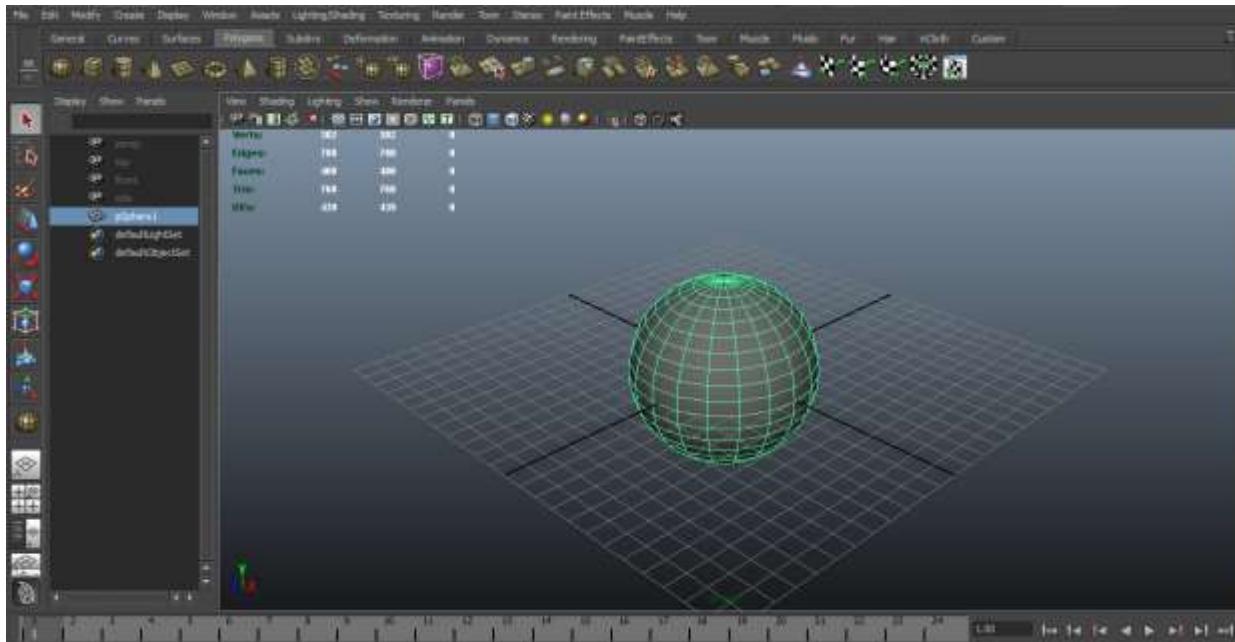


In this Module we will be learning all about the 3D software Maya. Now as stated in the syllabus the trial version of Maya should work fine for our 3 week needs. It last 30 days or so. So if you have not done so already please go to the Autodesk Home page and navigate to the Maya section and download and install the version that is appropriate for your computer's set up.



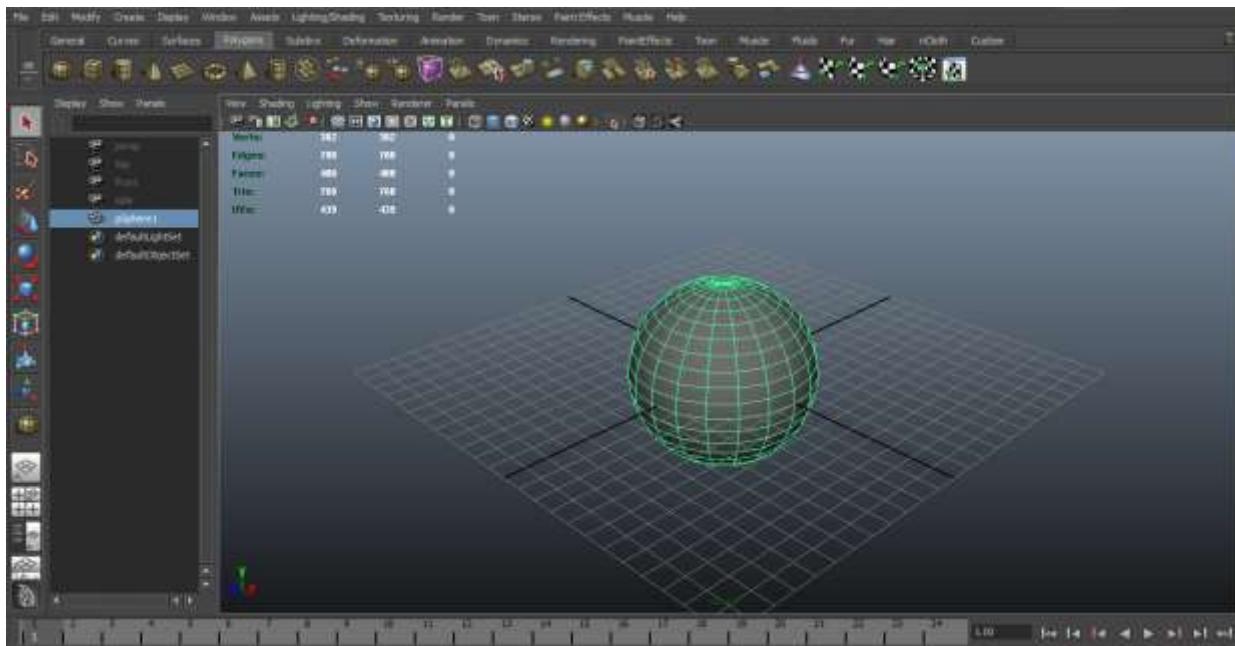
OK while you are waiting for that to finish we can talk a bit about the history of Maya. Remember that whole thing in the bible Paul begat Peter, and Peter Beget Asimoses or something well Maya;s history is a bit like that. Here is the Wikipedia on it.

