

## Modeling a Beating Heart:

This idea and some of the information was spurred on by a blog posting I found here: <http://eviljaymz.com/?q=node/38>. I highly recommend you check out this post because it may provide some insight for you that I may have missed. The author at eviljaymz also modeled the heart different that I did, so his link provides a different way to model.

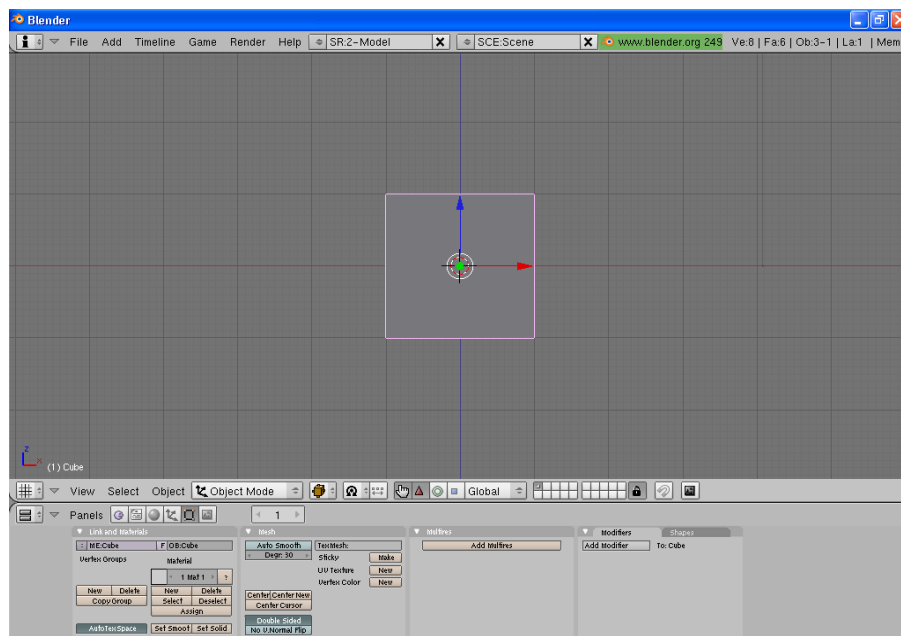
\*\* I will throw in this disclaimer, that the author for the aforementioned site is in no way affiliated with me, and his views or comments on anything do not represent my own.

## Anyway, Modeling and Animating a Beating Heart:

For this tutorial, I will be using Blender 2.49-2, and I will assume that you will be using a 3 button mouse. If you do not have a three button mouse, there are workarounds for that particular dilemma, but I do not want to devote a large amount of time to discussing them.

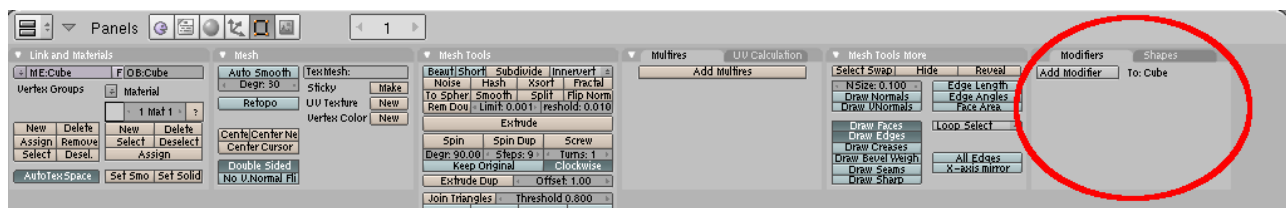
### Part 1: Modeling the Heart:

- 1.) Open Blender Like Normal, and unless you have switched up your default settings, you will be greeted with our cube like in the screen below.



- 2.) We will be modeling a very basic (almost cartoony looking) heart using extrusion, a mirror modifier, and a subsurf modifier. Leave the Default Cube as it is, since we will be using it. My system opens Blender in "Object Mode," so please *TAB* (press the tab key) to enter "Edit Mode." (I will not take a screen shot of this step, since it looks pretty much the same.)

- 3.) In the Panels Window (below your cube and 3d space) select Modifiers → Add Modifier → Mirror.

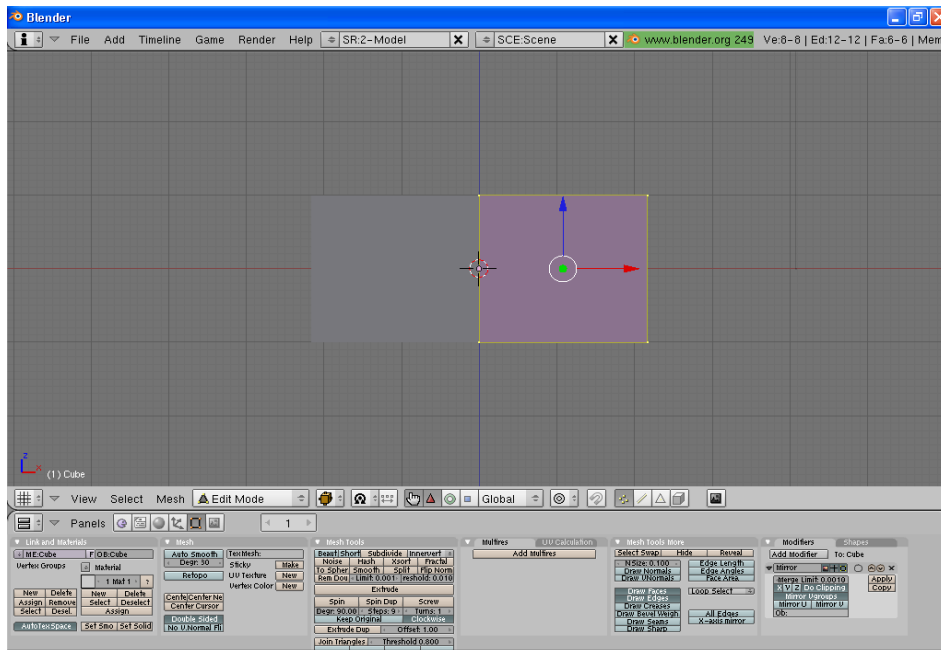


- 4.) Information should show up under that Modifier. Click on “Do Clipping,” and then we’ll get into the basic modeling portion.

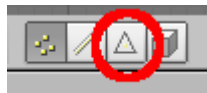


*By the way, the Mirror Modifier is a great way to only do half the work. You model half and the computer models half. I'm a huge fan.*

- 5.) For the sake of ease, grab the Red Arrow in the middle of your cube. (your entire cube should be selected... If it's not press the 'A' key until the cube is pink.) Drag the arrow to the right. A gray box should also make it's way to the left by itself. Stop pulling the arrow when you get the far left side of the cube over the z-axis (blue line).

