



If you don't know Rhino 3D you should have a look to my Rhino section for learn more about this fabulous modeler. But a lot of people know Rhino now, so I'll just show you how make this knife. When you'll see how I've done, it won't take you more than a few seconds for create this object! Yup just a few seconds, I've timed with a clock! You'll need to know..... nothing.



At first a little story: I was just playing with Rhino and one ellipsoide when this object appear on my screen. Hemm is there someone in my computer... "Hey where are you?".

### All the object is created from one ellipsoide

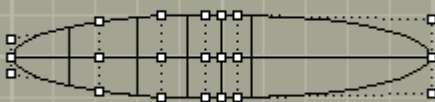
#### Front



Start by Make one ellipsoid with **PolarEllipsoid**.

Since the 97 november beta **Elipsoide** make by default one polar ellipsoide, but that wasn't true before this beta, so with The **PolarEllipsoid** command I'm shure you'll get the shape we need for the knife.

#### Top

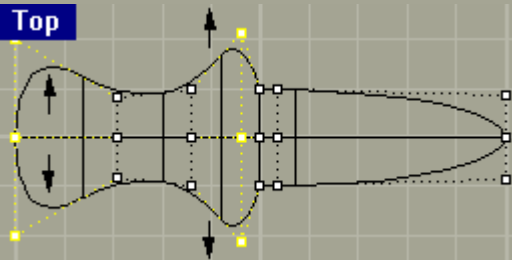


We need to add some Knots, so just type in **InsertKnotSrf**, or from the Surface menu, click Edit Tools, then click **Add Knot**.

At the Choose an object prompt, select the ellipsoid. The cursor moves along the surface.

At the Choose where to add knots (**Direction=Both** **Symmetrical=No**) prompt, choose the knot location. Type in "**D**" and "**U**" for choose the direction. Add a few knot like the picture, this will give a good control later.

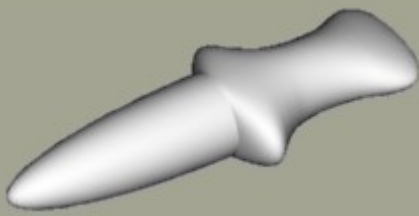
#### Top



Select the surfaces, from the Surface menu, click Point Editing, then click **Show Control Points** or directly type in **ShowCV**.

Select the controls points just on the right from the center axe with a rectangle selection.

From the Transform menu, click **Stretch**. or type in **Stretch**. While you are stretching the points use snap on the grid. At the Origin point prompt, choose the center point of the ellipsoide.

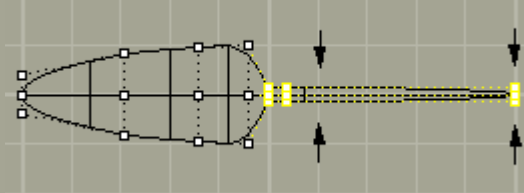


Push on shift key while stretch vertically, it will active the orthoangle snap. As your origine point is snaped on the grid the stretching will be symetrical. You didn't snap? So go back to the top and restart. He he he.

Do the same thing for the back of the knife (on the left).

You should get something like this picture on the left.

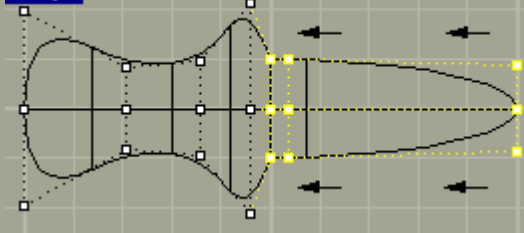
**Front**



OK, it isn't a knife at all, maybe a space ship, so let's refine the blade.

Always stretch the points with snap and orthoangle, do this in the Front view.

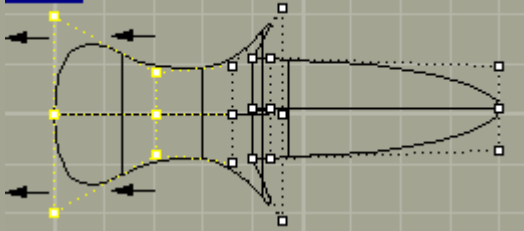
**Top**



Now for create a protection shape between blade and sleeve, **move** (This is the command to enter) all points of the blade toward the sleeve. The points to move are all just on the right of the ellipsoide center.

For all the process you just need one Top and Front viewports, but the Perspective view will be pleasant for see the evolution.

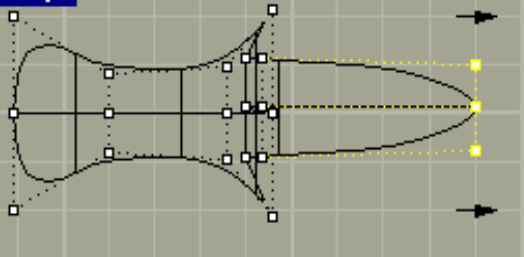
**Top**



Of course this operation can be done from the Front or Top view.

