

TUTORIALS

TECHNIQUES / TIPS / TRADE SECRETS

CINEMA 4D

dress to kill

From cushions to clothing, fabrics can really add the finishing touches to a 3D image. Make use of the new Clothilde engine in Cinema 4D 9 to add natural-looking cloth elements to this fantasy scene **BY ADAM BENTON**

FACTFILE

FOR

- Cinema 4D 9+ with Mocca 2 module

DIFFICULTY

Intermediate

TIME TAKEN

1 to 2 hours (depending on processor speed)

ON THE CD

- Full-size screenshots
- Supporting Cinema 4D scene files
- Bonus DAZ Productions Poser content

ALSO REQUIRED

N/A

Since the release of Maxon's Cinema 4D 9, *Mocca* - the software's character animation module - has included an extremely powerful cloth simulation engine called **Clothilde**. For any current Cinema 4D user who doesn't have one of the more comprehensive C4D module bundles (such as XL or Studio), this feature alone makes the *Mocca* module worthy of consideration, even if character rigging and animation isn't your usual cup of tea.

Clothilde allows for the quick creation of natural-looking cloth elements and garments, and is as suitable for still renders as it is for those in motion (which would often take considerably more time to model by more manual means).

In this tutorial, we'll demonstrate how you can 'dress' up a scene with some basic, and easily created, cloth items. It will help to add that all-important organic touch, and will hopefully demystify some of cloth simulation's primary features for those who want to try it, yet were daunted by its apparent complexity. We'll attempt to create three original items using

the powerful Clothilde engine: a simple cushion, a pulled-back net curtain and a large ceiling cloth. Finally, you will 'clothify' an existing clothing model, to integrate it better with a character and make it more natural-looking.

On the CD, you can find full-sized screenshots for the tutorial, along with pre-built scene files corresponding to the start and end of each section of the walkthrough. Load these in and refer to the settings if you get stuck at any point.

As a bonus, DAZ Productions (www.daz3d.com) has also provided most of the stock Poser-related characters and props used in this image, although Poser itself is not needed to complete the tutorial. For full details, see page 114.

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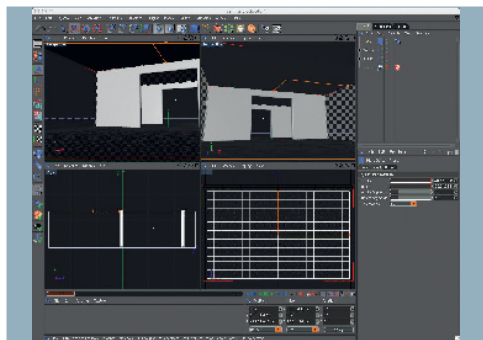
A red circular graphic containing a white stylized 'C' shape, serving as a background for the 'ON THE CD' text.

ON THE CD
● DAZ Productions
characters and props
as sold for \$145
[SEE PAGE 114](#)

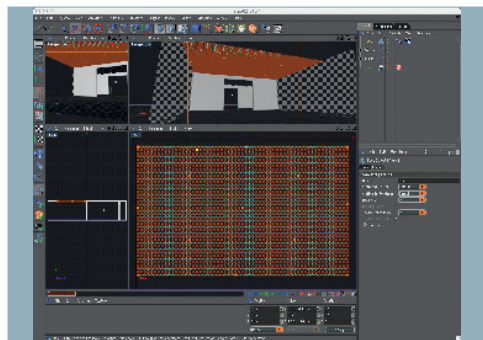




STAGE ONE | Hanging ceiling cloth



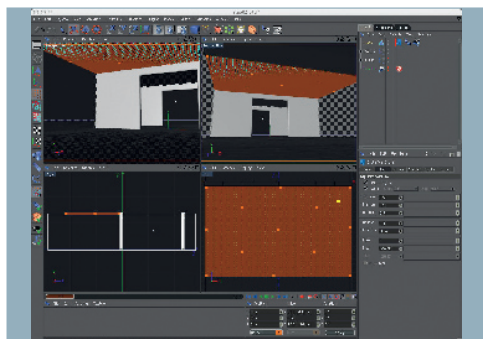
01 Start up *Cinema 4D* and load the 'ceiling_cloth.c4d' file from the CD. In here, you have the basic structure of the room shown in the scene, which you can use as a guide for the draped ceiling sheet. A plane object has already been created and placed just below the ceiling. Increase its subdivision to 60 Width Segments by 40 Height Segments (to give us square polys), and make it editable.