http://en.wikipedia.org/wiki/Autodesk_Maya

Further information: [Maya release history](#)

Maya is the culmination of three 3D software lines: Wavefront's The Advanced Visualizer (in California), Thomson Digital Image (TDI) Explore (in France) and Alias' Power Animator (in Canada). In 1993 Wavefront purchased TDI, and in 1995 [Silicon Graphics Incorporated](#) (SGI) purchased both Alias and Wavefront (due to pressure from [Microsoft](#)'s purchase of [Softimage](#) earlier that year) and combined them into one working company, producing a single package from their collective source code. The combined company was referred to as [Alias|Wavefront](#). In the mid-1990s, the most popular pipeline in Hollywood films was a combination of tools: Alias Studio for modeling, [Softimage|3D](#) for animation, and [PhotoRealistic RenderMan](#) for rendering.^[1] This combination was used for numerous films, such as [Jurassic Park](#), [The Abyss](#) and [Terminator 2: Judgement Day](#). It took Alias|Wavefront two more years after the merger to release Maya.

Both Alias and Wavefront were working on their next generation of software at the time of the merger. Alias had taken a Macintosh product, "[Alias Sketch!](#)", moved it to the SGI platform and added many features to it. The code name for this project was Maya. Maya was developed in close collaboration with Walt Disney Feature Animation, during the production of [Dinosaur](#), and the GUI was all customizable as a requirement from Disney so they could set up their own GUI and workflow based on decades of animation experience. This had a large impact on the openness of Maya and later also helped the software become an industry standard, since many facilities implement extensive proprietary customization of the software to gain competitive advantage.



It was then decided to adopt Alias' "Maya" architecture, and merge Wavefront's code with it.

In the early days of development, Maya started with [Scheme](#), then moved to [Tcl](#) as the scripting language, in order to leverage its similarity to the Unix shell language. Sophia, the scripting language in Wavefront's [Dynamation](#), was eventually chosen as the basis of MEL, and helped ease integration of other Wavefront technology.^[2]

Upon its release in 1998, Alias|Wavefront discontinued all previous animation-based software lines including Alias Power Animator, encouraging consumers to upgrade to Maya. It succeeded in expanding its product line to take over a great deal of market share, with leading visual effects companies such as [Industrial Light and Magic](#) and [Tippett Studio](#) switching from [Softimage](#) to Maya for the animation software.

Later, Alias|Wavefront was renamed Alias. In 2003, Alias was sold by SGI to the [Ontario Teachers' Pension Plan](#) and the private equity investment firm [Accel-KKR](#). In October 2005, Alias was sold again, this time to [Autodesk](#), and on January 10, 2006, Autodesk completed the acquisition and *Alias Maya* is now known as **Autodesk Maya**.

In 2003, Maya won an Academy Award "for scientific and technical achievement", citing use "on nearly every feature using 3-D computer-generated images."^[3]

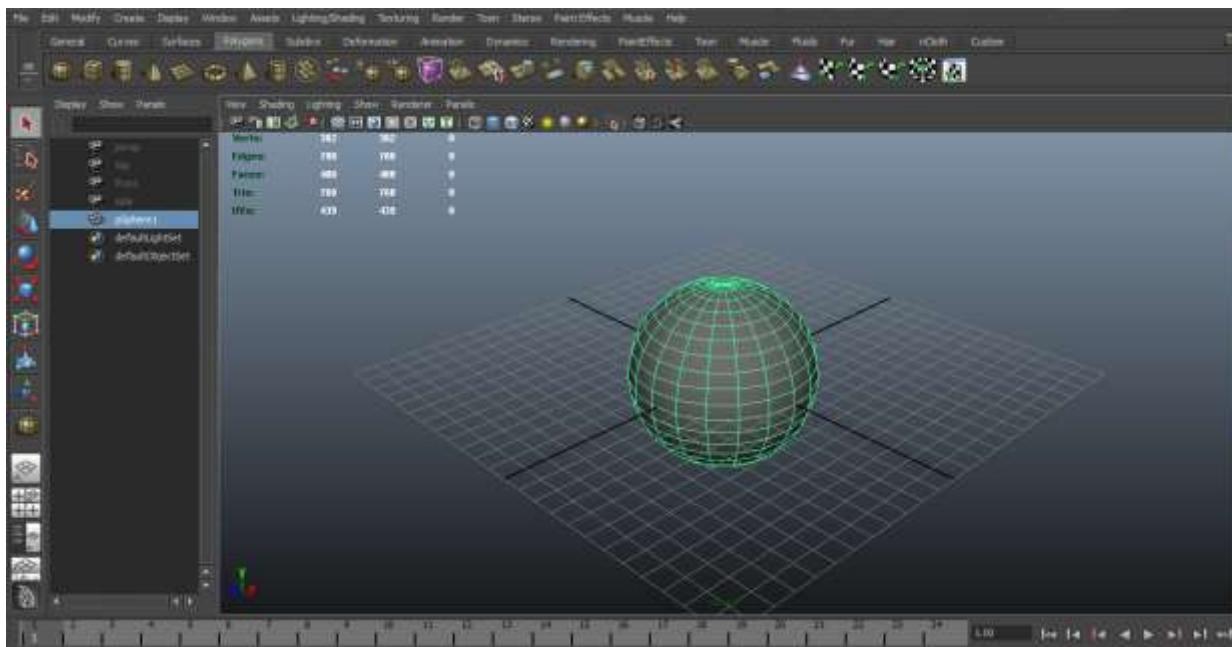
Add to that factoid that in 2008 Autodesk also bought Softimage. This gave them a total monopoly in the industry. They already owned 3Ds Max, They now had Maya and Softimage if you worked in the 3D business you better enjoy Canadian code.



