

Joan of Arc  
by  
Michel Roger

3ds Max



*Complete  
project*

Joan of Arc  
by  
Michel Roger

3ds Max



*Body*



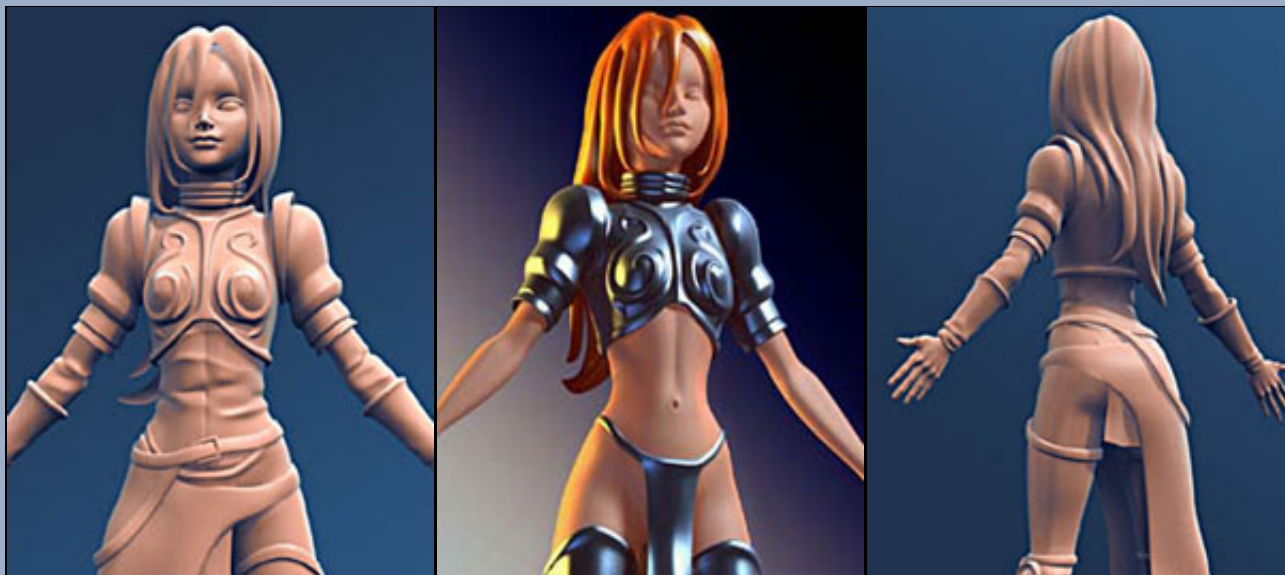
## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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This is simply the best tutorial I have seen, originally written by Michel Roger in French ([view here](#)) and tranlated by me [tom@3dtotal.com](#) and [Stefan Roth](#)

Creating a character from A to Z, modeling, textures, skinning.

Image Templates provided.

Presentation.

1. Modeling of the body	2. Modeling of the head	3. Modeling of the accessories	4. UVW Mapping	5. Texturing & Hair	6. Bones and skinning
Body (1 - 5 pages)	Head (1 - 6 pages)	The Sword (1 - 4 pages)	Bases (1 - 6 pages)	Eyes (1 - 2 pages)	Bases (1 - 2 pages)
	Ear (1-2 pages)	Armour legs (1 - 6 pages)	Sword (1 - 3 pages)	Skin (1 - 2 pages)	Hierarchy (1 - 3 pages)
	Assembly (1-2 pages)	Armour bust (1 - 6 pages)	Clothing (1 - 4 pages)	Hair (1 - 4 pages)	Skinning (1 - 5 pages)

Hair

(1 - 3 pages)

Armour

(1 - 3 pages)

Glove

(1 - 4 pages)

Body

(1-2 pages)

Accessories

(1 - 5 pages)

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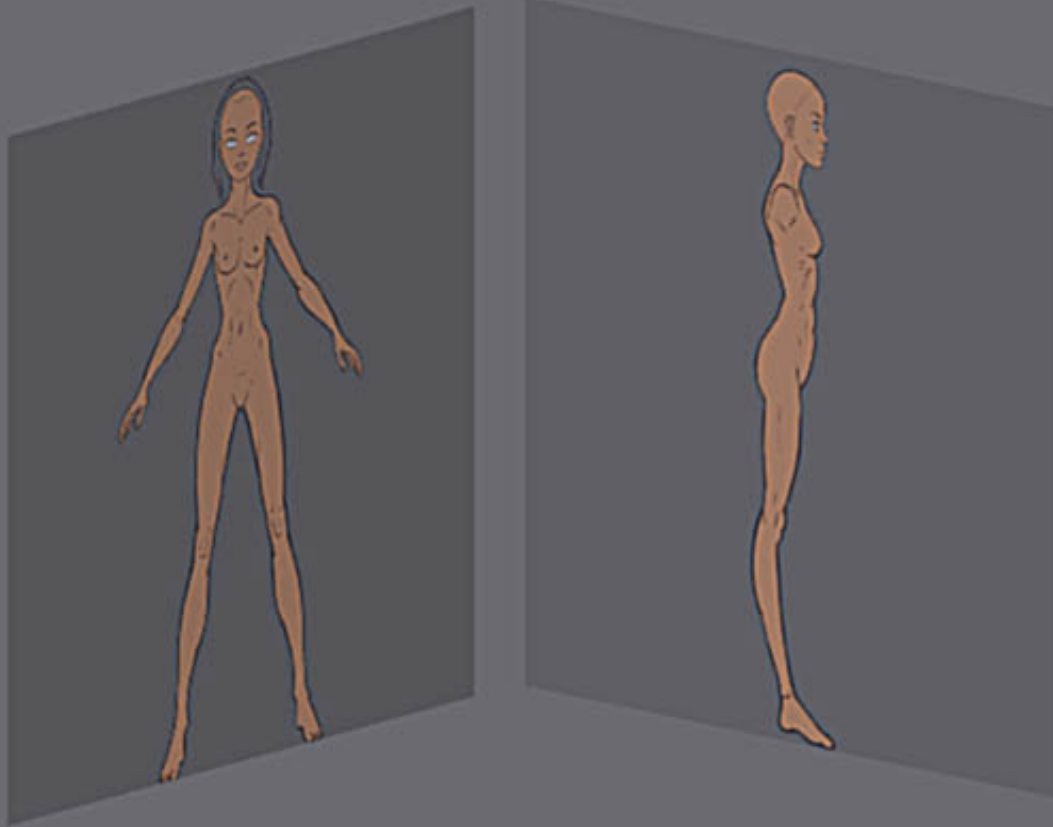
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### Modeling of the body

#### Why model the body if the final character has clothes ?

First of all it is a good exercise and you should never miss the opportunity to go in at the bottom of the things and because it will be very easy to take support from the body to model clothing later, thus giving a true volume to the character.

Of course there is no need to make the body with lots of details, thus the feet will be very simplified and the hands will be modeled as gloves.



As usual use the templates and regulate the size of displayable textures on 512 pixels in Preferences/Viewport/  
Configure Drivers.

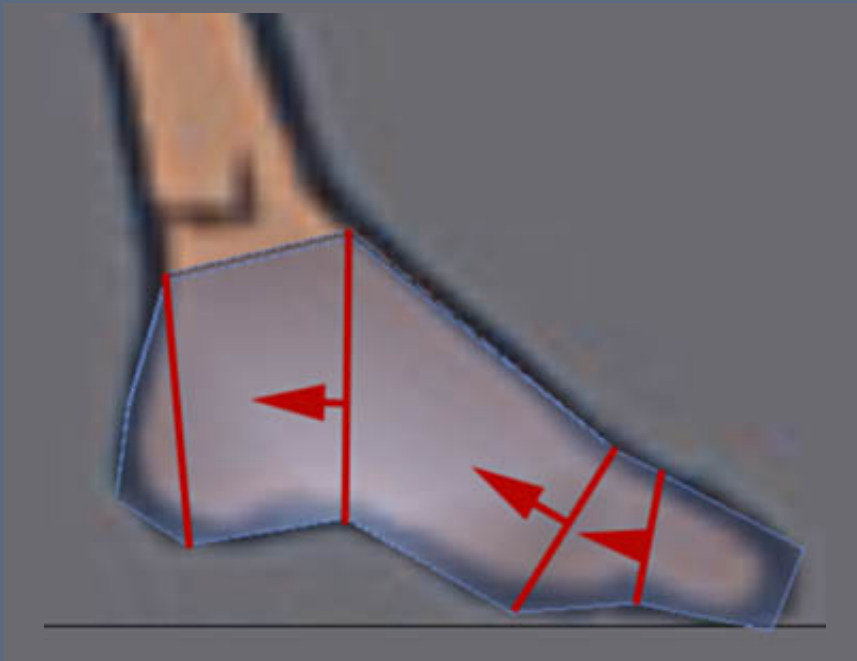
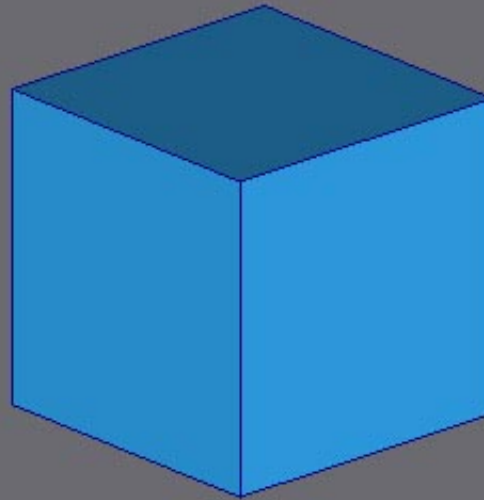
[Download templates here \(Zip 16ko\)](#)

The return of the basic cube :).

As in the Crash Bandicoot LPM tutorial, the base of modeling is a cube, the simplest primitive in 3d...

Apply "Edit Mesh" and Collapse Stack.

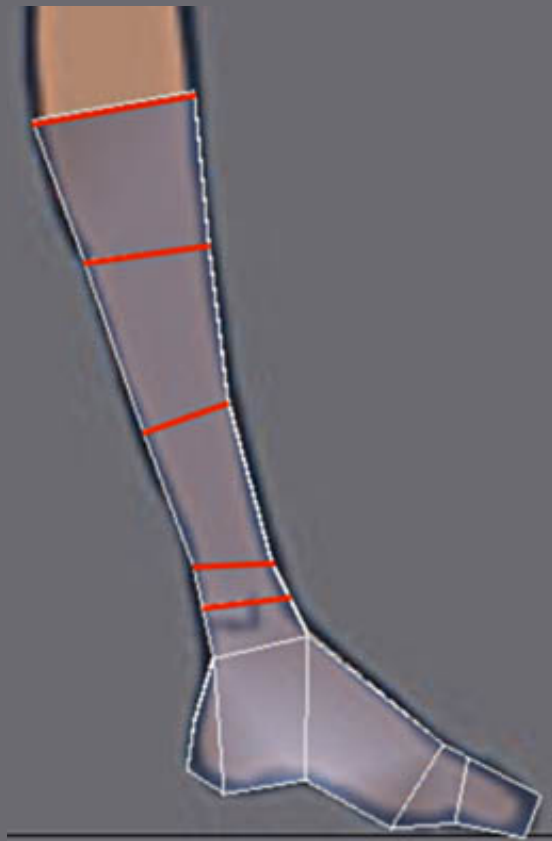




For the beginning start in left viewport, extrude one face from the cube, like show on picture on the left. Repeat this process and adjust the vertexes.

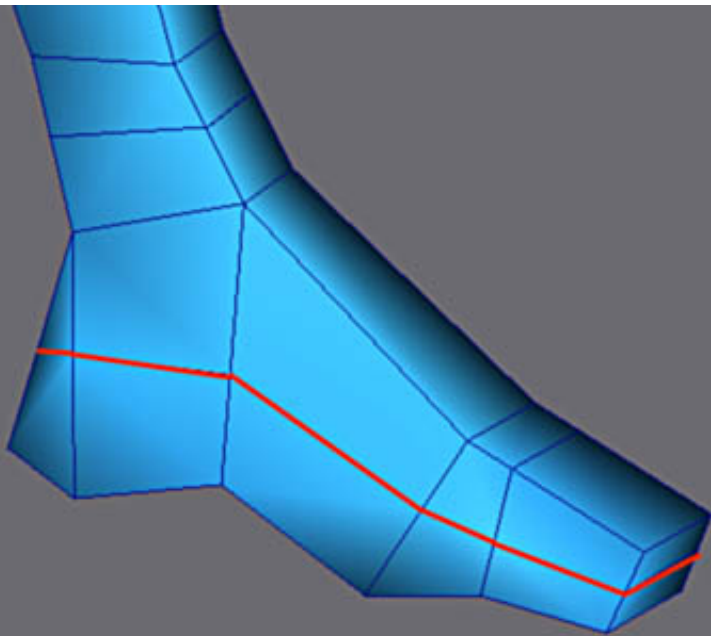
To see through mesh, activate the mode "See Through" in Properties of the object.

A short cut can be configured to pass from one mode to the other, check out Customize/Customize User Interface and "See Through" Toggle

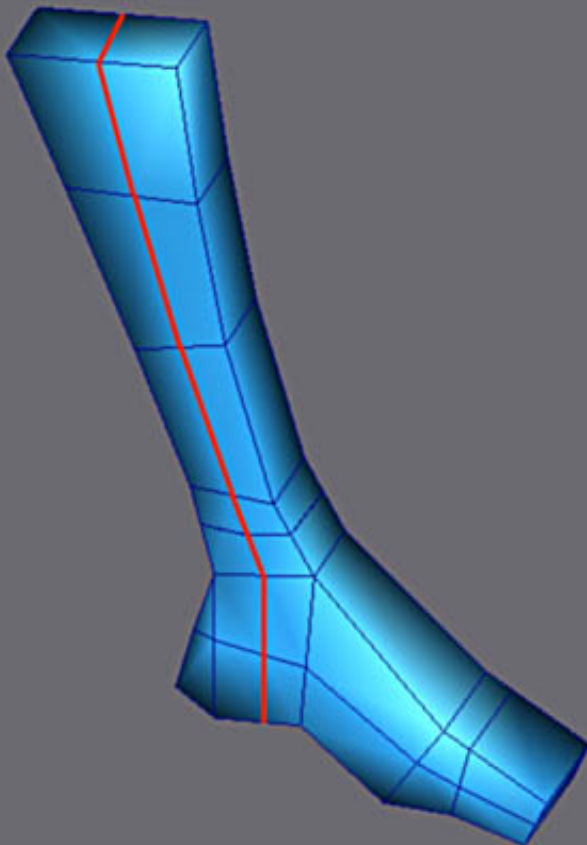


Still in left viewport, extrude the beginning of the leg and adjust the vertexes.

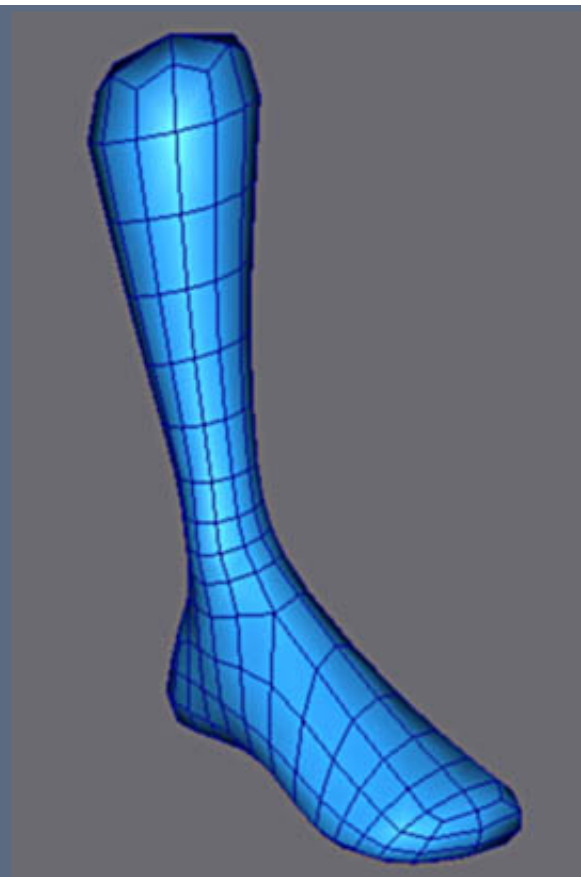
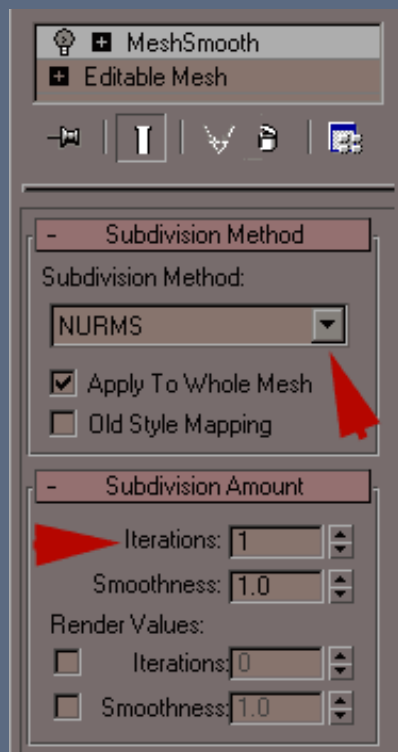
With Cut, insert the edges (left picture)



around whole foot. (rotate the viewport so  
you can cut the opposite side of foot)



Again add one line for the leg and the heel.  
(from both sides)

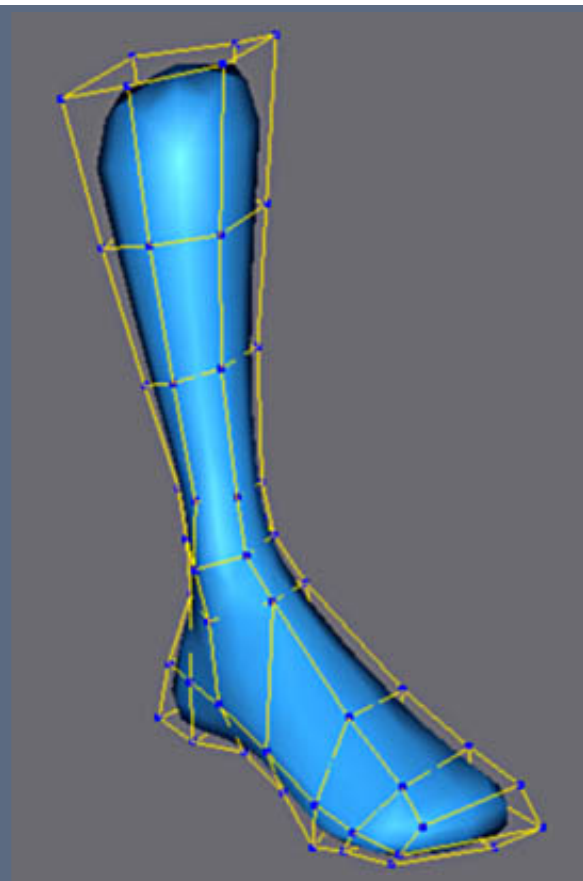


Unlike in the tutorial on Crash Bandicoot LPM, here we will use Meshsmooth smoothing while modeling on LPM. That combines the advantages of the LPM (simple and fast) and the quality of the smoothing of Meshsmooth.

Add Meshsmooth modifier.

We will use NURMS mode with an iteration of 1, its fast and detailed enough for modeling.

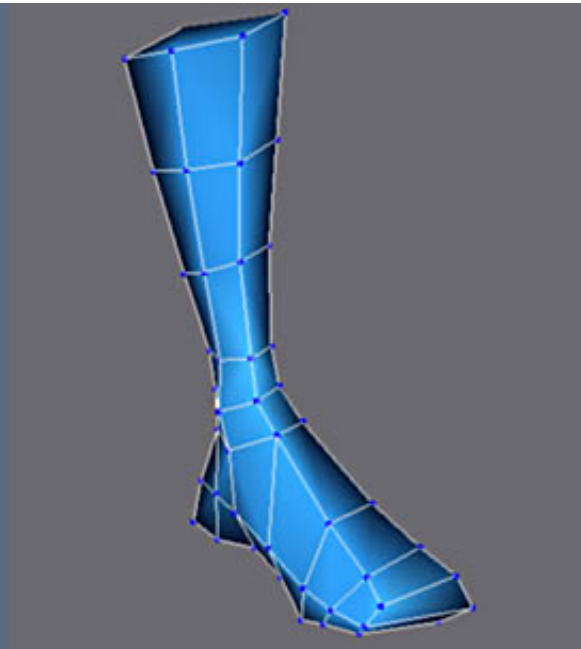
It should be noted that this technique of smoothing is universal since you can find it in most of 3D software FE: Maya, Softimage, Lightwave or Nendo. So the LPM mesh will look the same in these software after smoothing...



In the stack, click on Editable Mesh and activate the button Show End Toggle Result and go to Vertex mode. That makes it possible to see the mesh low definition (LPM) and the subdivided mesh at the same time. LPM mesh behaves as a cage of deformation of the subdivided mesh. However its one object.

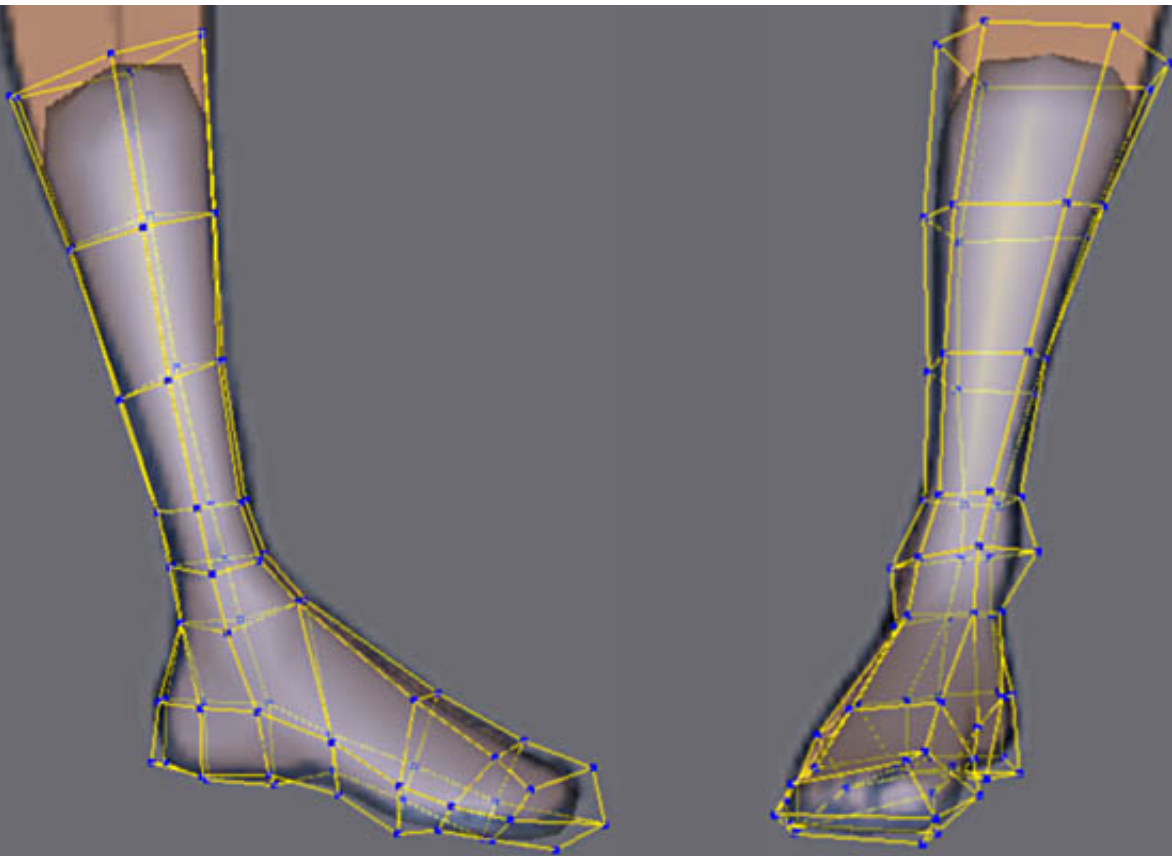






If you would like to temporarily see only LPM mesh , just turn of "show end result" toggle.

In general when you edit the mesh FE adding edges, it is more practical to work with this settings.  
When you are creating forms, the subdivided mode is better.



In See Through mode , adjust the vertexes with help of the references on the two sights.  
Finish the adjustments in User View , use see trough again for so you can see references easily.

Add a edge which passes by the medium of the foot and goes up  
along the leg.

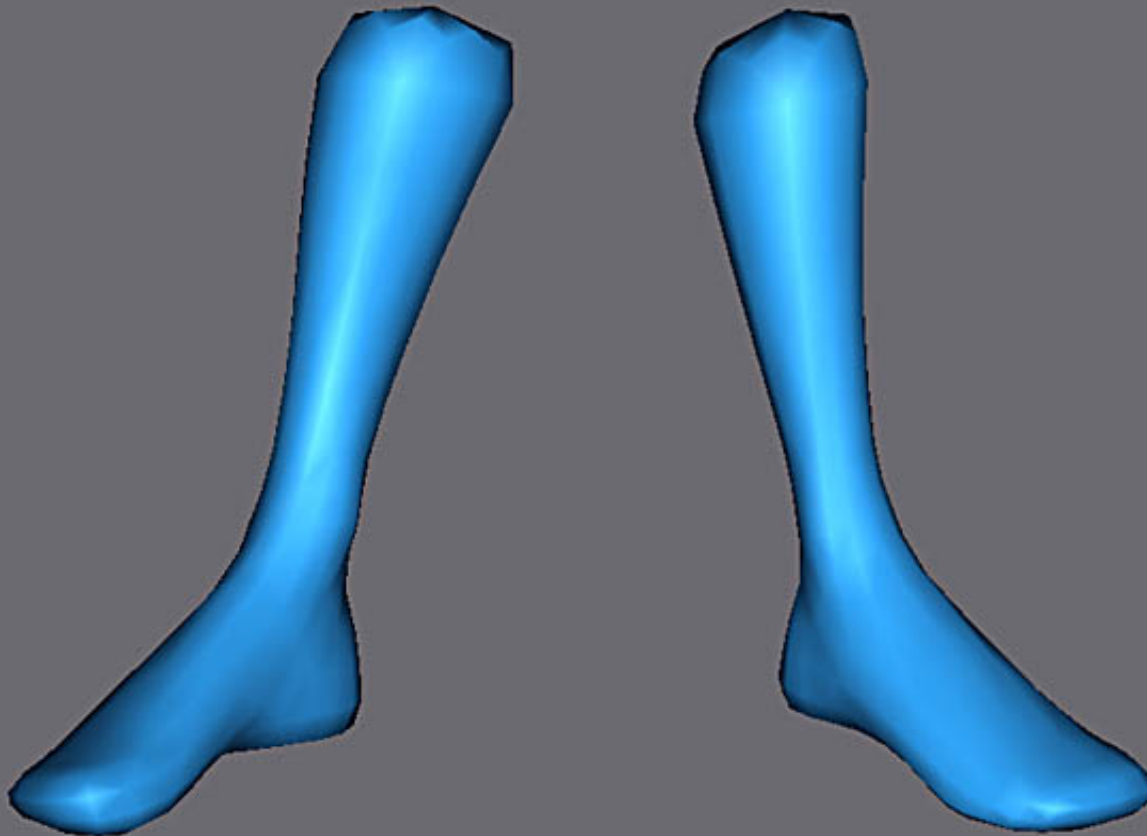
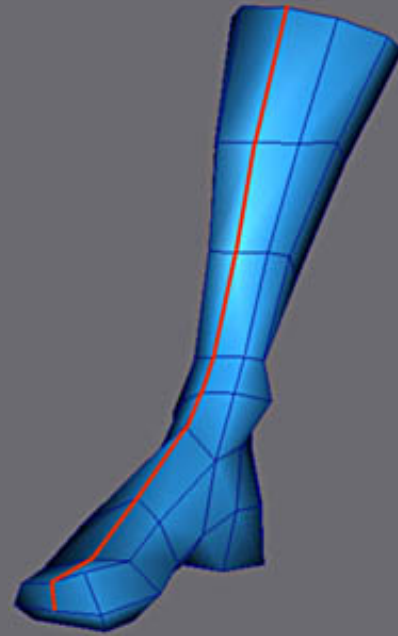


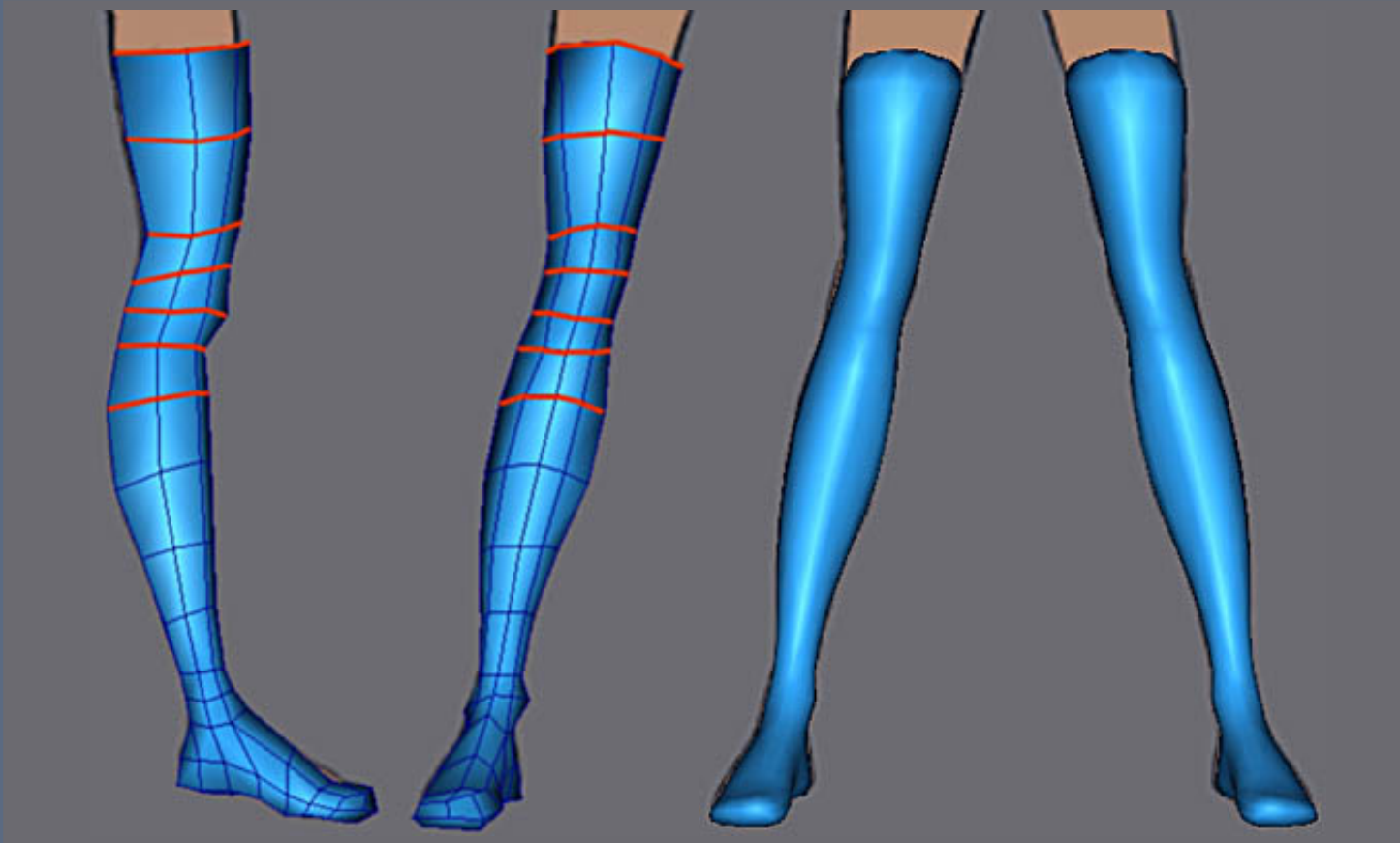
Image of the foot and the beginning of the leg after adjustment of the vertexes.

It should be noted that the orientation of the invisible edges of the faces is not important and does not influence the subdivided mesh.

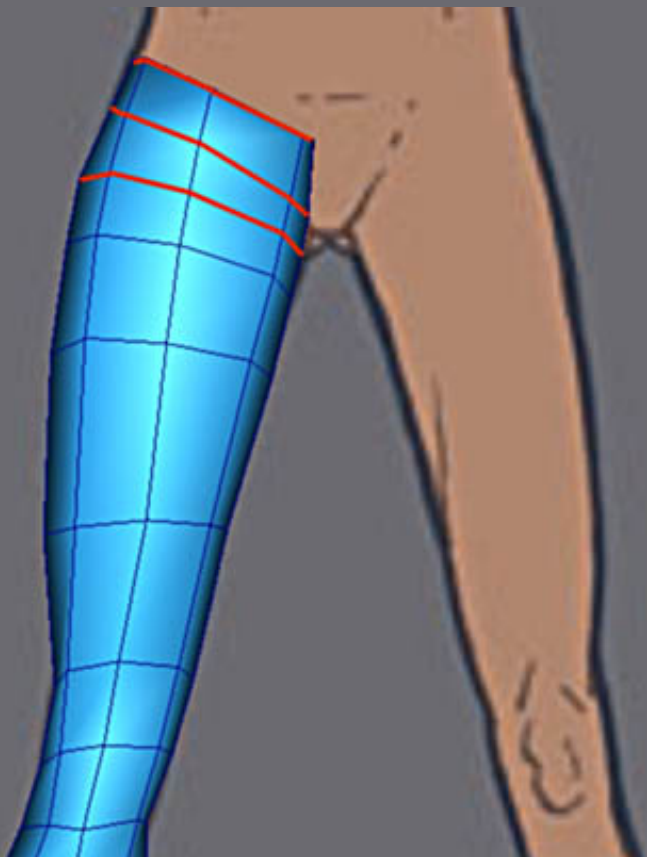
It is affected only by the visible edges.