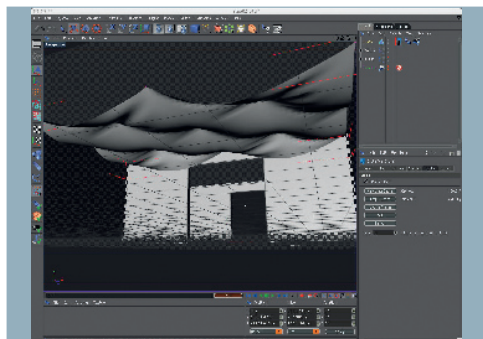
02 Switch to point mode and use the Live Selection tool to select each of the corner points (holding down the [Shift] key) and then a number of random, but evenly spaced, points scattered around the area of the rectangle. These points represent where you'll 'pin' the cloth sheet to the ceiling.

EXPERT TIP

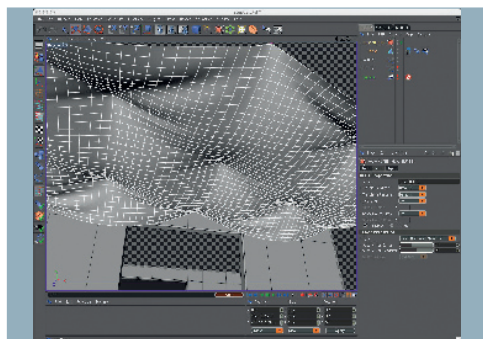
Hidden points
During the process of selecting multiple points, polygons or edges, especially those along a particular axis, you may find that the axis handles get in the way, which may prevent you from making further selections. To rectify this problem, you can choose to toggle the handles' visibility on or off by using [Alt]+[D]. Another useful command (and one used in this tutorial) is to hold down [Alt] when selecting a modifier such as the HyperNURBS or Cloth NURBS objects. This makes the currently selected object a child of the modifier.



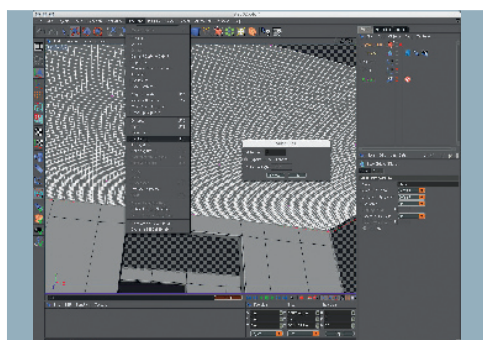
03 With the plane object selected, apply a Cloth tag from the Clothilde Tags menu and click on the Cloth tag's icon in the Object Manager. We want this material to appear light and thin, like silk, so setting a Stiffness of 1 should be adequate. Flexion is related to the 'bendability' of the cloth, and affects how finely it folds, so this can be set to 0, along with Bounce.



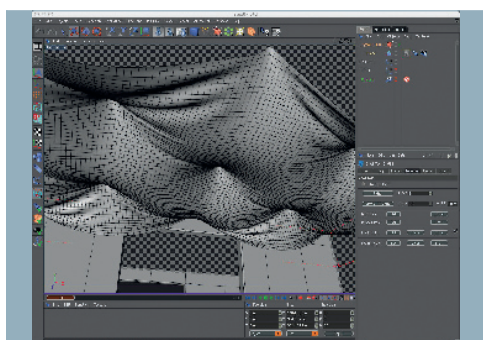
04 In the Dresser tab, and with your points still selected, click Fix Points > Set. In the Cache tab, click on Calculate Cache and watch as your cloth is simulated. If all went to plan, the selected points are anchored to the ceiling and the plane will have become draped cloth. You will see that the cloth never really rests properly, so go to the Forces tab and set the Global Drag to 4.