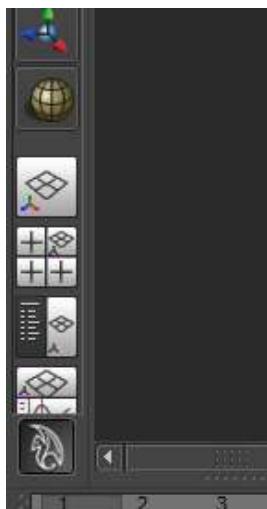
Oh that's a nice Mel script aye.

OK are we all installed? Now for the fun part, using the crazy thing. Learning Maya is as much learning method of thinking as it is learning where the buttons are. I am a firm believer that if you develop a methodology of how you like to work, and it works in one package, then you can work in any of the packages. You might have trouble finding the right button, but the differences in the 3d packages these days are pretty minimal. That being said and with everyone here having some computer background let us proceed with the idea that Maya will sort of be like something you have used before. Yay!

Maya Interface



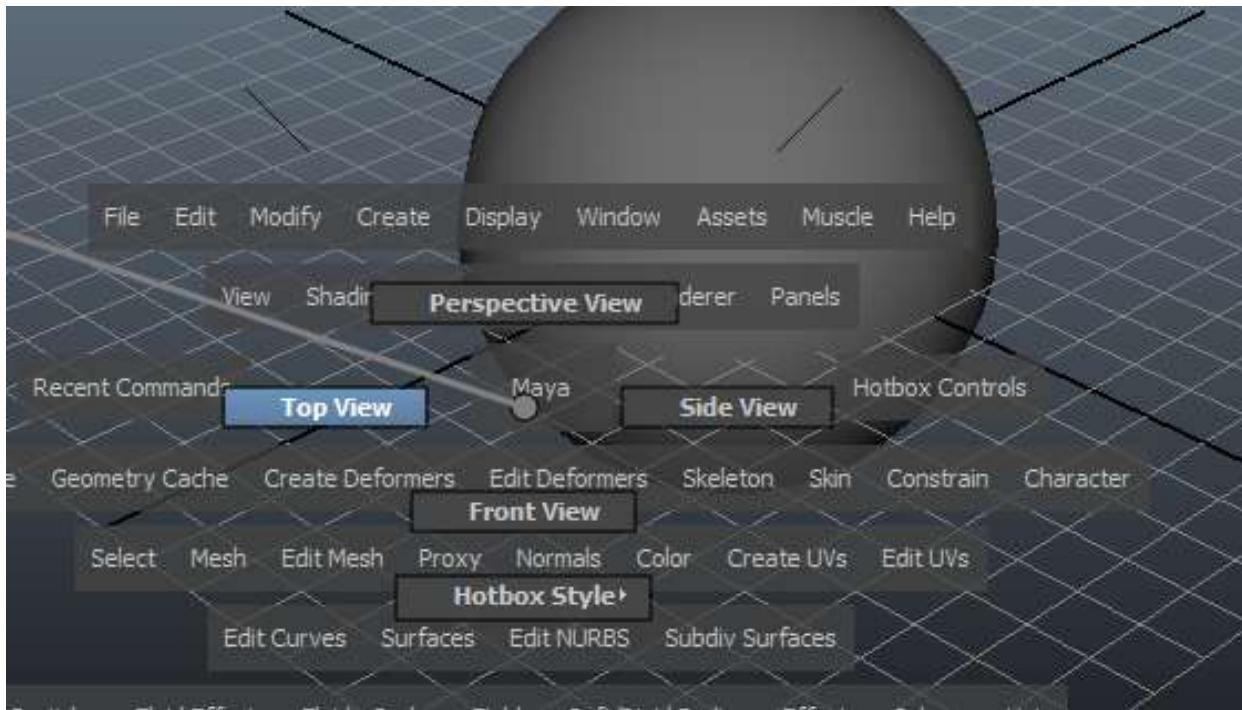
When you open Maya you get a window much like this one. There is the main stage (where the sphere is) and the time slider on the bottom and menus in every conceivable corner. For the moment we will concentrate on the main viewing window. What I have displayed here is a single panel. There are many, many, variations of windows layouts and you can easily customize it to be whatever you like.



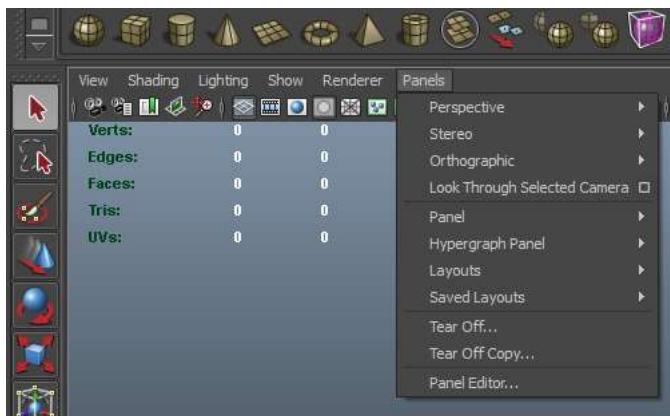
Now the easiest way to change your view is to hit the space bar. But that only toggles back and forth from your previous view to your current view. If you look to the left hand side near the bottom you will see some icons with little grid layouts on them. The one with the 4 square grid is single view. The one with the 3 plus (+) signs is 4 window mode and the one with the text next to the 4 square grid is outliner and window. We will get into the outliner later but for now just think of it as a list of all the things in your scene. Now because 3d world space works on an XYZ coordinate system the views you get are labeled with that as your point of reference. X is the horizontal or left and right Z is back and front and Y is up and down. These rules apply to the move tool as well.

Now another way to (You are going to be hearing that a lot) change the display windows is with the somewhat odd but very Liberace-esque hand mouse thing.