In general try to use as much square faces as possible because that gives best possible smoothing after subdivision.

Try to use as few cuts as possible and avoid faces with more than 4 corners...

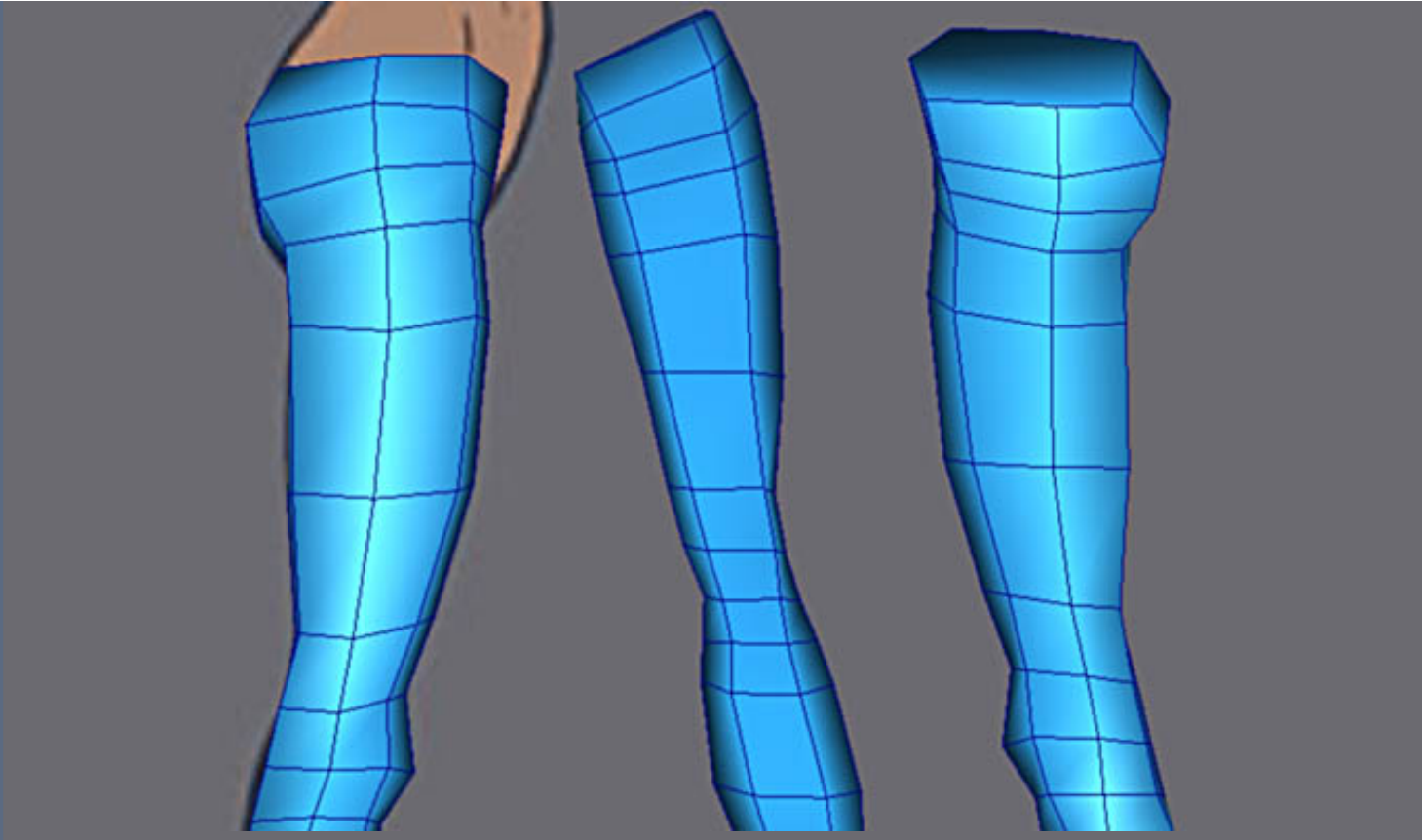


The knee and the thigh are made again with extrusion and adjustments of vertexes.  
You can mirror reference the leg for better view of it.



The joint of the leg to the abdomen must be subdivided well to allow a correct folding.





Views from left, back and right.

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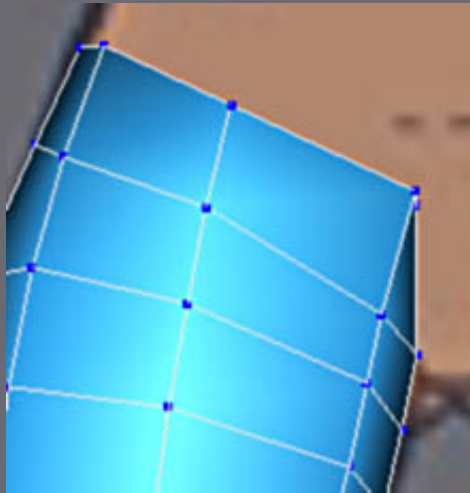
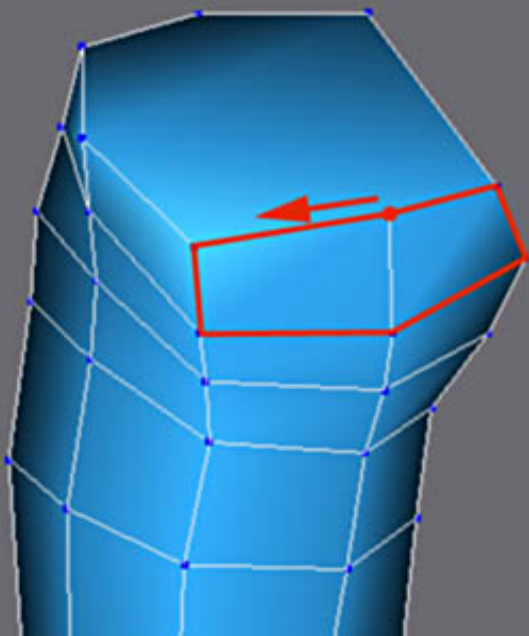
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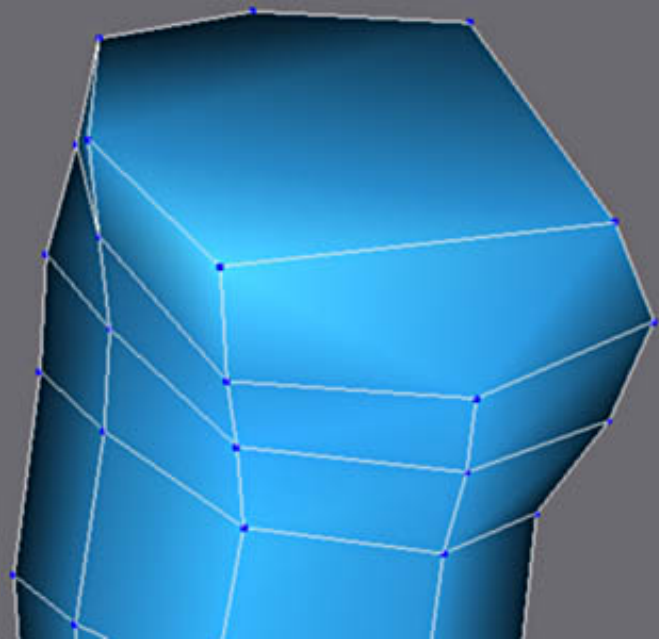
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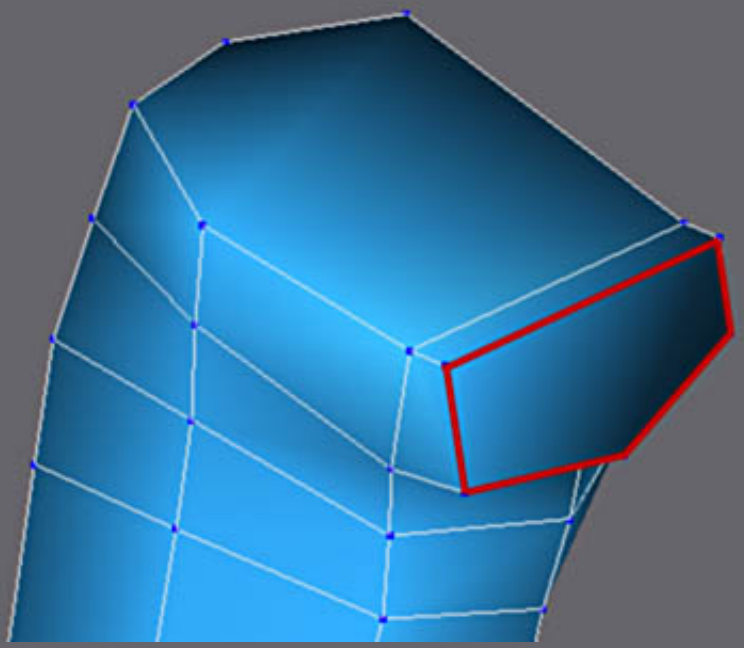
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### Modeling of the body

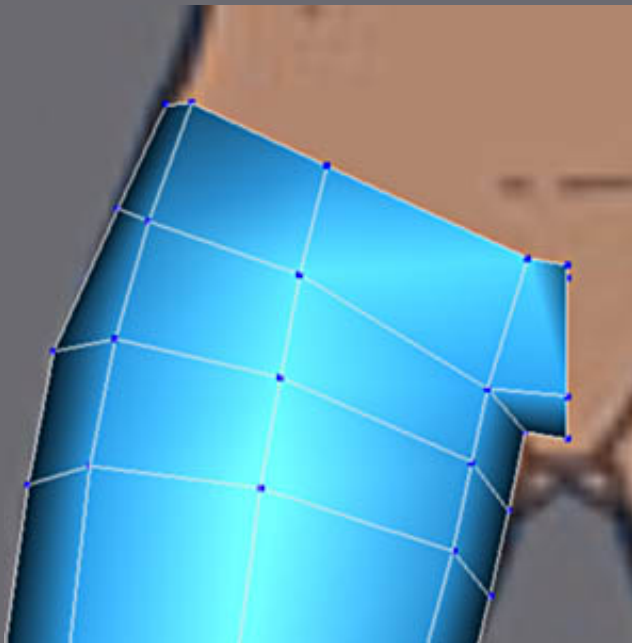




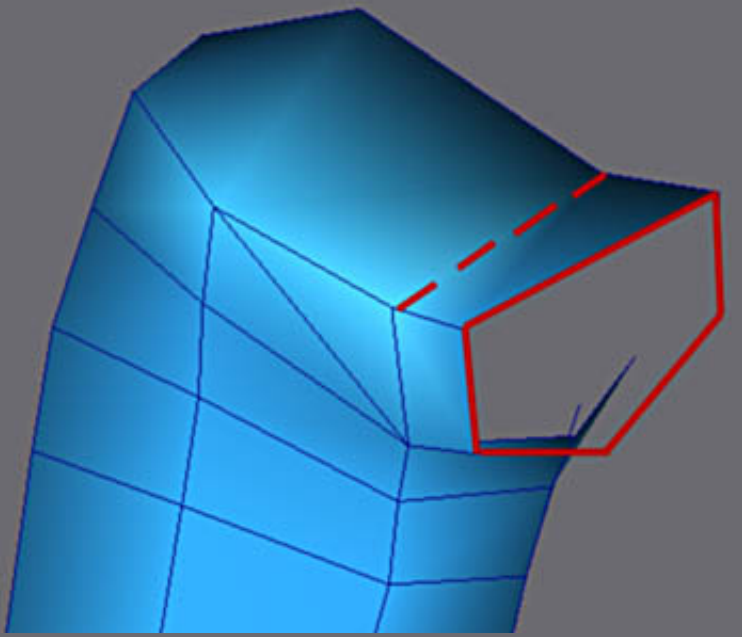
Use "weld target" for welding this vertex to the side one.



Extrude the resulting polygon.



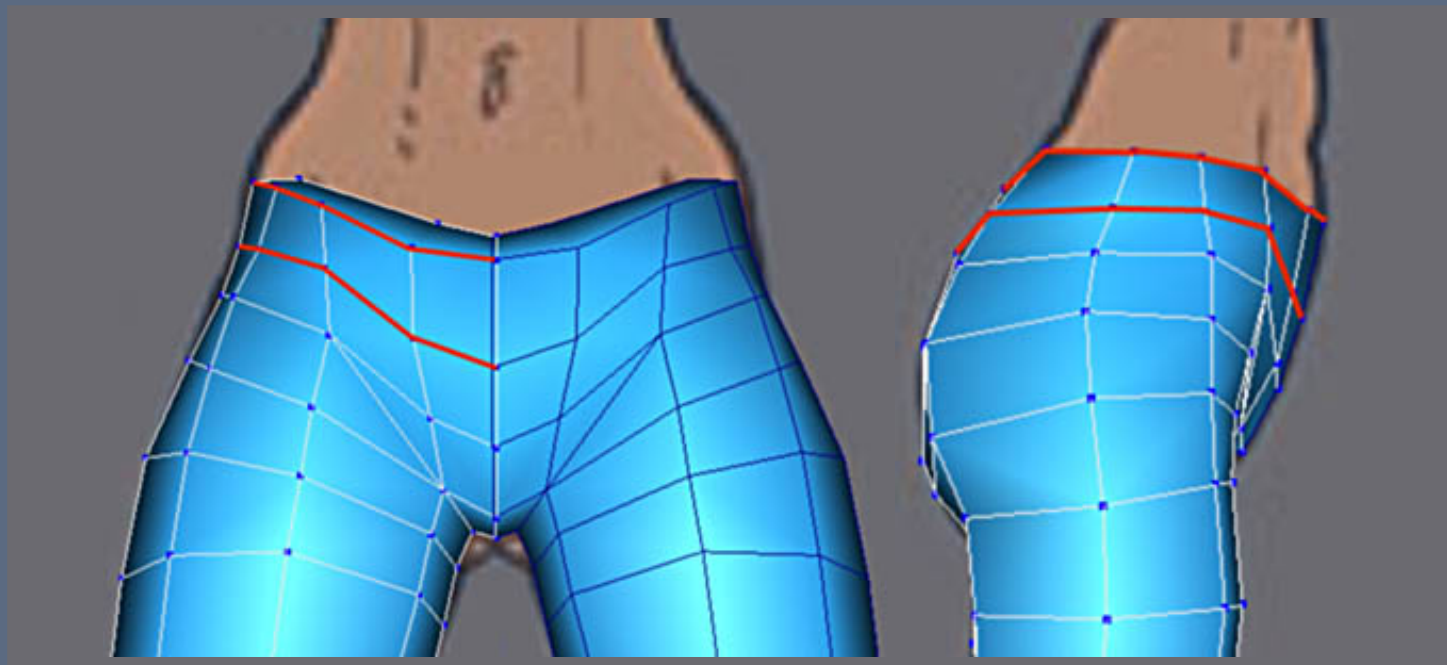
Select vertexes of this face and scale them in X to 0 so they are in one plane.



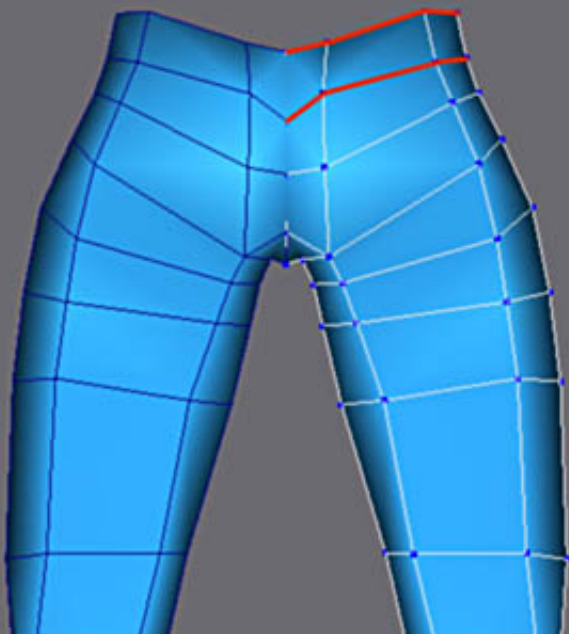
Delete the face and make the spotted line invisible ... (meshsmooth use visible edges for smoothing, try to turn visible on and off while in "show end result mode")



Front view with the mirror reference of mesh

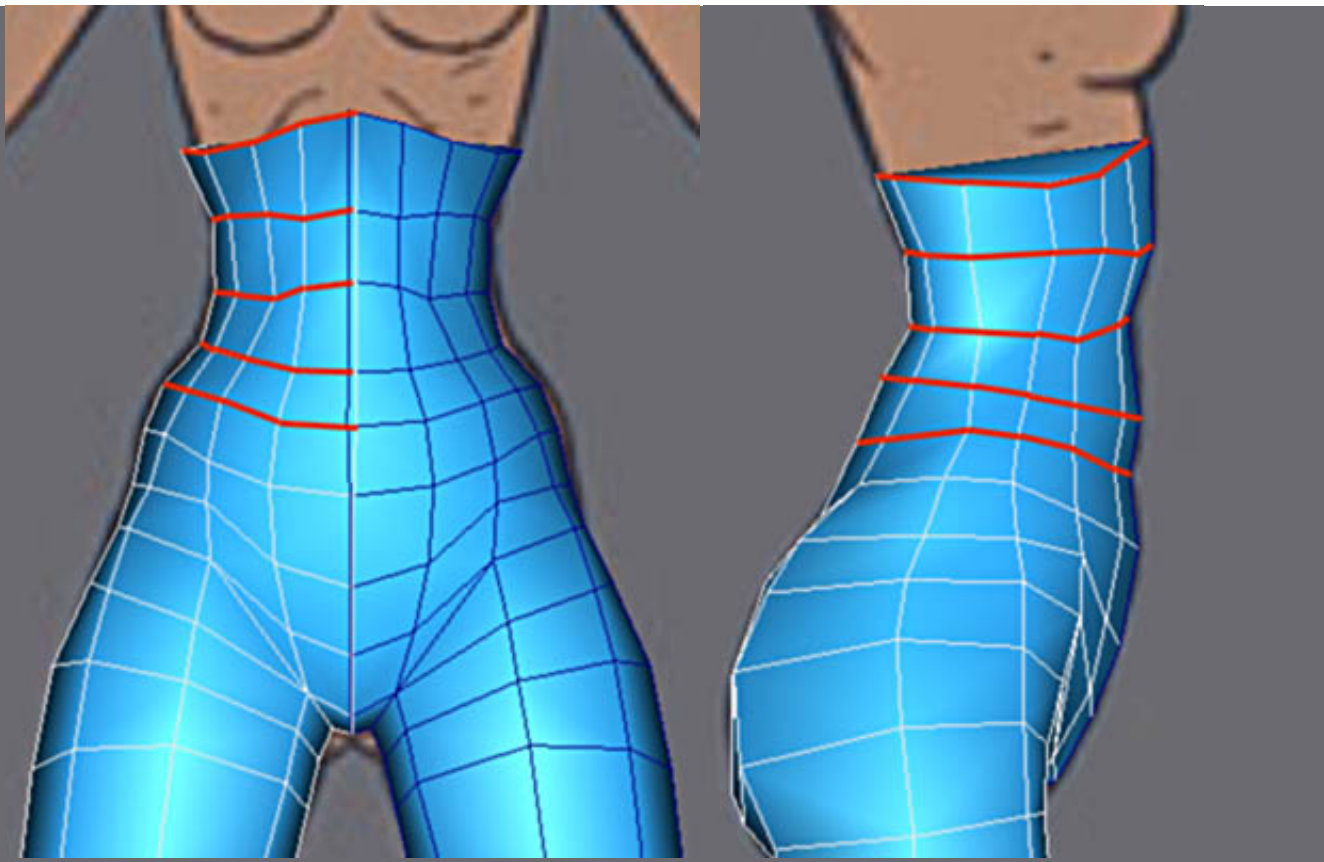


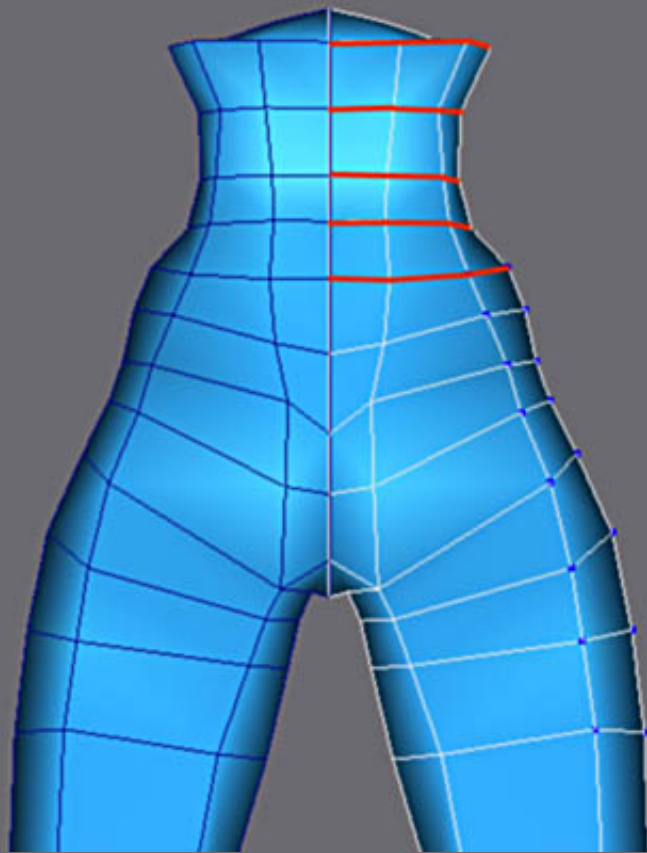




Extrusion of the basin.

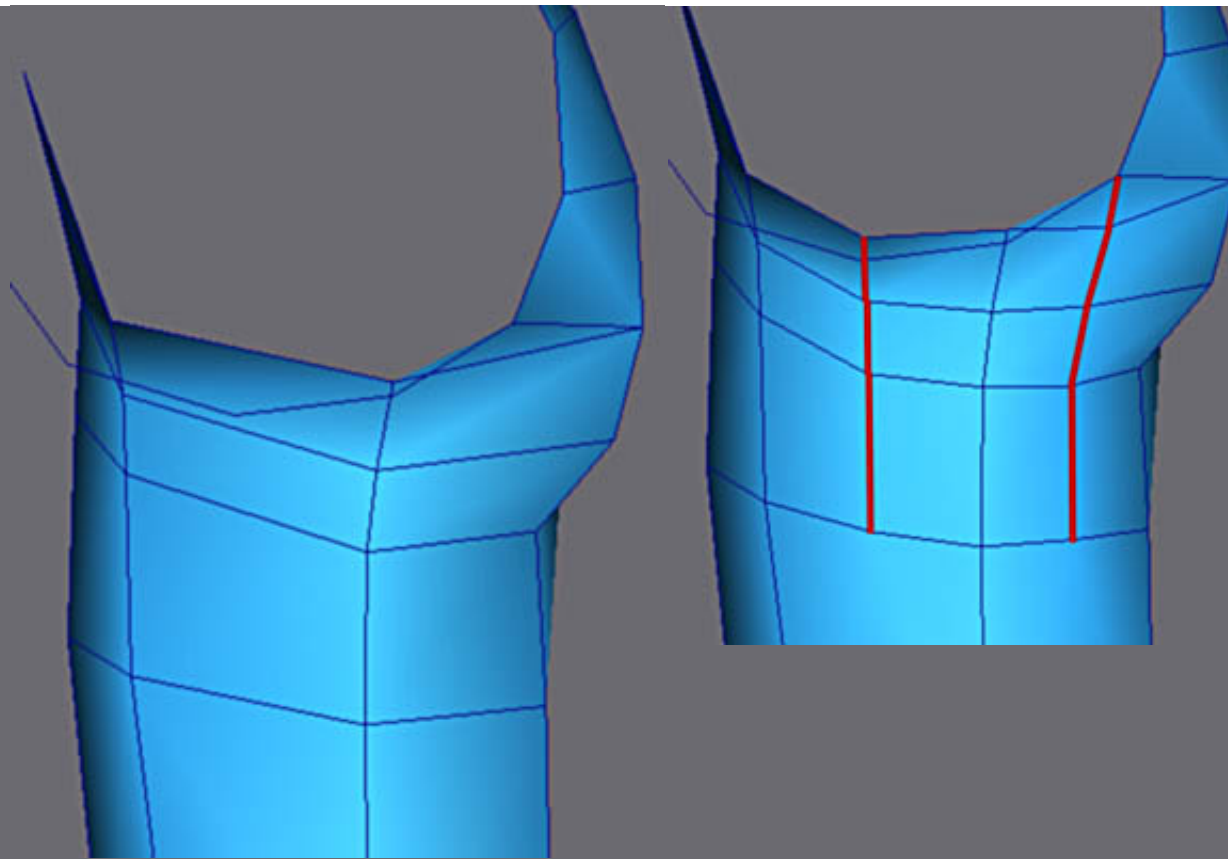
Front, left an back view.





Extrusion of the abdomen.

Front, left and back view.



Add edges on the top inside thigh with Cut.

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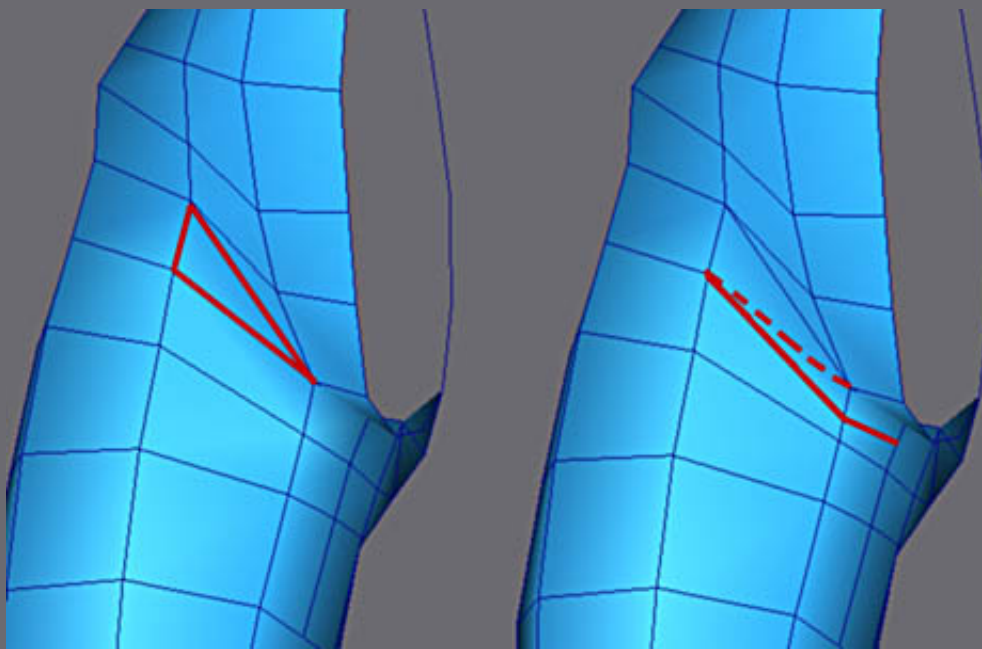
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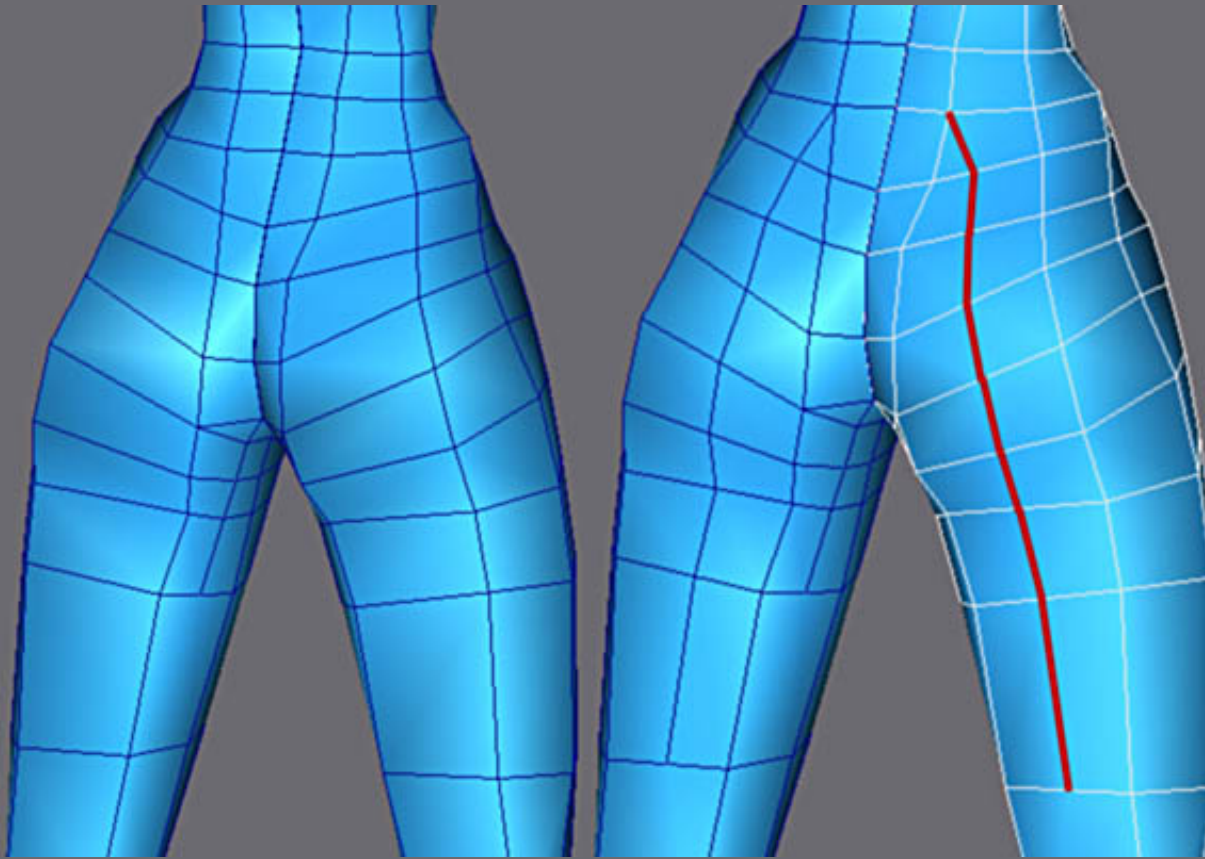
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### Modeling of the body



We need to get rid of that triangle because of bad subdivision. Use cut for creating line that correspond with fold line and make dotted line edge invisible (right picture)

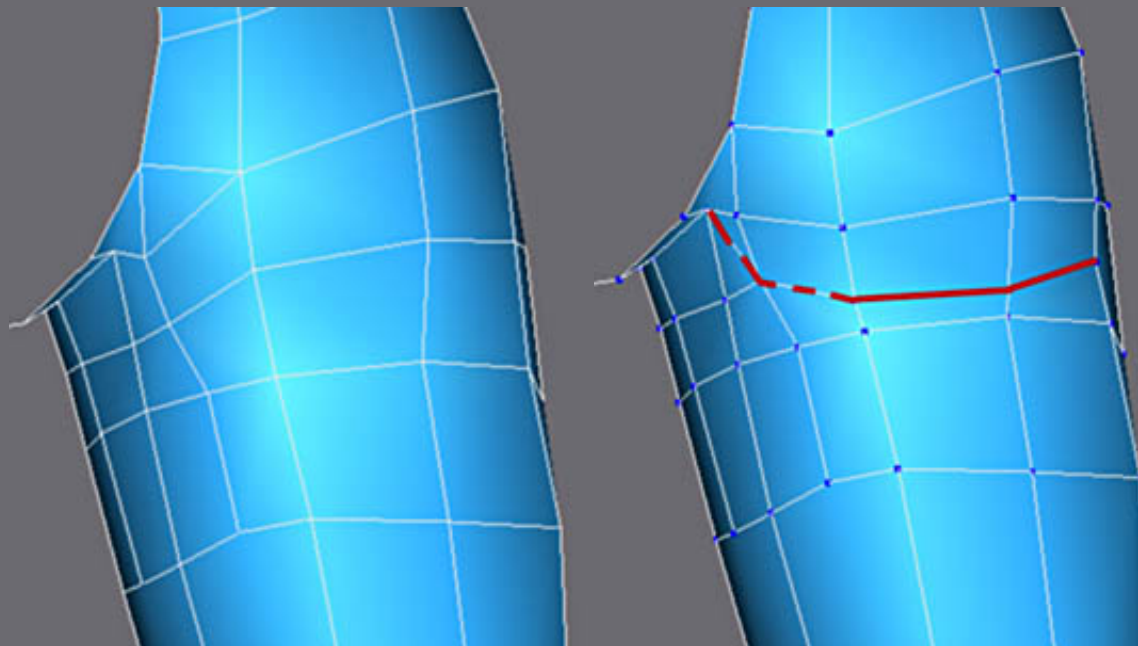
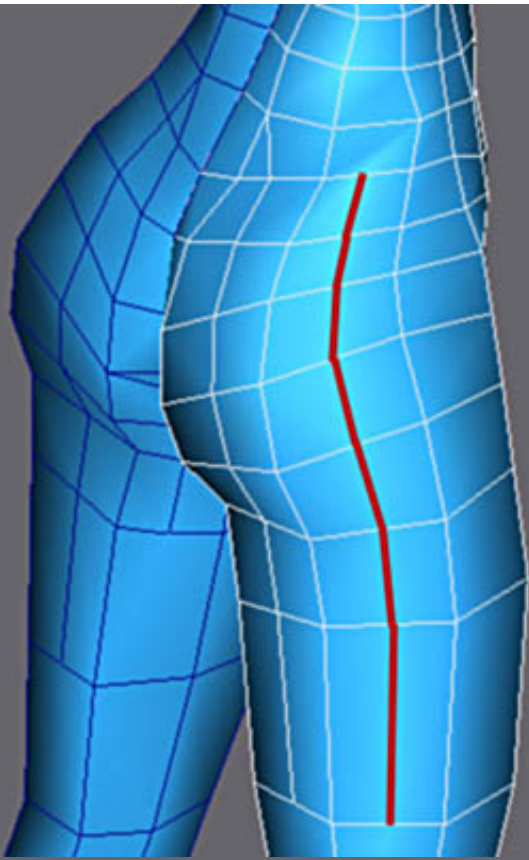


Extrusion was quite fast but the buttocks are not round enough

yet .

