Dynamic Clothing Control Plug-in for DAZ Studio™

User Documentation

Revision Initial

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Revision History

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What is the Dynamic Clothing Control Plug-in?

The Dynamic Clothing Control plug-in for DAZ Studio is a plug-in to enable DAZ Studio users to work with cloth which has been designed to respond realistically to the 3D figure's movements and poses along with the environment. Once the cloth material has been fitted to a 3D model and posed, the material can be processed by a draping simulation engine to "drape" or "relax" the cloth material to the model and its position, based on the materials own parameters and outside environmental factors such as gravity and movements.

The Control version differs from the free version in that it allows the user to adjust how gravity and wind affect the cloth, set collision tolerance, internal pressure, and simulation settings.

The Dynamic Clothing Control plug-in uses technology from OptiTex, a company which specializes in 2D and 3D CAD/CAM Fashion Design Software for the clothing and textile industry.

Conventions

This User Guide describes both the Windows and Macintosh versions of the plug-in. It includes several formatting conventions that present information clearly and make learning and working with the plug-in easier.

Unordered Procedures

Lists or procedures that do not need to be performed in a specific order have bullets next to each item, as shown here:

- Item 1
- Item 2

Ordered Procedures

When you need to follow steps in a specific order, it will have numbers next to each step, as shown here:

1. Do this first...
2. Next, you have to do this...

Keyboard Entries

If you need to press a specific key on your keyboard, you will see the key label in bold letters with the Macintosh key label first followed by a slash and the Windows key label. (for example, **Cmd/Ctrl**.) If you need to press two more keys simultaneously, the notation will appear as **Key1+Key2** (for example **Cmd/Ctrl+V**).

Mac OS Conventions

The following additional conventions apply for Macintosh users:

- Where instructions in this manual specify a right-click, Macintosh users may press **Ctrl** while clicking to access the same functionality.

Commands and Prompts

Screen prompts, menu and window names, fields, buttons, boxes, etc. appear in bold type. The syntax used to demonstrate accessing a palette or submenu is **Menu > Submenu**. For example **Edit > Preferences** means that you should open the Edit pull-down menu and then select Preferences to open the Preferences dialog box.

Tips, Cautions, and Notes

 **TIP!** Tips contain helpful advice and other information that makes the software easier and more enjoyable to use.

 **CAUTION!** Cautions warn of potential problems that you will want to avoid.

 **NOTE!** Notes contain other points worth mentioning.

ReadMe

At the end of the installation process, the Readme file will automatically appear. This file includes late-breaking developments and other information that were too recent to be included in the User Guide or Install Notes. Please take a few moments to read this information carefully as it may affect how you use the plug-in.

Installation - Macintosh & Windows

This section describes the installation process for the Dynamic Clothing Control plug-in on both Windows and Macintosh computers. Before installing the plug-in, you must read, understand, and agree to the End User License Agreement (EULA) and learn how DAZ protects artists' copyrights. The EULA appears during installation.

To install the Dynamic Clothing Control plug-in on either a Macintosh or Windows system:

1. If you have the Dynamic Clothing Basic plug-in installed, uninstall it before installing the Control version.
2. (Macintosh only) Unpack the zip file to access the installer.
3. Double-click on the Dynamic Clothing Control installer icon to start the installation.
4. If a previous version of the plug-in is already installed, you will be prompted to remove the current version to prevent possible conflicts. Click on **Yes** to continue.
5. Read the *Welcome screen* and click on **Next**.
6. Read the *Software License Agreement* and click on the radio button next to **I accept the agreement**, then click on **Next** to continue.
7. Read the *Ready to Install text* and click on **Next**.
8. Once the plug-in has been installed, read the *Important notes* and click on **Next**.
9. In the *Completing install* dialog, click on the checkbox next to **Launch DAZ Studio** if you want to use the program immediately; click on the checkbox next to **View the <plug-in> Readme** then on **Finish** to close the installer and view the readme.

Support

This manual addresses as many questions about Mimic as possible. Should you need it, there are several ways to get additional help.

Contacting Technical Support

Need support? Please contact DAZ as follows:

- Toll Free Phone: (800) 267-5170
- Local Phone: (801) 495-1777 (Our technical support hours are Monday through Friday, from 9:00 a.m. to 5:00 p.m. Mountain Standard/Daylight Time).
- Fax: (801) 495-1787
- Online Direct: http://daz.custhelp.com
- US Mail: 12637 South 265 West, #300, Draper, UT 84020

Other DAZ Resources

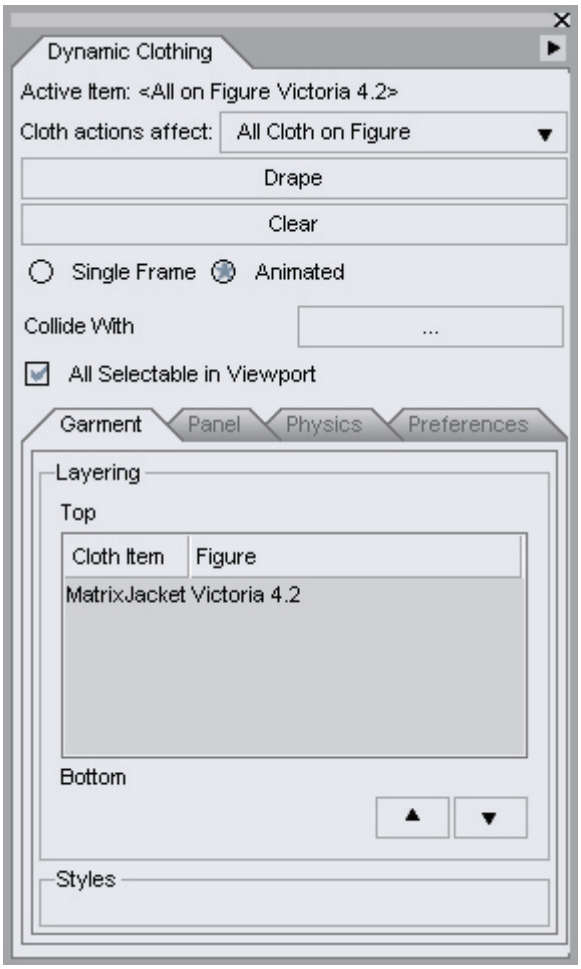
- Web site: http://www.daz3d.com
- Support database: http://daz.custhelp.com
- Community Forums: http://forum.daz3d.com
- Online Documentation and Tutorials: http://artzone.daz3d.com/wiki/doku.php/pub/software/mimic/start

Dynamic Clothing Control Overview

The following pages give an overview of the Dynamic Clothing Control panel and associated tabs, followed by a more detailed section on actually using the plug-in.