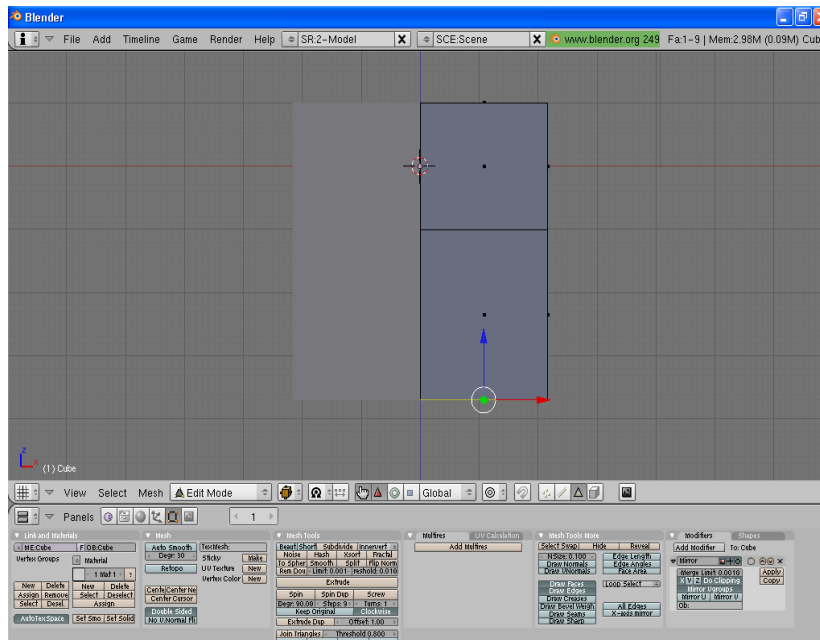


- 6.) Rotate your view slightly using the Middle Mouse Button (MMB, or the little wheely thing in the middle of your mouse... push and hold it until you can see the bottom of your cube.) Switch to face select mode (the little triangle button at the bottom of your 3d view).



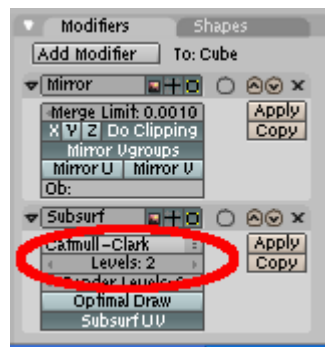
- 7.) Right click on the bottom face of the figure to select it.

8.) Press the e-key to extrude the face, and stop when you get the image to look something like the one pictured below:

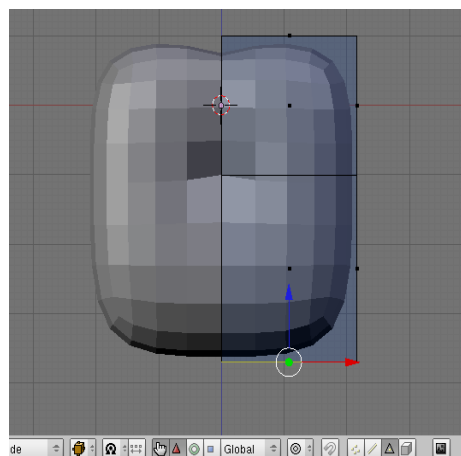


*(Remember scroll up/down to change how close you are to the object in your view)*

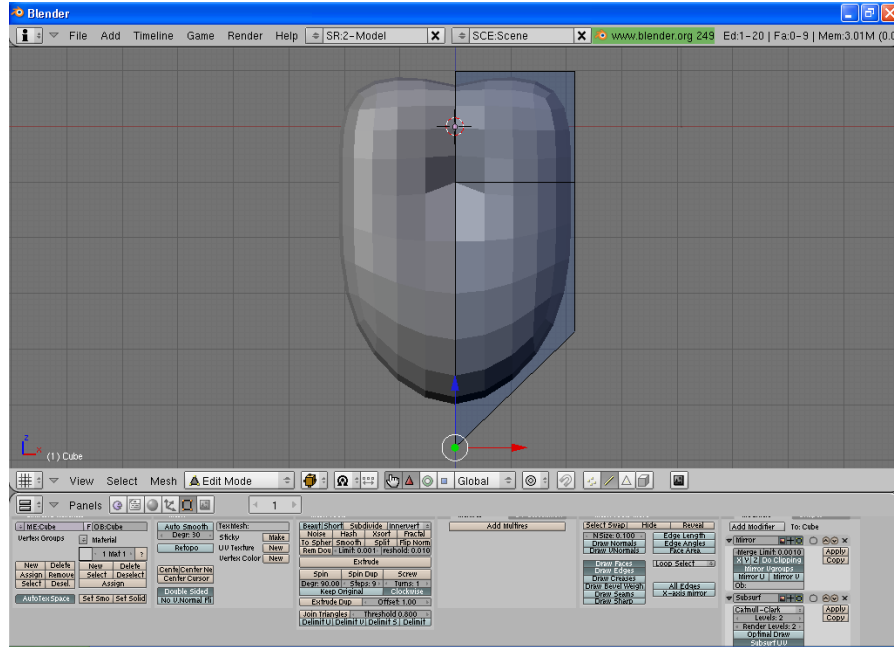
9.) In the Modifiers Section again, add a Subsurf Modifier, and change the levels from 1 to 2:



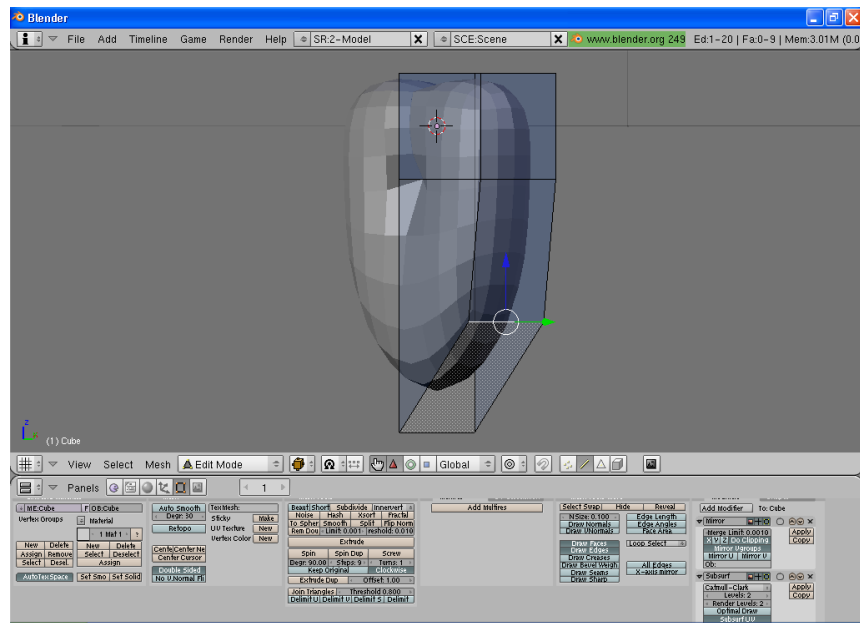
You should have something like this image:



