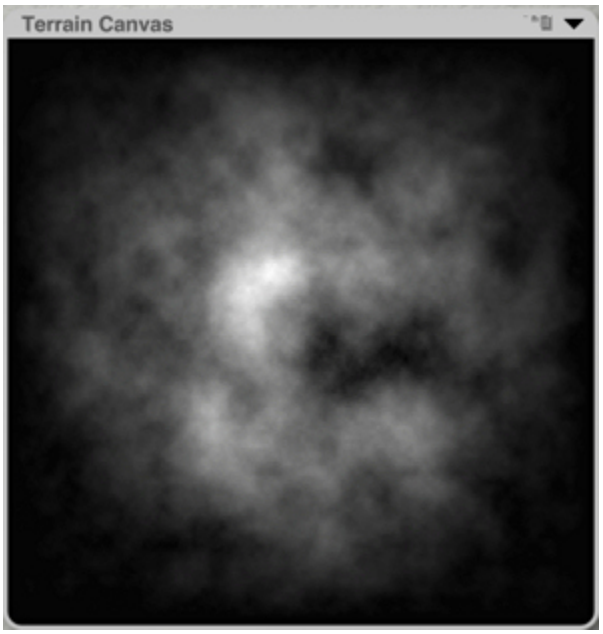


All the black areas of your image become white and white areas become black.

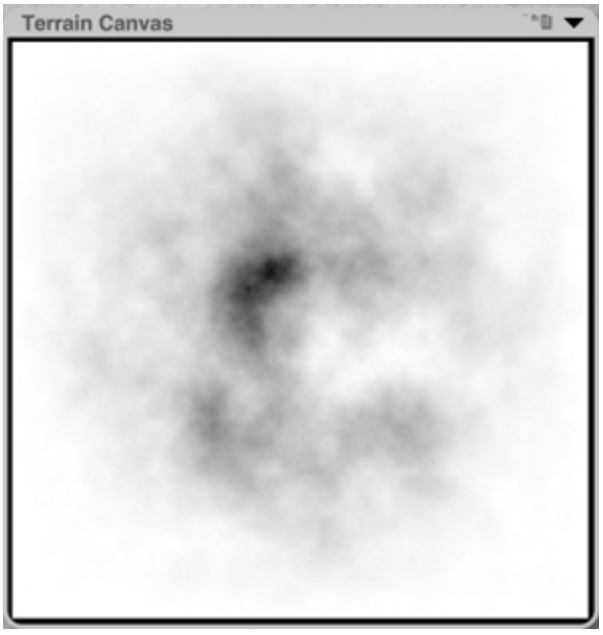
©2007 DAZ 3D, Inc.

To gradually invert your terrain image click and drag to the right over the Invert button. The black areas in the Terrain Canvas progressively turn white.

Original terrain:



Inverted terrain:

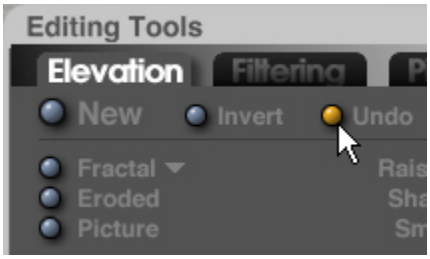


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Undoing Operations

You can reverse any effect you apply to your terrain using the Undo button. You can toggle between Undo and Redo by clicking the Undo button repeatedly.

To undo operations in the Terrain Editor, on the Elevation tab, click the Undo button, or press Cmd/Ctrl+Z. The last operation you applied is undone.



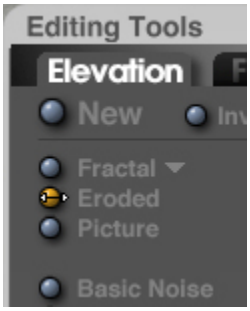
Eroded

Erosion simulates the effects of water erosion on your terrain objects. The calculations simulate rainfall and runoff based on the shades of gray progressing towards black. This effect works best on terrains that have large sloping areas.

The Eroded button simulates the effects of erosion over relatively short periods of time, like decades. To simulate the effects of centuries of erosion, use the Erode tool at the top of the Elevation tab.

To erode terrains:

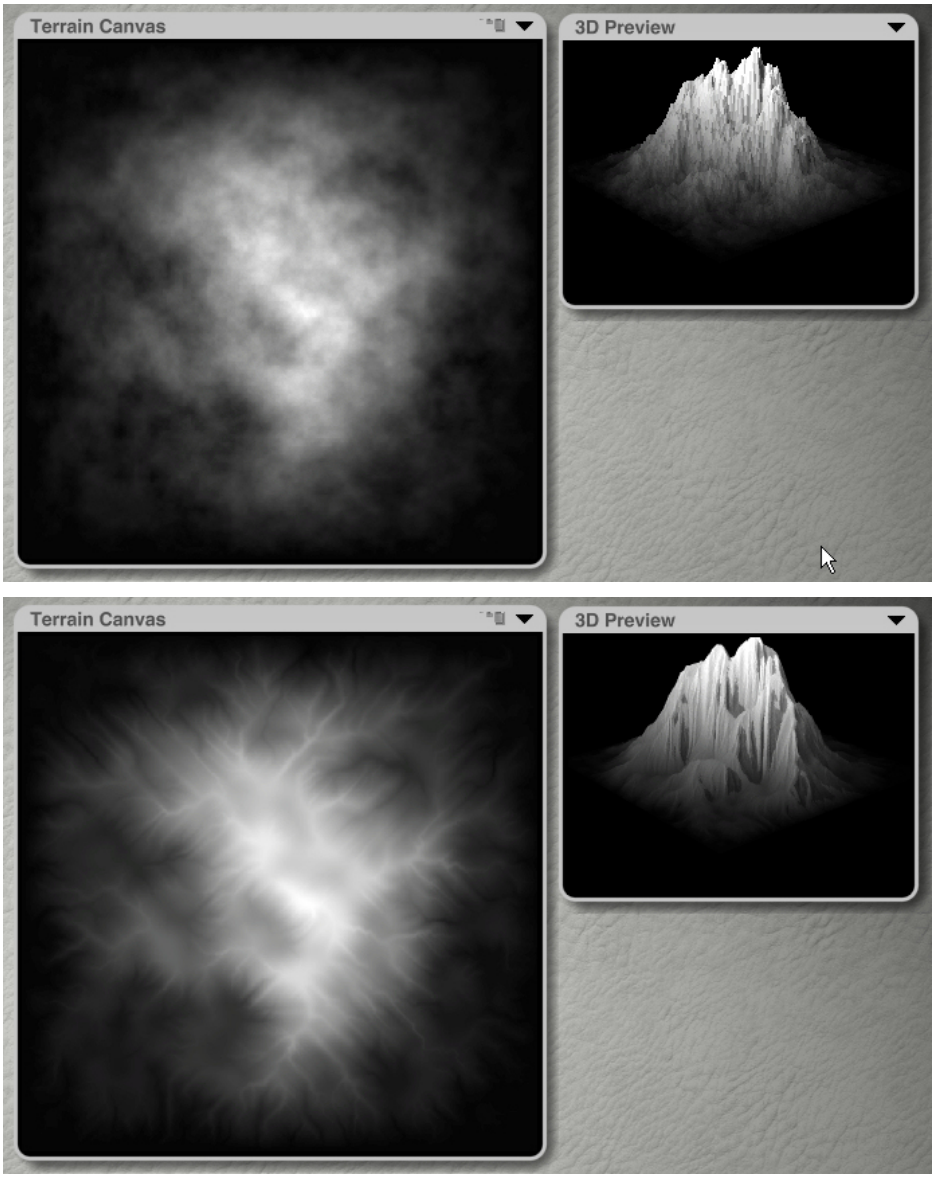
1. Click the Elevation tab.
2. Click the Erode button.



3. To gradually apply erosion, click and drag while the pointer is over the Erode button.

The upper image is what a terrain looks like before you apply the Erode effect. Notice that this image map has sloping areas that will make the erode effect more visible. The lower image is the same terrain after the Erode effect is applied. You can see how the surface now contains tracks created by running water.

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Source Generators

The Source Generators create basic terrain surfaces. They create the basis of your terrain and should be the first options used when creating your terrain.

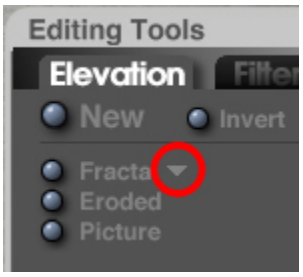
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Fractal

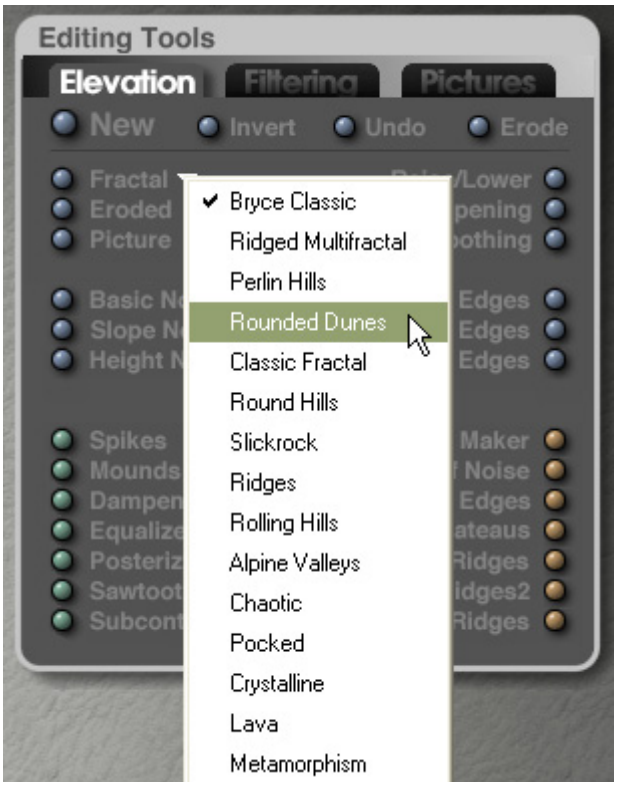
The Fractal tool creates terrains based on fractal patterns. It can be applied to an existing image and it can be applied gradually.

To use the fractal tool:

1. Click the Elevation tab.
2. Left-click on the triangle icon next to the Fractal effect.



3. Select a fractal type from the menu that comes up.

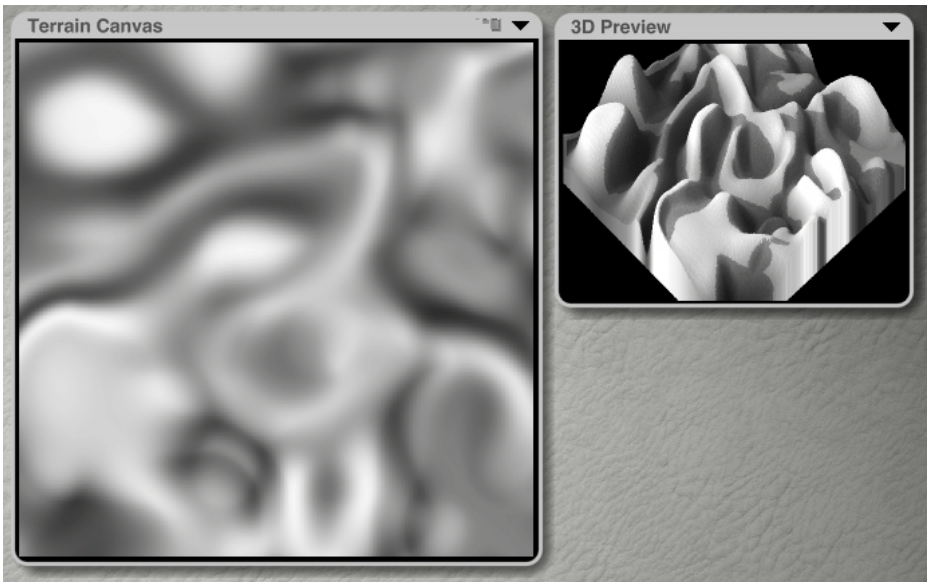


See "Fractal Types" for examples of each fractal type.

4. Click on the Fractal effect button to apply the effect 100% or drag right slowly to apply the effect in increments.

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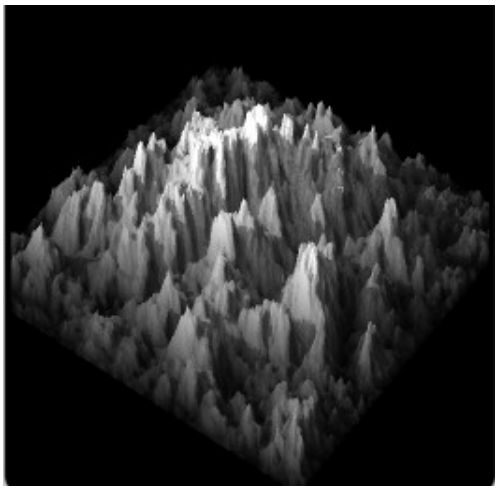
5. If you don't like the effect, Undo the change or click the Fractal effect button again to see a new variation of the selected fractal type.



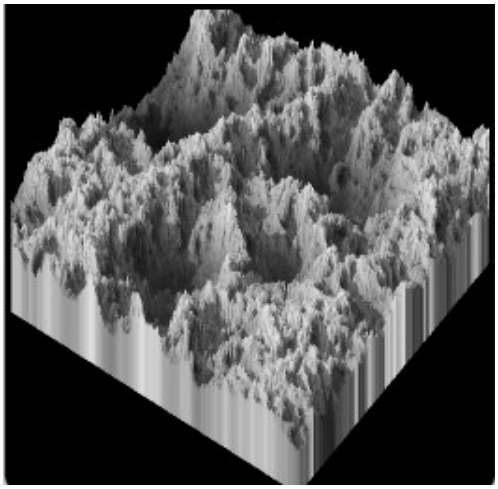
Fractal Types

Below are examples of the different fractal types available. Each type can produce multiple variations so the images below are just one example of many available for each type.

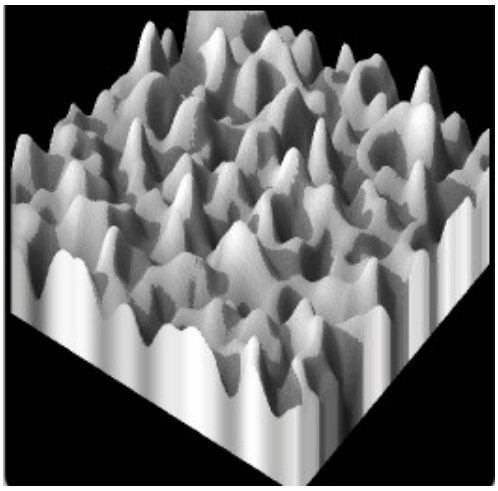
Bryce Classic



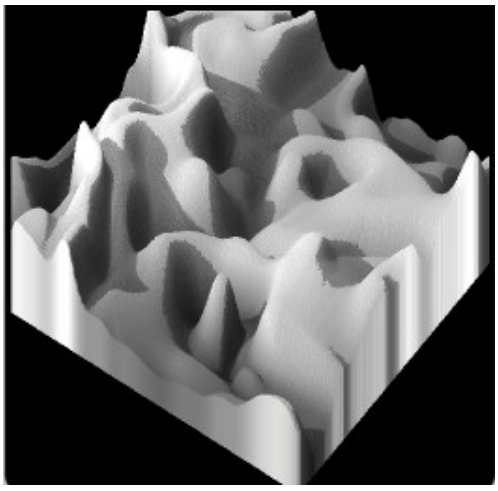
Ridged Multifractal



Perlin Hills

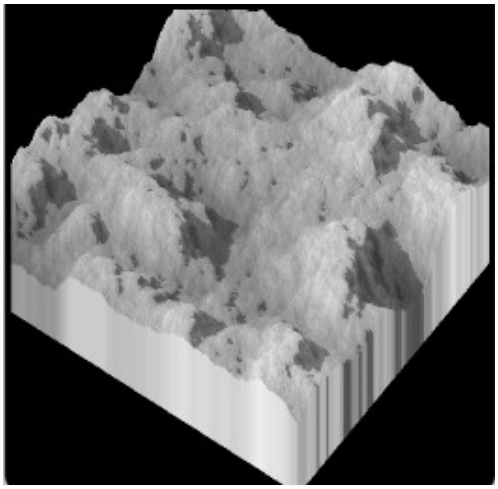


Rounded Dunes

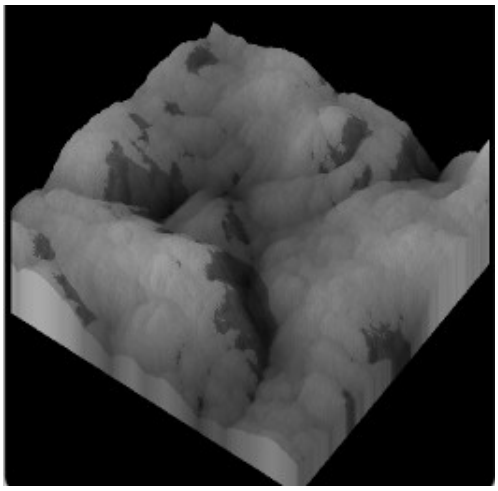


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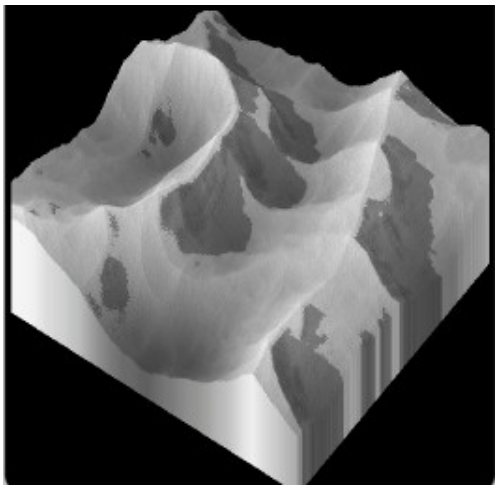
Classic Fractal



Round Hills

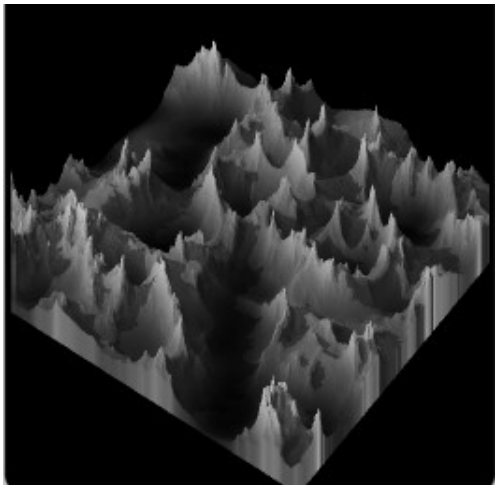


Slick Rock

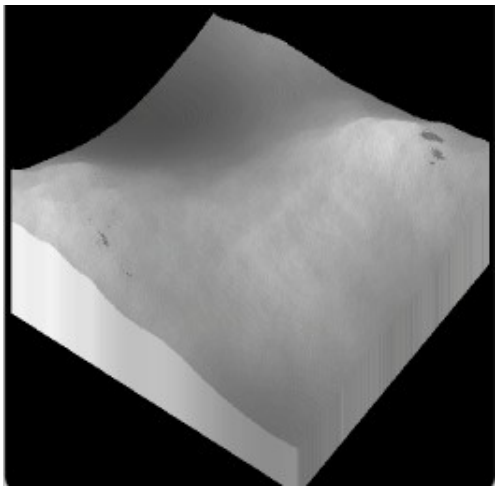


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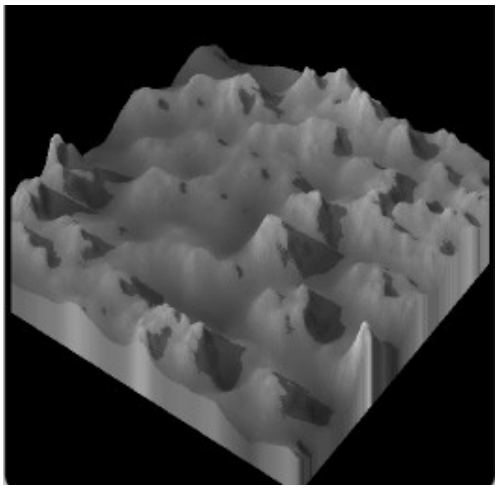
Ridges



Rolling Hills

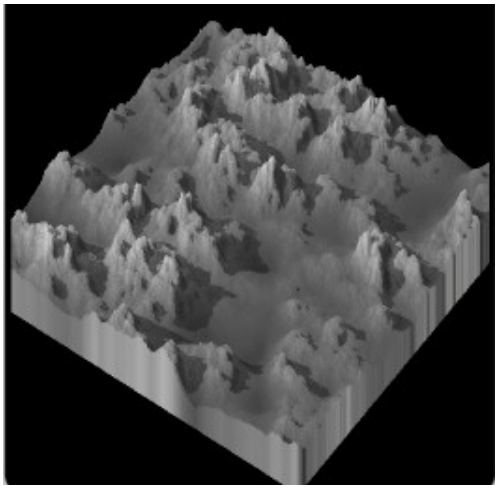


Alpine Valleys

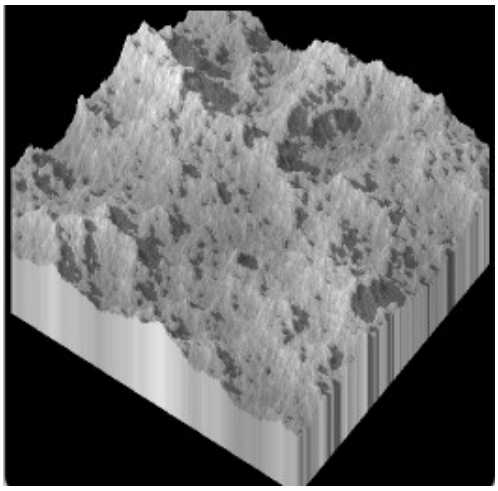


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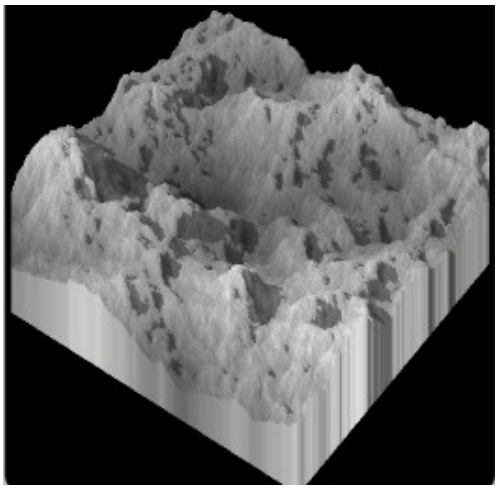
Chaotic



Pocked

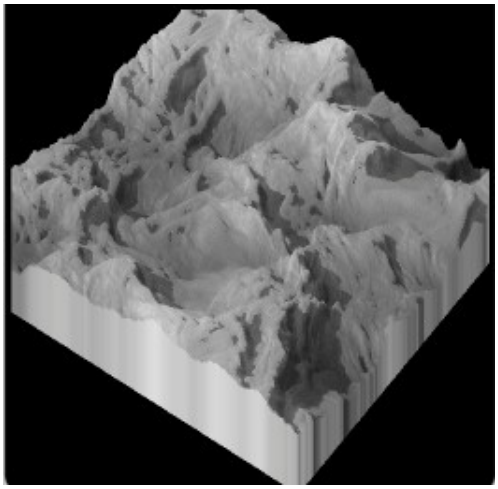


Crystalline

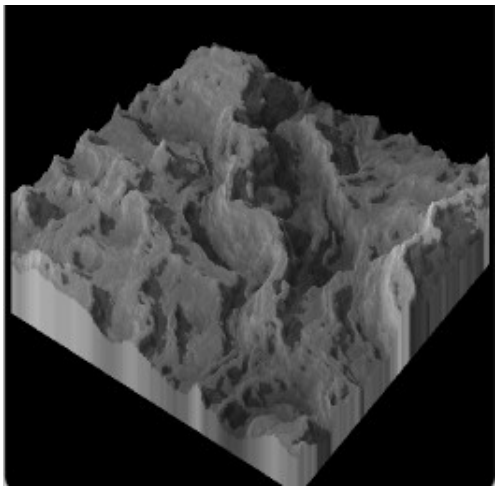


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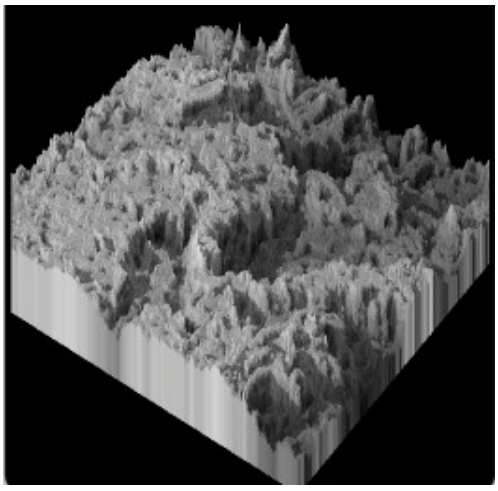
Lava



Metamorphism

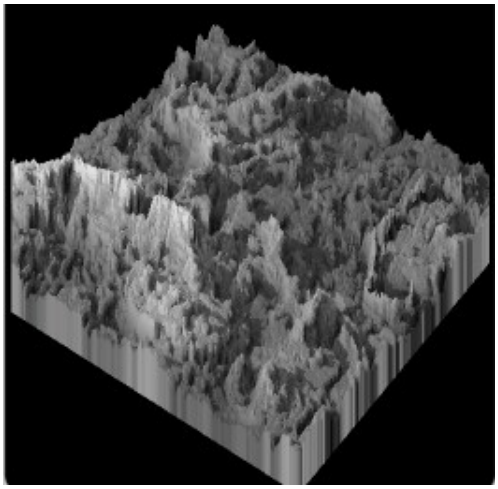


Metamorphised

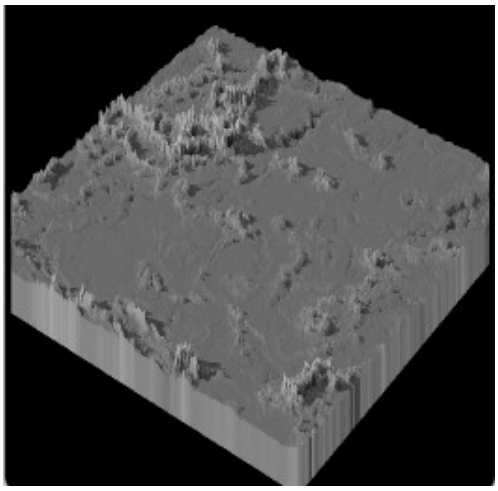


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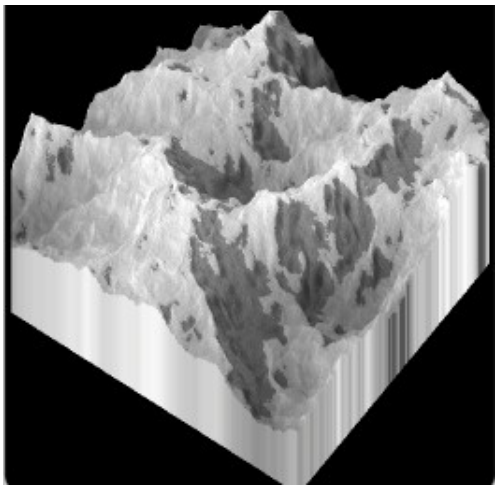
Fractured



Weathered Dikes

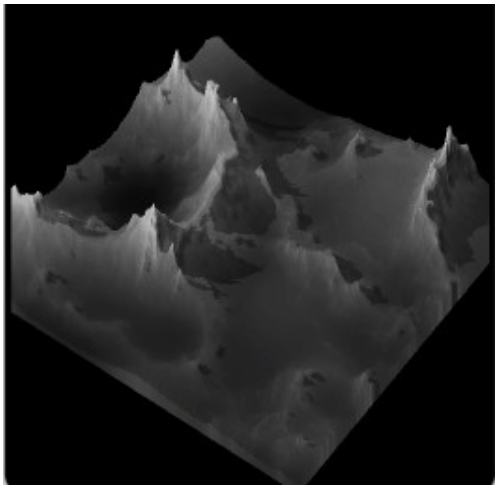


Warped Slickrock

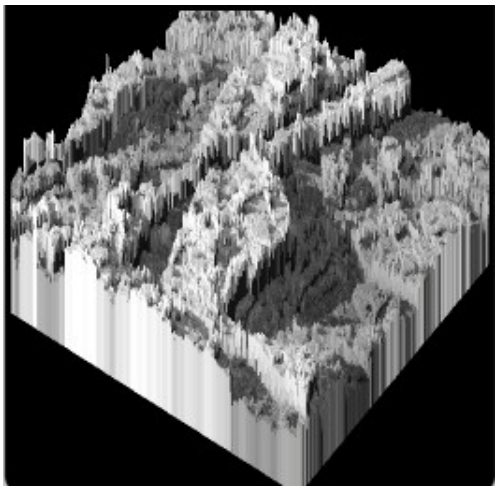


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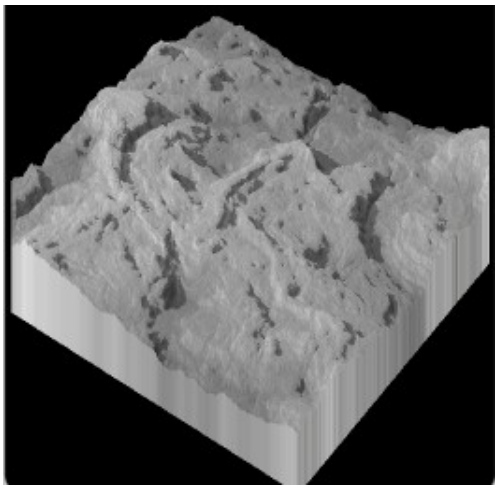
Warped Ridges



Zorch

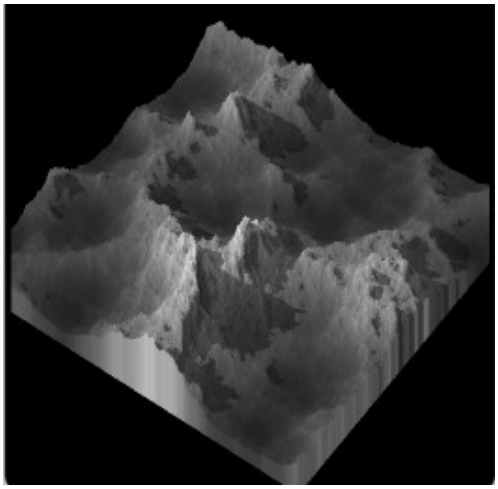


Warped Zorch

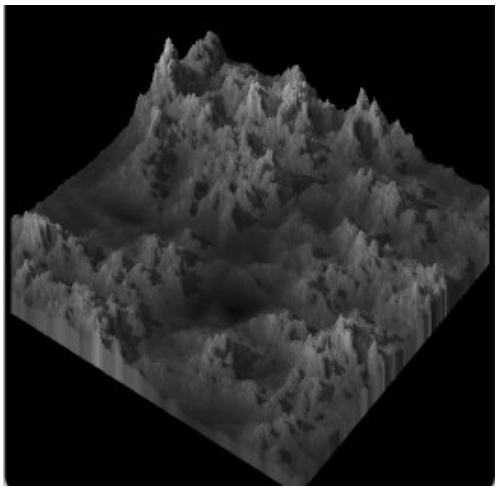


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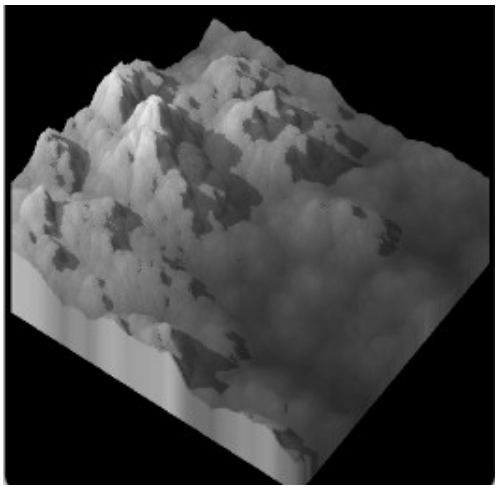
Mordor



Shattered Hills

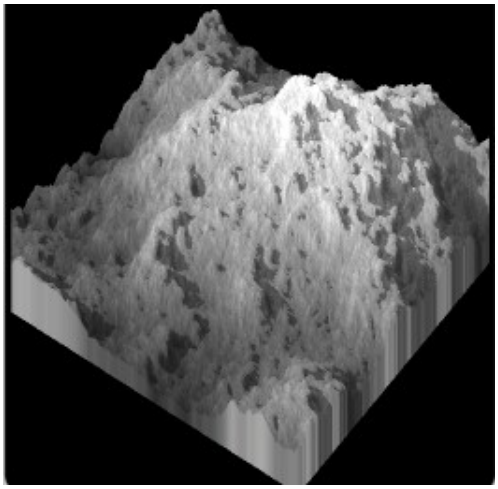


Cauliflower Hills

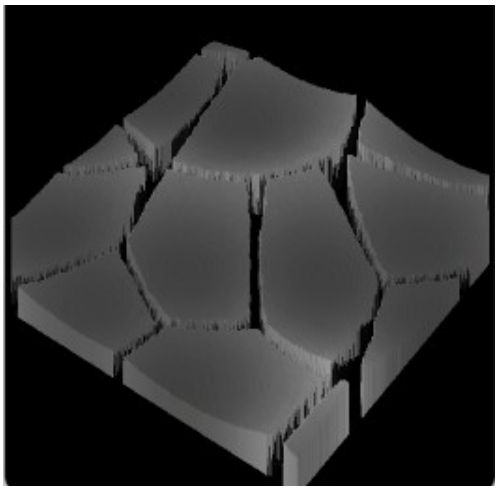


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Planet X



Mud Cracks



Random Generators

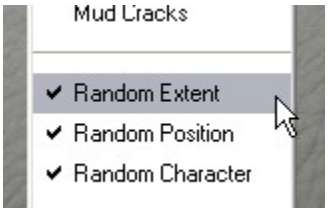
Three options that are rarely used in the Terrain Editor (but should be used more often) are the Random Generators:

- Random Extent which deals with how much surface the terrain extends over or the scale of the terrain's features
- Random Position which deals with the position of the terrain within the entire "fractal terrain universe"
- Random Character which deals with the look or character of the terrain

The Random Generators control the randomness of the terrain, so deselecting any one or more of them means that you turn off the randomness of that option.

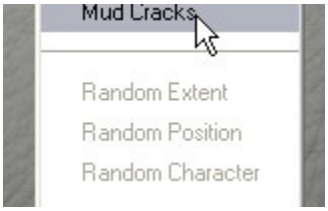
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To access these options, click on the triangle option next to Fractal and select any fractal type except for Bryce Classic.



The options will be active and enabled near the bottom of the menu.

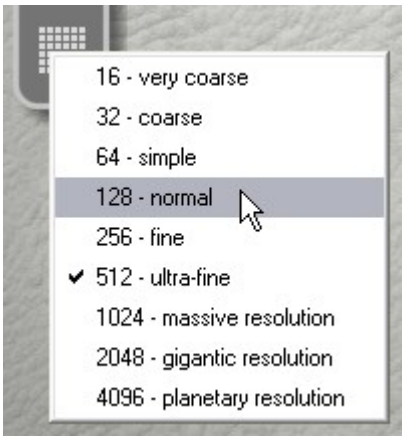
If Bryce Classic is selected, these options will be greyed out and not available.



So, if these options determine the randomness of the terrain extent, position, and character, then what good are they? Basically, if you find a terrain that you like the look of, you can turn off the options so that the feature you like isn't changed.

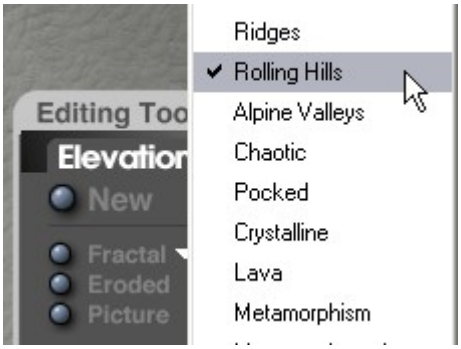
To take advantage of the Random Generators:

1. Create a new terrain and enter the Terrain Editor.
2. Set the resolution to 128. This allows you to get results more quickly.

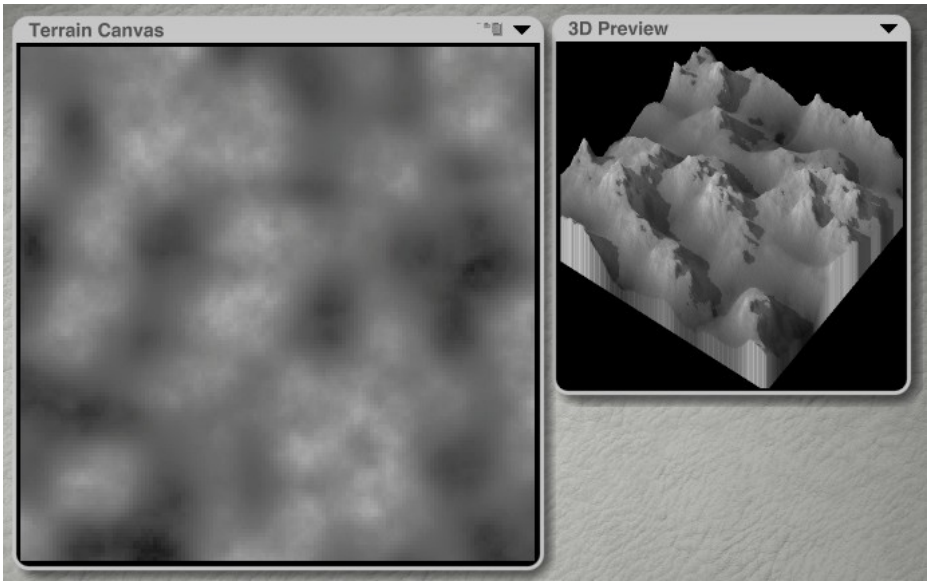


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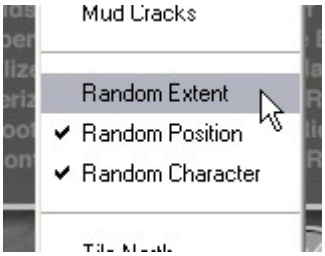
3. Select any fractal type except for Bryce Classic.



4. Click on the Fractal button until you find a terrain that has a pleasing scale to the features.

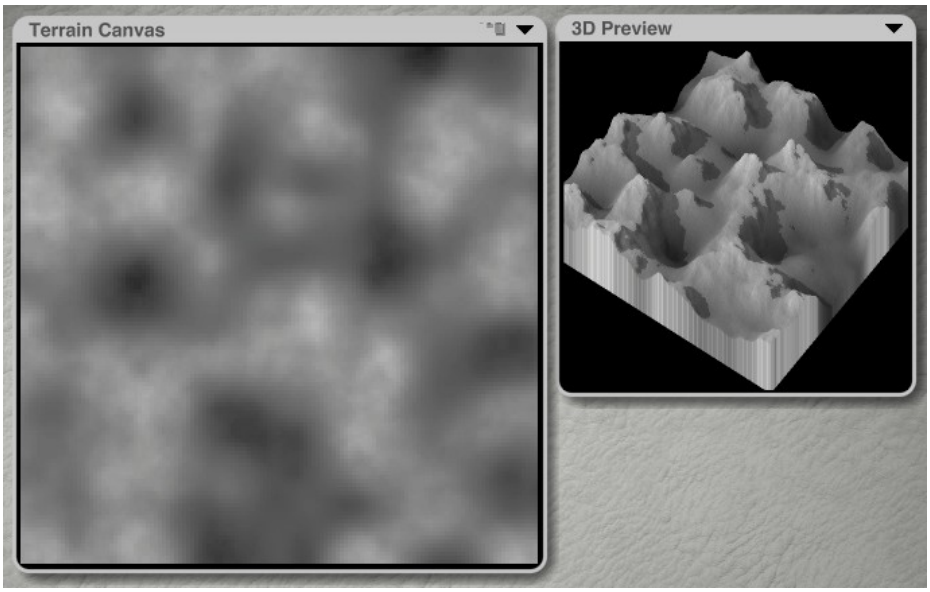


5. Bring up the fractal menu and deselect Random Extent. Since we like the scale of the terrain, we want to keep the same scale as we continue.

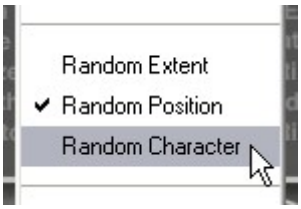


6. Click on the Fractal button again. Notice that even though the terrain changes, the overall scale remains the same.
7. Continue clicking on the Fractal button if you would like to see what else comes up.

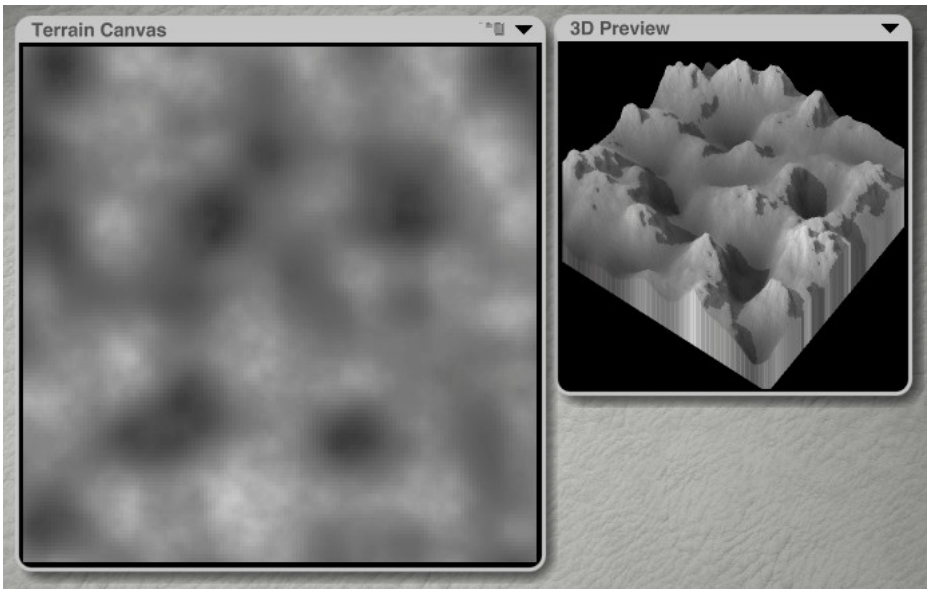
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8. Once you have a terrain that you like the look of, deselect Random Character so the terrain retains the look you like.

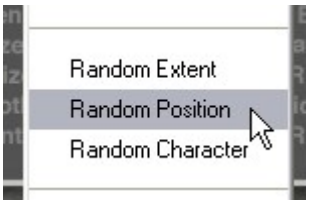


9. Click the Fractal button and notice that even though the terrain changes, the basic look of the terrain remains the same.

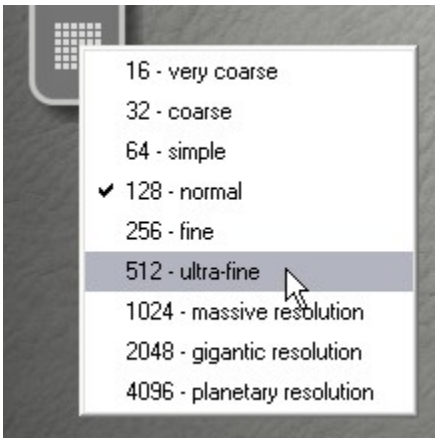


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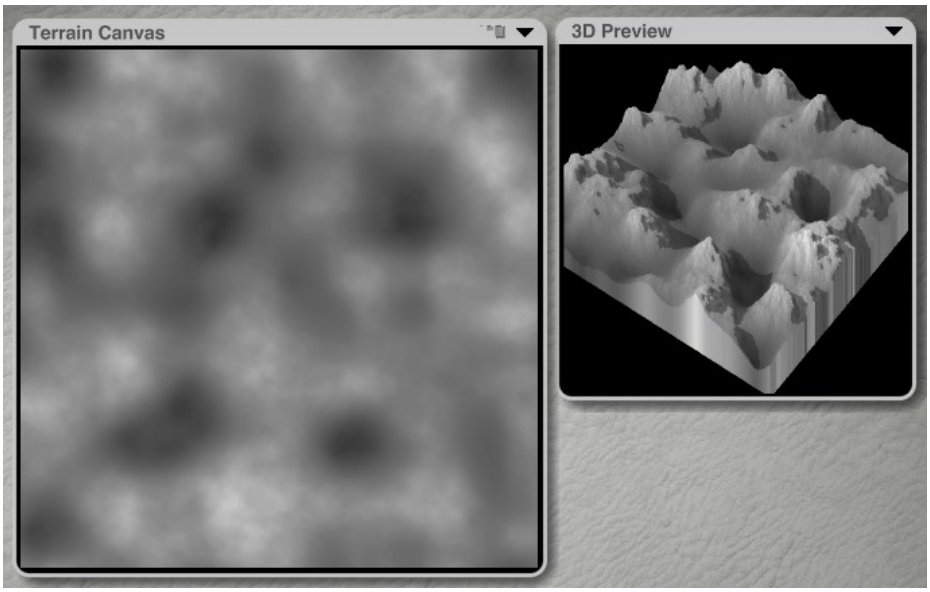
10. Once you have a terrain that you're happy with, deselect Random Position as well.



11. Set the resolution to 512 or larger.



12. If you will be using the terrain in a larger tiled terrain group, click on the Fractal button one more time to redraw the terrain at the selected resolution. This is needed when tiling to ensure that the terrain matches up exactly with the other terrains.



13. Exit the Terrain Editor. To use this terrain for tiling, continue to the section on "Tiling Terrains."

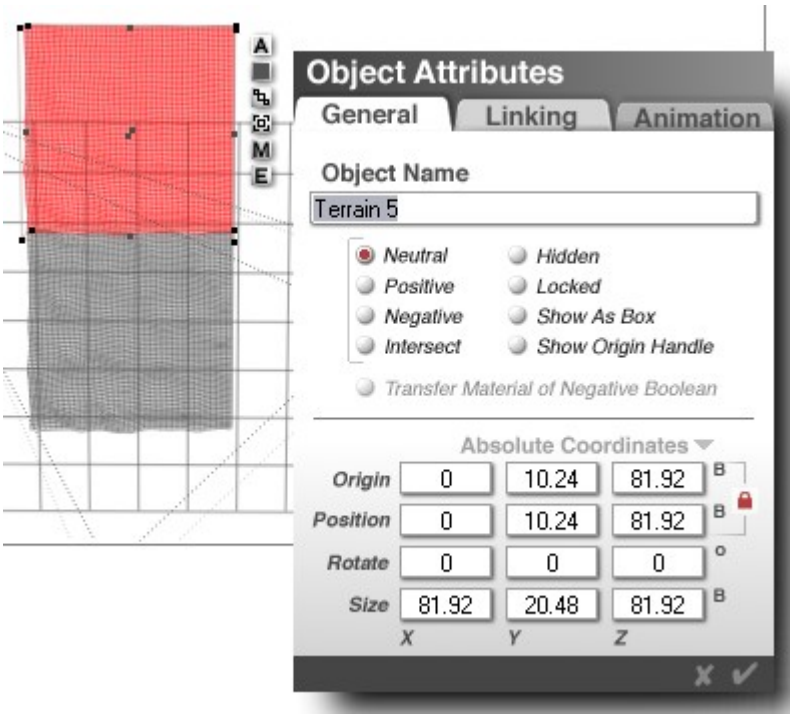
Tiling Terrains

Tiling Terrains allows you to generate a terrain, then tile "copies" of the terrain around the working window to create a larger terrain with no visible seams. You can tile terrains to the North, South, East, and West.

To tile terrains:

1. Build a new terrain following the instructions for the "Random Generators."

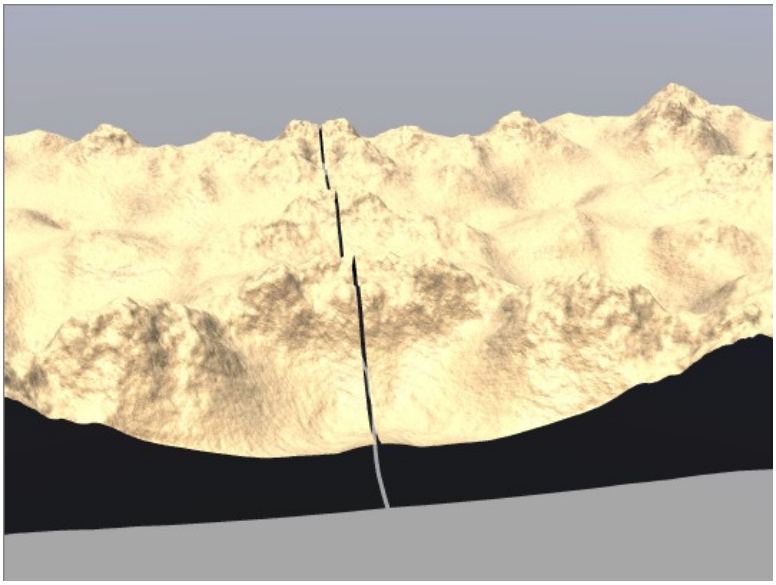
   Note: Tiling terrains does not work for the Bryce Classic fractal terrain.
2. Exit the Terrain Editor.
3. Once back in the working window, press Cmd/Ctrl+D to duplicate the terrain.
4. With the duplicate terrain selected, press Shift+Up Arrow eight (8) times to move the terrain up to the North. You can also go into the Object Attributes dialog and enter the terrain size into the Z-Position field to move it up the same amount as the terrain size. If you've resized the terrain, you'll need to use the Object Attributes dialog to move the terrain up.



5. With the terrain still selected, go back into the Terrain Editor, make sure that all the Random Generators are deselected and select Tile North.

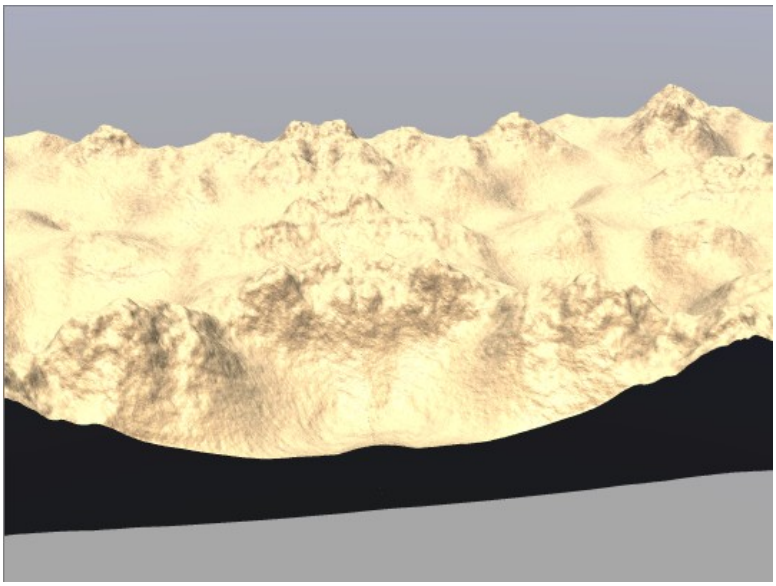


6. Click on the Fractal button.
7. Exit the Terrain Editor.
8. Render and you should see the terrains matching up at the seam.



9. If you notice a slight gap between the two terrains, nudge the terrain back down a smidge by pressing Opt/Alt+Down Arrow key three or four times until the edges meet.

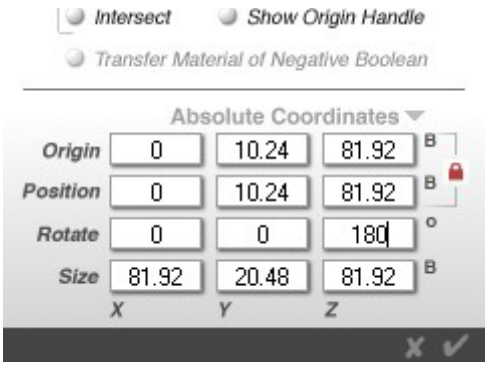
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10. Select the new terrain, duplicate and move North, East, or South.
11. Enter the Terrain Editor and choose to Tile based on the direction you moved the terrain and click on the Fractal button.
12. Repeat as needed, making sure that you select the terrain next to the new location. For example, if you move a terrain East and then want to go South, make sure you select the terrain you just moved. If you want to go West or South from the original terrain, select the original terrain, etc.

Caveat: When the terrain has been manually sculpted using the brush tool or by importing an image, the tiling options won't work since clicking on the Fractal button will generate a fractal terrain overwriting the sculpted terrain. In this case, you can manually "tile" the terrain by doing the following:

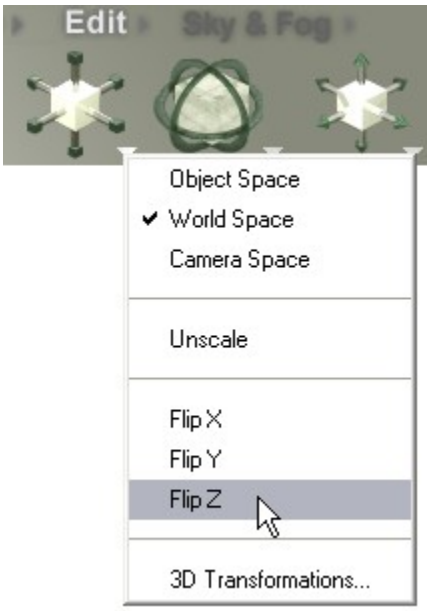
1. After moving the terrain to the North, access the Object Atrributes and enter 180 in the Z-Rotate field to rotate the terrain around 180° on the Z-axis.



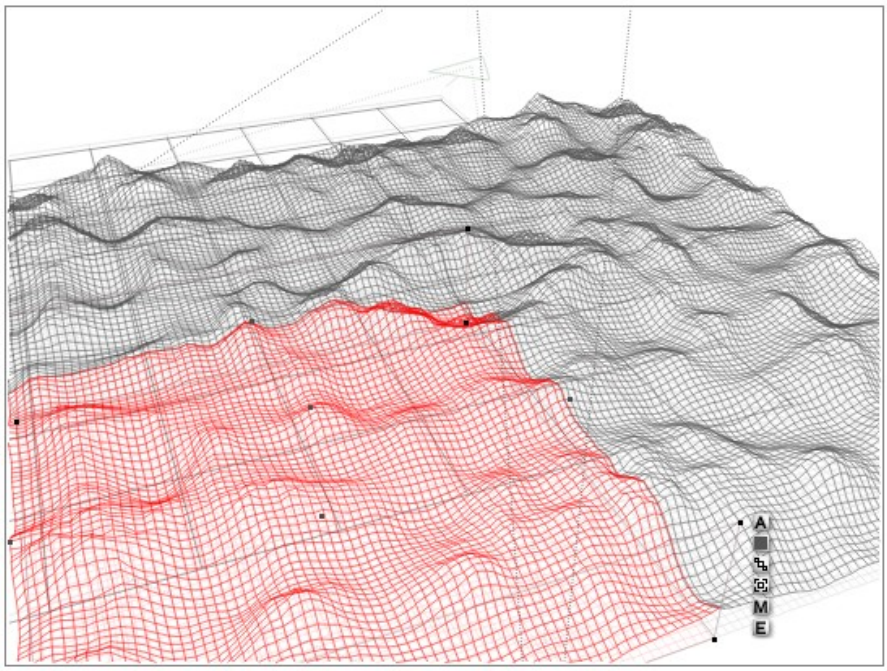
2. Click on the OK icon to close the Terrain Editor.

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3. Click on the triangle icon under the Resize tool and choose Flip from the menu then nudge the terrain down as in step 7 above.



4. Duplicate the second terrain and move it right, or to the East, by pressing Shift+Right Arrow eight (8) times, then selecting Tile East from the Terrain Editor (deselect Tile North). If that doesn't work, flip the terrain on the X-axis, then nudge it into place next to the second terrain.
5. Repeat by duplicating the third terrain, moving it down, and Tiling South (or flipping on the Z-axis).



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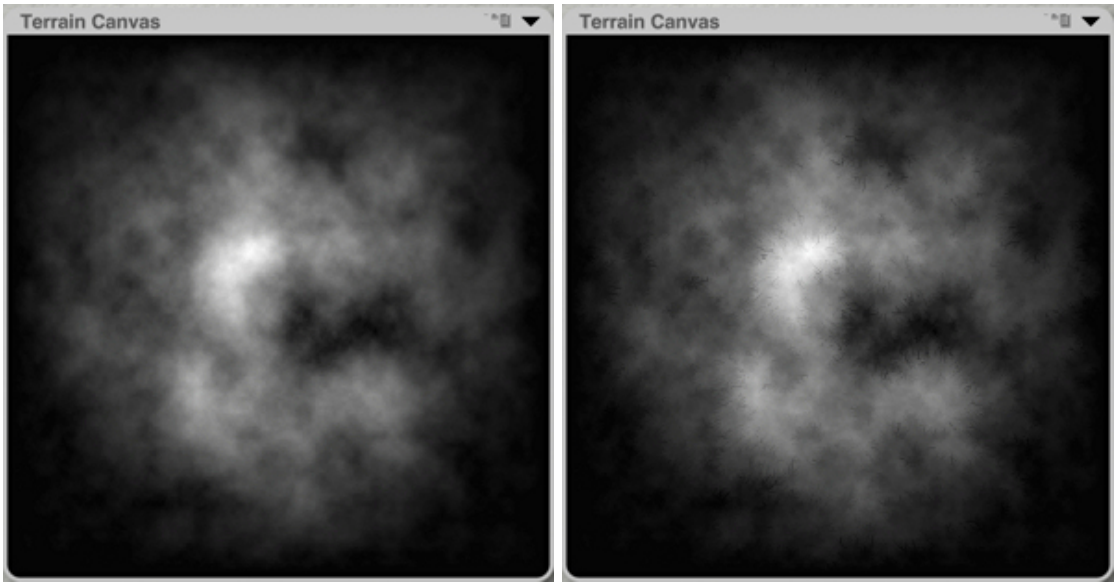
Erode

This tool applies natural erosion to your terrain. It can be applied to either a blank image or an existing image. You can also gradually apply erosion to an image. The Eroded tool is a more intense version of the Erode tool. Notice that when animating this type of terrain, material is actually added to the terrain, not removed from it as you might expect.



To erode the terrain, click on the Erode button. You may need to click several times to get a noticeable effect, but the effect is much sharper than if you used the Eroded tool.

Original terrain vs Eroded terrain:



Picture

This tool creates terrains from imported images. When you click this tool, the Open dialog appears. You can use this dialog to locate and load a picture to use as a Terrain Canvas.

Refer to the "Pictures Editor" for more information on loading pictures.

Using this tool you can import an image map created in another application like Painter or Photoshop.

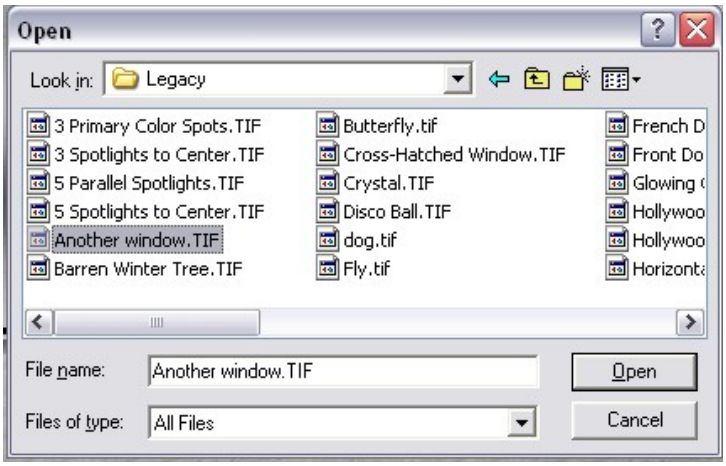
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To load a picture to use as a terrain:

1. Click on the Picture button.



2. The Open dialog will come up. Locate and select the picture you want to use in the Terrain Editor then click on Open.



The image will immediately be applied to the terrain.



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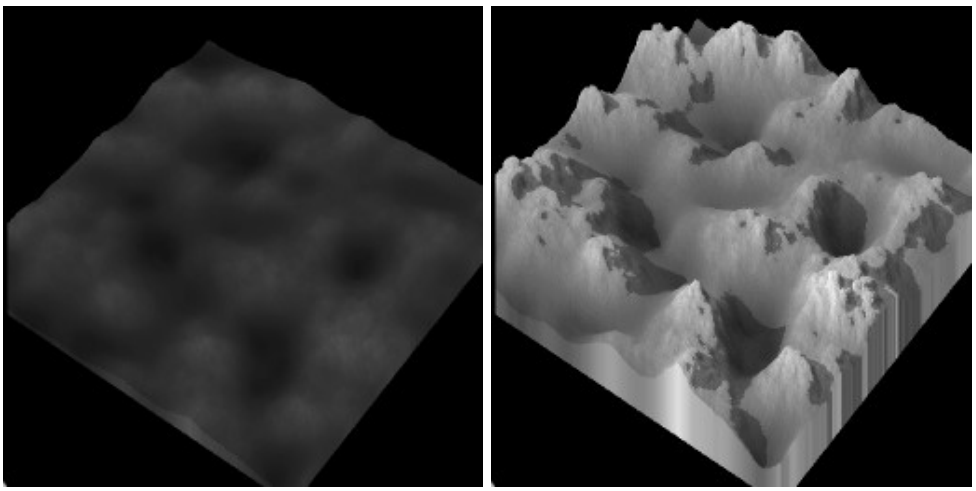
Raise/Lower

This tool adjusts the brightness of your Terrain Canvas.

To raise or lower the terrain, click and drag to the right to lower your height map or click and drag to the left to raise it. Single clicks gradually lower the map.

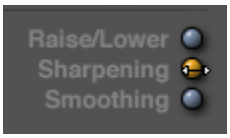


Examples:



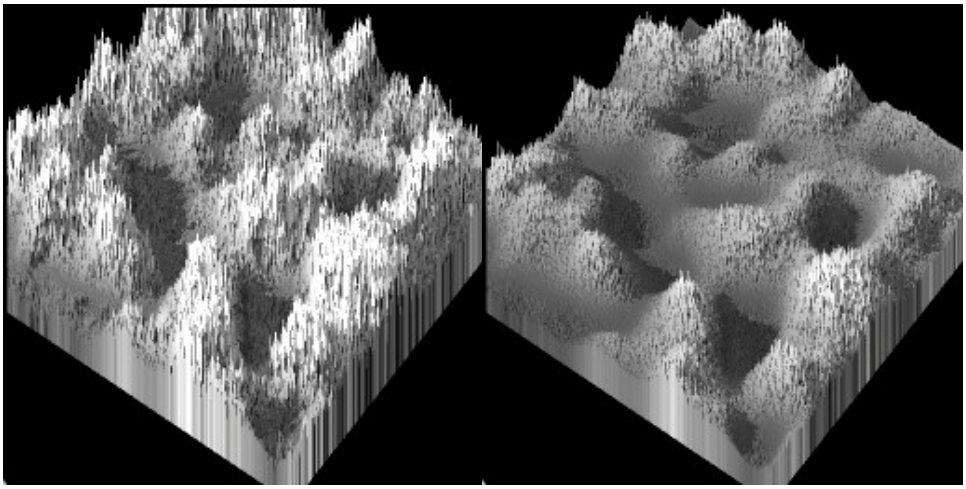
Sharpening

This tool sharpens the gray values in your Terrain Canvas. Click and drag left to increase sharpening and right to decrease it.



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Examples:



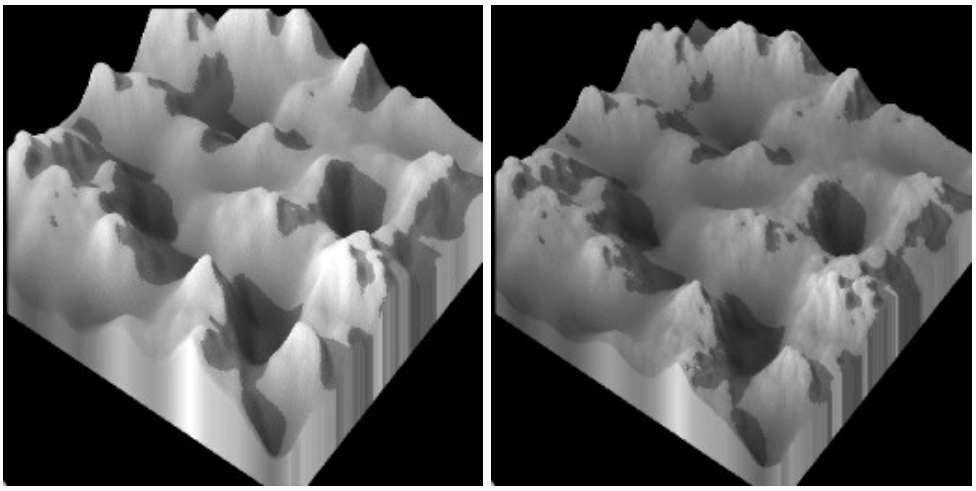
Smoothing

This tool blurs the Terrain Canvas. Click and drag right to decrease the blurring effect or left to increase it.



Smoothing is especially effective prior to using the Erode button, since the Erode algorithm works best when there are shades of gray in an image. If your canvas has too many sharp black to white transitions, the Erode may not be as effective.

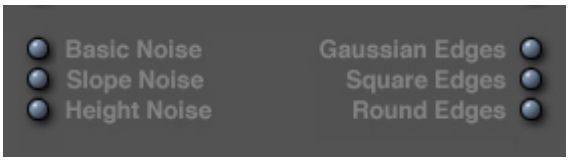
Examples:



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Basic Tools

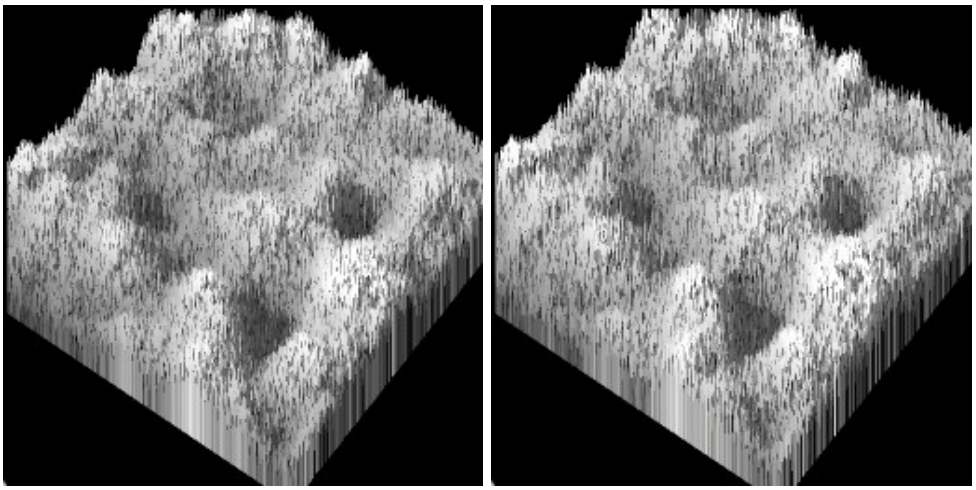
The Basic Tools edit the overall shape of your terrain and are located immediately below the Source Generators.



Basic Noise

This tool adds roughness to your terrain's surface by adding noise to the Terrain Canvas. Click and drag left to increase the noise and right to decrease it.

Examples:

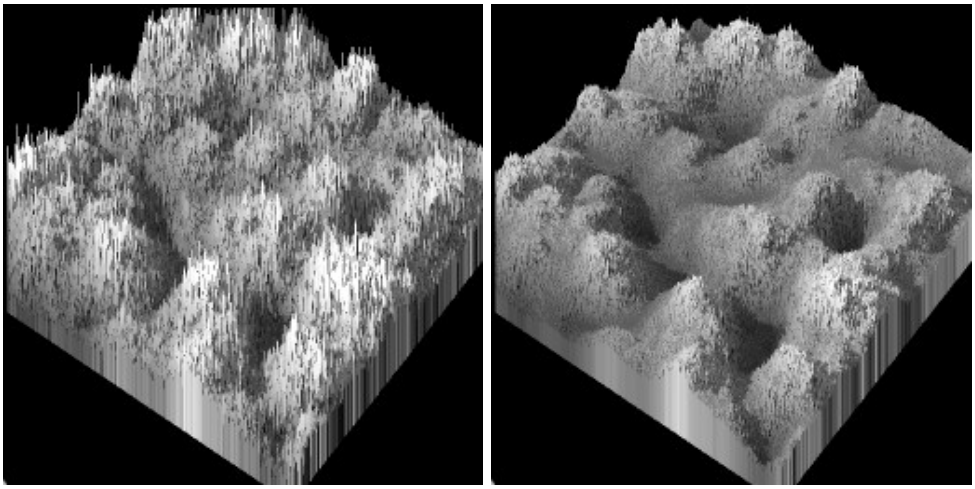


Slope Noise

This tool adds roughness to any sloping surfaces in your terrain. Click and drag left to increase the noise and right to decrease it. Slope Noise has no effect on flat surfaces. More noise is added to steep slopes.

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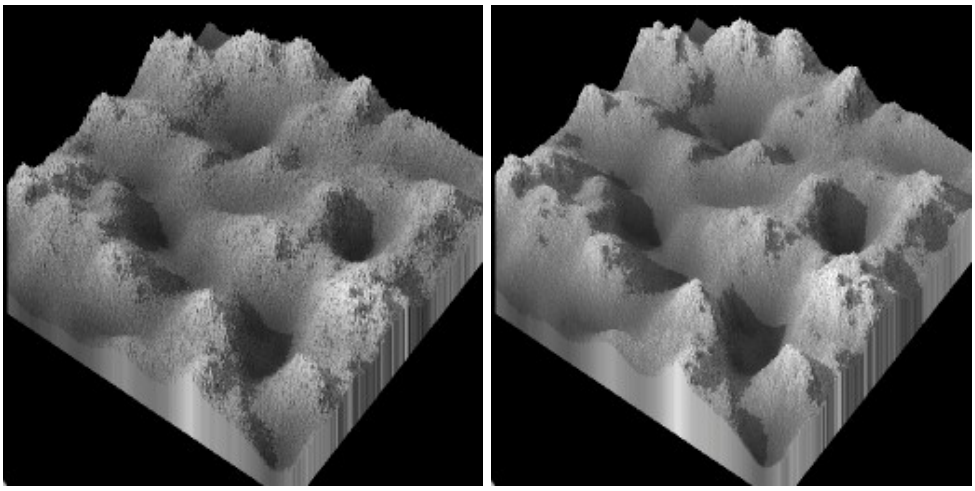
Examples:



Height Noise

This tool adds small amounts of noise at lower altitudes and more noise at higher altitudes. Click and drag left to increase the noise and right to decrease it.

Examples:



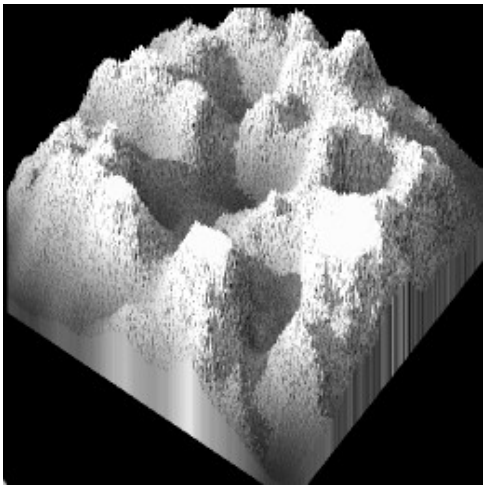
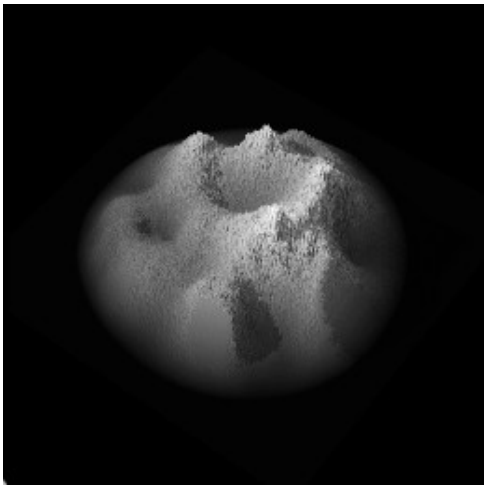
Gaussian Edges

This tool does not blur your map. It creates a "Gaussian curve" from dark to light, starting from the edges of your Terrain Canvas. This creates edges that gradually transition from dark to light, or start at the lowest possible altitude, and gradually progress into higher altitudes.

Gaussian Edges eliminates the seams between ground and terrain objects, when the ground plane and the terrain have the same surface material. You should apply this tool to any terrain that is going to be sitting on a ground plane in your scene.

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Examples:

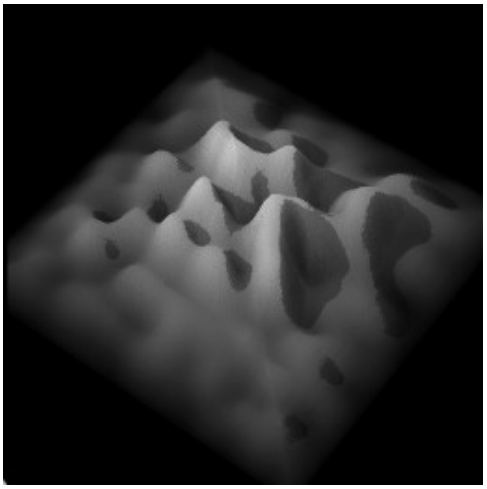



Square Edges

This tool creates an abrupt drop at the edges of your terrain. Use this tool when you have a terrain whose edges are not level, and you do not wish to use the Gaussian Edges tool for soft transitions.

You can add a slope to the square edges of your terrain by applying this tool gradually. Click and drag left to increase the slope and right to decrease it.

Example:

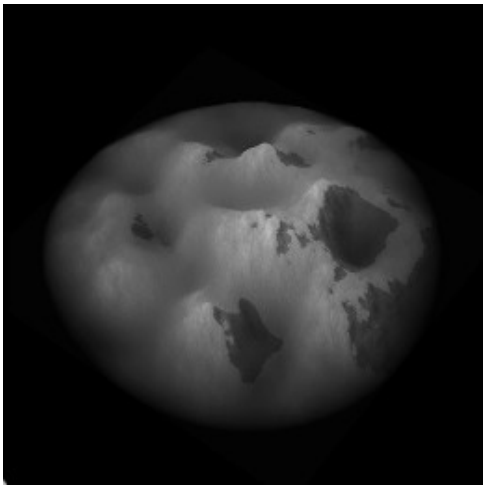


Round Edges

This tool creates an abrupt circular drop at the edges of your terrain. You can add a slope to the round edges of your terrain by applying this tool gradually. Click and drag left to increase the slope and right to decrease it.

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Example:



Special Effects

The Special Effect tools add realism to your terrain's surface. These tools, located below the Noise tool, apply filters to your terrain that act like image filters. They can change the look of the terrain without altering its basic shape.

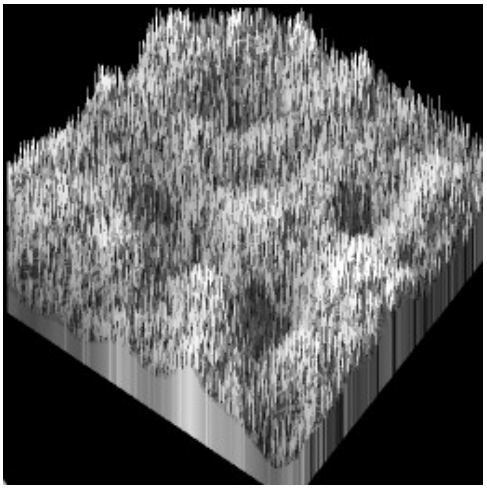


Spikes

This tool adds spiky structures to your map. When you apply the right material to these structures they can look remarkably like trees when viewed from a distance or even grass.

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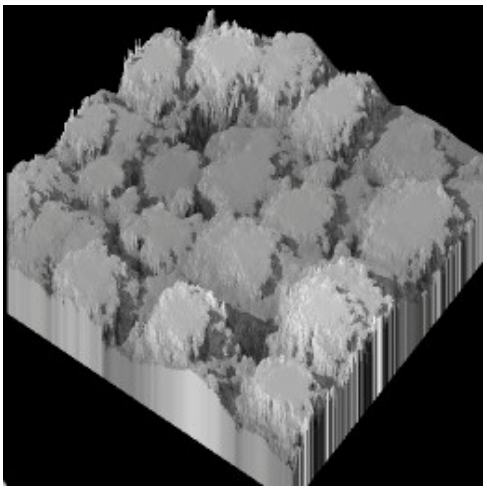
Example:

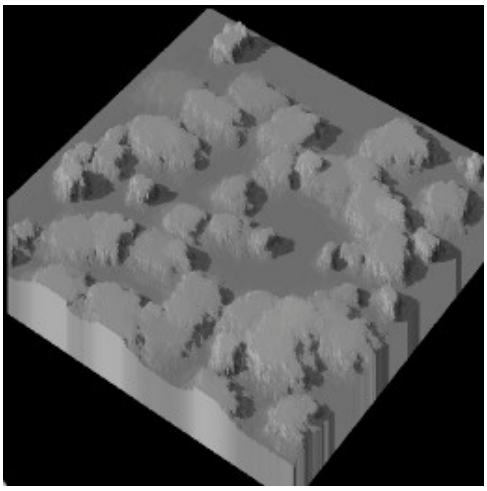


Mounds

This tool adds midsized splotches to your canvas. You can use this tool to create the appearance of stones or boulders under transparent water planes.

Examples:



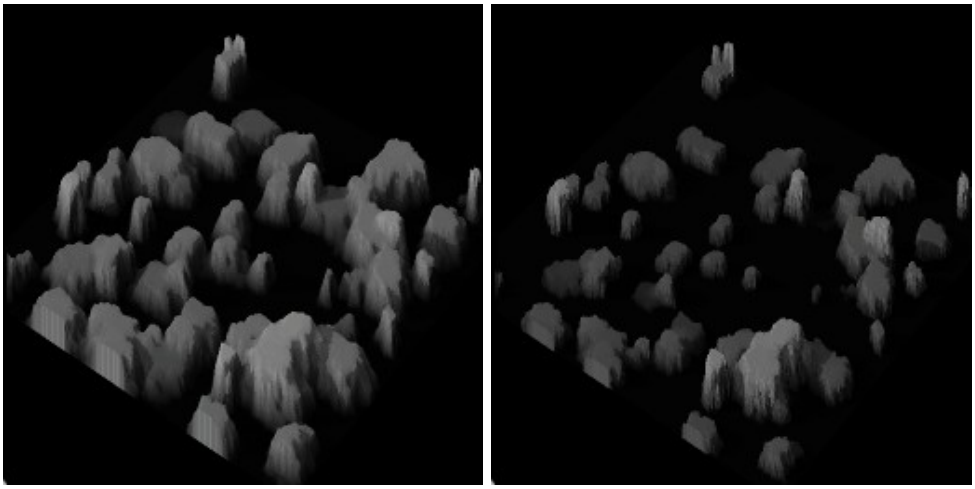


Dampen

This tool works like a contrast control. It will push gray values towards either black or white depending on where the gray value falls in the black/white range. Less than 50% goes to black, greater than 50% goes to white.

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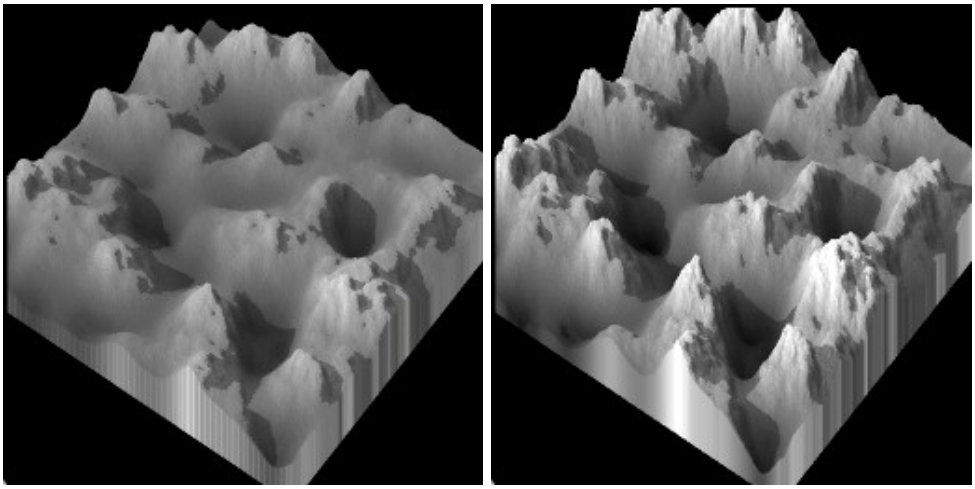
Examples:



Equalize

This tool acts like the Equalize function you may have seen in 2D image editing applications. It redistributes gray values in your Terrain Canvas such that a full range from black to white is present in your canvas.

Examples:

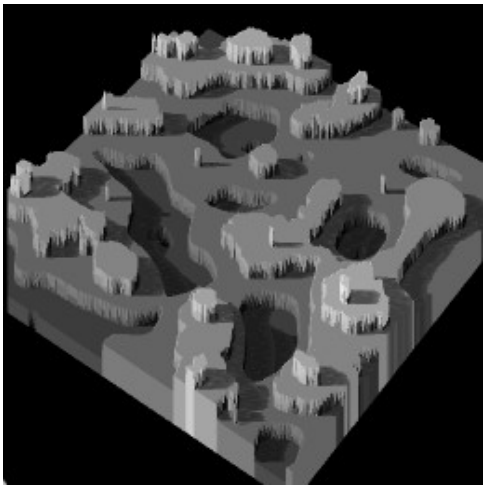
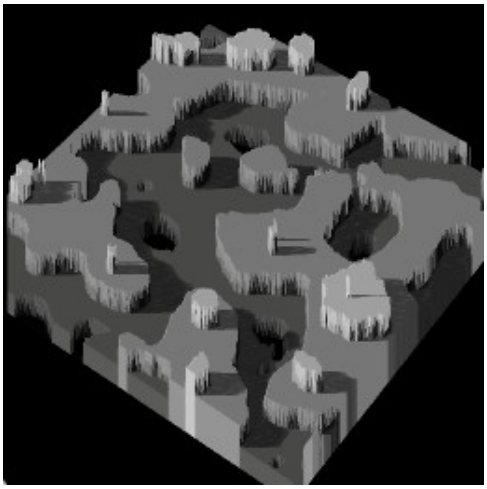


Posterize

This tool stratifies the gray levels in your Terrain Canvas, resulting in stair-stepped terrain structures. This is a good tool for creating desert plateaus.

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Examples:

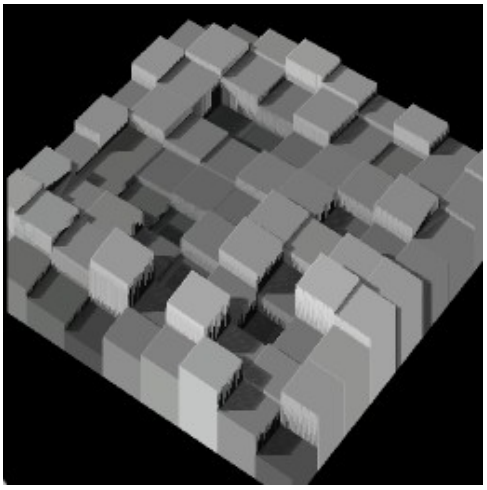



Mosaic

This tool is not a button on the Elevation tab. To use this tool, hold down Opt/Alt as you drag over the Posterize button. Mosaic creates highly pixelated square structures based on the gray content of your canvas.

This tool is excellent for instant cityscapes. Try adding one of the sci-fi city materials from the Preset Materials Library to a Mosaic terrain.

Example:

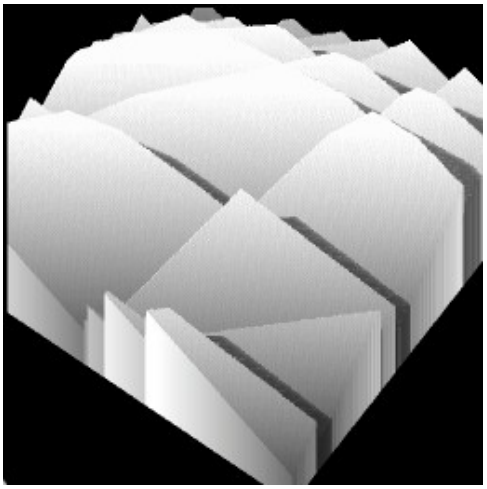


Sawtooth

This tool modifies your Terrain Canvas based on a sawtooth waveform structure. The results look like desert canyons and icebergs.

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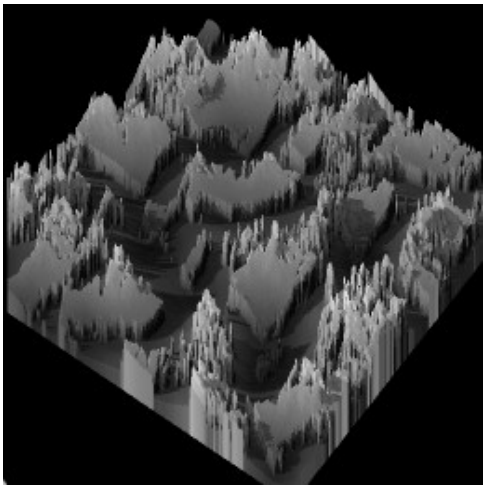
Example:



Subcontours

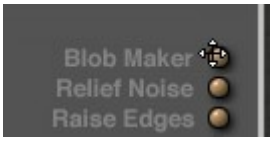
This tool works like a contrast control with the threshold set almost at white. Most values are pushed to black while only the very lightest are pushed to white. Subcontours produces spiky peaks with very low, gently sloping contours.

Example:



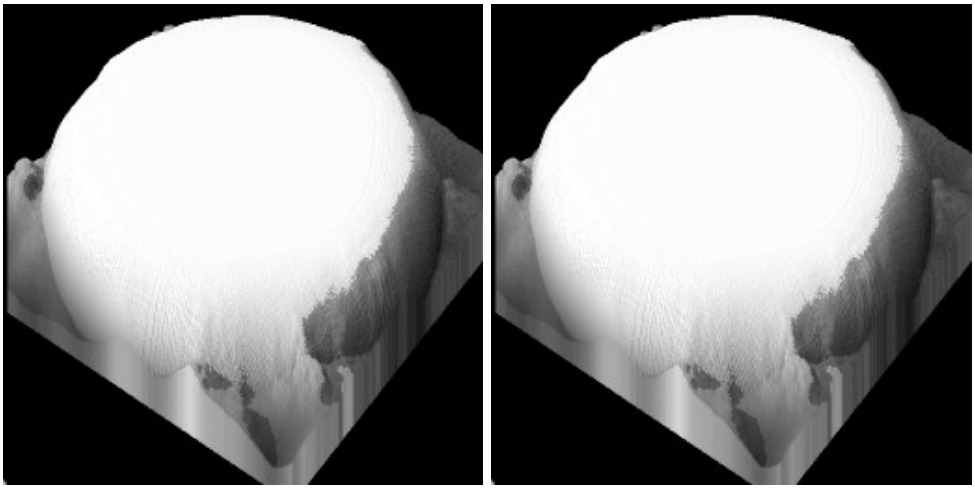
Blob Maker

This tool creates a smooth, circular structure within your existing Terrain Canvas. Click and drag left or right to change the size of the structure. Click and drag up and down to set the vertical location of the structure.



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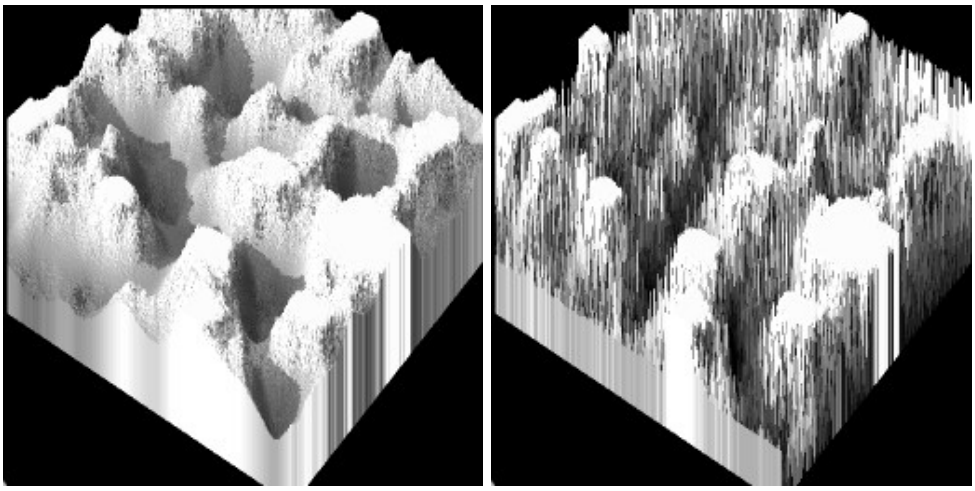
Examples:



Relief Noise

This tool acts like an emboss effect. It will emboss the grayscale data in your canvas and convert it to height information.

Examples:

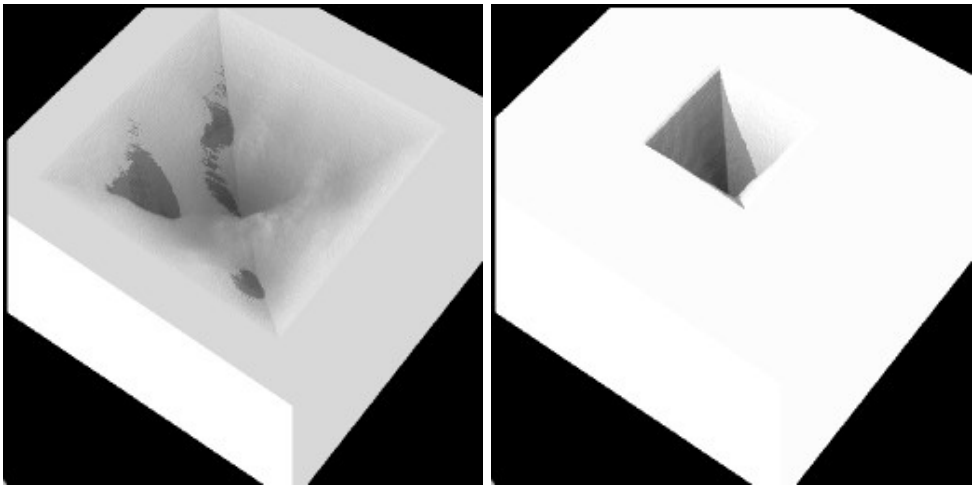


Raise Edges

This tool acts like an inverted version of the Square Edges tool. It creates abrupt increases in altitude at the edges of your terrain.

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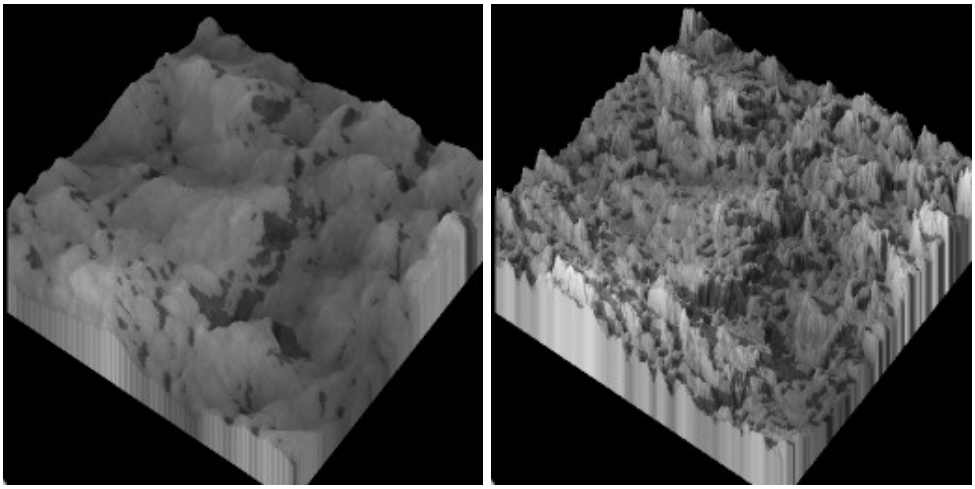
Examples:



Subplateaus

This tool smears your grayscale data in one direction while averaging the gray values. The result is natural structures not unlike those created by the Mounds effect, except that these structures are more directly related to your original gray data.

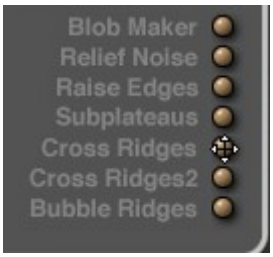
Examples:



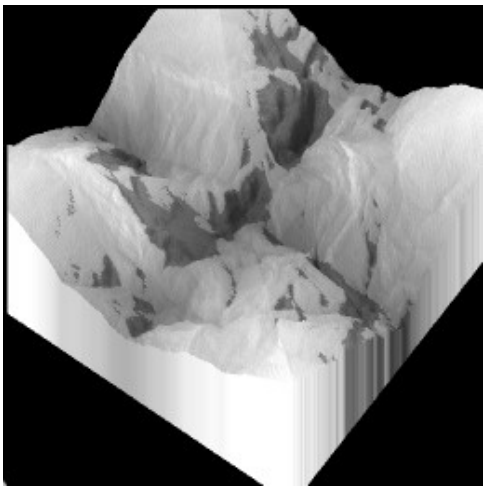
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Cross Ridges

This tool creates sharp ridges in a cross pattern. It creates very interesting canal-like structures.

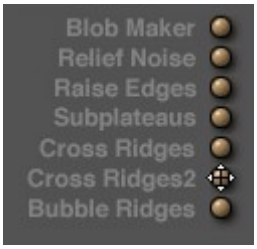


Example:



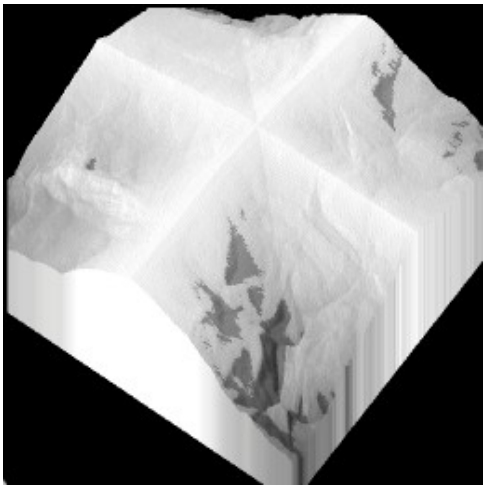
Cross Ridges 2

This tool is the inverse of the Cross Ridges tool. Instead of creating canals, it creates peaks.



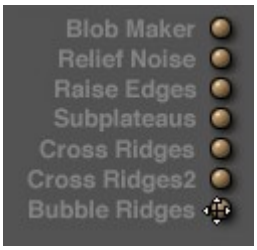
©2007 DAZ 3D, Inc.

Example:

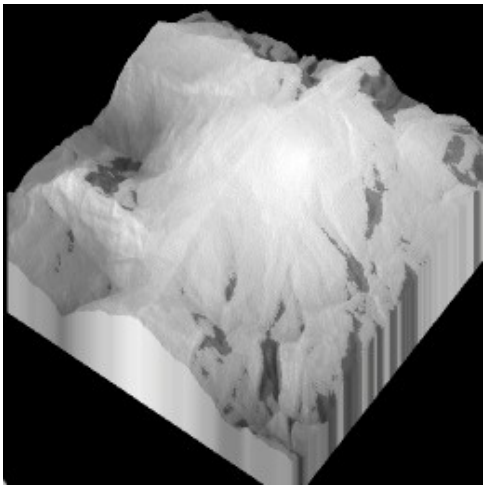


Bubble Ridges

Similar to the Blob Maker, the spherical structure this tool creates is of a consistent size. Dragging this button allows you to place the structure anywhere you like in your canvas.



Example:



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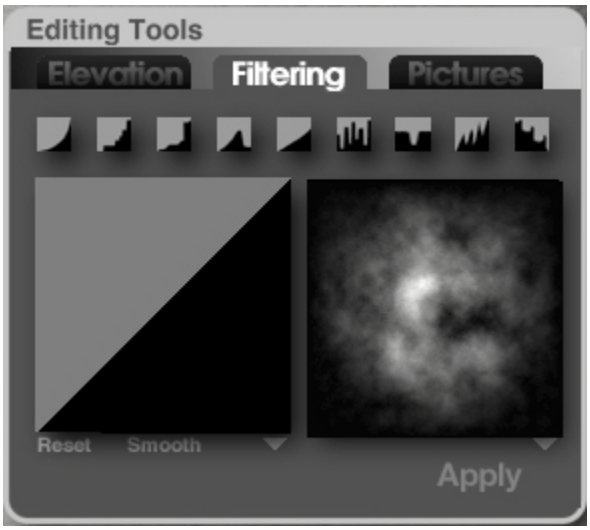
Filtering Tab

The Filtering tab is divided into three areas: the Filtering Graph, the Preview area, and the Filtering Presets.

The Filtering graph displays your Terrain Canvas' gray levels as value inputs and outputs. You can edit this graph to adjust the gray level values in your canvas.

Next to the graph is the Preview area. This area shows you what your Terrain Canvas would look like if applied to the current Filtering graph. This area automatically updates as you make changes to the graph.

Along the top of the tab are the nine Filtering presets you can apply to the graph. Each preset represents a different predefined graph. They are designed to create specific changes in gray levels, like smooth gradients and abrupt transitions.



How Filtering Works

The Filter area is essentially a graph that represents gray level input from black to white horizontally, and gray level output from black to white vertically.

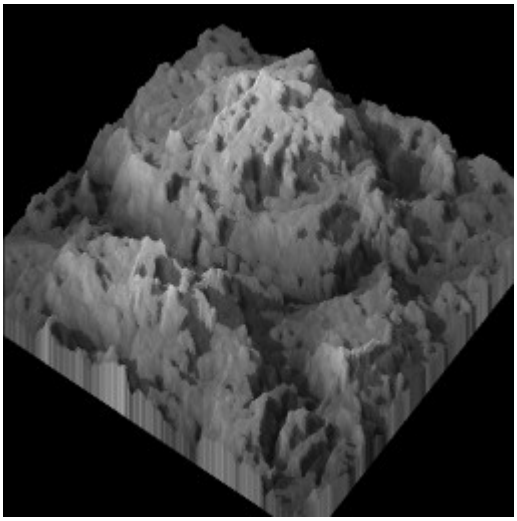
The default diagonal filter creates a graph where all values input as black are also output as black, and all values input as white are also output as white. That is why your Terrain Canvas appears unchanged - none of its gray level values have been altered.

By dragging in this Filter area, you can remap the gray values in your Terrain Canvas.

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To see how filtering works:

1. Generate your terrain.



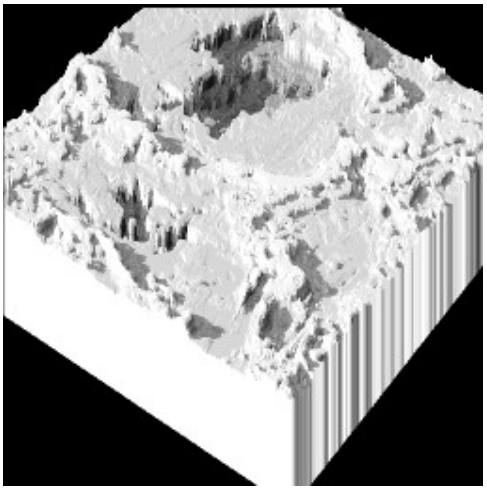
2. Place your cursor (which changes to a Pen within the Filtering area) in the top left corner of the Filter Area.



3. Drag diagonally to the bottom right corner.



4. Click Apply.



As you can see in the Preview area, your Terrain Canvas is inverted. The original graph showed that all values input as black were output as black and all the values input as white were output as white.

The new graph you created now shows that all values input as black are output as white and all the values input as white are now output as black. In other words all the dark values are light and all the light values are dark.

In the new Filtering graph all values input at 0 are output at 255 and all values input at 255 are output at 0.

This is a drastic example. In most cases you would adjust more selectively, like lightening the mid tone grays or darkening specific gray values. Remember that this graph represents your Terrain Canvas, so you're changing the shape of your terrain object as you adjust gray values.

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Altering the Filtering Graph

The best way to start adjusting the Filtering graph is to determine the type of effect you want to create. For example, if your canvas is too dark, raise the value of the darker gray value inputs by drawing a ridge in the left side of the graph.

To alter the Filtering graph:

1. Click the Filtering tab.



2. Drag your pointer over the area of the Filtering graph you want to adjust. When you drag over a black area, the pencil draws in gray; dragging over a gray area draws in black. Tracing over any lines you've drawn erases them.



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Undoing Filter Changes

To undo all changes to the Filtering graph:

1. Click the Filtering tab.
2. Click the Reset text button below the Filtering graph. The graph returns to the default Filtering graph.



Softening Harsh Transitions

To soften harsh transitions in the graph:

1. Click the Filtering tab.
2. Click the Smooth text button below the Filtering graph.



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3. Click the Smooth button again to soften the transitions more or press the Smooth button continuously until the curve is smooth enough for your needs.

Applying Filter Presets

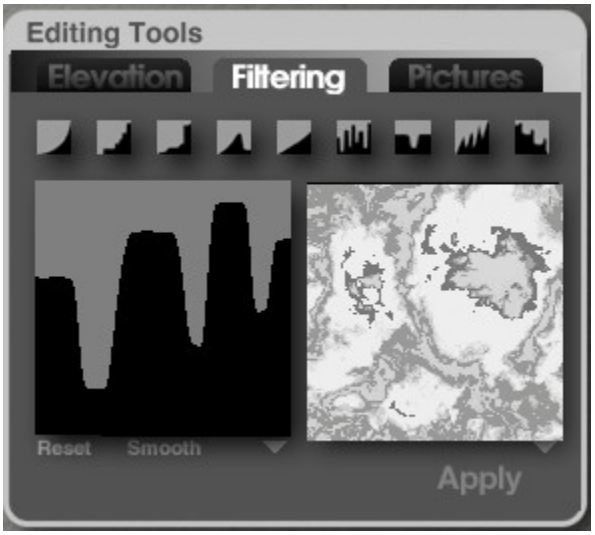
Filtering presets are provided to help you get started adjusting the Filtering graph. These presets are designed to provide different effects. The best way to understand these presets is to apply them to your graph and see what happens.

To apply presets:

1. Click the Filtering tab.
2. Click one of the preset buttons along the top of the tab.



The current graph is replaced with the preset graph.



Applying Filter Changes

Although any changes you make to the graph are applied to the Preview area, they do not automatically affect your Terrain Canvas. You have to apply the changes before they affect the canvas.

You can temporarily apply your changes to the 3D Preview in real-time by holding down Ctrl as you click and drag over the Filtering graph. (Issue)

To apply the Filtering graph to the 3D Preview. click and hold the mouse button over the filter graph preview. The 3D Preview updates. When you release the mouse the 3D Preview switches back to the unfiltered terrain. (Issue)

To apply filtering changes to the Terrain Canvas, click the Apply text button beneath the Preview area.



Blending the Filtering Graph

The Filtering Tab offers several ways of applying your Filtering graph to the Terrain Canvas. You can apply the graph directly or you can blend the graph with the canvas.

When you use a blending option you're essentially drawing a grayscale gradient and then blending it with your original canvas. The upper terrain in this image was altered by directly applying a filtering effect. The lower terrain was altered by blending a filtering effect with the original canvas.

To blend the Filtering graph with the Terrain Canvas:

1. Adjust the Filtering graph to achieve the desired effect.
2. Click the triangle icon below the Filtering graph and choose an option from the menu.

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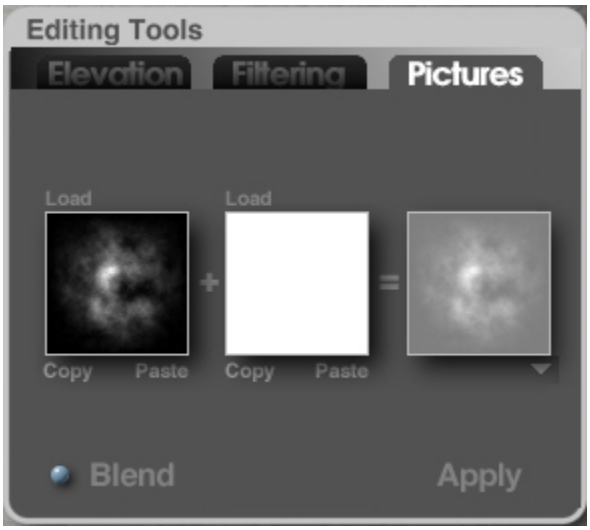
- Horizontal: horizontally blends your Filtering graph, expressed as a grayscale gradient, with your Terrain Canvas.
- Vertical: vertically blends your Filtering graph, expressed as a grayscale gradient, with your Terrain Canvas.
- Horizontal Add: horizontally blends your Filtering graph, expressed as a grayscale gradient, with your Terrain Canvas. This option uses a slightly different algorithm than the previous Horizontal option: it's not a traditional Additive, but an average of the existing terrain grayscale values with the maximum of the Terrain and Filter values.
- Vertical Add: vertically blends your Filtering graph, expressed as a grayscale gradient, with your Terrain Canvas. This option uses a slightly different algorithm than the previous Vertical option: it's not a traditional Additive, but an average of the existing terrain grayscale values with the maximum of the Terrain and Filter values.

3. Click Apply.

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Pictures Tab

The Picture tab has three picture squares and a blend control. The first two picture squares let you load a picture to use as a terrain and the third square shows you the result of combining the two pictures. The blend control lets you specify how the pictures are combined.

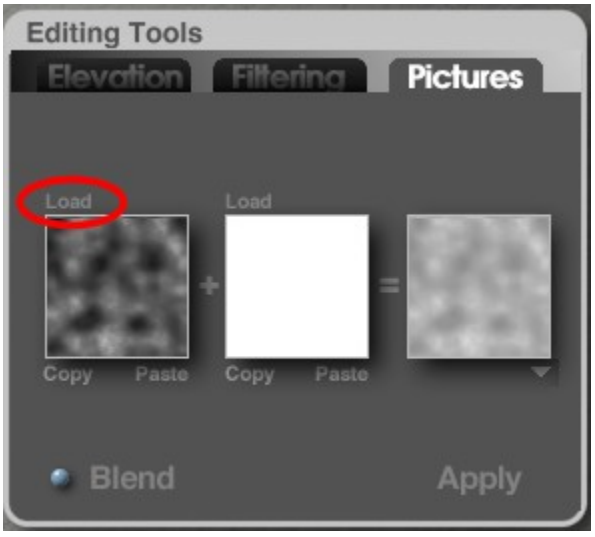


Loading Pictures

You can load any two pictures from your system. You can also paste images from the Clipboard.

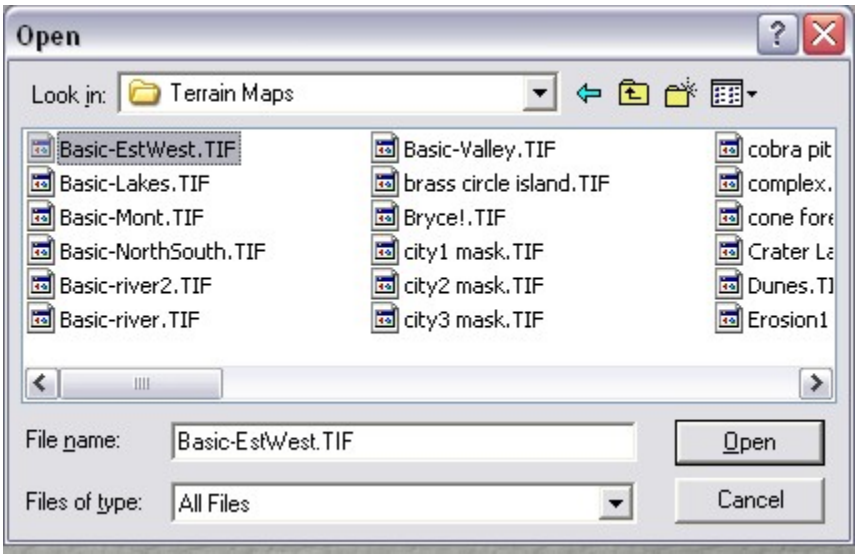
To load pictures,

1. Click the Load text button above the picture box into which you want to load the picture.



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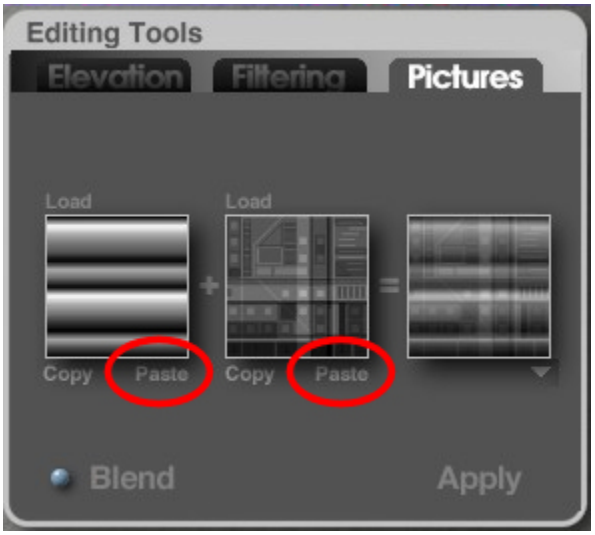
2. The Open dialog will come up. Locate the image you want to load, select it, and click on Open.



3. From the Picture button in the Elevation tab, hold down the Opt/Alt key to load the picture's color data directly into the 3D Preview. This allows you to see the interaction between the picture and the grayscale-to-height interpretation of its luminance values. The color data is only for viewing purposes and will not render with the terrain. (Issue)

To copy and paste a picture into the Picture tab:

1. In another application, copy the picture you want to use to the Clipboard.
2. In the Picture tab, click the Paste text button below the picture box where you want the picture to appear. When you use Cmd/Ctrl+V to paste from the Clipboard, the picture always appears in the first square.



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8-bit and 16-bit Terrains

New in Bryce 6 is the ability to import/export 16-bit grayscale images from the Terrain Editor. By default, Bryce creates terrains in 8-bit grayscale which can often be less smooth than needed but stores the images as 16-bit. Being able to import 16-bit grayscale images provides the ability to take advantage of Bryce's ability to store 16-bit and to add more detail to your terrains, with a much smoother surface.

Please note that you cannot convert 8-bit terrains to 16-bit in the Terrain Editor. Conversion between the two must be done in a paint program, like Photoshop or Paint Shop Pro. Just be aware that in some paint programs, like Paint Shop Pro, some of the tools (brushes, picture tubes) may not work in 16-bit mode, only in 8-bit mode. You may need to create your image in 8-bit then increase it to 16-bit before saving it.

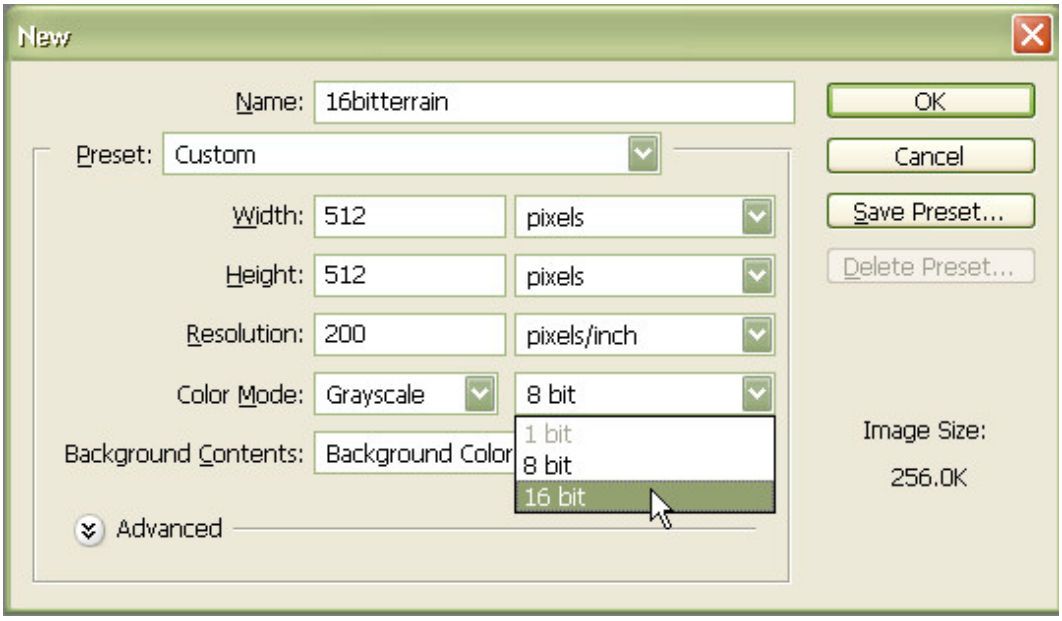
In addition, not all formats work the same between programs. For example, a 16-bit TIFF image exported from Paint Shop Pro X cannot be imported into the Terrain Editor, but the same image exported as TIFF from Photoshop, can be imported into the Terrain Editor.

Creating 16-bit Pictures

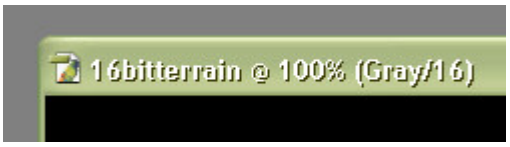
The instructions below use Photoshop as the paint program.

To create 16-bit images for import into the Terrain Editor:

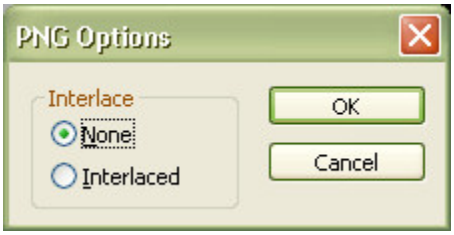
1. Open Photoshop and choose File > New from the menu. The New file dialog will come up.
2. Enter a name, width, height, and resolution. Choose a color mode of Grayscale and select 16 bit from the pull-down menu. If your background color is black, set the Background Contents to Background Color.



3. Click on OK to create the new image. The canvas title will indicate the color mode and bit size.



4. Paint your terrain or image using grayscale colors.
5. Save the image, selecting None for PNG Options and clicking on OK.

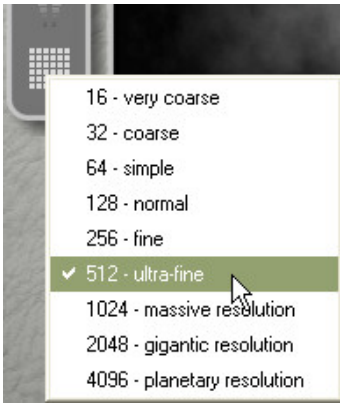


For Macs, when saving the images as TIF files, they need to be saved or converted to PC Byte Order.

Loading 8-bit and 16-bit Pictures

To load 8-Bit and 16-bit images into the Terrain Editor:

1. Create a terrain image in a paint program on a square canvas (i.e., 512x512, 256x256, etc.).
2. Open Bryce and create a terrain or symlat.
3. Click on the E button next to the selected terrain to enter the Terrain Editor.
4. In the Terrain Editor, for 16-Bit images check the Terrain Resolution to make sure it is at least at 512 - ultra fine, although 1024 massive resolution or higher is probably better. Just remember that if you downgrade the resolution later then upgrade it again, you will lose some resolution in the process. See the examples at the bottom of the page.