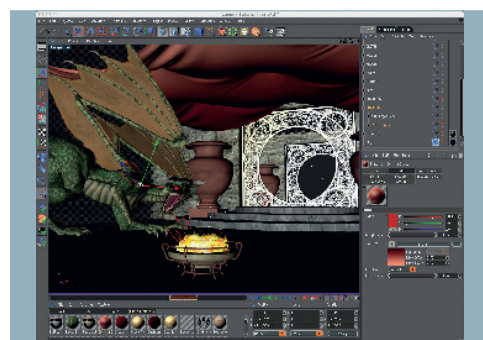
05 Recalculate the cache - your fabric should now come to rest. Select your plane, hold down [Alt] and add a HyperNURBS object. Even with the HN object, the mesh isn't as smooth or as defined as we would like for such a thin material. The cloth engine doesn't have enough polygons to begin with, so more need to be added.



06 Empty your cloth cache again, select the plane and go to Functions > Subdivide > 1. This now gives you 9,600 polys to play with. Your points should still be selected and will need fixing again in the Dresser tab; recalculate the cache. This yields a much better result, as you can see in the next screenshot.



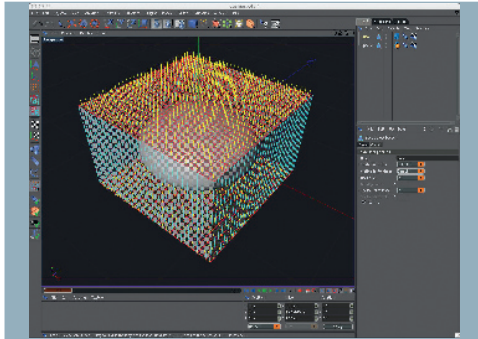
07 Back in the Dresser tab, click Relax (setting Steps to 2) to settle the form further, and click 'Init State'. Now the cloth starts from this form, which means it can further interact with other elements and forces, which is particularly useful in animation! We're using this as a static prop element, however, so you can now disable the cloth engine by unchecking it in the Tag tab.



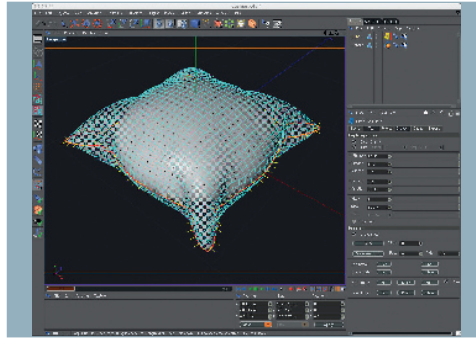
08 Finally, rename the HyperNURBS object to 'Ceiling Drape', open the 'Scene Default.c4d' file from the CD and Copy and Paste the drape into the scene file. Locate the 'Ceiling Drape' material and apply it to the object.



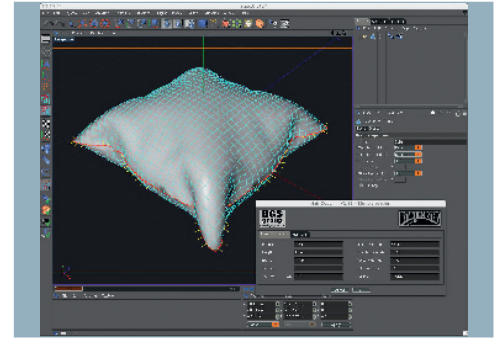
STAGE TWO | Simple cushions



09 Open the 'Cushion.c4d' file from the CD. Select the cube object, make it editable and, in polygon mode, select the top and bottom faces. Use the Subdivide function again with a setting of 5. Apply a Cloth tag to the cube object and a Collider tag to the sphere.