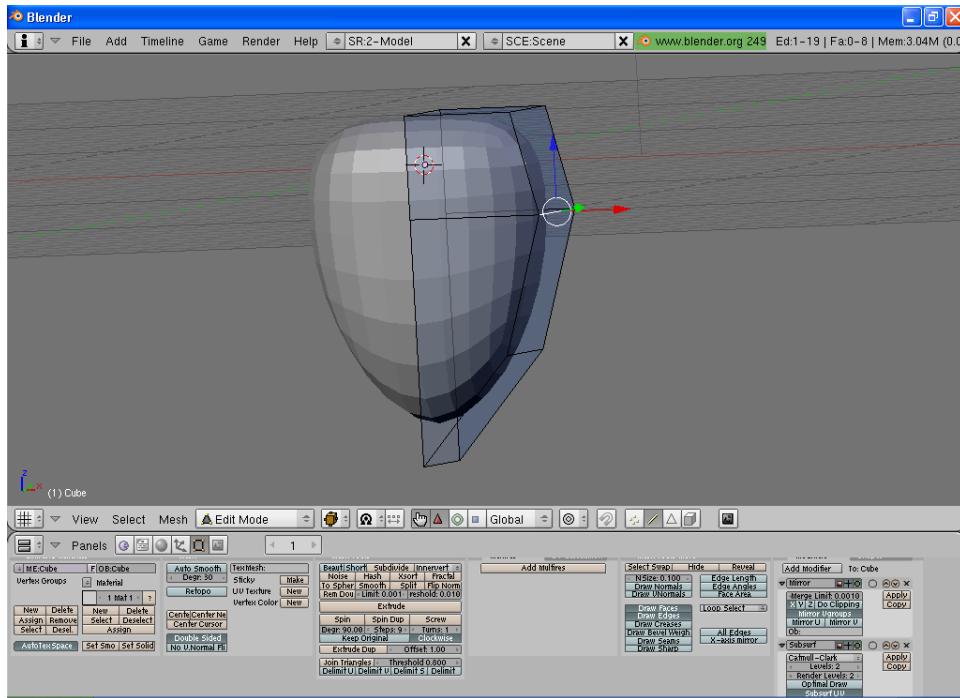
- 10.) Switch to edge select mode (the line button in the same place where you found face select), and select the bottom center edge of our “heart to be.” Pull the edge down along the z-axis. (You can use the blue arrow, or press the g-key, for grab, followed by the z-key, to constrain along the z-axis).



- 11.) Grab the lower right edge (see picture) and use the Red Arrow (g-key, x-key – grab and constrain) and pull the edge towards to the center of the figure.

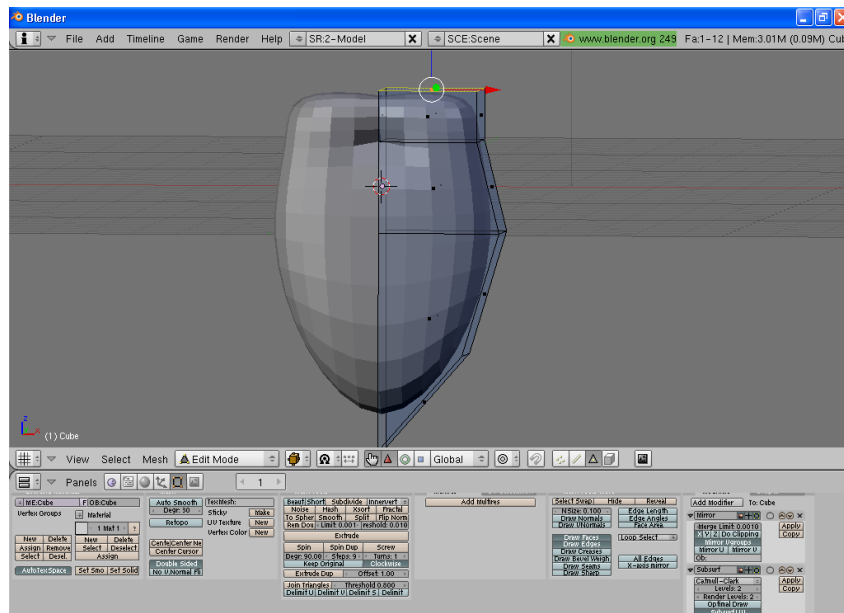


12.) Grab the upper edge and pull it out (same way as before):

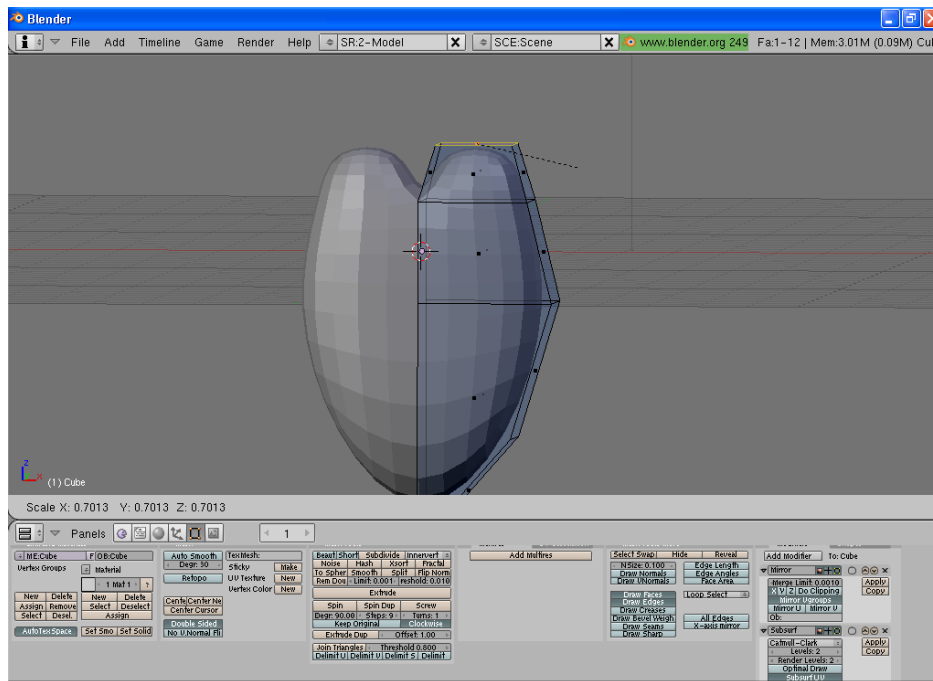


13.) Switch off the “Do Clipping” button under the Mirror Modifier.