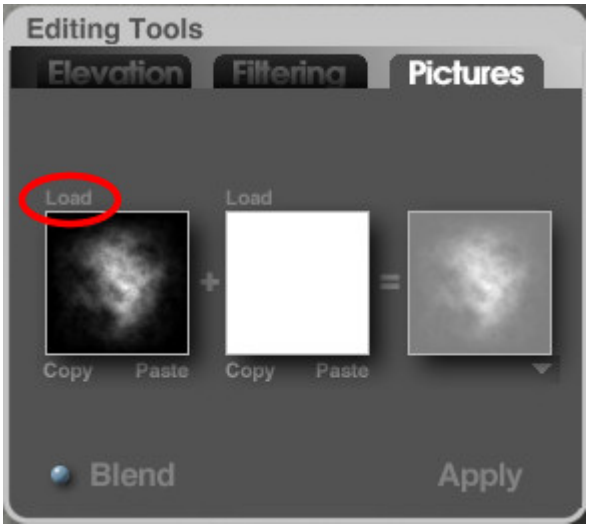


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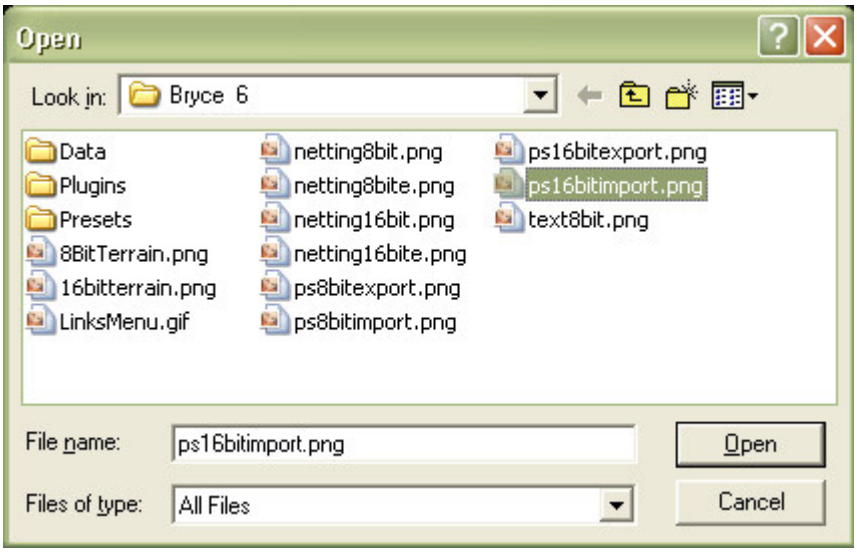
5. Click on the Pictures tab in the Editing Tools panel.



6. In the Pictures tab, click on Load above the first window.

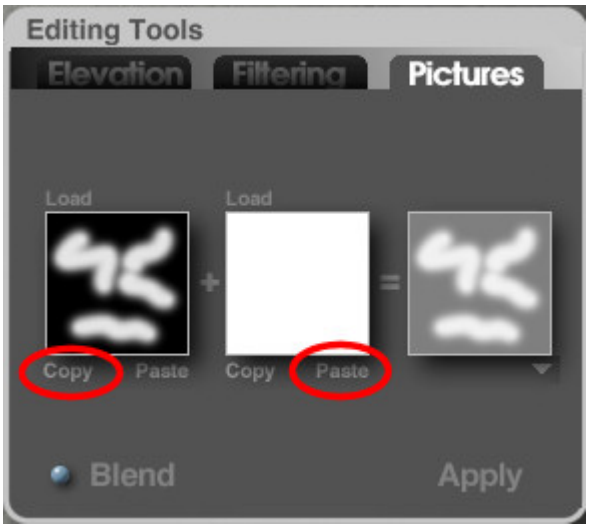


7. The Open dialog will come up, locate and select your 16-bit PNG file. Click on Open.



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8. The image will be loaded into the first window. Click on Copy under the first window, then on Paste under the second window.



9. The copy will be pasted into the second window. Click on Apply to load the image into the Terrain Canvas.



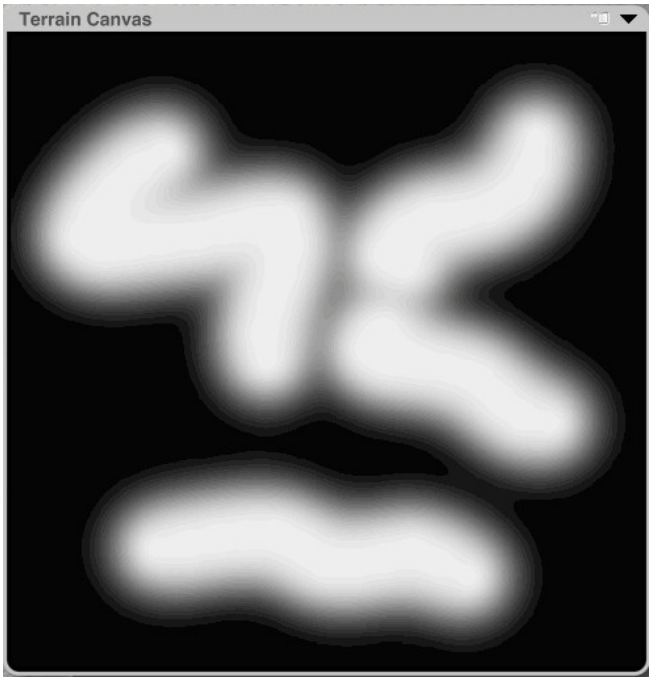
10. The image will be loaded into the Terrain Canvas where you can modify it further if needed.

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Examples:

- 16-Bit Image at 1024 resolution:

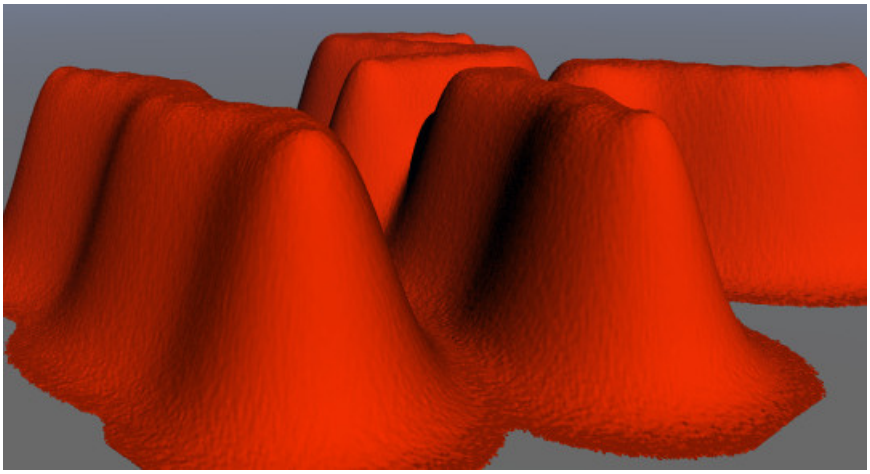


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- 16-Bit Image at 128 resolution:

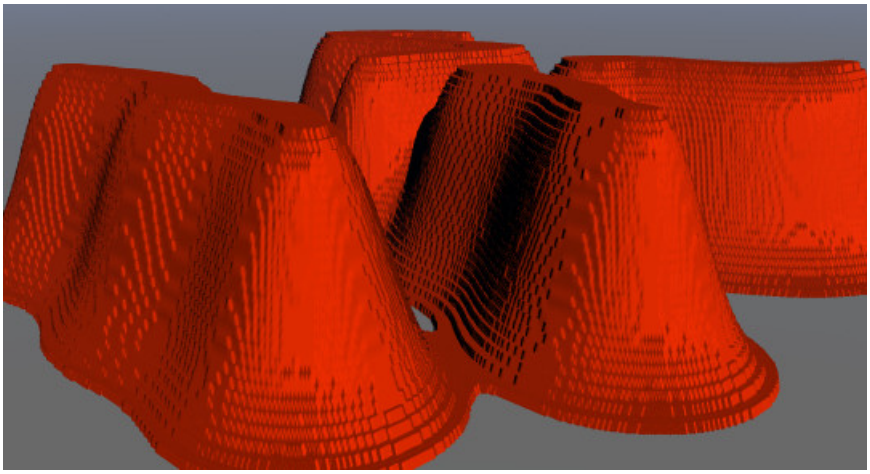


- 8-Bit 512 Resolution Rendered:

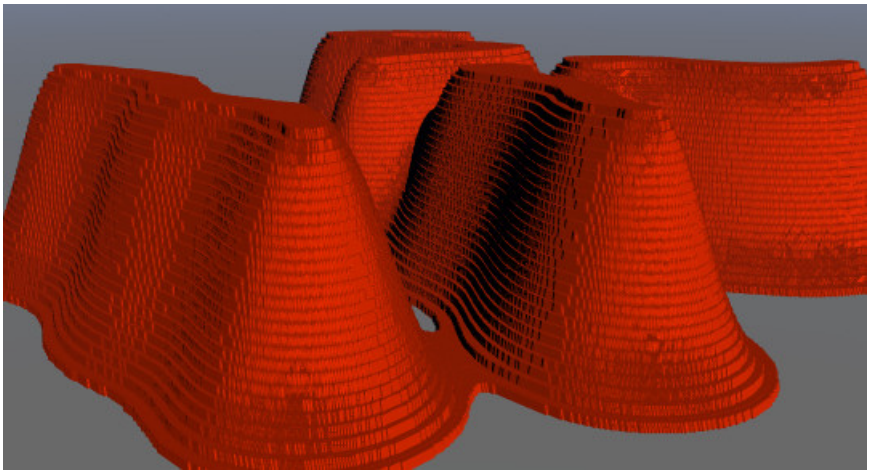


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- 16-Bit 512 Resolution Rendered:



- 16-Bit 1024 Resolution Rendered:



Exporting 8-bit and 16-bit Pictures

Sometimes, it is easier and/or more efficient to modify terrains in a paint program rather than in the Terrain Editor.

There are three ways to export the terrain grayscale images from Bryce:

1. Copy the original image in the Terrain Canvas and paste into a paint program.
2. Copy the original image in the Pictures tab and paste into a paint program.
3. Export the terrain image and open in a paint program - new in Bryce 6

To copy the image using the Terrain Canvas:

1. Create a terrain or symlat.
2. Click on the E button next to the terrain to enter the Terrain Editor.

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3. Select the terrain resolution for the size you'd like to work with in your paint program. For example, if you select 1024, then the grayscale image in your paint program will be 1024x1024, etc.



4. Modify the terrain to get your starting point, then press Ctrl+C.
5. Minimize Bryce and open your paint program.
6. Paste as a new image. The image will have the same dimensions as the selected terrain resolution in the Terrain Editor and will be in 8-bit format.



7. Modify the terrain using the tools in the paint program and save the image.

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8. Bring the image back into Bryce by doing one of the following:
    - Load it into the Pictures tab by clicking on Load
    - Copy it in the paint program and click on Paste in the Pictures tab
    - Copy it in the paint program and press Cmd/Ctrl+V in the Terrain Canvas

Blending Pictures

Once you have a picture in each of the first two squares, you blend them to create a third image that is used to create the new Terrain Canvas.

To blend pictures:

1. Load pictures into the first two squares. If you load only one picture a white square is used as the second blend image.



2. Click the triangle icon under the third picture box and choose a Blend mode from the menu.



- Blend: compares each corresponding pixel from the first two squares, and displays an average of the two in the corresponding location of the third square.
- Minimum: compares each corresponding pixel from the first two squares, and displays the darker of the two in the corresponding location of the third square.
- Subtract: compares each corresponding pixel from the first two squares, subtracts the brightness value of one from the brightness value of the other, and displays the result in the corresponding location of the third square.
- Add: compares each corresponding pixel from the first two squares, adds the brightness value of one to the brightness value of the other, and displays the result in the corresponding location of the third square.

3. Drag the pointer over the Blend control. Click and drag to the left to use more of the first image in the blend. Click and drag to the right to use more of the second image.



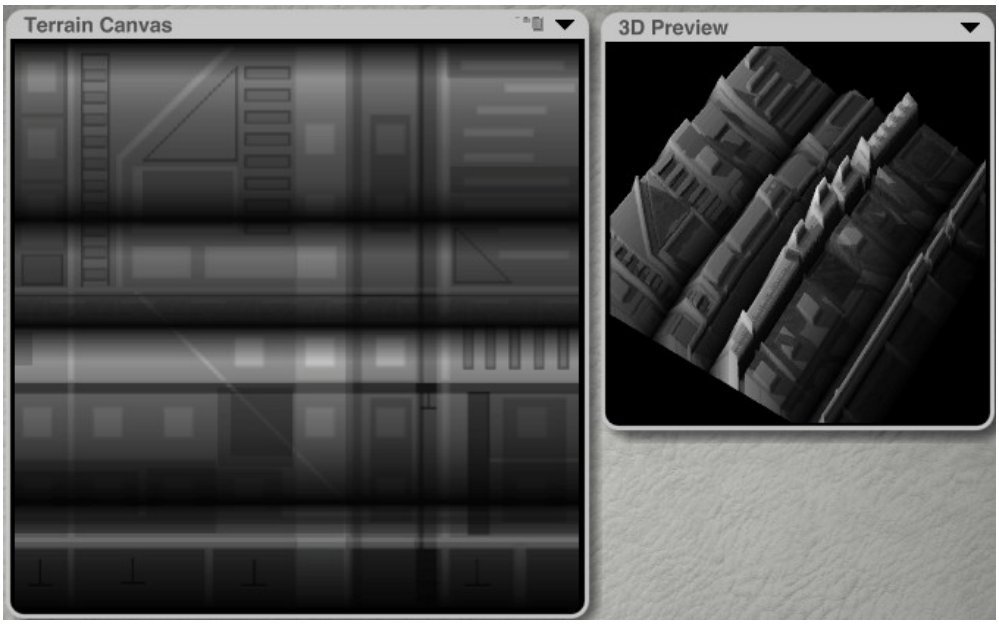
Applying Changes

Although the result of blending pictures appears in the third picture box, it is not automatically applied to your Terrain Canvas.

To apply a picture to the Terrain Canvas, click the Apply text button beneath the third picture square.



And the Terrain Canvas will be updated:



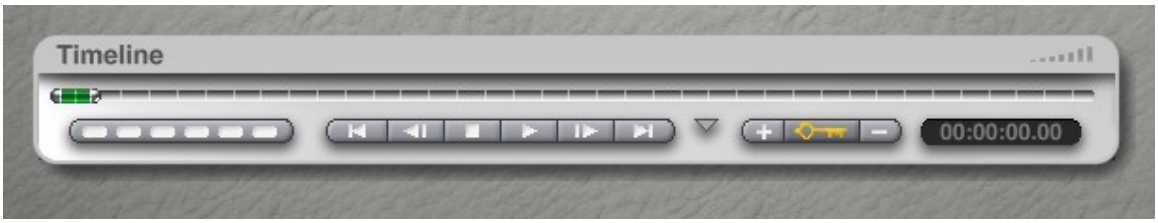
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Animation Controls

The Animation controls at the bottom of the editor let you create key frames for your terrain. Any change you make to the geometry of the terrain can be stored in a key frame and animated.

The Timeline that runs along the bottom of the editor displays the length of the animation. The Current Time Indicator within the timeline lets you set the current time of the animation.

The buttons in the Animation controls let you preview the animation. The buttons beside the Preview controls let you add and delete key frames from the Timeline. The Animation controls at the bottom of the editor let you create key frames for your terrain. Any change you make to the geometry of the terrain can be stored in a key frame and animated.



Speeding up the Terrain Editor

To speed up performance on slower machines, disable both the Real-time Linking and AutoRotate options.

To speed up the Elevation effects, use the single-click method rather than the click-drag "dial in" method, as the latter can be quite slow.

The larger terrain grid sizes, such as Massive, Gigantic, and Planetary, require a significant amount of memory and computing power. Only use these terrain grid sizes when necessary. If you are working on a slower machine, you may experience problems such as "out of memory" errors.

When you create a terrain in your Bryce scene, a natural impulse is to immediately dress it up with a cool material and render it right away to see what it looks like. For serious composition, consider keeping your terrains free of textural attributes until the final stages, as procedural textures take longer to render than smooth shaded surfaces. This will keep you working rapidly on your composition. Then, before your final output, you can take some time to design textures for your terrain. Export lets you save a terrain in a variety of file formats. You can then import a saved terrain into another 3D application or a different Bryce scene.

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Creating Terrains

You can create terrains in several ways. You can let the editor do all the work of generating a terrain based on a series of algorithms, you can use the editor's painting tools to create a custom image, or you can import an image into the editor.

When you generate a terrain, you use the Terrain Editor's Elevation tools, which include dozens of effects optimized for the purpose of heightening realism in Bryce terrains.

When you paint a terrain you use the editor's grayscale paintbrush to paint a topographical image. The image is then converted to a terrain object.

You can also create a terrain by importing a picture into the editor. The picture is converted to grayscale and used to generate altitude values.

Creating Landscapes

When you're planning the shape of your terrain, keep in mind the kind of landscape you want to create. You don't have to create all the land in your scene as a single terrain. You can create complex landscapes by combining several terrain objects.

Before creating terrain objects, plan out the entire map of your landscape. Then you'll be able to see where different terrain objects might be combined to create a single land mass.

If you have more terrains in your scene, you'll have a bigger scale for the environment. This gives you more resolution and a more realistic looking effect.

Before you start creating terrains you should map out all the land masses in your environment. You'll then be able to see where you will need to combine more than one terrain to create a specific type of landscape. These images show an example of mapping and the final result.

Pay attention to where the camera is positioned in the scene. Terrains that are closer to the camera need to be more detailed than those off in the distance.

Animation & Terrain Editing

You can record the process of creating a terrain into an animation using the Animation controls. Refer to “Animation” for more on animating terrains. Some of the Elevation tools can produce unpredictable results when they’re animated, so you may want to experiment with animating elevations before you create your final terrain.

Light Lab

The Light Lab is used to set the attributes of your light sources. You can edit the attributes of a light using the Light Lab. For example, you can control the intensity and sharpness of a light source, set its shadow attributes, change its color, add a gradient or light gel, and set the falloff pattern.

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Accessing the Light Lab

To access the Light Lab:

1. Select a light object in your scene.
2. Click the E button that appears next to its bounding box. The Light Lab will come up.

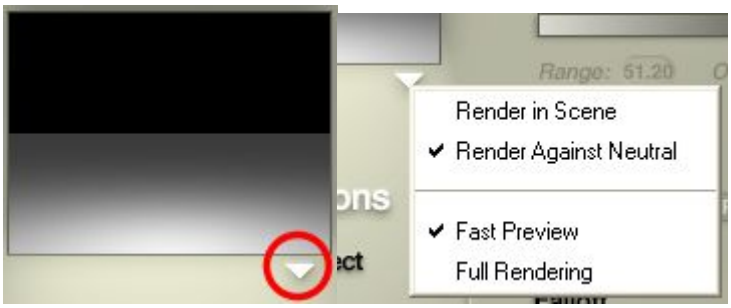


Light Preview

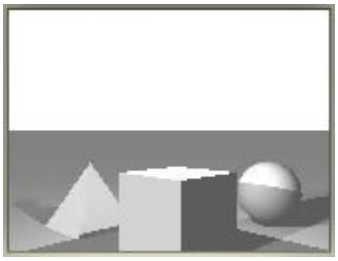
The Light Preview area displays the effects of any changes you make to the attributes of a light source. This preview can display the light against a neutral background or show the light in the scene. You can also choose between a faster, low-quality preview, and a slower, high-quality preview.

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To set the preview options in the Light Lab, click the triangle icon at the bottom right corner of the preview area and choose a preview option:



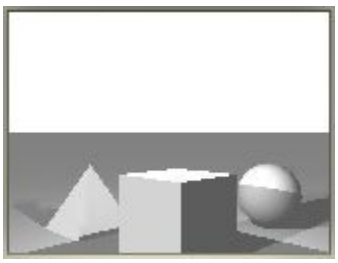
- Render in Scene displays your scene in the Preview area. This lets you see how the changes you make to the selected light will impact your entire scene.



- Render Against Neutral displays the light against a flat background. This lets you isolate the light so you can clearly see subtle changes.



- Fast Preview lets you achieve faster updates.



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- Full Rendering displays a high-quality rendered scene or light.



Light Attributes

You can change the intensity of a light source, set its color, and adjust a light's edge softness. When your light source is a spotlight, you can also control the spread of the light.

Intensity

To adjust light Intensity in the Light Lab, drag the light Intensity control. Drag right to increase light intensity and
left to decrease intensity.

The default Intensity is 25, although the slider can be set from 0 to 999 for positive lights and from 0 to -999 for negative lights.

Positive settings will show up as gold on the slider, while negative settings will show up as blue.



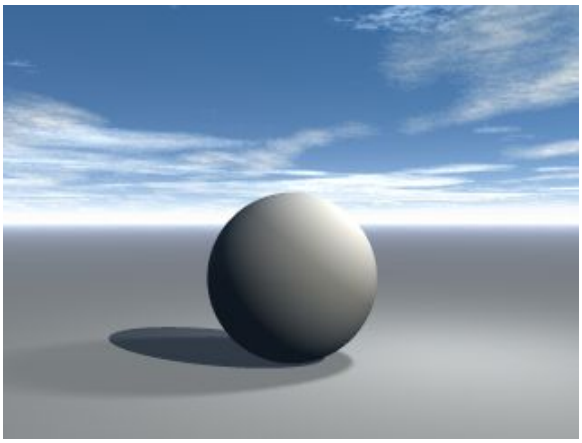
Negative lights are good for removing light from an area, either to darken a specific spot or to lower the intensity of the positive lights without affecting shadow ambience. Used correctly, negative lights can increase the realism in your scenes.

Examples:

- Radial Light Intensity = 25

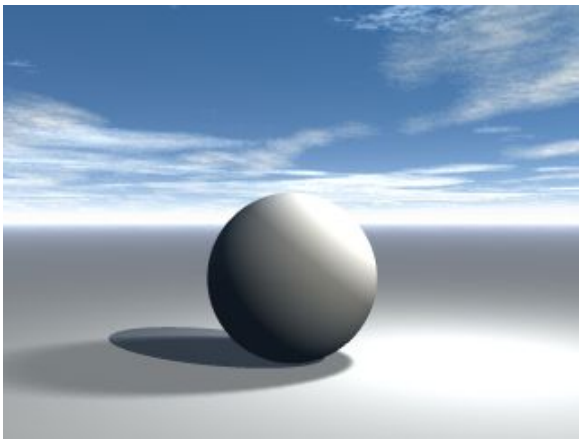


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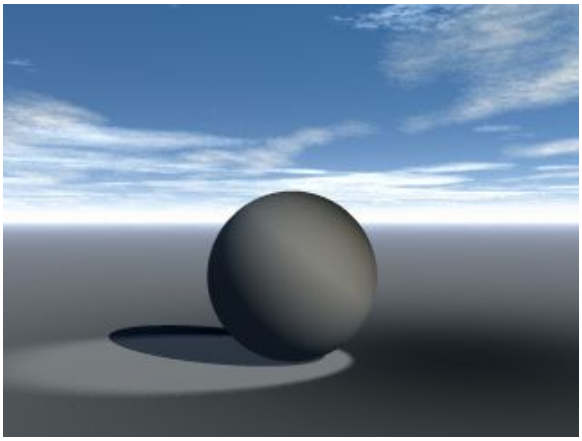
- Radial Light Intensity = 50





- Radial Light Intensity = -25





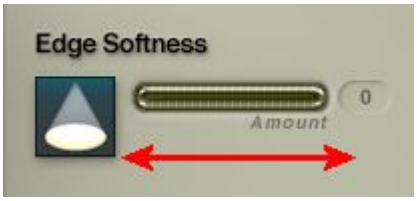
Edge Softness

The Edge Softness attribute lets you set the sharpness/softness of the edges of the spot projected by a light.

The default setting for Edge Softness is 0 with the slider having a range from 0 to 100.

To adjust a light's edge softness in the Light Lab, drag the Edge Softness control.

Drag left to sharpen the edges and right to soften the edges, or enter an amount in the numeric field.



Please note that for radial lights, the Edge Softness control is disabled.

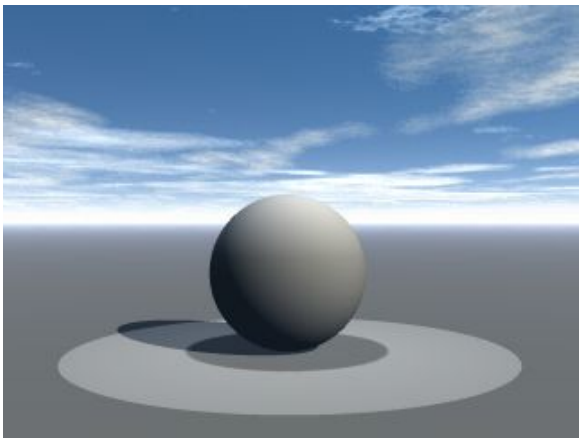


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Examples:

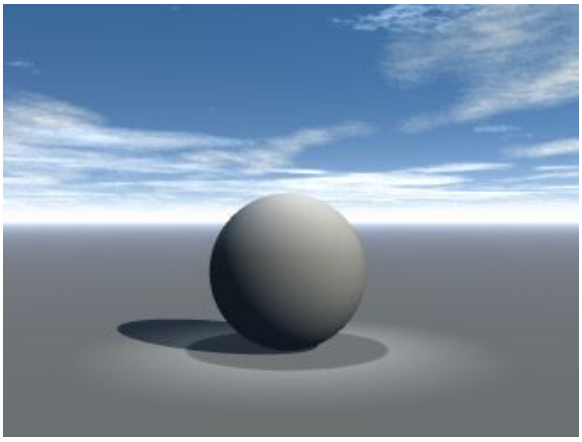
- Intensity = 25; Edge Softness = 0





- Intensity = 25; Edge Softness = 25

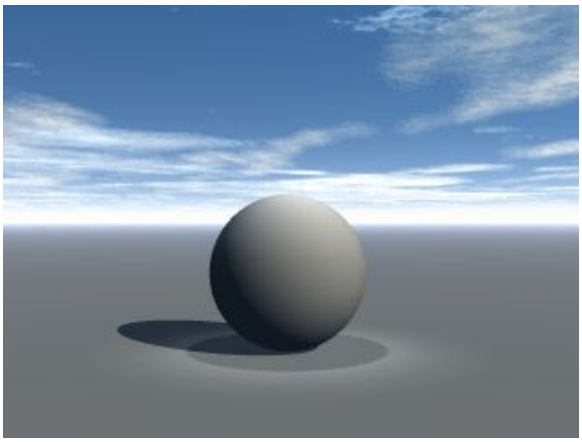




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- Intensity = 25; Edge Softness = 50



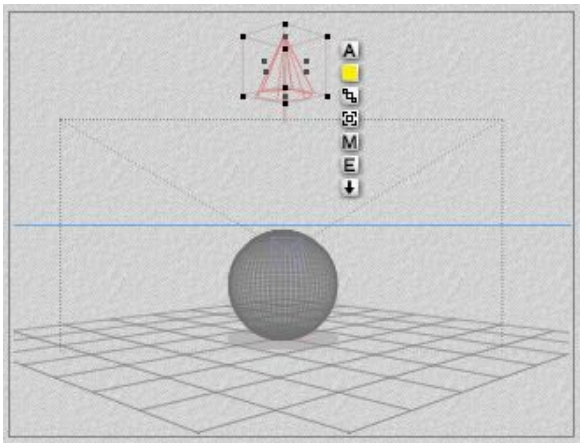


Spotlight Spread

The Spread of the Spotlight (also called the Half Angle) controls the size of the projected light cone. The size of the light's wireframe determines the spread of the light. The bigger the wireframe, the larger the spread.

To adjust the spread of a Spotlight:

1. Select a Spotlight in the Working window.

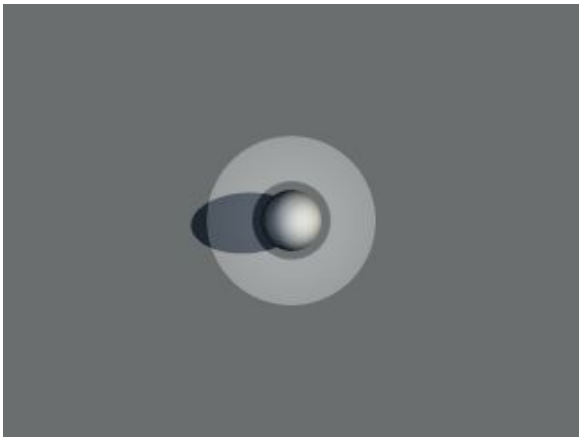


2. Drag one of its bounding box control points to set the wireframe's size. Increase the size to increase the spread and decrease the size to decrease the spread.

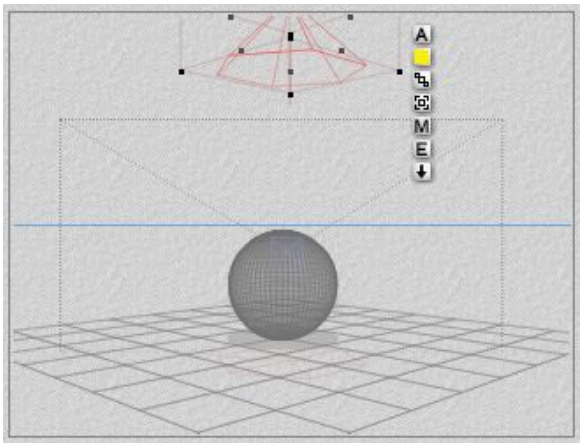
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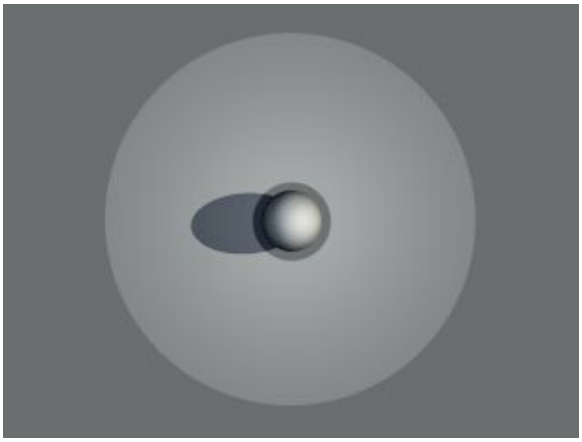
Examples:

- Default spread:



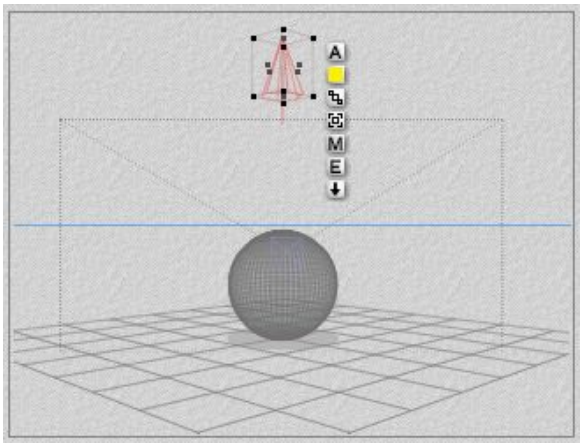
- Increased spread:

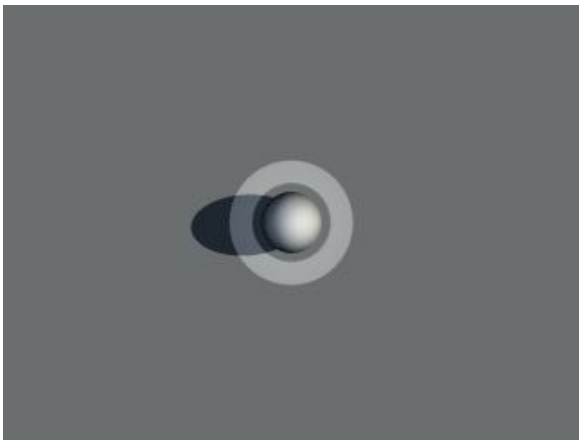




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- Decreased spread:





Cast Shadows

By default, any light source in Bryce causes objects in its way to cast shadows. You can control the ambience and softness of a shadow to produce realistic-looking shadows or surrealistic effects.

Shadow Ambience

When you change a Shadow's Ambience, you add a color to the shadow and can adjust the amount of the new color in the shadow.

The default setting is 0 for Shadow Ambience with the slider having a range of 0 to 100.



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To change a shadow's ambience:

1. In the Light Lab, ensure the Cast Shadows option is enabled.



2. In the Shadow Ambience area, click the Shadow Color swatch and choose a color from the color picker.



3. Drag the Amount control right to increase the amount of the new color or left to decrease the amount, or enter an amount in the numeric field.



4. Click on the OK icon to close the dialog.

You can also disable the shadow casting of a light source. This results in a light that illuminates surfaces but does not create shadows.

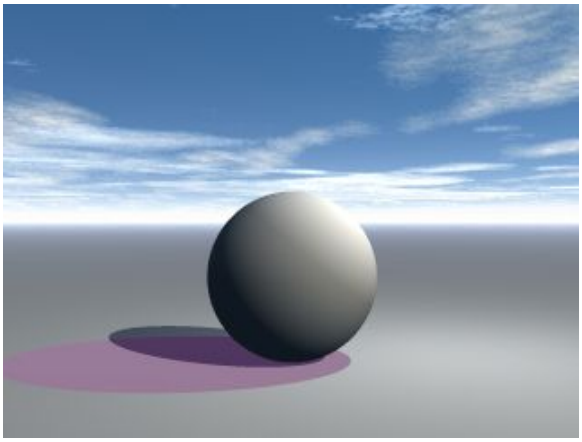
To disable shadow casting for a light source in the Light Lab, disable the Cast Shadows option.

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Examples:

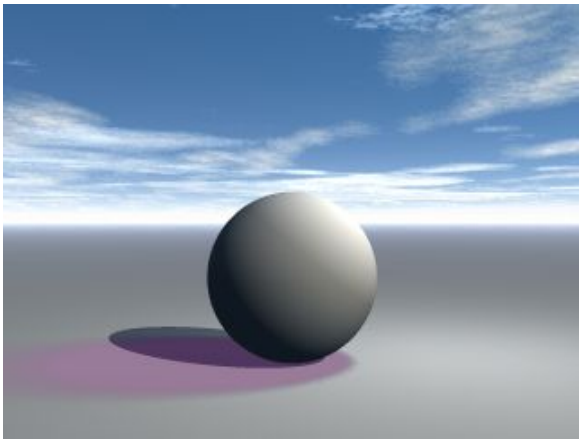
- Shadow Ambience = 21; Soft Shadows = 0; Color = Hot Pink





- Shadow Ambience = 21; Soft Shadows = 81; Color = Hot Pink

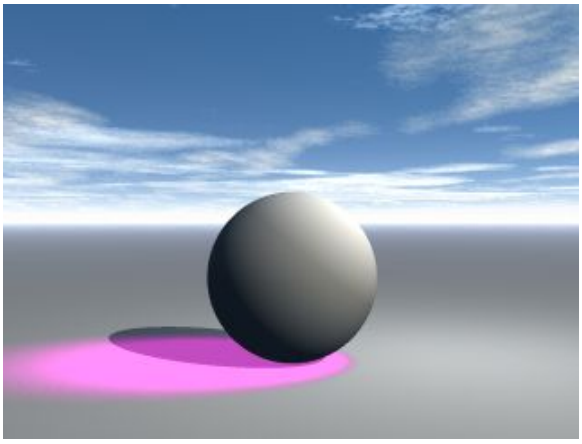




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- Shadow Ambience = 80; Soft Shadows = 81; Color = Hot Pink





Soft Shadows

When you adjust the softness of a shadow, you blur or sharpen the shadow's edges. Soft shadows blend more smoothly with the background.

The default setting is 0 for Soft Shadows with the slider having a range of 0 to 100.



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To adjust the softness of a shadow:

1. In the Light Lab, ensure the Cast Shadows option is enabled.



2. Drag the Soft Shadows control right to soften the shadow's edges or left to sharpen them, or enter an amount in the numeric field.

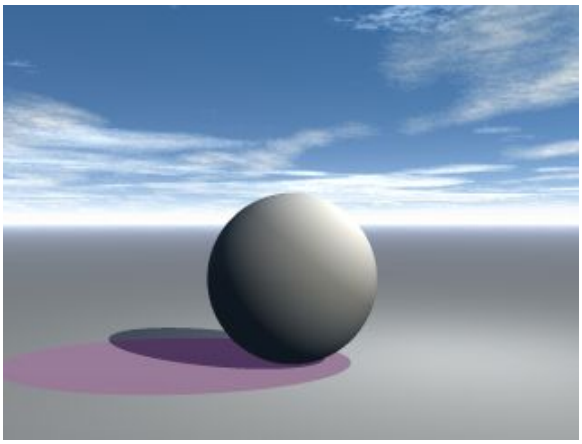


3. Click on the OK icon to close the dialog.

Examples:

- Shadow Ambience = 21; Soft Shadows = 0; Color = Hot Pink

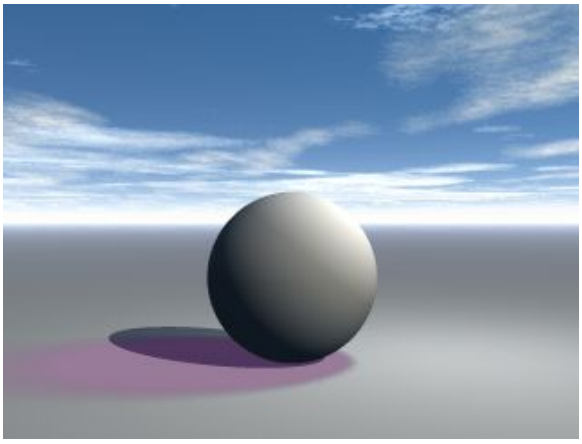




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- Shadow Ambience = 21; Soft Shadows = 81; Color = Hot Pink





Light Color

The Color of a light is different than the color of the Shadow Ambience. The light Color is the actual color of light that is cast by the light object, not the color of the shadow it casts.

There are two types of color that can be applied to a light:

- Uniform - which applies the same color over the entire light spread.
- Gradient - which applies a range of colors of the light spread.

Color - Uniform

When a Uniform Color is applied to a light, the selected color is applied to the entire spread of the light. No matter where the light falls, the light color will be the same.

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To set a light's Color uniformly:

1. In the Light Lab, enable the Uniform option in the Color area.



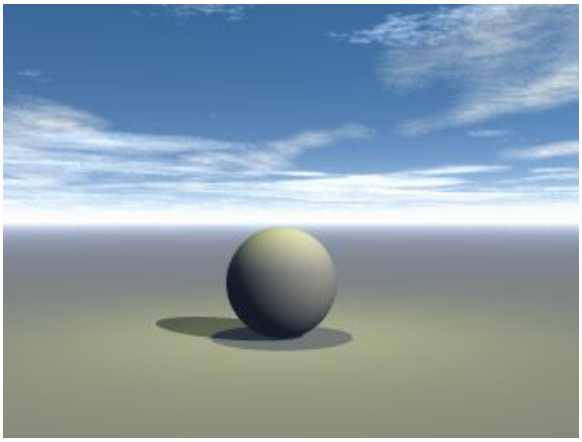
2. Click the Color swatch, and choose a color from the color picker.



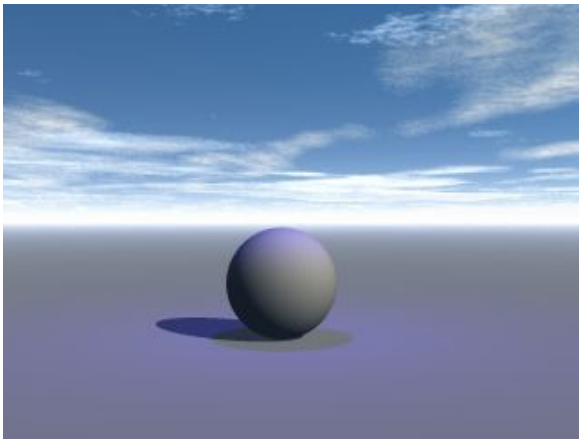
3. Click on the OK icon to close the dialog.

Examples:

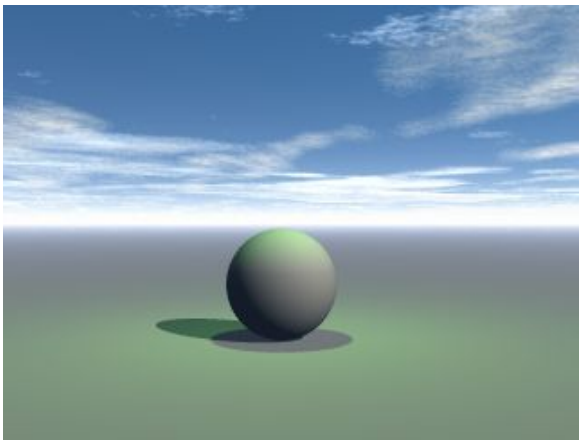
- Color = Yellow



- Color = Blue



- Color = Green



Color - Gradient

Gradient Lights change color as they get further away from the light source, thus coloring surfaces along the way differently.

For example, when you apply a red-to-yellow gradient to a light, the resulting gradient light colors nearby surfaces red and distant surfaces yellow. The mid-range surfaces will reflect blends of red and yellow light. This feature is useful for creating custom light falloff patterns.

You can create a gradient in Bryce or on the PC, you can import a gradient created with another application (Photoshop 5.5 and earlier). Macs cannot currently import any gradients.

When you create or import a gradient, it is automatically applied to the active light.

The Light Lab lets you control the range and offset of gradients. You can also change a gradient's colors and transparency.

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Import Gradient

To import a gradient:

1. In the Light Lab, enable the Gradient option in the Color area.



2. Click on the Import button.



3. Locate the drive and folder where the gradient file (.grd) is stored.
4. Select the file and click on Open.
5. Click on the OK icon to close the dialog.

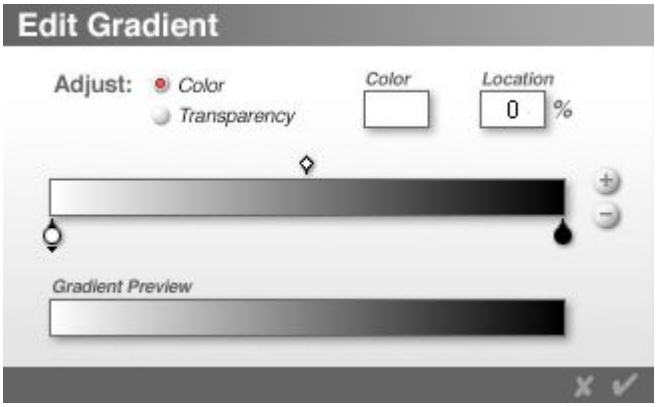
Modifying Gradients

To modify a Gradient, in the Light Lab, click the Edit button in the Color area.



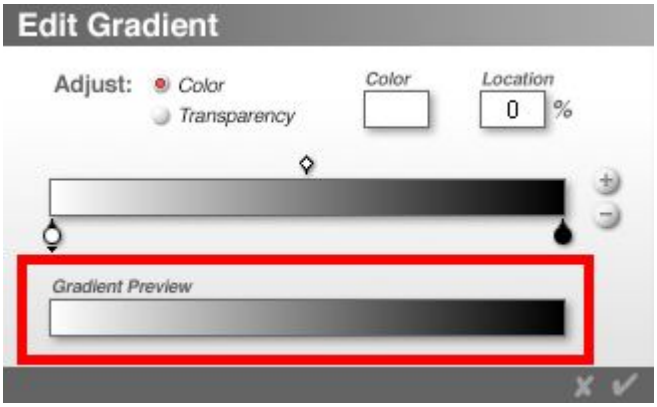
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The Edit Gradient dialog appears.



The Edit Gradient dialog lets you edit gradients added to lights. You can change a gradient's colors and transition points, add colors to a gradient, or remove unwanted colors. You can also change the transparency of a gradient to create various light patterns.

The Gradient Preview is automatically updated as you edit a gradient.



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Edit Gradient Dialog

The Edit Gradient Dialog provides the ability to modify the current gradient colors and transparency.

Modify Gradient Colors

To modify a Gradient's Colors:

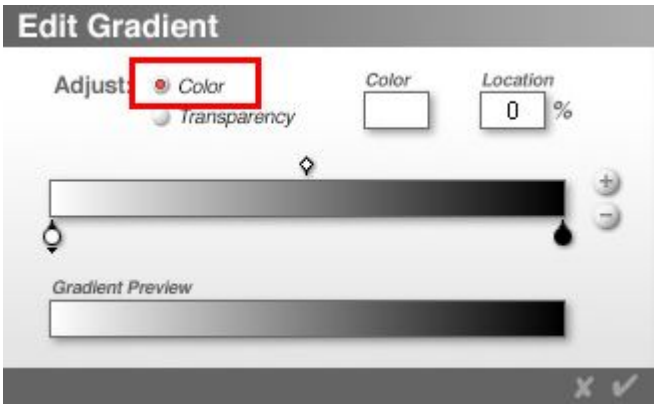
1. In the Light Lab, click the Edit button in the Color area.



The Edit Gradient dialog appears.

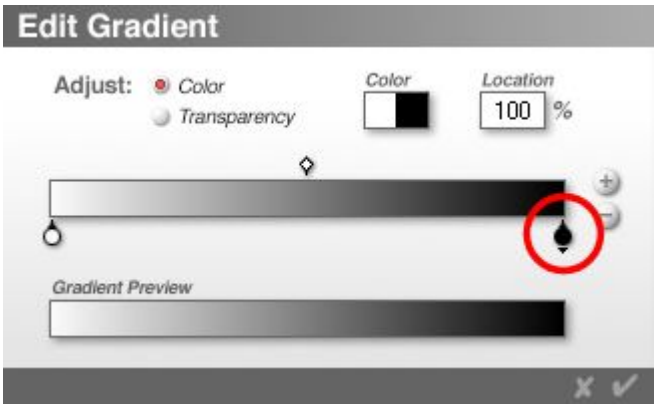


2. In the Adjust area, enable the Color option.

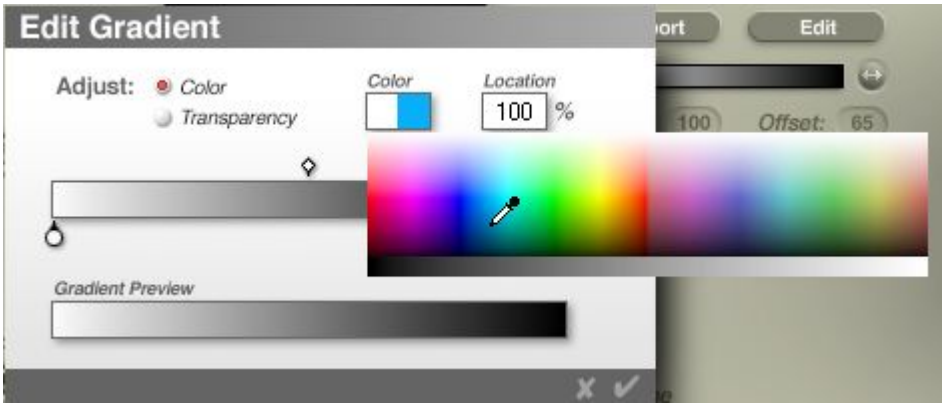


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3. Click a color node below the Gradient Control. A black arrow displays below the node indicating that the color node is selected.



4. Click the Color swatch, and choose a color from the color picker.

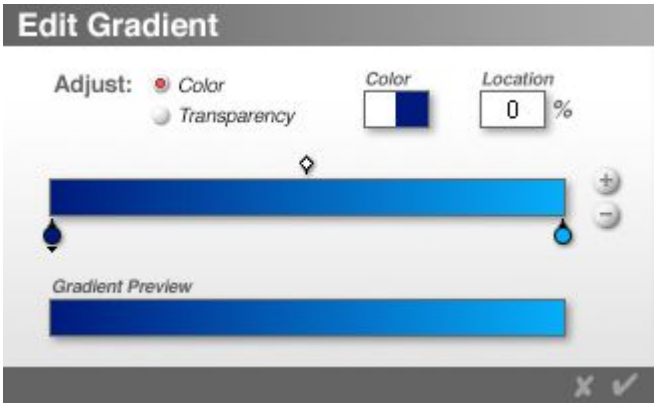


5. The Gradient Control and Gradient Preview will update to match the new color selection.

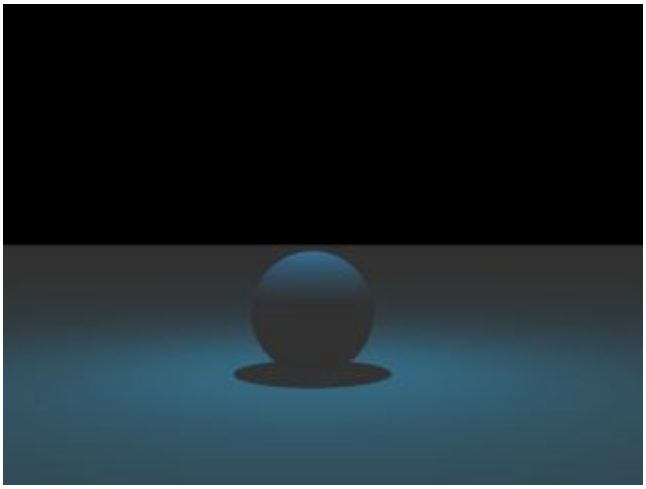


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6. Repeat steps 3 and 4 to modify other colors in the Gradient. See "Add Colors to Gradient" to add more color nodes or "Delete Colors from Gradient" to remove color nodes.



7. Click on OK to exit the dialog then on the OK icon in the Light Lab to return to the Bryce Working Window.



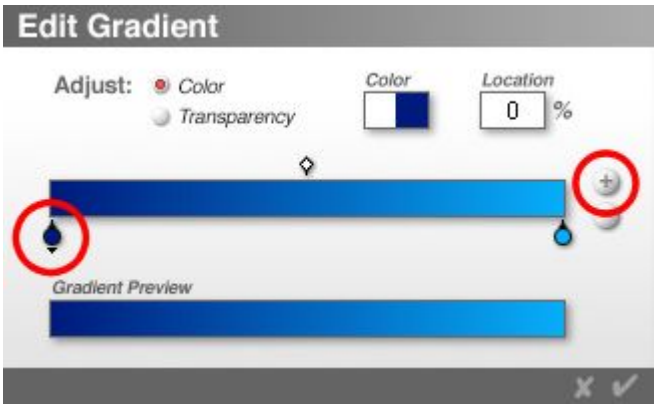
Add Colors to Gradient

The default Gradient has two color nodes which is usually sufficient for most renders, however, sometimes you need more colors, especially if the Range of the Light has been increased.

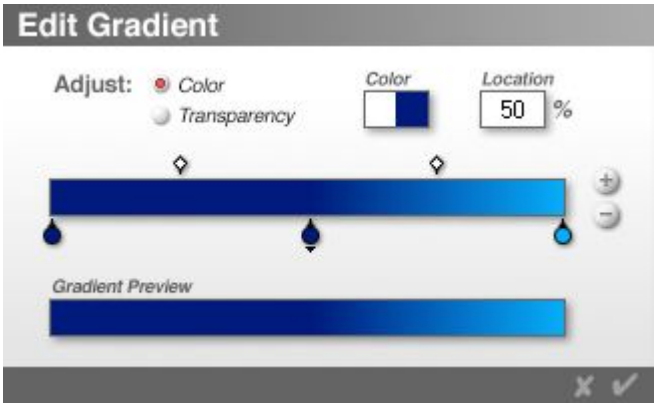
To add Colors to a Gradient:

1. Make sure that one of the Color Nodes is selected, then click the Add (+) button next to the Gradient control.

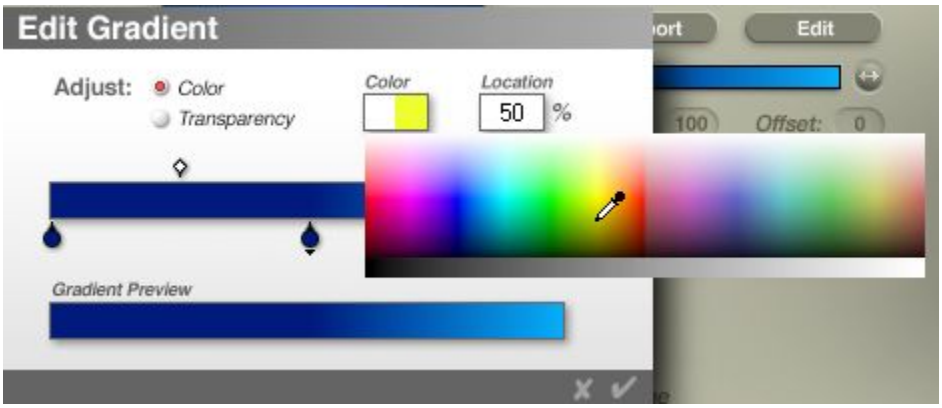
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A new color node appears below the center of the Gradient control.

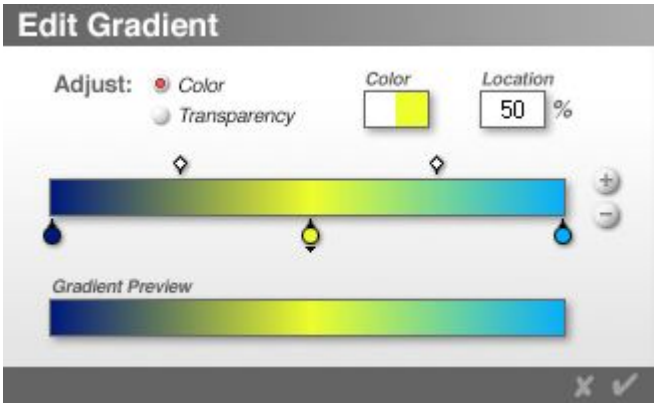


2. Click the Color Swatch, and choose a color from the color picker.



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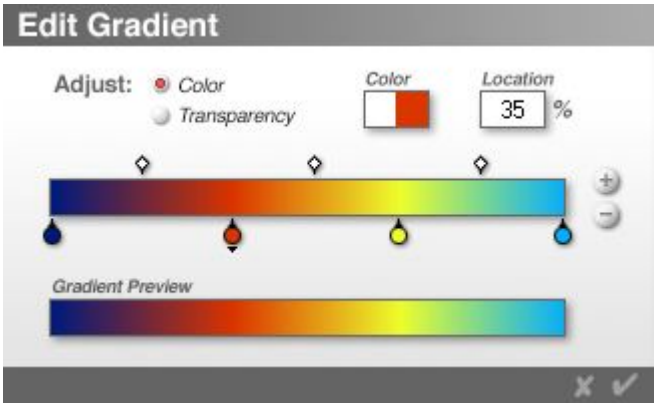
The Gradient Preview will update to show the new color.



3. If needed, drag the Color Node left or right to position it or click in the Location field and enter a number.

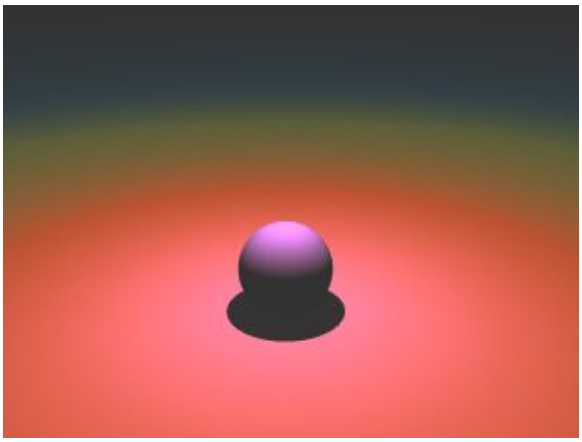


4. Repeat steps 1 to 3 to add other colors.



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5. Click on OK to exit the dialog then on the OK icon in the Light Lab to return to the Bryce Working Window.

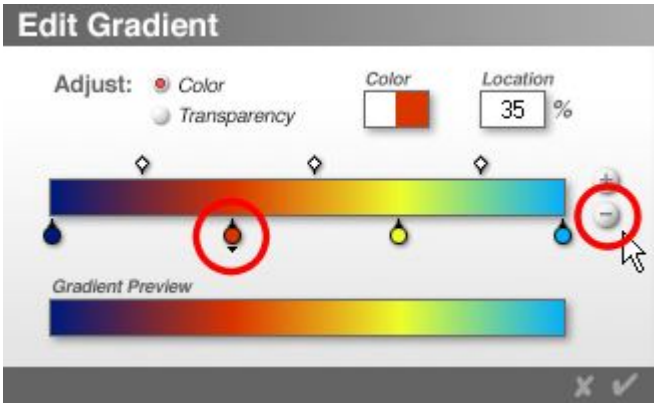


Delete Colors from Gradient

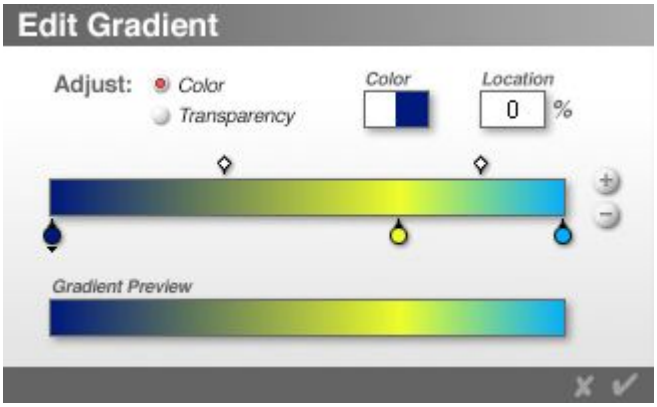
When you no longer need a Color, you can remove it.

To remove a Color:

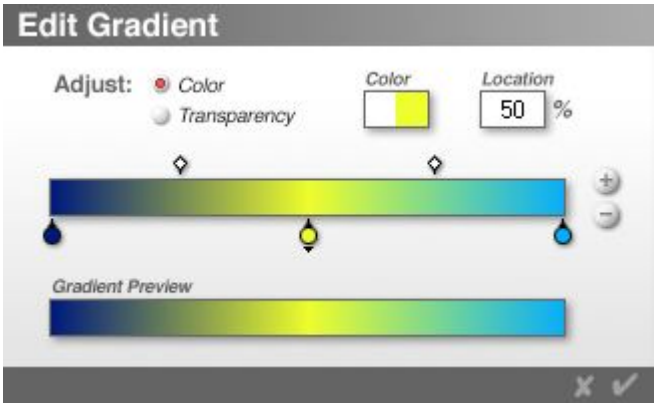
1. Select the Color Node you want to delete below the Gradient Box and click the Delete (-) button.



The Color Node will be removed.



2. Repeat to delete any additional nodes.
3. Once you've deleted the Color Node(s), adjust the Location and Transition Point of any remaining Color Nodes as needed.



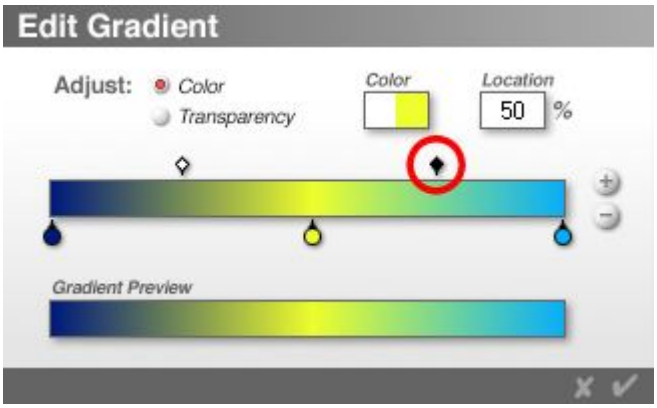
Change Transition Point

A Transition Point is an imaginary line between two colors in a gradient. Changing the Transition Point lets you change the ratio between the two colors and produce color blends dominated by one of the two colors.

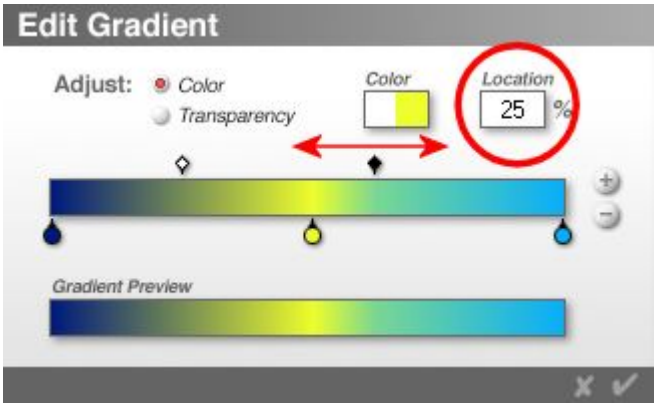
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To change a Transition Point in a Gradient:

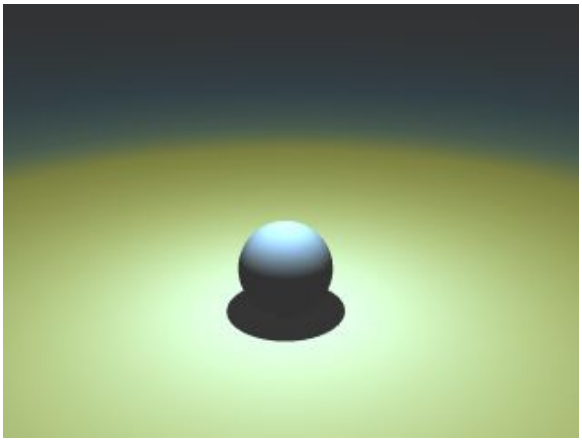
1. In the Edit Gradient dialog, left-click on the Transition Node you want to adjust. The Node will turn black indicating that it is selected.



2. Drag a Transition Point left to make the end color dominant or right to make the start color dominant. You can also change the transition point by typing values in the Location field.



3. Click on OK to exit the dialog then on the OK icon in the Light Lab to return to the Bryce Working Window.



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Change Gradient Transparency

By default, all Gradients created in Bryce are fully opaque. You can change the Transparency of a Gradient to create light sources that fade in or out. You can also create complex transparency patterns by adding Transparency Nodes with various opacity values.

To change the Transparency of a Gradient:

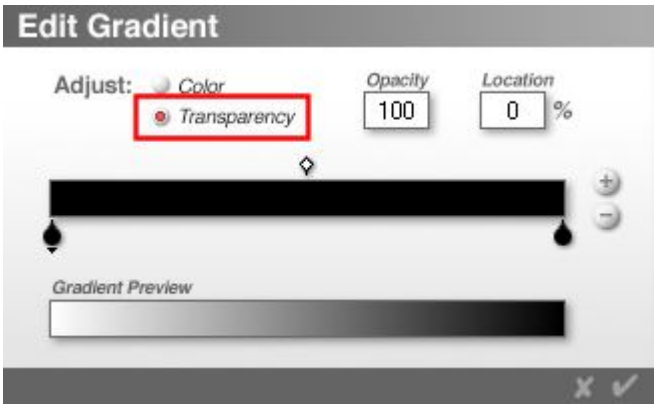
1. In the Light Lab, make sure Gradient is enabled then click the Edit button in the Color area.



The Edit Gradient dialog appears.

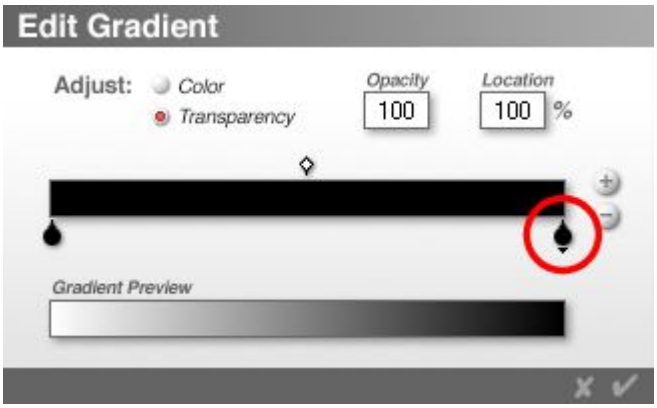


2. In the Adjust area, enable the Transparency option.

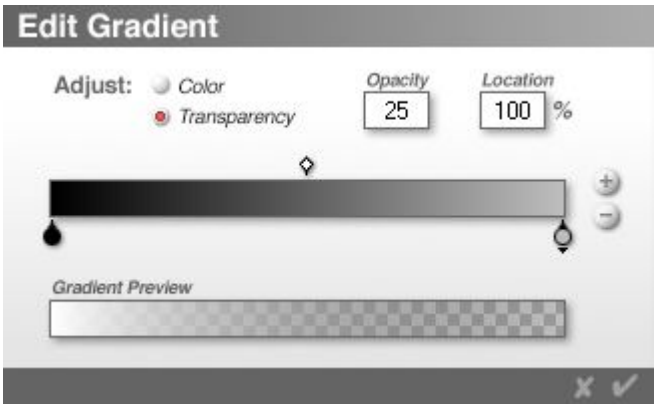


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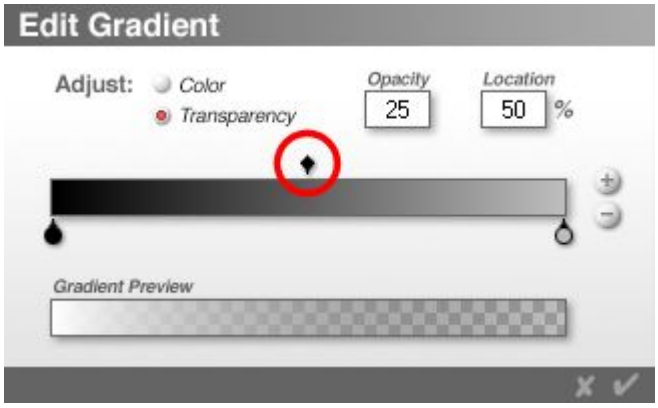
3. Click a Transparency Node below the Transparency control. A triangle appears below the Transparency Node indicating that the node is selected.



4. Type a value in the Opacity field. The Gradient Preview will be updated to reflect the selected Opacity value.

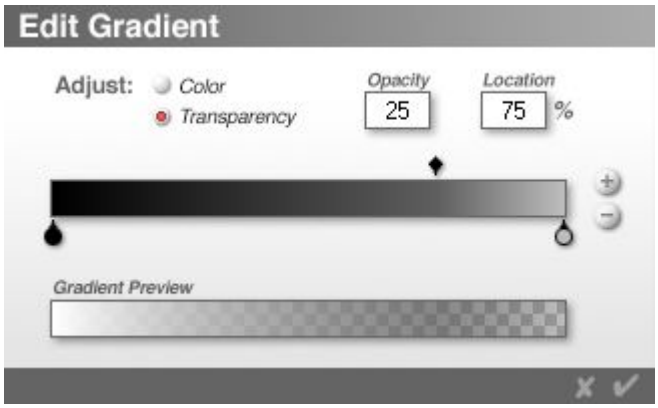


5. If you want to adjust the Transparency between two Transparency Nodes in a Gradient:
    - Left-click on the Transition Node you want to adjust. The Node will turn black indicating that it is selected.



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- Drag the Transparency Node above the Transparency control to the left or right or enter a value in the Location field.



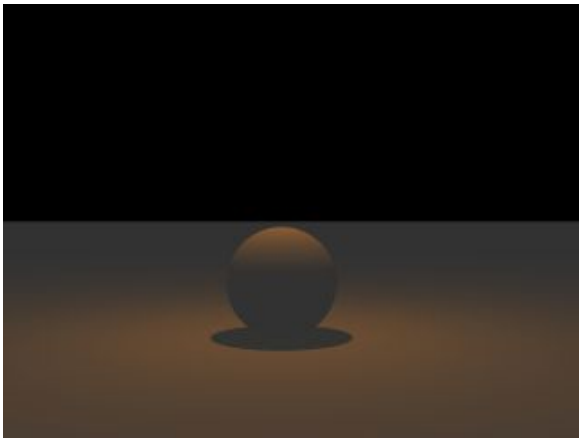
6. See "Add Transparency Node" to add new Transparency Nodes or "Delete Transparency Node" to delete Transparency Nodes, then adjust as needed.
7. Click on OK to exit the dialog then on the OK icon in the Light Lab to return to the Bryce Working Window.

Examples:

- Opacity = 25:



- Opacity = 75:

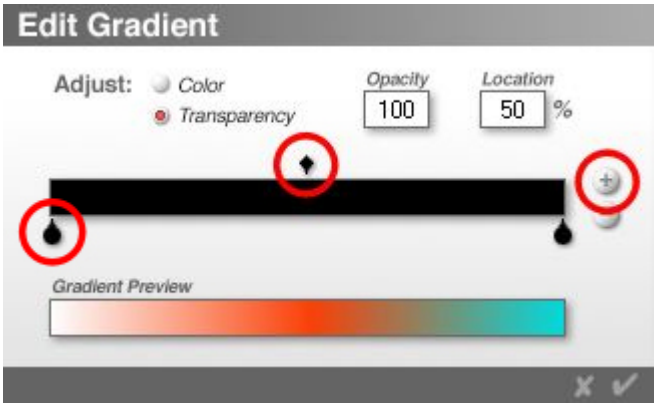


You can also use the above procedure to change the Transparency of imported Gradients.

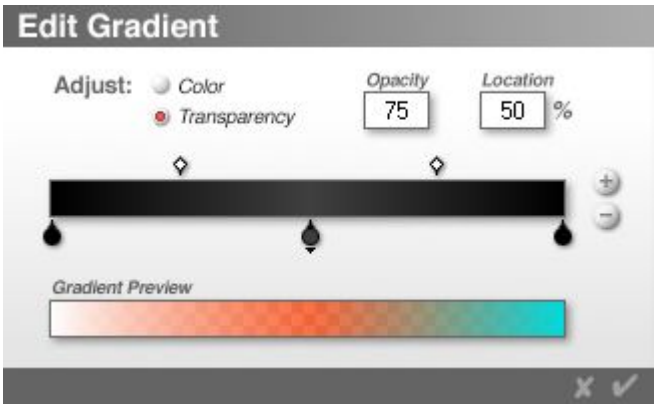
Add Transparency Node

To add transparency nodes:

1. Make sure that one of the Transparency or Transition Nodes is selected, then click the Add (+) button next to the Transparency box.



   A new Transparency Node appears below the center of the Transparency control.



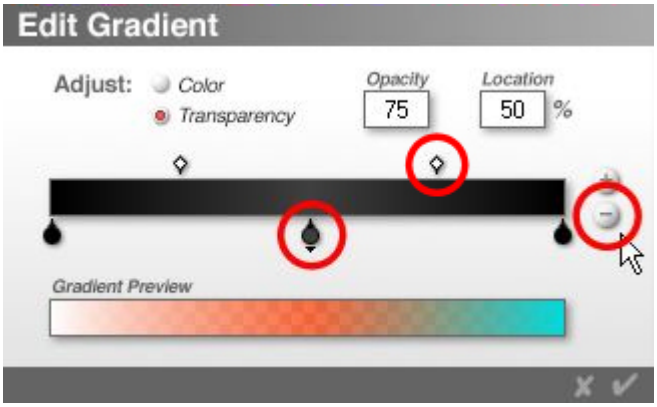
2. Select a Transparency Node to edit and type a value in the Opacity field. Type a value in the Opacity field.
3. Drag the new Transparency Node to where you want to change the transparency.

Delete Transparency Node

When you no longer need a Transparency Node , you can remove it.

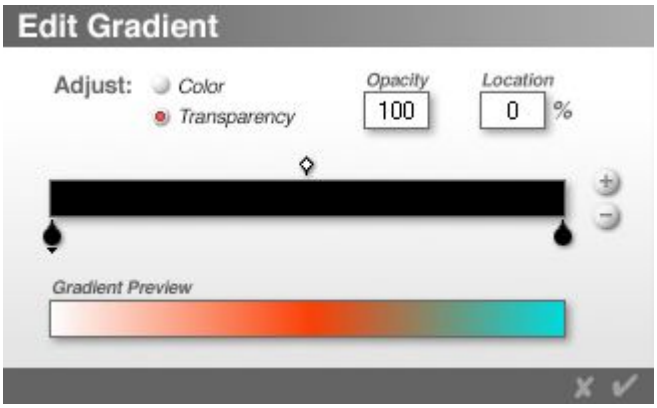
To remove a Transparency Node:

1. Select the Transparency or Transition Node you want to delete and click the Delete (-) button.



The Transparency Node will be removed.

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2. Once you've deleted the Transparency Node, adjust the Location and Transition Point of any remaining Transparency Nodes as needed.



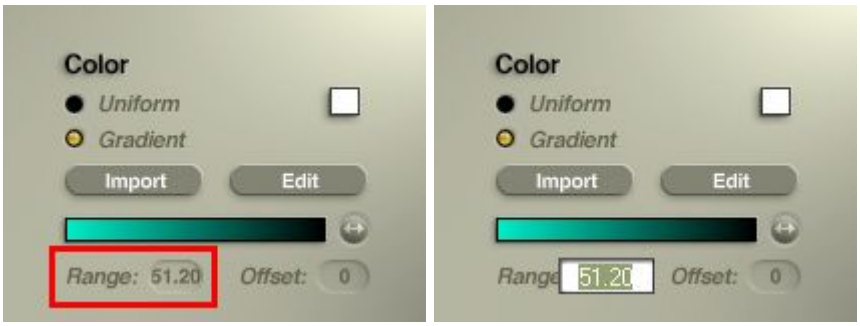
Gradient Range & Offset

The Range of a gradient is the distance in Bryce units that the gradient spans. When a gradient light is this distance from its source, the gradient's end color is applied to the light (provided you've accepted the default offset value of zero).

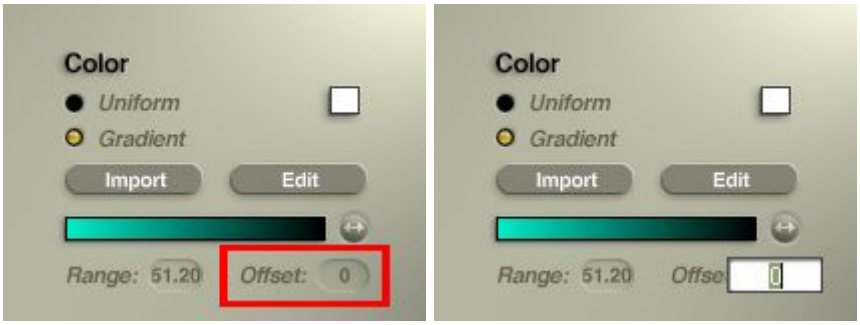
The Offset of a gradient determines how the gradient colors will be applied to the light source. By default, the offset value is zero, which means that the light will start with the start colors of the gradient. When you increase the offset, intermediary gradient colors will be applied to the light at its source. The maximum offset value of 100 results in a light source which begins with the end color of the gradient. See the last image on this page for an example of the Offset set to 100.

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To change a gradient's Range in the Light Lab, click the Range control in the Color area, and type a value in the field. The Range can be set from 0 to 99,999.



To change a gradient's Offset in the Light Lab, click the Offset control in the Color area, and type a value in the field. The Offset can be set from 0 to 100.

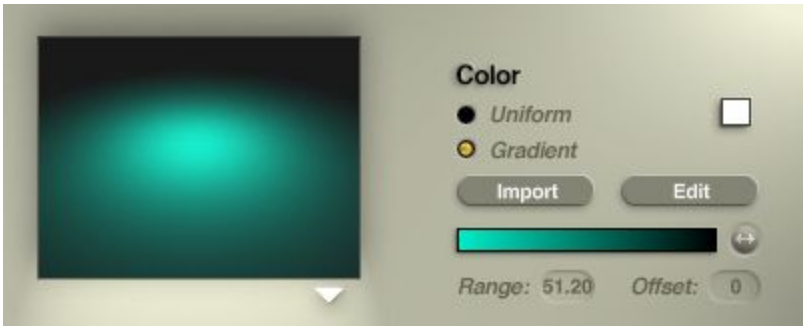


You can also change a gradient's Offset by dragging the Offset button next to the Gradient preview.



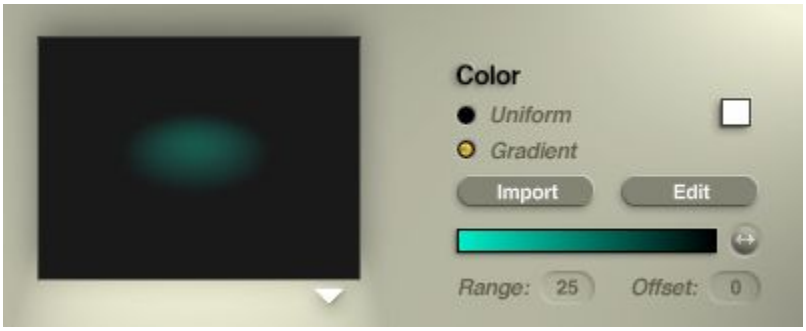
Examples:

1. Range = 51.2; Offset = 0:

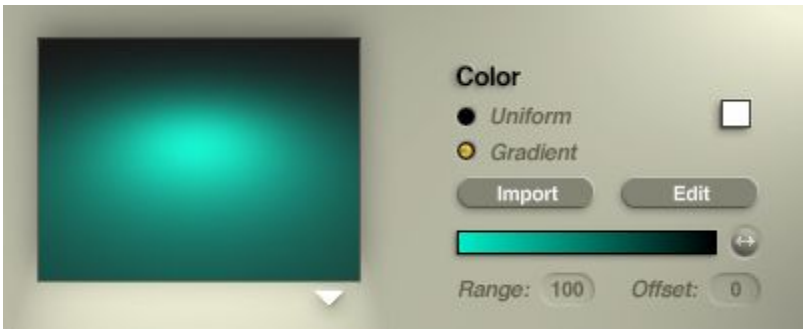


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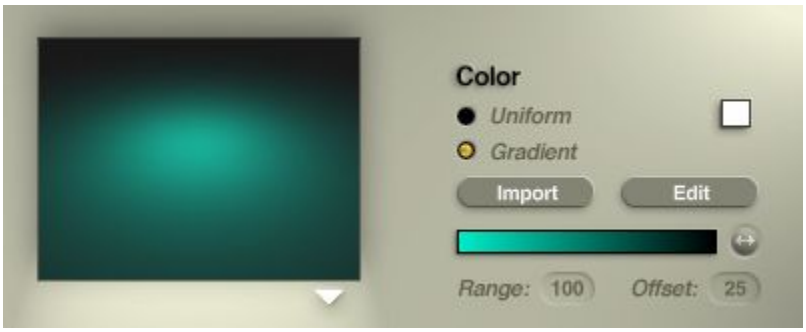
2. Range = 25; Offset = 0:



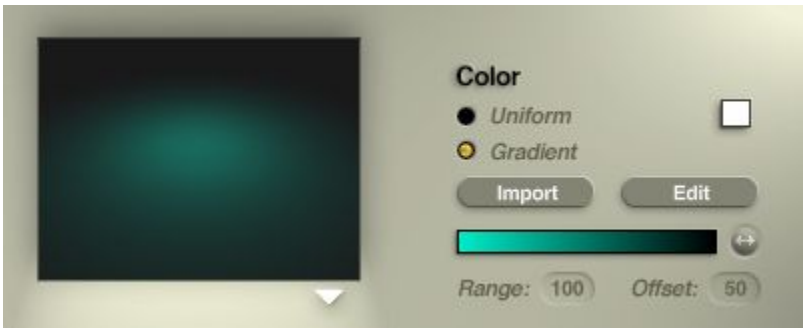
3. Range = 100; Offset = 0:



4. Range = 100; Offset = 25:

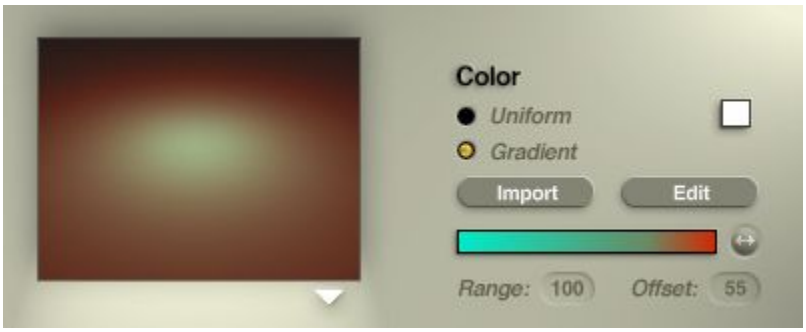


5. Range = 100; Offset = 50:



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6. Range = 100; Offset = 55 - showing the center still a bit green, then changing to orange:



Saving Gradients

Once you've edited a Gradient, you can save the Gradient by adding the Light Object to the Objects Presets Library or by adding the Light Material to the Materials Presets Library.

Saving to the Objects Presets Library saves both the light and the material. The light can be loaded into the scene from the library with all settings intact.

Saving to the Materials Presets Library saves only the material.

To use the saved Gradient material, apply the material to the light, then enter the Light Lab and enable the Gradient option to activate the Gradient.



Light Falloff

Light Falloff lets you control the relationship between the intensity of a light and the distance from the light. In the real world, the farther you are from a light source, the less influence it has on the illumination of your surroundings. In other words, the greater the distance, the weaker the light.

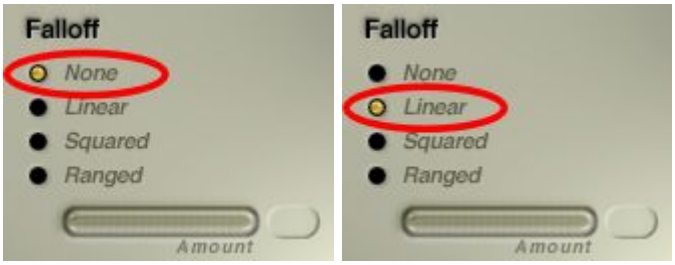
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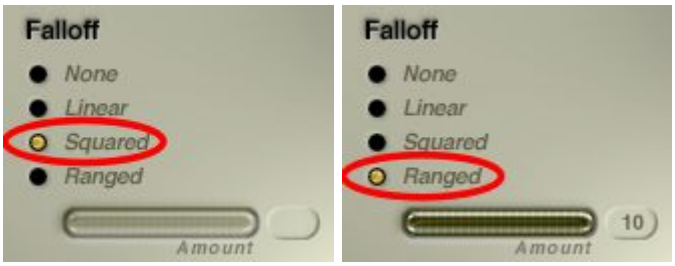


In Bryce there are four falloff types you can apply to a light:

- None (No Falloff) causes the intensity of the light to stay the same regardless of the distance.
- Linear Falloff causes the light's intensity to fall off at a constant rate. When you use this type of falloff, the light's range is rather large. This type of falloff is useful for creating outdoor lights like searchlights.
- Squared Falloff causes the light's intensity to fall off rapidly. When you use this type of falloff, the light's range is quite limited. This is useful for creating indoor lights, like lamps.
- Ranged Falloff causes the light to change abruptly from full intensity to zero (no illumination) after a distance range you define.

To set a light's Falloff in the Light Lab, enable one of the following options: None, Linear, Squared, or Ranged. Selecting Ranged falloff will enable the Amount slider.

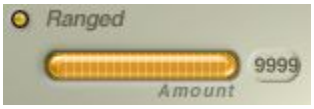




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To define the Range of a light's Ranged Falloff:

1. In the Light Lab, enable the Ranged option in the Falloff area.
2. Drag the Amount control right to define a greater range or left to define a smaller range or enter a value in the Amount field. The default Amount is 10 but can vary from 0 to 9999.



Examples:

- Falloff - None



- Falloff - Linear



- Falloff - Squared

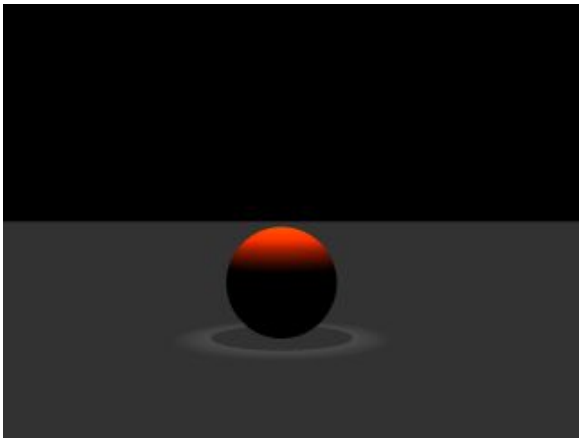


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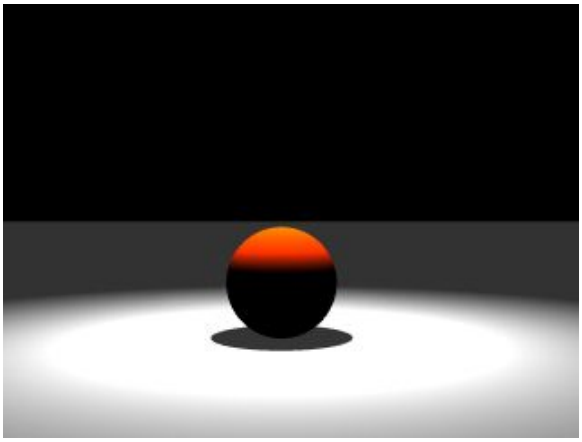
- Falloff - Ranged = 10



- Falloff - Ranged = 100

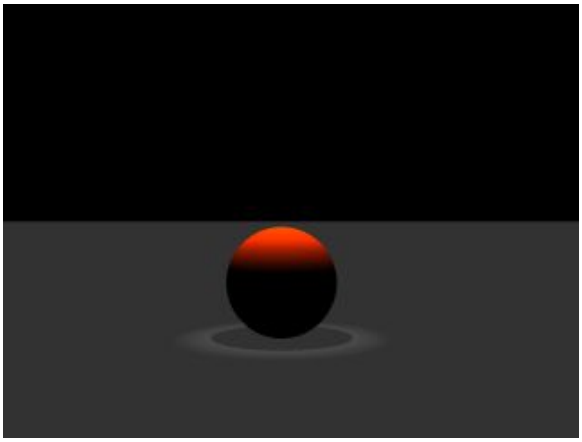


- Falloff - Ranged = 200



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- Falloff - Ranged = 1000



Visible Lights

Visible Lights make your light source visible in the scene, like the ball of light that appears around a lamppost on a foggy night.

There are two types of Visible Lights:

- Surface Visible Lights
- Volume Visible Lights



When you create a Surface Visible Light, the light from the object appears as a semi-transparent shape extending from the light source.

Surface Visible Lights have the same attributes as non-visible lights, so you can use the Edge Softness control to make the shape that extends from the light fuzzier at the edges, to give it a more realistic feel, or the Falloff options to adjust the range of the light.

The properties within the light are controlled by the default Surface Material applied to the light object. The material can be edited in the Materials Lab. By changing the material, you can change the color of the light, the intensity of the light's color, and many other properties.

When you create a Volume Visible Light source, a preset Light-sensitive Volume Material is applied to the light source. This makes the light coming from the light source appear visible in the scene, so in the case of a spotlight, the light would appear as a cone. The light also becomes volumetric and reacts to other lights around it. Objects

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within the cone interact with the light. They can block it, reflect it, etc. Any textures applied to the light also have volume.

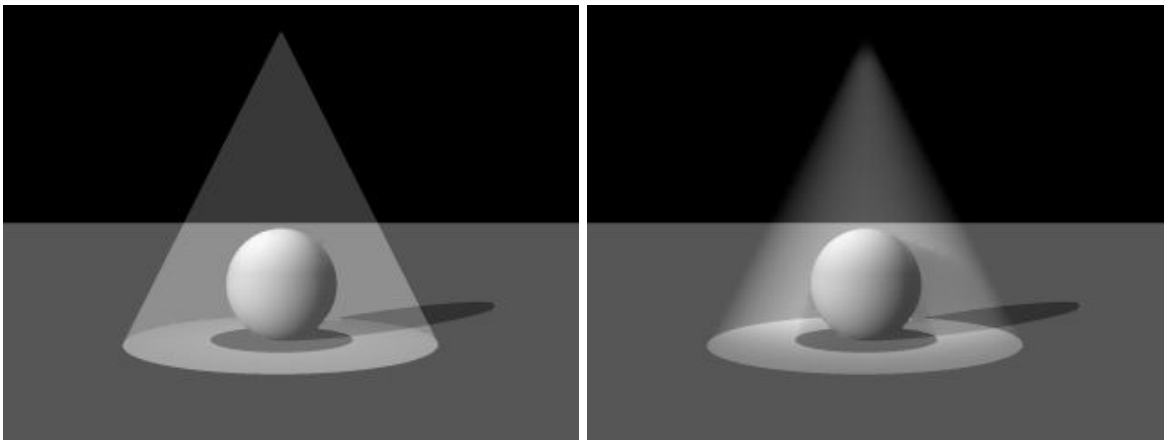
The material applied to the object is pre-defined for you, but you can edit its properties in the Materials Lab. By editing the material you can change the light's intensity, color, and transparency.

When you create a Volume Visible Light source, the light emanating from the light source is visible in the scene. This light has volume and interacts with the objects inside it.

The real difference between the two types of lights becomes apparent when you apply a gel to the light. In Surface Visible Lights, the gel texture is wrapped around the light cone like a skin. Making it semi-transparent makes it look more real, but it doesn't make it interact fully with objects inside the cone.

On the other hand, Volume Visible Lights create a real illuminated volume. The texture gel exists everywhere inside the cone, and the objects within the cone are directly affected by the texture. The light also interacts with the surrounding light sources.

In this example, the same objects were first illuminated by a surface visible light (top) and then a volume visible light (bottom).



It's a good idea to choose to apply the Infinite Light option to both types of visible lights, as this option extends the light's range and gives the light a more realistic look.



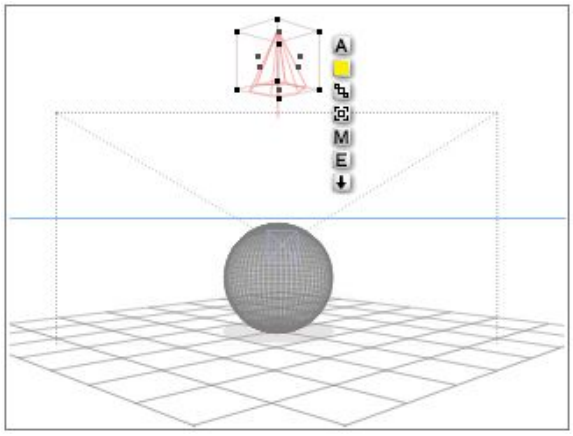
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Surface Visible Lights

When you create a Surface Visible Light source, it appears as a semi-transparent object in the scene.

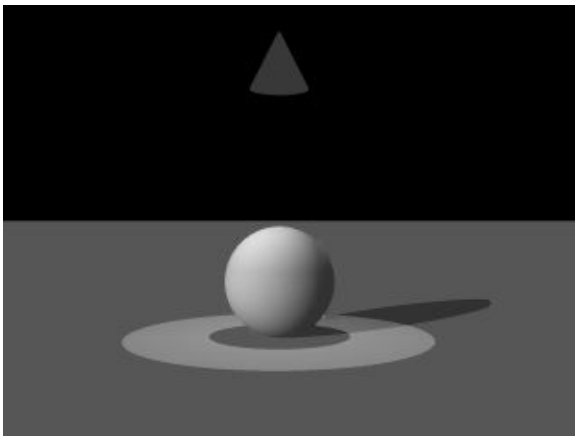
To create a Surface Visible Light:

1. Create a Light Source.



2. Click the E button that appears next to the light's bounding box. The Light Lab appears.
3. In the Render options area, enable the Visible Object and Surface options. A number of preset Surface material properties are applied to the light, creating a visible cone of light.

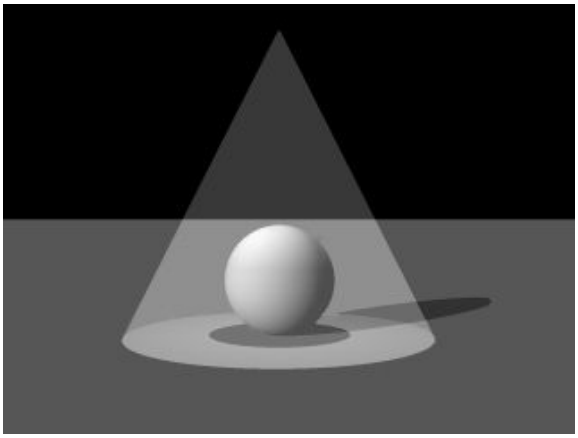




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4. If you want to extend the light's range, enable the Infinite Light option.

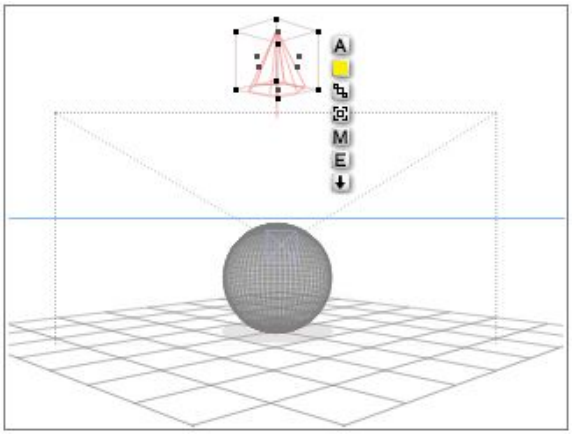




Volume Visible Lights

To create a Volume Visible Light:

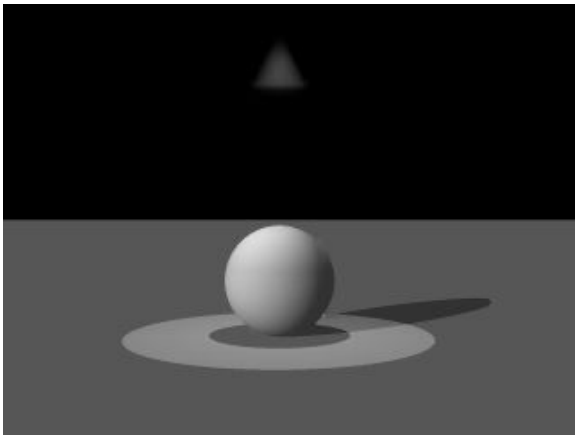
1. Create a Light Source.



2. Click the E button that appears next to the light's bounding box. The Light Lab appears.
3. In the Render options area, enable the Visible Object and Volume options. A number of default Volume material settings are applied to the light source creating a softer visible cone of light.

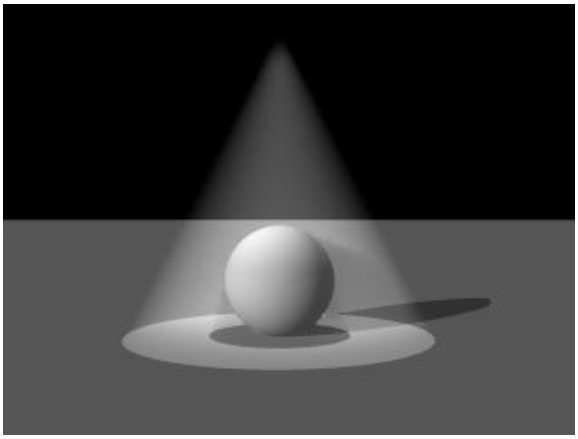
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4. If you want to extend the light's range, enable the Infinite option.





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Editing Visible Light Materials

The materials applied to a Visible Light control many of its properties. Although these materials can be edited, just like any other object's material, you should keep in mind that when you're editing a light's material in the Materials Lab, you're changing how the light source will appear in the scene.

Any texture components you apply to the light's material will appear as gels.

For Surface Visible Lights, the light's material is a Surface material. For a Volume Visible Light the material is a Volume Material.

Refer to "Surface Material Channels" for more on editing Surface materials and "Volume Material Channels" for more on editing Volume materials.

Applying Gels

Gels are filters placed directly in front of lights to change the colors cast by the light or to cast specific kinds of shadows.



In Bryce, you can use any image or procedural texture as a Gel. Once you've assigned a Gel to a light source, you'll be able to see the pattern of the Gel on any object it shines on. For example, if you apply an image to a Square Spotlight, you can create a slide projector. You can apply an unusual texture across your entire scene by assigning a Texture Gel to a Radial Light.

Using an Image as a Gel

To use an image as a Gel:

1. In the Light Lab, enable the Use Gel option.



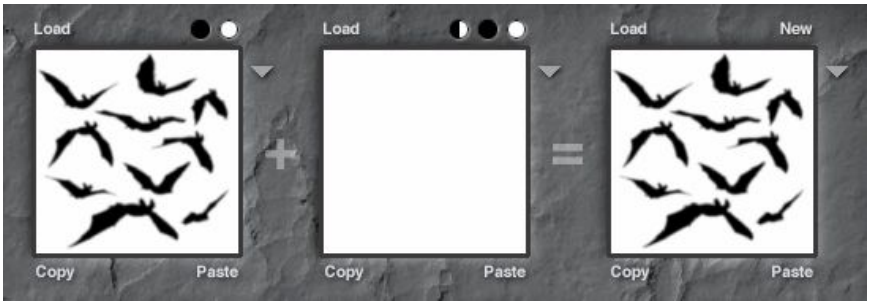
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2. Click the Image button.



The Picture Editor appears.

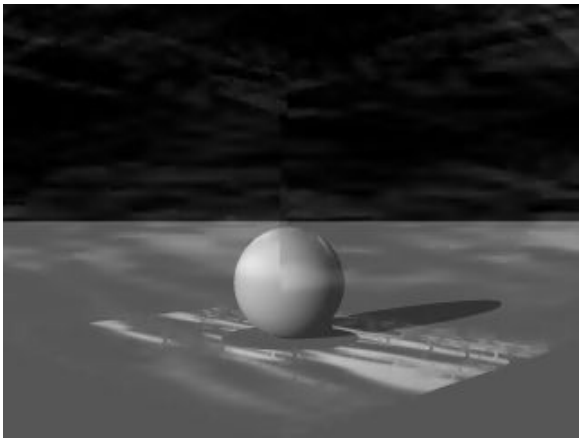
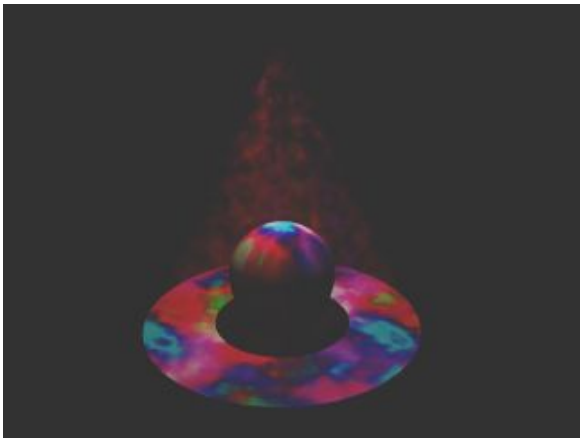
3. Choose an image from the Picture Library or click the Load button and load an image. Refer to "Pictures Editor" for more on the Picture Load dialog.



4. Click the OK icon to close the dialog. The picture is applied as a Gel.



When you apply a Gel to a Visible Light, the texture's pattern is visible throughout the visible light.

* Image Gels used are from the gel packages by Alex Aurichio.

Using an Procedural as a Gel

To use a procedural texture as a Gel, you must select a preset that contains a texture. Preset materials that contain only color or optic information (such as many found in the Misc > Basic category) will have no effect.

If you selected a color other than white in the Light Lab, that color overrides colors from Texture Gels. However, the luminance patterns are still used.

To use a procedural texture as a Gel:

1. In the Light Lab, enable the Use Gel option.



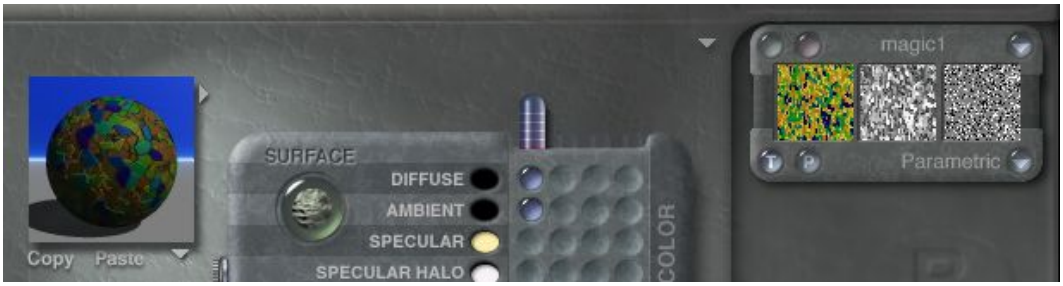
2. Click the Procedural button.



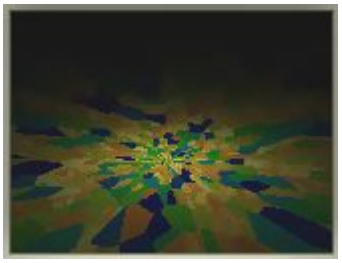
The Materials Lab appears.

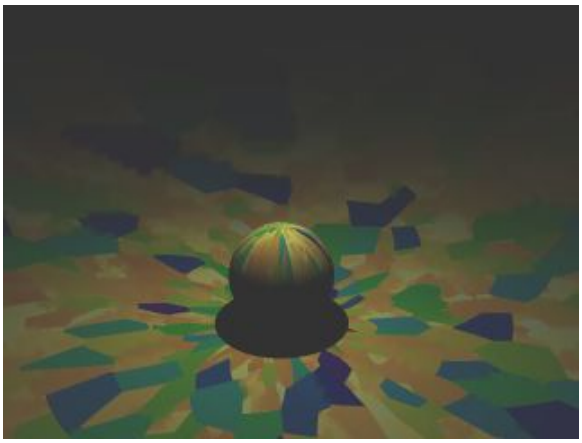
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3. Select a material from one of the categories available.



4. Click the OK icon to close the dialog. The texture in the material is applied as a gel.





Saving Light Settings

You can save up to five light settings using Memory Dots. This feature lets you experiment safely with various light attributes without losing your favorite light effects.

You can switch between different saved light settings to compare them. Also, you can reset the light settings to default at any time. When you no longer need a configuration of light settings, you can delete it.

The leftmost dot, slightly separated from the rest, is a quick way to return to the default Bryce sky.

There is no way to clear this dot. It will always contain the default light settings.

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Memory Dots are saved with the scene, but not between sessions, so you may want to save your favorite lights as presets before ending a Bryce session.

When you click on a full dot to activate it, the saved setting becomes the current Light. When you no longer need a saved light setting, you can delete it by clearing the dot it is saved to.

- To save a light setting to a memory dot, click an empty dot.
  - Empty dots appear gray - 
  - Full dots appear green (blue in Bryce 5/5.5, teal in Bryce 3/4) - 
- To return to the default light, click the far left memory dot. The light returns to the default, regardless of how many changes you've made.
- To switch between saved light settings, click a full (green) dot.
- Active dots appear blue with a white dot in the middle - 
- To clear a full dot, Opt/Alt+click a full dot. The dot turns gray and a new sky setting can be saved to it.

Positioning Lights

Light wireframes can be edited exactly like any other object, either directly in the scene using its bounding box or indirectly using the tools in the Edit palette.

Refer to "Repositioning Objects" for more on positioning objects.

Linking & Tracking with Lights

Since lights act just like other objects, you can link them to other objects or have them track other objects in the scene.

In an animation, lights that track an object can create some very complex lighting effects.

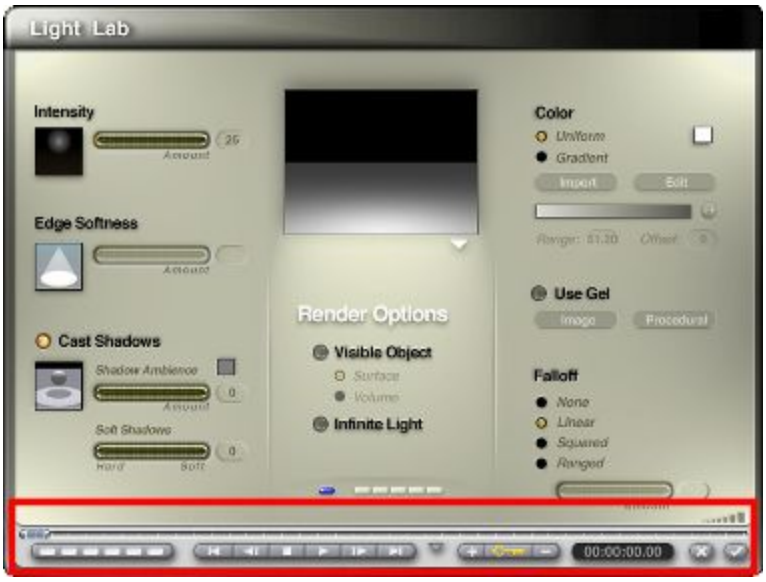
Refer to "Animating Techniques" for more on linking and tracking.

Animating Lights

You can animate lights by using the Animation Controls in the Light Lab. For example, you can animate a light's edge softness and intensity.

Refer to "Animation" for more on the animation controls.

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Tree Lab

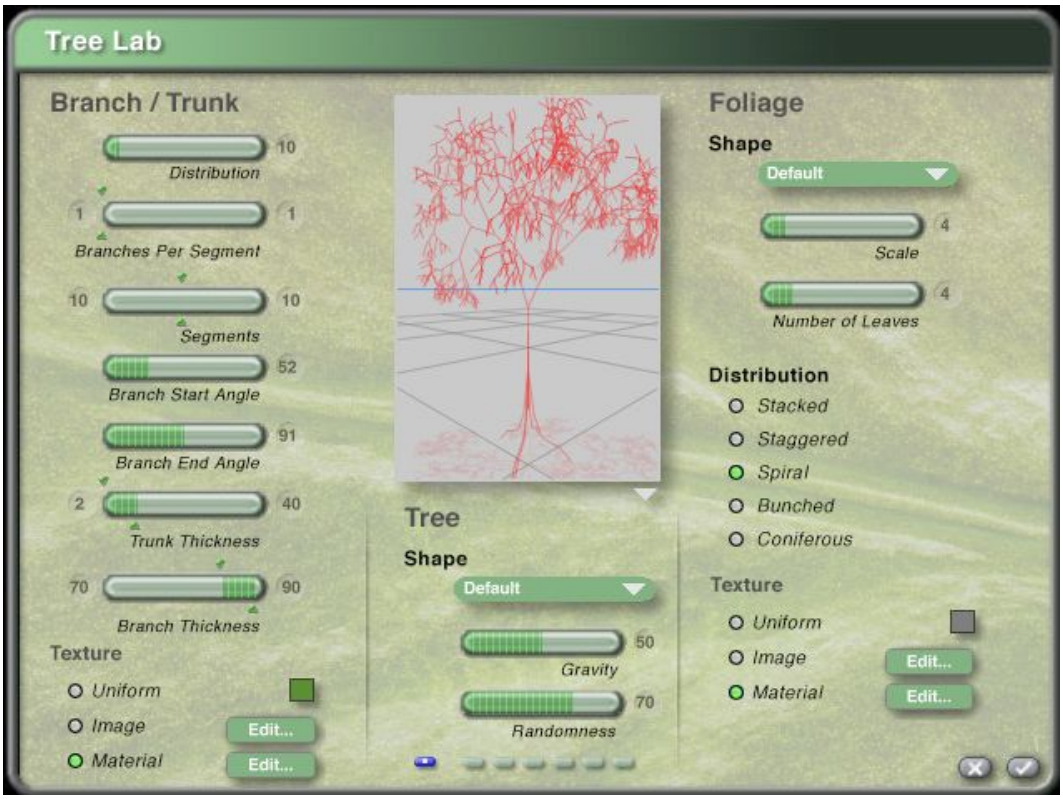
The Tree Lab lets you control the various attributes of tree objects. Using the tree lab, you can edit the trunk, branches, and foliage of a tree object to achieve a particular look. You cannot access the Tree Lab unless you have a tree object in your scene. When the Tree Lab opens, it temporarily replaces the screen and displays the currently selected tree object in the Tree Preview.

Accessing the Tree Lab

To access the Tree Lab:

1. Select a tree object in your scene.
2. Click the E icon that appears next to its bounding box or choose Objects > Edit Object from the Menu bar. The Tree Lab appears.

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Editing Trees

In Bryce 5, the ability to create organic tree shapes was added. This lets you add realistic or fantasy trees to your scenes. You can then customize your trees in the Tree Lab by assigning materials, controlling the shape of the trees, and more.

Trees have four essential components: the overall shape, the trunk, the branches, and the foliage. How these elements are shaped and organized around each other defines the appearance of the tree.

The overall shape of trees varies greatly between species. In general, trees have several feet of trunk before they begin to branch out, and the branches eventually form a crown. The shape of the tree can vary greatly within these criteria. For example, the sugar maple has an almost spherical silhouette; a poplar tree has a cylindrical shape that tapers to a point at the top; and conifers such as pine trees have a triangular shape.

The width of the trunk generally indicates the age of the tree; however, different species of trees have different widths when mature. A birch tree, even when quite old, will not have as wide a trunk as an oak tree of the same age. The texture of the trunk can also be a good indicator of the species or age of the tree; the trunk generally becoming coarser with age.

The characteristics of branches, such as their thickness, how the branches are arranged on the trunk, how they are positioned relative to each other, and how they are affected by gravity can also vary greatly between species. For example, a weeping

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willow tree has branches that begin growing upwards from the trunk but are so thin that gravity bends them towards the ground, giving the tree a distinctive, drooping appearance. Some species of conifers have symmetrically spaced and sized branches, giving them a very geometric appearance.

Finally, the foliage of the tree is probably the most obvious indicator of species. Species of trees have greatly varying leaf shapes and colors. Oak and ginkgo trees are both easily recognized by the distinctive shape of their leaves.

The variations in trees are virtually limitless. You need only look at the wide variation found in nature for inspiration when creating and customizing trees in Bryce.

Min/Max Sliders

The Tree Lab uses a unique kind of slider for setting some of the attributes of the trunk and branches. These sliders, called Min/Max sliders, let you set both the minimum and maximum values for an attribute using the same slider.



Bryce will choose a random value between the specified minimum and maximum when generating the tree.

To set the maximum value, drag the arrow below the Min/Max slider to the desired value. The Max slider cannot be set to less than the Min slider.



To set the maximum value numerically:

1. Click the field to the right of the Min/Max slider.
2. Type a value in the field.



3. To set the minimum value, drag the arrow above the Min/Max slider to the desired value. The Min slider cannot be set to more than the Max slider.



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To set the minimum value numerically:

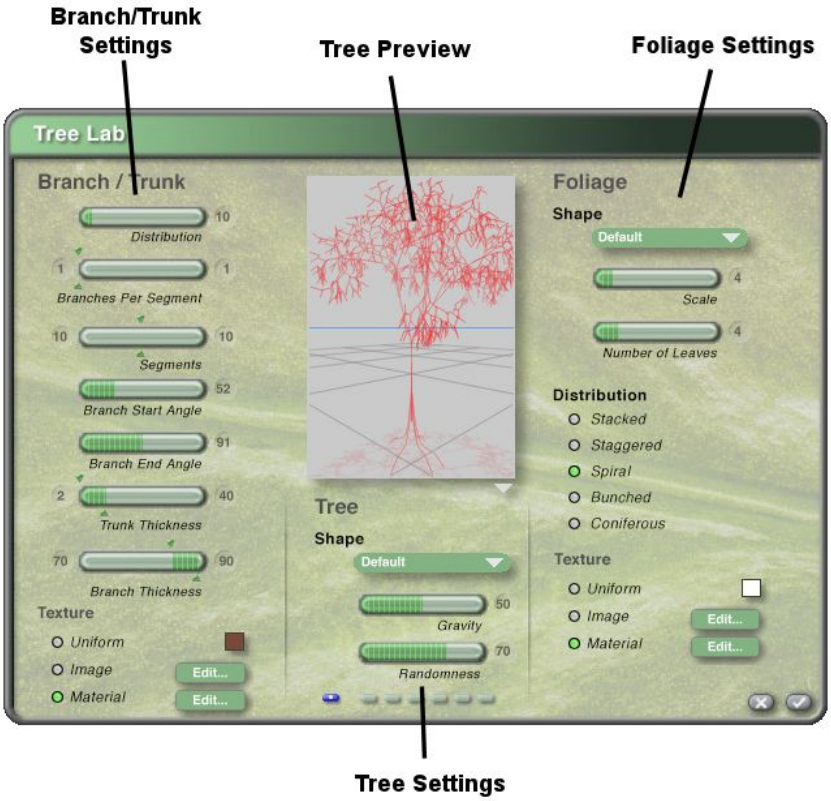
1. Click the field to the left of the Min/Max slider.
2. Type a value in the field.



A Quick Tour of the Tree Lab

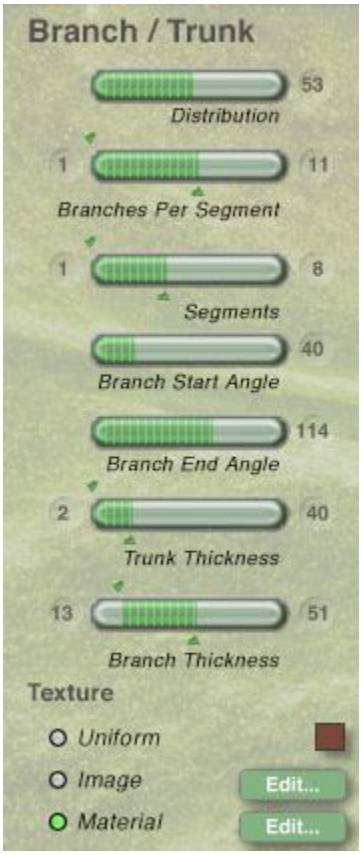
The Tree Lab is divided into four sections:

- Tree Preview: lets you preview changes to your tree.
- Branch/Trunk: lets you control the size of the tree trunk; the placement, number, and thickness of branches; and the materials used for the trunk and branches.
- Tree: lets you control the overall shape of the tree, the randomness of the tree, and how gravity affects the tree.
- Foliage: lets you control the overall shape of individual leaves, the scale and number of leaves, the distribution of the leaves, and the materials used for the leaves.



Branch/Trunk Settings

You can use the Branch/Trunk settings located on the left side of the Tree Lab to control the thickness of the trunk and branches, the distribution of branches around the trunk, the number of segments, the number of branches per segment, the starting and ending angles of the branches, and the texture used for the trunk and branches.



Trunk Thickness

The Trunk Thickness slider lets you specify a minimum and maximum width of the trunk, from 1 to 200. The minimum width controls the thickness of the twigs at the outermost reaches of the tree while the maximum width controls the base of the tree.



To set the maximum trunk thickness, drag the arrow below the Trunk Thickness slider to the desired value, or type a value in the field to the right of the slider. The maximum trunk thickness can be set from 1 to 200 but cannot be set thinner than the minimum trunk slider.

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To set the minimum trunk thickness, drag the arrow above the Trunk Thickness slider to the desired value or type a value in the field to the left of the slider. The minimum trunk thickness can be set from 1 to 99 but cannot be set thicker than the maximum trunk slider

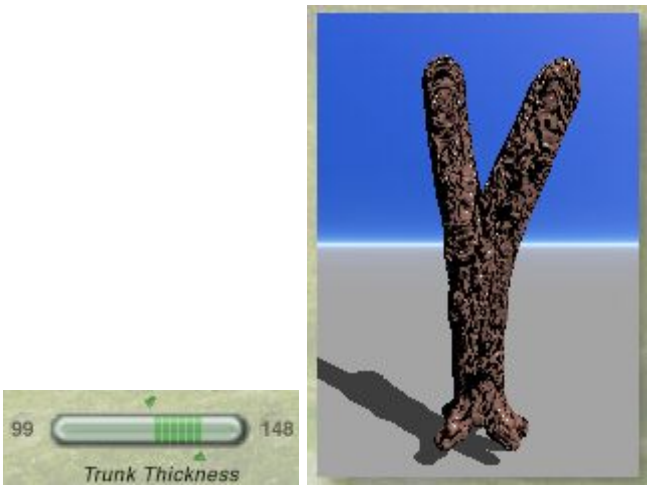


Examples:

- Minimum = 1, Maximum = 148



- Minimum = 99, Maximum = 148 - notice how the upper sections became thicker as the minimum slider increased



Branch Thickness

The Branch Thickness slider lets you specify a minimum and maximum percentage width for the branches, from 1 to 100. This setting doesn't control the actual width of the branches; it is the percentage width of child branches. For example, if the branch

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thickness is set to 50%, each child branch will be 50% of the width of the parent branch it is spawned from.



To set the maximum branch thickness, drag the arrow below the Branch Thickness slider to the desired value or type a value in the field to the right of the slider.

To set the minimum branch thickness, drag the arrow above the Branch Thickness slider to the desired value or type a value in the field to the left of the slider.

Examples:

- Minimum & Maximum = 50





- Minimum = 70, Maximum = 95

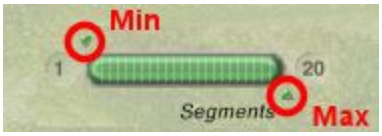




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Number of Segments

Each branch of the tree is divided into a number of segments. Each segment is a location on a "parent" branch where "child" branches will be formed. The number of segments can be set from 1 to 20.

