

Milkshape 3D Basics & Fundamentals

A tutorial on the fundamentals and basic use of Milkshape 3D by Ben "Zom-B" Wilson. I cover the GUI of Milkshape, creating simple shapes using two different methods and applying textures. This tutorial is intended for beginners of 3D Modelling.

Posted by [therealzomb](#) on Oct 9th, 2009 - Basic Other

Alright, let's take a look at the Milkshape layout. As you can see, we have four windows known as Viewpoints, three in a black and white 2D grid formation and one in a blue 3D space. Depending on if you have a default set-up, these should be (clockwise from top left) views from the Front, Left, Top and 3D but you can easily change these by right clicking inside each of the viewpoints and selecting Projection. The 2D grid windows will be your workspaces and the blue 3D space is for viewing your creation as you build.

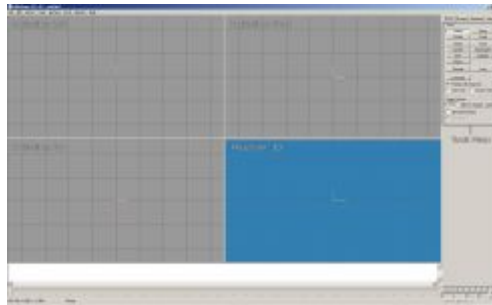
Along the right is the tools menu, separated into four tabs. Model contains your usual tools as seen in any media creation suite, if you click on Select you will see a Select Options box appear along the bottom showing how you can select either Vertices, Faces, Groups or Joints. I'll explain what those mean soon enough so don't worry. The Move tool allows you to move objects along any three of the 3D space axis, X Y and Z. From the Front perspective, X is left and right, Y is up and down and Z is forwards and backwards. You won't be able to move objects in the Z space from the Front perspective, so you'd have to use Top or Left instead.

Rotate and Scale do exactly what you'd expect, but have no effect on Vertices, only Faces, Groups and Joints. That's because Vertices aren't technically objects that can be modified, they are more of a blueprint or "connect the dots" type system. The Vertex tool places a Vertex wherever you click in one of the three 2D space windows and Vertices are connected by using the Face tool. When you have the Face tool activated, clicking three Vertices in an anti-clockwise formation creates a triangle known as a Face. If you connect three Vertices in a clockwise formation however, it will create a Backface which is generally not recommended for beginners. You can tell Faces and Backfaces apart by their colour, a Face is white and a Backface is black. If you see a Backface on your 3D view even though used an anti-clockwise formation don't worry, the camera is simply facing the wrong way.

To manipulate the camera, click inside the blue 3D space. Left Click moves the camera round the center of the screen, holding Shift and Left Click zooms in and out of the center. Holding ctrl and Left Click physically moves the cameras position, which will affect where the camera will zoom in. Try using these three simple movements so you get the hang of moving the camera around, if you get stuck from zooming in or moving away too far don't worry, just right click in the 3D space window and click "Reset View" to return the camera to it's original position or "Frame All" to fit all of your model onto the screen.

Back to the tools, the rest are used for creating shapes and they are pretty self explanatory. Sphere and GeoSphere create spheres, Box creates cubes, Cylinder for cylinders and Plane for flat surfaces that have no depth (similar to a piece of paper). Extrude is used for creating extra Faces by stretching a copy from another Face, this might sound bizarre to a beginner, but trust me it's extremely helpful for you and I'll explain why in the "Extrude Modelling" section. Joints is used for creating a virtual skeleton for your models, these are used for creating animations, most often in bipedal characters for games or objects with complicated moving parts. I won't be explaining animation in this tutorial, but I'm sure you don't want to dive right

into that just yet, let's learn some fundamentals first shall we? Also, Comment simply allows you to add text comments to your model, useful if you are sharing a project with another 3D artist.



Fundamentals

Ok, I'm going to do my best to explain to you how a 3D model is created. Now, I'm no expert, I haven't done a degree in 3D modelling or anything spectacular like that. I'm not even that good of a modeller, I'd only consider myself intermediate at best, I'd just like to share with you what I have learned over the years as a hobby and hope it helps you get right into creating your own models.