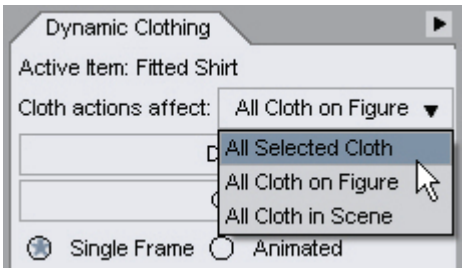
Dynamic Clothing Tab

The **Dynamic Clothing tab** for the plug-in is accessed by choosing **View > Tabs > Dynamic Clothing** from the menu. The tab can be placed anywhere around the Studio window or docked to one of the tab palettes.



The following options are available on the main cloth tab:

- **Active Item** - Shows the current active item, such as the name of the selected cloth, all items in scene, and all cloth on the figure.
- **Cloth actions affect** - Provides a drop-down menu from which to select which cloth items are to be affected.

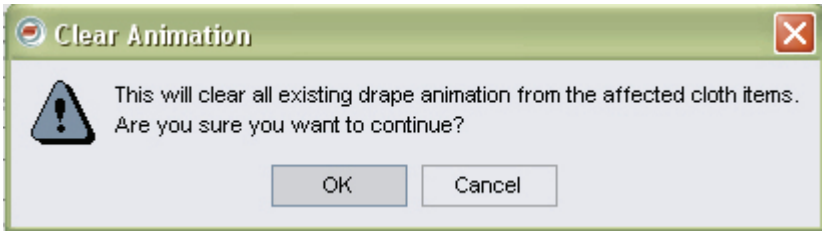


- **All Selected Cloth** - will affect all cloth items selected in the viewport
- **All Cloth on Figure** - will affect all cloth items on the figure whether the item is selected or not
- **All Cloth in Scene** - will affect all cloth items in the scene, no matter what figure they are applied to

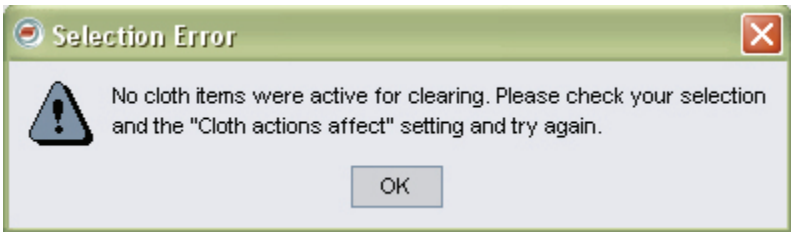
- **Drape** - Starts the process of simulating the clothing material, by running a physics engine which "relaxes" the cloth based on the parameters of the cloth material. While draping, a busy cursor and a progress dialog will pop up to give the user an indication of how long it will take.

  If you do not have a cloth item or the figure selected, you will get the following error message.

- **Clear** - Removes the active cloth's cached draping data and resets the cloth to its original default initial or auto-rigged state. You will be asked to confirm that the draping will be removed.

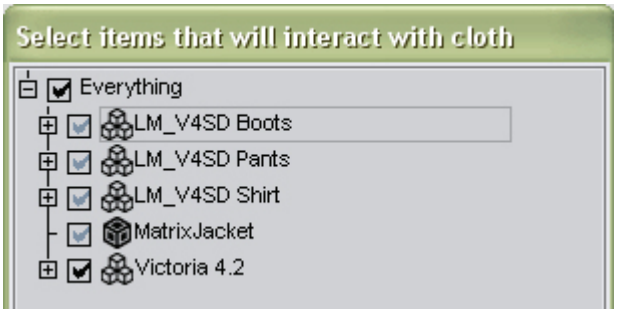


If you do not have a cloth item selected, you will get the following error message.

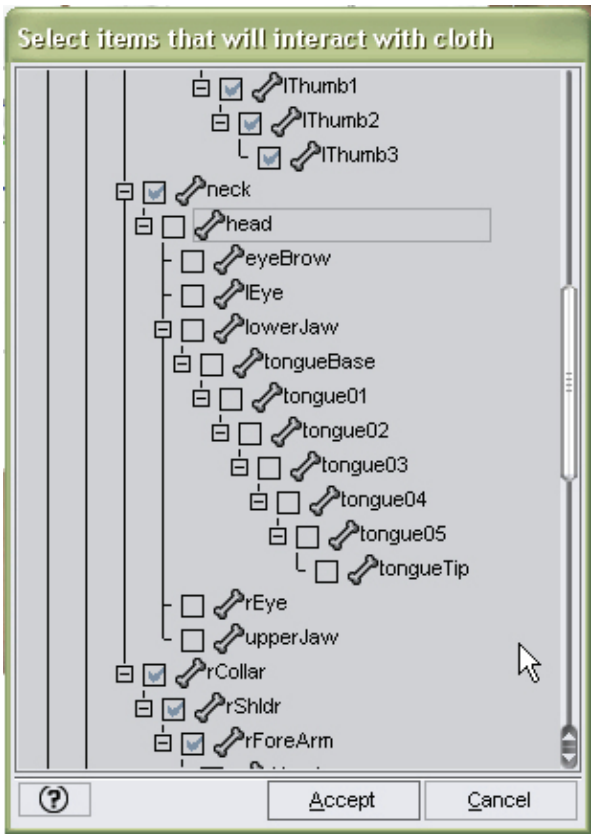


- Draping Mode -
    - **Single Frame** - This mode simply relaxes the cloth based on the current figures pose. The greater the changes from the initial pose and the final pose, the less accurate the drape will be. You may want to drape the item a few times in large pose differences. Good for previewing.
    - **Animated** - This mode relaxes the clothing materials over a series of tiny increments. Because the increments are so small, the changes to the material are also much smaller which enables the overall draping simulation to be much more accurate. Best for final draping. Use when draping over an animation timeline.
- **Collide With** - Brings up a selection dialog where the objects that the active cloth will collide with can be selected or deselected.

    - When clicked, the select dialog comes up with **Everything** selected by default.



    - If the cloth item will not be in contact with specific body parts, deselect them in the list by clicking on the plus sign (+) next to the figure/item and deselecting parts that will not be needed for the calculations. For example, the image below shows the head deselected for a shirt. A pair of slacks would probably not need to interact with the head and upper torso.

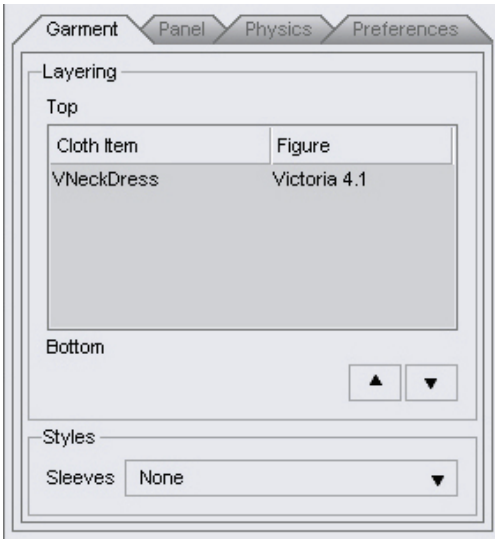


- Click on **Accept** to apply the changes or **Cancel** to accept the original selections.