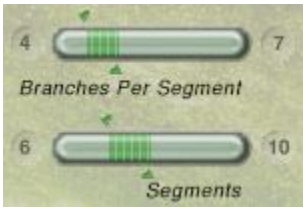


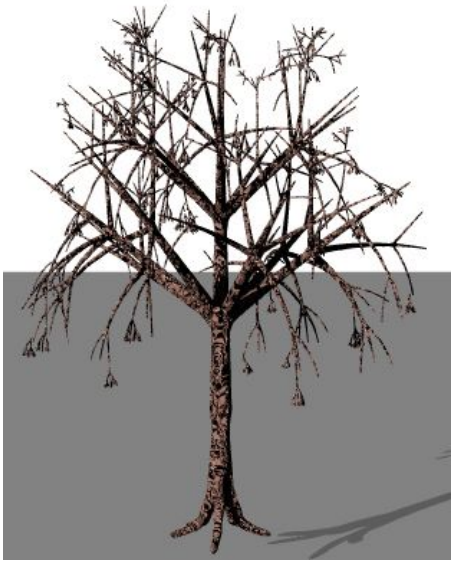
To set the maximum number of segments, drag the arrow below the Segments slider to the desired value, or type a value in the field to the right of the slider.

To set the minimum number of segments, drag the arrow above the Segments slider to the desired value, or type a value in the field to the left of the slider.

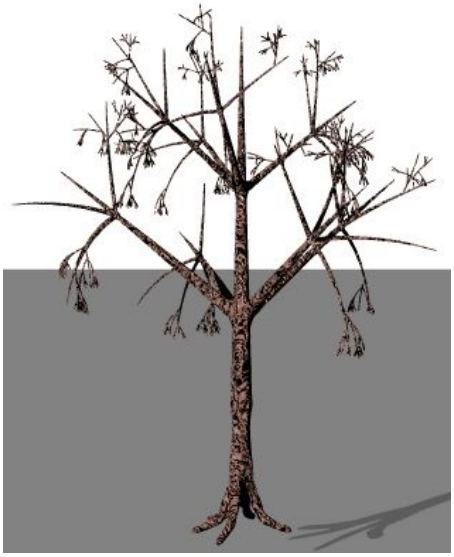
Examples:

- Segments = 6-10, Branches per Segment = 4-7

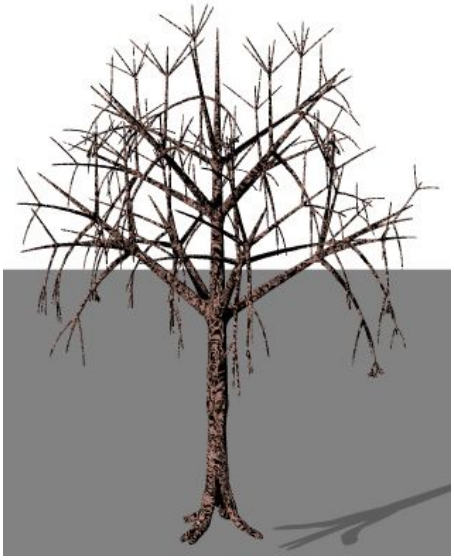




- Segments = 7, Branches per Segment = 4



- Segments = 10, Branches per Segment = 4



Branches per Segment

The Branches Per Segment slider lets you specify how many "child" branches will be formed in each branch segment.



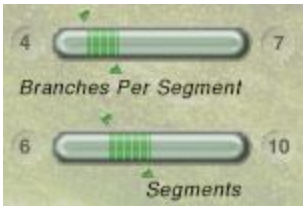
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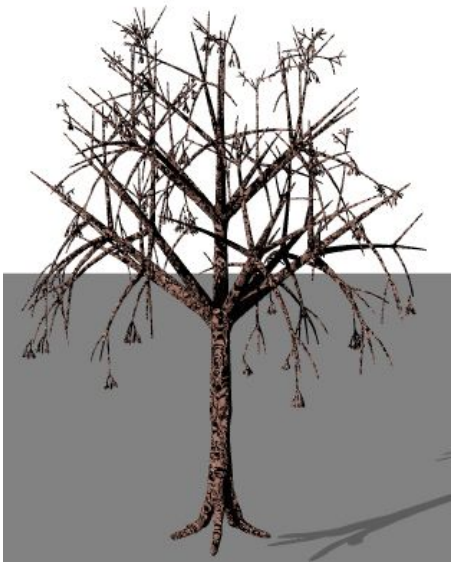
To set the maximum number of branches per segment, drag the arrow below the Branches Per Segment slider to the desired value, or type a value in the field to the right of the slider. The maximum number of branches per segment can be set from 1 to 20.

To set the minimum number of branches per segment, drag the arrow above the Branches Per Segment slider to the desired value, or type a value in the field to the left of the slider. The minimum number of branches per segment can be set from 1 to 4.

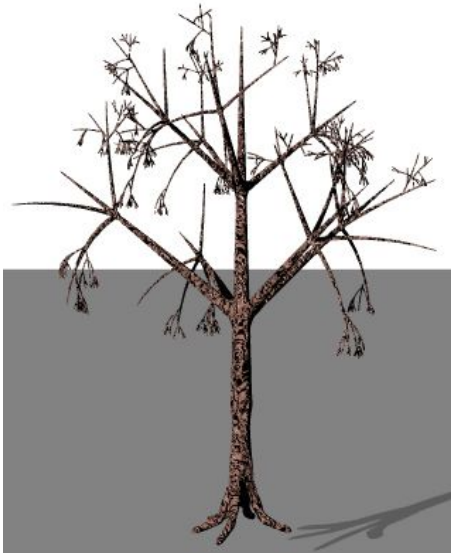
Examples:

- Segments = 6-10, Branches per Segment = 4-7

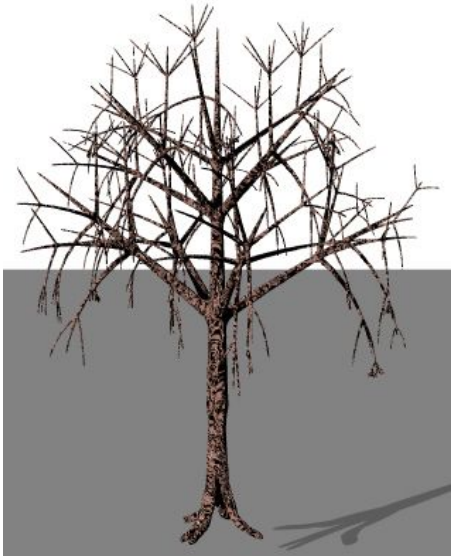




- Segments = 7, Branches per Segment = 4



- Segments = 10, Branches per Segment = 4



Branch Angles

The starting and ending angles for branches help determine the overall shape of a tree.

The branch start angle is the angle of the branch at the thickest part of the tree. The slider can range from 0 to 180.



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The branch end angle is the angle of the branch at the thinnest part of the tree. The slider can range from 0 to 180.

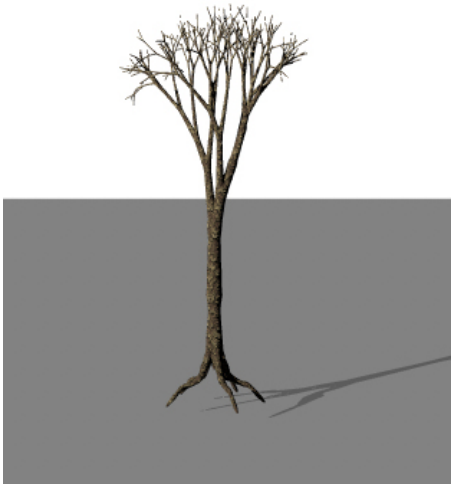


To set the branch start angle, drag the Branch Start Angle slider. Drag right to increase the angle and left to decrease it.

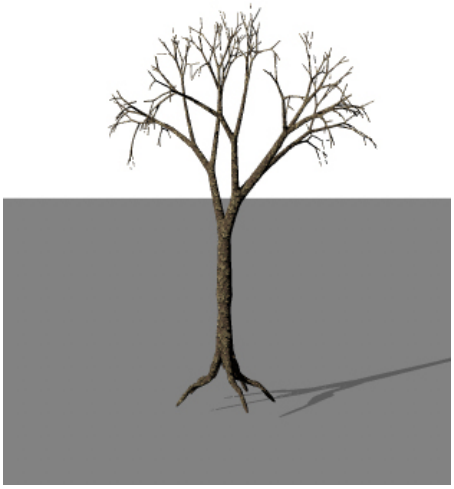
To set the branch end angle, drag the Branch End Angle slider. Drag right to increase the angle and left to decrease it.

Examples:

- Branch Start Angle = 25, Branch End Angle = 50



- Branch Start Angle = 50, Branch End Angle = 50



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- Branch Start Angle = 75, Branch End Angle = 75



- Branch Start Angle = 75, Branch End Angle = 150



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Trunk and Branch Texture

You can use a uniform color, an image, or a material as the texture for the trunk and branches of a tree. All the branches and the trunk of the tree will have the same texture; you cannot vary the texture for the branches and the trunk.

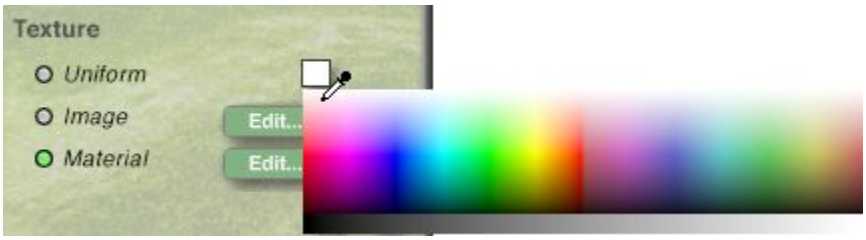


To use a uniform texture:

1. Click the Uniform button at the bottom of the Branch/Trunk section.



2. Click the Uniform Color swatch and choose a color from the color picker.



To use an image texture:

1. Click the Image button at the bottom of the Branch/Trunk section.



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2. Click the Edit button to the right of the Image button. The Pictures Editor appears. Refer to "Pictures Editor" for more on the Pictures Editor.



To use a material texture:

1. Click the Material button at the bottom of the Branch/Trunk section.



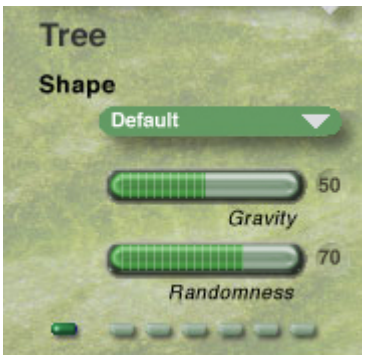
2. Click the Edit button to the right of the Material button. The Materials Lab appears.



3. Select a material from the lab and click on the OK icon to return to the Tree Lab.

Tree Settings

You can use the tree shape settings to set the overall shape of a tree and how the tree is affected by gravity. You can set the amount of randomness for the tree, ensuring that even with the same settings, no two trees will look alike. You can also use the Tree Lab's memory dots to store settings as you experiment with different tree attributes.

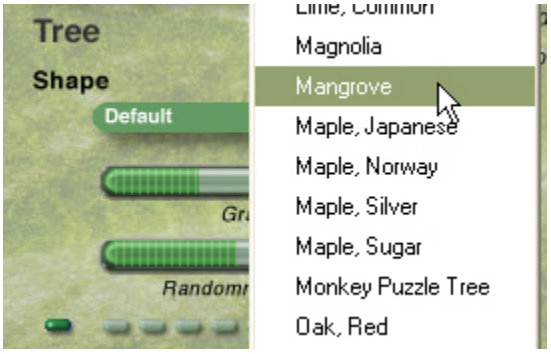


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Tree Shape

The overall shape of a tree varies greatly for different species of trees. Using the Shape drop down list, you can choose a species of tree for the overall shape of the tree.

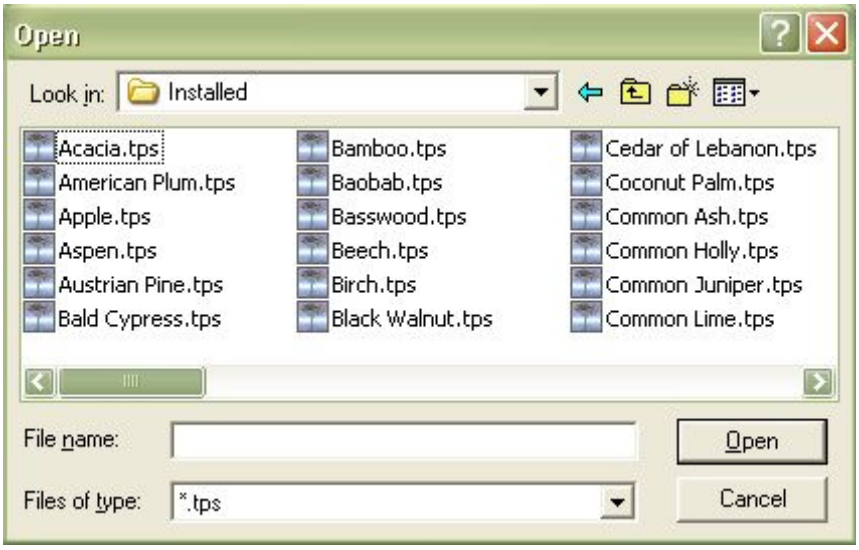
1. To choose a tree shape, click the Shape drop down list and choose a species of tree.



2. You can also select a tree shape by pressing Opt/Alt and clicking on the Default button.



3. The Open file dialog will come up where you can navigate to the Presets/Treeshapes/Installed folder and select a tree shape.



There are 60 tree shapes available:

- Acacia
- American Plum

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- Apple
- Aspen
- Austrian Pine
- Bald Cypress
- Bamboo
- Baobab
- Basswood
- Beech
- Birch
- Black Walnut
- Cedar of Lebanon
- Coconut Palm
- Common Ash
- Common Holly
- Common Juniper
- Common Lime
- Date Palm
- Dogwood
- Douglas Fir
- Elm
- Eucalyptus
- Fir Tree
- Giant Sequoia
- Ginkgo
- Hemlock
- Hornbeam
- Horse Chestnut
- Italian Cypress
- Japanese Maple
- Joshua Tree
- Magnolia
- Mangrove
- Monkey Puzzle

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- Mountain Ash
- Norfolk Island Pine
- Norway Maple
- Norway Spruce
- Papaya
- Poplar
- Red Oak
- Rhododendron
- Russian Olive
- Sassafras
- Scotts Pine
- Seagrape
- Silver Maple
- Spruce
- Sugar Maple
- Sumac
- Sweet Gum
- Sycamore
- Tamarack
- Tulip Tree
- Weeping Willow
- White Cedar
- White Oak
- White Pine
- Yew

Gravity

The branches and leaves of a tree can be affected by gravity. When gravity is high, the branches of a tree will droop and the leaves will be oriented towards the ground. When gravity is low, the same branches may be more upright, and the leaves may be oriented in all directions. The Gravity slider lets you specify how much gravity will be applied to a tree. The slider can be set from 0 to 100.

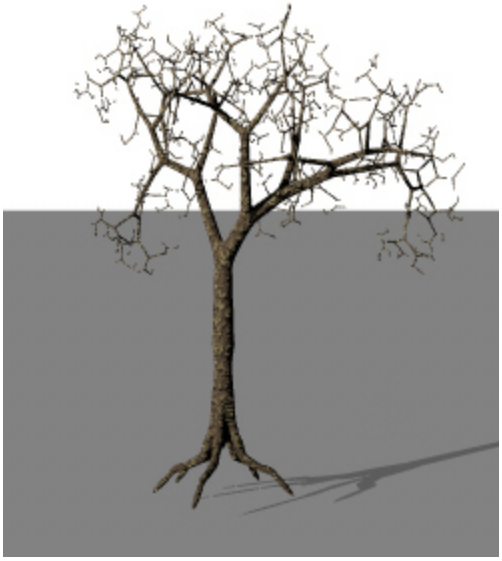


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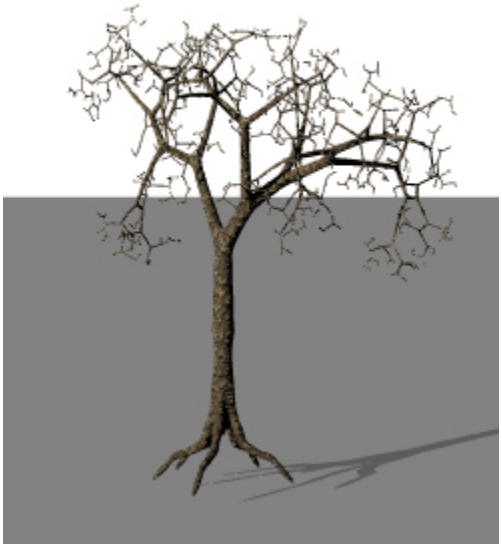
To set the gravity amount, drag the Gravity slider right to increase the amount of gravity and left to decrease it, or enter a value in the field.

Examples:

- Gravity = 5



- Gravity = 25



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- Gravity = 50



- Gravity = 100



Randomness

Trees in nature are not perfectly shaped. Two trees of the same species growing under identical conditions will vary greatly from one another. In Bryce, you can control the randomness of a tree so that, even with the identical settings, no two trees will be identical.

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The randomness setting affects both branch angles and leaf angles. The slider can be set from 0 to 100.



To set a value for randomness, drag the Randomness slider right to increase the amount of randomness and left to decrease it, or enter a value in the field.

Once the randomness has been set, the tree will need to be saved to the tree presets folder since copying or duplicating the tree will not activate the randomness.

See "Saving Tree Presets" and "Access Pre-Generated Trees" for information on how to save and use tree presets.

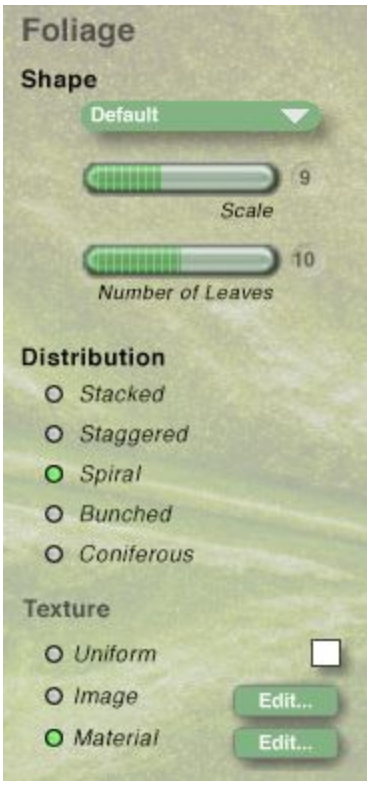
Examples:



Foliage Settings

You can use the foliage settings to control the appearance of the leaves on a tree. Using the foliage settings, you can choose a leaf shape, size, and quantity, and determine how the leaves are distributed on the branches. You can also specify a texture for the leaves.

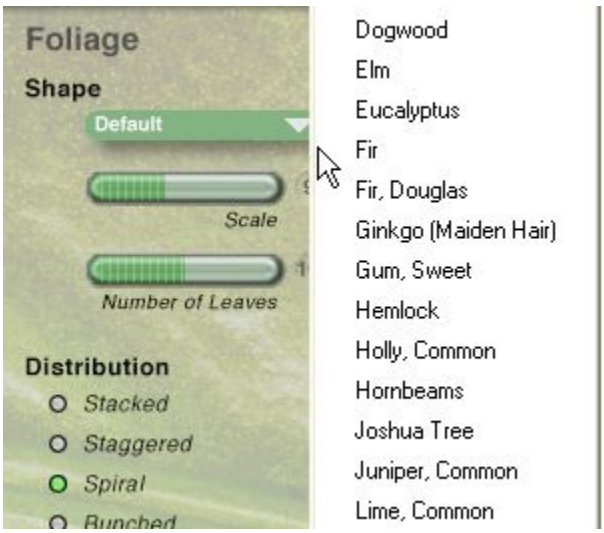
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Foliage Shape

The leaves of different species of trees have different shapes. The Shape setting lets you choose a leaf shape from a drop down list.

1. To choose a leaf shape, click the Shape drop down and choose a species of tree from the list.

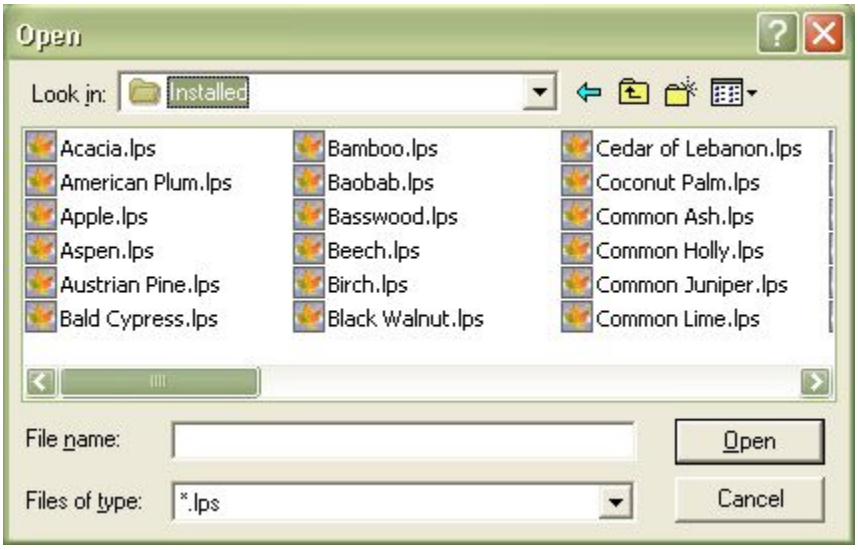


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2. You can also select a leaf shape by pressing Opt/Alt and clicking on the Default button.



3. The Open file dialog will come up where you can navigate to the Presets/Leaves/Installed folder and select a leaf shape.



There are 61 foliage shapes available:

- Acacia
- American Plum
- Apple
- Aspen
- Austrian Pine
- Bald Cypress
- Bamboo
- Baobab
- Basswood
- Beech
- Birch
- Black Walnut
- Cedar of Lebanon
- Coconut Palm

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- Common Ash
- Common Holly
- Common Juniper
- Common Lime
- Date Palm
- Dogwood
- Douglas Fir
- Elm
- Eucalyptus
- Fir Tree
- Giant Sequoia
- Ginkgo
- Hemlock
- Hornbeam
- Horse Chestnut
- Italian Cypress
- Japanese Maple
- Joshua Tree
- Magnolia
- Mangrove
- Monkey Puzzle
- Mountain Ash
- Norfolk Island Pine
- Norway Maple
- Norway Spruce
- Papaya
- Poplar
- Red Oak
- Rhododendron
- Russian Olive
- Sassafras
- Scotts Pine
- Seagrape

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- Silver Maple
- Spruce
- Sugar Maple
- Sumac
- Sweet Gum
- Sycamore
- Tamarack
- Tulip Tree
- User Leaf
- Weeping Willow
- White Cedar
- White Oak
- White Pine
- Yew

Foliage Scale

You can control the size of the leaves on a tree using the Scale slider. The Scale slider measures the size of the leaves as a percentage of the size of the tree. The slider can be set from 1 to 20.



To choose the size of leaves, drag the Scale slider. Drag right to increase the scale and left to decrease it.

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Examples:

- Scale = 5



- Scale = 10



- Scale = 15



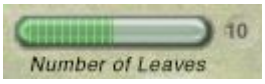
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- Scale = 20



Number of Leaves

The Number of Leaves slider lets you choose how many leaves will appear on each branch.



To set the number of leaves, drag the Number of Leaves slider right to increase the number of leaves and left to decrease the number of leaves, or enter a value in the field. The slider can be set from 0 to 20.

The number of leaves along with the scale will directly affect the length of the branches.

Examples:

- Scale = 4, Number = 7



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- Scale = 8, Number = 15



- Scale = 10, Number 10



- Scale = 15, Number 5



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Foliage Distribution

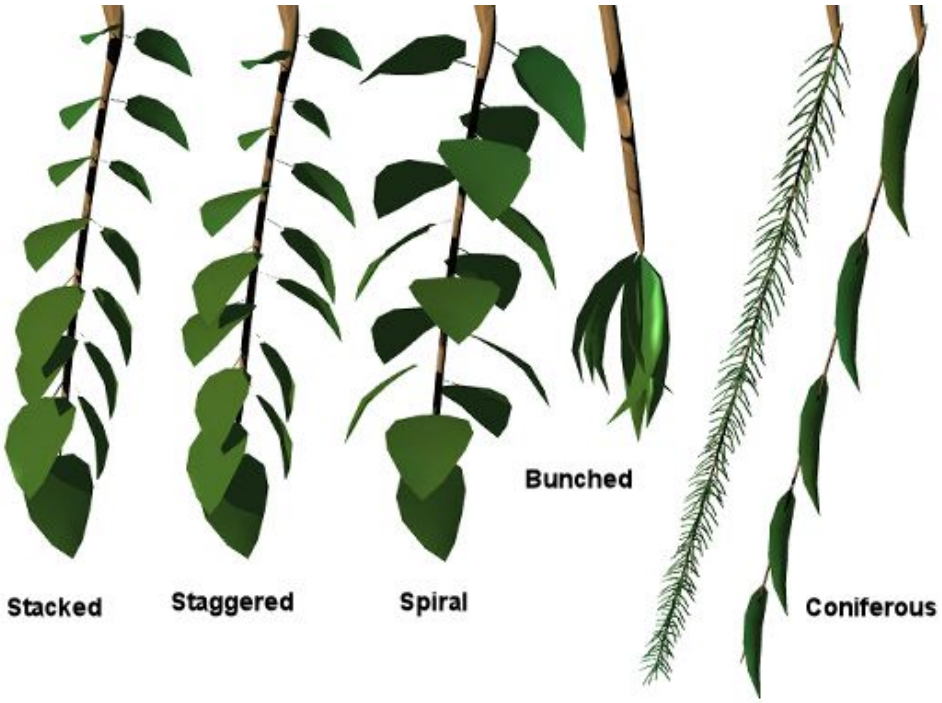
In nature, different species of trees have different arrangements of leaves. Some trees have leaves that are clustered together while others have leaves that spiral around a branch in an almost symmetrical pattern. Bryce offers five different leaf arrangements: Stacked, Staggered, Spiral, Bunched, and Coniferous.



To choose a leaf distribution, click the button beside one of the following options:

- Stacked: leaves are arranged in pairs on each side of the branch. If there is an odd number of leaves, a single leaf will be placed at the tip of the branch.
- Staggered: leaves alternate on each side of the branch. If there is an odd number of leaves, a single leaf will be placed at the tip of the branch.
- Spiral: leaves are arranged around the branch in a spiral formation. Bunched: leaves are clustered at the tip of the branch.
- Coniferous: leaves are placed along the middle of the branch.

The image below shows examples of the different distribution options.



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Please note that on trees that are densely populated with branches, segments, and/or leaves, the difference between some distribution options may not be very obvious. This is especially true for the staggered and spiral options. Decreasing the number of leaves or their scale will make the difference more obvious.

Foliage Texture

You can use a uniform color, an image, or a material as the texture for leaves of a tree. All the leaves will have the same texture; you cannot vary the texture of leaves.

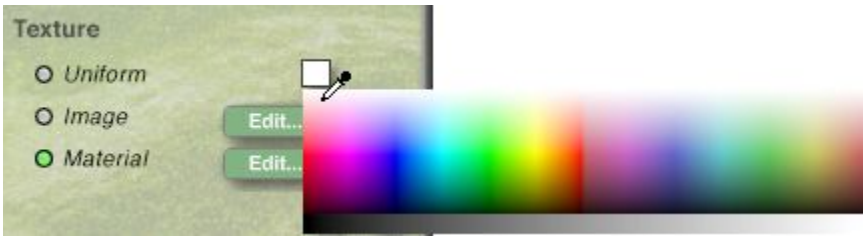


To use a uniform texture:

1. Click the Uniform button at the bottom of the Foliage section.



2. Click the Uniform Color swatch and choose a color from the color picker.



To use an image texture:

1. Click the Image button at the bottom of the Foliage section.



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2. Click the Edit button to the right of the Image button. The Pictures Editor appears. Refer to "Pictures Editor" for more on the Pictures Editor.



To use a material texture:

1. Click the Material button at the bottom of the Foliage section.



2. Click the Edit button to the right of the Material button. The Materials Lab appears.



3. Select a material from the lab and click on the OK icon to return to the Tree Lab.

You can only change the material of the leaves if you access the Materials Lab through the Tree Lab. If you select a tree and access the Materials Lab or the Materials Preset Library from the Edit palette and choose a material, the material will only be applied to the trunk and branches of the tree.

Saving Tree Lab Settings

The memory dots in the Tree Lab let you store your favorite Tree Lab settings. Using these dots you can safely explore many Tree Lab configurations without losing your favorite settings along the way. Memory dots appear at the bottom of the Tree Lab.

To save Tree Lab settings, in the Tree Lab, click on an empty dot (empty dots are gray). All the current Tree Lab settings are stored in the selected dot.

To switch to a saved Tree Lab setting, click on a full dot (full dots are green). The current settings are replaced with the settings stored in the dot. An active dot will be green with a white point inside it.

To reset Tree Lab settings to default, in the Tree Lab, click the leftmost memory dot. This dot always appears full.

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To delete a saved Tree Lab setting, Opt/Alt+click on a full memory dot. The leftmost dot cannot be cleared.

Tree settings can be saved permanently using the Create palette.

Animation

Animation is the process of adding a fourth dimension to your scene - time. To create an animation, you arrange a scene then record your movements or transformations of objects over time. Bryce creates a motion path from your recorded movements and then generates an animation.

You can animate almost anything in your scene: the motion of objects and the camera, object size and shape, object materials, terrain objects, and sky properties.

The Animation Process

Animation is a cooperative process between you and Bryce. You arrange objects and choose scene settings, and then make adjustments to the objects and scene over time. Bryce fills in the gaps between adjustments. When you play the animation, the illusion of motion is created.

The steps to creating an animation are as follows:

1. Create objects using the Create tools.
2. Build a scene by arranging and transforming objects, lights, and the camera.
3. Adjust the position, orientation, or scale of objects. Each time you make an adjustment, you create a key event which indicates a point where an object property was changed.
4. Adjust the shape or placement of the motion path.
5. Adjust the speed at which the object moves along the motion path using the Advanced Motion Lab.
6. Render the animation as a movie file.
7. You can render the animation as a QuickTime/AVI movie file or as a set of frames.

Time-Based Animation

In Bryce, key events are tied to real-world time increments (minutes and seconds) rather than individual animation frames. This means that you can create key events at specific points in time without worrying about the number of frames in your final animation.

Bryce automatically creates all the frames necessary to move from one key event to another. If you change the frame rate, Bryce adjusts the number of the frames between key events to match the new frame rate.

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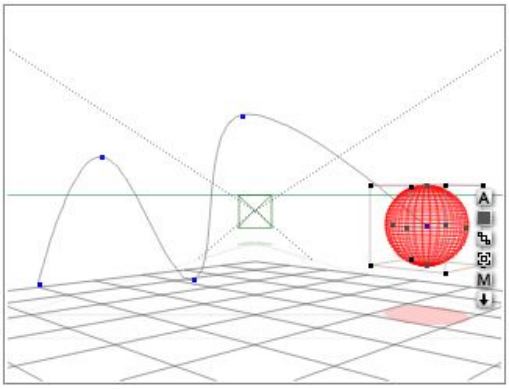
For example, let's say your frame rate is set to 15 fps (frames per second) and then you set up two key events, one at 1 second and the other at 2 seconds. Bryce automatically fills in the 15 frames necessary to move from the key event at 1 second to the key event at 2 seconds. If you change the frame rate to 30 fps, Bryce will add another 15 frames between the two key events to match the new frame rate.

Animation and Motion Paths

As you change the position, of an object, Bryce creates a motion path which shows you the path the object will take as it moves from one key event to another.

You can edit an object's motion path to adjust its trajectory throughout the course of the animation.

Refer to "Editing Motion Paths" for more on motion paths.



Animatable Properties

Each characteristic of an object or effect that can be animated is called a property. Most objects have many animatable properties. Properties like position, size, and orientation are common to all objects. Other properties are specific to certain types of objects. Lights have special properties like brightness, falloff, and gels.

Skies have their own set of properties that control everything from cloud coverage to the time of day.

The properties of individual objects can change depending on the material you apply. The color, texture, and density of an object can also be animated.

Some properties can be animated directly in a specific editor. Object material properties can be animated from within the Materials Lab and terrain geometries can be edited from within the Terrain Editor.

Properties in the Sequencer

Every time you change an object's property, it appears as a key event in the animation's Sequencer. In the Sequencer, each property of an object can be viewed on a separate timeline. You can expand an object's listing to see all the transformations or changes

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that have been applied to its properties. If you have not performed any transformations on the object, it cannot be expanded. Refer to "Property Timelines" for a complete discussion of the Sequencer.

To expand a listing in the Sequencer:

1. Make sure the Advanced Motion Lab is visible. If it's not, choose Objects > Advanced Motion Lab or click on the Motion Lab button.



2. Click on the object name to expand the listing.



Creating Animations

The Animation controls are the tools you'll use most often when creating animations. The palette provides tools for most of the basic animation functions:

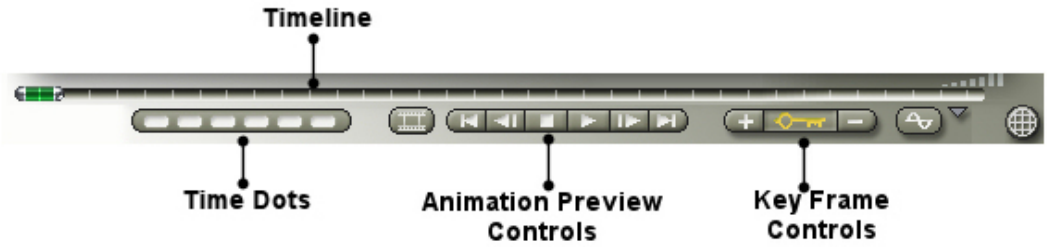
- viewing the timeline
- moving the current time
- setting the length of the animation
- specifying the Working Area
- previewing the animation
- recording key events
- adding/deleting key frames

The Animation controls appear at the bottom of the Working window as well as in the Terrain Editor and the Materials Lab.

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The Animation controls are made up of three areas:

- The Timeline, located at the top of the palette, displays a visual representation of the time in your animation. The indicator on the timeline (called the Current Time Indicator) represents the current time.
- The Animation Preview Controls, located below the Timeline, let you preview your animation in the Working window.
- The Key Frame Controls, located at the right edge of the palette, let you add and delete key frames. To display the Animation controls in the Working window: By default the Animation controls are located at the bottom of the Working window.



If the Selection palette appears at the bottom of the window, click the Time/Selection Palette toggle in the bottom-right corner of the Bryce window or press S. The button switches between the Selection palette and the Animation controls.



Setting Up an Animation

Before you start setting up key frames or adjusting the timeline, you should set up some general parameters for your animation.

The Animation Setup dialog lets you set up the duration, the frame rate and whether you want to display animation time as SMPTE (i.e.; hours:minutes:seconds:frames) or frame numbers. See "Animation Setup" for more detailed information on the setup dialog.

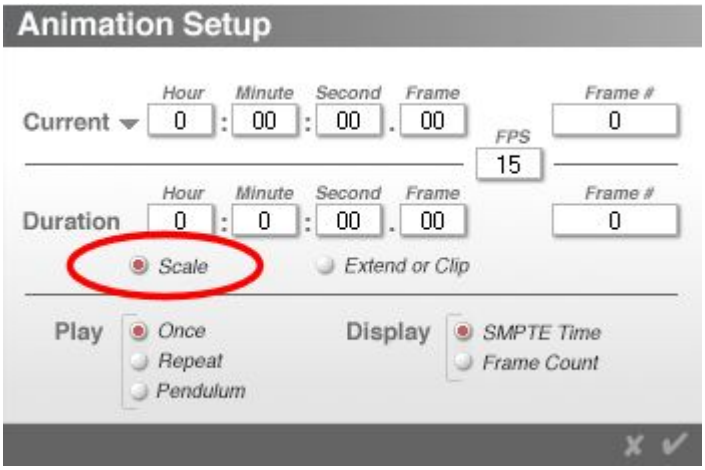
To set the duration of your animation numerically:

1. Choose File > Animation Setup from the menu or double-click the Current Time Indicator.

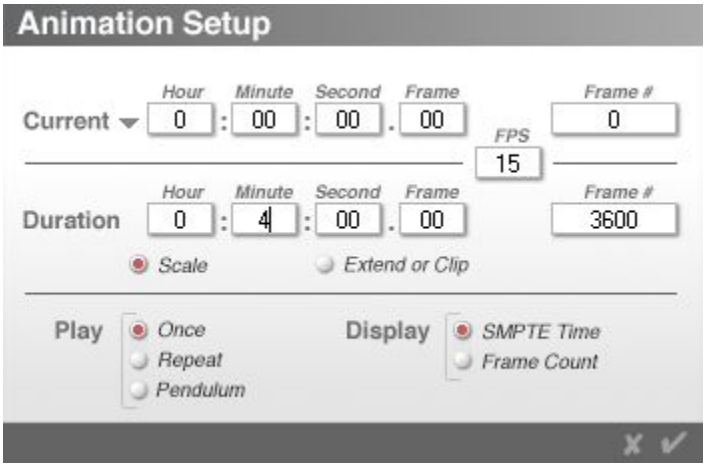


The Animation Setup dialog appears.

2. Click the Scale button. This switches to the Duration fields to set the duration of your animation.



3. In the Duration fields, enter the total length of your animation in hours, minutes, seconds and frames. When you enter a duration, Bryce automatically calculates the number of frames in the animation, based on the current frame rate. The number of frames is displayed in the Frame # field.



4. Click on the OK icon to close the dialog.

Setting the Frame Rate

The frame rate for your animation can have a large impact on the final quality of your rendered movie. A low frame rate is faster to render but may produce motion which is more jumpy, while a higher frame rate produces a much smoother motion.

Bryce displays frames as frames per second (fps). Fifteen fps is usually good enough for motions displayed on a computer while 30 fps is standard for broadcast-quality video.

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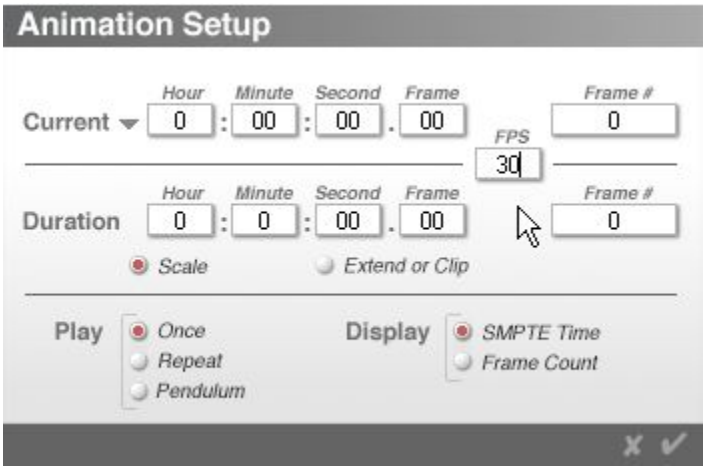
To set the frame rate for your animation:

1. Choose File > Animation Setup from the menu or double-click the Current Time Indicator (also called a Scrubber).



The Animation Setup dialog appears.

2. Enter a frame rate in the FPS field.



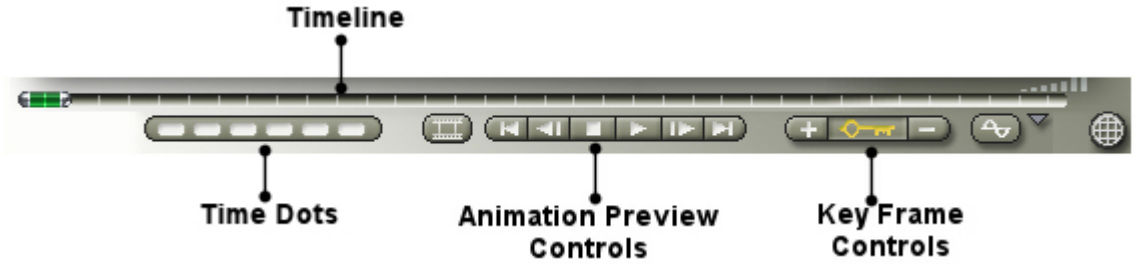
3. Click on the OK icon to close the dialog.

Animation Tools

Bryce's animation tools are designed to help you animate the properties of your scene.

Animation Controls

The Animation Controls let you record an animation and preview it in the Working window. You can also use the controls to change the current time or move to different points in time.



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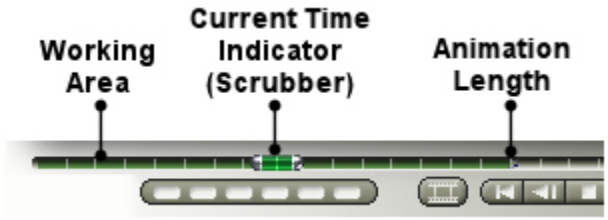
The Timeline appears in four places in Bryce: the Working window, the Terrain Editor, the Sky Lab, and the Materials Lab.

All four timelines represent the same time. The only difference is that when you're in an editor, you can only add frames for properties associated with that editor. For example, in the Terrain Editor you can only add key frames associated with terrain properties.

When you preview a timeline in the Working window, you'll be able to see all the changes in your scene, including any changes you may have made in other editors or in the Advanced Motion Lab.

The Timeline

The Timeline is a graphical representation of time.



The light blue colored section of the Timeline represents the length of the Working Area. The Working Area can be used as a visual guide to help you isolate portions of your timeline.

The dark blue colored section of the Timeline represents the current length of your animation.

When you render the animation you can choose to render the entire timeline or just the Working Area. When you use the animation preview controls, only the Working Area is previewed.

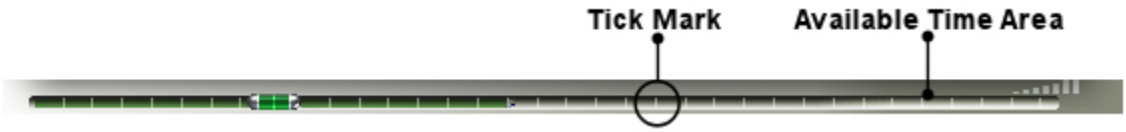
Refer to "Setting Up the Working Area" for more on the Working Area.

The Current Time Indicator, also called the Scrubber, lets you move to different points in time. This is the main tool you'll use to create animations. Every time you want to add a key event, you move the Current Time Indicator to a different point on the timeline.

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Working with Time

The light gray area in the Timeline is called the Available Time Area and it represents all time. This area is unlimited; you can scroll the time area infinitely.



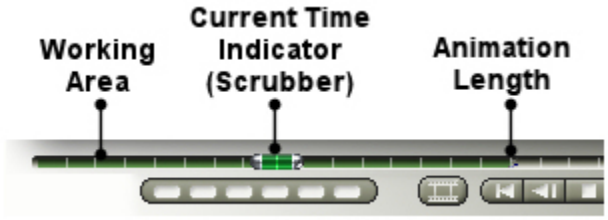
The white tick marks within the Timeline are visual cues that let you know when the time area is moving. If you move the Current Time Indicator off the screen, you'll see these white ticks move along the time area.

To scroll the time area, drag the Current Time Indicator off the screen to the right. You'll see the white tick marks move along the time area to the left.



Setting Animation Range in the Timeline

Setting the Animation Range in the Timeline The dark blue within the light gray area of the Timeline represents the total length of your animation. This area is usually hidden by the Working Area, so you may need to shorten the Working Area to adjust the Animation Range.



The Animation Range is automatically generated as you set up key events. The time of the final key event automatically creates the limit of the Animation Range. However, you can manually extend or shorten the area to set the range of your animation. You cannot shorten the Animation Range below the last frame in the scene since you can't have frames outside the Animation Range.

To manually set the Animation Range, in the Timeline, drag the handle that appears at the end of the Animation Range to the point where you want the animation to end. The handle may be obscured by the Current Time Indicator, so you might have to move the indicator to a different position in order to see it.

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Setting Current Time for an Animation

The large green handle in the Timeline is called the Current Time Indicator (commonly called a Scrubber). It sets the current time of the animation.

The Current Time Indicator is the most important tool of the Animation controls. When you're creating key events, the Current Time Indicator controls when the key event occurs in the animation. Refer to "Recording Key Events" for complete instruction on creating key events.

As you move the Current Time Indicator, the Text Display Area shows you the current time. If you're using SMPTE time, the current time is displayed as Hours:Minutes:Seconds:Frame # (such as 00:01:25:13). The Frame # changes as you change the frame rate for the animation. For example, at 15 fps Bryce will insert 15 frames within each second.



If you're using Frame Count, the number of the current frame is displayed.



You can also move to a specific point in time using the Animation Setup dialog. In this dialog, you can move to either a specific time or frame.

To move to a specific frame manually:

1. Drag the Current Time Indicator along the Timeline. As you drag, watch the Text Display Area. You'll notice that the final number cycles through each frame in the second of animation time. So at 15 fps the final number will cycle through frame 0-14 between seconds.
2. Release the mouse button when the Frame # reaches the desired frame.

The Current Time Indicator also controls which portion of your animation is being displayed in the Working window.

When the indicator is at the beginning of the animation, you're seeing the first frame of the animation in the Working window. When you move the indicator, the Working window displays a different portion of the animation. So, when you move the indicator to the center of your animation range, you're seeing what the animation looks like at the middle of the movie.

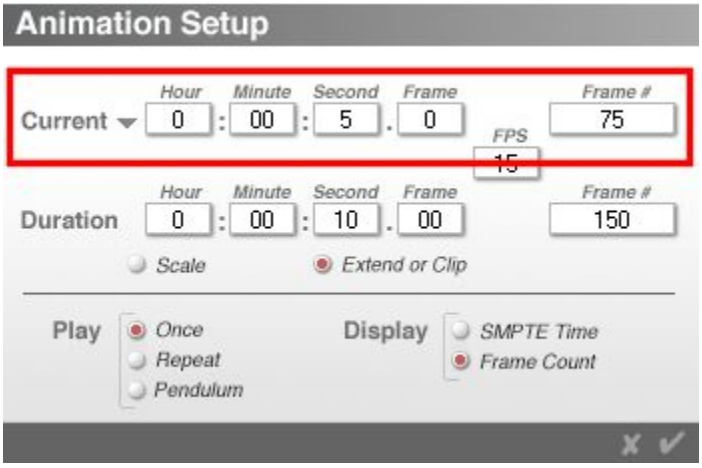
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To move the current time manually:

1. Drag the Current Time Indicator along the Timeline.
2. Release the mouse button when the Text Display Area shows the desired time.

To move the current time numerically:

1. Choose File > Animation Setup. The Animation Setup dialog appears.
2. In the Current fields, enter the hour, minutes, seconds and frame you want to move to. The Frame # field displays the number of the frame located at the specified time.



Time Dots

The Time Dots let you save positions on the timeline. You can use the dots to quickly jump between areas of the timeline you're working on.

To save the position of the Current Time Indicator:

1. Move the Current Time Indicator to the position you want to save.
2. Click on an empty Time Dot at the bottom of the Animation controls. A dot is empty when it appears white.



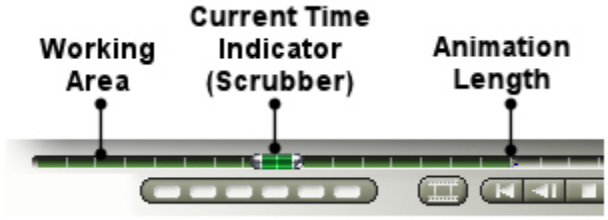
To move the Current Time Indicator to a saved position, click the Time Dot for the position you want to use. The current position appears green with a white dot.

To delete a saved position, press Opt/Alt+click on a full Time Dot. A full dot appears green.

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Setting Up the Working Area

The light blue portion of the Timeline represents the Working Area. This area highlights the portion of the timeline you're currently working on.



When you're previewing your animation, only the portion of the timeline within the Working Area is previewed.

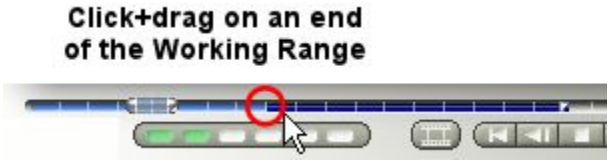
The Working Area is most useful when you're working on a long animations as it saves on preview time or when you're refining a specific portion of your animation.

When you're rendering the animation, you can choose to render the entire animation or just the Working Area portion.

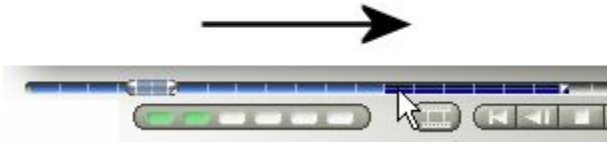
You can also use the Working Area to render out sections of the timeline while you're setting up the animation, and then render the entire Animation Range when you're creating the final animation.

To set the range of the Working Area manually:

1. Click+drag either end of the existing Working Area.



2. Release the mouse button when the Working Area is the desired length. The Working Area cannot be extended past the end of the Animation Range.



To set the range of the Working Area numerically:

1. Choose File > Animation Setup or double-click the Current Time Indicator.



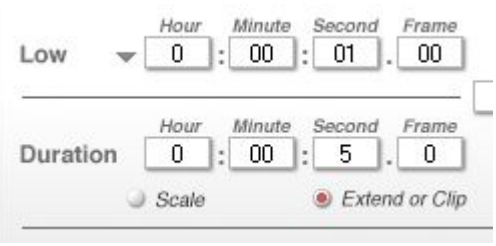
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The Animation Setup dialog appears.

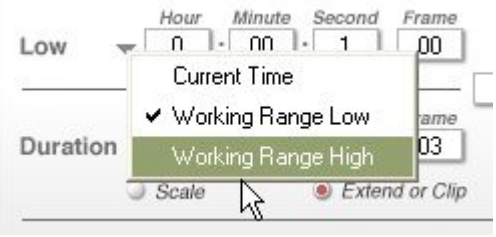
2. Click the triangle icon at the top-left of the dialog and choose Working Range Low from the menu.



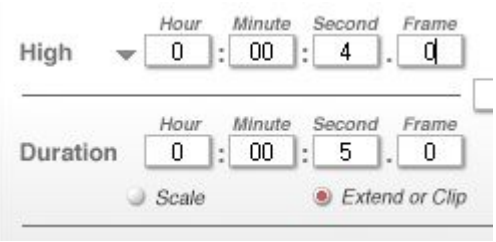
3. Enter the starting time for the Working Range.



4. Click the triangle icon again and choose Working Range High.



5. Enter the ending time for the Working Range.



6. Click on the OK icon to close the dialog.

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Setting Timeline Scale

The Scale Indicator at the right edge of the timeline let you adjust the scale the timeline. If you have a very long Timeline, you can use this control to scale it down so you can see the whole timeline at once. If you have a very short timeline, you can use the control to scale it up so it extends across the length of the palette.



To set the scale of the Timeline, drag the Scale Indicator.

- Drag right to increase the scale.



- Drag left to decrease the scale.



The scale of the Timeline does not affect its length, only how it's displayed in the Animation Controls.

Scaling Animation Duration

You can adjust the length of your animation, by scaling its duration to fit within a certain amount of time. For example, if you created an animation that's five seconds long but only want it to take up three seconds, you can scale the entire animation to last only three seconds.

When you scale the animation, all the events in the animation are compressed or stretched to fit within the desired amount of time. If you increase the scale, the events are stretched out, so they take longer to complete. If you decrease the scale, the events are compressed so the action speeds up.

To set the scale of the entire animation manually:

1. Hold down Opt/Alt+drag the Animation Range Handle.



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2. Release the mouse button when the duration of the animation is the desired length.



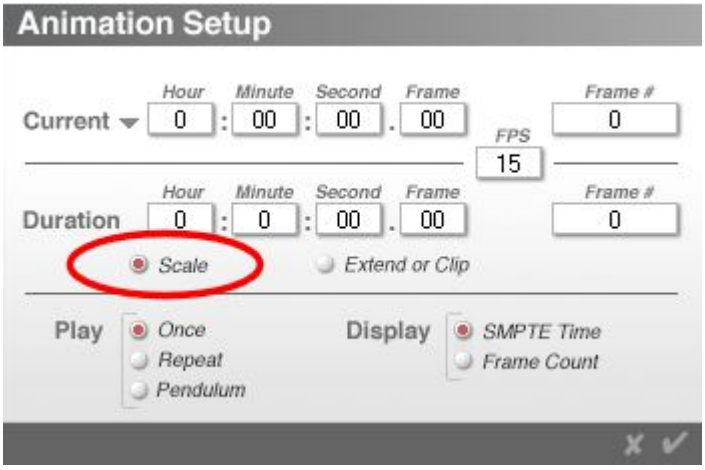
To scale the animation numerically:

1. Choose File > Animation Setup or double-click the Current Time Indicator.

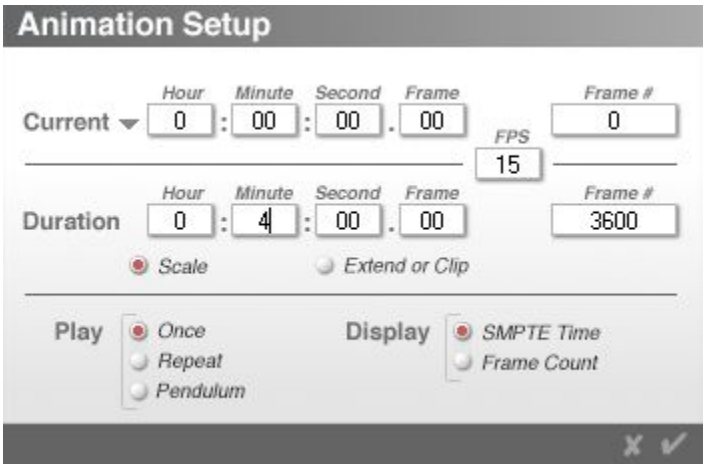


The Animation Setup dialog appears.

2. Click the Scale Animation button.



3. Enter the desired animation duration in the Duration fields.



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4. Click on the OK icon to close the dialog.

Recording Key Events

You can record key events by either enabling the Auto-Record mode or manually adding key frames.

When you enable Auto-Record mode, every object transformation or change of property you perform is recorded as a key event. A key event can store any change in size, position, orientation, material property, sky property, light property or geometry. However, a key event can only store one change per property at a specific point in time for each object in the scene. This means that at a single point in time, you can only have one change in position, size, material, or geometry per object recorded as a key event.

If you keep changing the same properties at the same point in time, the new changes replace existing changes. Only the last change you perform is recorded as the key event. To record more than one change in the same object's property you have to move to a different point in time. Then each change can be recorded as a separate key event and applied to the animation.

For example, if you move an object up and down at the same point in time, only the last transformation is recorded as the key event. However, if you move the object up at one point in time and then move the object down at a different point in time, both transformations are recorded.

When Auto-Record mode is disabled, the animation system is off. This means that your changes are not recorded as key events and changes in the Timeline do not affect your view in the Working window.

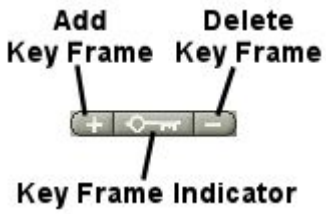
You can continue changing object and scene properties, but they won't be recorded as key events. If you want to record a setting or transformation you'll have to manually add a key frame using the Add Frame button.

Refer to "Auto-Record Mode" for enabling the automatic animation system.

Refer to "Adding & Deleting Key Frames" for more on manually adding and deleting frames.

Key Frame Controls

The Key Frame Controls let you add and delete key frames in your animation.



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The Key Frame Indicator is only active when the current time is at a key frame.



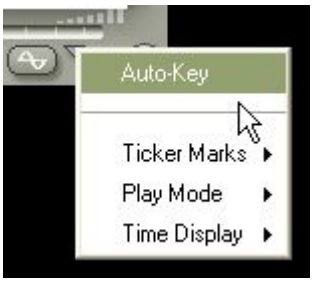
Auto-Record Mode

The Timeline options menu, located at the right edge of the controls, lets you enable or disable Bryce's automatic animation system.



To enable or disable Auto-Record mode:

1. Click the triangle icon to the right of the controls and choose Auto-Key.



2. The animation system is on when the option has a checkmark next to it.



3. Choose the Auto-Key option again to turn off the automatic animation system.

Adding & Deleting Key Frames

Adding & Deleting Key Frames

Usually you use the Auto-Record mode to add key frames to your animation, but there are some cases when you would need to force the system to create a key frame. For instance, if you accidentally make a number of changes while Auto-Record mode is

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disabled, you'll have to create a key frame to store your changes or they'll be discarded when you move to a different point in time.

Adding Key Frames

The Add Key Frame (plus) button lets you add a key frame.



When you are in Camera View, with nothing selected, the Add Key Frame automatically key frames the camera. In Director's View, it does not. It also keys the sky.

In Auto-Key mode, Bryce automatically adds key frames for you but when you disable the mode, you'll have to use Add Key Frame to add key frames at points in the timeline.

If you have an object selected, Bryce only records the changes in property for the selected object. If you have nothing selected, Bryce only records the changes in the sky (i.e., changes you make in the Sky & Fog palette).

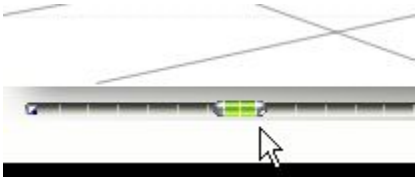
You can also modify the Add Key Frame operation so that, for a selected object, only a specific property is recorded as a key event.

To add a key frame:

1. Move the Current Time Indicator to the point where you want to add a key frame

   or

   If you need to force Bryce to overwrite an existing key frame, leave the Current Time Indicator where it is.



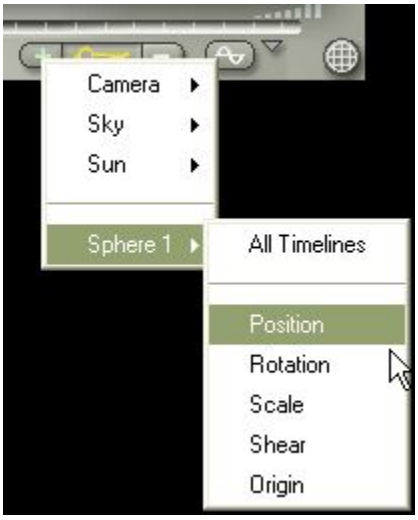
2. Make any changes needed to the scene for the next key frame.
3. Click the Add Key Frame button. Any changes you made above are recorded in the key frame.



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To add a frame for a certain property:

1. Select an object and make the necessary changes for the next key frame.
2. Hold down the mouse button over the Add Key Frame button and choose an object property from the menu that appears.



3. To add a key frame for sky properties: Make sure there is nothing selected and click the Add Key Frame button. or Hold down the mouse button over the Add Key Frame button and choose Sky from the menu.



4. Follow the menu arrow to key frame a specific sky property.
5. Repeat to add key frames for the camera and sun.

Deleting Key Frames

The Remove Keyframe button deletes the current key frame event or a specific type of key event.



In the Working window, deleting a key event deletes all the frames at the current time. In the editors the Remove Keyframe button only deletes key events for the properties associated with the current editor.

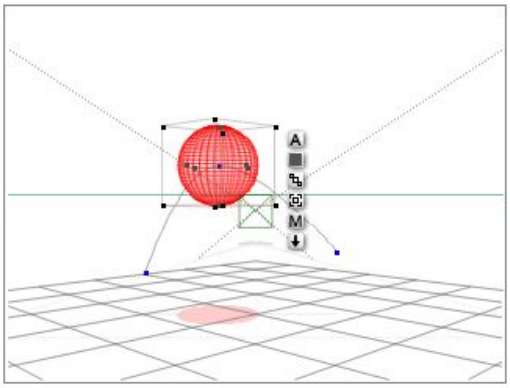
As with adding frames, Bryce deletes frames differently based on your current selection. If you have an object selected, Bryce only deletes the changes in property for the selected object. If you have nothing selected, Bryce deletes the changes recorded for your scene's sky.

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You can modify the Delete Key Frame button's function so that only a certain type of object property is deleted. Adding or deleting frames will effect the shape of an object's motion path.

To delete a key frame:

1. Use the Animation Preview Controls to move through the key frames until you find the frame you want to delete.

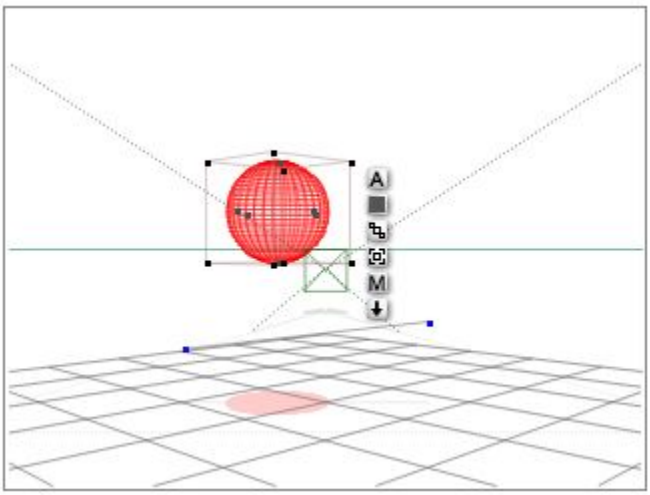




2. Click the Remove Keyframe button.



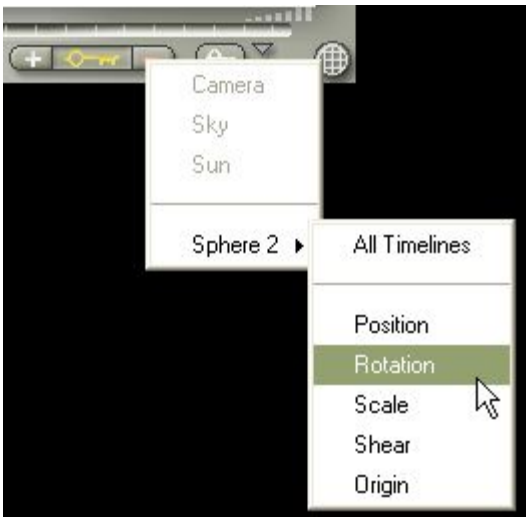
All the properties recorded at that point in time are deleted.



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To delete a frame for a specific object property:

1. Select an object.
2. Hold down the mouse button over the Delete Key Frame button and choose the object property from the menu that appears.



To delete all keyframes at once (PC only), press Ctrl+Shift+Alt and click on the Remove Keyframe button. This will delete all keyframes for all objects, materials, skies, terrains, etc. with no option to get them back unless you revert to the saved version or open a backup file.

Adding/Deleting Frames in the Editors

When you add a frame in the editors, only the properties associated with the editor are recorded as a key frame.

When you delete a frame in the editors only the properties associated with the editor are deleted. For example, if you delete a frame that contains position, material, and scale data in the Materials Lab, only the material data is removed from the key frame.

Previewing Animations

You can preview your animations using either the mini-preview in the nano-preview or by using the Animation Preview controls. Both of these methods allow you to see either a rendered preview or a storyboard.

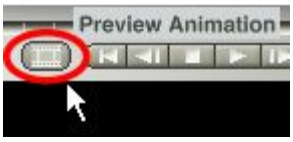
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Using the Movie Preview Window

Using the movie preview window, you can see a rendered version of your animation quickly.

To preview your animation:

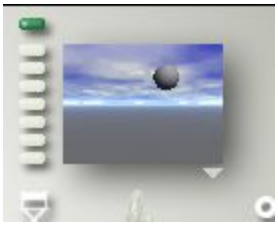
1. Create an animation.
2. Left-click+hold on the Preview Animation button to bring up the Preview Options menu.



3. Deselect Storyboard if it is selected.



4. Let up on the mouse to close the menu and click the Preview Animation button. The animation will preview in the Nano-Preview window.



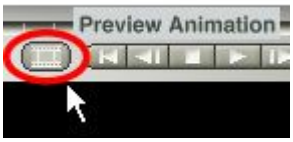
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Using the Storyboard Preview

Using the storyboard preview feature, you can review or navigate your animation, frame by frame.

To view your storyboard:

1. Left-click+hold on the Preview Animation button to bring up the Preview Options menu.



2. Select Storyboard if it is not selected.



3. Click on the Preview Animation button.
4. All of the frames appear in a grid pattern as they are rendered. When the rendering is finished, the movie plays in the nano-preview.



5. You can stop the preview at any time by clicking the mouse.
6. To exit movie preview mode completely, press the Esc key or redraw/render your scene or click on the Preview Animation button again.

Additional Features of the Storyboard

If you pause in the storyboard portion of the animation preview, you can perform various manipulations on your animation.

You can:

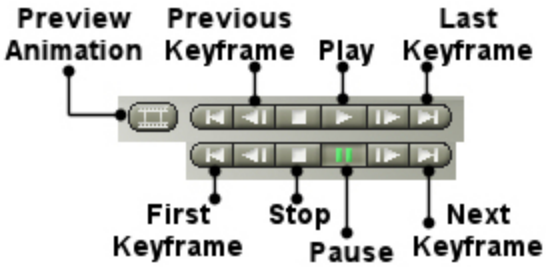
- Click on a frame to select it.
- Set the current time to that frame.
- Drag the scrubber and move forward or backwards through the animation.
- Double-click the corresponding storyboard image to render any of the frames.

As you perform these manipulations, the animation updates in real-time in the movie preview window.

Animation Preview Controls

The Animation Preview controls let you move between the key frames in your animation.

The outermost buttons move to the beginning and the end of the animation. The inner buttons move to the next and previous key frames, and start or stop the preview.



When you play an animation, all the frames in the animation within the Working Area are displayed. The preview is shown in Wireframe display mode.

	Starts a quick animation preview.
	Moves to the beginning of the Recorded Area.
	Moves one key frame backward in the animation.
	Shift+click moves one frame forward.
	Stops the animation.
	Plays the animation.

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	Pauses the animation during play
	Moves one key frame forward in the animation.
	Shift+click moves one frame backward.
	Moves to the end of the Recorded Area.

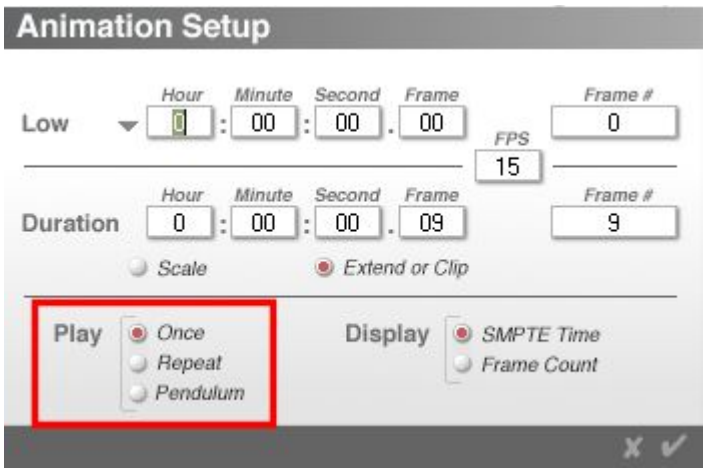
Setting Previewing Options

There are three options you can use to alter the preview of your animation:

- You can preview the animation only once.
- You can play the animation continuously.
- You can cycle forwards and then backwards through the animation.

To set a preview option:

1. Choose File > Animation Setup. The Animation Setup dialog appears.
2. Enable a Play option:
    1. Once plays the animation only once.
    2. Repeat plays the animation continuously.
    3. Pendulum plays the animation forwards then backwards, then forwards, continuously.



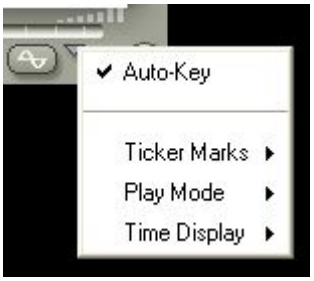
3. Click on the OK icon to close the dialog.

Animation Options

The triangle icon to the right of the animation controls displays the Timeline Options menu. This menu lets you turn the animation system on or off.



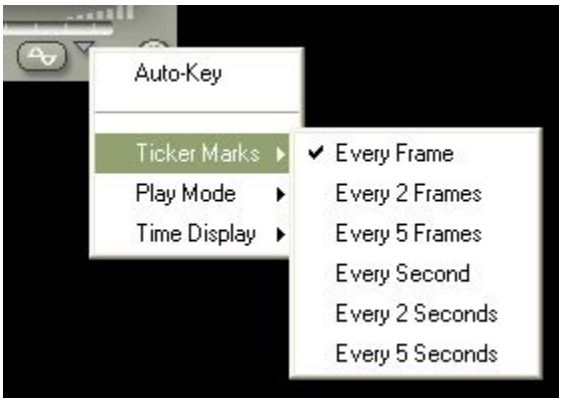
When the animation system is enabled (Auto-Key selected), every change you make to the scene is recorded as a key event. Changes can include things like moving an object, changing a material, or changing the shape of a terrain. The Auto-Key option is only available on the Animation Palette in the Working window.



When the animation system is disabled, your changes are not recorded. To record a key event you have to use the Add Key Frame button. In Bryce 6, the animation system is disabled by default. Previous versions of Bryce have the animation system enabled by default.

This menu also contains the following:

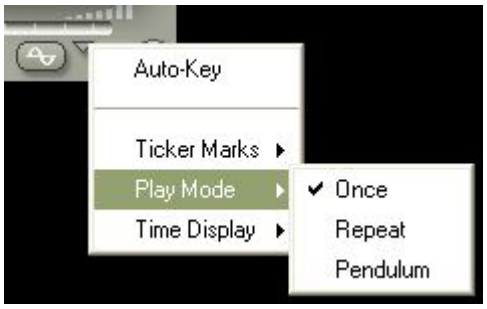
- Ticker Marks lets you select how Ticker Marks are displayed on the Timeline.



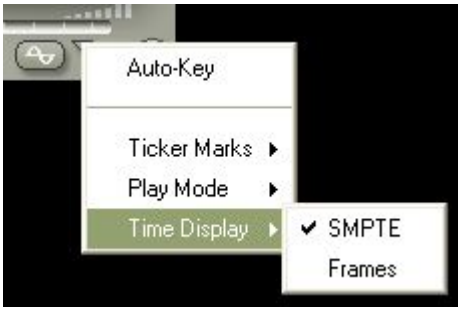
- Play Mode - Provides options you can use to alter the preview of your animation.
  - Once - plays the animation only once
  - Repeat - plays the animation continuously

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- Pendulum - plays the animation forwards then backwards, then forwards, continuously

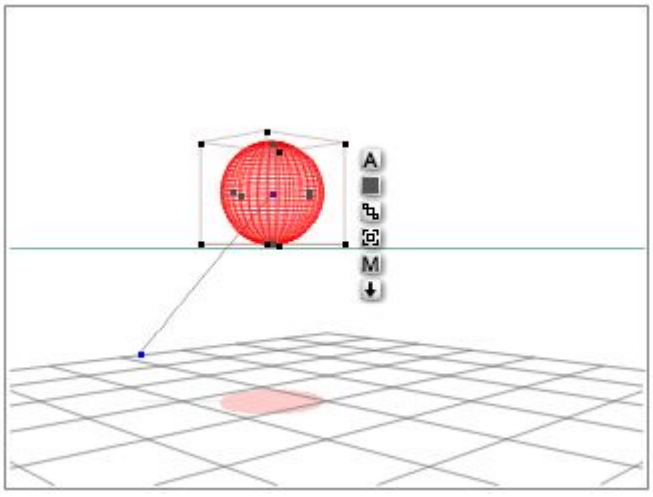


- Time Display - Select whether to display the animation in SMPTE Time or as a Frame Count.



Motion Paths

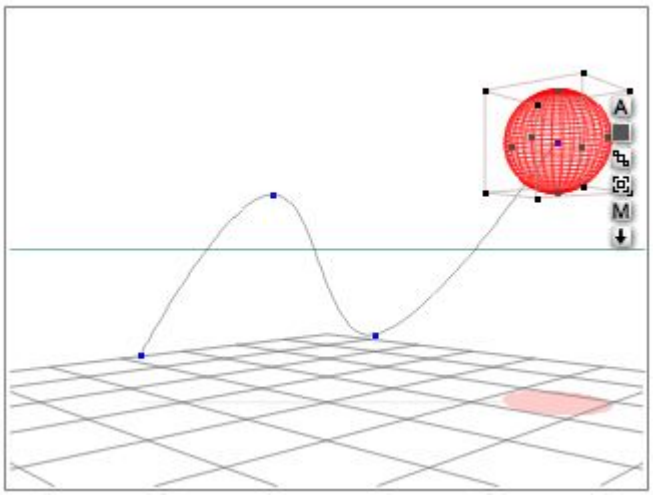
A Motion Path is a visual representation of an object's trajectory as it moves through time. An object's Motion Path is automatically generated as you create key events. Each new key event adds a new point to the path.



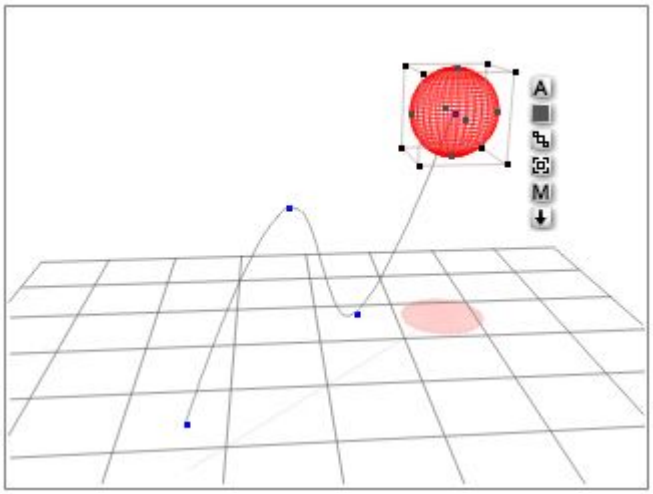
The shape of the curve is determined by the interpolation performed by Bryce. In most cases Bryce tries to create smooth motion so the path is drawn as a curve.

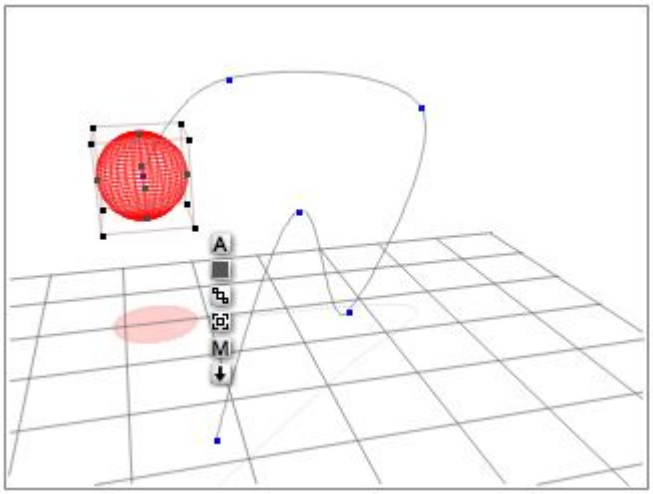
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As you add key events, the curve is adjusted to include the new motion. As you add more key events to your animation, the path changes shape to include the new motion. Bryce always keeps the motion smooth, so each new point is added as a curve.



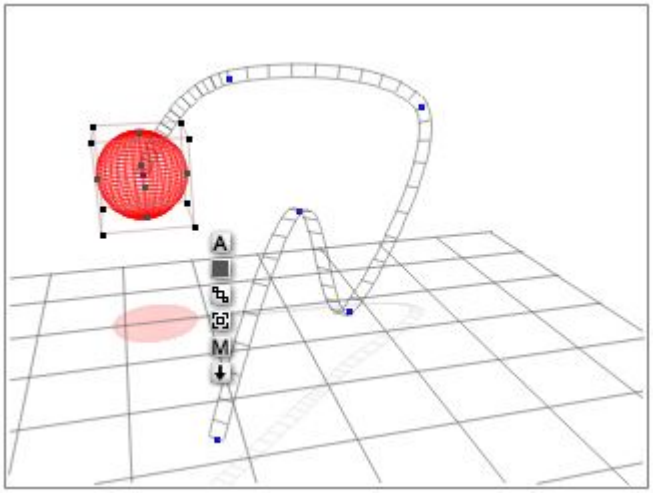
Motion Paths exist in 3D space so they can be viewed from any angle. If you move the camera, you can see how the object moves along the X, Y, and Z axes.





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The default state of the Motion Path can be difficult to see in a complex scene. You can give your Motion Path some extra depth by displaying it as a ribbon.

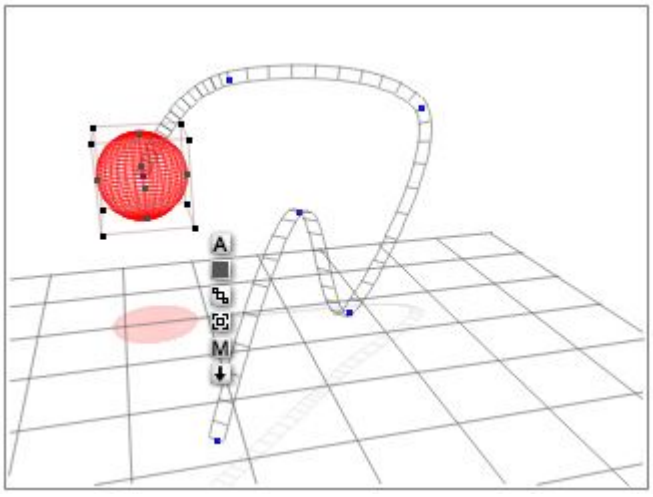


The ribbon lets you see the motion path as a flat track running through the scene.

By default, the Motion Path for an object only appears when the object is selected. Otherwise the path is invisible (including when selected as a preset in the Objects Library) and does not render in the final animation. You can change the display mode of the motion path in the Animation tab of the Object Attributes dialog.

Show as Ribbon

The default state of the Motion Path can be difficult to see in a complex scene. You can give your Motion Path some extra depth by displaying it as a ribbon.

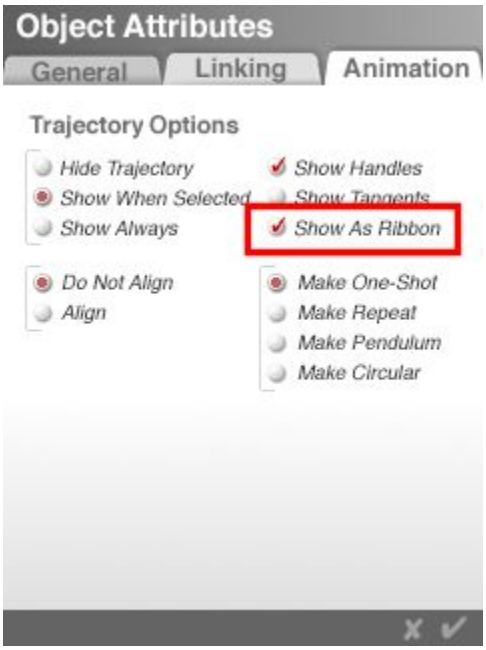


The ribbon lets you see the motion path as a flat track running through the scene.

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To show the Motion Path as a ribbon:

1. Select the object.
2. Click the A button that appears next to its bounding box. The Object Attributes dialog appears.
3. Click the Animation tab.
4. Enable the Show as Ribbon option and click the OK icon.



Show When Selected

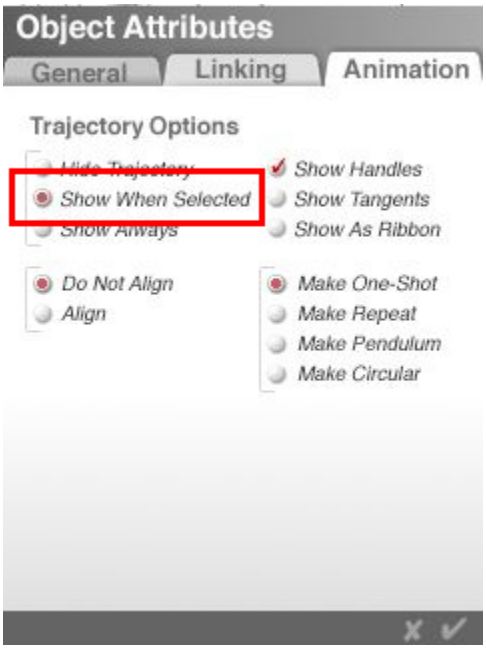
By default, the Motion Path for an object only appears when the object is selected. Otherwise the path is invisible and does not render in the final animation. You can change the display mode of the motion path in the Animation tab of the Object Attributes dialog.

To display the path only when the object is selected:

1. Select the object.
2. Click the A button that appears next to its bounding box. The Object Attributes dialog appears.
3. Click the Animation tab.

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4. Enable the Show Only when Selected option and click the OK icon.



Show Always

By default, the Motion Path for an object only appears when the object is selected. Otherwise the path is invisible and does not render in the final animation. You can change the display mode of the motion path in the Animation tab of the Object Attributes dialog.

To display the path at all times:

Select the object.

1. Click the A button that appears next to its bounding box. The Object Attributes dialog appears.
2. Click the Animation tab.
3. Enable the Show Always option and click the OK icon.

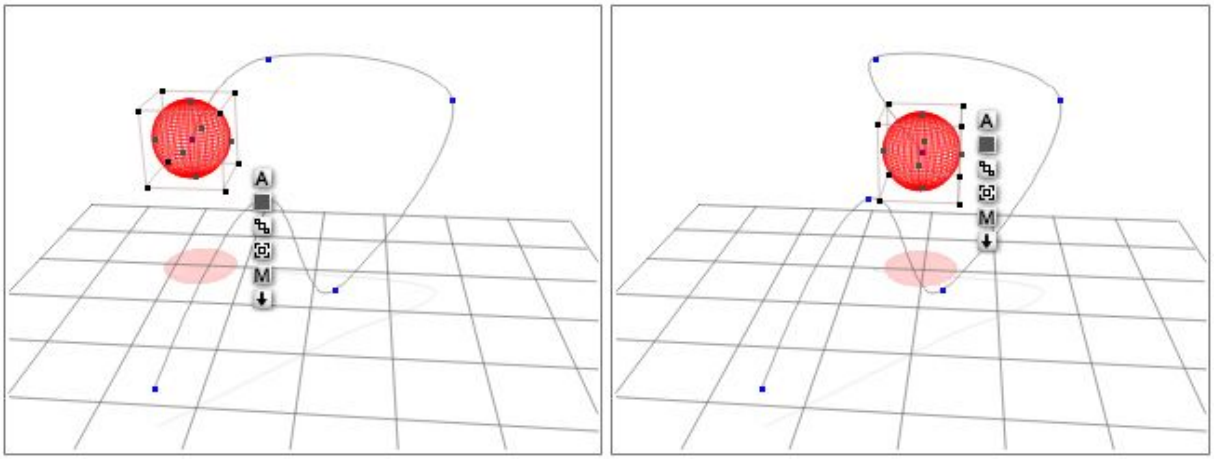


Editing Motion Paths

Changing the shape of the motion path changes the trajectory of the object. The path acts like a Bezier curve. You can change its shape by dragging its control points.

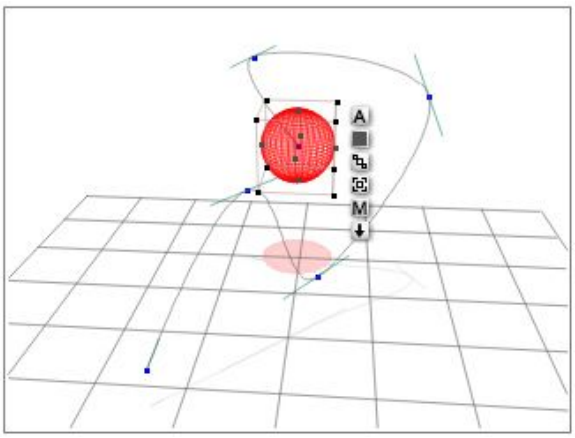
You don't have to be in Auto-Record mode to edit the path. The changes you make to the path's shape are applied directly to the path in real time.

Changing the shape of a path does not affect when key events occur. A key event that occurs at 00:00:01.00 will still occur at the same time regardless of where it is.



The events on the path in this image occur at 00:00:00.00, 00:00:00.04, 00:00:00.08, 00:00:00.12, 00:00:01.00, and 00:00:01.04. When you change the shape of the path, the direction in which the object travels changes, but all the events still occur at the same time they did in the original path.

Since Bryce treats the motion path as a Bezier curve, you can edit it just as you would any curve in any 2D illustration application. You can also display the curve's tangents which indicate the angle of the curve.



When you display a path's tangents you can see the angles of its curve points.

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Finer adjustments can be made to the curves by constraining the points to a specific axis.

1. Constrain to Y-axis - Click on point to select and without letting up on the mouse, press Opt/Alt and drag left or right.
2. Constrain to X-axis - Click on point to select and without letting up on the mouse, press Cmd/Ctrl+Opt/Alt and drag left or right.
3. Constrain to Z-axis - Press Cmd/Ctrl and drag left or right on the point

Note that only constrain to the Z-axis allows you to press the modifier keys before selecting the point. For the constrain to Y or X-axis, pressing the modifier key(s) first will lock the point in place until you do it correctly.

If the path is shown as a ribbon, pressing Opt/Alt or Cmd/Ctrl+Opt/Alt and dragging on the point will twist the ribbon but won't actually do anything to the object, i.e., the object won't twist around the path.

Motion Path Modifiers

There are a number of modifiers you can apply to the path to change the way motion occurs along the path.

Normally an object moves from the first key event on the path to the last over the course of the animation. If you want the object to move backwards along the path, or repeat its action, you would have to reposition the object and set up new key events. The modifiers let you create these types of effects automatically.

For example, if you wanted to animate the motion of a grandfather clock pendulum, you have to set up the forward motion and then the backward motion.

However, using the Pendulum modifier you just have to set up the forward motion path since the modifier changes the object's behavior so that it moves forward then back along the same path during the course of the animation. All you have to do to see the new motion is extend the duration of the animation.

There are four modifiers available:

- Make One Shot restores the motion of the path to its original configuration, meaning the action along the path only occurs once.
- Make Repeat creates a loop in the action. The motion on the path repeats continuously.
- Make Pendulum creates a repeating cycle in the action along a path. The object will move forward on the path, then back and then forward continuously.
- Make Circular closes the path to create a circular path. The object will move along the path and when it reaches the end, it'll swing around to the front of the path and start all over.

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To apply a modifier to a motion path:

1. Select the object.
2. Click the A button that appears next to its bounding box. The Object Attributes dialog appears.
3. Click the Animation tab.
4. Enable a modifier.



5. Extend the duration of the animation so you can see the change in motion.

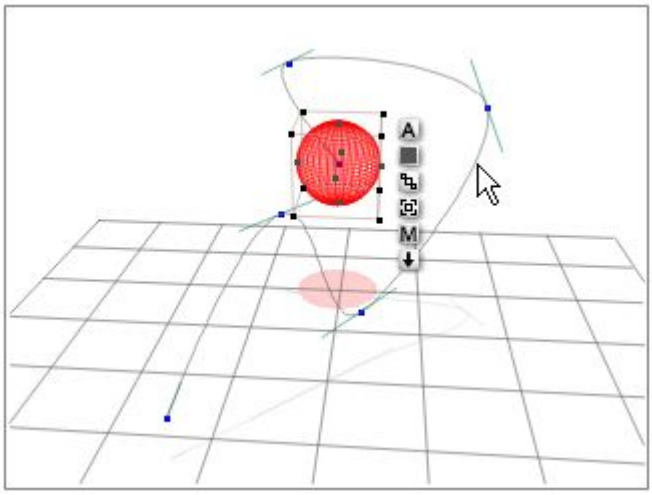
Moving the Path

You can also move the path by dragging it to a new location. When you drag the path, all the events on the path shift position. Changes in motion path position are not recorded as key events.

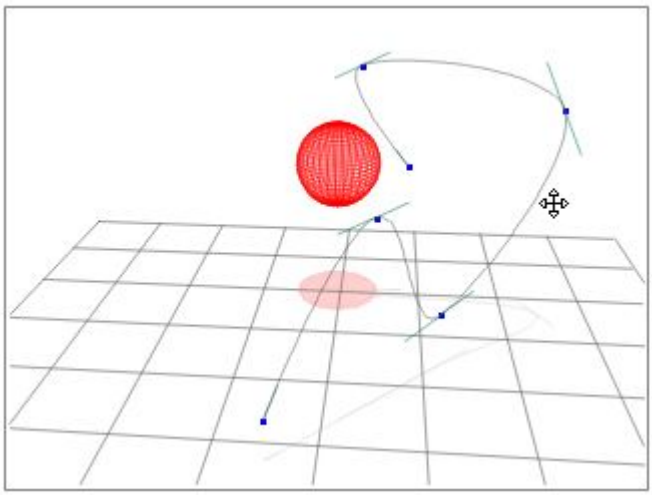
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To move a motion path:

1. Click on a section of the path that does not contain any control points. You have to click on a part of the path without control points, otherwise you'll change its shape instead of moving it.



2. Drag it to new location.



3. The object may not move with the path, but once the path is where you want it, press the Play button or the Last Frame button and the object will snap back on to the path.

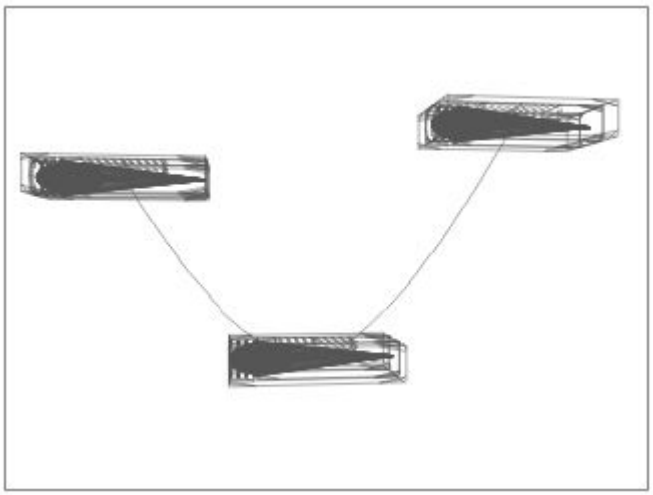
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Aligning Objects to the Path

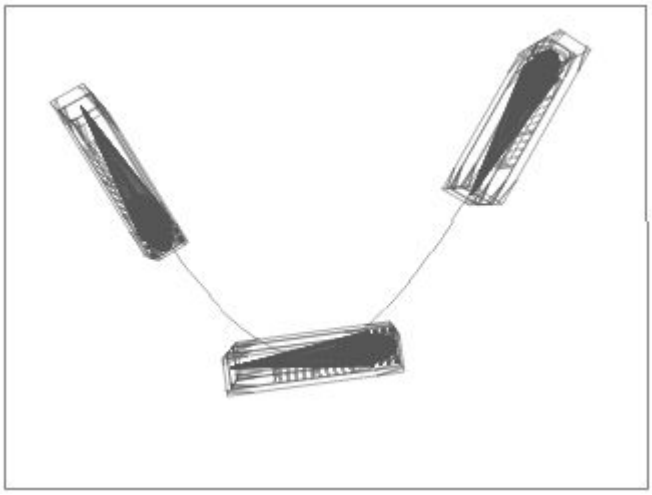
Normally, the orientation of an object remains fixed relative to world space as it moves from point to point. Using the Aligning option, you can have the object's orientation remain parallel to the path so that it reorients itself as it moves from point to point.

You can use this option to create more realistic motion for objects that have a distinct front and back.

The motion of this rocket looks rather unrealistic since it's rising and falling without pitching.



If you align the rocket to its path, the rocket's nose tilts down as it moves down and up as it moves up.



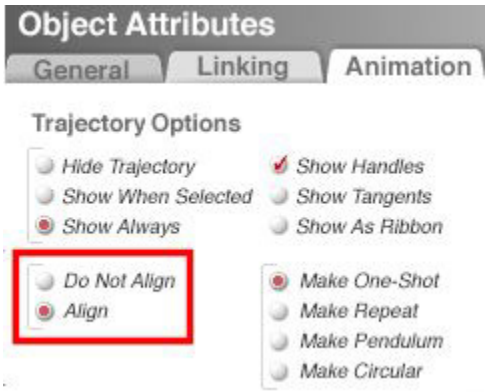
There are two align options available:

- Do Not Align disables aligning. The shape of the curve has no effect on the object's orientation.
- Align adjusts the object so that its orientation matches the shape of the path.

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To align an object to a motion path:

1. Select the object.
2. Click the A button that appears next to its bounding box. The Object Attributes dialog appears.
3. Click the Animation tab.
4. Enable an alignment option and click the OK icon.



Please note that if the motion path has tight curves, using the Align option may cause the object to flip as it goes around the curve. To avoid this, widen the curves on the path by moving points and/or adjusting the tangents.

Advanced Motion Lab

The Advanced Motion Lab lets you fine tune your animations. After you've created your key frames using the Animation Controls, you can use the tools available in this lab to control the speed at which objects move along a motion path, adjust the position of key frames, and preview your changes. Use the Velocity Curve editor to create different velocity effects and the Hierarchy area to control when object transformations occur.

The Advanced Motion Lab button opens the Advanced Motion Lab, which contains tools that let you control the detailed properties of your animation.



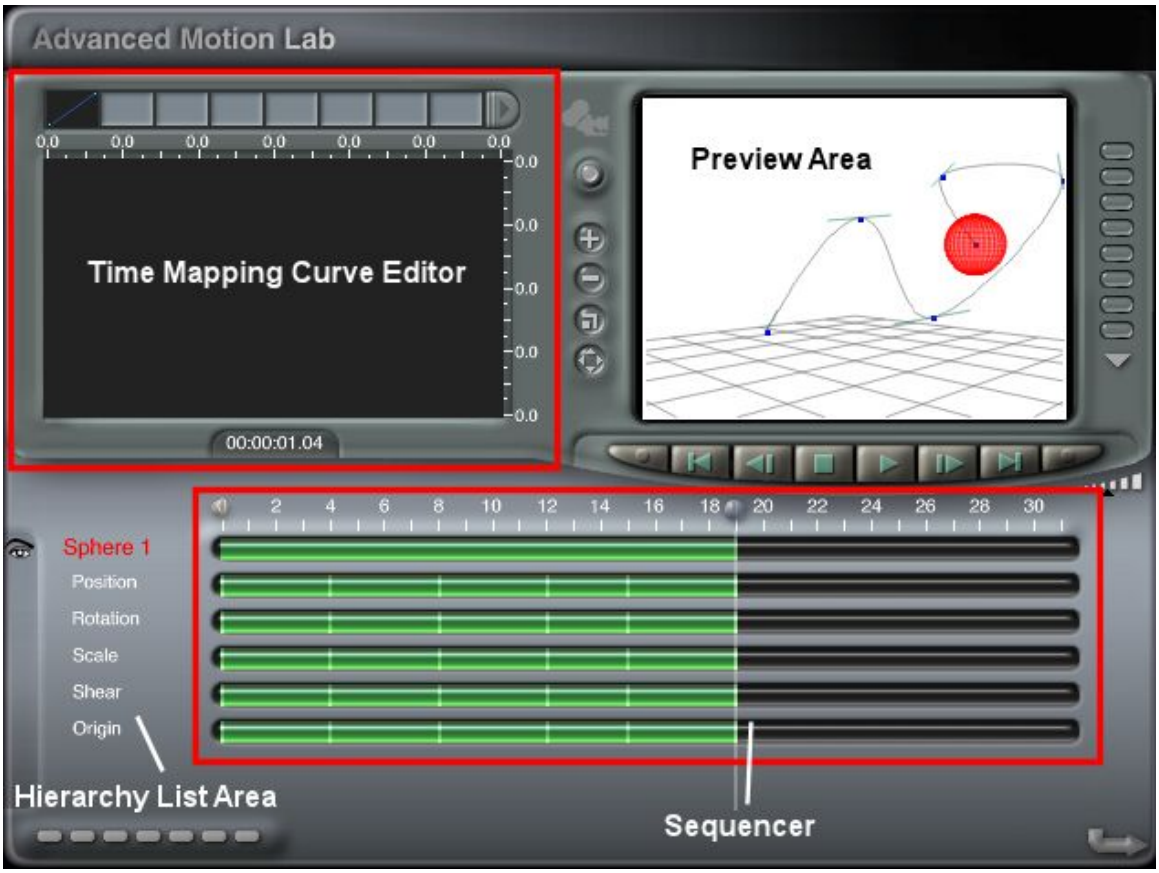
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You can use the lab to:

- view the hierarchical structure of your scene
- rearrange the sequence of key events for individual object properties
- remap the time it takes to move from one key event to another
- preview your animation

The Advanced Motion Lab is divided into four areas:

- The Hierarchy List Area, located in the bottom-left corner of the window.
- The Sequencer Area, in the bottom center of the window.
- The Time Mapping Curve Editor, located at the top-left of the window.
- The Preview Area, located at the top right of the window.



Hierarchy List Area

The Hierarchy List Area displays the scene's hierarchical structure, including links and groups. You can view all the hierarchies expanded or just the parent objects in the scene. You can also expand an object's listing to show all of its properties.

The Hierarchy List Area is used to control the display of both the object hierarchies and object property timelines. If you want to view only your scene's object hierarchies you'll

have to hide all the properties for all objects. You can hide each object individually or select from the menu to the right of the Preview Area to display or not display the hierarchy. Refer to "Object Hierarchies" for more on object hierarchies.

Display Property Timelines

To display property timelines:

- To display an individual object's property timelines, click the name of the object whose properties you want to display.



- To display all the property timelines of an object and its children, hold down Opt/Alt while you click on the name of the parent object.
- To display all property timelines in the Hierarchy List Area, select Expand All Timelines from the menu to the right of the Preview Area.



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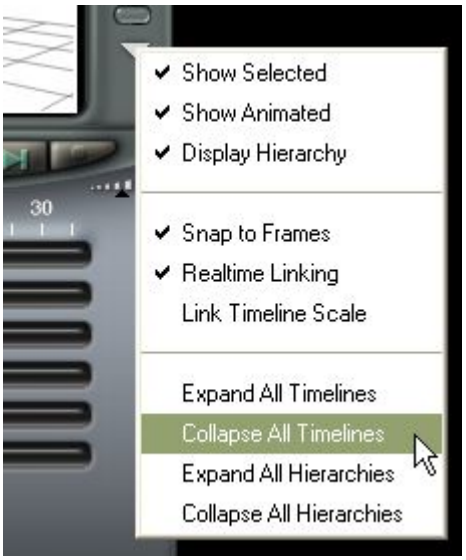
Hide Property Timelines

To hide property timelines:

- To hide an individual object's property timelines, click the name of the object whose properties you want to hide.



- To hide all the property timelines of an object and its children, hold down Opt/Alt while you click on the name of the parent object.
- To hide all property timelines in the Hierarchy List Area, select Collapse All Timelines from the menu to the right of the Preview Area.



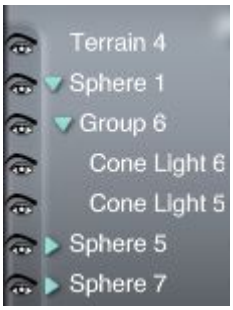
- When all the object timelines are hidden, the only thing displayed in the Hierarchy Area is the hierarchical structure of your scene.

Viewing Hierarchies

The Hierarchy List can be viewed in two ways: collapsed or expanded. You can use the arrow icons to expand or collapse the Hierarchy. When the Hierarchy List is collapsed you can only see the Parent objects in the object hierarchies. When it's expanded, you can see all child objects in the hierarchy.

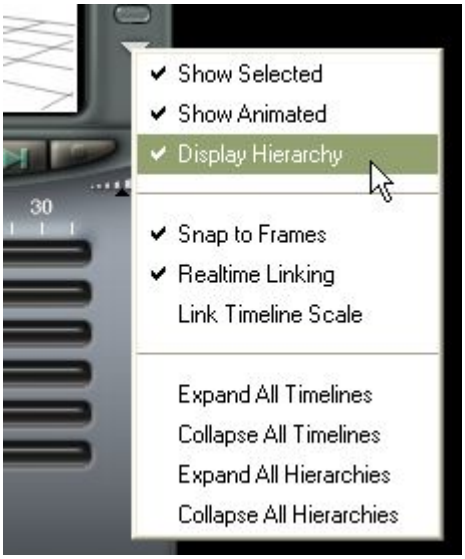
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The indents indicate Parent-child links or groups. The parent is aligned to the left and its children are indented from there.



To display or hide the hierarchical relationship:

- To display the hierarchical relationship in the Hierarchy List Area, select from the menu to the right of the Preview Area.
- To hide the hierarchical relationship in the Hierarchy List Area, deselect Display Hierarchy from the menu to the right of the Preview Area.



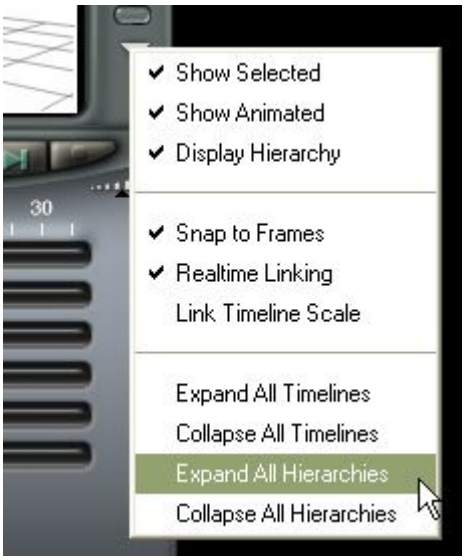
To expand/collapse the Hierarchy List:

- To expand or collapse individual items in the Hierarchy List, click the arrow icon beside an object's listing.



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- To expand the entire hierarchy, hold down Opt/Alt and click an arrow or select Expand All Hierarchies from the menu to the right of the Preview Area.



- To collapse all hierarchies, select Collapse All Hierarchies from the menu to the right of the Preview Area.



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- A right facing arrow indicates a collapsed hierarchy and a down-facing arrow indicates an expanded listing.



Hiding & Displaying Objects

The Hierarchy List Area displays all the objects in your scene. The icons on the left side of the listing indicates whether (eye open) or not (eye closed) the object is displayed in the preview area.



When you hide an object it does not appear in the Preview Area at the top of the Advanced Motion Lab. This setting has no effect outside the lab. Objects that are hidden in the lab will be visible in the Working window and will still render normally. You can use this feature to isolate objects that you're editing in the Sequencer or Time Mapping Areas.

To hide/display an object:

1. Click the Eye icon to hide the object.
2. Click the Closed Eye icon again to display the object.

The Sequencer

The Sequencer lets you see the key frames recorded for each property within an object. Each property has its own timeline track. Key frames are displayed as white marks on the timeline. The current time is indicated by the Current Time bar.

The Sequencer lets you see where in time a change in an object's property occurred and edit the position of that event. Different types of objects have different properties.

A scene contains more than just objects. You can expand the Hierarchy List to also display the properties for your scene's sky and the camera.

The display buttons along the left side of the hierarchy area let you hide or display an object in the animation preview. This can help you isolate objects in a complex scene.

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Property Timelines

Each object in the Hierarchy List has a number of timelines associated with it. When you display an object's properties you can see the timelines associated with each object.

To display an object's property timelines:

- To display an individual object's property timelines, click the name of the object whose properties you want to display.



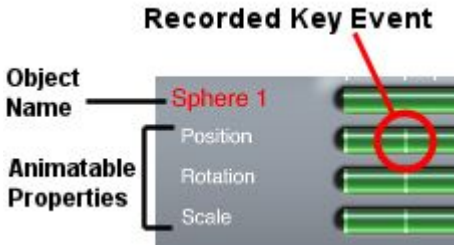
- To display all the property timelines of an object and its children, hold down Opt/Alt while you click on the name of the parent object.
- To display all property timelines in the Hierarchy List Area, select Expand All Timelines from the menu to the right of the Preview Area.

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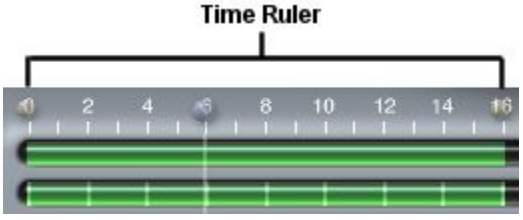


These timelines represent the various animatable properties for an object type. Different types of objects have different animatable properties.

For example, this is the listing for a sphere object. When the object's property timelines are displayed, you can see the key events recorded for each property. The white tick on a property timeline indicates that a key event has been recorded for the property.



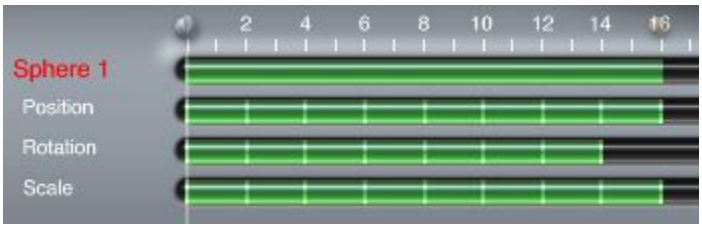
The ruler at the top of the Sequencer lets you see the exact point in time when the key event was recorded.

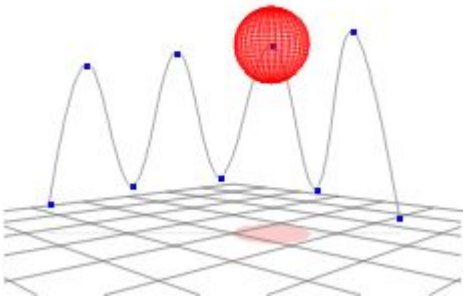


You can tell exactly when an event was recorded by lining the key event marker up with the ruler at the top of the Sequencer area. In the example above, a position key event was recorded at time 00:00:00.06 (or 0 seconds and 6 frames).

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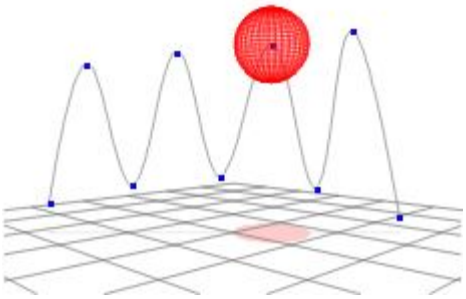
By moving these key events you can control precisely when events occur. For example, this sequence represents an animation where a ball moves up and down four times, rotates as it makes its third jump, and shrinks when its done bouncing.



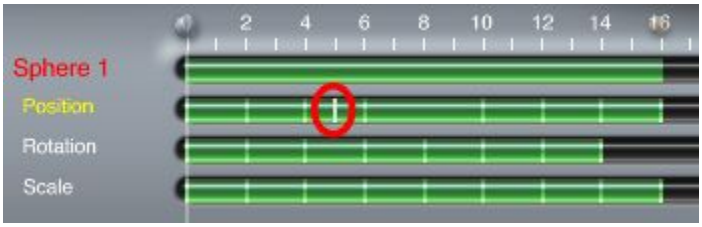


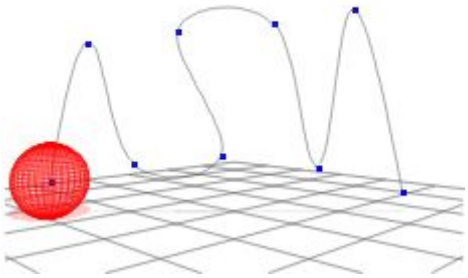
If you move the position key events closer together the bounces occur faster, but the timeline remains the same.





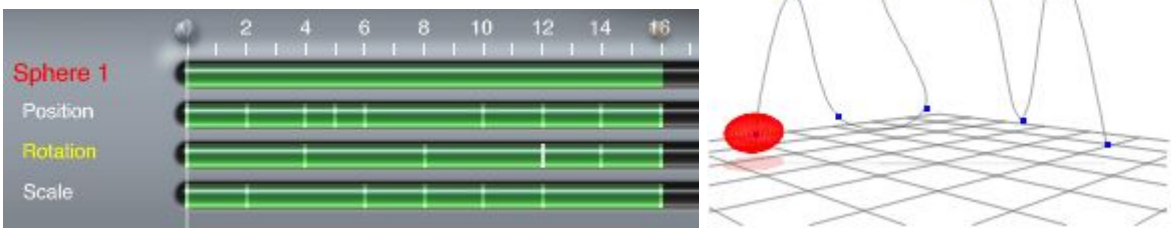
If you move the fourth position key event in front of the third event, you're changing the shape of the motion path, because the ball bounces up before it bounces down.





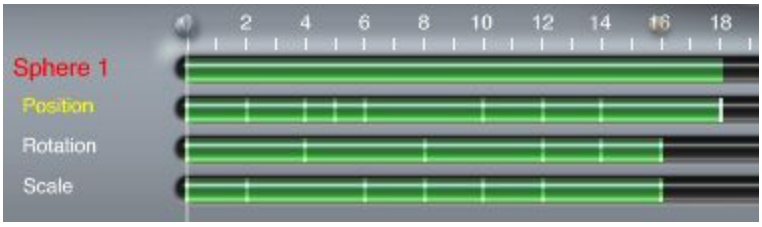
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Position is not the only key event you can arrange. Here both the rotation and scale key events have been repositioned. Now, the ball grows larger as it bounces and it rotates only at the end of the animation.



It's a good idea to activate the continuous preview while editing the timeline, so you can quickly see the effects of your changes. Refer to "Previewing Animations" for more on previewing.

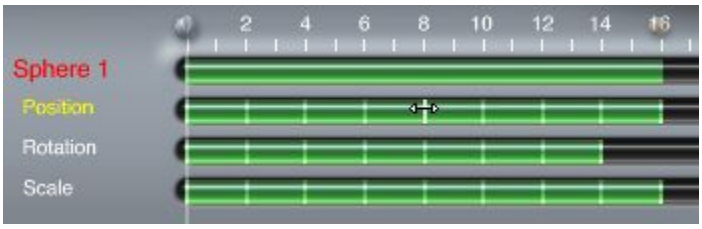
The amount of time available in the Sequencer area is not limited by the current Animation Range. If you position a key event past the current limit of your animation, the Animation Range is automatically extended.



Moving a Key Event

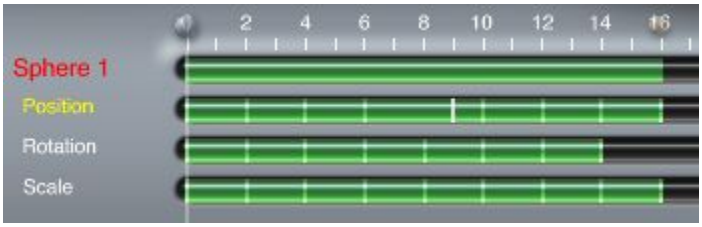
To move a key event on a timeline:

1. Expand the listing you want to edit.
2. Click the white tick mark on the listing's timeline.



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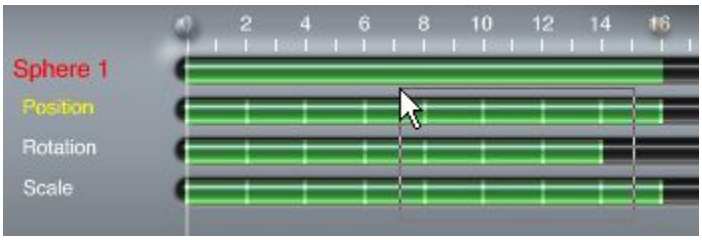
3. Drag the key event to a new position.



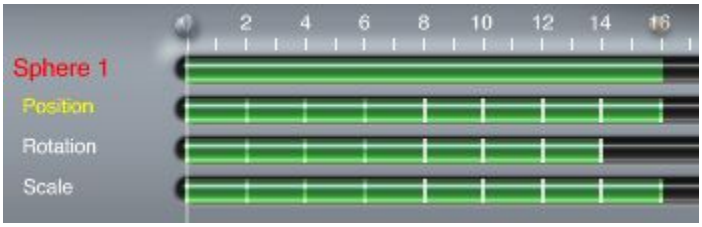
Moving a Group of Key Events

To move a group of key events:

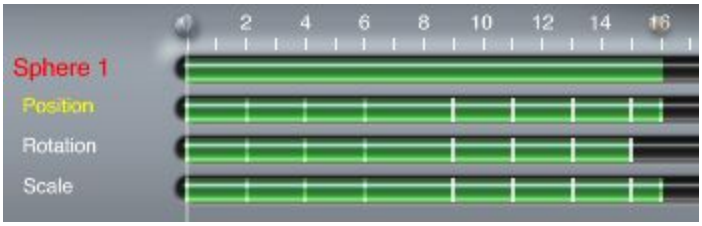
1. Drag a marquee around all the key events you want to select or hold down Shift and click each of the key events you want to move. You can select key events on different timelines.



2. The selected key events will be highlighted.



3. Drag one of the selected key events. All the other selected key events move also.

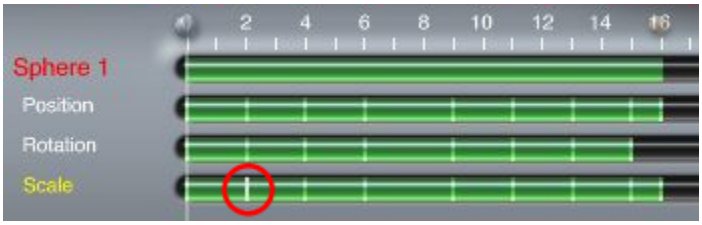


Deleting a Key Event

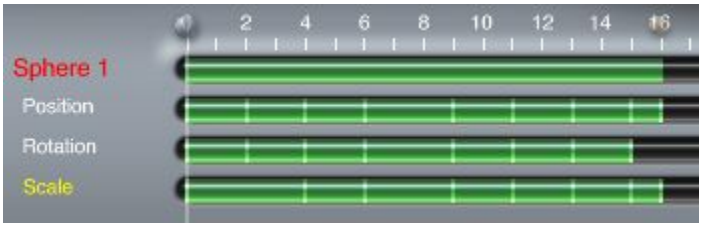
To delete a key event from a timeline:

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1. Select the key event or group of events you want to delete.

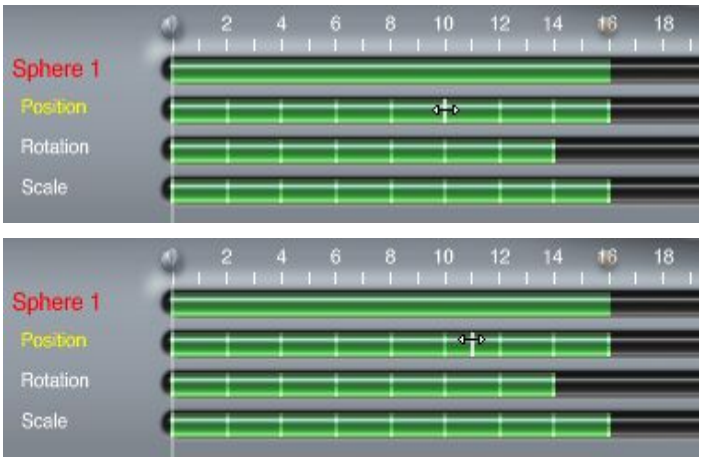


2. Press Backspace (on some Macintosh keyboards, the backspace key may be labeled "Delete"). The key event is removed from the timeline.



Copying a Key Event

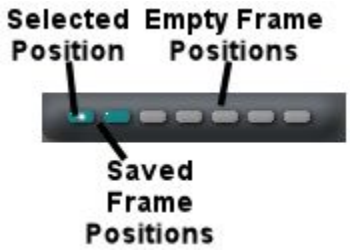
To copy a key event on a timeline, hold down Cmd/Ctrl and drag a key event. The original remains in place, but the copy moves as you drag.



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Saving Frame Positions

The Memory Dots below the Sequencer Area let you save specific frame positions for later use.



- To save a frame position, either play the animation and then stop it at the point you want to save or move the Current Time Bar in the Hierarchy Area to the position you want to save.
- Click on an empty Memory Dot on the right side of the Preview Area. A dot is empty when it appears gray.
- To move to saved position, click on a full Memory Dot. A dot is full when it appears teal. The selected dot will have a white dot in the center.
- To delete a saved position, Opt/Alt+click on a full Memory Dot.

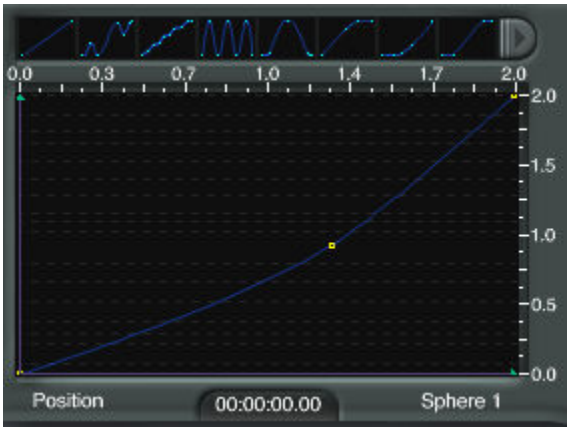
Time Mapping Curve Editor

The Time Mapping Curve Editor lets you control the length of time between key events. Each property listing in the Hierarchy List has its own Time Mapping Curve.