Basically, a 3D model is entirely made up of triangles. As I said before, these triangles are called Faces and are created using three vertices joined together. Practically any shape imaginable can be created in a 3D space and there's more than likely many ways to create that shape. There's no right or wrong way to arrange your Faces, but there's certainly more efficient ways of doing it, such as alternating between vertices rather than creating every triangle from one root Vertex. This probably sounds confusing but trust me, you'll find your own method once you get hang of it and you'll become more efficient every time since you'll know what works for certain shapes and curves.

Faces can be separated into groups, which is very useful for keeping your model organised and is extremely important for the texturing process. For example, for a human bipedal character you could typically have groups separated into Head, Torso, Arms and Legs. Of course this is only an example and you can create your model however you like, perhaps going into even more detail and separating your Arms group into Hand and Fingers too. A very useful feature of Milkshape is the Groups tab, you can find it on the right in the tools menu in-between Model and Materials. This will list all of your currently existing groups and you can select them individually, even giving them names for easy reference. Simply select a group, type a name into the text box then click Rename.

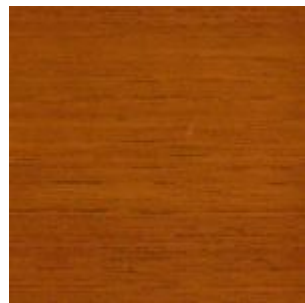
With your model organised into groups, you can go ahead and apply textures. They are managed under the Materials tab in the tools menu, and basically a texture is an image file that gets wrapped around a 3D model. The way the texture is applied can be modified using something called a UV Map. I'll go into more detail on that in the Texturing section. Textures are essential for giving your model the look it needs, it can be something as simple as a picture of tree bark for a tree model or something more complex like an unwrapped head for a human player model. Textures can be renamed in the same way as model groups and are added or deleted using the New and Delete functions.

Finally, Joints are the virtual skeleton I mentioned earlier. They are considered a more advanced feature of 3D modelling and not something that you need to learn straight away, though it's extremely common that for a model to work in a game, it will need to be assigned to at least one joint, also known as a "Bone". I'll explain more about this later.

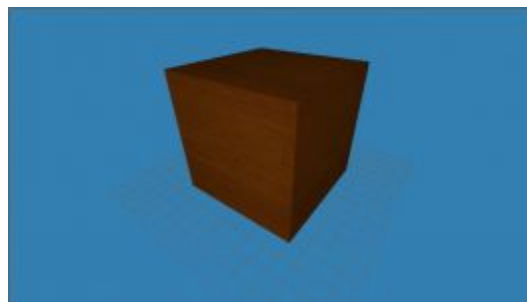
Simple Shapes

Now we're going to go ahead and create some simple shapes. Reset all of your viewpoints and then click the Box button from the tools menu. In the Front view, click and drag the left mouse button to create a square shape then release. You should see the square appear in each of the three 2D viewpoints and a light grey cube appear in your 3D view. Go ahead and move the camera around and inspect what you've just created. As you can see, Milkshape automatically took the Z axis into account and added the same amount of depth as the width and height of the square you have drawn. Also, if you take a look in the Groups tab you should see Box01 , this is the cube you have just created without a texture applied.

If your cube is still selected, it will appear red in the 2D views, if it isn't simply click on it in the Groups tab then hit Select. Now click over to the Materials tab and near the bottom, click New. This will add a new texture into your model's "world" called Material01. Now, in the middle of the Materials tools you should see two long boxes marked , these are the actual image files being used by this material. Click on the top box and an selection window will appear, simply find an appropriate texture (you can use this wooden one for now if you like) and then hit Open, this will apply the image file to Material01.



Now, with your cube still selected, simply hit Assign to paint the texture onto it. Your cube should appear in the 3D window with the texture applied, if it is still grey, right click in the 3D space and make sure that Textured is checked. Congratulations! You just made your very first textured model in Milkshape 3D, wasn't that fun?