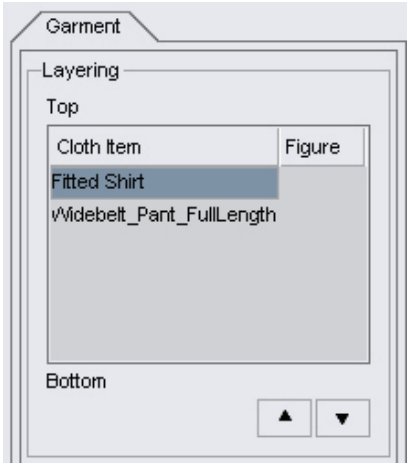
- **All Selectable in Viewport** - Enable this option in order to be able to select from all items in the scene to be collided with by the cloth.
- **Parameter tabs** - Tabs providing access to the more advanced functions of the plug-in.

Garment Tab

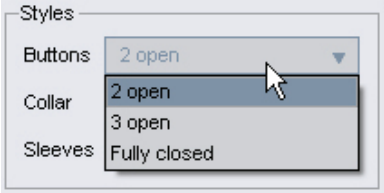
The **Garment tab** lists all cloth items in the scene, the figure they are fit to, ability to place the cloth items in layers, and selection of any styles.



- **Layering** - Sets the order of the cloth items to ensure they are layered correctly. For example, the image below shows the fitted shirt will be layered over the pants. If a jacket was added, it would need to be above the shirt and pants. Select the cloth item to move then use the up and down arrows to move it into the correct order.



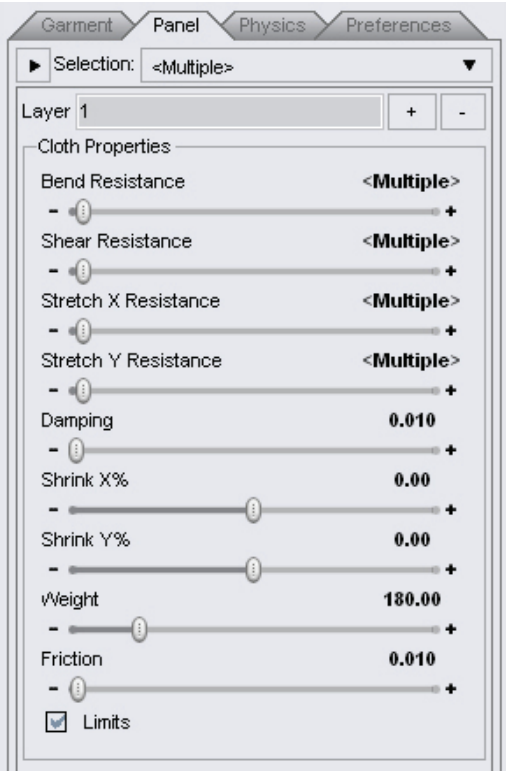
- **Styles** - If the cloth item contains styles, provides drop-down menus for selection of the different styles. In the image below, the Fitted Shirt has styles available for the buttons, collar, and sleeves. Click on the drop down menu for each item and select a style.



Panel tab

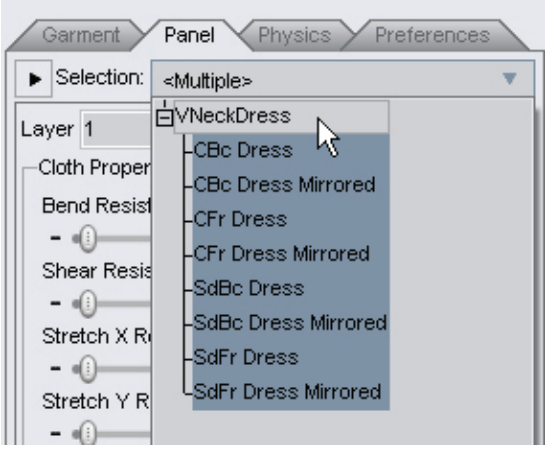
The **Panel tab** provides options for setting how the cloth acts based on what type of material it is. The modeled garment is pieced together the same as a clothing manufacturer would make the real article of clothing. The individual material sections enable the designers to further "tailor" their clothing to be as realistic as the original item or actual item would be. Each cloth section can have different properties associated with them. In addition, once the options are set, a preset can be saved that will apply the cloth properties to the same or another cloth item.

For example, a well tailored suit will drape nicely on a person when posed in a normal standing or walking position. However if the person were to raise their arms high over their head, the tailored aspects of the shoulder in the suit would cause bunching above the shoulders and pull up on the front of the suit. Likewise if the same person were to wear a cotton t-shirt and raise their arms high above their heads, the t-shirt would not bunch and have very little distortions of the material and the t-shirt probably wouldn't raise much in the front, especially if it were tucked in. The t-shirt is more stretchable and bendable than the tailored suit.

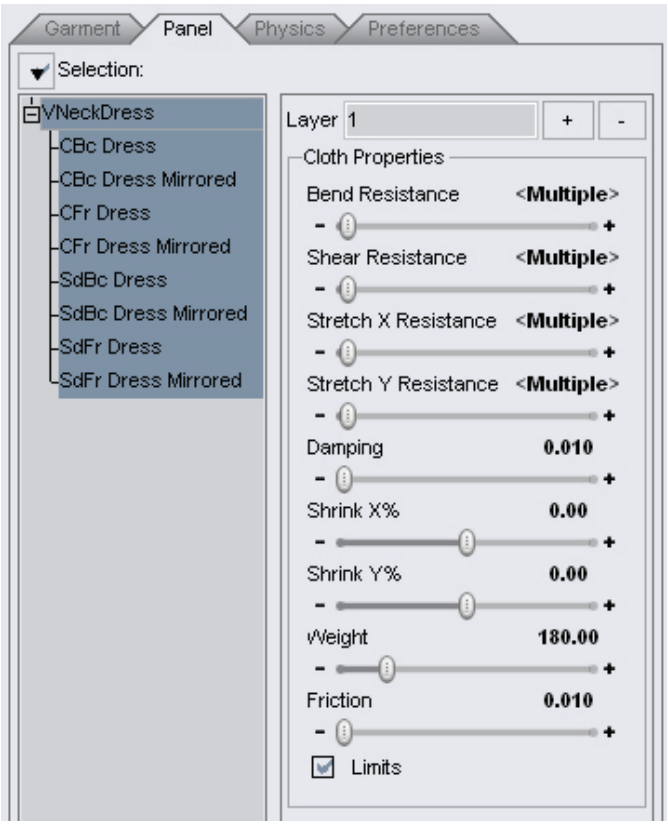


The Panel tab has the following options available:

- **Selection** - Click on the drop-down menu to the right to select a clothing item in the scene, use **Ctrl+click** to select multiple items to work on simultaneously and give them the same characteristics, such as all pieces of a waistband or sections of a skirt.



