

The Postman Butterfly...

Mastering 3D Graphics ~ issue #4

Caterpillar Strata StudioPro ~ Frank Vitale

Once again, I get to dive into the wonderfully freaky world of insects. I've always loved the little buggers. One sure-fire way of getting me to stop channel surfing is to present me with a program on insects. The diversity of the insect world is just immense. We've categorized at least one million different insect types, each with 6 legs and an exoskeleton. The fascinating part is we've barely scratched the surface; there are literally millions upon millions of insects that have yet to be discovered. The most difficult part of this project was simply deciding what type of insect to work on. Should I make one up, an alien insect? Or should I go with one that we know about, alive and well, here on earth?



Since I like to work from well-documented sources I decided to construct a well-known terrestrial insect, the, quite creepy “Postman Butterfly Caterpillar”. It’s scary looking and as an added bonus, quite poisonous, a great way to keep from getting eaten by birds. Also, this particular caterpillar has a great many spines and fuzzy patches, a perfect opportunity for me to use the Hair extension in StudioPro.

You might be asking yourself, “Is a caterpillar an insect”? They have more than 6 legs and they have no exoskeleton, so what the heck are they? Well yes, they are insects and yes they only have 6 legs and yes they do have an exoskeleton. The skin of a caterpillar is its exoskeleton. It cannot stretch and must be shed often, as they grow very fast. They’re voracious eaters, scarfing on vegetation constantly before they finally spin a pupa or chrysalis on their way to Butterfly or, Mothhood. As for the legs, the 6 on the front of the body – the ones that look like little daggers – are the only legs. The others are actually just extensions of the body, little nubbies that help them cling to branches as they stuff their chubby little faces. If you must categorize the caterpillar it is a “nymph,” an insect in transition.

So, enough caterpillar facts, I picked this guy because he looks freaky. Constructing him will also allow me to explore a few of the features of StudioPro that I’ve not pre-

viously explored. One is the Hair extension. I’ve messed with it before in attempts to create fur and hair and have never had much luck. I’ve found that it actually works quite well in many instances. Great for spikes and patches of hair or fur, unfortunately if you want to create a complete head of hair or a furry coat the hair extension will most likely not cut it. I’ll go into the details of this extension later in the tutorial.

Another feature I wanted to mess with was the Bones extension. I’ve played with this one quite a bit, but never used it in a production piece. Here we will use it to deform a mesh, bending the body of the caterpillar into the shape we want. I regret not using this feature more on past projects as it is a great way to tweak and twist shapes. Bones is more than just a great animation tool, it’s a great modeling tool. Enough babble, on to the tutorial.

Modeling and Organization

Well, as you no doubt already know, the best way to get lost in a project and end up spending 5 times as much time as is necessary, is to fail to properly organize it. StudioPro users the world over use the program for a reason - well, many reasons. One is its logical layout for keeping your projects organized. Shapes are key. We will create “shapes” for each of the main parts of the caterpillar such as the body sections, the feet, the spines etc...

Working this way will make our texture mapping easier as well as simplifying our object tweaking.

I'm not going to do much hand holding for this tutorial or it will end up being a monster like my last M3DG tutorial "The Entrance". I'll not leave steps out but it will definitely help if you have a fairly clear understanding of how StudioPro works before tackling this project. If you need a refresher, have a look at "The Entrance" tutorial (Issue #1).

The Main Body Section

The first thing to do is create a new project, save it with the name Postman_01.spd. I won't tell you to save often but do, nothing is worse than losing a few hours work due to a system or software crash which we all know happens at the most inopportune moments. Now that you have your project, to the resource window, click on the shapes tab and create a new shape, name it "Section". Name all shapes, this is what I mean by organization. Within this new shape we will create one section of the main body. As often as possible I'll be making this project as simple as I can by using primi-

tives. This is a great way to work. There is no need to make more work for yourself than necessary. When primitives will work, use them.

In this new shape create a sphere. The size is not really important, but do pay attention, as the size you create this section will set the precedence for the size of all your other shapes. Now click on the "convert" button at the top of your window (box with a sphere in it) and convert the sphere to a "bezier surface", this will allow us to reshape it. Switch the view to "right" and "outline" and make the x grid active (simply hit the x key, or the y then x key to make just the x grid active) this should be your view, see [figure 1](#).

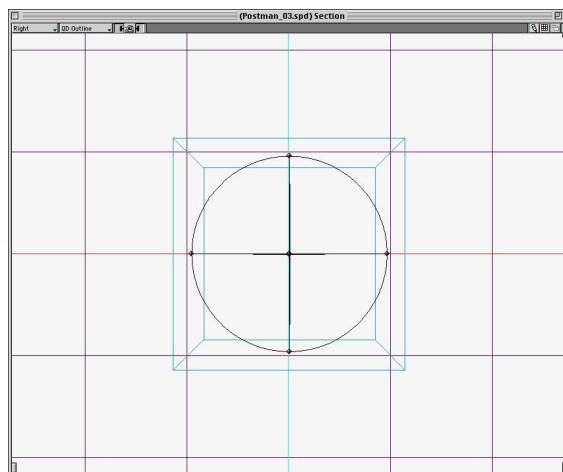


Figure 1: The sphere prior to reshaping.

Now to reshape the sphere as seen from the right view. Select the sphere and click on the reshape icon at the top of the screen (the white filled arc with the handles). You've now entered reshape mode. When you finish reshaping the object it will look like this, see [figure 2](#). Notice the reshape tool set included in this figure. As you move the cursor over the different tools, SSP displays the tool function in the upper left corner

of the screen. I've selected all the nodes on the shape so that you can see the length and angle of the handles, this should aid in the creation of this shape.

When creating shapes such as this, it is best to work in orthographic mode (move the eyeball slider to the far left for orthographic). This is the best way to achieve symmetry. Also, you will need to add a few points to your shape using the "add point" tool (the cursor with the dot). At times, when points are added, more points than are desired get created. If this happens simply undo and try again in a slightly different area or from a different view.

Now that we have our body section we can build the caterpillar's main body. The single section is complete so

close the shape window and go back to the main project window. From the shapes tab select the shape "section" and click insert; do this 9 times. There, you've just inserted 9 instances of the same shape in the exact same place. One by one click and drag the shapes until you've spaced them as such (switching to outline view will speed this up greatly) see [figure 3](#).

A few words on Texture Mapping

At this point we need to think a bit about how we are going to texture map this shape. In this example I'd like to show you another feature that Strata has added recently, it's called "Burn UV". As you've probably guessed this tool allows you to convert your standard, projection based mapping to UV mapping. UV mapping is very im-

portant in many instances and absolutely required if you want to apply deformations of any kind to an object. If you do not use UV, textures will slide as objects change shape. So, while the main body is still a straight shape we

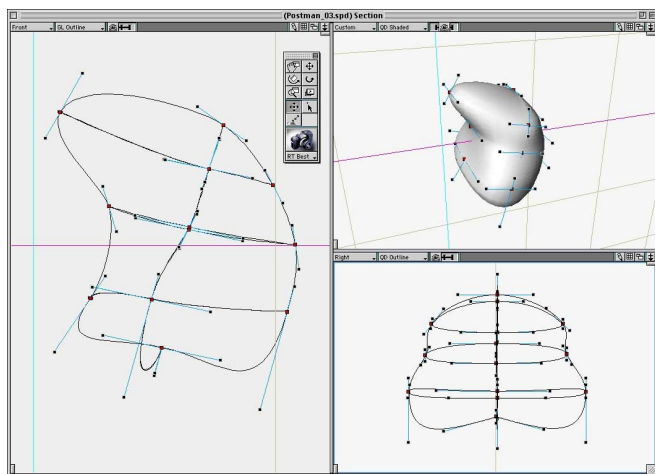


Figure 2: The completed section.

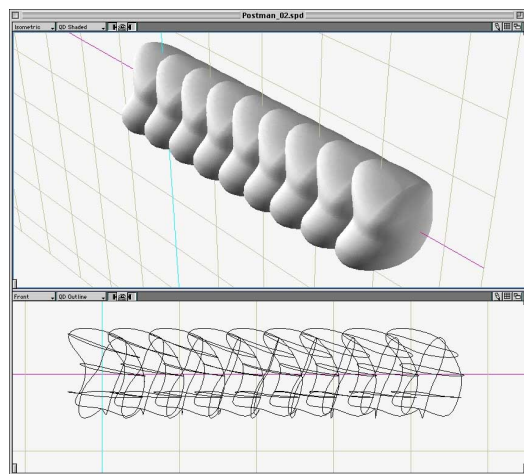


Figure 3: 9 sections making up the main body.

can texture map it using a cylindrical projection. The map that you use is not important, you can change it later. Make a place holder color map, a grid is a good idea and build a shader using the grid as your color map, be sure to name your shader “body main” or something similar. To use the Burn UV tool your object needs to be a polygonal mesh so group all the sections and convert to polygonal mesh. Now apply the shader using cylindrical as your mapping method. With your object selected, click on the burn UV button at the top of the screen, it’s a small rectangle with a UV in it. There you have it, the texture is now applied using UV mapping. We will now be able to use bones to deform the object. You might be wondering why we couldn’t simply use UV mapping from the get-go. Well, we could have, only then we would have to build a texture for each shape or use the same one for each shape. Either way it would not look nearly as good having a noticeable repeat and hard seams. Using one texture will actually help us to hide the seams created by the connecting shapes.

We will cover texturing a bit more after the model is complete. Unfortunately I’ll not be able to present step by step for texture mapping, I need to keep this one

under 20 pages and actually make my deadline. Perhaps we’ll be able to go deep into texturing for one of the intermediary issues of M3DG.

Bones

Now we get to jump into some fun stuff, using bones to reshape the body. Before we do that though I need to talk a bit about bones and how they work. First, have a look at [figure 4](#).

After an IK or bones structure is created the object properties window reflects its attributes and controls. You can name the IK structure as well as the individual bones. You set the flex and balance for each bone as well as its motion constraints, it’s quite intuitive actually. By simply clicking on the little spheres and dragging within the object

properties window you can set the motion constraints which are clearly reflected in the object space. The popup windows also allow you to set the bone to free or lock. As well, SSP tells you how many, if any, stray points you have; this will become clear shortly.

Now that you’ve had a crash course in SSP Bones, we will use

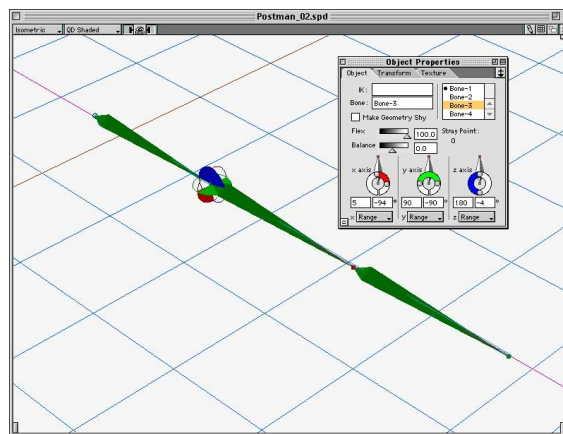


Figure 4: The bones window.

them to deform the polygonal mesh. Expand the mesh in the project window and name it “Body”, see [figure 5](#). Never mind the other parts for now, we’ll get to them soon. If the name refuses to take, add a space after the word. This usually does the trick.

For bones to deform a shape that shape must be a polygonal mesh. Since we converted the main body to a polygonal mesh, to set the texture mapping to UV we’re set. Now select the bones tool from the extensions pallet and from a front view click and drag, inserting 6 bones, see [figure 6](#). Make sure you start from the left, a bit off the left edge of the body and end a bit off the right side of the body; this will assure our deformation will work.

Notice that bone-1 has a small black dot next to it.

This bone represents the entire structure not a single bone. All other bones fall beneath it in the hierarchy. Now, from the front view click on the IK structure and drag it down so that it falls within the body shape, see [figure 7](#).

Next we need to attach the IK structure to the polygonal mesh. We will use the attach tool for this, the one that looks like a section of rope at the bottom of the tool bar. Since we are performing a deformation it is important that you hold down the “option” key when attaching the

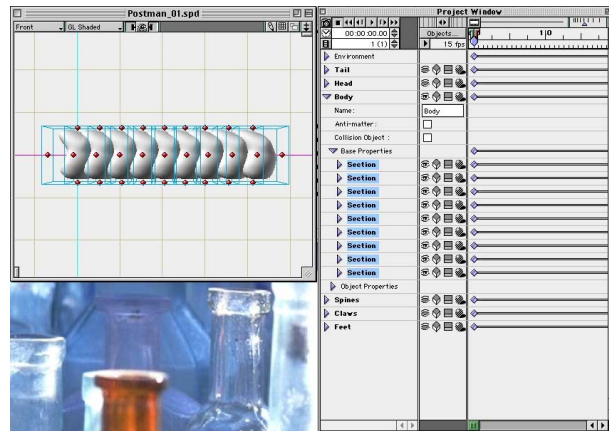


Figure 5: The main body and the project window.

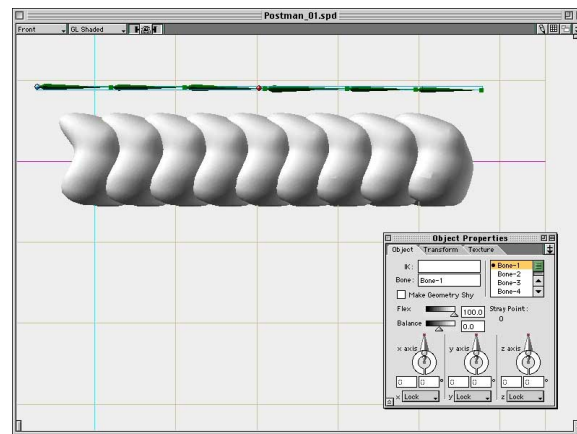


Figure 6: The 6 bones and the object properties window.

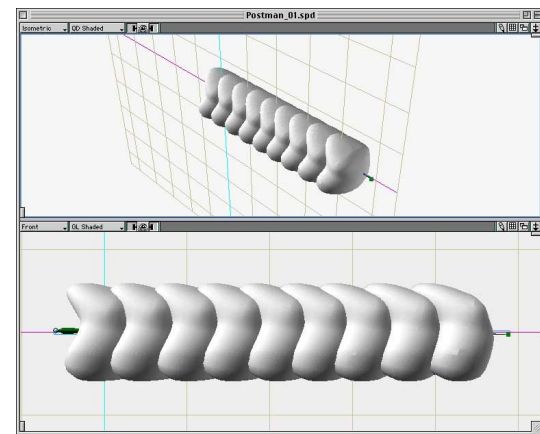


Figure 7: The IK Bones positioned in the main body.

IK structure, this will associate various points on the object to bones within their space. Do this now by clicking on the IK structure, the green bone sticking out of the left side of the body is fine, and dragging to the mesh. The bounding box of the mesh should highlight in red and the attachment has been made. The name has now changed from body to IK Mesh; change it if you like.

To reshape the object, select the IK Object in the project window and click the reshape button. Generally, I'll turn off the mesh at this point to simplify the reshaping process. Reshaping is very simple. Just select the rotate tool and click on the bone you wish to rotate and drag. That's all there is to it, see [figure 8](#). The default constraint is full motion in Z so working from a front view you should be able to get all the adjustments you need

without changing any of the settings in the object properties window. You'll notice that the object properties window shows stray points. In my case it shows 65 stray points, we'll fix this next.

Now, in your project window make your mesh visible again. It should look like [figure 9](#).

Everything looks great with the exception of the stray points that were never associated with the bones when the attachment was made. As to why this occurs, I do not know but it is very easy to fix.

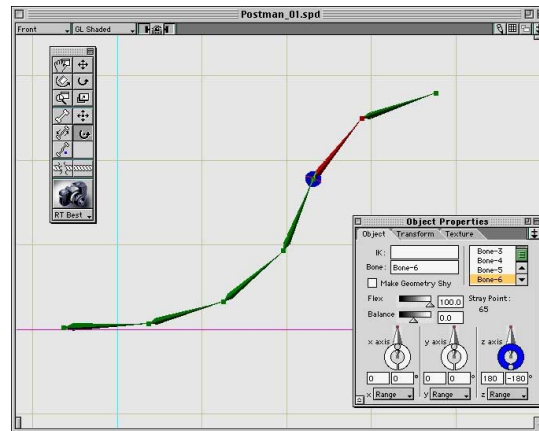


Figure 8: The bones rotated into position.

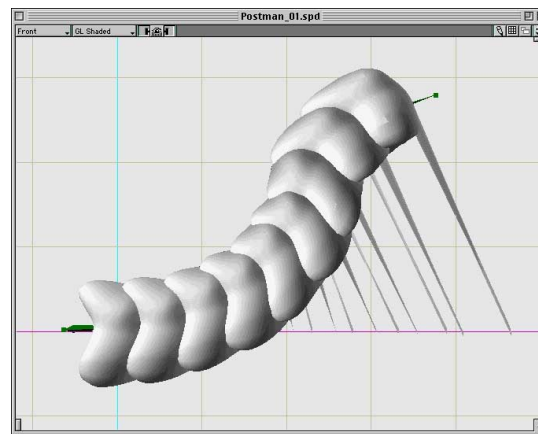


Figure 9: The reshaped mesh.

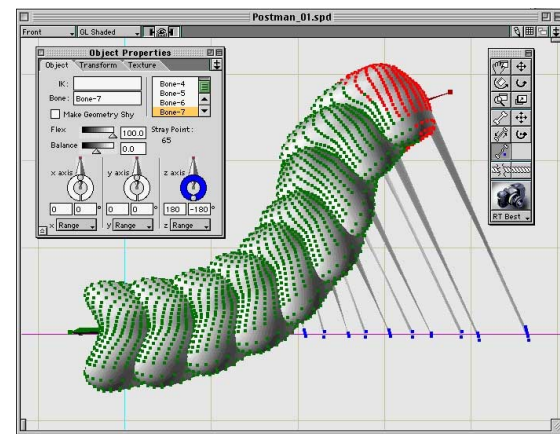


Figure 10: The reshaped mesh showing the vertex association.

To do so we will use the “vertex” tool, the bone with the blue dot next to it. Whenever you select this tool, all the vertices are shown either in green, red or blue. Green would be unassociated with the current bone, red would be associated and blue would be homeless or stray points, see [figure 10](#). We simply want to single click on each stray point to associate it with the selected bone.

Go through the bones one by one selecting them from the object properties window and clicking on the blue stray points to snap them into position. You’ll want to switch from “shaded” to “point cloud” to see any vertices that are hidden by the shaded view, see [figure 11](#). Also view the object from different angles to be sure you get all the stray points.

That does it – our main body shape is complete. We only rotated the bones along one axis, the z-axis. As you can see this is a very powerful way to create complex shapes that can not be created by other means. Bones and IK are generally thought of as animation

tools and are great for such. We could use bones to animate the movements of a caterpillar; however, there are some limitations. The other objects that are associated with the caterpillar, the spines, the head and the feet would not follow the shape as it is moved about. If we grouped everything and converted it to a mesh we could deform the entire model only texture mapping would prove to be a major chore, extremely limiting. What is needed is the ability to apply bones to a group.

The Tail

Now we will create the tail end of our caterpillar. From the resources window click on the shapes tab and create a new shape, name it tail. Use the same technique that was used in creating the body section to create the 3 main sections of the tail. Insert a primitive sphere, con-

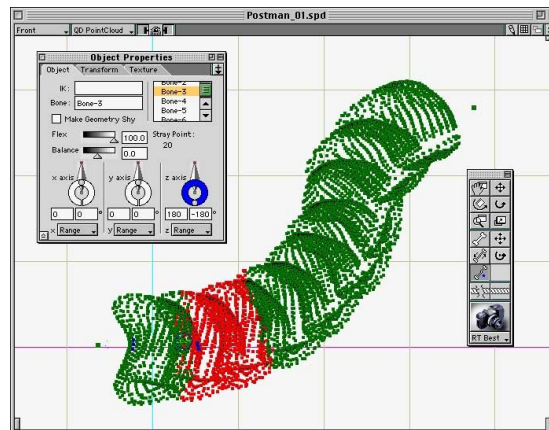


Figure 11: A point cloud view.

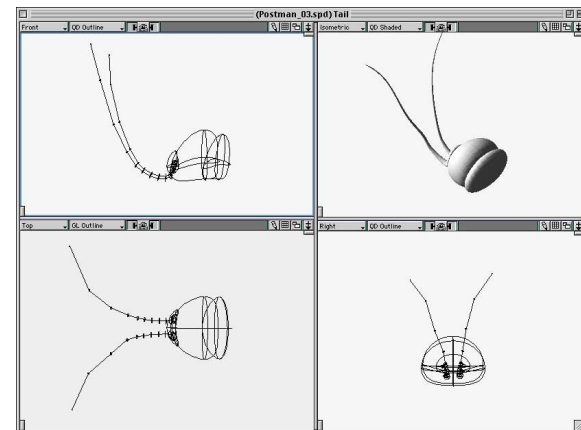


Figure 12: Tail section.

vert it to a bezier surface and reshape it adding points where necessary. See figures 12-15 for reference.

The last part of the tail to create is the tentacles or spines that protrude from the rear end of the caterpillar. These are created by using path extrude, converting to a skin object, repositioning the ribs and then re-skinning. This is the technique I used to create vegetation such as grass and reeds in the last cover issue of M3DG. It goes like this.

Using the pen tool create a path (still taking place in the shape window for “tail”) and then create a filled circle, see [figure 16](#).

Now, from the extensions pallet use the path extrude tool and drag from the circle to the path. This

will extrude the shape along the path. Now select the new object and convert it into a skin object using the convert button at the top of the screen. Next, use the

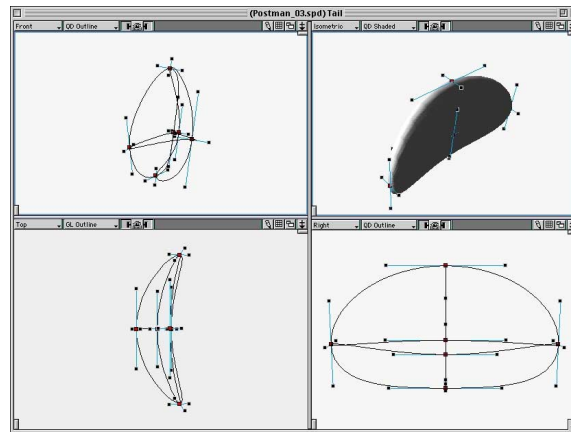


Figure 13: Tail section 1.

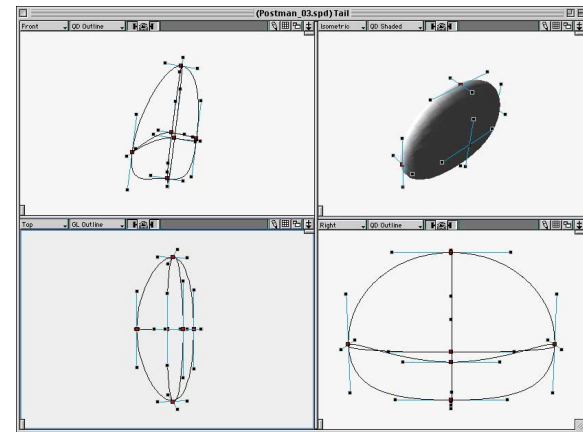


Figure 14: Tail section 2.

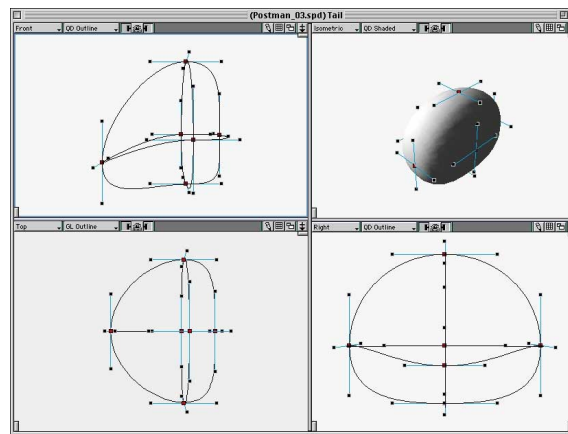


Figure 15: Tail section 3.

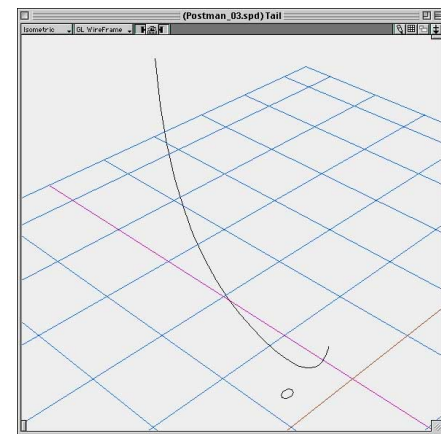


Figure 16: Path and circle.

unskin tool from the extensions pallet and click and drag on the object to unskin all the ribs. If you are in shaded view you might find it difficult to see all the ribs so switch to wireframe. Now select one rib at a time starting from where it attaches to the tail and using the object properties window (the transform tab) select scale, make sure it is locked to proportional, set to percentage and scale down each rib about 10% progressively. What you should end up with is something like that shown in [figure 17](#).

Next use the skin tool to reskin the ribs. Simply click and drag from rib to rib to create the finished object. Duplicate and position the pieces to get something like you see in [figure 18](#), notice also that I've further manipulated the ribs to add more asymmetry to the object – making it more realistic. This is done by moving and rotating the individual ribs just a bit before *reskinning* them.

You can now insert the tail shape into your main window and position it like you see in [figure 19](#).

The Head

On to the head. This is where it starts to get creepy. I've taken some artistic liberties in this area as I did not have

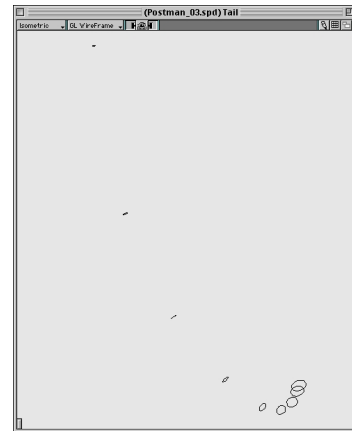


Figure 17: Tail protrusion ribs.

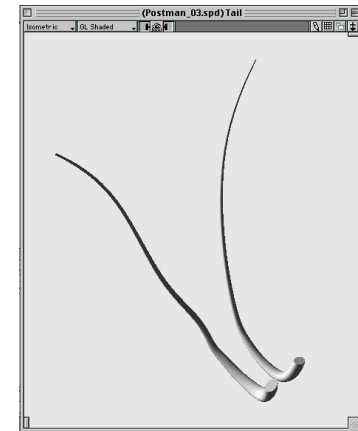


Figure 18: The finished protrusions.

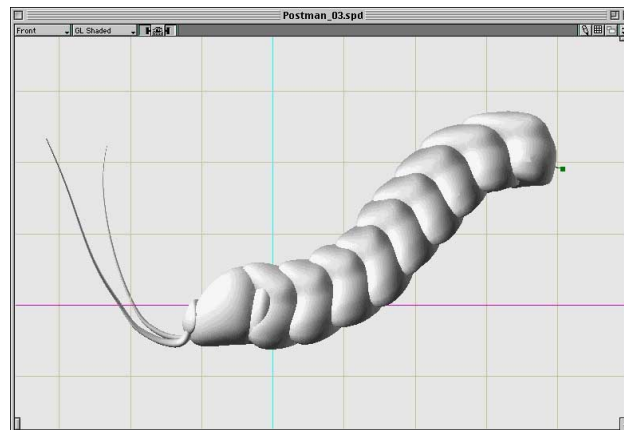


Figure 19: Body and tail.

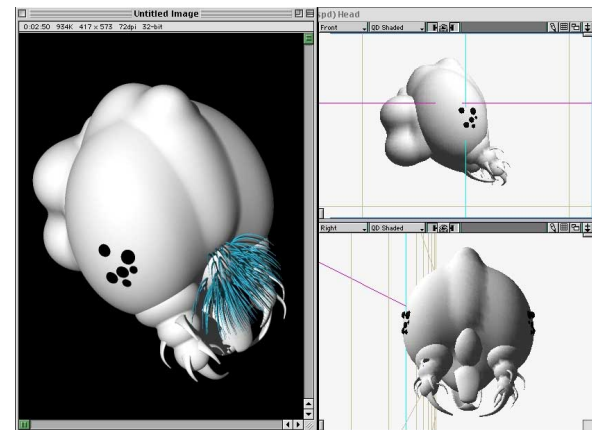


Figure 20: Facial hair.

the greatest close up reference for this area and all the mouth organs tend to be rather small and tight to the head. I wanted to dramatize this area to make this guy a bit more creepy. If you happen to be an entomologist please bear with me. This is also one of the areas where I wanted to play with the hair extension as you can see in [figure 20](#).

First we'll tackle the head and neck regions. For these shapes I used the MetaBall extension. I simply placed spheres of different shapes and sizes into position and applied the extension. At any time you can un-MetaBall the object,

move things around and then reMetaBall it. It's a great, flexible tool, see figures 21-24.

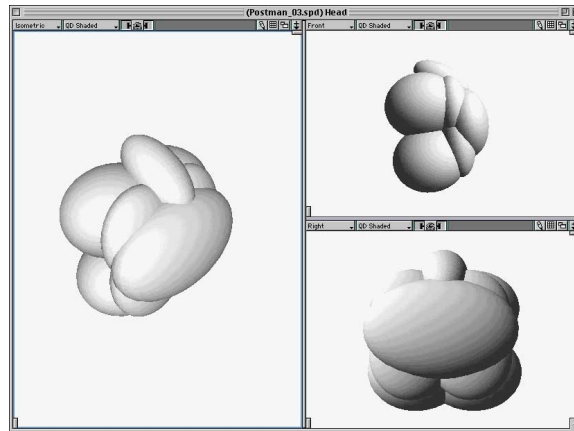


Figure 21: The different spheres that make up the neck shape.

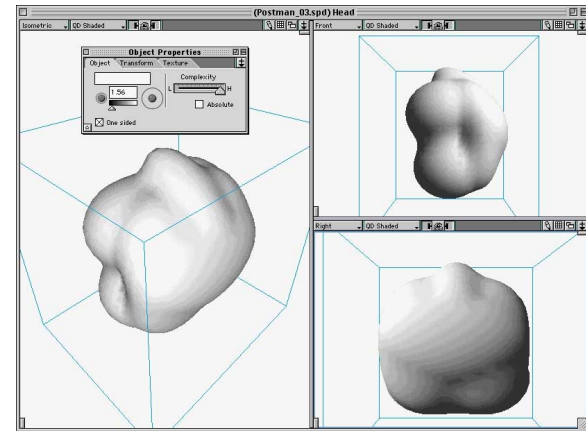


Figure 22: The MetaBall object for the neck.

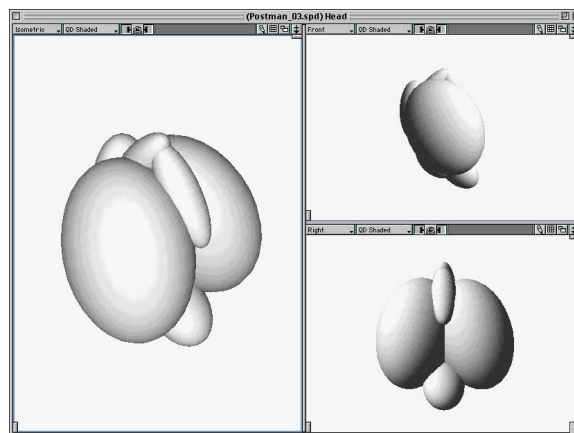


Figure 23: The different spheres that make up the head shape.

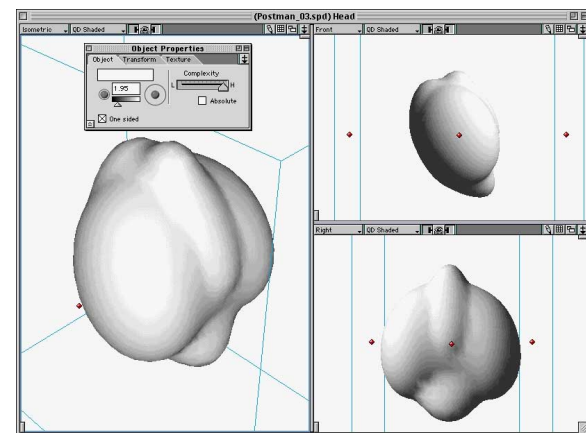


Figure 24: The MetaBall object for the head.

For the MetaBall tool to work the spheres must not be in a group. Other than that there are no real restrictions. The objects must be primitive spheres, you select them all and click on the MetaBall icon on the tool bar at the top of the screen. The object properties window then reflects the attributes of the New MetaBall object.

I created the jaws or pinchers in the same way. A MetaBall shape made up of 3 spheres and then several curving spikes created in the same manner as the protrusions on the tail section. A 2d solid circle is path extruded along a curved path, converted to a skin object, and then unskinned. The resulting ribs are then scaled down more and more until you reach the end and then reskinned. The finished claw shape is then duplicated several times, scaled, rotated and positioned in place. There you have it, scary jaws, see [figure 25](#). The beak shape is created similarly, only instead of using a simple 2d solid circle I used the pen tool to create a custom shape, see [figure 26](#). This technique is very simple and I've found it to be

very useful for a number of organic shape types. It's also a technique that is rather application independent.

The next features – the eyes – are simply spheres. They have been scaled a bit in z to flatten them and then positioned along the sides of the head. Caterpillars have strange eyes, 6 on either side of the head. They have evolved to see well up close, that's all they care about, seeing the food they eat. After arranging the eyes on one side of the head, I grouped them and then used the mirror tool to make a copy that mirrors along the z axis. Select the group you wish to mirror and with the mirror tool (found on the extensions pallet) click on the group and drag the cursor around until the axis you wish to mirror across is highlighted in yellow. It's best to work from an isometric view when doing this. After the copy

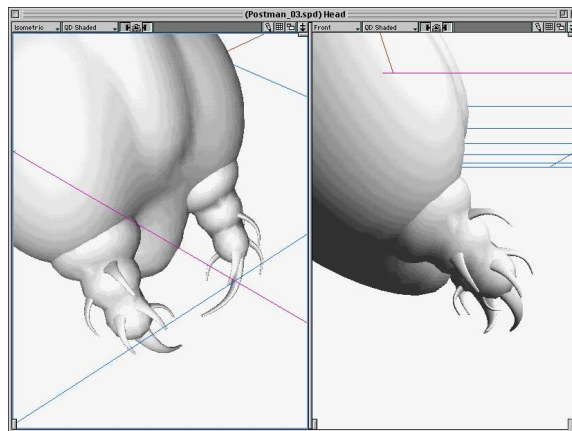


Figure 25: The scary jaws.

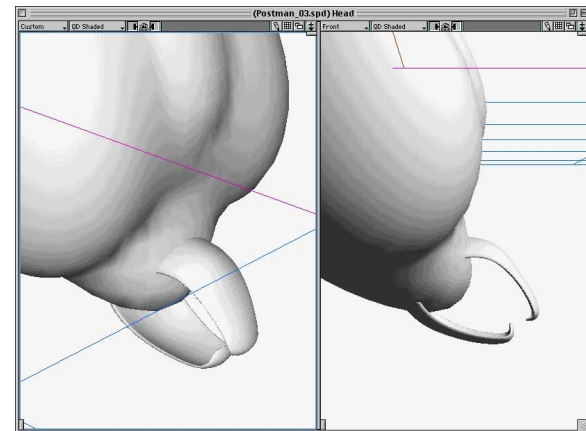


Figure 26: The scary beak.

has been made it is quite easy to move it into position on the other side of the head.

Another feature on the head is the patch of fur that appears just above the mouth. This is a feature that I added to draw the attention away from a less than perfect model of the mouth region. A good way to hide a potential error or lack of detail is to simply add additional objects, more detail really just from simple shapes; hair is a great way of doing this. The object used for this patch of hair is a lathe object. The reason for this is hair will cover all sides of an object, if a sphere is used we will have to create a great many more hairs than are necessary, ones that will protrude into the face and look quite artificial. So instead I used a lathe object that is only lathed around 180 degrees, see [figure 27](#).

See [figure 28](#) for a screen capture of the hair dialog box. This is the hair I used for the patch on the face.

Hair can be controlled in many ways and with most attributes a grayscale

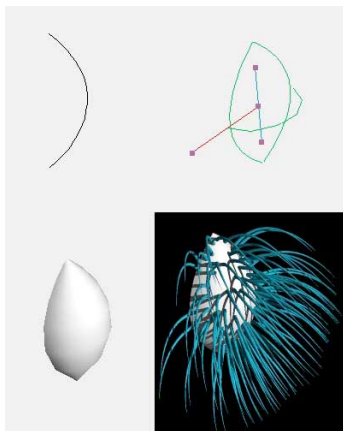


Figure: 27.

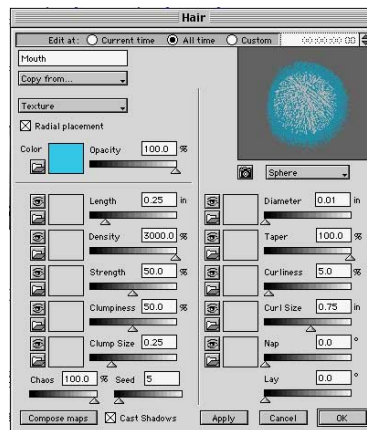


Figure: 28.

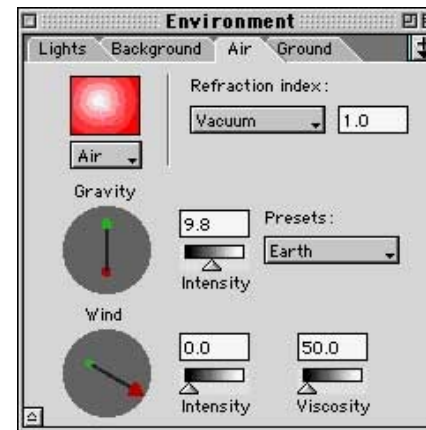


Figure: 29.

map can be used to affect how the hair behaves. You'll notice that the density of this particular hair is set to 3000%. I had to play with this a great deal to get the hair density I was after. The render times increase a great deal as you up this number, this is why I don't feel this extension is quite ready for the full fledged fur on a bear application. All the other controls are great though and it turns out to be a truly versatile tool. This extension is accessed throughout the fx tab on the resource pallet. Hair can be texture mapped by picking a texture from the pulldown menu at the top of the dialog, but the controls are really not there. It's been my experience that it is set to uv and there is no changing it. When working with hair you might notice that all the hairs on your object are drifting in one direction. That is due to 2 factors, 1: Strength and 2: Wind. Yes, StudioPro has wind and it is set to on as de-

fault; it will affect all particle systems. The wind can be turned off from the Environment window, air tab. Set the intensity to zero, see [figure 29](#).