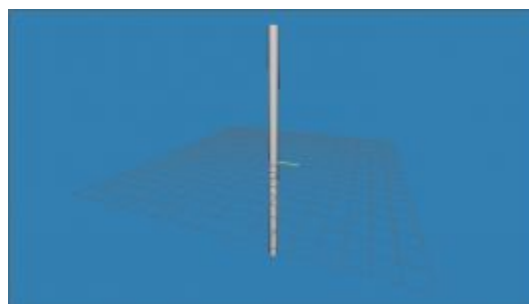
Extrude Modelling

Now you know how to create a cube, it's time to move on to the serious business. Extrude Modelling is a great technique for beginners to use to create moderately complex shapes without manually placing vertices and creating Faces. Save your wooden cube if you like then go ahead and create a new file. This time we're going to be using a background image to trace, this is a common practice used in 3D modelling, rarely do people create objects without some kind of reference. To save you some time, I've provided this picture of a pencil, simply right click on the full version and save it somewhere on your computer.



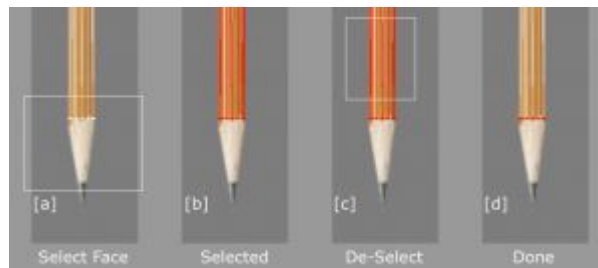
Now, right click inside your 2D Front view and click on Choose Background Image... then navigate to where you saved the pencil image and open it, you should now see the image applied behind the grid and axis. You may find it easier to trace this image by turning these off, simply right click inside the Front window again and de-select Show Axis and Show Grid, but this is completely optional. We're ready to begin turning this flat image into a 3D model! Click on Cylinder in the tools menu, in the Cylinder Options menu that appears at underneath, enter Stacks as 1 and you can leave Slices as it's default 12, the drop down box should be selected on Close with extra Vertex.

In your Front view, click and drag to create a cylinder over the main yellow part of the pencil then release, remember that if you need to zoom the camera in or out, it's Shift and Left Click. If you're having trouble fitting the cylinder in don't worry, just place it in as best you can then use the Select tool. In Select Options choose Vertex and make sure that Ignore Backfaces is not selected. Now you can select the vertices at the top and bottom of the cylinder and align them with more precision using the Move tool. You can also choose to select only the Y axis in the Move tool, if you remember this will prevent the vertices from moving in any direction other than up and down in the Front view. Very handy indeed! So, now you should have something that looks like this:



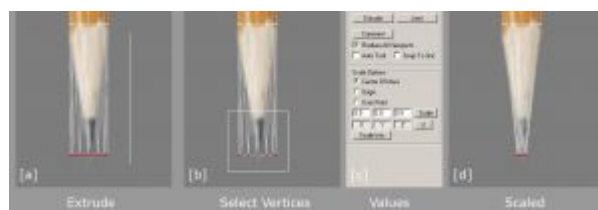
Huh. A rather bland looking grey tube. Well, let's move on to the tip of the pencil. Zoom in and use the Select tool with Face selected, then using Left Click, drag a box over the bottom group of vertices [a]. Now you'll see that along with the bottom Face selected, you've also got

some unnecessary Faces from the middle [b]. To remedy this, use the Select tool with Face still selected, hold Shift and use Right Click over these middle Faces then release [c]. This will leave you with only the bottom Face selected [d], which is the one you're going to extrude to create the sharp end of the pencil.



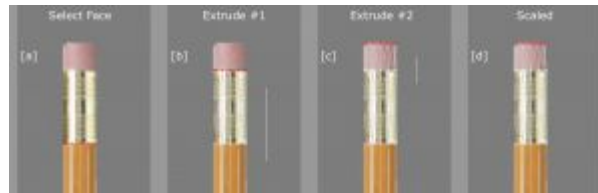
Click on Extrude and we're going to leave most of the values at their default, these should be Auto Smoothing Group selected and 0.0, 0.0, 0.0 on X Y and Z. Now, de-select X and Z by clicking on them. We're going to be extruding vertically which means we need to use the Y axis so be sure that is the only one selected then Left Click on your selected bottom Face and drag it downwards so it is level with the tip of the pencil and release [a]. As you can see, this has created a new group of vertices at the bottom of the pencil, yet they are still connected to the ones above with Faces. This is what Extruding is all about.