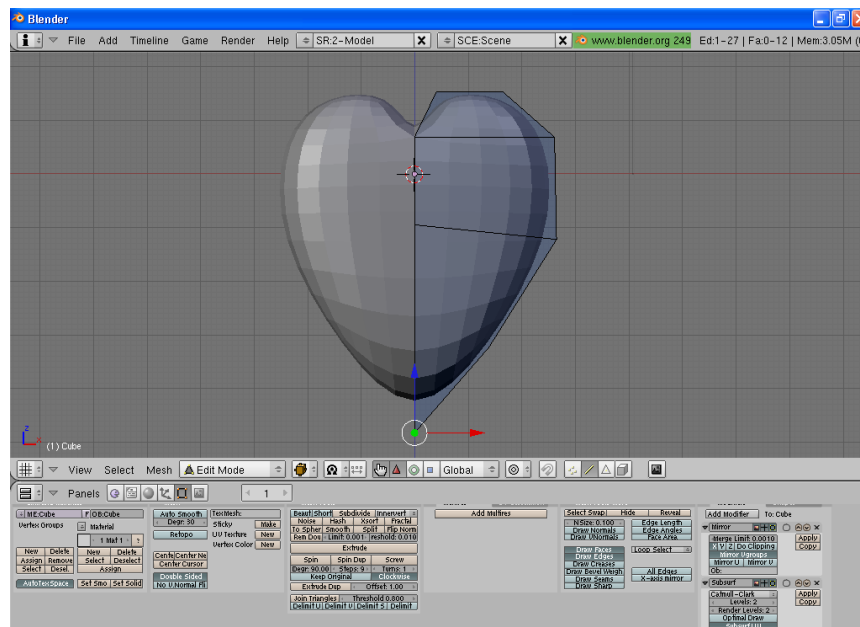
14.) Select the Top face (you need to be in face select mode – The triangle button) of your “heart to be” and extrude it with the e-key.



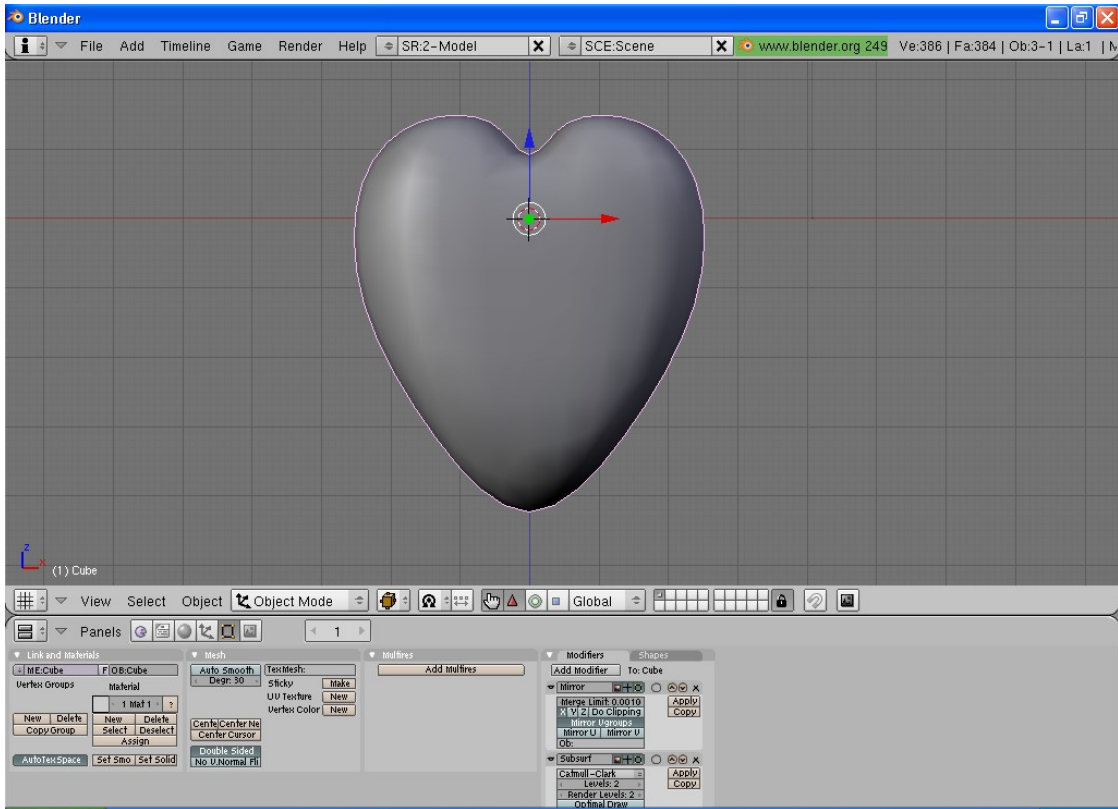
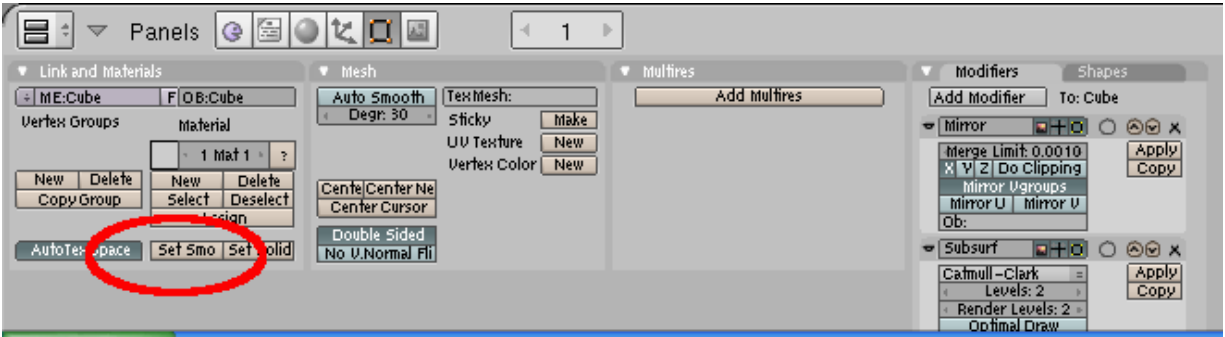
15.) Scale that face (s-key) along the x-axis (x-key). Press the s-key followed by the x-key



16.) Now you have your basic shape. Move around edges and faces until you get a heart shape that you're happy with. For me, I will be selecting the whole heart, and scaling it down along the z-axis. (a-key, to select all → s-key, to scale → z-key, constrain to the z-axis).



17.) Tab into object mode, and select “Set smooth” in the panels section.

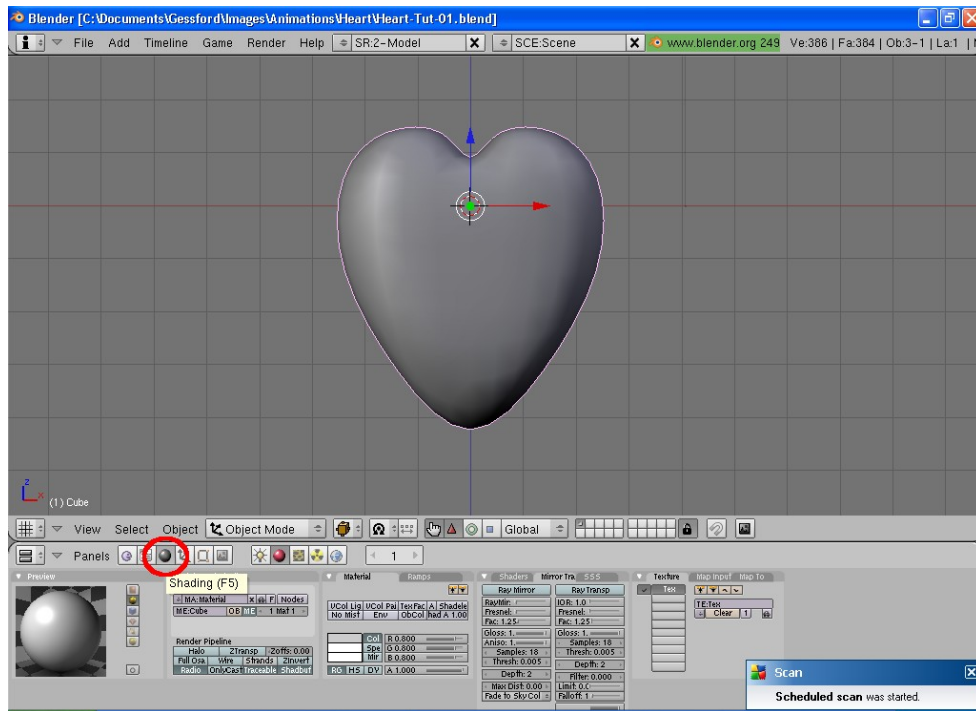


18.) Apply the Mirror Modifier (since we won't be doing any more editing). Now you have your heart.