The curve acts like a time filter which remaps the time in your animation. Depending on the shape of the curve, the events in your animation may take longer to complete or may occur very rapidly.

A Time Mapping Curve can speed up events while slowing down others. You can even reverse the action in your animation.

Refer to "Time Mapping Curves" for more on working with Time Mapping Curves.



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Time Mapping Curves

Time Mapping Curves are graphical representations of the time mapping filter. The filter remaps the time in your animation, so that the events that occur at specific times in your animation occur differently in actual time.

By adjusting the shape of the curve, you can control how fast events occur. When you create a sharp jump in the curve, you speed up the events in your animation. When you flatten the curve, you slow down key events.

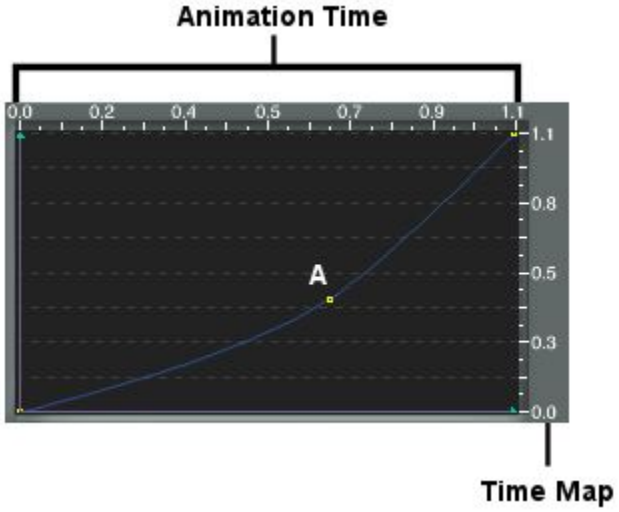
Each property of your scene can have a different curve, so you can have key events occurring at different speeds.

The curve acts like a filter. Time from the actual animation is remapped according to the shape of the curve to produce the final time. Depending on the shape of the curve, events can occur faster or slower.

Time Mapping Curves can only remap the time available in the animation. You cannot add more time or reduce the amount of time in an animation.

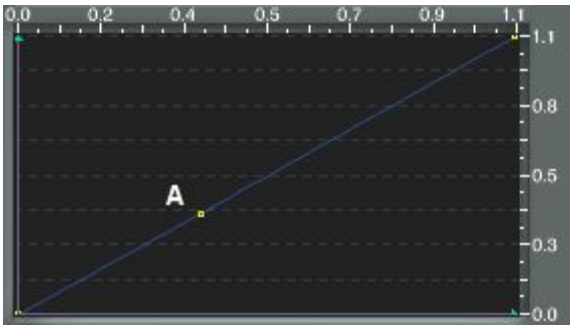
Editing Time Mapping Curves

The horizontal axis in the editor displays all the time in the animation. The vertical axis displays the time map for the properties' timeline. The key events recorded for an object property are displayed as horizontal dotted lines. The curve in the middle represents the time mapping filter. The point where the curve intersects a key event line tells you exactly when an event occurs. For example, at point A in this timeline, an event that occurred at 0.4 seconds in the original animation, will occur at 0.65 seconds after it's passed through the filter.



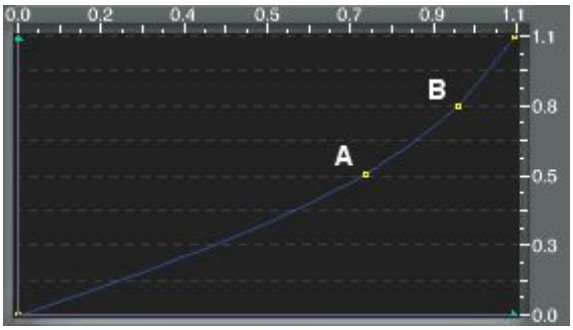
The default Time Mapping Curve for any property is a diagonal line. In this curve, time is not being remapped since events occur at the same time along both the horizontal and vertical axes. At point A in the default timeline, an event that occurred at 0.4 seconds in original animation, also occurs at 0.4 seconds in the time map.

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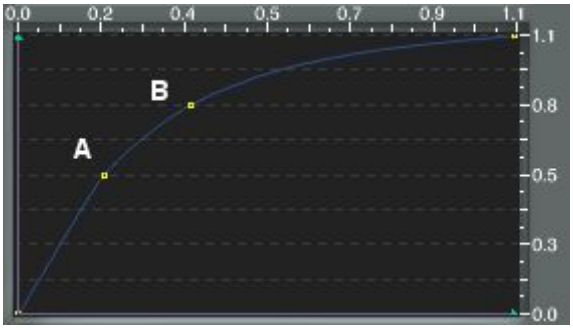
When you change the shape of the default curve, you're remapping time.

For example, if you make the curve convex, events occur later in the animation, but they're closer together which means the action at that point in your animation will speed up. In this example you can see that at point A an event that occurred at 0.5 seconds now occurs at 0.71 seconds. At point B an event that occurred at 0.8 seconds now occurs at 0.95 seconds.



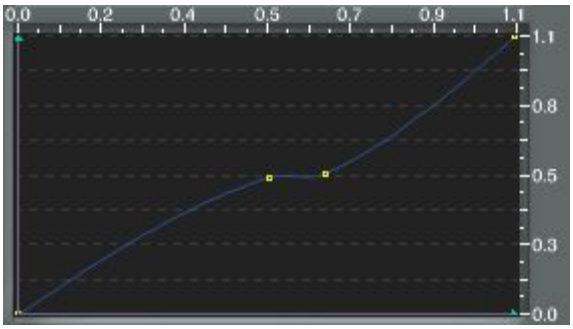
Although both events now occur later, there's much less time between them, so the action in your animation occurs later but the changes at that point are faster.

A concave curve would create the same type of effect, except that the events occur earlier. Here, event A and B occur much earlier, within the first half second and the amount of time between them is much less.

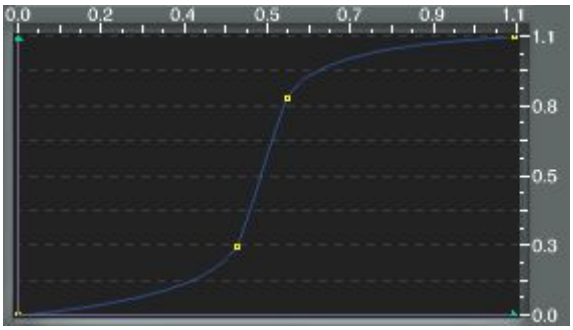


Different curve shapes represent different time mapping effects. A flat curve means that no motion is occurring since all the events on the curve are happening at exactly the same point in time. This curve indicates that a pause occurs during the course of the animation.

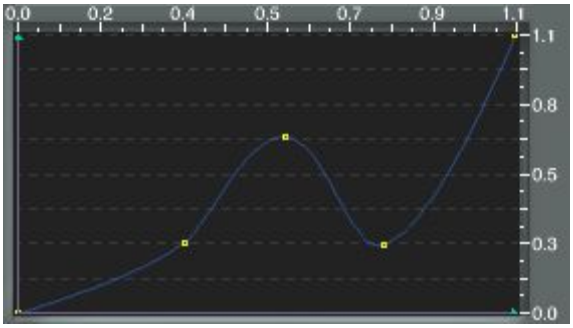
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A steep jump in the curve indicates a sharp increase in speed, as many events occur in a very short time. This curve indicates a sharp increase in speed.



An oscillation in the curve, indicates that events repeat, since they intersect the curve more than once. In this curve event A occurs once at 0.5 seconds and again at 0.75 seconds.



You can combine any variation of curve slopes to create different velocity effects.

While you're editing a Time Mapping Curve, you may want to continuously run the animation preview. As the preview runs, the cross-hairs in the Time Mapping Editor move from the beginning of the animation to the end. This way you can quickly see the effects of your edits. Refer to "Previewing Animations" for more on continuous preview. The counter at the bottom of the editor shows you the current time of the animation. As the animation runs, the counter updates to continuously show the current time.

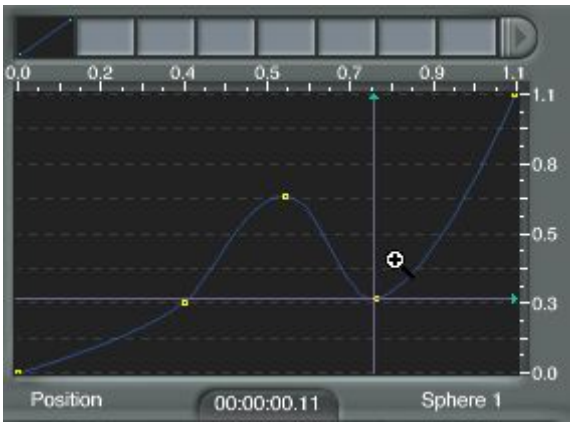
You can also move the current time by dragging the Current Time bar in the Hierarchy Area.

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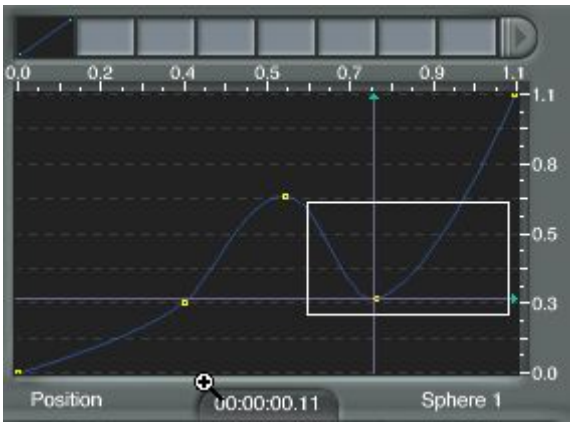
Zooming In on a Curve

To zoom into an area of the Time Mapping Curve:

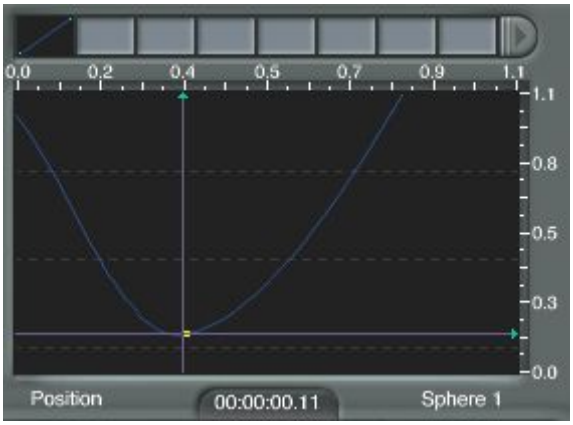
1. Move the cursor over the curve in the Time Mapping Editor. The cursor will change to the Zoom In cursor.



2. Click and drag over an area of the curve.



When you release the mouse, the area is enlarged.

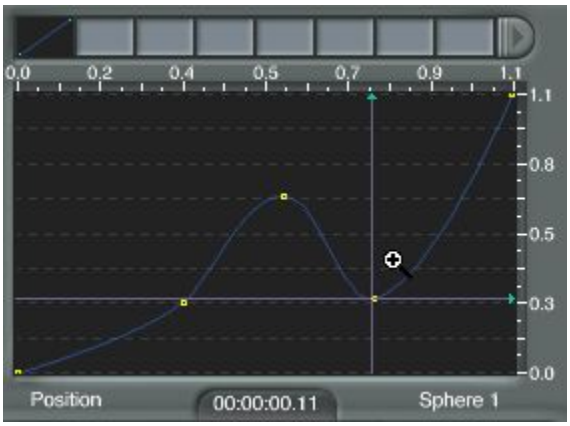


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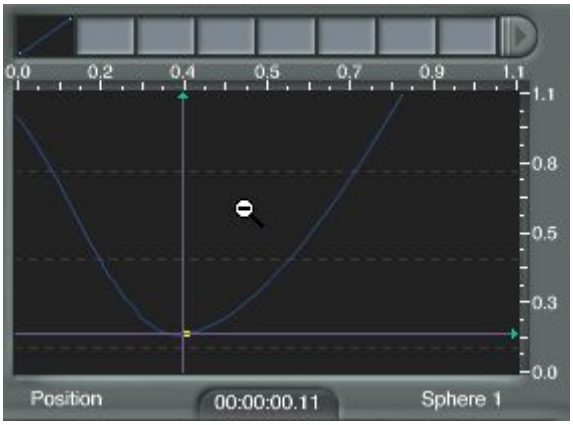
Zooming Out on a Curve

To zoom out from an area of the Time Mapping Curve:

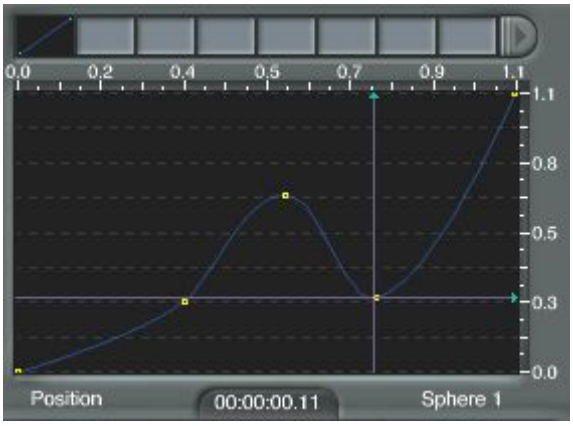
1. Move the cursor over the curve in the Time Mapping Editor. The cursor will change to the Zoom In cursor.



2. Hold down the Shift key and click inside the Time Mapping Editor. The cursor will change to the Zoom Out cursor.



When you release the mouse, the area is reset.

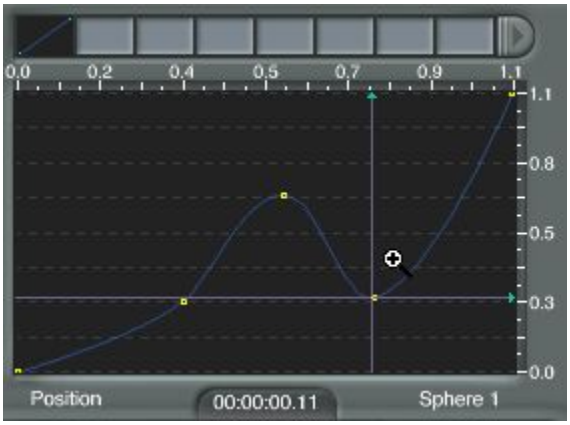


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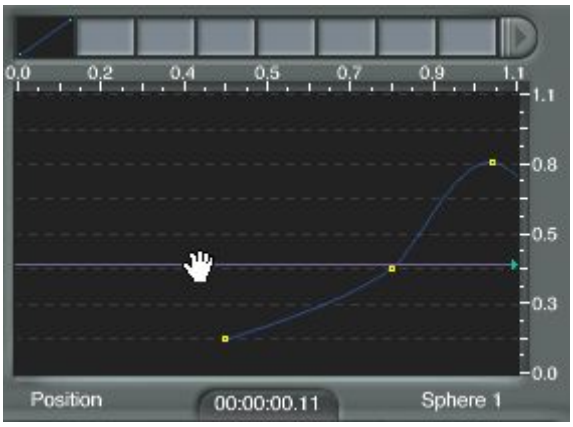
Panning the Curve

To pan the Time Mapping Curve, :

1. Move the cursor over the Time Mapping Editor.



2. Press the Spacebar (the cursor will change to the Pan cursor) and drag the curve in the editing window.

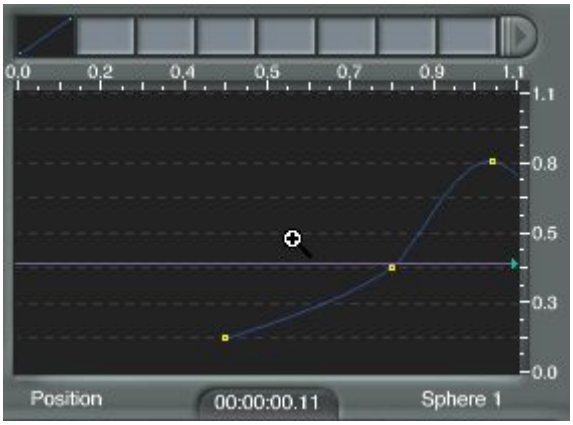


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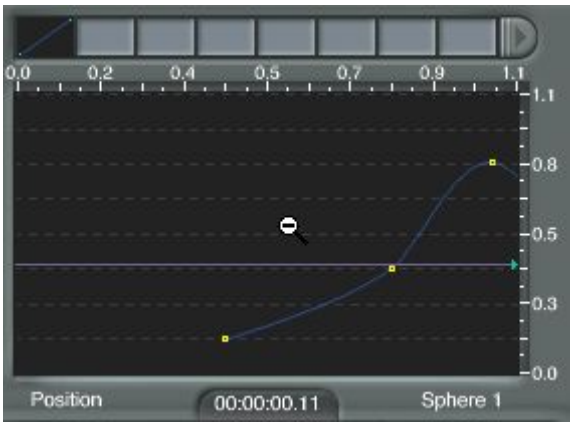
Resetting the Curve Editor View

To reset the view in the Curve Editor View after zooming in or panning:

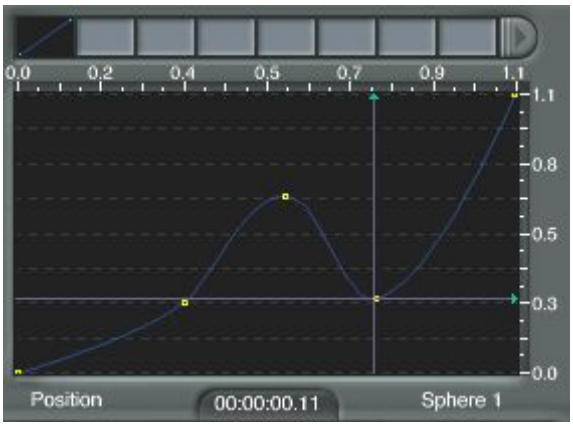
1. Move the cursor over the Time Mapping Editor.



2. Press Cmd/Ctrl+Shift then click in the editor window.



The view will be reset.

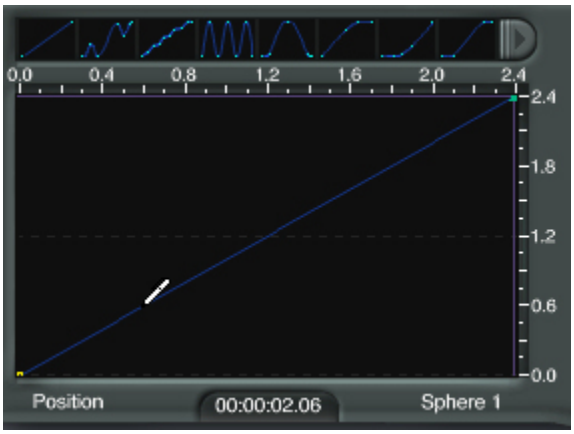


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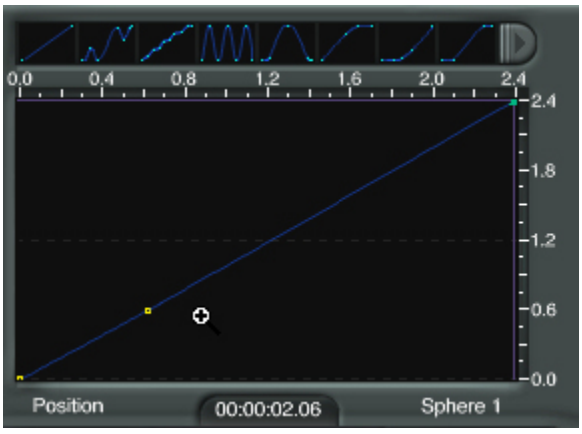
Adding a Point on a Curve

To delete a point on a Curve:

1. Move the cursor over the Time Mapping Editor where you want to add a new point. The cursor will change to a pen cursor.



2. Left-click on the curve and a new point will be added.

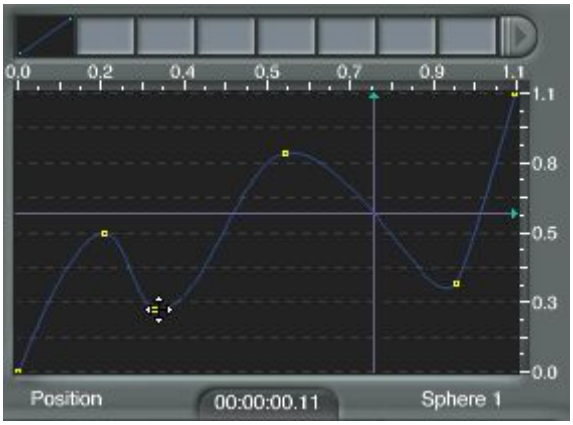


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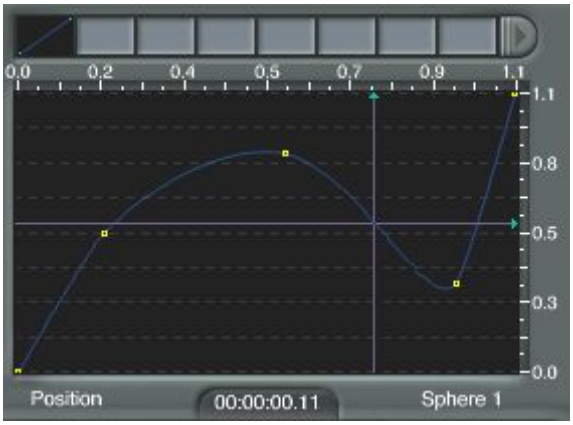
Deleting a Point on a Curve

To delete a point on a Curve:

1. Move the cursor over the Time Mapping Editor.



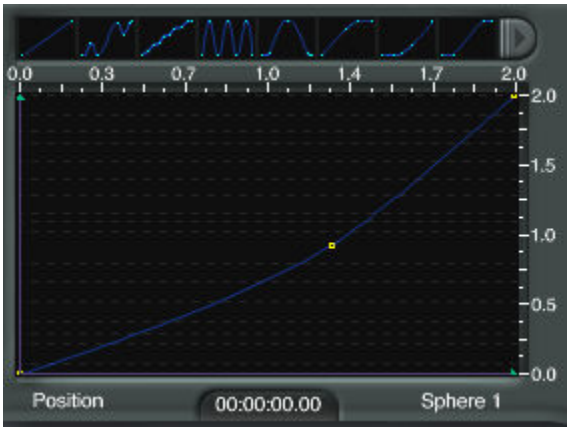
2. Press Cmd/Ctrl+Shift then click on the point to be deleted in the editor window. The point will be deleted.



Using Presets

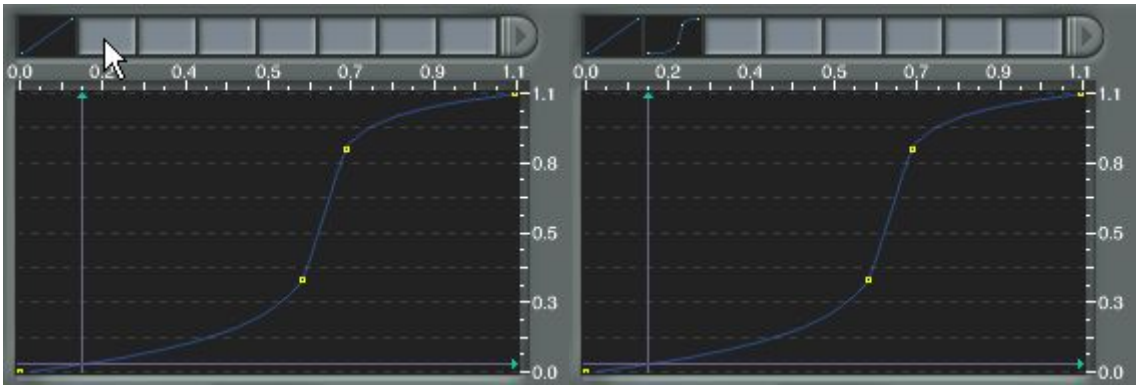
Above the Time Mapping Curve Editor are eight time mapping curve presets. You can create a preset of the current curve then apply it to a different attribute of the same object or to another object.

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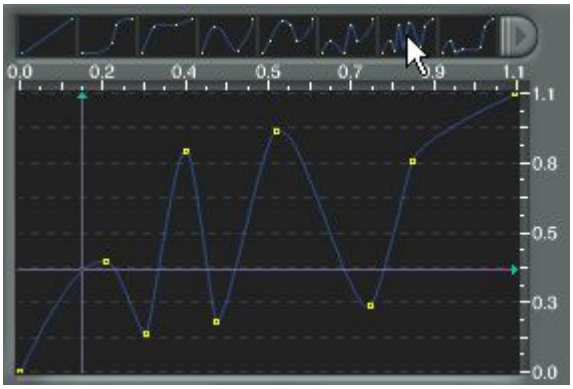


To add, apply, or remove a preset:

- To add a preset, click in one of the blank squares. Scroll using the arrow at the right if a blank square is not available.



- To apply a preset, click in the square that displays the preset you want to apply.



- To remove a preset, press Opt/Alt and click on the square that displays the preset you want to delete.



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- When all the preset slots are filled, a new one is automatically generated when you click on the right arrow.

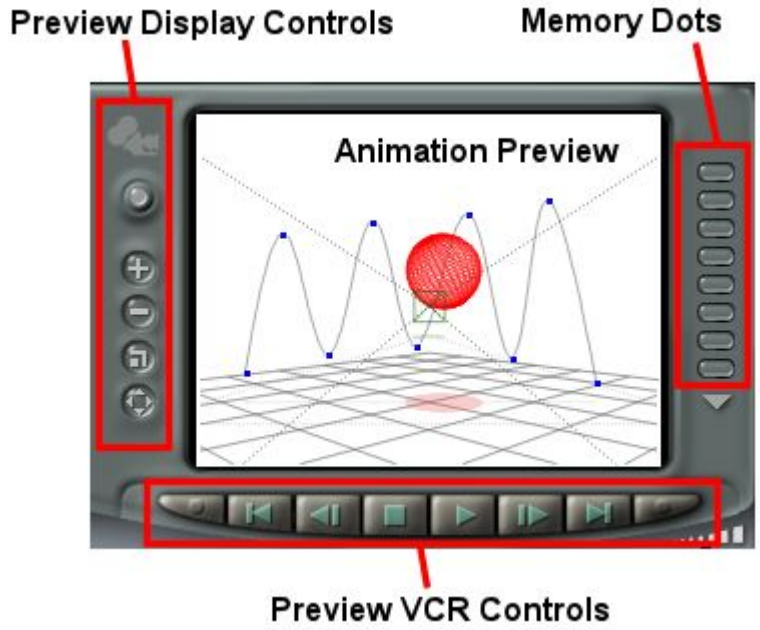


- To scroll to the newest preset or to the next preset in line, click on the arrow at the end of the preset container.



Preview Area

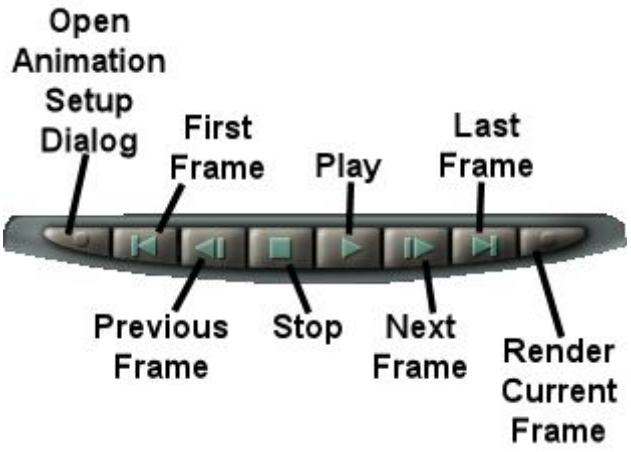
The Preview Area in the Advanced Motion Lab contains tools that let you preview your animation. It lets you see any changes you make to the timing and velocity of objects.



The Preview Area has four parts:

- The Animation Preview Area displays a wireframe preview of your scene. Any changes you make in the Time Mapping Curve Editor or the Sequencer are updated to this area.
- The Preview VCR Controls let you play the animation like a movie. You can stop, play, move forward one key frame, or back one. The far right button renders the scene.

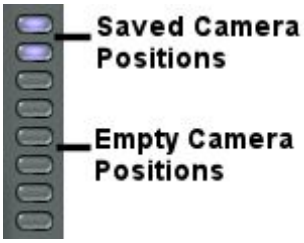
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- The Preview Display Controls let you zoom in/out of the preview, switch between Camera View and Director View, pan the preview, and reset the preview.



- The Camera Preview Memory Dots let you save specific camera positions in the preview for later use.

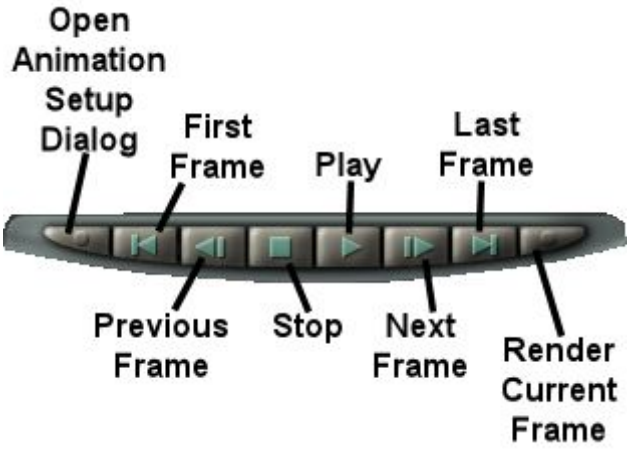


Once you start the animation, it will run continuously until you press the Stop button. Running the preview also moves the Current Time Bar in the Sequencer area and the cross-hairs in the Time Mapping Editor. In addition, the counter at the bottom of the Time Mapping Editor displays the current time of the animation as it plays.

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Preview VCR Controls

The Preview VCR Controls let you play the animation like a movie. You can stop, play, move forward one key frame, or back one. The far right button renders the scene.



Once you start the animation, it will run continuously until you press the Stop button. Running the preview also moves the Current Time Bar in the Sequencer area and the cross-hairs in the Time Mapping Editor. In addition, the counter at the bottom of the Time Mapping Editor displays the current time of the animation as it plays.

To preview an animation:

- Click the Play button in the Preview Area Controls. The animation starts running. It will continue playing until you press the Stop button.



- Click the Stop button to stop the preview.



- Click the First Frame button to go to the first frame in the preview.



- Click the Last Frame button to go to the last frame in the preview.



- Click the Previous Frame button to go to the previous frame in the preview.



- Click the Next Frame button to go to the next frame in the preview.



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- Click the Animation Setup button (first button on VCR Controls) to open the Animation Setup dialog.



- Click on the Render View button (last button on VCR Controls) to render the current frame in your preview.



Preview Display Controls

The Preview Display Controls let you zoom in/out of the preview, switch between Camera View and Director View, pan the preview, and reset the preview.



The controls along the left side of the Preview Area control several options for your animation preview.

- To switch between Camera View and Director's View in the preview:
  - Click the Swap Views button next to the Preview Area. When you first open the Advanced Motion Lab, the Preview Area displays the current camera view. In Director's View you'll be able to see the camera in the scene.
  - Click the button again to switch back to Camera View.



Changing views in the Preview Area doesn't affect the view in the Working window.

- To change the view in the Preview Area to orbit around your scene, click+drag the preview in the direction you want to move the view of your scene.

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- To zoom in and out of the preview, click the + and - buttons next to the Preview Area. The view of the scene enlarges or gets smaller depending on the button clicked.



- To reset the view in the preview area, click the Reset button next to the Preview Area. The view returns to the view displayed when you first entered the Advanced Motion Lab.



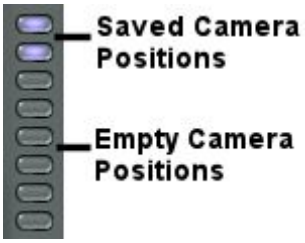
- To pan the Preview Area, drag the cursor over the Pan button next to the Preview Area.



- To rotate the Preview Area, drag in the Preview Area.

Saving Camera Preview Positions

The Memory Dots next to the Preview Area let you save specific camera positions in the preview for later use.



To save a camera position:

- Change the view in the Animation Preview Area by using the Zoom/Pan buttons or rotate the view by clicking in the preview window and dragging.
- Click on an empty Memory Dot on the right side of the Preview Area. A dot is empty when it appears gray.
- To move to saved camera position, click on a full Memory Dot. A dot is full when it appears purple.
- To delete a saved camera position, Opt/Alt+click on a full Memory Dot.

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Animating Techniques

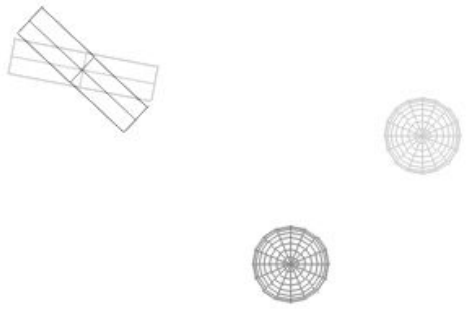
Bryce has several features you can use to add realism to your animations. The techniques can be used together to help you develop more exciting, natural, and dynamic animations.

In this section, you'll learn how to animate objects using the Tracking feature. You'll also learn how to animate several different properties of your scene like material channel properties, which can dramatically alter the look of your objects, and terrain object properties, which can alter the layout of your landscape.

Tracking Objects

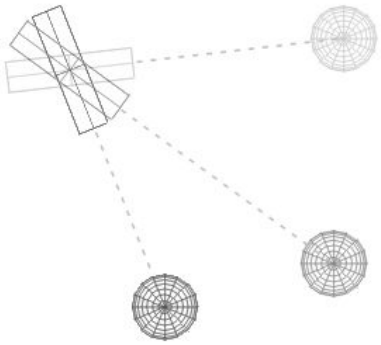
Tracking lets you connect an object to another, called the target, so that the object remains pointed at the target throughout the animation.

As the target moves, the original object pivots around its origin so that it remains pointed at the target. Normally, the original object does not change position, only orientation. However, if you offset the object's origin point, it might change location as it rotates around the offset point.

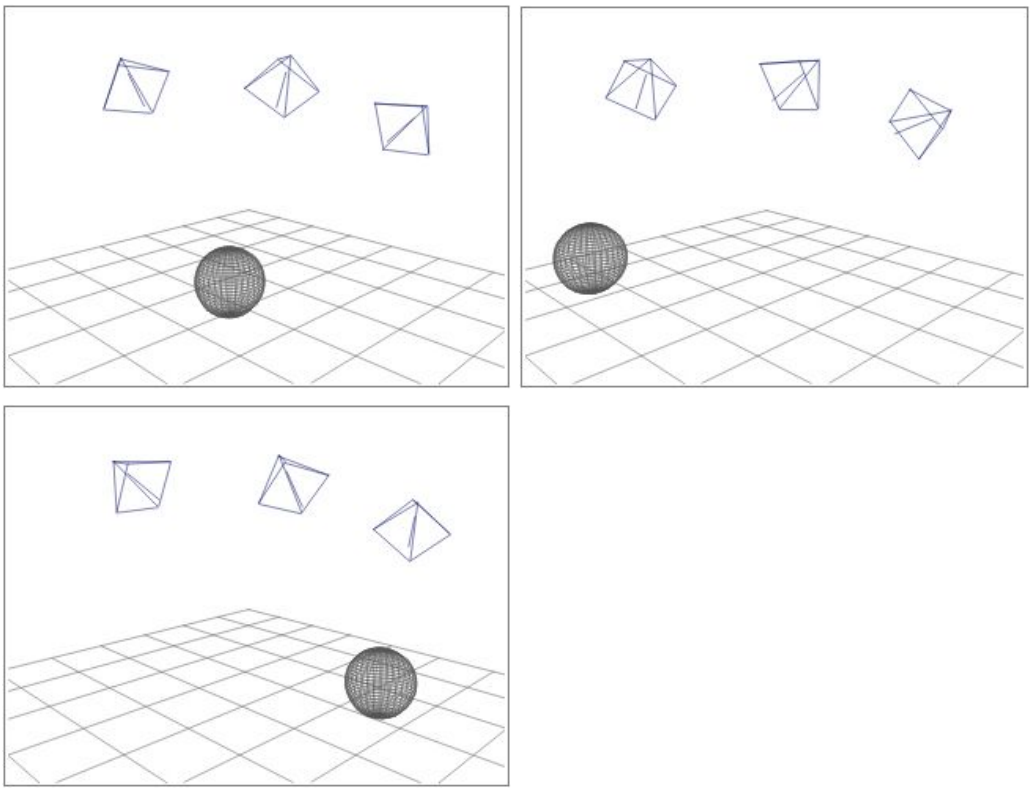


You can use tracking to quickly set up the animation of a number of objects at once. When an object is tracking another, you only have to set up the motion path of the target object. The motion of the objects tracking the target are automatically created. The original object pivots around its origin point so that it's always facing the target object.

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For example, in this scene the motion of all the lights is created when you move the target object. You can use this feature to ensure that a light or the camera remains pointed at an object during the entire course of the animation. You can also use it to create motions like a radar dish following a satellite or a sunflower following the sun. A parent object cannot track its child object.

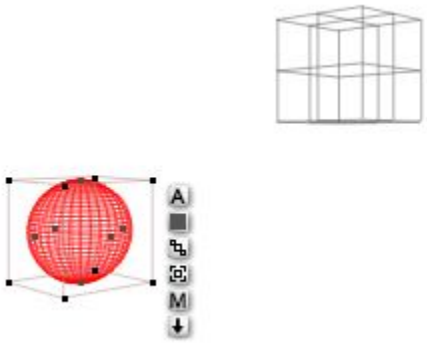


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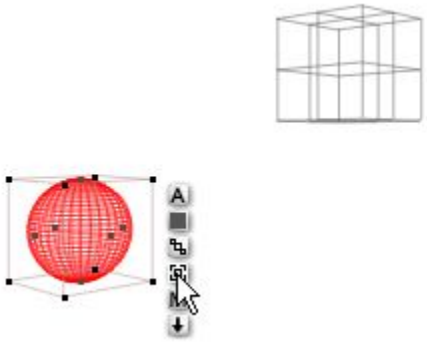
Set Track Object Interactively

To set up object tracking interactively:

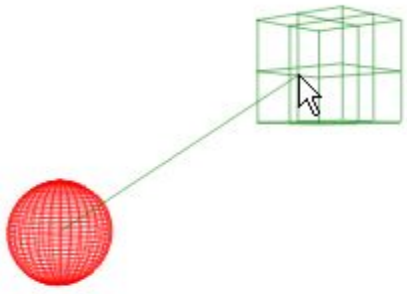
1. Select the object you want to remain stationary (that is, the one that tracks the target object).



2. Move the cursor over the target button (⊡) that appears next to the object's bounding box.

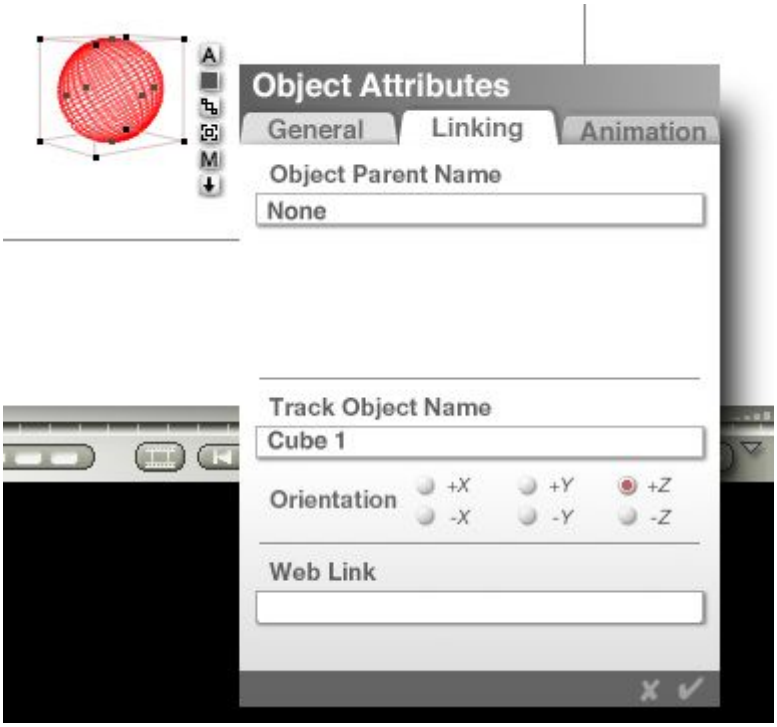


3. Left-click and drag the Target line from the ⊡ button to the target object. The target object turns green. As you drag the Tracking icon from the tracking object to the target, a tracking line appears. Let up on the mouse.

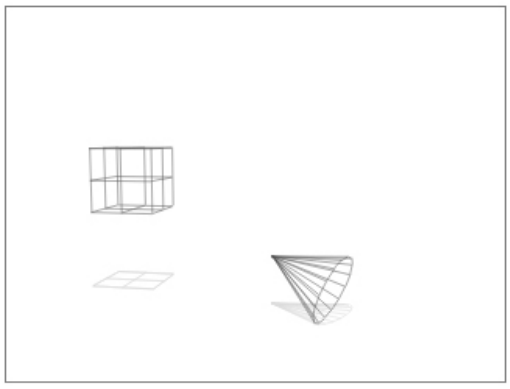


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4. If you need to change the orientation of the tracking object, click the A button that appears next to the object's bounding box. The Object Attributes dialog will come up.
5. Click the Linking tab.
6. The selected target object will now show in the Track Object Name field and the Orientation options will be visible. The default orientation is +Z which points the front of the object on the Z-axis towards the object it is tracking. Click on a button to change the orientation.



Example - Cone tracking a cube with orientation of +Y, so top of cone points towards the cube:



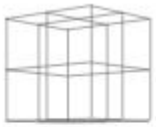
7. Click on the OK icon to close the dialog.
8. Move the target object to test that the tracking is working.

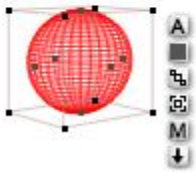
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Set Track Object in Object Attributes Dialog

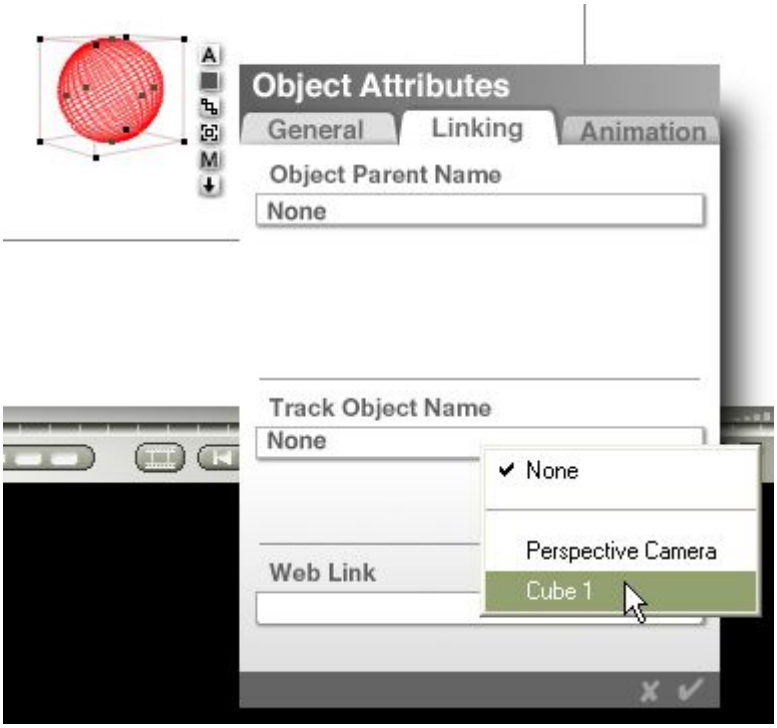
To set up object tracking using the Object Attributes dialog:

1. Select the object you want to remain stationary.



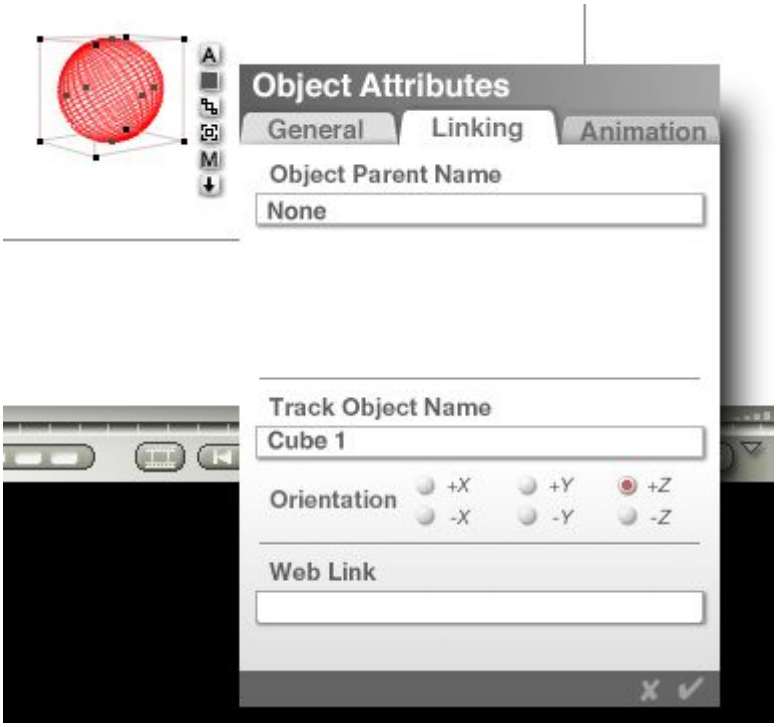


2. Click the A button that appears next to the object's bounding box. The Object Attributes dialog appears.
3. Click the Linking tab.
4. Click the Target Object Name menu and choose the name of the target object.

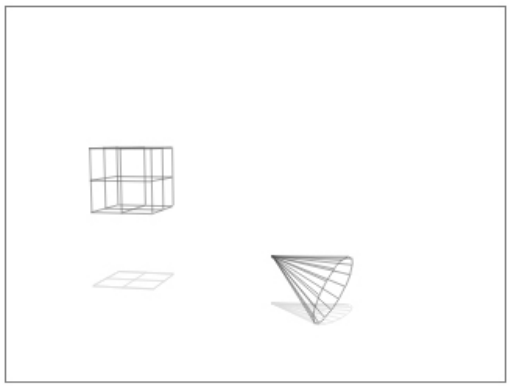


5. The selected target object will now show in the Track Object Name field and the Orientation options will become visible. The default orientation is +Z which points the front of the object on the Z-axis towards the object it is tracking. Click on a button to change the orientation.

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Example - Cone tracking a cube with orientation of +Y, so top of cone points towards the cube:



6. Click on the OK icon to close the dialog.
7. Move the target object to test that the tracking is working.

Animating the Camera

When you animate the camera, you're changing the view of your scene over the course of the animation. Since you're in 3D space you can move the camera to any position in the scene. You can have your camera circle around the scene, zoom into it or even fly under it. There are two ways of animating the camera in Bryce: using the Camera Position Controls or by moving the camera as an object.

The easiest way of animating the camera is to use the Trackball (or other Camera Position Controls) in Camera View while Auto-Key mode is enabled. Any changes you

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make to the position of the camera are automatically recorded as part of a key event. When you play the animation, your camera changes are added to all the other changes in scene properties to create the action in your animation.

While working in Camera View may be the easiest way of animating the camera, it is not the most precise. Because of the view's first person perspective, it can be hard to see the exact path of the camera as it moves. This can make creating a precise motion difficult. However, if you switch views, to an Orthogonal View or the Director's View, you'll be able to see the camera as an object in the scene. Then you can select the camera and set up key events for its position, just as you would for any other object. You can also display the camera's motion path so you can make precise adjustments to its movements.

After you're done setting up the key events for the camera, you can see the changes in the Sequencer in the Advanced Motion Lab. There you can rearrange the order of events or change how long it takes to move between camera positions. Refer to "Viewing Hierarchies" for more on working in the Hierarchy or "Time Mapping Curves" for more on remapping time.

Camera Motion & Skies

The motion of sky elements can affect how fast the action in your animation appears. For example, in time-elapsed movies, the clouds and sun fly by quickly as the objects stay in the same position. You could inadvertently create this type of action in your scene if you move only the camera in the scene without considering the static nature of the sky elements. Since the clouds stay in exactly the same position as you move the camera, they'll appear to be moving much faster than the objects in the scene.

To avoid this problem, Bryce lets you link the clouds to the camera. This way, whenever the camera moves, the cloud positions also move so they look like they're staying in the same position.

Although you can also link the sun to the camera, it's not a very good idea to link the two during an animation since any change in the camera position will change the time of day.

To link clouds to the camera:

1. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.

2. Click the Sky Lab button. The Sky Lab dialog appears.

3. Click the Cloud Cover tab.

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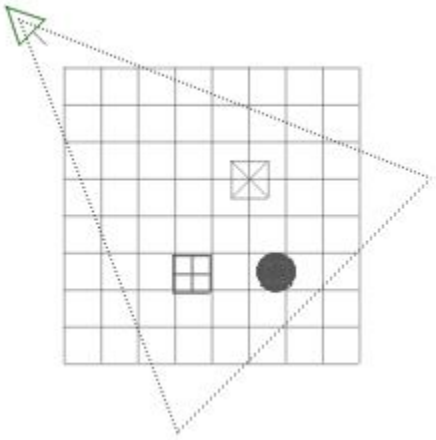
4. Click the Link Clouds to View button at the bottom of the palette.



5. Click the OK icon to exit the palette.

Using the Orthogonal Views

In Camera View you can't see the physical position of the camera in the scene since you're looking through it, but using one of the Orthogonal Views (Top, Bottom, Left, Right, Front, and Back) you'll be able to see the camera as an object. In this example, the scene is displayed in Top view. Here you can see the exact position of the camera in the scene.

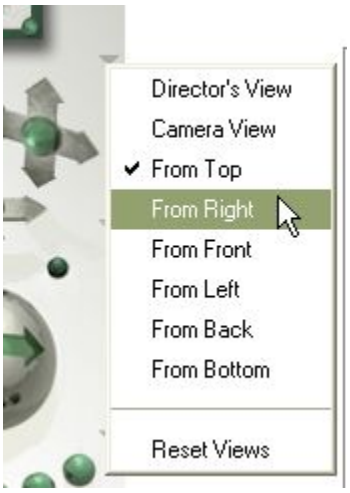


In these views you can animate the camera by changing its position at different points in time. When you run the animation, Bryce fills in the gaps between positions to create smooth camera motion.

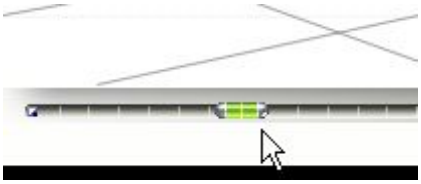
To animate the camera in an orthogonal view:

1. In the Working window, click the triangle icon next to the View Control and choose an Orthogonal View from the menu: Top, Left, Right, Bottom, Front, or Back.

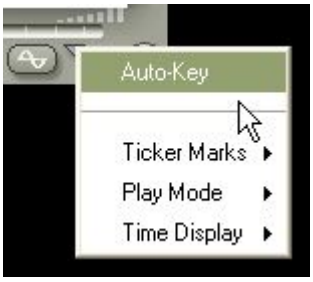
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2. Move the Current Time Indicator in the Timeline to the point where you want to start changing the Camera View.

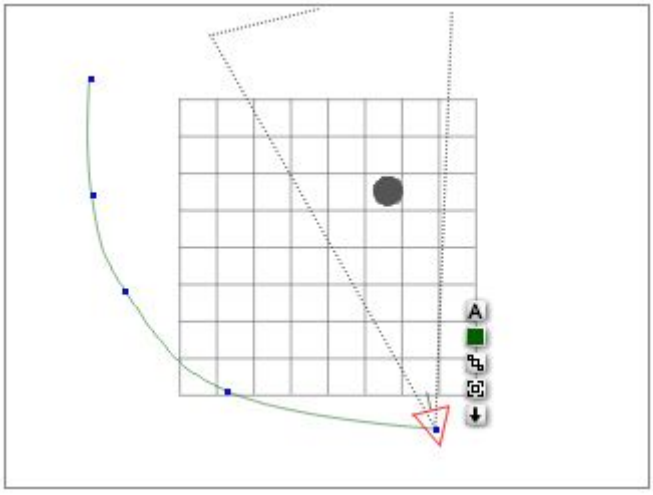


3. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



4. Drag the Camera wireframe in the Working window to a new position. Continue moving the Current Time Indicator and the Camera wireframe until all camera movements have been key framed.

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5. If you want to see the results of your changes, choose Camera View from the View Control menu and click the Play button in the Animation Controls.

Using Director's View

Director's View is similar to Camera View, except that in this view, you can see the camera as an object in the scene and the movements of the Director's camera are not recorded as key events. In Director's View you see the camera as an object in the Working window. You can change this view using any of the Camera Position Controls in the Control Palette.

In Director's View, you can move the view of the scene using the Trackball or the Camera Position tools. The view of the scene changes in the Working window, but no new key events are created.

You can also preview the animation while in Director's View. In the Working window you can see all the objects moving along their motion paths -including the camera.

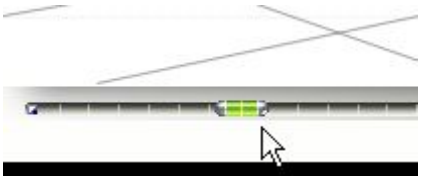
To animate the camera using Director's View:

1. In the Working window, click the triangle icon next to the View Control and choose Director's View from the menu.

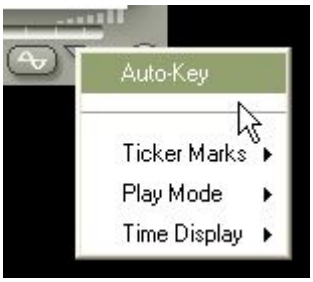


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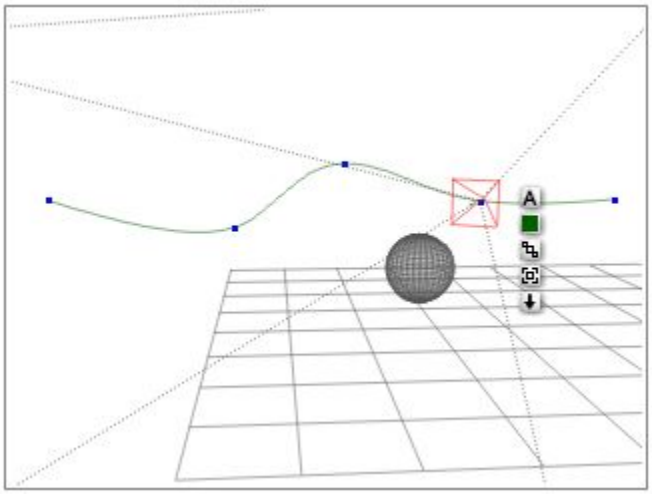
2. Move the Current Time Indicator in the Timeline to the point where you want to start changing the Camera View.



3. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



4. Drag the Camera wireframe in the Working window to a new position. Continue moving the Current Time Indicator and the Camera wireframe until all camera movements have been key framed.



5. If you want to see the results of your changes, click the Play button in the Animation Controls.

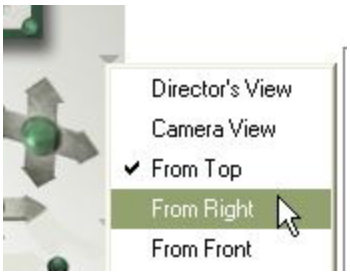
Displaying the Camera's Trajectory

If you're setting up a precise path for the camera, you may want to display its motion path. Just like with other motion paths, you adjust the trajectory of the camera by adjusting the shape of the path. Refer to "Editing Motion Paths" for more on working with motion paths. When you display the camera's trajectory, you can see the exact path it will take during the course of the animation.

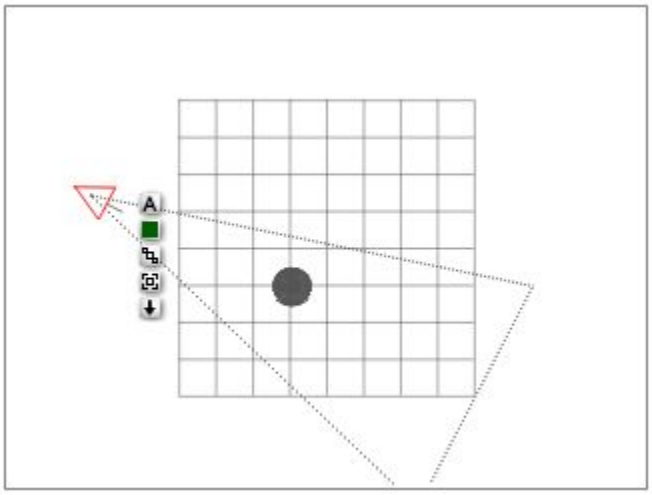
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To display the camera's trajectory:

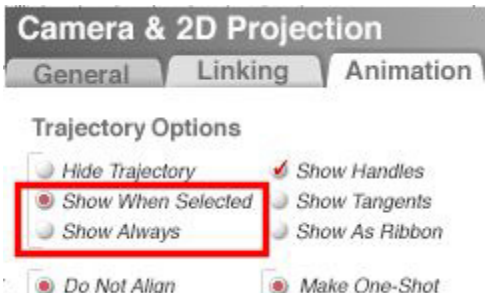
1. In the Working window, click the triangle icon next to the View Control and choose: Top, Left, Right, Bottom, Front, or Back from the menu.



2. Select the Camera in the Working window.



3. Click the A button that appears next to the camera's bounding box. The Camera & 2D Projection dialog appears.
4. Click the Animation tab and enable the Show When Selected or Show Always option.

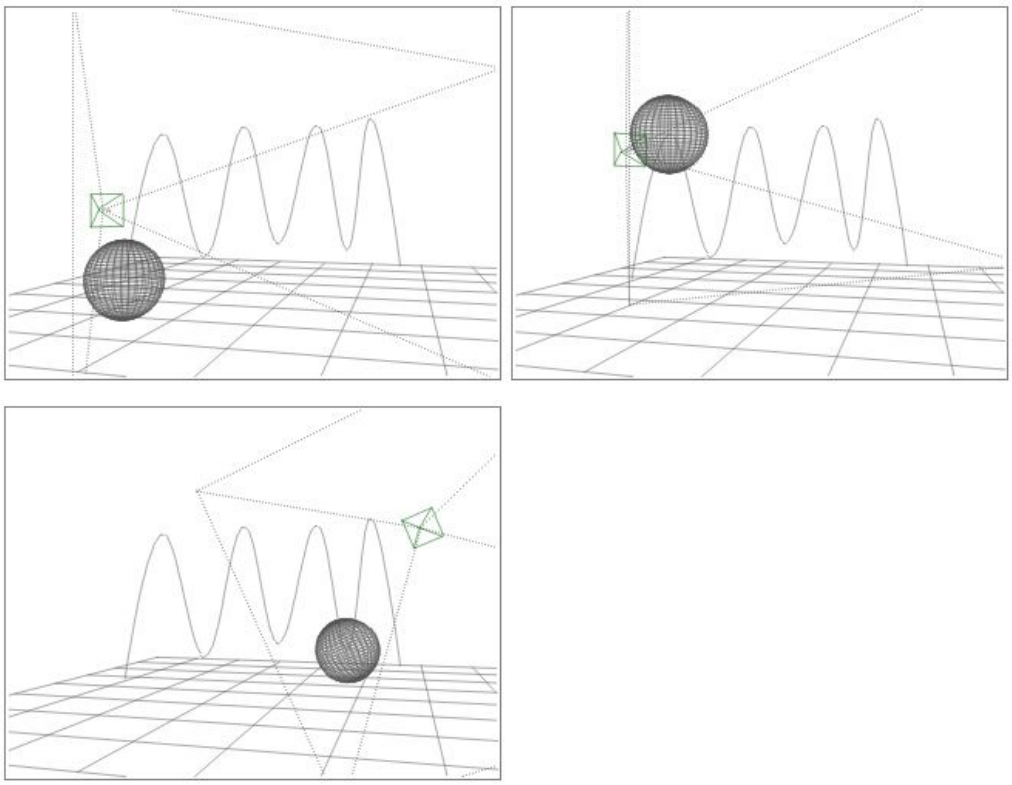


5. Click on the OK icon to close the dialog.

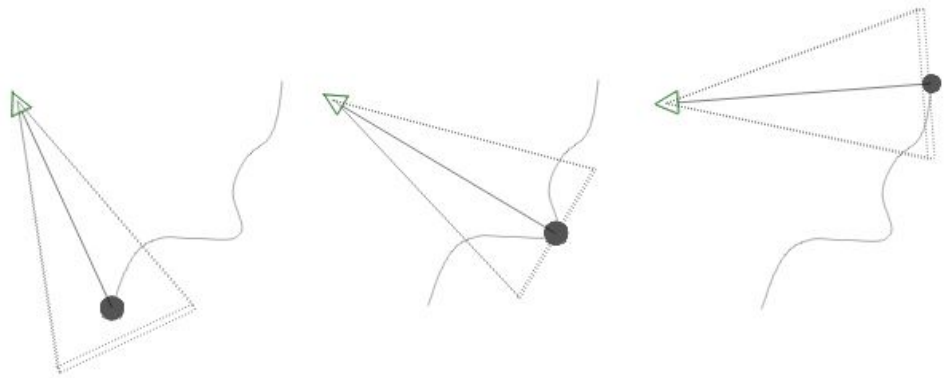
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Linking & Tracking with the Camera

Since Bryce lets you treat the camera as an object, you can also link the camera to an object or you can have it track an object. When you link the camera to an object, the view of the scene changes as the position of the parent object changes.



When the camera is linked to an object, both its aim and position change as the object changes. When you set the camera to track an object, the camera remains pointed at the target object no matter where the object moves in the scene. This means the Trackball is disabled because the orientation of the camera is controlled by the position of the target object. Also, you can't change the aim of the camera because it always aims at the target object.



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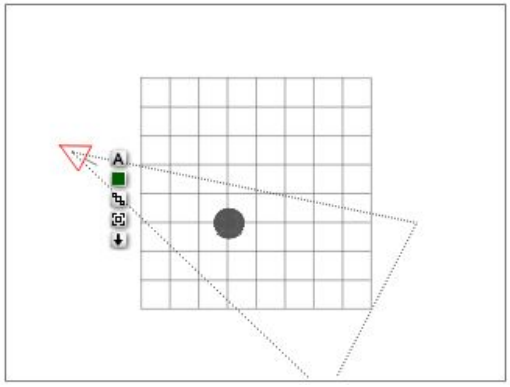
However, you can position the camera using the Camera Controls as these controls change the position of the camera not its orientation.

Linking the camera can cause unpredictable movements when you're in Camera View. If you change the position of the target object, the view of the scene will also shift.

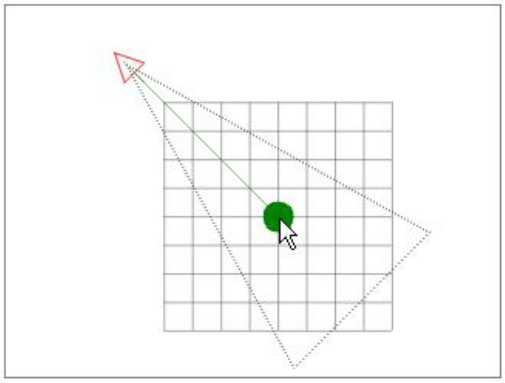
Set Link Camera to Object Interactively

To link the camera to an object interactively:

1. Switch to an Orthogonal View or Director's View.
2. Select the camera.



3. Move the cursor over the Tracking button ( ) that appears next to the camera's bounding box.
4. Drag the tracking handle from the button to the object you want to use as the target object. The target object will show as green.

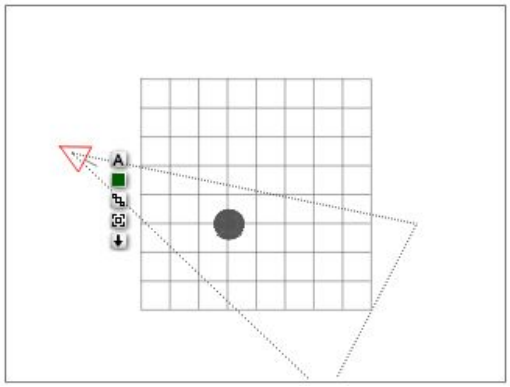


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Set Link Camera to Object in Camera & 2D Projection Dialog

To link the camera to an object using the Camera & 2D Projection dialog:

1. Switch to an Orthogonal View or Director's View.
2. Select the camera.



3. Click the A button that appears next to the object's bounding box. The Camera & 2D Projection dialog appears.
4. Click the Linking tab.
5. Click the Track Object Name menu and choose the name of the target object.



6. Click the OK icon to close the dialog.

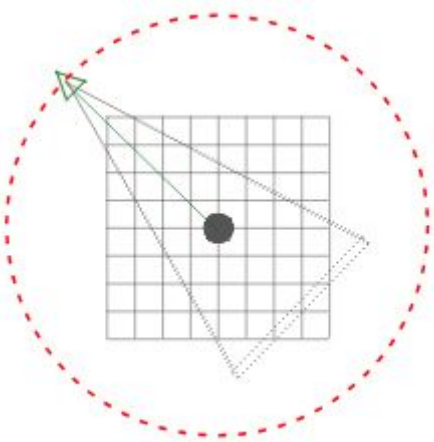
You can also access the Camera & 2D Projection dialog by double-clicking the Trackball or by clicking the triangle icon beside the Camera Controls and choosing Edit

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Current Camera from the drop down menu. Only the Camera & 2D Projection tab will be available when you access the dialog using one of these methods.

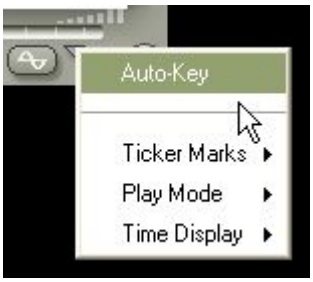
Creating Camera Orbits

The camera's Origin Point controls its center of rotation. When the Origin Point is at the camera's center, it rotates around in place. When the Origin Point is positioned somewhere in the scene, it will orbit around the Origin Point. During an animation, the view of your scene will orbit around a specific point in the scene. In this example, the camera's Origin Point was positioned in the center of the scene. During the course of the animation, the camera appears to orbit around the entire scene.



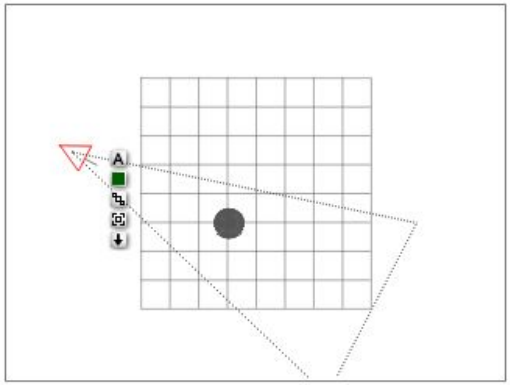
To create a camera orbit:

1. Switch to Director's View or one of the Orthogonal Views.
2. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



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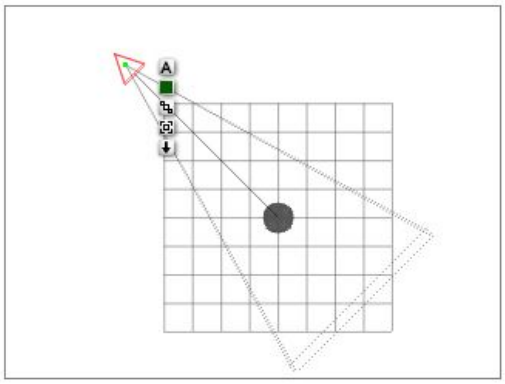
3. Click the Camera wireframe in the Working window.



4. Click the A button that appears next to the camera wireframe. The Camera & 2D Projection dialog appears.
5. Click the General tab.
6. Click the Show Origin Handle button and click the OK icon.

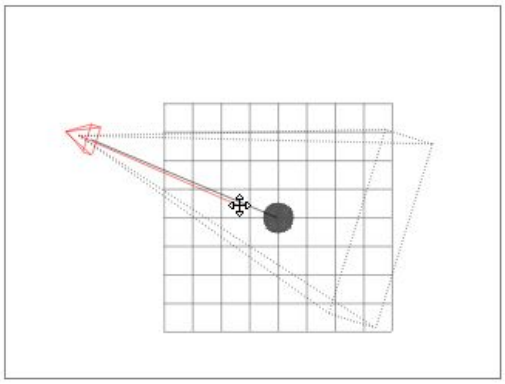


The Origin Point will now be visible in the scene as a bright green dot.



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7. Drag the Origin Handle to a position in the scene.



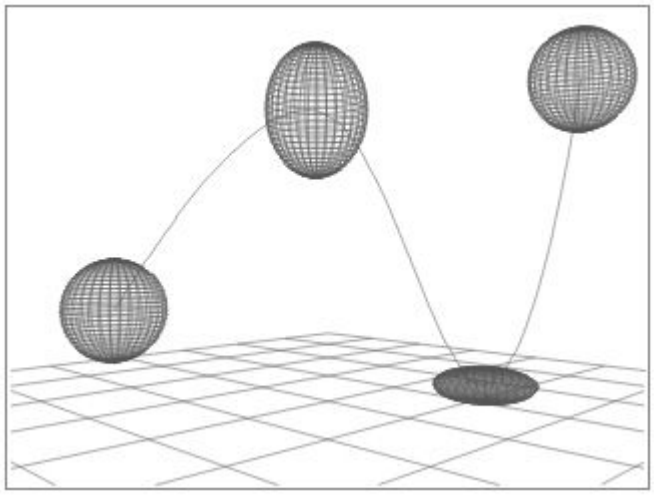
Note that it is easier to move the Origin Point if the camera is not yet linked to an object. Once the Origin Point is moved, then set the linking options.

8. Rotate the object using the Rotation tool in the Edit palette or the Trackball.
9. Play the animation to see the camera orbit around the scene.

Animating Transformations

When you're in Auto-Key mode, every transformation you apply to an object is recorded as a Key Frame.

In the Hierarchy Area you can see where the key frames for these transformations appear in the timeline. By moving these key frames you can control the order in which transformations are applied. For example, you can take an object that grows larger and then moves left, and turn it into an object that moves left and then grows. Several animation techniques, like squash and stretch, can be simulated using transformations.



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Animating Materials

The Materials Lab has its own set of animation tools that let you animate material properties. You can animate almost any property or texture.

Material animations are created using the Animation Controls at the bottom of the Materials Lab, which let you move along the Timeline and preview your animation. These controls let you move along your animation's timeline. This Timeline is the same as the one at the bottom of the Working window. It contains all the same key events as the Working window timeline. The Animation Controls in the Materials Lab can perform all the same features as the Animation Controls in the Working window except for the Auto-Key option.



When you're animating between textures, Bryce interpolates between patterns and colors over time. You can have a rocky terrain turn into a desert during the course of your animation.

The action in your scene can include much more that just motion. Many subtle or dramatic effects can be created by changing the properties of an object's surface over the course of the animation.

This section assumes that you're familiar with the concepts and procedures involved in creating material and textures. Refer to "Materials Lab" for more on creating materials and "Deep Texture Editor" for more on editing textures.

By animating an object's texture you can create subtle effects like changing the color of an object to simulate things like a tomato ripening. You can also create more dramatic effects like changing all the properties of a material at once. Using this technique you can change an object from marble to metal or glass to wood. For example, in this animation, the illusion of a banana ripening was created by changing the color and texture of a material over time.

In Bryce, animating materials is a rather straight-forward process. Using the animation tools in the Materials Lab you set the properties of a material at different points along the Timeline. When you run the animation, Bryce interpolates between the properties to create a transition from one material to the other.

You can animate any property of a material's:

- Colors
- Channel values
- Texture component usage (that is, switching between components A, B, C, and D)
- Texture properties
- Volume Material properties

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Take care when you're choosing which properties to animate. Some properties, like transparency, and volumetric effects can greatly increase the rendering time of your animation.

Animating Material Channel Values

By animating the channels in a material you can alter the properties of a material without changing its basic

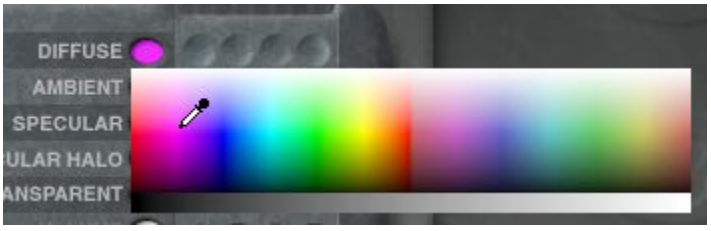
function. Using this technique, a rock material would still look like a rock, but change color, or glass would still look like glass except become shinier. Animating a channel value is the simplest way of animating a material and it requires the least amount of processing time.

To animate a material's channel values:

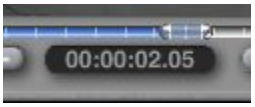
1. Select an object.
2. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



3. Click the M button that appears next to the object's bounding box. The Materials Lab appears.
4. Move the Current Time Indicator to the point where you want to start changing the material.
5. Either change the values of the material channels using the Value controls or change the color used for a channel by using the color picker.



6. Move the Current Time Indicator to a different point on the Timeline. The current time appears in the counter next to the preview controls.



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7. Change the channel values again.
8. Continue moving the Current Time Indicator and changing channel values until you achieve the effect you want.
9. Click the OK icon to exit the Materials Lab.
10. Click on the Preview Animation button to preview the material changes.



Animating Texture Components

Animating a texture component is an effective way of creating motion within a material. When you change the orientation, position, or scale within a texture component, the texture elements (like dots, checks or patterns) will appear to move.

You can use this technique to create realistic wave motion in a water texture. If you change the position of the texture pattern at different points in the Timeline, the waves will appear to move over the surface of the object.

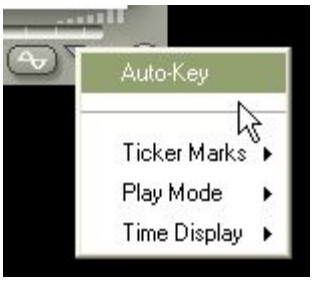
If you wish to avoid unexpected texture movement during a texture animation, use Object Space mapping mode for the texture. This way the texture moves as the object moves. However, you can create some very interesting effects using World Space.

You can also animate a texture component by altering the makeup of the texture using the Deep Texture Editor. Using the Deep Texture Editor you can change the make-up of any or all of the four texture components in a material.

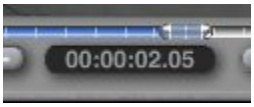
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To animate a material's texture components:

1. Select an object.
2. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



3. Apply a material preset from the Materials Preset Library. Click the M button that appears next to the object's bounding box. The Materials Lab appears.
4. Move the Current Time Indicator to the point where you want to start changing the material.



5. Click the button in the upper left corner of the texture component window. The Transformation Tools palette appears.

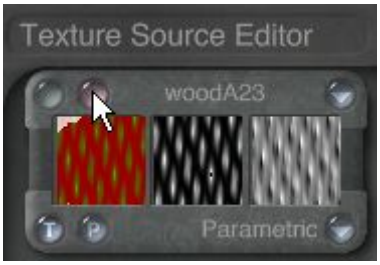


6. Adjust the position, orientation, and/or scale of the texture and click the T button to exit the palette.

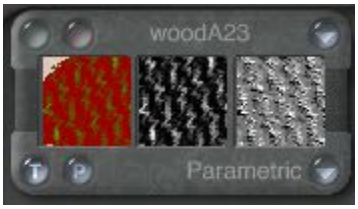
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7. Click the pink button in the upper-left corner of the texture component window. The Deep Texture Editor appears.



8. Adjust the values of the texture's components and click the OK icon to close the editor.
9. Move the Current Time Indicator to a different point on the Timeline. The current time appears in the counter next to the preview controls.
10. Change the texture properties again.
11. Continue moving the Current Time Indicator and changing texture properties until you achieve the effect you want.

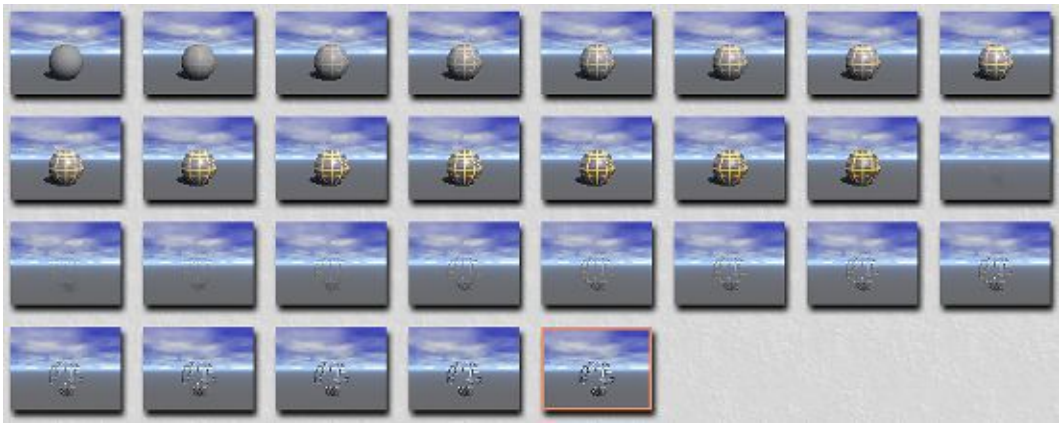


12. Click the OK icon to exit the Materials Lab.

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13. Click the Animation Preview button to see the result.

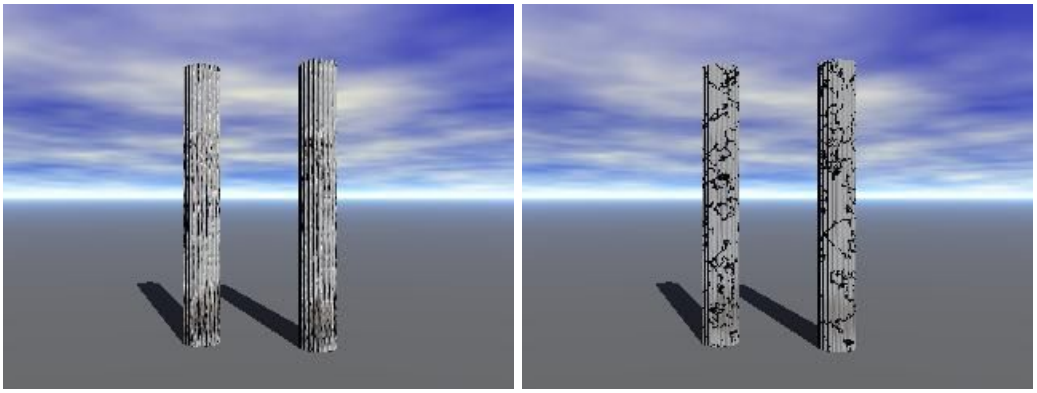
    Example using a different texture:



Animating Between Materials

Animating channel values or texture components is a good way of creating subtle effects in a material, but to create more dramatic action, you'll need to animate between two completely different materials.

This is how you create a transition from rock to glass, or wood to metal. For example, the transition between rock and marble in these temple columns was created using two completely different materials.



Animating between materials is exactly like creating two different materials for the same object. As long as the Auto-Key mode is enabled, all your settings are recorded as key events, so you can set up a material at one point in time and then move to a different point on the Timeline and create a completely different material.

There are two quick ways of creating different materials:

- By switching the Texture Component used to set a material channel, you can completely change the color, pattern, or bumpiness of a texture.
- Using the Preset Materials Library, you can quickly apply a different material to the object.

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Previewing Material Animations

Any change you make to a material's properties are displayed in the Material Preview Area. When you play a material animation, the same preview area shows you the transition of the material from one key event to the other. This is not the most effective way to see a material animation. The best way of seeing a material transformation is by rendering the scene.

To preview a material animation in the Materials Lab:

1. Click the Play button in the Animation Controls at the bottom of the Materials Lab.
2. Click the Stop button to stop the preview.

To preview a material animation in the Working window:

1. Click the Play button in the Animation Controls at the bottom of the Working window. The material animation shows in the Nano-Preview.
2. Click the Preview Animation button in the Animation Controls at the bottom of the Working window. The storyboard preview comes up showing the material animation.



Animating Terrains

Terrain objects are animated by changing their properties in the Terrain Editor.

This section assumes that you're familiar with the concepts and procedures involved in creating terrains. Refer to "Terrain Editor" for more on creating and editing terrains. By changing the shape of your landscape at different points on the Timeline you can simulate geological events like earthquakes or erosion.

There are several techniques you can use to control how the shape of your terrain changes. You can use the grayscale paintbrush to totally change the geometry of the terrain by adding new peaks and valley or you can use the Filtering tools to add small changes in elevation to the terrain.

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Terrain animations are created using the Animation Controls that appear at the bottom of the Terrain Editor.

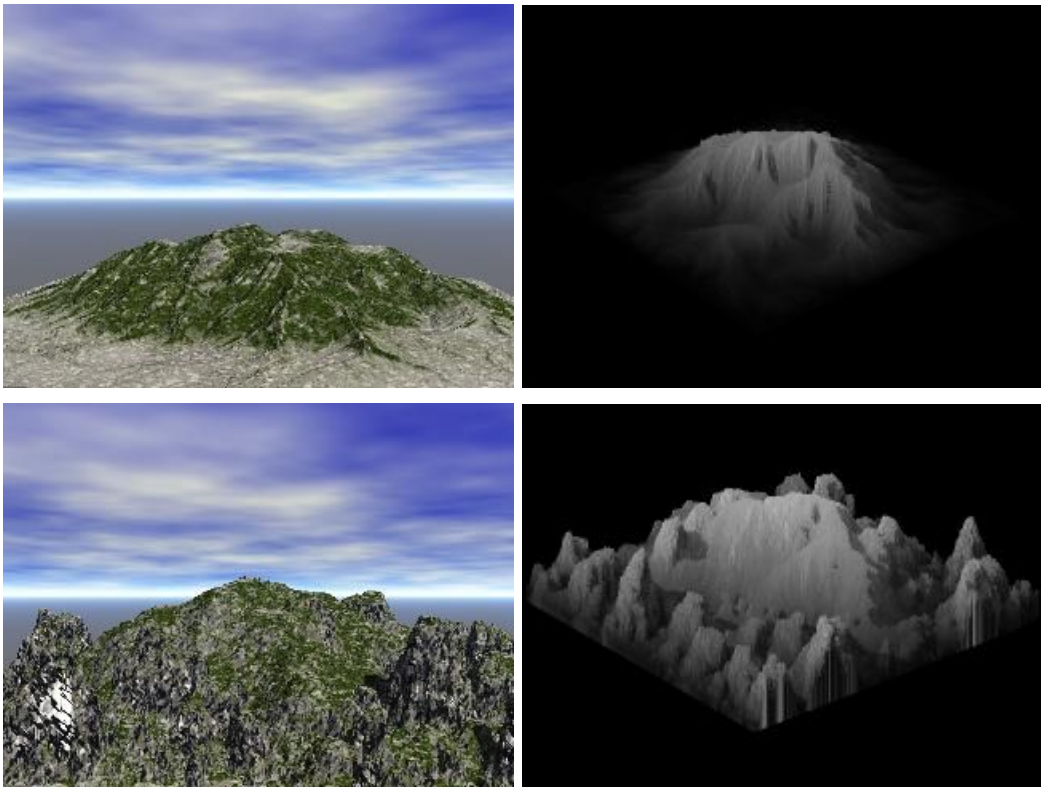


The Timeline in the Terrain Editor is the same as the one in the Working window except for the Auto-Key option. All the key events recorded for object transformations and material changes are displayed in the Timeline. The Animation Controls in the Terrain Editor can perform all the same functions as the those in the Working window.

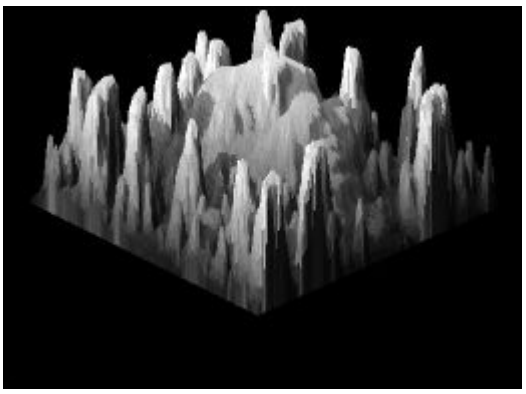
Animating Terrain Geometry

There are two ways of changing the geometry of a terrain object: by painting directly on the 2D Preview or by applying an elevation effect. When you paint on the canvas you create large changes in the terrain like the creation of new mountains or valleys.

The violent motion of great rock columns shooting up from the ground was created by applying the Mounds filter onto an existing terrain at different points along the timeline.



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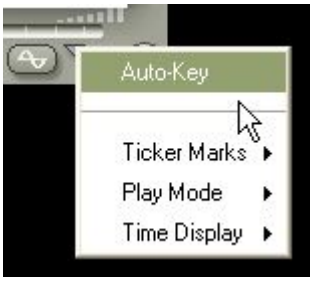
When you apply an effect you create smaller more subtle changes like a mountain eroding over time.

You can also use this technique to record how a terrain object was formed. By adjusting the Current Time as you add elements to the terrain, you'll have a complete record of all your steps.

To animate terrain geometry:

Click a terrain object.

1. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



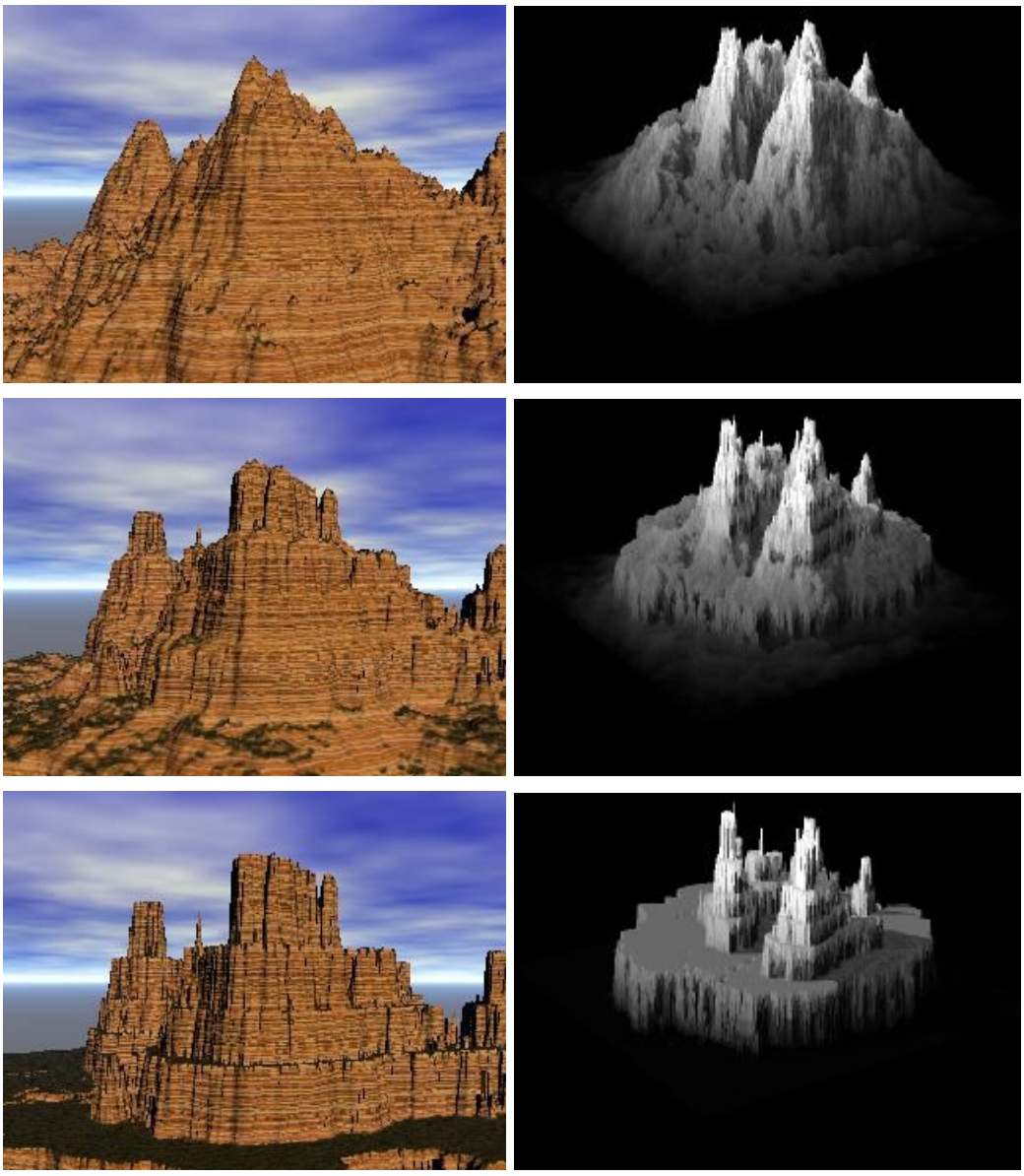
2. Click the E button that appears next to the terrain object's bounding box. The Terrain Editor appears.
3. Move the Current Time Indicator to the point in the Timeline where you want the terrain to change.
4. Either paint new areas in the terrain using the Grayscale paintbrush or apply one of the effects in the Elevation tab.
5. Move the Current Time Indicator to a different point on the Timeline.
6. Change the shape of the terrain again using an effect or the paintbrush.
7. Continue moving the Current Time Indicator and changing the terrain's shape until you achieve the desired effect.
8. Click the OK icon to exit the editor.

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Animating Terrain Filtering

By animating the shape of a terrain object's Filtering Graph you can create some very specific geometry effects.

For example, you can make specific areas of your terrain sink to simulate the damage caused by an earthquake. To create this effect you would darken only areas you want to sink in the Filtering Graph. Likewise, you create the effect of ridges forming by lightening specific areas of the graph. For example, the gradual appearance of stairs in this terrain was created by adjusting the filtering graph at different points in the timeline.

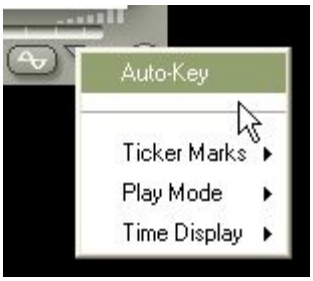


You can also use the Filtering Graph to gradually raise or lower the entire terrain over the course of your animation.

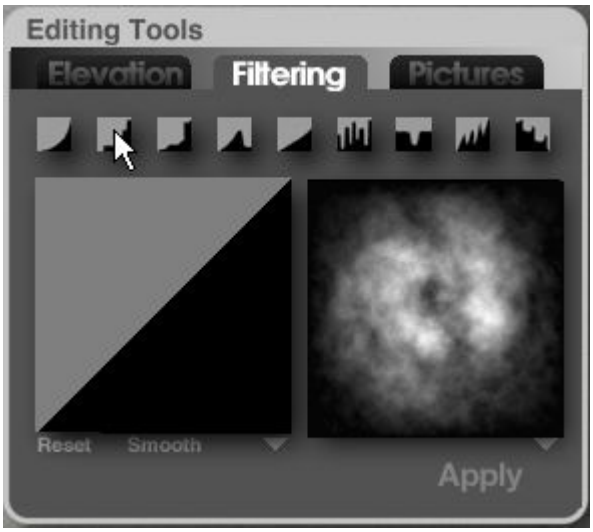
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To animate terrain filtering:

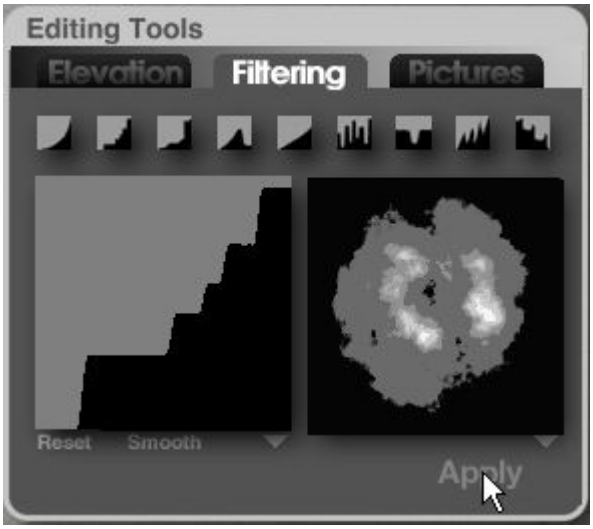
1. Click a terrain object.
2. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.



3. Click the E button that appears next to the terrain object's bounding box. The Terrain Editor appears.
4. Move the Current Time Indicator to the point in the Timeline where you want the terrain to change.
5. Click the Filtering tab.
6. Adjust the shape of the Filtering Graph or select a preset filter.



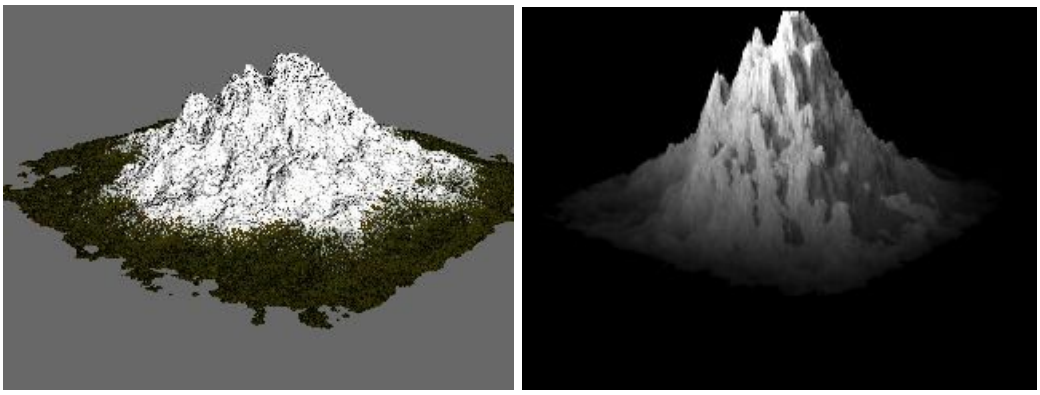
7. Click on Apply to apply the filter.



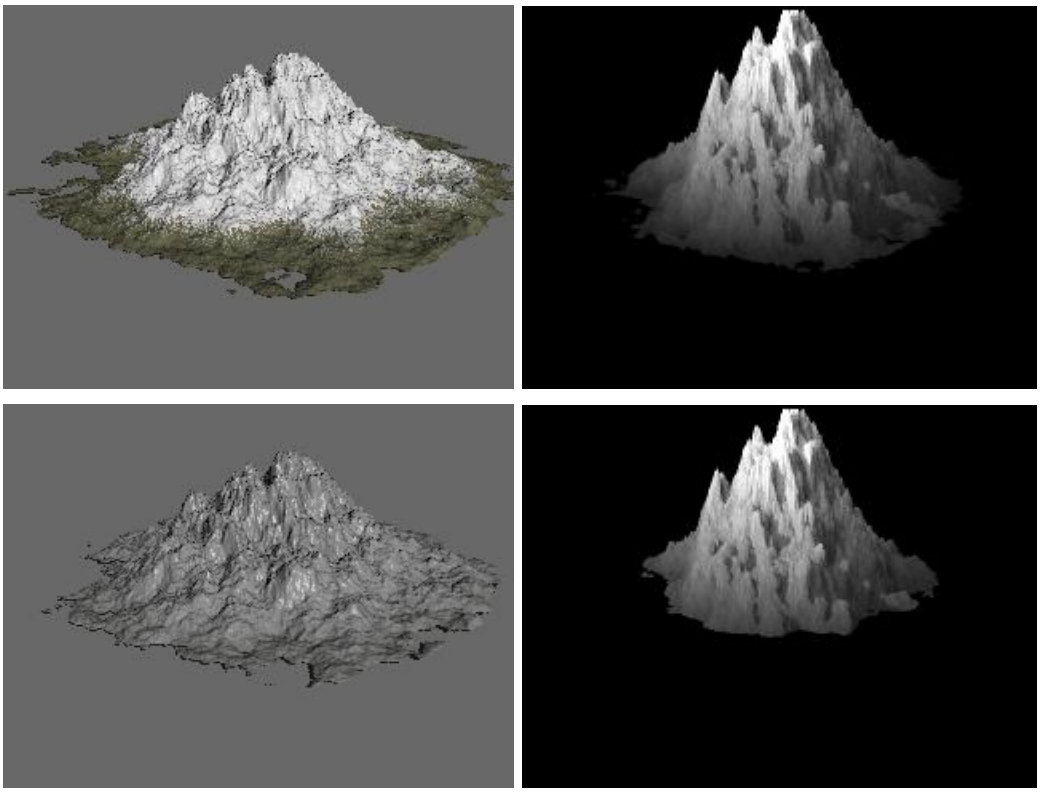
8. Move the Current Time Indicator to a different point on the Timeline.
9. Change the shape of the graph again.
10. Continue moving the Current Time Indicator and changing the terrain's graph until you have the desired effect.
11. Click the OK icon to exit the editor.

Animating Terrain Clipping

The setting of the Terrain Clipping Bracket can also be animated. As areas of the terrain are clipped, they're removed from the terrain object in the scene. Your terrain will look like it's breaking up, or like portions it are falling into the sea. For example, the gradual destruction of this island was created by changing the length of the clipping bracket at different points in the Timeline.

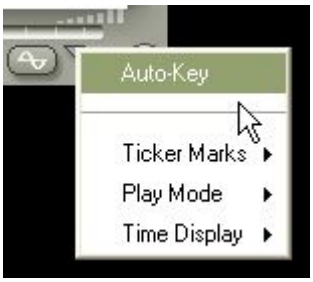


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To animate terrain clipping:

1. Click a terrain object.
2. Click the triangle icon in the Animation Controls and make sure Auto-Key is enabled.

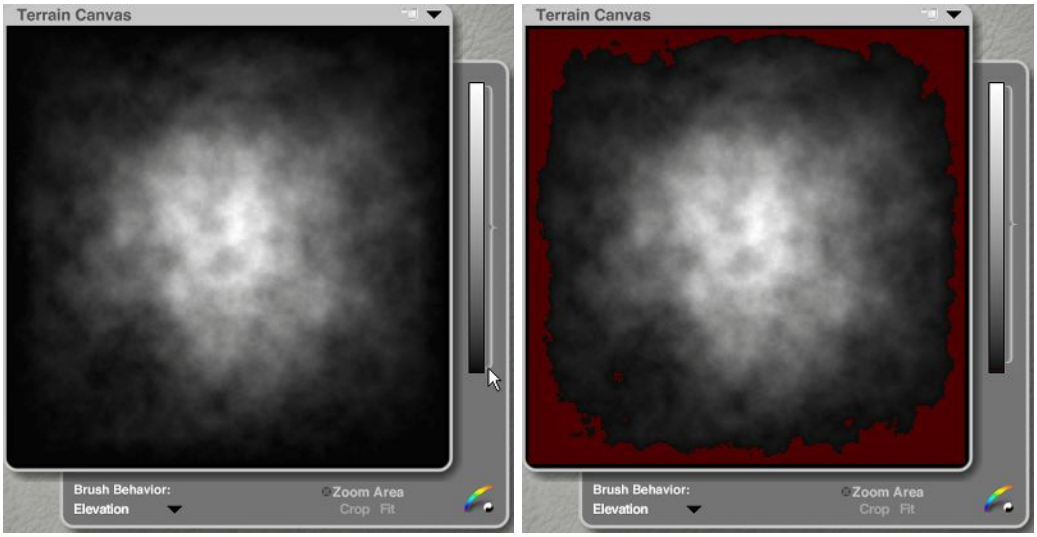


3. Click the E button that appears next to the terrain object's bounding box. The Terrain Editor appears.
4. Move the Current Time Indicator to the point in the Timeline where you want the terrain to change.
5. If the Clipping Bracket is not visible, click on the Display Clipping Bracket button at the top right of the Terrain Canvas.

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6. Click+drag up on the bottom of the Clipping Bracket to adjust the length of the Clipping Bracket.



7. Move the Current Time Indicator to a different point on the Timeline.
8. Change the length of the bracket again.
9. Continue moving the Current Time Indicator and changing the length of the bracket until you achieve the desired effect.
10. Click the OK icon to exit the editor.

Previewing Terrain Animations

Any change you make to a terrain's properties appear in the 3D Terrain Preview. When you play a terrain animation, the same preview area shows you the transition of the terrain from one key event to the other.

To preview a terrain animation in the Terrain Editor:

1. Click the Play button in the Animation Controls at the bottom of the Terrain Editor.
2. Click the Stop button to stop the preview.

Please note that if you exit the Terrain Editor, then re-enter it, the Terrain Canvas and 3D Terrain Preview will show the terrain at the current frame in the Working window. The Animation Controls can be used to animate the terrain in the 3D Terrain Preview but the Terrain Canvas will not update to match the preview. To update the terrain at a

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different frame, exit the Terrain Editor, move the Current Time Indicator to the frame you want, then re-enter the Terrain Editor.

To preview a terrain animation in the Working window:

1. Click the Play button in the Animation Controls at the bottom of the Working window. The terrain animation shows in the Nano-Preview.
2. Click the Preview Animation button in the Animation Controls at the bottom of the Working window. The storyboard preview comes up showing the terrain animation.



Animating Skies

All the properties of a Bryce sky can be animated. This means that any attribute you can set in the Sky & Fog palette or the Sky Lab dialog can be animated using the Animation Controls on the Timeline. This section assumes that you're familiar with the concepts and procedures involved in creating skies. Refer to "Sky & Fog Palette" for more on creating skies.

By changing the attributes in the Sky & Fog palette at different points in the timeline, you can animate everything from the position of the sun to the color of the clouds. For example, you can simulate changes in the time of day by changing the position of the sun over time.

There are several techniques you can use to add motion to your skies. You can animate all or some of the properties of your sky. You can activate and deactivate sky effects at different points in the animation. You can also animate the position of the sun or moon.

Sky animations are created using the Animation tools in the Working window and in the Sky Lab dialog.

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Animating Sky & Fog Settings

Animating Sky & Fog settings changes the properties of a sky over time. For example a scene can become cloudier or darker during an animation. The intensity of the change depends on how many properties you adjust and the amount of each adjustment.

In this example, the animation of approaching sunset was achieved by changing the sky settings at the end of the Timeline to a sunset.




Most Sky & Fog properties can be changed using the thumbnail controls. Other settings are available in the Sky Lab dialog.

You won't be able to see the effects of a sky animation until you render the entire animation.

To animate Sky & Fog settings:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.



2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.
3. Adjust the sky's properties using the Sky & Fog palette controls.
4. If the property to be changed is in the Sky Lab, enter the Sky Lab and adjust the property there.
5. Move the Current Time Indicator to a different point on the Timeline. Change the properties of the sky again.

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6. Continue moving the Current Time Indicator and changing the sky's properties until you achieve the desired effect.

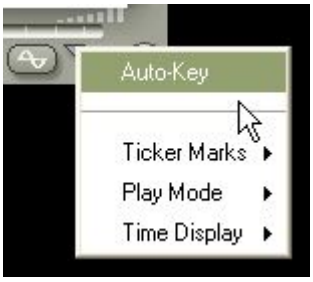
Animating Clouds

You can create the effect of wind in your environment by setting up cloud motion parameters. Based on your settings, Bryce automatically moves the clouds in your environment to create motion.

Cloud motion parameters are set in the Sky Lab dialog. The Cloud Direction control lets you set the direction for cloud motion, while the other controls set the speed and distortion of the clouds. Refer to "Setting Cloud Motion" for more information on setting cloud motion in animations.

To animate clouds:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.



2. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.



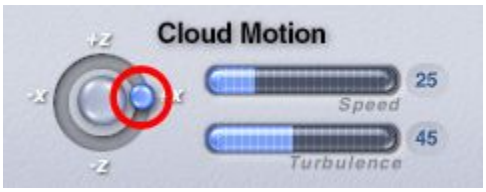
3. Click the Sky Lab button. The Sky Lab dialog appears.



4. Click the Cloud Cover tab.

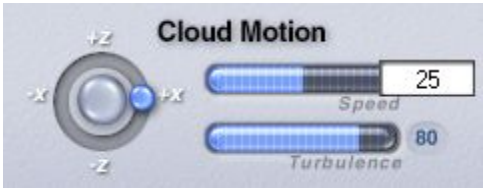


5. Move the direction indicator in the Cloud Motion controls to set a direction for the clouds as they move in the animation.

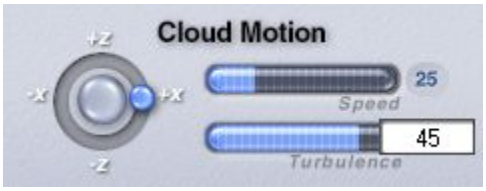


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6. Adjust the Speed control to set how fast the clouds move. You can also enter a speed value.



7. Adjust the Turbulence control to set how much the clouds will distort as they move. You can also enter a turbulence value.



8. Click on the OK icon to close the dialog.

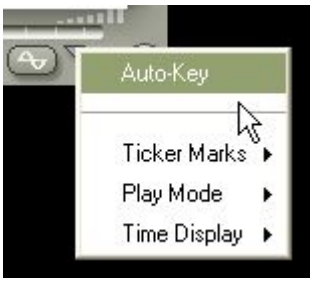
Animating Environmental Effects

Many environmental effects like rainbows and fog are not permanent features of a sky. They appear for a brief time and then fade way. You can simulate this action by changing the properties of the environmental effects at different points along the Timeline.

Environmental effects controls are located on the Atmosphere tab of the Sky Lab dialog. You can also animate the various settings for an effect. For example, the radius of moon rings can increase or decrease during the course of your animation.

To animate environmental effects:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.



2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.

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3. If it's not already visible, display the Sky & Fog palette by clicking the text item on the menu bar.



4. Click the Sky Lab button. The Sky Lab dialog appears.



5. Click the Atmosphere tab.



6. Change the properties of an effect: Fog, Haze, Rainbow, Blend with Sun, Volumetric World, and/or Color Perspective.
7. Move the Current Time Indicator to a different point on the Timeline.
8. Change the properties of the effect again.
9. Continue moving the Current Time Indicator and changing the effect's properties until you have the desired effect.
10. Click on the OK icon to close the dialog.

Animating Sun/Moon Position

One of the most spectacular effects you can create using the scene's sky is elapsed time. In the great outdoors we perceive time in relation to the position of the sun and the brightness of the sky. By changing the position of the sun or moon you can simulate time passing in terms of days or months. In this example, the passage of time is simulated by the change in the sun's position.

Since all the elements in the sky are linked, the other properties of the sky like Ambient Light change as the position of the sun changes, adding to the realism of the effect.

For the moon, you can also change its phases, so you simulate the passage of an entire month just by adjusting the moon attributes.

To animate the Sun or Moon position:

1. Click the triangle icon in the Animation controls and make sure Auto-Key is enabled.
2. Move the Current Time Indicator to the point in the Timeline where you want the sky to change.
3. Adjust the position of the sun or moon using the Sun Position control in the Sky & Fog palette.
4. Move the Current Time Indicator to a different point on the timeline.
5. Change the position of the sun or moon again.

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6. Continue moving the Current Time Indicator and changing the sun or moon position until you achieve the desired effect.

Previewing Sky Animations

Any change you make to a sky 's properties appear in the Sky Lab Preview. When you play a sky animation, the same preview area shows you the transition of the terrain from one key event to the other.

To preview a sky animation in the Sky Lab:

1. Click the Play button in the Animation Controls at the bottom of the Sky Lab .
2. Click the Stop button to stop the preview.

To preview a sky animation in the Working window:

1. Click the Play button in the Animation Controls at the bottom of the Working window. The sky animation shows in the Nano-Preview.
2. Click the Preview Animation button in the Animation Controls at the bottom of the Working window. The storyboard preview comes up showing the sky animation.



Importing Animations from DAZ Studio

Bryce 6 adds the capability to import animations from DS. You can also import saved Poser scenes containing animations into DS, then import them into Bryce.

Refer to "Importing Animations via DS Link" for more on importing animations from DS.

QuickTime VR

QuickTime VR allows you to take a 360° panoramic image, and make it into a VR Movie; this unique movie will display a 2D panoramic representation of your 3D world and allow point and click navigation through the world. You can look up, down, and around your rendered scene as though you were a camera on a tripod.

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Further, QuickTime VR lets you create "Nodes" or hotspots in the movie where you can click and go to another linked movie. This means you can look around a landscape, and seeing an interesting rock formation in the distance, click on it to view the entire landscape from that new vantage point.

These nodes can also contain "Object Movies" another specialized technology from Apple that allows you to click and drag to, in effect, "pick up" any object in the VR movie and examine it from all sides, as if you literally picked it up and turned it around and around in your hands.

Creating QuickTime VR Panoramas

The process of creating a panorama involves completing a few easy steps.

To create QuickTime VR Panoramas:

1. Choose Default in the Document Setup dialog.
2. Click on the uppermost Views Memory Dot in the control palette, to make sure your camera is level.
3. Set up your scene. The important thing to remember is that for a successful 360° scene, you need interesting objects all around your camera. The best way to work on this is to go to the Top View, and position objects all the way around the camera. Keep the Nano-Preview in Camera View mode to check your view while you are working in Top View.
4. Drag the tip of the camera around in the Working window to check the view of your scene from all directions.
5. Once you have a good distribution of objects in a visually interesting scene, switch back to Camera View and do a quick test render.
6. After the render, make any required position changes.
7. Choose File> Document Setup and select QTVR Panorama. This aspect ratio is optimized for use with Apple's Make QTVR Panorama tool, though many aspects will work. The preferred aspect is 13:4. Width must be divisible by 96, and height must be divisible by 4. The QTVR Panorama option ensures that your image meets these criteria.
8. Click the triangle icon next to the Render controls and choose Select 360° Panorama from the menu.
9. Click the Render button to do a quick test render. The panoramic render mode necessarily introduces some distortion into your image, and this may change the way you want your objects to appear.
10. Make any position changes you like. When you do a panoramic render, your wireframe scene will bear little resemblance to the rendered scene. This is why you should work on your scene in standard Default mode, and switch to Panoramic rendering after everything is set up.
11. Choose File menu >Render To Disk. The Render to Disk dialog appears.

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12. Leave the default settings. The Output Size in Pixels was set by the QTVR Panorama option in the Document
13. Setup dialog. The Print Resolution defaults to 72dpi, which is the only acceptable setting for the screen-resolution VR movies; and the Output Size in Inches is extra information. You can, however, use these features to your benefit if you need to print out a 2D version of your VR scene.
14. Click the OK icon.
15. In the Save dialog, choose QuickTime VR, then click the Save button.
16. Specify the location and file name for your rendered QuickTime VR panorama.

Exporting QuickTime VR Panoramas

To export a QuickTime VR Panorama:

1. Follow the steps for creating a QuickTime VR Panorama through step 11.
2. Click the Render button if you made any changes after your test render.
3. When the rendering is done, choose File > Export Image and choose QuickTime VR from the list.
4. Specify a location for the saved panorama, then click Save.

Further VR Exploration

This is a quick way to get started with simple, single-node QTVR movie-making. To create movies with other embedded nodes, or to get deeper into the world of QuickTime VR, contact Apple Computer.

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Torus Editor

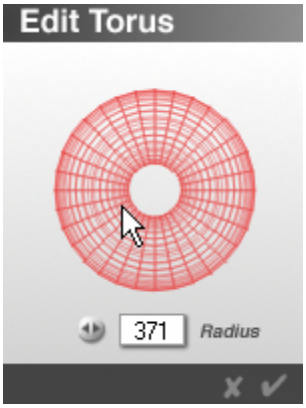
Torus editor lets you adjust the inner radius of any torus object. The preview is automatically updated as you change the inner radius. You can zoom in and out of the preview window, and you can preview the torus object from different angles by rotating the preview image.

To display the Torus editor:

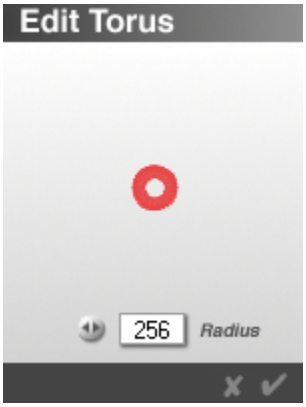
1. Select a Torus object.
2. Click the E icon that appears next to the object's bounding box.

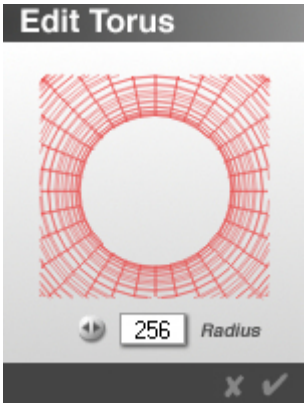
To adjust the inner radius of a torus:

1. In the Torus editor, drag on the Torus in the preview window. Release the mouse when the radius is the size you want. You can also specify the inner radius by typing a value in the Radius field or dragging on the arrows next to the Radius field.



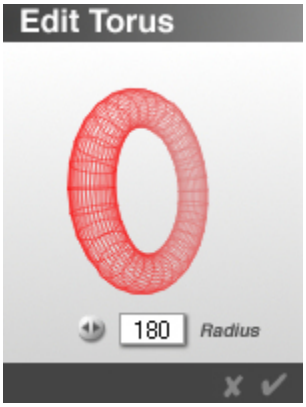
2. To zoom in and out in the Torus editor, hold down Ctrl+Opt/Alt and drag on the Torus in the Preview window.



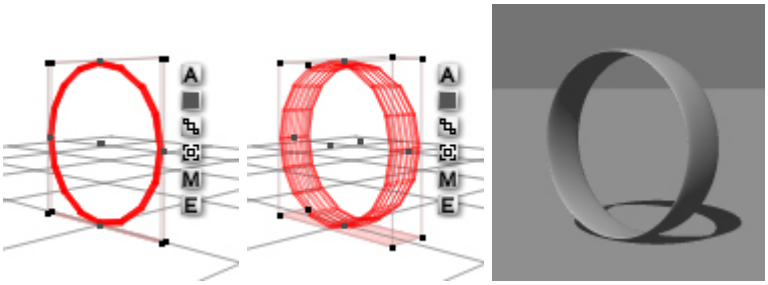


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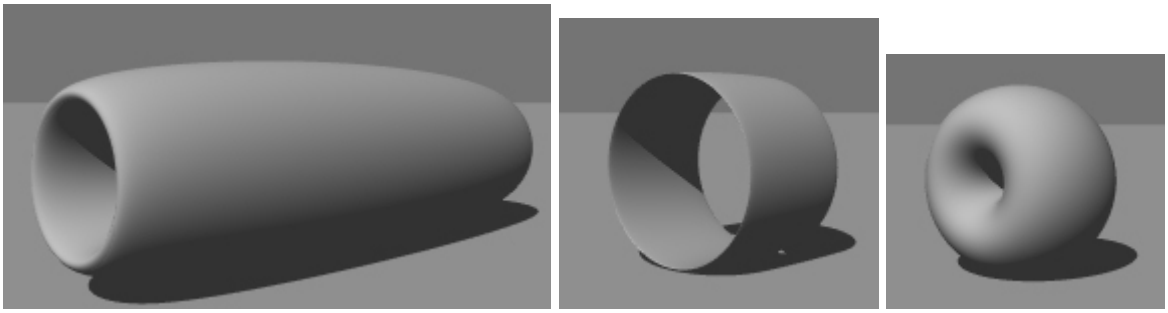
3. To preview a torus from different angles in the Torus editor, either hold down Ctrl and drag on the Torus in the preview window or press Caps Lock to toggle the continuous spin mode.



4. Once you're satisfied with the radius and size, click on the OK icon to accept the changes.
5. Check the edge of the torus to see if it's what you want. You can adjust the X, Y, and Z-size as needed to get different looks.



You can get all kinds of cool shapes by adjusting the radius and size of the torus object:



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Mesh Editor

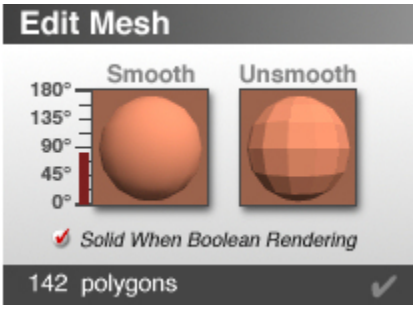
Imported objects (such as OBJ or DXF objects) and native Stone objects are both treated as meshes inside Bryce.