Or, click on the arrow to the left of **Selection** to open a panel containing a listing of the cloth items in the list, then click on a clothing item in the scene to select it. Use **Ctrl+click** to select multiple items to work on simultaneously and give them the same characteristics.



You can also choose **Tools > Surface Selection** (**Ctrl+Alt+M**) and select material zones in the viewport. The Selection field will update based on the surface you select.

- **Layer** - Lists the layer the article(s) of clothing are on. Higher layers are displayed over lower layers. For example, a shirt might be at layer 1 and a pocket on that shirt might be layer 2. You can change the currently selected item's layer by clicking on the "+" or "-" buttons or by entering a number in the field.

  If multiple items are selected, the minimum and maximum layer numbers will be displayed such as "<Min 0> <Max 43>"

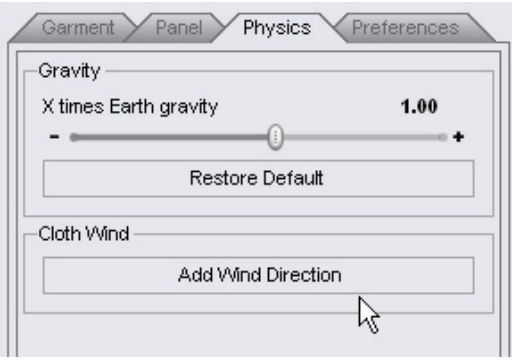
  - Note: In the Garment tab, if the ordering of the garments changes in the "Top to Bottom" layer ordering. The layer number in this pane will be affected. If an item of clothing is moved from the top layer order to the bottom layer order in the layer ordering panel, then the layer numbers of everything moved up the chain will be increased to account for the items moving down and vice-versa if the items are moved from the bottom up. For example, if the bottom article of clothing Cloth-B has layers 0-5 and Cloth-A has layers 6-7. Switching the layering order of those 2 items would give Cloth-A layers 0-1 and Cloth-B layers 2-7. This way, the layers of items within each cloth item remains consistent with the garment.
- **Cloth Properties** - In general the numbers in the parameters represent the measure of resistance of the fabric to deforming itself according to the property. A small number such as 1 will easily deform where a large number such as 5000 will resist the property, i.e., it won't stretch easily, instead it will constrict. The default numbers are chosen by the material designers. These parameters give the designers the ability to make different materials like cotton, polyester, silk, leather, rubber, etc. with more realistic properties. For example rubber might easily bend, stretch, and shear, but have a high friction number.
  - **Bend Resistance** - Measure of resistance the fabric has to bending. Small numbers give the fabric section more ability to deform. Larger numbers provide stiffer (less bendable) fabric.
  - **Shear Resistance** - Measure of resistance the fabric has to shearing on both the x and y axis'. A Small number gives the fabric more shear-ability. For example, "1" will make the item appear baggy and loose fitting.
  - **Stretch X Resistance** - Measure of resistance the fabric has to stretching on the x-axis. A small number gives the fabric a loose fitting look on the x-axis. A larger number keeps the fabric tight to the figure.
  - **Stretch Y Resistance** - Measure of resistance the fabric has to stretching on the y-axis. A Small number gives the fabric more stretch-ability. For example, a "1", will make the item appear baggy and loose fitting with the effect of gravity adding to the pull on the fabric. A large number such as "5000" will pull the garment very tightly in to the figure.

- **Damping** - Measure of how the fabric has to being damped. A large number gives the fabric more damping-ability. An example of damping could be a shock-absorber on a car. The shock absorber "dampens" the wheel from continually bouncing up and down. This parameter acts similar to this on clothing.
- **Shrink X%** - Percentage of shrinkage the fabric will experience on the x-axis. A small number will not shrink the item very much. A larger number will cause more shrinkage to occur.
- **Shrink Y%** - Percentage of shrinkage the fabric will experience on the y-axis. A small number will not shrink the item very much. A larger number will cause more shrinkage to occur.
- **Weight** - Measure of the fabric's weight, heavier fabrics like leather will have a greater weight than silk. A small number gives the fabric less weight so other parameters (i.e., forces) may have more effect upon the item than gravity. Larger numbers will have more gravitational pull.
- **Friction** - Measure of resistance the fabric has to sliding upon itself or other items. For example, using a small coefficient of friction like 0.010 will allow the fabric to slide easily across a surface.
- **Limits** - Uncheck the limits box if you don't want the panel setting sliders to be limited. This enables you to set very high or low values if you choose. Whether the limits option is on or off is persistent and will be remembered.

CAUTION! When changing settings for a panel, make sure that all applicable panels are changed as well to match, otherwise, the cloth will be "torn apart" when draped. For example, if you set the Friction on the front right of a waistband to 2, but not on the front left or both back pieces. When draped, the front right will resist movement while the other parts will try to

Physics Tab

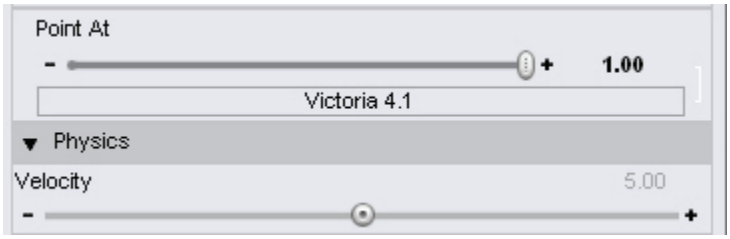
The **Physics tab** provides the ability to set up and modify external forces such as gravity and wind, which act upon the garment.



The Physics tab has the following options available:

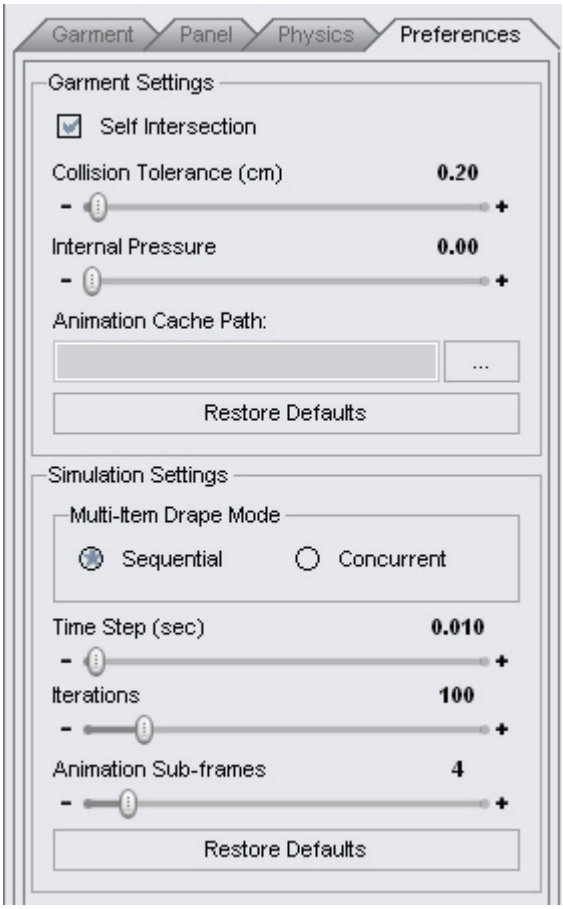
- **Gravity** -
  - **X times Earth gravity** - One of the standard parameters to the physics engine is gravity acting upon the garment. On earth at sea level the gravity is -9.81 (m/s^2). This slider will adjust the level in multiples of the Earth's gravity of 1.0.