That about does it for the head. Have another look at [figure 20](#) for the completed head.

The Legs

Next, the legs. The legs are made of 3 basic parts, the claw, the leg itself and the bridge section that connects the legs to the body. The bridge section is easy, it is created the same way as the body sections, from a reshaped sphere. The legs are a bit more tricky. Here we used the MetaBall method again but I've also applied a deformation lattice to them to get just the right shape. It works like this. First the MetaBall shape. Create 3 spheres like those shown in [figure 30](#).

Select all 3 spheres and click on the MetaBall tool at the top of the screen, see [figure 31](#).

Now for the lattice...You can click and drag a lattice directly into the work space or you

can click directly on an object. When a lattice is inserted this way it fits perfectly to the object and is automatically attached. Inserting a lattice on its own leaves it free from

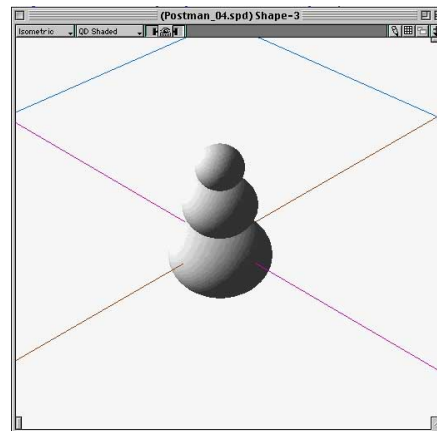


Figure 30.

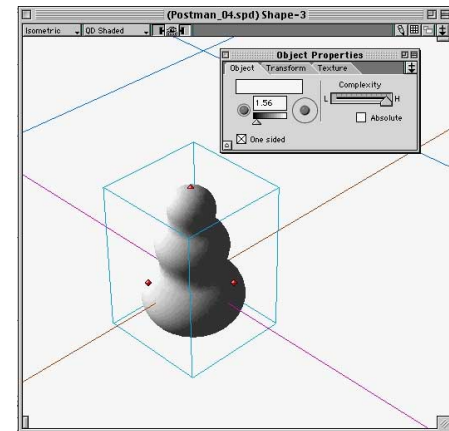


Figure 31.

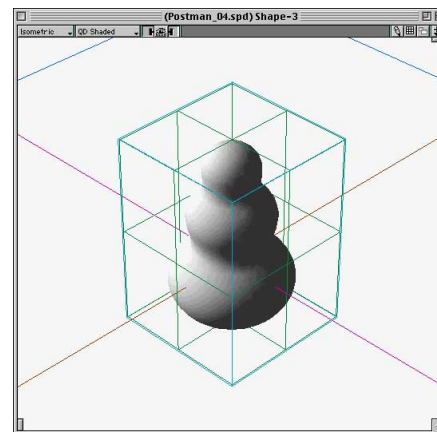


Figure 32: The MetaBall object with the lattice.

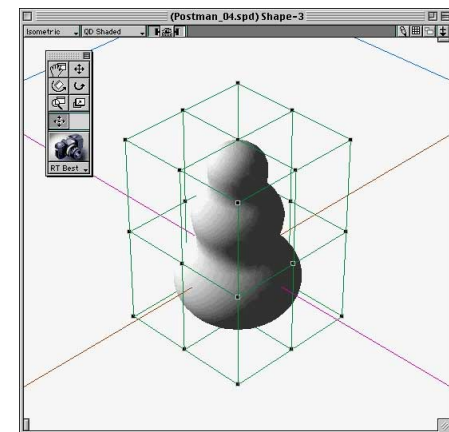


Figure 33: The MetaBall object with the lattice applied and selected for reshape.

association, it must then be attached to the object you wish to deform. In this case we are going to apply the lattice directly to the MetaBall object. The tool is simply called “Deform” and is located on the extensions pallet. Select it and single click on the MetaBall object. You should now have a lattice attached to your object, see [figure 32](#).

A deformation lattice appears in your project window as a separate object, similar to the way an IK chain works. And similar to an IK chain the deformation lattice needs to be reshaped to affect the object to which it is attached. Now select the lattice in the project window and click the reshape icon, see [figure 33](#).

The tools for reshaping the lattice are quite simple. It’s a matter of selecting

the points and moving them; that’s about it really. To create the foot shape you’ll want to move the vertices on the lattice like that shown in [figure 34](#).

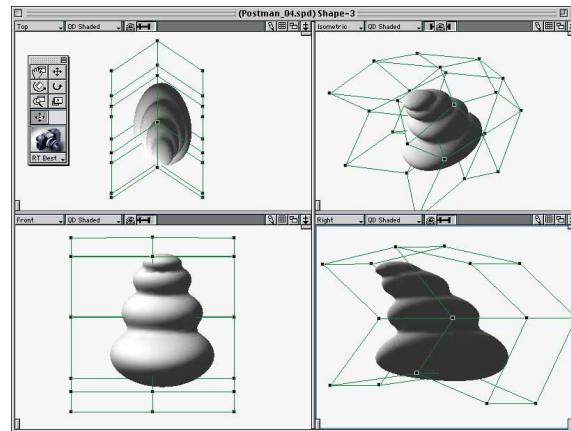


Figure 34: The adjusted lattice and deformed MetaBall object.

Next we’ll add the claw and will have a completed leg. The claw is made with the path extrusion converted to the skin shape method, check out [figure 35](#) and go for it.

Additionally, I’ve added a small sphere to smooth the transition from claw to leg shape. Also, I’ve rotated the group to be in the position I’ll need for integration to the next level. Remember, any manipu-

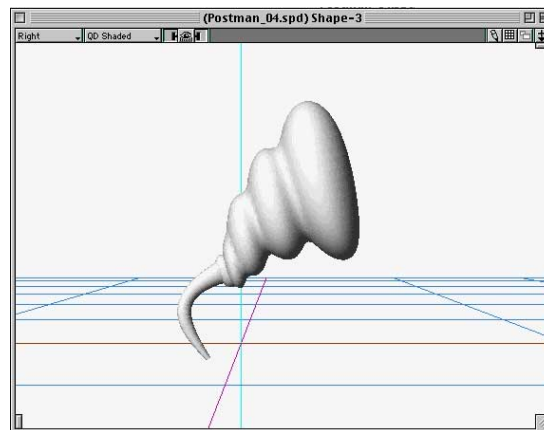


Figure 35: The foot with the claw.

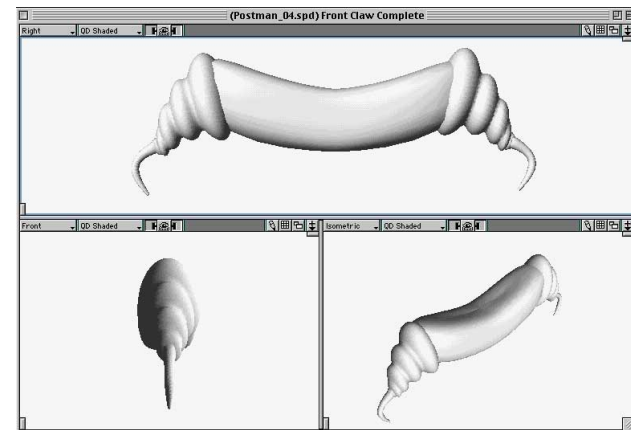


Figure 36: The completed front legs.

lation applied to an object on its shape level will be reflected in the main project window. Now create a new shape and name it “Front Claw Complete”. Within this shape we’ll insert two of the leg shapes and create a bridge between the two using the reshape primitive technique, see [figure 36](#).

The next set of legs we need to create are the “prolegs” which are not really legs at all but extensions of the body that assist the caterpillar in clinging to and grasping branches as it feeds on leaves. [Figure 37](#) shows an exploded view of this proleg section. All of the parts are just reshaped spheres with the exception of the ring, which is a lathe object.

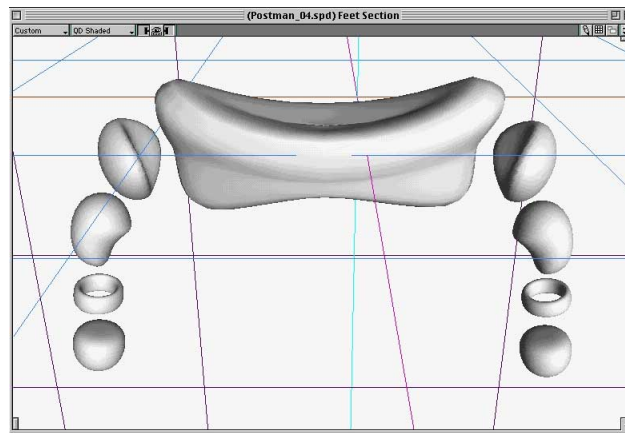


Figure 37: Exploded view of prolegs.

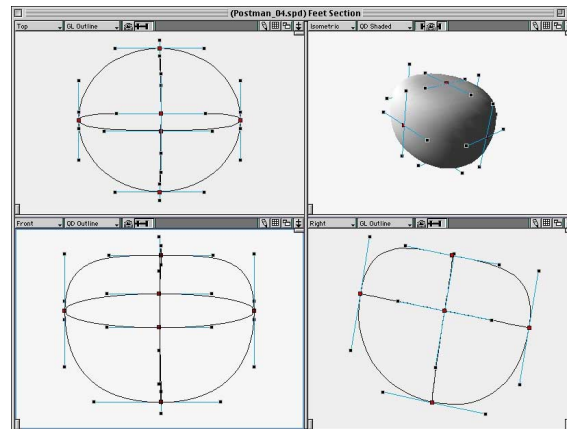


Figure 39: Foot.

Figures 38 through 42 show each shape in detail.

If need be, one could also use either the “Deformation Lattice” or “Bones” to further manipulate the legs or the

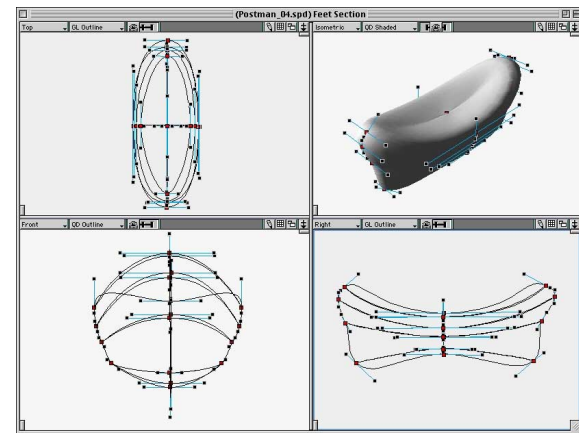


Figure 38: Bridge.

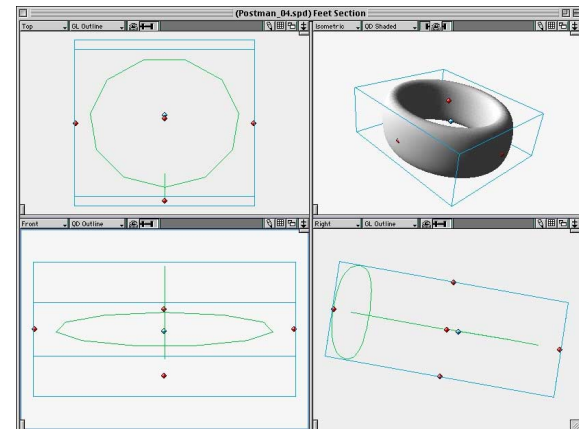


Figure 40: Lathe shape for hair.

prolegs for modeling or animation. In the case of bones you would need to group the objects and then convert them into a polygonal mesh. If a deformation lattice will do I would recommend using it instead. With a lattice you simply need to group the objects in question. This allows you to still texture map the objects separately. Both techniques allow for animation.

Spines

The final objects we need to create are the spines. If we are going to accurately create the Postman Butterfly Caterpillar then we need these spines; also, they really add to the creepy factor. So, create a new shape and name it, single spike. Within this shape space create one cone and scale it as you see in [figure 43](#).

This cone needs to be very small, as it will act as a hair or spine that appears on the main, much larger spine. Now create another shape and

name it “Spine”. See [figure 44](#) for a rendering of the finished spine and then we’ll create one.

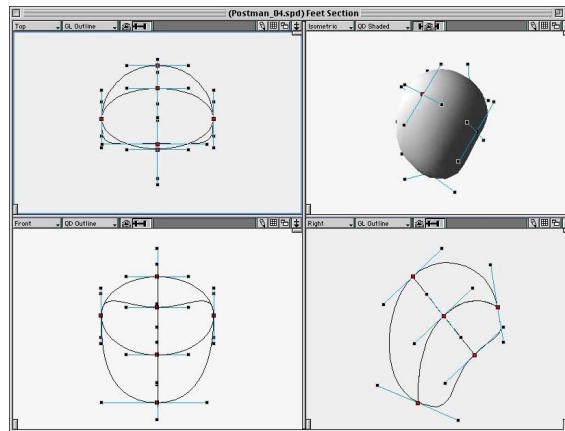


Figure 41: Lower leg section.

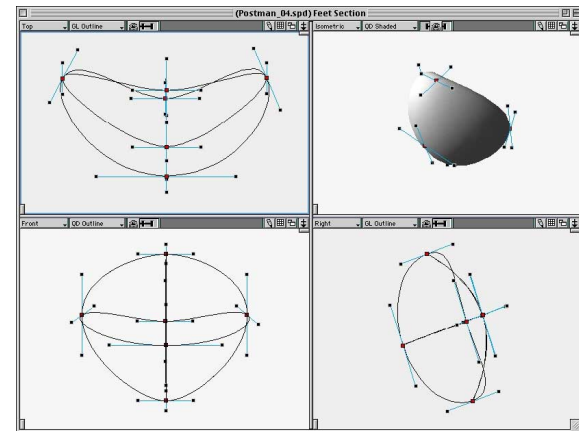


Figure 42: Upper leg section.

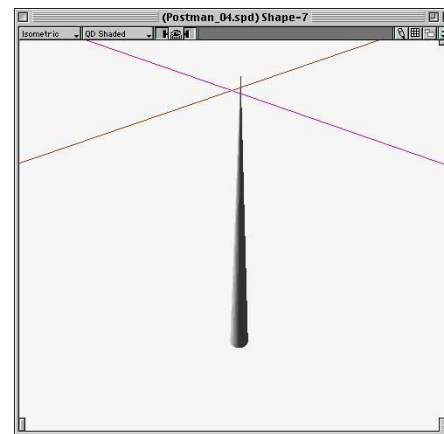


Figure 43: The single cone.

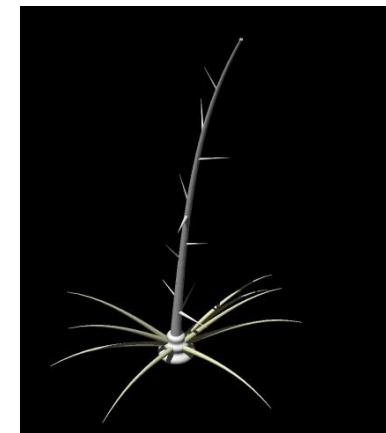


Figure 44: The completed poisonous spine.

All of the gray portions of this spine are modeled, the pale yellow portions are hair. First, the base shape, as you have likely guessed it, is a MetaBall shape. See [figure 45](#) for its configuration.

The spine itself was created using the extrude along a path, convert to skin technique we've used on several parts earlier. The small spikes are inserted as shapes and scaled to fit properly. The hair effect we are using has been created similar to the way the patch of hair on the face was created. I've used a lathe object that is hidden within the base, as I mentioned earlier this helps to cut down on the amount of hairs required, see [figure 46](#). And for the setting on this particular hair shader, see [figure 47](#).

Notice how in the hair settings the preview has a much higher density than our actual shape. This emphasizes the need to preview how the hair looks on the shape you are applying it to.

There you have it, all of the parts for the caterpillar have been created. Now assembly is required. Insert the different shapes into the main modeling window arranging them the way you see here ([figure 48](#)). You will find it much

quicker if you turn the different shapes off when they are not needed. See [figure 48](#) for the completed caterpillar model. The most tedious part will be adding the spines, there are lots of them and the screen redraws will begin to creep to a crawl. To speed up your assembly only have one spine turned on at a time. Also, before doing all

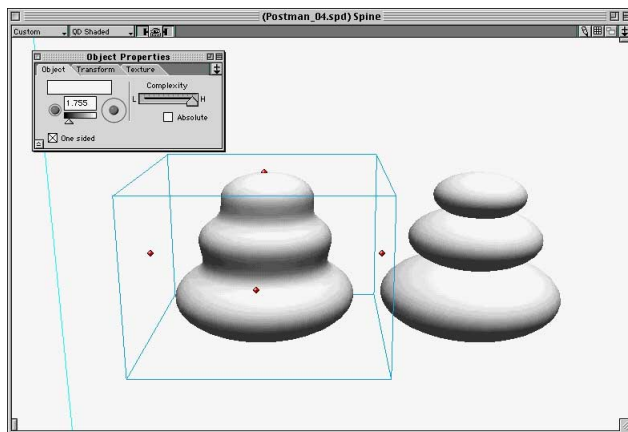


Figure 45: The base of the spine.

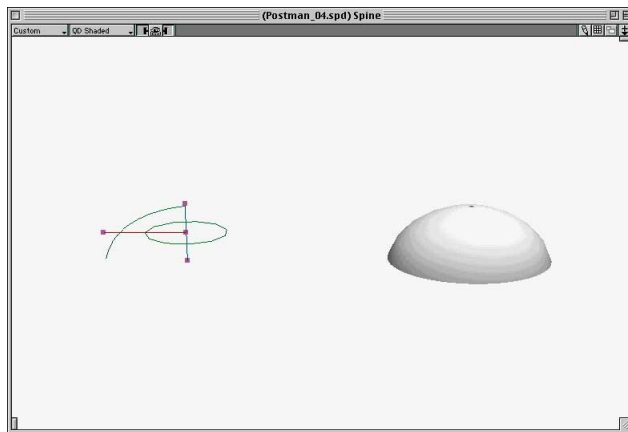


Figure 46: spike hair shape.

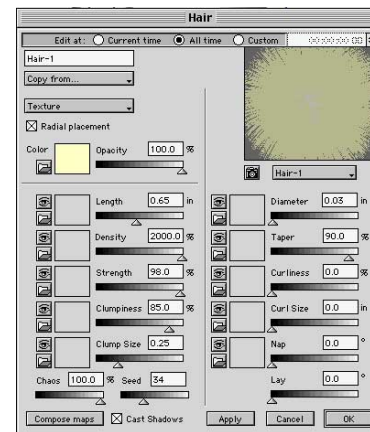


Figure 47: spike hair settings.



Figure 48: Front View.

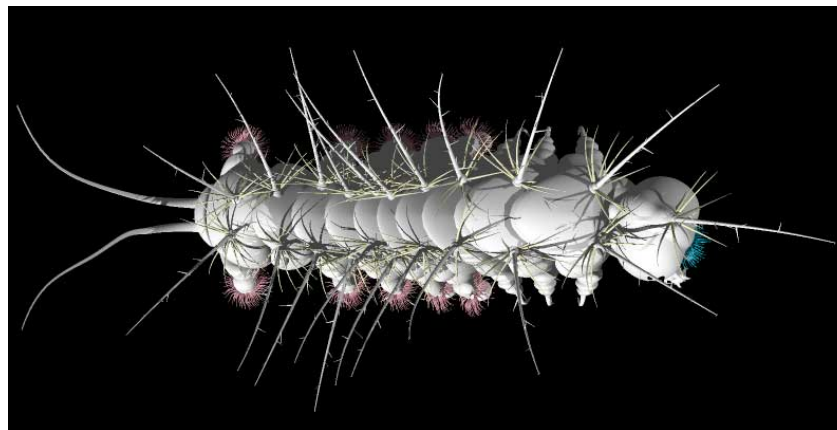


Figure 49: Top View.

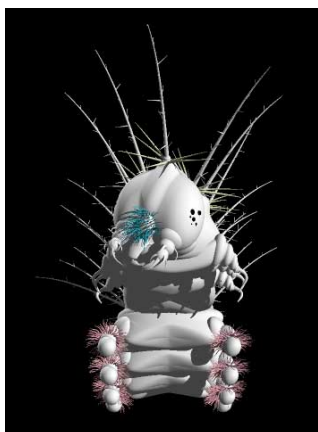


Figure 50: Right View.

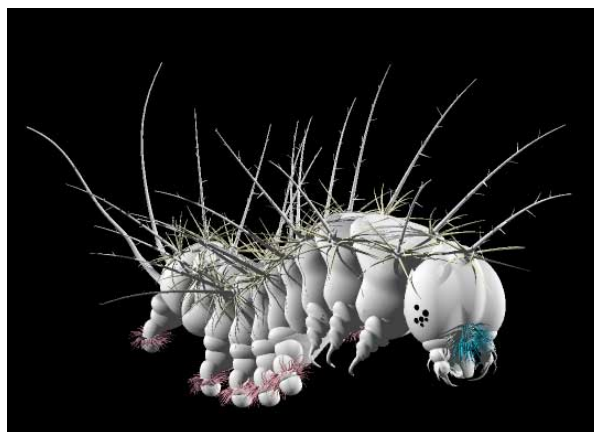


Figure 51: Isometric View.

the rotation and transformations, set the view to point cloud and move the shapes center point to the bottom, near the base. The center point of any object is a blue dot

in the center of the object. To move this point, hold down the command key, click on it and drag. Do this in several views to ensure you have it near the base, see figures 48-51. This will make rotation of your object much easier.

Additional Scene Elements

Check out the final render and you will notice the branch on which our caterpillar rests as well as the vine with all the leaves. The Branch and the vine are simply path extruded objects that have been converted to skin objects so I could rotate the ribs, creating a twisting

effect. The texture maps have been applied using UV so the pattern follows the shape of the object. The leaves are flat planes that have been converted to bezier meshes and adjusted to reflect the curvature of the leaf. The leaf shape itself is achieved with a stencil map. See figures 52 and 53 for the leaf model and texture maps used for this shape.

Notice that one of the maps is a Glow map. Since translucence is not yet an option in StudioPro (not to be confused with transparency) I used a very slight glow to simulate it. This is a subtle effect but one that works well, it brightens the area defined by the glow simulating a slight translucence.

Texture mapping

I do not really have the time to go into all the details of the texture mapping for the caterpillar at this time but stay tuned, as I'll cover it in a future issue. I used most of the texture mapping tools to achieve the look I was after including the use of glow to simulate translucence.

Lighting

The lighting for this scene is quite simple, consisting of 2 spot lights and one global light. The Global light has a slight green tint to it and is quite low in intensity. It serves to create a rather ambient green coverage to the scene. The primary light is a spotlight. It has a high intensity, 110% and a slight yellow tint. This light also uses a gel, which simulates light shining through more leaves and vegetation off screen, see figure 54.

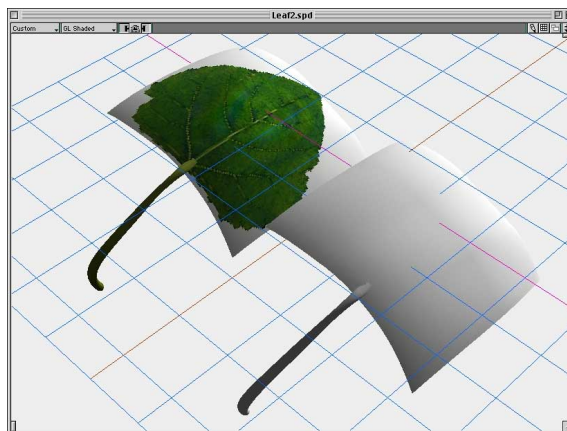


Figure 52: The leaf model.

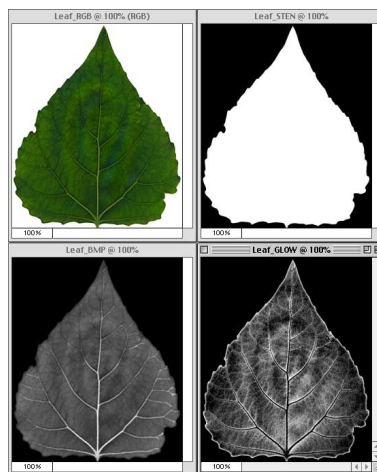


Figure 53: The leaf texture maps.

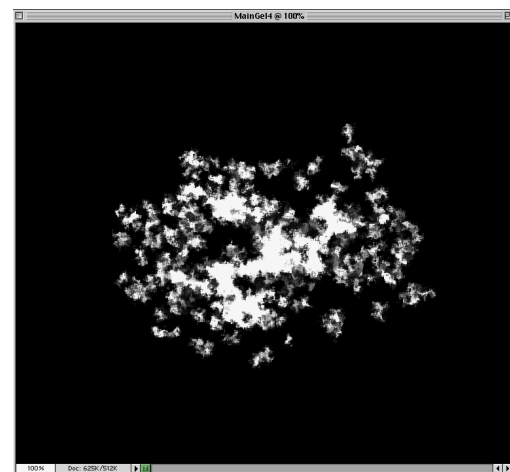


Figure 54: The main light gel

The use of a gel I feel is a very important and under-used effect. To gain realism you need to think not only of your composition and what is in it but also what is out of the field of view and how this might effect your image. The 3rd light is a small spotlight that focuses on the head. The light from the main spot did not illuminate the head sufficiently. The small spot has a slight green tint to it to simulate the idea that the head, which is much shinier, is reflecting green from the leaves.

Conclusion

The final thing to do was add a background, a simple composite in Photoshop will do. The biggest decision I had to make here was go with a light background or dark background. A light background made for a more realistic image. All in all things worked out the way I planned. The representation of the Postman Caterpillar is not exact but will no doubt make for a beautiful Postman Butterfly nonetheless. One question that remains is, do insects have memory of past experiences and if so do butterflies remember being little grub heads?

Biography

Frank Vitale has been at the Digital art thing for about 10 years. Based in Scottsdale, Arizona, he works freelance from his home on projects in film, broadcast, CD Rom

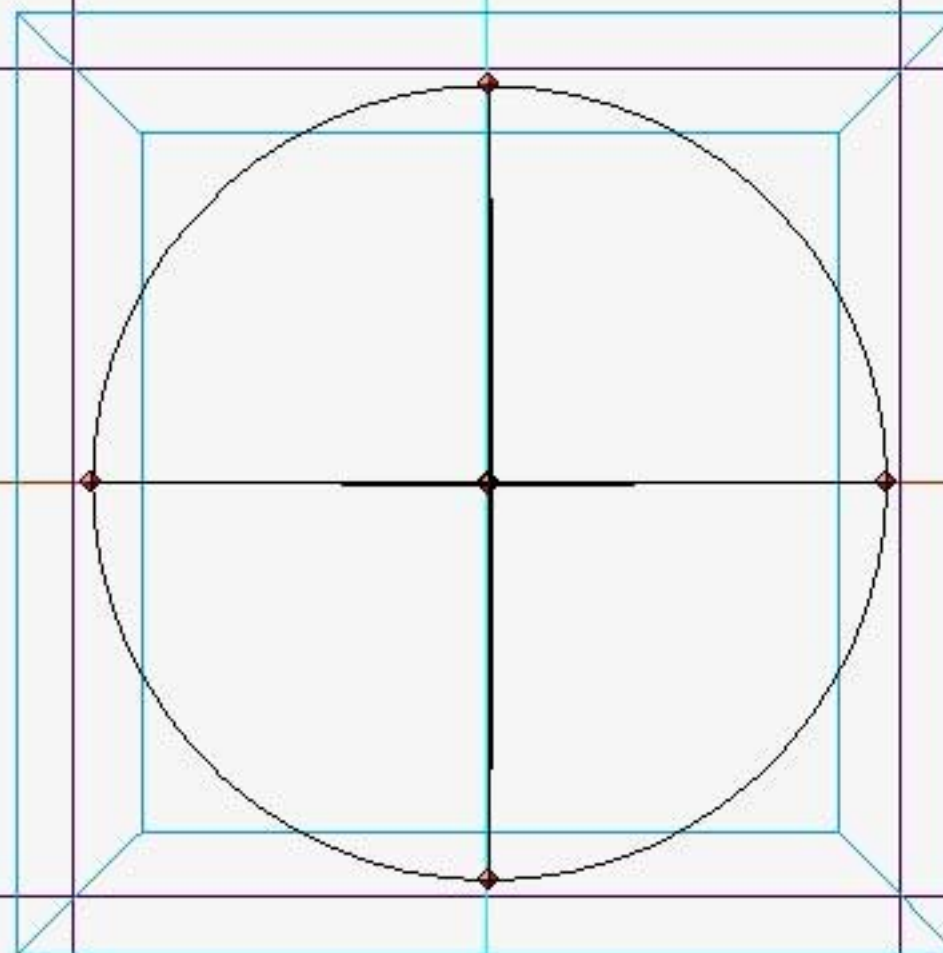
games, print and web development. He is available to answer your questions and welcomes any comments you might have. Frank is also a regular teacher for Strata Inc. Have a look at the texture tab in StudioPro 2.5. The texture collection under the “StonesThrow” Tab was created by Frank for the 2.5 release.

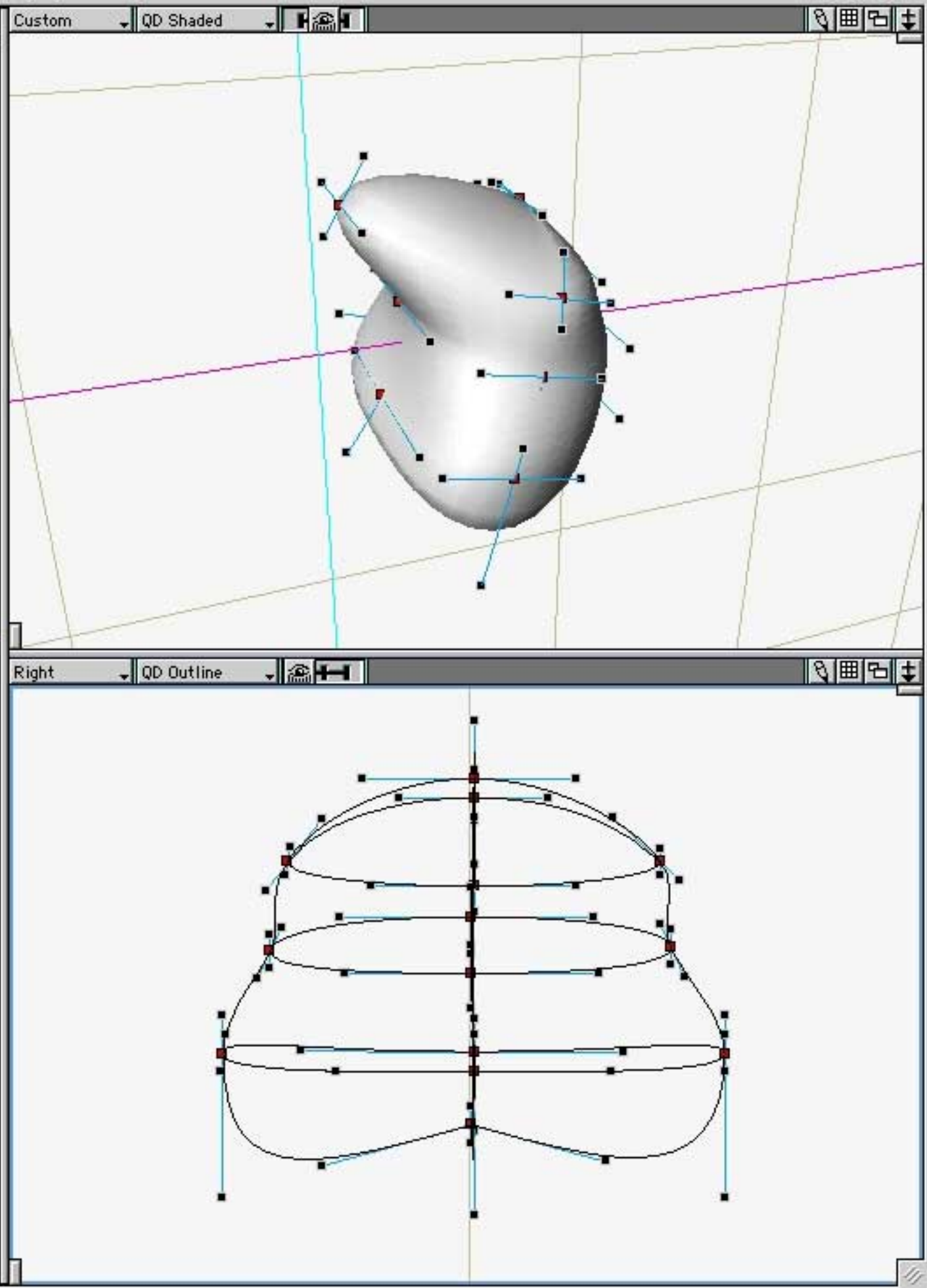
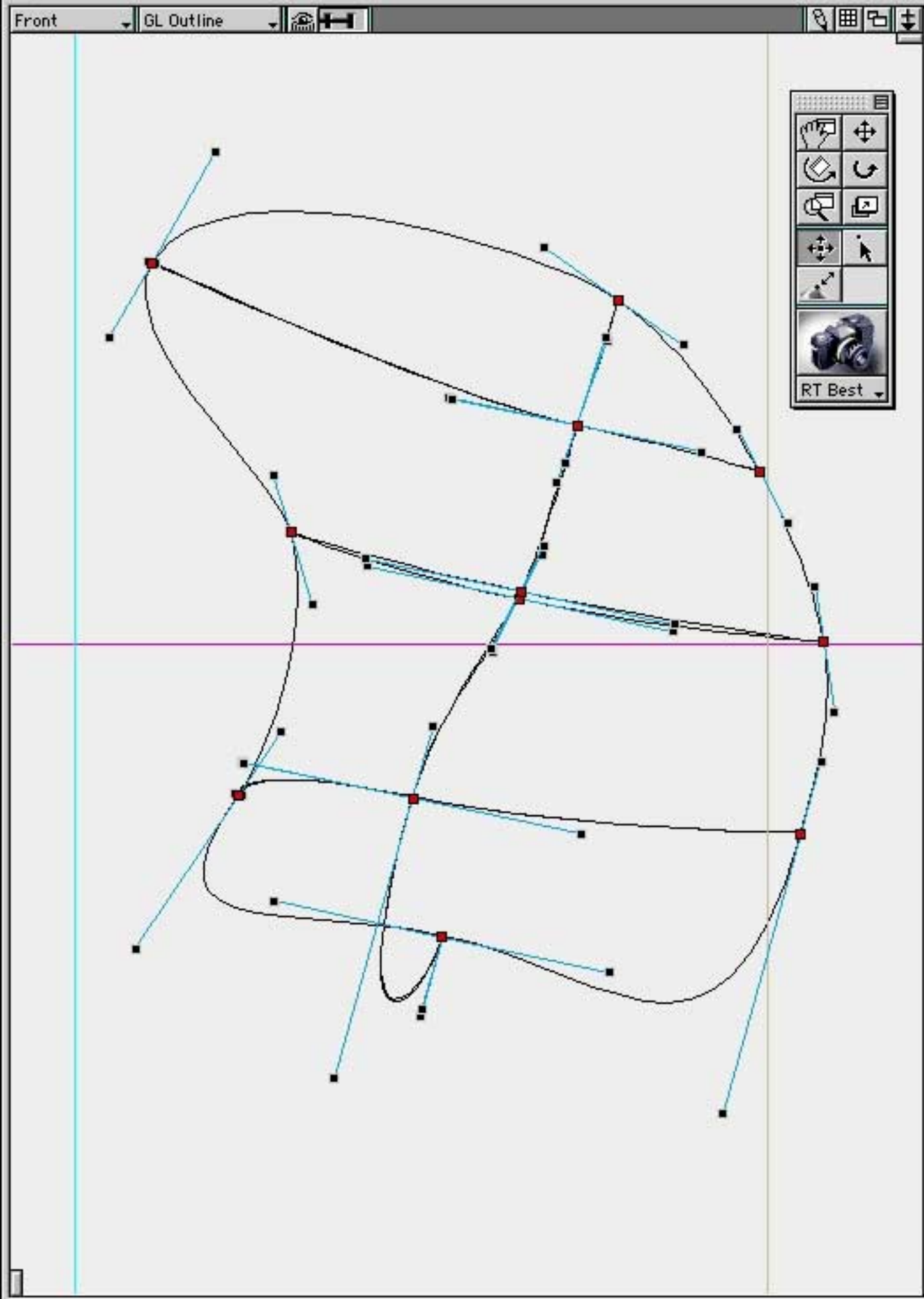
vitalef@home.com <http://www.vitalef.com>

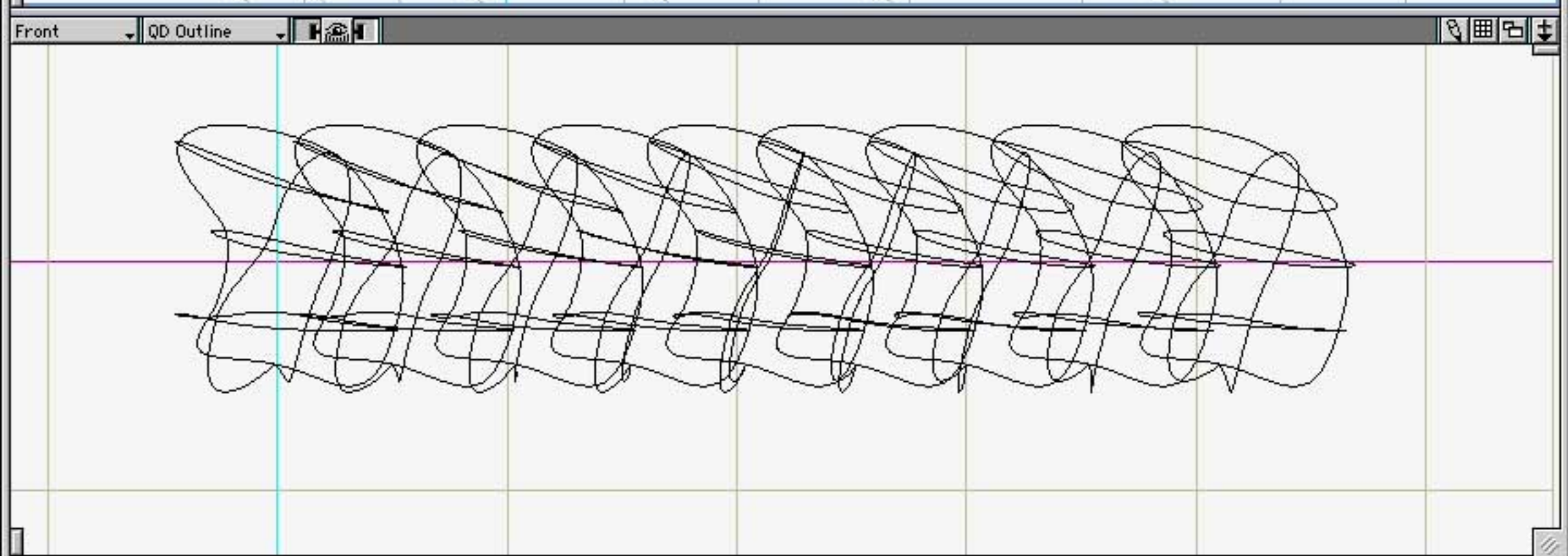
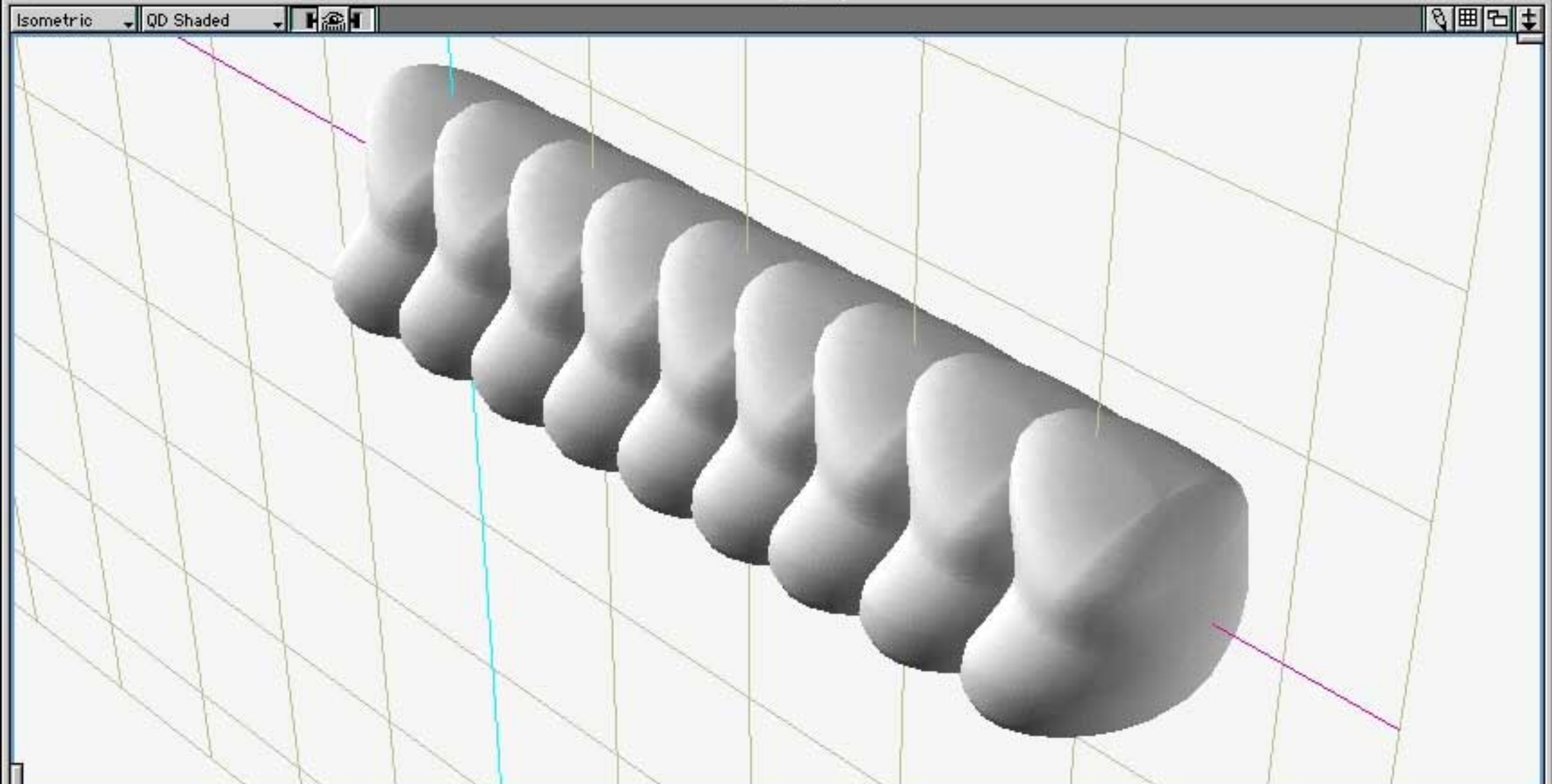


Final Render: The final render of the Postman Caterpillar.