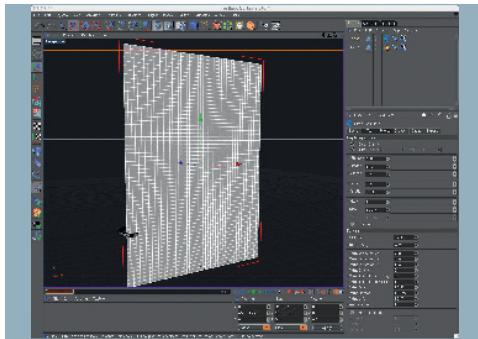


10 Invert the selected polys so that only the sides are selected. In the Dresser tab of the Cloth tag, click on Seam Polys > Set. Stiffness is fine at the default 10, along with a Flexion value of 1. In the Dresser tab again, set the Dress-O-Matic Width at 1m, which will be the height of the seam polys. Now click on Dress-O-Matic.

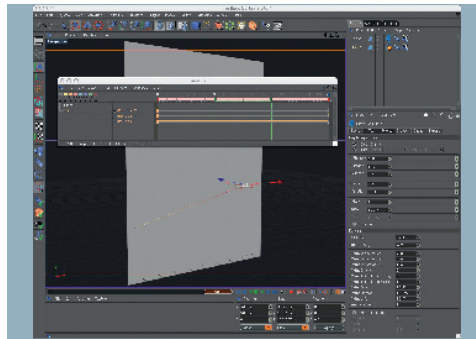


11 For this scene, the cushion no longer needs Cloth functionality, so delete the Cloth tag and the Sphere Collider object. With the seam polys still selected, use the *Hair Department* plug-in (on the CD) to add tassels. Make individual adjustments and place it all in a HyperNURBS. Rename the object, copy it to the Scene Default and apply the Cushion Textures from the CD.

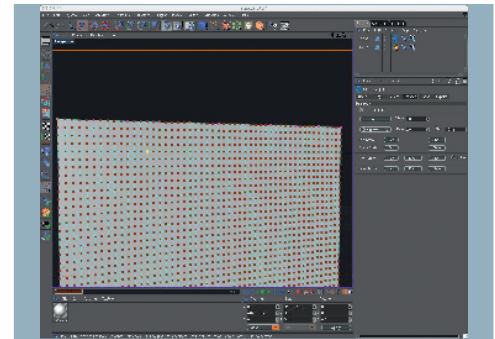
STAGE THREE | Tied-back curtain



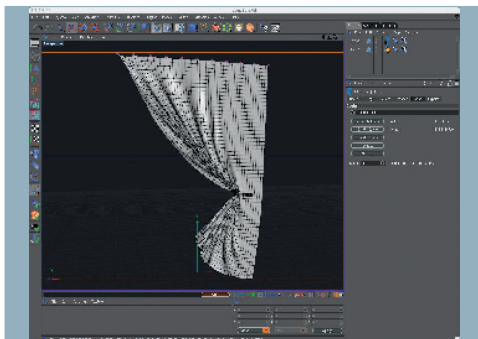
12 For a curtain to look like it's been pulled back, we need to do just that, and we'll use some simple animation to help. Open the 'Tie Back Curtains.c4d' file from the CD and increase the plane's subdivision to 50 Width Segments and 60 Height Segments. Make it editable and apply a Cloth tag. We're going to use the 'half torus' object to pull the curtain back, so apply a Collider tag to it.



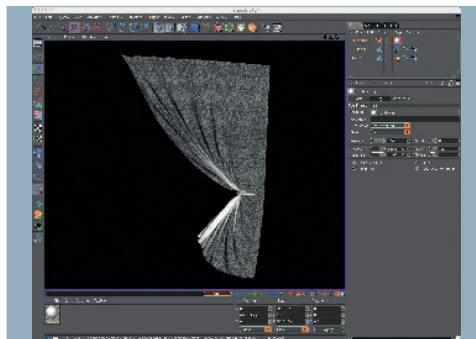
13 Select the Torus object and record a positional keyframe (click on the red record button). Note that the Y value is currently at 300 and X is -440. Move your timeline forward to 90 frames and move the Torus to Y=500, and X=340, then record another keyframe. The X movement gathers the curtain inward, and the small Y movement should help lift it into a nicer shape.



14 Now we need to fix some points at the top of the curtain to hang it. In point mode, select every fifth point, and in the Dresser tab of the Cloth tag, click 'Set' next to Fix Points. Press the animation play button, or click on the Calculate Cache button in the Cloth tag. Our curtain is now pulled back.