    For example, if you are draping clothing on the moon you would set the gravity to -0.1667, which is 1/6 the gravity of earth, or -1.62 (m/s^2)
  - **Restore Default** - This button resets the sliders to their default values.
- **Cloth Wind** -
  - **Add Wind Direction** - Adds a wind source which the cloth will respond to similar to how the cloth responds to gravity. The wind source will add pressure forces to the cloth from the direction of the source. Similar to how a light adds lighting effects to a scene. Multiple wind sources will be averaged and act upon the garment as if coming from a single point.
  - **Wind Velocity** - This is available on the Parameters tab after selecting the wind source in the scene. The velocity determines how fast the wind is blowing and how much it affects the cloth based on the cloth settings. The default velocity is set at 5.



Preferences Tab

The **Preferences tab** provides options where the user can set up specific garment and simulation draping settings.



The Preferences tab has the following options available:

- **Garment Settings** -
  - **Self Intersection** - When checked, the cloth item will intersect with itself. This will cause more bunching of the cloth. When not checked, the cloth item will be able to pass through itself in an unrealistic manner but will drape much quicker.
  - **Collision Tolerance (cm)** - This can be thought of as the amount of "padding" that is kept between the clothing geometry and the figure geometry when draping. A value of 0.2 indicates that the cloth will "hover" 0.2 cm above any geometry it's colliding with. Changing this setting is useful in situations where the figure's geometry can be seen poking through the cloth geometry. Increasing the collision tolerance can help solve the problem. As a note, setting the value to 0 will make the clothing act as if there is no colliding geometry at all. Setting this value too high can result in simulation anomalies with the cloth going every which way.

- **Internal Pressure** - This is a measure of how "puffy" the material will be when simulated. For example, a down jacket is much "puffier" than a rain jacket. The larger the number the more internal pressure is exerted on the material and the "puffier" it will appear.
- **Animation Cache Path** - This button brings up a standard "Choose Folder" dialog to allow the user to choose a folder where the animation cache is stored when the scene is saved. This is not where the temporary animation cache is store during draping functions, but the location where the final files animation cache files are stored. When a saved scene is opened at a later time, Studio will look in the selected location for the correct draping files to load.
- **Restore Defaults** - This button resets the Garment sliders to their default values.

- **Simulation Settings** -
  - **Multi-Item Drape Mode** - Determines in what order the cloth items are draped, either sequentially (one at a time) or concurrently (at the same time).
  - **Time Step (sec)** - The increment in time segments that the physics engine uses for each loop when draping over a single frame. (This option will be grayed out when draping over an animated range.)

    For example, if you enter 0.01. Each loop of the draping engine will move the clock forward 1/100 of a second.
  - **Iterations** - The number of loops the physics engine will run through a calculation using the Time Step as its increment when draping over a single frame. If you choose 0.01 sec as your time step, to get the equivalent of 1 second of draping you will need 100 iterations. (This option will be grayed out when draping over an animated range.)
  - **Animation Sub-frames** - Only used when draping over an animated range. Sometimes the animation sequence is too big of a gap to get good draping results. For example, 30 frames per second might not give great results so adding a sub-frame increment of 4 would run the physics engine 4 extra times per frame, giving better details for each frame. (This option will be grayed out when draping over an single frame.)
  - **Restore Defaults** - This button resets the Simulation sliders to their default values.

Dynamic Cloth Presets

The settings for a cloth panel or complete cloth item, can be saved as a Dynamic Cloth Preset. These presets can then be used by other Pro version users and Basic version users (who can't change the presets manually).

There are two types of dynamic cloth presets:

- **Garment Dynamics Preset** - This preset is specific to a cloth item and uses the garment's material zones to set the cloth properties. The settings are applied to all panels/material zones of the cloth item. It does not set surface properties (applying colors, textures, etc.).
- **Fabric Dynamics Preset** - This preset can be used on any cloth item to set a specific type of fabric, such as cotton, lycra, silk, etc. The settings are applied to the currently selected panels/material zones on the cloth item.

Saving a Garment Preset

To save a garment preset:

1. Adjust the cloth settings on the **Panel tab** for all panels/material zones.
2. Choose **File > Save As > Garment Dynamics Preset** from the menu. A default save dialog will come up.
3. Navigate to the folder where you want to save the preset, enter a name in the filename field, select a file type of either plain text (.ds) or encrypted (.dsb), and click on **Save**.

Saving a Fabric Preset

To save a fabric preset:

1. Adjust the cloth settings on the **Panel tab** for any panel/material zone on the cloth item.
2. Make sure the modified panel is selected in the Surfaces tab or choose **File > Save As > Fabric Dynamics Preset** from the menu. A default save dialog will come up.
3. Navigate to the folder where you want to save the preset, enter a name in the filename field, select a file type of either plain text (.ds) or encrypted (.dsb), and click on **Save**.

Applying a Garment Preset

To apply a garment preset:

1. Select the cloth item or any panel/material zone of the cloth item.
2. Double-click on the garment preset in the Content tab.

Applying a Fabric Preset

To apply a fabric preset:

1. Select the panel/material zone to apply the preset to. To select more than one material zone, use **Ctrl+click** in the Surfaces tab or in the Selection field of the Cloth Panel tab.

    **TIP!** Fabric presets are applied only to the currently selected panel/material zone. Select multiple zones to apply the preset to more than one zone at a time.
2. Double-click on the fabric preset in the Content tab.

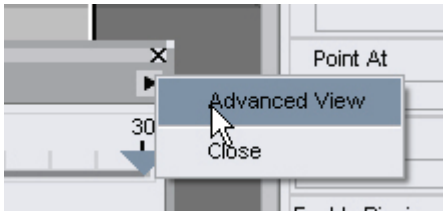
 **NOTE!** You cannot apply garment or fabric presets to stitches.

Using the Dynamic Clothing Control Plug-in

The Dynamic Clothing Control plug-in provides the ability to drape pre-made cloth items onto a figure, such as Victoria 4, and adjust settings for gravity, wind, and collisions. See the individual sections for more information on each option (i.e., what it does, how it affects the cloth, etc.).