Isometric QD Shaded

Object Properties

Object Transform Texture

IK:

Bone: Bone-3

☐ Make Geometry Shy

Flex 100.0

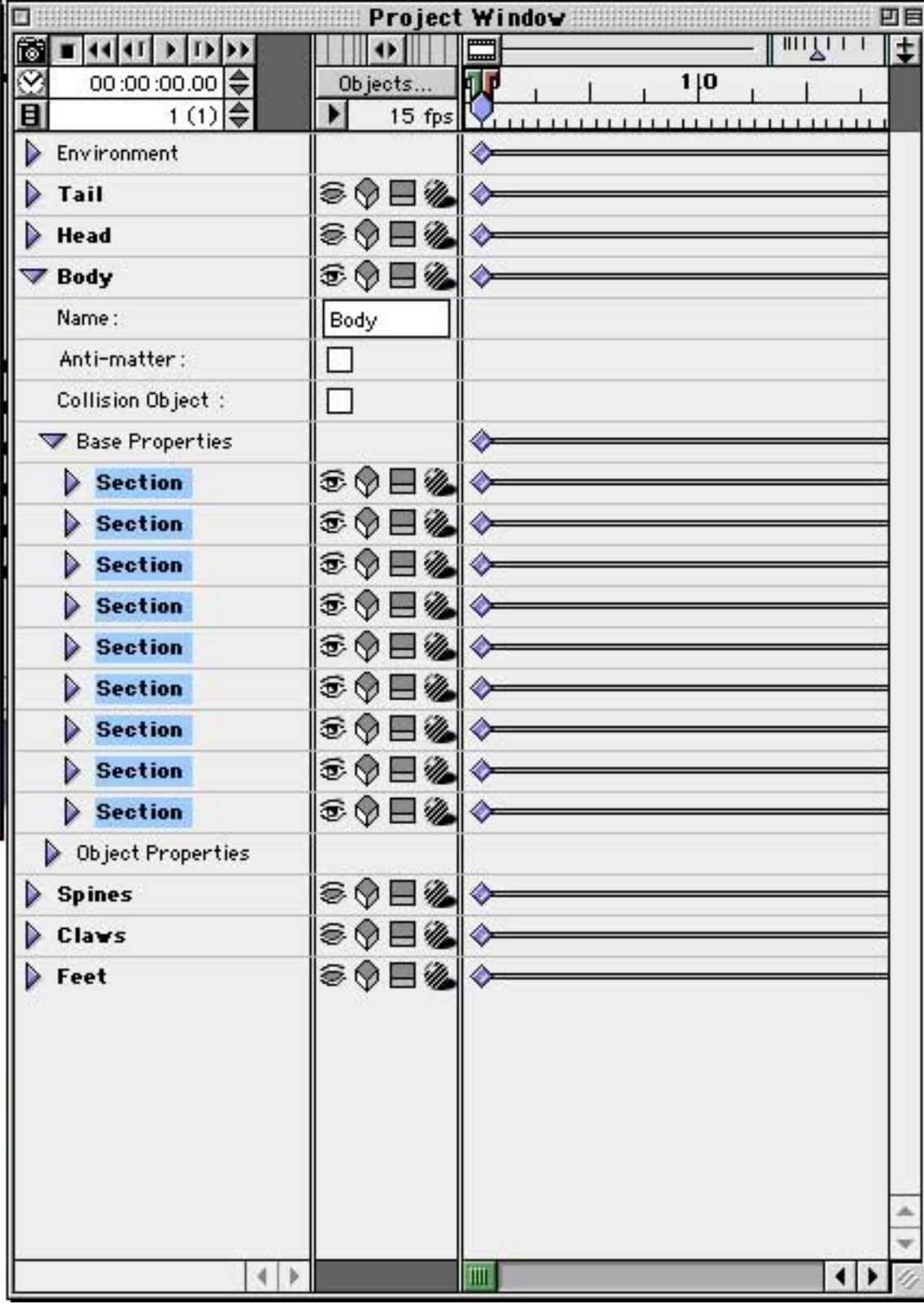
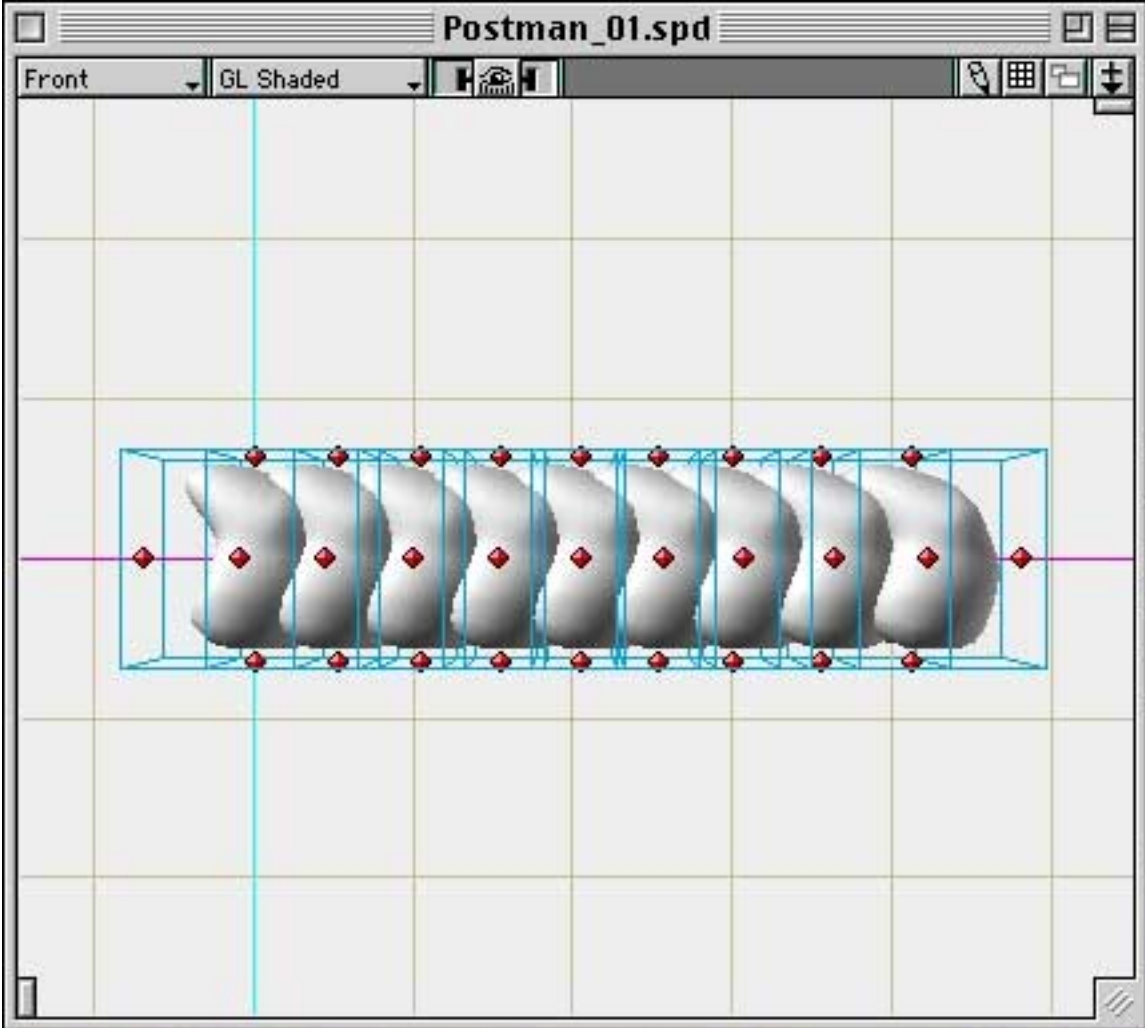
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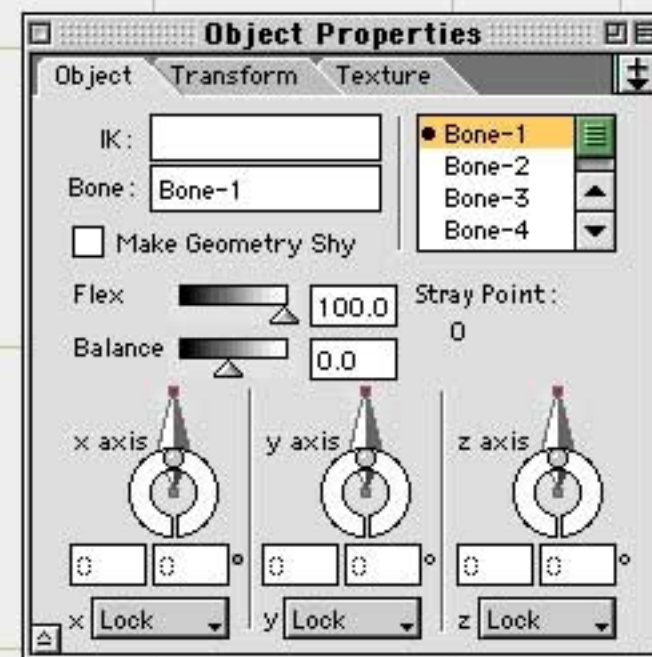
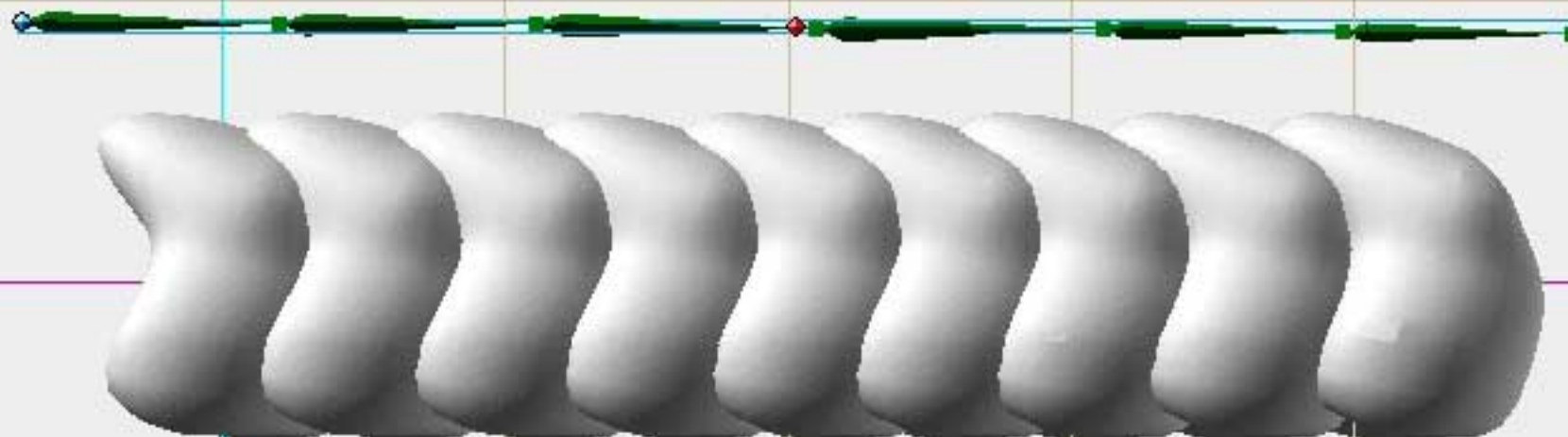
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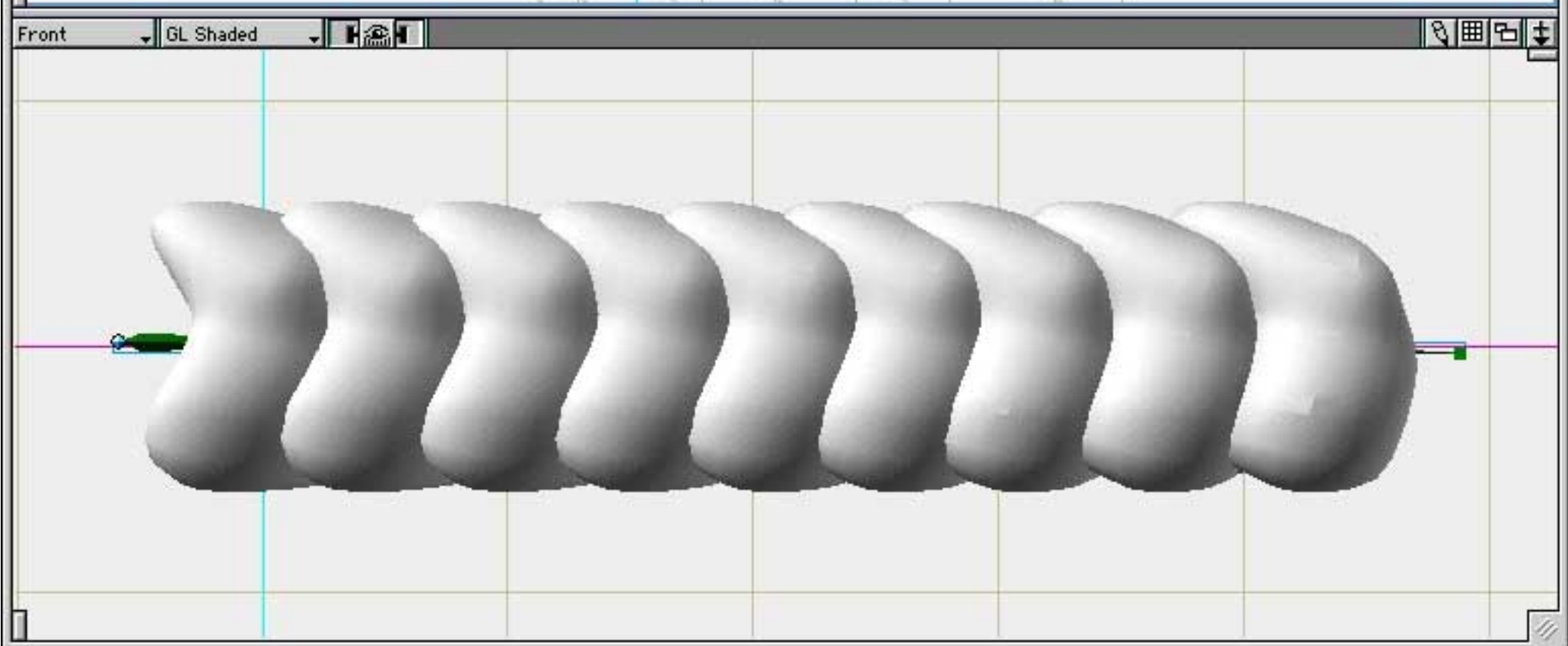
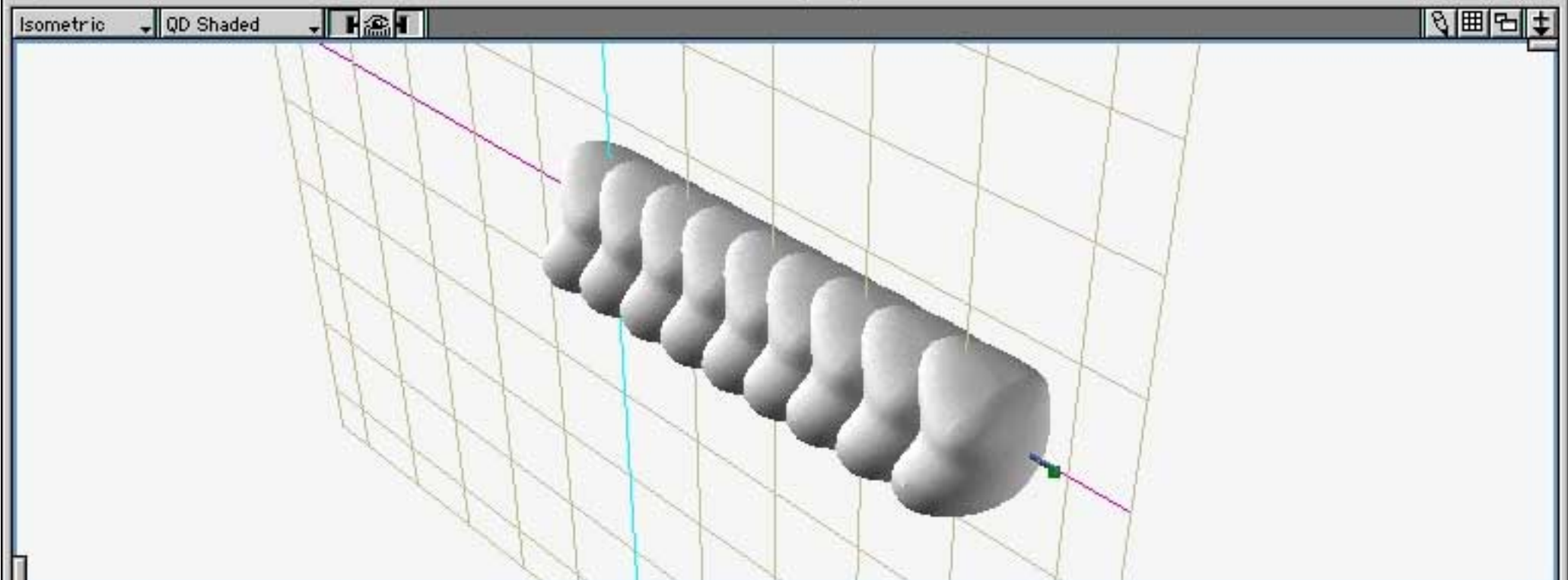
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x Range y Range z Range

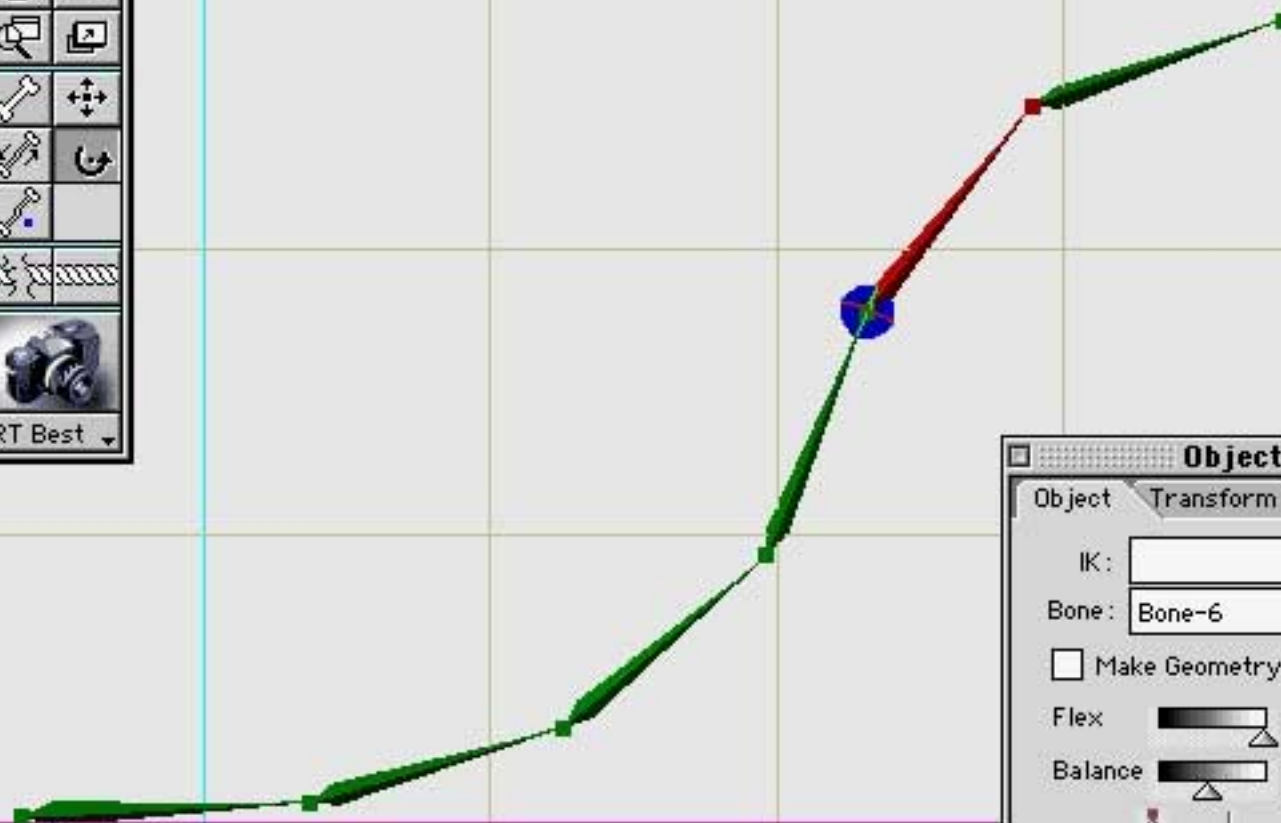






Front

GL Shaded



Object Properties

Object Transform Texture

IK:

Bone:

☐ Make Geometry Shy

Flex 100.0

Balance 0.0

Stray Point: 65

x axis

y axis

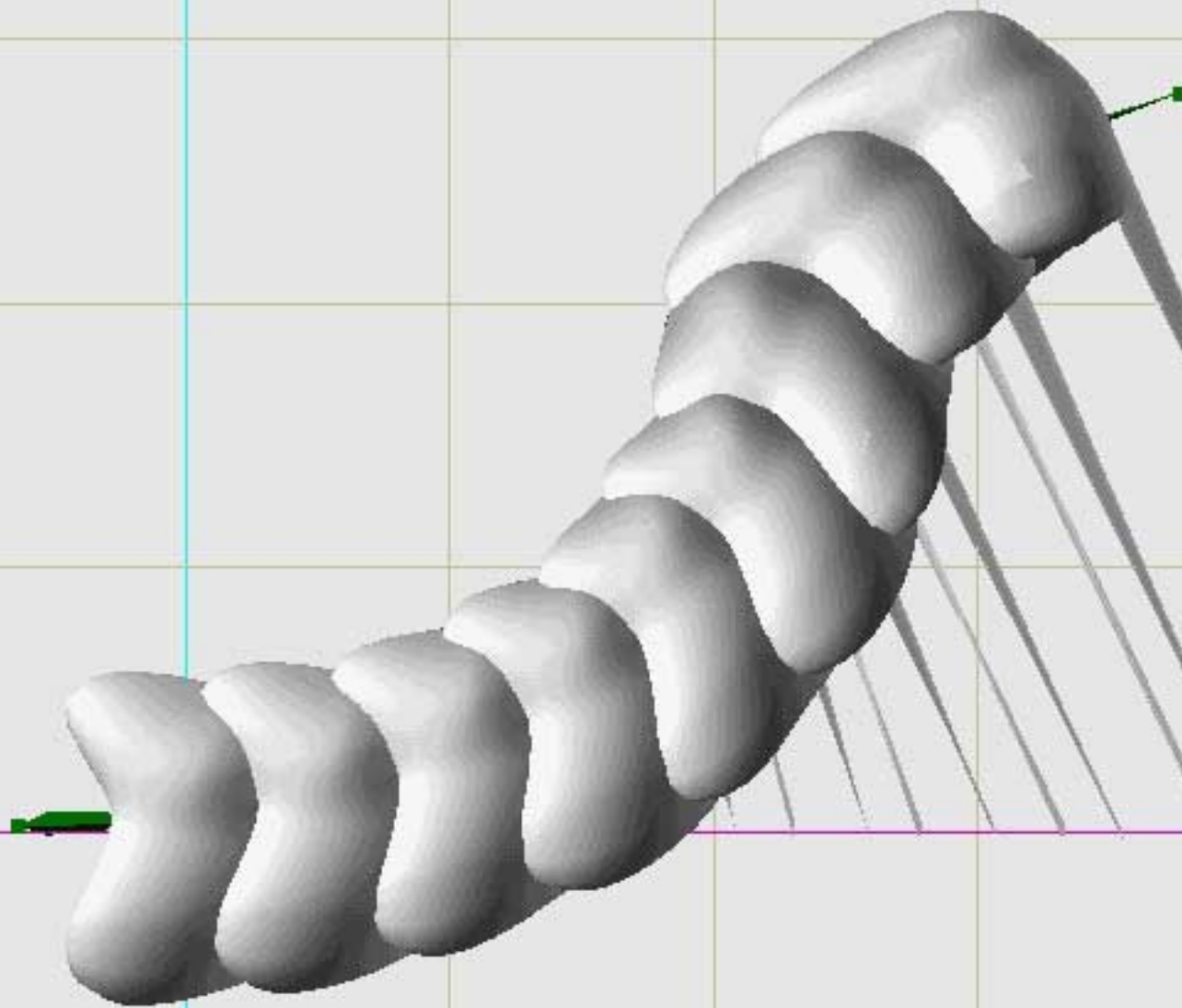
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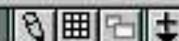
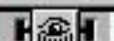
Front

GL Shaded



Front

GL Shaded



Object Properties

Object Transform Texture

IK:

Bone: Bone-7

Bone-4

Bone-5

Bone-6

Bone-7

☐ Make Geometry Shy

Flex

100.0

Stray Point:

65

Balance

0.0

x axis



y axis



z axis



0

0°

0

0°

180

-180°

x Range

y Range

z Range



RT Best

Front

QD PointCloud

Object Properties

Object

Transform

Texture

IK:

Bone:

Bone-3

☐ Make Geometry Shy

Flex

100.0

Balance

0.0

Stray Point:

20

x axis

y axis

z axis

0

0

0

0

180

-180

x Range

y Range

z Range

Bone-2

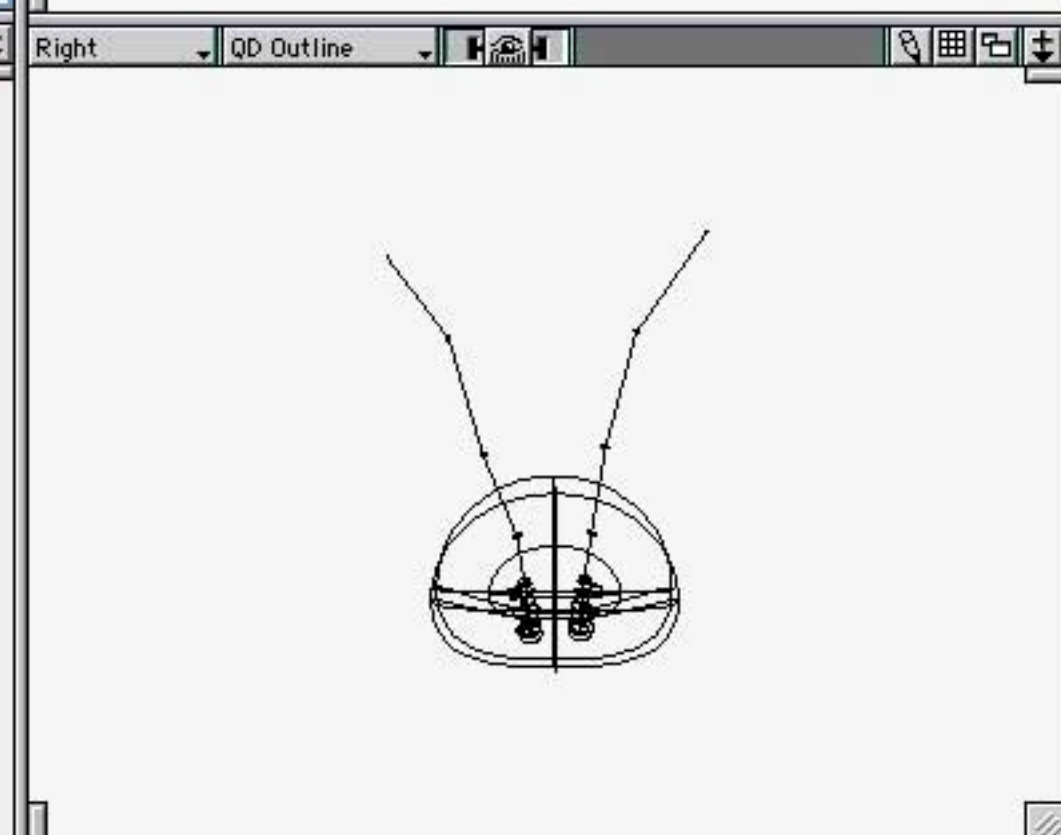
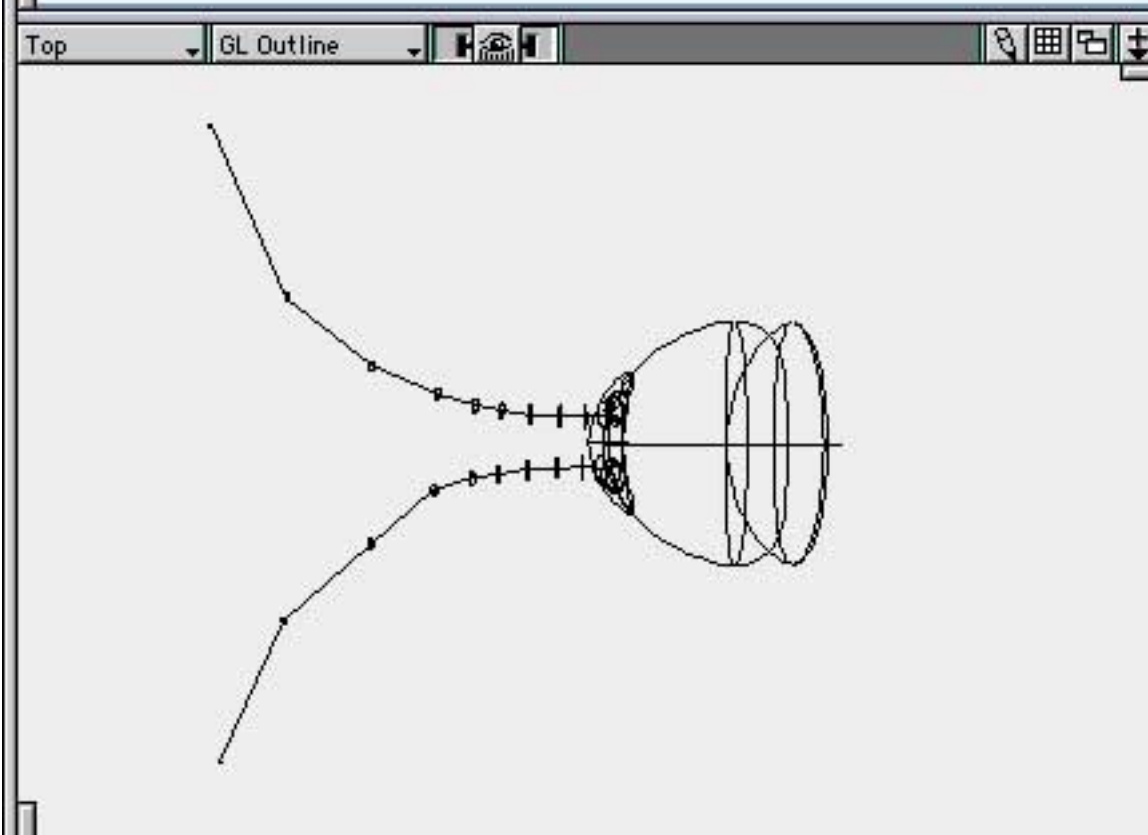
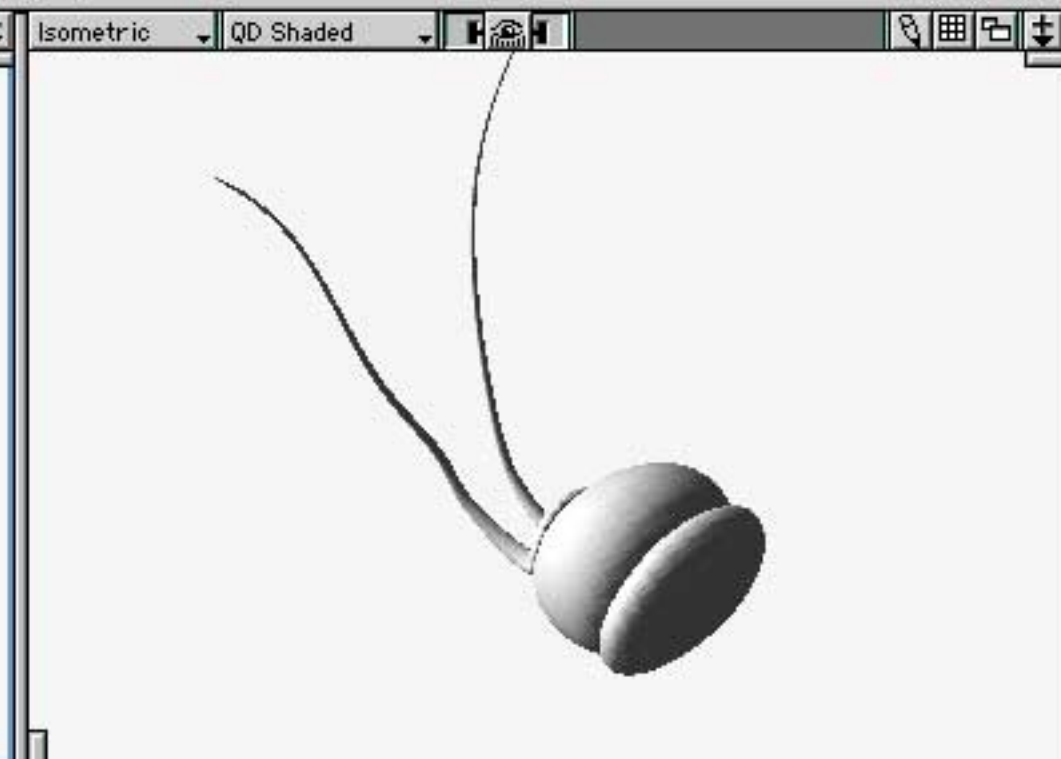
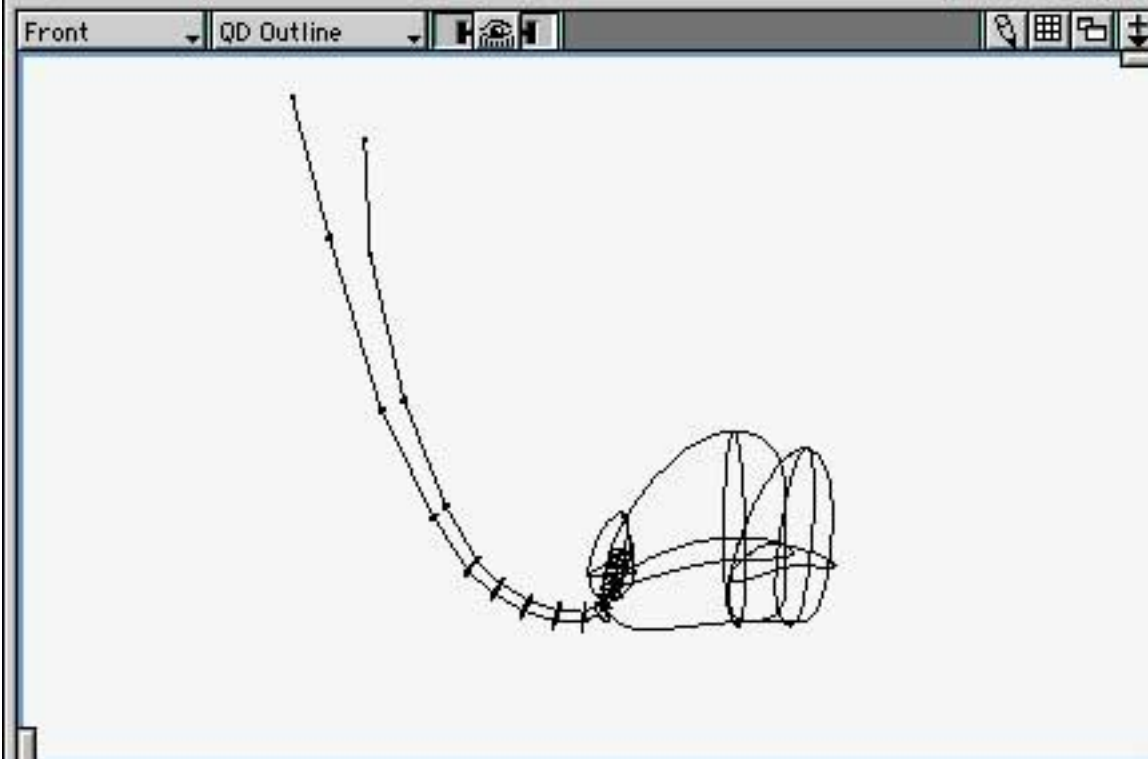
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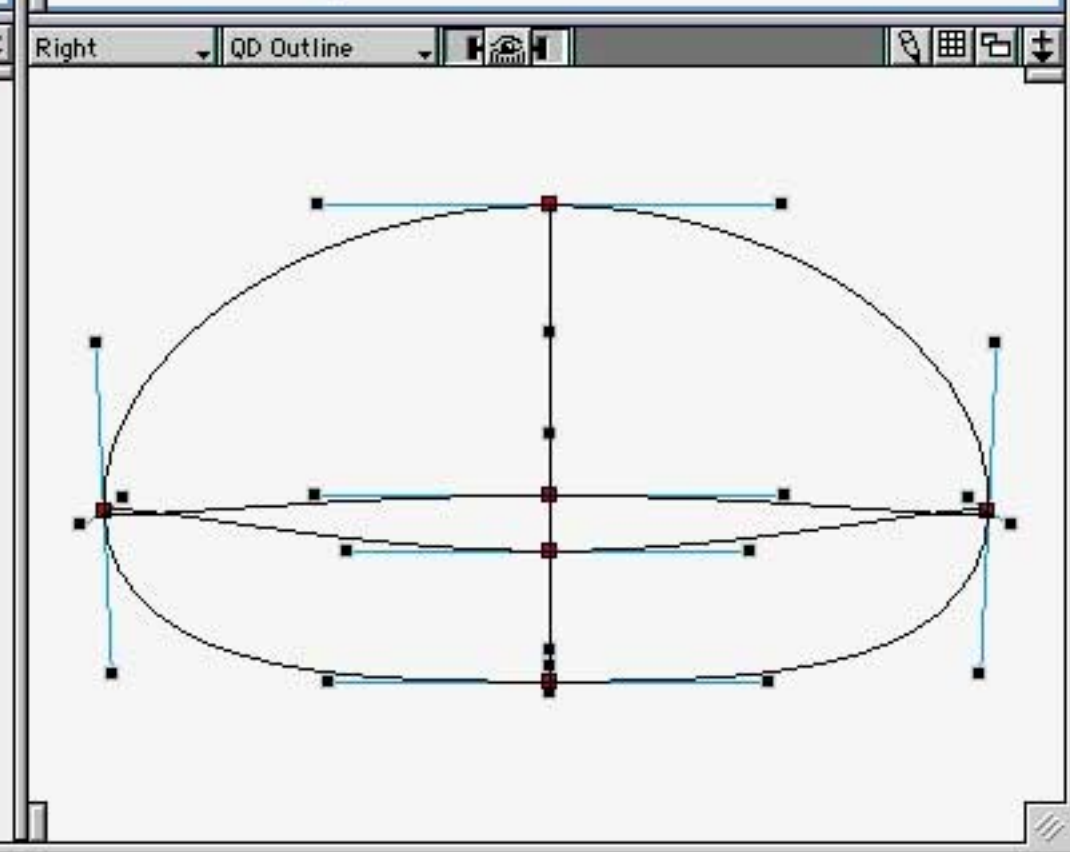
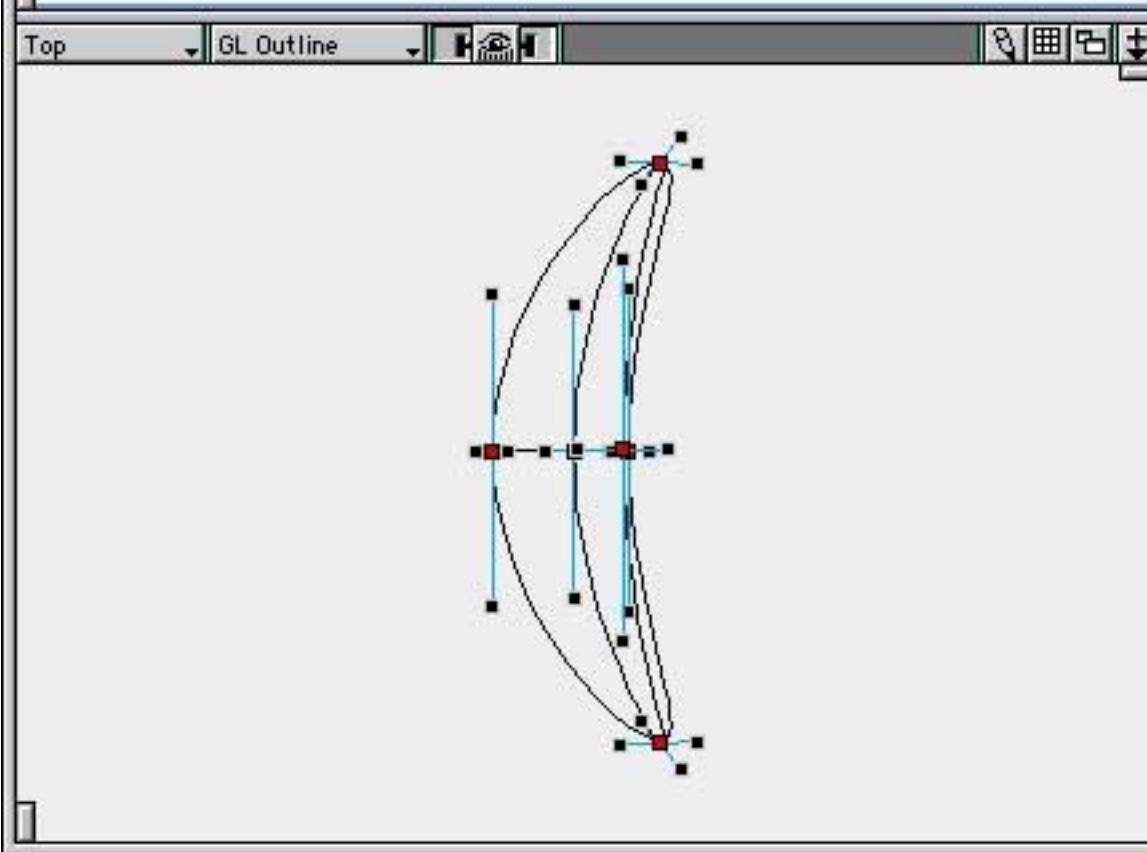
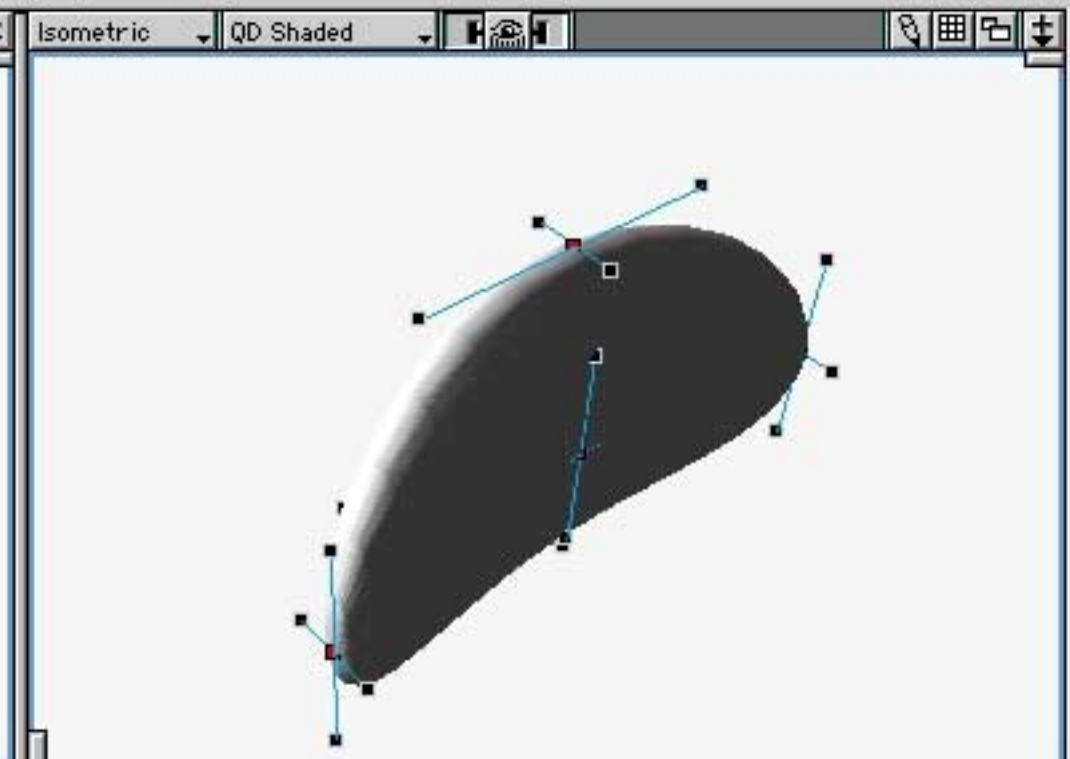
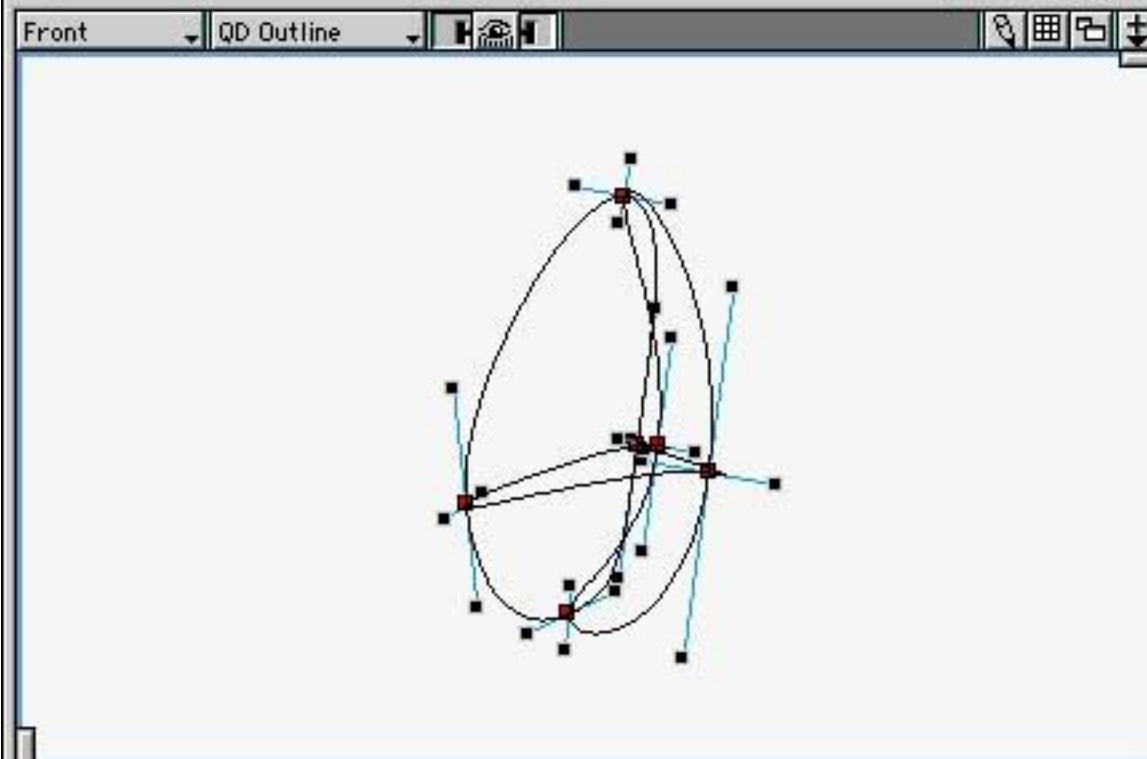
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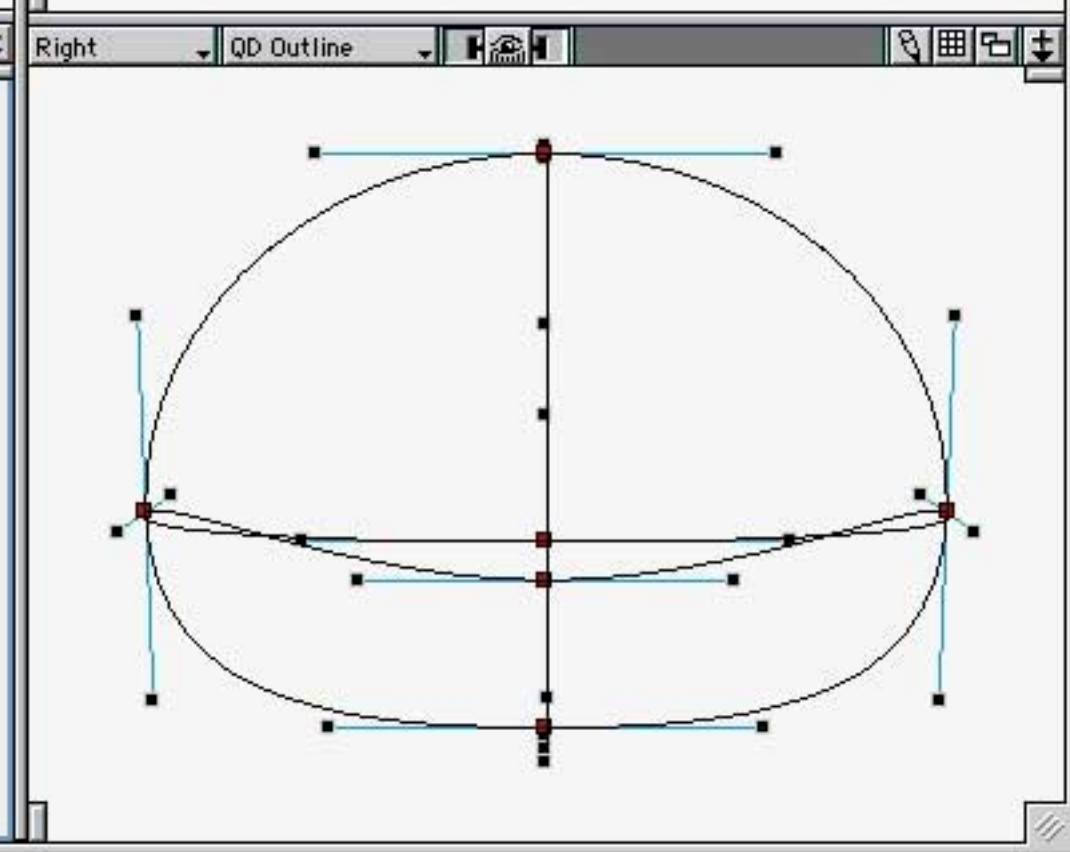
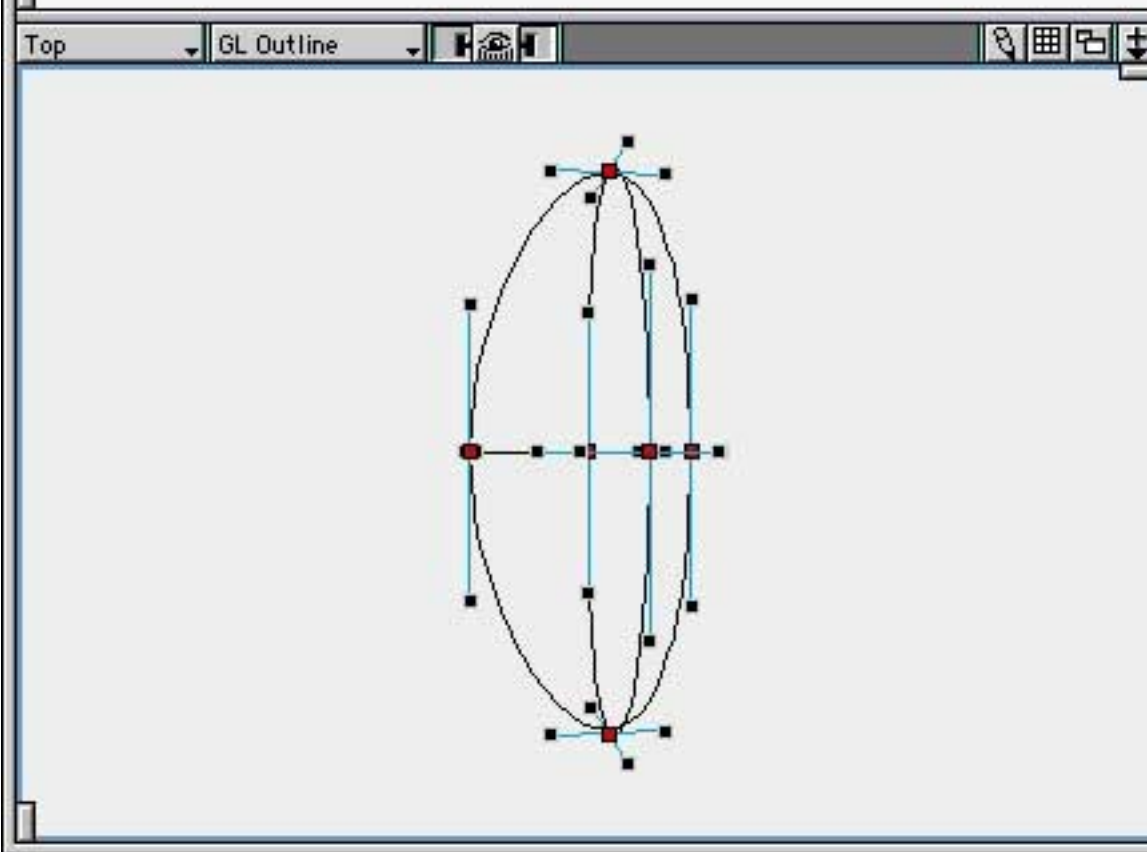
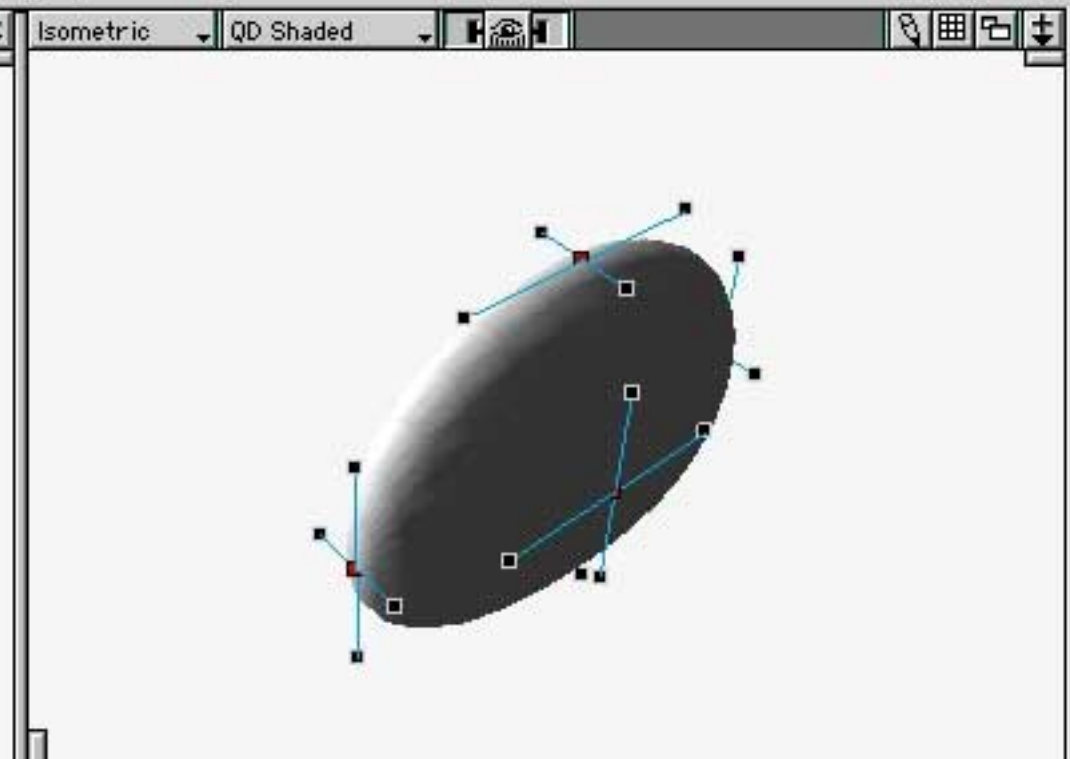
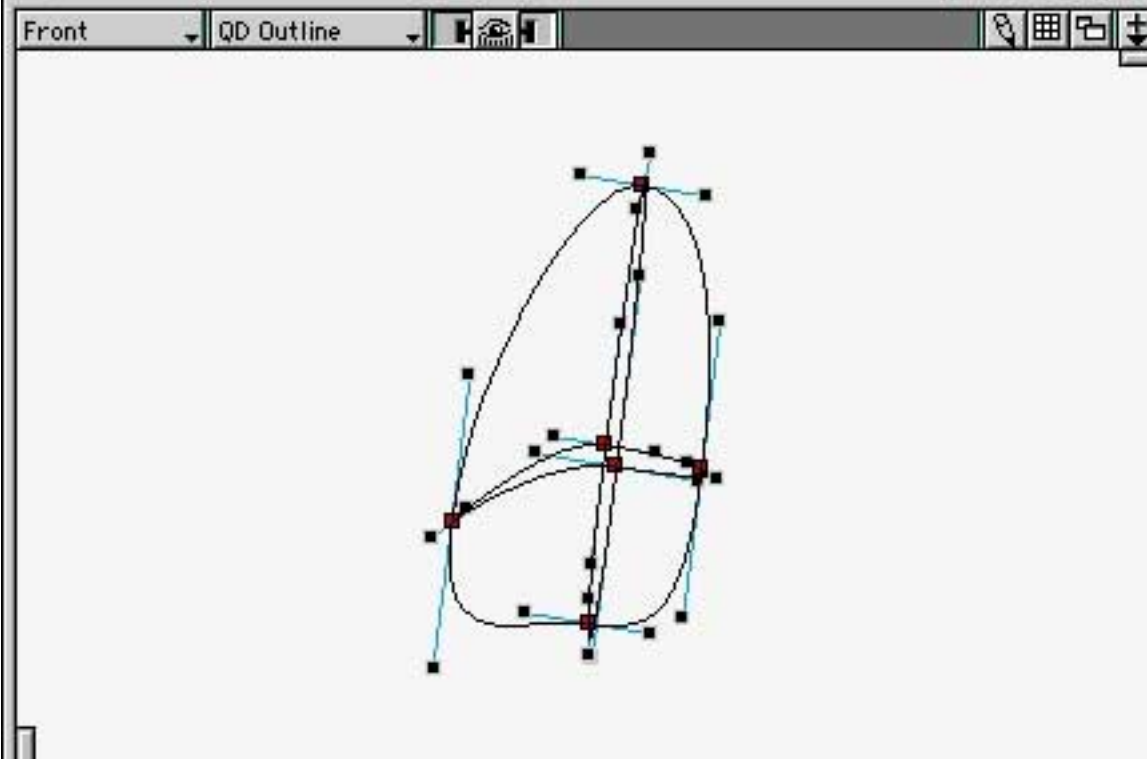
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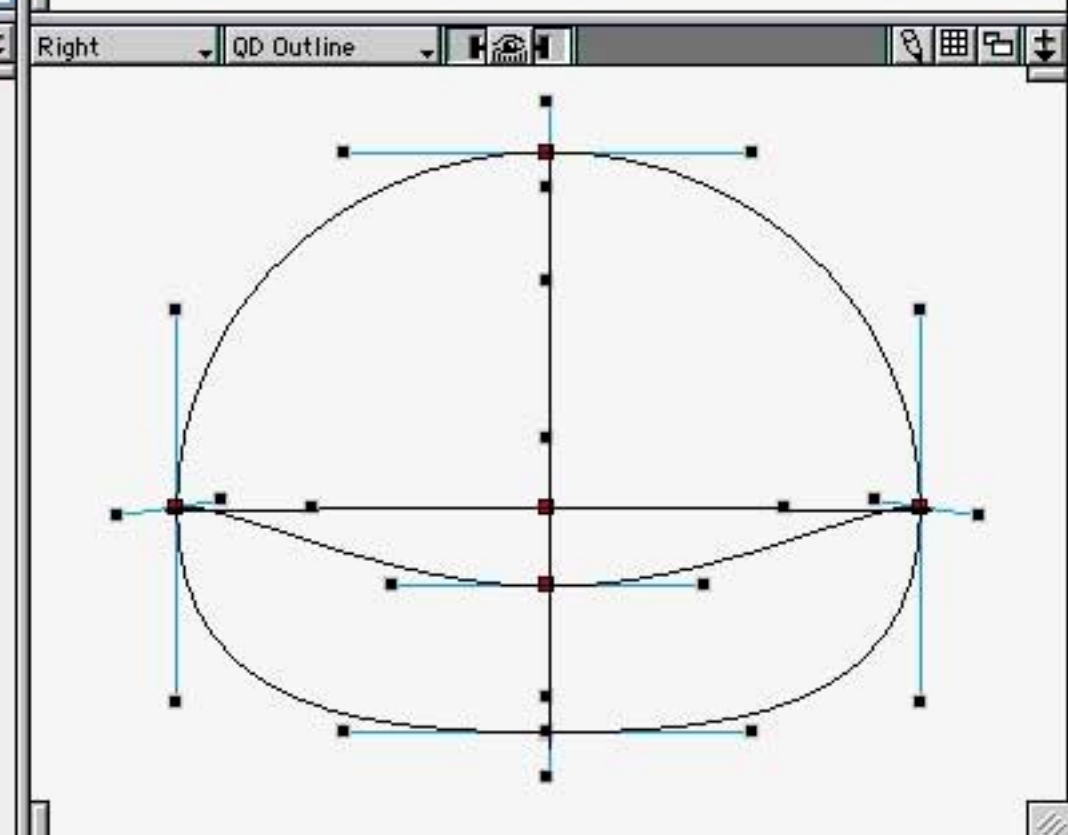
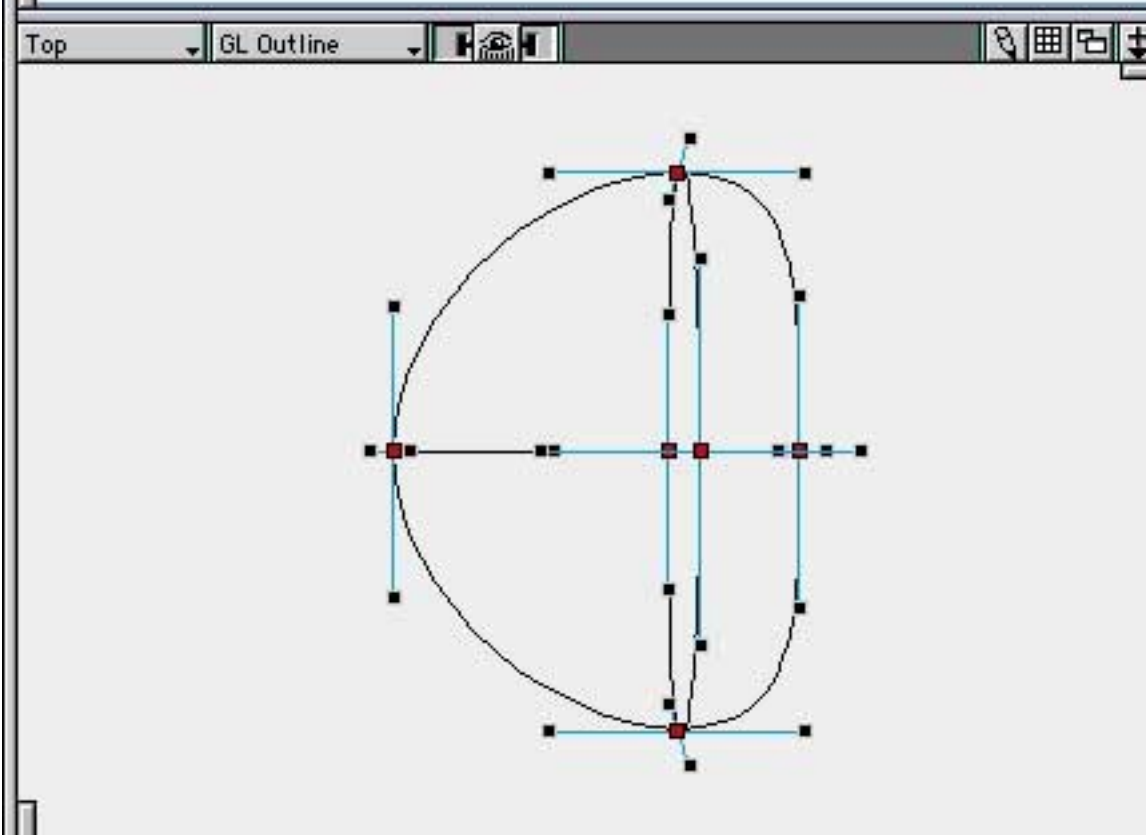
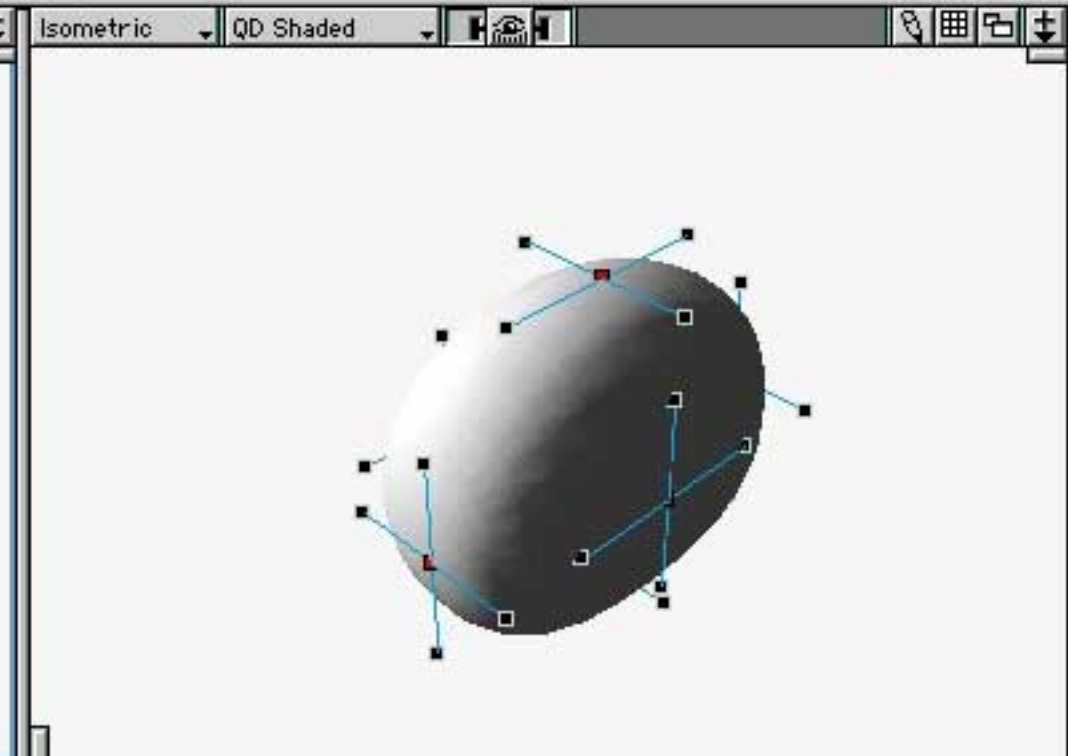
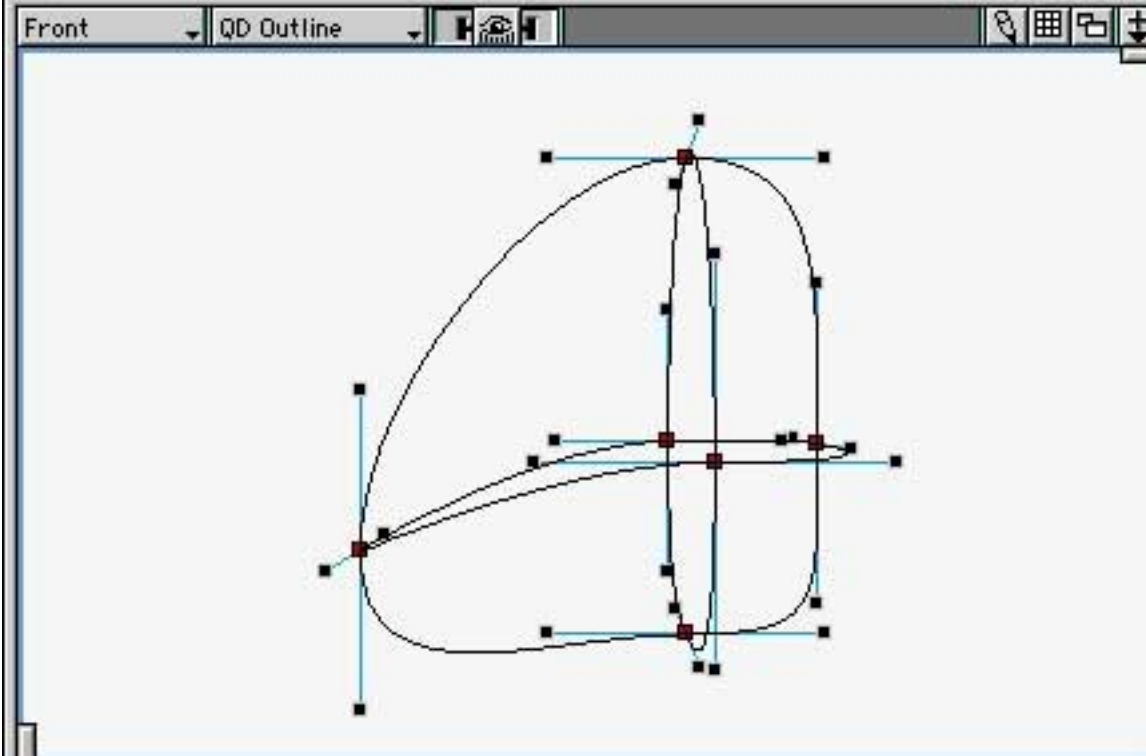
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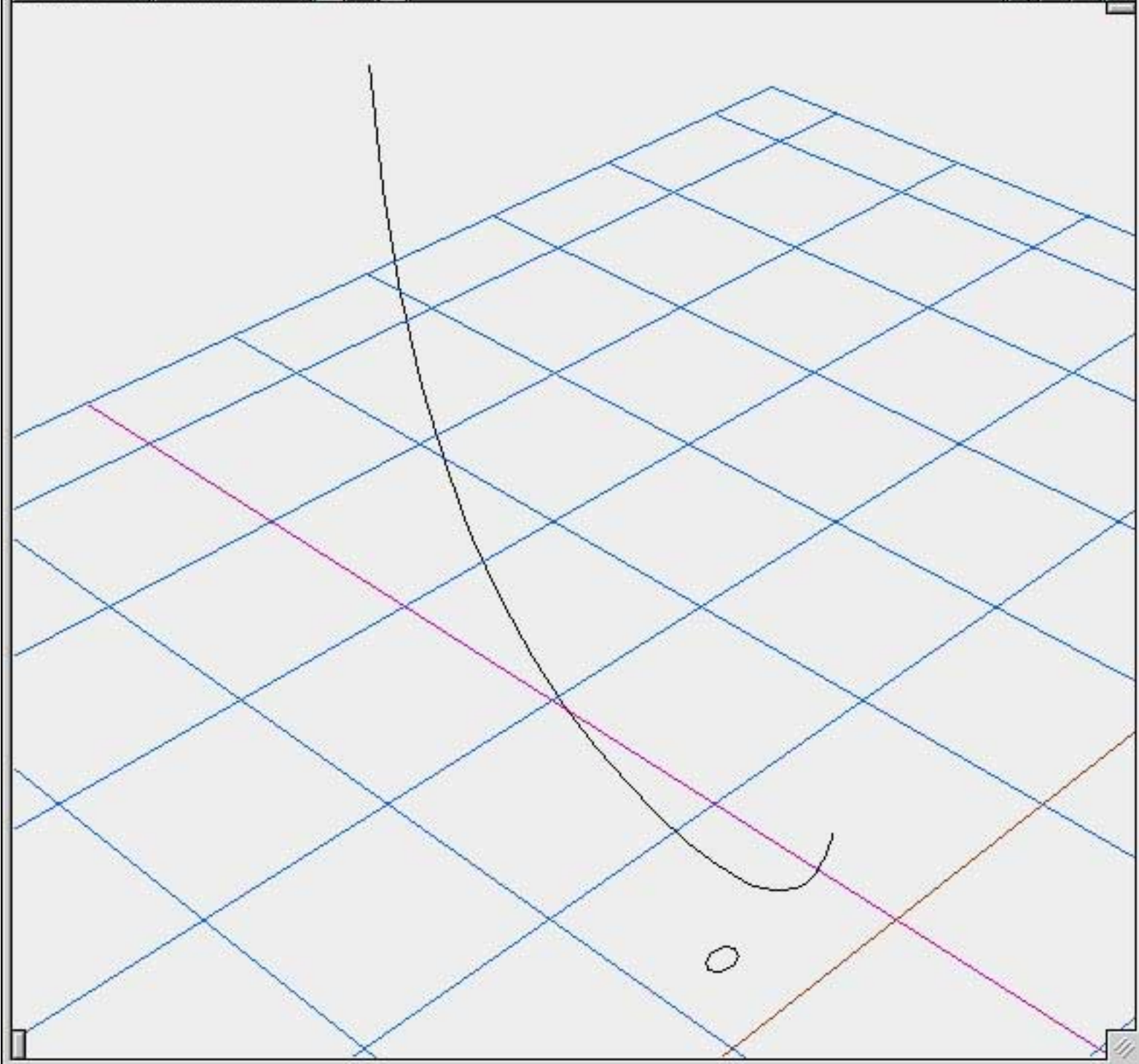