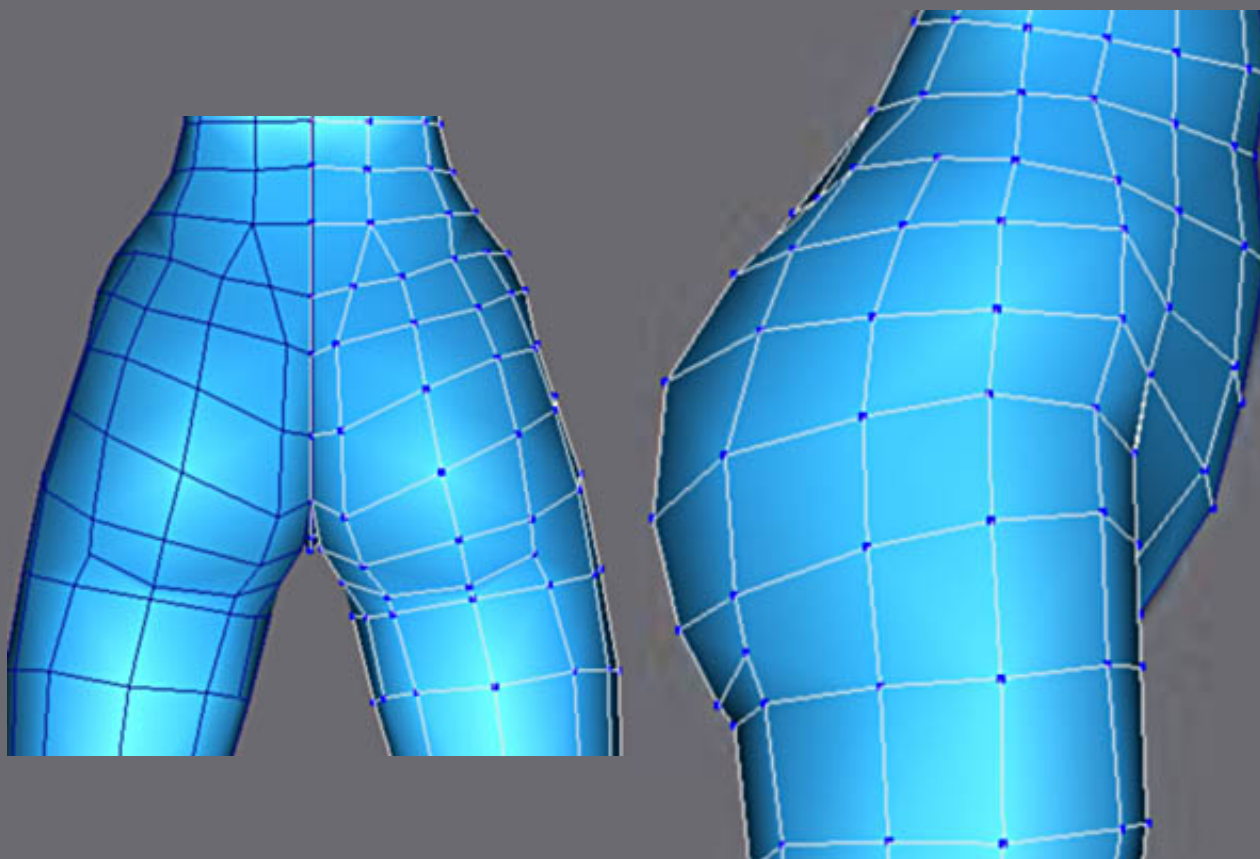
Two series of Cut Edges allow to round all that.

Position the vertical edges regularly around the back and side part of the thigh and the hips.



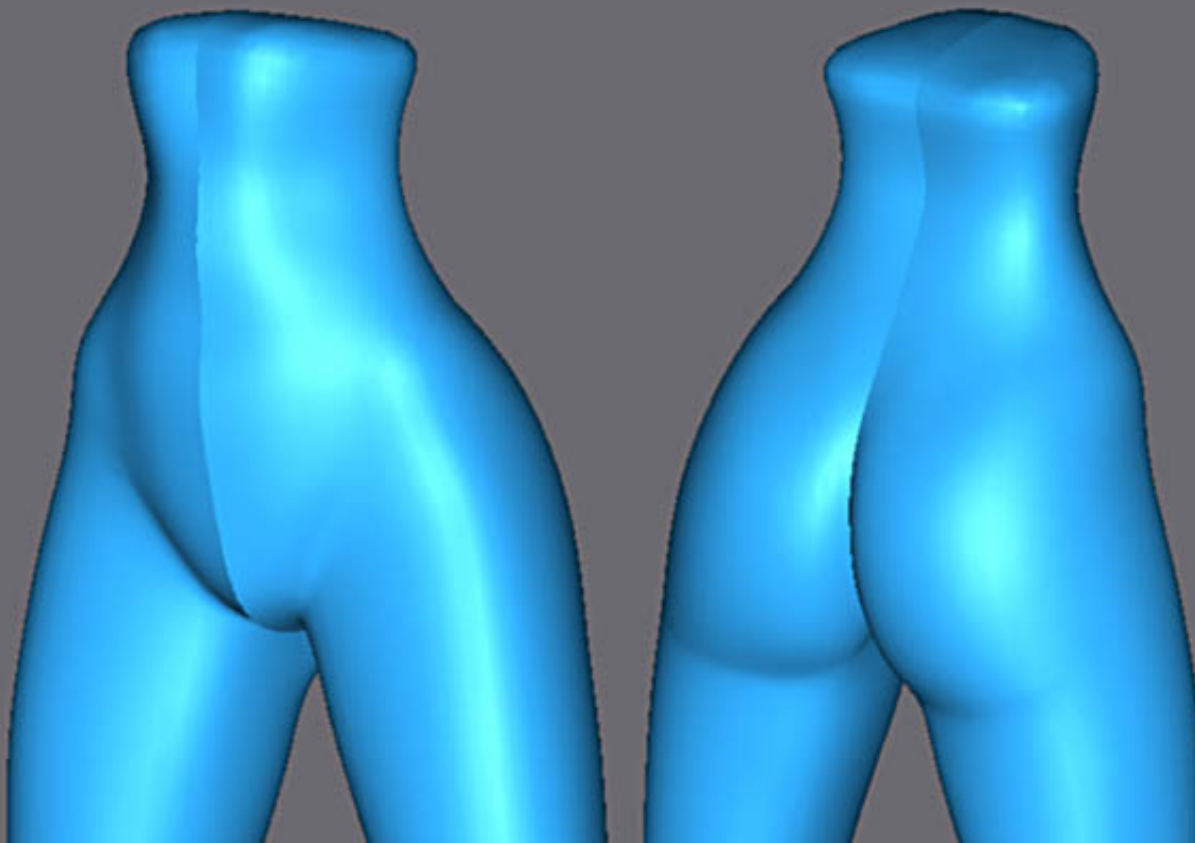


To mark the fold gluteus, add the marked edges and turn them visible (the dotted edges). Make invisible the others to have the same aspect as on the image on right side.

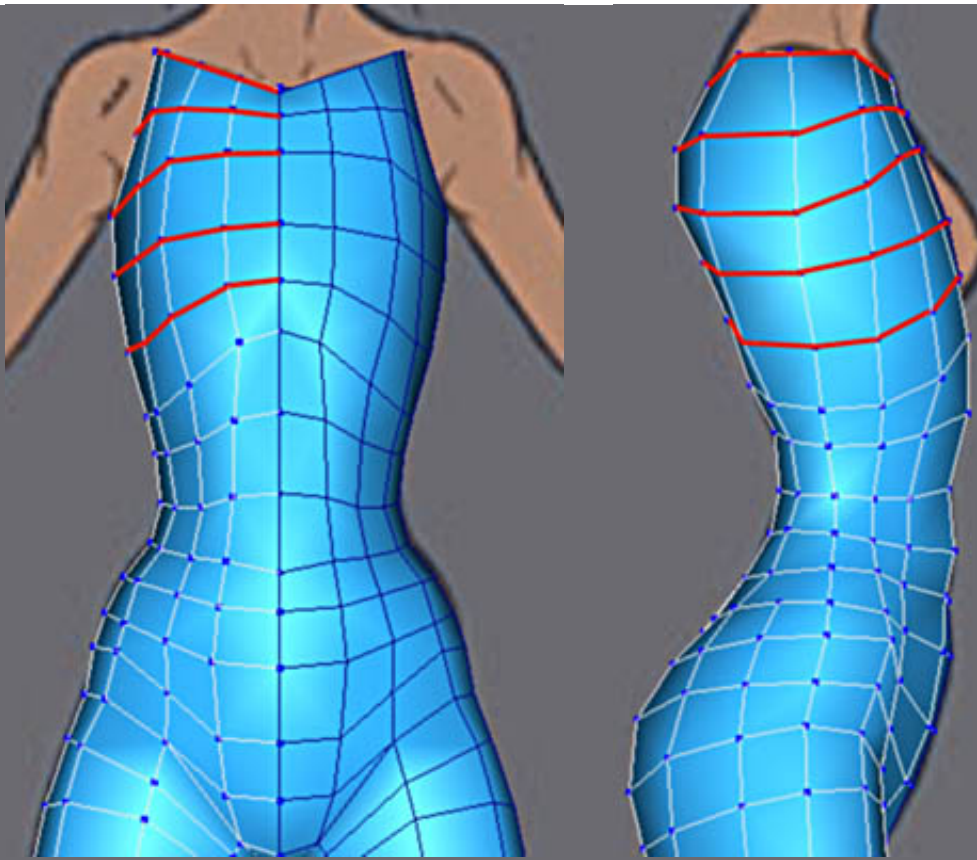


Aspect of the grid of the buttocks seen from back and left.

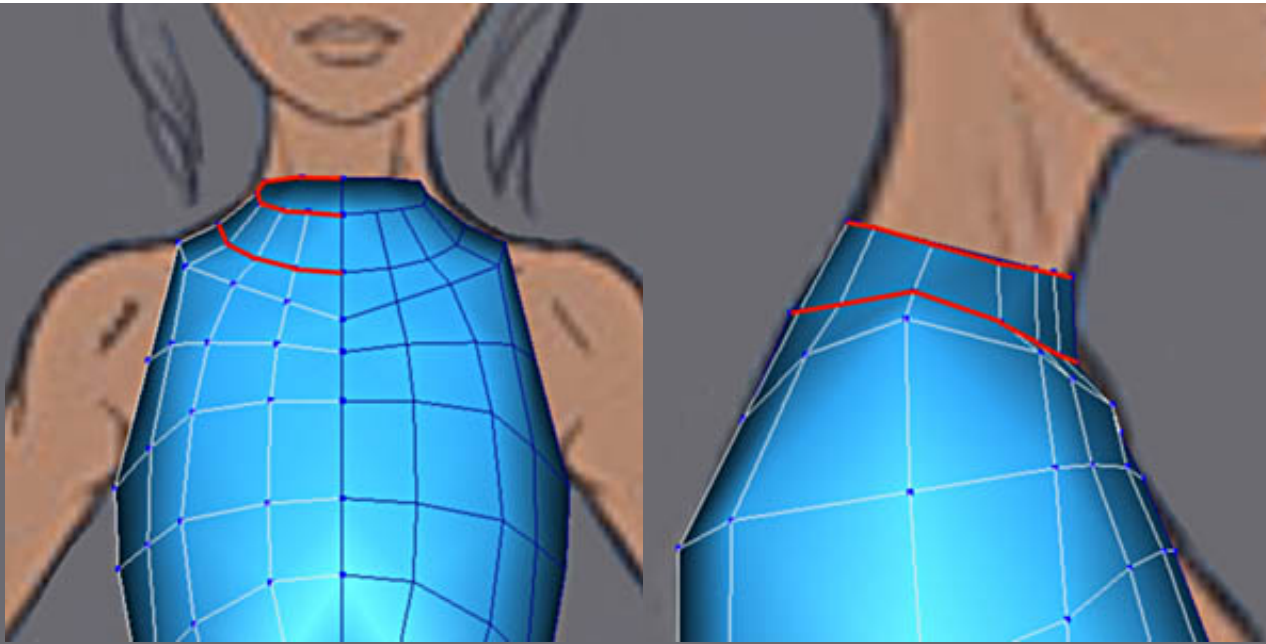




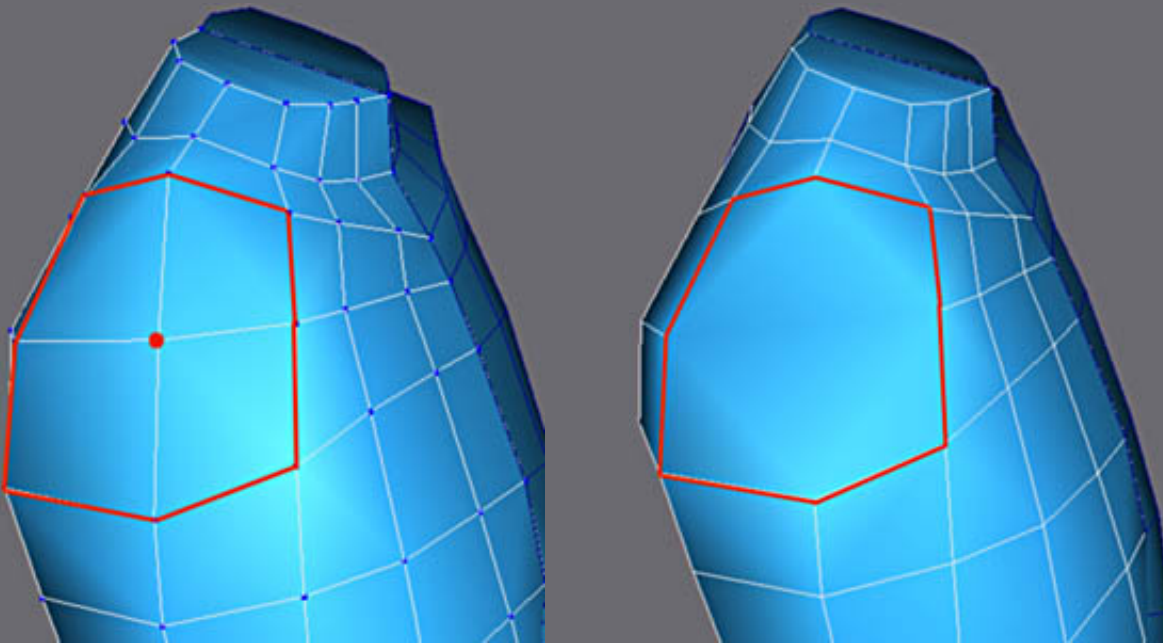
The subdivided mesh, iteration 2 in Meshsmooth.

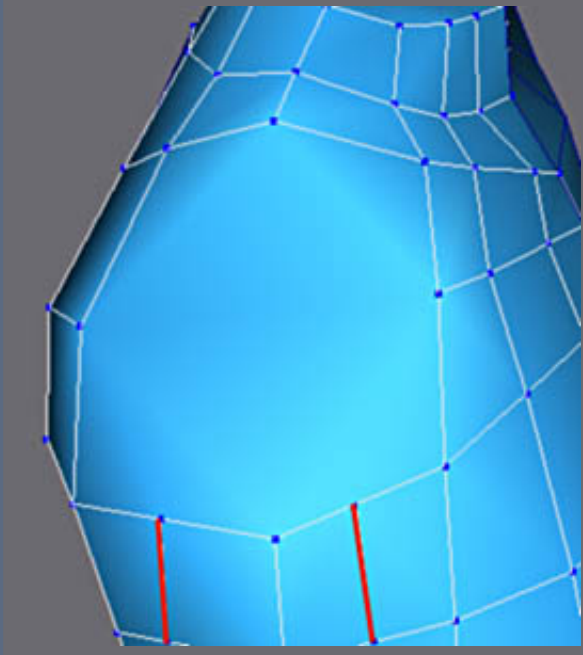


Extrusions for the top of the bust.



Two extrusions for the start of the neck.





While preparing for modeling of arm, simplify the for faces into one polygons (Weld Target).

Insert the edges (see picture on left) for a better round-off of the arm.

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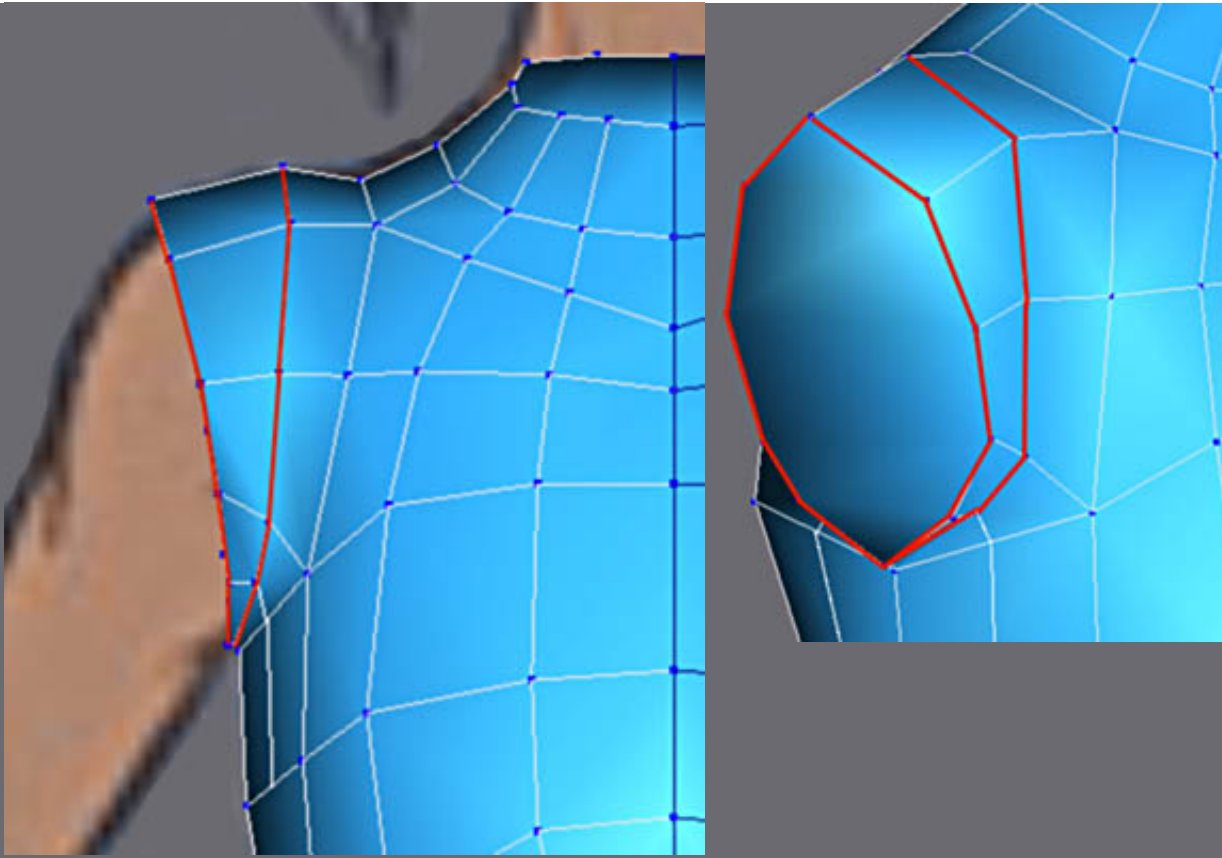
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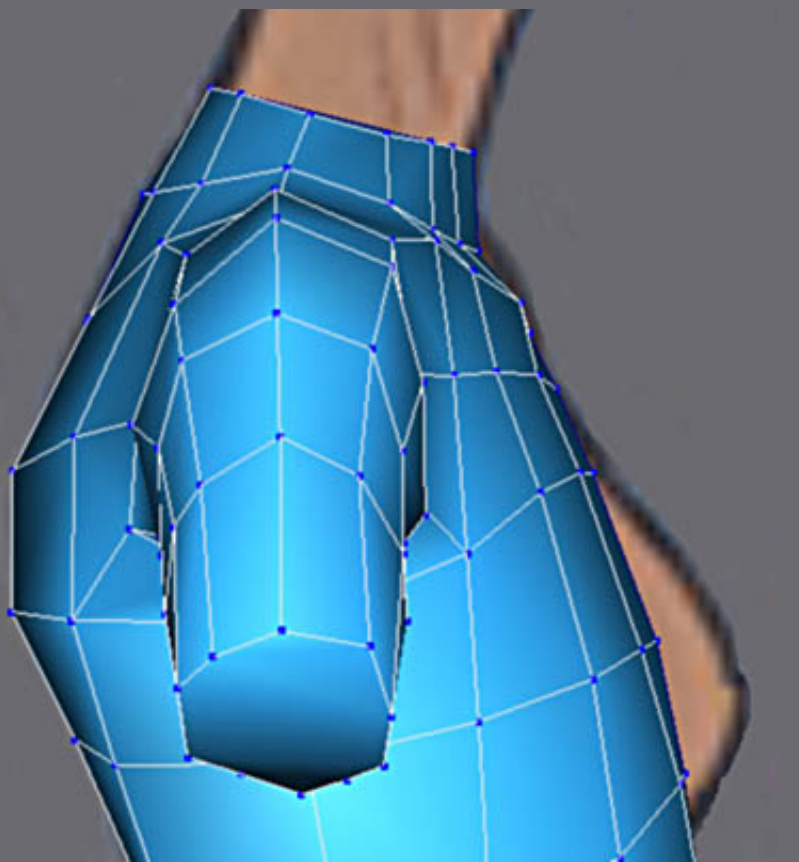
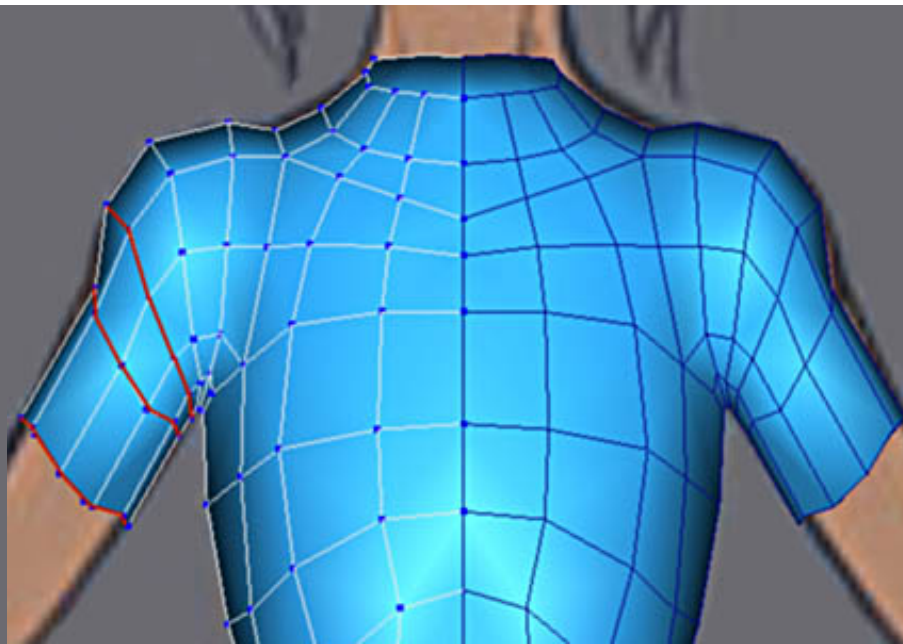
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Modeling of the body



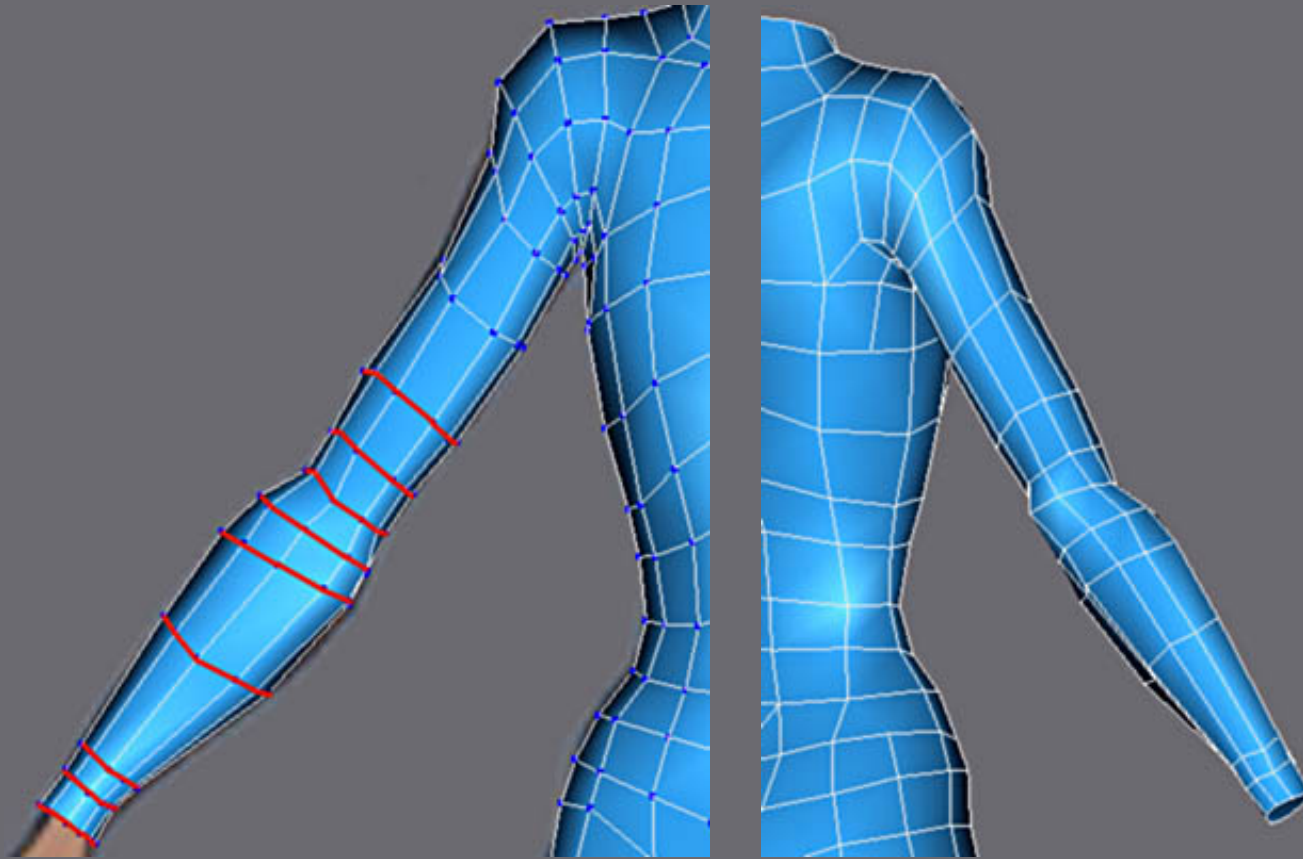
Extrusion of the shoulders.





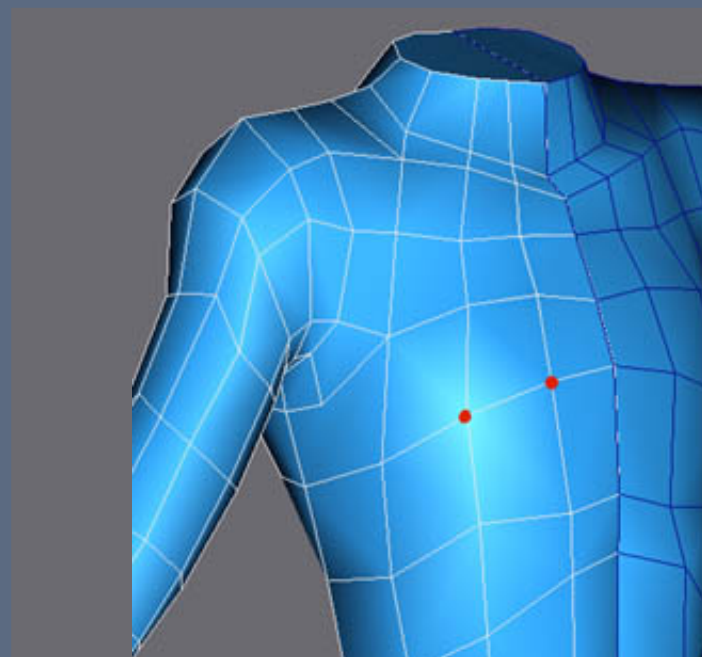
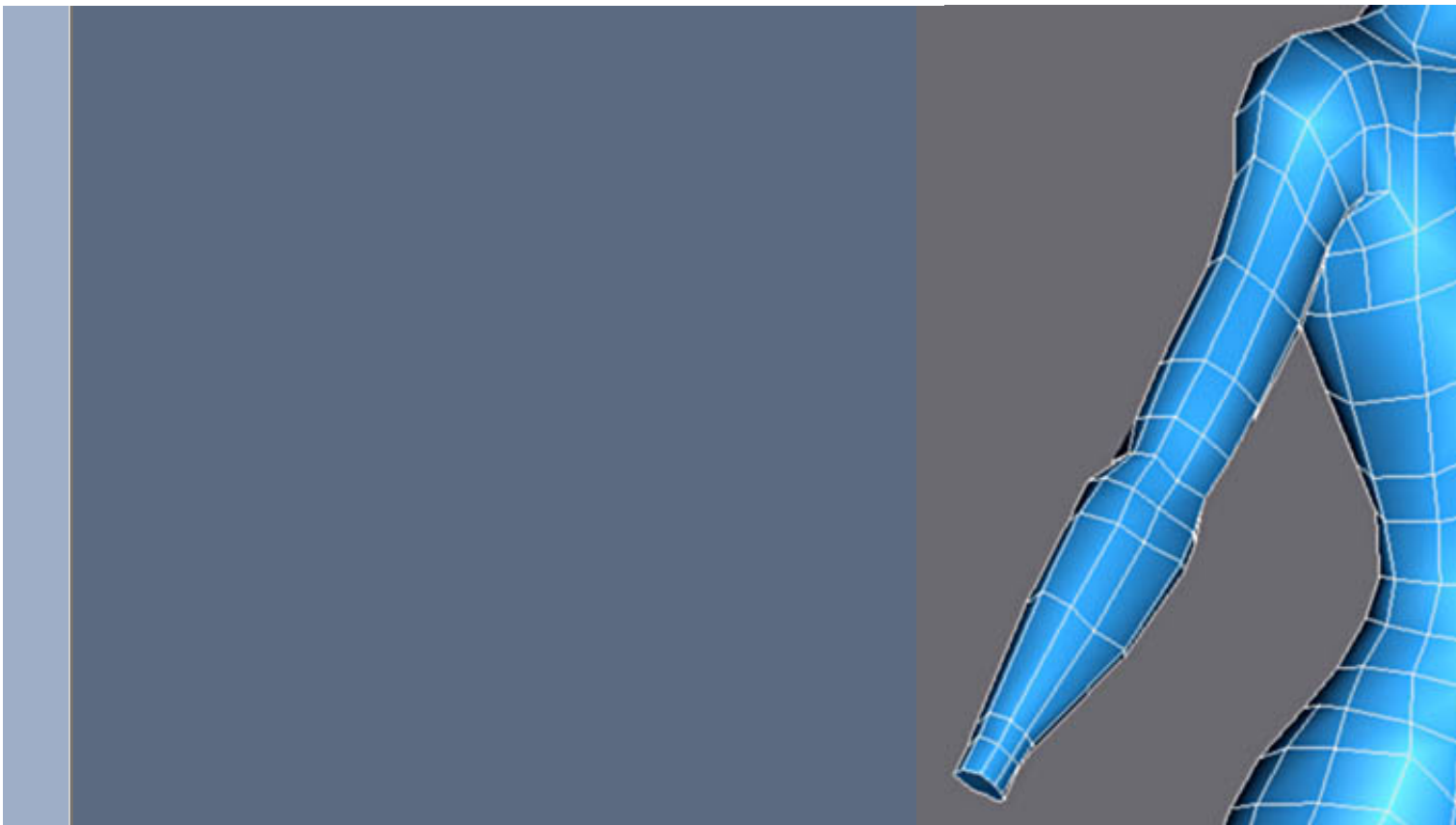
Continue with extrusion of the arm.