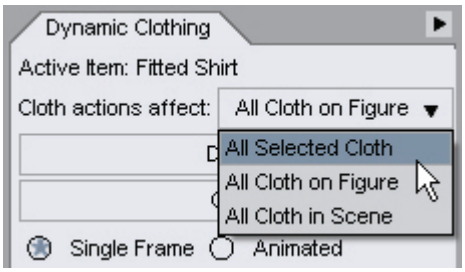
1. Load Victoria 4 into the scene in DAZ Studio.
2. Activate the Dynamic Clothing Control plug-in by choosing **View > Tabs > Cloth** from the menu. The **Cloth Panel** will come up.
3. Decide whether to drape the cloth over a static pose or over an animation timeline. Draping over several frames will take longer but will result in a better draping action.
   - **Static pose** - select figure and apply a pose.
   - **Animation** - activate the **Timeline**, enable the **Advanced View** and click on the plus sign to add a keyframe to the first frame. Move the scrubber to the last frame, apply a pose to the figure, and click on the plus sign to add

a keyframe at the last frame.

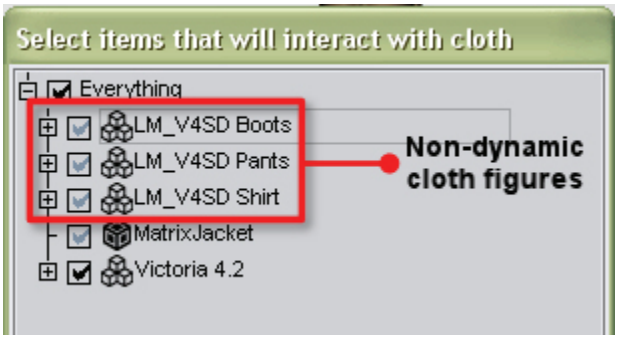


4. Make sure the figure is selected and locate the content folder containing the included cloth items.
5. Double-click on each cloth item to apply it to the figure.
6. Select each cloth item and check the **Parameters tab** to ensure it is fitted to the figure and fit them if needed.

   If loading a non-rigged cloth item (prop), it can be parented to the figure if needed. Items such as a tablecloth do not need to be parented.
7. In the **Cloth tab**, select which cloth items to affect from the **Cloth actions affect** drop down menu.

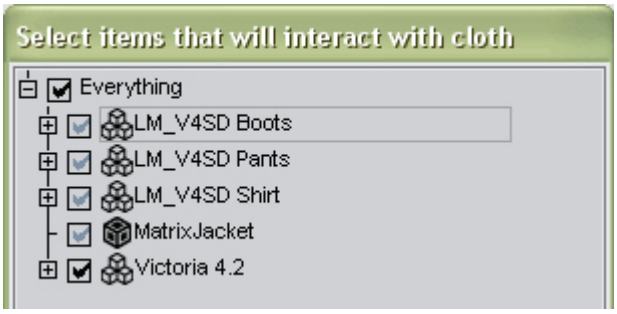


   - **All Selected Cloth** - will affect all cloth items selected in the viewport
   - **All Cloth on Figure** - will affect all cloth items on the figure whether the item is selected or not
   - **All Cloth in Scene** - will affect all cloth items in the scene, no matter what figure they are applied to – use for non-parented items
8. Select the draping mode of Single Frame or Animated.
   - **Single Frame** - This mode simply relaxes the cloth based on the current figures pose. Good for previewing and when draping over a static pose.
   - **Animated** - This mode relaxes the clothing materials over a series of tiny increments. Best for final draping and when draping over an animation timeline.
9. If the cloth needs to interact with other items in the scene, such as a floor, chair, or non-dynamic clothing, enable **All Selectable in Viewport** so the items can be selected in the **Collide With** dialog.

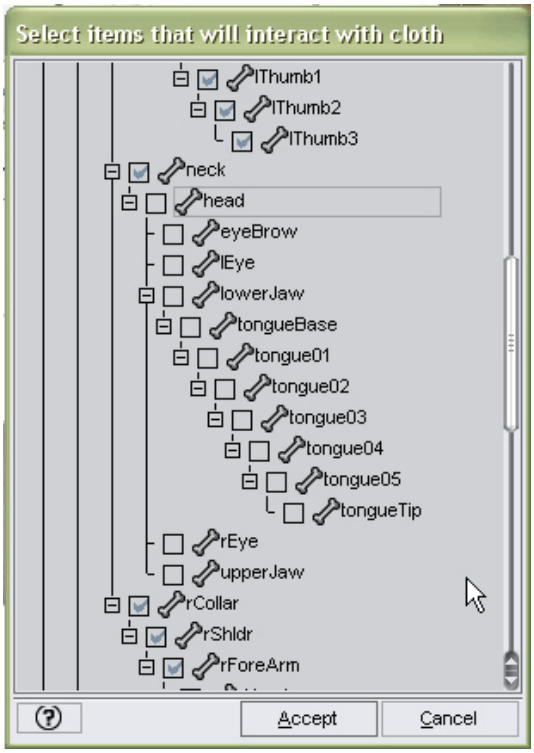


10. Click on the button next to **Collide With**.

The select dialog will come up with **Everything** selected by default.

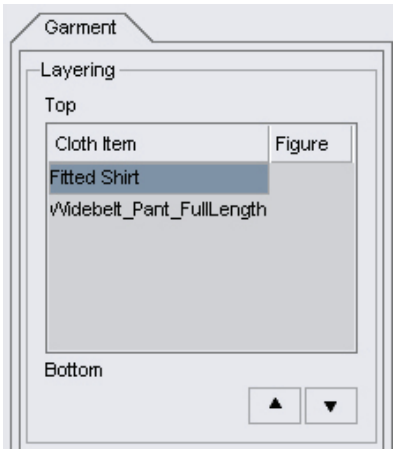


11. If the cloth item will not be in contact with specific body parts, deselect them in the list by clicking on the plus sign (+) next to the figure/item and deselecting parts that will not be needed for the calculations. For example, the image below shows the head deselected for a shirt. A pair of slacks would probably not need to interact with the head and upper torso.

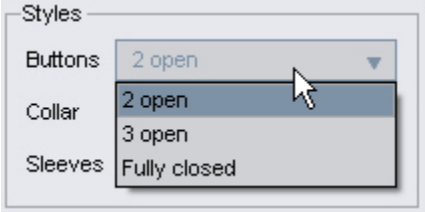


NOTE! If you change the cloth styles or remove the current cloth items and replace them with different ones, the collide with options will remain the same. So if you change from a sleeveless item to a long sleeved item, make sure you re-enable collision with the arms and hands that you may have disabled earlier.