Isometric

GL WireFrame



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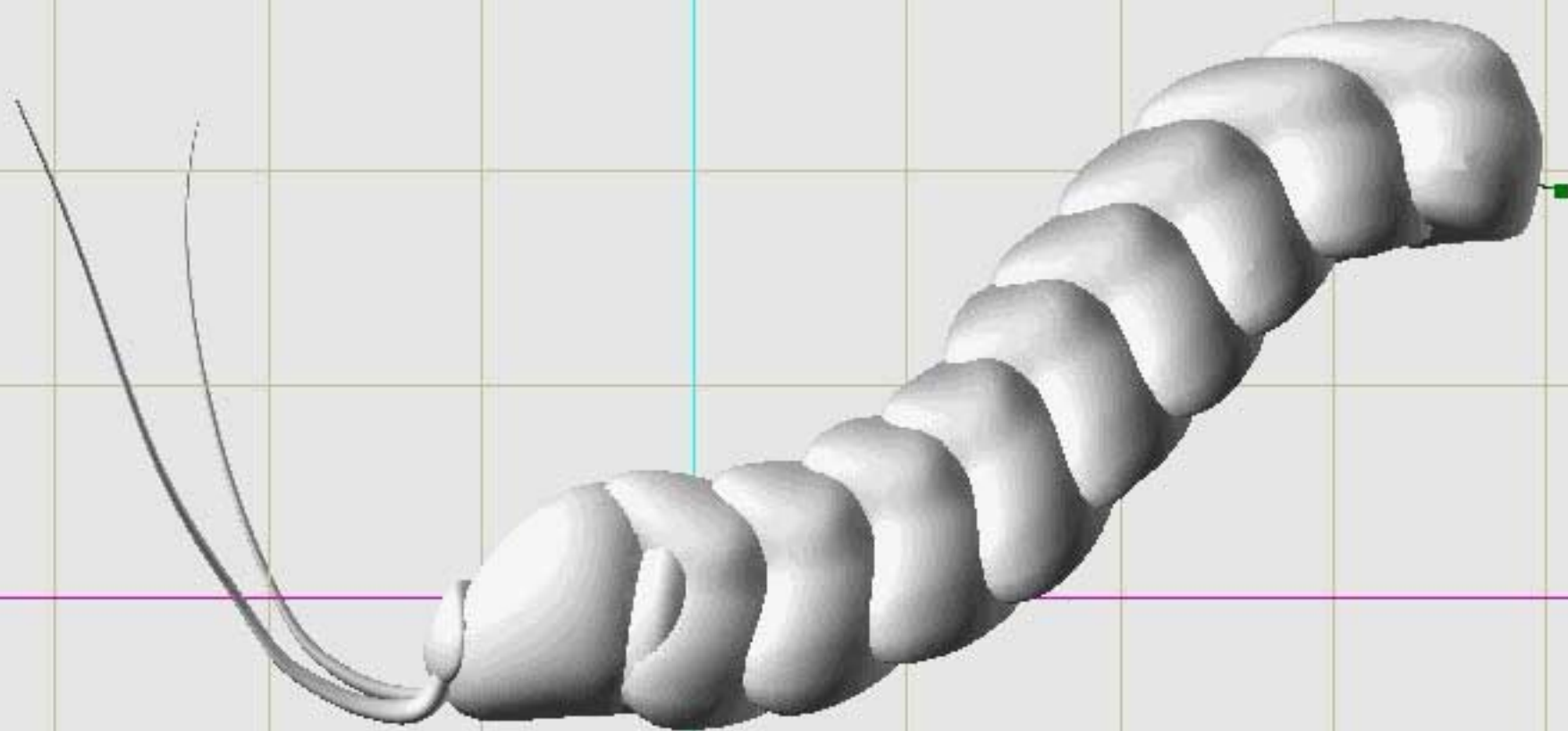
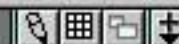
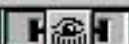
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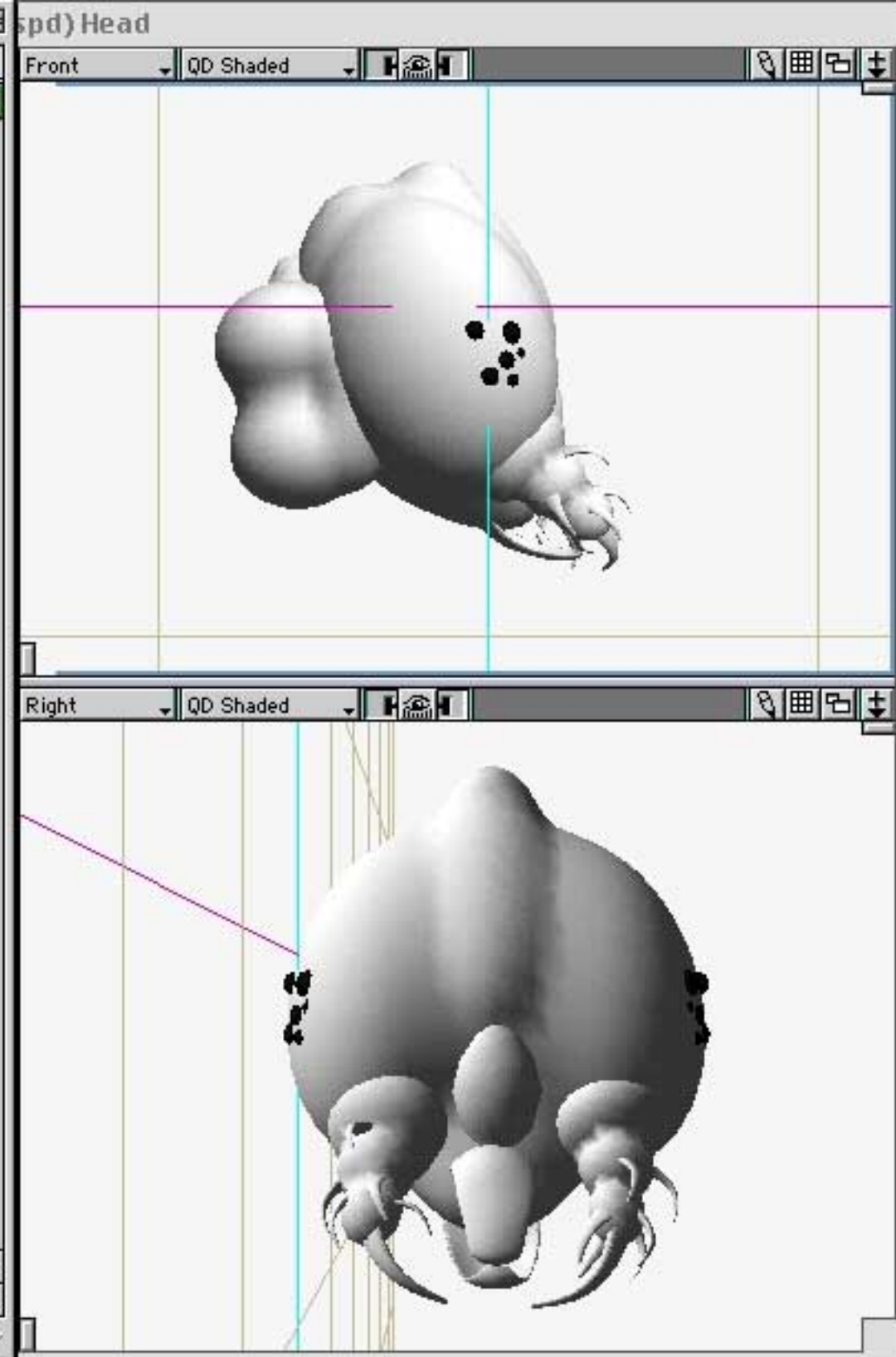
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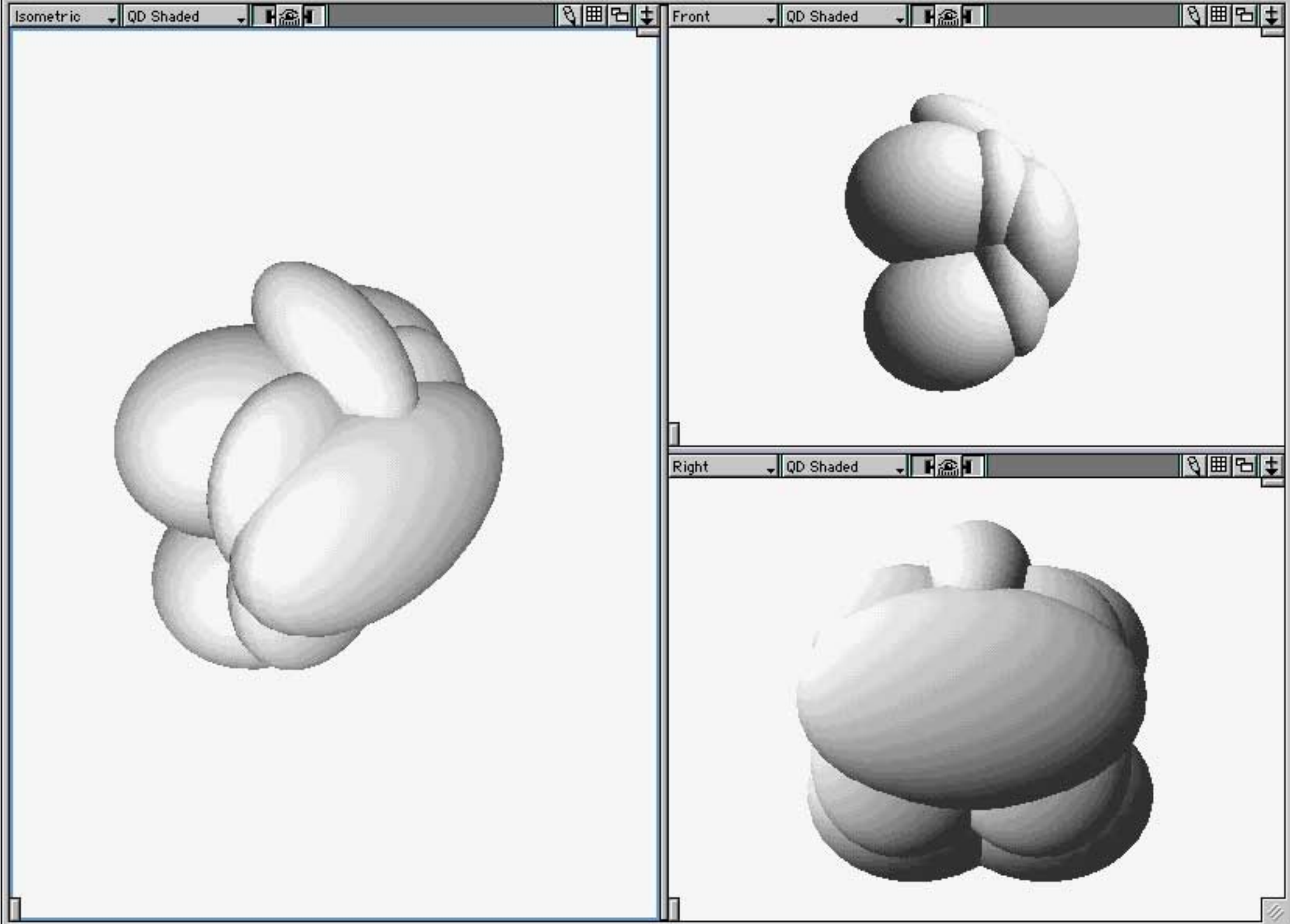


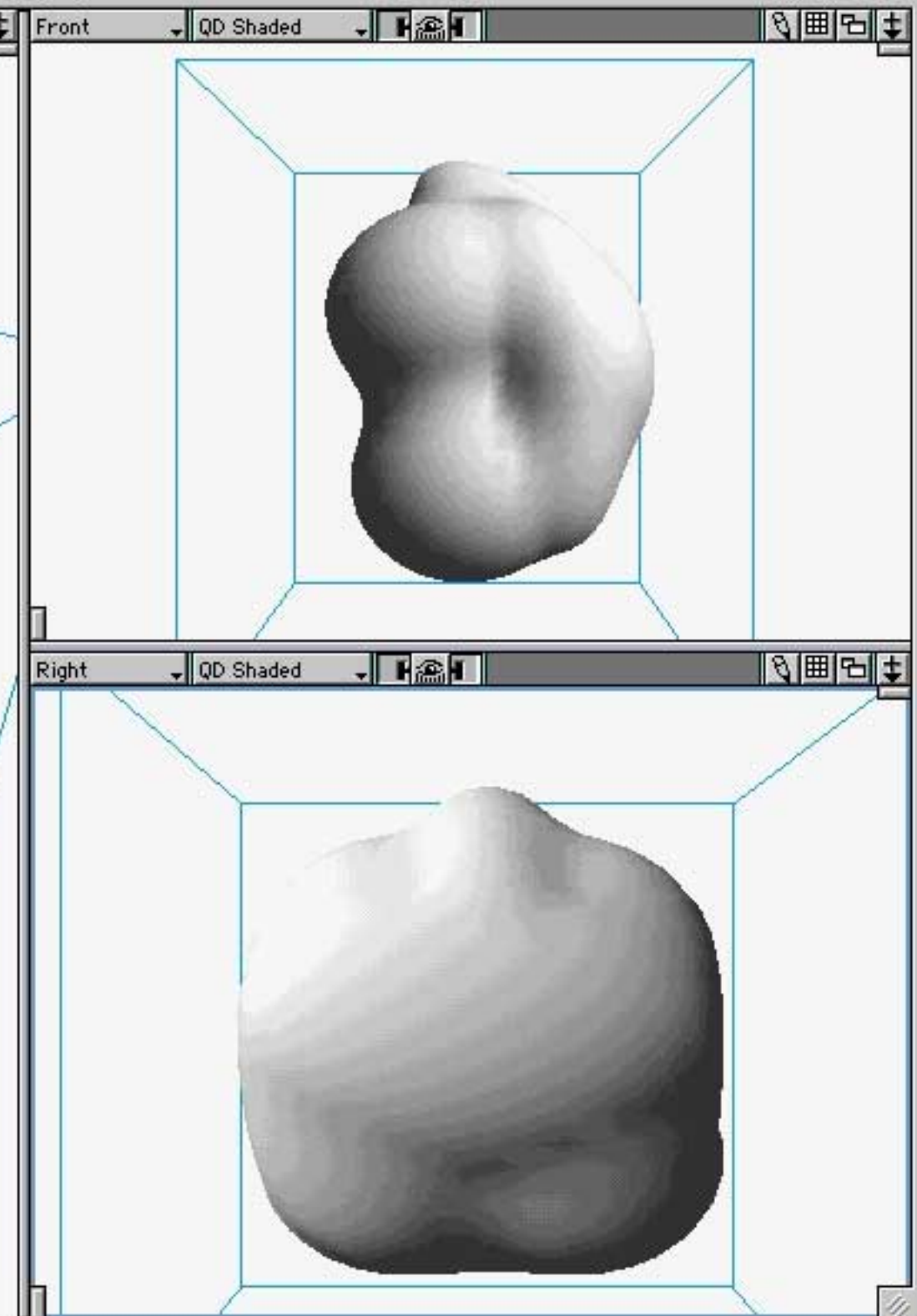
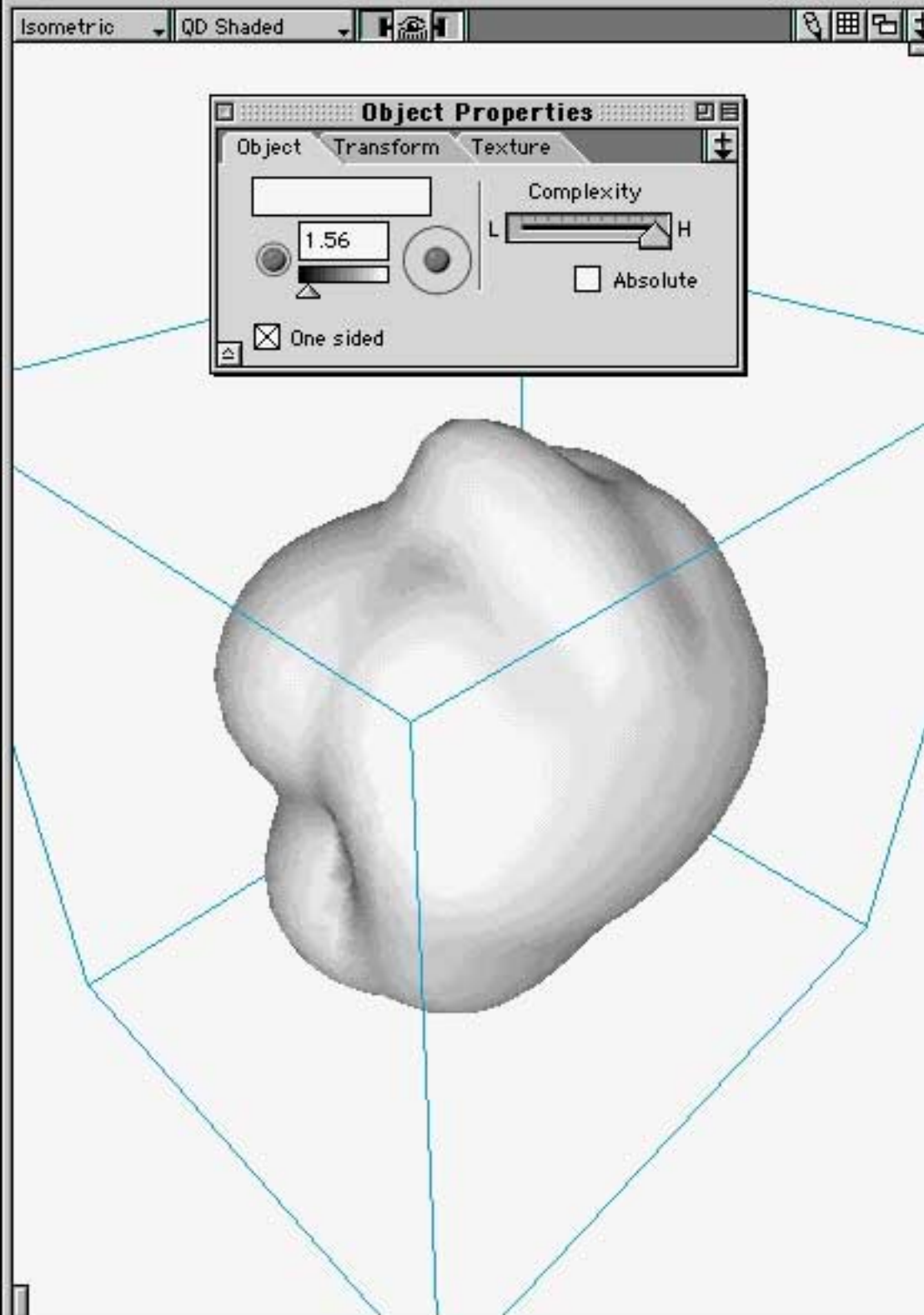
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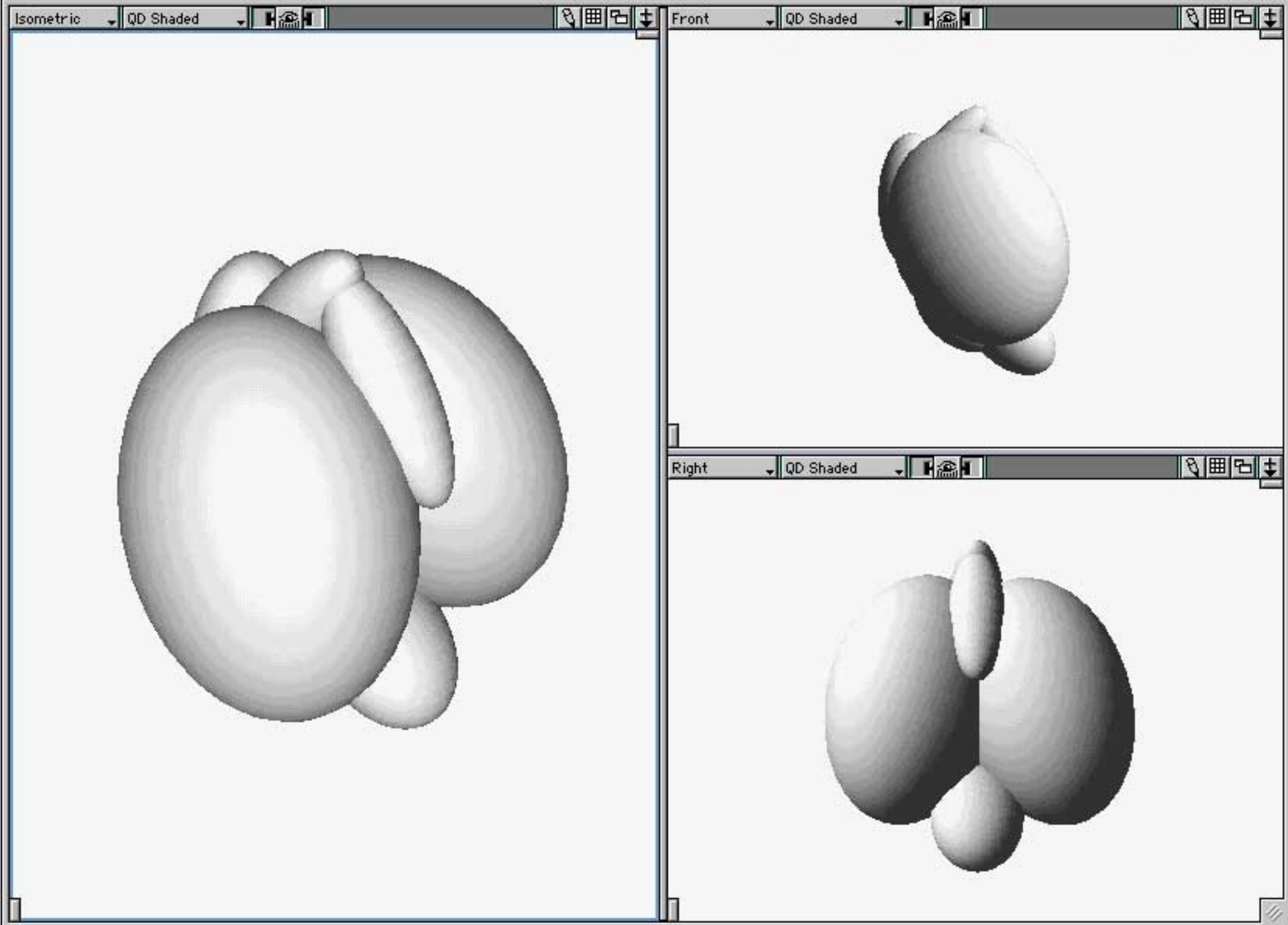
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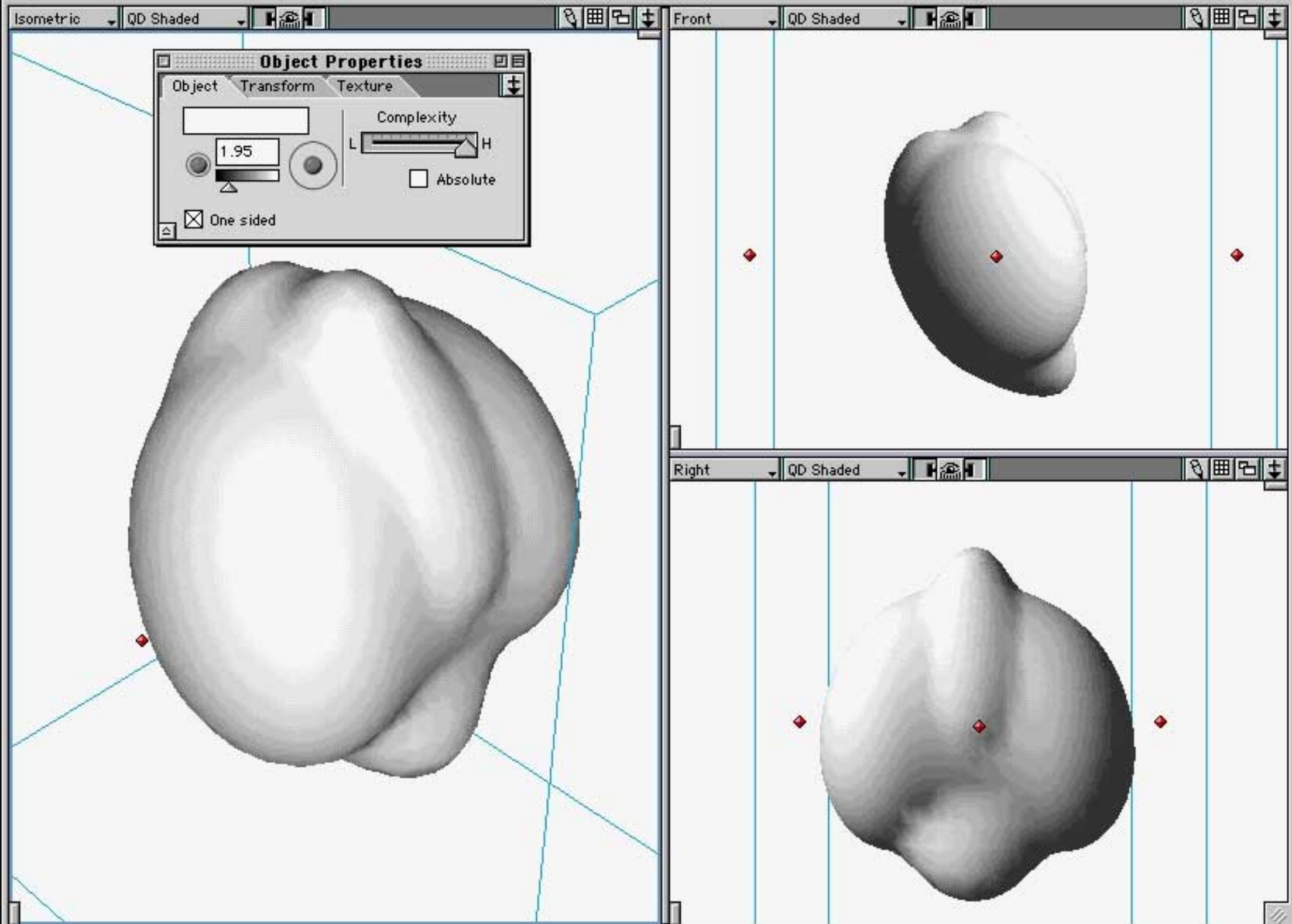


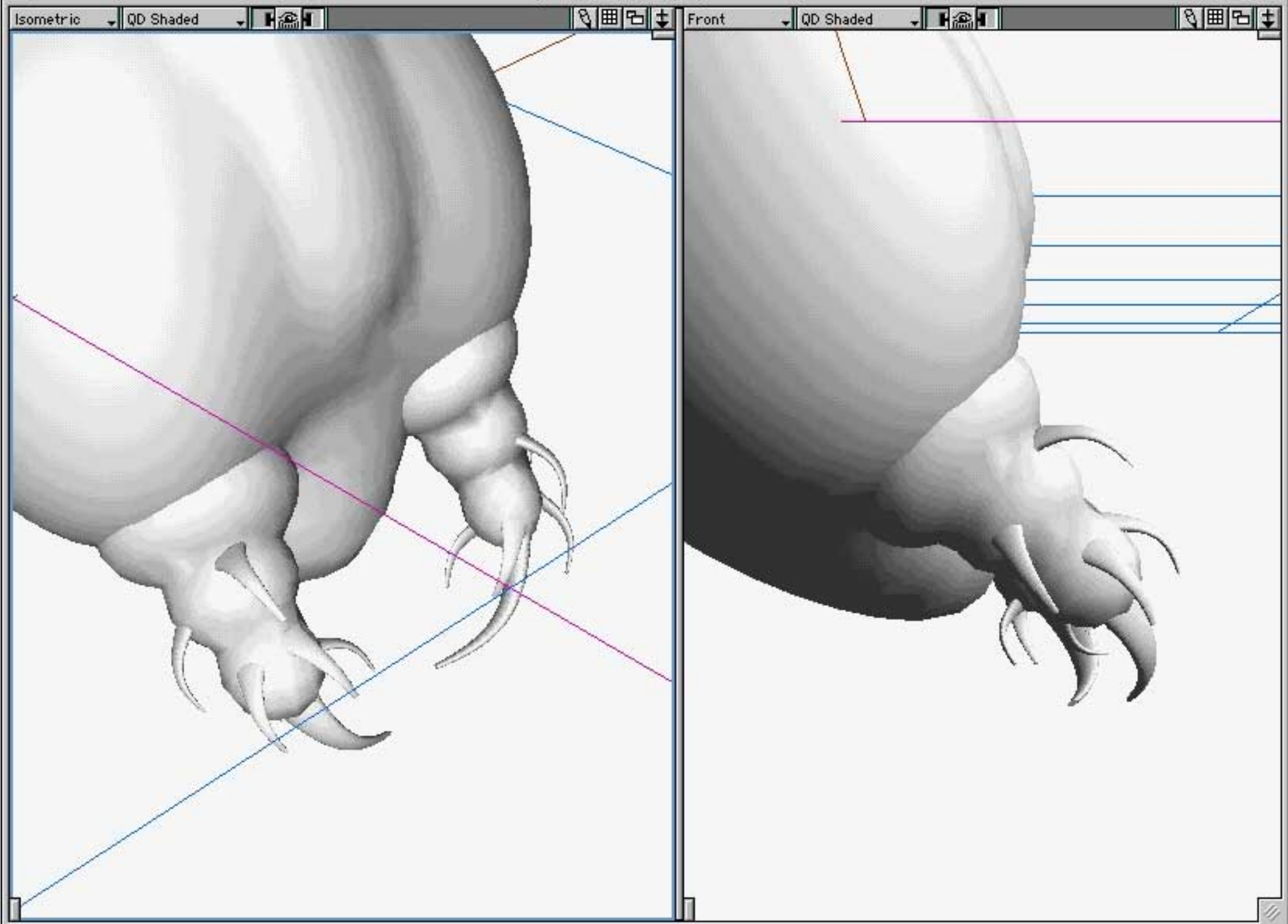


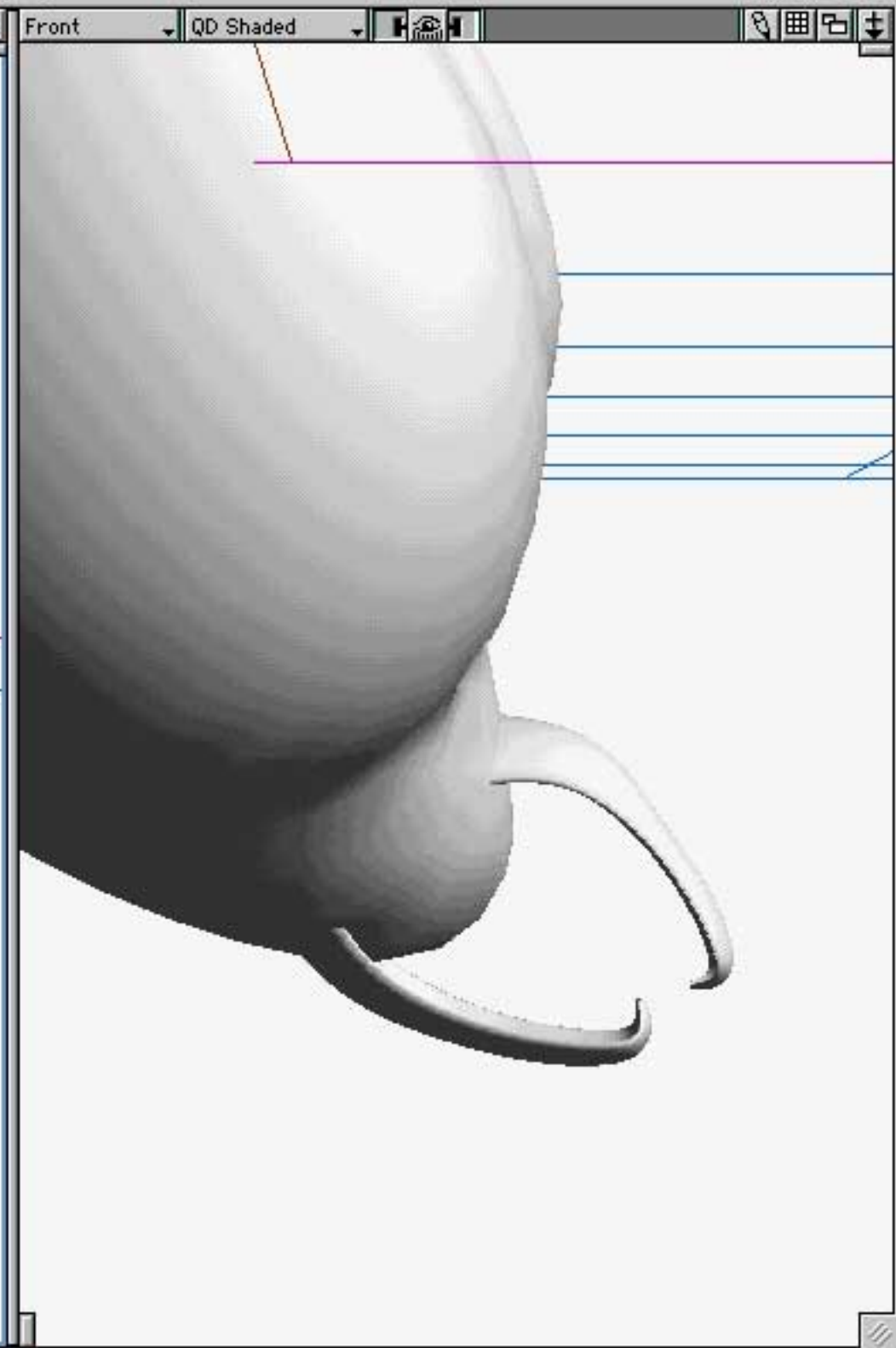
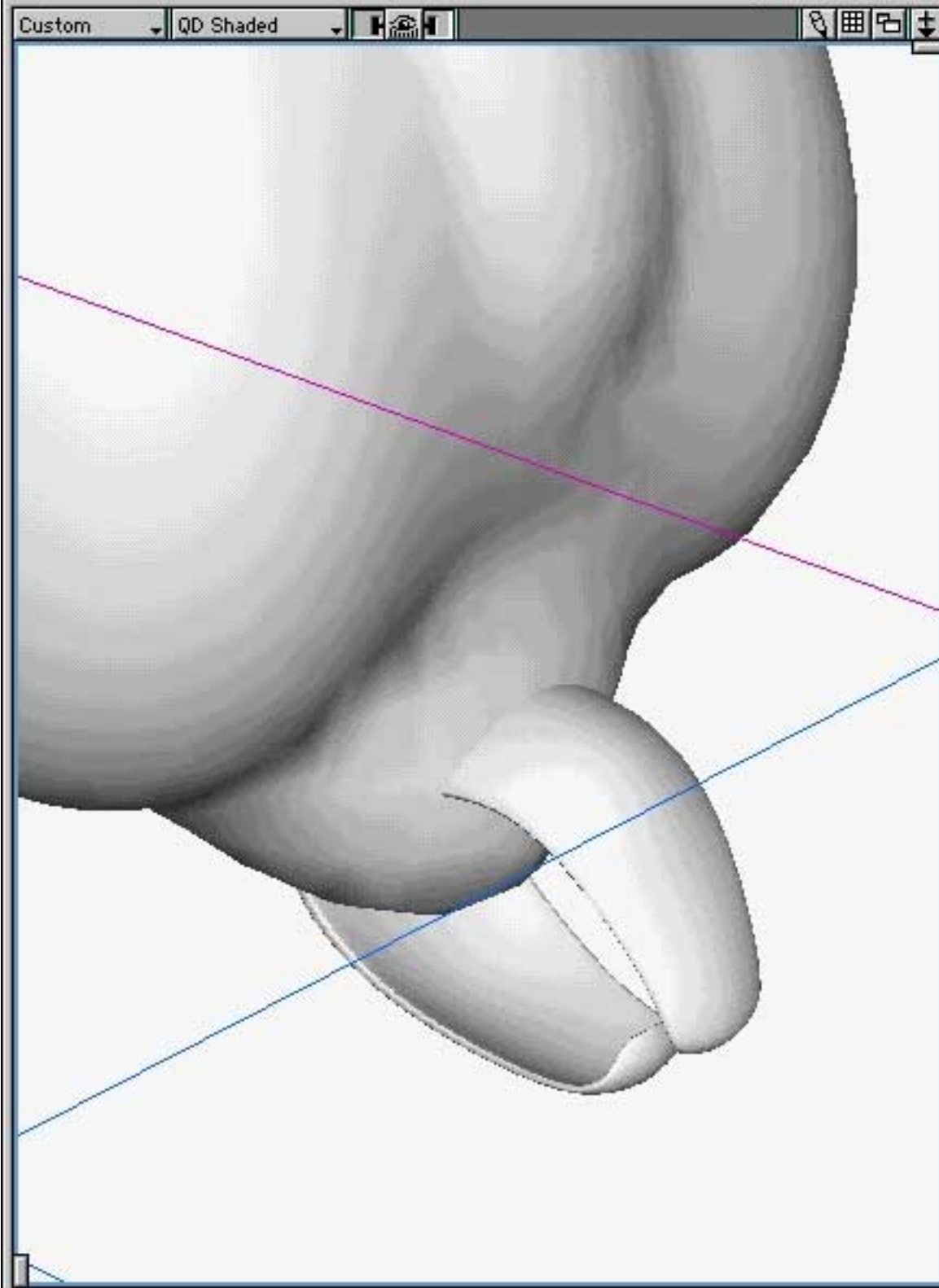


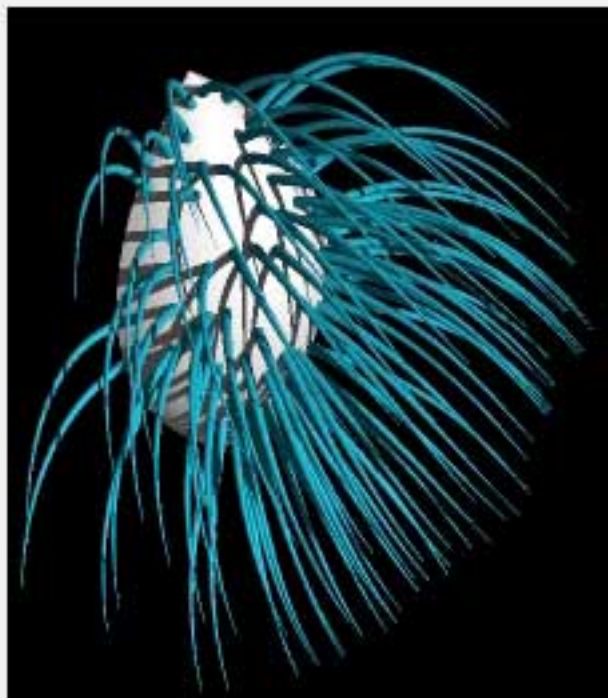
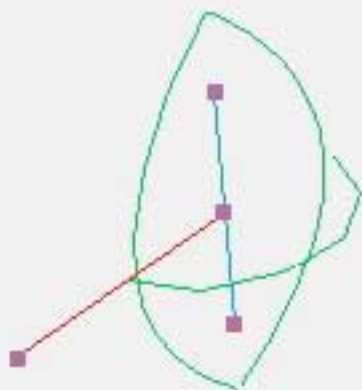












Hair

Edit at: ☐ Current time ☒ All time ☐ Custom

00:00:00

Mouth

Copy from...