This part is make up from group of edges, it is necessary for animation.



Continue to extrude elbow and forearm.



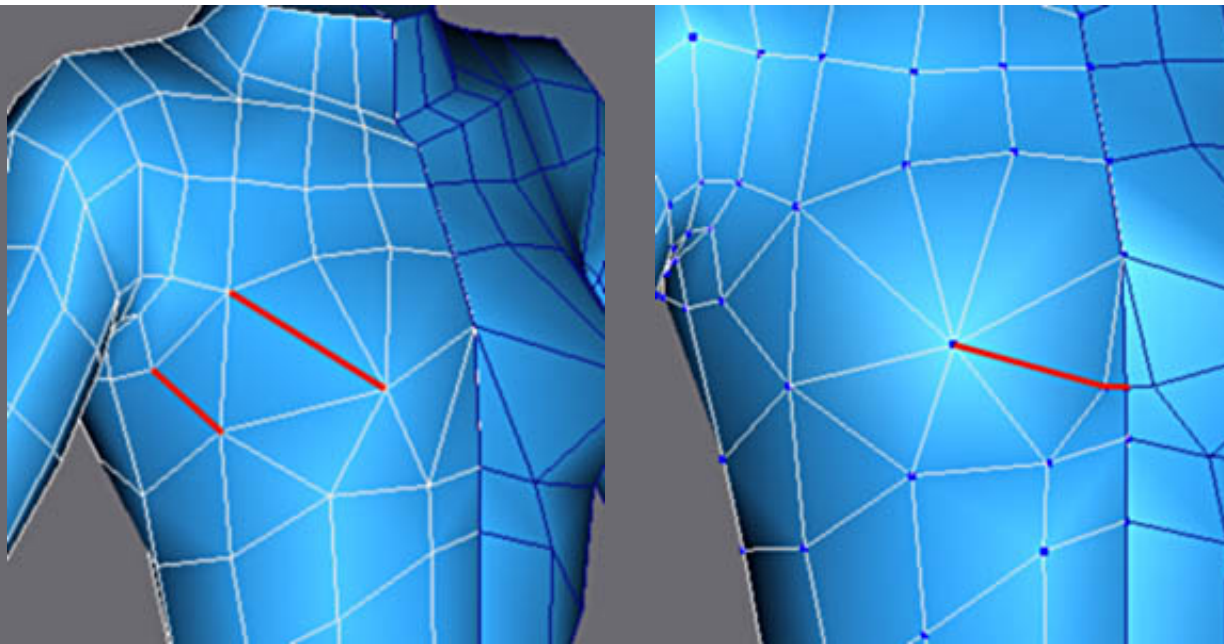


Now we are going to work on breast.

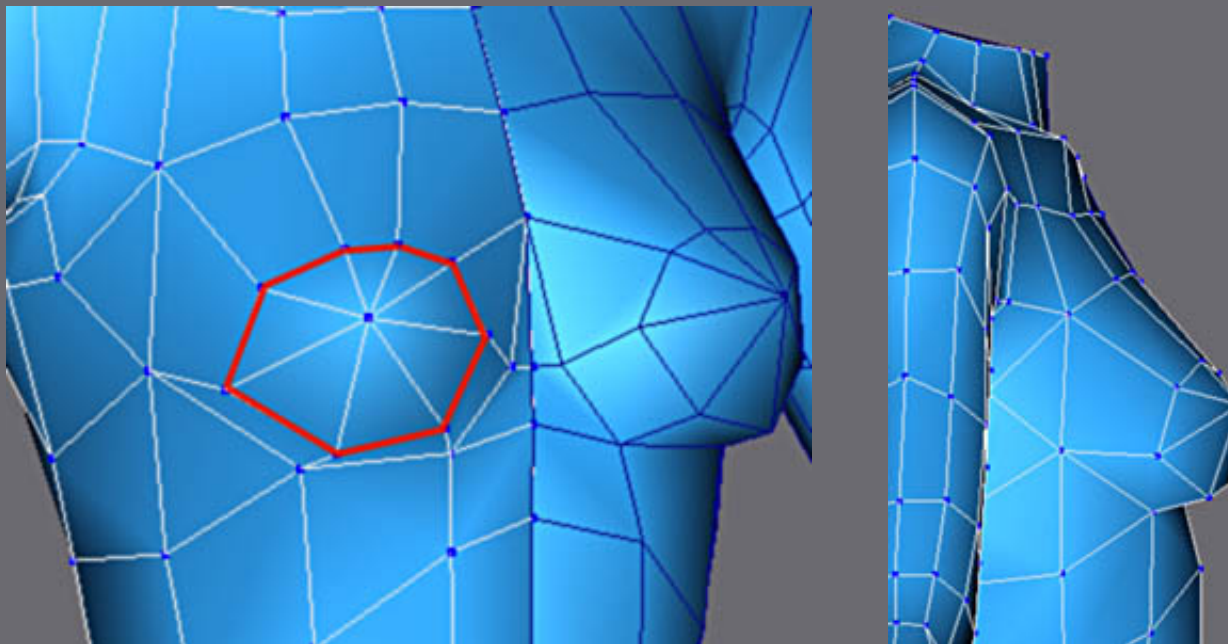
Collapse the two vertexes marked red, and you got the centre point.

Make visible both egdes to outline the base.

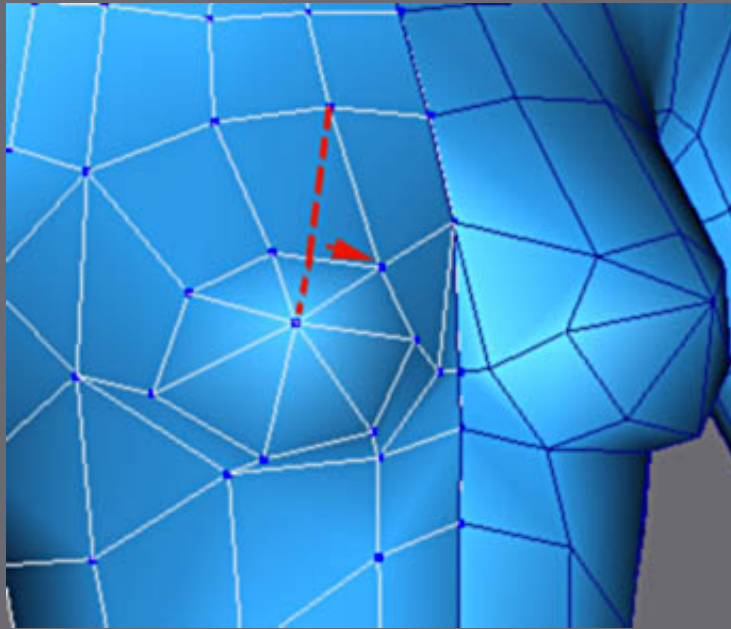




Make visible these edges on the left and on the right picture for a better round-off.



Insert these edges to give a better round-off of profile of the centre.



Simplify the geometry with Weld Target to remove the polygon with 5 corners.

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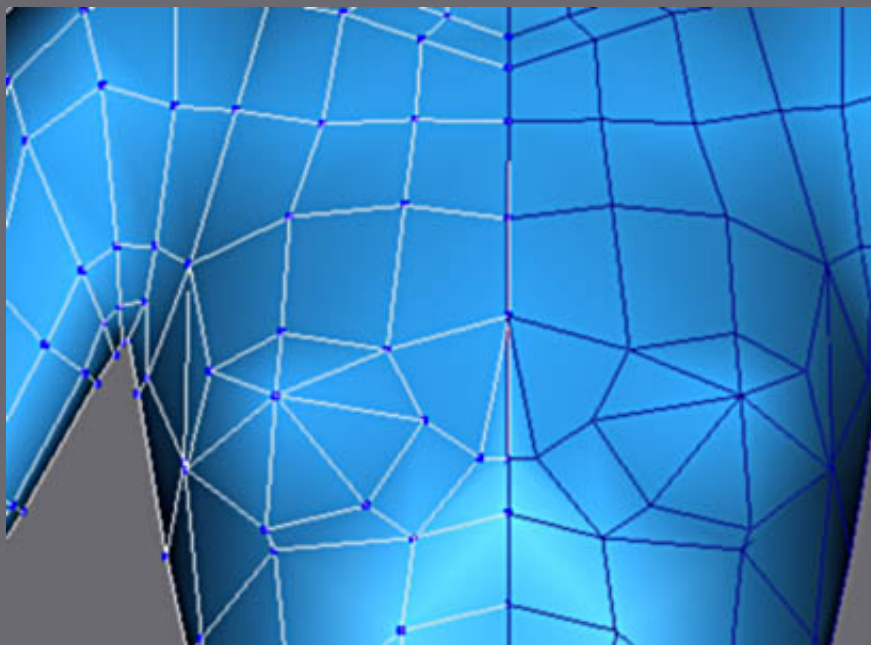
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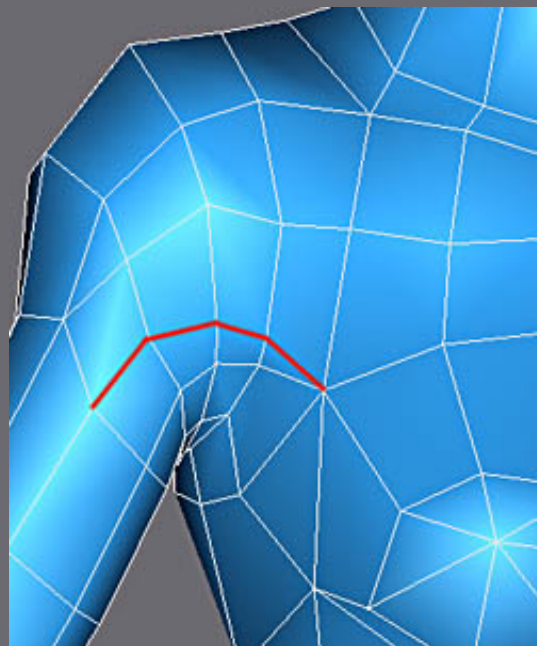
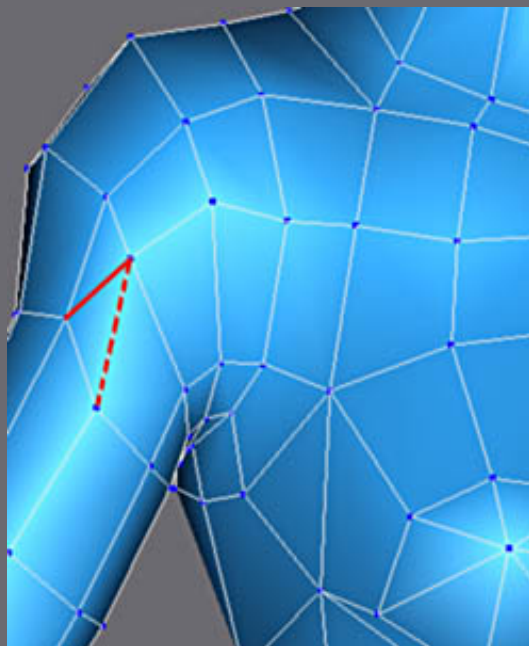
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### Modeling of the body



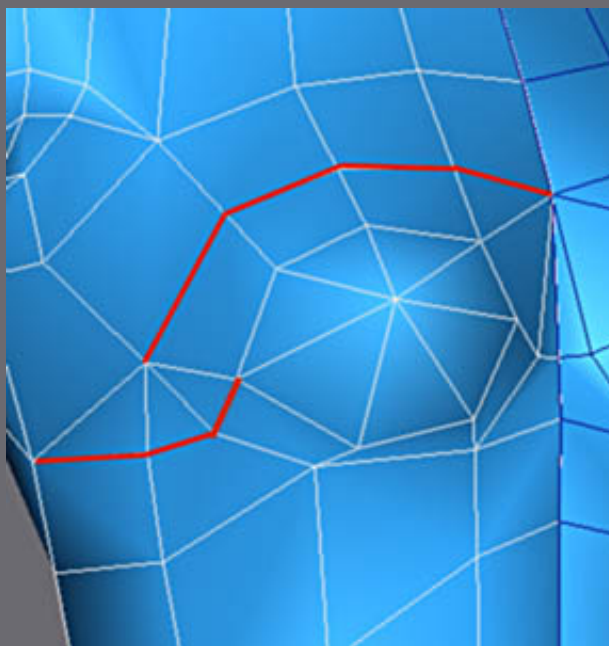
Front view of the chest.



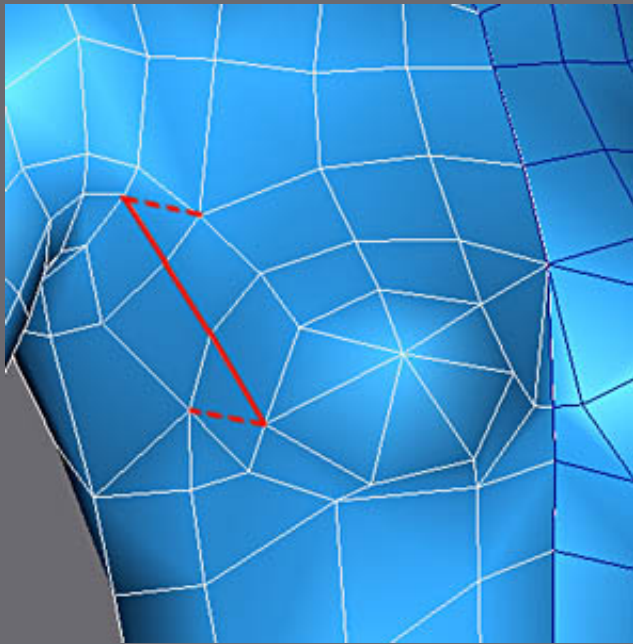


Modify the edges like above, to make visible ( full line ) and invisible (dotted line).

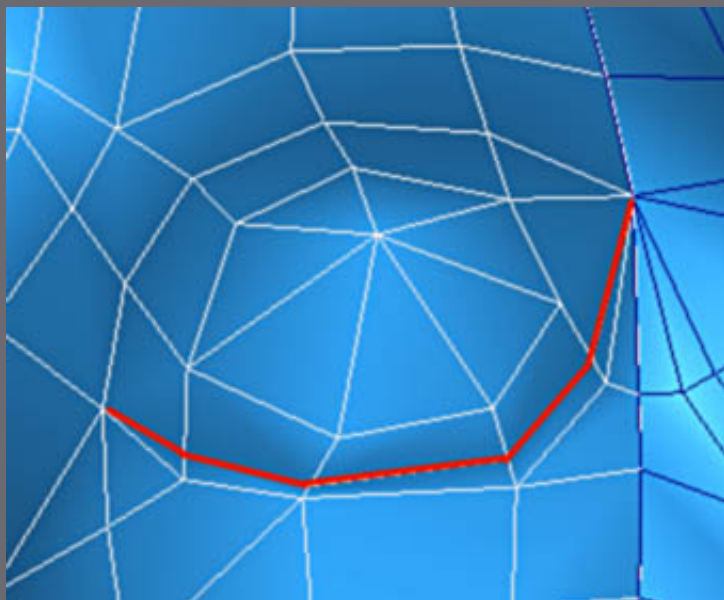
Then Insert the edges like on the right.



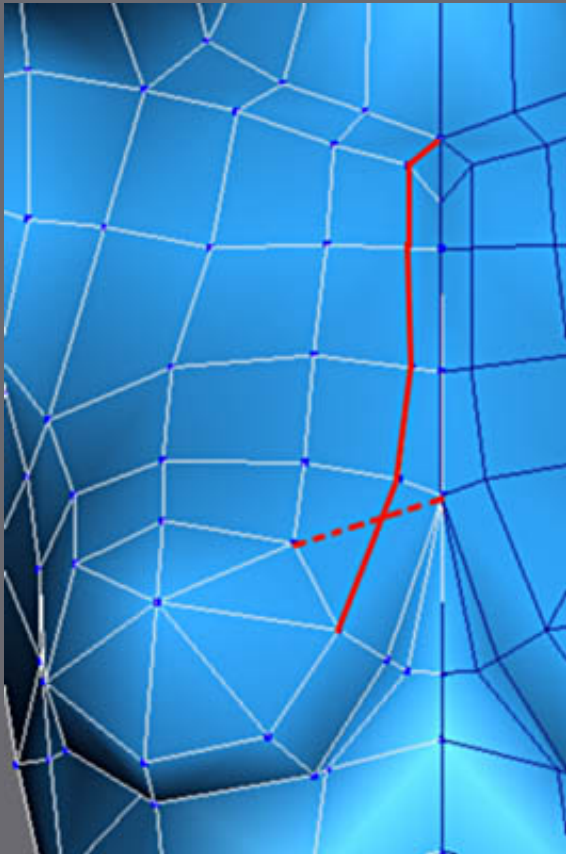
Insert the edges as on the right image.



Insert the edges and to turn invisible those into dotted to have only quads in this zone.



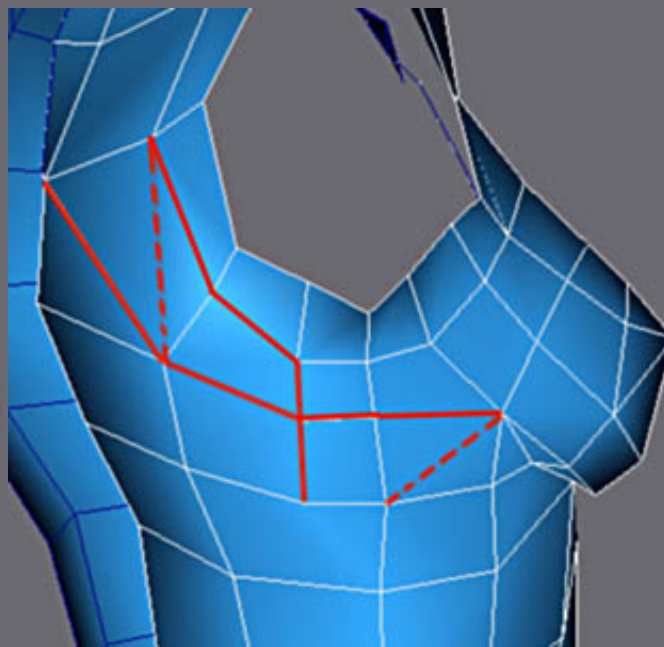
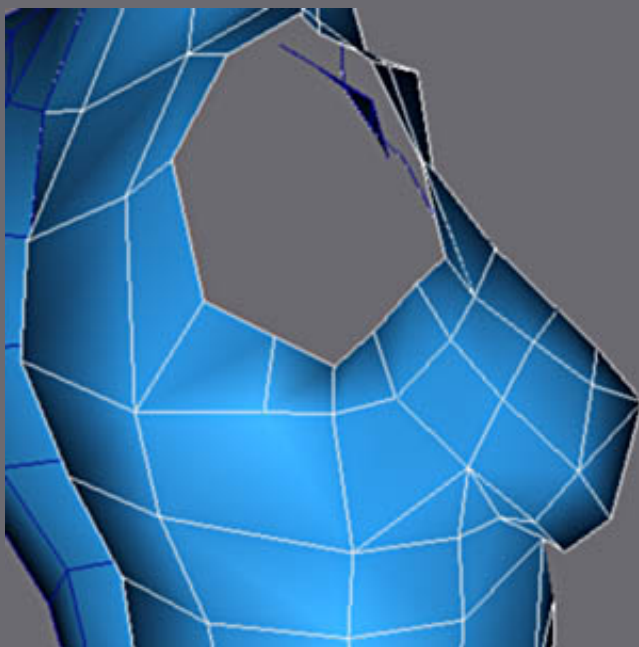
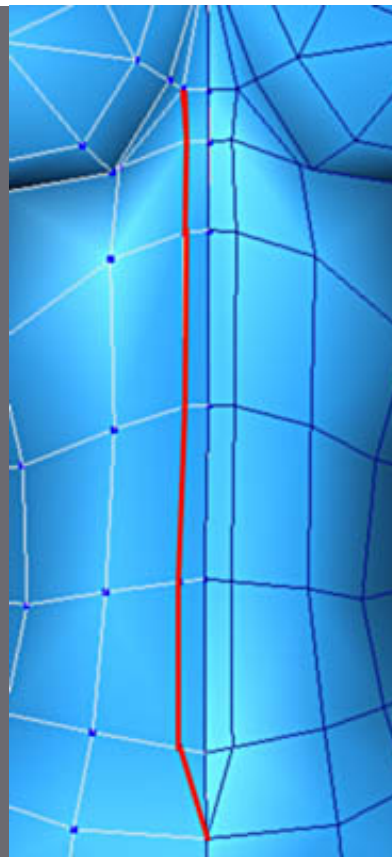
Insert edges here to make the fold under breast .



Finally insert these edges and simplify the resulting geometry with Weld Target to remove the triangle.

Mark the median furrow while inserting these edges.

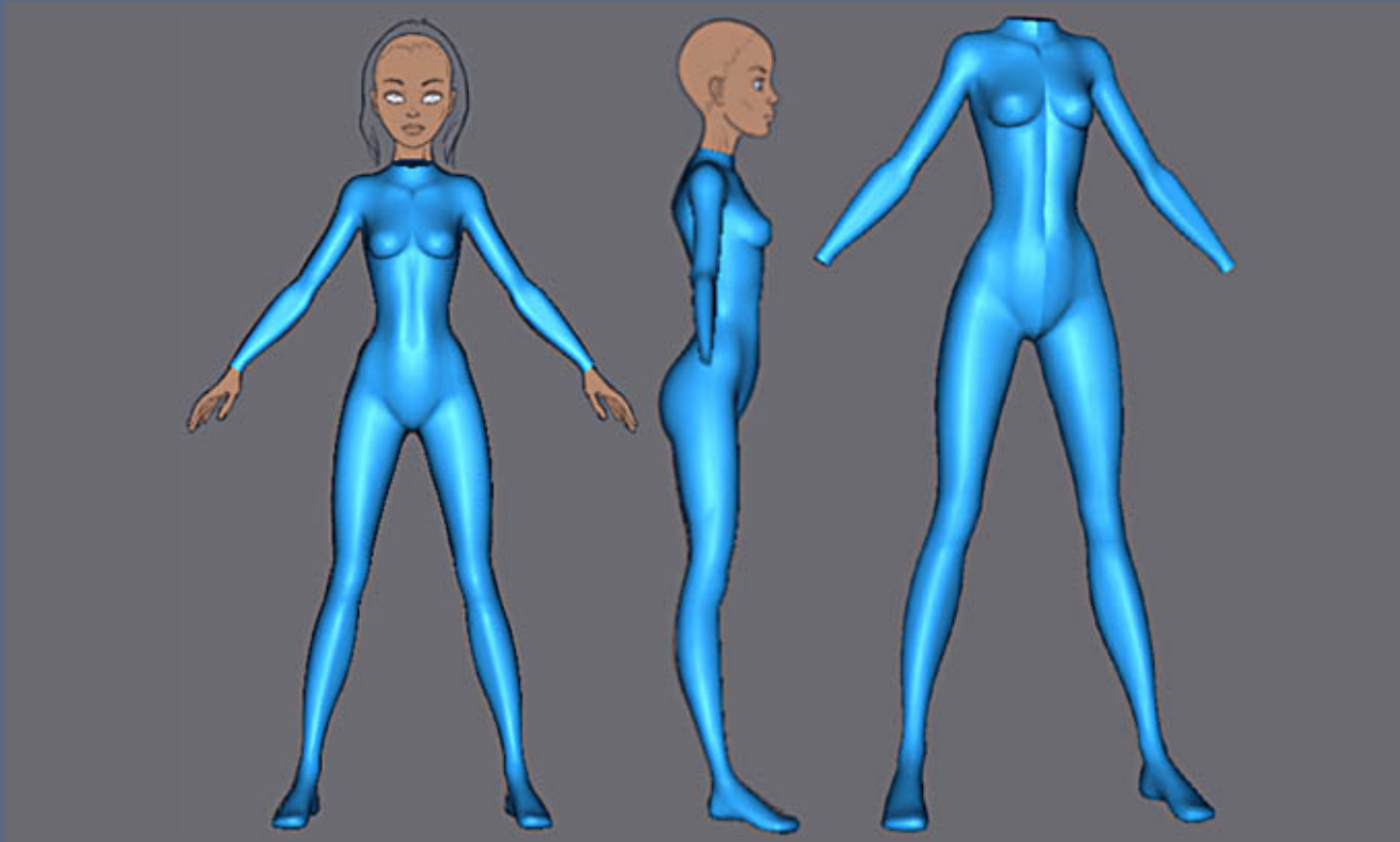


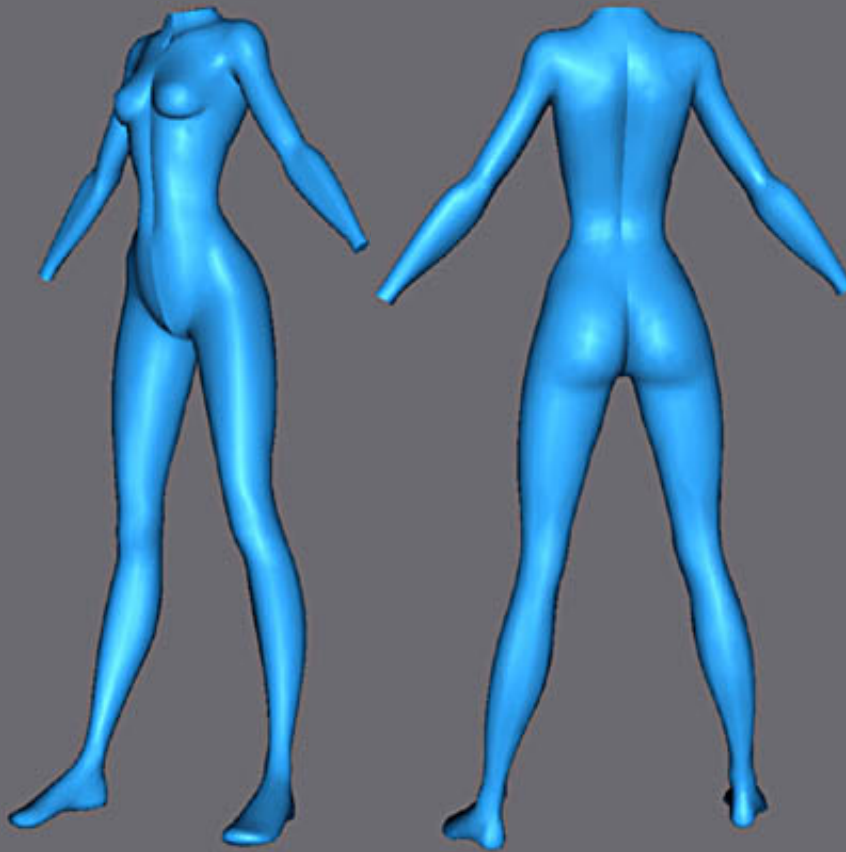


Finally add edges ( full lines ) and make invisible dotted lines to create quads.

There are nothing more but bands of quads for the junction arm-bust, giving best possible smoothing and avoiding concern in animation.

Faces of the arm were hidden for better legibility (Hide in the face mode).

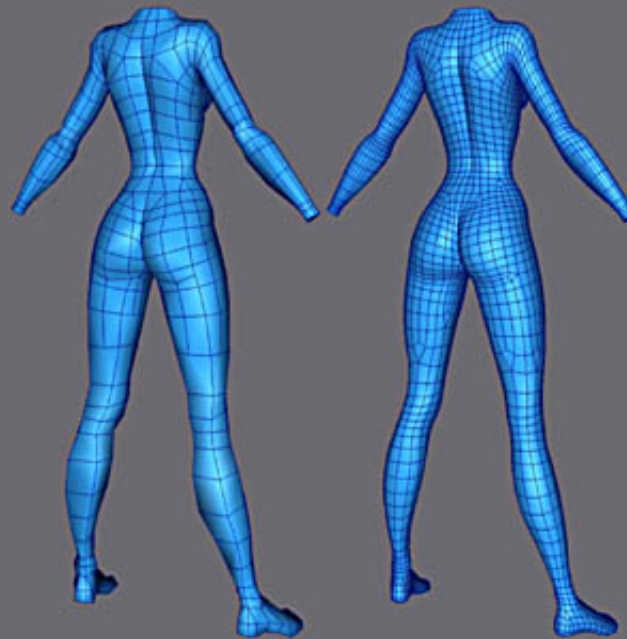
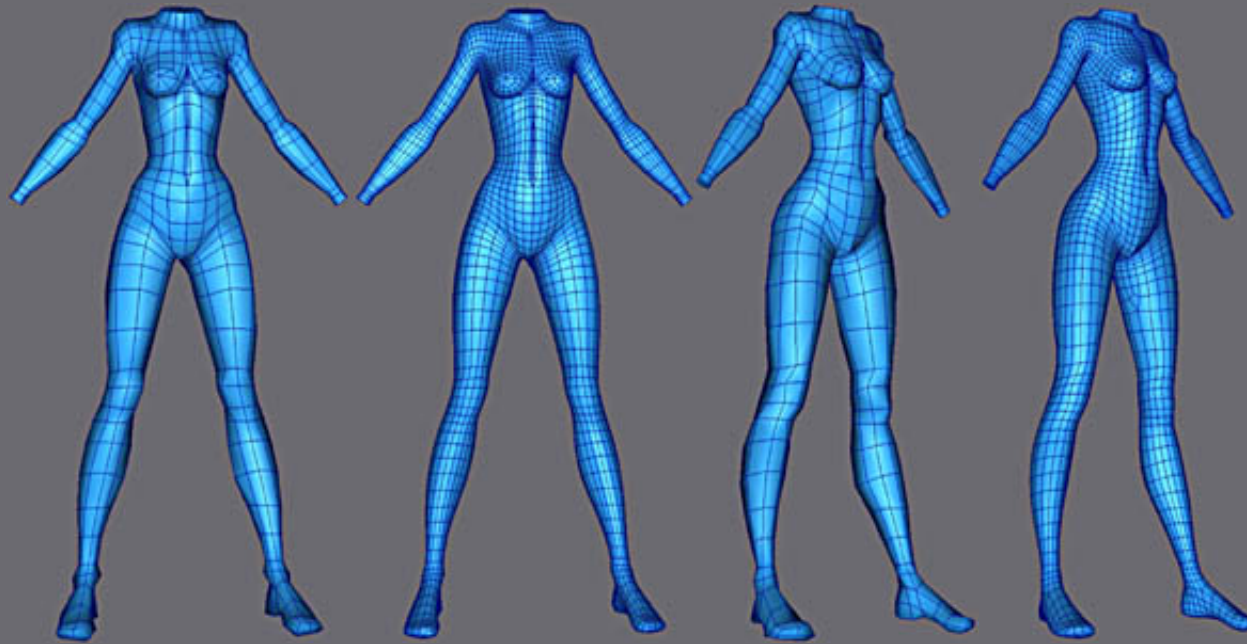




Finished modeling.

Low poly images are above and subdivided ones below (NURMS with iteration 1).

Click on the images below to enlarge.



Do not collapse the stack because the reason of this type of modeling is to achieve low polygon mesh (LPM). We will use it for modeling accessories and subdivide it later.

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Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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by  
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*Head*

## 3D Studio Max

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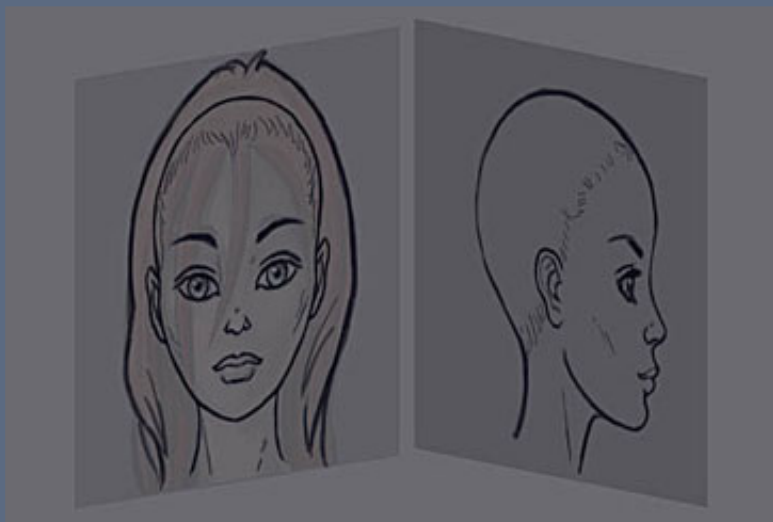
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### Modeling of the head

The second part of this tutorial is devoted to modeling the head and to the ear. A new way of modelling in low polygon is approached.



Use the templates and regulate the size of displayable textures on 512 pixels in Preferences/Viewport/Configure Drivers.