12. Click on **Accept** to apply the changes or **Cancel** to accept the original selections.
13. In the **Garment tab**, check the order of the cloth items to ensure they are layered correctly. For example, the image below shows the fitted shirt will be layered over the pants. If a jacket was added, it would need to be above the shirt and pants. Select the cloth item to move then use the up and down arrows to move it into the correct order.



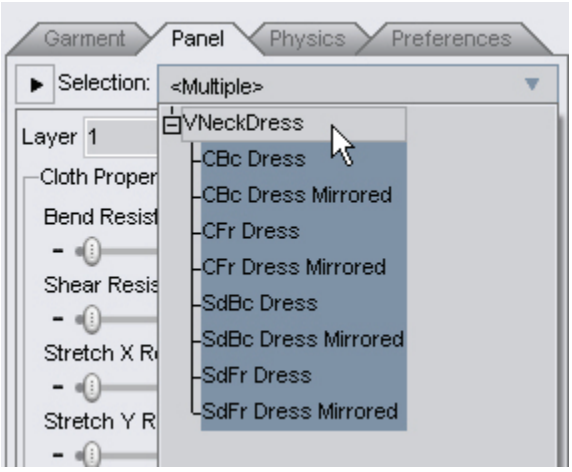
14. If the cloth item contains styles, they will show up in the **Styles** section. In the image below, the Fitted Shirt has styles available for the buttons, collar, and sleeves. Click on the drop down menu for each item and select a style.



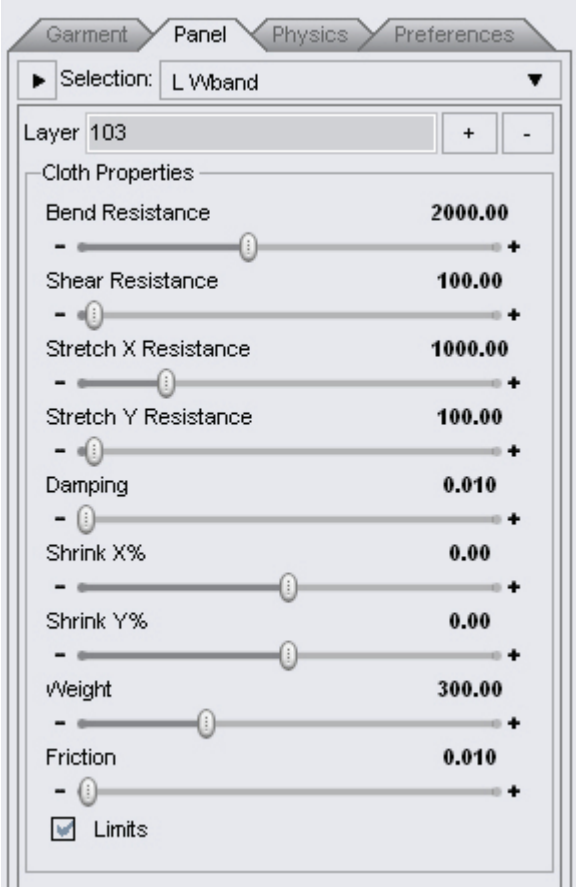
Remember to adjust any collide with options as needed based on the selected styles (see step 11 above).

NOTE! Each style is a different mesh object so selecting a new style will change what textures are required for that style. The garment creator may also have saved a default texture with the style itself. You can keep the texture applied or use a material preset to change the textures.

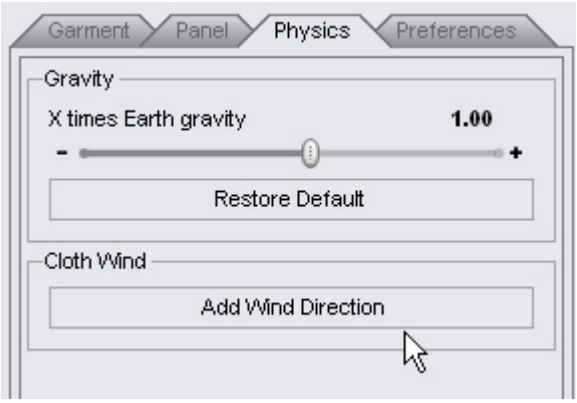
15. Check over the **Garment tab** to ensure that all settings are correct.
16. Click on the **Panel tab** and select a cloth item or cloth piece from the Selection menu. Use **Ctrl+click** to select multiple items that will have the same settings.



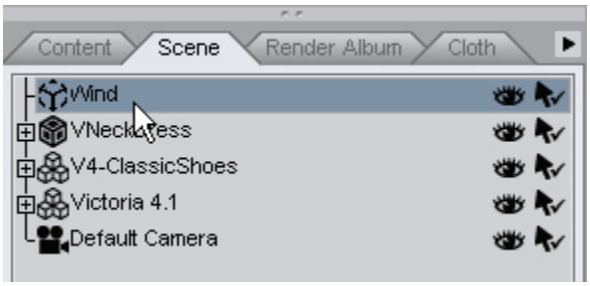
17. Use the sliders to adjust the **Cloth Properties** which set the layering and measure of resistance that the fabric deforms itself.

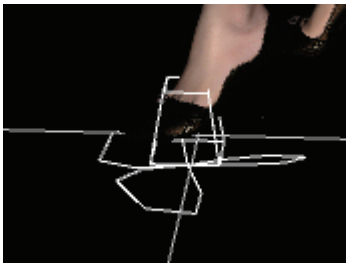


18. Instead of setting each cloth property, you can apply a garment or fabric preset. These presets apply settings for different types of fabric to the cloth item and the settings on the Panel tab will changed depending on the applied fabric preset. See "Dynamic Cloth Presets" for more on applying garment and fabric presets.
19. Click on the **Physics tab** and set the amount of **Gravity** and add a **Wind Direction** if needed.