In the next section we will be adding color, which will be a very simple red color. If you already know how to add colors, you can skip that section and move onto Part III (page 10).

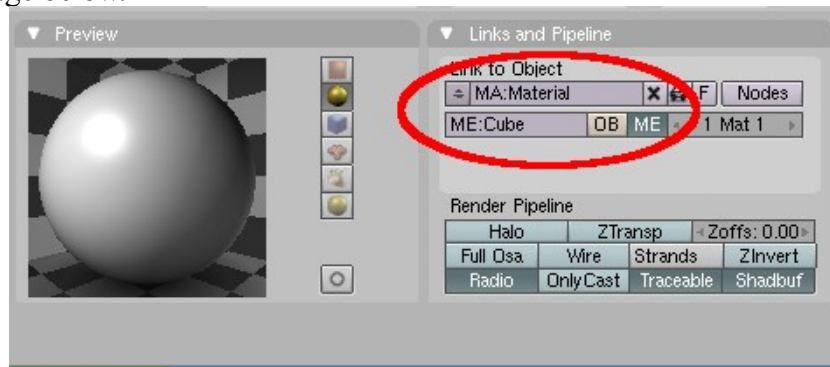
## Part 2: Adding Color:

1.) Select the Gray circle/sphere button in the panels section. This button will take you to the shading and materials portion of Blender.

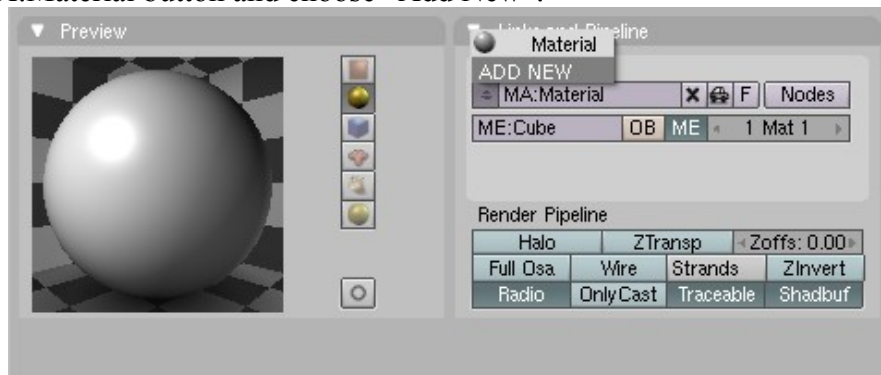


*(Ignore the AVG Scan pop-up, that shouldn't happen for you)*

2.) See the image below.

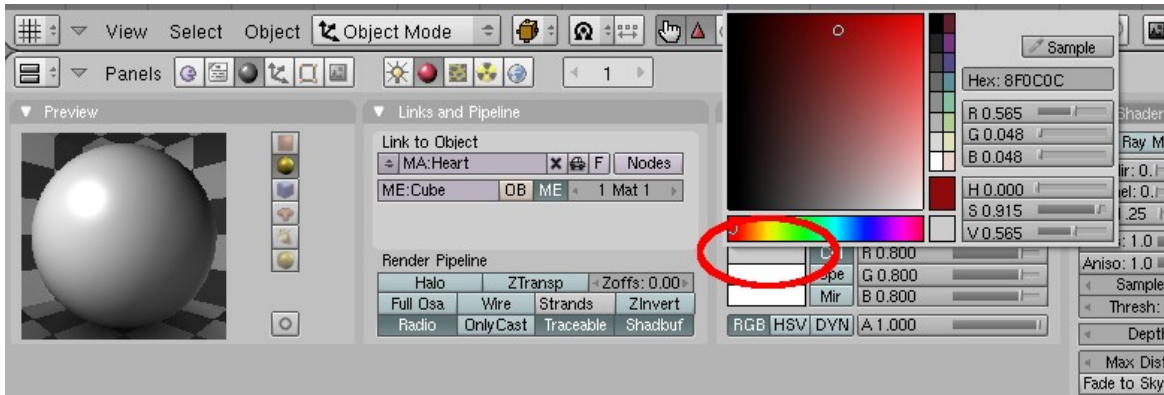


Select MA:Material button and choose “Add New”:

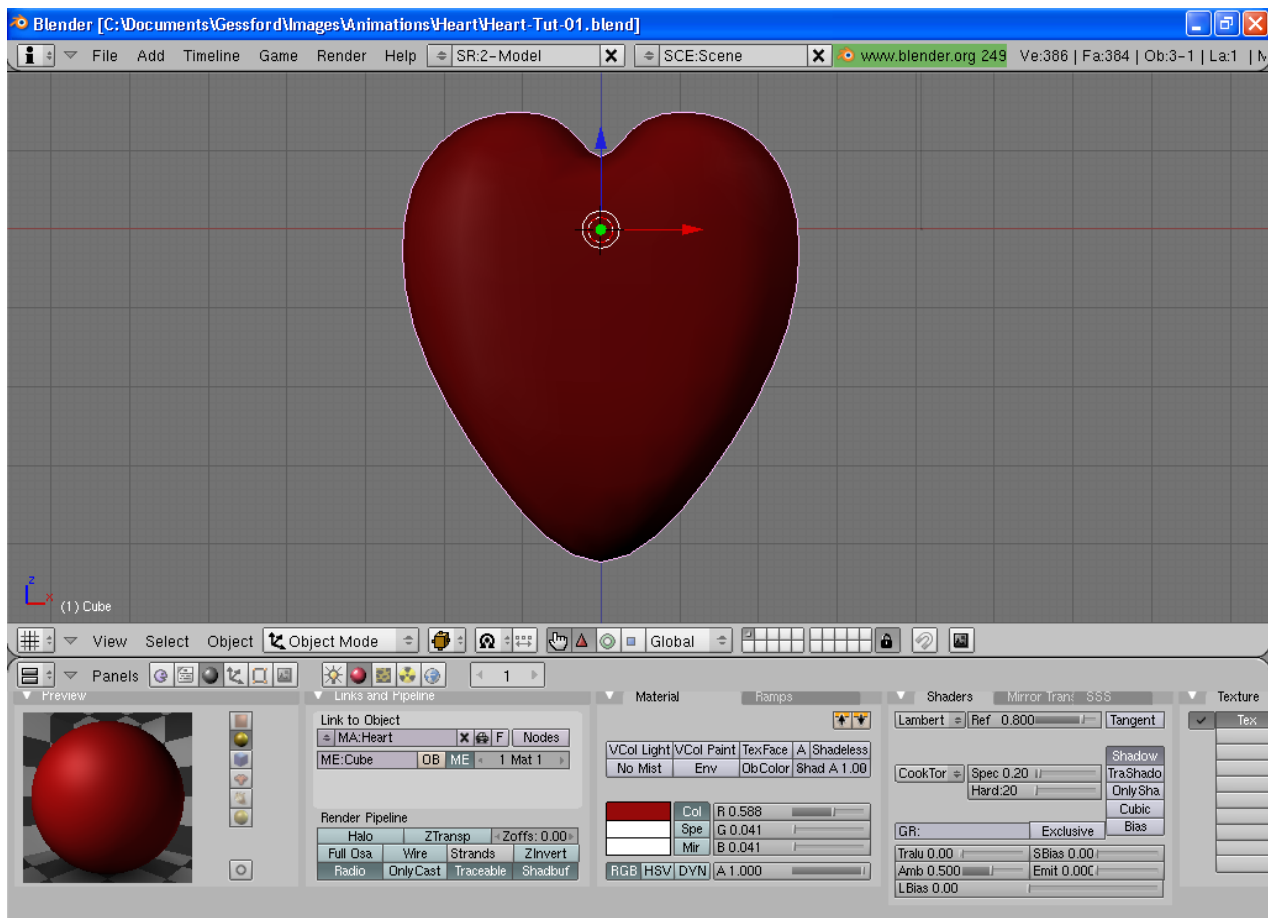


You can rename this material to “Heart” if you would like.

3.) Click on the top gray box under the “Material” tab. A color box will pop up. Left click on some Red Color.



You now have a red heart... Yay! There are other settings that I usually mess with in this section, especially under the “Shaders” Tab, and I’ll adjust the “spec” and “Hard” settings.

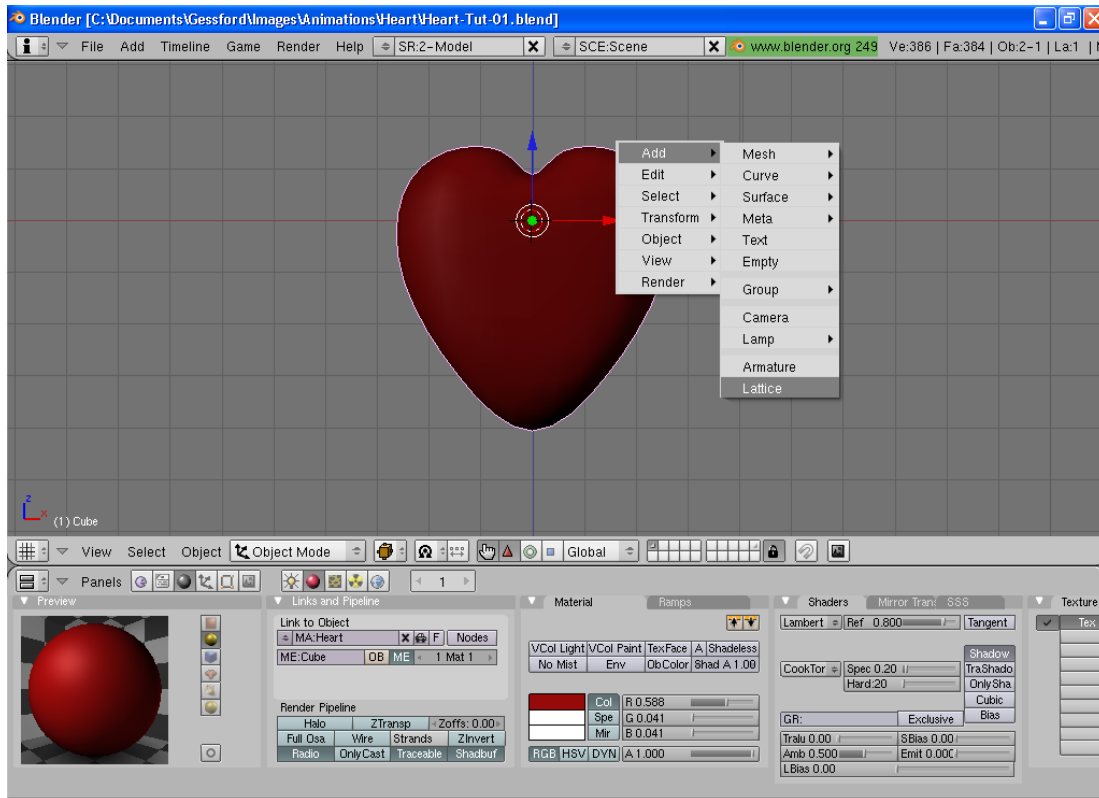


### Part 3: Getting The Heart to Beat:

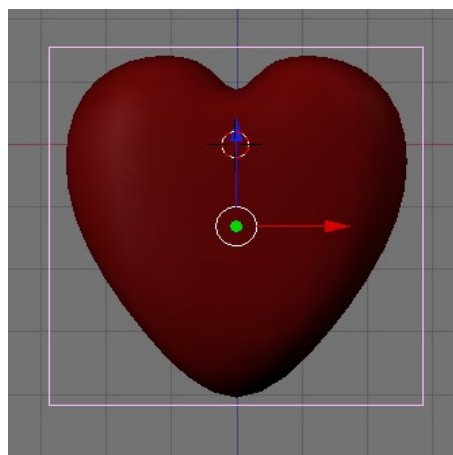
Admittedly, this is going to be a longer section, but since this is already 10 page document, hopefully you have found the information somewhat useful to this point.

As for the animation portion of this tutorial, Our Heart will be driven by a Lattice.

1.) If you have been following this tutorial straight through, you should still be in Object Mode. From front view (num-1), add a Lattice. You can do this by pressing spacebar (to add and object), or you can add and object by pressing Shift+a. *By the way, Shift+a (Shift, a) will be the way that you add objects in Blender 2.50.* Select Lattice.