Marking Menus



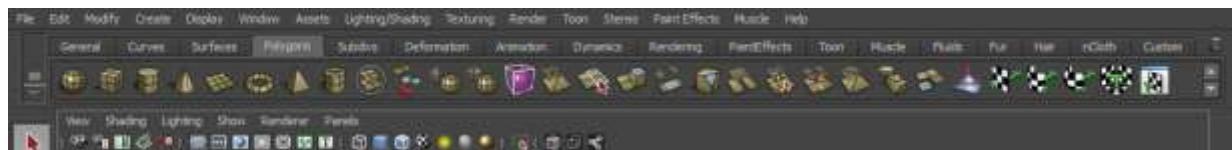
This is where you select the space bar and the right or left mouse button and then drag to any of the functions or windows that you see. I use this quite a bit to switch views. Go ahead try it. Press the space bar and drag the mouse off in some direction and let go. Where did you end up? Cool huh. You can use this function to quickly access all sorts of stuff and of course it is totally customizable.



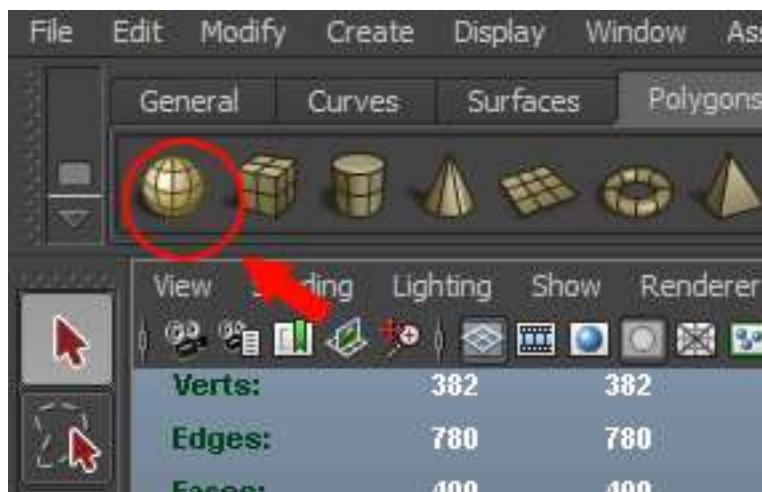
There is also the **Panels Tab** (Shown Left) which is a pull down version of the window system. I know what you're thinking and you are right there is a lot of redundancy in this program. But think of it as having a lot of chances to get it right.

Tool shelf

The tool shelf is not really one tool shelf but many specialized shelves' covering a wide variety of Maya functionality. They hold everything from a button to create a simple cube to a pen that draws flowing water. Ya that's a real thing. They once again are totally customizable and can be docked to a wall or where ever. There are tons of preset s that are available and if it gets too messy for you just close the ones you don't use.

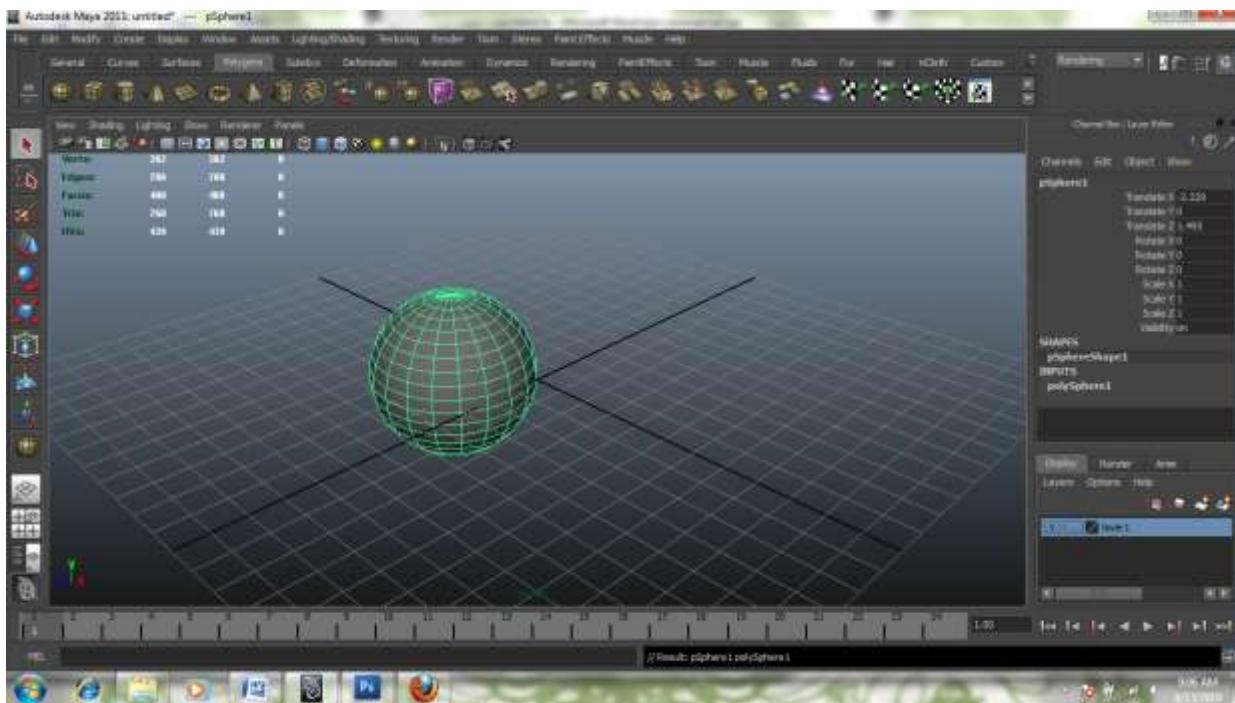


Above here I have the Polygons tab selected. You can see the name of the tab highlight and all of the various buttons for that tab become available. Don't worry about trying to learn what all of them are right now as you use the software more you will pick them up. I have been using the software for 10+ years and there are still buttons I have to look up to see what the heck they are. Go ahead and try some of the other tabs now. The paint Effects tool has quite a few fun ones but you have to render most of that to see it. At the very end is a custom tool tab. This is a premade shelf for you to populate with whatever you want. I sometimes use Mel scripting <http://www.3dlessons.com/tutorials/Introduction-to-MEL-Scripting-01133.html> to generate a button for doing repetitive tasks like selecting an entire joint set in the same order. I then can put this button on the custom shelf. However I usually just add it to the shelf that it pertains to as I do not make a lot of buttons.