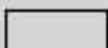
Texture

☒ Radial placement

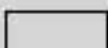
Color  Opacity 100.0 %



Length 0.25 in



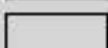
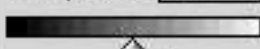
Density 3000.0 %



Strength 50.0 %



Clumpiness 50.0 %



Clump Size 0.25



Chaos 100.0 % Seed 5



Compose maps

☒ Cast Shadows



Sphere



Diameter 0.01 in



Taper 100.0 %



Curliness 5.0 %



Curl Size 0.75 in



Nap 0.0 °



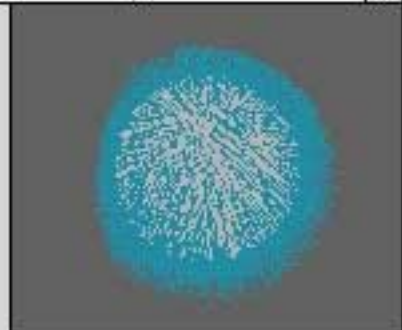
Lay 0.0 °



Apply

Cancel

OK



Environment

Lights

Background

Air

Ground



Air

Refraction index:

Vacuum

1.0

Gravity



9.8

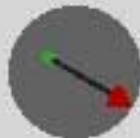
Presets:

Earth



Intensity

Wind



0.0

50.0



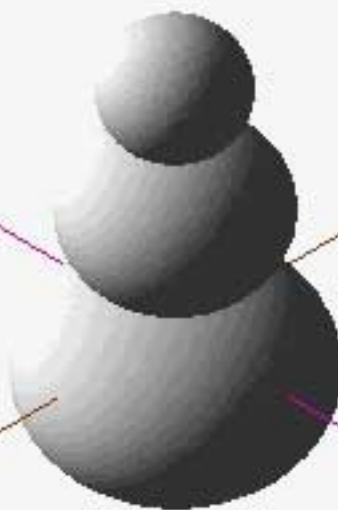
Intensity



Viscosity

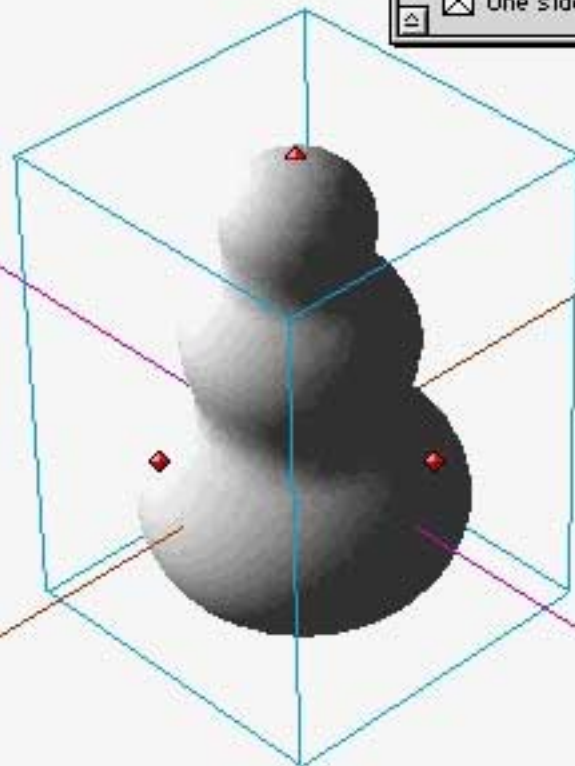
Isometric

QD Shaded



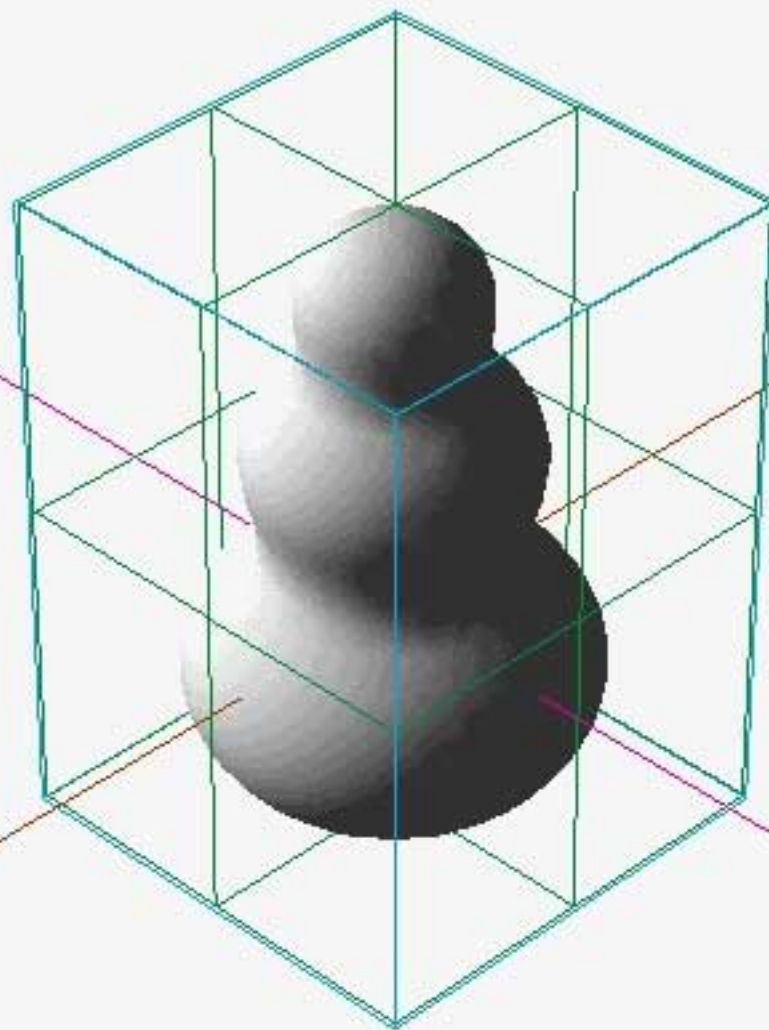
Isometric

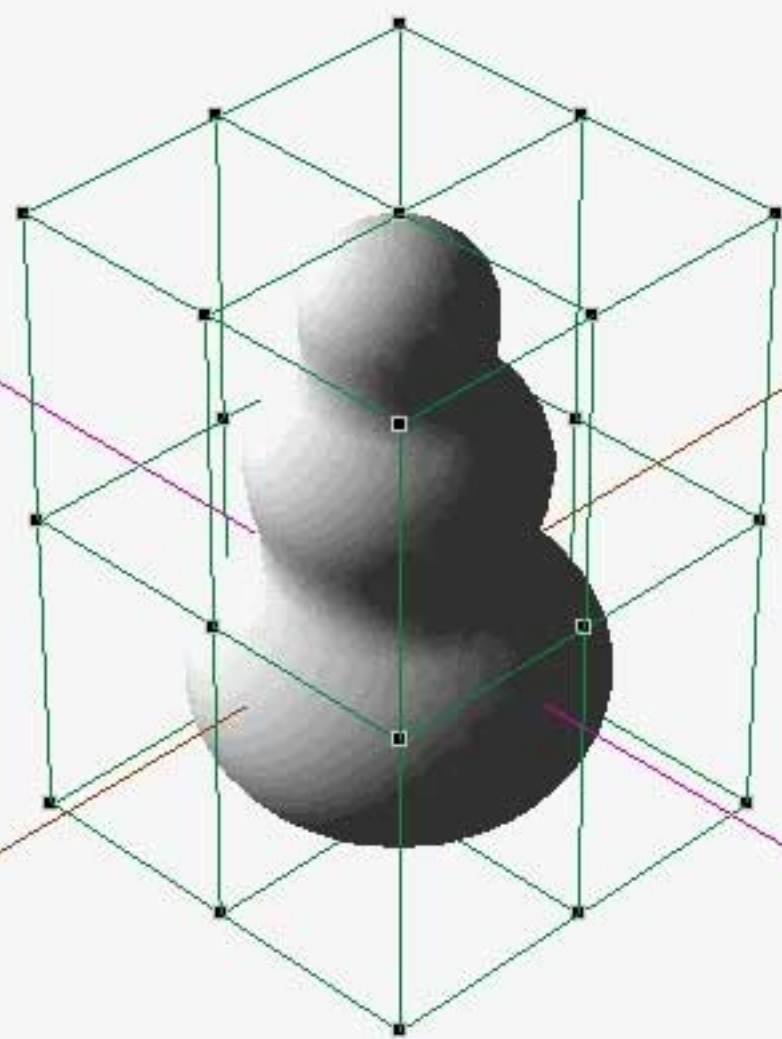
QD Shaded

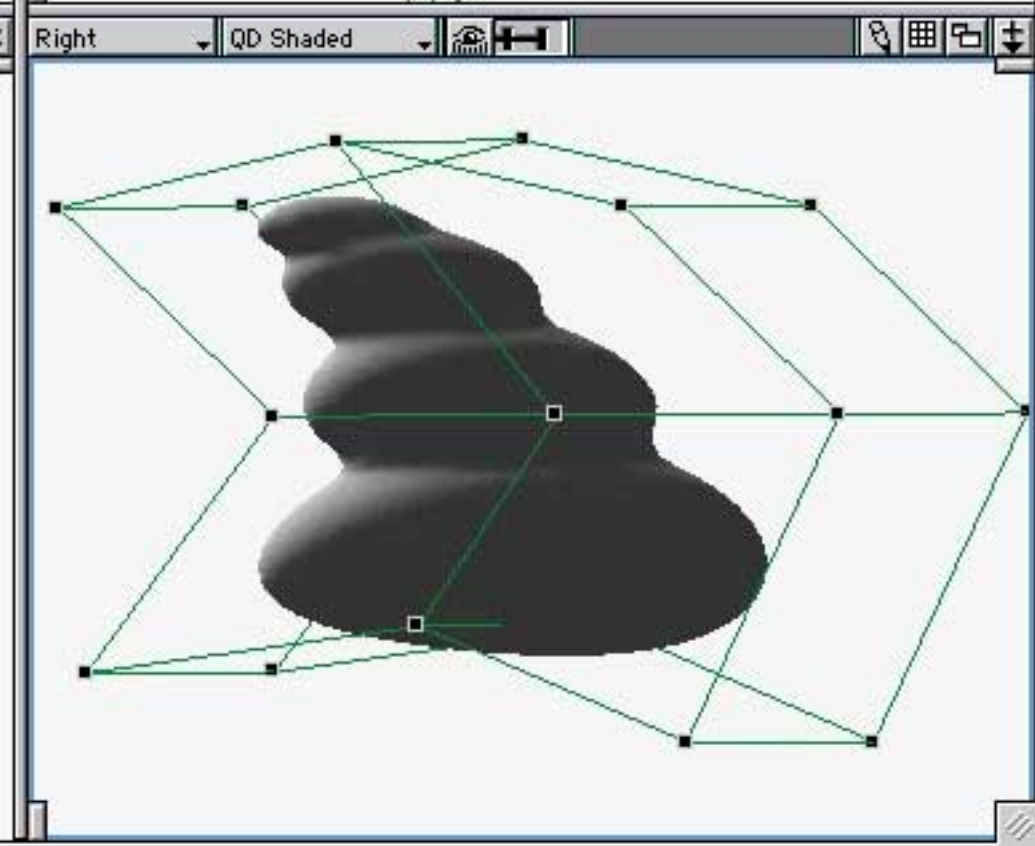
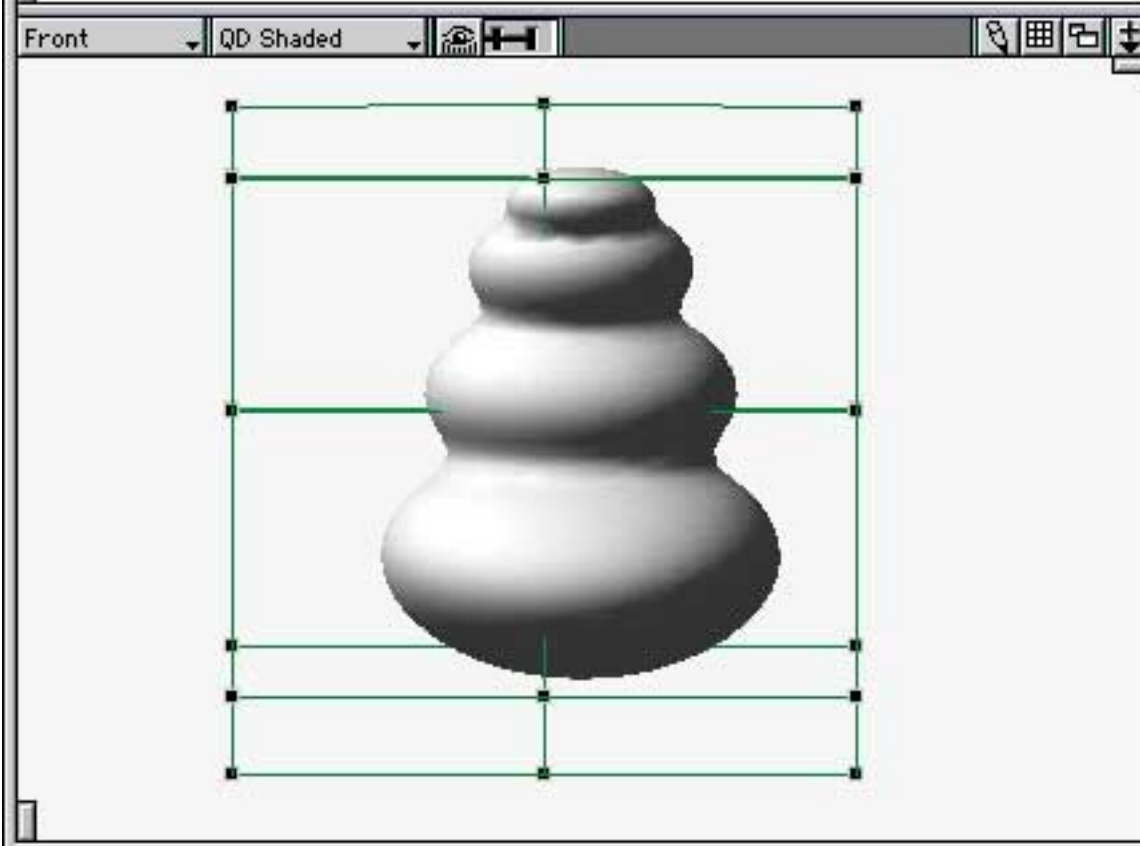
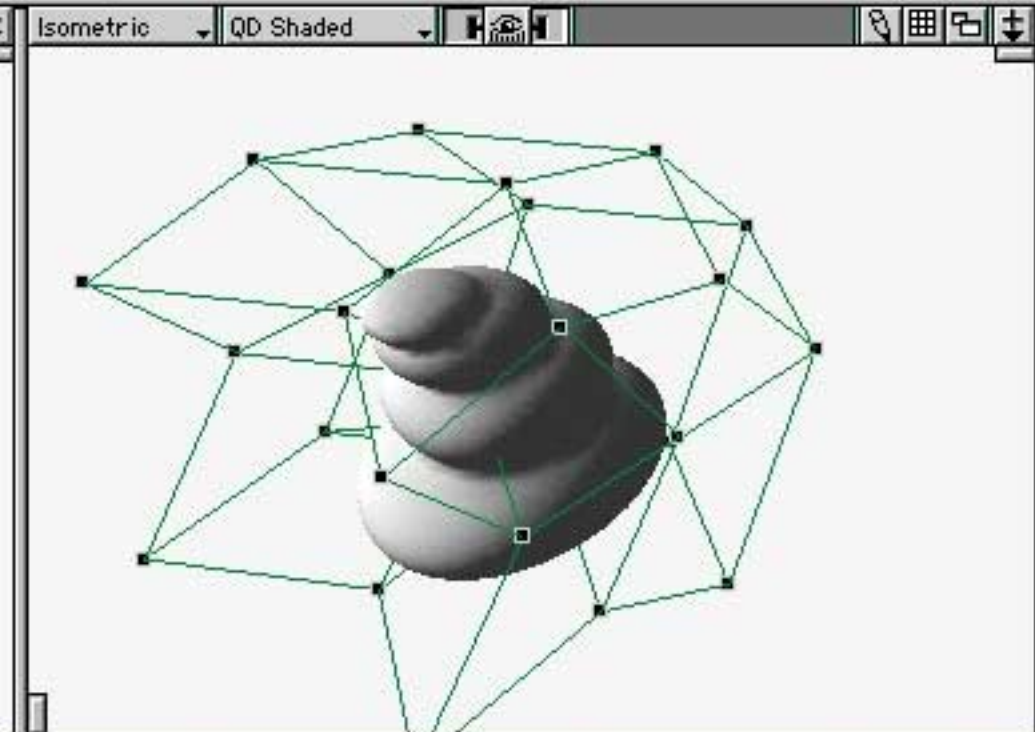
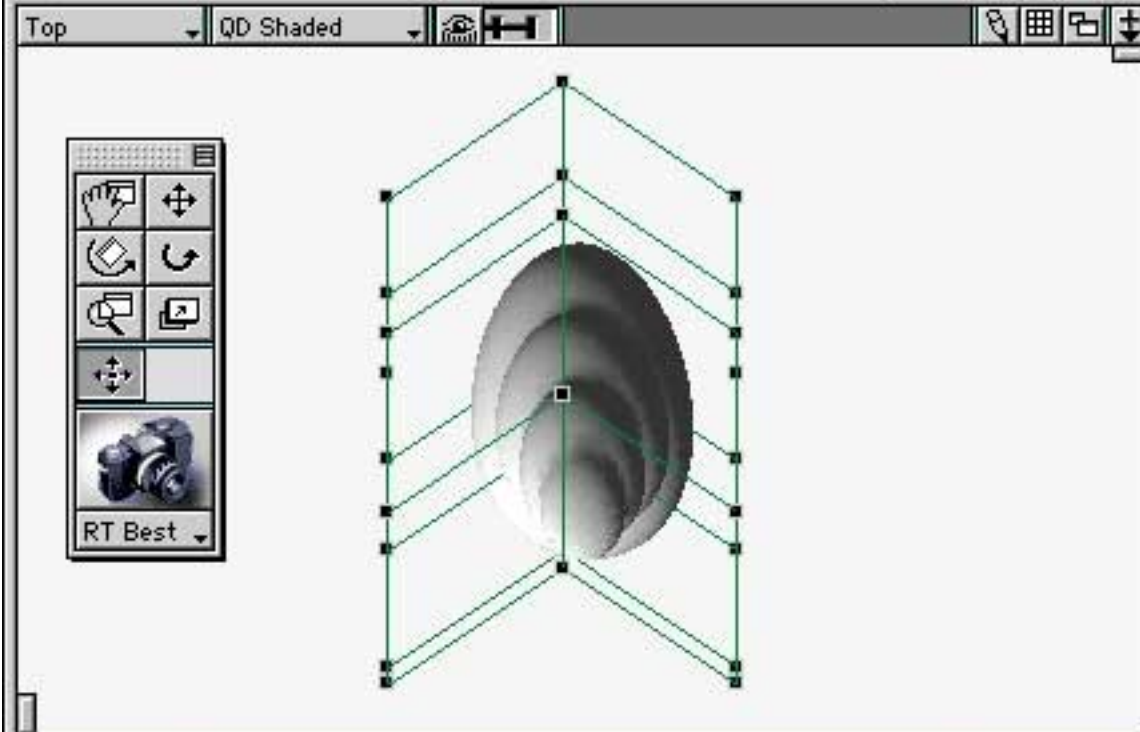


Isometric

QD Shaded

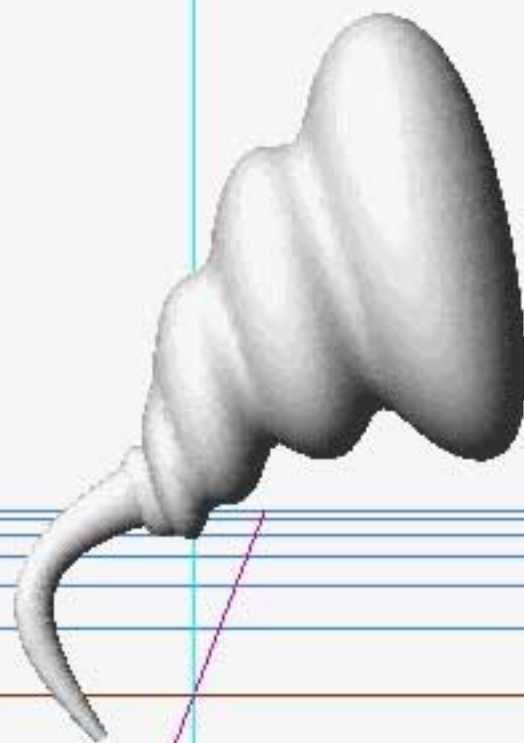






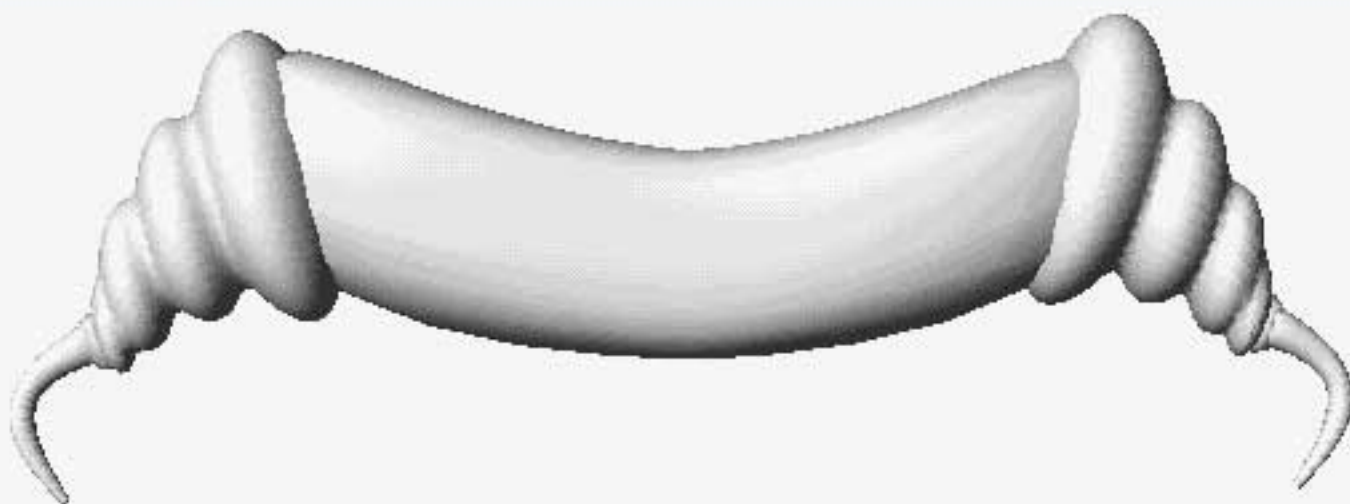
Right

QD Shaded



Right

QD Shaded



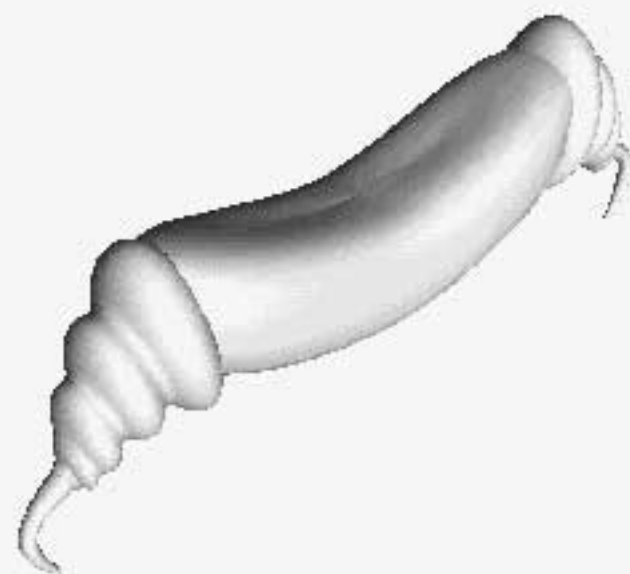
Front

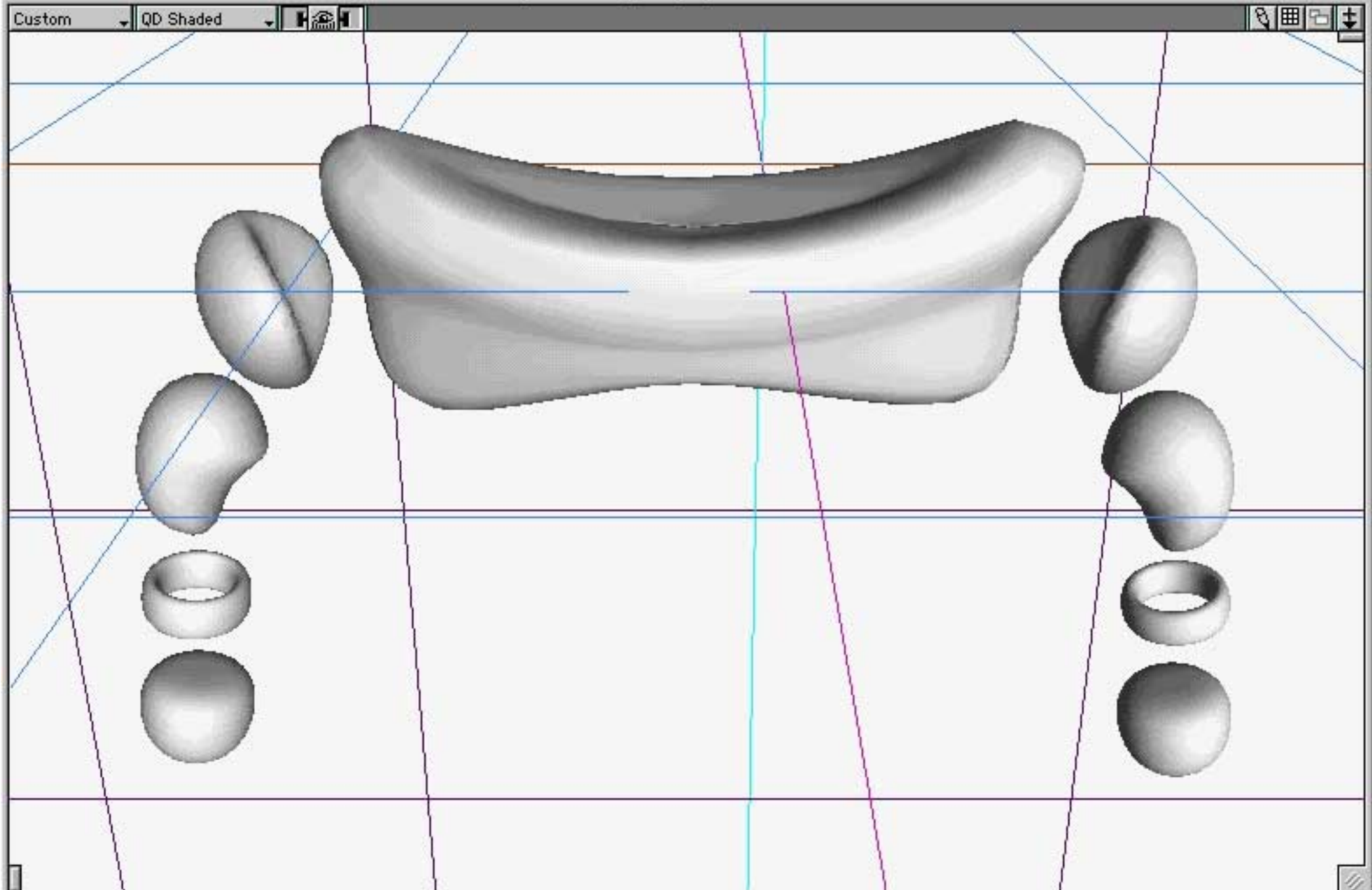
QD Shaded

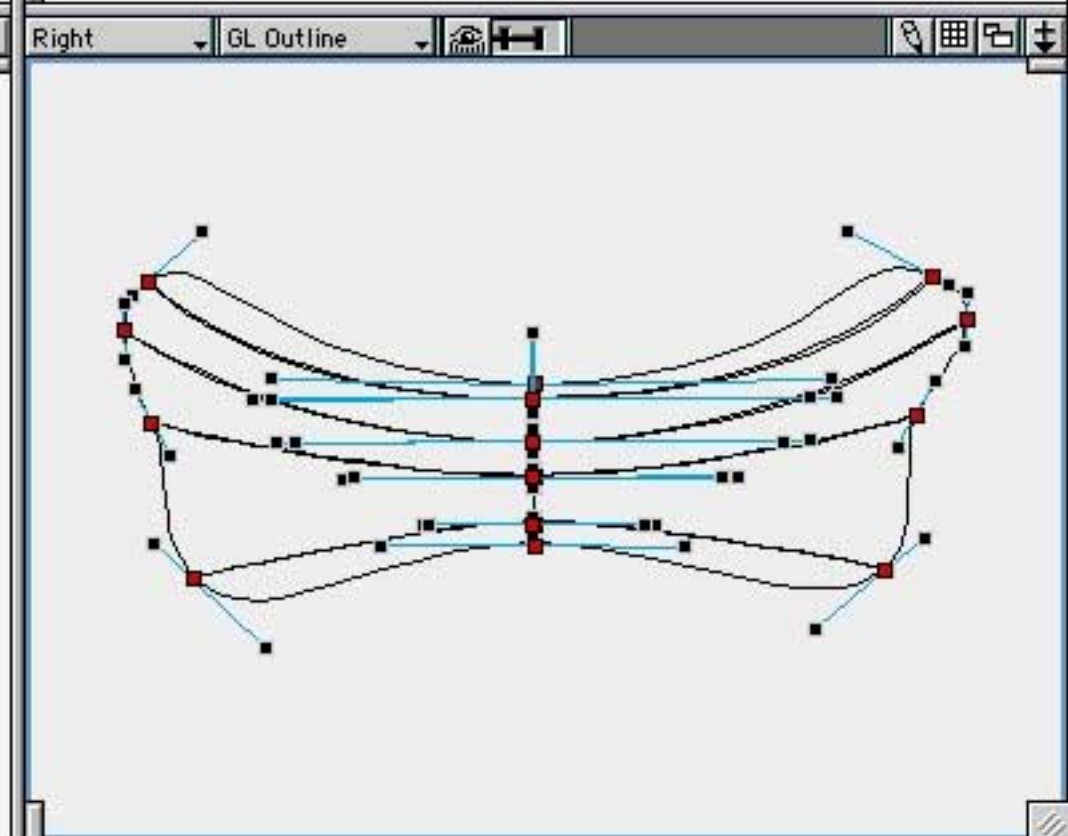
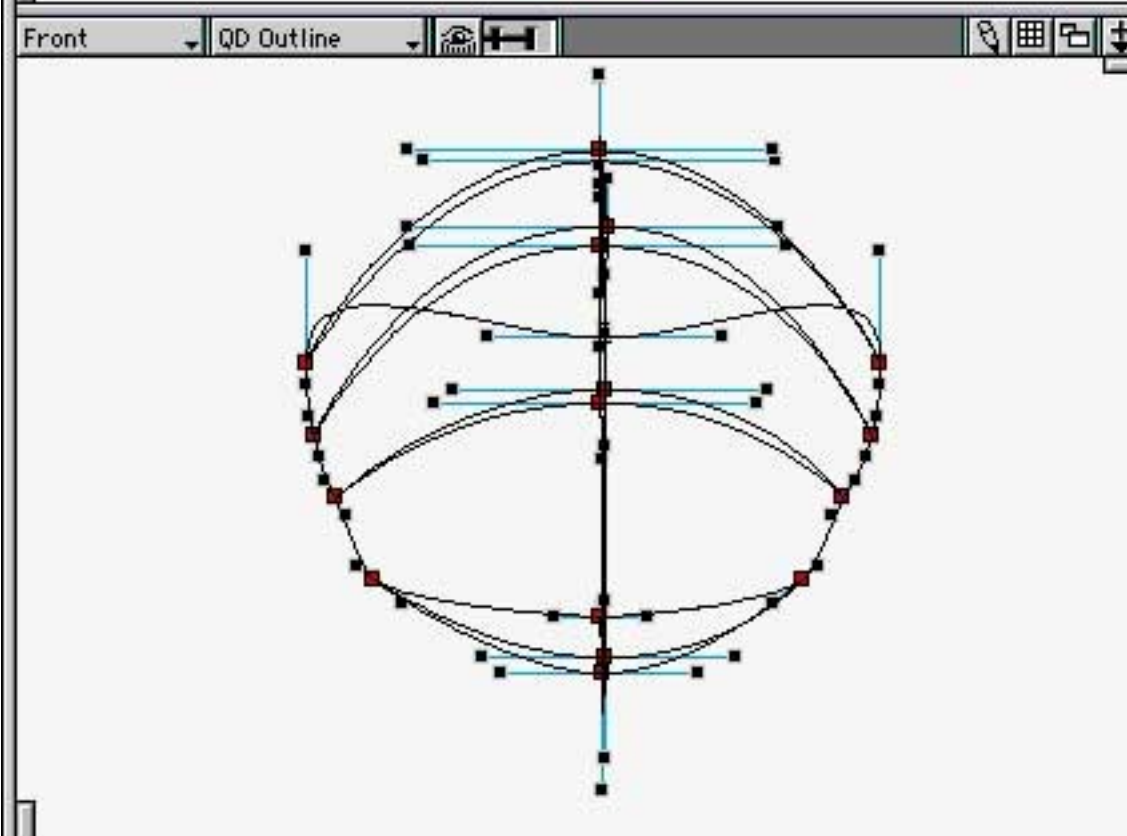
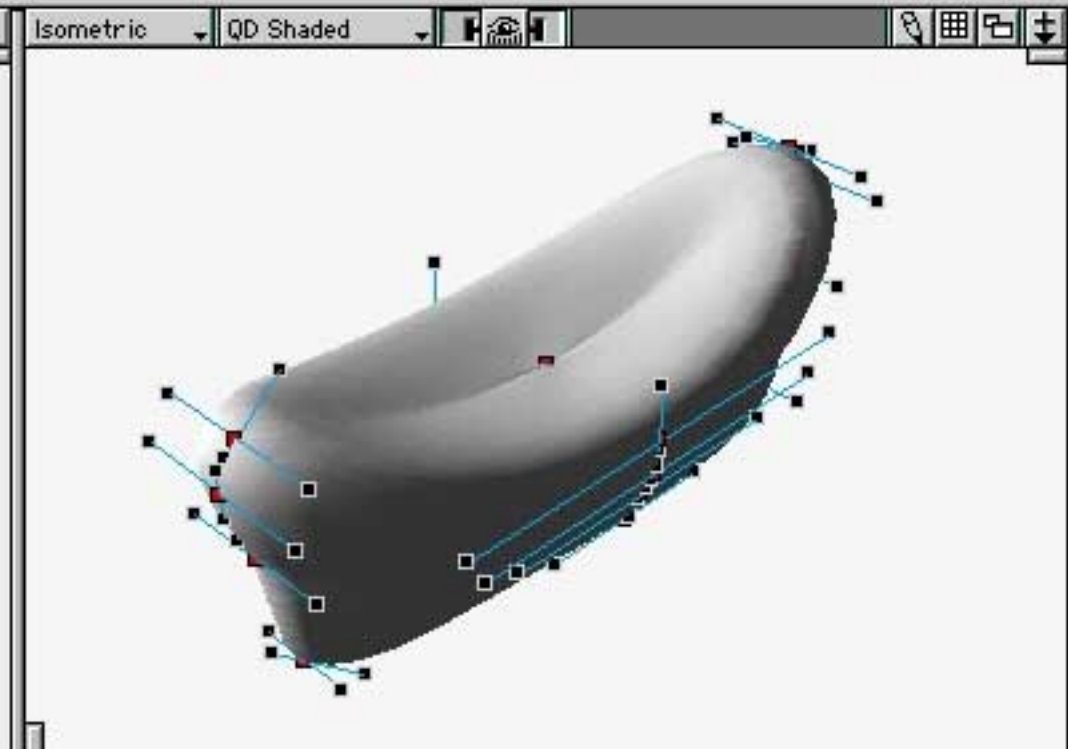
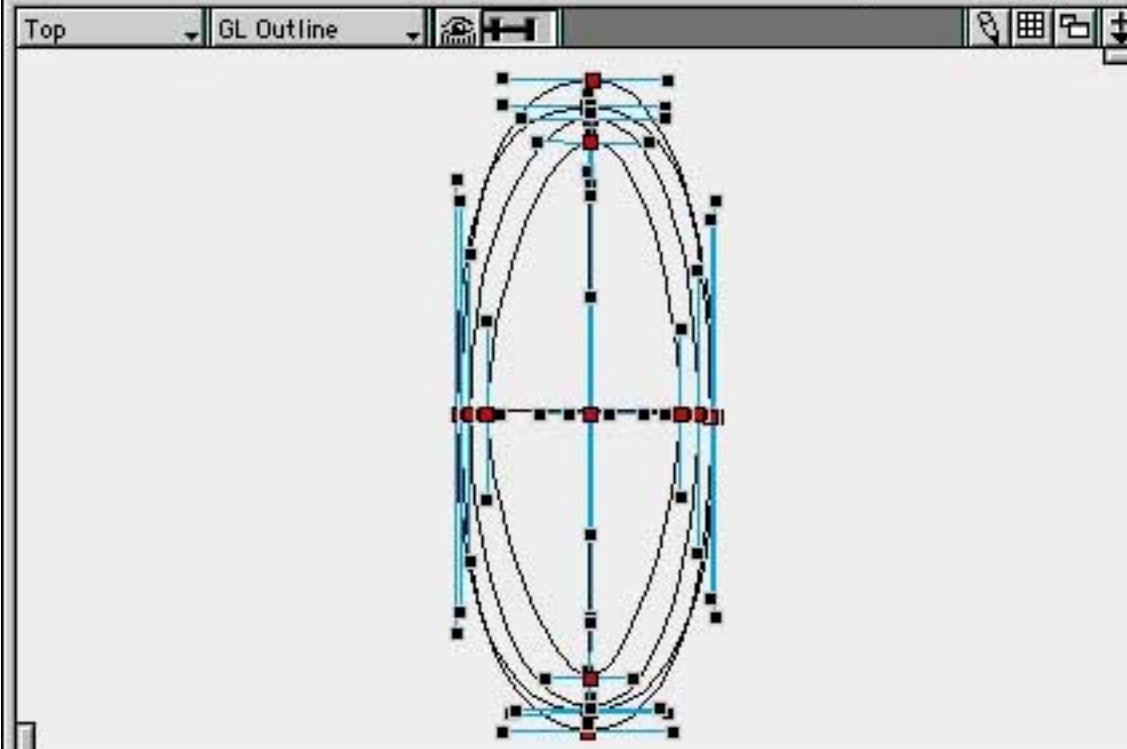