The Mesh Editor lets you adjust the smoothness of an object's surface. You can smooth objects that are very rough or remove the smoothing previously applied to DXF objects.

It is not a good idea to smooth or unsmooth stones. These objects are highly dependent upon the clumpiness of the polyhedral shape as well as the bumpiness in the assigned procedural texture to retain their realism. Smooth stones look very unnatural.

To smooth imported objects or stones:

1. Select the imported object or stone.
2. Click the E button that appears next to the object's bounding box.
3. Adjust the value of the smoothing range by dragging the gauge along the left side of the dialog.



The gauge sets the maximum angle you wish to be smoothed.

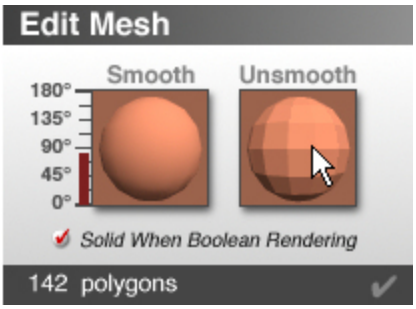
For instance, you may wish to smooth all angles under 90° to preserve the sharpness of cubes. In that case, set the maximum angle to 85° before smoothing.

4. Click the Smooth button until you achieve the desired effect. The more you click, the smoother the object becomes.

To unsmooth imported objects or stones:

1. Click the imported object or stone.
2. Click the E button that appears next to the object's bounding box.
3. Adjust the value of the smoothing range by dragging the gauge along the left side of the dialog.

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The gauge sets the maximum angle you wish to be unsmoothed.

For instance, you may wish to unsmooth all angles under 90°. In that case, set the maximum angle to 85° before unsmoothing.

4. Click the Unsmooth button until you achieve the desired effect. The more you click, the sharper the object becomes.

There are times when you will need to have an imported mesh be solid in order to use it in Boolean operations. When this is needed, enable Solid When Boolean Rendering.

To export a mesh object:

1. Select the mesh object you want to export.
2. Click the E button next to the object's bounding box. The Edit Mesh dialog appears.
3. Click Cmd/Ctrl+D. The Save dialog appears.
4. Choose a location and filename for the mesh object.

Working with DAZ Studio & Poser

Bryce includes DAZ Studio (DS) as a plug-in. DS is a complete virtual photo studio where you can create scenes by adding and positioning figures, clothing, props, materials, lights, and more. Once you create one or more objects in your DS scene, exiting DS automatically brings these objects into Bryce, where you can work with them just as you would any other Bryce object. With Bryce 6, you can also import animations from DS. In addition, you can export objects from DS with specific settings for Bryce imports.

Poser from e-frontiers also provides the ability to export OBJ files and Poser 6 SR2 implemented the ability to add transparency map information into the MTL file, however, the transparency maps don't import into Bryce because the MTL file uses "map_d" while Bryce needs "map_D." Changing the "map_d" to "map_D" allows Bryce to import the transmaps correctly. You'll still need to locate the textures, but the transmaps will not have to be added manually.

One caveat when setting materials in DS or Poser, if the diffusion value is too low, Bryce will also have a low diffusion value and the object will look black. To prevent this,

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set the diffusion in DS/Poser to 1 prior to exporting, otherwise, you'll have to update each mesh piece separately in Bryce.

Importing Static Objects via Studio Link

Bryce makes it extremely easy to import figures and props from DS using the Launch DAZ Studio button. Scenes can also be set up in Poser, then the Poser scene imported into Bryce via DS.

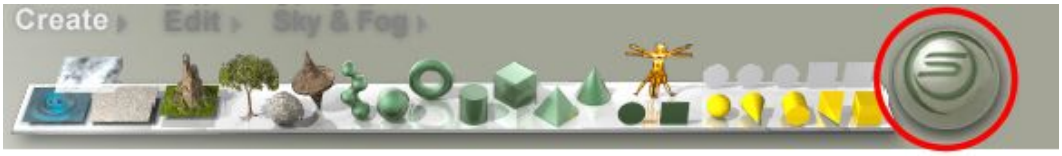
Bryce treats imported DS objects as primitives, meaning that bones and joints do not transfer between applications.

Bryce creates one object per body part per material. For example, if a finger group has two materials (such as Skin and Nails), Bryce will create Pinky_Skin and Pinky_Nail objects. You can access these objects by ungrouping the imported object(s) or pressing Cmd/Ctrl and left-clicking on top of the object and choosing the required mesh from the list.

All DS material settings transfer to Bryce. We recommend setting material attributes inside DS to take advantage of the material groups assigned to the DS objects.

To import static objects from DS:

1. Launch DS by clicking the Launch DAZ Studio button located at the right side of the Create palette. DS will be launched.



   Remember to set the diffusion values to 1 prior to closing DS.

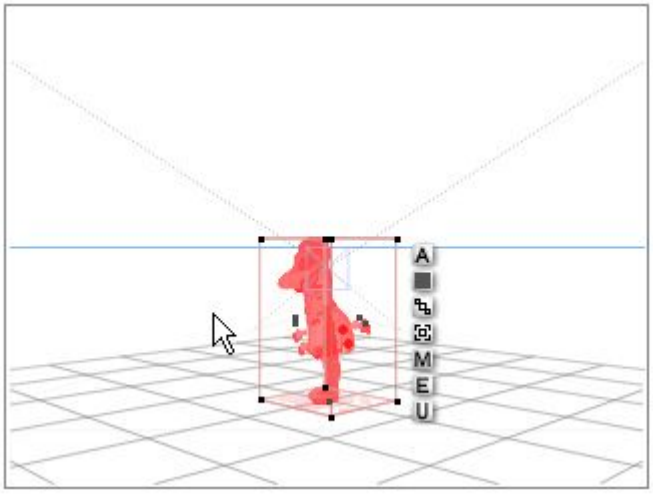
2. Once you have created your DS scene, exit DS OR click on the Return to Bryce button to return to Bryce with your object(s) in your Bryce scene.



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If the Return to Bryce button is not visible, choose View > Tools > Bryce while in DS.

DS will close and Bryce will import the object(s).



Importing Animations via Studio Link

Bryce 6 adds the ability to import full animations from DS, including textures. In order to keep the Bryce files down to a more manageable size, Bryce uses DS as an animation plug-in, saving the figure and the animation in a DS scene file instead of in the Bryce scene file. If the animation and objects were physically imported into Bryce, each frame would require a new object which would increase the file size of the Bryce scene file and cause memory issues, effectively limiting the ability to import more than about 10 seconds of animation. By using DS to store the objects and animations, the number of frames that can be imported into Bryce is practically limitless (well, depending on what your machine can handle that is).

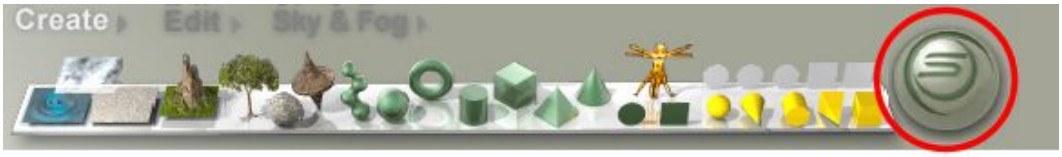
There are some known issues with this new function:

- Breaking the link to DS deletes the animation in Bryce since the animation is stored in the .daz file. After breaking the link, closing the Bryce scene file, then re-opening the scene file, Bryce will re-import the animation and objects. You'll now have a static object from the original scene and a new object linked to the "new" animation. Basically .... DON'T BREAK THE LINK TO DS FOR AN IMPORTED ANIMATIONS!!!!
- Trying to import a second animation after breaking the link to a previous animation will crash Bryce. Instead of trying to import two or more separate animations, build all the animations in DS (either as one file or multiple, then merge), then import the full animation into Bryce.

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To import animations from DS:

1. Launch DS by clicking the Launch DAZ Studio button located at the right side of the Create palette.
2. Load a figure into DS and animate it using the Timeline tool. You can also import a saved Poser file containing a figure with an animation applied, apply a saved animation pose file to the figure, or import a BVH file.



   Remember to set the diffusion values to 1 prior to closing DS.

3. Once you have finished animating the figure, save the scene by choosing File > Save As > Scene from the menu. This is just a precaution because mistakes do happen.



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When the scene has finished saving, exit DS by clicking on the Return to Bryce button to return to Bryce with your object(s) in your Bryce scene. You can also return to Bryce by clicking on the X button in DS, pressing Ctrl-Q, or choosing File > Quit in DS.



If the Return to Bryce button is not visible, choose View > Tools > Bryce while in DS.

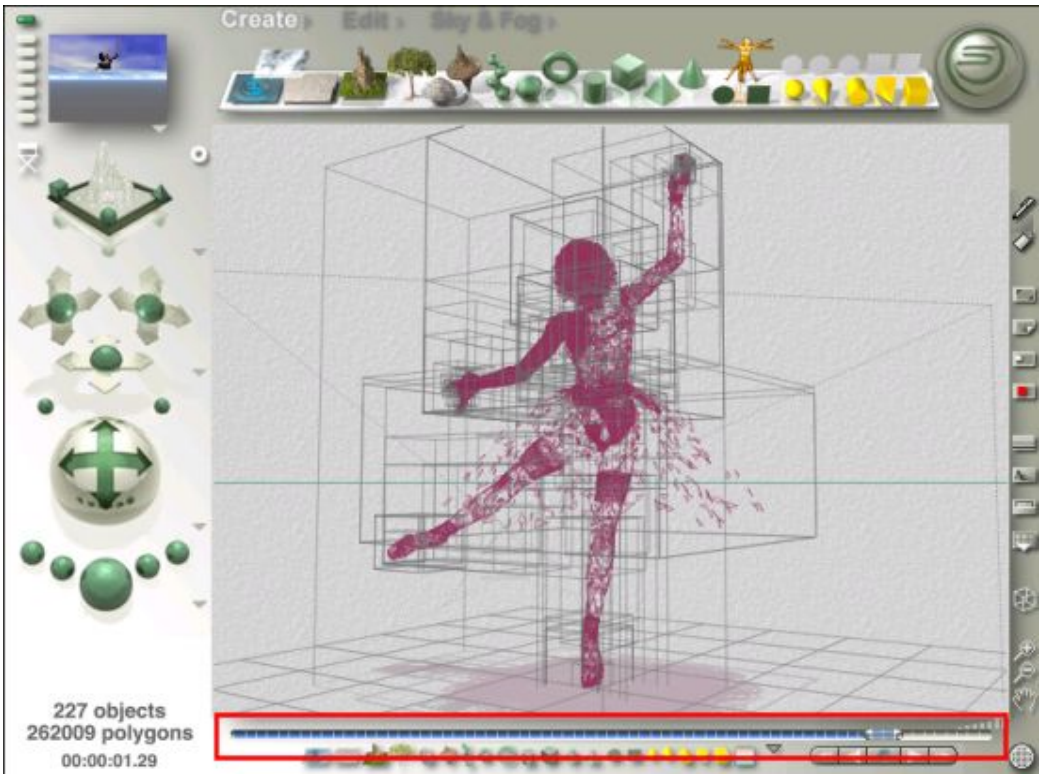
5. DS will close and Bryce will come back up from the background with the Import Studio Animation dialog showing. Accept the default of 0 to import the entire animation or enter the time or frame number to start the import at. Please note that currently, the frame import indicates the Bryce frame not the DS frame.



6. Click on the OK icon to close the dialog and begin the import. Bryce will first convert the objects then the animation.
7. The imported objects with animations will import at full Poser/DS size. Once imported, you can select all the objects, group them, then resize or move the group as needed.
8. In the image below, note that the animation timeline is filled with the imported animation. You can preview the animation or play it, just remember that doing so will not be as smooth or fast as an animation containing a couple of objects.

   Note: Playing the animations is not compatible with the OpenGL display modes since the display cannot refresh quickly enough and the meshes break apart temporarily.

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9. Setup and render the animation just as you would any other animation.

Updating Imported Animations

Once you've imported your animation from DS into Bryce, you may find that you need to make some changes to the animation. However, you do not want to just go back into DS and reimport the animation into Bryce.

When you import static objects from DS into Bryce, then go back into DS to make changes, Bryce deletes the old object and imports the updated object as a new object. The same thing happens to the object(s) for an animation but the old animation is deleted and the updated animation is imported.

To update an imported animation:

1. Launch DS by clicking the Launch DAZ Studio button located at the right side of the Create palette.
2. Modify the animation as needed, close DS, and the animation will import into Bryce.

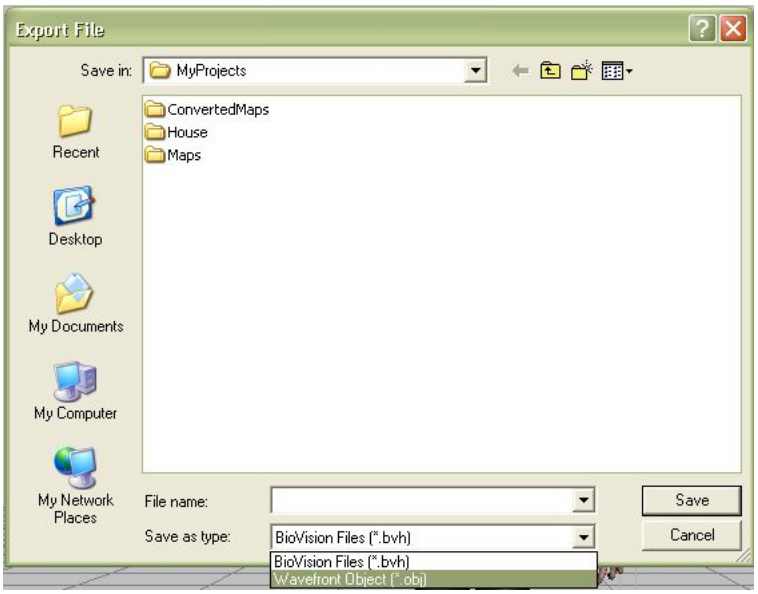
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Importing Static Objects via Studio Export

It's not always practical to import figures from DS using the Launch DS link in Bryce. To help with this, DS provides a specific export filter for Bryce that takes into account how Bryce reads reflection, bump, and transparency maps. In addition, DS will gather all the image maps together into folders in the same folder as the OBJ.

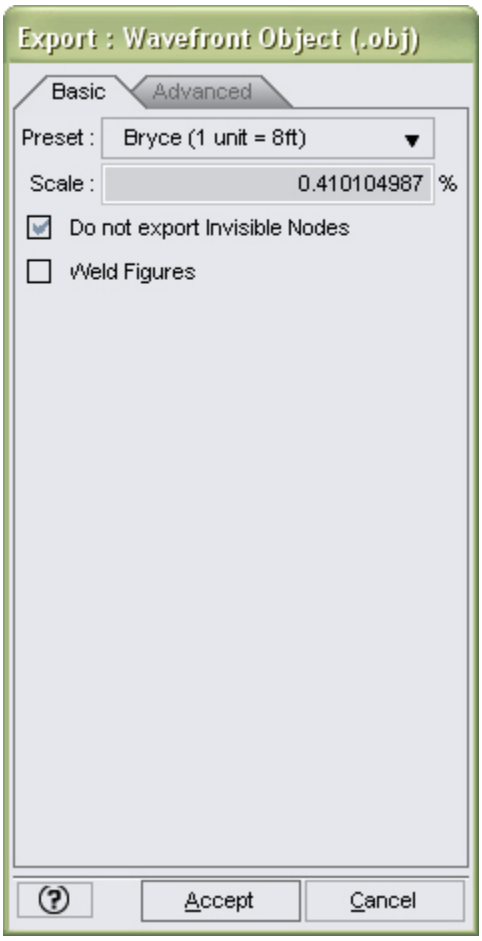
To import static objects from DS:

1. Launch DS and load the figures, etc. you need for your scene. Remember to set the diffusion values to 1 prior to exporting from DS.
2. Once you have created your DS scene, choose File > Export from the menu in DS.
3. Make sure that Wavefront Object (*.obj) is selected, then enter a filename and click on Save to save the file to your computer.



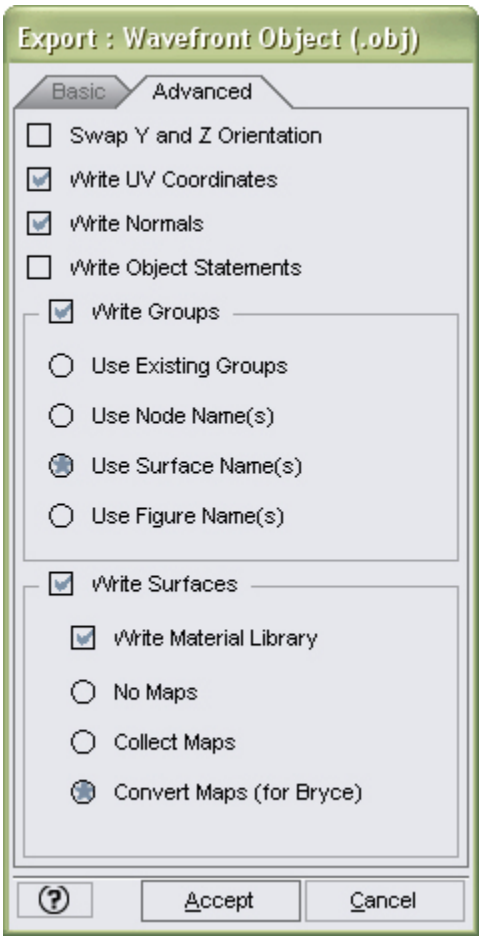
4. The Export dialog will come up. Choose Bryce from the pull-down menu and set the scale. The default is 100% but that is probably going to be too large once you return to Bryce. Start at 50% and modify it as needed as you gain experience. If parts of the figure have been set to invisible, check the Do not export Invisible Nodes option so they aren't brought into Bryce.

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5. Click on the Advanced tab and select the options you want to export. Make sure you select to Convert Maps (for Bryce) especially if the maps include transparencies and bump maps.

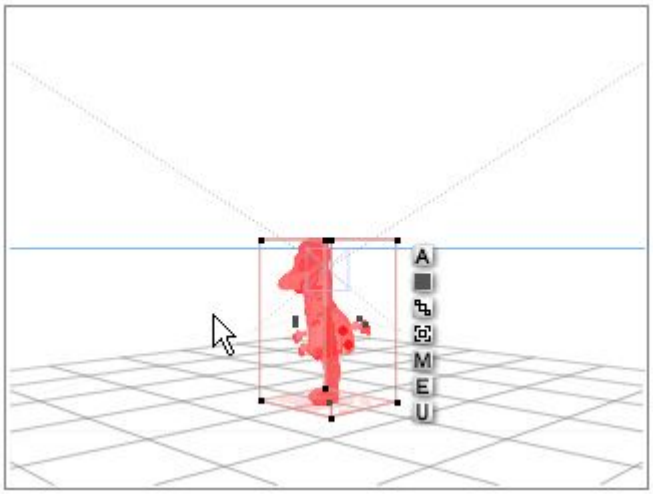
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6. Click on Accept and DS will export the mesh and save the maps to a folder in the same directory as you saved the mesh to. It will also convert the maps so that Bryce can correctly import the bump maps, transparency maps, etc.
7. Exit DS.
8. Open Bryce and choose File > Import Object from the menu. The File Open dialog will come up.

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9. Locate the mesh file and click on Open. Bryce will import the object.



Breaking Link from Studio

Sometimes it is necessary to break the link between a static object in Bryce and the original file in DS, for example:

- When you are finished modifying an imported object and are ready to finalize the scene.
- When you want to duplicate an imported object but keep the original one.
- When you want to remove parts of the imported content, the link to Studio will need to be broken before you can delete the part. Not breaking the link will delete all the imported content instead of just the part you wanted to remove.

  Just remember ... don't break the link to DS for an imported animation or the animation will no longer work.

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To break the link between DS and Bryce:

1. Select the object group in Bryce that you want to break the link to.
2. Choose Objects > Break DAZ Studio Link from the menu.



3. The object is now a standalone object that can be manipulated without affecting the DS file.

Remember, once you break the link between DS and Bryce, the object can no longer be modified via DS.

Editing Objects Imported via Studio Link

While working on your scene, you may find that you need to modify the objects that were imported from DS. This is done by launching DS again, modifying the figure, then exiting DS so that the modified figure and/or animation is re-imported into Bryce.

Keep the following in mind when returning to DS to modify the figure/animation:

When saving your Bryce scene with imported objects from DS, Bryce saves the DS scene along with the Bryce scene and automatically loads it the next time the scene is loaded. The Bryce file contains a live link between the scene and the saved DS scene.

Because of this:

1. Deleting a model in either program removes that object from both programs.
2. You can edit DS objects in Bryce like any other object. However, if you go back into DS at any time, you will lose those edits since Bryce has to delete the previous object then re-import the new modified object.

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3. Saving the Bryce scene and closing Bryce does not break the DS link. If you are finished editing the figure/object, break the link to DS so the object becomes a standalone mesh in Bryce.
4. If you modified the figure in Bryce by resizing or moving it, re-importing it from DS will place it at the original import location in Bryce. As long as the object size is the same as the original imported object, you can copy the object matrix before returning to DS, then paste the matrix on the re-imported figure in Bryce.

To copy the settings from a DS imported object and paste on to a new version:

1. Select the object group(s) in Bryce.
2. Choose Edit > Copy Matrix from the menu.
3. Launch DS from the Create Palette and modify the figure and/or animation.
4. Exit DS and wait for the import to complete.
5. Select the object group(s) and choose Edit > Paste Matrix from the menu.

   Remember that if the figure parameters have changed so that the object matrix is larger or smaller than before, then using the Copy/Paste Matrix may alter the object incorrectly for the new matrix properties

Importing Static Objects via Poser Export

Figures can also be exported from Poser into Bryce, however, not all Poser material settings transfer to Bryce. The MTL file exported with the OBJ file includes basic color settings, textures, bump maps, and transparency maps (as of Poser 6 SR2). However, since the MTL file uses "map_d" instead of "map_D," the transmaps don't import into Bryce. This is easily taken care of as shown below.

To import static objects from Poser:

1. Launch Poser and load the figures, etc. you need for your scene. (You may need to hide the eyebrow mesh using the provided morphs for the figure.)

   Remember to set the diffusion values to 1 prior to exporting from Poser.
2. Once you have created your Poser scene, choose File > Export > Wavefront OBJ from the menu.

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3. The Export Range dialog will come up. Choose Single Frame and click on OK.



The Select Objects dialog will come up.

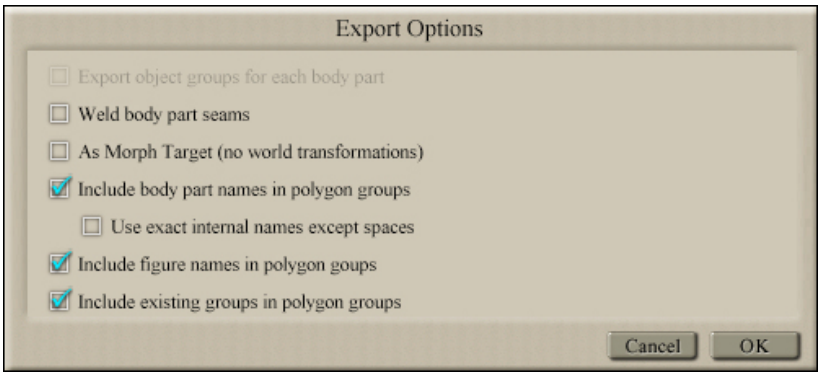
4. Check the selections to make sure that everything you want to export is selected and anything you don't want exported is deselected (like Ground).



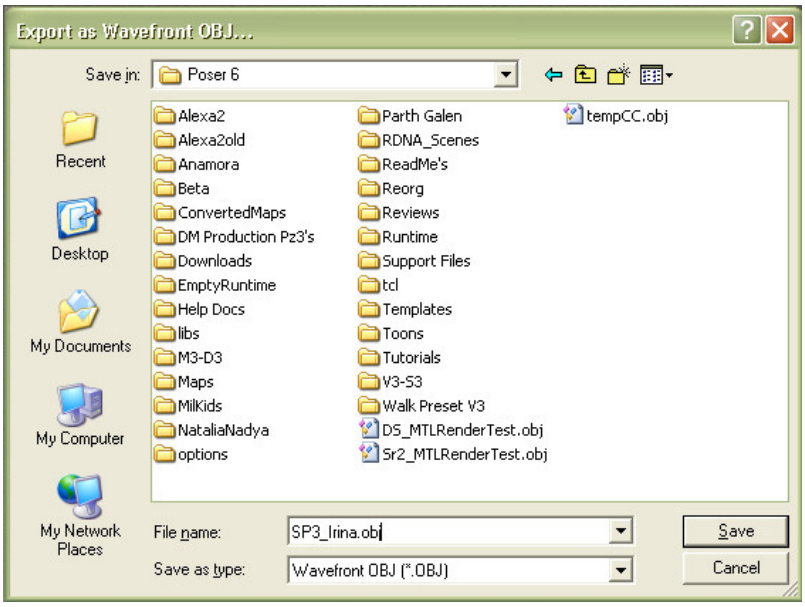
5. Click on OK.

   The Export Options dialog will come up.

6. Select the export options you want to export.



7. Click on OK to accept the settings.
8. The Export as dialog will come up. Navigate to the folder where you want to save the OBJ file and rename the file.

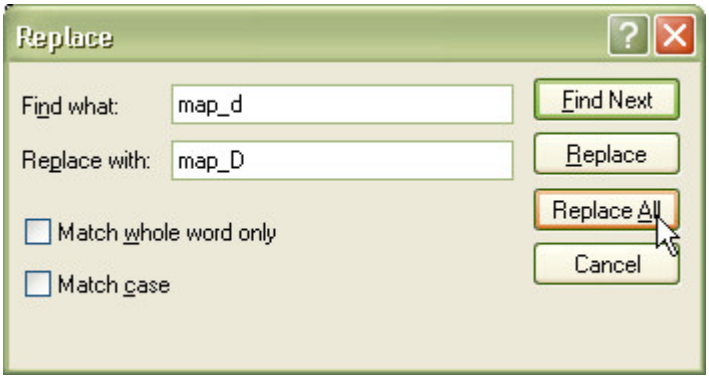


9. Click on Save. The file will be exported to the selected directory.
10. Close Poser.
11. If the figure included transparency maps, navigate to the directory where you saved the OBJ file and open the matching MTL file in a text editor.

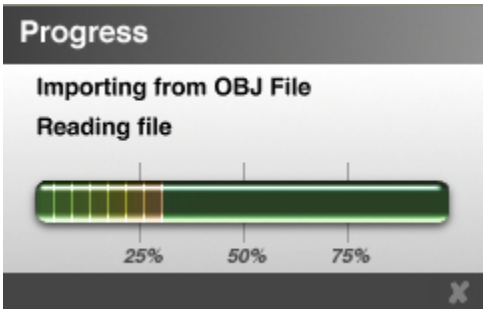
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12. In the text editor, do a search/replace and replace "map_d" with "map_D."

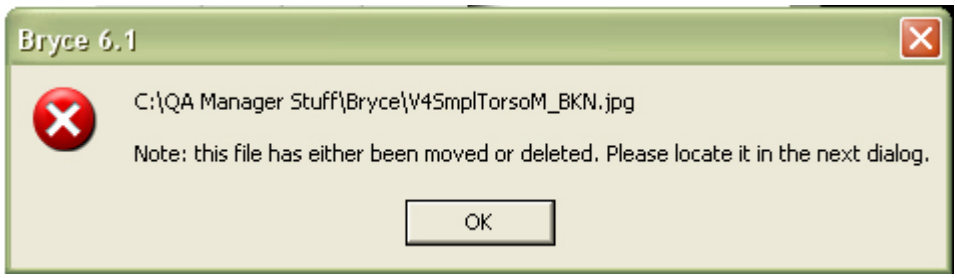




13. Save and close the MTL file.
14. Open Bryce and choose File > Import Object from the menu. The File Open dialog will come up.
15. Locate the mesh file and click on Open.
16. Bryce will import the object

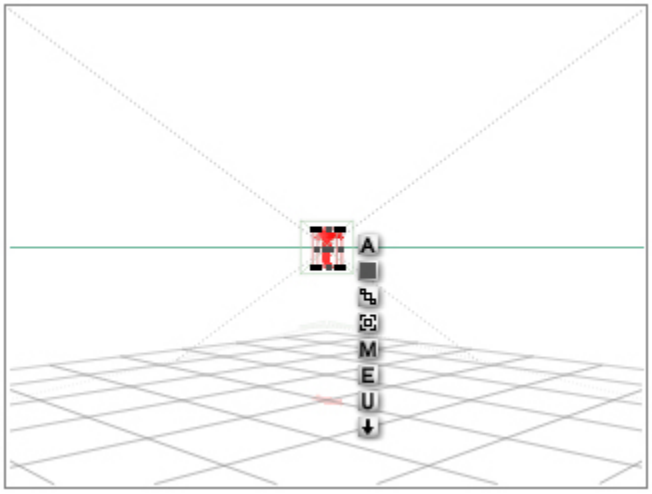


then start asking you to locate the textures. For each texture it asks for, navigate to the textures folder where the image is located and click on Open. Continue until all textures have been imported.

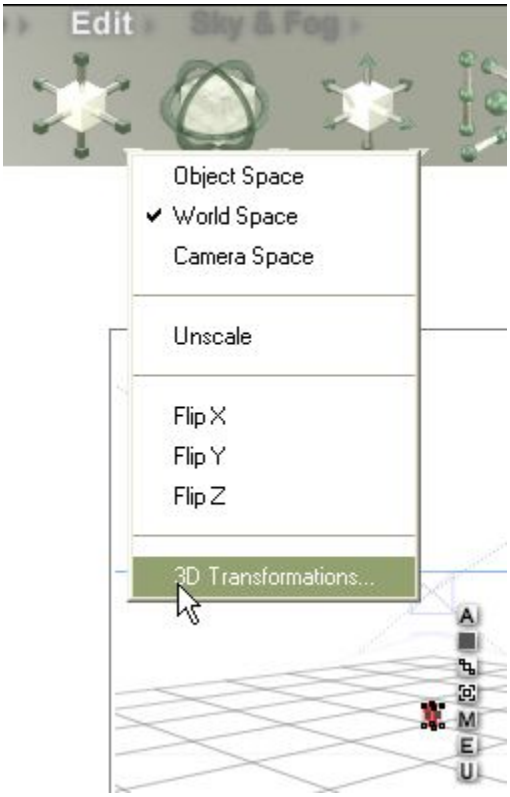


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17. When the import is complete, your object(s) will be very tiny. This is because Bryce imports static objects at their actual size and not scaled to match Poser.

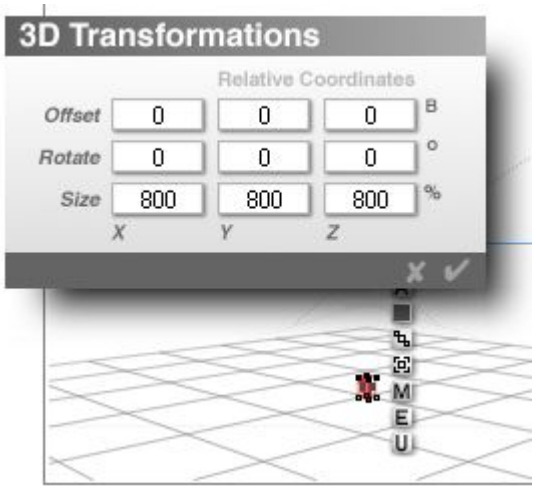


18. To increase the size of the object(s), you can manually resize it by using the Scaling tool or by dragging on the object handles.
19. However, it is easier to resize using the 3D Transformation tool: { Click on Edit to bring up the Edit Palette, then click on the triangle under the Scaling tool. Choose 3D Transformations from the menu.

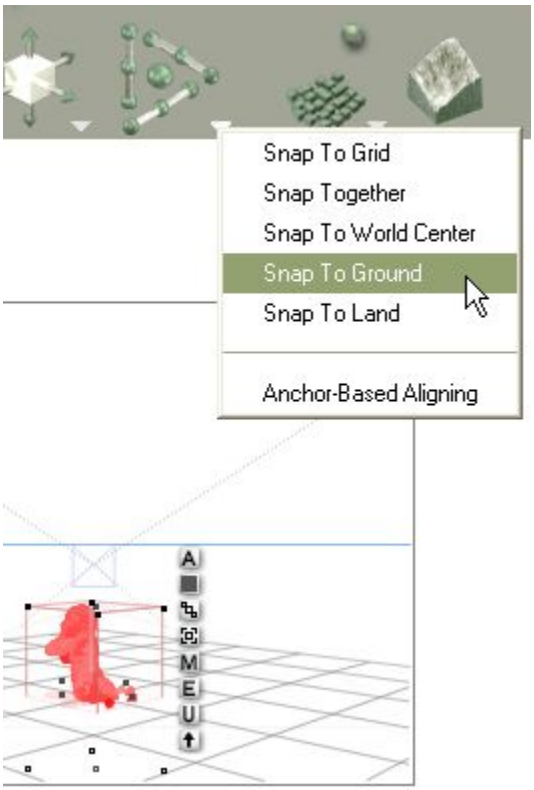


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20. Enter a percentage in the Size fields, such as 800%, then click on the checkmark to accept the change.

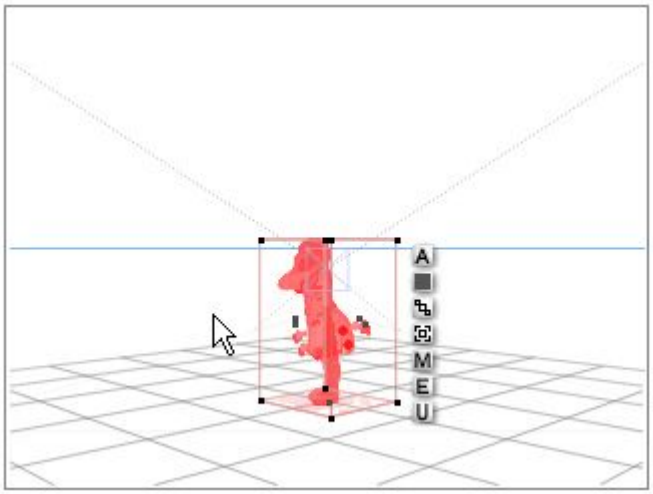


21. The object(s) will resize by the entered amount, but may be above or below the ground plane. Click on the triangle under the Align tool and choose Snap To Ground from the menu:



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22. The object(s) will snap up to the ground plane and your import is complete.



Working With Objects

Objects are the building blocks of your Bryce world. They can be used as props, to populate a scene, or to add detail to landscapes.

An object is the most basic item in Bryce. Objects can be anything from terrains to pebbles. In Bryce, there are several ways of creating objects. Some objects use unique editors; others can be created by a simple one-step click.

There are two main tools for creating objects. The Create Palette, which contains tools for creating objects with a single click, and the Preset Objects Library, which contains pre-made objects you can add to your scene.

In a scene, the arrangement of objects is as important as their form. You can design beautiful landscapes, or build complex models, but if they're the wrong size or in the wrong position, they won't look right in the scene. To get the right look, you'll need to position or rotate the objects to make sure they are in the right places within the scene, or you may need to resize an object so that it is in proportion to the rest of the objects. These kinds of operations are called transformations.

Bryce supports three basic types of transformations: size, position, and rotation. The tools in the Edit palette let you interactively perform these operations on any object in your scene. As well, the Object Attributes dialog lets you transform objects numerically for greater precision.

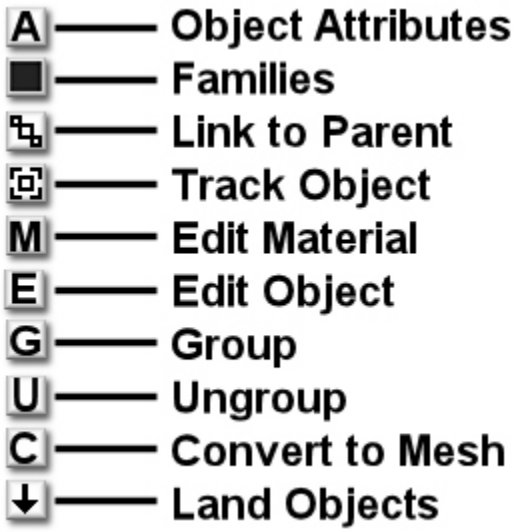
As you arrange objects, you'll probably need to create some kind of object hierarchy. An object hierarchy lets you create a structure in your scene that organizes objects according to their spatial or logical relationships. The structure can make arranging objects much easier and faster.

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You can create an object hierarchy by grouping and linking objects. The following sections describe how to use the transformation tools and the Object Attributes dialog to resize, reposition, rotate, align, and randomize objects. It also describes how to create object hierarchies.

Object Control Palette

The Object Control Palette appears as a list of buttons along the right side of an object's bounding box. The
icons that appear in this list vary depending on the type and number of objects selected.



These icons let you:

- access the Object Attributes dialog, the Materials Lab, and any editors associated with the object
- group and ungroup objects in a selection
- add objects to families
- land objects
- link objects
- convert Booleans to mesh
- set up object tracking

If your selection falls outside of your Working window, the icons appear in the rightmost area available on the screen.

To display the Object Control Palette, select an object or group of objects.

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Object Attributes Icon



The Object Attributes icon control displays the Object Attributes dialog. When the dialog opens, it shows the current name, position, orientation, and scale of the object.

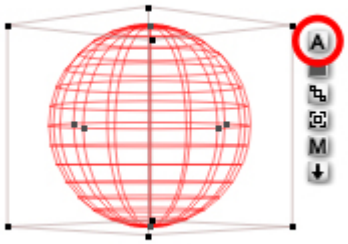
The Object Attributes dialog is where you'll set up the object's name, size, orientation, placement, and display quality. It is most often used to numerically transform the object. When you're animating an object, the dialog is used to control how the object interacts with its motion path. Refer to "Animation" for more on animating.

The Object Attributes dialog contains three tabs which let you set various object properties:

- General: contains options that let you set the object name, position, size, rotation, and display quality.
- Linking: contains options that let you set up a link between two objects. You can also use this tab to set up a tracking link.
- Animation: contains options for controlling the display of motion paths and setting the motion path type. To display the Object Attributes dialog:

To open the Object Attributes dialog:

1. Select an object or group of objects.
2. Choose Objects > Edit Attributes or press Cmd/Ctrl+Opt/Alt+E or click the A icon next to the object's bounding box.



3. Click on a tab to access the required options:
    - General Tab
    - Linking Tab
    - Animation Tab

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General Tab

The General tab contains controls for setting the object's name and display attributes and position.

Object Name

The Object Name field in the General tab of the Object Attributes dialog lets you name a selected object.

When you create an object, the first thing you should do is assign a name to it. An object's name identifies it within the scene.

You can select objects, by name, using the Selection palette. The name can also help you distinguish a specific object when your scene contains more than one object of the same type. Refer to "Selecting Objects" for more information.

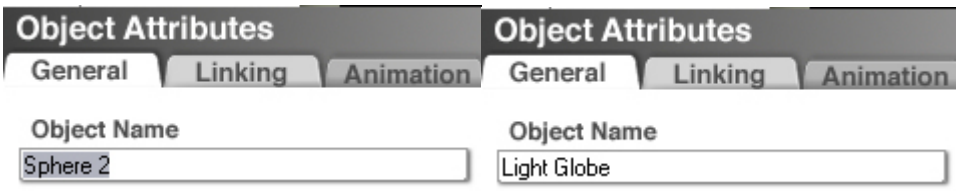
The name is also used to identify an object in a hierarchy. Object hierarchies appear in the Hierarchy List area of the Advanced Motion Lab. Refer to "Object Hierarchies" for more on hierarchies.

An object's name is also used when creating parent-child links and setting object tracking.

To name an object:

1. Select an object.
2. Click the A icon that appears next to its bounding box.

   The Object Attributes dialog will come up.
3. Select the current Object Name and type in a new name.



4. Click on the OK icon to accept the changes.

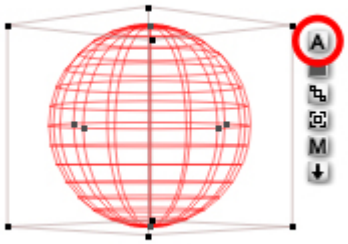
Boolean Attributes

Boolean attributes, listed in the General tab of the Object Attributes dialog, control how an object acts in a Boolean operation. For example, if a Boolean attribute is set to Negative, the object subtracts an area from a positive object. These are examples of some of the objects you can create using Boolean operations. Refer to "Boolean Operations" for a complete discussion of Boolean operations.

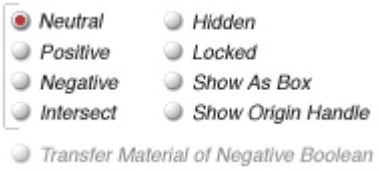
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To set an object's Boolean attributes:

1. Display the Object Attributes dialog.



2. Make sure the General tab is displayed.
3. Enable one of the check boxes at the top of the dialog:
    - Neutral: defines any selected object, objects, or group as non-Boolean. No Boolean operation can be performed on a neutral object. This is the default setting for all objects.
    - Positive: defines any selected object, objects, or group as solid when grouped.
    - Negative: defines any selected object, objects, or group as negative when grouped. Think of a negative object as a "cutting object."
    - Intersect: defines any selected object, objects, or group as an intersecting object when grouped.

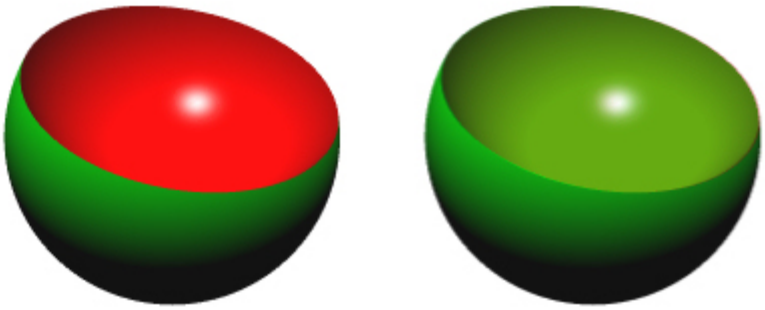


Transfer Material of Negative Boolean

In the Object Attributes dialog under the General tab there is a option called "Transfer Material of Negative Boolean." When selected, this transfers the material of the negative Boolean object in a group to the area of contact on the positive Boolean object.

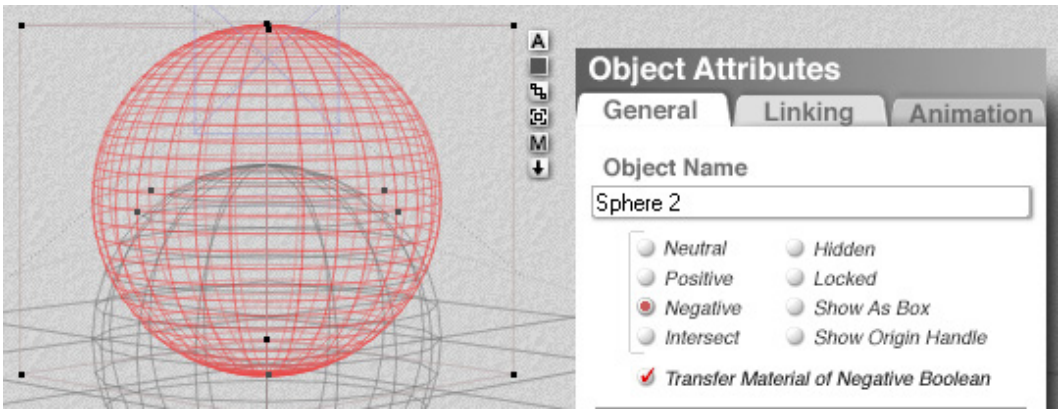
For example, in the first image below, a green positive sphere is Booleaned by a red negative sphere giving a kind of green bowl with a red interior. The second image shows the same Boolean group but this time, the Transfer Material of Negative Boolean option is disabled, so the interior of the bowl is green.

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To enable transfer material of negative Boolean:

1. Select an object.
2. Click the A icon that appears next to its bounding box.
3. On the General Tab, enable the Negative radio button. Transfer Material of Negative Boolean will be selected by default.



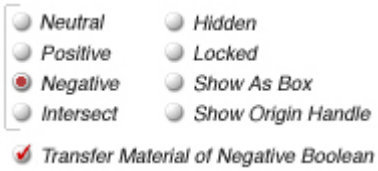
4. Click the OK icon to exit the Object Attributes dialog.
5. Select all objects that are to be part of the group and click the G button next to the selected objects' bounding box.

To disable transfer material of negative Boolean:

1. Select an object.
2. Click the A icon that appears next to its bounding box.
3. On the General Tab, enable the Negative radio button. Transfer Material of Negative Boolean will be selected by default.

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4. Click on the checkmark next to Transfer Material of Negative Boolean to disable the option.



5. Click the OK icon to exit the Object Attributes dialog.

Set As Unity

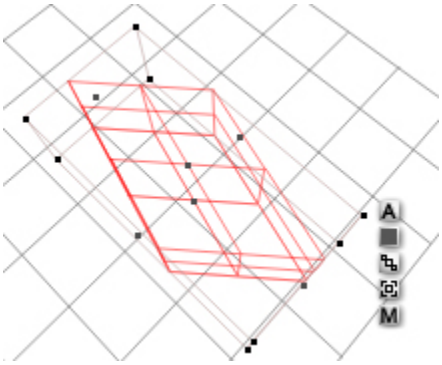
After editing an object for a while, you may find a shape you don't like and would like to reset the object to its original shape, you can revert the shape using the unreposition, unrotate, and unscale commands.

You can also use the Reset to Unity command.

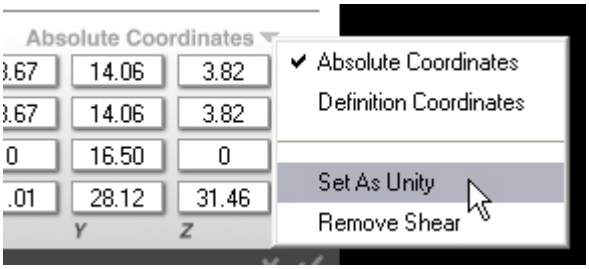
However, you can change the Unity of any object by using the Set As Unity function. This function changes the default of the current object to whatever it was when you selected the menu command.

To set an object as unity:

1. Create an object and modify it.



2. Click on the A icon next to the selected object to access the Object Attributes dialog.
3. Choose Set As Unity from the Coordinates menu.



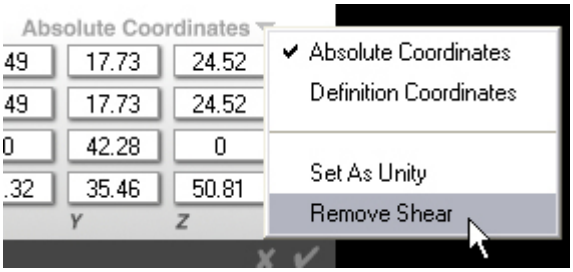
4. Click on OK to exit the dialog.
5. Make changes to the object, then hold down Control/Ctrl+Alt and click one of the bounding box handles. The object will revert to the shape you set as unity.

Remove Shear

While it is possible to skew objects in Bryce, this is usually done by accident and isn't desirable.

To reset the object back to the default:

1. Select the object.
2. Click on the A icon next to the selected object to access the Object Attributes dialog.
3. Choose Remove Shear from the Coordinates menu.

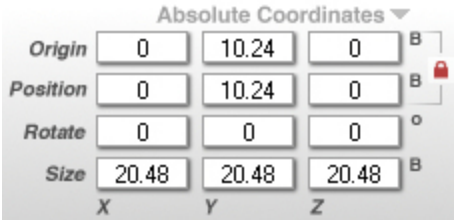


4. Click on the OK icon to accept the changes. The object will revert back to its default shape.

   If you chose Set As Unity before removing shear, well ... the skewing is now the default and you'll need to create a new object and start over.

Editing Transformation Attributes

The numeric entry fields on the General tab of the Object Attributes dialog describe an object's position, orientation, and size in 3D space. You can adjust these attributes by entering values in one or all of the numeric fields.



To the far right of the Origin, Position, and Size fields are B's standing for "Bryce Units" and a degree symbol next to the Rotated field for degrees of rotation.

The values in this dialog use either Absolute or Definition coordinates for transformations. Absolute coordinates use the World Space X, Y, and Z-axes as a

reference for transformations. Definition coordinates redefine how the object is created in Object Space.

Refer to "Coordinate Systems" for more on these coordinate systems.

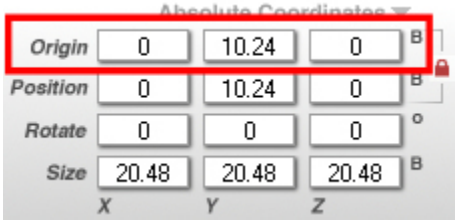
Using Definition coordinates can create some unpredictable results because you're redefining the entire object when you change the Offset, Rotate, and Size values.

Origin Fields

The origin point is the center of the object, so when you change the Origin values, the position of the object changes as well.

To set an object's origin point:

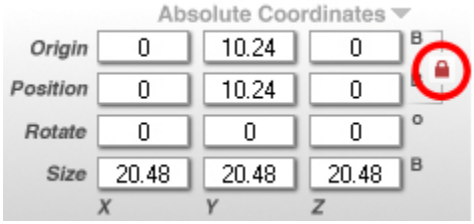
1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enter values in the Origin X, Y, and Z fields.



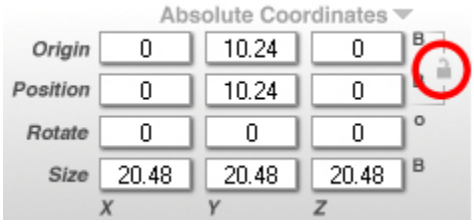
4. Click on the OK icon to exit the dialog.

To set an object's origin point without moving the object:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Click on the red padlock icon next to the Origin and Position fields.

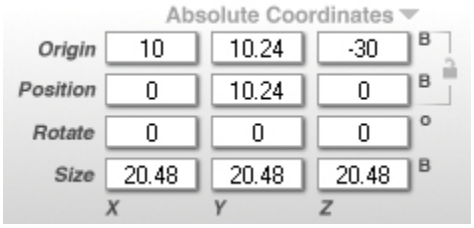


The icon will change to a gray padlock with the shackle open.

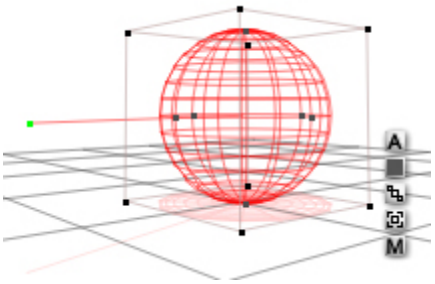


You can now change the Origin values without moving the camera.

4. Enter values in the Origin X, Y, and Z fields.



5. Click on the OK icon to exit the dialog. The new Origin Point location can be seen in the scene as a green dot if you selected to Show Origin Handle.



6. If you go back into the Object Attributes dialog, the padlock will be locked again so that the new origin point and the object's position are linked again allowing normal operations to be performed on the object.

To reset the object's origin point:

1. Hold down Shift and click on the origin point.

   or

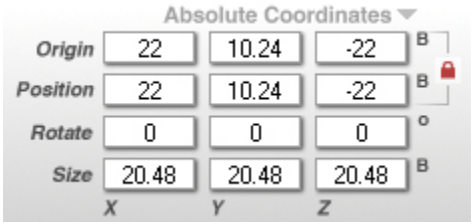
2. Enter the Object Attributes dialog.
3. Unlock the padlock.
4. Set the Origin values to match the Position values.
5. Click on the unlatched lock to lock the fields.
6. Click on OK to exit the dialog.

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Position Fields

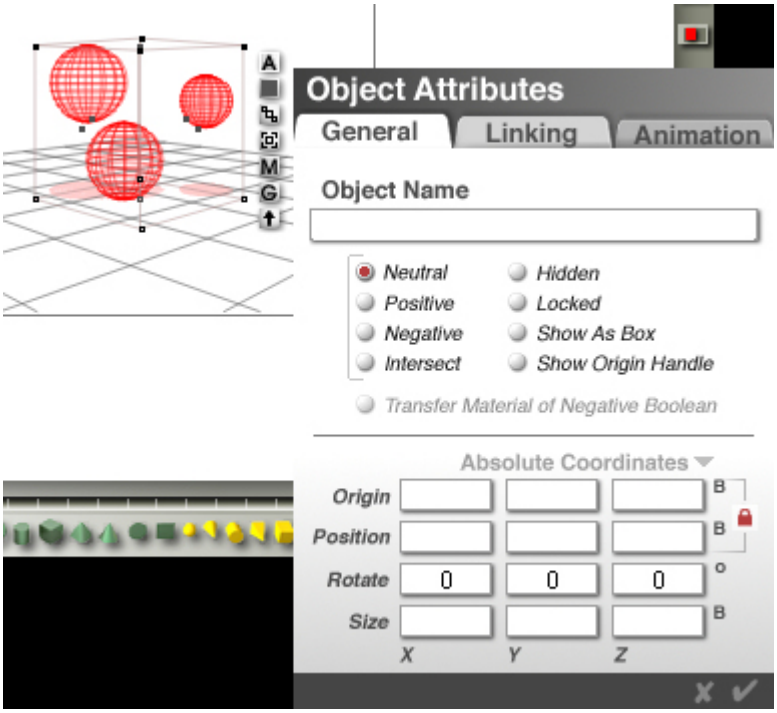
To set an object's position:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enter a value in the Position X field to set the object's position on the X axis. This axis moves the object left or right.
4. Enter a value in the Position Y field to set the object's position on the Y axis. This axis moves the object up or down.
5. Enter a value in the Position Z field to set the object's position on the Z axis. This axis moves the object backward or forward.



6. Click on the OK icon to exit the dialog.

When you select multiple objects and access this dialog, there are no values displayed in the Position fields. If you then enter a value in any field, the selected objects are moved to the new coordinate(s).

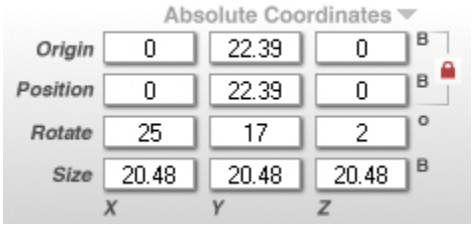


Rotate Fields

To rotate an object:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enter a value in the Rotate X field to set the object's rotation around the X axis.

   You can enter negative values, values greater than 360° or values less than -360°. Bryce reduces the value to an absolute value within a range of 0° - 360°.
4. Enter a value in the Rotate Y field to set the object's position on the Y axis.
5. Enter a value in the Rotate Z field to set the object's position on the Z axis.



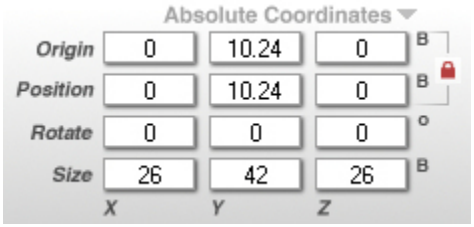
6. Click on the OK icon to exit the dialog.

Size Fields

To set an object's size:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enter a value in the Size X field to set the object's size in the X axis.

   You can enter negative values here if you need to.
4. Enter a value in the Size Y field to set the object's size in the Y axis.
5. Enter a value in the Size Z field to set the object's size in the Z axis.



6. Click on the OK icon to exit the dialog.

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When you select multiple objects and access this dialog, there are no values displayed in the Size fields. If you then enter a value in any Size field, the selected objects are scaled to the new coordinate.

Display Quality Attributes

The display options available in the General tab of the Object Attributes dialog let you control how the object appears in the Working window. Some of these options can speed up the redraw of your scene.

Hidden

When you apply this option to an object, it is not rendered when you render your scene.

The object remains visible in the Working window, where you can still select and edit it, but it will not display in the final render.

To hide an object:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enable the Hidden button.



4. Click on the OK icon to exit the dialog.

Locked

This option locks any selected object, objects, or group, preventing unintentional changes to size, position, or rotation. Locked objects appear grayed out in your wireframe view.

To lock an object:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enable the Locked button.

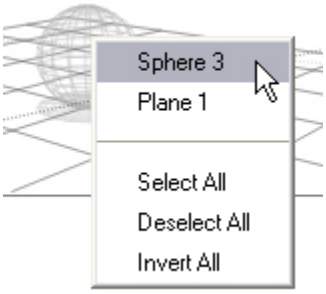


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4. Click on the OK icon to exit the dialog.

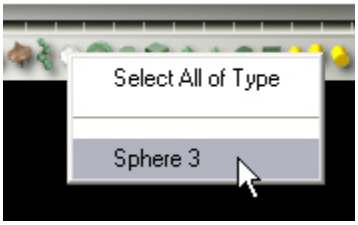
To select a locked object:

1. Press Cmd/Ctrl, click on the object, and select it from the popup list.



OR

2. Click the Time Selection Palette toggle at the bottom of the Working window to display the Selection palette. Use the Time Selection Palette toggle to switch between the Animation controls and the Selection palette.
3. Click an object type button, and choose the desired object from the menu that appears.



4. Display the Object Attributes dialog.
5. Make sure the General tab is displayed.
6. Disable the Locked button.
7. Click on the OK icon to exit the dialog.

Show as Box

This option displays any selected object, objects, or group as a box. This is useful when you just want to work with the object's position. It can speed up work in a complex scene because it displays simpler objects. You can still manipulate your object using the bounding box control points.

To display an object as a box:

1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.

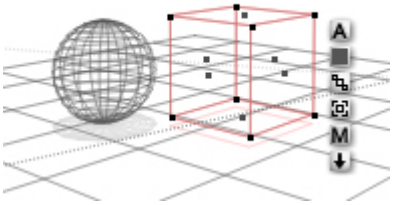
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3. Enable the Show as Box button.



4. Click on the OK icon to exit the dialog.

   Result:



Show Origin Handle

This option displays the selected object's origin point. You can then edit the position of the point to change the object's center of rotation. Refer to "Object Origin Points" for more on origin points.

To display an object's origin point:

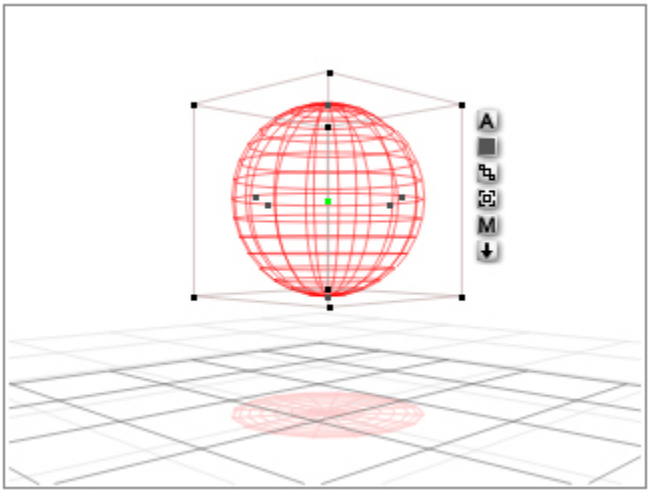
1. Display the Object Attributes dialog.
2. Make sure the General tab is displayed.
3. Enable the Show Origin Handle button.



4. Click on the OK icon to exit the dialog.

   The origin handle will show up as a green dot when the object is selected.

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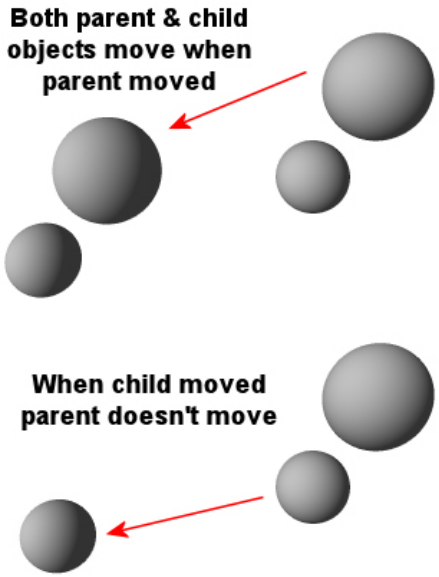
Linking Tab

Link attributes control how an object is linked to another. The controls on the Linking tab of the Object Attributes dialog let you set parent-child link attributes and tracking attributes.

Linking Objects

When you link two objects, you connect them in a Parent-Child link.

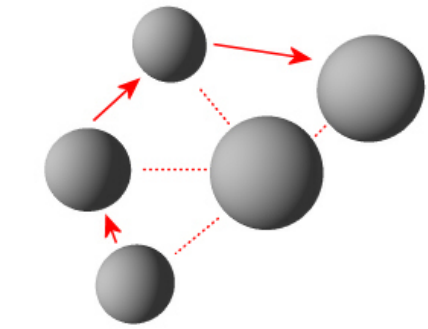
In a parent-child link, the parent controls the actions of the child. This means that when the parent object moves, so does the child object. However, when the child object moves, the parent object does not.



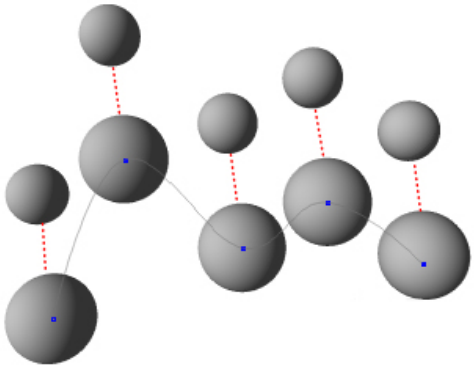
©2007 DAZ 3D, Inc.

A child object will start its movement from its original position and always maintain a constant distance from the parent. The distance is determined by the original positions of the objects before they were linked. The movement of the child object depends entirely on the type of transformations you apply to the parent object.

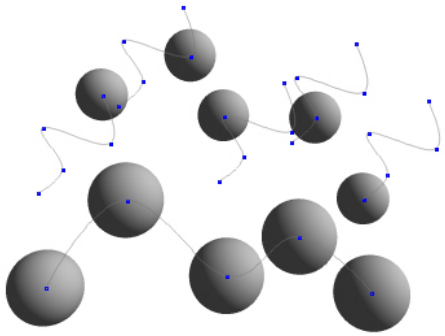
If you rotate the parent, the child will orbit around it like a moon around a planet.



If the parent is moving along a path, the child will match the trajectory of the parent's path, but maintain a constant distance from the parent object.



If both the parent and the child are moving along a path, the child object moves along its path while matching the trajectory of the parent object's path.



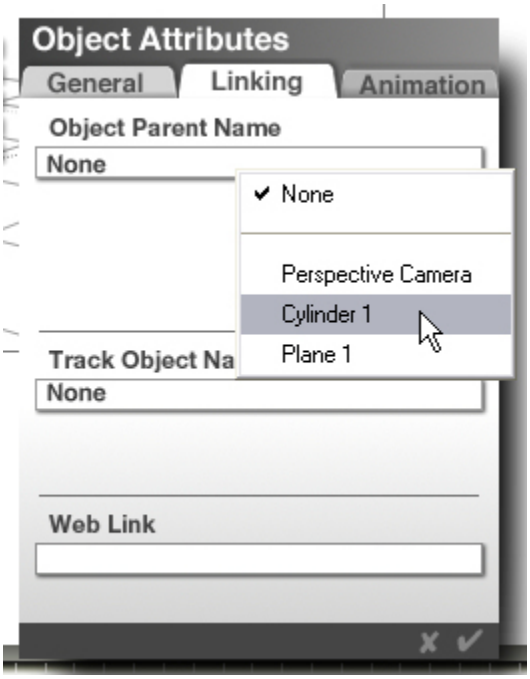
Objects can also be linked to a path for animations. See "Geometric Path Linking" for more information on this option.

See "Link to Parent Icon" for information on linking objects interactively.

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To link objects in the Object Attributes dialog:

1. Display the Object Attributes dialog.
2. Click the Linking tab.
3. Click the Object Parent Name field and choose a name from the menu that appears. Choose None to break a link.



4. Enable a Propagate option or disable the ones you do not want to use. These options control which parent object transformations are applied to child objects and how objects are constrained when they're linked to a path.

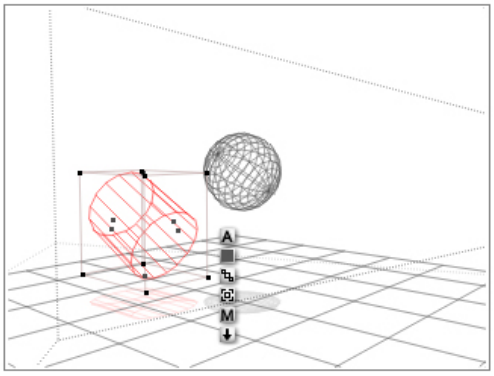


5. Click on the OK icon to exit the dialog.

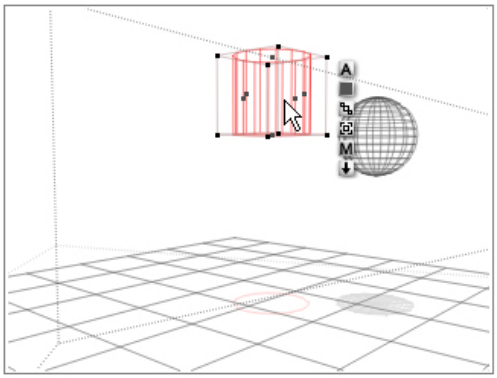
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Examples:

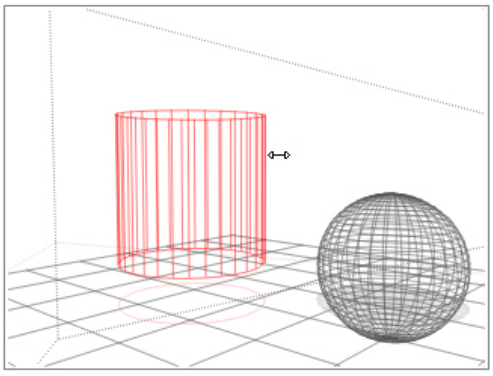
- Rotation



- Offset - parent moved, child moves with it



- Size



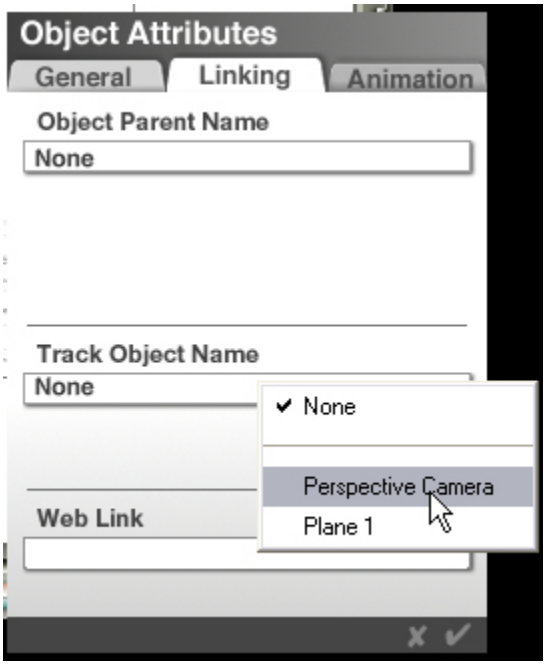
Tracking Objects

When you set up a tracking link, the stationary object tracks the target object as it moves or rotates. Whenever the target object moves, the stationary object pivots so that it's always facing the target. The Tracking options let you set the target object for the selected object and define which axis of the stationary object will face the target.

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To set an object to track another:

1. Display the Object Attributes dialog.
2. Click the Linking tab.
3. Click the Track Object Name field and choose a name from the menu that appears. Choose None to break a tracking link.



4. Enable one of the Orientation options. These options set which object axis will track the target.

Web Link

Use Bryce to get your images on the Web! Bryce will export an HTML page with your rendered image, along with any hotspot links associated with the objects in your scene.

With the HTML dialog, you can set your Web page title, the server directory for the page (either your local hard disk or the Web host), the name of the JPEG file for the image, your e-mail address, and the Background URL.

Also, in the dialog are two sliders -one for the level of JPEG compression, and the other for how precise you wish the hotspot polygons to be. Bryce will then generate the HTML page and the JPEG image file for you, ready to be brought straight onto the Web. To create an HTML page:

To add a web link to an object:

1. Select the objects that will become hotspot links.
2. Click the A icon to display the Object Attributes dialog.

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3. Click the Linking Tab, and enter an URL in the Web Link box.



4. Click on the OK icon to exit the dialog.
5. When you are done with your scene, render the scene to disk as an HTML file.

Animation Tab

Animation attributes control the display of an object's motion path. A motion path is a graphical representation of an object's trajectory over the course of the animation. Refer to "Motion Paths" for more on motion paths. The options on the Animation tab of the Object Attributes dialog let you control how an object's motion path is displayed in the Working window and how that path is drawn.

Motion Path Display Options

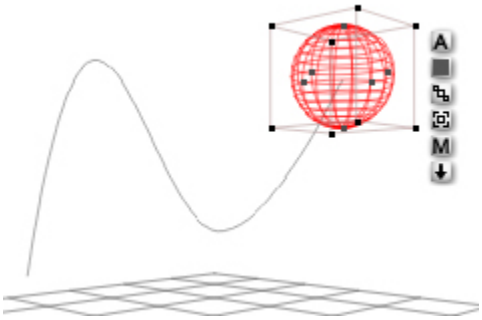
Normally, a motion path is displayed as it is being drawn and when the object is selected. The motion path display options on the Animation tab of the Object Attributes dialog let you control when the motion path is displayed.

To set motion path display options:

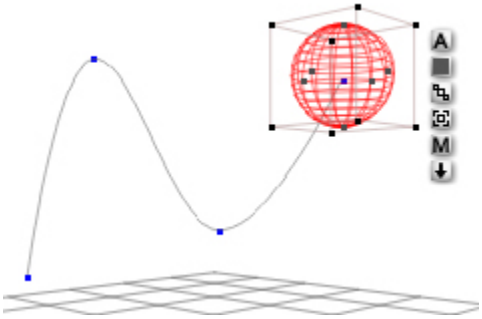
1. Display the Object Attributes dialog.
2. Click the Animation tab.

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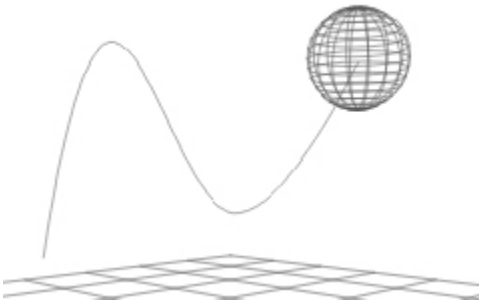
3. Enable one or all of the display options:
    - Hide Trajectory: enables or disables the display of the motion path. When it is disabled, no motion path is drawn.



    - Show When Selected: displays the motion path only when the object is selected.



    - Show Always: displays the motion path at all times, even when the object is not selected.



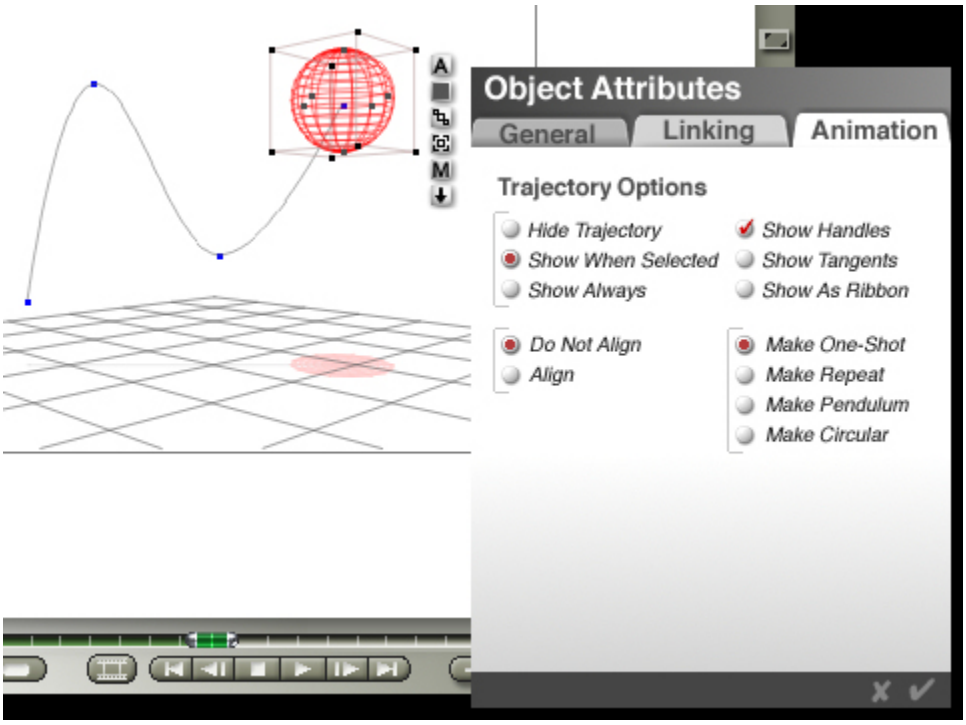
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Motion Path Attributes

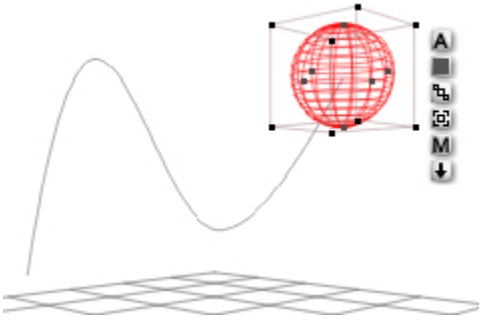
When a motion path is created, it looks like a curve that extends out from an object. The motion path attributes let you display additional information on a motion path.

To set motion path attributes:

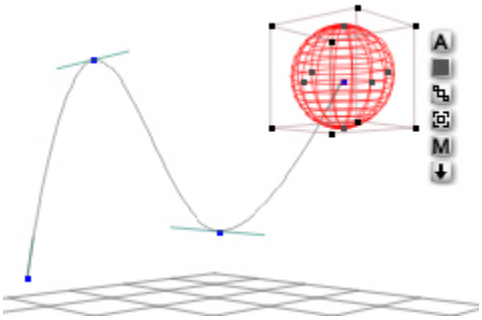
1. Display the Object Attributes dialog.
2. Click the Animation tab.



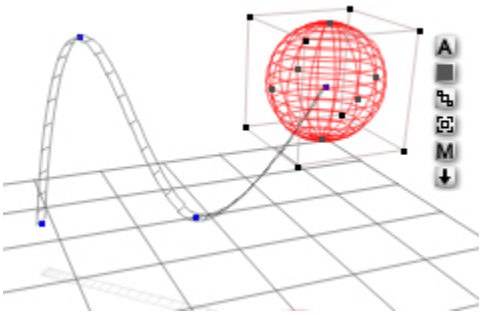
3. Enable one or all of the attributes:
    - Show Handles: displays or hides the path's control handles. The handles represent key frames. The image below shows the handles hidden with the image in step 2 showing the handles shown.



- Show Tangents: hides or displays lines extending from each control handle. Tangents help you see the slope of the curve.



- Show as Ribbon: displays the motion path as a flat ribbon in the working window. This makes the path easier to see when you move the camera.



Align Options

Normally, unless you apply a rotation, an object's orientation remains constant as it moves along a motion path. The align options let you force the object's orientation to match the slope of the motion path so that as the path curves up, the object tilts up.

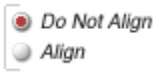
To set align options:

1. Display the Object Attributes dialog.
2. Click the Animation tab.
3. Enable one of the following options:
    - Do Not Align: disables aligning. The shape of the curve has no effect on the object's orientation.

      This is the default setting.

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- Align: adjusts the object so that its orientation matches the shape of the path.

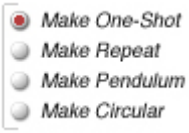


Motion Path Geometry Options

The shape of a motion path is determined by the position of the object as it moves through the animation. The motion path geometry options let you change the shape of the path to create different effects.

To set motion path geometry options:

1. Display the Object Attributes dialog.
2. Click the Animation tab.
3. Enable one or all of the options:
    - Make One Shot: performs the motion once and does not repeat the motion.
    - Make Repeat: creates a loop in the action. The motion on the path will continuously repeat.
    - Make Pendulum: creates a repeating cycle in the action along a path. The object will move forward on the path and then back.
    - Make Circular: closes the path to create a circular path. The object will move along the path until it reaches the end. It then swings around to the front of the path and starts over. You must have at least four position key frame points for this feature to work.



Families Icon



Families are a way of creating “logical groups.” Unlike regular groups, families are not treated as a single unit with regards to transformations. Families help you keep track of elements in your scene and can be used for selection purposes. For example, you can put all the elements that make up the background of your scene in to one family, all the items with a particular material in another, all trees in another and so on.

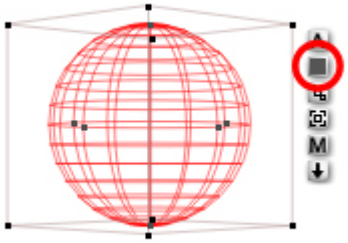
Each family has a different object color. The color appears only when the object is not selected, since a selected object’s bounding box and wireframe appear red. You can

easily see which objects belong to the same family when there no objects selected in the Working window.

When grouping objects that belong to a non-default family and group them, the group is a member of the default family although the objects stay with their own family.

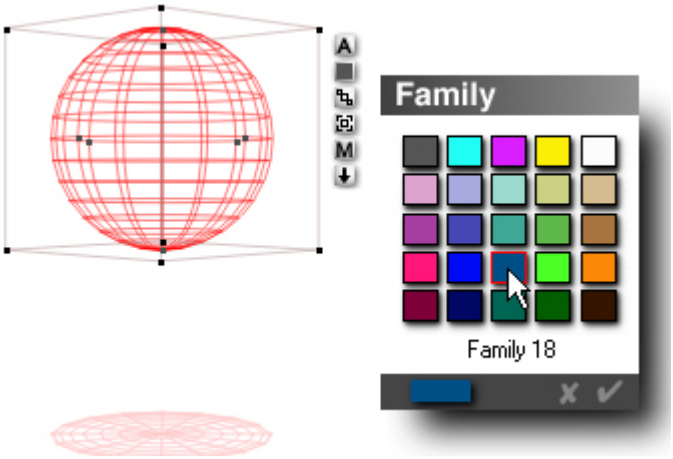
To add selected objects to a family:

1. Select all the objects you want to add to the family.
2. Click the ■ icon that appears next to the object's bounding box.



The Family dialog appears.

3. Choose a color that represents an existing family.

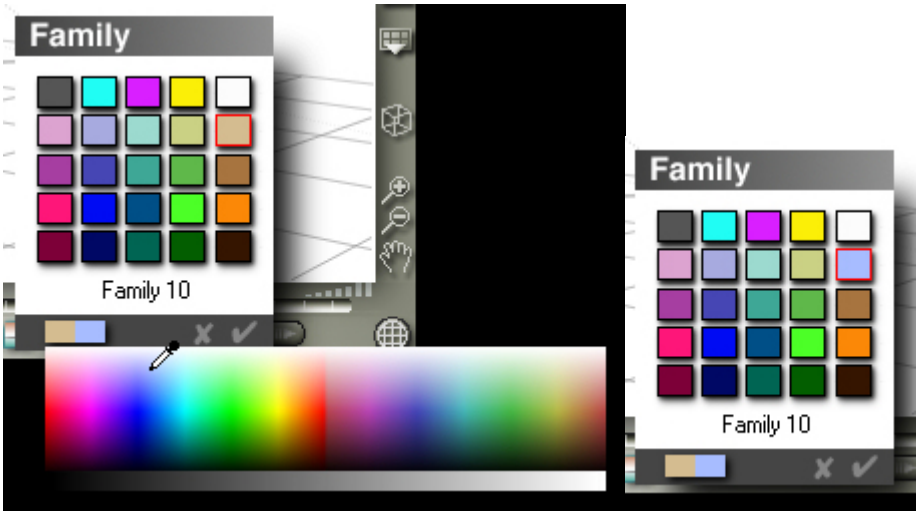


Once a color family has been selected, you can change both the family name and color.

4. To change the family name, click on the name, i.e., Family 18 in our example, backspace over the current name and enter a new name.



5. To change the family color, left-click on the lower color swatch to bring up the color picker and select a new color.

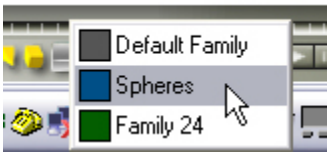


6. Click the OK icon. The color you select becomes the object's wireframe color.



The new selected family will be available in the Selection palette and if you changed the name of the family, it will be listed under the new name.

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Refer to "Select by Family" for information on selecting objects by family.

Linking to Parent Icon



This control lets you set up a parent-child link between two objects. When the objects are linked, the transformations you apply to the parent object affect the child. Refer to "Linking Objects" for more information.

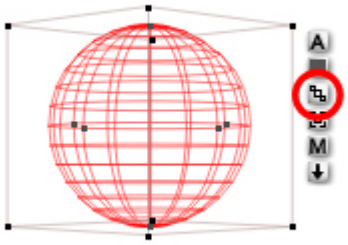
You cannot create a link where the parent object is the child of its own child object (i.e. a loop). The parent object turns blue.

The first object you select becomes the child object. The object you drag the link line to becomes the parent object.

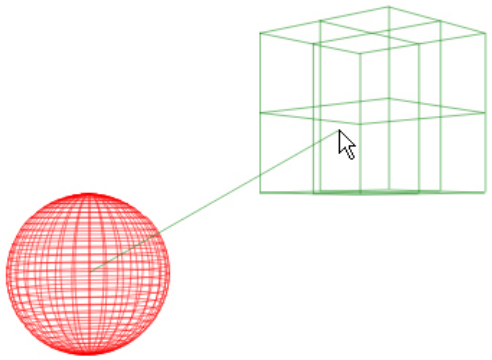
Creating Link

To link one selected object to another:

1. Select the object you want to be the child object within the link.
2. Click the icon and drag it to the object you want to be the parent object.



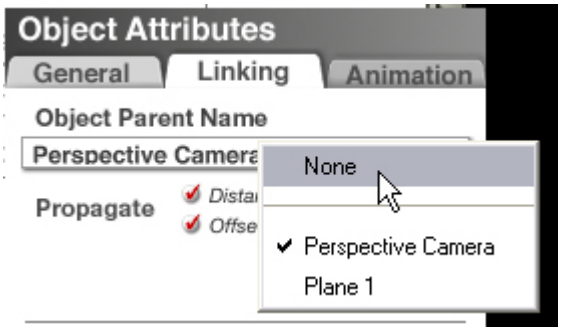
3. Release the mouse button when the parent object turns green. A link line extending from the child object to the parent appears as you drag.



Breaking Link

To break a link:

1. Select a child object.
2. Click the A icon that appears next to the object's bounding box. The Object Attributes dialog appears.
3. Click the Linking tab.
4. Click the Object Parent Name menu and choose None.



5. Click the OK icon to unlink the two objects.

Geometric Path Linking

A Geometric path is an object that acts like a track for controlling the motion of objects. Normally, when you link an object to a Geometric Path, it is constrained to the path. However, using the linking options in the dialog you can disable or enable constraining.

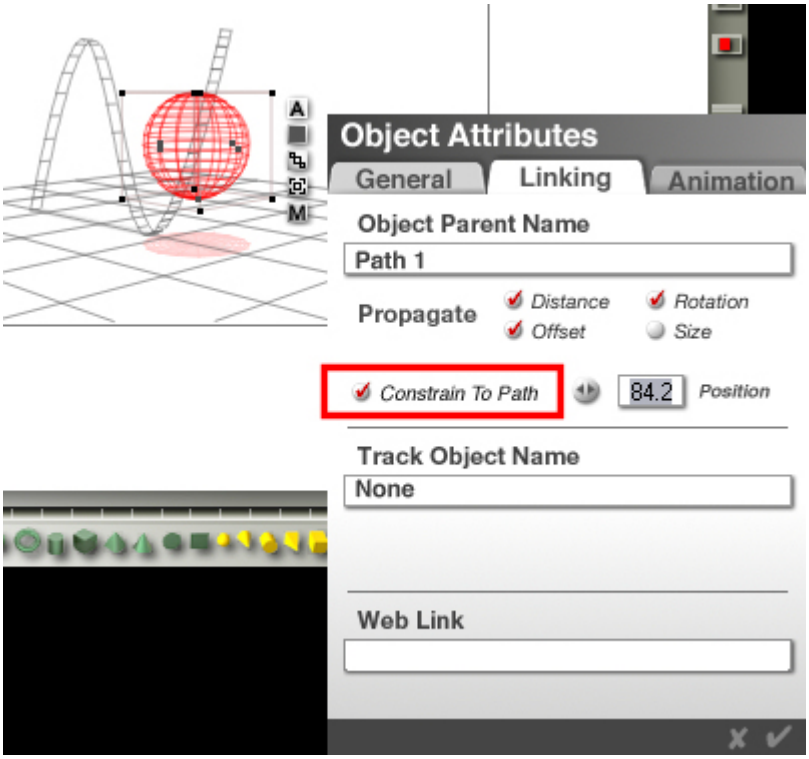
When an object is constrained to the path, it can only move along the path. When it's not constrained it acts like a regular child of the path. Its movement is not constrained to the path. The options in this dialog also let you set where on the path an object begins

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its motion. For more information about geometric paths, refer to “Creating Geometric Paths.”

To constrain/unconstrain an object to a geometric path:

1. Select an object linked to a geometric path.
2. Display the Object Attributes dialog.
3. Click the Linking tab.
4. Enable the Constrain to path button to constrain the object to the path. Disable the button to unconstrain it.

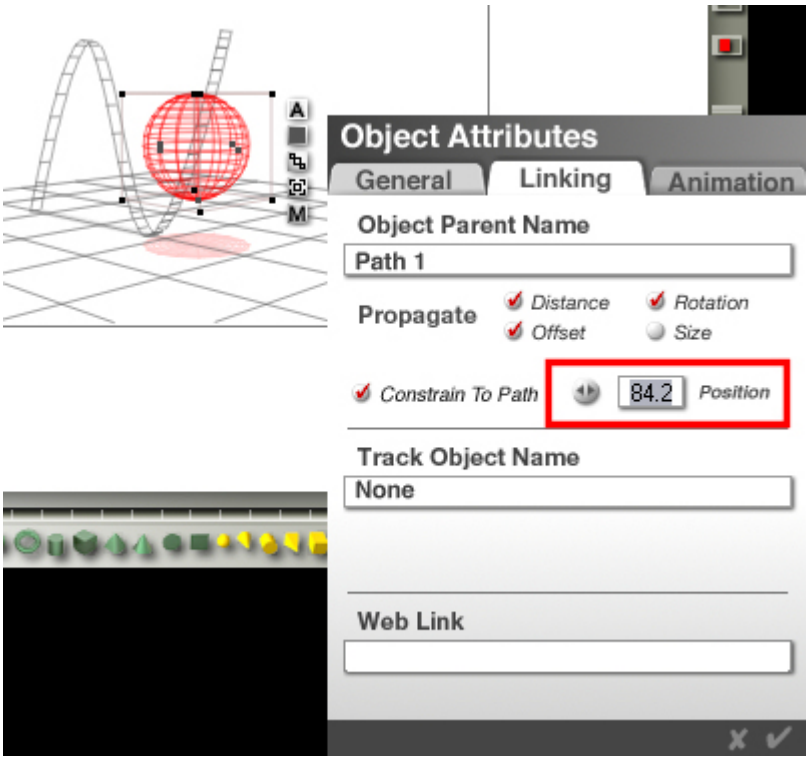


5. Click on the OK icon to exit the dialog.

To set where the object sits on the path:

1. Select an object linked to a geometric path.
2. Display the Object Attributes dialog.
3. Click the Linking tab.
4. Enter a percentage in the Position field. 100% places the object at the end of the path, and 0% places it at the beginning.

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5. Click on the OK icon to exit the dialog.

Object Hierarchies

An object hierarchy lets you create relationships between objects.

A hierarchy adds structure to the objects in your scene. This can make arranging and animating objects much easier. When you're arranging objects, a hierarchy can make positioning and rotating easier since you can transform an entire hierarchy all at once instead of separately. The same is true for animating. You can quickly create motion animations by changing the position of a parent object, since its children will move with it.

Hierarchies can be created by either grouping or linking objects.

Grouping vs Linking

Both grouping and linking let you create functional or spatial relationships between objects. The difference is how the objects within each hierarchy work.

Within a group all the objects act as one. When you resize a group of objects, you are resizing all objects in the group simultaneously. This type of hierarchy is good for creating complex objects with static parts, like a tree or a large terrain.

Within a linked hierarchy objects behave differently depending on which object within the hierarchy is being transformed. Any transformation you apply to the parent object is applied to all its children. However, transformations applied to a child object do not

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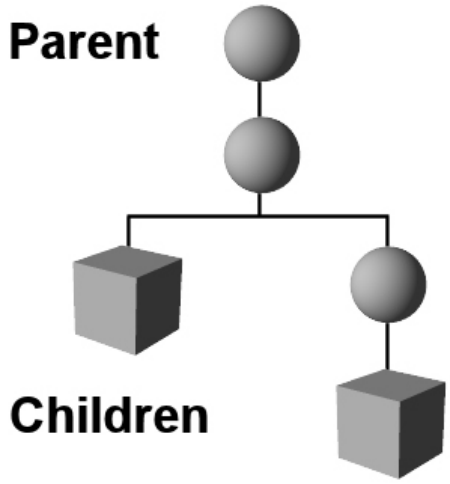
affect the parent. This type of hierarchy is good for creating objects that have moving parts like this train engine. As you move the parent all the objects in the hierarchy move, as the child moves the parent remains unchanged.

You can control exactly which transformations are applied to a child object using the options on the Linking tab in the Object Attributes dialog.

Hierarchical Structure

A hierarchical structure consists of a parent object or objects and its descendants. In the case of linking, the parent object is at the top of the hierarchy and its children are below it. Children in the hierarchy can also have children creating a branched hierarchy.

In a hierarchy created using links, the parent object is the primary object in the link. The children are any objects linked to the parent. If you have multiple linked objects in a hierarchy, the parent object at the top of the hierarchy is the parent object in the first link you created.

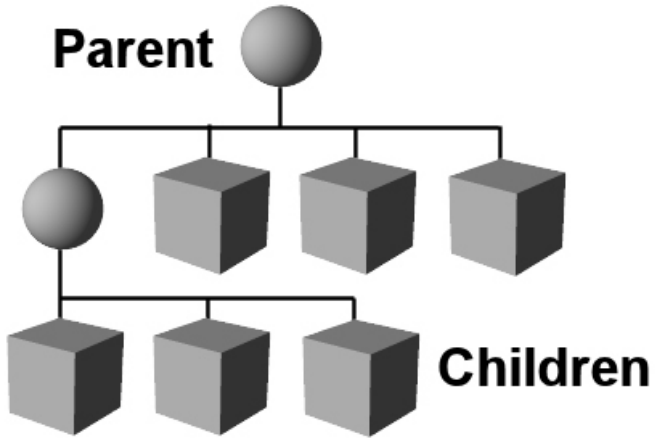


In this link hierarchy, the parent object has one child and that child has two children one of which also has a child. So if you were to transform this hierarchy, any operation you perform on the Parent at the top of the hierarchy is applied to all its children.

In a hierarchy created using groups, the parent object is the group. All the objects within the group are the children. If you have multiple groups within a group, the parent object is the final group you create. In this group hierarchy the parent group has four children one of which is a group that contains three children. If you were to transform this hierarchy, any operation you perform on the parent group would be applied to all the children.

A hierarchy can be made up of both linked and grouped objects. One way of creating this type of hierarchy is by grouping the parent objects from different link hierarchies together. In this case, the final group you create would become the parent object of the hierarchy.

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You cannot create a group using a child object. Only parent objects can be part of a group. When the parent is in a group all its children are also part of the group since they must follow the parent.

You could also create a hierarchy where a group is linked to a parent object. In this case, the parent object of the hierarchy would be the parent from the first link you created. In this hierarchy the parent object is a group that has four children one of which is the parent object of a link hierarchy that has two children.

Viewing Object Hierarchies

The Hierarchy List area of the Advanced Motion Lab lets you see a list of all the objects in your scene. Object hierarchies are indicated by indents. A parent object is listed at the far left of the area; its children appear indented beneath it.

Refer to "Animation" for more information on viewing object hierarchies.

Tracking Icon

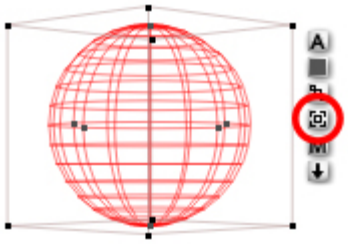


This control lets you set up a Tracking link between two objects. When an object tracks another, the selected object pivots as the target object changes position. As a result, the object always faces its target. Refer to "Tracking Objects" for more on tracking.

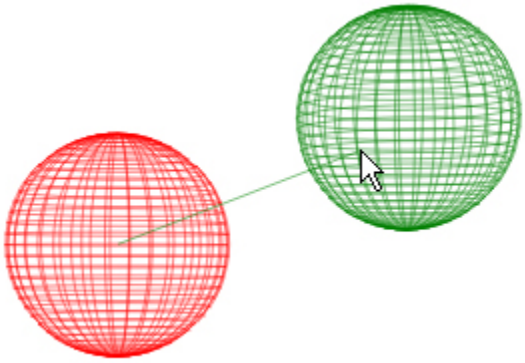
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To set a selected object to track another:

1. Select the object you want to be the stationary object.
2. Click the Tracking icon and drag it to the object you want to be the target object.



3. Release the mouse button when the target object turns green. A tracking line extending from the stationary object to the target appears as you drag.



Material Icon

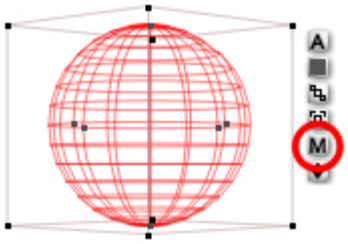


This control displays the Materials Lab. Refer to “Materials” for more on Materials. When you use this control, the Materials Lab displays the material currently applied to the selected object, and the object appears in the Material Preview area of the lab.

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To display the Materials Lab:

1. Select an object or group of objects.
2. Click the M icon that appears next the bounding box.



3. The Materials Lab will come up.

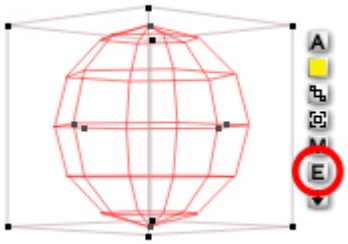
Edit Object Icon



This control only appears if the object you selected is a terrain, a symmetrical lattice, a torus, a stone, an imported polyhedron object, or a light. When you click this control, the editor for the object type you have selected opens.

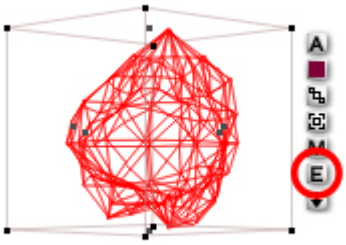
To display an object's editor:

1. Select an object or group of objects.
2. Click the E icon that appears next to the bounding box.
    - If a light object is selected, the Light Lab will open.

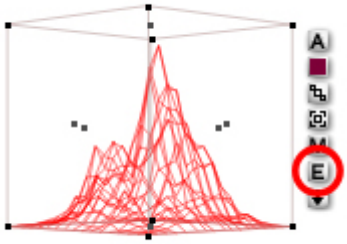


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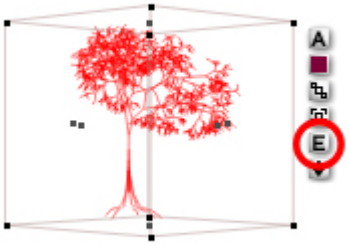
- If a rock or imported object is selected, the Edit Mesh dialog will open.



- If a terrain or symlat is selected, the Terrain Editor will open.

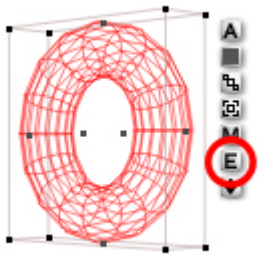


- If a tree is selected, the Tree Lab will open.



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- If a torus is selected, the Edit Torus dialog will open.



Group Icon

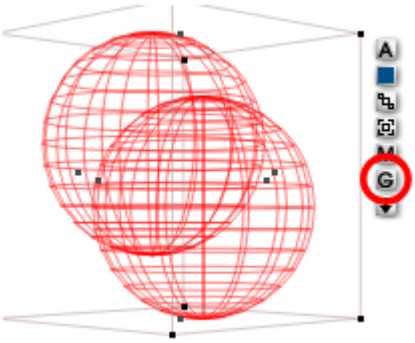


This control appears only if your selection contains multiple objects. When you click this control all the objects in the selection are grouped. Refer to "Grouping Objects" for more on grouping.

If this icon does not appear when you have a multiple selection, it means that you can't group the selected objects because of an object hierarchy conflict. Refer to "Object Hierarchies" for more information.

To group selected objects:

1. Select all the objects you want grouped.
2. Click the icon that appears next to the object's bounding box. A group bounding box appears around all the objects.



Convert Boolean Icon



The Convert Boolean icon converts Boolean groups to mesh which can then be exported from Bryce and imported into other programs.

This control only shows up when Boolean primitives are grouped. When you click this control, the Boolean group is converted to a mesh.

To convert a new Boolean object group to a mesh:

1. For a new object, create a Boolean group using positive, negative, and intersect primitives and sub-groups. Do not include neutral objects, infinite planes/slabs, trees, metaballs, lights, or the camera.
2. In the image below, the two spheres are grouped together to create a hollow sphere and the group set to positive. A negative cylinder is then added and grouped with the positive cupola group. This new group is set to positive and grouped with the remaining positive objects.



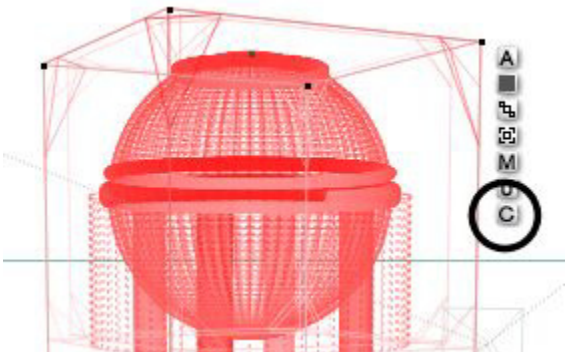
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3. Apply a texture if you wish.



4. After grouping all the objects and/or sub-groups, a new C icon will appear under the U icon.

   Click on the C icon to start the mesh conversion or choose Objects > Convert Boolean to Mesh from the menu or press Opt/Alt+Shift+C.



5. Wait until the conversion is complete and the object looks like a "real" mesh.

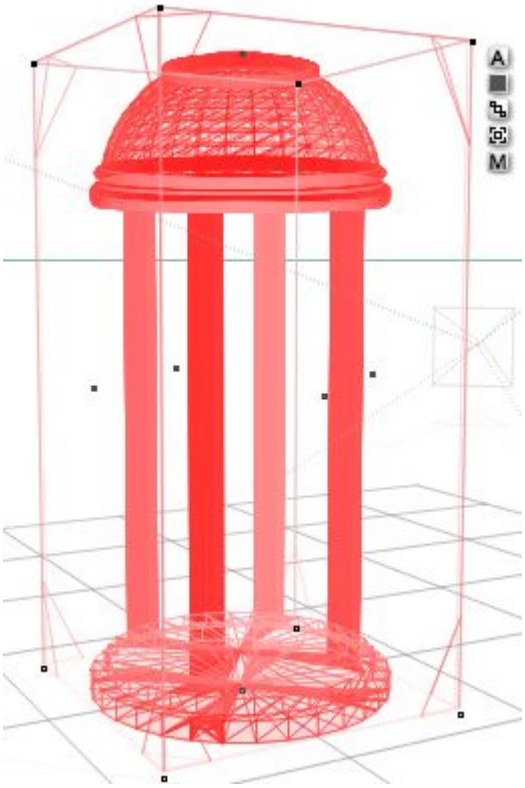
   Depending on the size of your object, the conversion could take a while to complete. If the object is complex, it can take a very long time to convert or may crash Bryce if your system runs out of memory. To help with this, change the Selected Resolution of the object to a lower number. So, if the Selected Resolution is set to 8, then the converted mesh will be "chunky" but if the Selected Resolution is set to 32, then the converted mesh will be much smoother and take longer to convert.

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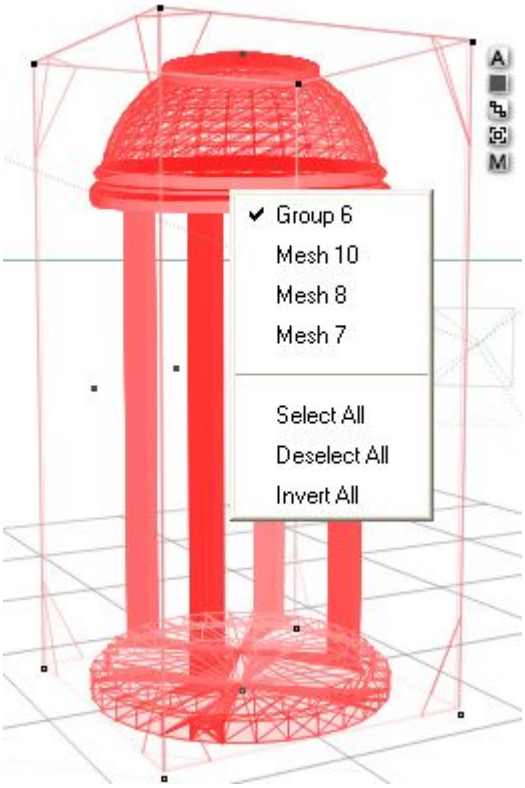
While converting the Boolean to a mesh, as long as the timer cursor is showing, Bryce is working on the conversion. Bryce may even show as not responding in the task bar or File Manager, however, unless the program crashes, wait until the process is complete instead of closing the process manually.

6. Notice that there is no E icon next to the converted mesh shown below. This is because the group still contains the original Boolean information. However, the new mesh can be set to positive, negative, or intersect, and then grouped with another converted mesh or with newly created primitives.

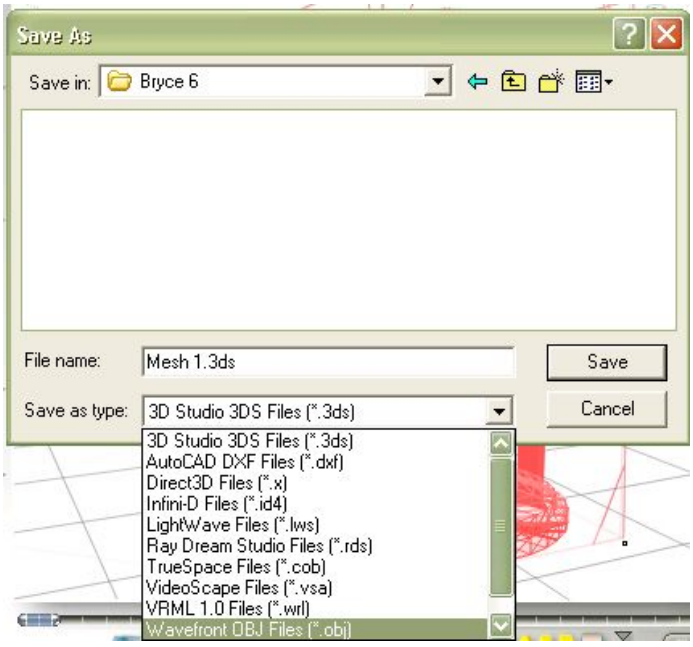


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7. If you press Ctrl+click on the mesh, you'll see a list of the meshes but you will not be able to select them. The mesh still needs to be finalized.

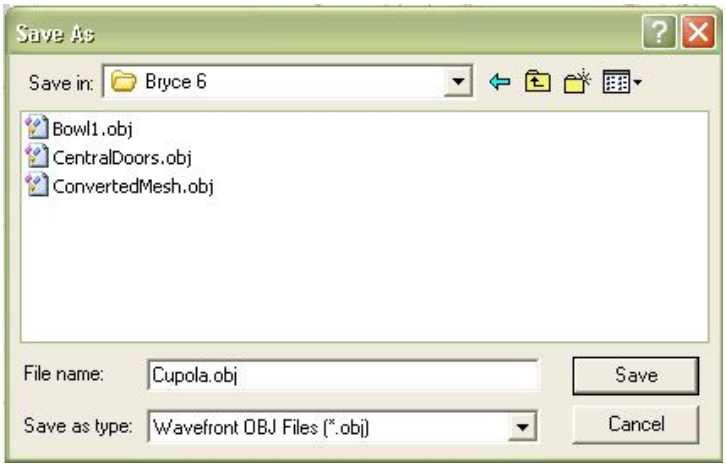


8. To complete the mesh conversion, choose File > Export Object from the menu. The Save As dialog will come up.
9. Select the file type from the Save as type pull-down list.

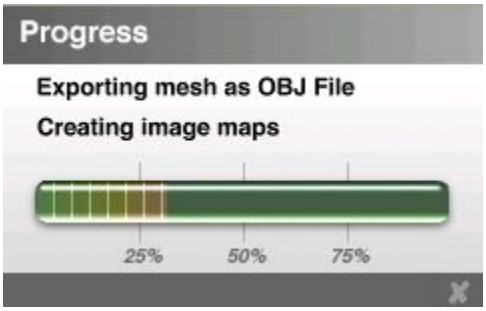


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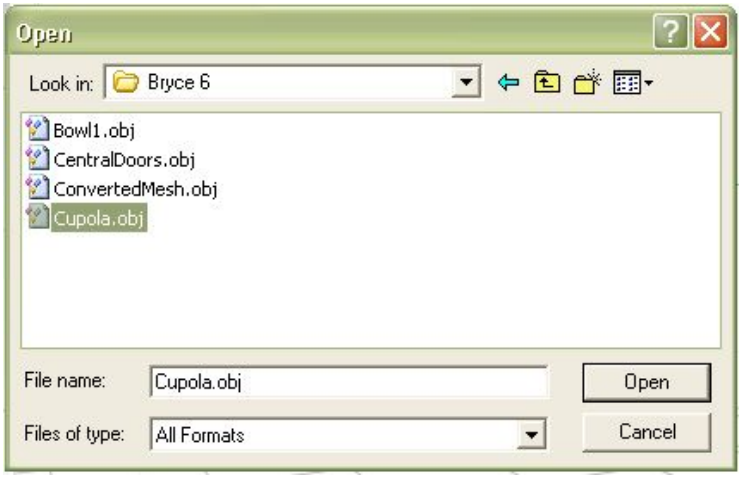
10. Change the name of the file so it makes more sense and can be located later, then click on the Save button.



11. A Progress dialog will come up showing the conversion process.



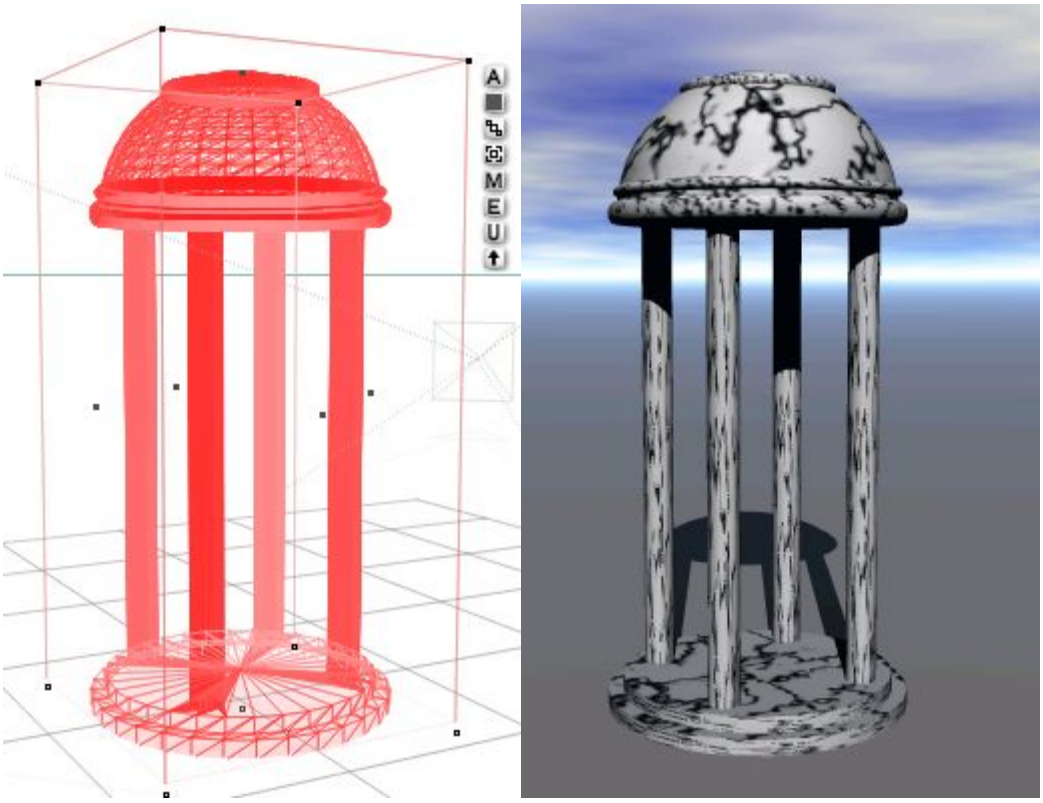
12. Once the export has completed, the mesh can be re-imported into Bryce or into another program.
13. To import the mesh back into Bryce, choose File > Import Object from the menu. The Open dialog will come up.



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14. Locate and select the mesh to import, then click on Open.

    The mesh will be imported, along with any textures that were exported.



Please note that Bryce applies a very basic UV mapping to the object and as a result, the textures may not map correctly on the imported mesh. This can be fixed by applying the original texture back onto the object or by modifying the texture scale in the Materials Lab.

Boolean objects from older versions of Bryce can be converted to a mesh as long as all the included primitives and sub-groups are set to a Boolean state.

To convert an older Boolean object group to a mesh:

1. Select each primitive in the object group.
2. To set the primitive to positive, press the P key on the keyboard.
3. To set the primitive to negative, press the N key on the keyboard.
4. To set the primitive to intersect, press the I key on the keyboard.
5. Repeat steps 1 through 4 for each sub-group in the object group.
6. Convert the mesh as shown above, export, then re-import to finalize the mesh.

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When building Boolean groups for conversion, the following must be kept in mind:

1. Each object in a group, including any sub-groups, must be set to positive, negative, or intersect. You cannot have a neutral object or sub-group in the final group as the conversion process will discard it.
2. The Group can contain any object that can be Booleaned except an infinite plane/slab.
3. A converted mesh can be set to positive, negative, or intersect, then Booleaned with another converted mesh or new primitive objects or even with imported objects.
4. The final group cannot contain metaballs, Bryce trees, lights, infinite planes/slabs, or the camera.
5. The final group can contain multiple sub-groups, but each sub-group must be set to positive, negative, or intersect.

The image below shows a Boolean object that had some neutral primitives and groups in the final group. The top image shows the original object in Bryce while the bottom image shows the same object after being converted to a mesh, exported, then re-imported. Notice that parts of the model are missing. These are where the neutral objects/groups were that the conversion process threw out.



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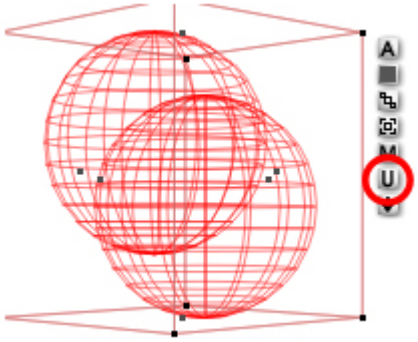
Ungroup Icon



This control only appears if you've selected a group or a number of objects contained in a group. When you click this control, any group in the selection is ungrouped. If the selection contains nested groups, you can continue clicking this control until all the groups are ungrouped, or until the control disappears.

To ungroup a selected group of objects:

1. Select all the objects you want ungrouped.
2. Click the  icon that appears next to the object's bounding box.



3. If the group had sub-groups, continue clicking on the  icon until all groups that you want ungrouped are ungrouped.

Land Object Icon



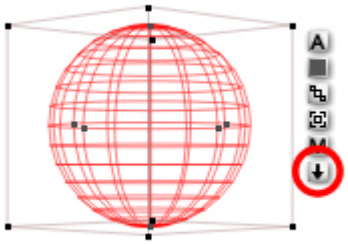
This control appears as either an arrow pointing up or down, depending on the position of the object selected.

When you click this control, the object snaps to the top of the object below it. This control works like the Land Selection option available in the Edit palette. Refer to "Landing Objects" for more information.

To land a selected object:

1. Select the object you want to land.
2. Click the  or  icon that appears next to the object's bounding box. The object snaps to the top of the object directly below it or if the selected object is below ground, it snaps to the bottom of the object directly above it.

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Selecting Objects

Before you can perform any type of editing or transforming operation on an object, you need to select it. As well as selecting objects using the cursor, Bryce's Selection tools let you select objects by type or family. You can also cycle through all the objects in your scene.

- To select an object, click on any object. A selected object's wireframe will appear red. Alternatively, you may drag a marquee around the object.
- To step through all the objects in your scene, press the Tab key until the object you want selected appears in red.
- To select a number of objects, drag a marquee around a number of objects.
- To select an object within a group, hold down Ctrl and click the desired object.
- To select all objects, either choose Edit > Select All, or press Cmd/Ctrl+A.
- To deselect all, either choose Edit > Deselect All, or click anywhere outside the selected area.
- To add objects to a selection, hold down the Shift key while selecting the object.
- To remove objects from a selection, hold down the Shift key and click the selected object.
- To select obscured objects, hold down the Shift key and select through the obscuring object. All objects underneath the cursor will be selected. If the obscuring object is already selected, it will be deselected and all the objects behind it will be selected.
- Alternatively, hold down Cmd/Ctrl and click an object to select or deselect. Use Shift to select multiple objects. You will see a list of all objects under the cursor. This lets you not only view the selection status of all the listed objects, but change it as well. This aids in dealing with large scenes.

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Resizing Objects

When you create an object, it appears at a default size. Once you place it in your scene, you may need to resize it to make it proportional to the other objects in your scene. There are five ways of resizing objects in Bryce: using the Resize tool, in the Edit palette, to resize an object along different axes using the 3D Transformation dialog which lets you enter precise values to resize objects using the control points on the object's bounding box to interactively resize the objects using the Object Attributes dialog using keyboard commands

Objects are measured in Bryce units. When you resize an object, you're increasing or decreasing its size based on unity size. When you resize an object to 150%, you're sizing it to 150% of unity. Refer to "Bryce Units" for more information.

Resize Using the Resize Tool

The Resize Tool is available on the Create palette and is often the easiest method of resizing objects quickly.

Refer to "Resize Tool" for more on using this tool.

Resize Using the Keyboard

You can use the keyboard keys to resize objects:

- Press Shift+8 (asterisk) or Shift+Opt/Alt+8 to double a selected object's size.
- Press / (slash) to halve a selected object's size.
- Press = (equal) to return the object to unity size and snap it to the Grid.

Resizing Numerically

Objects are resized numerically using the Object Attributes dialog.

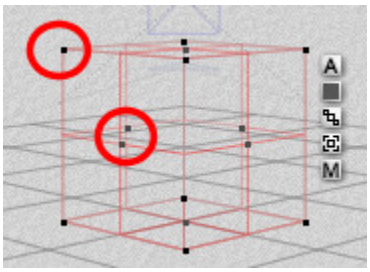
Refer to "Editing Transformation Attributes" for more information on resizing objects this way.

Resize Interactively

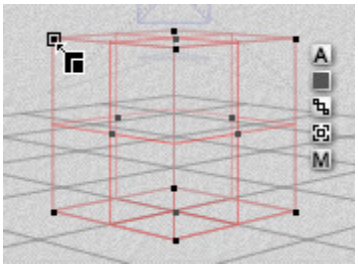
While you can resize objects using the Resize tool or the 3D Transformation dialog, there are resize controls on the object's bounding box that let you resize objects directly in the Working window. You may find this a much more intuitive way of transforming your objects.