Now let's make a Sphere. With the polygon tab selected click on the little sphere icon. Now left click drag in one of your windows to generate a sphere. You can generate a sphere from the Create Menu if you like this gives you more precise options for the objects properties, Like how many faces or precise size. But for now let's do the draggy thing.

It should look something like the page below. Notice that the edges of the sphere are highlighted. This means the object is active or selected. Now click somewhere off the object and the object is deselected. Click on it again and it is selected again.



Now Right click on the object. This brings up the sub-object editor menu. Drag and release on **vertex**. Now all the vertex are available for editing. Now right click again and select Object mode and we are back to normal. What are subobjects you ask? They are the building blocks that make up computer objects. But we will get into that in the next mod for now enjoy the fact that you can select them.

Now let's try moving the object around. See the Icons on the far left hand side of the screen. This is the Move tool menu bar it live on the left hand of your screen. If it is not there then try clicking another view, it should show up eventually.



The first arrow is a select without movement tool. This activates the object but will not alter it in any way

The second is a similar select tool but with a marquee function.

The next is the paint brush tool which works by modifying attributes with a controllable radial dispersion of effect.

This is the move tool (well come back to it in a minute)

The Sphere with the little arrow is the rotate tool.

The box with the 4 little arrows is the scale tool

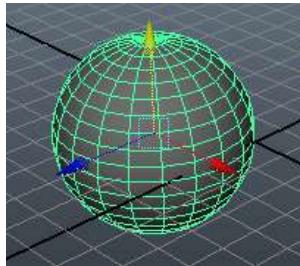
The box with the cage is the universal manipulation tool

The plane being pulled is the soft modifier tool

The little arrow thing is the show manipulator tool

The last icon is a representation of what you have selected in the tool shelf.

Ok now select the object again. Now go over to the move menu and select the move tool. The object should have a arrow looking icon now.

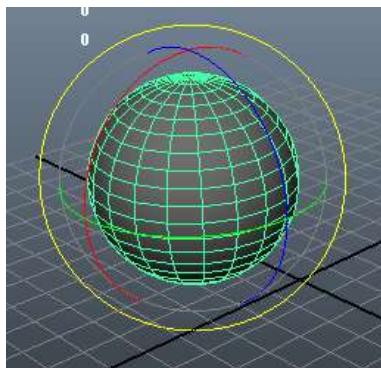


You can see the different colored arrows point in different directions. The yellow arrow points up and down the red arrow points side to side and the blue points back and forth. In computer terms we call this XYY. Y is up down X is left right and Z is back and forth. There is a digital readout at the right side in the channel editor. The center of the grid is called 0,0. If you move forward, up, or to the right you get positive

number if you move down or to the left or back you get negative numbers. Ok now that we know that let us proceed with the moving. Click on the red arrow and while holding down the button drag the sphere around. Now try the other directions. Neat huh.

You can also access this tool by hitting the W key.

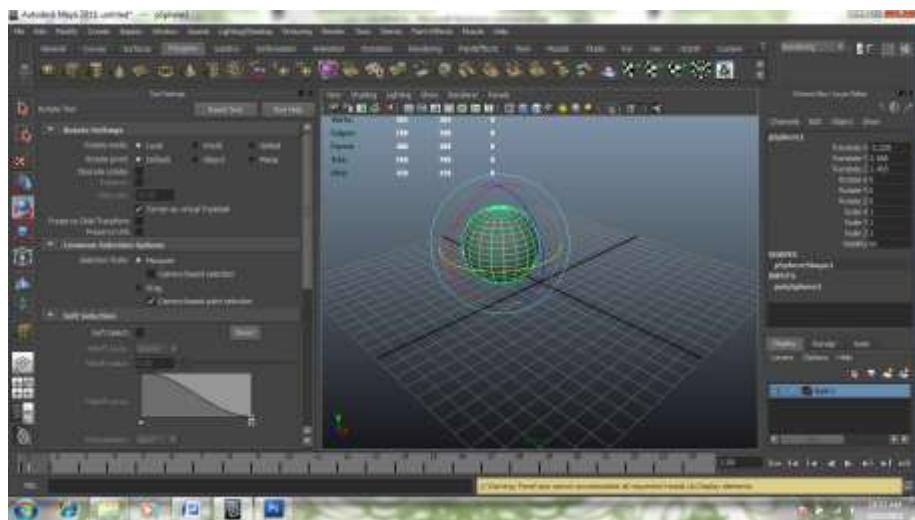
NOW let's look at the rotate tool.



This works very much like the move tool. But no arrows. Instead we get loops. You like loops right. So the yellow loop spins per whatever view you are in. The red and the blue spin as to their orientation to you in the view.

Now if you double click on the rotate tool (Or any other tool) you get the properties for the tool. Here you can adjust the way the tool orients to the world. You will use this lots later on but not so much right now.