15 It's now a case of experimenting with the tag settings to get the right feel for the material. To see the settings we used, refer to the scene file on the CD. Each time, simply tweak, rewind and play again (or empty the cache). When you're happy with the basic look and feel, enable the Self Collision option under the Expert tab and run the simulation again.



16 Place the object in a HyperNURBS and apply the 'Net Curtain' material to it. Again, in this case, the object isn't going to be animated, so disable the Cloth Engine on it (see Expert Tip box). Rename the object and Copy and Paste it into the scene document.

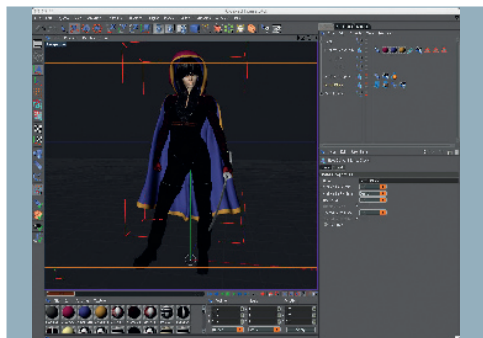
EXPERT TIP

Dynamic fixes

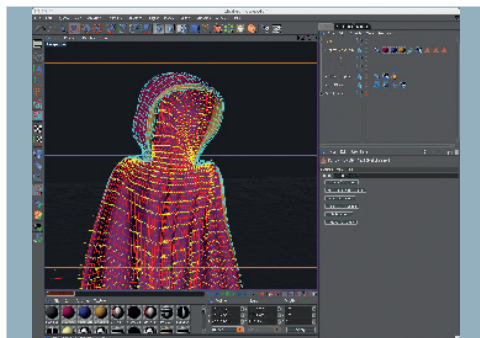
Clothilde isn't simply for animation. One of the great things about the engine is that you can simulate a material into a default relaxed state, fix it, and then keep trying more interactions and external forces on it, with repeated 'fixing' until you get the result you want. This means that you can create very dynamic sculpted forms within your still images - and all without having to pull points around by hand. To make an object static again after running the cloth simulation, turn off the Cloth Engine from within the Tag tab of the Cloth tag.



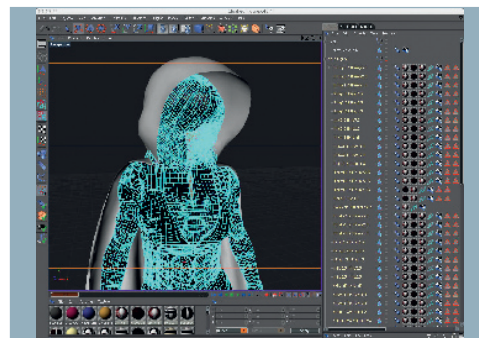
STAGE FOUR | 'Clothification' of existing clothing



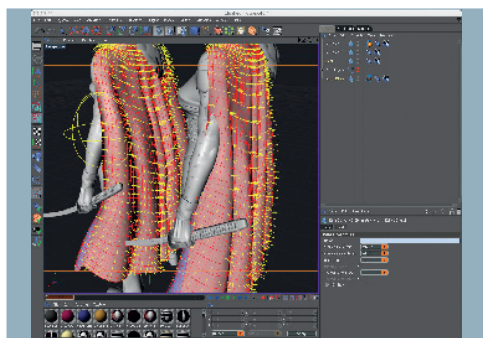
17 Clothilde is capable of creating complex clothing, and simple geometry can be converted into fitted garments quite easily using the techniques already outlined. However, you may already have some premodelled clothing you'd like to 'clothify'. We've set up this character (Cloaked Figure.c4d on the CD) in Poser and imported it using Robert Templeton's *interPoser* plug-in (not included).



18 The hood of the cloak has been deliberately oversized using the available morphs. The cloak needs editing, however, as it's currently double-sided, and Clothilde seems to work best with a single layer of polys. We can easily select and delete the inner polys using the Selection tags.