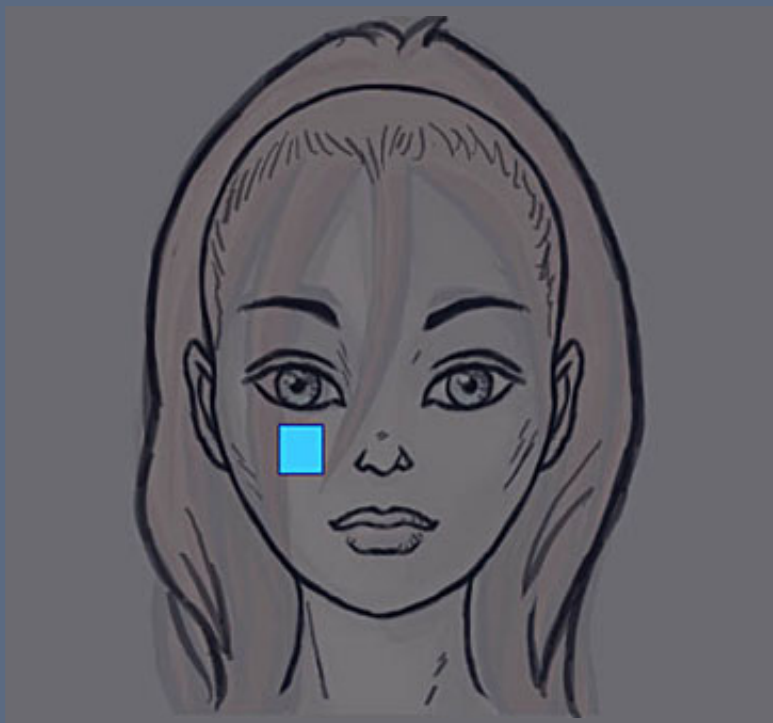
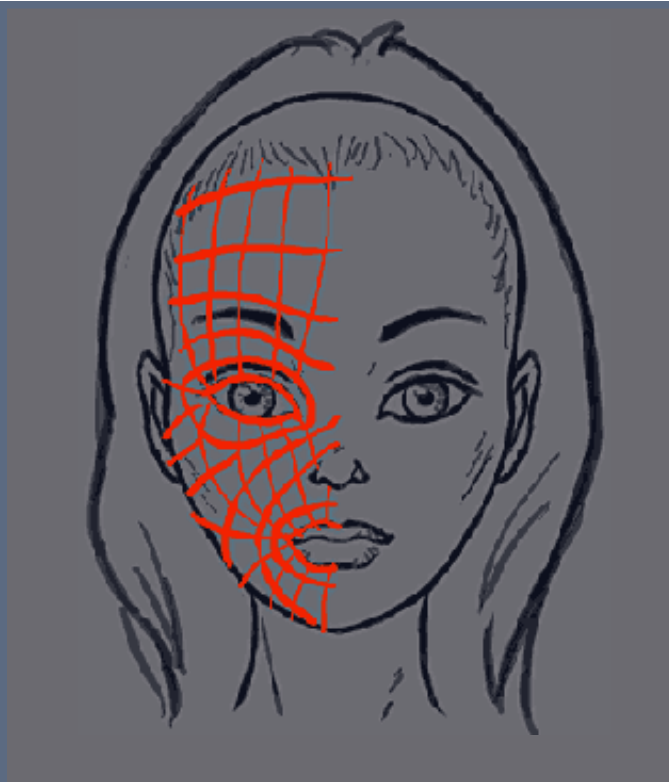
See Gauge.

The images (head and ear), Zip 50Ko.



Before launching out, a small sketch of the mesh we are aiming for will be made

This allows to plan with the muscular structure of the face in mind and guarantee of good possibility of facial animations thereafter.

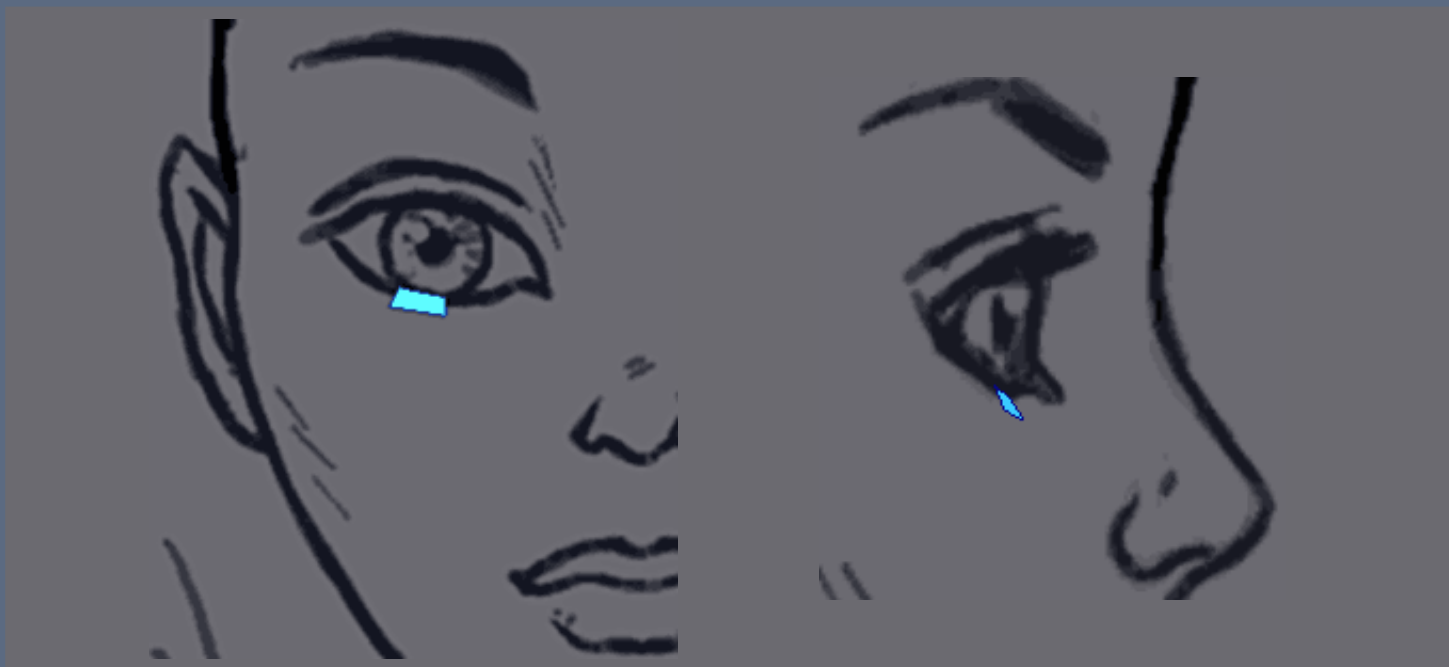


Here you begin not with a box but a simple rectangular face.

In the Create panel choose Shape, with Rectangle for face, build a rectangle and convert into mesh by applying a Mesh edit.

To crush the pile (collapse stack) to have only Editable Mesh left



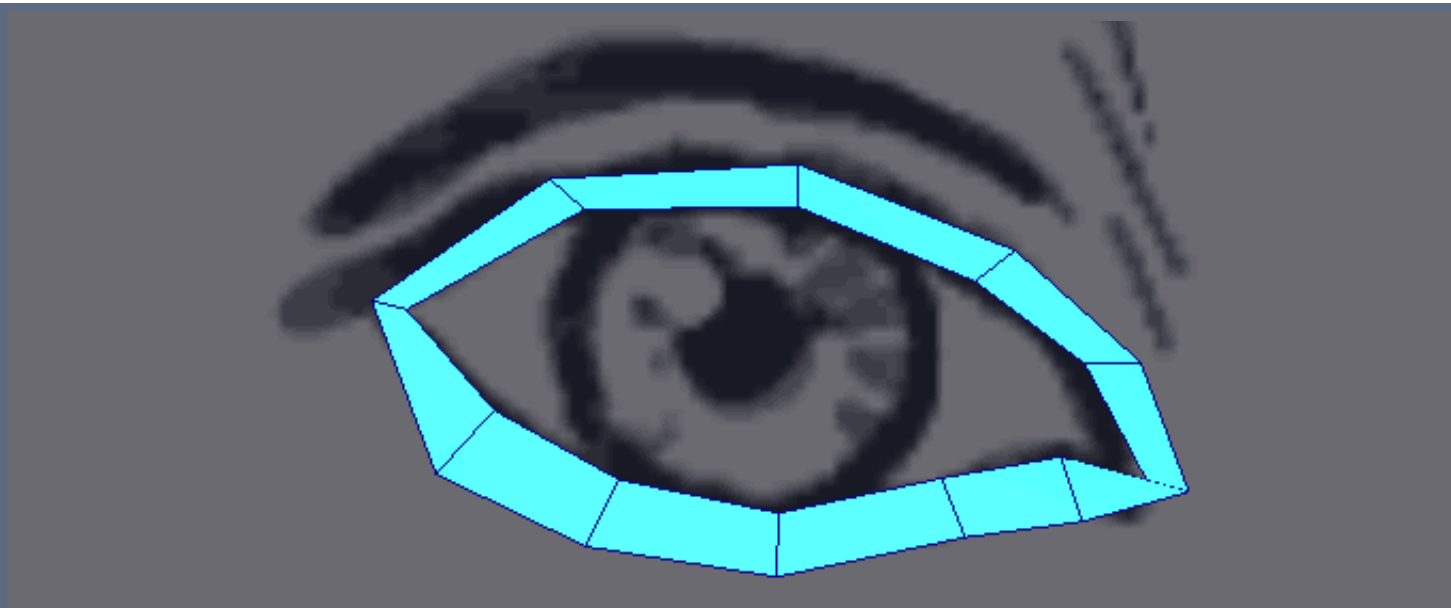


Adjust the polygon like the images.

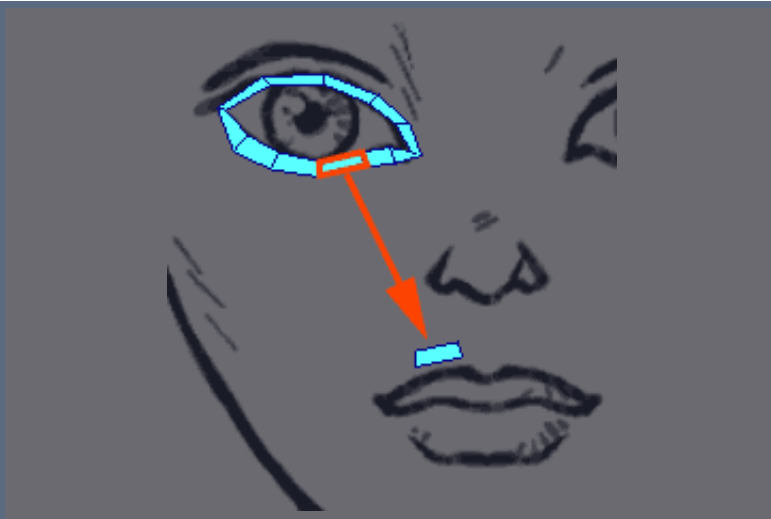


Select the one outer edge and holding down the shift key use Move to move the edge away.  
Max extrudes the edge and creates a new rectangle (quadrangle or quad).

Repeat the operation by adjusting the vertexes each time and make the complete eye shape as shown.  
With Weld Target, weld the two vertexes to join the band of quads together.

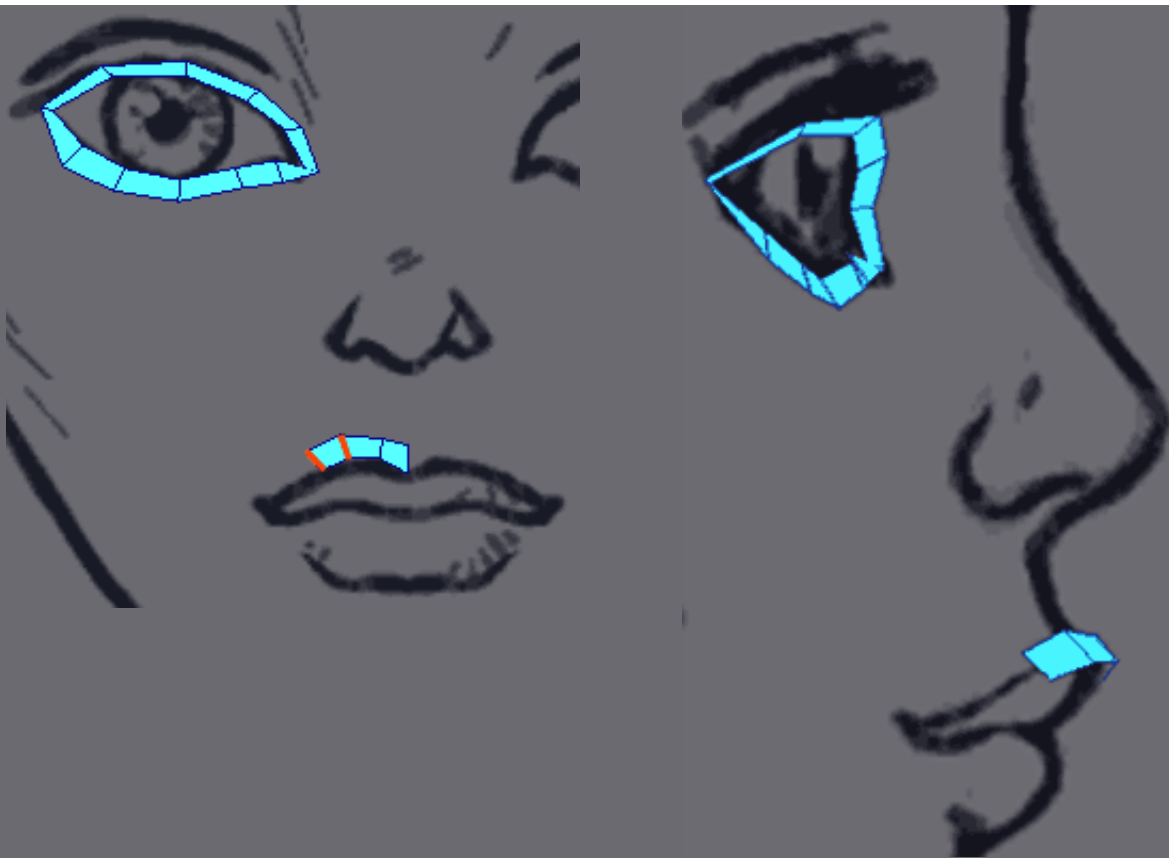


Front view and profile after adjustment of the vertexes

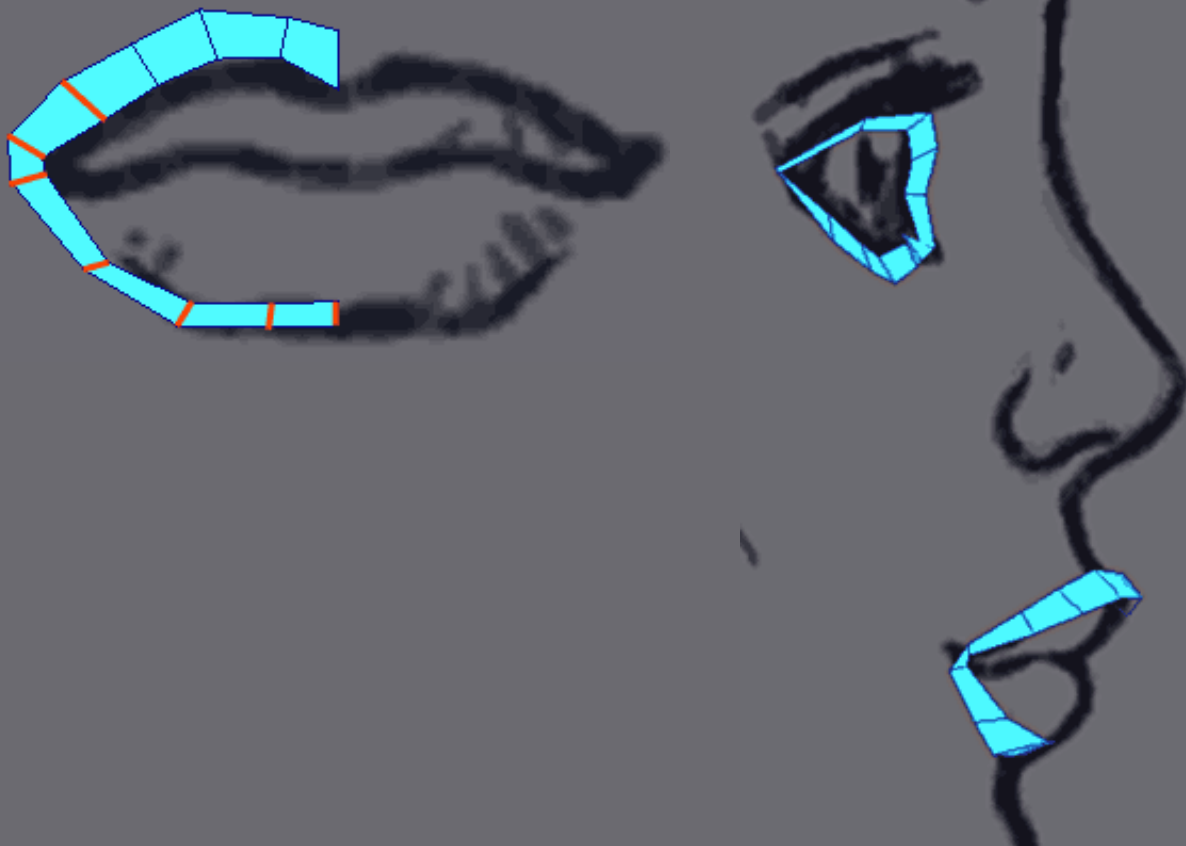


Start with the top of the mouth now.  
Select a face around the eye and all while holding shift key move the face.  
Dialogue box appears and select Clone to Element.

The news face is then part of the same object.  
An element in an max object is a group of faces not connected physically to the remainder of the object.



As with the eye, extrude to it surround the mouth shape and adjust as shown in these pictures of the two dimensions.

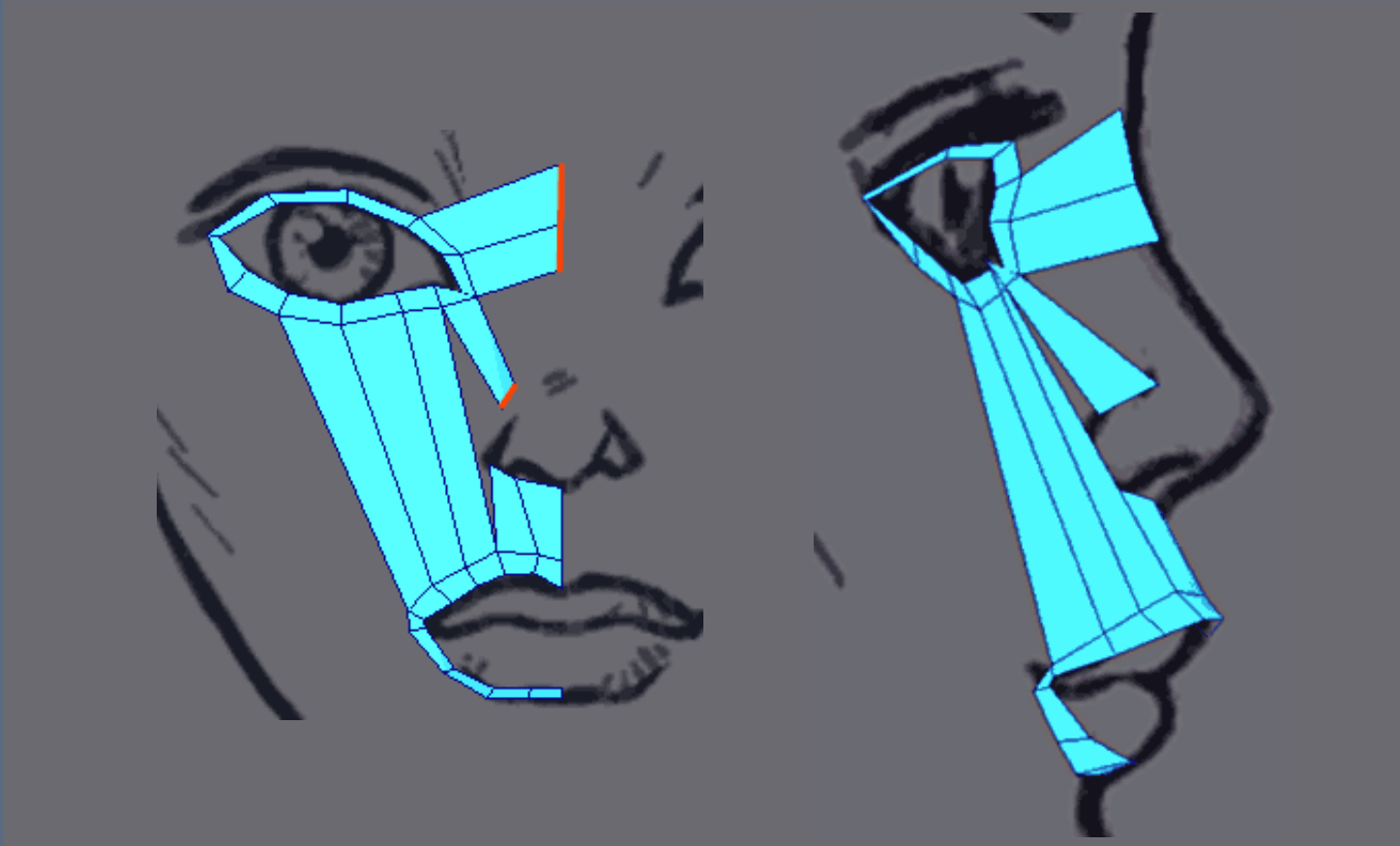


Circumference of the extruded mouth.

Extrude both edges like opposite.

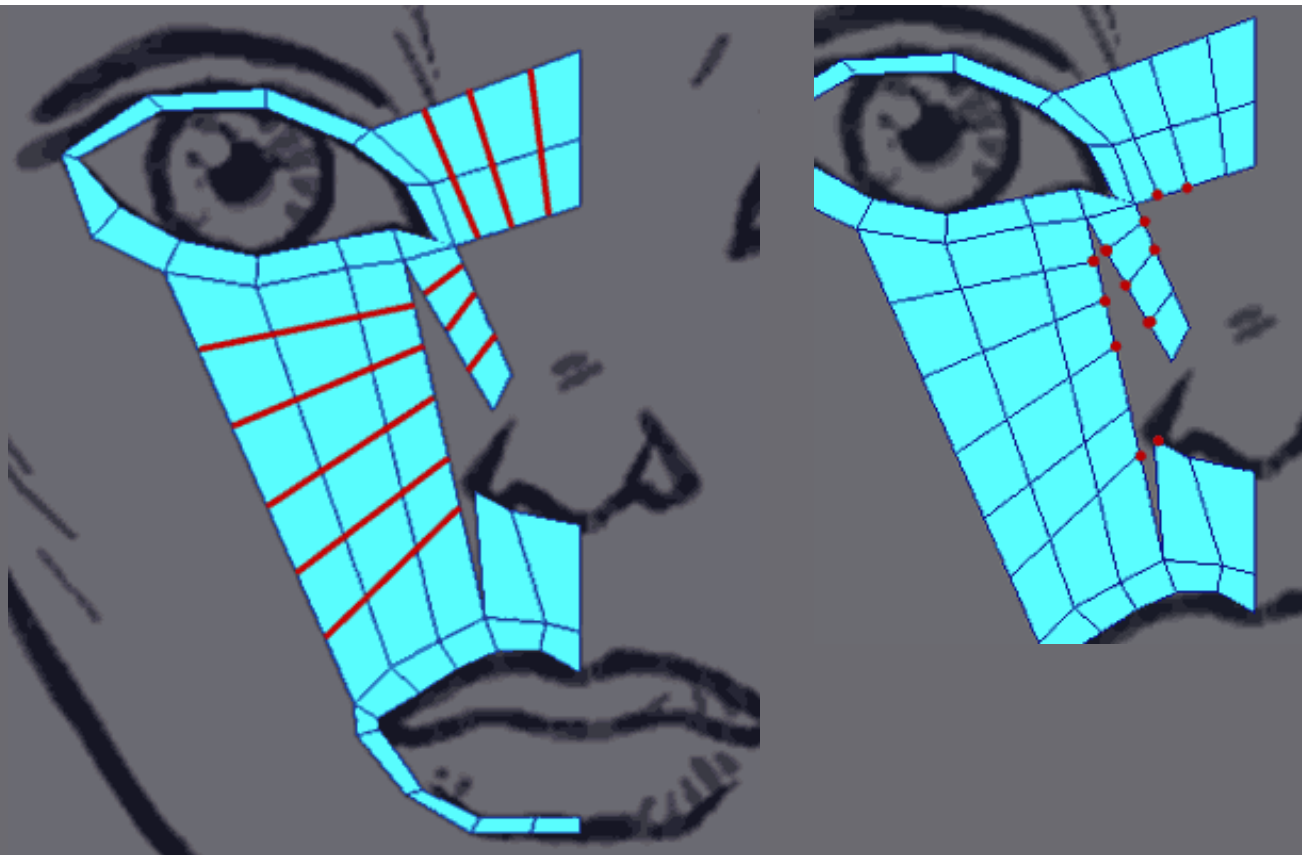


Extrude like above and using Weld Target weld these edges to the lower eyelid.



Extrude the 3 edges like above.





Make Cuts as on the image top left.



Select two by two the vertexes as above right image  
then weld each pair into one vertex.

The mesh should be as oppisite after Collapse



Adjust the vertexes like above.

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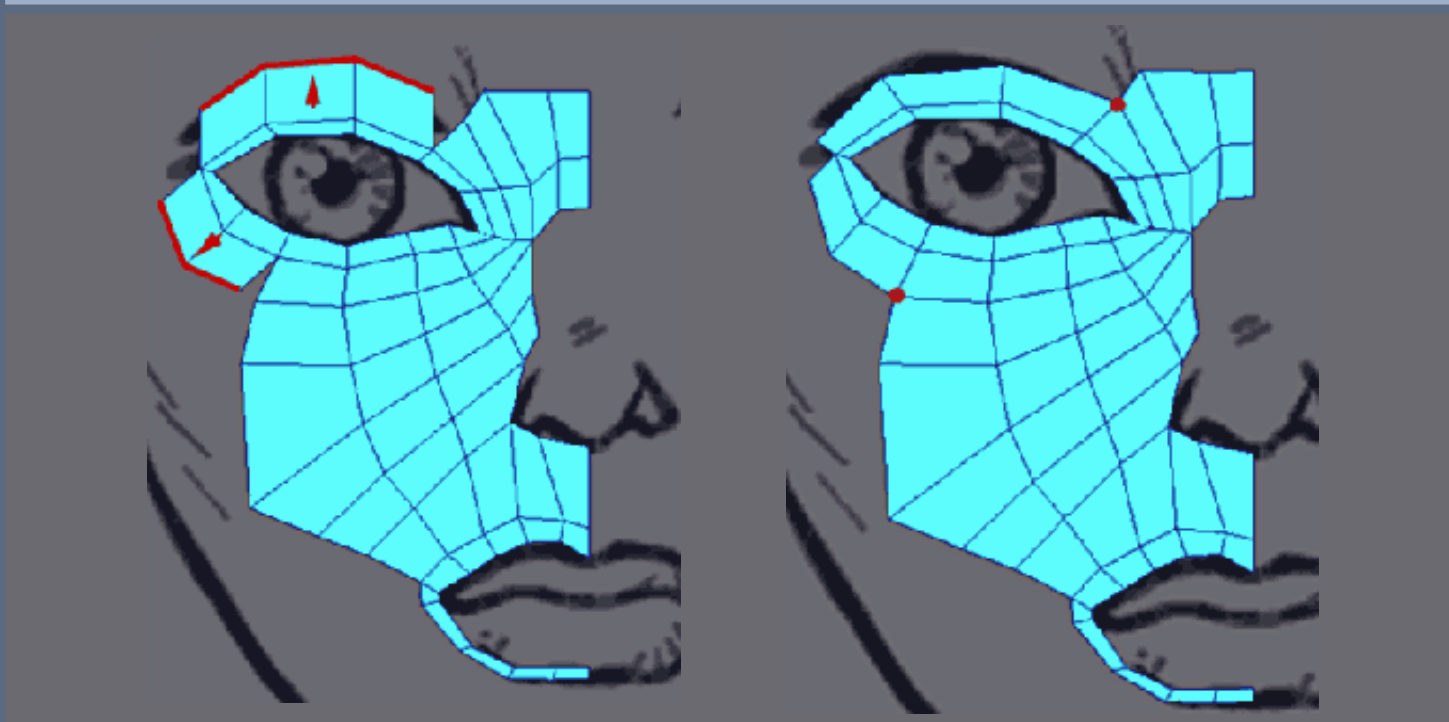
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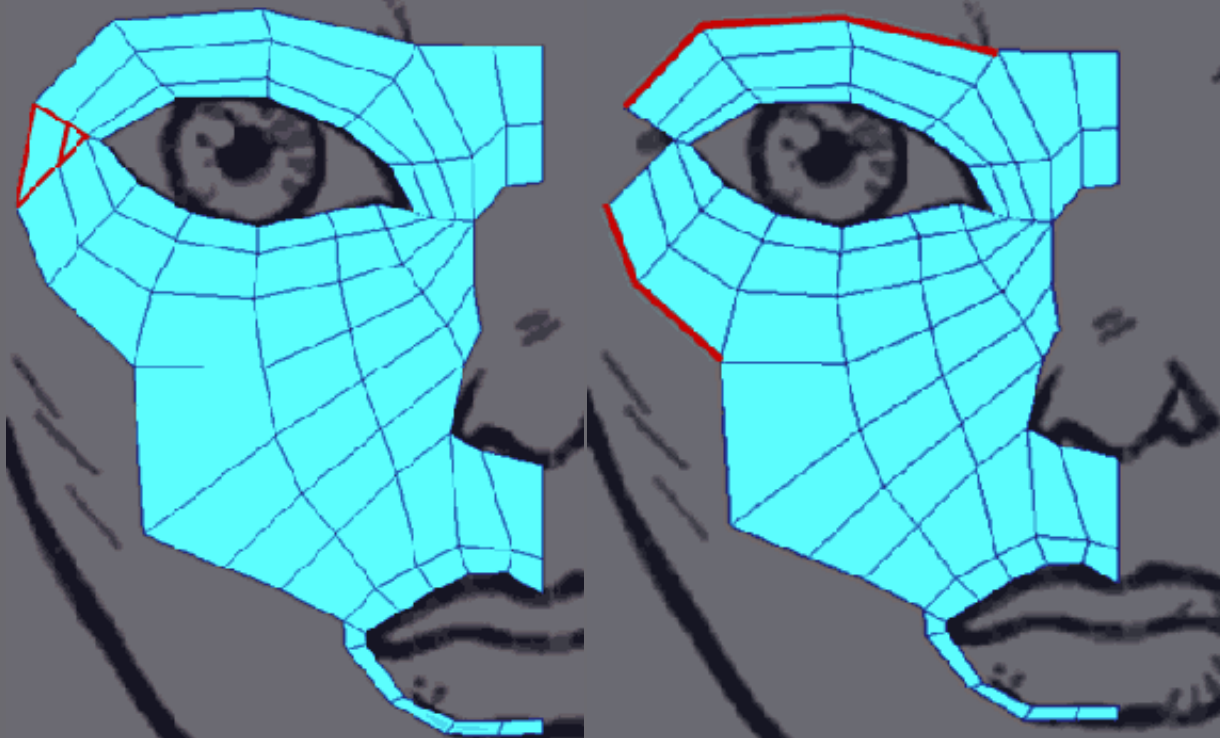
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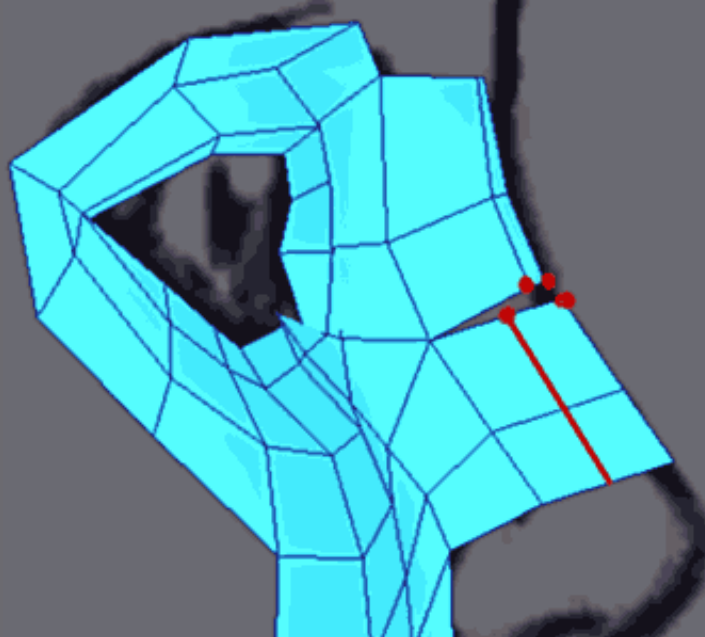
### Modeling of the head



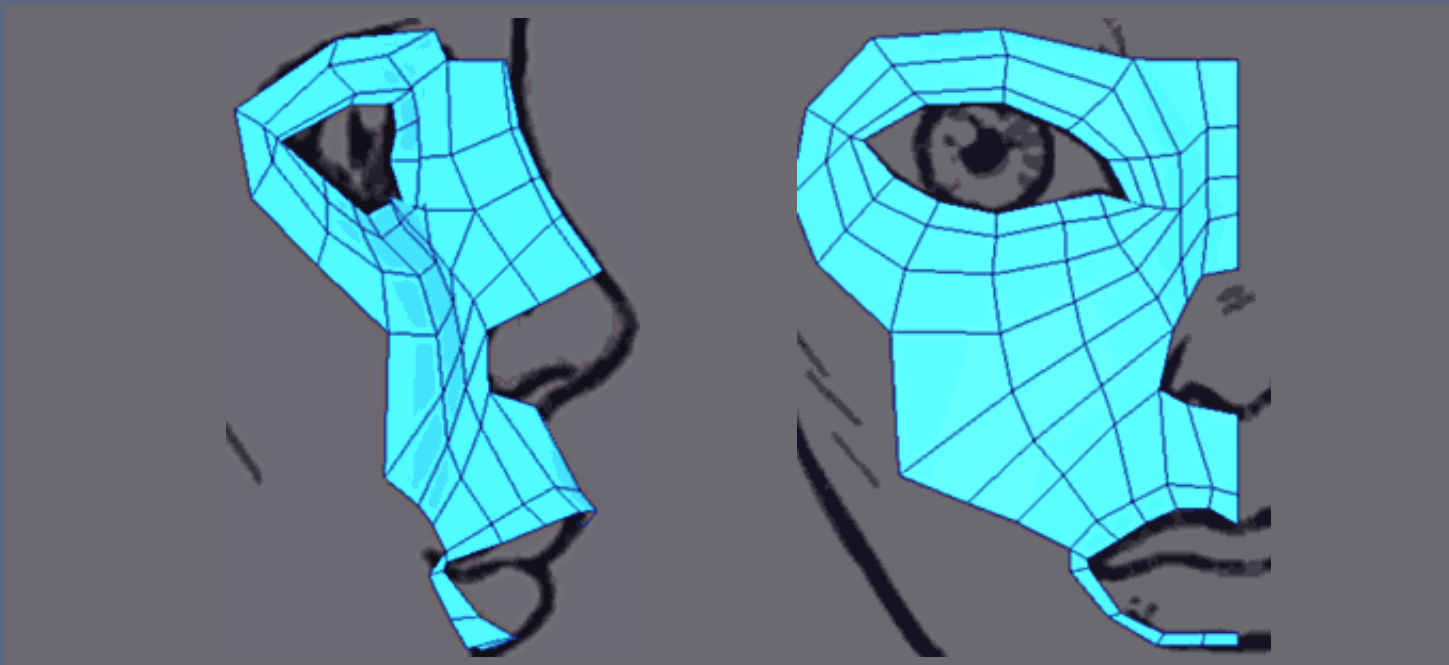
Extrude the edges like above and weld the vertes pairs as before.