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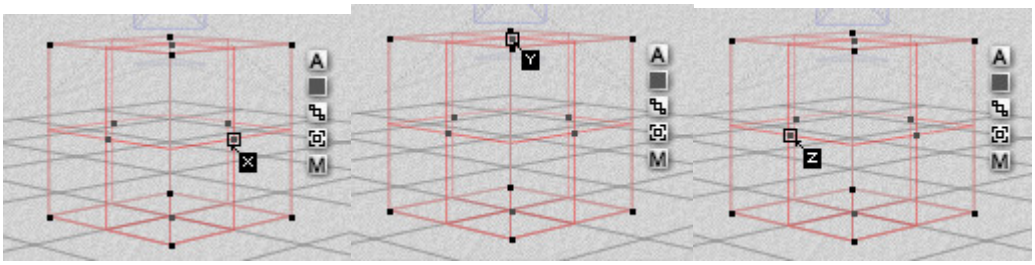
When you select an object, a bounding box appears surrounding your selection. At each corner of the box, and at the center of each face, is a control point.



As your cursor passes over the corner control points, it changes to a generic Resize cursor.



As it passes over the control points on the faces, it changes to an X, Y or Z. This indicates the axis along which you can resize the object by clicking and dragging on that point.

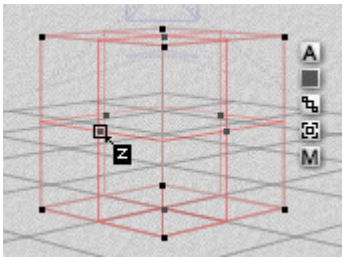


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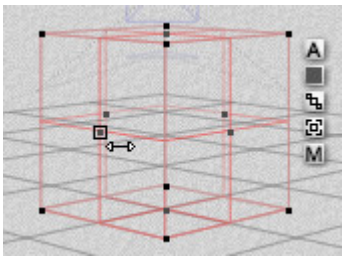
Scale Along a Single Axis

To resize an object along a single axis interactively:

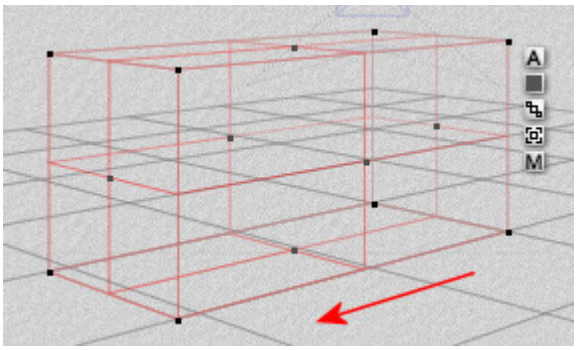
1. Select an object.
2. Drag one of the control points at the center of a bounding box face. As you pass your cursor over the face, the cursor changes to an X, Y, or Z to indicate the axis you're resizing along.



3. Drag right to enlarge it or left to shrink the object.



The object will scale along the axis of the selected control point.



Scale Object from Specific Side

To resize an object from a specific side:

1. Select an object.
2. Click the any face control point and hold down the mouse button, then press Cmd/Ctrl+Opt/Alt.

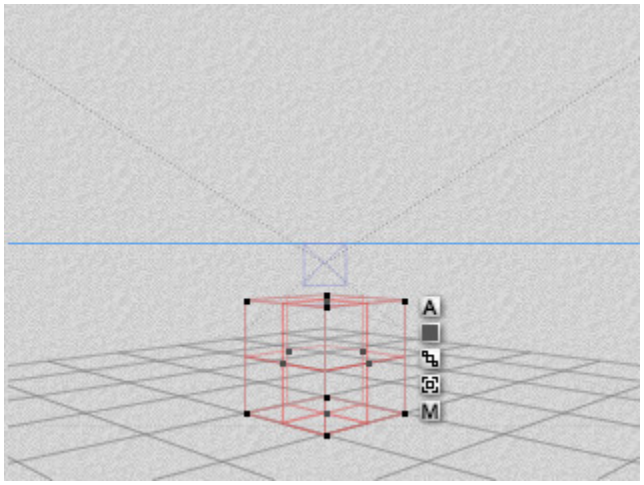
©2007 DAZ 3D, Inc.

3. Drag right to enlarge it or left to shrink the object.

   The object resizes in all directions from the center of the face opposite the selected control point. For example, if you select the Y control point on the top of the object, the object will scale up and out, but not down.

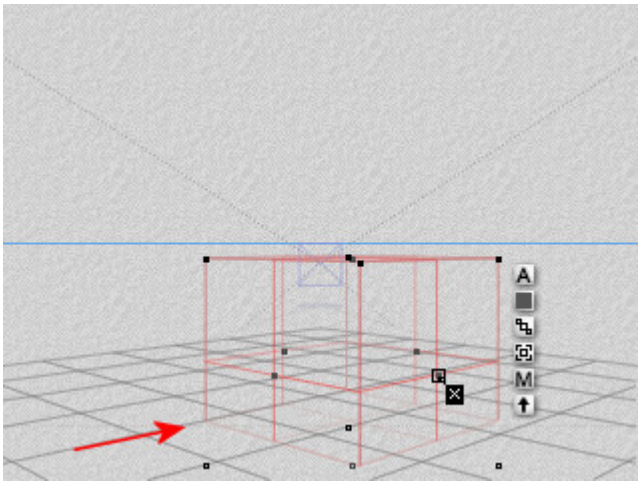
   Make sure to select the control point and hold the mouse down before pressing Cmd/Ctrl+Opt/Alt. If you press Cmd/Ctrl+Opt/Alt first, nothing will happen.

To show some examples, below is a cube that has been moved so that the edges line up with the ground plane grid:



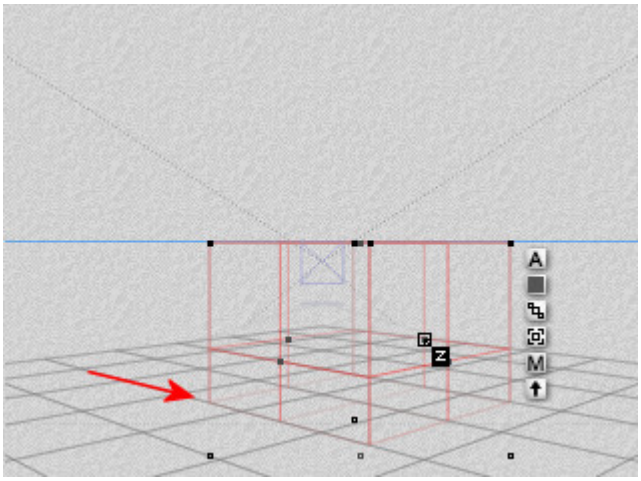
1. Select the X control point nearest the Director's View, press Cmd/Ctrl+Opt/Alt and drag right.

   Notice how it resizes on the Y and Z-axes in both directions, but only to the right on the X-axis. The arrow shows the side that doesn't move.



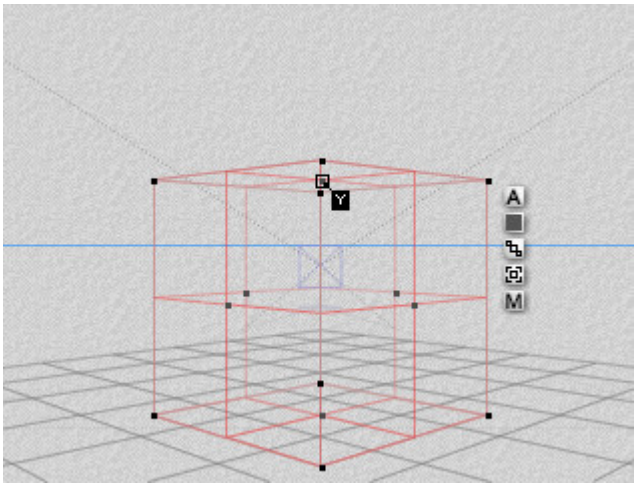
2. Select the control point on the opposite side of the cube, press Cmd/Ctrl+Opt/Alt and drag right.

   Notice how it resizes on the Y and X-axes in both directions, but only to the back on the Z-axis. The arrow shows the side that doesn't move.



3. Once more, select the Y control point on the top side of the cube, press Cmd/Ctrl+Opt/Alt and drag right.

   Again, notice how it resizes on the X and Z-axes in both directions, but only up on the Y-axis. The bottom of the cube stays firmly on the ground plane.



Scale from Opposite Side

To resize an object from the opposite side:

1. Select an object.
2. Click one of the control points on a face and hold down the mouse button, then press Ctrl. The cursor will change to a double-sided arrow.

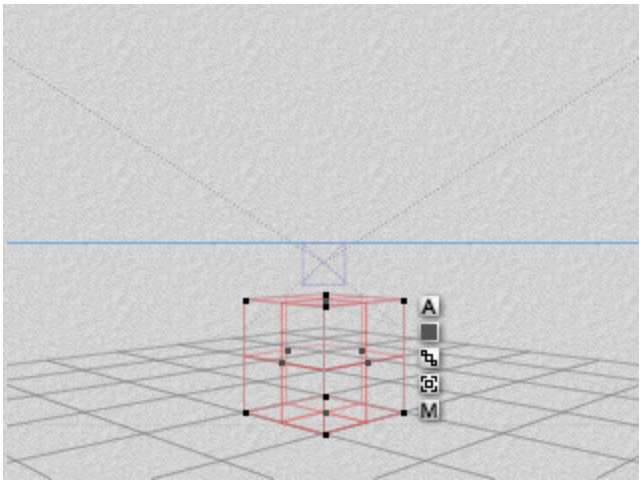
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Note: Make sure to select the control point and hold the mouse down before pressing Ctrl. If you press Ctrl first, you'll rotate the object instead.

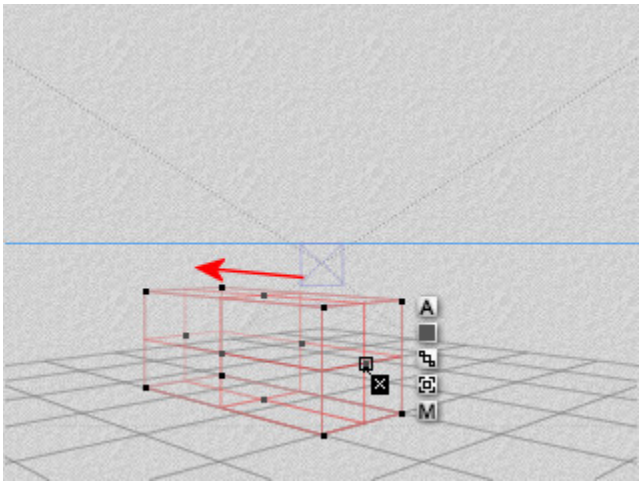
3. Drag right to enlarge it or left to shrink the object.

   The object resizes in all directions from the bottom center of the object. This transformation may be useful if the object is on the ground and you want it to remain there.

To show an example, below is a cube that has been moved so that the edges line up with the ground plane grid:



Then resized by clicking on the X control point nearest the user, pressing Ctrl and dragging right. If the mouse had been dragged left, the cube would have been resized smaller on the opposite side.

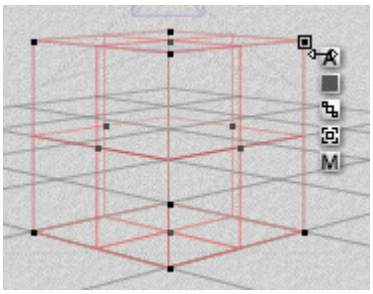


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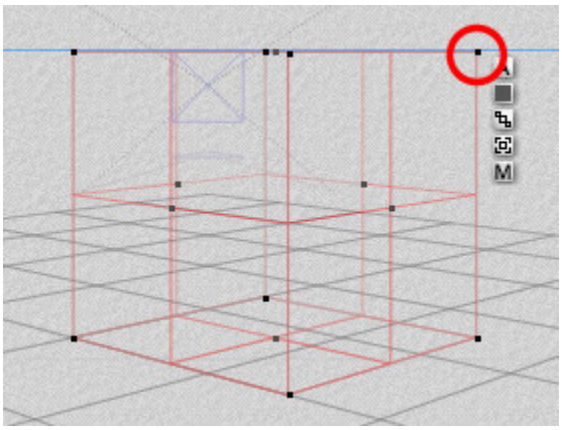
Scale from Corner

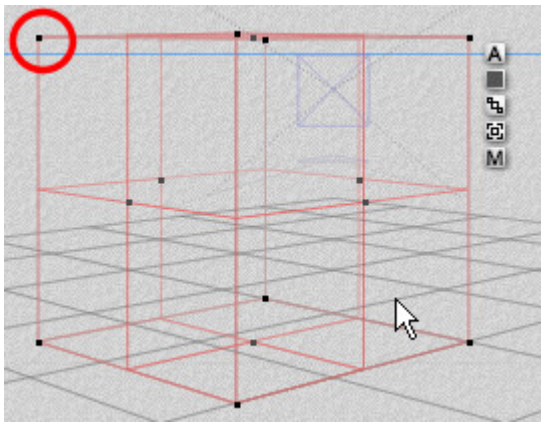
To enlarge or shrink an object interactively:

1. Select an object.
2. Drag one of the control points on the corners of the bounding box. Drag right to enlarge or left to shrink the object.



The object will resize in the direction of the selected corner (circled in images below):



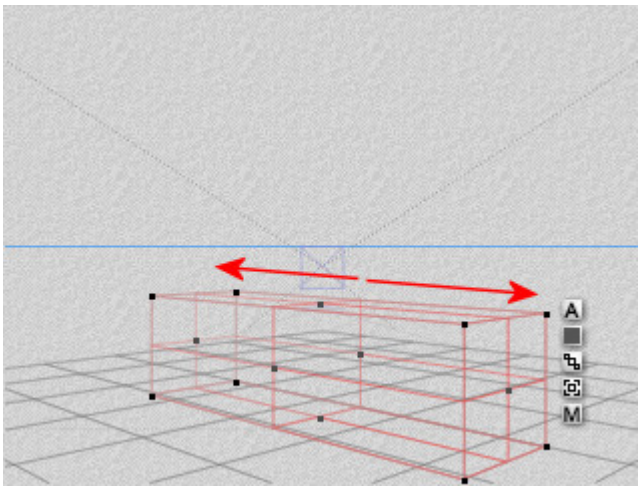


Scale from Center

To resize an object from the opposite side:

1. Select an object.
2. Click one of the control points on a face and hold down the mouse button, then ...
3. Press Opt/Alt and drag on one of the control points on a face.
4. Drag right to enlarge it or left to shrink the object. The object resizes in both directions from the bottom center of the object on the selected axis.
5. Select the X control point nearest the Director's View, press Opt/Alt and drag right. Notice how it resizes from on the X-axis in both directions. The arrows show the direction it scales towards.

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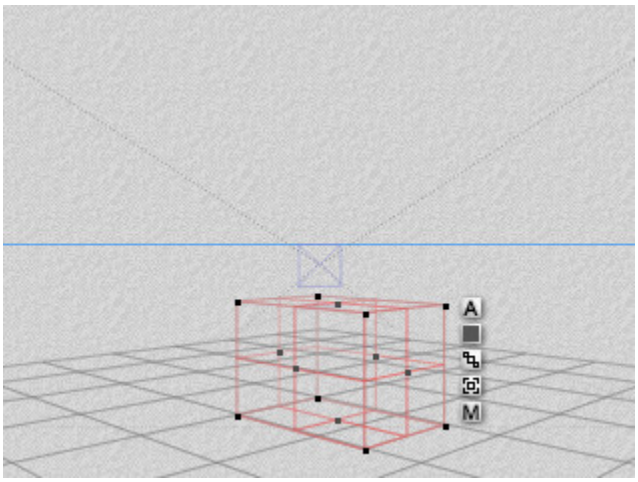
Scale by 50% from Specific Side

To increase the size of an object by 50%:

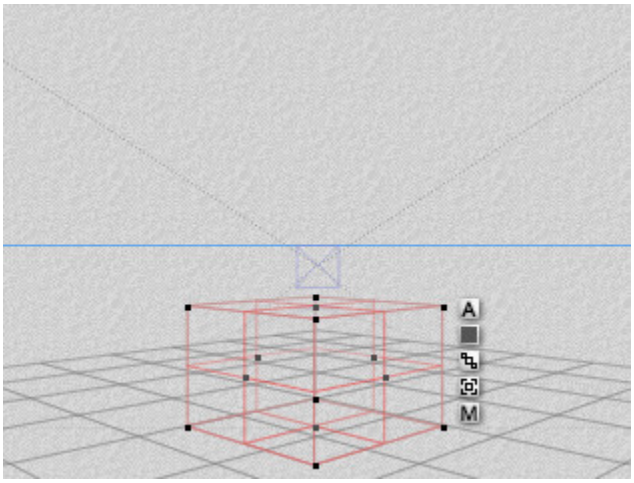
1. Select an object.
2. Press Shift then select any control point and drag right on the control point once for each increase.

   The object will increase by 50% in the direction of the selected control point.

   The image below shows a cube increased to the right on the X-axis by 50%.

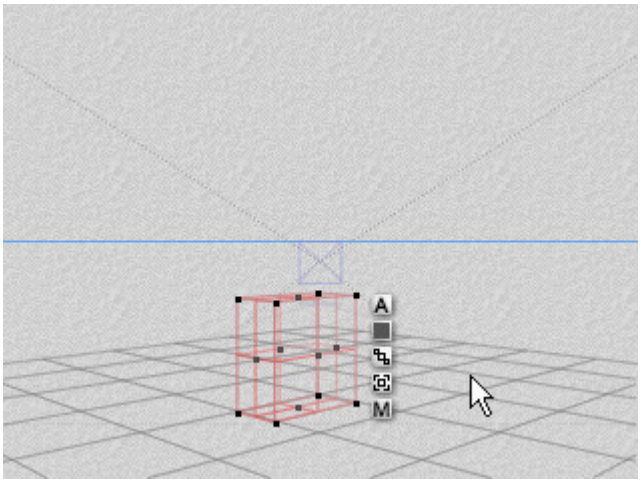


Then increased towards the front on the Z-axis by 50%:



To decrease the size of an object by 50%:

1. Select an object.
2. Press Shift then select any control point and drag left on the control point once for each decrease.



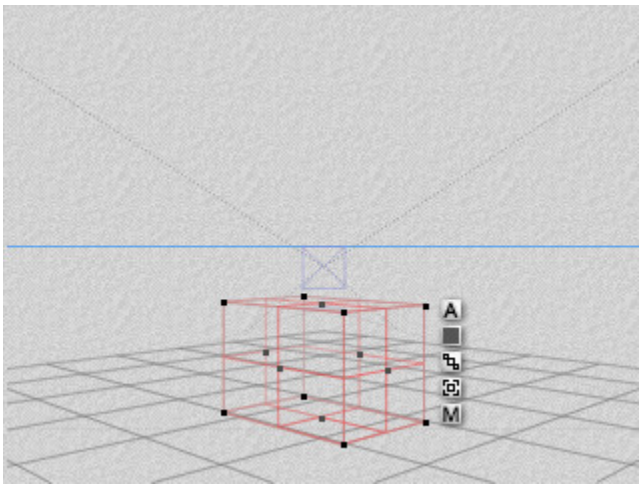
Scale by 50% from Center

To increase the size of an object by 50% from the center:

1. Select an object.
2. Press Shift+Opt/Alt then select any control point and drag right on the control point once for each increase.

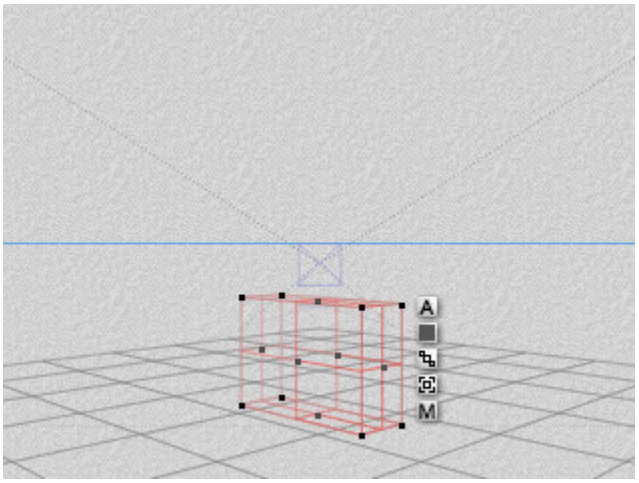
   The object will increase by 50% in both directions for the selected control point. The image below shows a cube increased on both sides of the X-axis by 50%:

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To decrease the size of an object by 50% from the center:

1. Select an object.
2. Press Shift+Opt/Alt then select any control point and drag left on the control point once for each decrease. The object will decrease by 50% in both directions for the selected control point.



Reset Object to Unity Size/Rotation

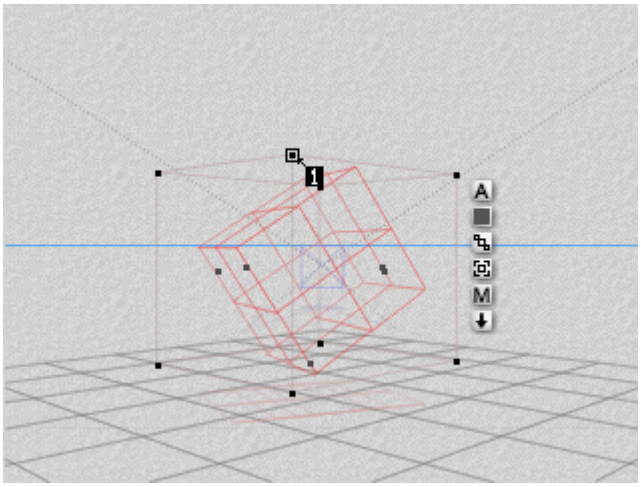
Every object in Bryce has a default size and shape. When you create an object, the default size is used to define its size and placement. As you transform and edit objects, these default properties are discarded and replaced. However, you can return an object to its original state for size and rotation at any time.

The Restore control returns the object to its default size and orientation, also called Unity, regardless of the number of resize and rotate transformations you've applied to it.

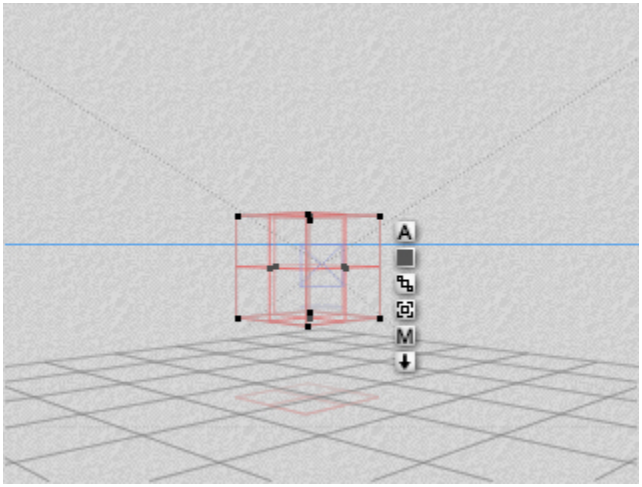
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To reset an object to unity size and rotation:

1. Select object.
2. Press Ctrl+Alt and move the mouse cursor over a control point. The cursor will change to a "1" cursor.



3. While still holding down Ctrl+Alt, left-click on the control point. The object will be reset back to its default size and rotation, but not reset to the original location.



Skewing Objects

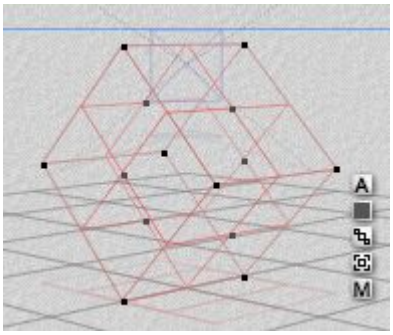
While Bryce does not have the ability to deform objects by manipulating vertices, objects can be skewed to get some interesting shapes, like making a diamond shape out of a cube.

This is accomplished by rotating the object, then resizing the object in World Object mode using the Scaling tool.

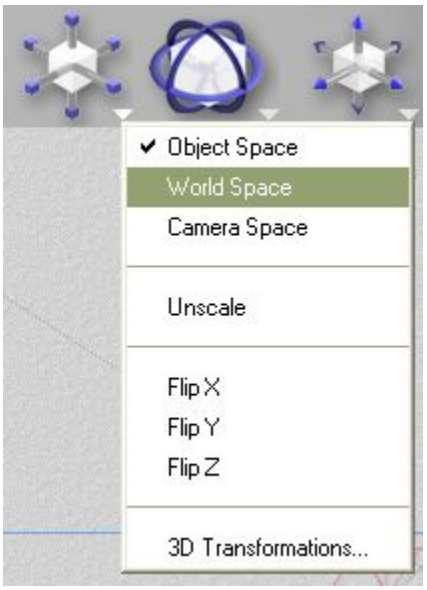
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For an example:

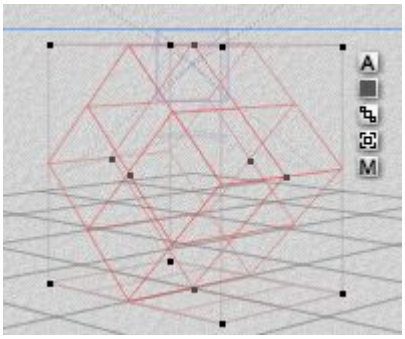
1. Create a cube, rotate it 45 degrees on the Z-axis, and drop it to ground.



2. Select World Space from the Scaling or Resizing tool sub-menu.

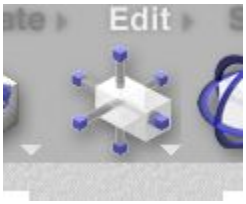


3. The bounding box changes to align with World Space.

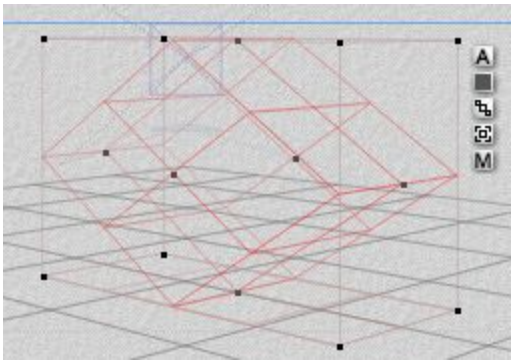


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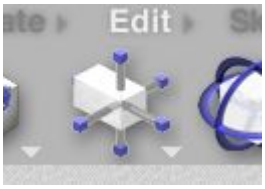
4. Scale along the X or Z-axis.



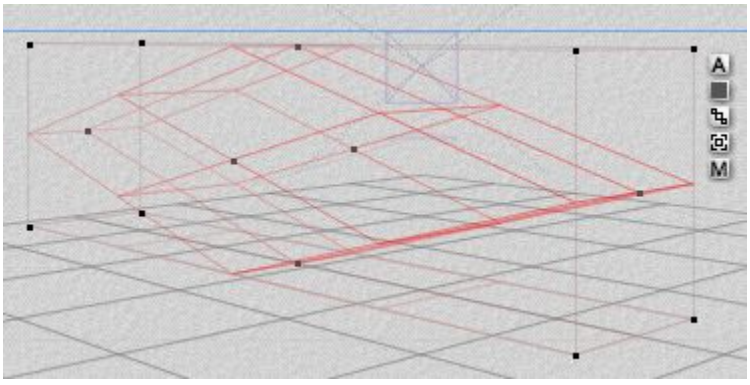
The cube skews along that axis.



5. Now scale the other way.

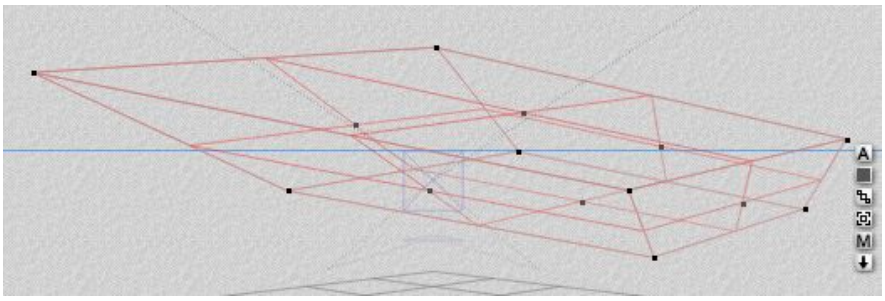


6. And it skews in the opposite direction.



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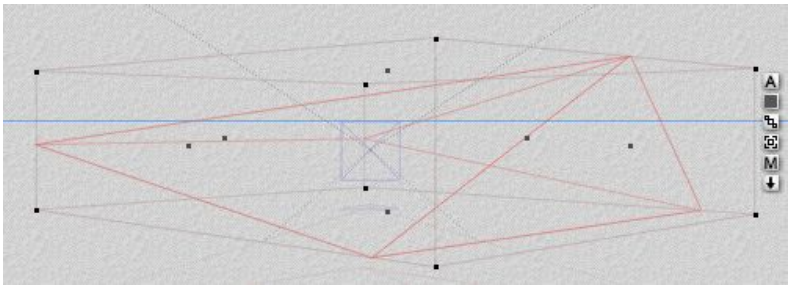
7. Continue rotating the object and scaling along different axes just to see what happens.



And here's the object above rendered.

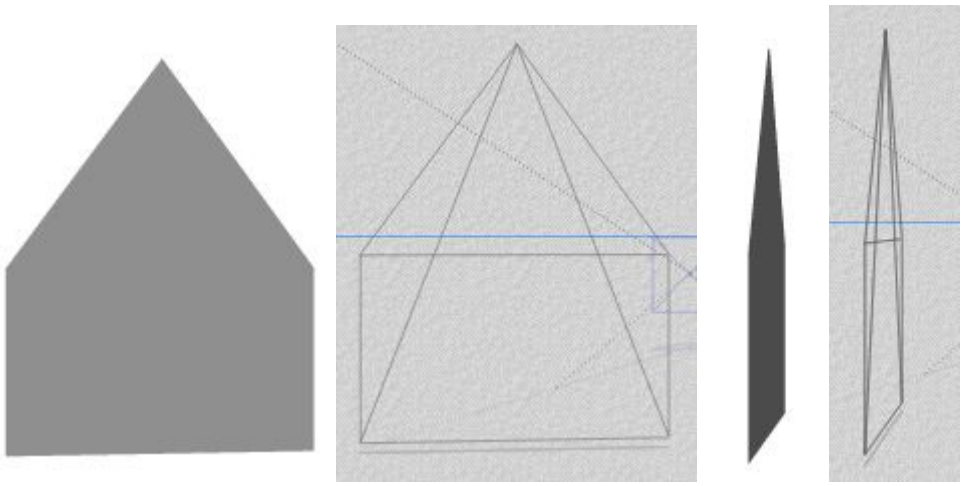


Now for a pyramid:

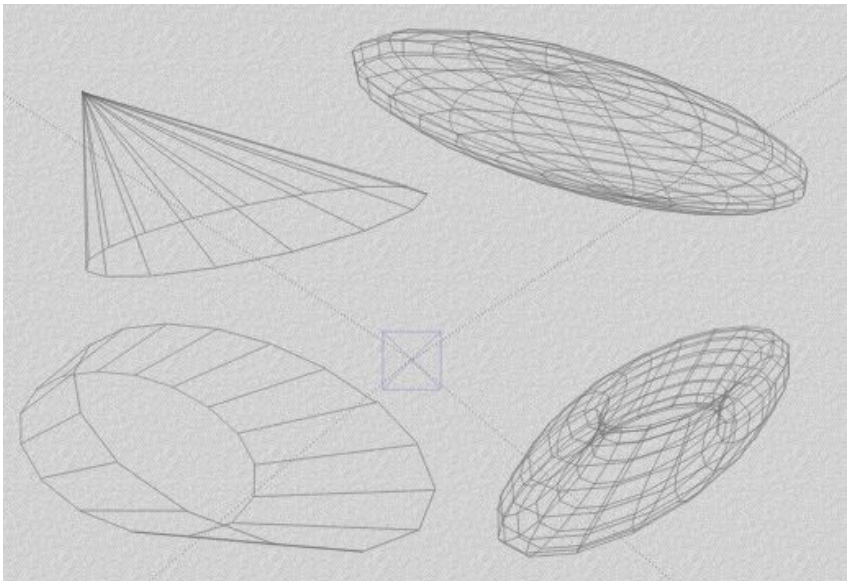


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This is a pyramid skewed so much that it is literally folded in on itself: And when rotated, is completely flat:

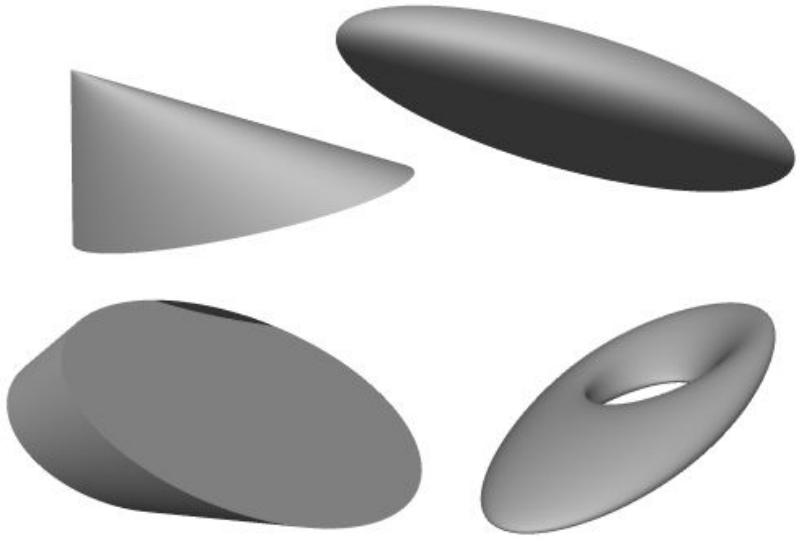


Any object can be skewed, including imported objects, metaballs, and infinite planes. Below are examples of a skewed cone, sphere, cylinder, and torus:



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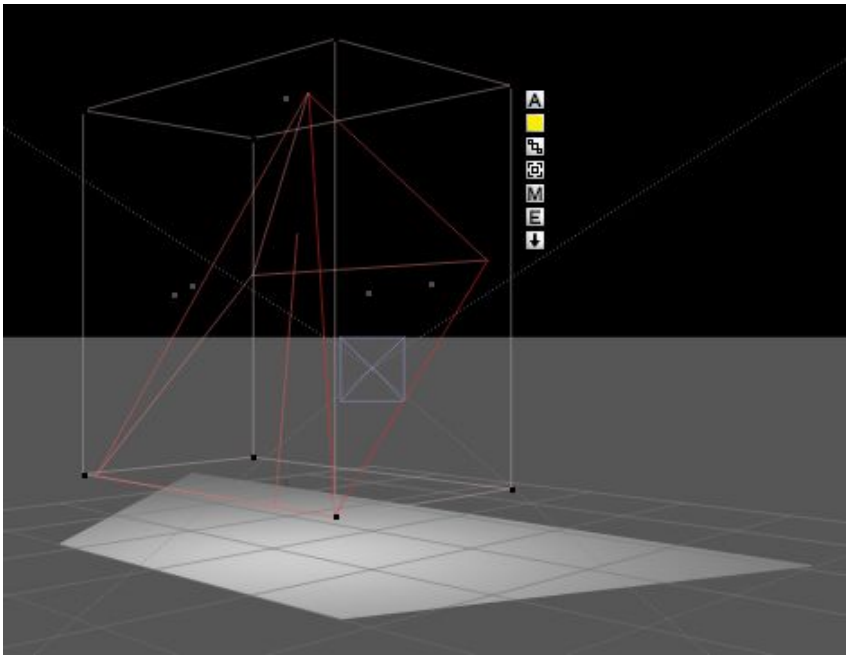
And here they are rendered:



And of course, you can still adjust the radius of the torus to get a thinner object:



And lights can cast some interesting shapes when skewed:



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Rotating Objects

The Rotate tool is available on the Create Palette and is usually the easiest way to rotate objects.

Refer to "Rotate Tool" for more on using this tool.

Rotate Numerically

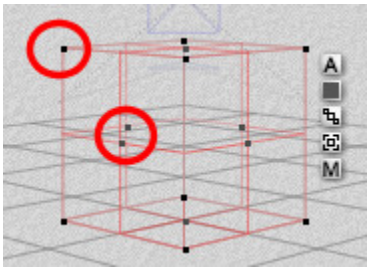
Objects are rotating numerically using the Object Attributes dialog.

Refer to "Editing Transformation Attributes" for more information on rotating objects this way.

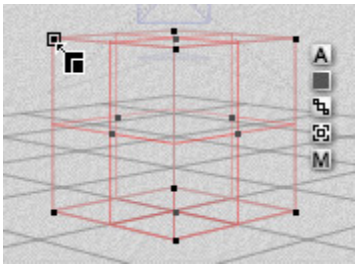
Rotate Interactively

While you can rotate objects using the Rotate tool or the 3D Transformation dialog, there are rotate controls on the object's bounding box that let you rotate objects directly in the Working window. You may find this a much more intuitive way of transforming your objects.

When you select an object, a bounding box appears surrounding your selection. At each corner of the box, and at the center of each face, is a control point.

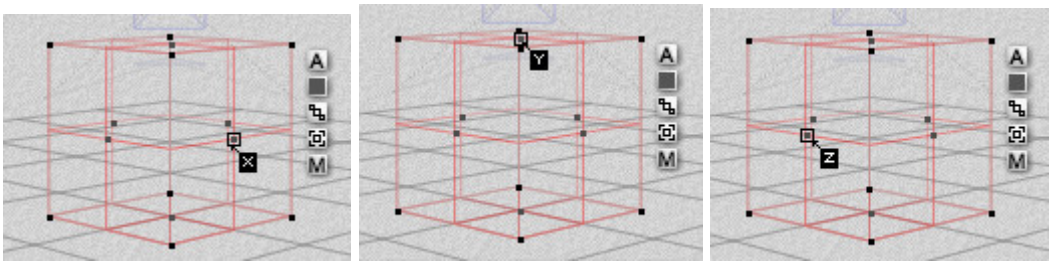


As your cursor passes over the corner control points, it changes to a generic Resize cursor.

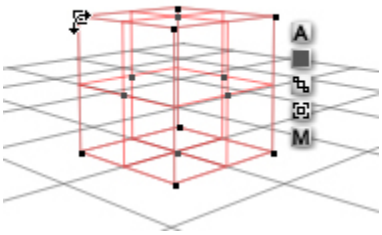


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As it passes over the control points on the faces, it changes to an X, Y, or Z. This indicates the axis along which you can transform the object by clicking and dragging on that point.



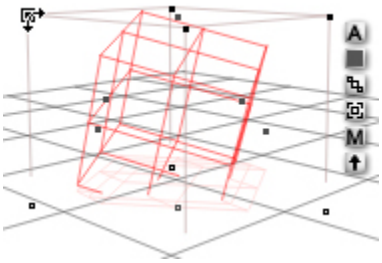
Press the Cmd/Ctrl key and click on one of the control points. The cursor changes to an double arrow arc. Do not click on the control point before pressing the Cmd/Ctrl key or you will resize the object instead of rotating it.



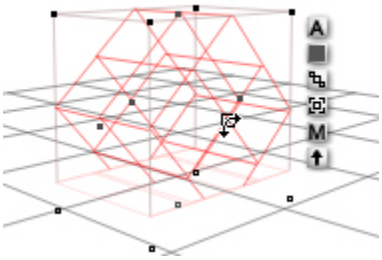
Click on the control point you want to rotate the object around and drag the mouse left and right to rotate the object.

Examples:

- Rotate on any corner:

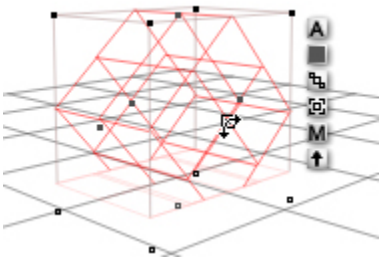


- Rotate on X-axis:

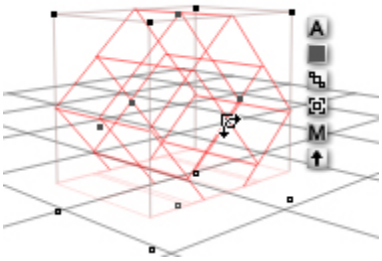


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- Rotate on Y-axis:



- Rotate on Z-axis:



Repositioning Objects

When you create a new object it can be placed in your scene either at absolute world center or at an arbitrary location based on your current view. Object placement is determined by your preference setting. The Reposition tool is located in the Create Palette and is usually the easiest way to reposition objects, however, there are other ways to move objects around the scene.

Nudging Objects

Nudging lets you move objects by pressing the arrow keys and the PageUp and PageDown keys.

Nudging uses World Space coordinates to reposition objects. Each time you press a key, the object is moved in 1/4 unity size increments (5.12 Bryce units). Refer to "Bryce Units" for more on Unity.

To nudge an object along the X axis:

1. Select one or more objects.
2. Press either the Right or Left arrow keys. Hold down Shift to nudge objects in 1/2 unity size increments (10.24 Bryce units) Hold down Option/Alt to nudge objects in 1/256 unity size increments (0.08 Bryce units).

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To nudge an object along the Y axis:

1. Select one or more objects.
2. Press either the PageUp or PageDown keys. Hold down Shift to nudge objects in 1/2 unity size increments (10.24 Bryce units) Hold down Option/Alt to nudge objects in 1/256 unity size increments (0.08 Bryce units).

To nudge an object along the axis:

1. Select one or more objects.
2. Press either the Up or Down keys. Hold down Shift to nudge objects in 1/2 unity size increments (10.24 Bryce units) Hold down Option/Alt to nudge objects in 1/256 unity size increments (0.08 Bryce units).

Reposition Interactively

The simplest way of positioning objects is by dragging them to different locations in your scene. When you drag an object, you're repositioning it with respect to the camera.

To reposition an object interactively, select the object or group and do one of the following:

- Drag the object to a new location.
- Hold down X while dragging to constrain movement to the X-axis.
- Hold down Y while dragging to constrain movement to the Y-axis.
- Hold down while dragging to constrain movement to the Z-axis.

Grouping Objects

As your scene becomes more complex, you'll need to group objects. Grouping lets you control a set of objects as a single unit. When you perform a transformation on a group, all the objects are equally affected. If you scale a group, all the objects change size, or if you rotate a group, all the objects rotate around a single axis.

Your choice of objects to place in a group depends on how you want to organize your scene. You may want to group the objects that comprise more complex objects, like the walls and turrets of a castle. You can group objects to keep all the components of a complex object like this train engine together. You can also create groups to maintain the spatial relationships between objects as you transform them.

You can also create a group to maintain the spatial relationships between objects as you transform them, like the boards in this fence. You can place as many objects as you like in your group. You can even nest groups within groups. Nesting can be an easy way of managing more complex scenes.

Groups are essential to creating Boolean objects. Boolean operations will not work unless the objects are part of a group. Refer to "Boolean Operations" for more on Boolean objects.

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You cannot create a group using a child object. If a child object is part of your selection the “G” icon will not appear.

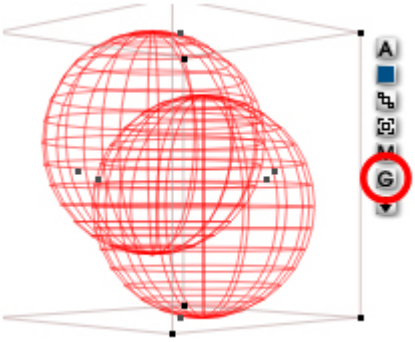
To create a new group:

1 Select all the objects you want to group.

2 Choose Objects >Group Objects, or press Cmd/Ctrl+G.

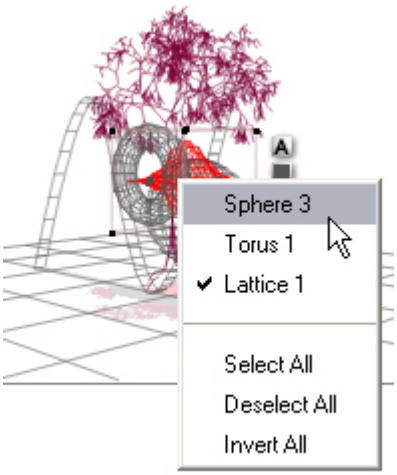
You can also click the G button next to the selected objects’ bounding box.

1. Select all the objects you want grouped.
2. Click the G icon that appears next to the object's bounding box. You can also choose Objects > Group Objects or press Cmd/Ctrl+G. A group bounding box appears around all the objects.



To select objects within a group:

1. Hold down Control/Ctrl and click on an object inside the group bounding box.
2. Select the object you want from the menu.



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Creating Boolean Objects

A Boolean object is an object created by combining two or more objects to form a single object. Boolean objects are created by performing Boolean operations on a number of objects. You can perform three types of Boolean operations in Bryce: union, subtraction, and intersection.

Bryce uses Object properties to perform Boolean operations. Objects can be Neutral, Positive, Negative, or Intersecting. When you combine these objects in a group, the result is a Boolean object.

Boolean operations do not have any effect on Neutral objects. When you group a neutral object with a Boolean object, no Boolean operation is performed. Objects are neutral by default. This image shows the result of a Positive and Negative Boolean operation (top) and a Positive and Neutral operation (bottom). The original object placement appears on the left.

If you are importing objects from Bryce 2, you may want to change some positive objects to neutral for faster rendering.

Boolean Operations

There are three Boolean operations used in Bryce:

- Boolean Union is performed by grouping two positive objects. The area that is common to both objects is removed, creating a continuous object. For example, when you group two positive spheres, you get a kind of peanut shaped object which is the union of the two objects.
- Boolean Subtraction is performed by grouping a negative object with a positive object. The area that is common to both objects is subtracted from the positive object, resulting in a positive object with negative space. For example, when you group a positive sphere with a negative one, the resulting object looks like a sphere with a crater.
- Boolean Intersection is performed by combining an Intersecting object with a Positive object. The area that is common to both objects becomes the only visible portion of the group.

Negative or Intersecting objects must share space with at least one Positive object in the group to exhibit a Boolean operation. If there is no common space, Negative objects are invisible when rendered.

A group that contains an Intersecting object that does not intersect with any other object in the group becomes entirely invisible; this is because the Intersecting object is intersecting with nothing.

You can build very complex objects by compounding Booleans. Suppose you wanted to create a flute. You would first create the hollow tube by combining a positive cylinder

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with a negative cylinder, then create several negative spheres and group those with the tube, creating a simple flute.

By compounding more Boolean operations on top of this simple flute, you could create even more complex objects.

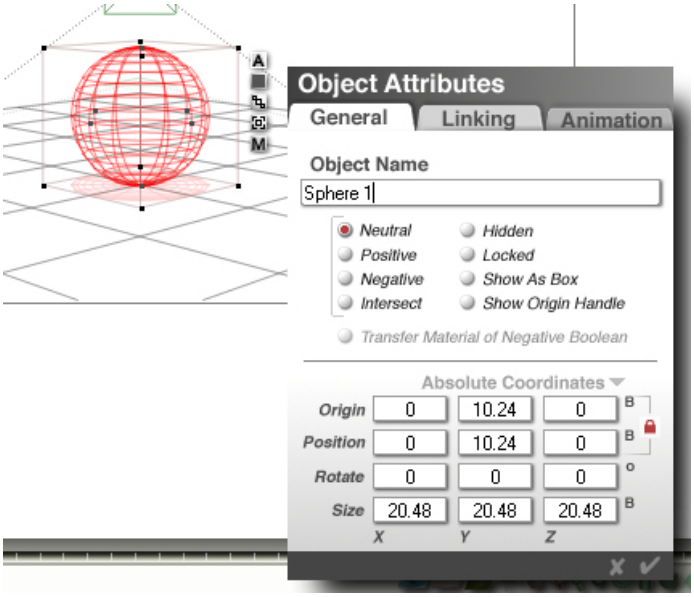
Since Bryce performs Boolean operations using object attributes, you can adjust the shape of a Boolean object by repositioning the objects in the group. You can edit objects within groups using the Solo mode in the Selection palette.

The final Boolean object appears only in the rendered image or in the Nano-Preview. You won't be able to see the Boolean object in the Wireframe preview.

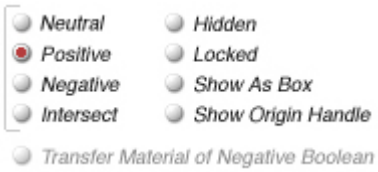
Boolean Union

To create an object that is a union of two objects:

1. Select an object.
2. Click the A button next to the object's bounding box, or press Cmd/Ctrl+Opt/Alt+E, or choose Objects menu> Edit Attributes. The Object Attributes dialog appears.

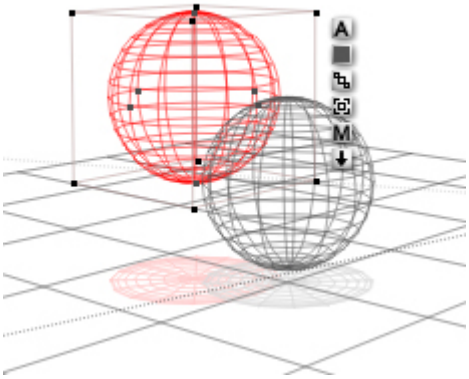


3. Enable the Intersecting checkbox.

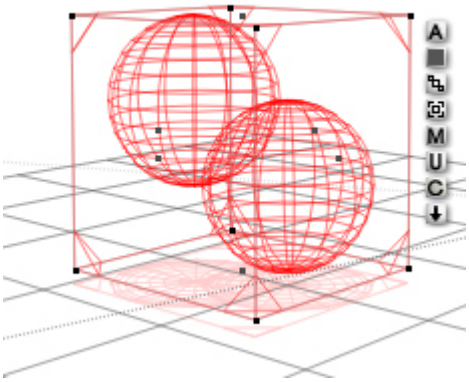


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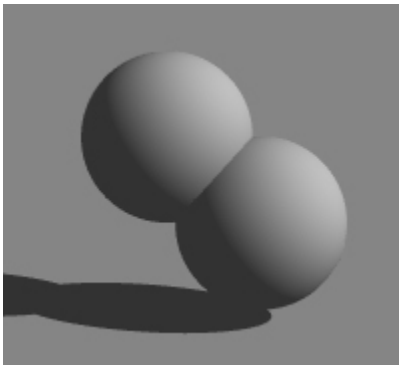
4. Move the object so that it intersects another object.



5. Make sure that the second object's Boolean attribute is set to Positive.
6. Select both objects and click the G icon next to the selection's bounding box to group them.



7. When your scene is rendered, the area common to the two objects is removed, creating a continuous object.



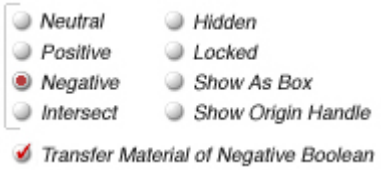
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For many objects you build with no negative or intersect operations, setting the objects to positive isn't necessary, however, if you plan on grouping the Boolean Union group with other groups that contain Boolean operations, then all objects in the groups (and the groups) must be set to positive, negative, or intersect.

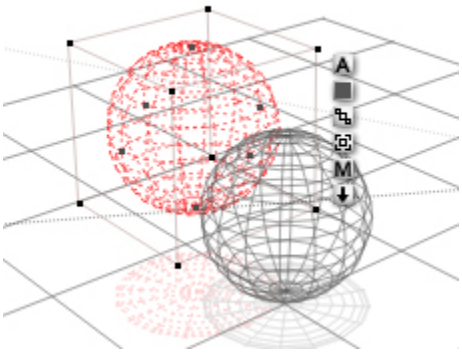
Boolean Subtraction

To subtract one object from another:

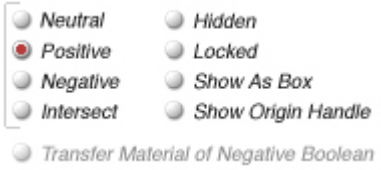
1. Select an object.
2. Click the A icon next to the object's bounding box, or press Cmd/Ctrl+Opt/Alt+E, or choose Objects menu> Edit Attributes. The Object Attributes dialog appears.
3. Enable the Negative checkbox.



4. Move the negative object so that it intersects another object.

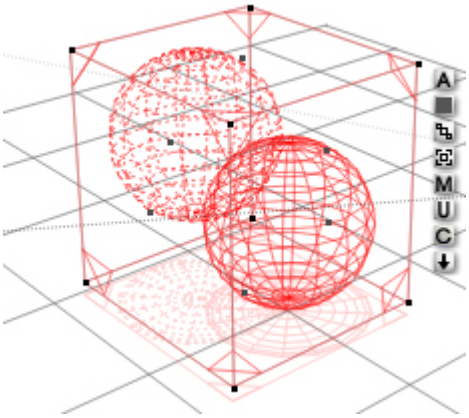


5. Make sure that the second object's Boolean attribute is set to Positive.

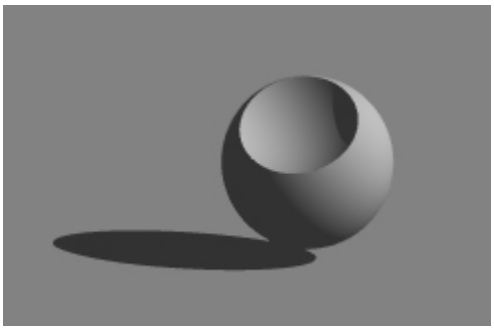


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6. Select both objects and click the G icon next to the selection's bounding box to group them.



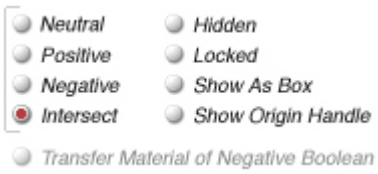
When your scene is rendered, the area where the two objects intersect is removed from the positive object.



Boolean Intersection

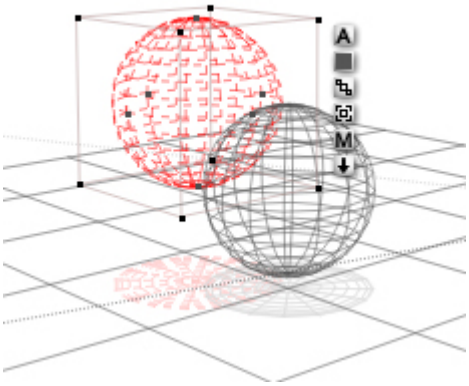
To create an object that is the intersection of two objects:

1. Select an object.
2. Click the A button next to the object's bounding box, or press Cmd/Ctrl+Opt/Alt+E, or choose Objects menu> Edit Attributes. The Object Attributes dialog appears.
3. Enable the Intersecting checkbox.

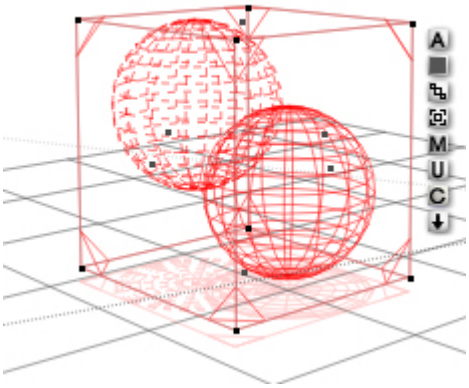


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4. Move the intersecting object so that it intersects another object.



5. Make sure that the second object's Boolean attribute is set to Positive.
6. Select both objects and click the G icon next to the selection's bounding box to group them.



7. When your scene is rendered, the area where the two objects intersect becomes the only visible portion of the group.



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Bryce and 3D Space

Since all the objects in your scene exist in 3D space (defined by XYZ), any transformation you perform is a 3D transformation. This means that you're changing the attributes of the object in each axis.

Bryce has three ways of defining 3D space:

- World Space, which is constant
- Object Space, which changes as the object changes
- Camera Space, which changes as the camera changes

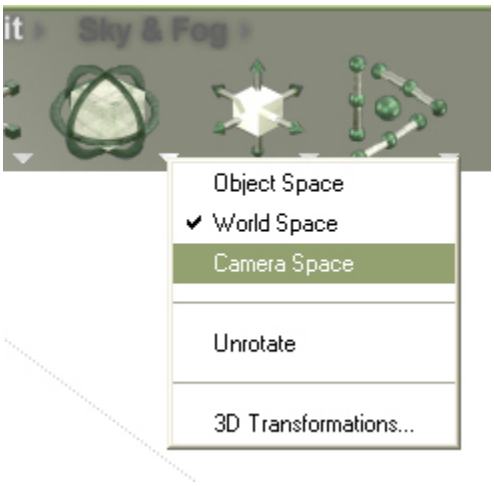
When you're using the interactive transform tools on the Edit palette you can use any one of the 3D space definitions.

To choose a 3D spatial option for transformations:

1. Click the Edit button at the top of the Bryce window to display the Edit palette.

2. Click the triangle icon below one of the transformation tools and choose a 3D spatial option from the menu.



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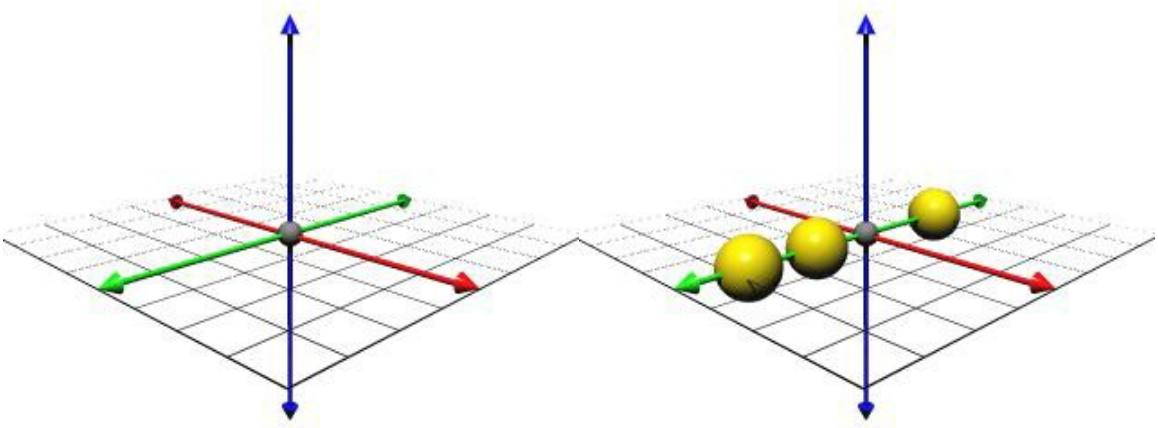
World Space

World Space is the coordinate system that defines all the space in the Bryce universe. It is constant and cannot be modified. It is also the default space used for transformations.

World Space is defined by three axes, X, Y, and Z, that all meet at world center. This center is defined numerically as 0, 0, and 0 for the X, Y, and Z-axes. By default, all new objects appear at world center.

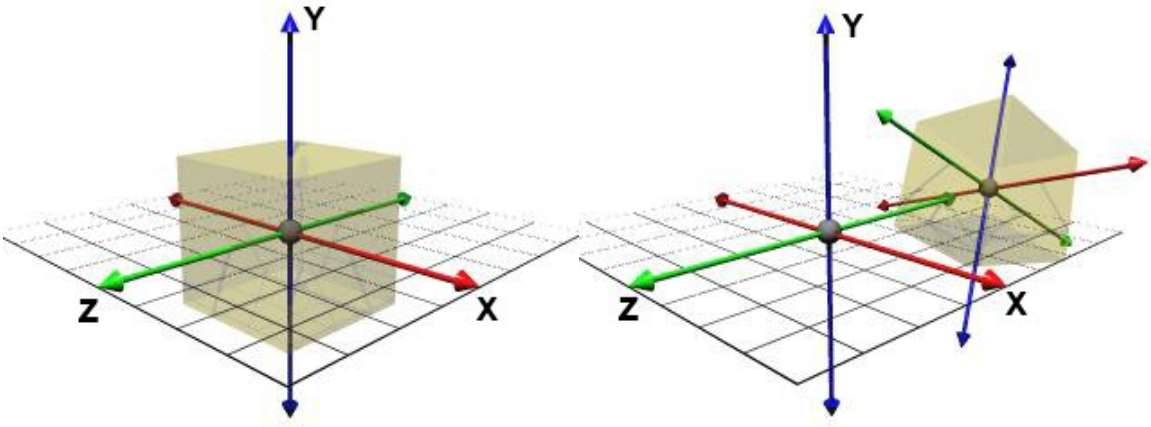
The Y-axis that extends from world center defines all vertical space. Positive values represent distances above ground level and negative values represent distances below ground. The X-axis represents distances left and right and the Z-axis represents distances backward and forward.

When you use World Space for transformations, objects move in relation to this absolute coordinate system.



Object Space

When Bryce creates an object, it defines the up, down, right, left, back, and front of the object. These definitions remain with the object no matter what transformations you apply to it. So in a sense, each object carries with it its own coordinate system.



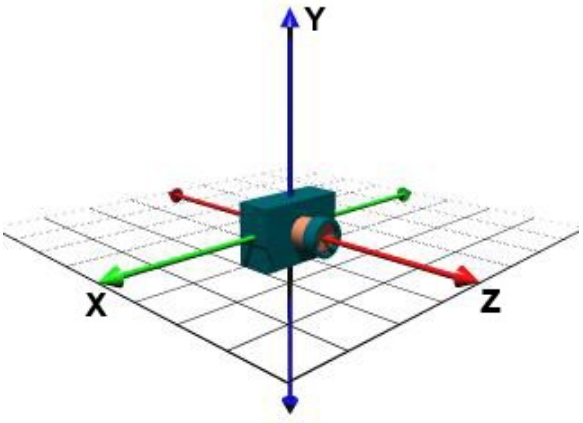
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When you transform an object using Object Space, the object moves in relation to its internal coordinate system. For example, you can increase the height of an object based on its own Y axis.

Because Object Space ignores the absolute coordinates, the object becomes taller without being skewed. If you used World Space, the object would become deformed since it increases along the absolute Y axis.

Camera Space

Camera Space is defined by three axes, X, Y, and Z, that extend from the camera center. Wherever you move the camera, these axes move along with it.



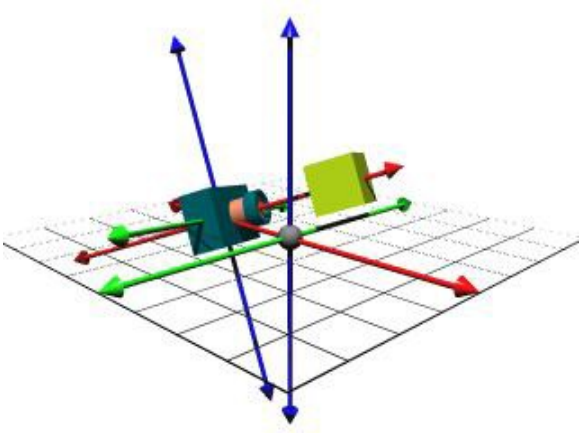
When you use Camera Space for transformations, you're moving objects in relation to the camera. When you drag along the X-axis in Camera Space, you're moving left or right from the camera.

When you move along the Y-axis in Camera Space, you're moving up or down from the camera. When you move along the axis, you're moving away or towards the camera. Since the camera can be rotated and repositioned, it can sometimes be hard to tell which way is up, left, or right, because your view from the camera is no longer aligned to the absolute XYZ-axes.

Suppose you've rotated the camera and then you move an object along the Y-axis in World Space. Instead of moving up, it may appear to move off to the left, since your view of the scene is not aligned to the World Space Y-axis.

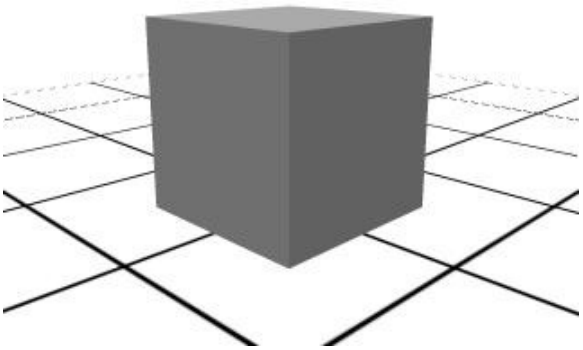
However, in Camera Space, the object will move up, because the object moves along the camera's Y-axis.

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Bryce Units

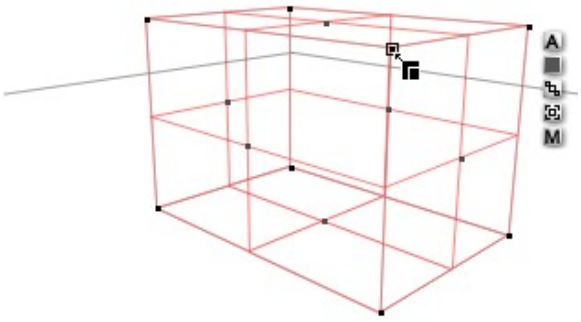
Bryce maintains an invisible, absolute, infinite 3D grid internally. This grid is comprised of 3D cube increments, each of which is 20.48 x 20.48 x 20.48 "Bryce Units" (or BUs) in size. Most of the primitive objects (spheres, cubes, etc.) are created at the same size as a 3D cube.



All interactive 3D transformations are relative to an absolute (Unity) size, position, and orientation for all objects.

To reset primitive objects to Unity, hold down Ctrl+Opt/Alt and click one of the object's control points. The object is reset to it's default size and rotation.

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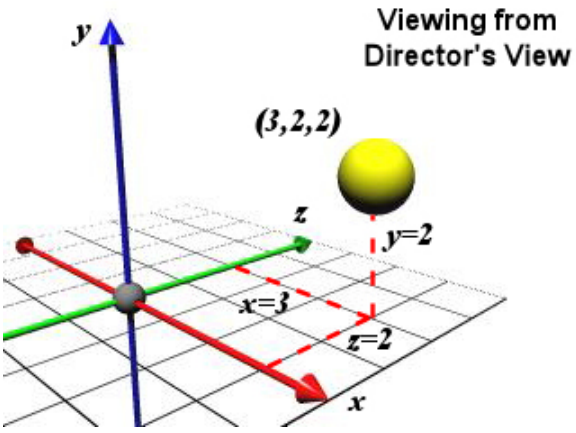
Coordinate Systems

When you're transforming objects numerically in the Object Attributes dialog, you can use one of two coordinate systems:

- Absolute Coordinates
- Definition Coordinates

Absolute Coordinates

Absolute Coordinates use the World Space axes as the reference for object transformations. When you enter transformation values using Absolute Coordinates, you're defining how the object is transformed along the World Space, or absolute, X, Y, and Z-axes.



Definition Coordinates

Definition (Object Space) Coordinates define how an object is actually created. In object space, the origin of the object is located at X=0, Y=0, Z=0. All the other points in the object are defined by coordinates along the object's internal X, Y, and Z-axes.

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This coordinate system uses the object's internal axes as a reference for transformations. When you enter transformation values using this system, you change how the object is defined to include the position of its origin, its size, and orientation. In Definition transformations, the origin point of the object always remains at Object Space 0, 0, 0. As you move or scale the object, it changes, moves or grows along its internal axes, but the origin remains at 0, 0, 0. This can cause some unpredictable results. For example, if you scale an object using Definition Coordinates, the origin point will no longer be in the exact center of the object. When you rotate the object, it won't rotate around its center.

Transforming using Definition Coordinates is not the same as using Object Space with one of the Transformation tools. When you choose Object Space for one of the transformation tools, transformations are performed using Object Space axes as a reference, but the final position, or size, is calculated using Absolute Coordinates. So in this case the object origin and all its points move along with the object.

When you use Definition Coordinates to transform an object, you're redefining how the object is created, so its origin does not change as the size and position change.

Relative Coordinates

Relative Coordinates use the World Space axes as reference for object transformations, but the values represent changes relative to the object's current position or size. For example, if you enter a position change of 2 units, the object moves two units from its current position along one of the World Space axes

Relative Coordinates is the only coordinate system available in the 3D Transformation dialog.

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Practical Application

Welcome to the Bryce tutorial. This tutorial introduces you to the major features and functions of Bryce. The main goal is to teach you the basic techniques you'll need to create landscapes and environments.

There are two separate tutorials. The basic tutorial shows you how to create a terrain, customize the sky, and create a body of water. "Creating a vaulted roof" teaches you how to create a more complex environment and an animation.

Each section of the tutorials is self-contained, so you can start from any point. All the files necessary for completing the lessons are provided for you in the "Tutorials/Manual Tutorial" folder. While the preset libraries shown in the tutorials are the ones from Bryce 6, any version of Bryce can be used to follow these tutorials although the presets will be in different categories (i.e., in Water, not in Waters > Turbulent, in Terrains, not in Terrains > Rocky, etc.)

Note: While following the tutorial lessons, objects (especially terrains, rocks, and trees) will look noticeably different than what you see in your Bryce scene. This is because these objects are created with random settings each time. Another item that will look different are the libraries for materials, objects, textures, and skies, since you may not have the same items installed although the default installed categories will be the same for everyone using Bryce 6.

- Lesson 1: Creating a New Document
- Lesson 2: Positioning the Camera
- Arranging Objects in the Scene
    - Lesson 3: Adding & Adjusting the Terrain
    - Lesson 4: Applying a Texture
    - Lesson 5: Adding a Sky Preset
    - Lesson 6: Adjusting the Sky
- Creating a Body of Water
    - Lesson 7: Preparing the Landscape
    - Lesson 8: Creating the Interior of the Lake
    - Lesson 9: Filling the Lake
- Creating a Vaulted Roof
    - Lesson 10: Creating a Pyramid
    - Lesson 11: Converting the Pyramid
    - Lesson 12: Resize the Pyramid
    - Lesson 13: Use the Sphere to Carve out the Roof

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    - Lesson 14: Creating a Group
- Building the Walls
    - Lesson 15: Moving the Roof
    - Lesson 16: Creating the Walls
    - Lesson 17: Adjusting the Wall Size
    - Lesson 18: Duplicate the Walls
    - Lesson 19: Make the Walls Taller
    - Lesson 20: Adding a Doorway
    - Lesson 21: Assigning Boolean Properties
- Group and Grow the Entire Building
    - Lesson 22: Grouping the Building
    - Lesson 23: Change Your Viewpoint of the Scene
- Sphere on a Pedestal
    - Lesson 24: Merging an Existing Scene
    - Lesson 25: Adjusting Lighting
- Pre-Production
    - Lesson 26: Pre-Visualizing & Timeline for the Sequence
    - Lesson 27: Setting up the Timeline for the Sequence
- Animate the Camera
    - Lesson 28: Setting the Camera Trajectory
    - Lesson 29: Pointing the Camera
    - Lesson 30: Making Camera Adjustment
    - Lesson 31: Smoothing the Camera's Trajectory
    - Lesson 32: Test Render
- Fine Tuning Your Animation
    - Lesson 33: Converting the Trajectory to a Path
    - Lesson 34: Creating Keyframes from the Beginning & End of the Path
    - Lesson 35: Velocity Adjustment
    - Lesson 36: Another Test Render
- Final Comments

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Lesson 1: Creating a New Document

When you set up a new document, you define the size of your working space in pixels. The higher the resolution, the larger your working space. The resolution you choose depends on what type of scene you want to create.

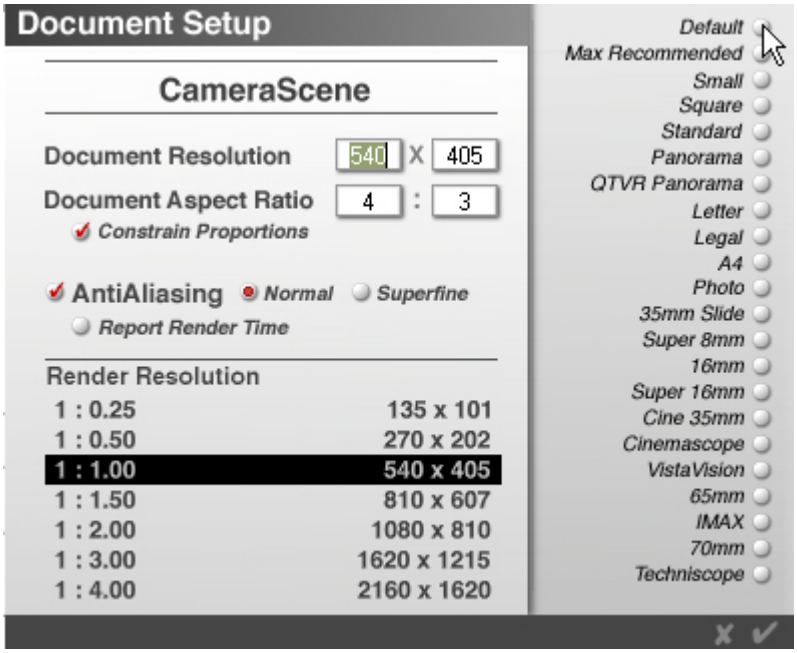
To help you choose a resolution, Bryce provides several preset aspect ratios for the most commonly used types of documents.

To set up a new document:

1. Choose **File > New Document** from the menu.

   The *Document Setup* dialog appears.

2. Click the button beside the **Default** preset in the list of presets on the right side of the dialog.



   The **Resolution** and **Aspect Ratio** fields update automatically.

3. Click the **OK** icon at the bottom of the dialog to accept your changes and exit the dialog.

Now that you have a document, you can set up the camera view and start creating a scene.

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Lesson 2: Positioning the Camera

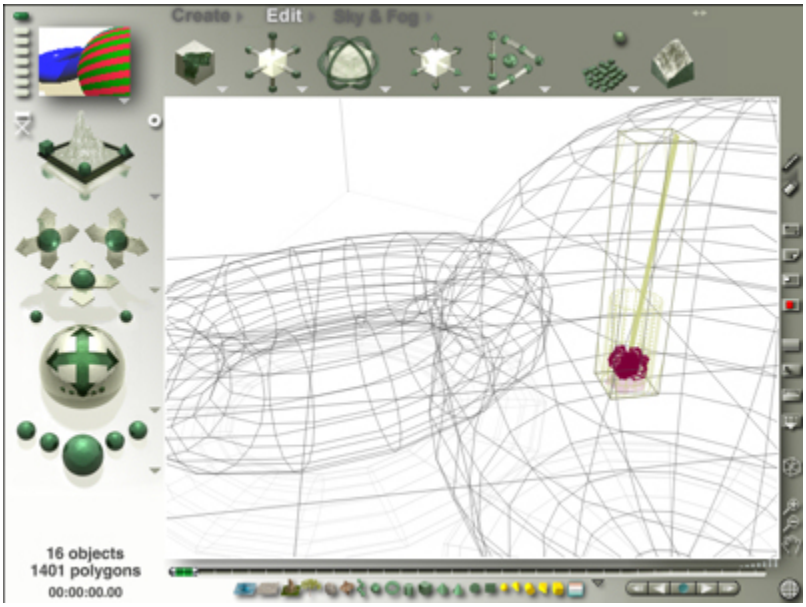
In this lesson you'll use the Director's View to view objects in the scene. In this view, you can see all the objects in the scene including the camera.

There are four controls you can use to position the camera: the **Camera axes controls**, the **Trackball**, the **Preset Views**, and the **Camera and 2D Projection dialog**. Most of these tools are located on the *Control Palette*.

When you reposition the camera, you're changing the view of the scene, not the position of the objects.

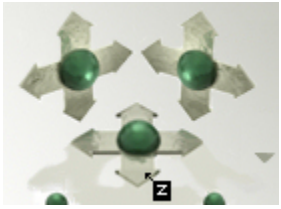
To open the camera lesson file:

1. Choose **File > Open** from the menu.
2. Locate the file "Camerascene" in the "Tutorials/Manual Tutorial" folder and click on **Open**. The scene will open showing a scene that is close to the camera.



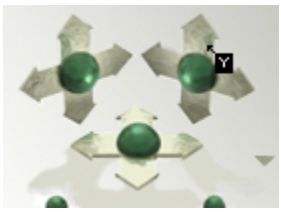
To reposition the camera using the Camera axes controls:

1. On the **XZ control**, drag the Z arrow up to move the scene away from you. When you move over the tip of an arrow in the Camera control, the cursor changes to an axis indicator.

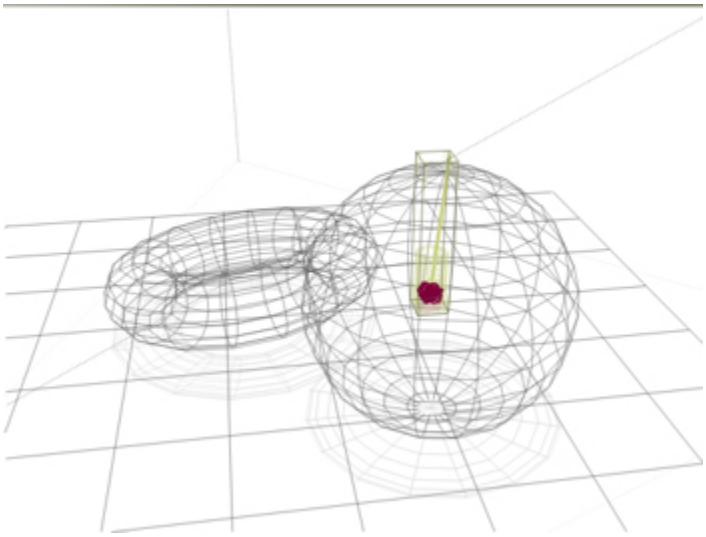


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2. On the **XY control**, drag the tip of the Y arrow up to move the scene up. Your scene should look like this when you've finished using the Camera controls.



The sphere and the torus objects should now be easier to see, but you can adjust the camera again to get a better view of the hidden cylindrical objects.

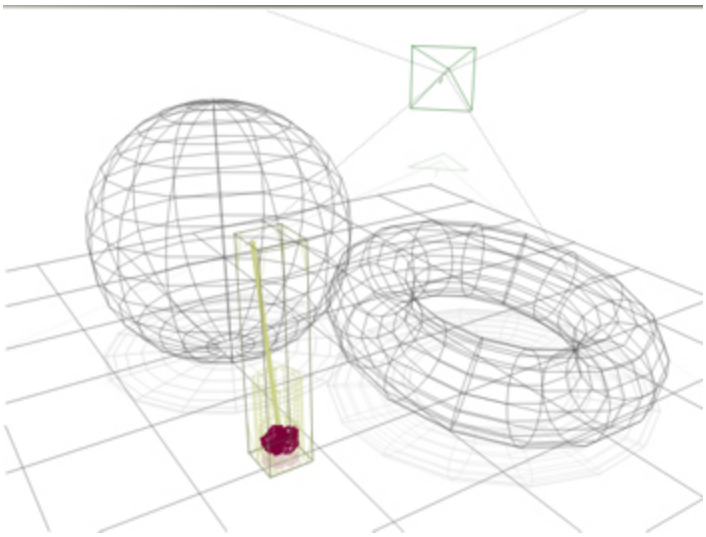


To reposition the camera using the **Trackball**, click the center of the Trackball and drag to the right. The scene appears to rotate to the left.



The camera is now in an almost perfect position to view the scene. You can also see the camera object in the background.

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You can place the camera in a precise position by moving it numerically.

To reposition the camera numerically:

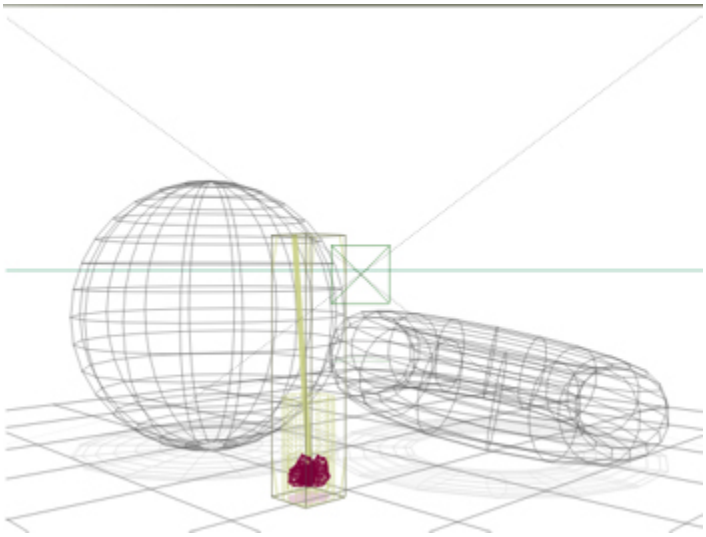
1. Double-click the **Trackball**. The *Camera & 2D Projection* dialog appears.
2. Enter Position X = 104, Position Y = 32, Position Z = -100, Rotate X = 0, Rotate Y = -46, Rotate Z = 0.



3. Leave the remaining values at their defaults.

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4. Click the **OK** icon to apply the changes to the camera.



Arranging Objects in the Scene

A 3D illustration depends heavily on the arrangement of the objects in the scene to create a specific look or feel.

In 3D space, an object can be viewed from any angle. You should take all of these angles into account when you're arranging objects.

The lessons in this section will help you learn how to add, position and transform objects to create a 3D illustration.

- Lesson 3: Adding & Adjusting the Terrain
- Lesson 4: Applying a Texture
- Lesson 5: Adding a Sky Preset
- Lesson 6: Adjusting the Sky

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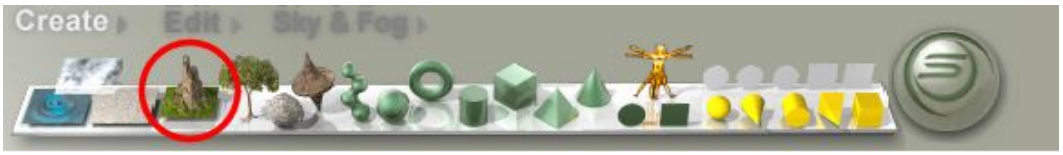
Lesson 3: Adding & Adjusting the Terrain

To create a terrain:

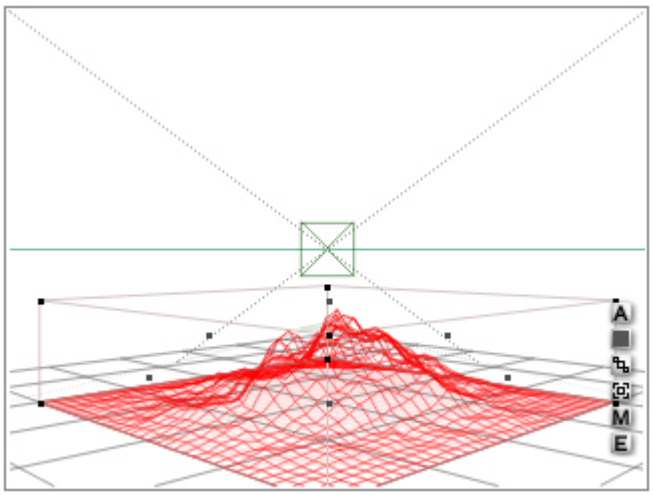
1. Click on the **Create** button to display the *Create Palette*.

2. Click the **Terrain Object**.

   The terrain appears in your scene.

To reposition the terrain, you can use the **Reposition tool** to move the terrain to the rear left of your scene. As you move the mouse pointer over the arms of the Reposition tool a small tag appears and displays the name of the axis over which you are positioned.

1. With the terrain selected (outlined in red), click **Edit** to display the *Edit Palette*.

2. Click the upper X (left) arm of the Reposition tool, and drag to the left.

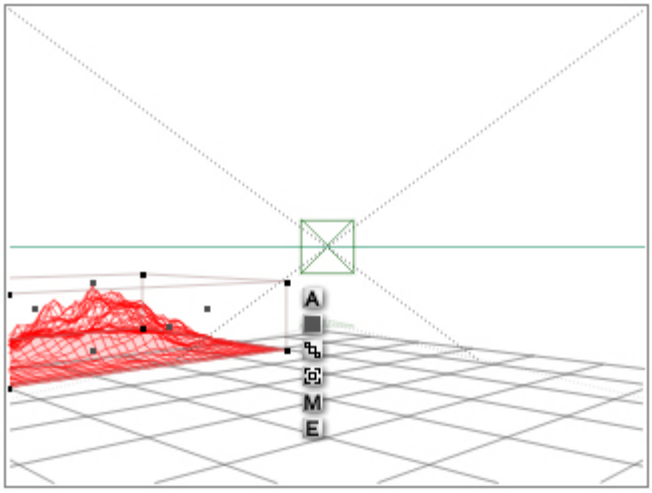
   The terrain will move along the X-axis towards the rear of your scene.

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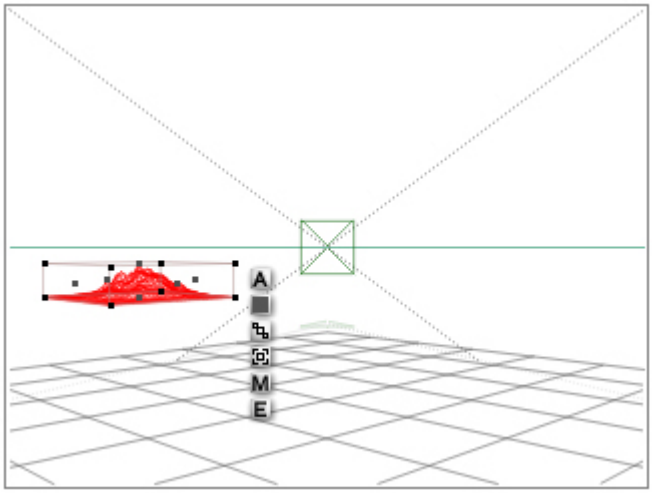
3. Click the upper Z (right) arm of the tool, and drag to the right.



The terrain will move along the Z-axis towards the middle of your scene.



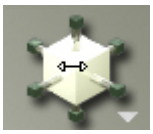
4. Repeat this process as needed until the terrain is in the position shown below.



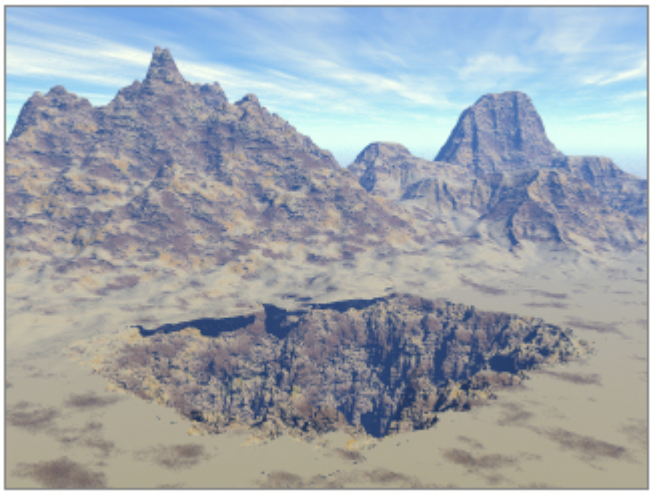
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To resize the terrain:

1. With the terrain still selected, click the center of the **Resize tool**, then drag to the right to increase the size of the terrain.



Notice that as you resize the terrain it appears to disappear below the ground plane. The ground plane is the grid in the foreground which appears by default whenever you start a new project. It is an infinite plane because it extends to infinity along the X and Z-axes. The terrain appears to disappear because it is resized evenly about its center.



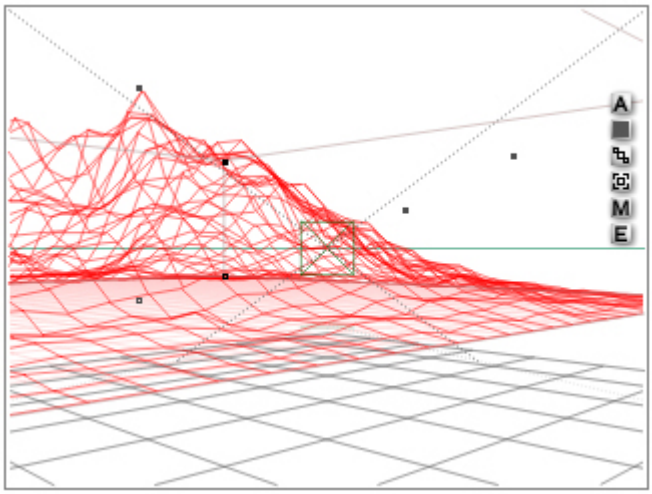
2. Click the **Land Objects button** (the arrow button located at the bottom of the vertical row of buttons to the right of the terrain).



The terrain repositions on the ground plane and the arrow button disappears.

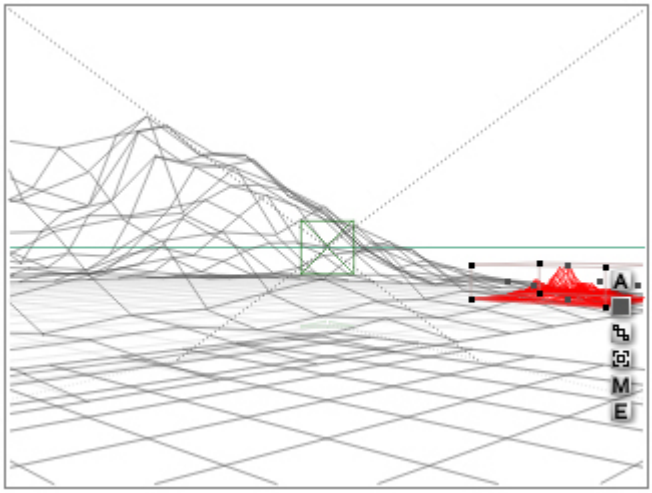
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3. Resize the terrain until it looks something like the image below.



To add and reposition a second terrain:

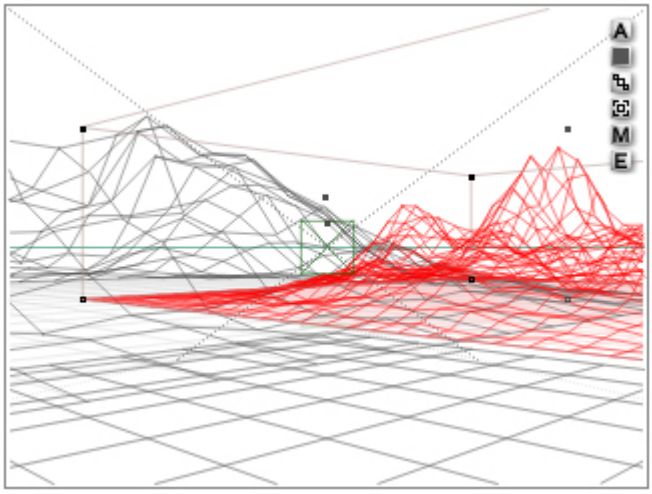
1. Click **Create**, then click the **Terrain Object** to add a second terrain.
2. Click **Edit**, to display the *Edit palette*.
3. Use the **Reposition tool** to move the terrain to the far right of the scene.



4. Increase the size of the terrain, using the **Resize tool**. Note that this terrain (Terrain 2) is further back than the first one.

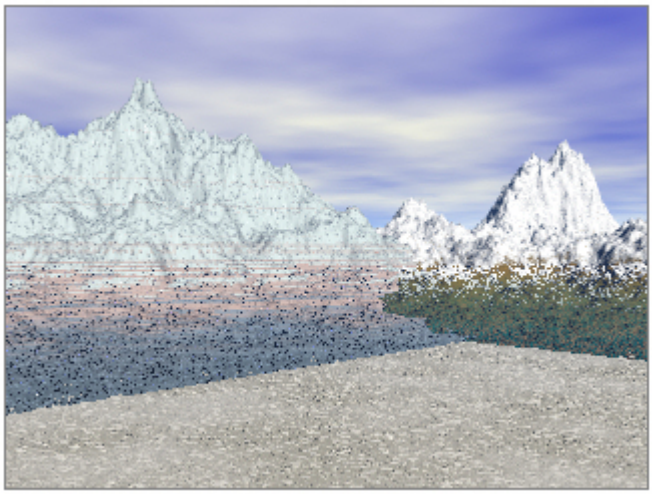
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5. Click the **Land Objects button** to align the second terrain along the ground plane.



6. Click the **Render button** to view your image.





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To switch back to Wireframe display mode:

- Click the **Display Modes button** once to return to *Wireframe display mode*, or hit the **Escape** key to toggle between the modes.

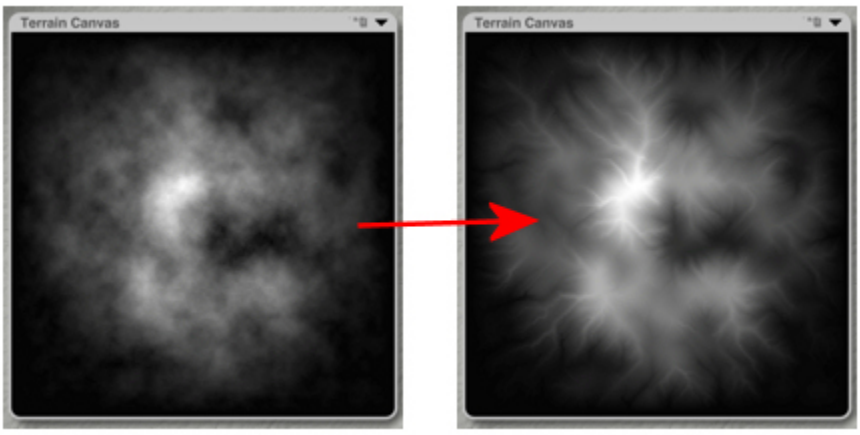


To change the terrain's appearance:

1. Select Terrain 2. The wireframe turns red.
2. Click the **Editor button** (the E button located in the Object Control Palette - the vertical list of buttons associated with the selected terrain object).



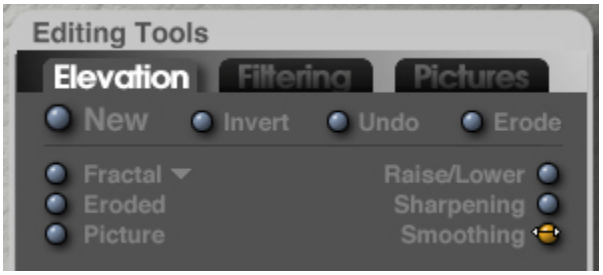
   Your screen is overlaid by the **Terrain Editor**.
3. In the **Editing Tools palette**, click the **Eroded button** twice. The terrain will update in the *Terrain Canvas* to show the erosion effect.



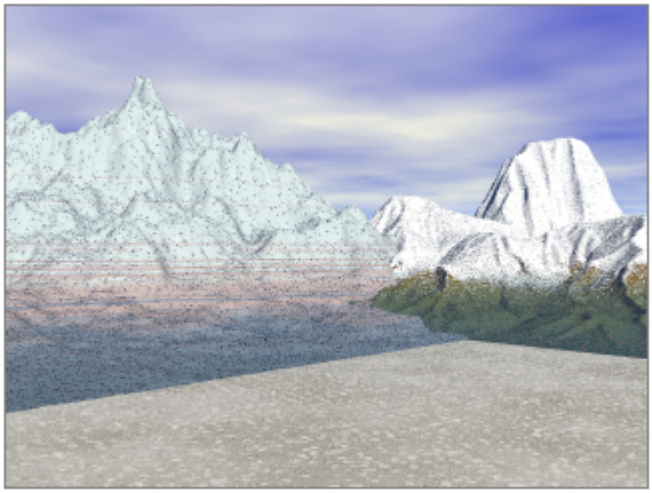
4. Exit the **Terrain Editor** by clicking the **OK** icon.
5. Select Terrain 1.
6. Click the **Editor** button to display the **Terrain Editor**.

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7. In the **Editing Tools palette**, click the **Smoothing button** once.



8. Exit the **Terrain Editor** by clicking the **OK** icon.
9. Click the **Render button** to view your image.



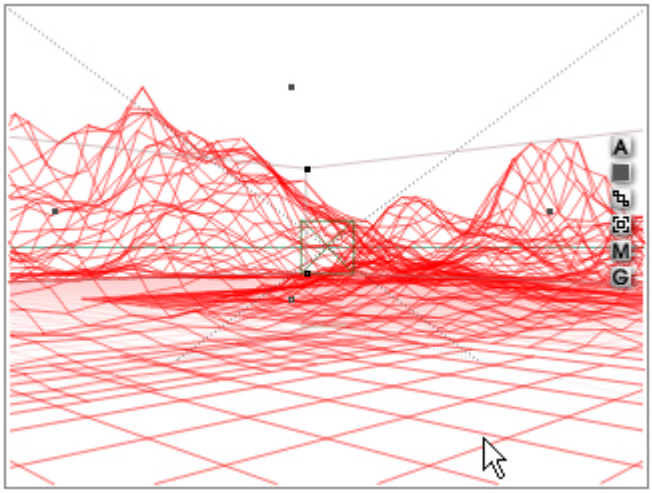
Lesson 4: Applying a Texture

Now you will apply a material to the terrains and the ground plane.

To apply a texture:

1. Click the **Display Modes button** to return to **Wireframe display mod**e.
2. Select Terrain 1.
3. Hold down the **Shift** key on your keyboard and click Terrain 2; still holding the **Shift** key down, click the ground plane (Plane 1). All three wireframes are selected and outlined in red.

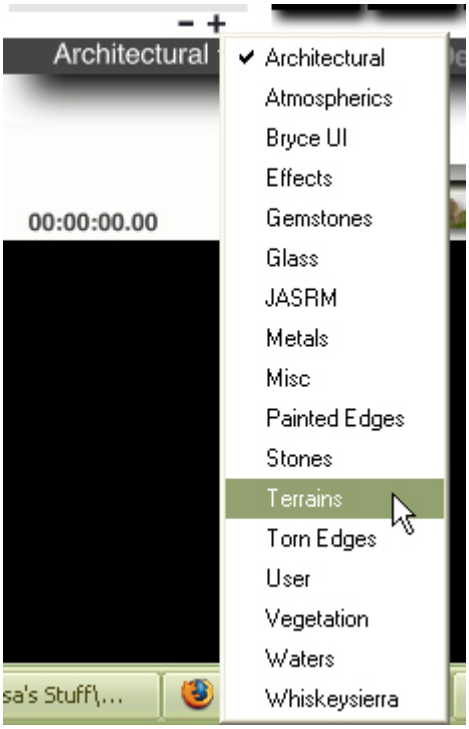
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4. Click the triangle icon next to **Edit** to display the *Material Presets Library*.

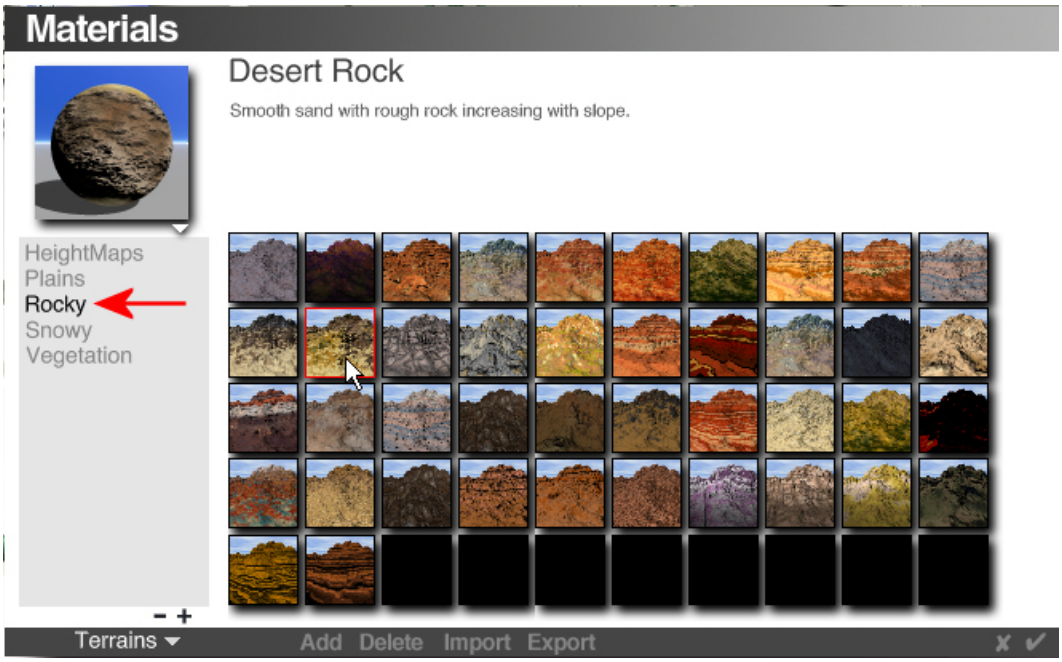


5. In the *Material Presets Library*, click on the triangle icon next to **Architectural** and choose **Terrains** from the menu to change to that category. Another selection of preset materials appears.



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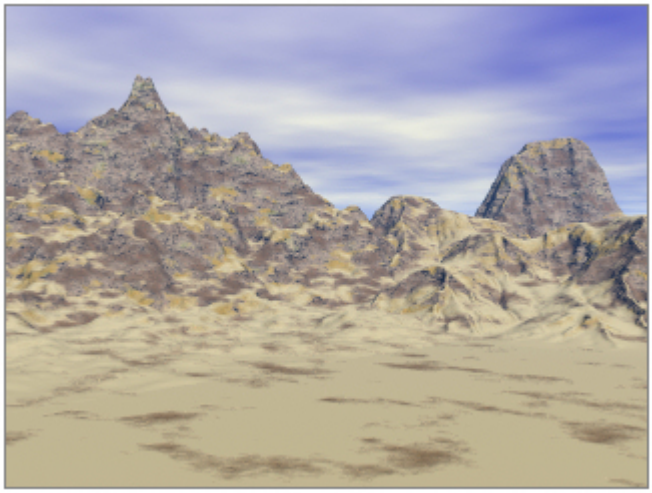
6. Click on the **Rocky** category, then on the **Desert Rock** preset (second from the left on the second row). A red border appears around your selected material.



7. Click the **OK** icon to return to your scene. If you look at the **Nano-Preview window** (top left), you'll see that
the Desert Rock material has been applied.



8. Click the **Render button** to view your image.



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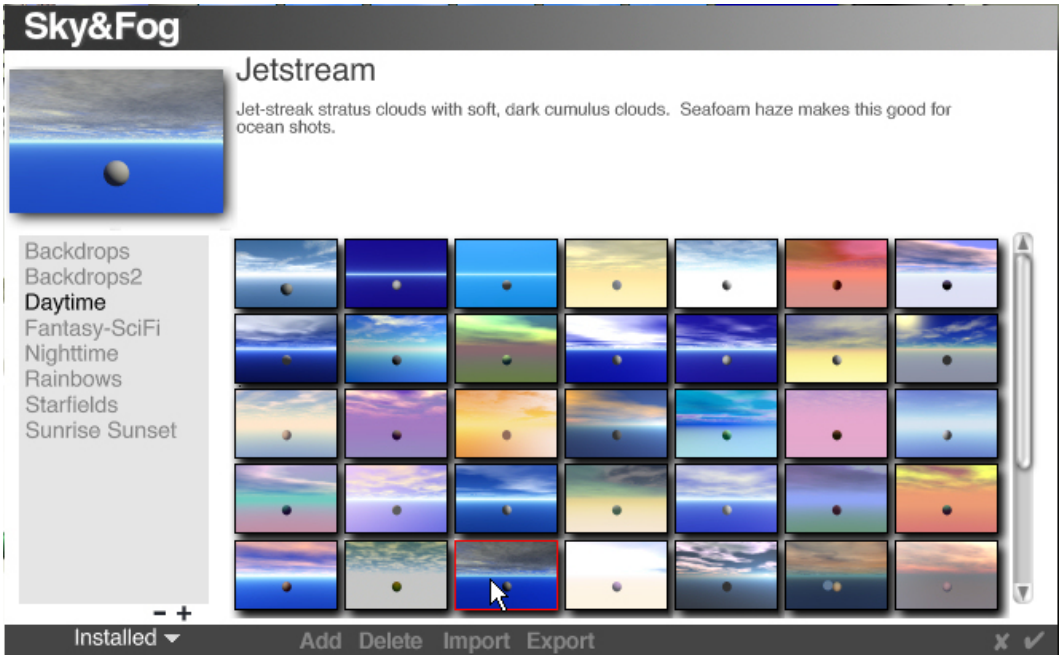
Lesson 5: Adding a Sky Preset

To complete these lessons, you'll need a terrain. If you've been following this tutorial from the beginning, you can use your scene. Otherwise, you can use the sample file provided for you. The sample file is called "Finished Terrain" and is located in the "Tutorials/Manual Tutorials" folder.

While the default scene created by Bryce includes the default sky, you can easily change the sky preset for the scene.

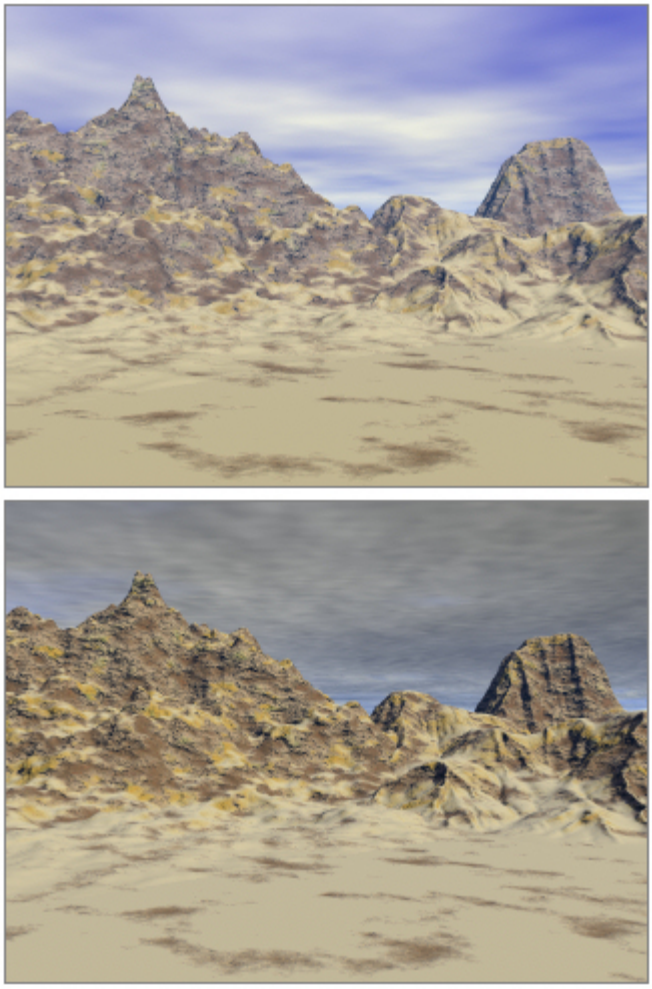
To change the sky preset:

1. Click the triangle next to **Sky & Fog**. The **Sky & Fog Presets Library** appears.
2. Click on the **Daytime** category, then on the **Jetstream** preset (third from the left on the fifth row). A red border appears around your selected sky.



3. Click the **OK** icon to apply the sky preset to the scene.
4. Click the **Render button** to view your image. The first image shows the scene with the default sky while the second image shows the scene after applying the Jetstream sky preset.

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Lesson 6: Adjusting the Sky

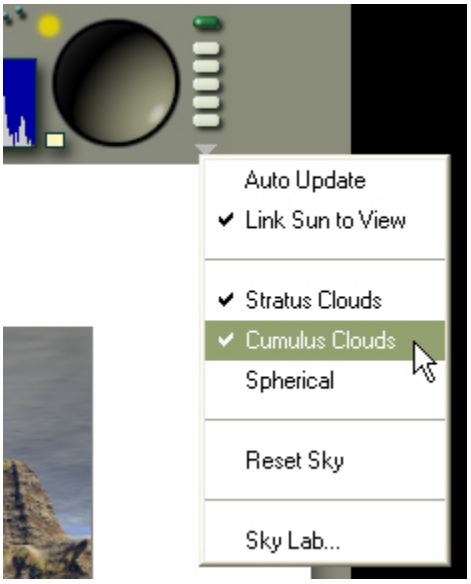
Once you have added a sky preset you can adjust the appearance of the sky. You can determine what type of clouds are included in the scene. You can also add perspective to the scene by adjusting the amount of Haze in the scene.

To modify the clouds:

1. On the *Sky & Fog palette*, click the triangle beneath the **Sky Memory Dots**. This displays the **Sky & Fog options menu**.

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2. From the menu that appears, click **Cumulus Clouds** to deselect it.



To adjust the sky:

1. Move the pointer over the thumbnails on the *Sky & Fog palette* to locate the **Haze** thumbnail. Note that the names of the palettes appear in the bottom left of the Bryce window and as tool tips near the thumbnails.
2. Click the **Haze** thumbnail. The number 1 appears at the bottom left corner of the Bryce window; this is the **Haze value**.

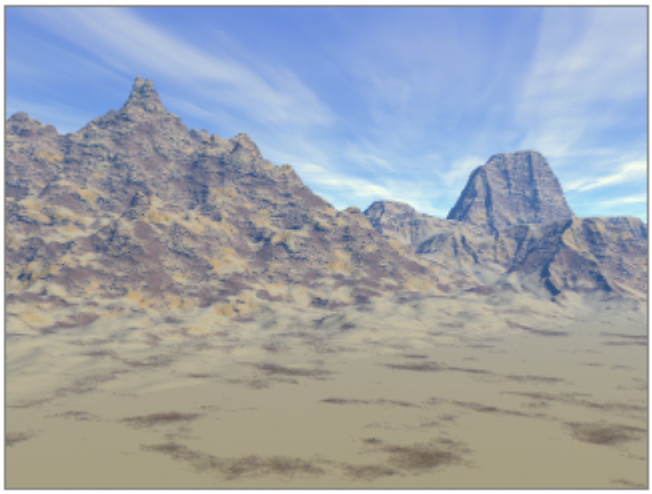


3. Click the **Haze** thumbnail, drag to the right to increase the **Haze value** to 17.



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4. Render the scene again to view your image.



Note that the increased haze value has separated the two mountains, appearing to push the second terrain farther back in the distance.

Creating a Body of Water

To complete these lessons you'll need a terrain. If you've been following the tutorial from the beginning, you can use the files you have created. Otherwise, you can load the sample file, "Finished Sky" provided for you in the "Tutorials/Manual Tutorial" folder.

- Lesson 7: Preparing the Landscape
- Lesson 8: Creating the Interior of the Lake
- Lesson 9: Filling the Lake

Lesson 7: Preparing the Landscape

Next you will create a body of water by digging a hole and adding some water.

In this tutorial, we'll use a **Negative Boolean operation** to cut a hole out of the ground plane. A Negative Boolean operation requires a **Positive object** (or a Positive group of objects) and a **Negative object**. When these are grouped together the shape of the Negative object is cut out of the Positive object. Objects can be given **Negative**, **Positive**, **Neutral**, or **Intersect** attributes in the *Object Attributes dialog*.

To set the landscape as a Positive Boolean object:

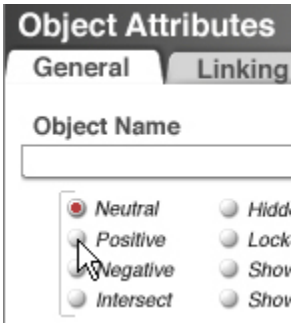
1. Click the **Display modes button** to switch to **Wireframe mode**.
2. Select one of the terrains.
3. Holding down **Shift**, select the second terrain and the ground plane. All three wireframes should now be highlighted in red.

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4. Click the **Object Attributes button** (the A button) to display the *Object Attributes dialog*.



5. Click on the **Positive** button to enable it. This makes each one of the selected objects positive.



6. Click the **OK** icon.

To group the terrains:

1. Click the **Group button** (the G button in the vertical list associated with the selected objects). This will group the three objects (Terrain 1, Terrain 2, and Plane 1) together in a **Group** called Group 1.



2. With Group 1 still selected, click the **Objects Attributes button** (the A button) to display the *Object Attributes dialog*.



3. Enable the **Positive** option.

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4. Click the **OK** icon. The objects and the group are now all set to Positive.

Lesson 8: Creating the Interior of the Lake

Next you will create a third terrain object—Terrain 3 -and apply the same Desert Rock material as you used before. Then you will rotate the terrain object to create an inverted terrain that will eventually form the interior of the lake. Next you will make the inverted terrain a Negative Boolean object. Grouped with the positive terrains created in the last lesson, this negative terrain will 'cut' a hole out of the ground plane.

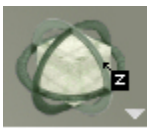
To create a new terrain object:

1. Click on the **Create** button to display the *Create Palette*.
2. Click the **Terrain Object** to add a third terrain to the scene.
3. Click on the **Edit** button to display the *Edit Palette*.
4. Click the triangle icon next to **Edit** to display the *Material Presets Library*.
5. If needed, click on the triangle icon next to **Architectural** and choose **Terrains** from the menu to change to that category.
6. Click on the **Rocky** category, then on the **Desert Rock** preset (second from the left on the second row). A red border appears around your selected material.
7. Click the **OK** icon.

This terrain needs to be rotated through 180 degrees about the X or Z-axis to create the interior of the lake.

To rotate the terrain:

1. Click on the **Edit** button to display the *Edit Palette*.
2. Locate the **Rotation tool**. Move the pointer over the X or Z-axis rotation ring.

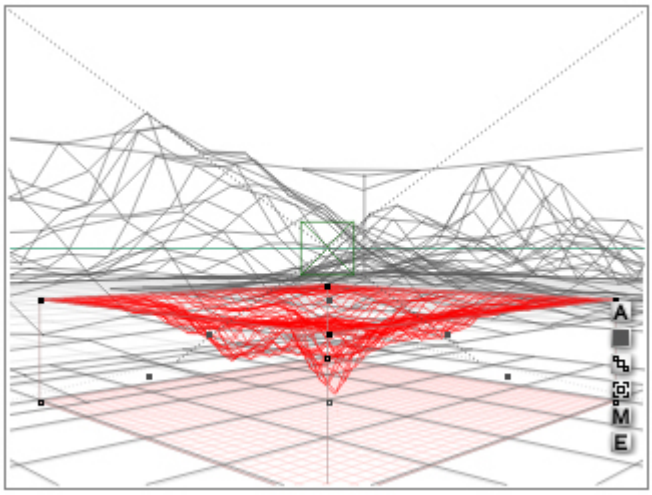


3. Hold down the **Shift** key (this causes the rotation to be carried out in 45-degree increments), then click and drag horizontally on the rotation ring. You'll see the angle of rotation displayed at the bottom left of your screen. Drag until you see either 180 or -180 in the **Text Display Area**.



The terrain will now be upside down and your screen should look like this.

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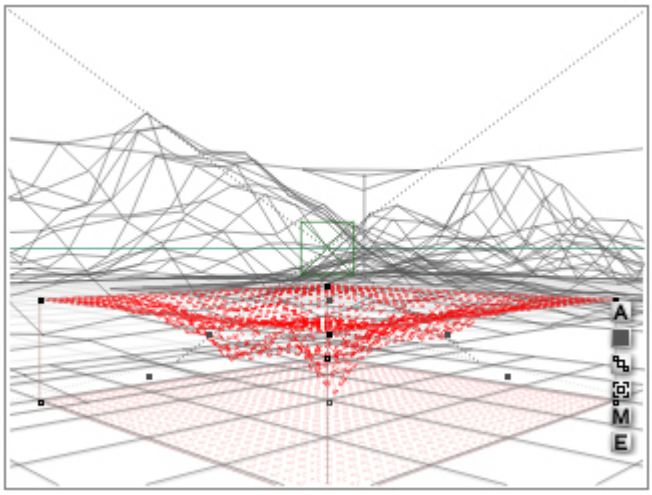
To create a Negative Boolean object:

1. With Terrain 3 still selected, click on the **A** button to display the Object Attributes dialog, then click on **Negative**.

   It is now a negative Boolean object. This means that Bryce will ‘cut’ this shape from the ground plane.

2. Exit by clicking the **OK** icon.

   You'll notice that the Terrain 3 wireframe is dotted, since it is now Negative.



To create the lake:

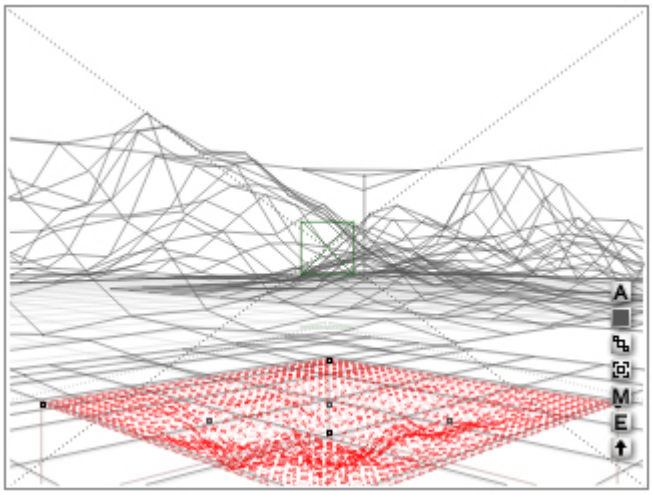
1. Ensure that the **Wireframe Underground On/Off button**, found on the *Advanced Display Palette*, is off. When the underground is off, the button will be a square with a line through it as seen in the second image below.