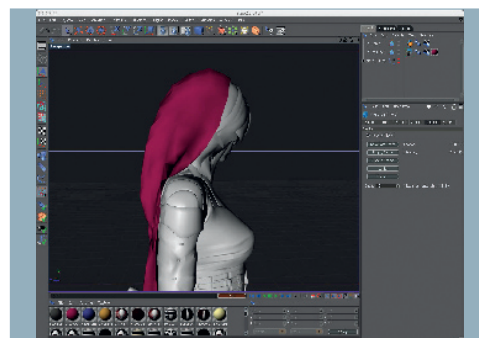
19 Using the Selection tags, delete the Lining and Trim of the cloak, as well as all the unnecessary Texture, Selection and Normals tags. [Ctrl]-click on the Main Figure and scroll down to 'Select Children', then choose 'Connect' from the Functions menu. Hide the original Main Figure and rename the new figure 'Collision'.



20 The cloak is intersecting the left arm, so you need to edit the mesh. Select Structure > Brush and carefully pull the cloak mesh backwards, away from the arm and hand. The hair polys are also sticking out at the back, and these can be edited in the same way, or simply deleted. Once this is complete, apply Cloth and Collider tags.

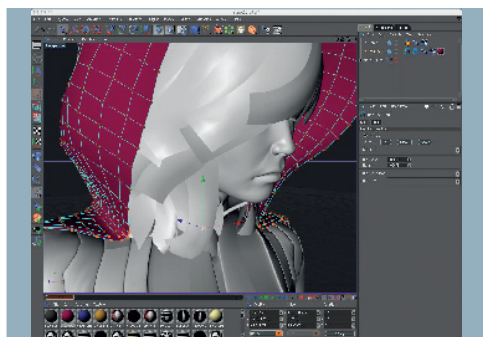


21 Now you're ready to simulate the cloth onto the figure. We've chosen to make the cloth a little stiffer than previously, so we've used a Stiffness setting of 40. Remember to add a Global Drag value of about 4 to prevent too much motion. We've also dragged a simple material onto the cloak, making it easier to see.

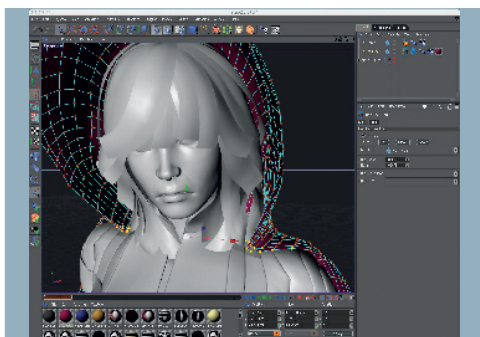


22 In the Cloth tag, click on Calculate Cache. At frame 12, the cloak looks OK, but as you get further into the simulation, you can see that the weight of the cloth is actually causing it to slide off the figure until it just rests on the back of her head! We'll fix this in the next section of the walkthrough. At this point, empty the cache.

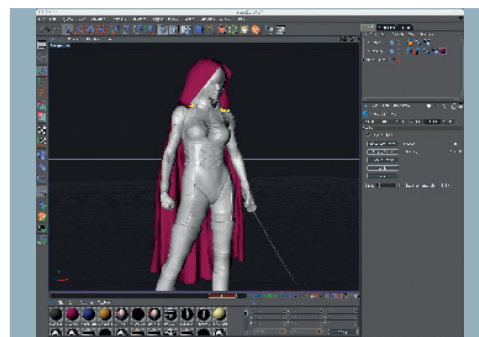
STAGE FIVE | Belting up



23 The solution is similar to the way in which we previously fixed the cloth to the ceiling, but this time we're using another tag. From the Clothilde Tags menu, apply a Belt tag to the cloak. In point mode, select some points either side of the cloak's shoulder area. Only a few points will be needed along the front, and perhaps a couple more from the second row.



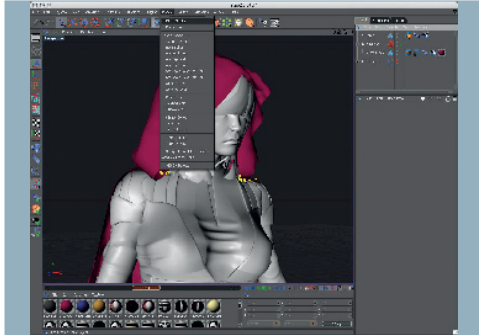
24 Next, click on the Belt tag. You need to define the object that the cloak will attach to, so drag the Collision object into the tag's 'Belt On' field. Now click 'Set' and the points should turn yellow to indicate that they're now belted.



