

07259950-0

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Chapter 1

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1.1 "

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This is the Multiview version of the Metaform Tutorial by James Hastings. I got this Tutorial off the Internet & it has helped me greatly. The one thing I wish I could do is swap easily back and forth between his screen grabs (Nice touch James!) and his text. So I decided to turn it into an Multiview document. This tutorial is designed to work with the Multiview program that comes with WB 3.xx & up. It has internal links to IFF files that require the ILBM datatype be in you Devs: drawer (Should be there already). This tutorial works best on an Interlaced WB with more than 16 Colors but will work Fine with other screens (You just have to scroll around a lot is all). Once you view the screen grab just hit the "Retrace" button to swap you back to the text. I hope you enjoy this version and all thanks belongs to James Hastings for creating the tutorial in the first place!

** Please Note: The Pictures MUST be in the same Directory as the Guide **

Enjoy,

Thomas Healy

Introduction

1.2 "

M E T A F O R M T U T O R I A L

The documentation that accompanies LightWave 3.5 does not go into too much detail regarding the function and use of the "Metaform" subdivide tool in

LightWave Modeller. I have created this step-by-step tutorial to illustrate the use of this important but under-documented feature of the software. By following this tutorial I hope that you will gain an understanding of the use of the metaform tool.

This tutorial assumes that you are very familiar with LightWave modeller, and have experience with creating points, polygons, and modifying and manipulating objects.

The object that you will create in following this tutorial is the hand-set from an old-fashioned telephone. These hand-sets were highly rounded, sculpted objects that would be difficult, if not impossible, to properly model with standard lathe/extrude tools. The metaform subdivide allows us to construct a very crude approximation of the shape we want using simple-to-work shapes and tools, and then creates the smoothly changing contours based on the geometry of our original shape.

Step One

1.3 "

Step 1: To begin, create a rough outline of the general shape of one of the handset's ear/mouth pieces (see Figure.01). Looking at Figure.01, you will see that I have used the minimum possible geometry. There is a point placed only wherever the curve of the final object will change direction.

1.4 "

Step 2: Lathe this shape but use only 8 segments. This will be adequate for the metaform tool to turn into a completely rounded shape, and allows us to work with very simple object geometry (see Figure.02).

1.5 "

Step 3: Rotate this shape 22.5 degrees. This will straighten out the object so that we can add the handle easily (see Figure.03).

1.6 "

Step 4: We need to make sure our geometry is as simple as possible. This means we must reduce the number of polygons as much as possible. Looking at Figure.03, you will see that the top and bottom of the shape consist of 8 triangles meeting at a point in the centre. This is a result of the lathing operation in Step 2. Using the right-mouse button, lasso the top polygons, cut them, and paste them into another layer. Press the "k" button on the keyboard to kill these polygons, leaving only the points. Select and delete the middle point, and then construct three polygons from the remaining points

(see Figure.04). You need to make sure that the polygons you create for metaforming contain no more than 4 sides. This is optimal. Cut the polygons you have created, return to the original object, and paste them.

1.7 "

Step 5: Repeat Step 4, but perform the operation on the lower 8 centre polygons. Lasso the polygons, cut them to another layer, kill the polygons, delete the centre point, construct 3 new polygons (see Figure.05), cut them, and paste them into the original object.

1.8 "

Step 6: We need to create a hole to which we can attach the handle of the handset. Metaform objects must consist of an external "skin" only -- there can be no "internal" polygons. Therefore, we cannot simply make a handle and let it overlap into the ear/mouthpiece of the handset -- it must be attached to it and be part of the surface. The best way to make a hole is to remove a polygon from our shape. However, if we were to remove an entire side, the handle attachment would be too large. Therefore, we are going to "slice" the object at a point to create a point at which we can cut the hole. Go to a new layer, and select your original layer as the background layer. Create a two point polygon that cuts through the object slightly below centre (see Figure.06). Return to the original layer, and select the layer with the two-point polygon as the background layer. Use the "Tools/Drill" to "Slice" the object in the Z axis. At this point, it would be a good idea to use the "Tools/Points/Merge" function to merge all the points on the object so far.

1.9 "

Step 7: Select the polygon on the top right-hand side (see Figure.07) and delete it.

1.10 "

Step 8: Rotate the entire object -12 degrees (see Figure.08).

1.11 "

Step 9: Move the entire object to the left (see Figure.09).

1.12 "

Step 10: Mirror the object (see Figure.10).

1.13 "

Step 11: Select the points around the "holes" that we created in Step 6 (see Figure.11) -- note that there are 8 points selected. Copy these points, and paste them in a new layer.

1.14 "

Step 12: Create additional points to create the framework for a crude handle for our handset, which will join the ear and mouth piece (see Figure.12).

1.15 "

Step 13: Create polygons between these points to create the handle (see Figure.13). Remember that when picking points to create polygons, they must be selected in clockwise order if the polygon is facing you in the view your are working in, and counter-clockwise if it is facing away from you in the view.

1.16 "

Step 14: Cut the handle, and paste it into the original layer which contains the ear and mouth piece (see Figure.14). Merge the points. At this point, we have a good, but crude, approximation of our final shape. It is constructed entirely of 4 sided polygons. It would be a good idea at this juncture to check the orientation of your polygons, and flip any that are facing the wrong way. Once you begin metaforming this shape, you will have too many polygons to deal with!

1.17 "

Step 15: In the "Polygon" menu, select "Subdivide" and choose the "Metaform" option. You should end up with something that looks like Figure.15.

1.18 "

Step 16: If your object is going to be far from the camera, you can skip this step. If your object is going to be closely visible, then I suggest that you repeat the Subdivide/Metaform operation for a second pass. This will improve the surface smoothness and make the object more convincing (see Figure.16).

1.19 "

Step 17: Choose Polygon selection, go to the "Display" menu, and select "Stats" (see Figure.17). At the bottom of the Statistics display, you will see buttons marked "+" and "-" next to an item called "Non-Planar." The metaform function has a tendency to create non-planar polygons, which may cause rendering errors. Pressing the "+" button here will select all non-planar polygons in the object. Then you can go to the "Polygon" menu, and choose "Triple" to break these non-planar polygons into triangles.

1.20 "

Step 18: Apply a surface, and save your object.

Authors

1.21 "

I hope that this tutorial has helped you realize the potential of the metaform tool.

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Feel free to Email me to swap Textures, Objects Ect. for LightWave or if you just want to B.S. I hope you enjoy this. Later,

Thomas

P.S.

For James Hastings: James, I hope you don't mind me messing with your text file! Let me know if you do ;)

P.P.S.

All Copyrights apply, I'm not Liable for ANYTHING happening as result of this Guide file, so you can't sick your lawyers on me...Ha Ha Ha!