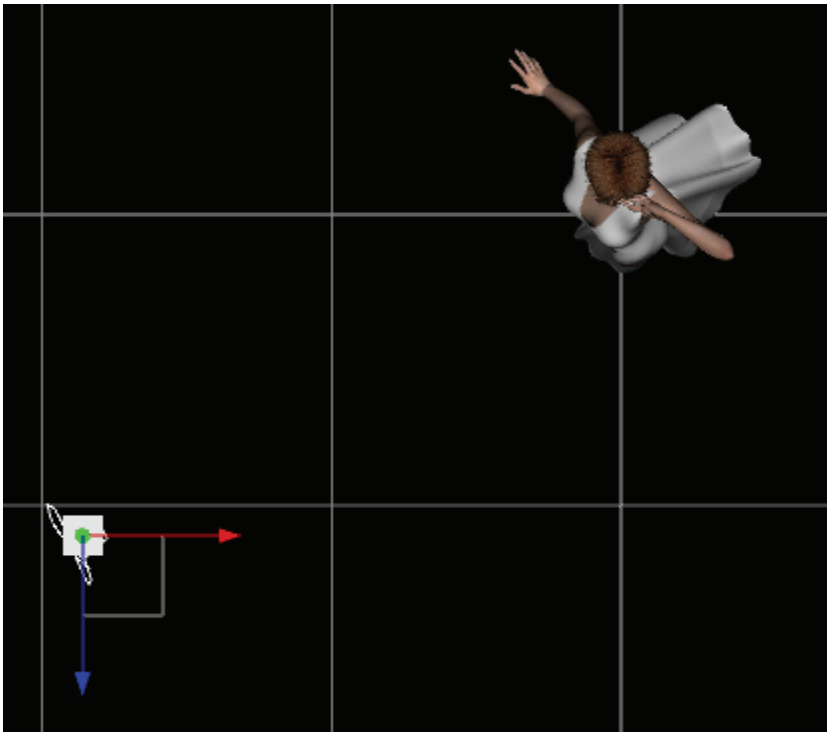


20. In the Studio **Scene tab**, select the wind source object. To see it in the viewport, you may need to change the background color of the viewport in order to see it.



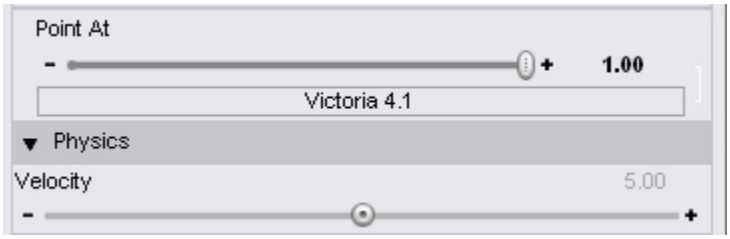


21. Move the **Wind Direction** so that it shows which direction the wind is blowing. For example, the image below shows the wind source in front of the figure with the "fan blades" pointing away from the figure. This tells the cloth engine that the wind is coming from behind the figure. You can have the Wind Direction anywhere around the figure, as log as the fan blades are pointing in the direction the wind is going.



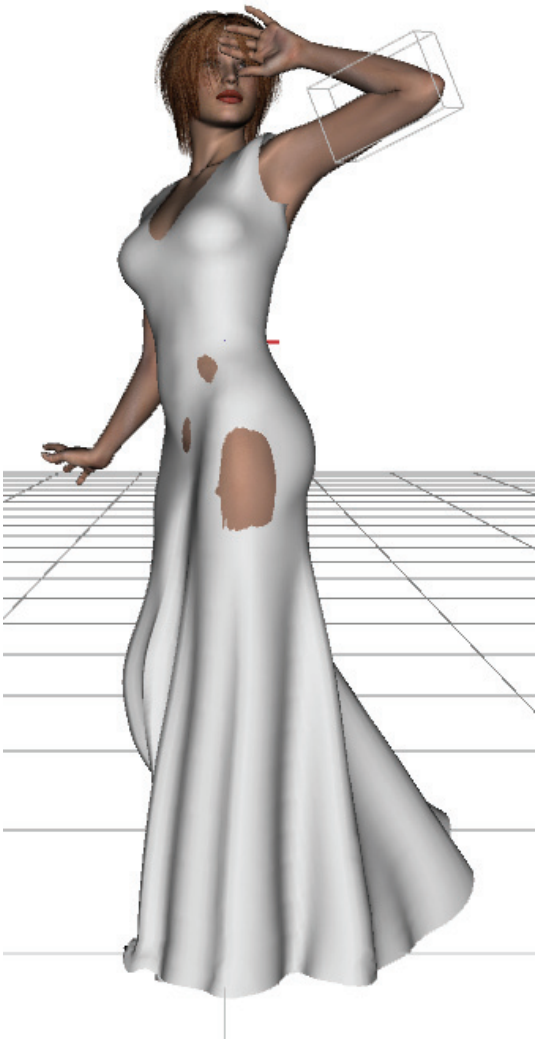
TIP! Multiple wind sources are averaged so that the wind seems to be coming from one direction.

22. In the **Parameters tab** for the wind source, set the **Wind Velocity** and if needed, point it at a figure or other object. A cloth item made of heavy or thick fabric will need a higher velocity setting than a cloth item made of cotton or silk.

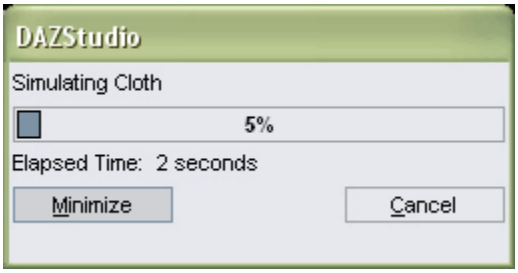


23. Click on the Preferences tab and set the **Garment Settings** and **Animation Cache Path**.
    - **Self Intersection** - enable if the cloth will intersect with itself
    - **Collision Tolerance (cm)** - set the amount of "padding" that is kept between the clothing geometry and the figure geometry when draping.
    - **Internal Pressure** - sets how "puffy" the material will be when simulated.

24. Set up the **Simulation Settings** for iterations and frames.
    - **Time Step (sec)** - sets the increment in time segments that the physics engine uses for each loop.
    - **Iterations** - sets the number of loops the physics engine will run through a calculation using the Time Step as its increment.
    - **Animation Sub-frames** - Only used when animating and provides a sub-frame increment for the physics engine giving better details per frame. Adjust this as needed as you drape over an animation timeline.
25. Check the **Cloth actions affect** field and if **All Selected Cloth** is selected ensure that the correct clothing items are selected in the viewport. To do this, click on the cloth item to affect in the viewport, press **Ctrl** and click on additional cloth items if needed. The selected cloth items will be highlighted with their bounding boxes.



26. Click on the **Drape** button. A progress bar will come up showing the percentage complete and elapsed time. If draping over an animation timeline, the figure's pose will change as the animation runs and the cloth will drape accordingly.



27. Wait until the simulation is complete or click on **Cancel** to cancel the operation. Some cloth items may require more than one draping operation if the pose is too extreme. In such a case, perform a single drape, then an animated drape to refine the draping.

28. To re-drape the cloth for more detail, move the scrubber back on the timeline to where you want to start the draping, then click on the **Drape** button.

29. Before changing the pose, styles, or cloth settings on the cloth items, click on the **Clear** button to clear the draping for the selected cloth items (the cloth item(s) must be selected in order to clear the draping). You will be asked to confirm removal of all draping animation from the affected cloth item(s). Click on **OK** to confirm or on **Cancel** to keep the current draping. Once the draping has been cleared, move the timeline scrubber to the first frame prior to redraping.

 **TIP!** If you re-drape and nothing happens, check to make sure you moved the scrubber back to the first frame of the animation (or any frame in between if you need to refine the draping without starting back at the beginning).

30. To replay the draping, click on the **Play** button on the animation timeline.

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