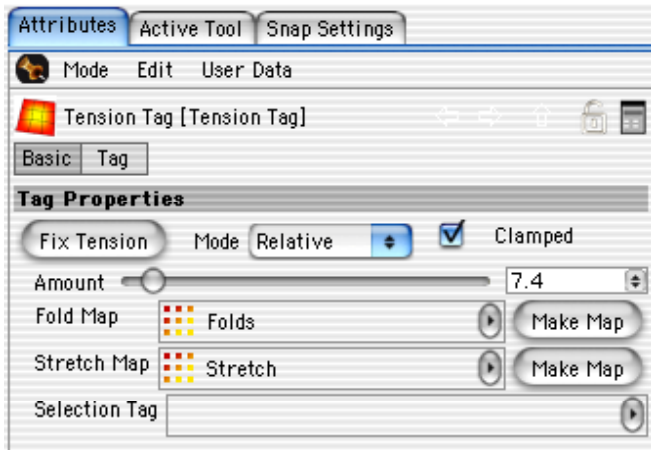


C.A.R. Tags - Tension Tag

The tension tag is designed to measure how much stretching and compression is occurring in a meshes edges and output this to two Vertex/Weight Map tags. You can then use this information for a number of purposes, including blending displacement, normal and bump maps to create natural looking folds and stretches as a mesh deforms.

The Interface



The tag should be put on Editable Geometry in it's relaxed state.

Once there the first thing you should do is press the "Fix Tension" button. This records the relaxed state to compare to in order to work out where is stretched/compressed.

The next thing to do is either link in premade vertex maps into the Fold and Stretch links, or create new ones by clicking the "Make Map" buttons next to these links, of course you don't need to do this, but there needs to be at least one vertex map there in order to output anything from the Tension Tag. These maps will then be driven by the Tension Tag. You can put in vertex map tags from other objects, however they must have exactly the same number of points, otherwise they wont be updated as your object deforms.

After that start playing around with the object, animating it, deforming it, even manually moving it's points around. If you select the Vertex maps in question in the Cinema 4D Object Manager you will see them update accordingly.

In order to fine tune the maps you can control the nominal distance used to calculate how strong the maps will be through the "Amount" slider. The higher this is the higher the distance an edge needs to stretch or fold in order to make the vertex map 100% strong at those points.

The "Mode" control determines one of two ways that the tension is evaluated. "Relative" means that it's relative to the edges original length. Thus if Amount is set to 2, then an edge must double in length to reach 100% weighting for stretch. "Absolute" means it takes a world unit value change in edge length (amount again) to determine if the points on an edge should receive full weighting. It's worth noting that it's the average of the edges attached to a point, so if one edge is out putting 100% stretch, but another is out putting 100% compression then two will cancel each other out, and the point will receive 0% stretch or compression!

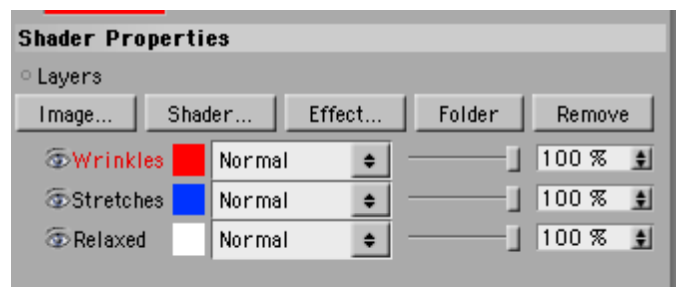
The "Clamped" value allows you to stop the vertex maps receiving more than 100% even if the amount of stretch/compression on a point is far higher than 100%.

An Example Texture Setup for Cinema 8.5+

(If you are working in Cinema 4D r8.2 then you will need to use the Fusion shaders and find an alternate vertexmap shader. There are a few plugins around that do this including one in Remotion's Ditools)

The easiest way is to work with the Vertexmap Shader and the Layers Shader.

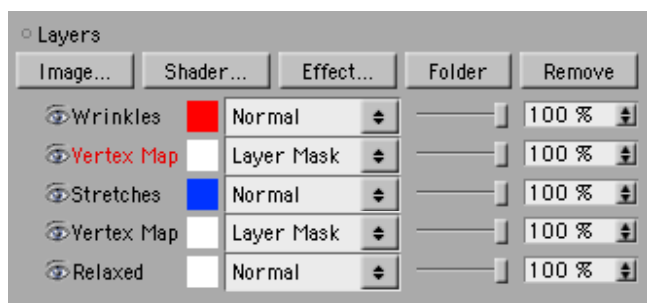
First off pick the channel you want to use, be it color, displacement, bump or whatever. Then add to that a Layers Shader.



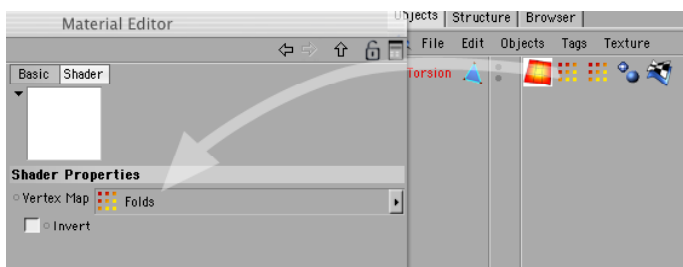
In the Layers Shader add your Relaxed state texture, and your Folds/Stretched state textures, you of course only need to generate

the textures that you desire here, so if you want you can leave out the folds or the stretch shader. Make sure that the relaxed state map is at the bottom of the pile.

Now add in the Vertexmap shaders (Effects->Vertex Map), These will be used as masks for the other layers. We do this by putting the layer we want to use as a mask, underneath the layer we want to mask, and then in the blending modes for the mask layer picking "Layer Mask".



Now all we do is link the Vertexmaps in correctly, to do this just edit the Vertexmap shader, then drag & drop the VertexMap you wish to use into the Link Field in it's GUI.



Once you have set up both masks with the correct vertex map links your'e ready to render!