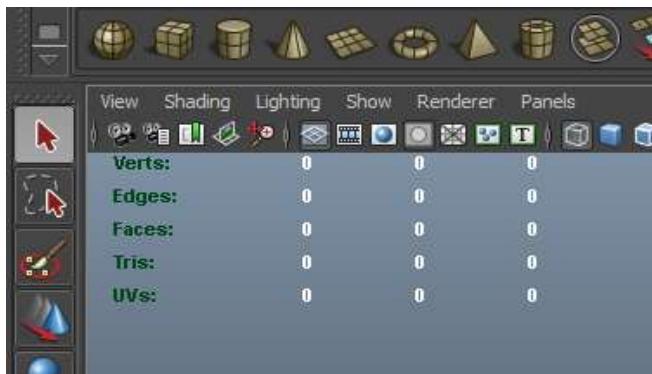
Go ahead now and try it out. You can also try the scale tool.



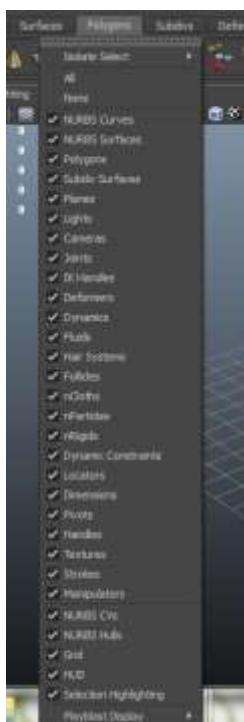
Displaying Things

Now if you thought there was a lot of ways to bring up a window wait until we try to display an object in a window. OMG.

In Maya there are lots of ways to look at all the things you create as well as lots of things to create. Here is the display tab. Which allows you to edit what is visible and in what way things are displayed.



You have a bunch of choices but we are going to concentrate on the **SHOW** pull down menu. This is the tab that controls what is displayed on the screen. This does not delete the non selected item it merely renders it not visible. This can be very useful if you just want to look at the joints or see just the mesh or whatever. By the way just an FYI you can set a priority to whatever you want to be selected first when you click on it. So if you want to always grab the bones first you can do that no matter what is on the screen. We will talk about preference later.

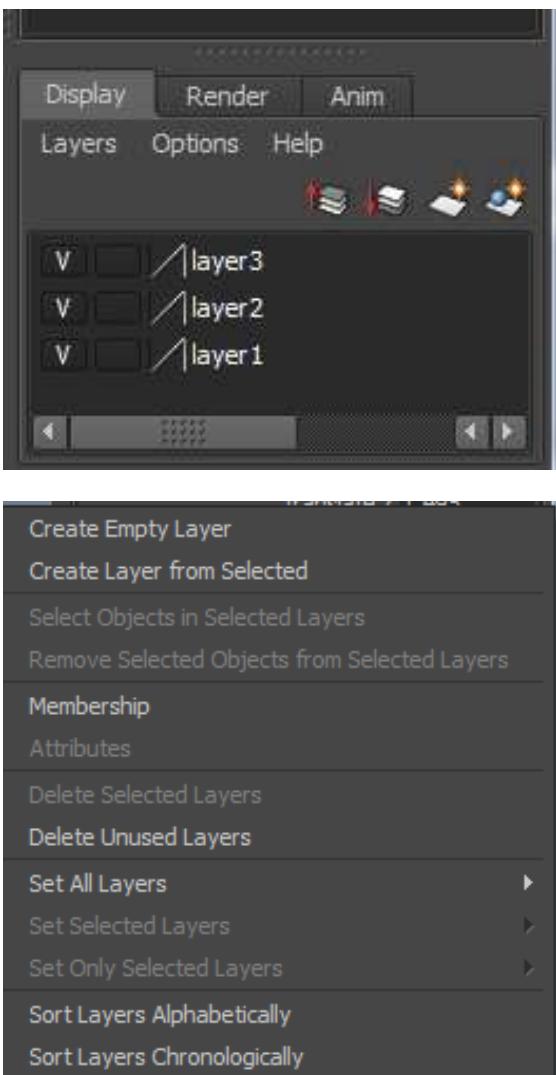


This is what the Show menu looks like pulled down.

See the little checks next to the description. If that box isn't checked you won't see the item. I usually hit the **All** button up there on top and then go back and re-check the ones I use all the time like **Polygons**, and **joints** and **Locators**. You can try it on the sphere you created. Select all and all the little boxes uncheck , your sphere disappears. Now click in the box next to the word **POLYGON** and it is back.

I more want you to just pocket the info for later use. I have spent many an hour looking for something that someone told me was in a file and not seeing it because I had one of these boxes unchecked. So now you know, if you can't see something that is supposed to be there most likely you have it hidden. Unless of course it is in a **Layer**.

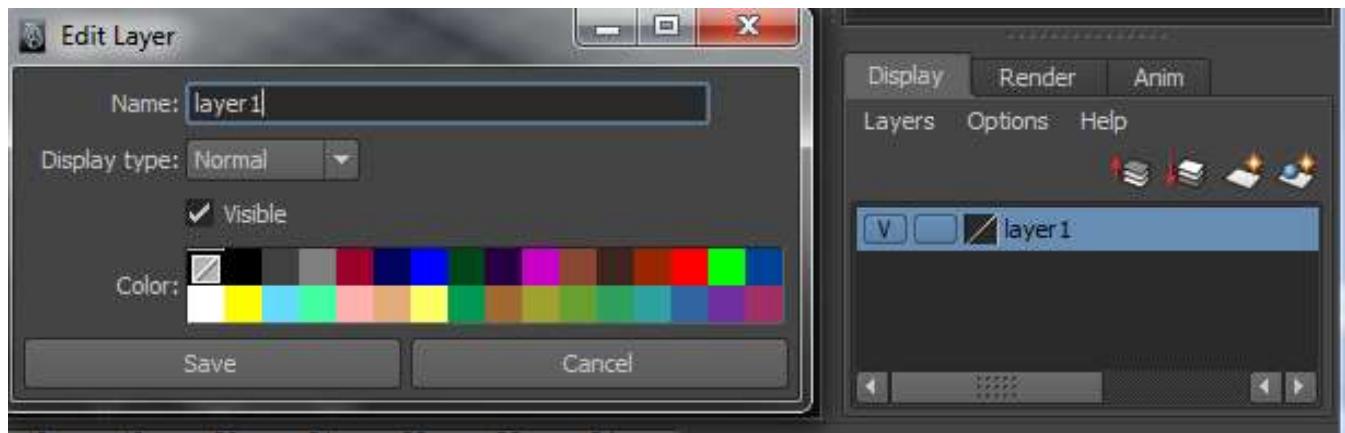
The Layer Editor



The Layers in Maya are very much like the layers in Photoshop. They are created in very much the same way we did it there. You click on the **LAYERS** button from the pop-up menu select either **Create Empty Layer** or **Create Layer from Selected** if you have an object in the scene that you would like to add automatically. A new layer appears in the stack, highlighted which give you the opportunity to name it and assign it a color for easy access.