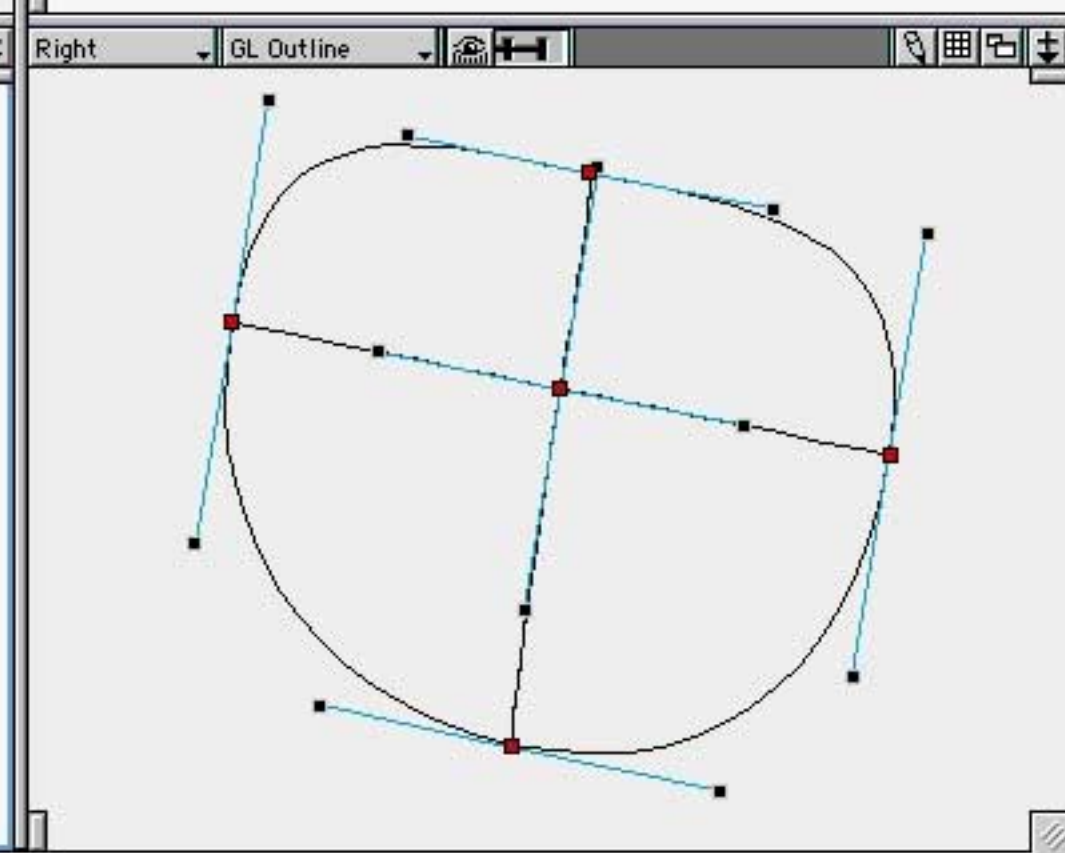
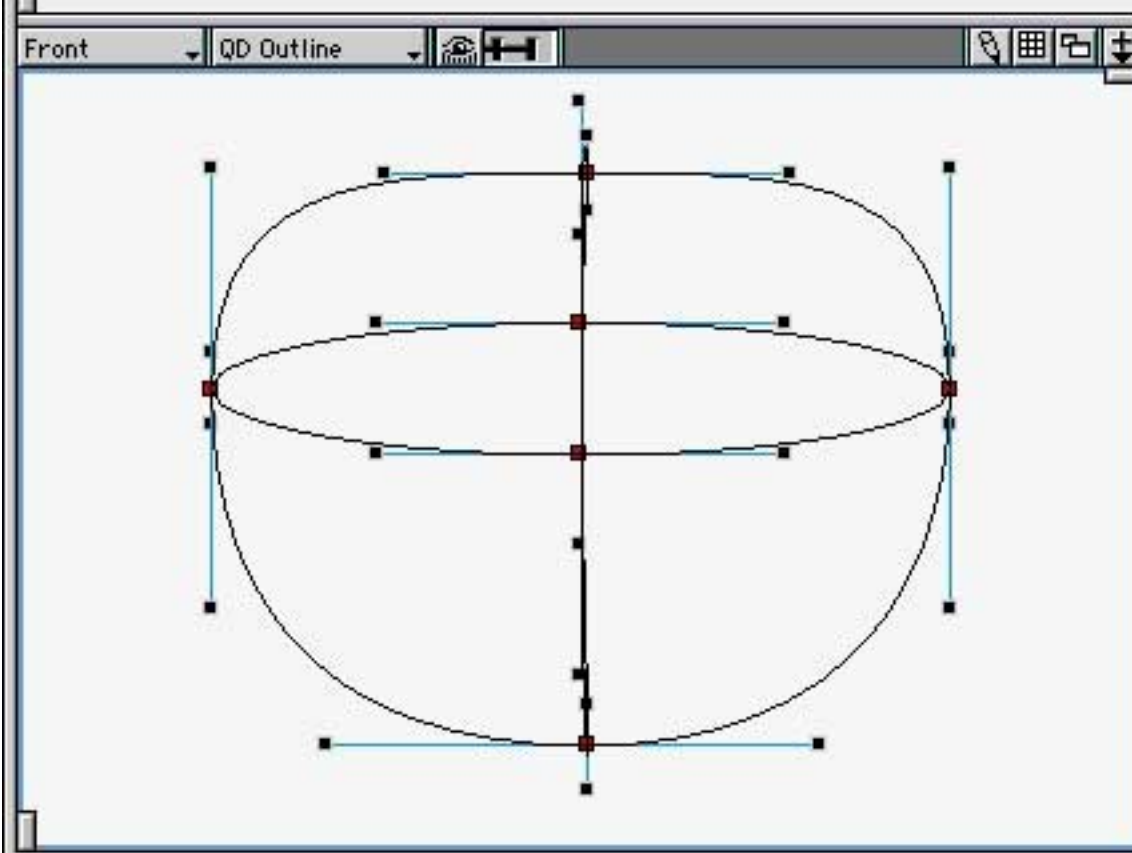
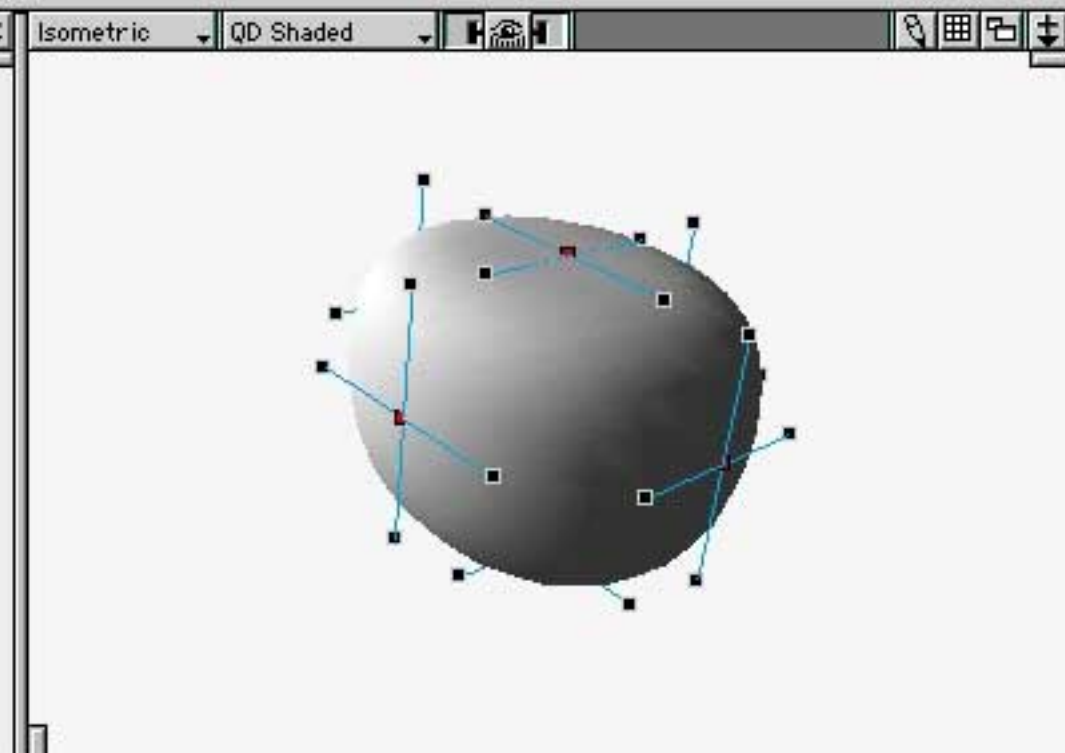
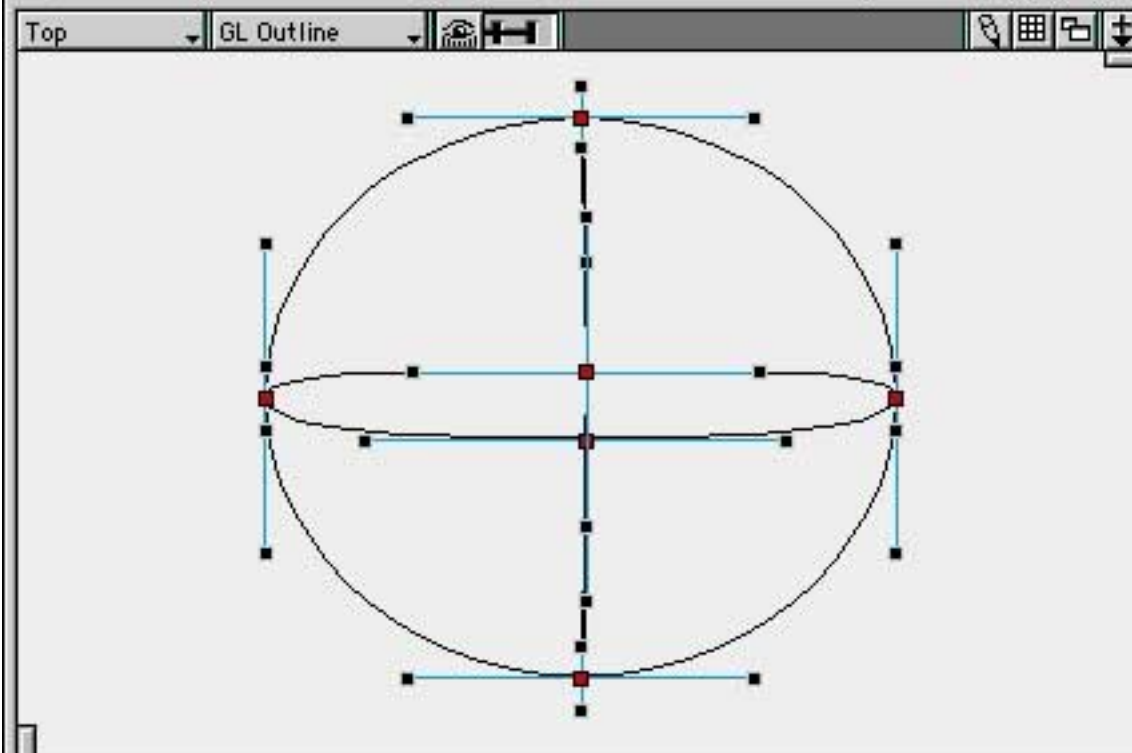
Isometric

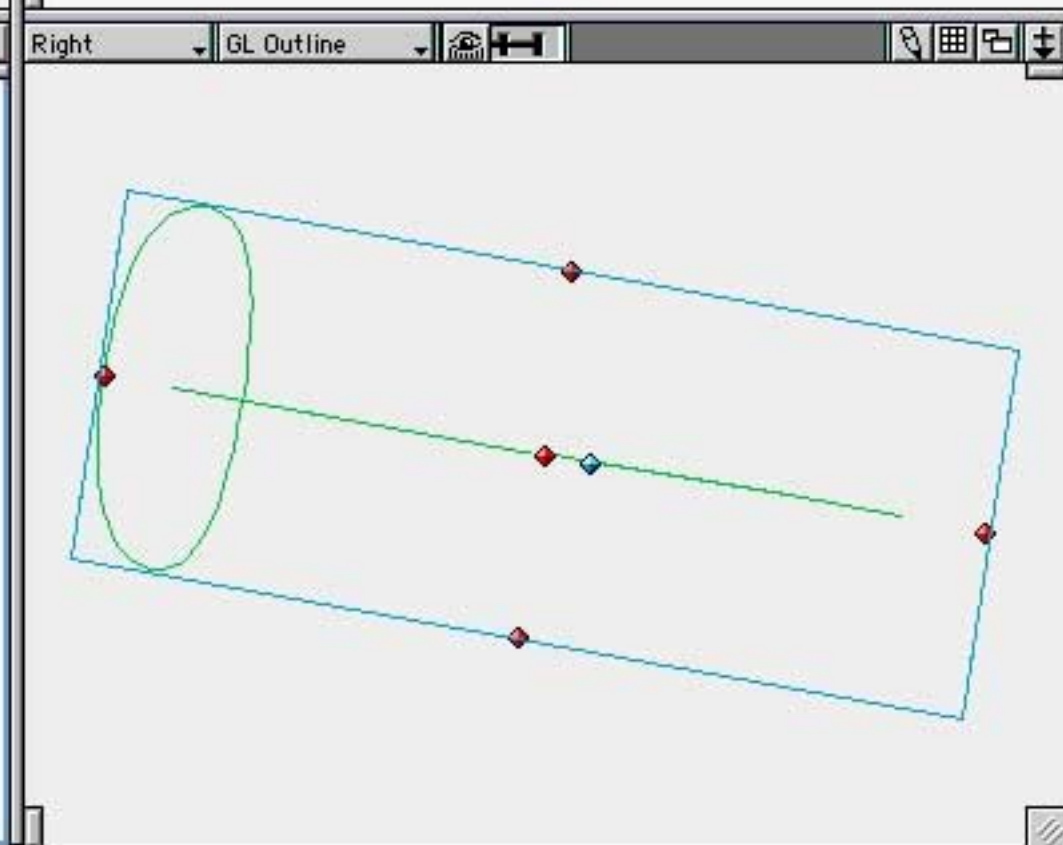
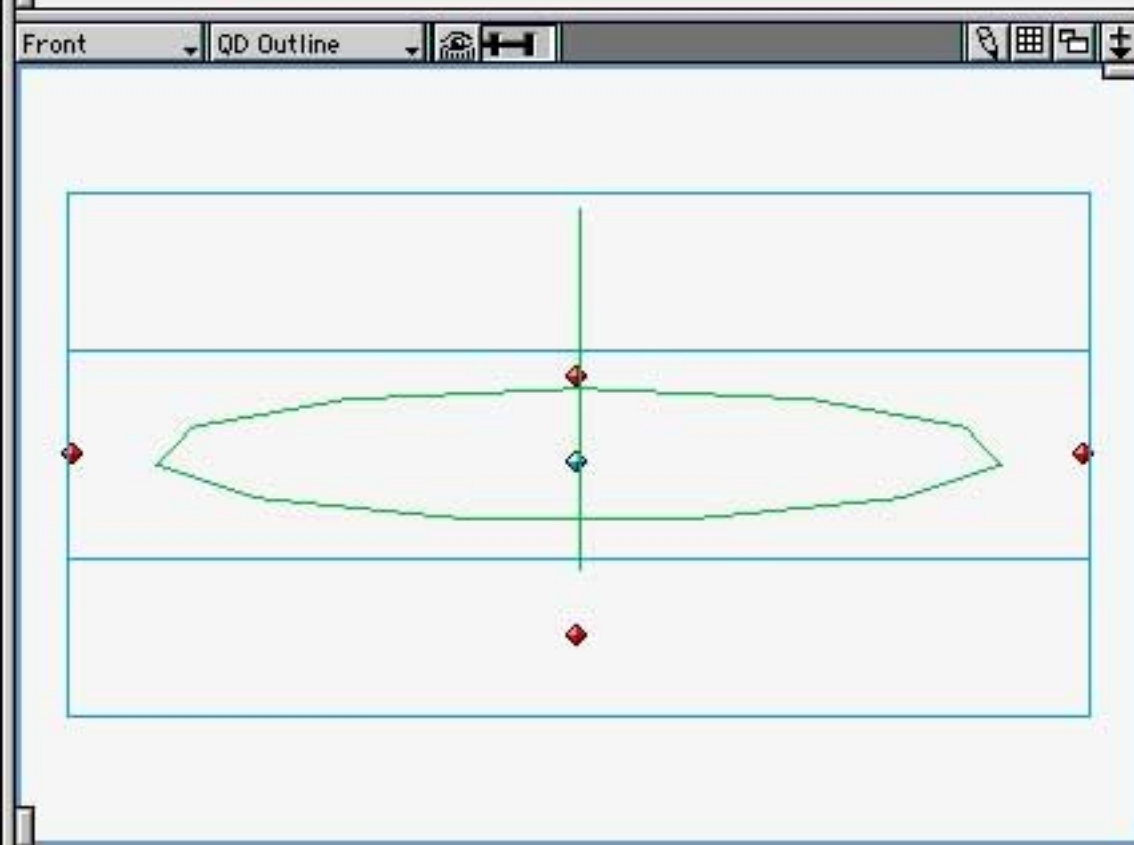
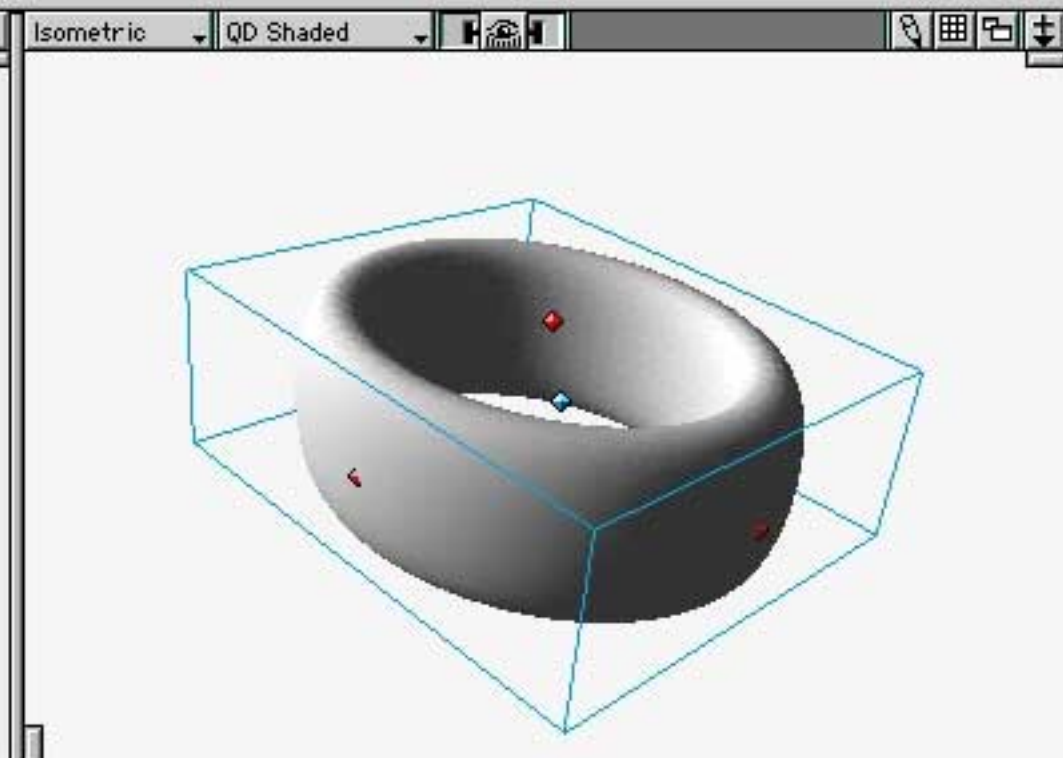
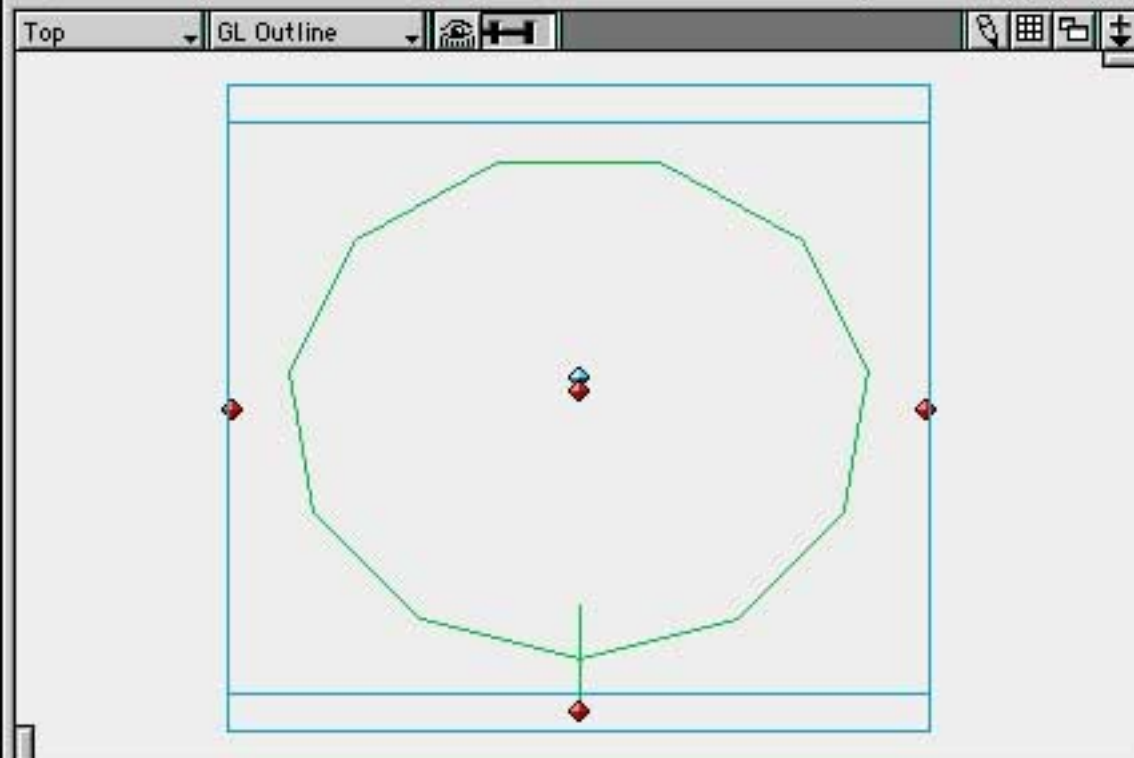
QD Shaded



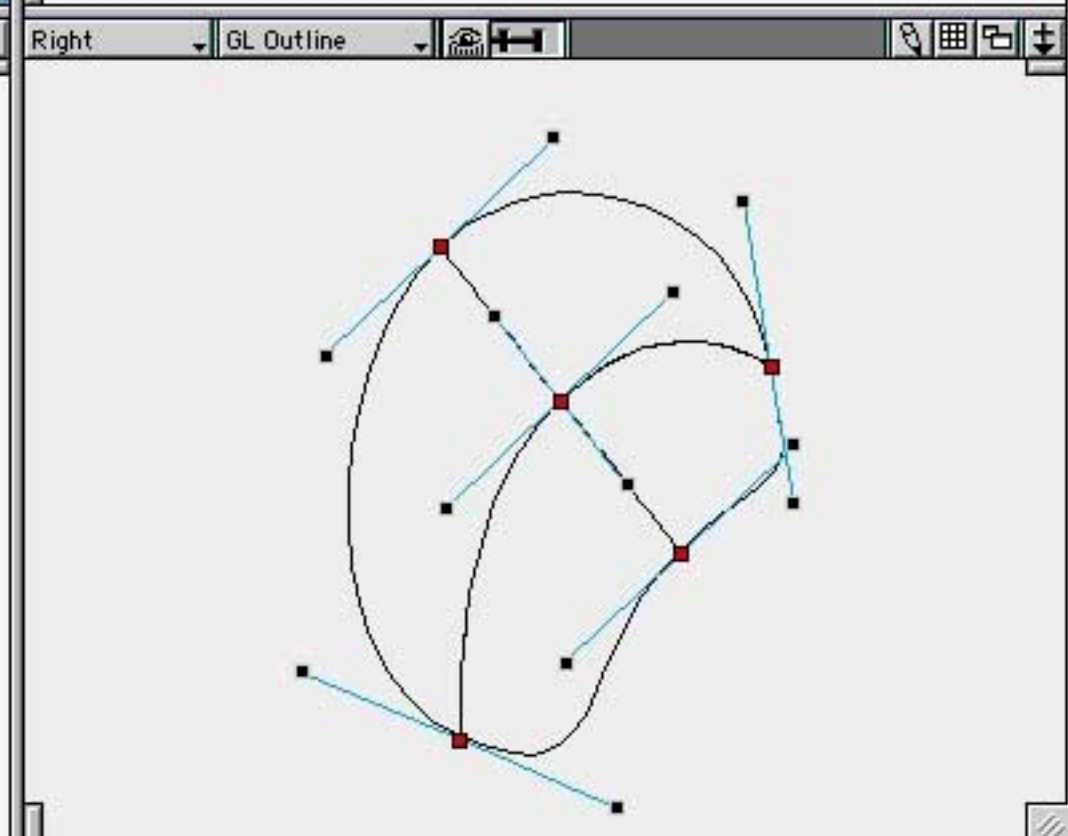
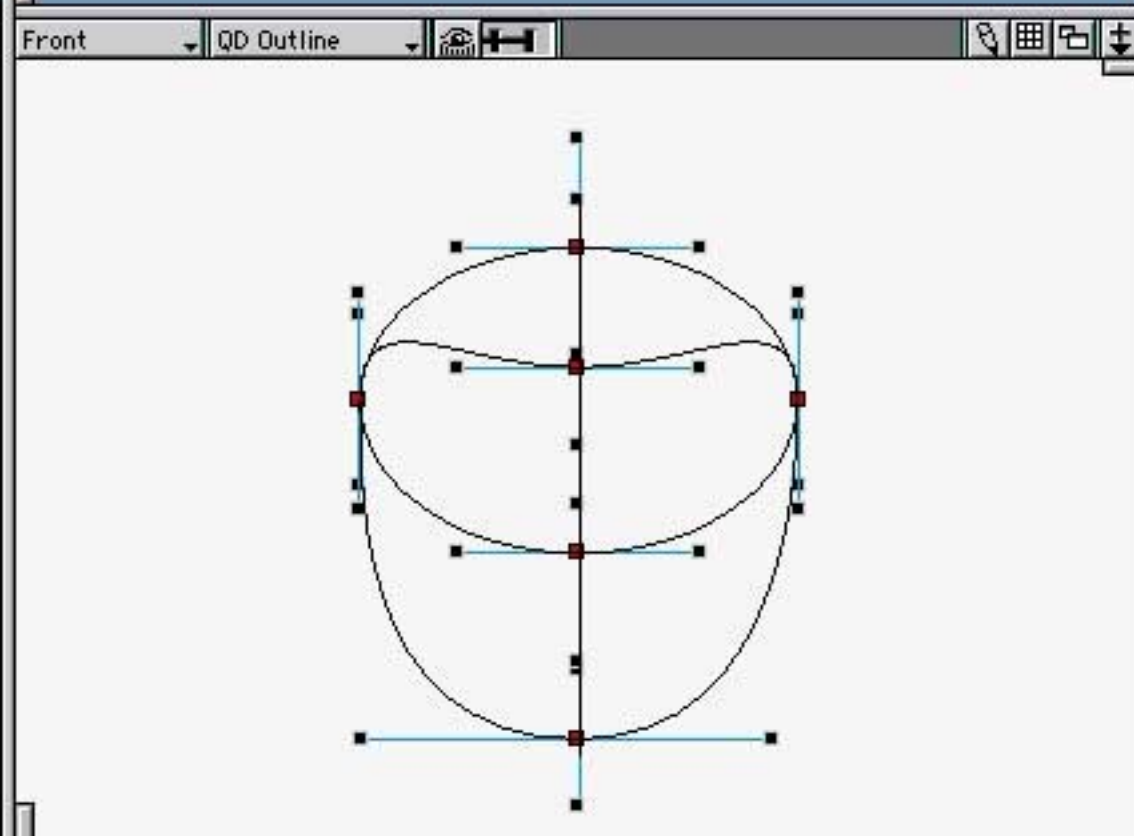
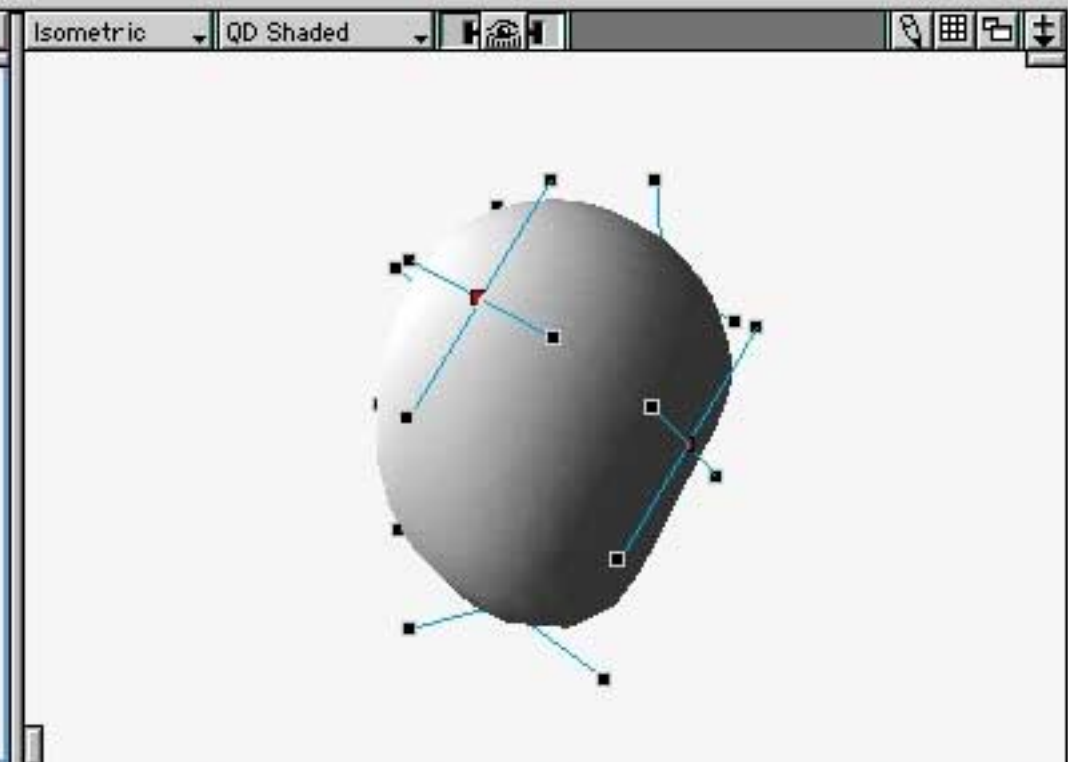
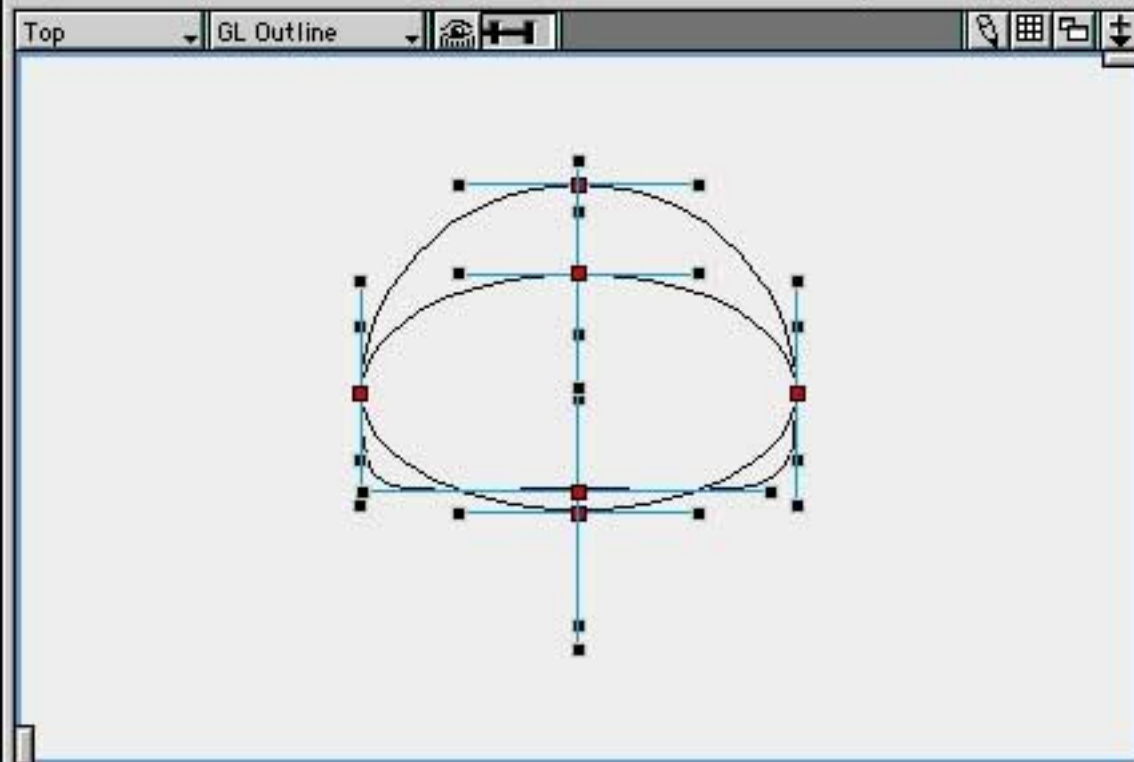




