

Hello there possums. It's time for you to pluck up all your available courage and delve deep into the heddy and intoxicating world of the NURB. Now, the common NURB is a small and difficult creature to handle, being mainly nocturnal and voracious if not treated with care. But if you take the time and effort the common NURB will prove to be a loyal and giving friend.

All together now - Ahhhhhhhhhhhh! (Blech!!)

Yup it's about that time of night I like to chow down on a NURB or two, would you care to join me?

Pack up now Jerry, it's way past your bed time

About here should be a picture of something cool that I've built in NURBs. But alas, not so. The first thing about NURBs in Max is that their fatally flawed. The first set of NURB tools are simple, and although powerful in their own right, not that suitable for really amazing stuff. This is mainly due to the lack of "Trim curves". Now, I'm no NURB expert, but as I understand it trim curves let you cut holes in NURB surfaces, none this doesn't seem massively limiting, but once you grasp how NURBs work, you'll see this is a big drawback. Don't fret too much though, advanced NURBs including trim curves are in Max 2.5 - soon to be released.

Now, if you don't know what NURBs are then most of this so far will have passed you by. So now would be a good time to explain some stuff....

And on the eighth day God created NURBs, and lo, they were good..

NURBs are special types of surface that have no faces, but are calculated at render time. They are dynamically subdivided depending on what the camera can see at the time. This basically means **NO MORE FACETS!** All the blockiness of poly models is done away with and nice smooth shapes are the order of the day. Because they have no faces and stuff, they can be represented in the viewport by curved splines, so there is less clutter when working. "they sound the dogs!" I hear you cry, but there are drawbacks as well. They take longer to process than poly stuff (although if you're in the habit of filling your scenes with 500K polys I can't see there being THAT much difference), and also, because they are built from curvey splines rigid hard edged shapes are harder to build.

A NURB, a NURB, my kingdom for a NURB....


The first important thing to grasp about Max Nurbs is, the concept of dependent and independent things. A lot of the surfaces and curves that you make will rely on other surfaces and curves (and points). These are all **DEPENDENT** things. You can't go in and alter them directly, you have to change the things that they depend on. If you need to edit them individually then you need to make them **INDEPENDENT**. They then no longer take any regard of the shapes they used to belong to.

Got that? Good.

Here is a brief run down of all the buttons in that there spanky NURBs floaty window.

 This makes a point in space (whoopy doo). In the grand scale of things about as useful as a trout trapped car. (that's not)

 This makes a dependent point of a point. Sort of a child of a point.

 Ahh the first useful bit. This makes a dependent point **ON** a curve. The point sits on the curve and you can slide it along the curve like a path.

 This makes a point at the place where two curves cross. Dependent

 Another useful one this. Makes a dependent point ON a surface. So you can (in the end) make a curve that lies on a surface.

 Creates an independent cv (control vertex - more on this later) curve.

 makes an independent point(and this)curve.

 This one is perhaps the most useful. it fits a curve between existing points. If you create 4 surface points you can turn them into a curve.


 Makes a transform curve, sort of like a "shift move" thing. But is also dependent.

 Makes a dependent curve that blends between two other curves. Even when you alter the curves the end stays true.

 Gives you an offset curve. A bit like shift scale - but not quite. Is also dependent.

 Yup your right! makes a mirror of the selected curve. Dependent.

 These make chamfers and fillets between two other curves. I had trouble with these. Never seemed to work properly - but that could be just me.

 These make curves from a surface. Move the cursor over a surface and a curve tracks the point here you are. Click to create the curve. One button for X (U) and one for Y (Y).

 makes a CV surface - just like in the create NURBs surface panel.

 Makes a point surface.

 See transform curve.

 See blend curve.

 See offset curve.

 See mirror curve.

 Same as normal extrude but makes NURB surface.

 Same as normal lathe but NURBS.

 Makes a surface between two open ended curves.

 Makes a loft surface from as many curves as ya like.

 Fills gaps in surfaces.

Have you lost your cotton pickin' mind?