If you already have a layer that you would like to add an object from your scene to, then select the object and right click on the layer and hit **add selected**. If you are not sure what is in the layer you can go back to the Layers tab and hit **Membership** which allows you to edit all sorts of things.

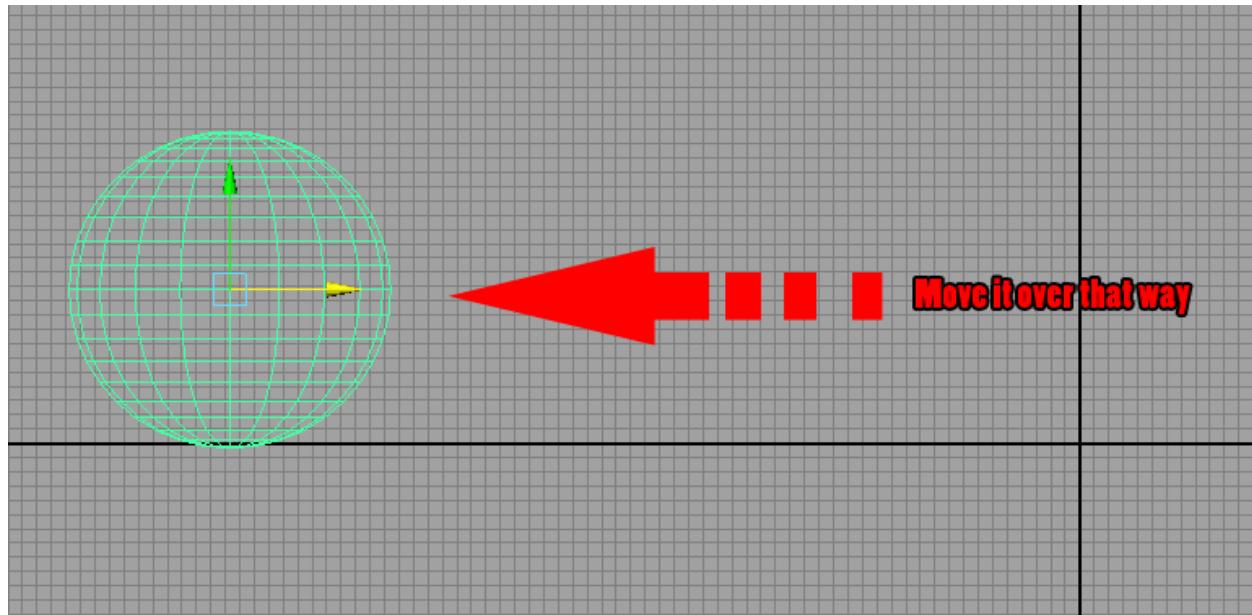
Now you may have noticed the little box to the side of the layer with the (V) in it. This is very simply a visibility toggle for the layer. Click on the (V) and the layer is hidden, click on it again and it becomes visible again. The box next to the (V) controls the selectability of an object. If you click it you either get (T) for template (R) for reference or nothing which is the default state. By selecting (T) you are essentially freezing everything in that layer. You cannot select it in any way. By selecting R you are making it a reference of the objects in the file. Which



This is the Layer editor where you can change the name and color of a layer for easy identification.

Assignment

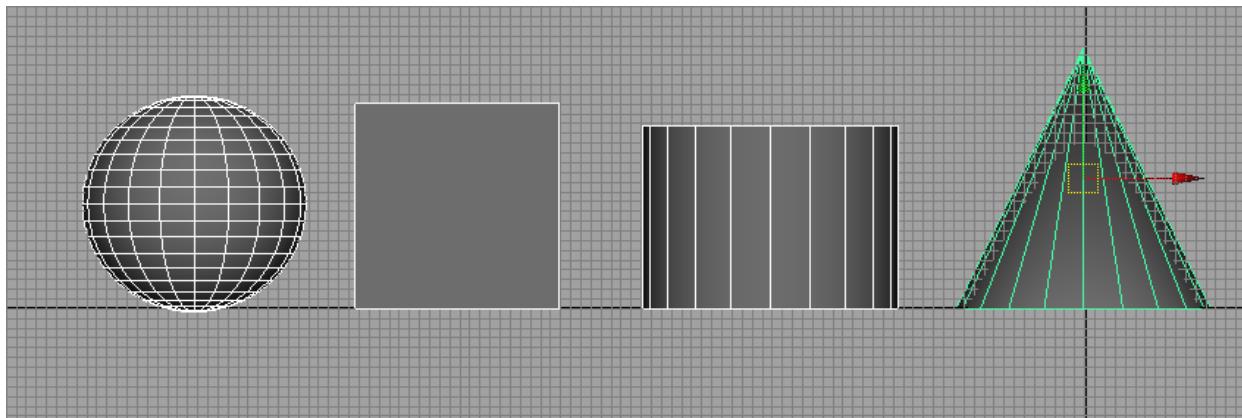
Now let's try to put this all together. From the polygon shelf select the sphere and create in your **FRONT** view. Now select the move tool (or hit W) and grab the little red arrow that appears (Shown as a selected yellow arrow in my picture) and slide it to the left. So it is out of the way.