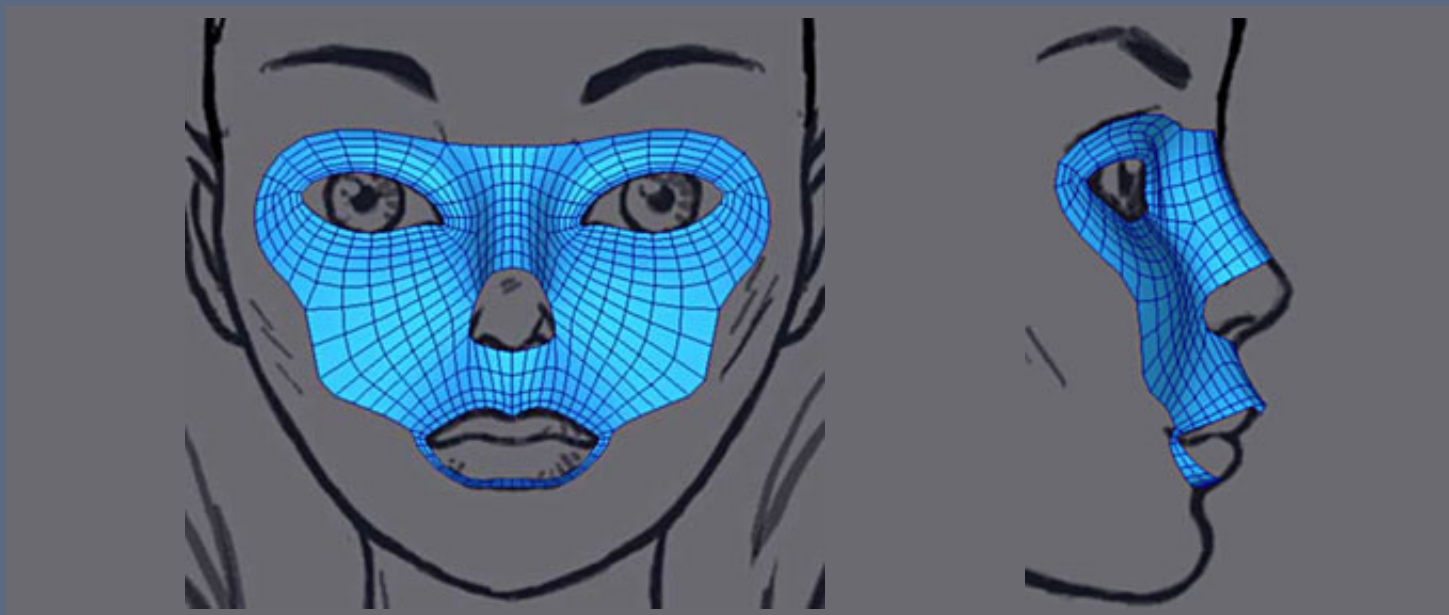
Complete the faces with Create poly



Extrusions on the nose, additions of edges with Cut and weld of the vertexes.



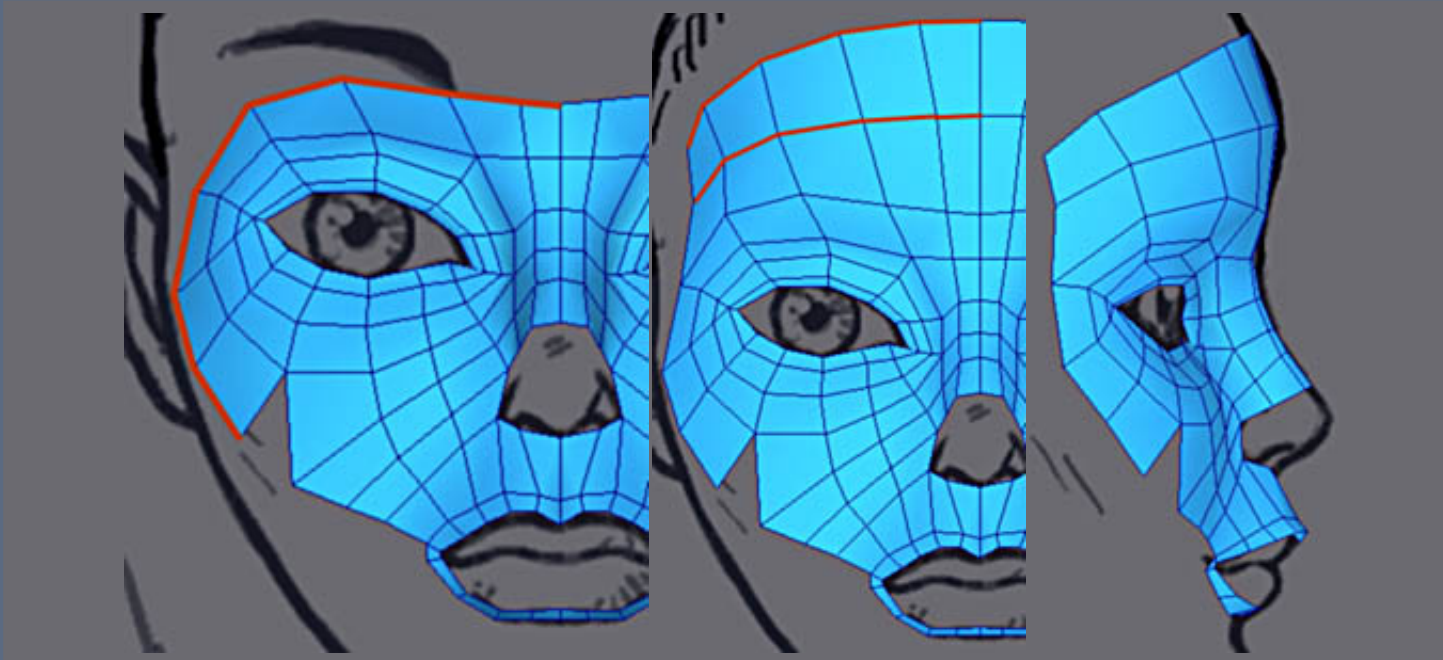
After adjustment of the vertexes.



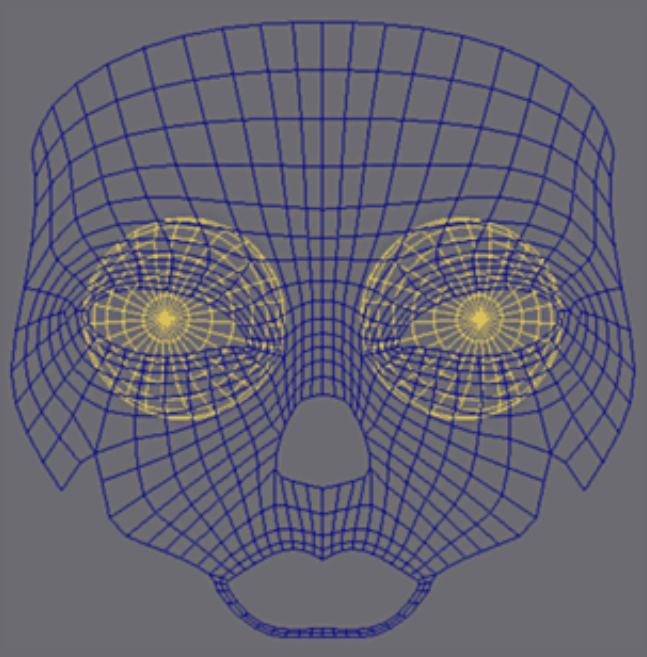
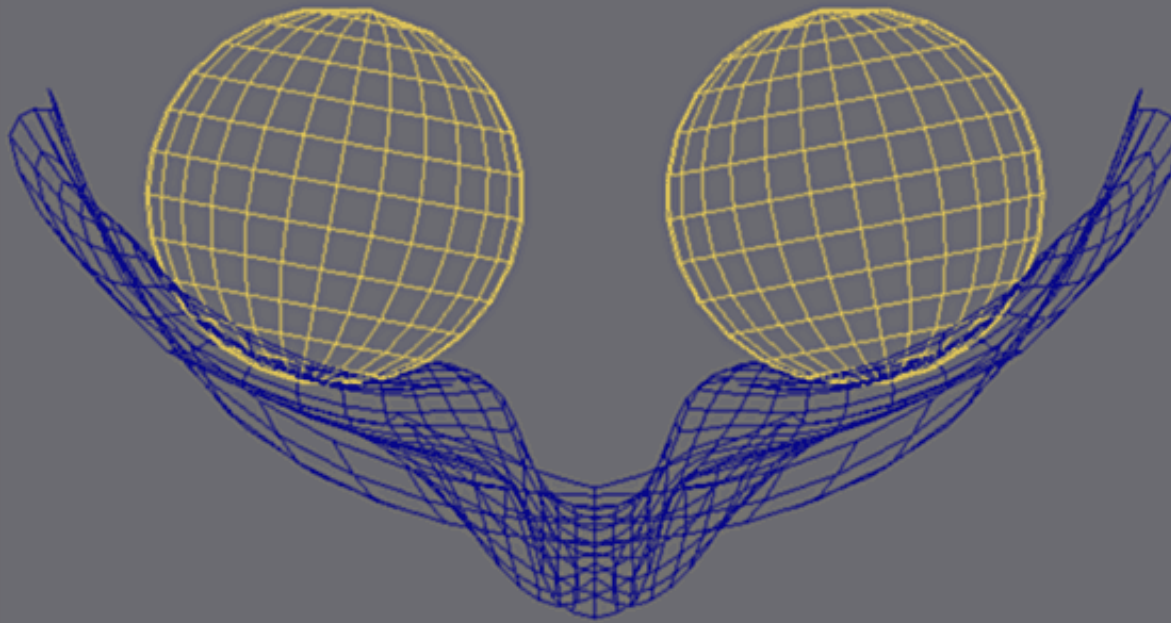


As with the body, add the modifier Meshsmooth in mode NURMS, iteration 1.  
Make a copy mirror Instance.

With Low poly cage adjust the vertexes to give a regular form to smoothed surface.



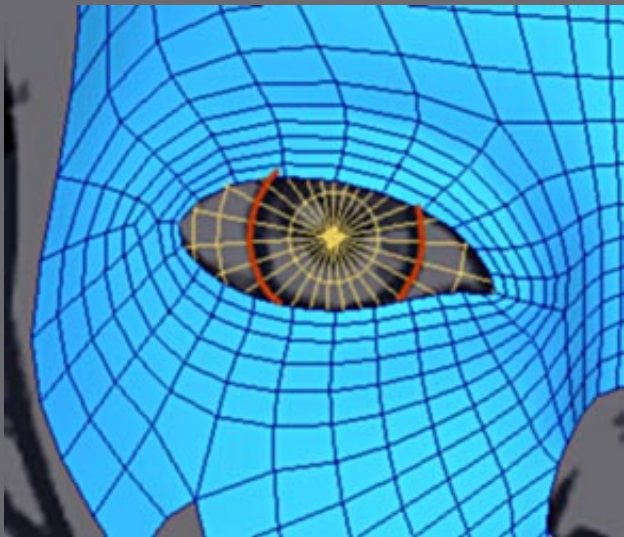
Continue to extrude to build the forehead



Now is time to add sphere eyes and adjust the eyelid area

Create a sphere of diameter slightly higher than the width of the opening of the eye.

Apply to it a slight rotation to the vertical axis.

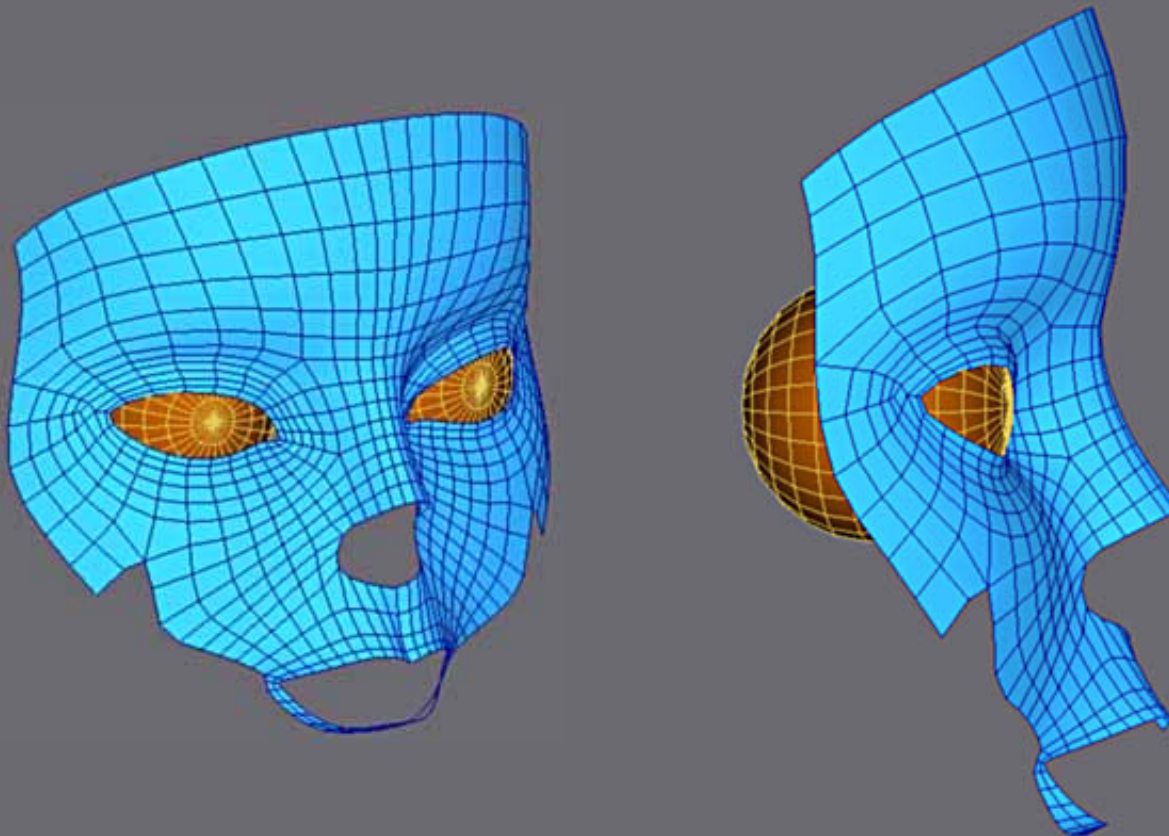


It is necessary to be arranged so that a circular division coincide with the edge of the pupil.

For that vary the number of segments of the sphere.

Here 27 segments are used

That will be useful later during the completion of the eye.



Finally adjust the vertexes of the eyelids top and bottom so they are placed on the outer edge of the spheres.

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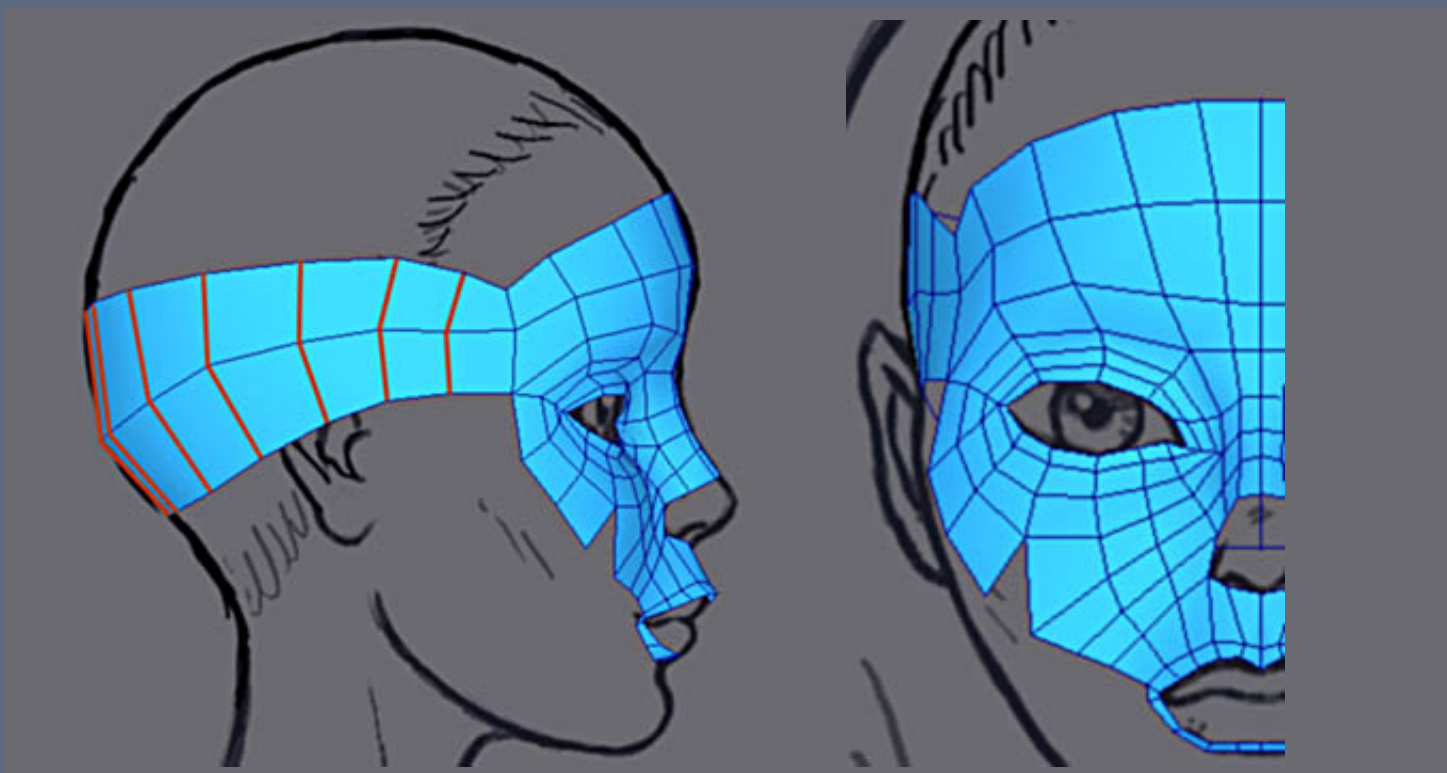
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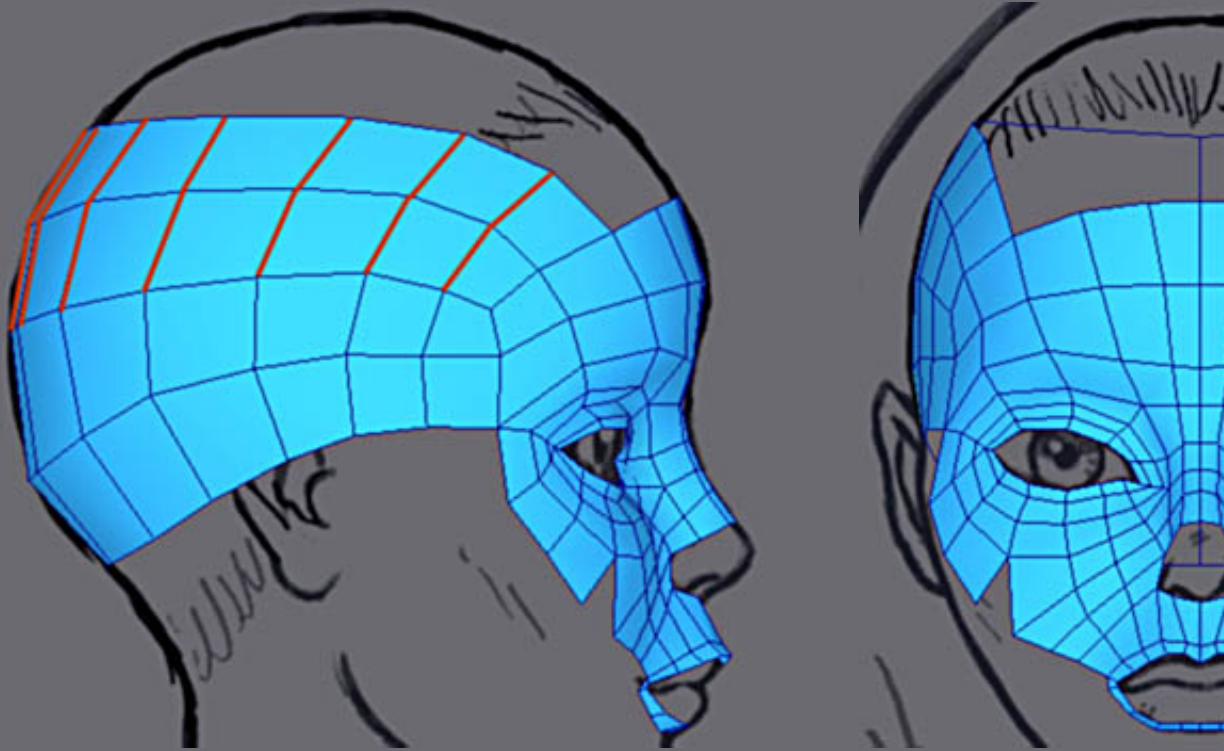
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### Modeling of the head

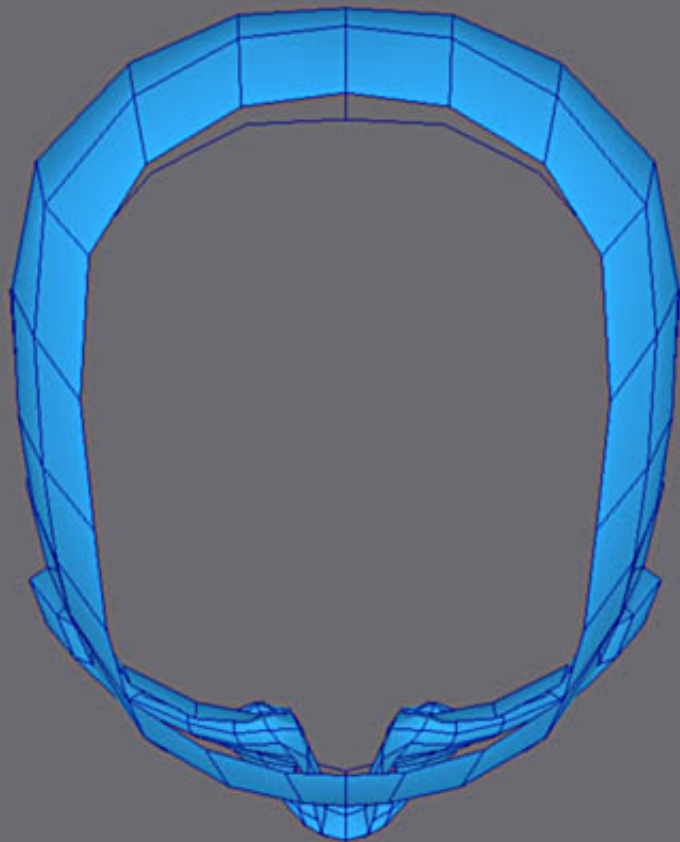


Extrusions for cranium



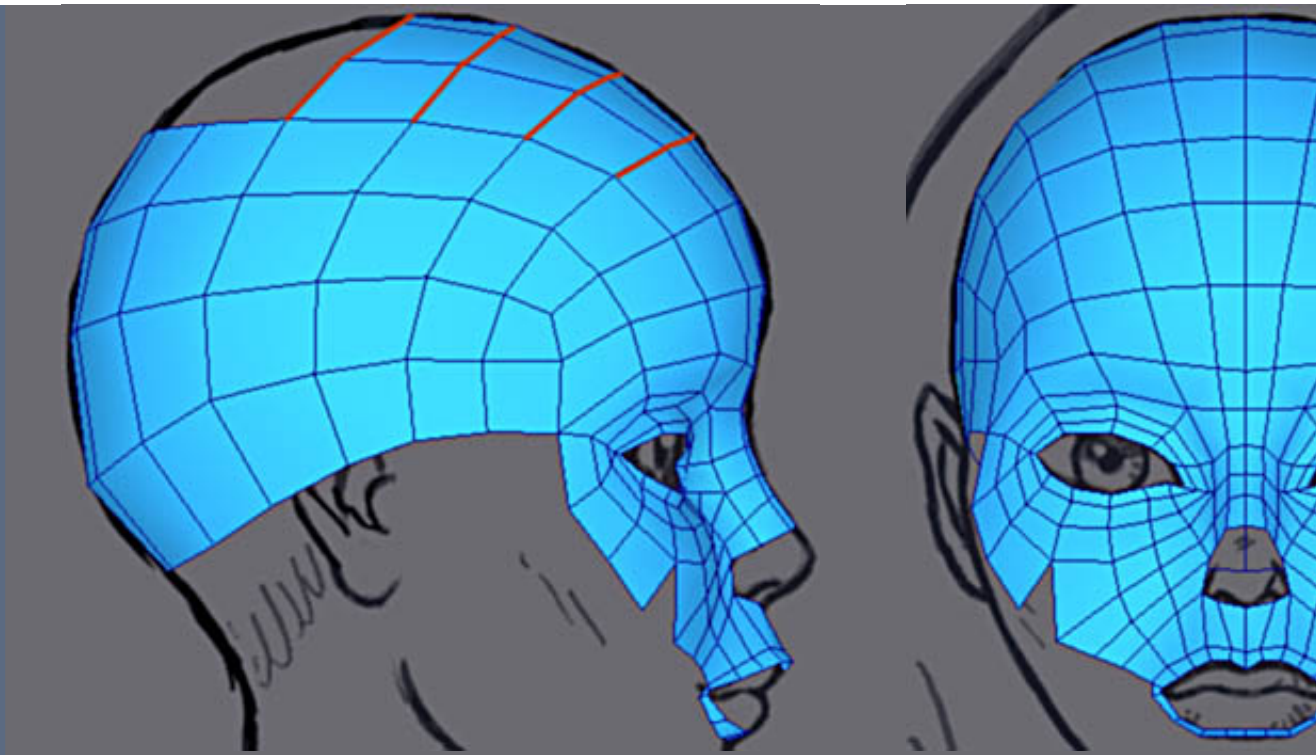


Still an extrusion for cranium.

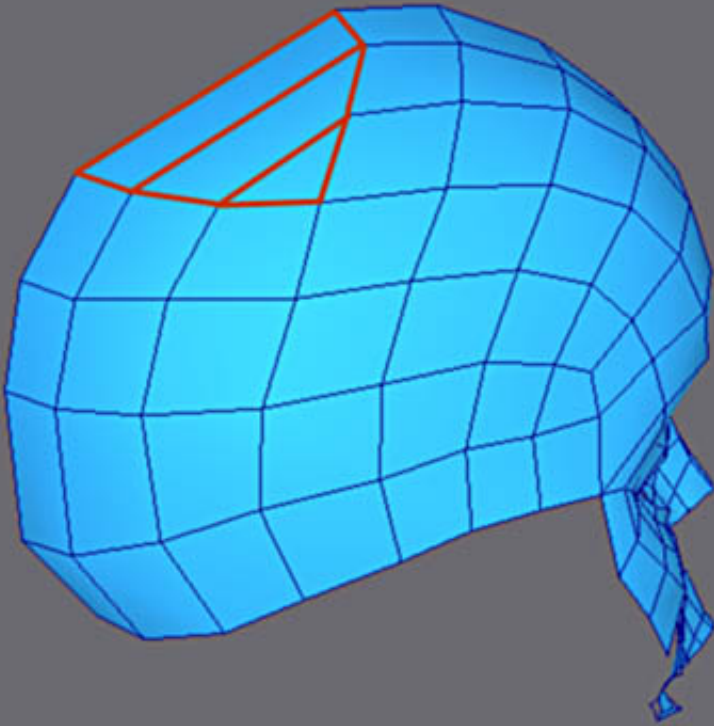


For top opposite.

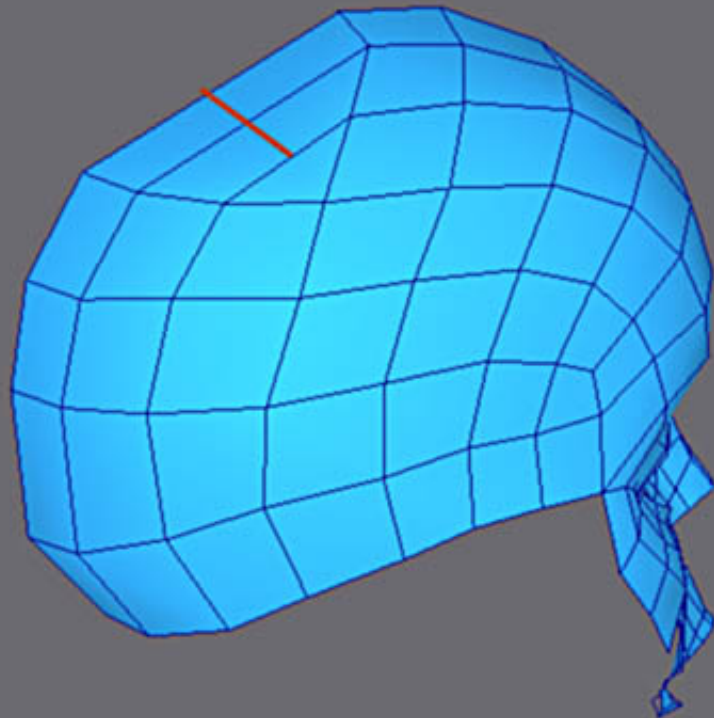




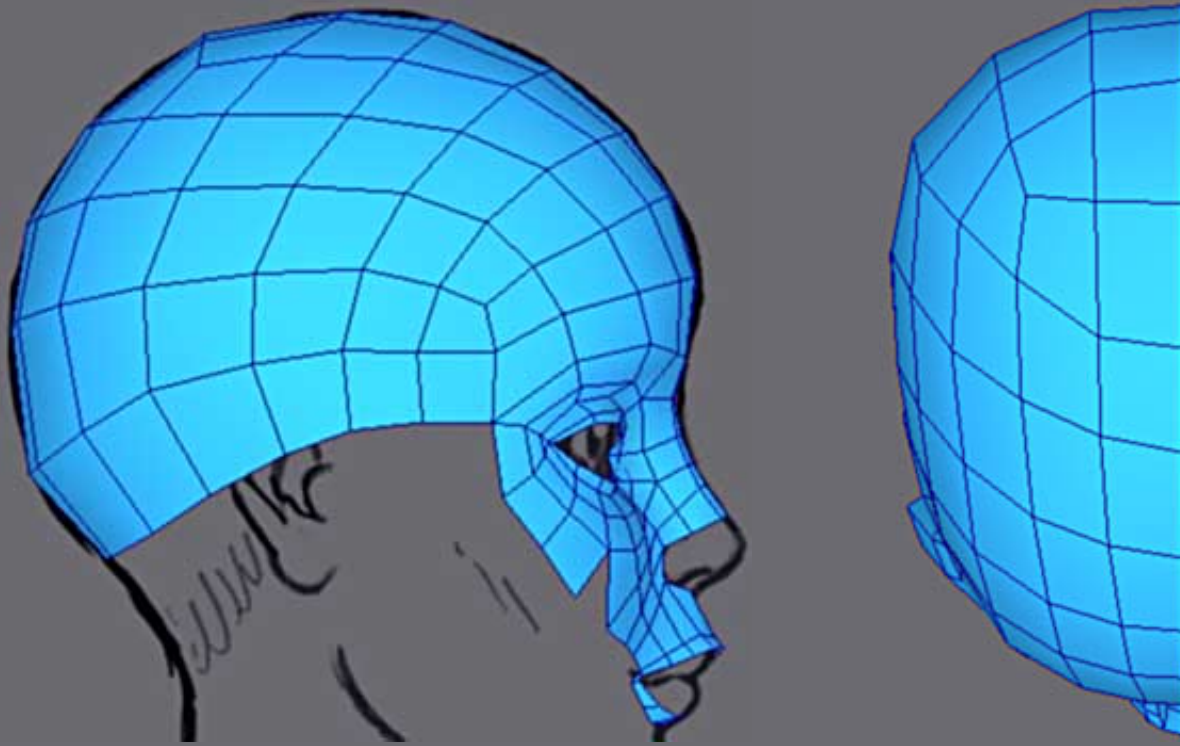
A last series of extrusion for the top of cranium.