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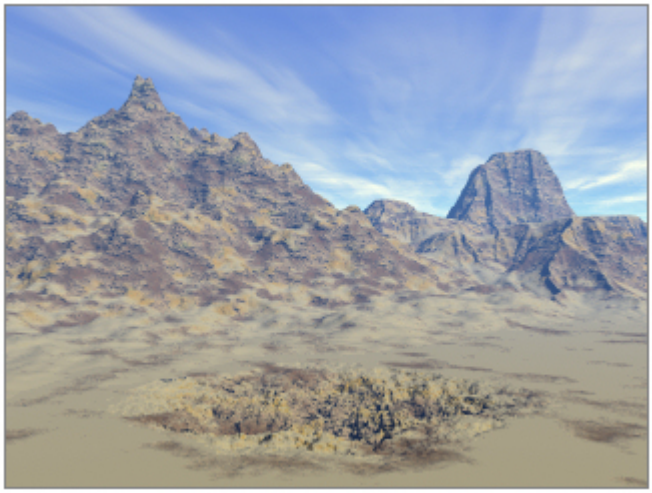
2. Click and drag Terrain 3 until the square base (which is now on top) is just above the ground plane. Watch the Nano-Preview window to track your progress.

   Your scene in wireframe mode should look like this.



To group the terrains:

1. With Terrain 3 still selected, hold down the **Shift** key and click one of the other terrains to select Group 1 together with Terrain 3.
2. Click the **Group button**.
3. Click the **Render button** to see the hole in the ground plane.



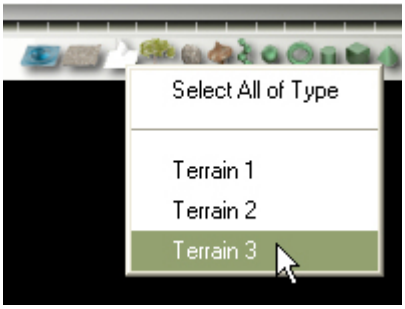
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To make the interior of the lake bigger:

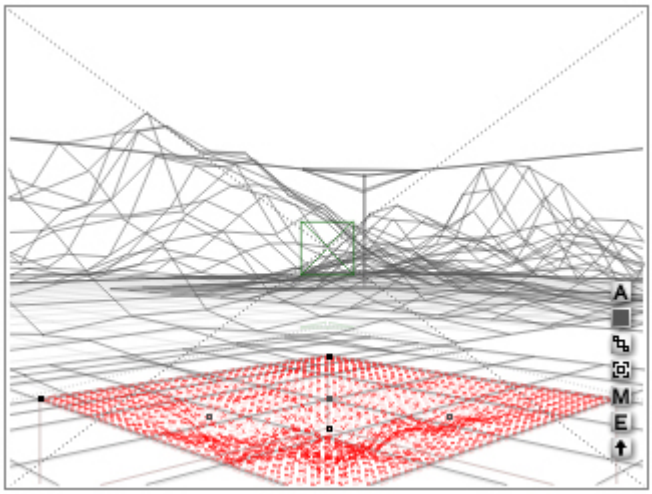
1. Click the **Display modes button** to return to **Wireframe mode**.
2. If the *Animation Palette* is visible at the bottom of the Bryce window, click the **Time/Selection toggle**, located in the bottom right corner of the Bryce window, to display the *Selection Palette*.



3. Click and hold the **Terrain icon** on the *Selection Palette* at the bottom of the screen, then select Terrain 3 from the list.

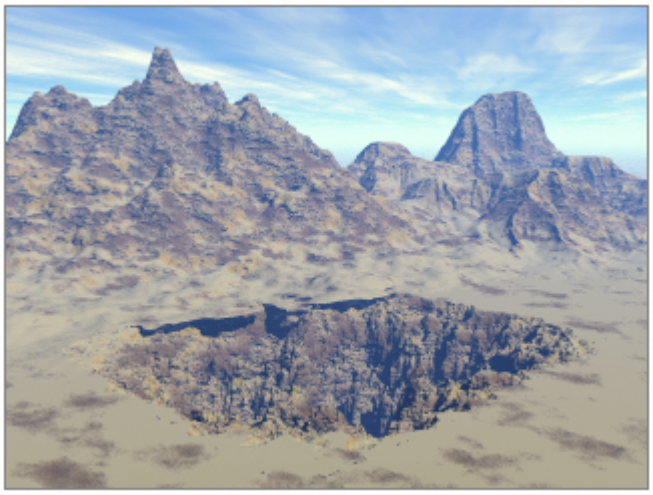


Terrain 3 should now be the only selected object. Although it is part of a group, this terrain can still be repositioned, resized, and rotated on its own.



4. With Terrain 3 selected, use the **Resize tool** to make it bigger and the **Reposition tool** to fine- tune the positioning. Watch the **Nano-Preview** window to check the effect you're creating. When you lower the terrain, keep the terrain's square bottom above the ground plane; otherwise, the hole will disappear under the ground plane.

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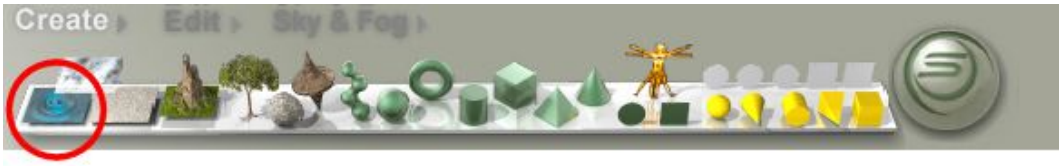


Lesson 9: Filling the Lake

Now we'll fill the hole with water.

To fill the lake:

1. Click on the **Create** button to display the *Create Palette*.
2. Click the **Water Plane** icon.



A water plane appears with a random material applied. It covers the whole of your image up to the bases of the mountains.

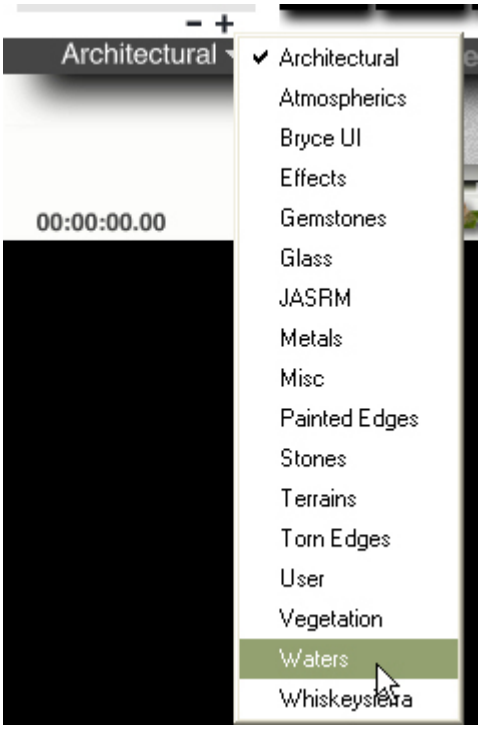


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3. Click the triangle icon next to **Edit** to display the *Materials Presets Library*.

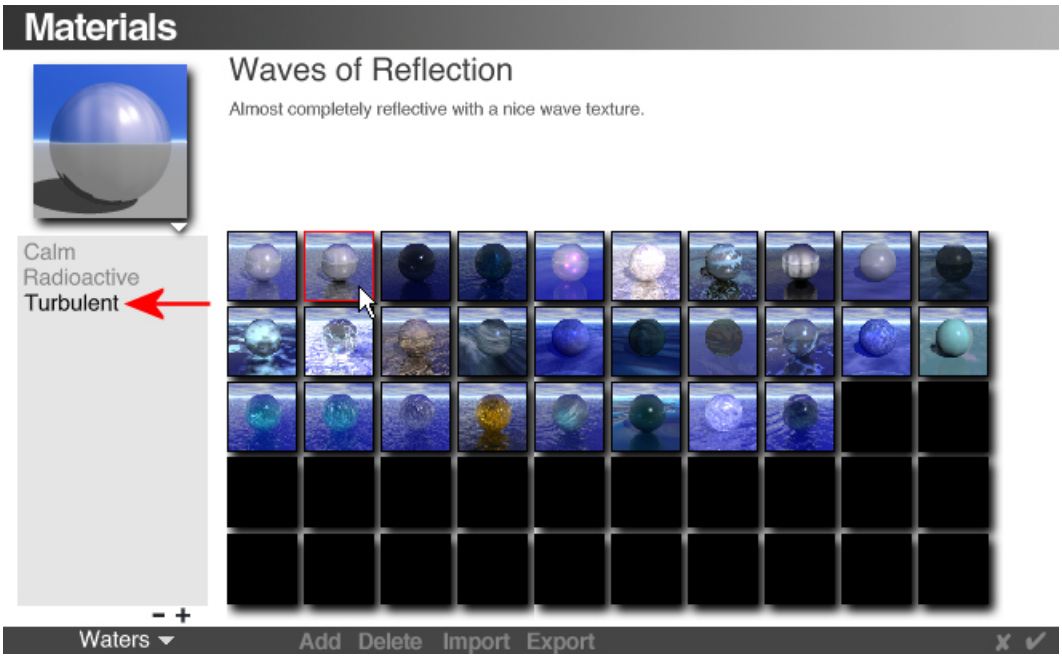


4. In the *Material Presets Library*, click on the triangle icon next to **Architectural** and choose **Waters** from the menu to change to that category. Another selection of preset materials appears.

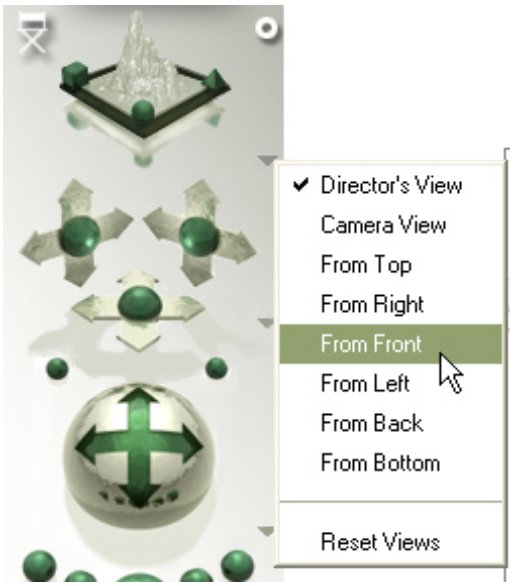


5. Click on the **Turbulent** category, then on the **Waves of Reflection** preset (second from the left on the first row). A red border appears around your selected material.

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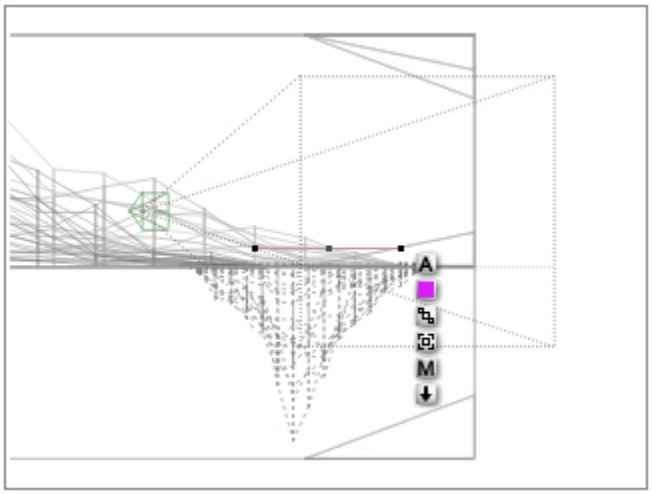


6. Select Waves of Reflection (third row down, third from left).
7. Click the **OK** icon to exit the *Materials Presets Library*.
8. From the *View Options* menu choose **From Front**.



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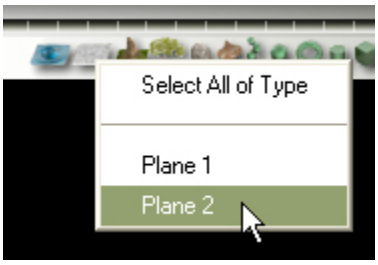
Your scene will look similar to this:



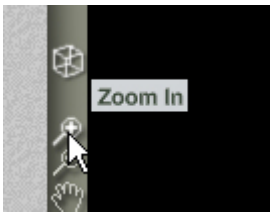
9. Ensure that the **Wireframe Underground On/Off button**, found on the *Advanced Display Palette*, is off. When the underground is off, the button will be a square with a line through it as seen in the second image below.



10. If the water plane has been deselected for some reason, click the **Infinite Planes** icon on the *Selection Palette* at the bottom of the screen and choose Plane 2 from the list.

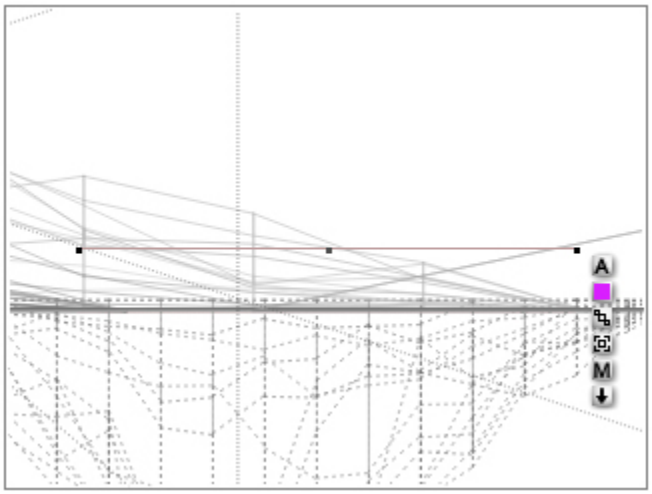


11. Click on the **Zoom In** button to zoom in on the selected water plane.



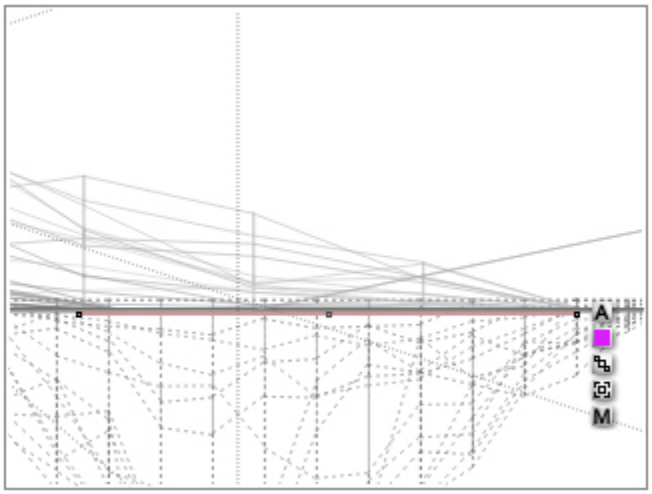
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Your scene will look similar to this:



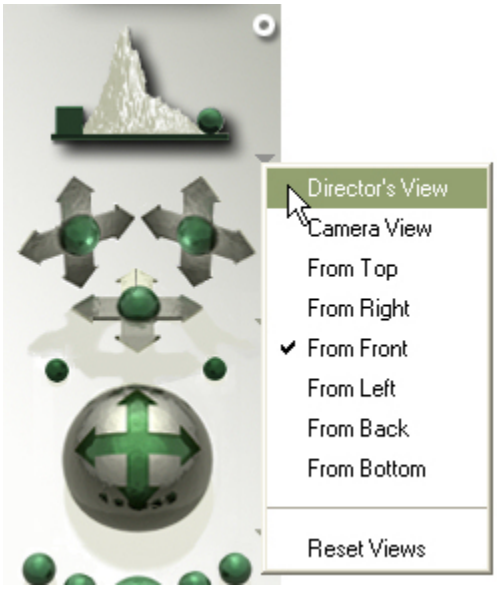
12. Click on the **Edit** button to display the *Edit Palette*.
13. Use the **Reposition tool** to move the water plane along the Y-axis (i.e., down) until it is just below the ground plane.

Your scene in wireframe mode should look similar to the image below.



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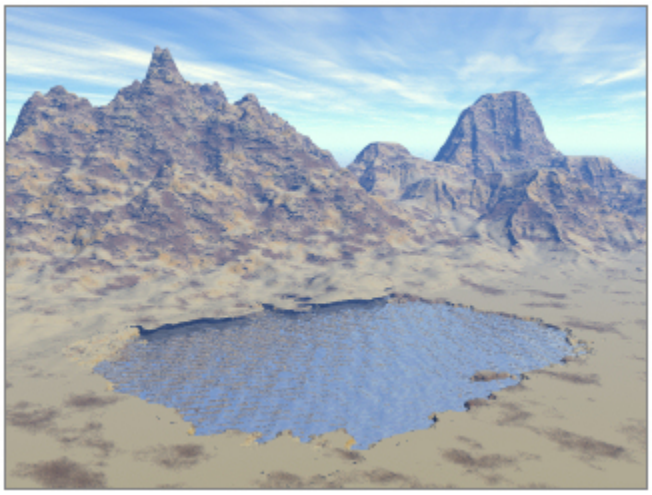
14. Choose **Director's view** from the *View Options menu*.



15. Check the **Nano-Preview** window to ensure that the water plane has filled the inverted terrain.



16. Click the **Render** button to view the final image.



This concludes the beginner's tutorial.

This tutorial has only touched on a very small fraction of the controls and procedures available in Bryce. You could go further with this image by adding some rocks and vegetation to the foreground. Try different water materials for the lake and different

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terrain and plane textures and a different sky - in Bryce the variations are literally endless.

Creating a Vaulted Roof

Creating a Vaulted Roof

In this tutorial, you will create an animation of an interior scene of a building with a vaulted ceiling. You'll work with an imported image, adjust the lighting of the scene, and finally animate the camera to fly through the scene.

- Lesson 10: Creating a Pyramid
- Lesson 11: Converting the Pyramid
- Lesson 12: Resize the Pyramid
- Lesson 13: Use the Sphere to Carve out the Roof
- Lesson 14: Creating a Group

Lesson 10: Creating a Pyramid

While creating the building's roof, you will become familiar with the create and edit controls of Bryce, as well as Boolean operations.

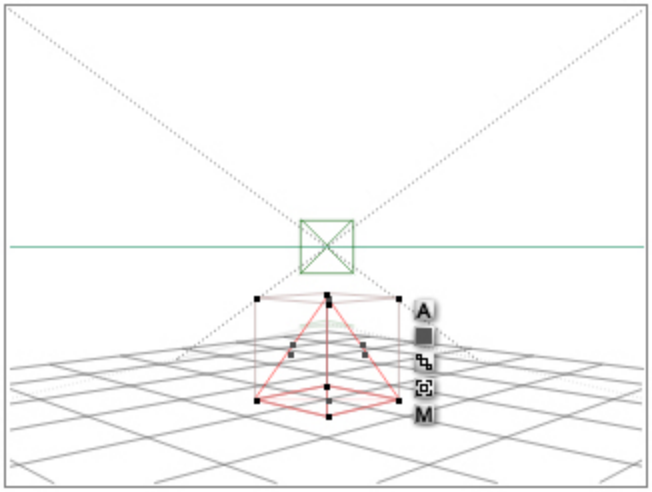
To create the pyramid:

1. Click **Create** to display the *Create Palette*.
2. Click the **Pyramid** icon.



A pyramid appears in your scene.

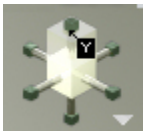
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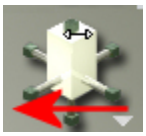
Next, make the pyramid flatter by reducing its height.

To resize and reposition the pyramid:

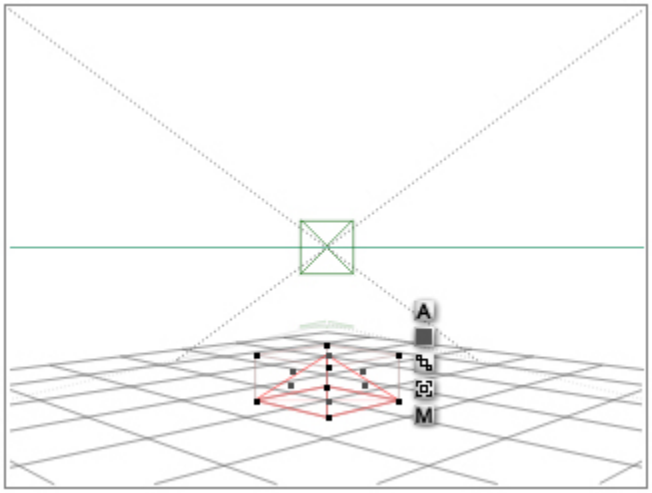
1. Click **Edit** to display the *Edit Palette*.
2. Click the upper Y-axis of the **Resize tool**.



3. Hold down the **Shift** key and slowly drag to the left.



Until the pyramid looks similar to the image below:

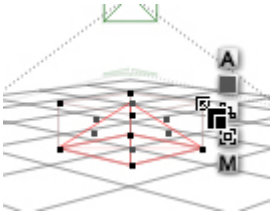


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Pressing the Shift key constrains the change to regular increments.

Next, you'll proportionately enlarge the pyramid. This time, work directly with the object's handles in the scene window.

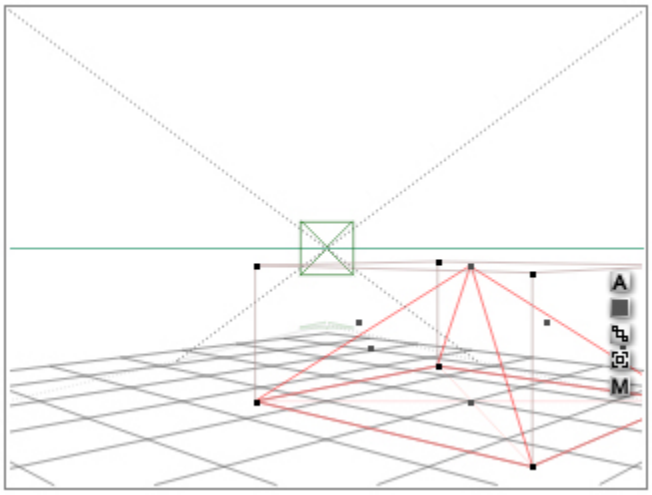
4. Place the cursor over the upper right corner of the object's bounding box, next to the **Object Attributes** button (the **A** button). The cursor changes to a proportional resize icon.



5. Hold down the **Shift** key and drag the corner of the bounding box to the right.

   The pyramid snaps to a larger size.

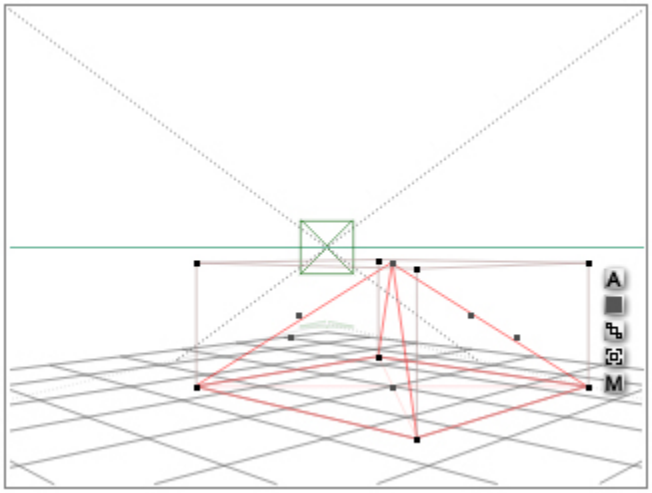
6. Drag for three more steps. The pyramid is enlarged and should extend off the right edge of the scene window as seen below.



Next, you'll use the arrow keys to nudge the pyramid to a more central position in the scene window.

7. Press the **left arrow key** four times move the pyramid to the left. The pyramid moves so that the entire object can be seen in the scene window. It will not be centered in the scene.

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Lesson 11: Converting the Pyramid

The next task is to duplicate the pyramid and convert it to a sphere. Eventually the sphere will be “cut out” from the pyramid using a Boolean operation.

To duplicate the pyramid:

1. Click **Edit** to display the *Edit Palette*.
2. Make sure the pyramid is selected and choose **Edit > Duplicate** from the menu. A second pyramid appears in the exact place where the first one is.
3. Click the double arrows at the top right of the *Edit Palette*.

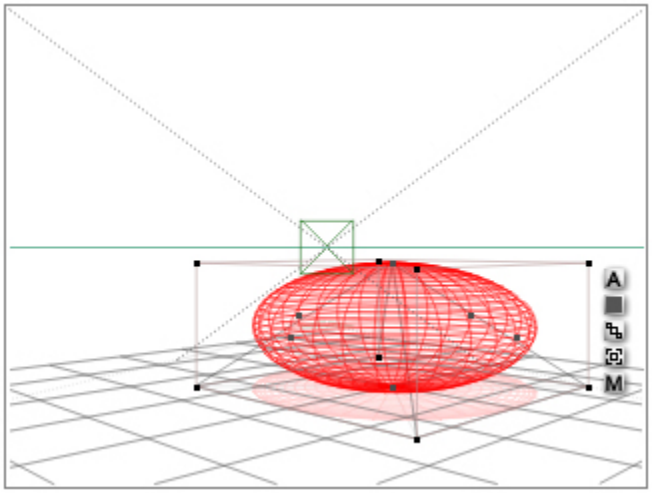
   A set of Bryce primitives appears.



4. Drag to the left until the sphere primitive is highlighted.

   The pyramid has changed to a sphere.

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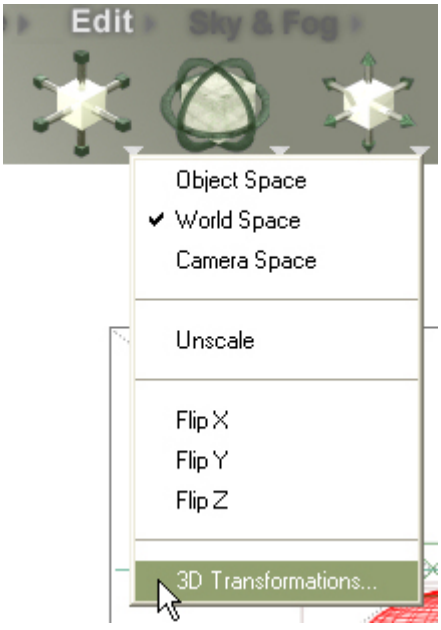


Lesson 12: Resize the Sphere

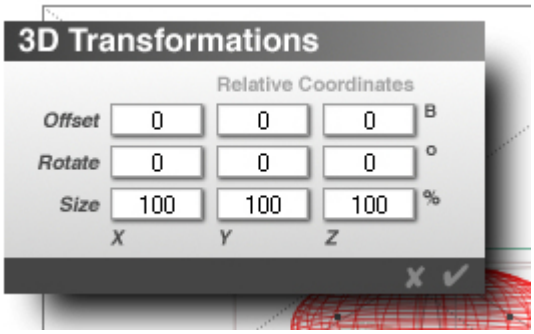
To cut the sphere out of the pyramid, the sphere needs to be resized and slightly repositioned. This time you will resize the object using the 3D Transformations dialog box.

To resize the sphere:

1. On the *Edit Palette*, click the triangle beneath the **Resize tool** and select **3D Transformations** from the list.

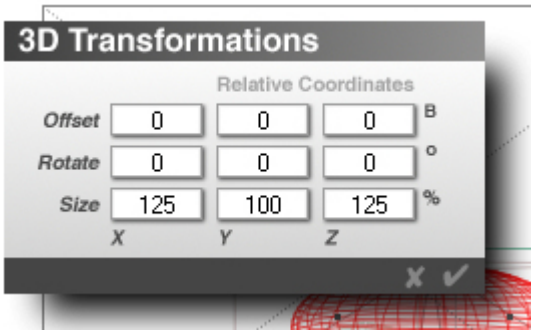


A dialog box appears.



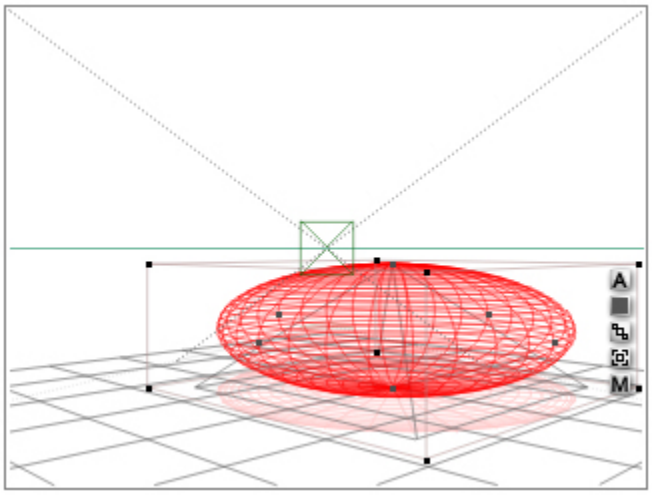
The bottom row of options are for changing an object's size. Size is expressed as a percentage of the current size. To enlarge the sphere horizontally without affecting the height, you will enter new values for the X (width) and Z (depth) axes and leave the height (Y) axis unchanged.

2. In the numerical boxes for the size of the X and Z-axes, enter 125 (for 125%).



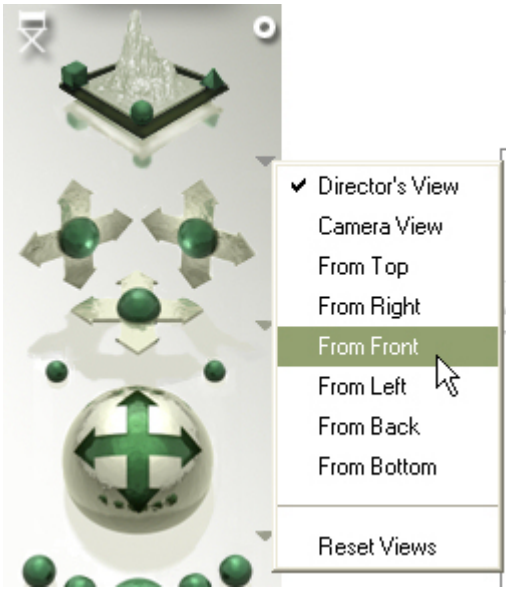
3. Click the **OK** icon to exit the dialog box.

   The sphere expands slightly on the horizontal axis while the height remains unchanged.

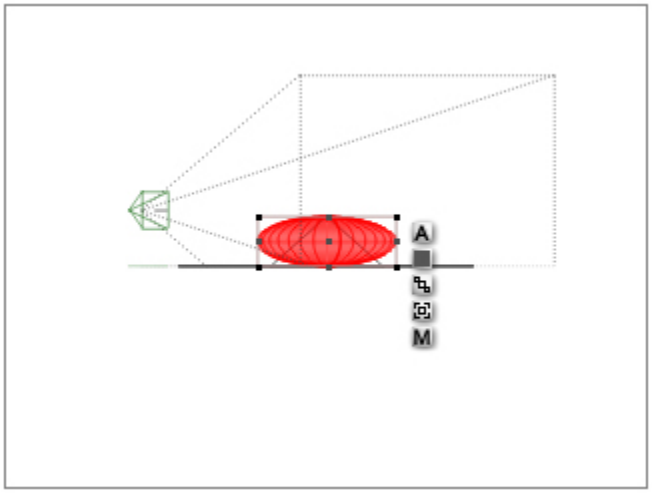


To adjust the position of the sphere:

1. From the *View Controls menu*, select **From Front**.



The scene changes so that you are viewing the objects from a straight horizontal view.



2. Click the upper Y-axis of the **Reposition tool**.

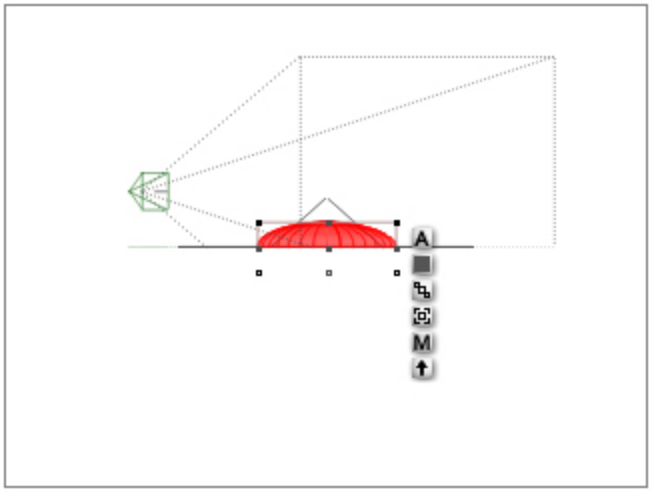


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3. Hold down the **Shift** key and drag once to the left.



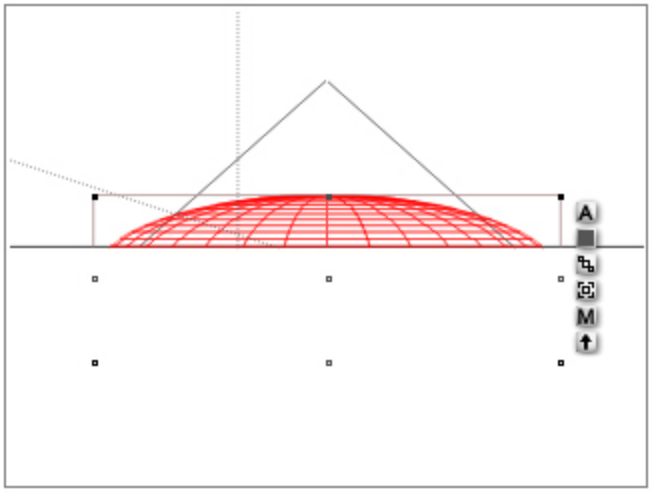
The sphere drops so that it is half hidden under ground.



Next you will lower the sphere a bit more until the next “rung” of the wireframe is aligned with the ground level.

4. Again, click and hold the upper Y-axis of the **Reposition tool**.
5. Hold down the **Shift** key and drag to the left slightly until the wireframe is aligned with the ground.

You may have to repeat this step several times to get the alignment exact. If needed, let up on the Shift key to move the sphere in smaller increments.



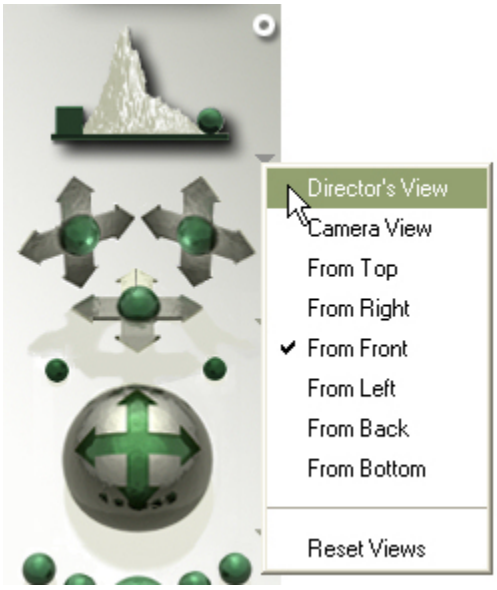
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Next you will carve out the under side of the roof with the sphere using a Boolean operation.

Lesson 13: Use the Sphere to Carve out the Roof

To carve out the roof:

1. Change back to Director's View, by choosing **Director's View** from the *View Options* menu on the *Control Palette*.



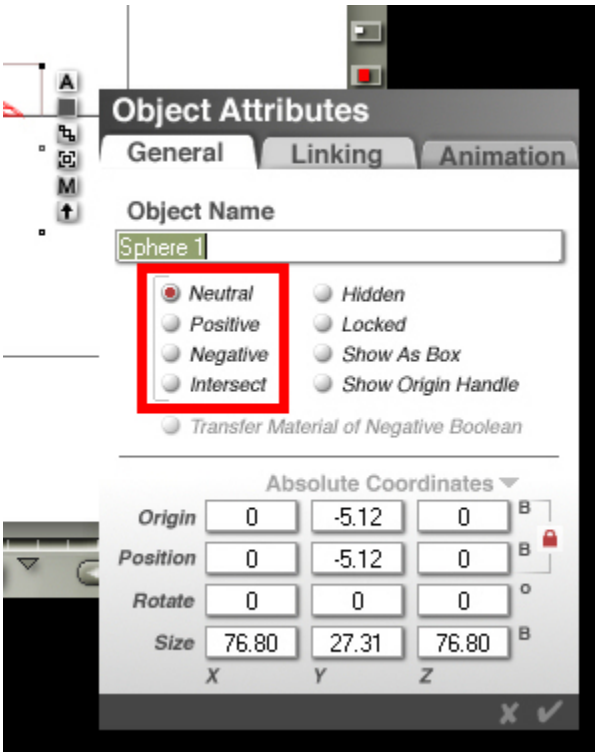
Now, you will assign Boolean properties to your objects. The sphere is selected, so we'll start with that.

2. Click the **Object Attributes** button (**A**) next to the sphere's bounding box.

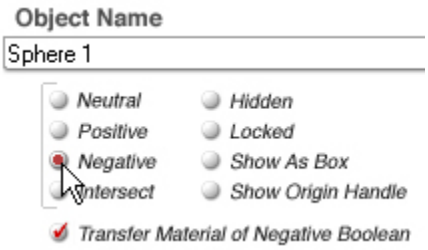
The *Object Attributes dialog* box appears.

Under the title, Sphere 1, the button for **Neutral** is selected. That is the default for all Bryce objects.

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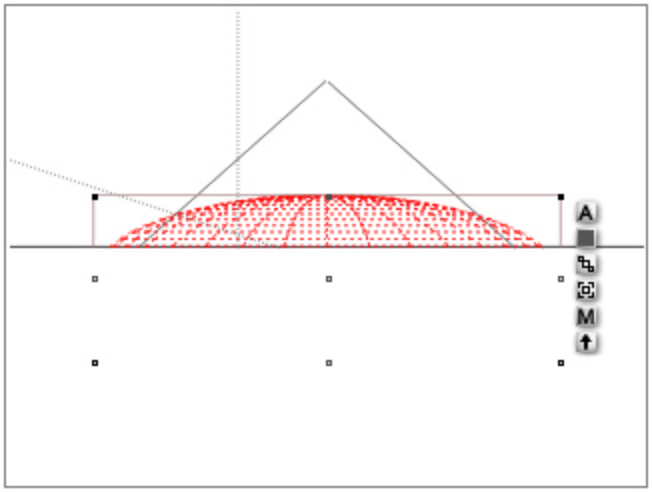
3. Enable the **Negative** option by clicking on the button next to that option.



4. Click the **OK** icon to exit the Object Attributes dialog box.

   The sphere's wireframe changes to dotted lines.

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Next, make the pyramid positive.

5. Select the Pyramid by clicking it. Its wireframe turns red.

   You could use the Object Attributes dialog box to make the pyramid positive. However, Bryce has an easier way.

6. Type **P** (for positive).

   The wireframe doesn't change; its line is still solid.

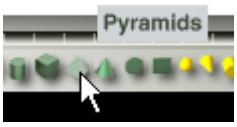
TIP: To make an object negative, type **N**. To make it intersect, type **I**. To make it neutral, type the letter **O**.

Lesson 14: Creating a Group

To make the Boolean effect work, you must group the objects together.

To group objects:

1. If the *Selection Palette* is not visible at the bottom of the Bryce window, click on the **Toggle** button or type **S**.
2. If the pyramid is not currently selected, on the *Selection Palette*, click the **Select Pyramid** icon.

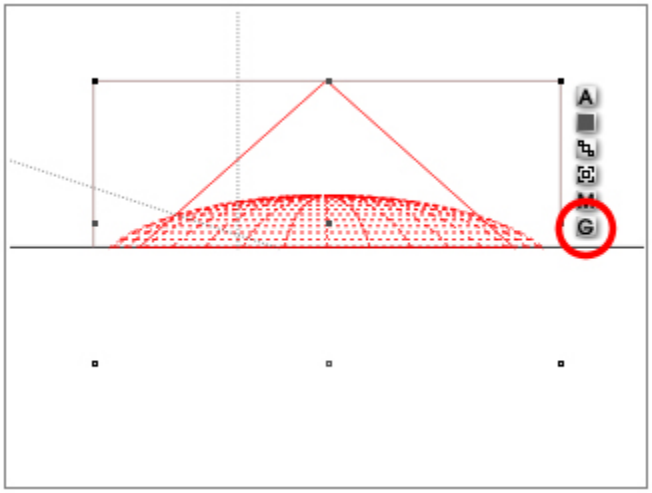


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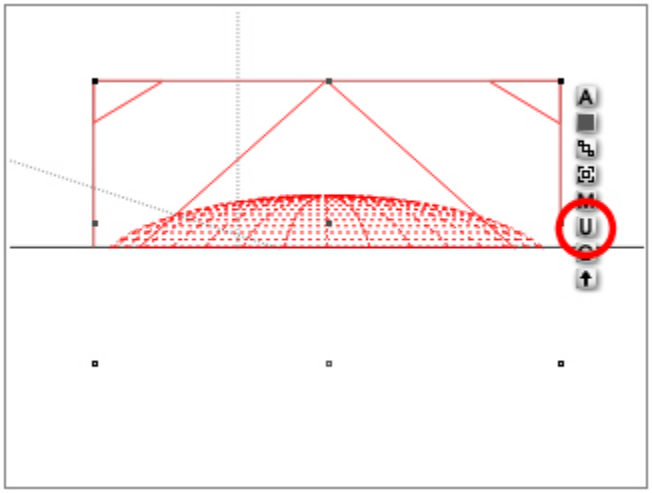
3. Hold down the **Shift** key and click the **Select Sphere** icon on the *Selection Palette*.



4. Both objects will be selected and the *Object Control Palette* next to the objects will change to add a **Group** button (**G**). Click on the **Group** button to group the selected objects.

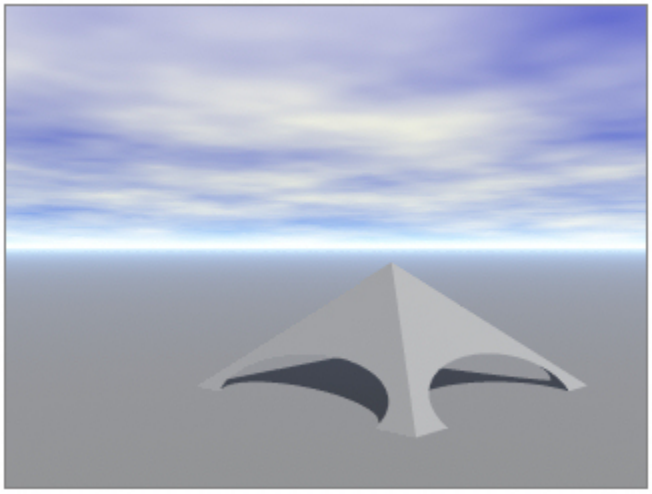


The bounding box changes slightly, with diagonal insets at each corner. This indicates that the object is a Boolean group. In addition, the **G** button disappears, and a **U** button takes its place. (The U stands for **Ungroup**)



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5. Change the view back to **Director's View** and click the **Render** button to check your work. Your scene should look like the following figure.

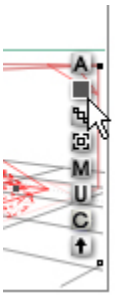


To create a family group:

1. Press the **Esc** key to switch back to wireframe mode.

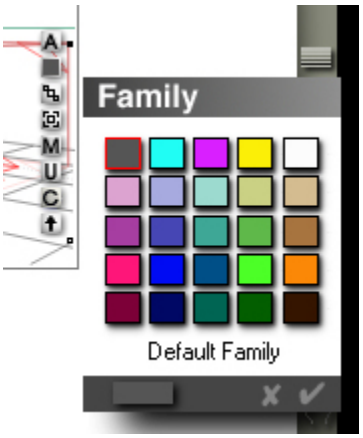
   The wireframe of your scene appears.

2. Click the gray **Family** button underneath the **Object Attributes** button.

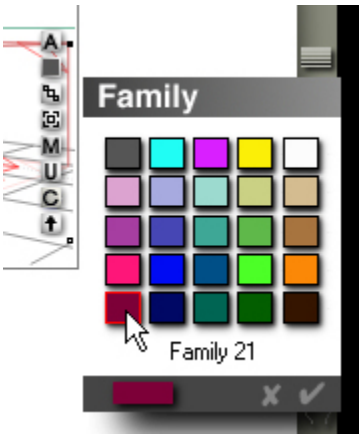


   The *Family* dialog box appears. The gray color is selected and the **Default Family** name displays at the bottom of the dialog box.

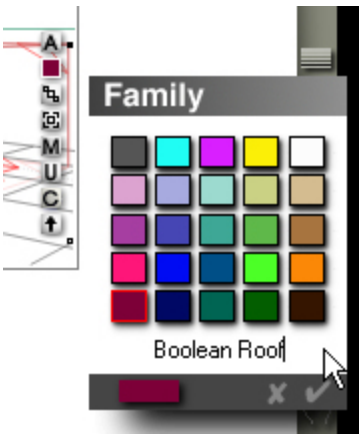
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3. Click the bottom left color (maroon). The text display now reads Family 21.



4. Select the words **Family 21** and type the words **Boolean Roof**.



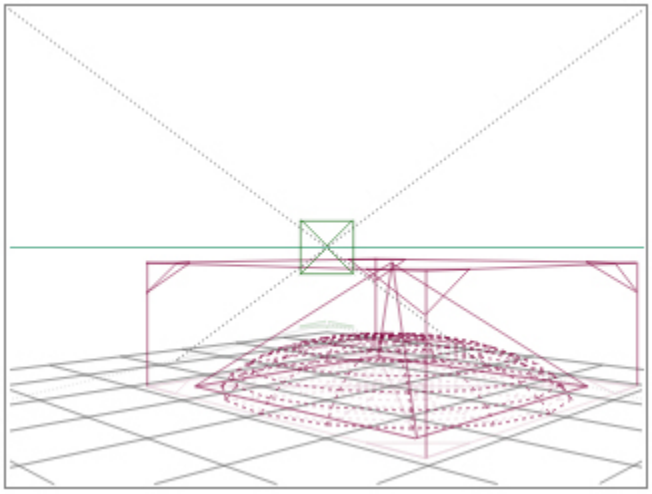
©2007 DAZ 3D, Inc.

5. Click the **OK** icon to exit the *Family* dialog box.

   The dialog box disappears, and the **Family** button has changed to the maroon color.



6. Deselect the object by clicking the background of the image. The wireframe has now changed to maroon to match the selected family color.



7. Save your scene file and give it the name **Rendered Boolean**.

Building the Walls

In this next section, you will create walls for your roof using the cube primitive. Before doing so, however, you will need to raise the roof so that the walls can fit underneath.

- Lesson 15: Moving the Roof
- Lesson 16: Creating the Walls
- Lesson 17: Adjusting the Wall Size
- Lesson 18: Duplicate the Walls
- Lesson 19: Make the Walls Taller
- Lesson 20: Adding a Doorway

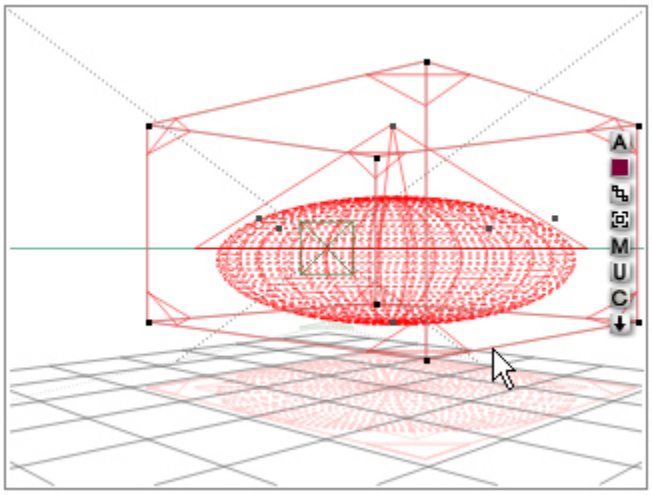
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- Lesson 21: Assigning Boolean Properties

Lesson 15: Moving the Roof

To raise the roof:

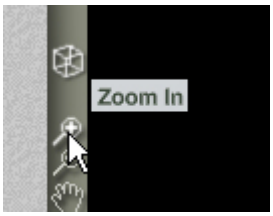
1. If needed, select the Group by clicking it in the scene window. The wireframe turns red.
2. Press the **Page Up** key six times. The bottom of the pyramid will be aligned to the horizon.



TIP : You can also change the position of the roof by clicking the Object Attributes button and changing the Y-axis position to 35.60.

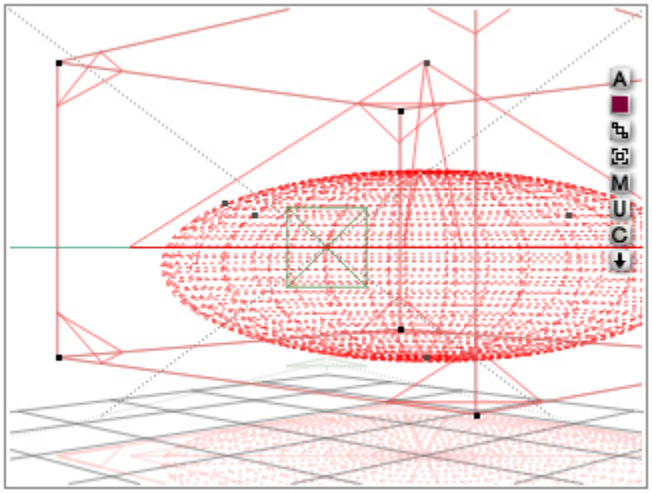
You can zoom in for a closer view if needed.

3. Click the **Zoom In** tool on the Advanced Display palette (the Zoom In tool is the magnifying glass with a plus sign (+)).



The objects appear larger, with the selected cube near the center of your scene.

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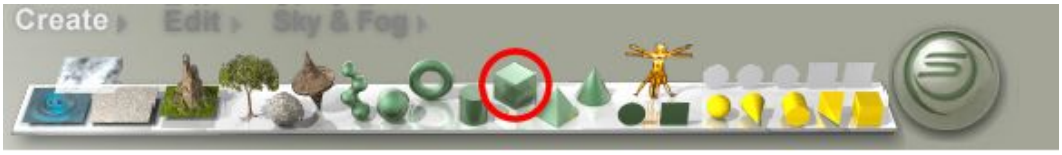


Lesson 16: Creating the Walls

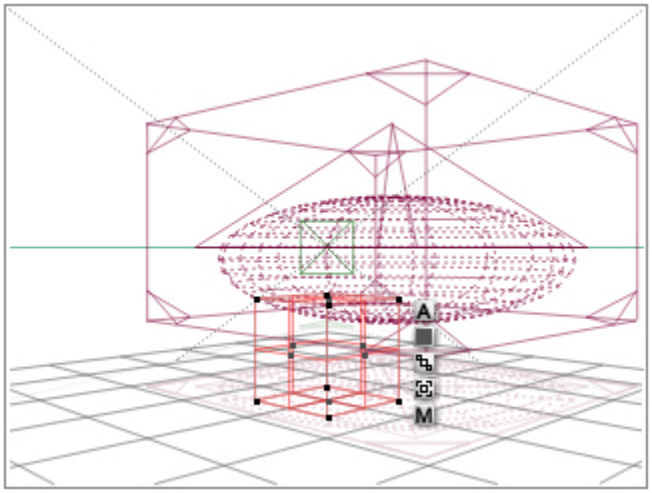
You are now ready to create walls to go underneath your roof with the arched cutouts. The Cube primitive will be the basis of your walls.

To create the walls:

1. On the *Create Palette*, click the **Create Cube** icon.



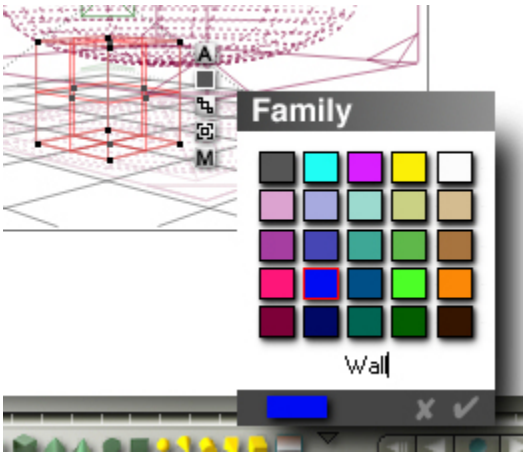
A cube appears in your scene.



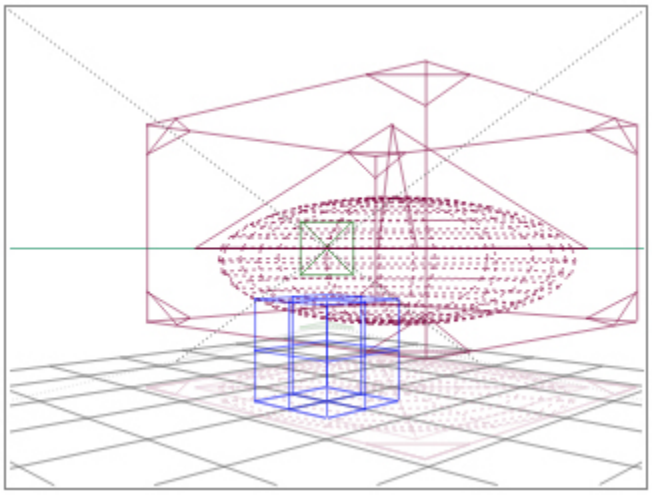
2. Click the family color button to access the **Family** dialog box.

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3. Select **Family 17**, type the word **Wall** in the text entry field, and click on the **OK** button.



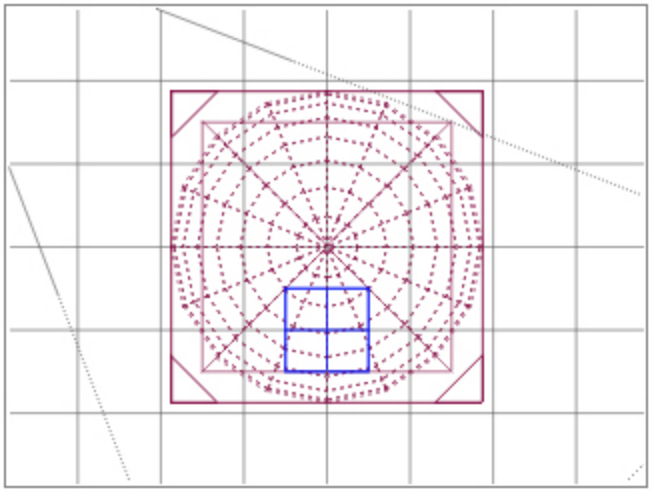
The family color is changed.



4. Select the roof then change the view to Top View by choosing **From Top** from the *View Options* menu.

The scene changes to top view.

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TIP: Another way to change to top view is to use a keyboard shortcut. Press the number 2 key. (or ~ for Director's View, 1 for Camera View, 2 for Top View, 3 for From Right, and 4 for From Front).

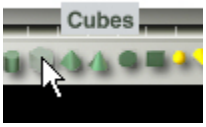
5. Click the **Zoom In** tool once or twice to zoom in on the roof. By selecting the roof earlier, the camera will zoom in on the selected object, centering it in the viewport.

Lesson 17: Adjusting the Wall Size

Notice that the cube's lower edge is aligned with the pyramid's edge. However, it needs to be made wider to match the pyramid's width, but less deep so that it does not occupy so much of the pyramid's interior.

To adjust the wall size:

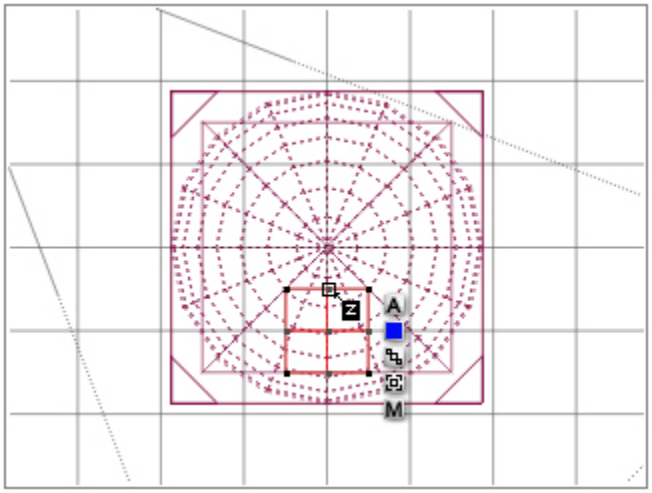
1. Click on the Select Cubes icon on the Selection Palette to select the cube.



2. Place the cursor over the top center control point of the cube's bounding box.

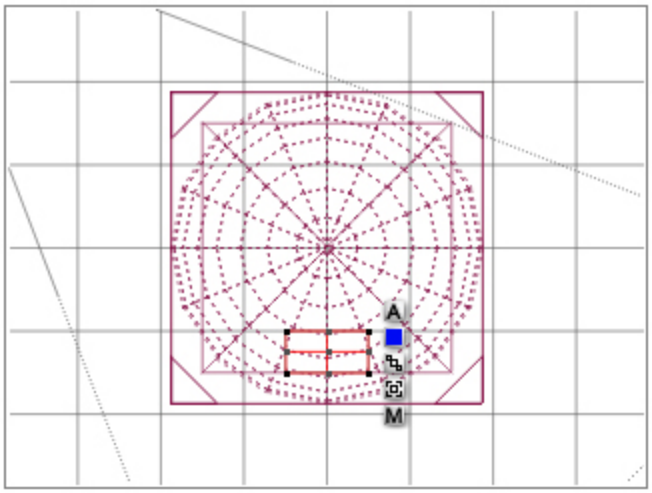
   The cursor changes to a **Z**, indicating that Bryce is ready to work with the object along the Z-axis.

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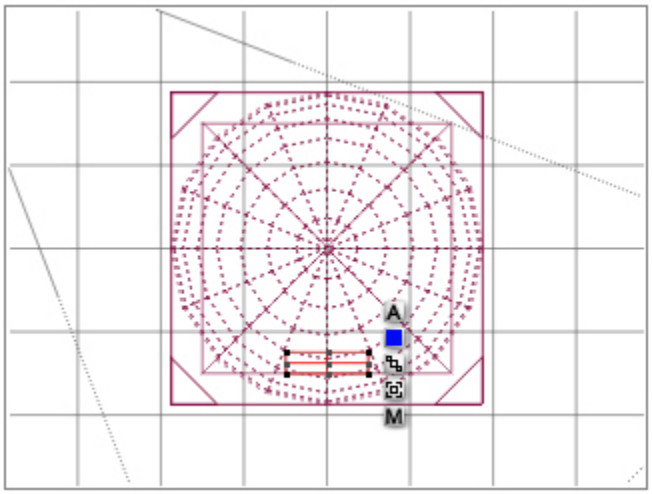
3. Click on the control point, hold down the **Shift** key and slowly drag once the left.

   The cube snaps to half its depth.

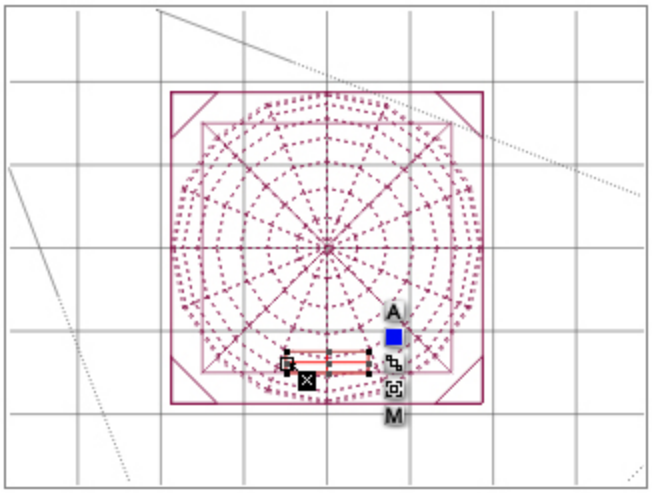


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4. Repeat the procedure to shrink the cube to half its depth again.

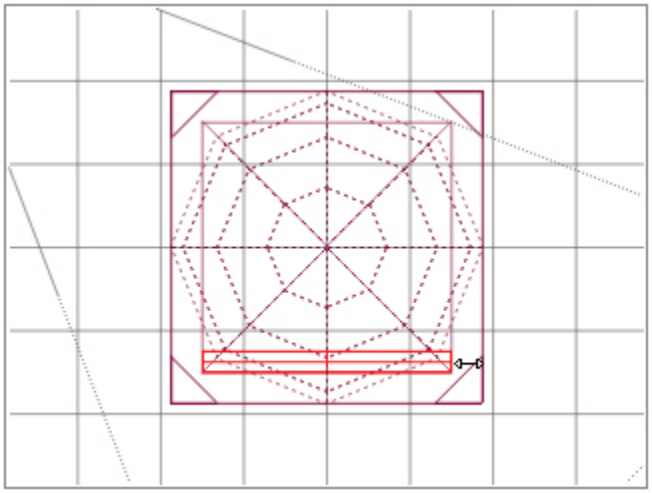


5. Place the cursor over the right center point of the bounding box. The cursor changes to an **X**.



6. Press the **Alt/Opt** key (this will resize the object from the center), click on the control point and drag slowly to the right until the edges pf the cube line up with the edges of the pyramid.

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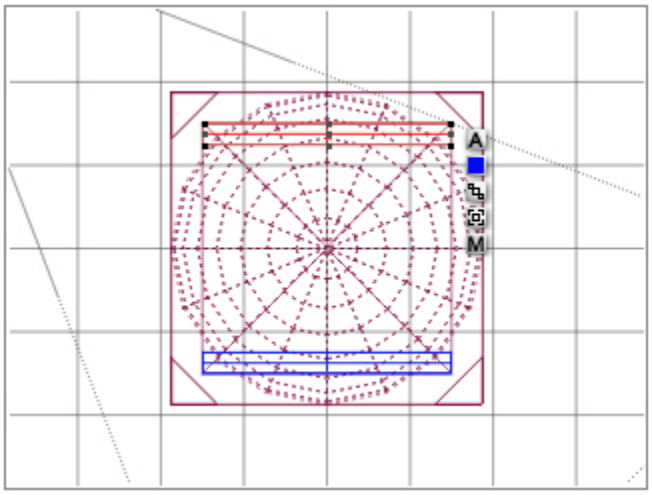
Lesson 18: Duplicate the Walls

You now have one wall. Duplicate this wall to create the one opposite.

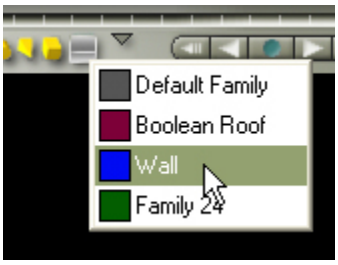
To duplicate the walls:

1. With the wall still selected, choose **Edit > Duplicate** from the menu.

   An identical cube appears in the same place.
2. Press the up arrow key to align the wall with the opposite side of the pyramid.



3. Click the **Select Families** icon on the *Selection Palette* and select **Wall** from the list. Both walls will be selected.



4. Duplicate these walls by choosing **Edit > Duplicate** from the menu or by pressing **Cmd/Ctrl+D**. A second set of walls is created in your scene.

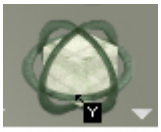
   For the next action you will temporarily group the newly created second set of walls.

5. Click the **Group** button to group the walls.

   The G button changes to a U, indicating that the objects are grouped. The Family button color is gray for Default family (as a new entity, it takes on the Default family color and label).

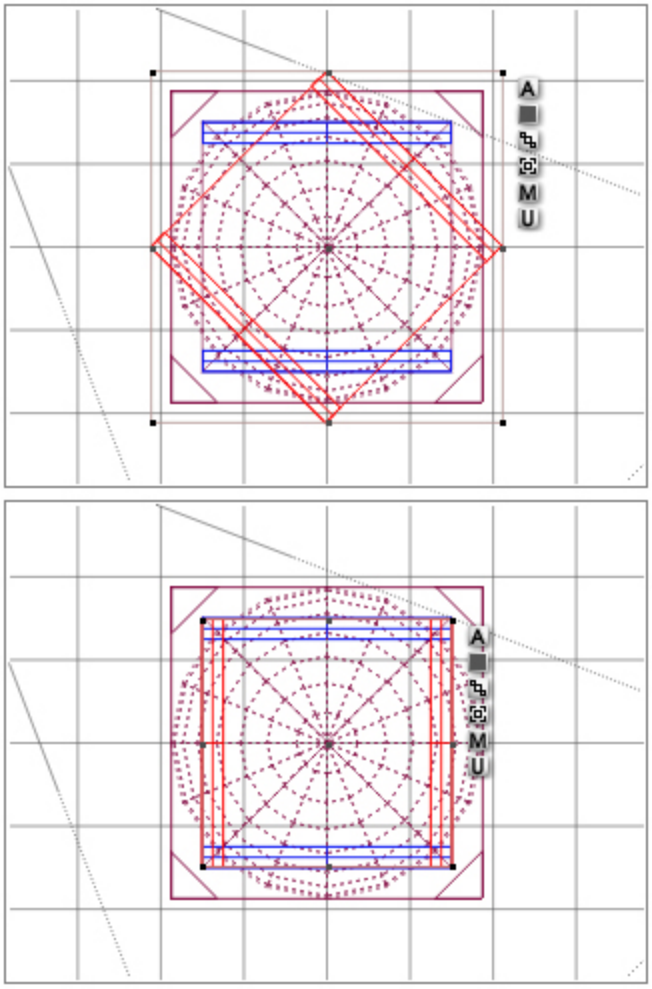
   Now you can rotate this group around its center, which happens to be the same as the center of the pyramid.

6. Click the **Edit** button to display the *Edit Palette*.
7. Place your cursor over the horizontal band of the Rotate tool. The cursor changes to a Y.



8. Press the **Shift** key to constrain rotation to 45 degree increments.
9. Click and slowly drag in either direction. The group snaps first to 45 degrees, and, as you continue dragging, to 90 degrees.

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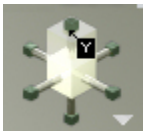
10. Click the **Ungroup** button. The U changes to a G, and the Family color changes to the Wall color.

Lesson 19: Make the Walls Taller

Before starting this lesson, press **~** to switch back to Director's View. This view will show more depth perspective.

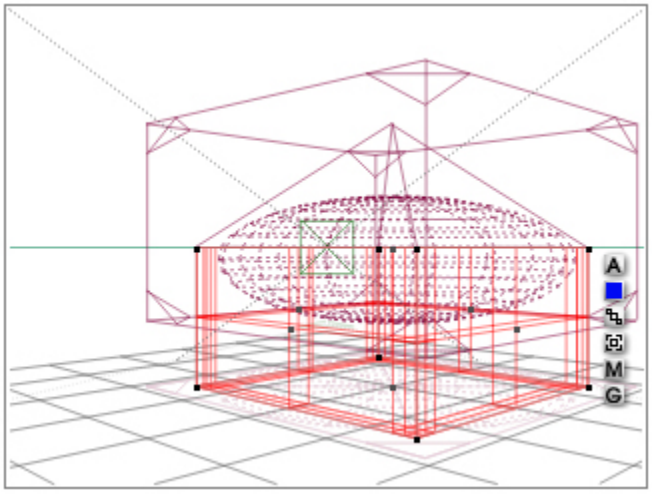
To make the walls taller:

1. Make sure all the walls are selected by selecting them with the **Select Cubes** icon on the *Selection Palette*.
2. Place the cursor over the top axis of the **Resize** tool. The cursor changes to a **Y**.

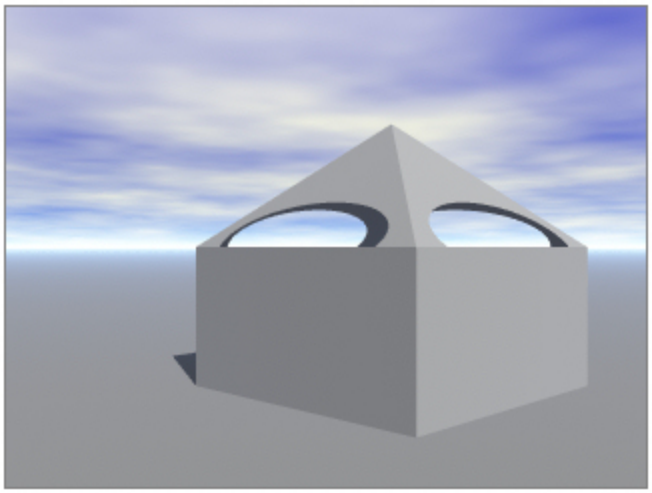


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3. Press the **Shift** key then click and drag to the right until the walls pop up to meet the bottom of the pyramid.



4. Click the **Render** button to see your progress.



Lesson 20: Adding a Doorway

You will make a doorway by duplicating and resizing one of the cubes so that it cuts a Boolean hole through the wall.

To add a door:

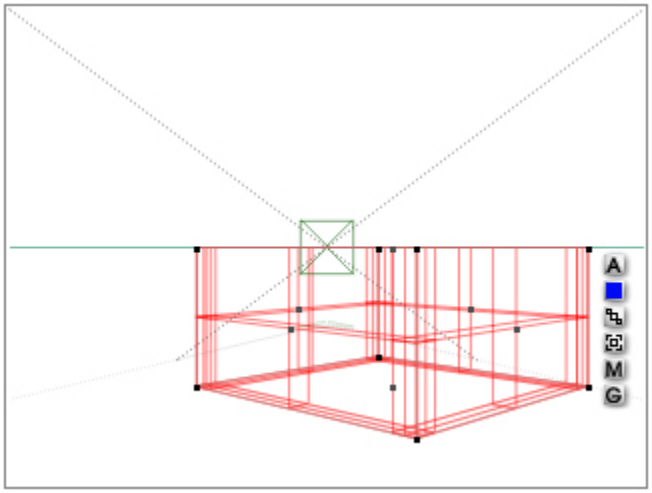
1. Switch to **Top View**.
2. Select the wall objects if they are not already selected.

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3. On the *Selection Palette*, click the **Solo Mode** button.



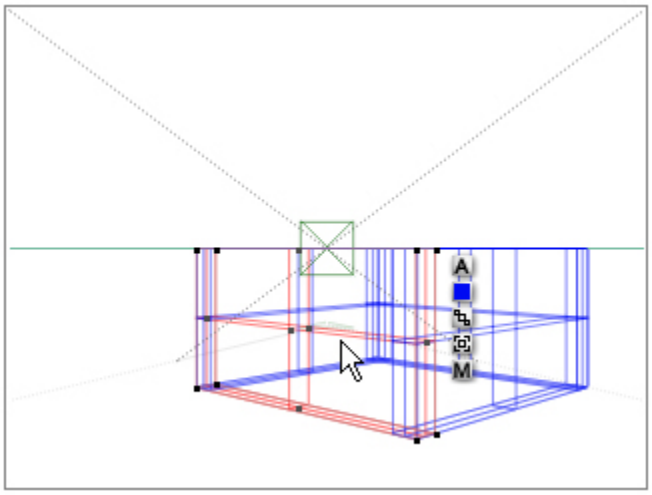
All unselected objects (the ground plane and the Boolean group) disappear, leaving only your selected objects and the camera.



The **Solo Mode** button will change to red to indicate you are in Solo Mode.



4. Deselect the wall objects by clicking elsewhere in your scene window.
5. Click the front wall object to select it.

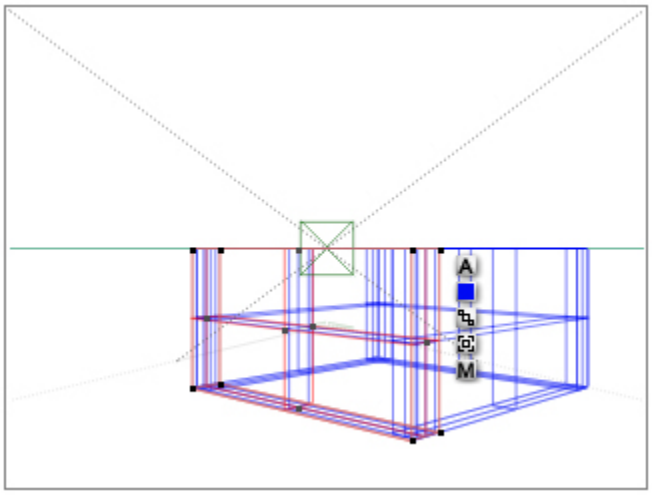


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6. Duplicate the object by choosing **Edit > Duplicate** from the menu or pressing **Cmd/Ctrl+D**. This new object will become the doorway object.

   The doorway object must be a little thicker than the wall. While you're still in Top View, you will increase its depth slightly.

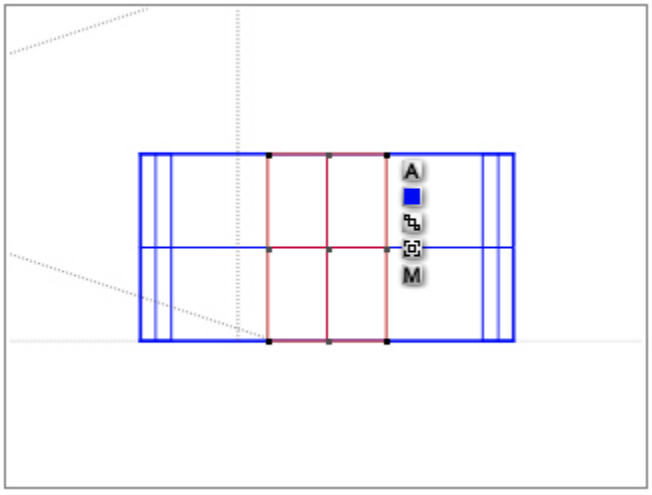
7. Click the **Z-axis** on the **Resize** tool, hold down the **Opt/Alt** key to change the size symmetrically, and drag slightly to the right to make the doorway object thicker.



   The other resize adjustment must be made looking at the object from Front View.

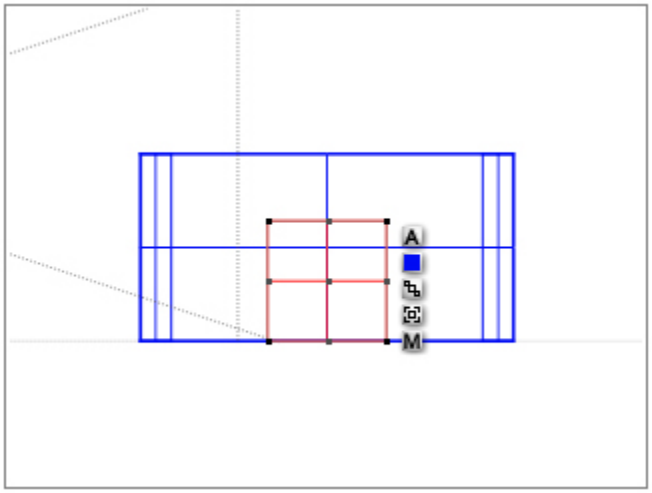
8. Switch to **Front View**. Zoom in if needed to see the wall more clearly.

9. Click the **X-axis** on the **Resize** tool, hold down the **Opt/Alt** key, and drag to the left until the object is about the width in the following figure.



10. Click and drag the top **Y-axis** on the **Resize** tool to the left. This will shorten the doorway. Continue until it is about the height in the following figure.

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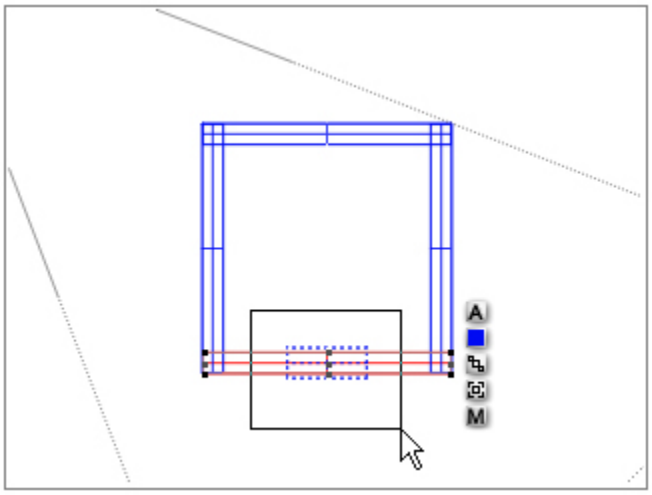


Lesson 21: Assigning Boolean Properties

After the doorway object is created and sized correctly, assign Boolean properties to it. The doorway must be cut out of the wall, so you'll need to make the doorway object negative.

To add Boolean properties:

1. Press the **N** key to make the doorway object negative. The wireframe changes to a dotted line.
2. Switch to **Top View**.
3. Select the front wall by clicking on it. The wireframe turns red.
4. Press the **P** key to change this object's properties to positive.
5. Select both the front wall and the doorway by drawing a selection marquee around their centerpoints.

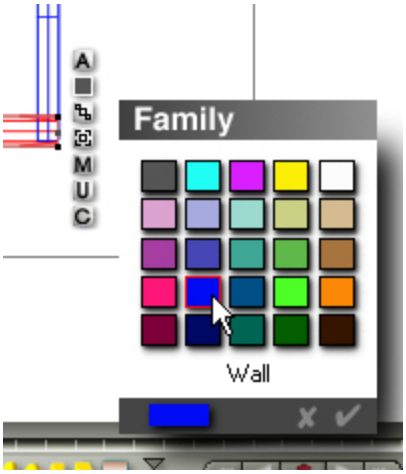


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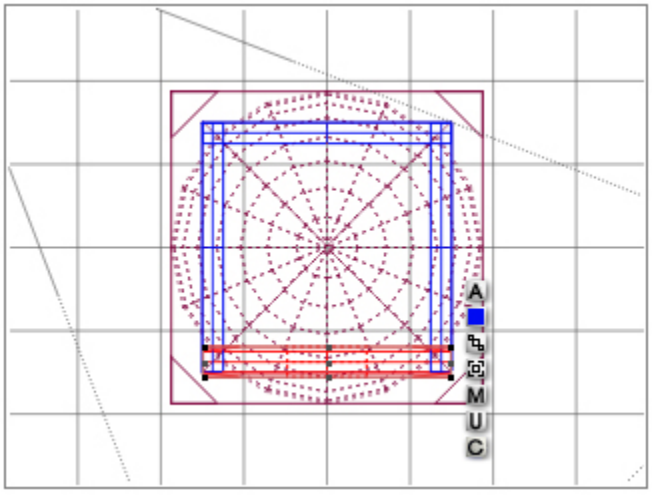
6. Click the **Group** button to group them. The G changes to a U and the family color changes to Default Gray.

   Since this group is part of the Wall family of objects, it's a good idea to assign the group to the Wall family.

7. Click the **Family** button on the *Object Control Palette* next to the group to access the Family dialog box.
8. Select the **Wall** family.

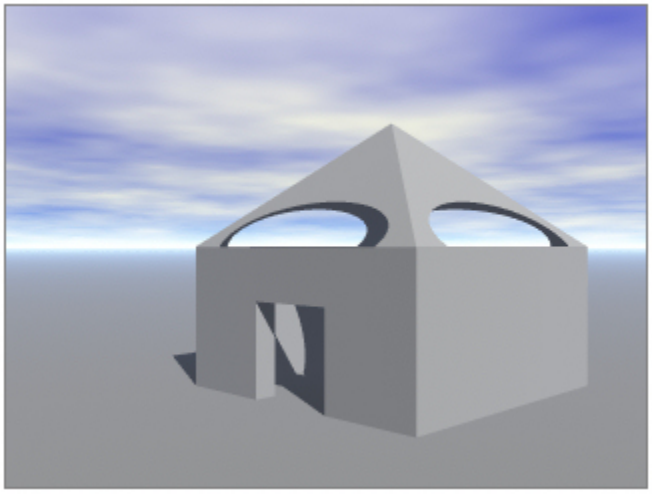


9. Click the **OK** icon to exit the dialog box. The Family button changes to the Wall wireframe color.
10. Click the **Solo Mode** button to exit solo mode. The rest of your scene appears and the Solo Mode button changes back to green.



11. Change to **Director's View**.
12. Click the **Render** button. You may need to adjust the walls if there is a gap between the walls and the roof.

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13. Save your scene.

Group and Grow the Entire Building

Since you'll be placing objects inside this building and eventually flying through it with the camera, the building needs to be bigger. When you enlarge the entire object as a group, the individual objects retain their relative size and position.

- Lesson 22: Grouping the Building
- Lesson 23: Change Your Viewpoint of the Scene

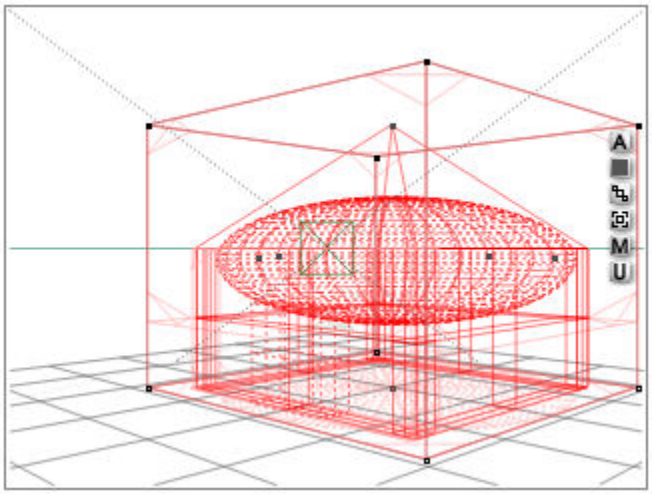
Lesson 22: Grouping the Building

To group the building:

1. Choose **Edit > Select All** from the menu or press **Cmd/Ctrl+A**. All of your objects, including the ground, are selected.
2. Hold down the **Shift** key and click the ground to deselect it. The selection bounding box encloses only the pyramid group and the wall objects. The Group button is showing.

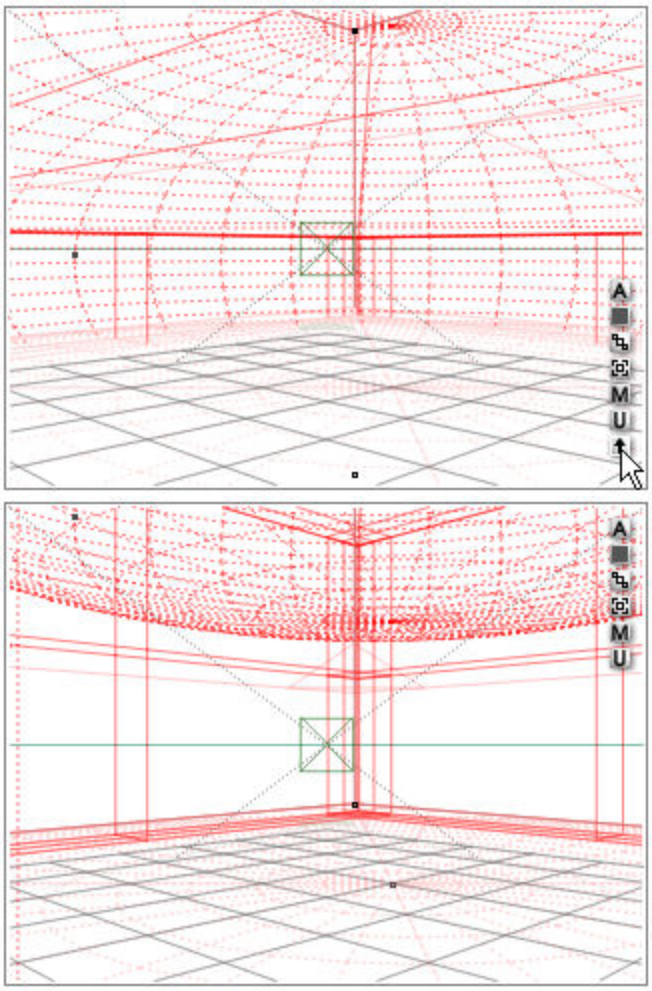
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3. Click the **Group** button to group these objects.



4. Press the ***** key twice (Shift+8). Each time you press this key, your group's size doubles.
5. Click the upward pointing arrow button (located with the group of buttons associated with the bounding box of the selected object). The group jumps up so that it is now resting at ground level.

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Lesson 23: Change Your Viewpoint of the Scene

You need to adjust your viewpoint of the scene so that you can see the entire building.

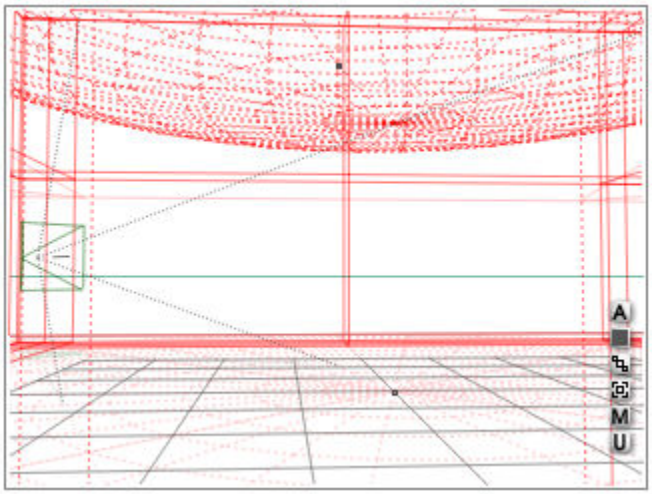
To change the viewpoint:

1. Place the cursor over the **Trackball** control on the *Controls Palette*. The cursor changes to double crossed arrows.
2. Click and drag the Trackball to the right. The scenes rotates counter clockwise in the scene window.



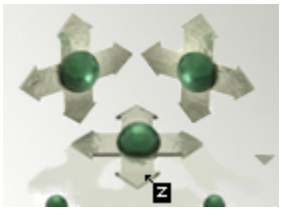
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3. Continue dragging until the blue camera wireframe is on the left side of the window and the center wireframe lines of the front and back walls line up in the center of the window, looking like the following figure.



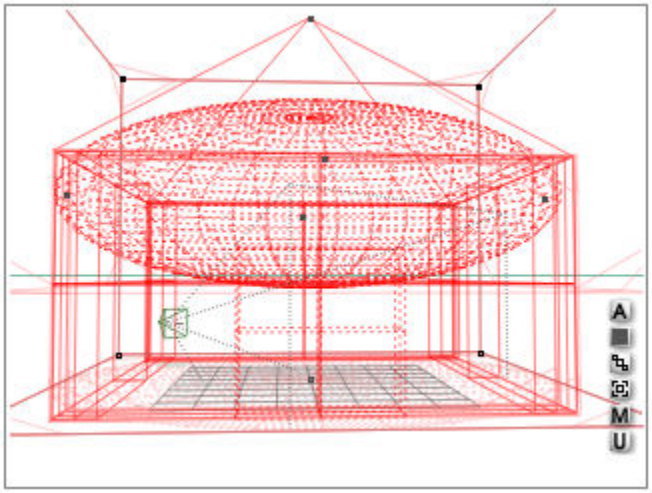
You are now looking through the doorway of the building.

4. Place the cursor on the bottom **Z** arrow of the .**XZ Camera Control** .



5. Drag up on the **XZ Camera Control** until you can see the entire front wall of the building.

The scene should look like this.



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6. Save your scene and call it **Grouped Building**.

Sphere on a Pedestal

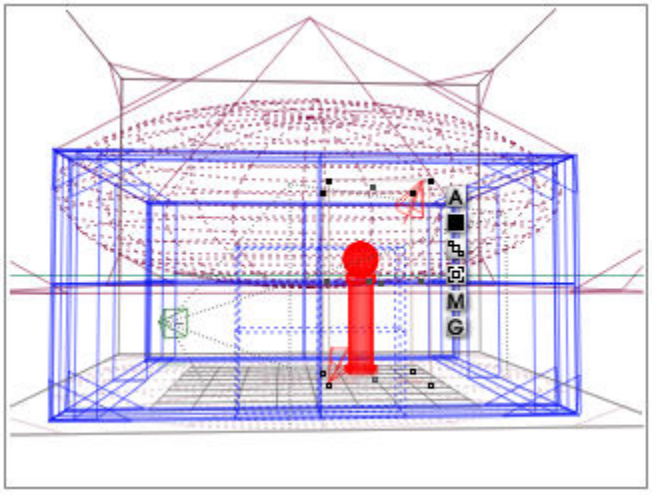
The next section of this tutorial will incorporate merged into the scene you are creating.

- Lesson 24: Merging an Existing Scene
- Lesson 25: Adjusting Lighting

Lesson 24: Merging an Existing Scene

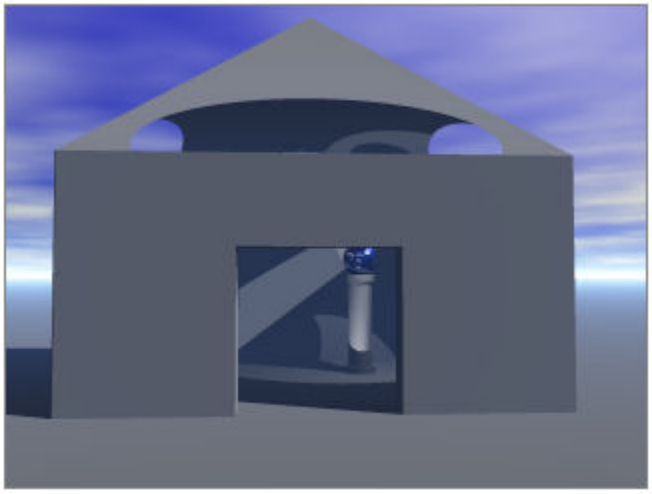
To merge another scene into the current scene:

1. Choose **Edit > Deselect All** from the menu.
2. Select **File > Merge** from the menu.
3. In the **Open** dialog, navigate to the Tutorials/Manual Tutorial folder.
4. Select the scene file called **Pedestal Merger**.
5. Click the **Open** button. The Wireframe for the merged scene appears in your scene and is selected.



6. Render the scene. There is now a pedestal with a mirrored sphere on it. There are lights in the scene as well.

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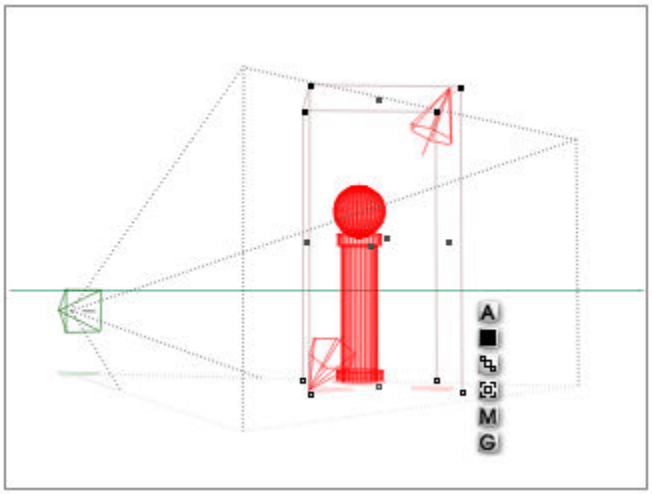
Lesson 25: Adjusting Lighting

In this next lesson, you will make slight modifications to the lights and use Bryce's tracking controls to make the lights always point at certain objects. To make it easier, you'll need to temporarily rid your scene of some extra objects.

To adjust lights:

1. Select the pedestal group and lights.
2. Click the **Solo Mode** button on the *Selection Palette* to change to Solo mode.

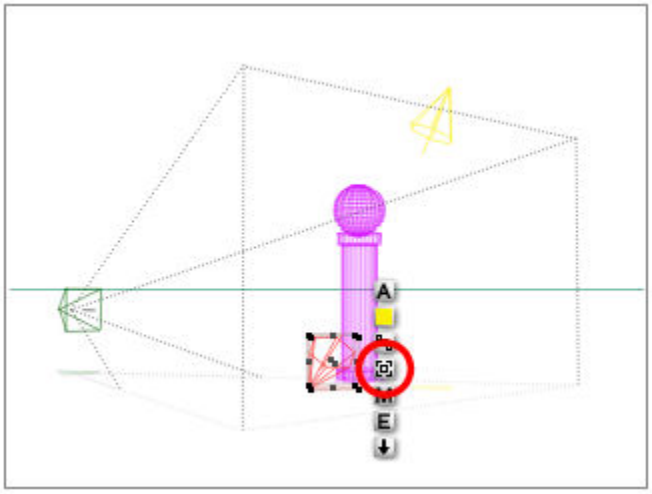
   The ground, walls and building objects disappear, leaving only the two lights and the pedestal and sphere.



3. Click away from the objects to deselect them.
4. Select the lower light.

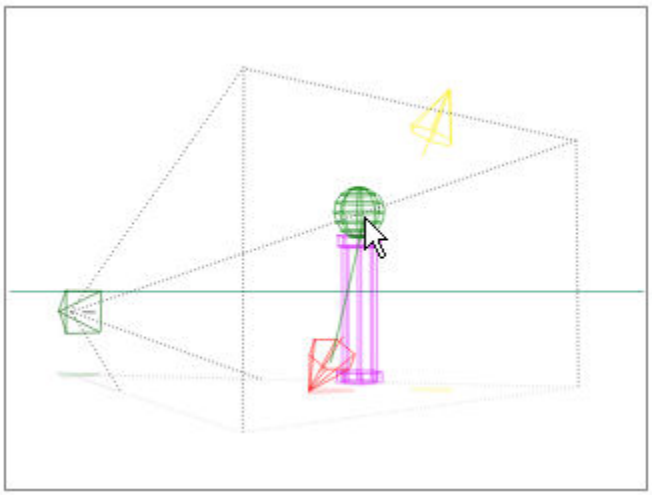
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5. Click the **Tracking icon** (the fourth button down in the group of buttons associated with the selected object) and drag from it to the sphere object.



While your mouse button is still pressed, whatever object is underneath the cursor turns green.

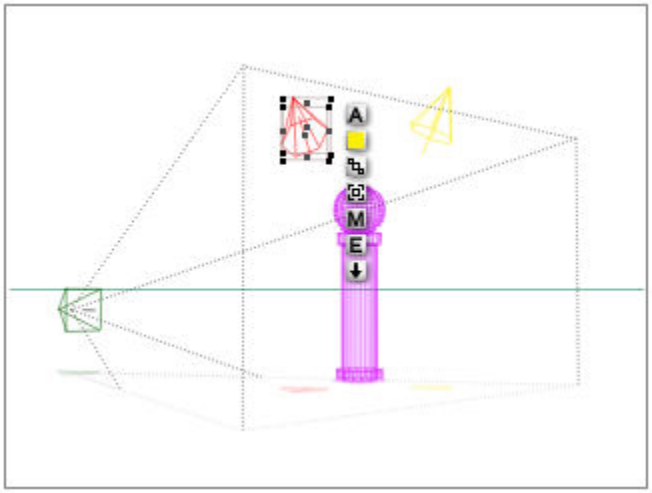
6. Release the mouse button when the sphere turns green.



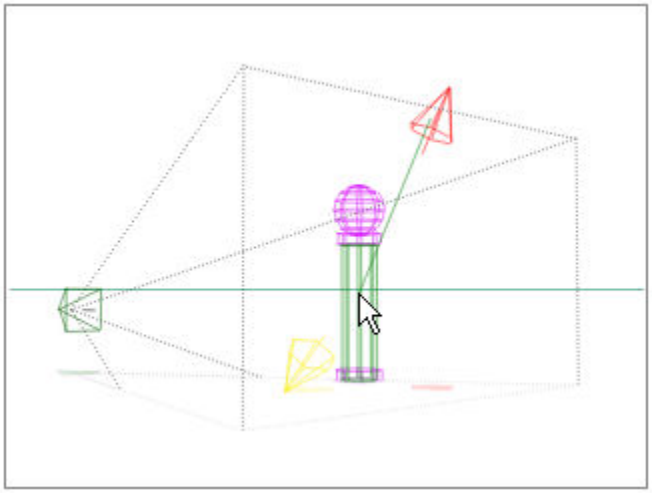
The light is now set to track the sphere.

7. Drag the light so that it is located above and to the left of the sphere. The light remains pointing at the sphere.

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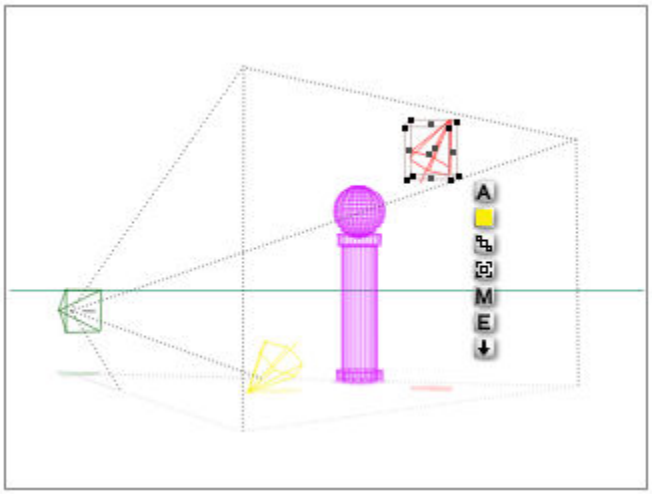
8. Click the **Land Object** button (the Down arrow button located in the group of buttons associated with the
selected object). The light snaps to the ground, pointing toward the sphere from this position.
9. Select the light that is located above and to the right of the pedestal.
10. Drag from this light's **Tracking** icon to the tall cylinder.



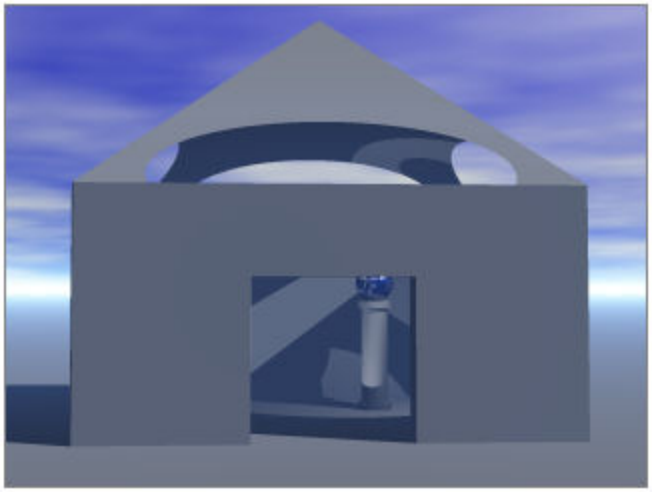
11. Release the mouse button when the tall cylinder turns blue.

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12. Drag the light down slightly to the right.



13. Click the **Solo Mode** button to exit Solo Mode.
14. Render and save your scene.



Pre-Production

In this section of the tutorial, you will plan the creation of an animation. You'll work on some pre-production tasks. Then you will animate the camera, tweak the animation, and conduct test renders.

You can use either the scene you created in this tutorial or the file entitled "Animation-start" in the Manual Tutorials folder.

- Lesson 26: Pre-Visualizing & Timeline for the Sequence
- Lesson 27: Setting up the Timeline for the Sequence

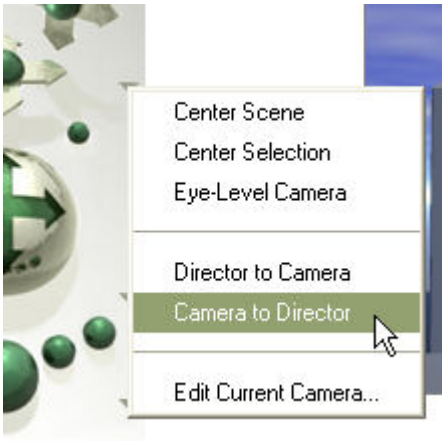
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Lesson 26: Pre-Visualizing the Sequence

Up until now, you've been working with your scene in Director's View and in the different orthogonal views. For
animating you will use Camera View.

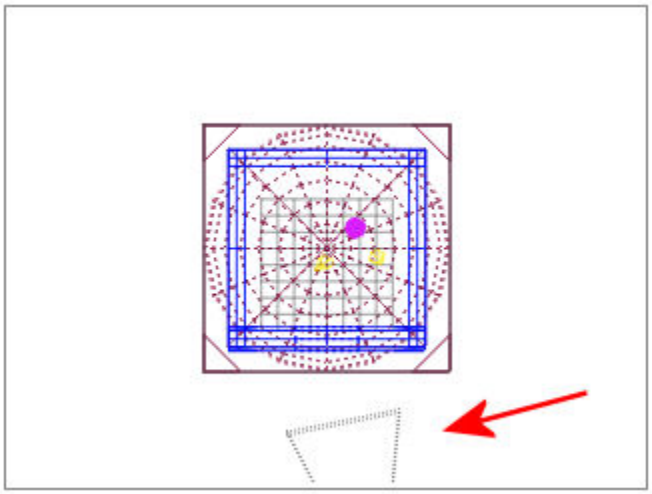
To plan and time the sequence:

1. On the *Controls Palette*, choose **Camera to Director** from the *Camera Options* menu.



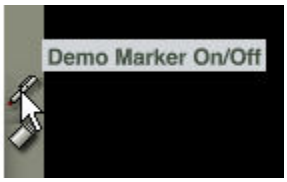
   The camera wireframe disappears from the scene. The camera object has moved to the same location as the Director's View, so it is now located at your point of view.

2. Switch to **Top View**. Your scene changes to top view. The camera is now located at the bottom of the scene window. In this animation, the camera will go through the doorway, circle around the pedestal, then go out through the archway just above the left wall.

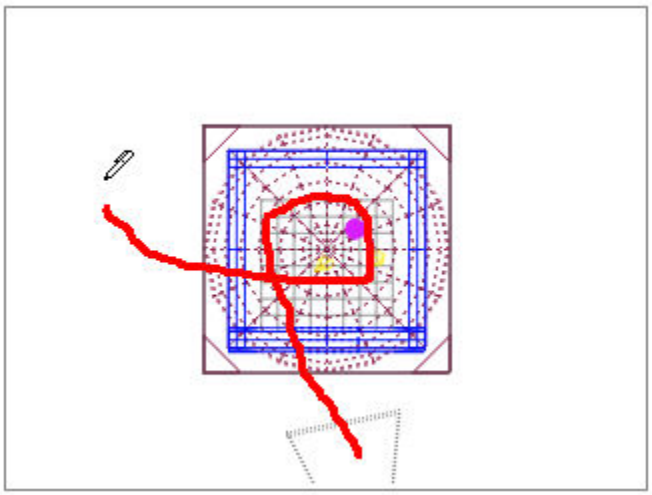


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3. On the Display palette (to the right of the Working Window) click the Demo marker tool.



4. Beginning at the camera's location, drag the mouse to draw a path from the camera, through the door, around the pedestal, and out the left side. Your scene should look something like this.



For this example, let's assume that this path will take 9 seconds for the camera to travel.

5. Press the space bar to remove the marked path and deactivate the Demo Marker (or click on the Demo Marker icon again).

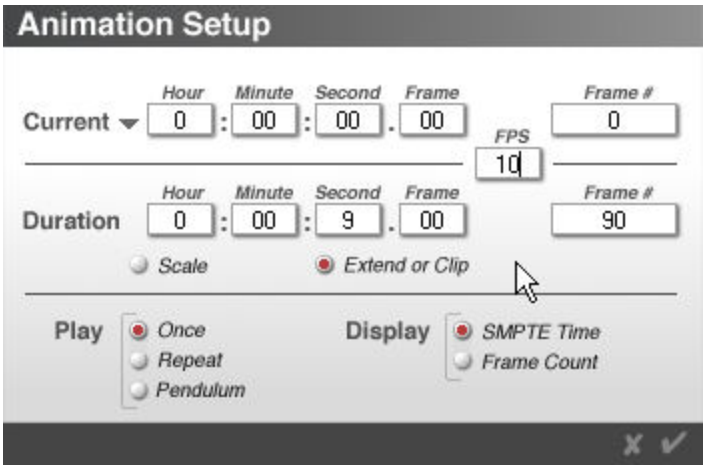
Lesson 27: Setting up the Timeline for the Sequence

Now that you have decided that the animation will take 9 seconds, it is time to set it up and begin animating the camera.

To set up the Timeline:

1. Choose **File > Animation Setup** from the menu.
2. In the dialog, enter 9 seconds in the **Duration** section and change the **frames per second** (FPS field) to 10.

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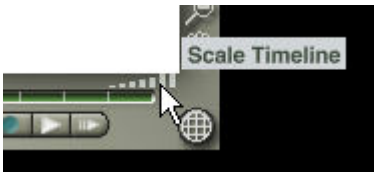


When you exit the dialog box, the Time Scrubber and Current Time Indicator on the Animation palette fill with a green timeline.



The blue extends beyond what is visible in the Time Working area. You will use the Scale tool above the right end of the timeline to scale the timeline so that you can see it.

3. On the **Scale tool**, drag the cursor to the right.



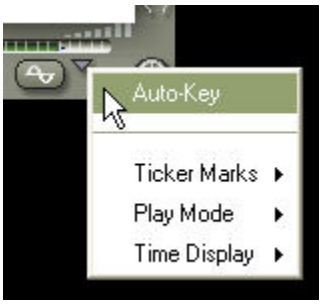
The tick marks move closer together and more of them appear from the right.

4. Continue dragging until you can see the entire green portion of the timeline.

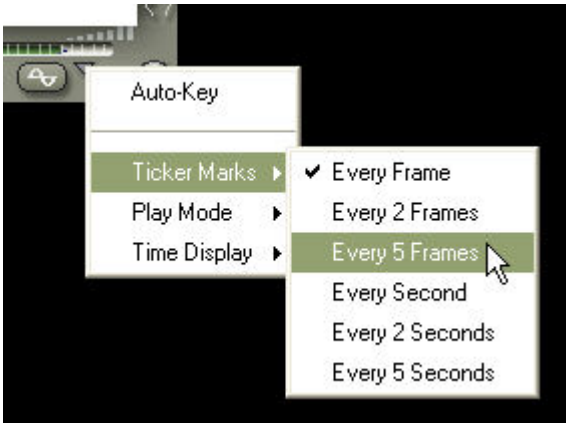


5. If the *Selection Palette* is showing, toggle to the *Animation Palette* by clicking the **Toggle** in the lower right corner of the Bryce interface.
6. Click the triangle on the right side of the Animation palette and ensure **Auto-key** is selected.

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7. Click the triangle again and select **Ticker Marks > Every 5 Frames**.



When your frame rate is 10 frames per second, a ticker mark every 5 frames is equivalent to a ticker mark every half a second.



Animate the Camera

This section shows how to adjust the camera animation for a smooth animation.

- Lesson 28: Setting the Camera Trajectory
- Lesson 29: Pointing the Camera
- Lesson 30: Making Camera Adjustment
- Lesson 31: Smoothing the Camera's Trajectory
- Lesson 32: Test Render

Lesson 28: Setting the Camera Trajectory

To adjust the camera's trajectory:

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1. Drag the **Scrubber** three ticks to the right.

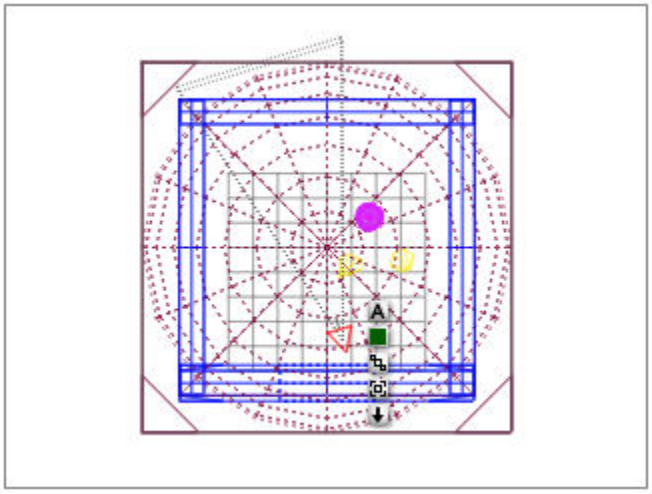


   The time reading is 00:00:01.05.

2. Place the cursor over the camera. Zoom out of if you need to in order to see the camera.

   Do not drag the camera by the blue handle in the center of the camera; you will be dragging and adjusting the actual key position rather than the camera itself.

3. Drag the camera to the interior of the room, as shown.



4. A blue point appears where the camera was just located and a blue trajectory line links the first point with the new camera location.



   The trajectory is the line along which the camera will move.

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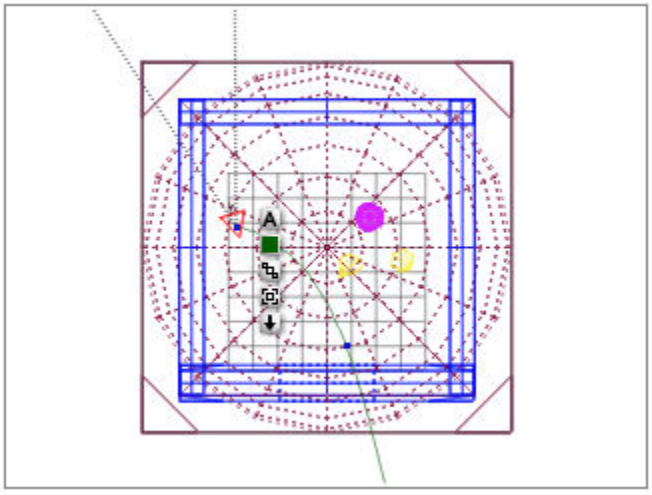
You'll also notice that the keyframe button is yellow, indicating a saved keyframe at this point on the timeline.



5. Drag the Scrubber another three ticks to the right.

   The time reading is 00:00:03.00.

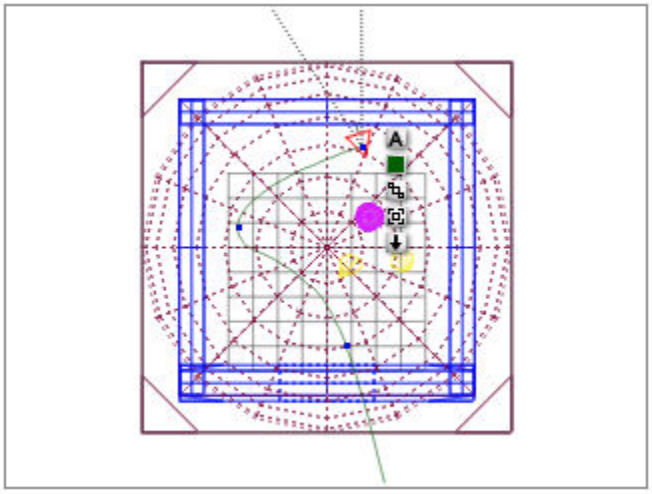
6. Drag the camera so that it is on the left side of the mirrored sphere wireframe.



7. Drag the Scrubber another three ticks to the right.

   The time reading is 00:00:04.05.

8. Drag the camera so that it is on the far side (top) of the sphere wireframe, as shown.

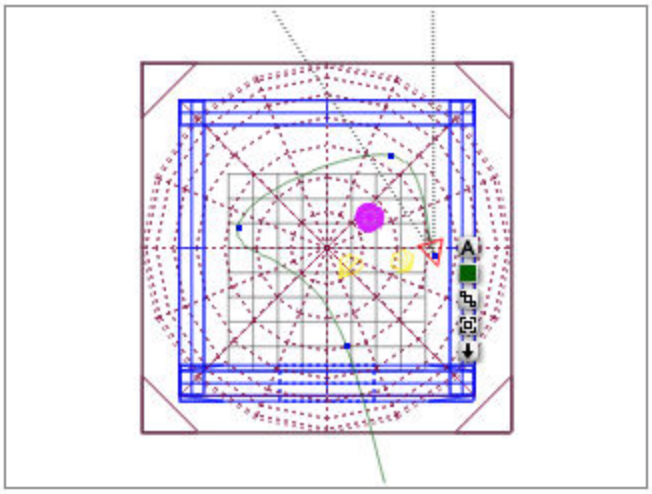


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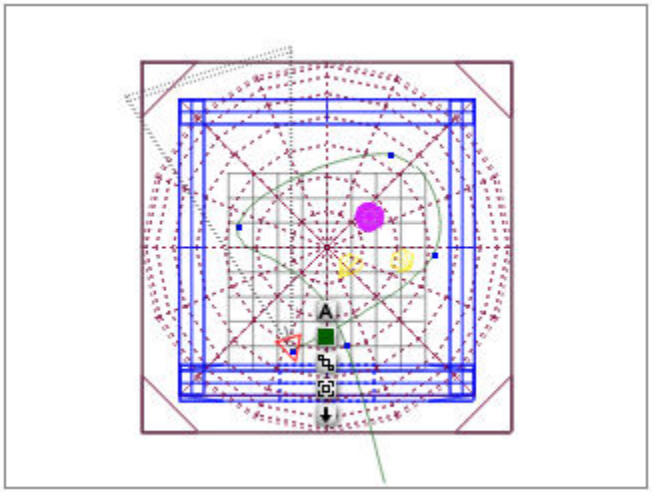
9. Drag the Scrubber another three ticks to the right.

   The time reading is 00:00:06.00.

10. Drag the camera so that it is on the right side of the sphere wireframe.



11. Drag the Scrubber another three ticks to the right. The time reading is 00:00:07.05.
12. Drag the camera so that it crosses to the left of the path as shown.

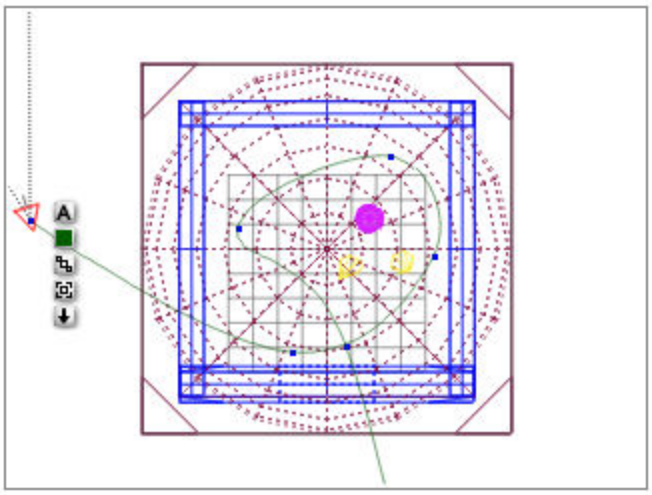


13. Drag the scrubber the final three ticks to the right to the end of the timeline.

    The time reading is 00:00:09.00.

14. Drag the camera well beyond the wireframe to the left of the building, as shown.

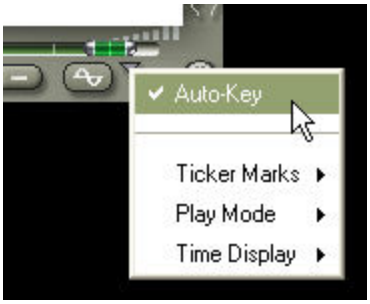
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Congratulations! You have just created a camera trajectory to animate this camera.

You'll no longer need the Bryce's Auto-key function. To ensure that you do not inadvertently create a new keyframe during the next steps of this tutorial, you can deactivate this function.

15. Click the triangle to the right of the *Animation* palette.
16. Deselect **Auto-Key** from the list.



Lesson 29: Pointing the Camera

Check to see how the camera moves by playing the sequence.

To play the sequence:

- Click the **Play** button on the Animation palette.



The camera moves along the blue trajectory while the Time scrubber moves from

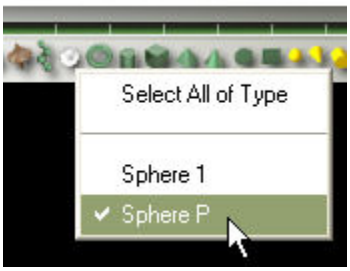
left to right. Notice that throughout the animation, the camera faces in one direction.

You can find a sample wireframe render of the animation in the Manual Tutorial folder, titled BooleanLessonWire1.mov.

To point the camera:

1. Toggle back to the *Selection Palette* by clicking the **Toggle** in the lower right hand
corner of the Bryce window.
2. Click and hold the **Select Sphere** tool.
3. Choose the **Sphere P** on the list that appears.

   This should select the pedestal sphere in the merged scene. Make a note of the sphere's name; you will find it in a different pop-up menu in the next couple of steps.