Now save the file as YourName Maya assignment_1

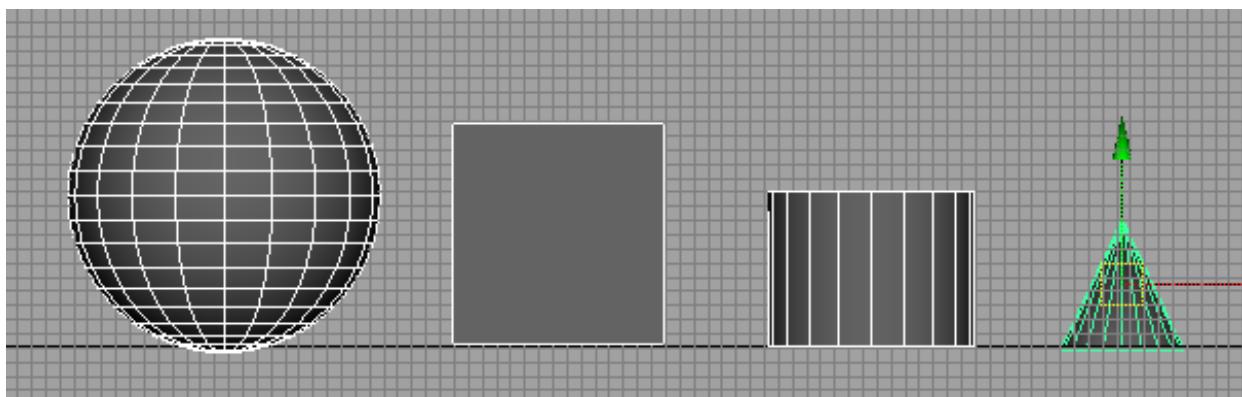
Ok we are not done yet it is just a good idea to do that every now and again. Go back up to the polygon shelf and select the cube and repeat the process you just did with the sphere except put the cube just to the right of the Sphere. Now repeat this with the cylinder and the cone. The cone is a bit of a strange build but I think you can handle clicking the mouse twice for one object.

When you are all done you should have a scene (that is what we call these in the biz) like this.

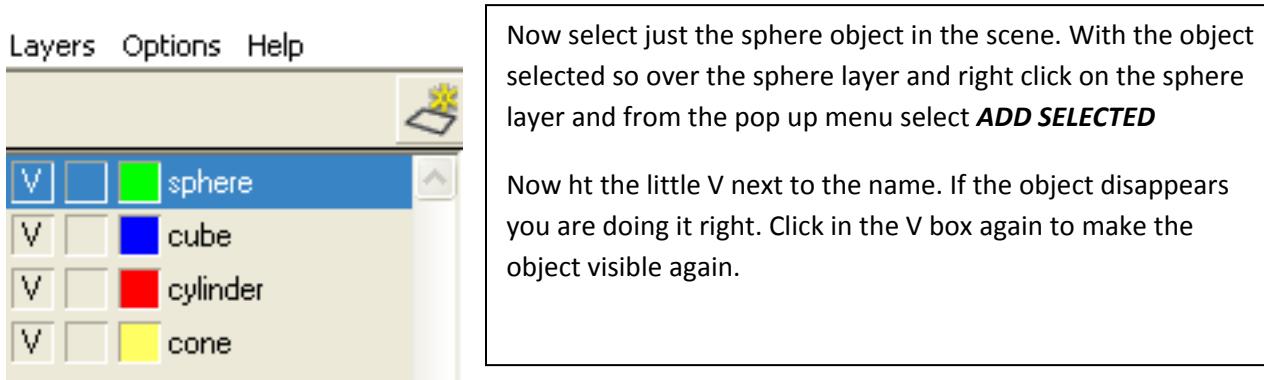


This is probably a good time to clue you in on the number keys. The number keys are also display keys. Well at least 3-4-5-6-7 are. 1,2 and 3 are low, medium and high Quality object display, and 4 is wire frame and 5 is default shaded, and 6 is shaded and textured, and 7 is using lighting. You can try these now if you like, they make no permanent changes.

OK, on with what we were doing. With your line up looking a lot like it does up top I want you to grab the scale tool form over there on the left and scale the cube a little smaller than the sphere, scale the cylinder a little smaller than the cube, and so on. Your scene should look like this when you are done.



I have also used the translate tool to move them onto the 0,0 line. Now for the hard part. Go to the layer editor we opened up before and make 4 new layers. If you need help with this you can scoot back to that part of the lesson. Name the first layer **sphere** the second layer **cube** the third **cylinder**, and the last name **cone**. Give each layer a color of its own as well. It should look like this.



Ok now let's add each shape to its layer. Make sure to test them out. When you are all done I'd like you to save your file as we did before. Make sure you save it as .MA this time as this will allow me to retro open it if your copy of Maya is newer than mine. Also please take a screen shot of your work area make sure I can see all the objects and all the layers and save that as a .jpg Turn these both in, in the assignment section of this mod.

Summary

In this section we covered how to view things in Maya. We talked a bit about the different layouts possible and some of the more commonly used menus systems and windows. We learned to generate polygons and how to begin to manipulate them. If you missed any of this go back and read it again.

Assignment 10

Turn in Maya shape assignment

Turn in screen capture .jpg of your workspace with layers and shapes visible.

Discussion 10

What was confusing for you about this assignment? How did you overcome that problem?

QUIZ

1) What two companies merged to form Maya?

- a. A- Alias and Wavefront
- b. Disney and Auto Desk.
- c. Linux and TLC

2) Who owns Maya today

- a. Autodesk
- b. Autoreply
- c. Auto City

3)