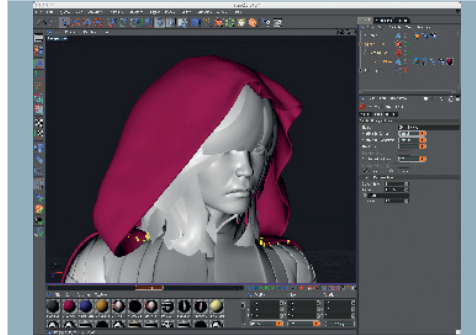
25 Back in the Cloth tag, click on 'Calculate Cache' again. As the simulation progresses, the cloak stays in place and the hood falls over the top of the head, partially obscuring the front of the model's face. As before, some experimentation with the Stiffness and Flexion settings is required to achieve satisfactory results. Again, refer to the scene file on the CD to see the values we used.



STAGE FIVE (Continued) | Belting up



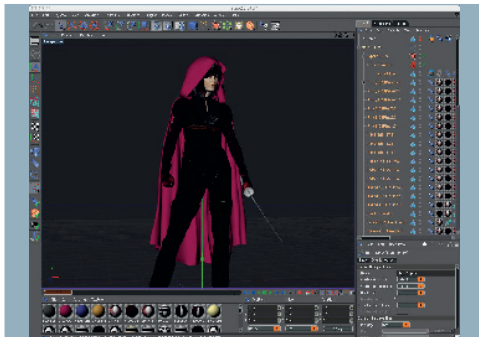
26 After applying settings, go back into the Cloth tag and make sure Self Collision is ticked under the Expert tab, then recalculate. Select the Cloak object in the Object Manager, hold down [Alt] and, from the *Mocca* menu, add a Cloth NURBS object. The cloak is now a child of the NURBS object.



27 Select the Cloth NURBS object and set the thickness to 1.5. This goes some way towards smoothing the mesh and will add thickness, but the cloak could still benefit from more smoothing, so add a HyperNURBS object, too. Now, the thickened edge is rounded, along with the rest of the cloak.

EXPERT TIP

Do-it-all fabric power
With its sophisticated dynamics and collision detection, you can use Clothilde in the simulation of a number of other real-world objects. For example, a 'cloth' car crashing into a 'collider' wall, fronds of kelp moving in the currents of the sea, or the wings of a butterfly flapping. A single piece of 'cloth' can also have a number of different properties across its surface with the use of vertex weight maps. For example, for a dress that is tightly fitting around the torso and flared around the legs, you might use a weight map to control how much each area can flow.



28 In the Dresser tab, relax the cloth a couple of steps and click the 'Init State - Set' button. The cloak's default position is now set, and the Cloth engine can be switched off for the sake of our still render scene. Drop the cloak hierarchy into the Main Figures hierarchy and Copy and Paste into the scene file; position as required.



29 Just for fun, let's go back a couple of steps in our previous cloak document, reactivate the cloth engine, and see the effect of adding wind forces to the cloak. In the Forces tab, make the Wind Direction X=1m, and the Z=-1m. Make the wind strength 5. Ensure that the Hyper and Cloth NURBS are deactivated and click on Calculate Cache.



30 In the main scene file, arrange your newly created cloth elements to your individual requirements. We decided to add a gold, silky edge to our cloak with a Texture Selection tag (both textures are in the scene file). Sometimes, you may find that, despite all the cloth simulations, you're still not entirely happy with the look of the object's shape, yet there's nothing to stop you using the

Brush tool (or whatever you prefer to use) to sculpt the mesh even further towards your desired form. We did exactly that in this instance (see above), reducing the stiffness and 'inflation' of the hood. This isn't a comprehensive exploration of all of Clothilde's many features by any means, but we've hopefully whetted your appetite for more! ●