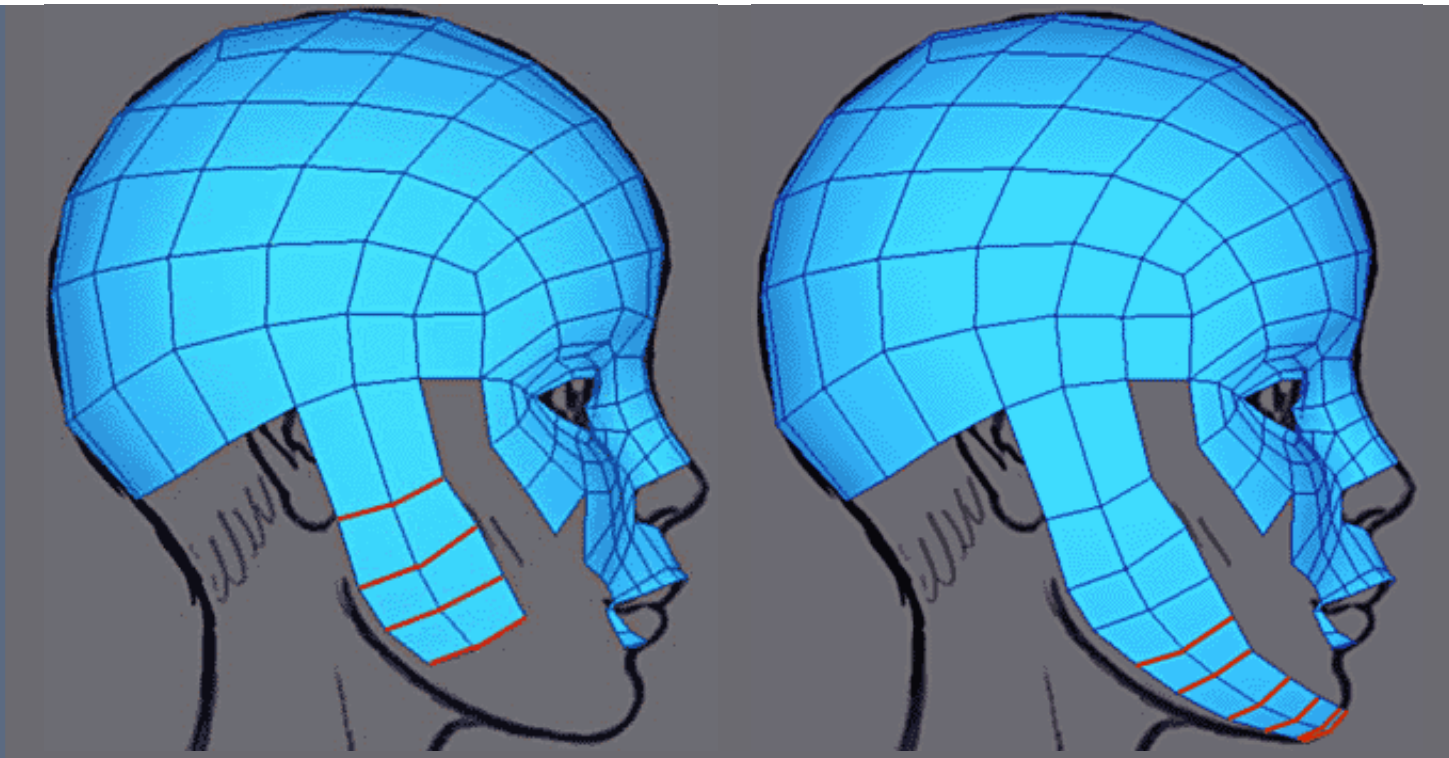
To build these faces to close cranium.



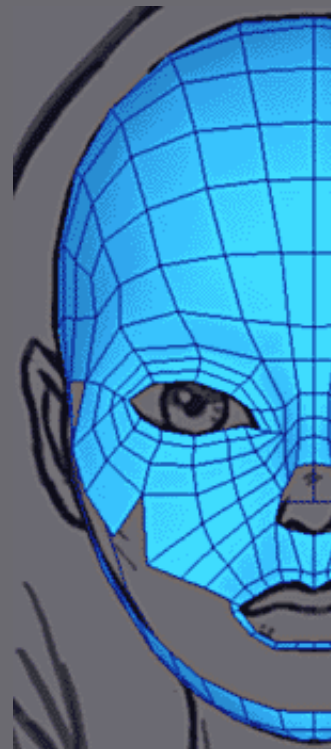
Add vertexes with Cut Edge.

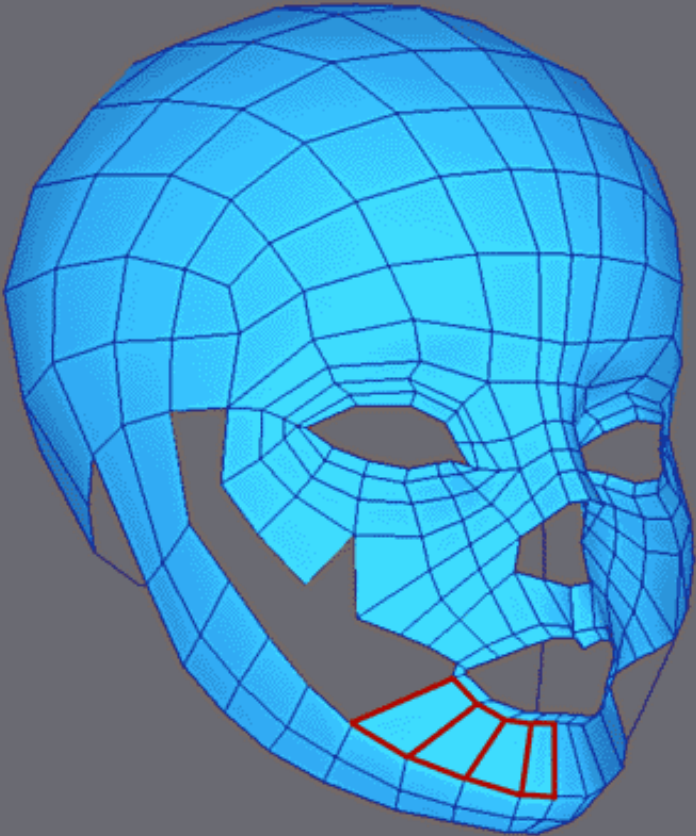


The finished cranium. Note that there are only rectangular faces (quad).



Extrusions for the jaw and the chin.





To build the faces of the chin with Create Face.

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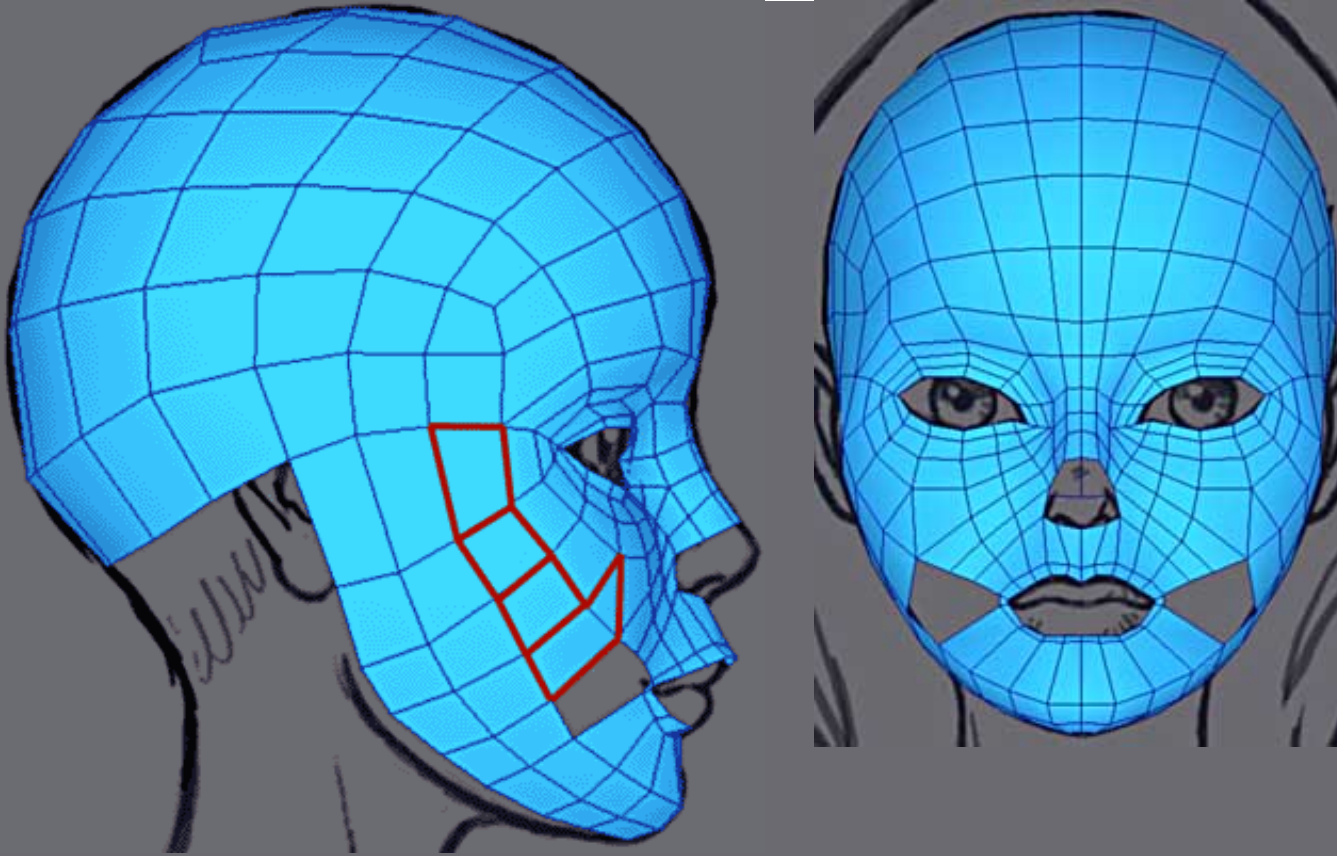
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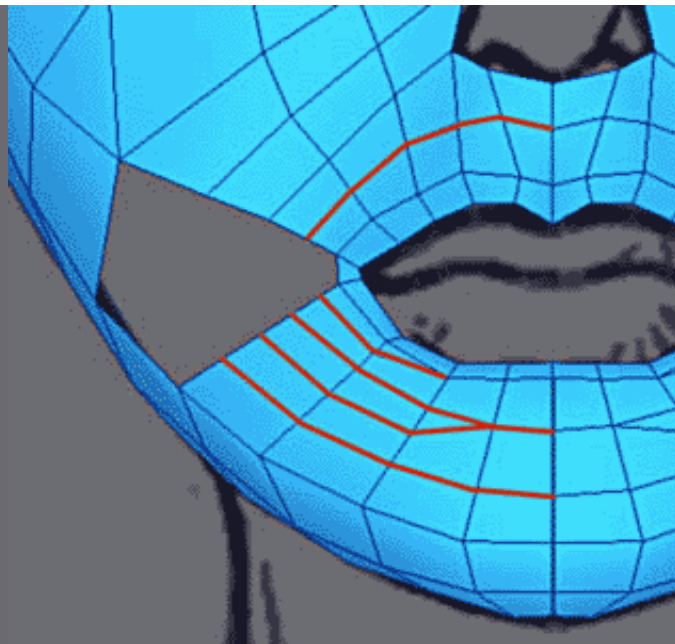
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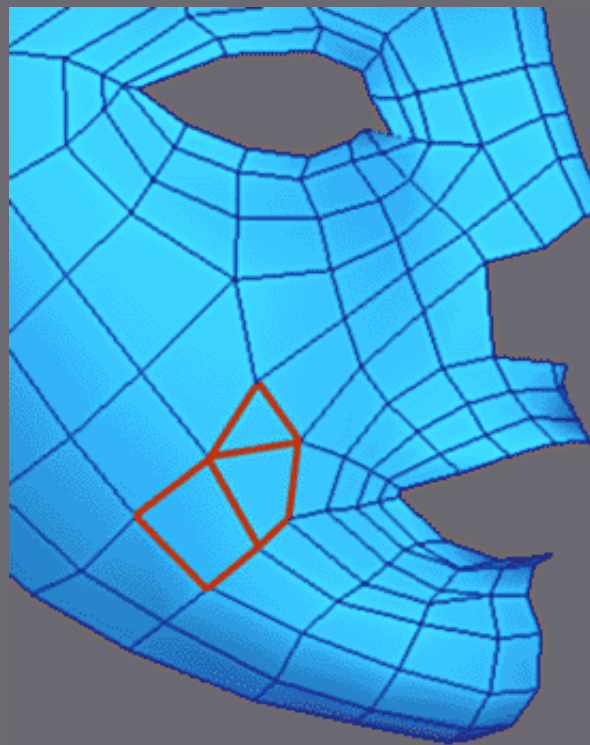
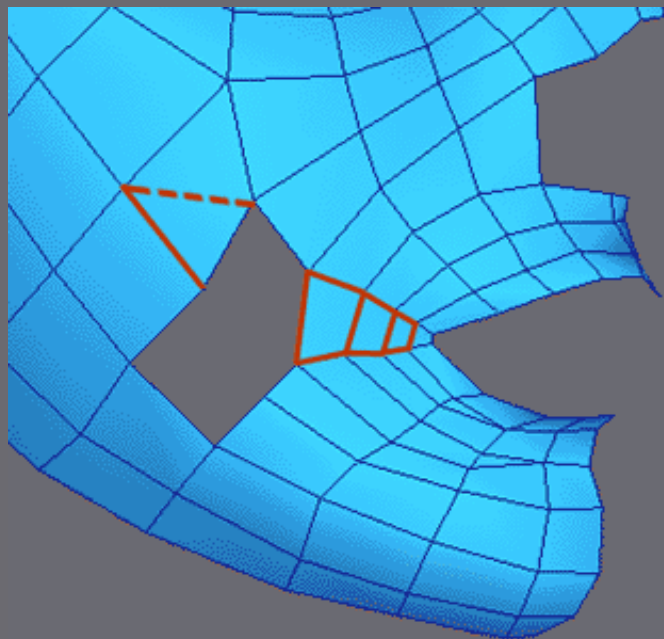


Build these faces with Create Face.



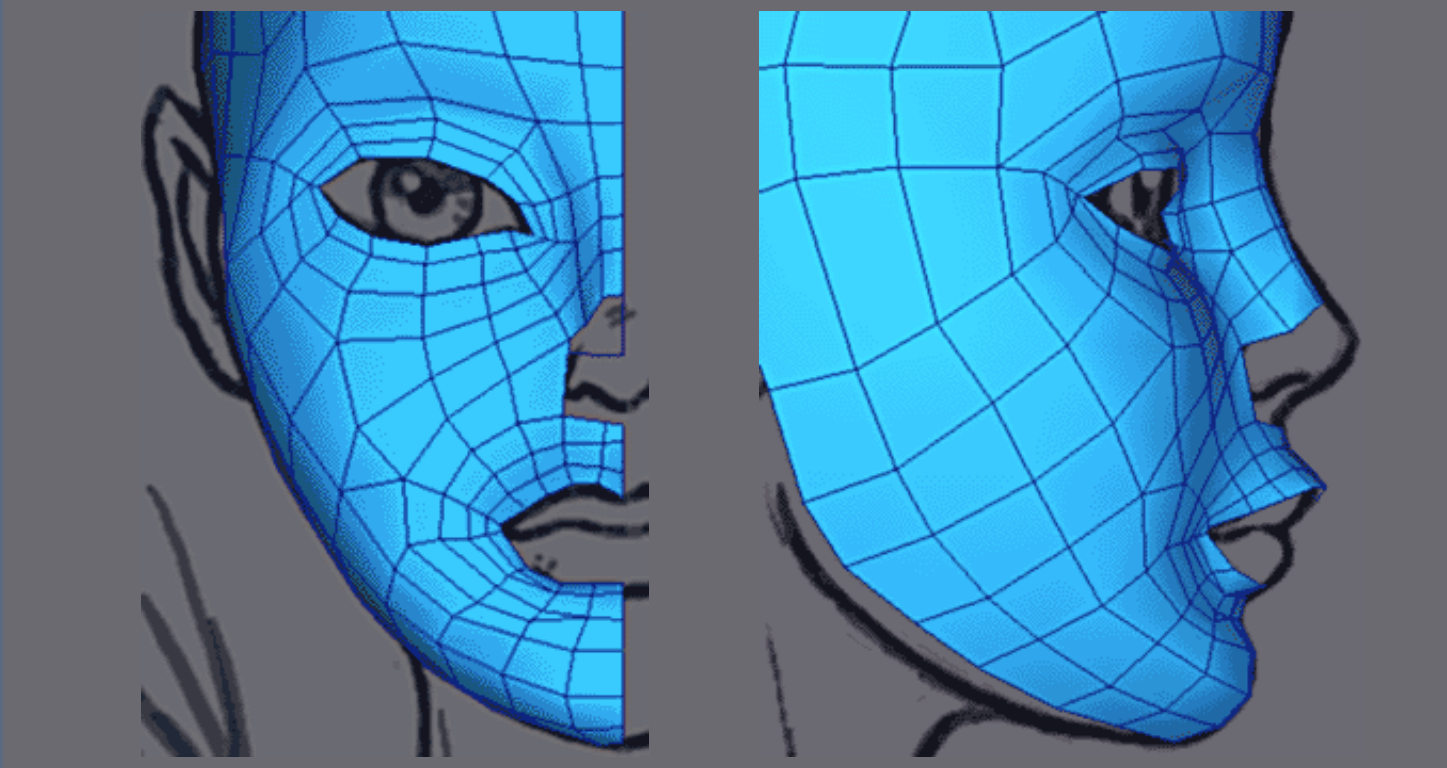


Insert these edges with Cut.

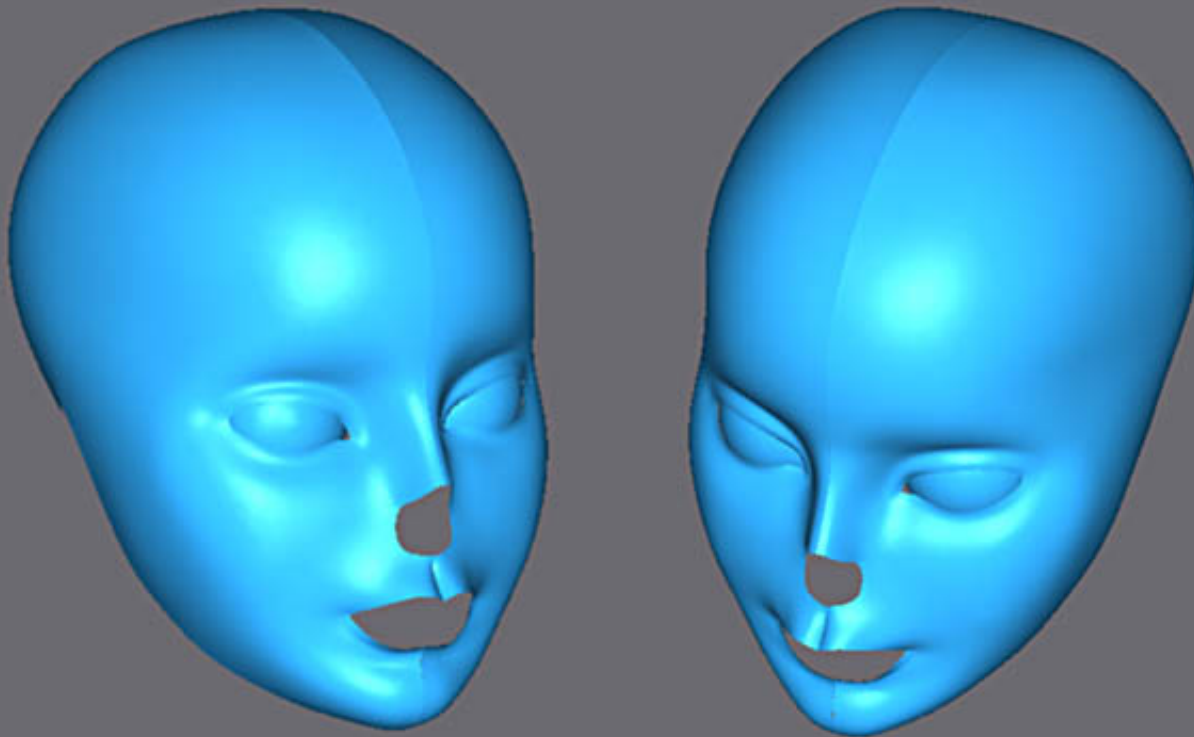


This gap is sealed by creating polygons as shown. Try to obtain the same mesh layout you may have to use the edge visible/invisible button

Image of right-hand side shows the hole filled with Create Face.

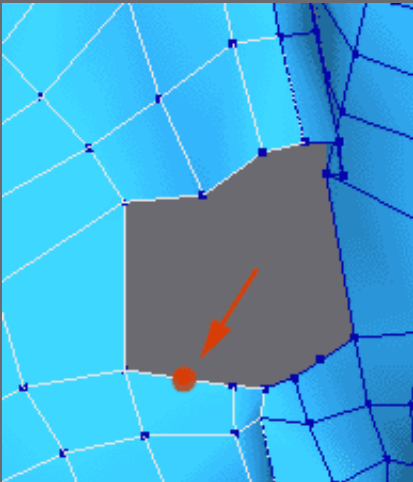


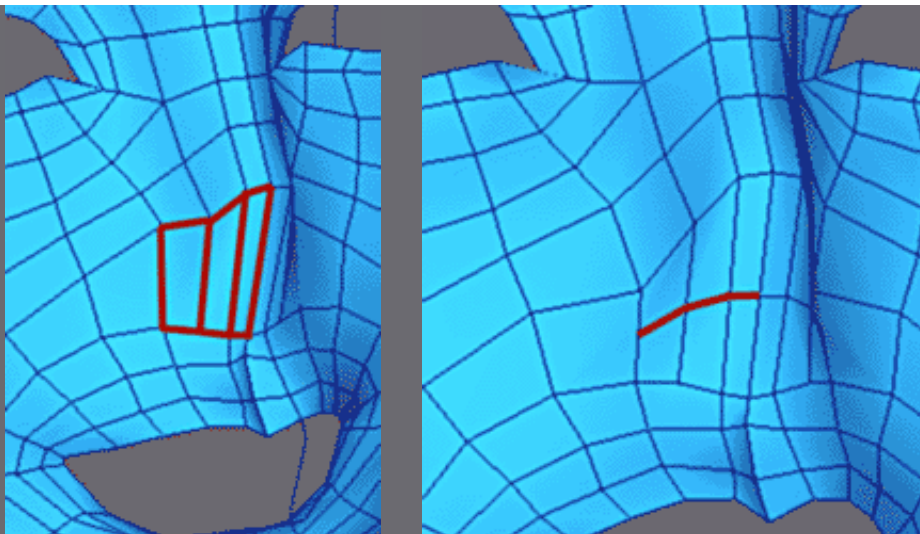
After adjustment of the vertexes.



Apply a material with enough shininess to see the defects on subdivided surface.  
Correct and adjust with the cage low poly.

Aim to have a maximum number of faces as quads and not tris as this guarantees best possible smoothing with Meshsmooth.

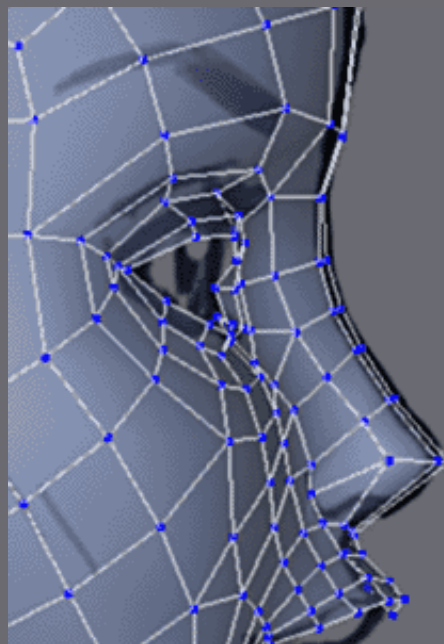




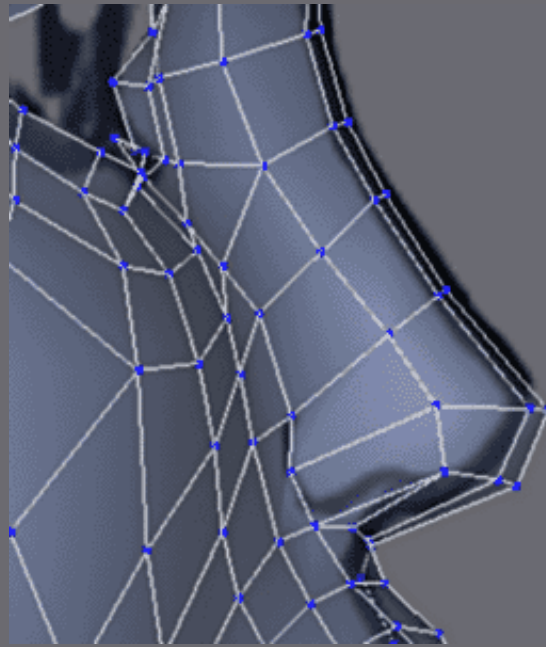
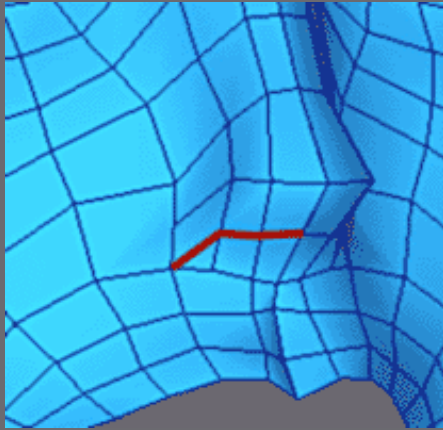
#### Onto the Nose

Insert a vertex using Divide into the base of the nose.  
Fill the hole with Create Face (as in picture, middle).  
Insert edges with Cut (picture, right-hand side).

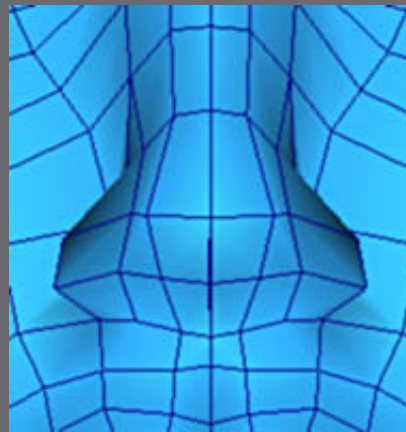
How the profile looks after adjustment of the vertexes compared to the template (mode See Through).

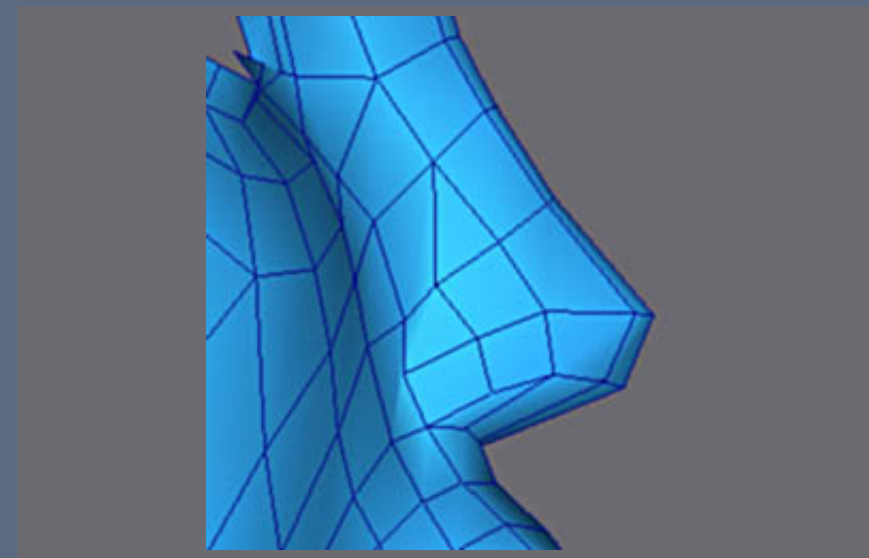






Insert these edges and adjust for with dimensions.





Insert these edges.

Adjust the faces of the nose as with dimensions as on the images.

The base of the shape of the nose is now finished.