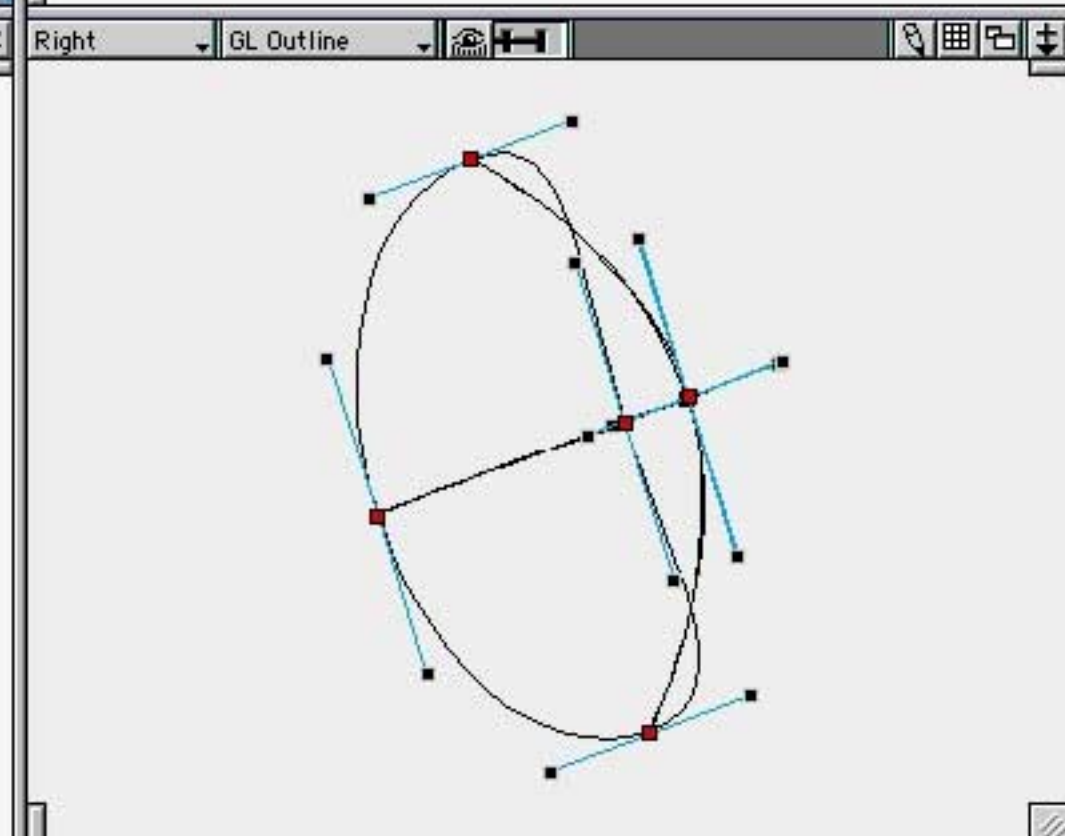
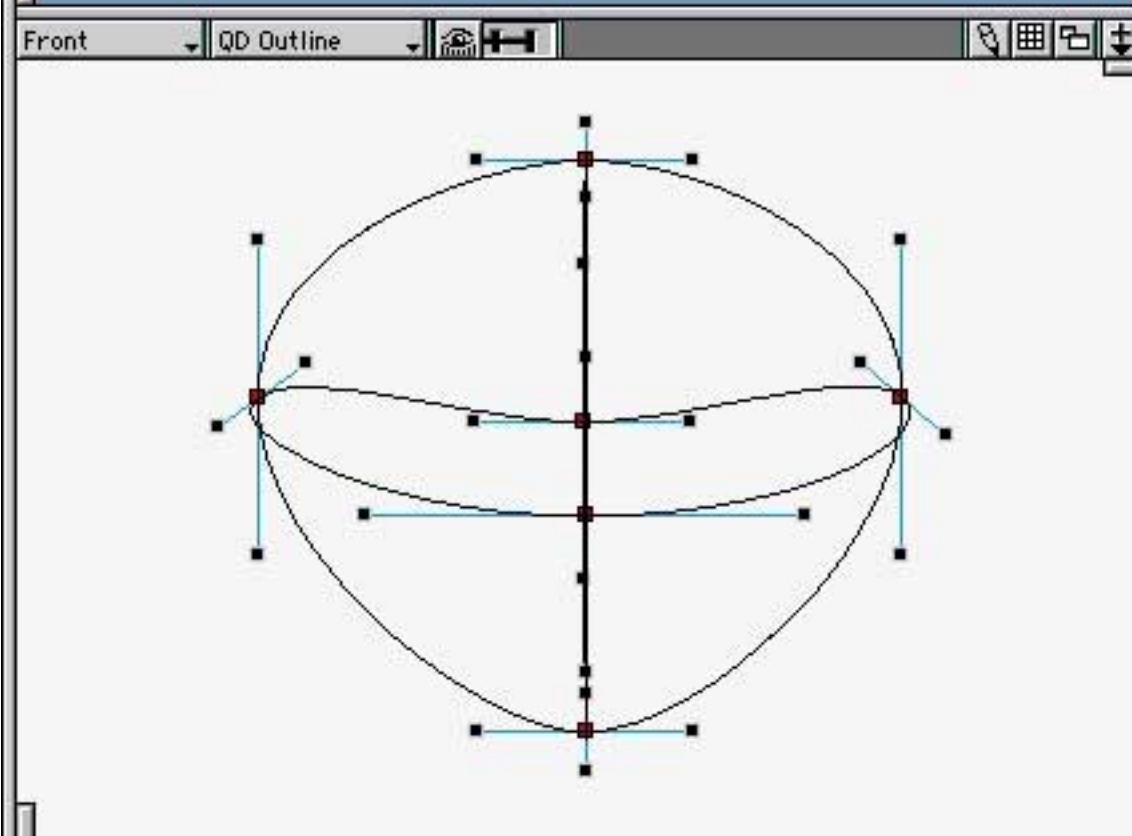
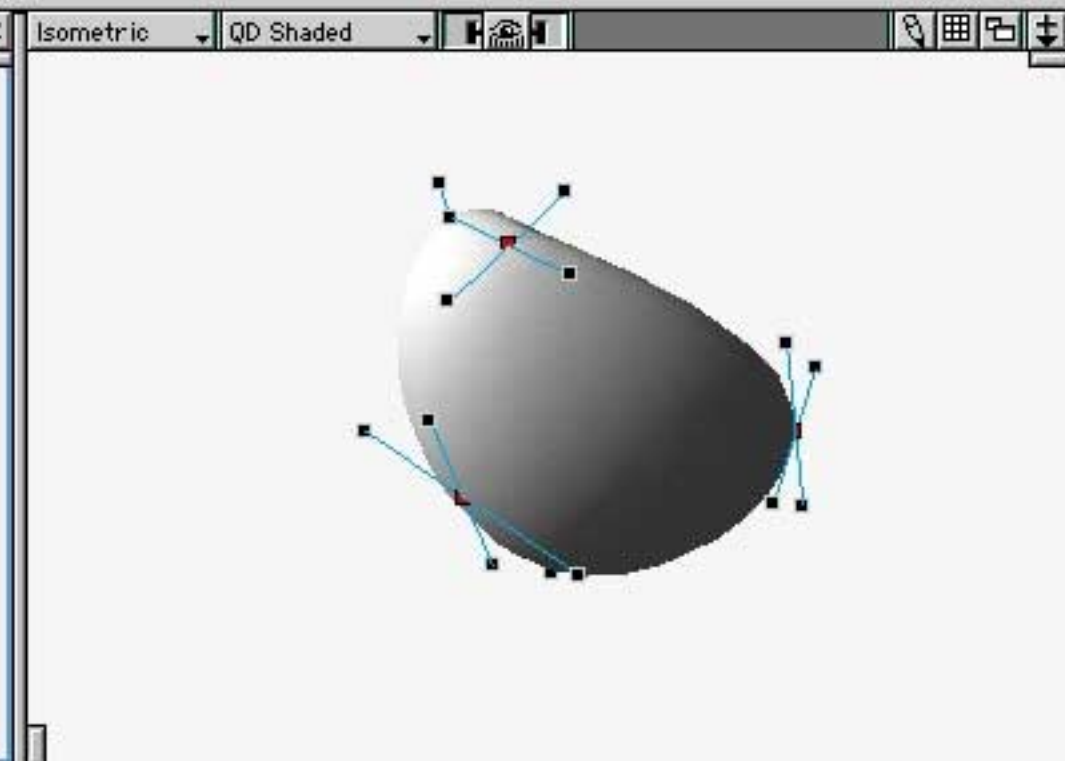
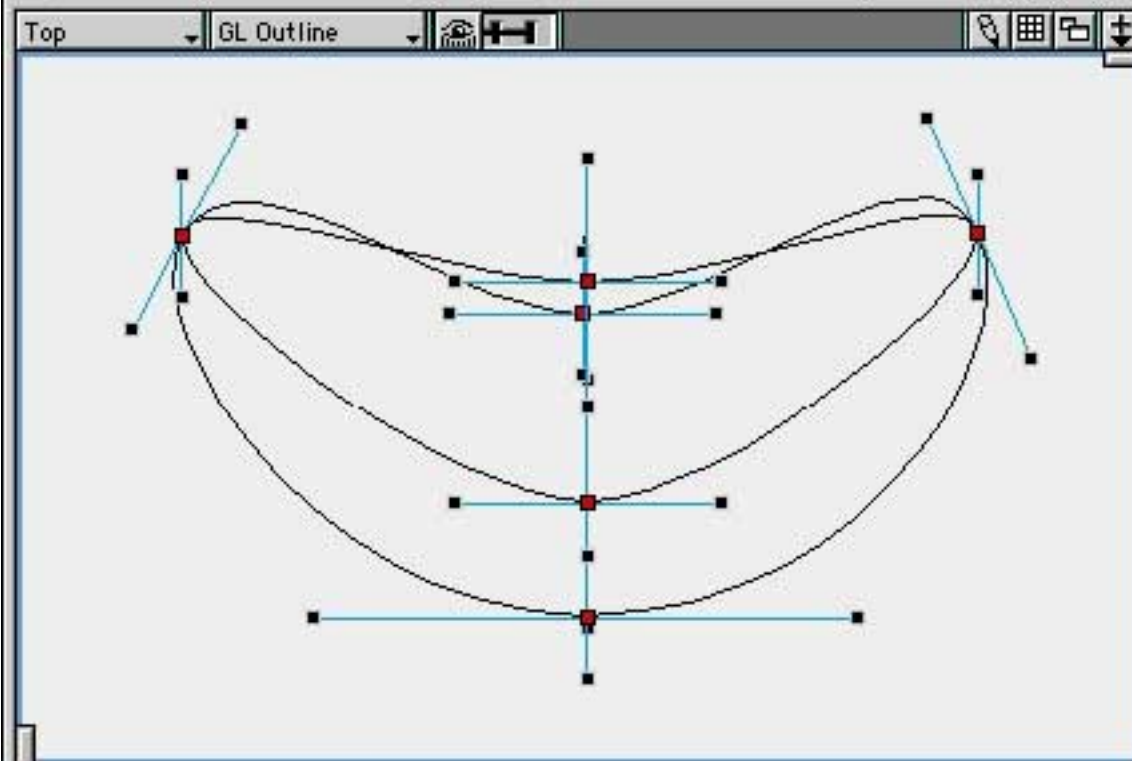




(Postman_04.spd) Feet Section



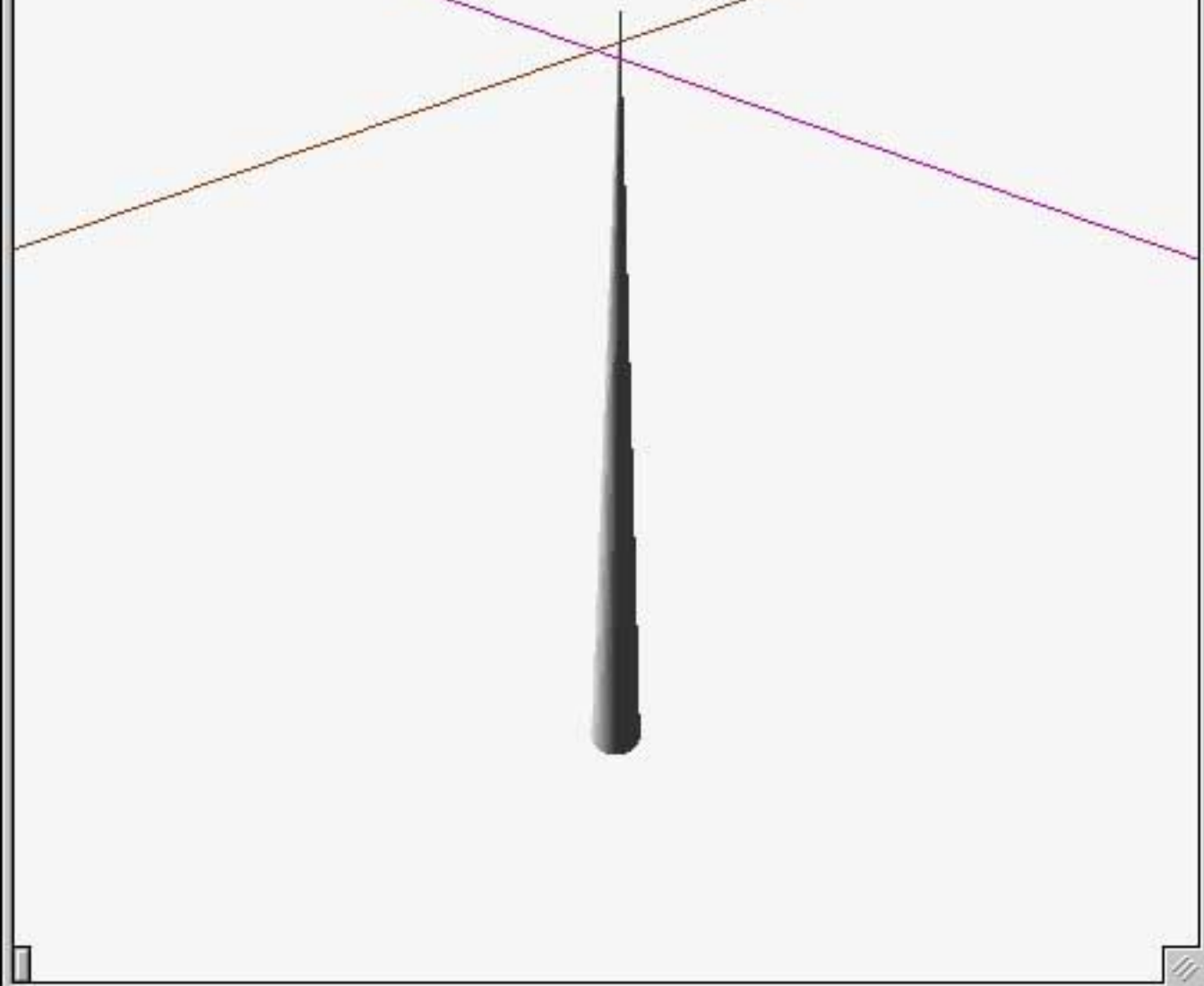
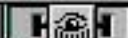
(Postman_04.sp0) Feet Section

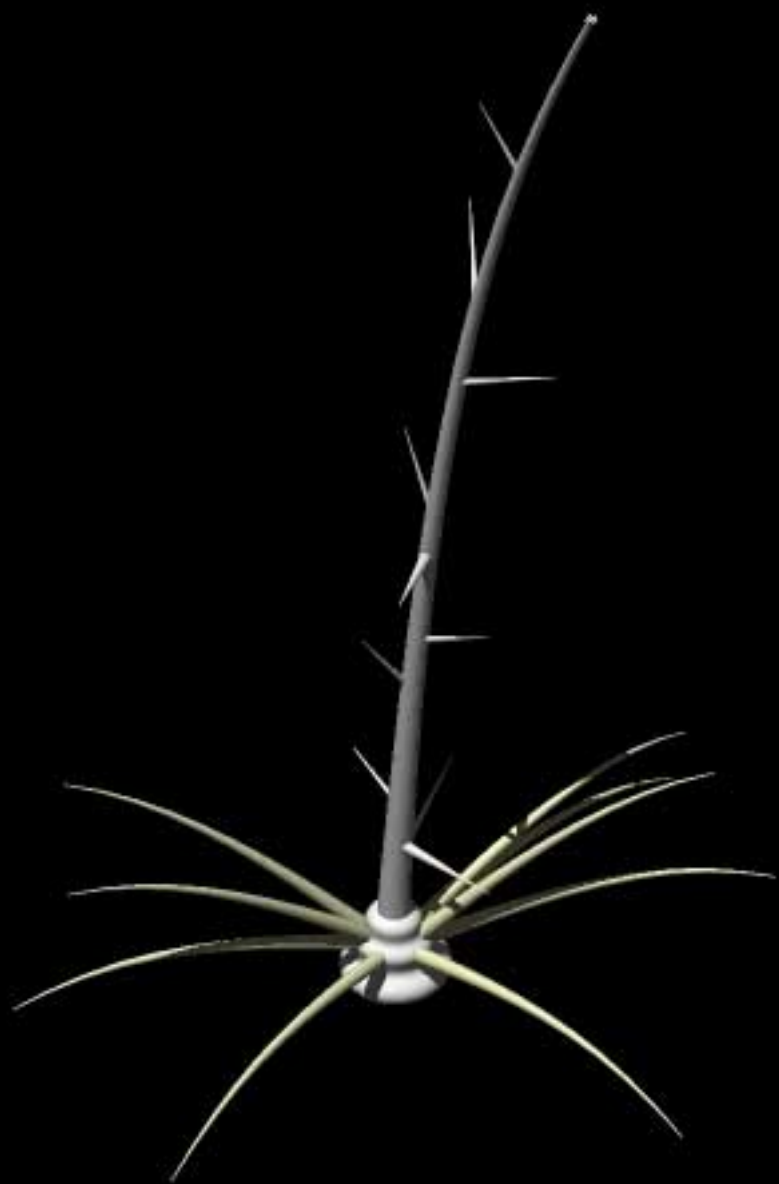


(Postman_04.spd) Shape-7

Isometric

QD Shaded





Object Properties

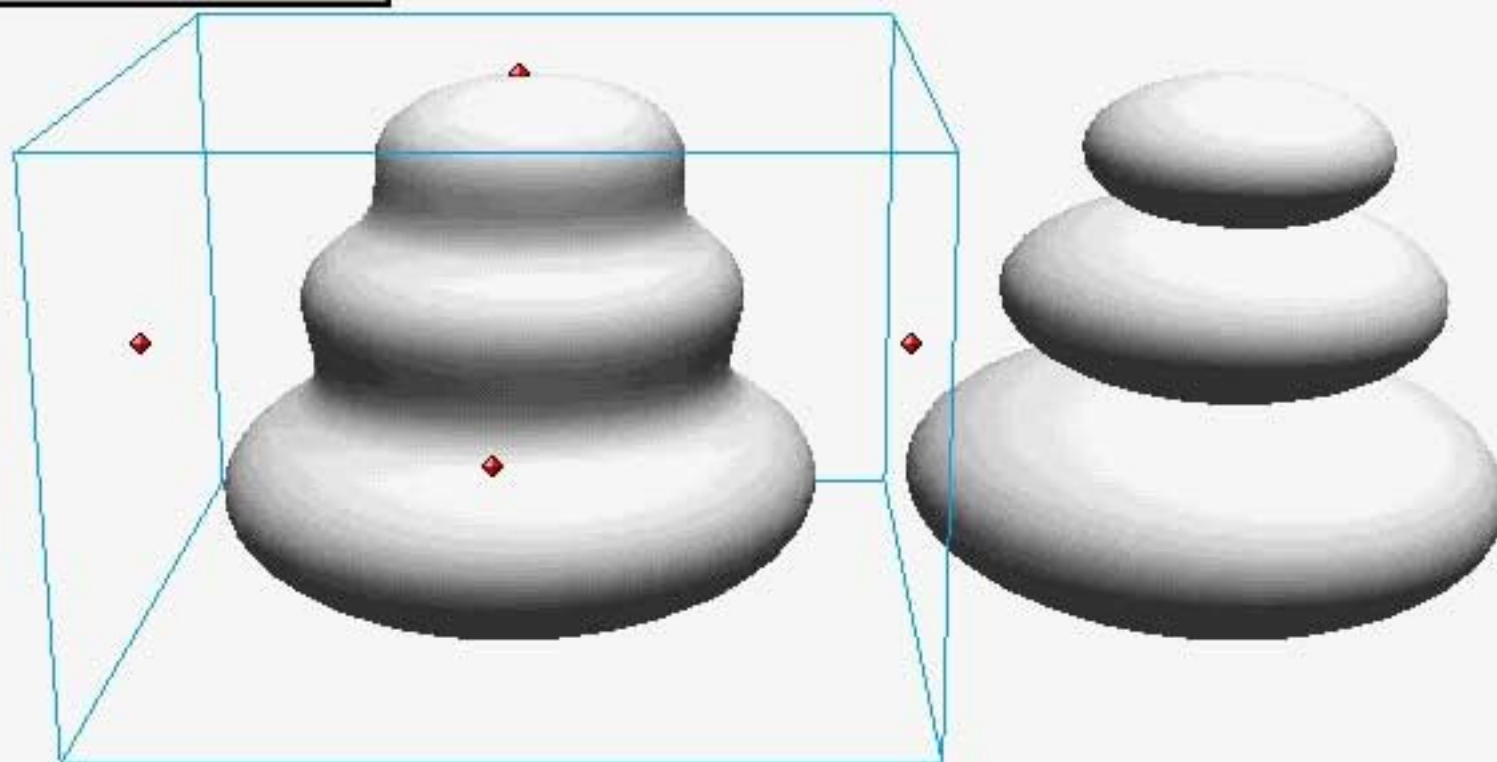
Object Transform Texture

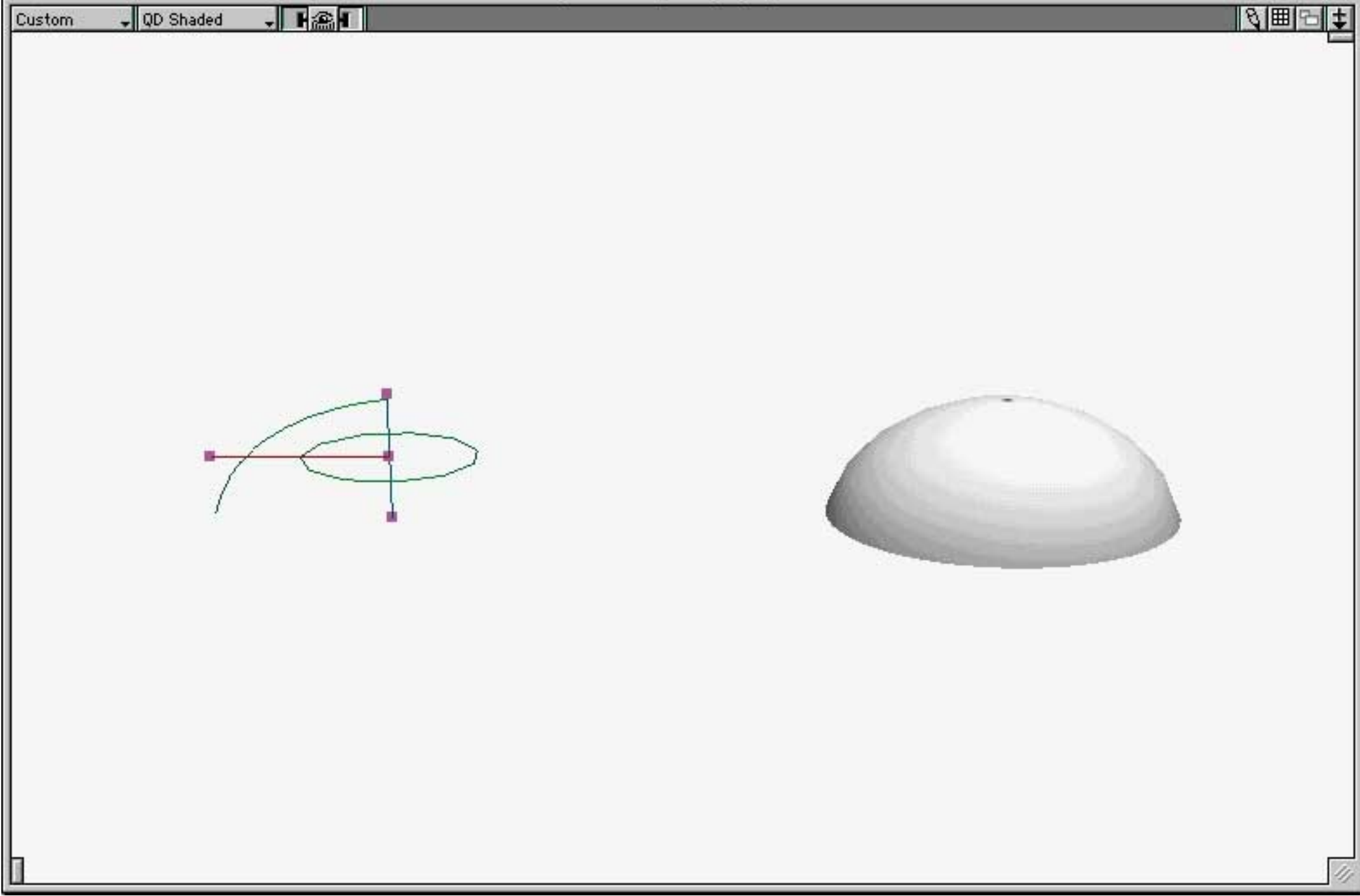
1.755

Complexity L H

☐ Absolute

☒ One sided





Hair

Edit at: ☐ Current time ☒ All time ☐ Custom

00:00:00:00

Hair-1

Copy from...

Texture

☒ Radial placement

Color  Opacity 100.0 %



Length 0.65 in



Density 2000.0 %



Strength 98.0 %



Clumpiness 85.0 %



Clump Size 0.25



Chaos 100.0 % Seed 34



Compose maps

☒ Cast Shadows



Hair-1



Diameter 0.03 in



Taper 90.0 %



Curliness 0.0 %



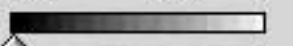
Curl Size 0.0 in



Nap 0.0 °



Lay 0.0 °



Compose maps

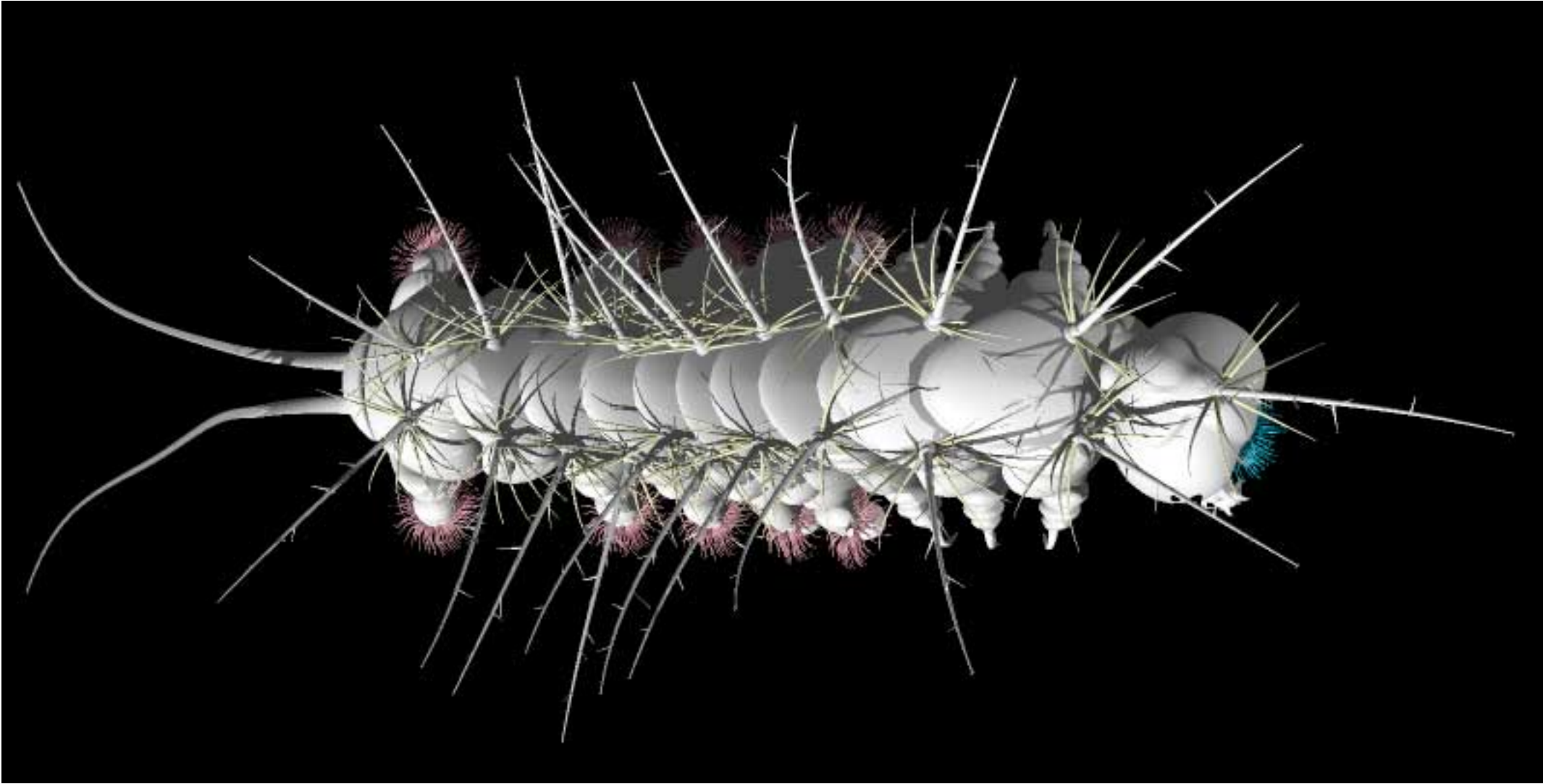
☒ Cast Shadows

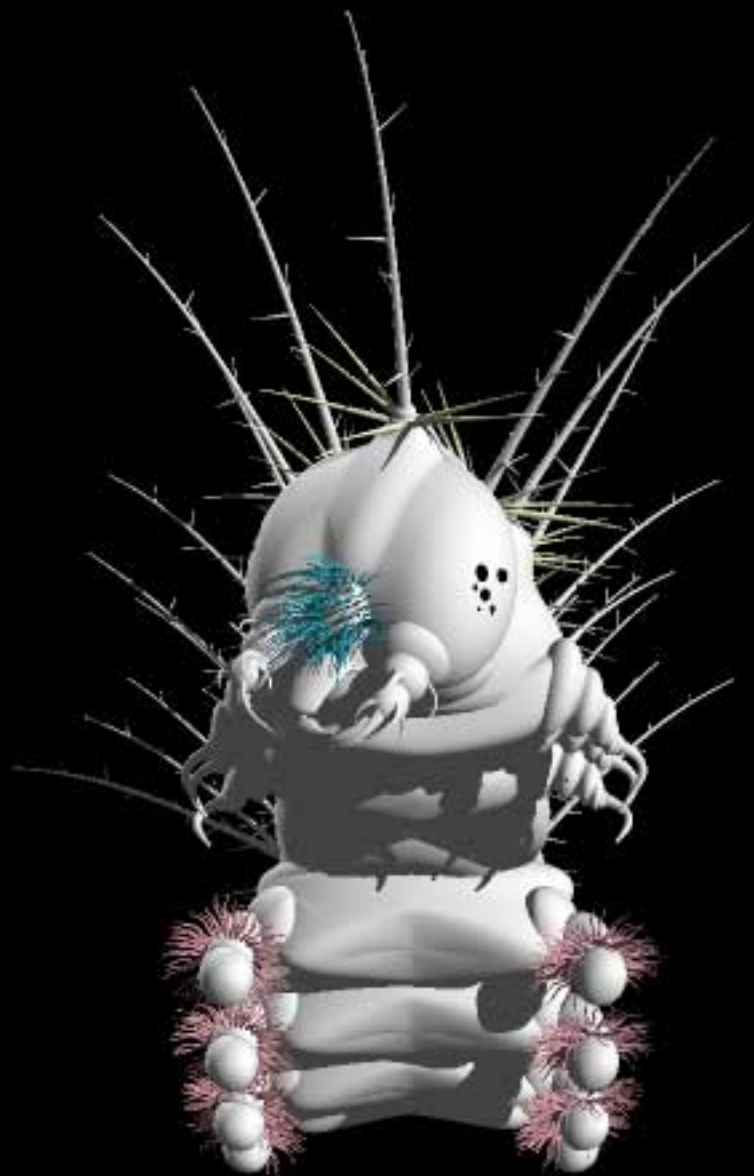
Apply

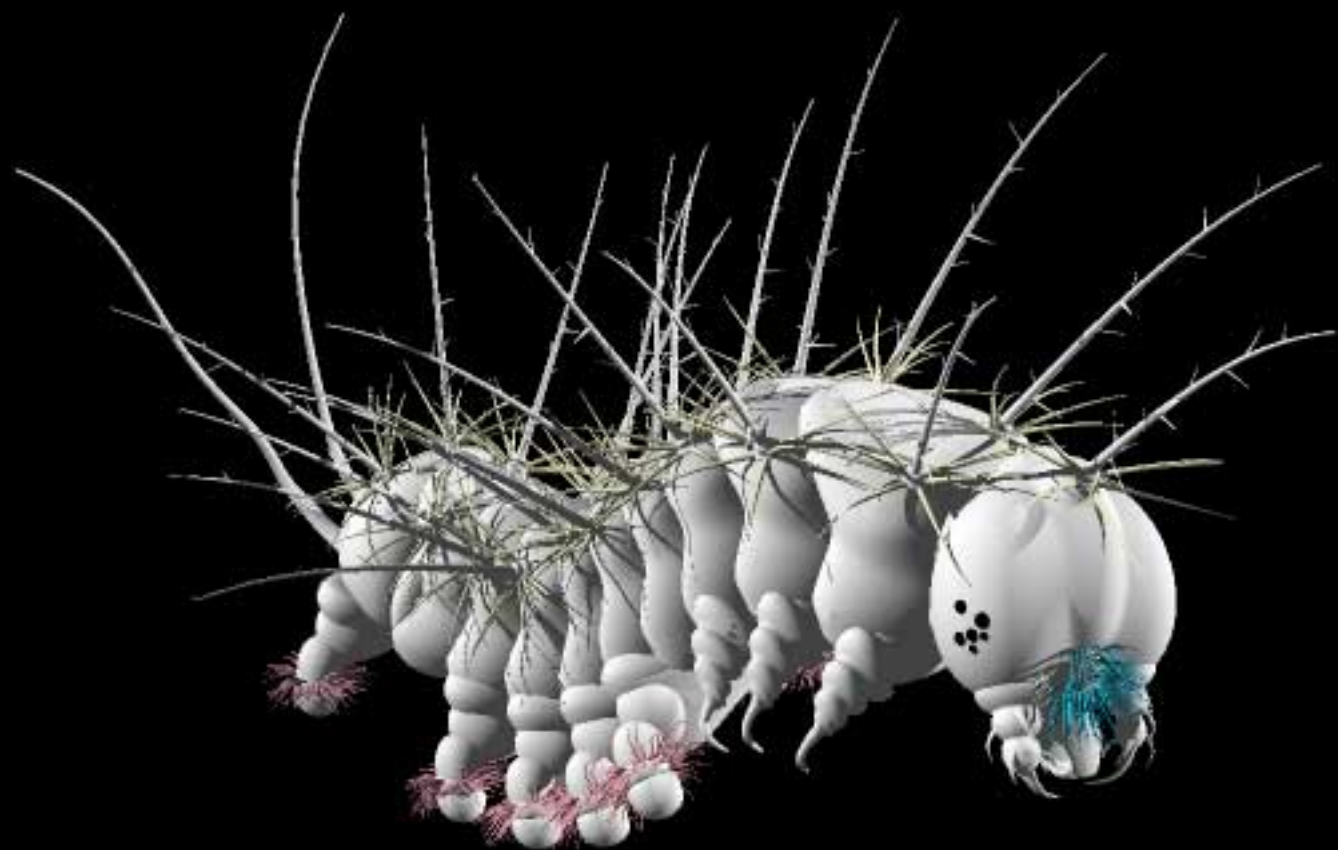
Cancel

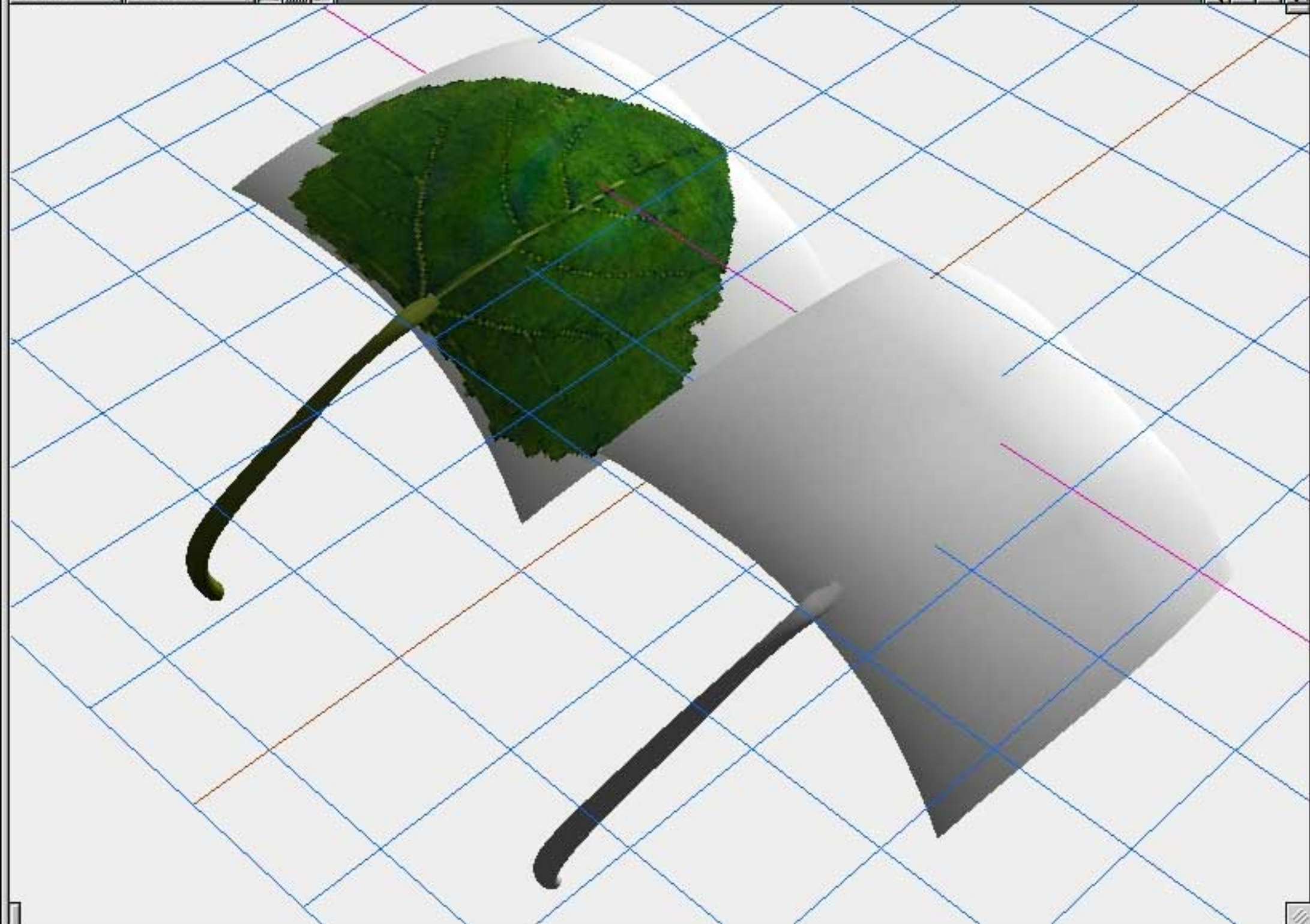
OK











Leaf_RGB @ 100% (RGB)



100%

Leaf_STEN @ 100%



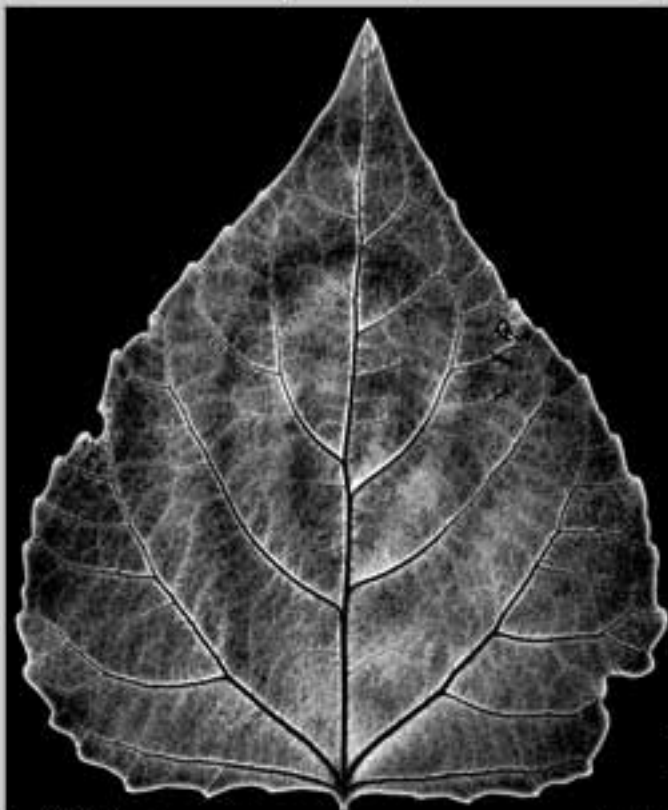
100%

Leaf_BMP @ 100%



100%

Leaf_GLOW @ 100%



100%