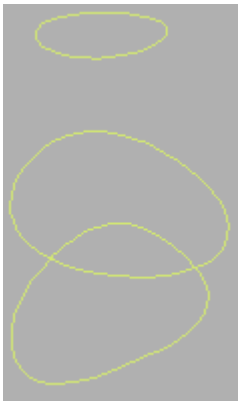
Now there were a few new things in that lot. CV and POINT stuff for instance. A CV or control vertex is a bit like a bezier spline handle, in the way that it influences the shape rather than defines it. If you've used FFD (free form deformations) you'll get the idea. On the other hand POINT curves and surfaces, the edges of your shape always go through the vertex, and these are more like your conventional mesh vertices.

I find it's always best to go straight for the CV curves or surfaces. Mainly because whenever you make a curve or surface independent it comes out as a CV object anyway. Also you can't refine a point curve after it has been created, which you can with CV curves.

Let's get it on, you know it....

A lot of the time your shapes will start from NURB splines, but you can't build a surface straight from the splines. In the manual it says to create a CV patch surface then attach your splines to it then delete the surface?? Well that's too much like effort. Try building your splines, click on one and goto modify. Choose attach and pick all the other splines. Then right click on edit stack and choose collapse to NURB surface. You can now build a surface over the splines.

Just a quick one before I go



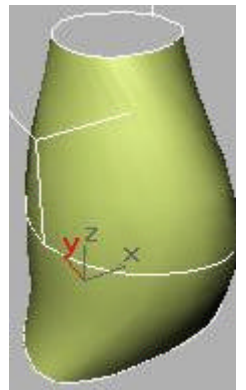
Let's look at how to build a quick NURB loft shape, then refine it later. This is not supposed to be any sort of object, just a shape to show you the technique. Draw some NURB curves (create, shapes - dropdown - NURBs curves) three should do it. In fact a blob like these.

Then attach them all together in the modify panel. Right click on the edit stack button and choose collapse to NURB surface. You should also get up the NURB tool panel.

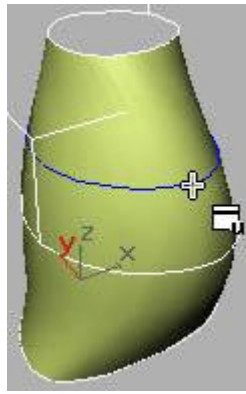
If you choose the  button and click and drag from one shape to the others. This should create a lofted NURB surface.

NOTE: You might get a shape that looks inside out, it's just the normals that need flipping. Goto sub-object surface, click on the surface and choose flip normals.

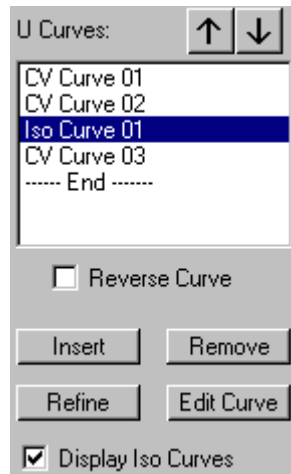
It should look something like this now. Sort of a blob shape. But it's not quite the right sort of blob shape is it? No, it isn't. What it could do with is a buldge bit near the top on one side. That's OK, we can do that.



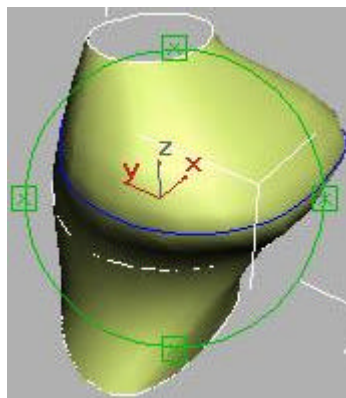
Select the Uiso Curve button . Then choose an area near the top, ala' picture.....



This should give you a dependent curve that fits the shape of the surface. If we want to edit (which we do) the curve then we need to make it independent. Go to sub-object curve and click on the curve that you just created. Then click the make independent button Make Independent. If you then goto sub-object curve CV you can edit the shape of the curve. Pull a couple of points around, then goto sub-object surface. Because this is a loft surface, you've got extra parameters at the bottom of the roll-out. What we need to do is get the curve back into the loft shape.



Click in the small list of curves where you want to stick the new curve. It should appear before the one you highlight. Click the insert curve button. Then select the new curve. It should be inserted into the loft surface and look a bit like this....



I hope this has given you a little insight into NURB stuff. As I said I probably won't use them until I get 2.5. but you can still do some pretty neat stuff, and it's a good chance to learn how they work.