# Sparrowhawke3D

# The Pin Modifier

## for CARRARA 5, 6 & 7

## Beta Version 0.2

The Pin Modifier can be applied to attach one object to the deforming surface of another.

To install the plugin extract the contents of the compressed zip package into the Carrara\Extensions sub-folder. The plugin must also be installed into the ..\Extensions folder of all render nodes. To remove the Pin Modifier users must delete the Pin.mcx,Pin.dat and Pin.txt files.

Macintosh users should open the Carrara installation folder (typically /Applications/Carrara). Right-click on the Carrara or Carrara Pro application and then choose "Show Package Content". Navigate to "Contents/MacOS/Extensions" then copy the Pin.mcx, Pin.dat and Pin.txt files into that folder.

Once installed, apply the Pin Modifier by selecting the object, opening out the Properties tray and then on the Modifiers card hit the + icon and choose Pin from the list of modifiers. If other Sparrowhawke3D plugins are installed it can be found under a sub-menu.

# Using the Pin Modifier

Normally when buttons are fitted onto a conforming costume, and made part of the figure geometry, they move but also deform with the figure. When props are parented to moving body parts and clothing they do not follow the bends at the joints. When applied, the Pin Modifier finds the nearest point on the surface of a mesh and sticks to it, changing the orientation and position of the pinned object when the other mesh moves and deforms.

To use the Pin Modifier move the object to be pinned into position on the surface of the clothing, figure, or deforming mesh. This is best done when the figure is at the zero position and at the start of the time line. Hit the [Select Object] button and select the mesh to *Pin To* from the list. The pinned object will now adjust itself whenever the mesh is moved.

The update of the pinned buttons will not occur in the preview window until the movement is completed - or in some cases until the Stop button on the sequencer tray is hit.

To adjust the location of a pinned object hit the *Pin To* object button and deselect the pinned to clothing object from the list. Now adjust the position and orientation of the pin and then reselect the clothing.

Checking the [] *Disable* box will allow the pinned object to be moved freely. If the modifier is to be temporarily disabled during an animation add a key frame to the pin position immediately into the time line. Disabling the Pin modifier will not change the position of the pin

Check the [] *Do Not Re-align* box to make the pinned object follow and maintain its position near the surface but not to rotate itself to maintain the original alignment with that surface. The pinned object can be manually rotated or made to re-align again at any time.

Once an object has been pinned to the surface of another object that mesh should not be altered without first detaching the pin by deselection. If the surface mesh changes the modifier may not behave as expected or disable itself until the mesh is reselected. The pinned object itself can be changed at any time. Adjusting the hot point will change the position of the button though.

The Pin modifier will not prevent the buttons from entering into the surface under heavy deformation or folding.

# Converting the Buttons of a Conforming Costume

Conforming and dynamic costumes can be designed with the Pin Modifier in mind to add the buttons after rigging the bones. The buttons of an existing costume must be removed from the costume geometry and made into separate objects. This should be done when the costume is not conformed to any figure and in the zero pose. Follow the steps outlined below:

1. The mesh of some figures and costumes cannot be duplicated, copied or edited so open the figure in the hierarchy and select the 'model' or geometry of the figure then choose File | Export to OBJ or another suitable format. Next choose File | Import and bring the geometry back into Carrara, with the *Transform:* options set not to *AutoPosition*, to *Disable Auto-scaling* and to create one Vertex Primitive object.

2. Edit the imported costume geometry in the model room. From the application menu choose Edit | Select All and then Selection | Deselect By | Shading Domain and find the separate shader for the buttons. Delete all of the other geometry leaving only the buttons behind. Some of the shader values will have been lost during the import-export process so these should be checked or changed to refer to the original shader.

3. Return to the Assemble room and duplicate the vertex primitive with the buttons as many times as there are buttons. Edit the duplicates one by one, creating a new master object for each. Delete all of the buttons except the first, then edit the second duplicate and delete all the buttons except for the second etc until each button is a separate object.

4. Select the 'model' or geometry of the original figure and enter the Model room.

5. Choose Selection | Select By | Shading domain, and by finding a separate shader for the buttons they can be easily selected. It may not be possible to delete the buttons of the original figure but they can be hidden instead. Choose Model | Transform | Scale or use the Scale tool then set the size of the buttons geometry to be 0.01% of the original size. Use the Move tool and move the buttons inside the body of the costume to hide them. These transforms could be stored as a morph instead of a permanent change.

6. Now the buttons can be pinned to the costume. Select each of the buttons. Its best to set the hot point to the object first. Switch to the <Modifiers> tab then add a Pin modifier. Select the original conforming costume as the object to Pin To.

7. Group the buttons and add that into the figure group or as a child of the nearest body part for convenience. Save the figure to the Objects browser. When the costume is conformed to the figure and then posed the buttons will no longer be distorted. When the rotate or transform tool is used on the figure the buttons position will not update until the mouse is released and the pose completed.

# Planned Improvements

- Allow for marked scale changes in the mesh of the pinned to object and adjust the position of the pin to maintain a relative position as they scale.

- Possibly to have auto-grouping of many buttons in the same mesh, adding local virtual pin-points.

- To get live updates in the preview window when figures are moved.

# Support

Sparrowhawke3D is an amateur project so I can't make any promises regarding support, however I'm keen to improve my simple practical plug-ins and share them with the Carrara community.

The Pin Modifier beta is freely available for testing. You can use it in any project, commercial or otherwise. You may not repackage and sell the Pin Modifier.

For comments, feedback and suggestions email me, Jeremy@Sparrowhawke3D.com.