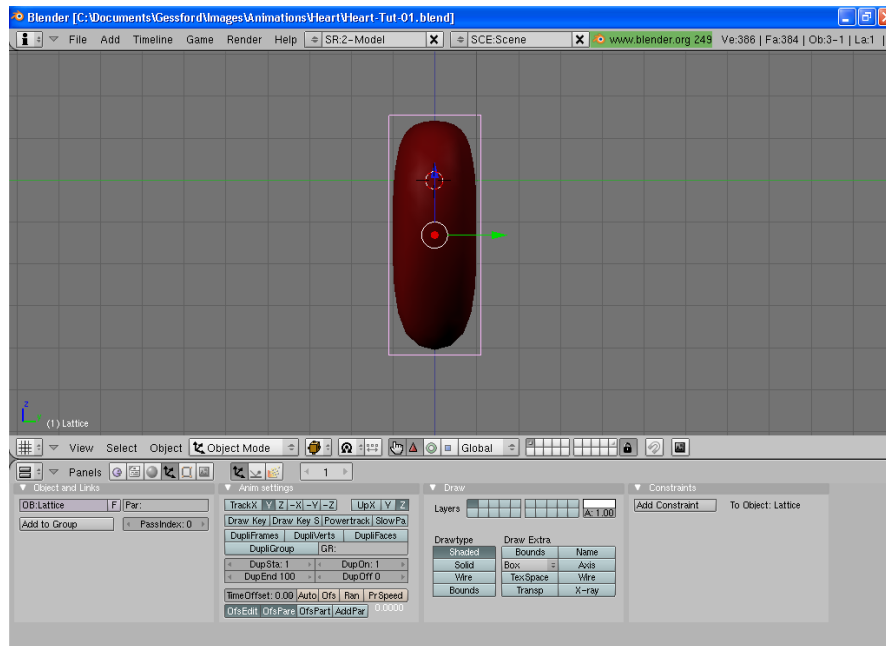


2.) The Lattice appears inside the heart, so you can't see it. Scale it up with the s-key until it's around the heart.



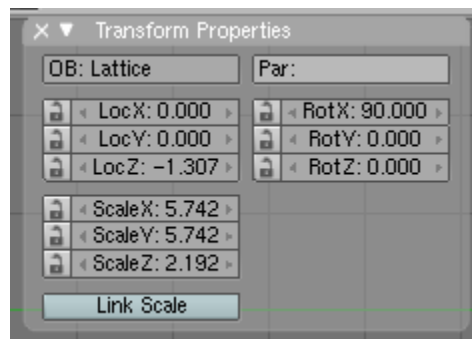
The pink box is your lattice.

3.) Press Num-3 (numpad 3), and you're in side view. You'll see that there is a lot of space between the heart and the lattice, close that space by scaling along the y-axis (s-key → y-key):



4.) A common problem is expecting to have our new lattice drive our heart without any additional work. Blender will not assume that the lattice you have on your screen is going to do anything but sit there. We need to attach the lattice to the heart. Here's how:

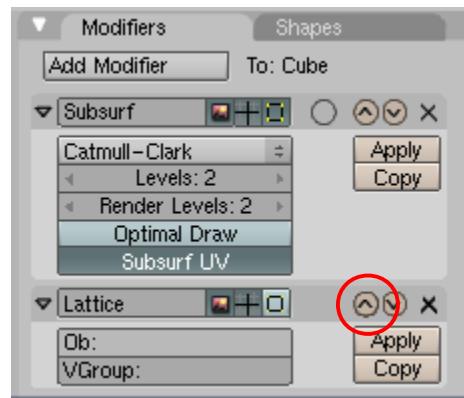
Press the 'n' key to bring up the transform properties menu. In the window that pops up, you should see the following:



This gives you quite a bit of information about your Lattice... Right now the most important thing is the name of the object (look at "OB:"). Your Lattice surprisingly enough is called "Lattice". It is important to pay attention to the names in Blender. "Lattice" and "lattice" are two completely different things with regard to the program. So pay attention to capital letters!

Now, Right click on our heart... Please make sure you're in object mode, or this is just going to frustrate you. If you haven't yet, apply your Mirror Modifier (this can only be done in object mode). Leave the subsurf modifier alone!

Next, Add Modifier and choose “Lattice,” and you should see the following:



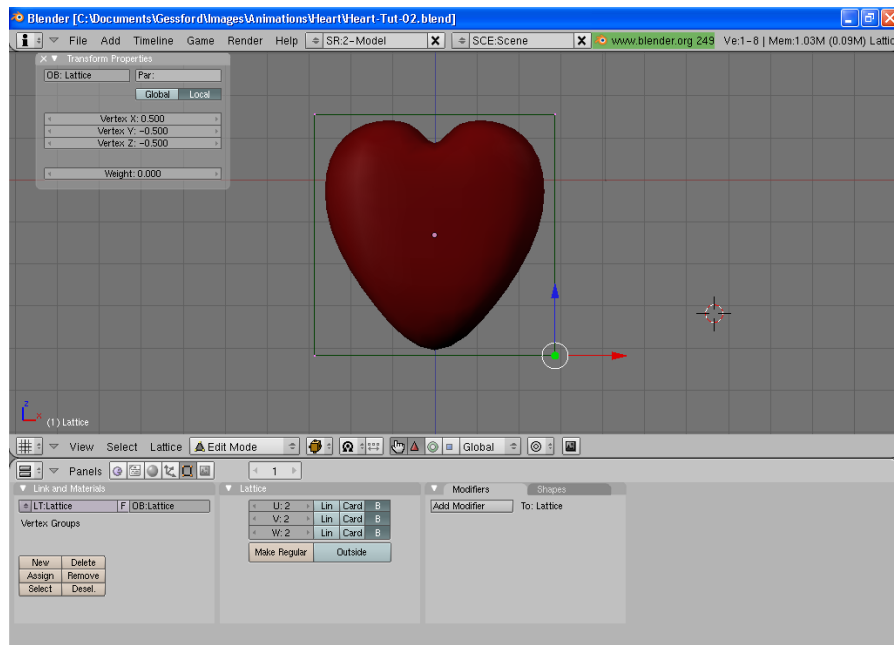
We will need to move the Lattice Modifier to the top of the stack. If you don't get in the habit of putting Subsurf at the bottom of the stack of modifiers, your meshes/objects will sometime act in funny ways that you don't want. SO... Press the up arrow key that is circled in red.

Next, in the space labeled 'Ob:' type “Lattice”

Now your lattice will control your heart.

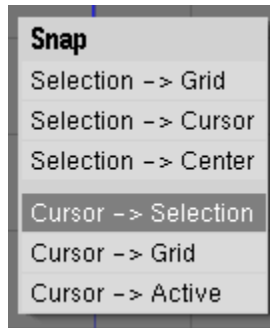
5.) Switch to front view (numpad 1), and select the lattice with your right mouse button. Now press the Tab key and you should be in edit mode. Select one of the pink points (right mouse button). Press g-key for grab. Move the point around. As you move the point, the heart should also move as a result. Pretty neat huh?

Go ahead and play around with this for a while... I know you want to. But when you're finished make sure your image looks like the one below. (Press *Ctrl + z* to undo anything you don't want to remain that way.)