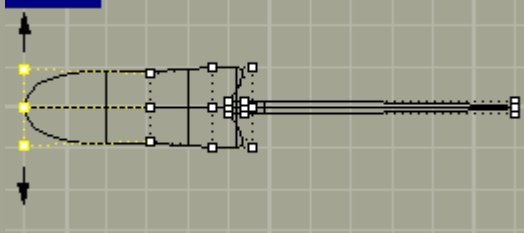
The sleeve is probably too short, it depend of your ellipsoide, so **move** the point for enlarge it.

**Top**



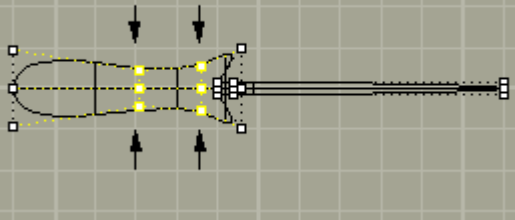
It's the same thing for the blade, if it's too short move the point for stretch it.

**Front**

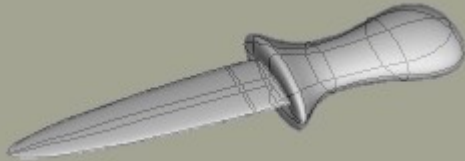


For expanding the thickness of the sleeve, Stretch again the left points in Front view.

Front

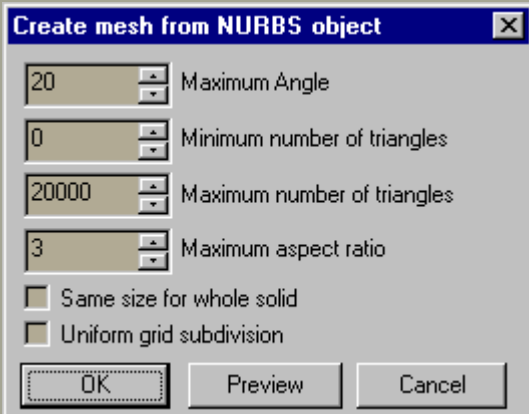


Let's dig the sleeve in the middle, always by stretching, snap, orthoangle, in front view.

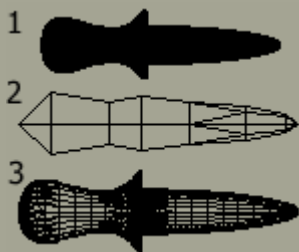


Hey that's finished! What is your score? 30 seconds? If you took more than 40 seconds you are very bad. :-)

Now you would probably want to know how to get a good texture control on it.



Okky dokky, so let's explode this knife, Yeahhhhh. Hey don't get me wrong, I'm not a terrorist, I just want to separate the blade from the sleeve. Ok Let's be serious: Lady and gentleman we are going to convert this object to vertices and polygons. "Hoo noooo". Please be courageous, anyway your favorite renderer can't import nurbs. So select the knife and type in **Mesh**, come on do it, ... good! Now you have to set the number of polygon, it depends on the level of precision you want, I want some precision so **Enter maximum angle:0** and **Maximum number of triangles: 90,000**, hem no don't do it, but play with these two parameters and look at the result by click on Preview each time, don't choose the uniform grid subdivision option, it will give you some nice triangle but not good precision.

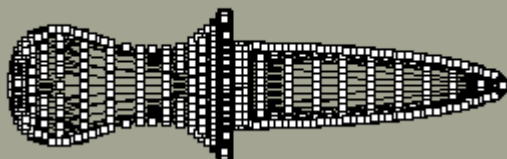


Game: Which of these knives is the good one?

Answer: It's the third

Let's say we set the default parameters. They aren't bad for our shape. Anyway if there is too much triangles you'll be able to optimize it in 3DS4 and MAX, I dunno in others 3D softwares.

Top



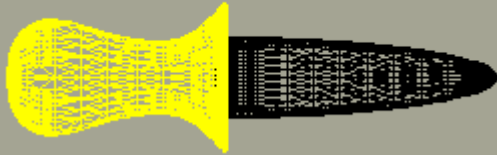
When your knife is converted to mesh. Just enter **Pon** which means Points On. That will display all these control points which are very sexy.

Front



Select all the blade points after have copied the whole knife (**Copy**), press your "del" key, do the same thing on the other knife but with the sleeve points. Then you'll get one blade and one sleeve. The **HidePoints** and **RestorePoints** command are helpful for hide and show the points during the selection.

Top



After a little bit longer work than the nurbs knife work, here is our blade and sleeve.

So let's save them to one 3DS file let's render them with texture in MAX or others.

It's also possible to separate the blade from the knife and keep the nurbs.

The only thing to do is to **project** a line between the two parts, and use **Split**.

Then you can render the perfects nurbs meshes, with different textures on the two parts.



Hope this gave you some new ideas. Let me know about them.



*Renaud DELCUZE* ©Alliance Production 1998 *Rhino/Max 3D House*

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