Now we're going to scale these new vertices down so they make the sharp tip of the pencil. Using the Select tool set to Vertex, select the bottom vertices [b]. Now, using the Scale tool, enter these values into the boxes under Scale Options. Center Of Mass selected, 0.9, 0.9, 0.9 on X, Y and Z, U de-selected and Scale Into de-selected [c]. We're using 0.9 on all three axis because this is a nice and small amount to use to shrink an object, similarly we would use 1.1 if we wanted to make something bigger. Now we simply press the Scale button next to the values enough times until the tip of the pencil becomes adequately sharp [d]. How many times you press the Scale button is entirely up to you, personally for this tutorial I pressed it fourteen times.



Alright, that's one end of the pencil done. Move the camera up to the top now using Ctrl and Left Click and select your top Face using the same method that you used earlier to select the bottom one [a]. Using the Extrude tool, again only on the Y axis, move that Face upwards to the end of the metal connector, creating a new set of vertices and Faces [b]. We don't need to scale these since there's no change in shape, just extrude this new Face you just created again, up to the end of the eraser [c]. Now, use the Scale tool and using the same 0.9 values, press the Scale button once [d]. This will create the slightly curved top of the eraser and complete your pencils shape, congratulations! You may notice the shading on your pencil doesn't look quite right, this is to do with the Smoothing Groups, something which I'm not going to go into just yet, to fix it just go into the Groups tab, and in the Smoothing Groups options, click on

Clear All. This will smooth out your model. Save the file, since we're going to be using it for the Texturing process.

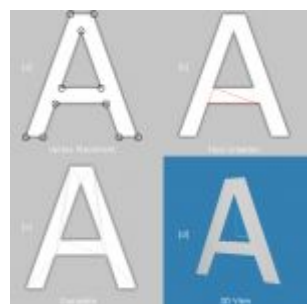


Vertex Modelling

Now you know how to use Extrude Modelling, you might feel as though you know enough to stop reading. Which is fine by me, I even encourage you to go and practice on a variety of shapes until you get comfortable with it. Eventually though, you'll come to a point where you find some objects just aren't practical to build using Extruding. This is where Vertex Modelling comes into use, it is the absolute bare bones method of creating a 3D model, as I explained in the Fundamentals section. It involves placing Vertices and connecting them together using Faces. Since you're a beginner, I'll start you off with something simple, just so you can get to grips with it and perhaps in a future tutorial I'll go into more detail. We'll be creating a 3D model of the letter A, here is the image that we are going to trace.



Create a new File and set that image as your background in the 2D Front view. Zoom in so it fits in the window, we're going to place some Vertices and it can be a precise procedure. Click on the Vertex tool, as you can see there are no special options because it simply only has one action. Now where ever you click in the 2D windows, a Vertex will be placed. Place a Vertex on each edge of the A, as you can see in the diagram [a]. Using the Face tool, with it's Threshold set to the default of 5 in Face Options, click on three Vertices in an anti-clockwise formation, to create a triangle [b]. Repeat this method for the rest of the remaining Vertices. When you're finished, you should have something that looks like the final image [c] & [d].



As you can see in the 3D view, you have created the shape of the A, with the white Faces in front and the black Backfaces in the back, it is a flat plane and has no depth. This is why Extrude Modelling can be easier for beginners because they don't have to manually give depth to everything they create. If this model was loaded in a game, the Backfaces would most be transparent and you'd see right through them, that's because Backfaces aren't "drawn" by most game engines, only Faces are. This is why it's important to make sure all of the polygons on the visible parts of your model are Faces with a texture applied. That's about it for Vertex Modelling! The rest is pretty much up to you, the more you create models, the more you'll get used to it and you'll begin to find your own method of creating faces, alternating the order of the triangles you create and so on.

Summary

By now you should be getting to grips with basic model creation in Milkshape 3D. I really hope this tutorial has helped you and I've tried my best to be as clear as possible with my instructions and tips. If you're having any problems, feel free to leave a comment or send me a message as this tutorial will be posted primarily on Mod DB (moddb.com/members/therealzomb) and I'll gladly help you out to the best of my abilities.

If people are happy with my tutorial and there's enough demand for more, I'll write another for Intermediate users, detailing Texturing with UV Maps, Exporting for GoldSrc and Source engine based games, creating Joints and rigging a Skeleton and more. Until then, practice what you've learned and enjoy making a bunch of 3D models!