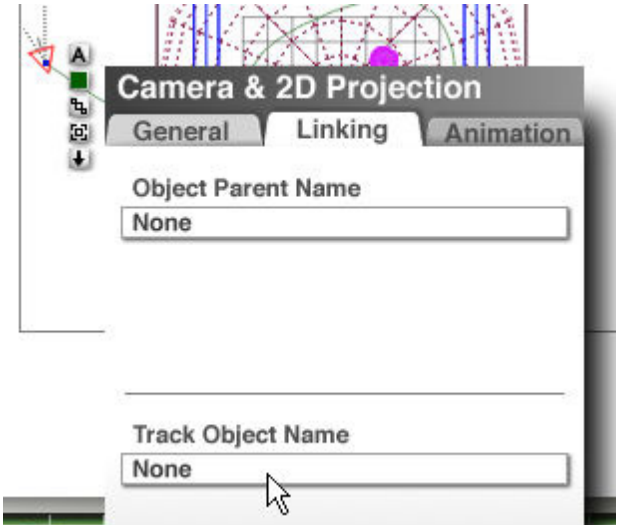


4. Click the camera to select it.

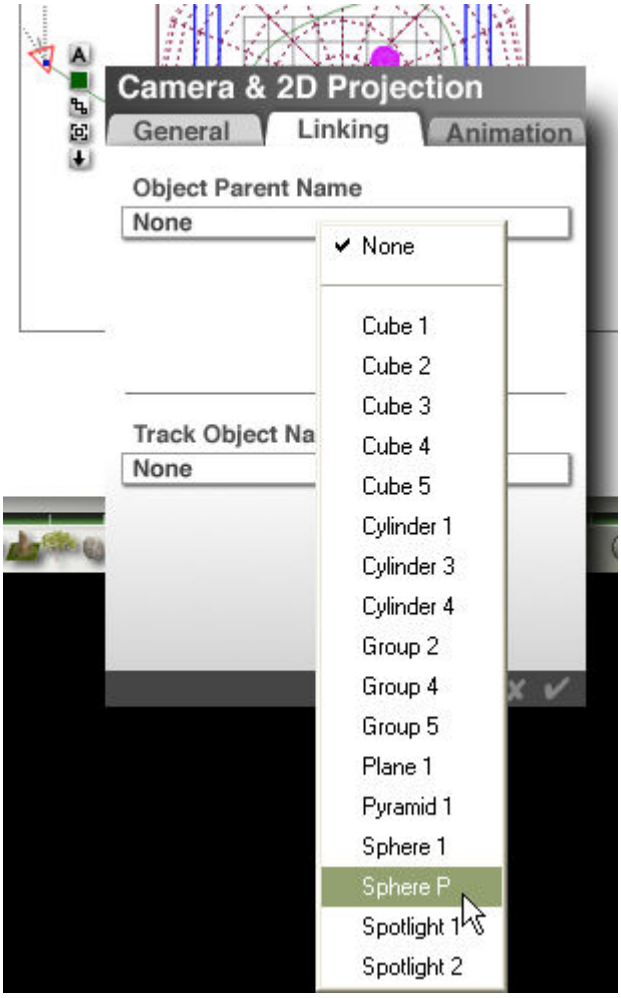
   The camera's wireframe turns red and the blue trajectory line appears.
5. Click the **Object Attributes** button (**A**).
6. Click the *Linking* tab.

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7. Click the box titled ‘None’ under **Track Object Name**.



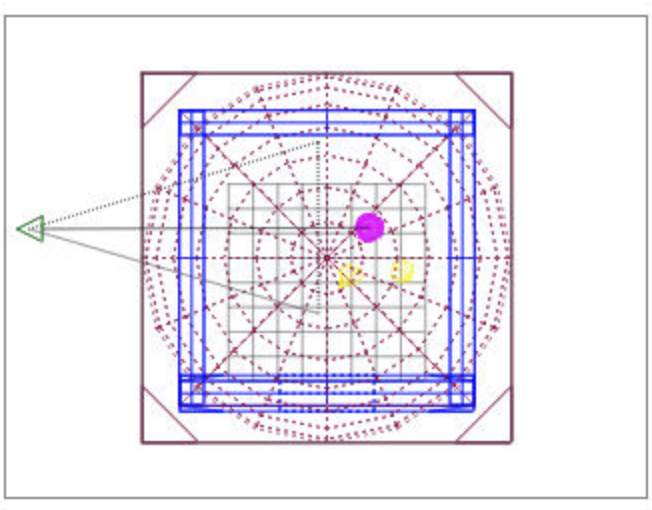
8. Select the name of the pedestal sphere.



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9. Click the **OK** icon to leave the *Camera's Object Attributes* dialog box.

   The camera snaps to the right to point at the sphere and a gray line extends from the camera to the sphere.



10. Toggle back to the *Animation palette*.
11. Click the **Play** button. The camera moves along the trajectory, facing the sphere for the entire duration of the sequence.

    You can find a sample wireframe render of the animation in the Manual Tutorial folder, titled BooleanLessonWire2.mov.

To view the scene from camera view:

1. Switch to **Camera View**.
2. Click the **Play** button to watch the wireframe animation.

   The camera flies through the space, all the while keeping the sphere at the center of the scene window.
3. Save your scene, call it Animation-Rough Cam.

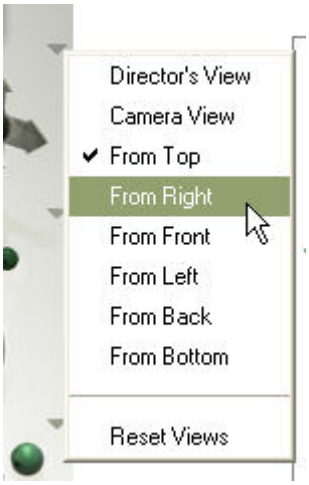
Lesson 30: Making Camera Adjustments

The height of the camera fly-through is below the mirrored sphere and below the open arch on the left side of
the building. However, the camera trajectory may have some kinks in it. You can drag the points of the camera
trajectory to reshape it.

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To adjust the height:

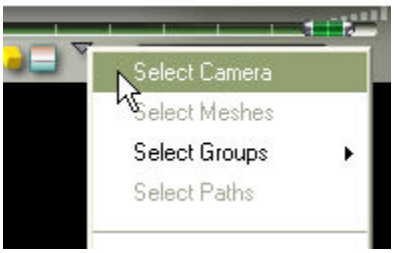
1. Switch to the **From Right** view.



2. Press **Cmd/Ctrl+A** to select all objects in the scene.
3. Click the **Zoom Out** tool so you see the entire camera path.

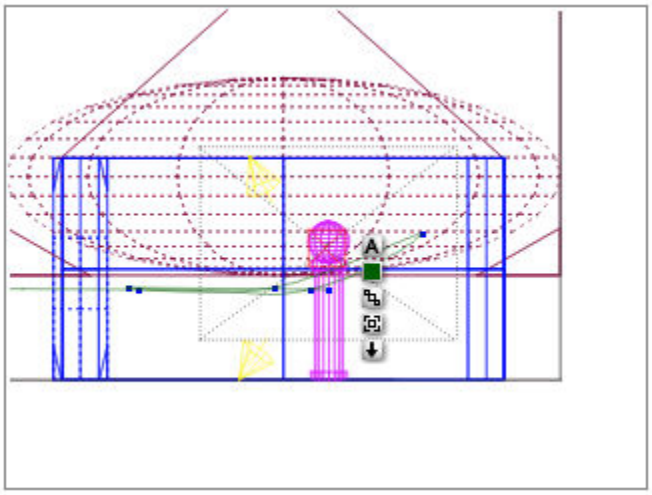


4. From the *Select Options* menu, choose **Select Camera**.



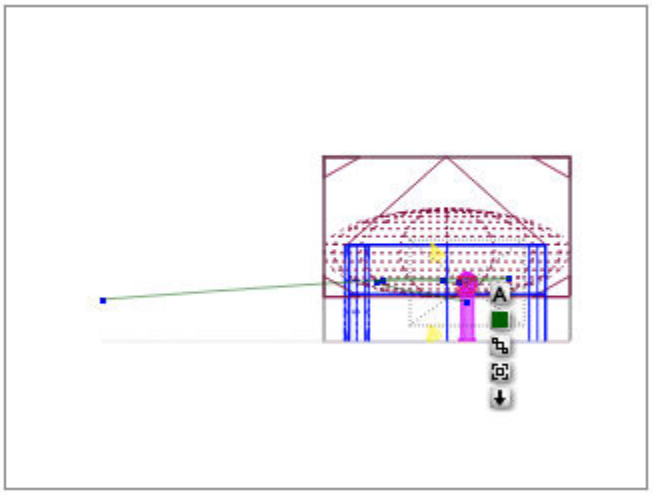
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5. Drag the point on the right up so that it is level with the sphere.



6. Drag the other points up, except for the first and last.

   Your scene should look like this figure. Note how the first and last points are lower than the others which we just moved up.

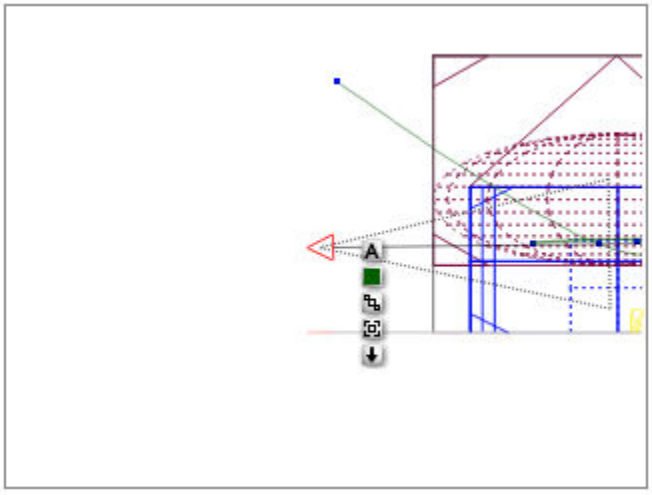


   Next, you'll adjust the camera's height so that it is level with the sphere as it circles around it.

   To continue adjusting, you will need to look at the scene from a different perspective.

7. Switch to **From Front** view.
8. **Zoom out** if needed.
9. Drag the endpoint of the camera trajectory up so that it extends from the sphere through the Boolean sphere and beyond the building.

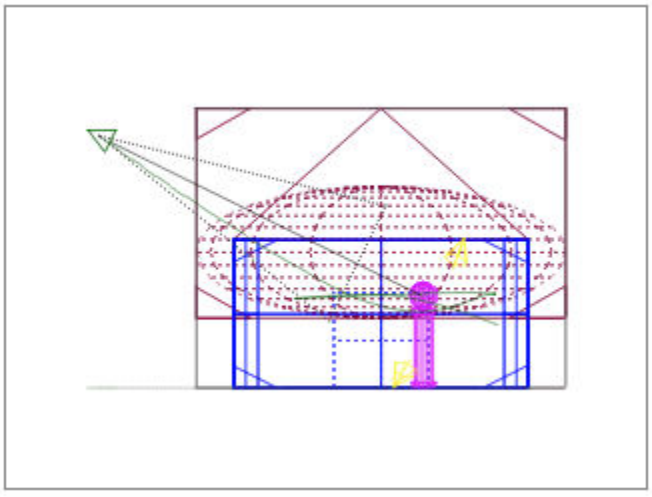
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Note that you might need to Zoom out here to see the same view as the image above. The dotted line of the sphere is the location of the open area of the arch.

10. Click the **Play** button.

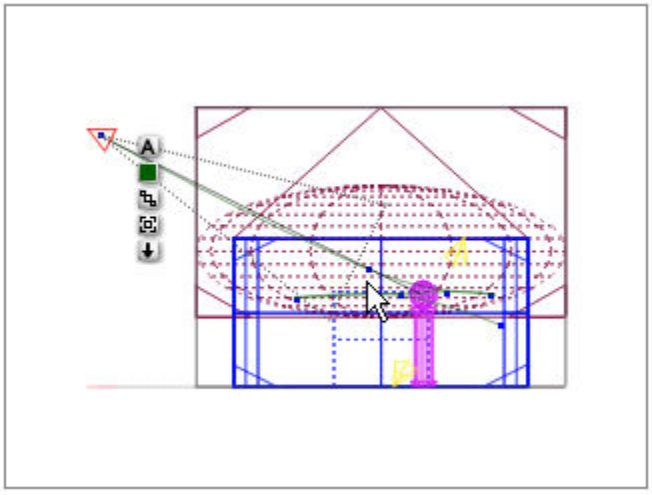
    Watch the camera's movement through the sequence. The camera ends up at the position you set at the previous step.



Now that the camera is back on the trajectory, notice that the gray line between the camera and the sphere provides a guide for that straight line of sight. You can use the guide for other placements of your trajectory.

11. Drag the previous key point up so that it is aligned with that gray line. Your trajectory should look like the one shown.

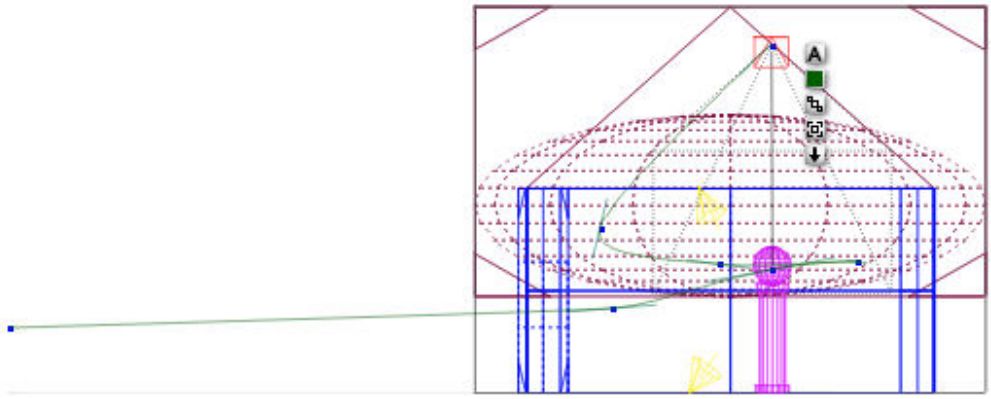
©2007 DAZ 3D, Inc.



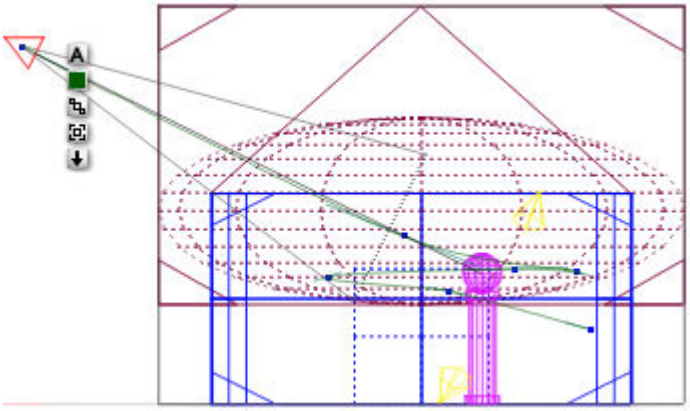
12. Switch to **Right** view.
13. Look at the animation path compared to the height of the door. In our example, the point just inside the door is too high which means the camera will pass through the top of the door.



14. Click on the point and move it down slightly. Move the first point down a little as well.

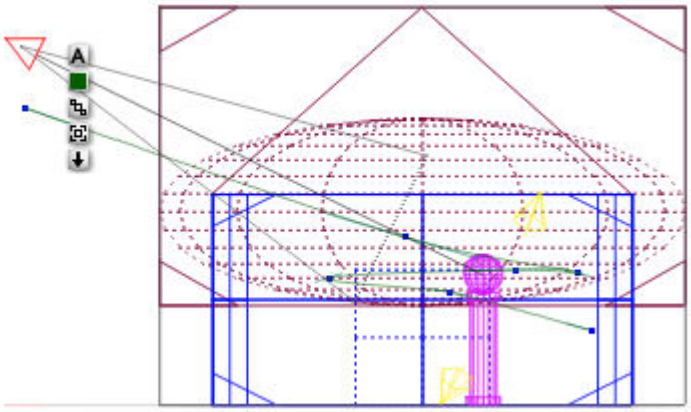


15. Switch to Front view.
16. Look at the animation path that goes through the arch opening.



17. If you think the path is too high and the top may cut off part of the animation, grab the last point and drag it down some. Don't worry if the camera doesn't move down with it as it will adjust itself when you play the animation.

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18. Switch back to **Camera** view.
19. Click the **Play** button to see your animation.

Lesson 31: Smoothing the Camera's Trajectory

To smooth the Camera's trajectory, you will adjust the points and work with the shape of the curve using the tangents of each point.

To see the tangents, you will need to make them visible.

To display the trajectory options:

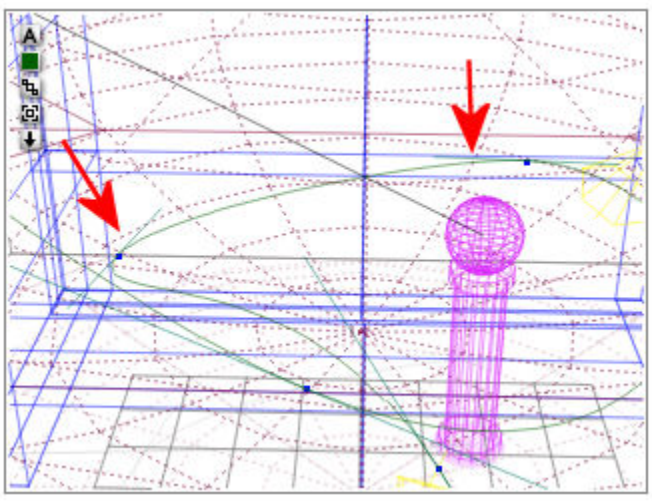
1. Switch to **Director's View**.
2. Click the **Object Attributes** button to access the *Camera and 2D Options* dialog.
3. Click the *Animation* tab.
4. Under **Trajectory Options**, click the button for **Show Always** and **Show Tangents**.



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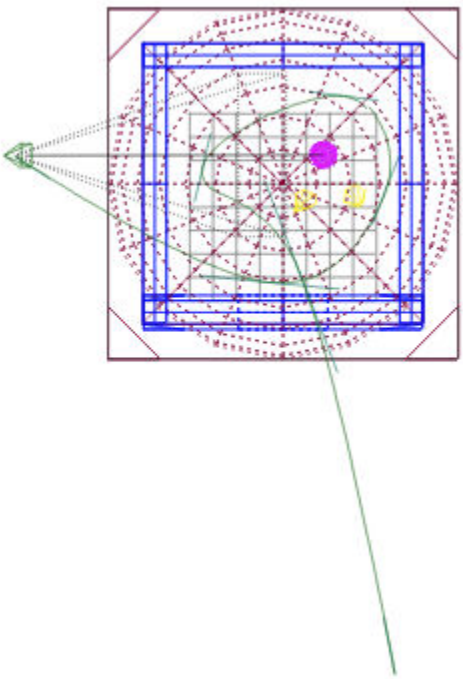
5. Exit the *Camera and 2D Projection* dialog box by clicking the **OK** icon.

   The camera trajectory now has green lines extending from each point.



To smooth the trajectory:

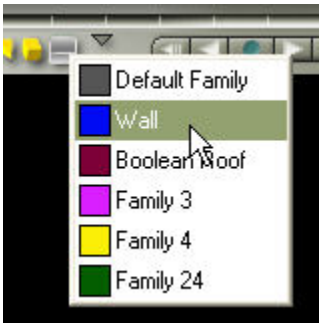
1. Smoothing the trajectory is easiest when you work in Top View so switch to **Top View**.



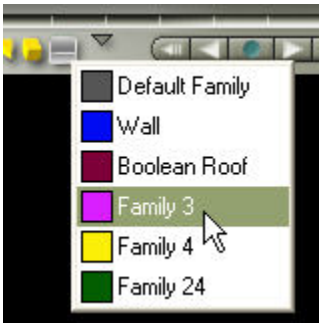
2. Toggle to the *Selection Palette*.
3. Click the **Select Families** button.

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4. Choose the **Walls** family.



5. Hold down the **Shift** key and select **Pedestal** from the *Families list*. If the Pedestal family is not listed, choose **Family 3** from the menu.

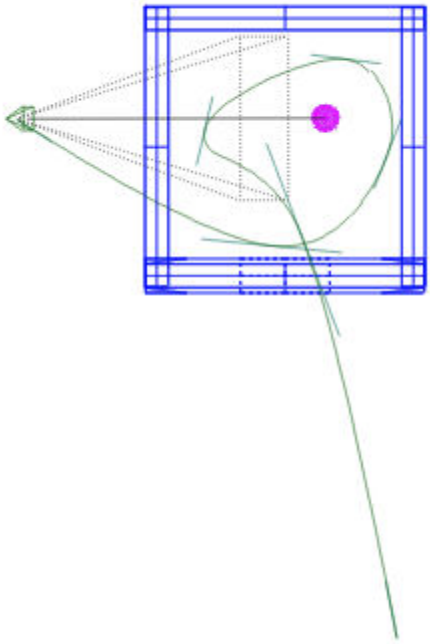


6. Click the **Solo Mode** button.



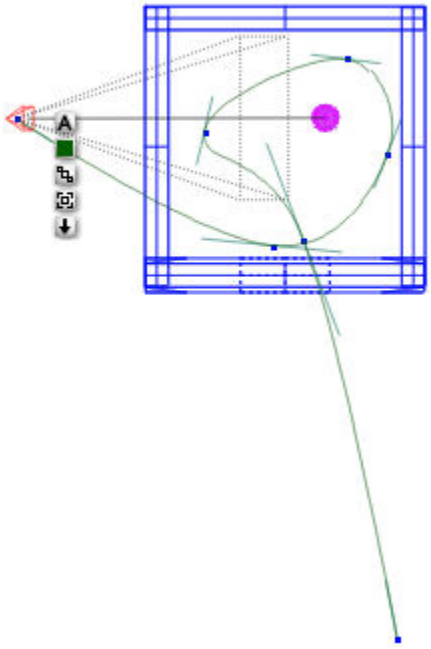
There is now a much clearer view of your camera trajectory and the tangents extending from each point.

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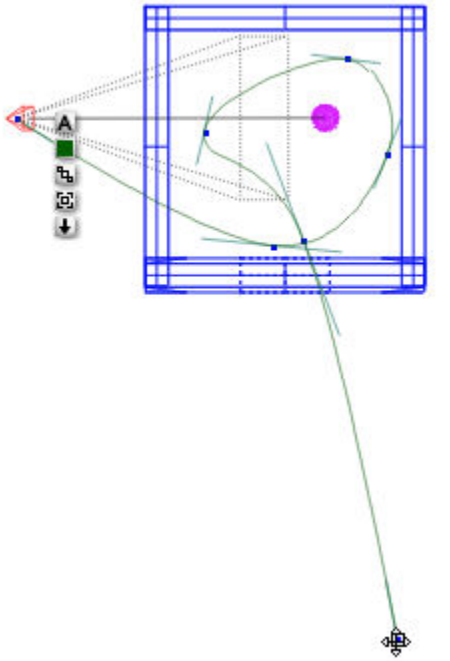
Any kinks in the path result from a lengthy tangent interfering with a neighboring point. Shortening the tangent will smooth out the trajectory line.

7. Click the camera to select it. The points appear.

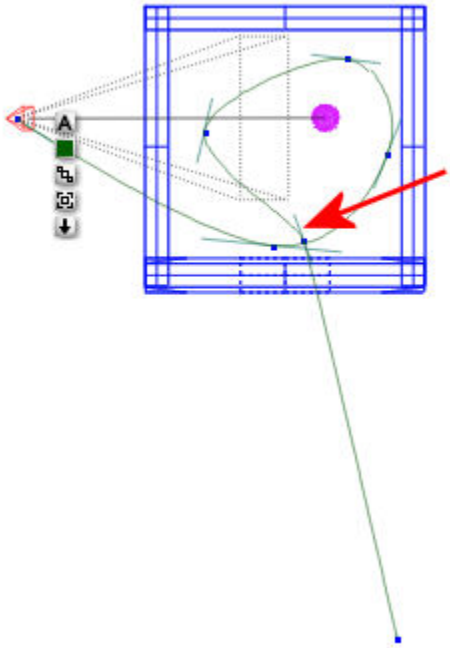


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8. Place the cursor over the point with the longest trajectory. The cursor changes to crossed arrows.

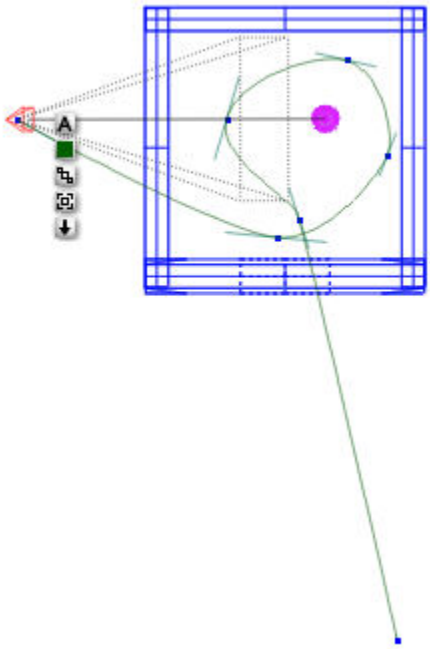


9. Press the **T** key (for tangent), the cursor changes to a double arrow, then click and drag to the right. The tangent lines shorten.



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10. Reposition any other points to smooth out the trajectory line.



11. Click the **Solo Mode** button.
12. Switch back to **Camera View**.
13. Toggle back to the *Animation Palette*.
14. Click the **Play** button to view the animation.
15. Save your scene.

Lesson 32: Test Render

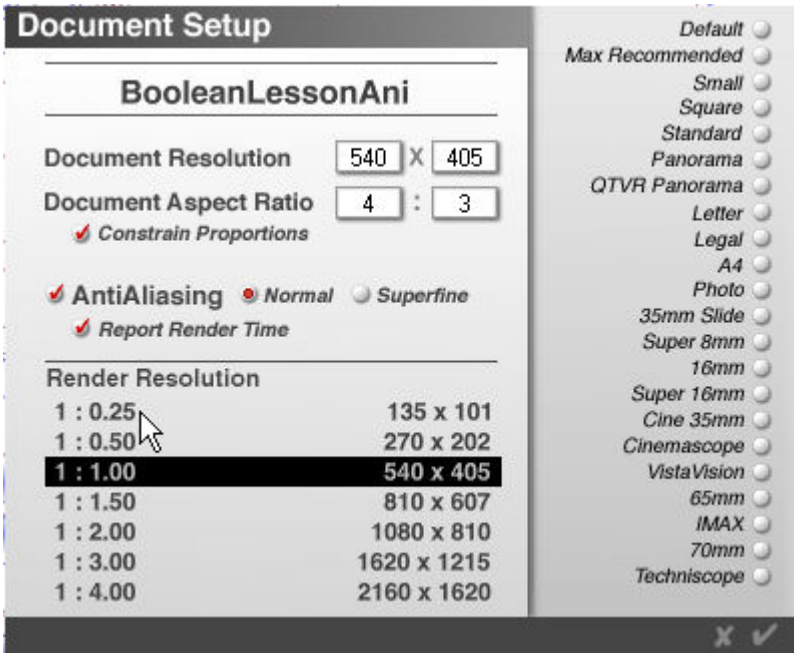
It's time to set up a test render of your animation sequence. Continue with the scene file you have been working with, or use the Animation-Smooth Cam scene file from the Manual Tutorial folder.

To create a rough animation, you need to change the render size of your scene to a smaller image.

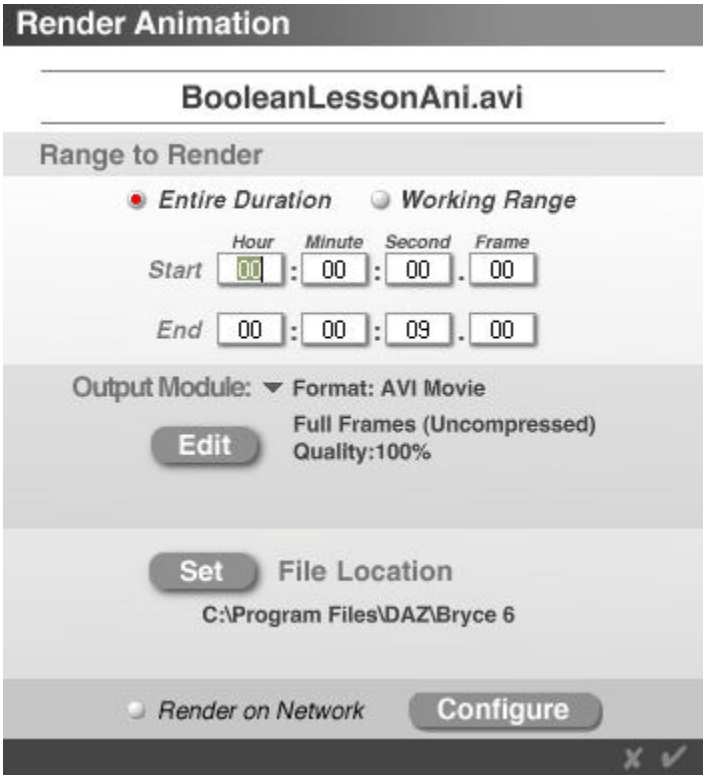
To create a test render:

1. Choose **File > Document Setup**.
2. In the dialog box, change the render resolution to **1:0.25**. The document size will stay at the same size, but the rendered size will be smaller (saves time).

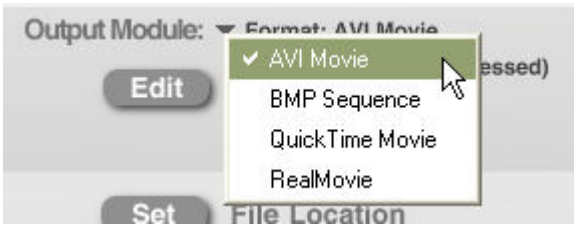
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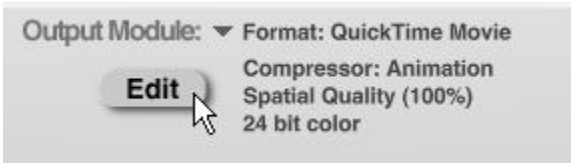
3. Click the **OK** icon to exit the dialog box.
4. Click the **Render** button to test render your scene.
5. Choose **File > Render Animation**. The *Render Animation* dialog comes up where you can choose the settings for this test render.



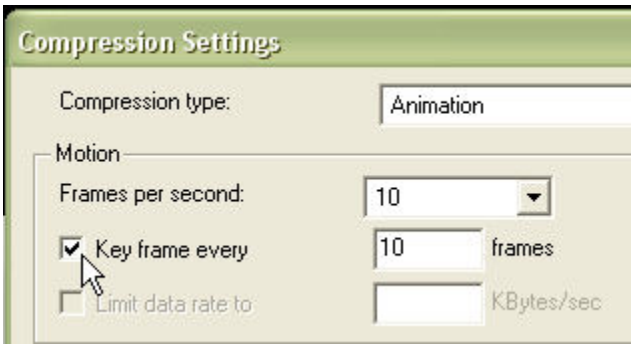
6. In the **Output Module** section, click on the arrow next to **Format** and choose an output format.



7. If you selected to save as a QuickTime Movie, click the **Edit** button. A *Compression Options* dialog box appears.



8. Disable the option for **Keyframe every 10 frames** then click **OK**.



9. Click the **Set** button. A *Save* dialog box appears, showing the location and name of your movie.
10. Choose the location and name of your movie.
11. Click **Save**.
12. Click the **OK** icon to exit the *Render Animation* dialog box.

    Your scene begins rendering each frame. At the end of the render, Bryce automatically launches the movie player application.



13. Click the **Play** button to watch your animation.
14. Pay attention to where the camera goes and looks at. If you don't like something, go back into Bryce, move the appropriate points and re-render the animation.
15. Once you are happy with the animation, switch back to Bryce and save your scene file.
16. Congratulations! You've created your first Bryce movie! Make sure that you exit the movie player application before you continue the tutorial.

Fine Tuning Your Animation

To finish your animation, you will convert your trajectory to a path. In the beginning, you used key frames to set

the position of the camera. This trajectory is good for creating the physical location of the camera over the
sequence. However, the points along the path tend to correspond to places, and not necessarily events, or
velocity.

Converting to a path will allow you to set up two key frames, one for the beginning and the other for the end, and you can adjust the velocity without worrying about the placement of a keyframe at that spot.

- Lesson 33: Converting the Trajectory to a Path
- Lesson 34: Creating Keyframes from the Beginning & End of the Path
- Lesson 35: Velocity Adjustment
- Lesson 36: Another Test Render

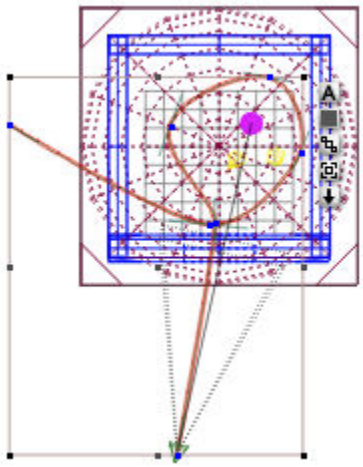
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Lesson 33: Converting the Trajectory to a Path

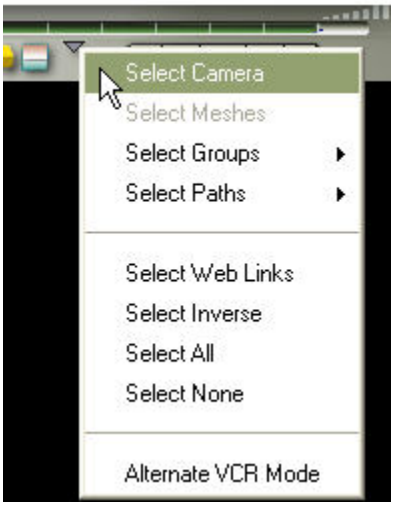
To work on the timing and velocity of your sequence, you will need to convert your trajectory into a single path object.

To convert from Trajectory to path:

1. Switch to **Top View**.
2. Select your camera by clicking it.
3. Choose **Objects > Create Path** from the menu. A new path object appears, occupying the same space and shape as the camera trajectory.



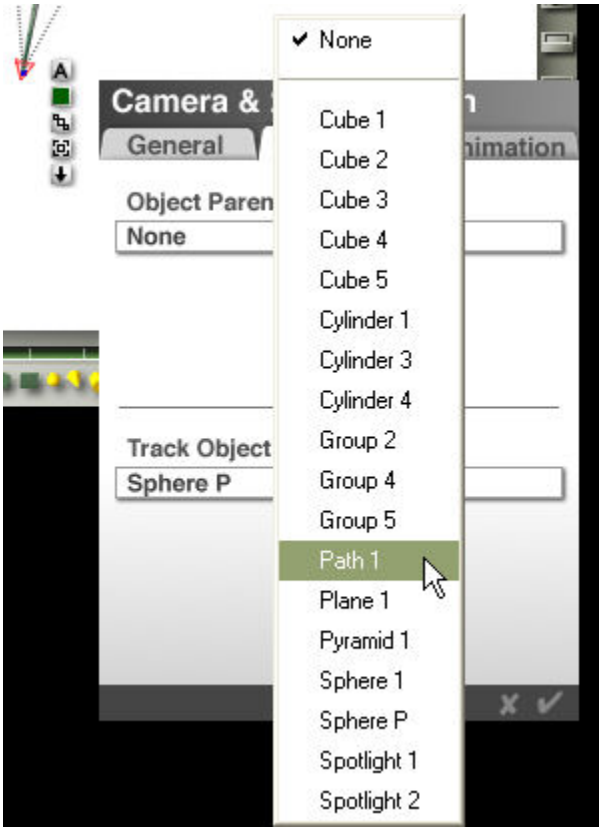
4. Select the camera again.
5. Click the triangle on the *Selection Palette* and choose **Camera** to select the camera (Notice that there is an option there for selecting paths as well).



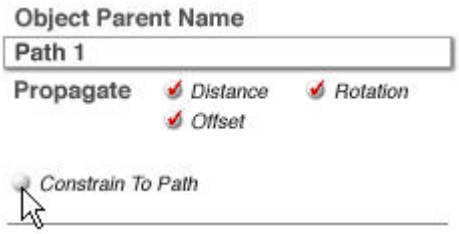
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The Camera and its trajectory line are selected.

6. Click the **Object Attributes** button (A).
7. Click the *Linking* tab.
8. For **Object Parent** name, select **Path 1** from the pop-up menu of your objects.



9. Click the button next to **Constrain to Path**.



10. Click the **OK** icon to leave the dialog box. The blue trajectory line disappears.

    The trajectory line went away when the camera was constrained to the path. All of the key-framed motion information for the camera went away with the trajectory.

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The location information of the trajectory is preserved in the path, which is present in your scene.

11. Click the **Time/Selection Toggle** to switch to the *Animation Palette*.
12. Click the **Play** button.

    The scrubber moves, but the camera does not. You'll re-set the key frames for camera motion for the beginning and end of the sequence.

Lesson 34: Creating Keyframes from the Beginning & End of the Path

To create key frames:

1. Click the **Time First Keyframe** button on the *Animation Palette*.



   The scrubber moves to the beginning of the sequence (time 00:00:00.0).

2. Click the **Add Keyframe** button.



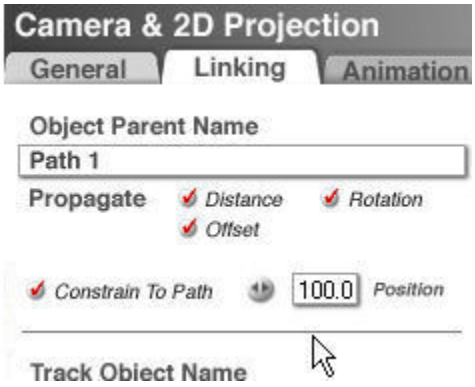
3. Click the **Last Keyframe** button.



   The scrubber moves to the end of the sequence (time 00:00:09.0).

4. Click the camera to select it.
5. Click the **Object Attributes** button.

6. Type the number **100** in the **Position** box.



7. Click the **OK** icon. Your camera should now be located at the end of the path.
8. Click the **Add Keyframe** button.
9. Check your animation, by clicking the **Play** button.

   Your camera should now move smoothly along the path.

   You now have very smooth camera movement over a complex path, using only two key frames.

Lesson 35: Velocity Adjustment

The last thing you will do with your animation in this tutorial is adjust the camera's velocity along the path. To do this, you will work in Bryce's Advanced Motion Lab.

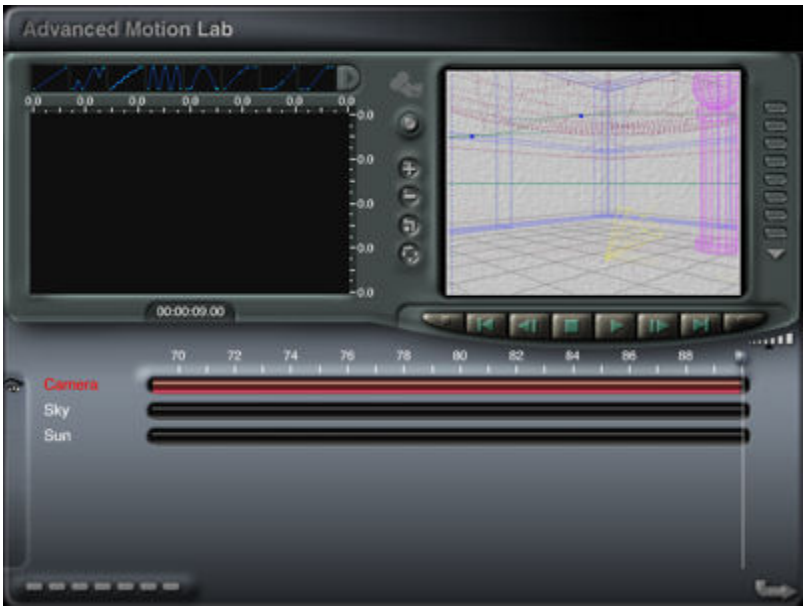
Your camera should be selected.

To adjust the velocity:

1. Click the **Advanced Motion Lab** button.

   On the bottom half of the **Advanced Motion Lab**, the objects and their timelines are displayed. The round button at the upper right of the timelines is the current time display. Because of the length of the animation, you can't see the entire timeline for this sequence.

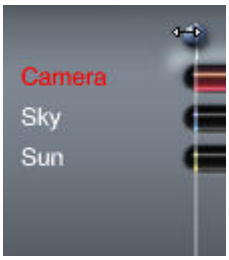
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2. Drag the round **Current Time** display marker to the left. The numbers and timeline bars scroll off to the right.



3. Continue dragging left until the marker is at the left end of the timeline.

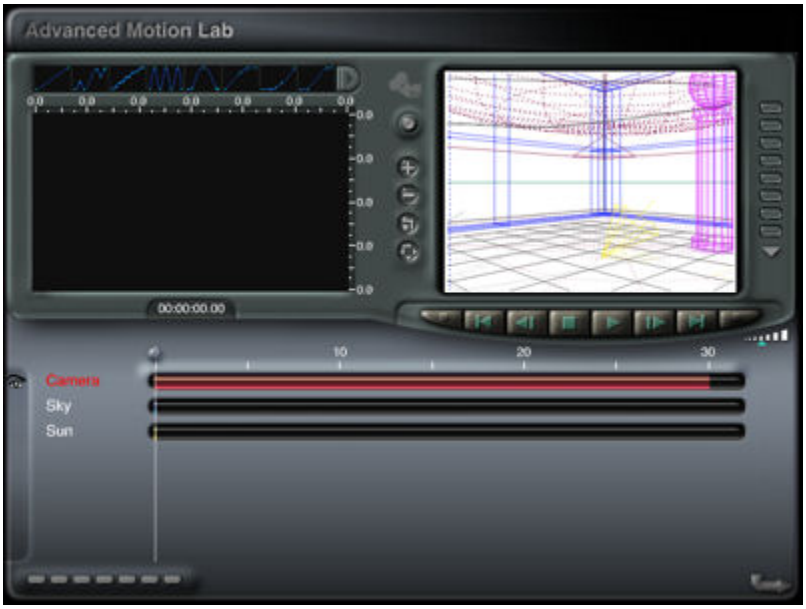


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4. Drag the **Scale** tool to the right. (It is located under the preview window.)

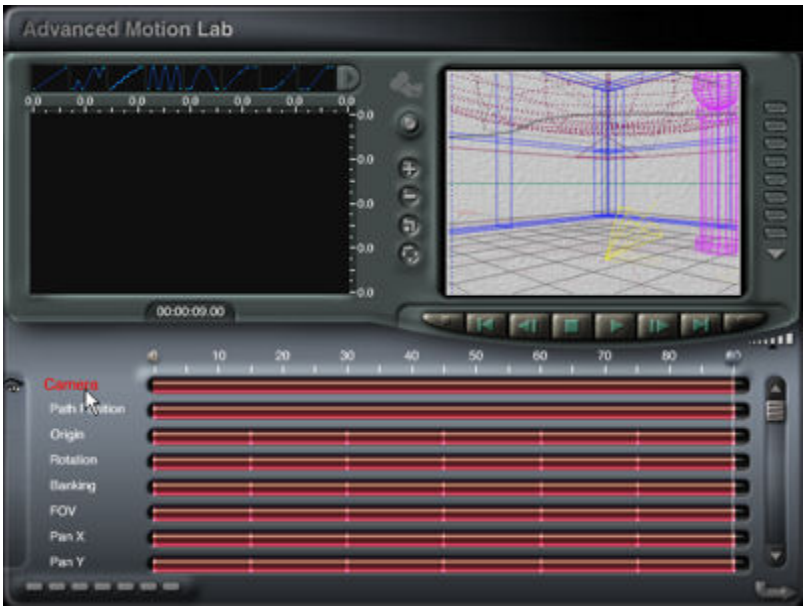


The space between numbers decreases, and after a bit, the entire timeline is displayed.

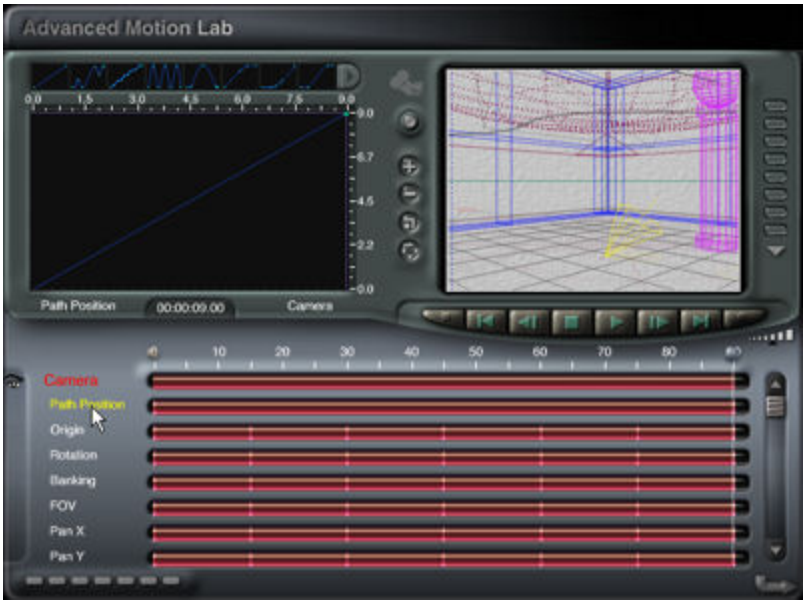


5. Release the mouse button. The word **Camera** is displayed in red.
6. Click the word **Camera**. The camera animation settings are expanded under the Camera name.

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7. Click the word **Path Position**. Additionally, in the *Velocity Controls* section (also known as the *Time Mapping Curve*), a diagonal line has appeared. Next to the window to the right is a camera icon and a light icon.

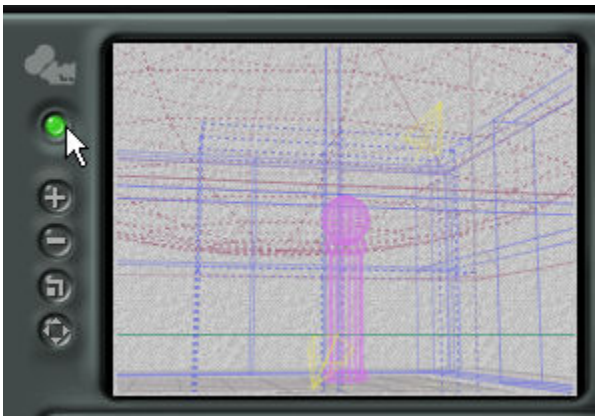


8. Click the camera icon.

   The numbers and timeline bars scroll off to the right.

   A green light appears and the display in the right window changes to show your scene from the camera's perspective.

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See how the animation preview and the Velocity area work together.

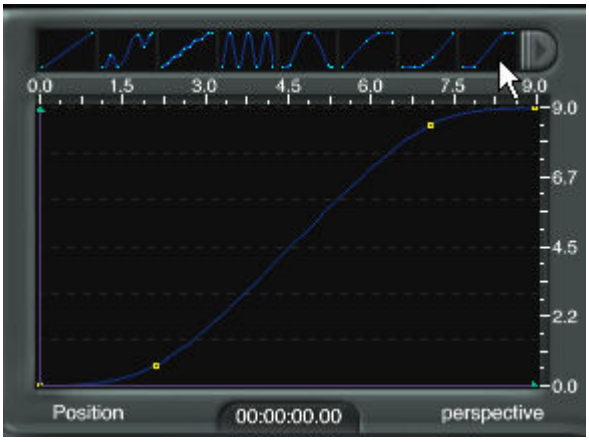
9. Click the **Play** button under the animation preview window.



The animation plays, while crosshairs mark the current time along the Velocity line.

You'll use one of the preset Velocity curves to put a little variety in the camera motion.

10. From the Velocity Controls section, click the slight S-shaped curve that matches the one shown.



11. Click the **Play** button.

The animation begins slowly, moves faster for a time and then slows down toward the end.

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When the velocity curve is flatter, camera motion is slower. When the curve is steeper, the motion is swifter.

12. Click the arrow in the lower right corner to leave the *Advanced Motion Lab* and return to your scene.
13. Save your scene file.

Lesson 36: Another Test Render

Before your test render, double-check your render settings. To render:

1. Choose **File > Document Setup** from the menu.
2. In the *Document Setup* dialog box, ensure that you are rendering at the smallest ratio: 1:0.25.
3. Click on the **OK** icon to exit the dialog.
4. Switch back to **Camera View**.
5. Select **File > Render Animation** from the menu.
6. In the *Render Animation* dialog, change the name of this test file to Render 2.
7. Click the **Set** button.
8. In the *Save* dialog box, add “test path” to the name.
9. Click **Save**.
10. Click the **OK** icon to exit the *Render Animation* dialog box. Your animation begins rendering.

Final Comments

Compare the two test animations. Do you see the difference in movement?

For your final render, you may render at a larger size, or, for fun, try creating a Volumetric World to add drama to those light rays that enter the building through the arches.

Congratulations! You have now created a scene, set up your animation, created the camera trajectory, converted the trajectory to a path, and adjusted the camera’s velocity on that path. You have walked through a fair portion of the power of creating and animating Bryce scenes.

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Appendices

The appendices contain information that is helpful for quick reference to shortcut commands, known issues, and troubleshooting.

- Appendix A - Shortcut Commands
- Appendix B - Acronyms
- Appendix C - Known Issues
- Appendix D - Troubleshooting
- Appendix E - Links
- Appendix F - Credits

Appendix A - Shortcut Commands

Shortcuts are a quick way to access functions within Bryce. These shortcuts are provided within the manual in the appropriate section, but the following pages provide a way to find the shortcuts without having to go through the manual page by page.

The commands for Macintosh and Windows users have been split into separate pages. Click on the links below to access the shortcut commands for your operating system.

- Macintosh Shortcut Commands
  - Menus
  - Palettes & Labs
  - Object Creation & Selection
  - Object Translation
  - Object Scaling
  - Rendering
  - Dialogs
- Windows Shortcut Commands
  - Menus
  - Palettes & Labs
  - Object Creation & Selection
  - Object Translation
  - Object Scaling
  - Rendering
  - Dialogs

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Macintosh Shortcut Commands

Menus - Macintosh

Menu Item	Command Keys
File	
New Document	Command+N
Document Setup	Command+Option+N
Animation Setup	Command+Shift+N
Open	Command+O
Save	Command+S
Save As	Command+Shift+S
Revert to Saved	Command+Option+S
Render	Command+R
Clear and Render	Command+Option+R
Render Animation	Command+Shift+R
Print	Command+P
Edit	
Undo	Command+Z
Redo	Command+Shift+Z
Cut	Command+X
Copy	Command+C
Paste	Command+V
Clear	Option+>
Copy Material	Command+Option+C
Paste Material	Command+Option+V
Copy Matrix	Option+C
Paste Matrix	Option+V
Duplicate	Command+D
Replicate	Option+D
Multi-Replicate	Option+Shift+D
Random Replicate	Option+R
Select All	Command+A
Invert Selection	Command+Shift+A
Load Sky only when Merging	Option, then choose File > Merge
Object	
Edit Object	Command+E
Attributes	Command+Option+E
Convert Boolean to Mesh	Option+Shift+C
Edit Material	Command+M
Edit 2D Pictures	Command+Option+M

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Edit 3D Textures	Option+M
Show Objects As Box	Command+B
Show Objects As Mesh	Command+L
Group Objects	Command+G
UnGroup Objects	Command+U
Create Path	Option+P
Fly-around	Command+Y
Motion Lab	Command+T
Sky Lab	Command+K

Palettes & Labs - Macintosh

Item	Command Keys
Palettes	
Create	Ctrl+1
Edit	Ctrl+2
Sky	Ctrl+3
Toggle Time/Selection	S
Labs	
Materials Lab	Command+M
Picture Library	Command+Alt+M
Deep Texture Editor	Option+M
Sky Lab	Command+K
Motion Lab	Command+T
Object Editor	Command+E
- Edit Mesh, Edit Torus, Terrain Editor, Light Lab, or Tree Lab	
Time Line	
Show Selected Path as Ribbon	Option+P
Play or Pause	/
Next Ticker Mark in Timeline	>
Previous Ticker Mark in timeline	<
Next Key Frame	Shift+>
Previous Key Frame	Shift+<
Move to Start of Animation	[
Move to End of Animation	]
- Next two items will move the Scrubber past the end of the current Timeline	
Move to next Ticker Mark	Period (.)

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Go back to previous Ticker Mark	Comma (,)
Delete All Animation Frames at once	Not available for Macs
Move Palettes	
Move Palette	Spacebar+drag palette
Reset Palettes	Option+Spacebar+click on a palette
Advanced Display Palette	
Marker	M
Turn Anti-aliased Wireframes and Depth Cueing On or Off	Ctrl+Alt+click Depth Cue Tool
Reset Pan Tool	Option+click on Pan Tool
Floating Nano-Editor	Option+Spacebar+drag in window
Zoom In	Plus (+)
Zoom Out	Minus (-)
Zoom Into a Specific Area	Command+Spacebar + drag a marquee around an area of your scene
Zoom In Using the Mouse	Command+Option+Spacebar + drag the mouse left in your scene
Zoom Out Using the Mouse	Command+Option+Spacebar + drag the mouse right in your scene
Camera Views	
Director's View	~
Camera View	1
Top	2
Right	3
Front	4
Saved Views #1 through #5	5 through 9
Reset Views	Option + click on the Select Views control
Delete Saved Camera Views	Option+click on a filled Memory Dot
Reset Camera Banking	Option+click on Banking control
Reset Field of View	Option+click on Field of View control
Reset Camera Origin Point	Shift+click on Camera Origin Point
Reset Views	Option+click on Select Views control
Fly-around View	
Start Fly-around	Command+Y
Zoom In in Fly-around View	Command + drag mouse up
Zoom Out in Fly-around View	Command + drag mouse down

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Note: When dragging the mouse up or down to zoom in or out, do not click in the scene, just move the mouse while pressing Command/Ctrl	
Slow Down Fly-around View	Shift
Pause/Unpause Fly-around	Spacebar
Stop Fly-around	Return
Camera Controls	
Constrain Trackball to Y-axis	Option+drag on Trackball
Constrain Trackball to X-axis	Control+drag on Trackball
Render Controls	
Turn Off Anti-Aliasing for an object	Select Object, click on the A button, press Control+Shift+click on checkmark
Turn On Anti-Aliasing for an object	Select Object, click on the A button, press Shift+click on checkmark

Object Creation & Selection - Macintosh

Item	Command Keys
Creating Objects	
Volume Water Plane	Option+Click Water Plane
Volume Ground Plane	Option+Click Ground Plane
Volume Cloud Plan	Option+Click Cloud Plane
Load Preset Tree	Option+Click Tree
Save Preset Tree	Ctrl+Click Tree
Negative Metaball	Shift+Click Metaball
Sphere with X=20.48, Y=10.24, Z=20.48	Ctrl+Click Sphere
Sphere with X=20.48, Y=40.96, Z=20.48	Shift+Click Sphere
Cylinder with X=20.48, Y=5.12, Z=20.48	Ctrl+Click Cylinder
Cylinder with X=20.48, Y=40.96, Z=10.24	Shift+Click Cylinder
Cube with X=4.12, Y=5.12, Z=20.48	Ctrl+Click Cube
Cube with X=10.24, Y=40.96, Z=20.48	Shift+Click Cube
Pyramid with X=20.48, Y=5.12, Z=20.48	Ctrl+Click Pyramid
Pyramid with X=10.24, Y=40.96, Z=20.48	Shift+Click Pyramid
Cone with X=10.24, Y=10.24, Z=40.96, horizontal	Ctrl+Click Cone
Cone with X=10.24, Y=40.96, Z=20.48	Shift+Click Cone
2D Disk Horizontal	Ctrl+Click 2D Disk Vertical
2D Face Horizontal	Ctrl+Click 2D Face Vertical
Set Object Attributes (non-metaballs)	
Set current object to Positive	P
Set current object to Negative	N

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Set current object to Intersect	I (i)
Note: the commands above will set a metaball's attributes but they will not affect its actions, it will still act as a positive object.	
Selecting Objects	
Multi-selection, Add object to current selection	Shift+Click on object(s)
Select obscured objects	Ctrl+Click on object, select from list
Tab through objects in scene	Tab key
Remove object from selection	Shift+Click on object
Select all objects behind cursor (will deselect any object behind the cursor that is already selected)	Shift+Click on front object
Add object to current selection from list	Ctrl+Click on object, when list comes up, Shift+Click on object in list to add
Remove obscured object from selection	Ctrl+Click on object, when list comes up, Shift+Click on object in list to deselect
Invert selection in small area	Select object then Shift+Drag Marquee around area

Object Translation - Macintosh

Item	Command Keys
Sun & Moon	
Place Sun with Precision	Hold down Control+Option and double-click the Sun Control. Continue holding down Control+Option and, in the working window, click where you want to position the sun. A yellow asterisk will show up where you click indicating where you placed the sun.
Place Moon with Precision	Hold down Control+Option and double-click the Sun Control. Continue holding down Control+Option, press Shift, and, in the working window, click where you want to position the sun. A blue asterisk will show up where you click indicating where you placed the moon.
Translating Objects	**Select object first ...**
Slow down translation	Option+drag on Reposition control
Constrain direction to X-axis	X+Drag object or Left-click-hold on object, press Control+Alt, then drag object
Constrain direction to Y-axis	Y+Drag object or Left-click-hold on object, press Option, then drag object
Constrain direction to Z-axis	Z+Drag object or Left-click-hold on object,

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	press Command, then drag object
Move positive on X-axis by 10.24 BU	Shift+Right
Move negative on X-axis by 10.24 BU	Shift+Left
Move positive on Y-axis by 10.24 BU	Shift+Page Up
Move negative on Y-axis by 10.24 BU	Shift+Page Down
Move positive on Z-axis by 10.24 BU	Shift+Up
Move negative on Z-axis by 10.24 BU	Shift+Down
Move positive on Y-axis by 5.12 BU	Page Up
Move negative on Y-azis by 5.12 BU	Page Down
Move positive on X-axis by 5.12 BU	Right or '
Move negative on X-axis by 5.12 BU	Left
Move positive on Z-axis by 5.12 BU	Up
Move negative on Z-axis by 5.12 BU	Down
Move positive on X-axis by 2.56 BU	Shift+Option+Up
Move negative on X-axis by 2.56 BU	Shift+Option+Down or Shift+Option+5
Move positive on Y-axis by 2.56 BU	Shift+Option+Page Up
Move negative on Y-axis by 2.56 BU	Shift+Option+Page Down
Move positive on Z-axis by 2.56 BU	Shift+Option+Right
Move negative on Z-axis by 2.56 BU	Shift+Option+Left
Move positive on X-axis by 0.08 BU	Option+Right or Option+'
Move negative on X-axis by 0.08 BU	Option+Left
Move positive on Y-axis by 0.08 BU	Option+Page Up or Shift+Option+1
Move negative on Y-axis by 0.08 BU	Option+Page Down
Move positive on Z-axis by 0.08 BU	Option+Up or Shift+Option+7
Move negative on Z-axis by 0.08 BU	Option+Down or Shift+Option+9

Object Scaling - Macintosh

Item	Command Keys
Scaling Objects Interactively	**Select object first ...**
Increase by 50% on selected side	Shift+drag right on control point once for each increase
Decrease by 50% on selected side	Shift+drag left on control point once for each increase
Increase by 50% from center	Shift+Option+drag right on control point once for each increase
Decrease by 50% from center	Shift+Option+drag left on control point once for each increase
Scale from center	Option+drag on control point
Scale from opposite side	Command+drag on control point
Scale from specific side	Drag on control point then press Control+Option

Scaling Objects by Keyboard	**Select object first ...**
Double object size	* (Shift+8)
Halve object size	/
Return object to original (unity) size	=

Rendering - Macintosh

Menu Item	Command Keys
Render	Command+R
Clear and Render	Command+Option+R
Render Animation	Not available on Mac
Resume Render	Command+R
Turn off AA for single object or group	Select object or group, press A button, press Ctrl+Shift+Alt, and click on OK icon
Turn on AA for single object or group	Select object or group, press A button, press Shift, and click on OK icon

Dialogs - Macintosh

These are commands that work inside a specific dialog or lab field.

Item	Command Keys
Object Attributes/Multi Replicate/Sky Lab - Text Field Modifiers	
Add 1 to value	Up Arrow
Subtract 1 from value	Down Arrow
Add 0.01 to value	Option+Alt+Up Arrow
Subtract 0.01 from value	Option+Alt+Down Arrow
Add 10 to value	Shift+Up Arrow
Subtract 10 from value	Shift+Down Arrow
Random Replicate - Text Field Modifiers	
Add 1 to value	Up Arrow
Subtract 1 from value	Down Arrow
Edit Mesh	
Export Rocks/Imported Meshes	Select mesh, Command+E or click on E button, then Command+D
Terrain Editor	
Access Deep Texture Editor from Terrain Editor	Shift+click on Picture button or Command+Option+O
Access Picture Library from Terrain Editor	Command+O or Control+click on Picture button
New Blank Terrain	Command+N
Revert to Terrain active when TE was opened	Command+Shift+N or

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	Control+click New button
ErodeTerrain	Command+Shift+E
Raise Terrain	Command+Shift+X
Lower Terrain	Command+X
Max Brush Level (white)	Command+L
Min Brush Level (black)	Command+Shift+L
Reset Clipping Bracket	Command+Shift+A
Flip/Invert Terrain	Command+I
Reset Gradient Bar	Option+click on Gradient Bar
Flip Gradient Colors	Command+F
Copy Terrain Grayscale to Clipboard	Command+C
Paste Terrain Grayscale to Terrain Canvas	Command+V
Undo one step	Command+Z
Deep Texture Editor	
Clear Texture	Command+N
Terrain Exporter	
Preview Pan	Spacebar+Drag
Preview Zoom	Command+Drag
Preview Adjust Contrast	Command+Option+Drag
Preview Adjust Brightness	Command+Option+Shift+Drag
Advanced Motion Lab	
Toggle Hierarchy for Object	Option+click Object Name
Animation Options Dialog for Object	Shift+click Object or Attribute Name
Toggle Hierarchy for all Animated Objects	Command+Q
Toggle Hierarchy for Selected Object (if object contains a sub-hierarchy)	Not available on Mac
Show All/Show Animated	Command+A
Top of List	Home
Bottom of List	End

Windows Shortcut Commands

Menus - Windows

Menu Item	Command Keys PC
File	
New Document	Ctrl+N or Set NumLock, then Ctrl+ decimal key on numpad
Document Setup	Ctrl+Alt+N
Animation Setup	Ctrl+Shift+N
Open	Ctrl+O or Set NumLock, then Ctrl+ divide

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	key (/) on numpad
Save	Ctrl+S
Save As	Ctrl+Shift+S
Revert to Saved	Ctrl+Alt+S
Render	Ctrl+R
Clear and Render	Ctrl+Alt+R
Render Animation	Alt+Shift+R
Print	Ctrl+P
Edit	
Undo	Ctrl+Z
Redo	Ctrl+Shift+Z
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Clear	Alt+>
Copy Material	Ctrl+Alt+C
Paste Material	Ctrl+Alt+V
Copy Matrix	Alt+C
Paste Matrix	Alt+V
Duplicate	Ctrl+D
Replicate	Alt+D
Multi-Replicate	Alt+Shift+D
Random Replicate	Alt+R
Select All	Ctrl+A or Set NumLock, then Ctrl+1 key on numpad
Invert Selection	Ctrl+Shift+A
Load Sky only when Merging	Alt, then choose File > Merge
Object	
Edit Object	Ctrl+E
Attributes	Ctrl+Alt+E
Convert Boolean to Mesh	Alt+Shift+C
Edit Material	Ctrl+M
Edit 2D Pictures	Ctrl+Alt+M
Edit 3D Textures	Alt+M
Show Objects As Box	Ctrl+B
Show Objects As Mesh	Ctrl+L
Group Objects	Ctrl+G
UnGroup Objects	Ctrl+U
Create Path	Alt+P
Fly-around	Ctrl+Y
Motion Lab	Ctrl+T
Sky Lab	Ctrl+K

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Palettes & Labs - Windows

Item	Command Keys
Palettes	
Create	Ctrl+1
Edit	Ctrl+2
Sky	Ctrl+3
Toggle Time/Selection	S
Labs	
Materials Lab	Ctrl+M
Picture Library	Ctrl+Alt+M or Ctrl+Alt+ minus key on numpad
Deep Texture Editor	Alt+M or Set NumLock, then Alt+ minus key on numpad
Sky Lab	Ctrl+K or Set NumLock, then Ctrl+ plus key on numpad
Motion Lab	Ctrl+T
Object Editor	Ctrl+E
- Edit Mesh, Edit Torus, Terrain Editor, Light Lab, or Tree Lab	
Time Line	
Show Selected Path as Ribbon	Alt+P
Play or Pause	/
Next Ticker Mark in Timeline	>
Previous Ticker Mark in timeline	<
Next Key Frame	Shift+>
Previous Key Frame	Shift+<
Move to Start of Animation	[
Move to End of Animation	]
- Next two items will move the Scrubber past the end of the current Timeline	
Move to next Ticker Mark	Period (.)
Go back to previous Ticker Mark	Comma (,)
Delete All Animation Frames at once	Ctrl+Shift+Alt+click on Remove Keyframe button
Move Palettes	
Move Palette	Spacebar+drag palette
Reset Palettes	Alt+Spacebar+click on a palette
Advanced Display Palette	
Marker	M
Turn Anti-aliased Wireframes and Depth Cueing On or Off	Ctrl+Alt+click Depth Cue Tool
Reset Pan Tool	Alt+click on Pan Tool
Floating Nano-Editor	Alt+Spacebar+drag in window

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Zoom In	Plus (+)
Zoom Out	Minus (-) or Shift+0 (on numpad)
Zoom Into a Specific Area	Ctrl+Spacebar + drag a marquee around an area of your scene
Zoom In Using the Mouse	Ctrl+Alt+Spacebar + drag the mouse left in your scene
Zoom Out Using the Mouse	Ctrl+Alt+Spacebar + drag the mouse right in your scene
Camera Views	
Director's View	~
Camera View	1
Top	2
Right	3
Front	4
Saved Views #1 through #5	5 through 9
Reset Views	Alt + click on the Select Views control
Delete Saved Camera Views	Alt+click on a filled Memory Dot
Reset Camera Banking	Alt+click on Banking control
Reset Field of View	Alt+click on Field of View control
Reset Camera Origin Point	Shift+click on Camera Origin Point
Reset Views	Alt+click on Select Views control
Fly-around View	
Start Fly-around	Ctrl+Y
Zoom In in Fly-around View	Ctrl + drag mouse up
Zoom Out in Fly-around View	Ctrl + drag mouse down
Note: When dragging the mouse up or down to zoom in or out, do not click in the scene, just move the mouse while pressing Command/Ctrl	
Slow Down Fly-around View	Shift
Pause/Unpause Fly-around	Spacebar
Stop Fly-around	Enter
Camera Controls	
Constrain Trackball to Y-axis	Alt+drag on Trackball
Constrain Trackball to X-axis	Ctrl+drag on Trackball
Render Controls	
Turn Off Anti-Aliasing for an object	Select Object, click on the A button, press Ctrl+Shift+click on checkmark
Turn On Anti-Aliasing for an object	Select Object, click on the A button, press Shift+click on checkmark

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Object Creation & Selection - Windows

Item	Command Keys
Creating Objects	
Volume Water Plane	Ctrl+Click Water Plane
Volume Ground Plane	Ctrl+Click Ground Plane
Volume Cloud Plan	Ctrl+Click Cloud Plane
Load Preset Tree	Alt+Click Tree
Save Preset Tree	Ctrl+Click Tree
Negative Metaball	Shift+Click Metaball
Sphere with X=20.48, Y=10.24, Z=20.48	Ctrl+Click Sphere
Sphere with X=20.48, Y=40.96, Z=20.48	Shift+Click Sphere
Cylinder with X=20.48, Y=5.12, Z=20.48	Ctrl+Click Cylinder
Cylinder with X=20.48, Y=40.96, Z=10.24	Shift+Click Cylinder
Cube with X=4.12, Y=5.12, Z=20.48	Ctrl+Click Cube
Cube with X=10.24, Y=40.96, Z=20.48	Shift+Click Cube
Pyramid with X=20.48, Y=5.12, Z=20.48	Ctrl+Click Pyramid
Pyramid with X=10.24, Y=40.96, Z=20.48	Shift+Click Pyramid
Cone with X=10.24, Y=10.24, Z=40.96, horizontal	Ctrl+Click Cone
Cone with X=10.24, Y=40.96, Z=20.48	Shift+Click Cone
2D Disk Horizontal	Ctrl+Click 2D Disk Vertical
2D Face Horizontal	Ctrl+Click 2D Face Vertical
Set Object Attributes (non-metaballs)	
Set current object to Positive	P
Set current object to Negative	N
Set current object to Intersect	I (i) or Set NumLock, then press 9 (on numpad)
Note: the commands above will set a metaball's attributes but they will not affect its actions, will still act as a positive object.	
Selecting Objects	
Multi-selection, Add object to current selection	Shift+Click on object(s)
Select obscured objects	Ctrl+Click on object, select from list
Tab through objects in scene	Tab key
Remove object from selection	Shift+Click on object
Select all objects behind cursor (will deselect any object behind the cursor that is already selected)	Shift+Click on front object
Add object to current selection from list	Ctrl+Click on object, when list comes up, Shift+Click on object in list to add

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Remove obscured object from selection	Ctrl+Click on object, when list comes up, Shift+Click on object in list to deselect
Invert selection in small area	Select object then Shift+Drag Marquee around area

Object Translation - Windows

Item	Command Keys
Sun & Moon	
Place Sun with Precision	Hold down Ctrl+Alt and double-click the Sun Control. Continue holding down Ctrl+Alt and, in the working window, click where you want to position the sun. A yellow asterisk will show up where you click indicating where you placed the sun.
Place Moon with Precision	Hold down Ctrl+Alt and double-click the Sun Control. Continue holding down Ctrl+Alt, press Shift, and, in the working window, click where you want to position the sun. A blue asterisk will show up where you click indicating where you placed the moon.
Translating Objects	**Select object first ...**
Slow down translation	Alt+drag on Reposition control
Constrain direction to X-axis	X+Drag object or Left-click-hold on object, press Ctrl+Alt, then drag object
Constrain direction to Y-axis	Y+Drag object or Left-click-hold on object, press Alt, then drag object
Constrain direction to Z-axis	Z+Drag object or Left-click-hold on object, press Ctrl, then drag object
Move positive on X-axis by 10.24 BU	Shift+Right
Move negative on X-axis by 10.24 BU	Shift+Left
Move positive on Y-axis by 10.24 BU	Shift+Page Up
Move negative on Y-axis by 10.24 BU	Shift+Page Down or Shift+'
Move positive on Z-axis by 10.24 BU	Shift+Up
Move negative on Z-axis by 10.24 BU	Shift+Down
Move positive on Y-axis by 5.12 BU	Page Up
Move negative on Y-azis by 5.12 BU	Page Down
Move positive on X-axis by 5.12 BU	Right or '
Move negative on X-axis by 5.12 BU	Left
Move positive on Z-axis by 5.12 BU	Up
Move negative on Z-axis by 5.12 BU	Down
Move positive on X-axis by 2.56 BU	Shift+Alt+Up
Move negative on X-axis by 2.56 BU	Shift+Alt+Down or Shift+Alt+5

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Move positive on Y-axis by 2.56 BU	Shift+Alt+Page Up
Move negative on Y-axis by 2.56 BU	Shift+Alt+Page Down
Move positive on Z-axis by 2.56 BU	Shift+Alt+Right
Move negative on Z-axis by 2.56 BU	Shift+Alt+Left
Move positive on X-axis by 0.08 BU	Alt+Right or Alt+'
Move negative on X-axis by 0.08 BU	Alt+Left
Move positive on Y-axis by 0.08 BU	Alt+Page Up or Shift+Alt+1
Move negative on Y-axis by 0.08 BU	Alt+Page Down
Move positive on Z-axis by 0.08 BU	Alt+Up or Shift+Alt+7
Move negative on Z-axis by 0.08 BU	Alt+Down or Shift+Alt+9

Object Scaling - Windows

Item	Command Keys
Scaling Objects Interactively	**Select object first ...**
Increase by 50% on selected side	Shift+drag right on control point once for each increase
Decrease by 50% on selected side	Shift+drag left on control point once for each increase
Increase by 50% from center	Shift+Alt+drag right on control point once for each increase
Decrease by 50% from center	Shift+Alt+drag left on control point once for each increase
Scale from center	Alt+drag on control point
Scale from opposite side	Click on control point then press Ctrl and drag
Scale from specific side	Click on control point then press Ctrl+Alt and drag
Scaling Objects by Keyboard	**Select object first ...**
Double object size	* (Shift+8)
Halve object size	/
Return object to original (unity) size	=

Rendering - Windows

Menu Item	Command Keys
Render	Ctrl+R
Clear and Render	Ctrl+Alt+R
Render Animation	Alt+Shift+R
Resume Render	Ctrl+R
Turn off AA for single object or group	Select object or group, press A button, press

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Turn on AA for single object or group	Ctrl+Shift+Alt, and click on OK icon Select object or group, press A button, press Shift, and click on OK icon

Dialogs - Windows

These are commands that work inside a specific dialog or lab field.

Item	Command Keys
Object Attributes/Multi Replicate/Sky Lab - Text Field Modifiers	
Add 1 to value	Up Arrow
Subtract 1 from value	Down Arrow
Add 0.01 to value	Ctrl+Alt+Up Arrow
Subtract 0.01 from value	Ctrl+Alt+Down Arrow
Add 10 to value	Shift+Up Arrow
Subtract 10 from value	Shift+Down Arrow
Random Replicate - Text Field Modifiers	
Add 1 to value	Up Arrow
Subtract 1 from value	Down Arrow
Edit Mesh	
Export Rocks/Imported Meshes	Select mesh, Ctrl+E or click on E button, then Ctrl+D
Terrain Editor	
Access Deep Texture Editor from Terrain Editor	Shift+click on Picture button or Ctrl+Alt+O
Access Picture Library from Terrain Editor	Ctrl+O or Ctrl+click on Picture button
New Blank Terrain	Ctrl+N
Revert to Terrain active when TE was opened	Ctrl+Shift+N or Ctrl+click New button
ErodeTerrain	Ctrl+Shift+E
Raise Terrain	Ctrl+Shift+X
Lower Terrain	Ctrl+X
Max Brush Level (white)	Ctrl+L
Min Brush Level (black)	Ctrl+Shift+L
Reset Clipping Bracket	Ctrl+Shift+A
Flip/Invert Terrain	Ctrl+I
Reset Gradient Bar	Alt+click on Gradient Bar
Flip Gradient Colors	Ctrl+F
Copy Terrain Grayscale to Clipboard	Ctrl+C
Paste Terrain Grayscale to Terrain Canvas	Ctrl+V
Undo one step	Ctrl+Z

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Deep Texture Editor	
Clear Texture	Ctrl+N
Terrain Exporter	
Preview Pan	Spacebar+Drag
Preview Zoom	Ctrl+Drag
Preview Adjust Contrast	Ctrl+Alt+Drag
Preview Adjust Brightness	Ctrl+Alt+Shift+Drag
Advanced Motion Lab	
Toggle Hierarchy for Object	Alt+click Object Name
Animation Options Dialog for Object	Shift+click Object or Attribute Name
Toggle Hierarchy for all Animated Objects	Ctrl+Q
Toggle Hierarchy for Selected Object (if object contains a sub-hierarchy)	Ctrl+H (will only open sub-hierarchy, will not close it)
Show All/Show Animated	Ctrl+A
Top of List	Home
Bottom of List	End

Appendix B - Acronyms

AA - Anti-Aliasing

AML - Advanced Motion Lab

BU - Bryce Unit

DOF - Depth of Field

DS - DAZ Studio

DTE - Deep Texture Editor

FOV - Field of View

G2H - grayscale-to-height map

HDRI - High Dynamic Range Image

IBL - Image Based Lighting

LOD - Level of Detail

Mat Lab or MatLab - Materials Lab

MRD - Maximum Ray Depth

PS - Photoshop

PSP - Paint Shop Pro

SymLat - Symmetrical Lattice

TE - Terrain Editor

TIR - Total Internal Reflection

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Appendix C - Known Issues

This page lists the known issues with Bryce or just helpful information about how things currently work.

1. Alpha Channel replacement in Pictures Editor
2. Animation Preview in OpenGL Mode
3. Apply Gradient to Light
4. Bryce 4 Animations do not work in Bryce 6
5. Bryce 4 OBPs crash Bryce 6
6. Camera Grouping
7. Cannot add Long Descriptions to Older Presets
8. Crash when accessing Library with no Presets
9. Cutting Trees crashes Bryce
10. Deleting Leo or Moon Texture
11. Display or Hide Palettes
12. Exporting Objects
13. File Size Doubled
14. Hidden Body Parts in DS Animations
15. Image Based Lighting
16. Imported objects grouped by Material
17. Importing objects with Bump Maps
18. Lab Keyframes not added to Main Timeline
19. Leaf Textures not saved
20. Location changes in DS not reflected in Bryce
21. Manual Rotation on Y-axis
22. Memory Dots not Saving IBL Info
23. Memory Issues
24. Moon Brightness
25. Photoshop Plug-in Support
26. Real-Time 3D Preview for Filters
27. Reflection Mapping
28. Reset Clamps option missing
29. Screen Refreshing

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30. Spray Rendering from Render Mode
31. Sun/Moon Rings
32. Terrain Gradients
33. Tick Marker in IBL Tab disappears
34. Tree Lab Branches per Segment
35. Volumetric Object Intersection

PC Specific Issues:

1. Windows Vista and AVI files

Mac Specific Issues:

1. 16-Bit Textures imported into Terrain Editor
2. Batch Rendering
3. Bryce 6 Scene files saved with Bryce 5 extension
4. CPU Usage
5. Gradient Color Picker
6. Loading files with no extension
7. Numeric Edit Boxes
8. Permission Issues
9. Save versus Save As
10. Universal Binary Support

Alpha Channel replacement in Pictures Editor

Loading image in Pictures Editor with alpha channel to replace another image does not replace the alpha channel. Workaround is to either load the alpha map separately or load into a blank slot.

Affected versions: Mac/PC Bryce 4, 5, 5.5, 6, and 6.1.

Animation Preview in OpenGL Mode

When previewing an animation from DAZ Studio and in an OpenGL Display Mode, the OpenGL display cannot properly display the animation and the objects and figures will look like they are "exploding." Workaround is to preview an animation in Wireframe Mode.

Affected versions: Mac/PC Bryce 6/6.1.

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Apply Gradient to Light

On the PC, gradients (.grd) can only be loaded that were saved from Photoshop 5.5 or earlier.

On Macs, .grd files cannot be loaded at all.

Affected versions: Bryce 5, 5.5, 6, and 6.1.

Bryce 4 Animations do not work in Bryce 6

Animations created in Bryce 4 may not work correctly if at all in Bryce 6. The workaround is to open the animation file in Bryce 6, select File > Animation Setup, set the Duration settings to 0 (make a note of the current Duration settings on paper first), click on the OK icon, select File > Animation Setup again, re-enter the Duration settings, and click on the OK icon. The animation should now play correctly in Bryce 6.

Affected versions: Mac/PC Bryce 6/6.1.

Bryce 4 OBPs crash Bryce 6

Some Bryce 4 OBP files will cause a Bryce 6 crash when selecting the object in the Objects Library. Workaround is to load the OBP in the Bryce 5/5.5 Objects Library, export out as a new OBP file, then import into Bryce 6.x.

Note: The object does not have to be loaded into the scene in Bryce 5/5.5, just into the library.

Affected versions: Mac/PC Bryce 6/6.1.

Camera Grouping

Camera can be incorporated into a converted mesh group.

Affected version: Mac/PC Bryce 6.

Fixed in: Bryce 6.1.

Cannot add long Descriptions to older Presets

Because of the changes made to the library preview sizes, older presets do not have access to the longer titles and descriptions by default. To take advantage of the longer title and description fields, export the older preset from Bryce 6.1, and then re-import.

Affected versions: Mac/PC Bryce 6.1.

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Crash when accessing Library with no Presets

Running Bryce without the default presets will cause Bryce to crash since the locations are hard-coded into Bryce. Make sure you install all the preset executables that come with Bryce.

Affected versions: All.

Cutting Trees crashes Bryce

If you try to cut some Bryce trees from your scene using Cmd/Ctrl+X, Bryce will crash.

Affected versions: Mac/PC Bryce 6.1.

Deleting Leo or Moon Texture

If you delete Leo in the Pictures Editor, he'll come back and any textures you load in the first slot, will be replaced by Leo. Same with the moon texture since both these images are hard-coded into Bryce.

Affected versions: All for Leo, Bryce 6/6.1 for the the moon only.

Display or Hide Palettes

Since the palettes are no longer hidden in Bryce so that mousing over them makes them visible, some of the display/hide functions no longer work.

See below for the listing of which functions are affected:

- Ctrl+4 - Control palette. Affected versions: Bryce 4, 5, 5.5, 6, and 6.1.
- Ctrl+6 - Advanced Display palette. Affected versions: Bryce 4, 5, 5.5, 6, and 6.1.
- Ctrl+Tab - Display or Hide all palettes. Affected versions: PC Bryce 5, 5.5, 6, and 6.1.

Exporting Objects

When exporting objects:

1. Alpha Effects (i.e., using a procedural texture to drive the value of the transparency or reflection channel) are not exported.
2. Reflection values are not exported.
3. 256x256 pixel image texture resolution in Bryce 6, 512x512 pixel image texture resolution in Bryce 6.1.

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4. Mac exports .PCT image textures which may not work with all applications.
5. When exporting objects that were previously imported (i.e., Poser figures via Poser import or DS integration), the texture maps are exported correctly albeit at 512x512 pixels, but the alpha maps are applied upside down. The workaround is to use the original textures instead of the exported ones from Bryce when importing into another program.

Affected versions: Mac/PC Bryce 6/6.1.

File Size Doubled

Loading and immediately saving a scene file may cause the file size to double. There is currently no workaround except to make changes to the scene first before saving.

Affected versions: Mac/PC Bryce 6/6.1.

Hidden Body Parts in DS Animations

When importing DAZ Studio animations into Bryce, any hidden object/body part will reappear in Bryce. Hidden body parts for still objects do not import into Bryce.

Affected versions: Mac/PC Bryce 6/6.1.

Image Based Lighting

1. HDRI illumination stops working on "Revert to Save."

   Affected version: Mac/PC Bryce 6.

   Fixed in: Bryce 6.1
2. Specularity and Metallicity have no effect when IBL is used as the only light source.

   Affected version: Mac/PC Bryce 6, 6.1.
3. HDRI settings cannot be keyframed.

   Affected versions: Mac/PC Bryce 6/6.1.
4. HDRI information can be saved to the Sky Library and to Memory Dots, however:
   - If you save an HDRI to a Memory Dot, then save the scene file, the Memory Dot will be cleared although the HDRI will still be applied in the scene.
   - If you save an HDRI to a Memory Dot, then change the sky setting, the Memory Dot will be cleared and the HDRI info will not be saved with the scene.

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- If you save an HDRI to a Memory Dot, then select the top Memory Dot to switch to the default sky, and save the scene, when you reopen the file, Bryce will crash.
- Affected versions: Mac/PC Bryce 6.1.

5. When saving an HDRI sky to the Sky Library, the Y-setting will change to 90 no matter what setting was saved with the sky.

   Affected versions: Mac/PC Bryce 6.1.

Imported objects grouped by Material

When you import an object from DAZ Studio or Poser, the object is grouped by material not by body part. If a particular body part needs to be deleted so as not to show in Bryce, set the affected body part to hidden/invisible in Poser/DS before exporting/importing.

Affected versions: Mac/PC Bryce 6/6.1.

Importing objects with Bump Maps

D|S integration imports and .OBJ imports don't load bump maps correctly and the values will need to be manually tweaked.

Affected versions: Mac/PC Bryce 6/6.1

Lab Keyframes not added to Main Timeline

When animating keyframes in the different labs, applying keyframes to all timelines does not apply the keyframes to the main timeline. There is no workaround at present.

Affected versions: All.

Leaf Textures Not Saved

Leaf textures are not saved in .bto (tree) files.

Affected versions: Mac/PC Bryce 5, 5.5, 6, and 6.1.

Location changes in DS not reflected in Bryce

When importing an animation from DAZ Studio then changing the location of the objects in Bryce, the position changes are not saved in Bryce since the animation information is saved in the matching .daz file. The same goes for location changes in DS that are not are not carried over into Bryce.

There is currently no workaround for this issue.

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Affected versions: Mac/PC Bryce 6/6.1.

Manual Rotation on Y-axis

When you manually rotate an object on the Y-axis, Bryce will automatically change the X and Z-axis values to match the new rotation and reset the Y-rotation to 0.

Affected versions: All.

Memory Dots not saving IBL info

Sky Memory Dots: Saving skies to Memory Dots not saving IBL information.

Affected versions: Mac/PC Bryce 6.

Fixed in: Bryce 6.1.

Memory Issues

During extended use of Bryce, the memory usage by Bryce is not released unless you save and close the application. This can increase the length of time it takes to perform operations, render still images, render animations, and render over the network. It is recommended that before you render, save and close Bryce, then reopen the file to start the render.

Affected versions: All

Moon Brightness

Moon Brightness is currently too soft for many users. At the moment there is no workaround.

Affected versions: All.

Photoshop Plug-in Support

Photoshop plug-in support not working correctly. Some older filters may still work, such as the KPT3 filters provided with Bryce 3/4.

Affected versions: Mac/PC Bryce 5, 5.5, 6, and 6.1.

Reflection Mapping

Reflection mapping does not work for cubes, pyramids, 2d faces, and 2d discs. For these primitives, only the base color is applied.

Affected versions: Mac/PC Bryce 4, 5, 5.5, 6, and 6.1.

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Reset Clamps option missing

When exporting a terrain in MetaStream format, the Reset Clamps option is missing from the Terrain Export Lab Options menu.

Affected versions: Mac/PC Bryce 5, 5.5, 6, and 6.1

Screen Refreshing

There are some screen refreshing issues that happen when other programs, dialogs, etc. are opened in front of the Bryce window. When Bryce is brought back to the front, a forced refresh is required to update the working window.

Affected versions: Mac/PC Bryce 6.1.

Spray Rendering from Render Mode

While in Render Mode, returning to Wireframe mode after using the Spray Render tool will currently lose your spray rendered area.

Affected versions: Bryce 5.5, 6, and 6.1.

Sun/Moon Rings

In the Sky Lab, the Secondary Ring option will not stay deselected. If you disable the secondary ring option, exit the Sky Lab, then re-enter the Sky Lab, the Secondary Ring option will be enabled again. The only way to get rid of the secondary ring is to disable the Halo Rings option.

Affected versions: Bryce 5, 5.5, 6, and 6.1.

Terrain Gradients

Gradients applied to a terrain in the Terrain Editor cannot be saved to the Materials Library on PCs. The gradient colors in the Diffuse channel will be replaced by the original diffuse color. On Macs, the gradients can be saved to the Materials Library and applied to other terrains, except for the Blue and White striped gradient. This gradient can be saved to the library, but when you apply it to a terrain, Bryce crashes. The saved .MAT files from a Mac can be imported into the PC version, the gradient can be seen in the thumbnail, but when applied, the gradient is thrown out and the original diffuse color is applied.

Affected versions: PC Bryce 4, 5, 5.5, 6, and 6.1. Mac Bryce 6 and 6.1.

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Tick Marker in IBL Tab disappears

The Tick Marker on the IBL Roller Ball disappears when you move the Roller Ball and will not reappear until you apply a new sky, then re-enter the Sky Lab.

Affected versions: Mac/PC Bryce 6.1.

Tree Lab Branches per Segment

In the Tree Lab, increasing the minimum branches per segment to more than 4 may hang the Tree Lab up indefinitely or produce an out of memory error message.

Affected versions: Mac/PC Bryce 6/6.1.

Volumetric Object Intersection

Intersection of two volumetric objects renders with artifacts.

Affected versions: Mac/PC Bryce 4, 5, 5.5, 6, and 6.1.

Mac Only Issues

16-Bit Textures imported into Terrain Editor

Mac 16-bit TIF files imported into the Terrain Editor need to be saved or converted to PC Byte Order.

Affected version: Mac Bryce 6 and 6.1.

Batch Rendering

Mac Bryce scene files must have the .BR6 extension (must be in all caps) in order for batch rendering to work correctly. If the files do not have the extension, Bryce 6 will render the default scene for the first queued scene file, then render the remaining scenes correctly. You must add the .BR6 extension in the folder where the files are saved, not when saving the scene file.

Affected versions: Mac Bryce 6 and 6.1.

Bryce 6 Scene files saved with Bryce 5 extension

B6 scene files saved with .br5 extension.

Affected version: Mac 10.4 Bryce 6.

Fixed in: Bryce 6.1.

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CPU Usage

CPU usage on single processors still uses about 80% while idling. On multi-processor Macs after a few minutes of inaction, B6 returns to near 0%.

Affected versions: Bryce 4, 5, 5.5, and 6.

Gradient Color Picker

Gradient Color picker currently doesn't work in Mac Bryce 6.

Affected versions: Mac Bryce 6.

Fixed in: Mac Bryce 6.1

Loading files with no extension

Double-clicking on a Mac Bryce 6 scene file results in Bryce loading the default scene if the scene file does not have the .BR6 extension.

Affected version: Mac Bryce 6.

Fixed in: Mac Bryce 6.1.

Numeric Edit Boxes

Numeric Edit boxes only display 6 digits including the decimal.

Affected versions: Bryce 5, 5.5, 6, and 6.1.

Permission Issues

Before installing B6/6.1, it's recommended that Mac users run Disk Utilities (in the Applications > Utilities folder) and run Repair Permissions.

Affected versions: Mac Bryce 6 and 6.1.

Save versus Save As

The "Save" menu item works the same as the "Save As..." item.

Affected version: Mac OS10.4 Bryce 6 and 6.1.

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Universal Binary Support

Currently no Universal Binary support. B6 works under Mactel's Rosetta but with a slowdown in performance.

Affected versions: Mac Bryce 6

Fixed in: Mac Bryce 6.1.

PC Only Issues

Windows Vista and AVI files

When using Windows Vista and saving an animation as an AVI file, the AVI file can only be played in the Windows Media Player.

Affected versions: PC Bryce 6/6.1 on Windows Vista only.

Appendix D - Troubleshooting

List of possible problems you may encounter or questions you may have about Bryce.

Please note that these are only proposed solutions and may not apply to your situation.

Problem:

I installed Bryce 6.1 but the program still shows as Bryce 6.0. How do I know I installed Bryce 6.1?

Solution:

When you installed Bryce 6.1, you should have seen the new splash screen plus, if you choose Help > About Bryce 6.0, don't let up on the mouse, press Cmd/Ctrl then let up on the mouse. The version will be listed as 6.1.12.6 or later.

Problem:

In Windows Vista, the palette names are covered by the top bar, how do I get to the palettes?

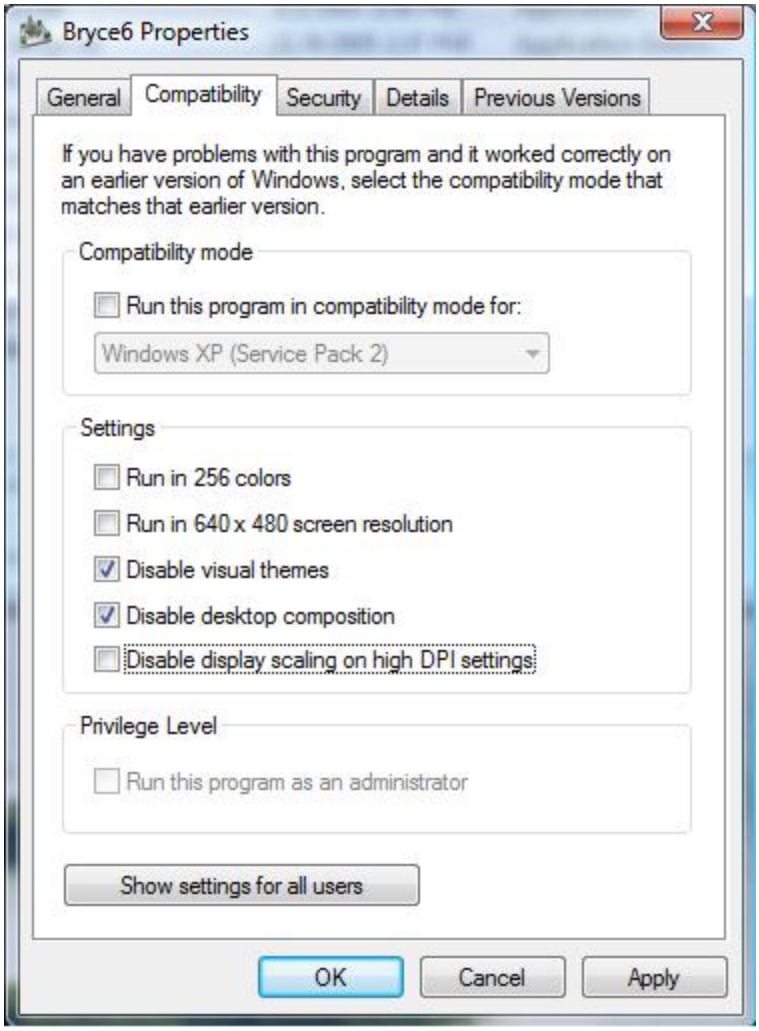
Solution:

There are two ways to access the palettes in Windows Vista.

1. Use the shortcut keys to bring up the palettes:
    - Create palette - Ctrl+1
    - Edit palette - Ctrl+2
    - Sky & Fog palette - Ctrl+3

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2. Change compatibility mode for Bryce:
    a. Click on the Bryce 6.x icon and choose Properties from the menu
    b. Click on the Compatibility table
    c. Check the boxes to "Disable themes" and "Disable desktop composition"



    d. Click on OK

    (thanks to sgaske26 for this)

Problem:

Loading scene takes an extremely long time to open without any obvious reason or Bryce crashes when opening scene.

Possible Solution:

Check the display options to see if any of the OpenGL options are selected. If they are, change to one of the default display options and try opening the scene again.

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Check to see if you have enough swap space available on your C: drive or other drives, sufficient memory to open the scene. You need at least double the file size in memory available.

Problem:

Bryce crashes with an unexpected error when saving a scene.

Possible Solution #1:

Check the filename of any imported textures to see if any of the filenames are over 32 characters, including period and extension. Either rename the texture before importing or rename it in the Picture Editor.

Possible Solution #2:

A material preset may be causing the problem. If the crash started happening after you applied some materials, try removing the materials one at a time until you find the one that crashes Bryce.

Problem:

A bunch of Bryce trees are in a scene and parts of the trees are missing - OR - a metaball object with lots of metaballs has missing areas.

Possible Solution:

Bryce trees are made of metaball objects and because of this they inherited some of the problems the Bryce 5/5.5 metaballs have. When the meta objects are placed too close to each other, they may effectively "cancel" each other out. Try moving the trees or metaballs a little further apart from each other. Sometimes it only takes a tiny amount of movement to get the missing parts to show back up. Bryce 6 fixes this problem but trees and metaballs in scenes saved with earlier versions of Bryce cannot inherit the Bryce 6 fix. If using a Bryce 5 scene in Bryce 6, either move the trees/metaballs further apart or recreate the scene entirely in Bryce 6.

Problem:

How do I render a single image over a network?

Solution:

Use the Network Render and enable Use Tile Optimization.

Problem:

In Bryce 5.5, when I saved scene files, some of the textures would be lost. Why did this happen and has it been fixed in Bryce 6?

Solution:

"Yes, it's been sorted out. As you know, it's a memory issue. Well, the problem in 5.5 was that there was a memory maximum hard coded into B5.5 that once a scene's draw on memory got to a certain point, it started dropping textures to try to conserve on its memory usage. This was obviously a poor implementation to solve this problem of Bryce competing for memory needed by the OS, etc.

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"In Bryce 6, we've improved this as much as we could by implementing a 'smart' memory management system where B6 allows your scenes to take up a certain percentage of memory before it will start to do this. ... Unfortunately, depending on the scene and the amount of RAM your system has, you may still encounter this on occasion, but from our testing, this is much less frequent now."

posted by Steve Kondris on the DAZ BryceTalk Forum.

Problem:

After I've imported an object into Bryce via the DS link, then go back into DS to modify the object, when I go back into Bryce, the object goes back to its original location and size. Why is this happening?

Solution:

In order to incorporate the changes made in DS, Bryce deletes the old object so it can import the new object. You can usually use the Copy/Paste Matrix command to copy the old settings to the new object. See "Editing DS Objects" for more on this.

Problem:

I imported an object into Bryce via the DS link and when I tried to delete a part I didn't need, the entire object was deleted.

Solution:

In order to allow Bryce to incorporate any changes made to an object within DS, a link between the two programs is created in the scene file. This link keeps the entire object together so that it matches the DS version. In order to delete parts of the group, you'll need to Break the Link between DS and Bryce. Just remember that you cannot break the link if the file is an animation imported from DS.

Problem:

When I load TIF images into the Pictures Editor, the image is either corrupted or the alpha channel isn't loaded.

Solution:

Not all paint programs save TIF files the same way. Try opening the image in your paint program and resaving the TIF file using a different compression method or uncompressed. Save the file under a new name just in case it doesn't work.

Question:

When I select a material preset in the Materials Library, the material in the preview window looks different than the preset thumbnail. Why?

Answer:

This is because the preset thumbnail may have been added with the neutral sky deselected so that the current scene sky settings would affect the material. Refer to "Thumbnail Preview Options - Materials Library" for examples showing the difference using a neutral sky or a sky preset can make to the preview.

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Appendix E - Links

List of programs and sites referenced in the manual or that may be useful in your personal art program.

All listed programs are copyright/trademarked by the respective owners.

- Programs
  - Adobe Acrobat
  - Canvas
  - Grouper
  - MeTaL Fixer
  - Paint Shop Pro
  - Photoshop
  - Poser
  - SnagIt
- Websites
  - 3D Lapidary - site that provides 3D gemstones for use in renders
  - Robin Wood - site providing a series of beginner and intermediate Bryce tutorials

Appendix G - Credits

Thanks to the following for their assistance in making this manual a quality resource:

- Dan Whiteside - For the Mac Color Picker images and assistance with the Mac/PC Shortcuts and Known Issues.
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  - Lise Lebel
  - Jonathan Allen Cummings
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- The Bryster
- Steve Lareau
- Brian Foley
- sgaske26

Thanks folks!

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Technical Writer
DAZ Productions

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Glossary

#

2D Projection: Your 3D scene must be interpreted as a 2D projection; that's how it is translated to your 2D screen! Pretend your 3D scene is a drawing on a (2D) piece of paper, which is in front of your camera lens; you have control over the right/left up/down position of the paper (Pan controls), and over the scale of the drawing (Zoom/Scale tools). 2D Projection values are an important factor in defining a View for your scene.

3D Transformation: This is a term that refers to any operation relating to the size, rotation, and position of any object. There are in fact other types of 3D transformations that are possible in 3D space, such as deformations, sweeps, and lathing; but Bryce is not a modeler, and supports only the basic three: size, rotation, and position.

3DMF: 3D MetaFile format from Apple for exchanging 3D geometry between applications.

A

Absolute Coordinates: Values which express an absolute location, rotation, or size, whether they are location coordinates, degrees of rotation, or units of measure.

Additive Mode: A color blending algorithm which adds the brightness value of colors from one item to the brightness values of another.

Algorithm: A finite step-by-step problem-solving procedure.

Aliasing: A visual artifact caused by low resolution sampling that can cause hard edges or areas of high frequency in an image to look jagged (often referred to as "jaggies"). See "anti-aliasing."

Alpha Channel: A separate grayscale channel accompanying any PICT/BMP file that can determine which areas of the PICT/BMP will be visible in the final image and which will not. Typically, white areas in the alpha channel describe the areas in the corresponding image that will be visible, while black areas in the alpha channel describe the areas in the corresponding image that will not be visible. Also referred to as a mask. In the absence of an alpha channel, Bryce can use the luminance values of any 2D PICT or 3D solid texture as alpha information.

Altitude: A measurement of height. In Bryce, many textures will change their behavior based on altitude.

Ambient: Light that has no point of origin or specific direction, and is presumed to strike every point on every object with equal intensity. Since it is not affected by other environmental light, it tends to affect objects in shadow, and can make objects visible even with no specific light source.

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Amplitude: In Bryce, this refers to the intensity of the cloud definition. Increasing the amplitude will make cloud contours harder, while decreasing it will result in softer edged, more diffuse cloud formations.

Anti-aliasing: The process of eliminating aliasing by higher resolution sampling, so that hard but jagged edges appear smooth and clean.

Aspect Ratio: The relationship between the width and height of your document, expressed in pixels as a width to height ratio.

Auto-update: A feature in the Sky & Fog palette and Nano-preview which will automatically update your changes into your rendered scene or Nano-preview, respectively.

B

Banking: Camera rotation around its Z axis; kind of a left/right tilt. Also known as roll, it creates the illusion that your horizon is tilted.

Batch Rendering: A process that will allow you to automate the rendering of multiple scenes. Just drag and drop a group of scene files on the Bryce application icon, and Bryce will do the rest.

Bitmap: Literally, a "map of bits." Your screen is comprised of pixels, and each one of those pixels expresses a level of color, whether it is one bit (black and white) or 24-bit (millions of colors). Your image, when rendered, can be thought of as a pixel-by-pixel map of color, hence the term "Bitmap".

Boolean: A fancy word that is used to describe a system where there are two possible states: On/Off, Yes/No, 0/1, True/False, and so on. With respect to Bryce rendering, a Boolean attribute such as Negative or Intersect will determine whether a particular part of a group of objects will be Rendered/Not Rendered.

Boolean Rendering: A rendering process wherein either the space taken up by "negative" objects is subtracted from "positive" objects, yielding an object with portions removed; or two or more objects are combined to form a composite object combining the mass and dimensions of all contributing objects.

Bryce Units of Measure: An arbitrary system of measurement for 3D objects in Bryce 3D. Most Bryce objects when they are created are a default size of 2048x2048x2048 Bryce units.

Bump Mapping: A process that interprets changes in an object's surface luminance or color values and, without actually affecting the object's geometry, expresses them as perturbations on the object's surface.

Button: Term used to indicate text or a graphic to be clicked on in order to access a palette, tool, or additional options. Used interchangeably with "icon."

C

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Camera: A metaphorical "tool" for viewing areas in a scene. The metaphor refers to the conical projection of the scene onto a 2 dimensional plane along a specific direction.

Camera Space: A method for representing objects in 3D space. It uses a set of Cartesian coordinates which are relative to your camera.

Center Scaling: The ability to perform resizing or rotating operations on an object based on the object's center, rather than an alternate point, such as its base.

CMYK Color: A well known subtractive color standard widely used in the print industry. CMY color models blend Cyan, Magenta, and Yellow to approximate colors for print; almost always used with a fourth ink, black (K), to compensate for ink impurities.

Conversion: The process of changing an object of one type into an object of another type. Use the little arrow in the Edit palette.

Convert Boolean to Mesh: The process of converting a boolean group into a mesh that can be exported from Bryce and then imported back into Bryce or into another 3D program.

D

Deformation: A special form of 3D transformation which will deform an object's geometry, creating bulges, twists, bends, and more. Bryce 3D does not support this kind of transformation; but you can certainly import deformed objects from other modeling applications via the Import DXF and 3DMF feature in Bryce.

Depth Cueing: The effect we use to create the appearance that wireframes far away are dimmer than wireframes closer to the camera. This effect is adjustable.

Derivative Objects: Most primitives available in the Create palette also have a few derivative objects as well. For instance, the Sphere is accompanied by an Ellipsoid and a Squashed Sphere; both are considered to be Spheres by Bryce, but they have had some post-processing applied to change their sizes.

Diffuse: Light that is evenly reflected from an object's surface, visible regardless of the angle from which it is viewed. Diffuse is associated with matte objects.

Document Resolution: The actual size of your working document area, expressed in pixels. When your Render Resolution is set to 1:1, the Render resolution is the same.

DXF: Originally developed for use with AutoCad®, at one time, this was the most common 3D file exchange format.

E

Edit: Any action performed on an object after its initial creation. Includes moving, resizing, rotating, copying, assigning textures, pasting, and more.

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F

Family: A kind of logical association, assigning a Family attribute to a set of objects allows you to select and display sets of objects based on an assignable wireframe color and associated family name. This way, objects which share some characteristic such as distance, structure, material, or other, can be easily seen, selected, soloed, and so on.

Field of View: Field of View values describe the range, from 1 to 180°, which your camera is allowed to take in.

Frequency: A measurement of the number of times certain textural characteristics repeat themselves within a fixed area.

G

Gel: A texture or picture which is applied to a light and treated as a transparency or slide, enabling the light to project colors, textures, or images onto objects in your scene.

Gradient: A smooth progression of two or more colors.

Gradient Lights: A light object that colors surfaces differently depending on the distance of the surface from the light object.

Grayscale-to-Height Mapping: A process that interprets a grayscale range from black to white and expresses that range as height, from low to high. Also referred to as "G2H" Mapping.

Group: Grouping, a kind of spatial association, allows a set of objects to be treated as one. To achieve Boolean rendering effects, objects must be grouped.

H

HDRI:

HLS color: An alternative color model: Hue, Lightness, and Saturation.

HSV color: An alternative color model: Hue, Saturation, and Value.

I

Icon: See "Button."

Illumination: In Bryce, any property or characteristic related to how an object responds to light. This includes Ambient, Color, Diffuse, Reflectivity, Refraction, Specular, and Transparency.

Image Based Lighting:

Image Resolution: Since Bryce renders bitmaps at 72dpi, the only image resolution you need to determine is the height to width ratio of your image.

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Infinite Plane: A two dimensional surface that extends infinitely along the X and Z axes. Bryce 3D's Ground, Cloud, and Water Planes are all infinite planes, though they exhibit different textural properties and are placed in the scene at different altitudes.

L

Landing: Dropping an object straight down onto the object directly beneath it. Usually used to "land" an object on the ground.

Link to View: A Bryce feature which locks the sun's position to the camera position. This way you can use the sun control to set your sun position, and you will not lose that position if you move the camera.

Location: An object's position in 3D space. Synonymous with position and offset.

M

Mapping: The process of interpreting data input of one kind and expressing it as another. See Bump Mapping, Grayscale-To-Height Mapping, Pict Mapping, and Texture Mapping.

Marquee Selection: Marquee is a noun which refers to a tool, in many applications, which will create a selection area; it can also be used to refer to the selection itself. Bryce has no marquee tool per se, but you can click and drag in the wireframe window to marquee a selection (here the term is used as a verb), and you can click and drag in the rendered image to marquee a selection for discrete rendering.

Material: In Bryce, the sum of up to four textural elements, either 3D procedural or 2D picture-based, used to drive various effect channels, plus post processing, used as a surface property for Bryce objects

Materials Channel: The rows in the Materials Grid, grouped as Light, Effect, and Color; can be driven independently or by Texture Components.

Materials Grid: The gameboard-like area in the Materials Lab where Texture Components drive parameters in the various Channels in the Grid to make a Material.

Matrix: The term is used only in the Bryce Edit menu, for the Copy/Paste Matrix commands. When you use these commands, you are copying and pasting an object's position, rotation, and size; you are not copying size, rotation, or position alone, but the matrix of all coordinates, hence the name.

Memory Dots: This feature, available in the Control palette for use with Views, and in the Sky & Fog palette, allows you to simply click on a Memory Dot to save the state of the parameters to which it pertains.

Mesh: Sometimes known as polyhedron. Used in reference to imported geometry as well as Bryce's internally created Stone objects. Similar to Polygon, but polygonal faces have been diagonally split, or triangulated.

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Metaballs: Spheres that blend into each other based on proximity. The closer two Metaballs are to each other, the more their shape merges together. Metaballs can be used to create fluid shapes that are otherwise time-consuming or even impossible to create using primitives and Boolean operations.

N

Nano-Editor: The Nano Editor is a small version of your wireframe window, which you can use to edit your scene quickly.

Nano-Preview: A small preview of an object or scene. The Nano-preview window is at the top of the Control Palette.

Network Render Client: A computer connected to a TCP/IP network that receives and renders sections of an image, and then sends the rendered sections back to the network render server.

Network Render Server: A computer connected to a TCP/IP network that controls the other machines on the network, sending them sections to be rendered and reassembling all of the rendered sections into the final image or animation.

Network Rendering: A special rendering mode that sends sections of a render to multiple computers. This reduces the amount of time required to render a complex scene without sacrificing the complexity of the scene or the quality of the final rendered image or animation.

O

Object Space: A method for representing objects in 3D space. It uses a set of Cartesian coordinates which are relative to a given object.

Object Type: Though Bryce creates and imports many kinds of objects, for the purpose of selections and conversions it must sort these objects into types. These types can be clearly seen in the Conversion option and in the Edit palette. Cubes and their derivatives are all of the Cube type; Cloud, Water, and Ground planes are all of the Infinite Plane type; Pict objects and 2D Faces are all of the 2D Face type; all imported objects are of the mesh type.

Offset: An object's position in 3D space. Synonymous with position and location.

Opacity: The degree to which light cannot pass through an object. In Bryce, the term primarily refers to the opaque portions of alpha-channels.

OpenGL:

Orientation: An object's orientation in 3D space, expressed in degrees; synonymous with rotation.

Orthogonal: A special projection of your scene which has no perspective distortion. Kind of a perspective-free drafting board view, used for precise alignments. All Views with the exception of the Camera View are Orthogonal. The term can be used interchangeably with the term orthographic.

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Output Resolution: Available in the Export Render dialog, you can set the print resolution of the resulting rendered image expressed in dots per inch.

P

Parallel Light: A light which cast rays that are perfectly parallel to one another.

Patch Rendering: A technique you can use in Bryce: select a specific area, or patch, of your image for further rendering. Useful to examine areas for detail before doing a final render, or for re-rendering specific areas after making a change, thereby avoiding having to re-render your entire image.

Pict Mapping: A process that interprets a 2-dimensional Pict and expresses it as the surface of a 3-dimensional object, according to a specified algorithm.

Pitch: Camera rotation around its X axis; kind of a tilt forward or back.

Plop-Render: Name for Bryce's way of representing a marquee selection of your rendered image. Selections appear to "plop" forward, with attendant drop shadows and rendering controls. This feature can be enabled, disabled, or hidden, as you wish.

Polygon: All 3D objects in Bryce 3D are built from multiple-sided (in Bryce, we use 4 sides) geometric surfaces, and are therefore inherently polygonal in nature.

Primary Rays: The quantity of virtual rays of light that are initially "shot" into the Bryce scene.

Primitive: A basic geometric form, such as a cube or sphere, used as a basis for constructing compound 3D objects such as buildings, rocket ships, or snowmen.

Primitives: Like primary colors, Primitives are the primary objects in Bryce. Spheres, cubes, cylinders, pyramids, cones, disks, squares, and tori are all primitives.

Procedural Objects: Procedural objects are objects that require special constructions or "procedures" to create them. Procedures can include operations such as assignment of materials, randomization of internal parameters, or assignment of light properties. For example, terrains.

R

Radial Light: A light which casts rays equally in all directions.

Ray Hits: The total number of times all rays strike objects in your scene. Note: The total of Ray Hits and Misses is not equal to the total of Primary and Shadow rays because secondary rays are not quantified in the Render Report.

Ray Misses: The total number of rays that are fired, but strike no objects in your scene. Note: The total of Ray Hits and Misses is not equal to the total of Primary and Shadow rays because secondary rays are not quantified in the Render Report.

Raytracing: An image synthesis technique by which a virtual beam of light is projected from a virtual camera into a 3D scene in order to evaluate shading and visibility.

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The virtual beam may be absorbed, reflected, or otherwise affected to some degree by every object it strikes. For instance, if it hits your sky, then a blue sky color ends up on that portion of your virtual "film", your image. In this way, a final color is determined for each pixel in your image.

Reflectivity: The degree to which an object bounces light back from its surfaces.

Refraction: As a light wave passes from air through another medium such as water or thick glass, it seems to bend or turn to a certain degree. This phenomenon is known as refraction, and the degree to which light bends or turns in these situations is controlled by the Refraction channel in the Materials Lab.

Relative Coordinates: Values which express location, orientation, or size relative to the current location, orientation or size.

Render: The complex process of building a 2-dimensional bitmapped image from all the information contained in your 3-dimensional wireframe scene

Render Resolution: The size of your rendered image, expressed in pixels, or as a multiple of your Document Resolution. The implication here is that your rendered image can be larger or smaller than your Document Resolution.

Replicate: While Duplicate will create a copy of your selected object, Replicate will create a copy of the object and the last 3D transformations applied. If you create an object, move it up a bit and rotate it a bit, selecting Replicate will create a copy, move it and rotate it for you; Multi-replicate will do the same with multiple copies in one step.

Roll: Camera rotation around its Z axis; kind of a left/right tilt. Also known as banking, it creates the illusion that your horizon is tilted.

Rotation: An object's rotation in 3D space, expressed in degrees; synonymous with orientation.

S

Scale: Values that express the space an object occupies; synonymous with Size, though Size implies an absolute space.

Scene: a) The complete content of your Bryce world; b) The two-dimensional screen projection of your 3D scene; c) The file that Bryce saves, containing all information regarding your landscape.

Secondary Rays: When a primary virtual light ray strikes an object, if that object is reflective or transparent, another secondary ray is fired from that location (either bounced, if reflective, or bent, if transparent/refracted) to continue through the scene. This process is repeated up to six times, to find a home for the ray, and therefore a final color for a pixel in your scene. Secondary rays are not quantified in the Render Report.

Shadow Rays: Once a primary or secondary virtual light ray has found a final resting place, it must determine whether or not to create a shadow behind the object. To do so, another ray is fired from that location, and this is a shadow ray.

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Size: Values that express the space an object occupies; synonymous with Scale, though Scale implies a relative size.

Sky Dome: A secondary environmental ambient light, used to create a color cast in a scene where there is little visible global light.

Smoothing: Imported objects consist of polyhedral faces, which, when rendered, appear quite chunky. This is not, in most cases, desirable. Use the smoothing command to eliminate this chunkiness. You can set a threshold angle for smoothing as well.

Snap To: A special form of 3D Transformation changes the selected object's position based on the Snap To. command you select. These commands are located in the Edit palette, in the Alignment Options menu.

Solid Texture: A three-dimensional mathematical description of an object's textural characteristics. Often referred to as procedural texture.

Specular: The "highlight" of any object with a shiny surface; light that reflects non-uniformly in specific directions depending on the surface roughness. "Specular highlight" refers to the point where specular reflection is most pronounced.

Spotlight: A light which casts rays in a cone shaped spread; often used top create the classic "Hollywood spotlight" effect.

Square Spotlight: Similar to the Spotlight, but casts rays in a pyramid-shaped spread; think of it as a slide projector.

Symmetrical Lattice: A procedural Bryce Terrain object which has another Terrain mirrored at the base.

T

Terrain: An object used in Bryce as the basis for mountains, islands, plateaus, and other landscape objects.

Terrain Canvas: The area in the Terrain Editor onto which you paint and apply effects. Terrain data can be rendered at many levels of detail, from 16x16 to 4096x4096. This resolution does not refer to the wireframe that is used to represent the terrain, but instead to the grayscale data used to determine the internal level of detail used to generate the terrain. Terrains with lower resolutions will appear chunky, and will render very quickly; use these for terrains that are far in the background or where detail is not so important. Terrains with higher resolutions will show increasing levels of detail, and will take much longer to render; use these for foreground terrains, or in other cases where detail is important.

Terrain Resolution: Terrain geometry can be rendered at several levels of detail. At very low settings, you may see geometric "facets" in your terrains, even with "smooth surfaces" selected. In this case, increase your terrain resolution. Low resolution rendering is often best for items in the far background, where detail is not so important.

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Texture Component: A part of an object's material. Texture Components, which can either be a 2D Picture or 3D Texture.

Texture Mapping: A process of applying detail to a surface without actually affecting the object's geometry. Values from the texture can determine or affect any surface characteristic, including color, reflectivity, transparency, or bumpiness.

Torus: A Bryce primitive that looks like a donut.

Transparency: The measure of an object's ability to transmit light through its surfaces.

Triangulation: The process of splitting up geometric faces into triangles for greater flexibility

U

Unity: The state a Bryce object is in when it is first created, or just after the Unity button has been pressed; positioned within a "cube" of fixed size in an invisible 3D grid, with no rotation applied.

V

View: The sum of camera position in 3D space, plus 2D Projection pan and scale values

W

Wireframe: A mesh representation of a 3D object.

Wireframe Resolution: Your onscreen wireframe objects can be displayed at various levels of detail; this display resolution can be set discreetly for static, selected, and moving wireframes. This resolution has no relevance to document, render, or output resolution.

World Space: A method for representing objects in 3D space. It uses a fixed, or absolute, set of arbitrarily determined Cartesian coordinates.

Y

Yaw: Camera rotation around its Y axis; kind of turning to look right or left.

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