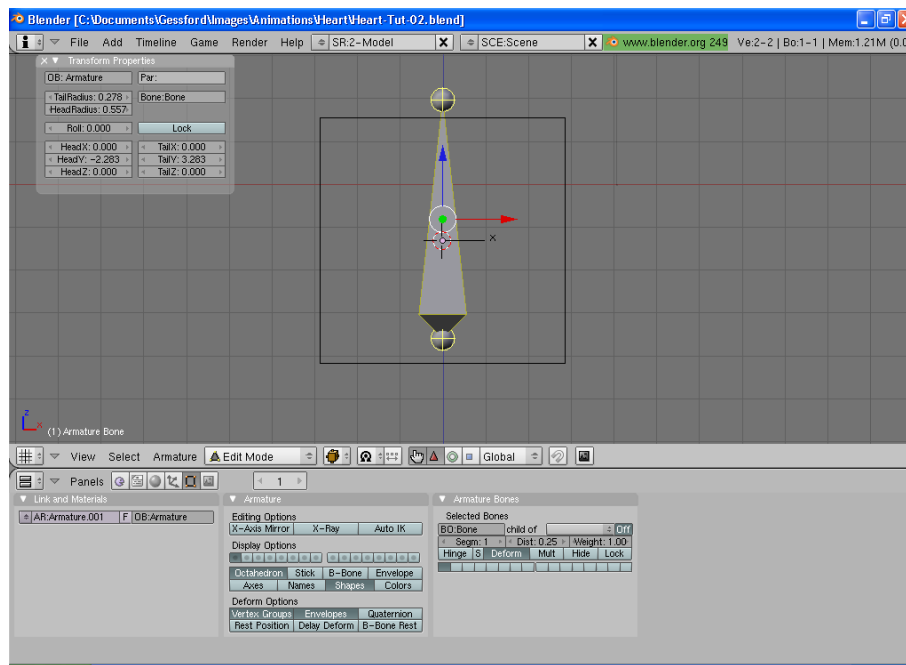




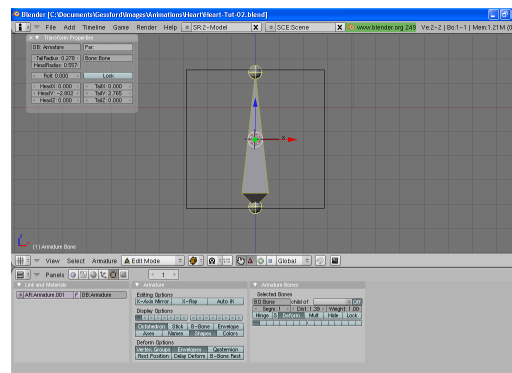
8.) Select the empty/hook, and then press Shift + s, which give you the option to snap objects and cursors to each other. Choose “Cursor → Selection”



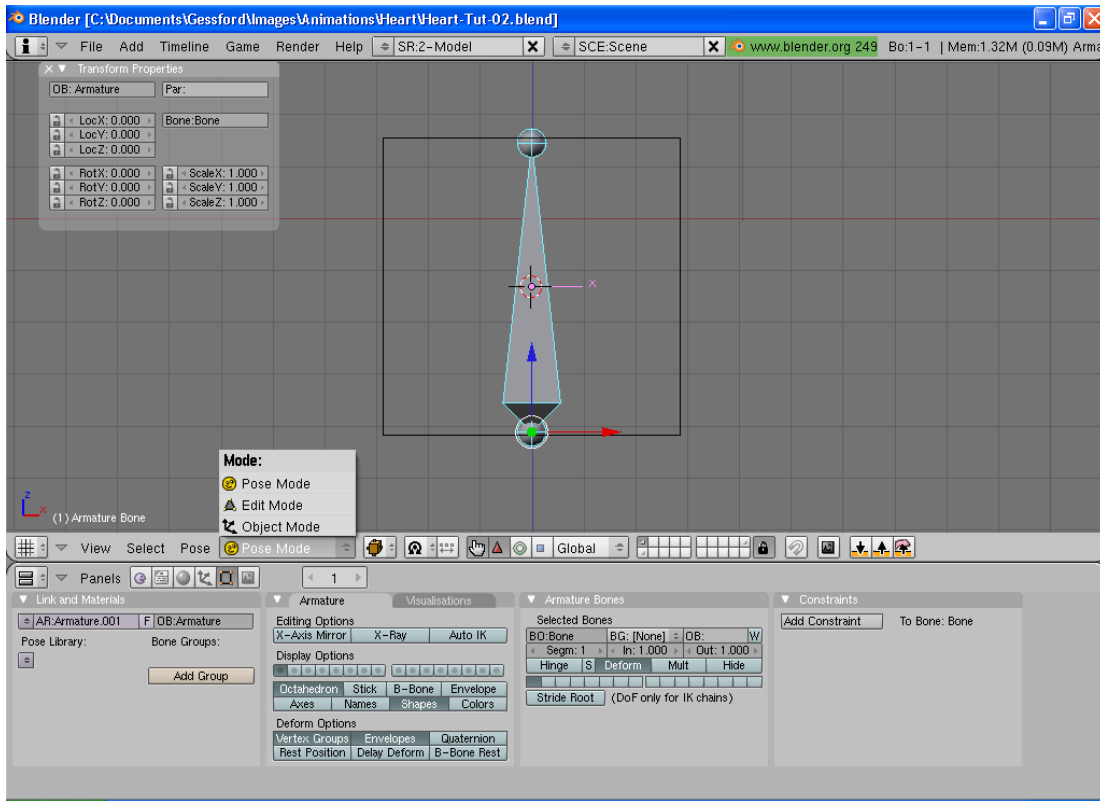
9.) Now press Spacebar (Shift + A) to add an “Armature.” This will add a bone in Edit Mode. If you're not in Edit Mode, you need to get there (*mostly by pressing Tab*). Right click on the Middle of the bone to select it and scale it larger with the s-key. You should get something like the image below:



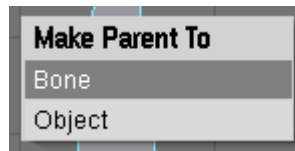
Now, grab the bone with the g-key and move it along the z-axis (press the z-key), **or** you can just left click on the blue arrow and move the bone down. (*I just like to have the bone in the box.*)



10.) Tab into Object Mode. Select the Bone, and change the mode to “Pose Mode” in the bar below the 3d window:



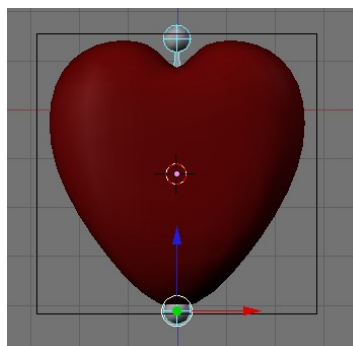
- 11.) Select the hook, then shift + right click on the Bone.
- 12.) Press ctrl + p, and choose Make Parent To “Bone”.



- 13.) Now select the bone and scale it up and down... Your lattice should also scale with the bone.
- 14.) We need to make sure everything is working with our heart... Select the layer your heart has been moved to with shift + left mouse button:



15.) Everyone should be visible.



16.) Your bone should still be selected, and you should be in “Pose Mode”... If it's not, please select the bone and move to Pose Mode and try scaling it up and down to make sure it's causing your heart to scale.

17.) Also trying scaling along the x-axis and the z-axis to see some of your options (s-key → x-key, s-key → z-key) .

You now have the ability to scale and move your heart. When I update this tutorial (hopefully over break), I will tell you how you can animate this object as well as create an animated gif in GIMP, but due to lack of time, and the fact that I'm 16 pages into this tutorial so far, I'm going to leave you here.

I hope you were able to get something out of this...