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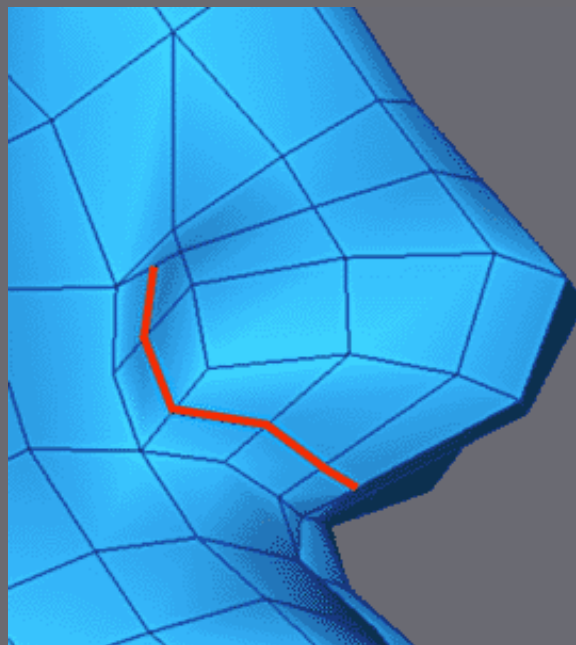
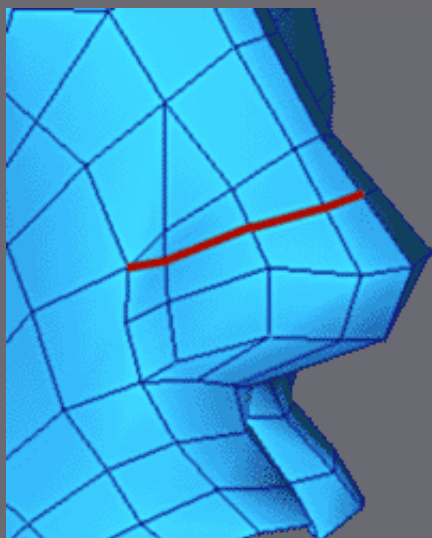
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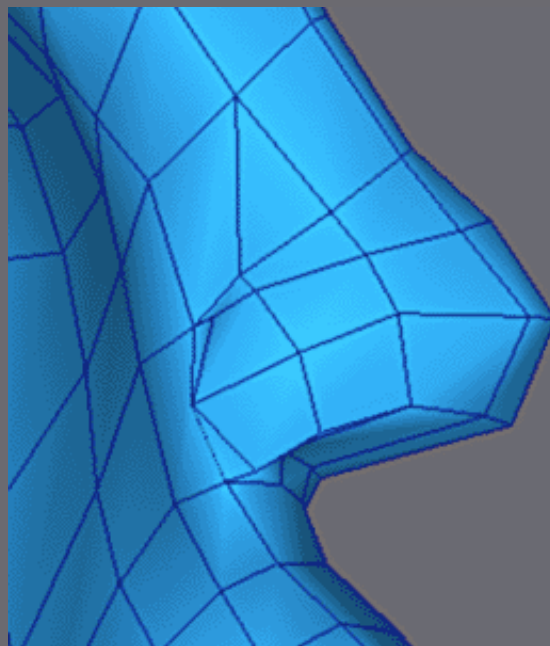
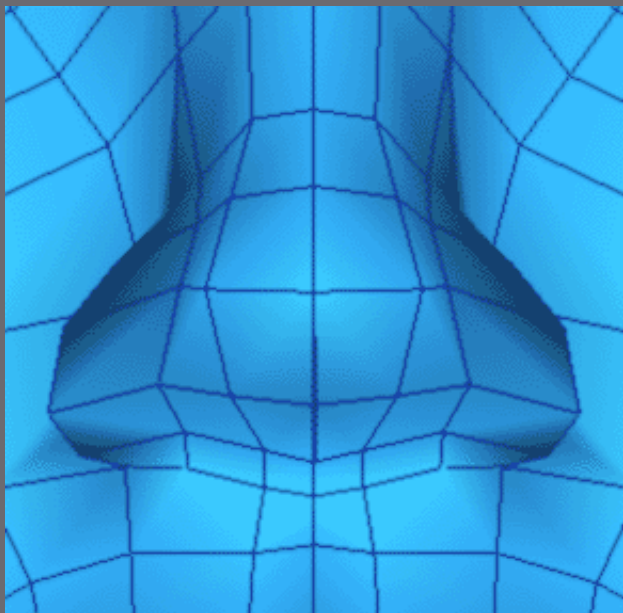
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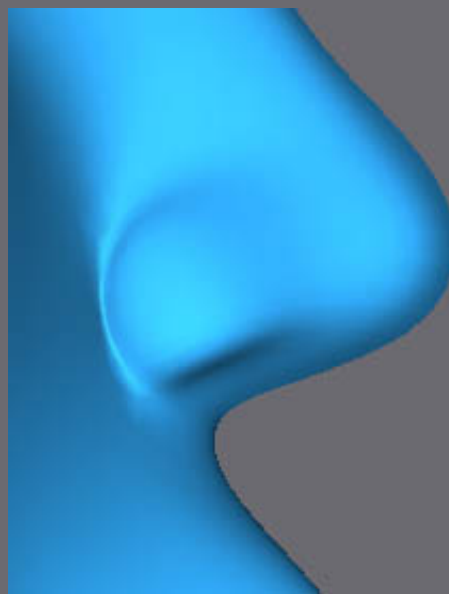
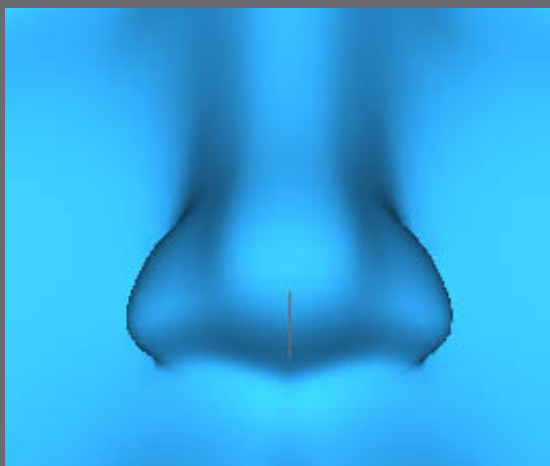


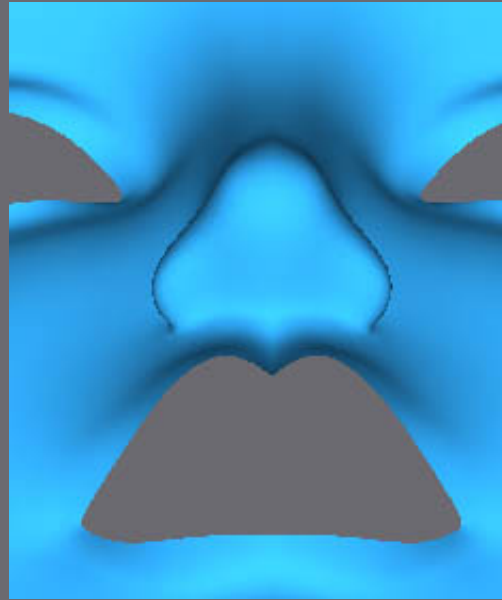
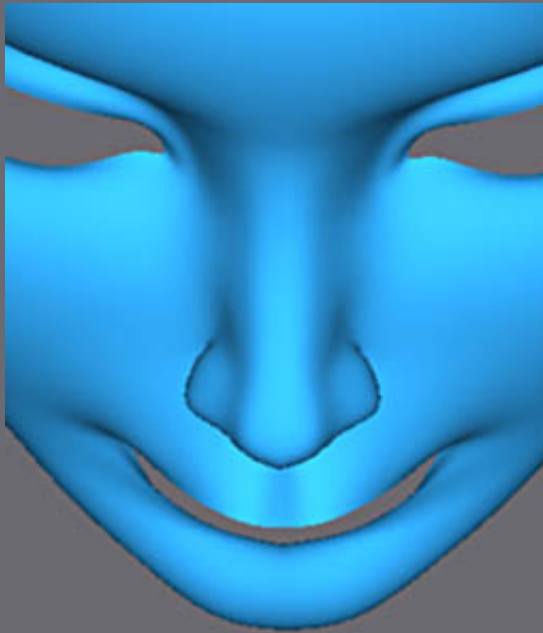
Insert these two series of edges with Cut.



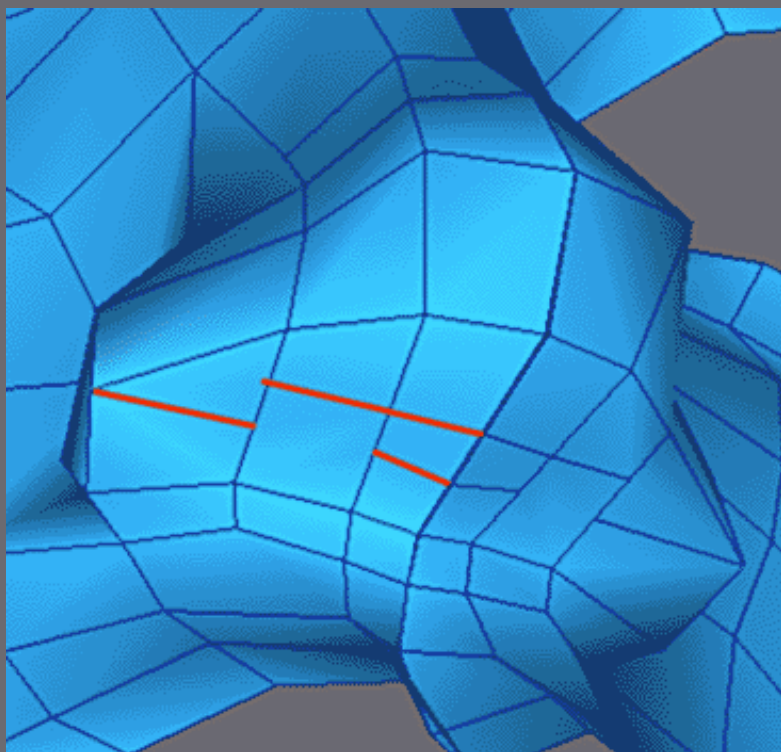


Possitions after adjustment.

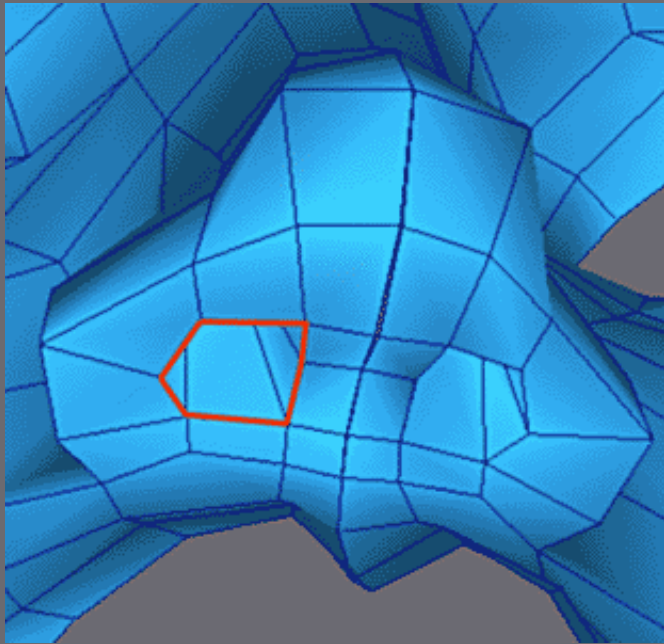




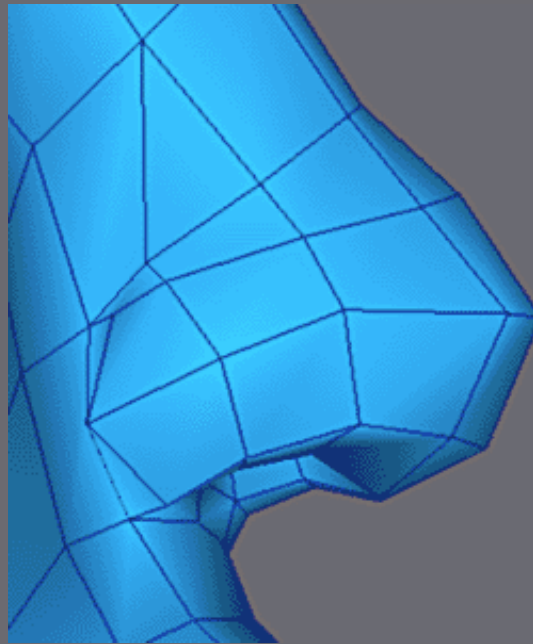
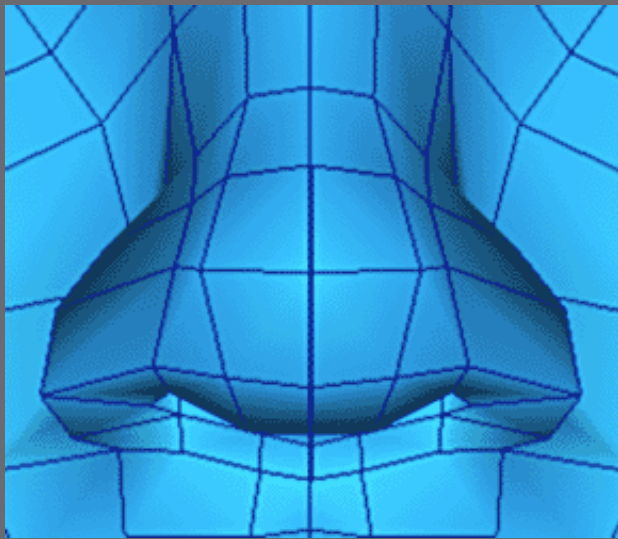
Look of the nose once subdivided. Work the form with the low poly cage and view smoothing at the same time.



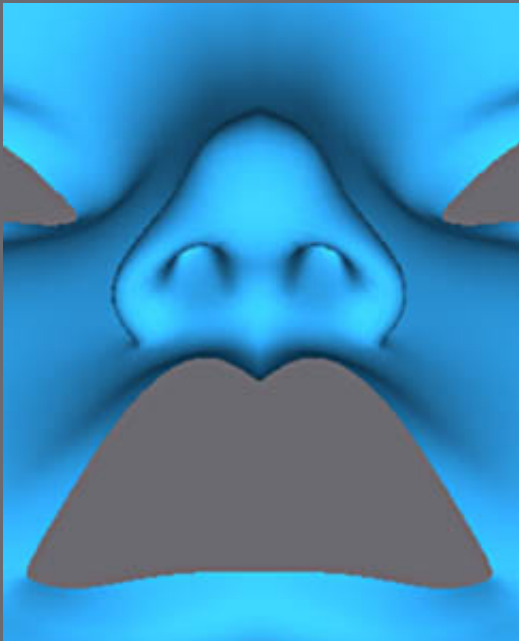
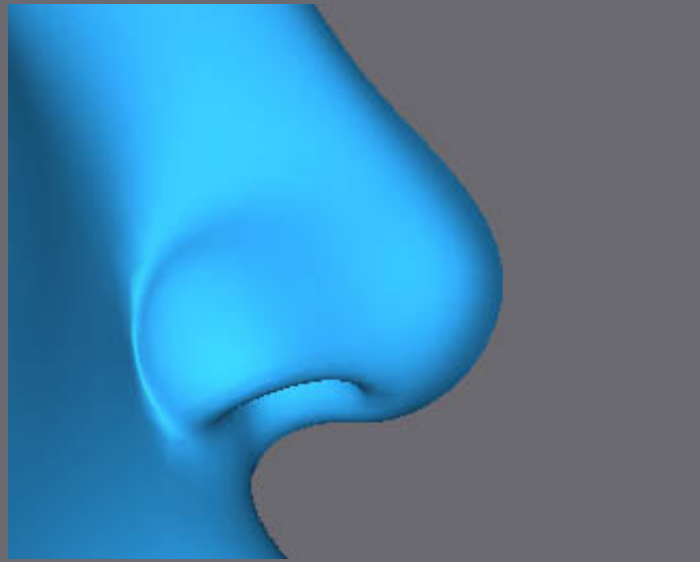
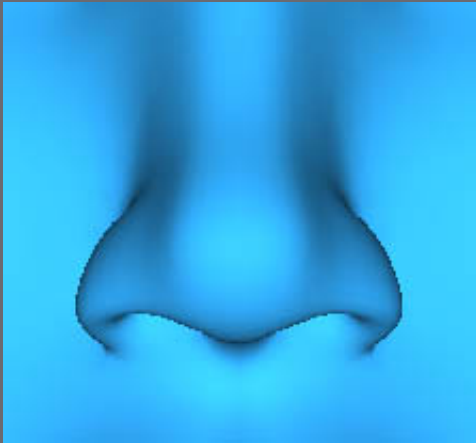
To finish, insert these edges to make the hole of the nose.



Select the polygon as indicated in the picture and made one Extrude inwards as well as Bevel to reduce the size of the internal hole.

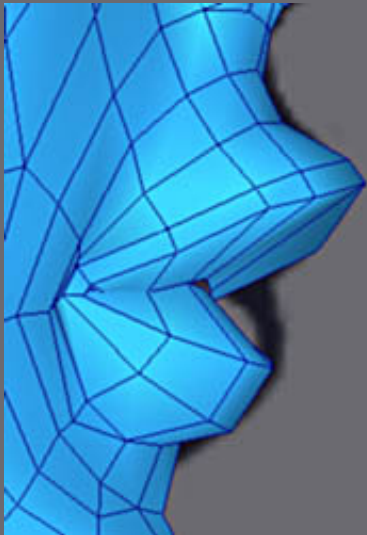
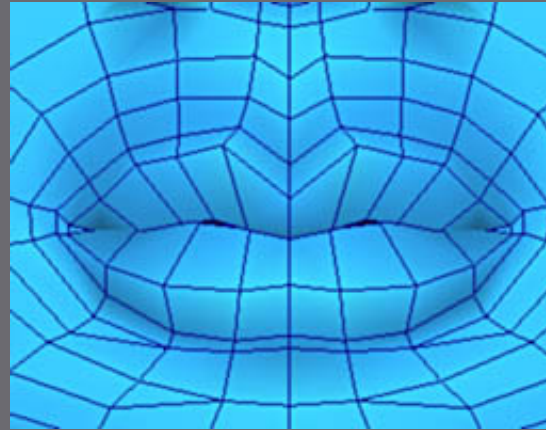
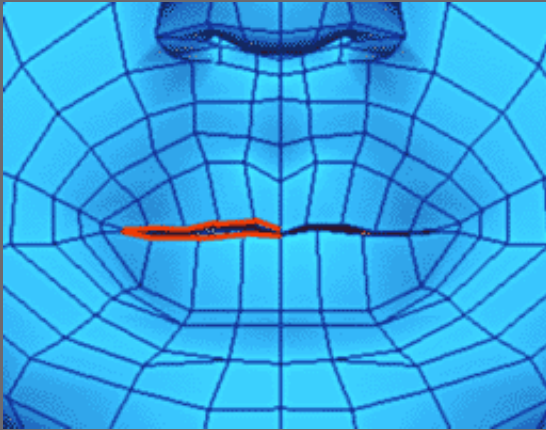


Dimentions of the nose in low polygons.



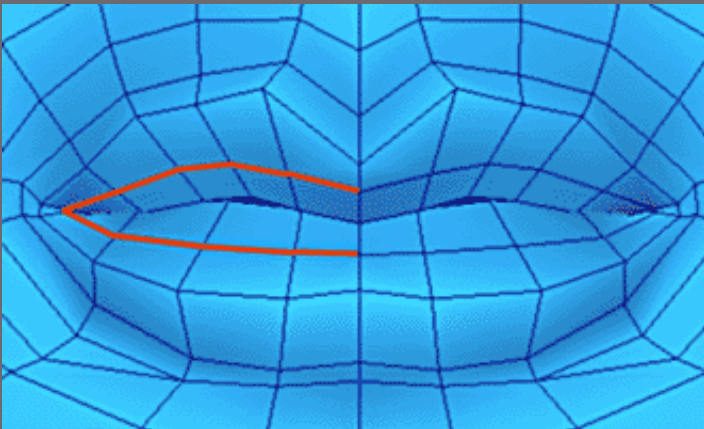
Finished nose, subdivided with iterations 2.



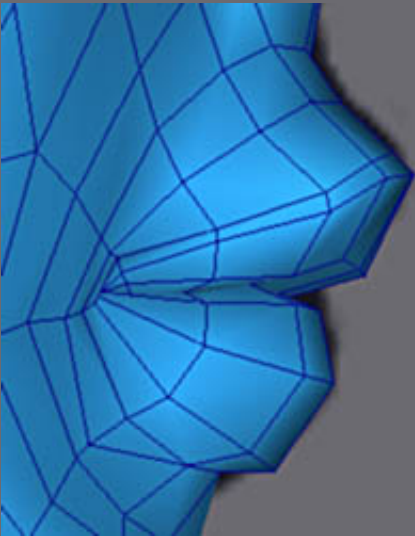
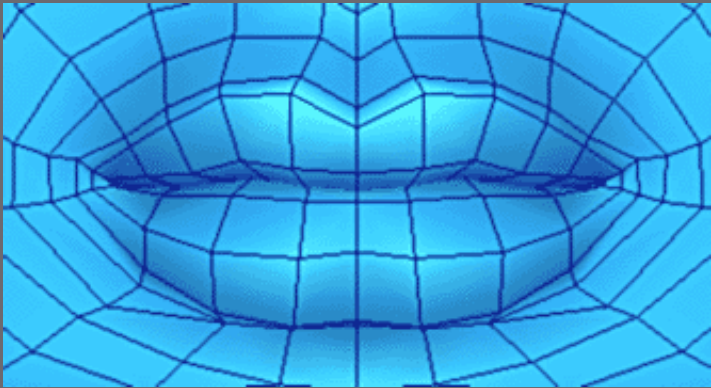


Onto the mouth now.

Select the edges edge of the mouth and extrude  
with shift ket depressed and uniform scale



After having adjusted the vertexes, add edges with  
Cut.



Stop to adjust the verticies.

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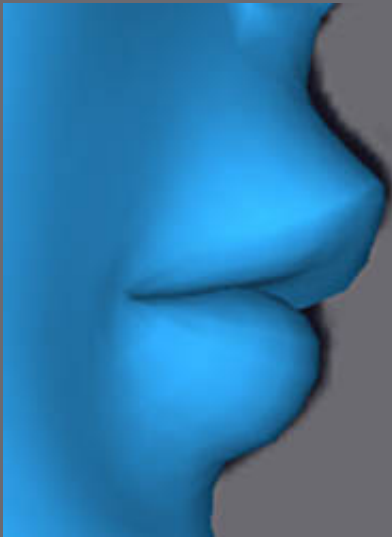
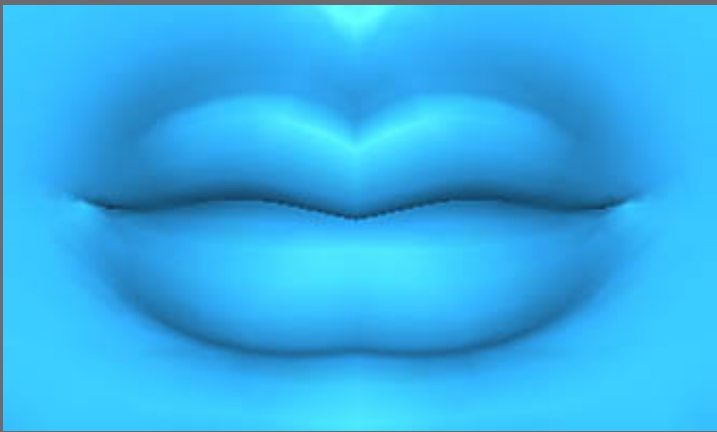
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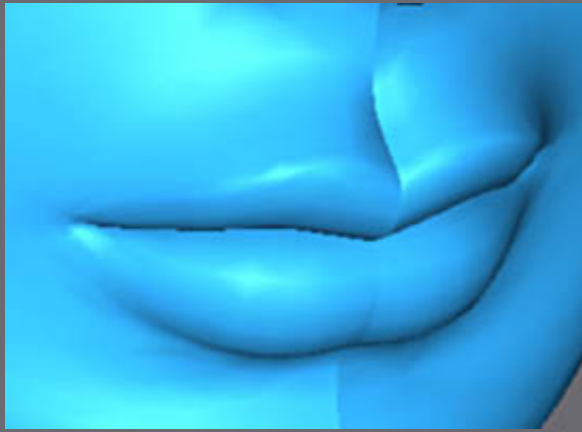
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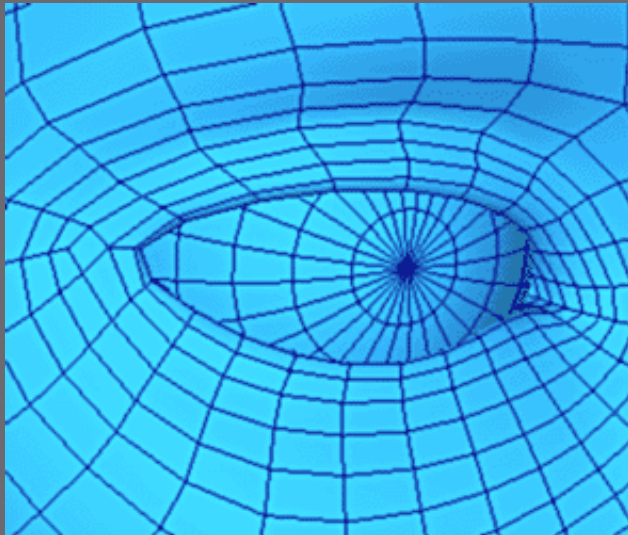
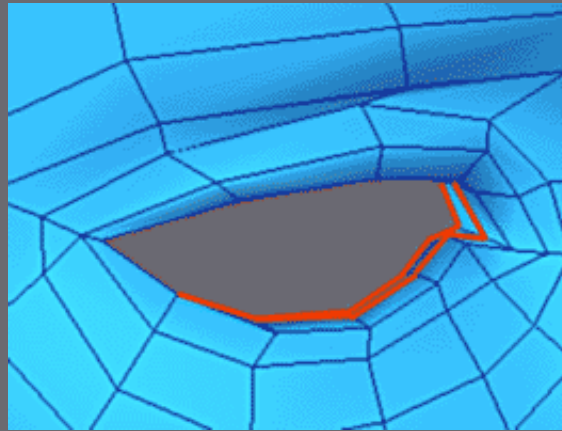
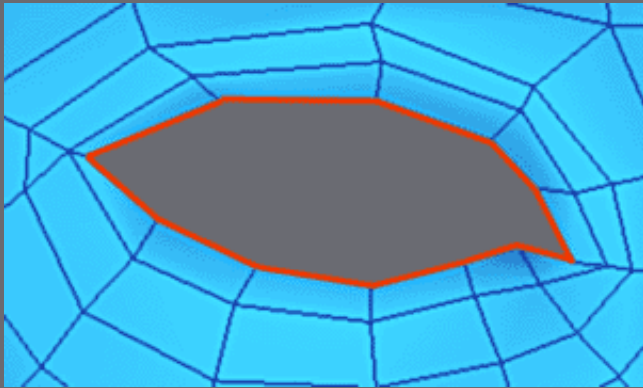
Modeling of the head



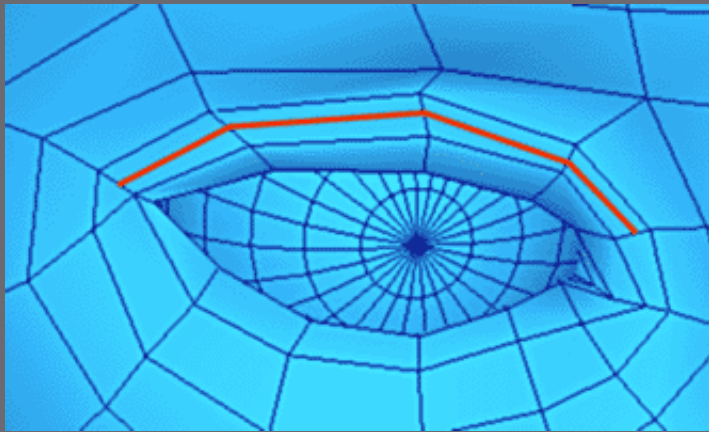




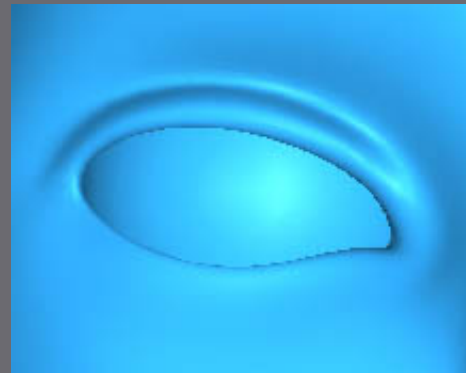
The mouth finished in subdivision 1.



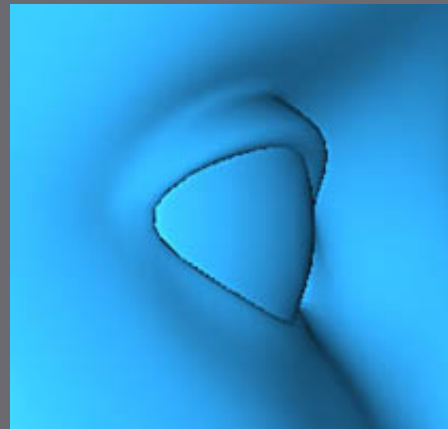
To finish the eyelids, twice extrude the edge of eye and adjust to make an edge rounded towards the interior.

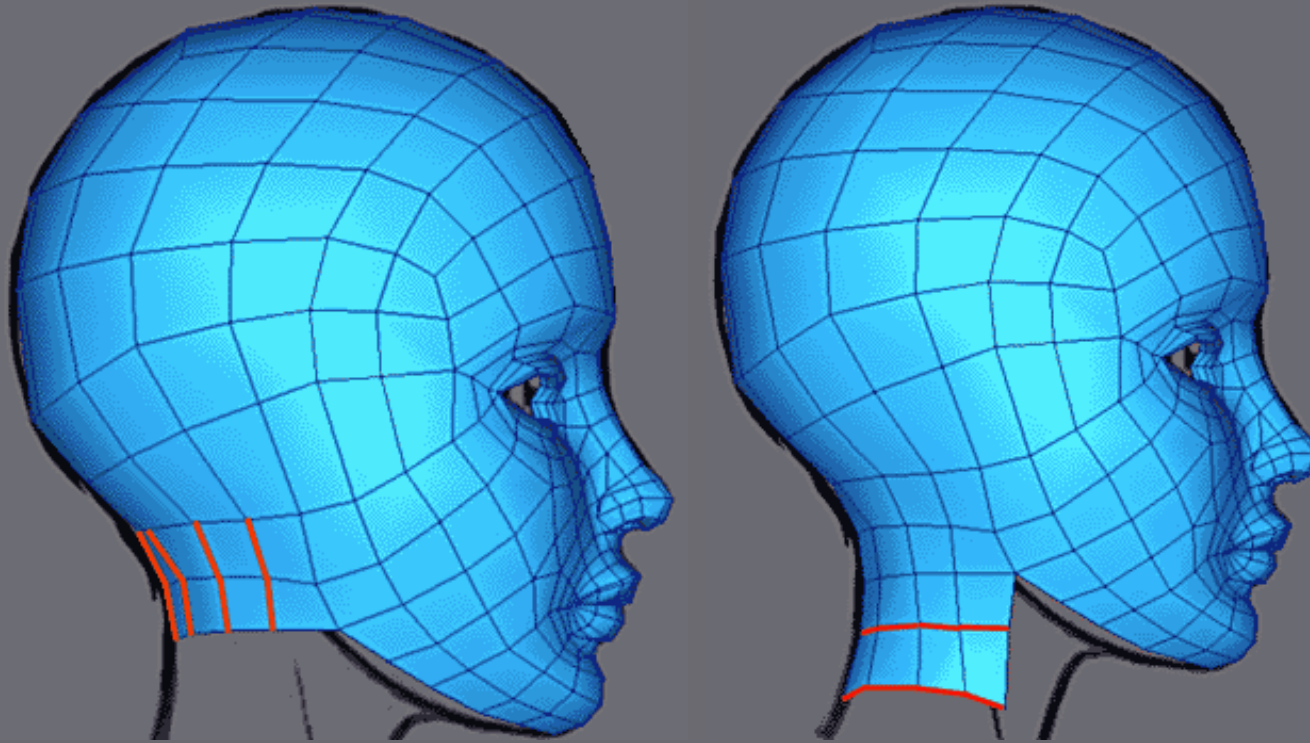


Add an edge on the higher eyelid to detail and exaggerate it more.

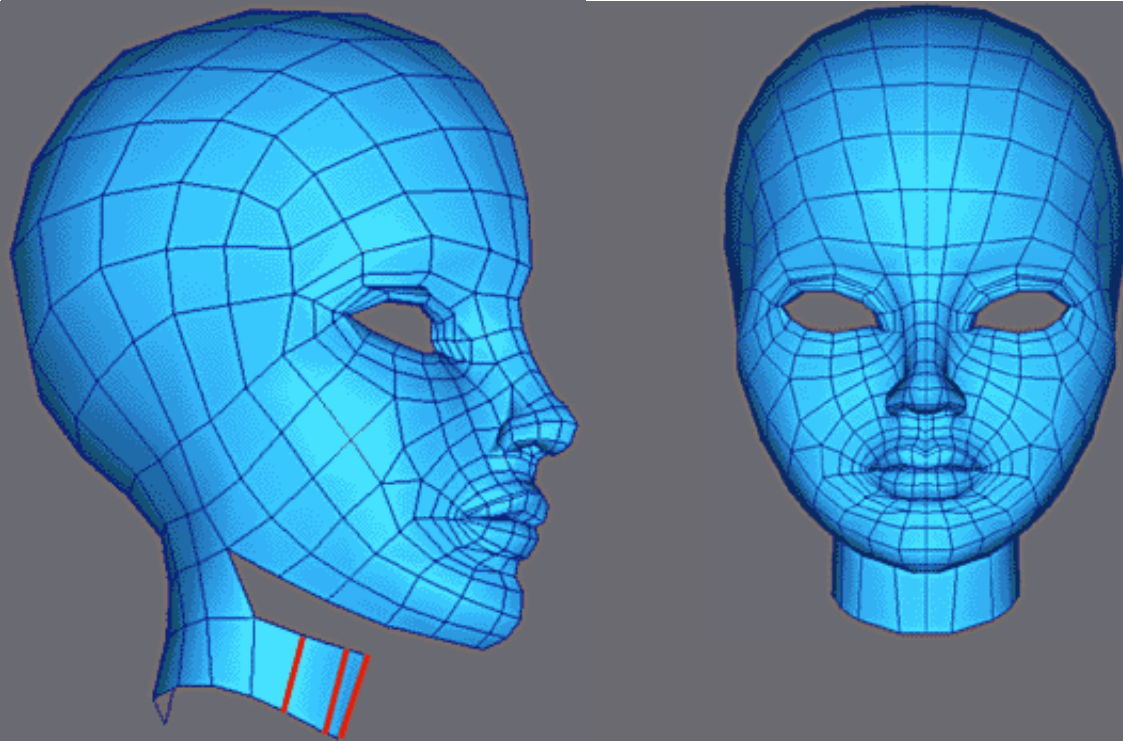


Eyelids in subdivision 2.

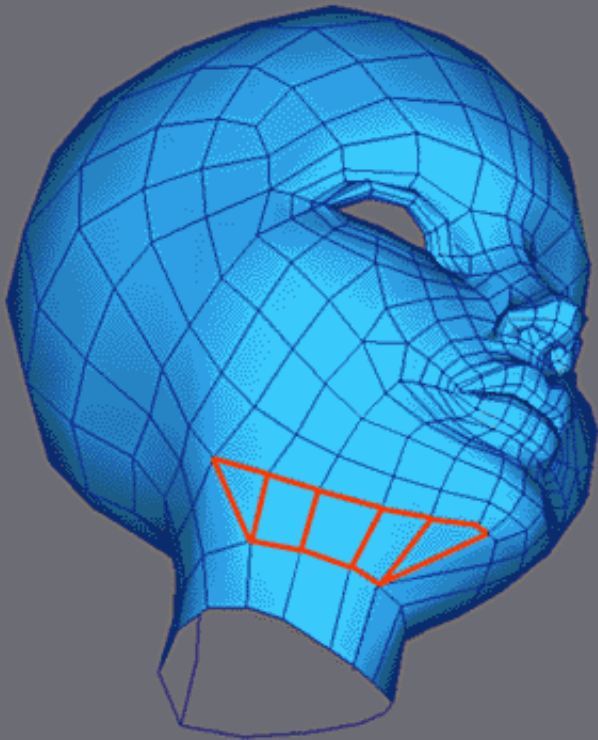




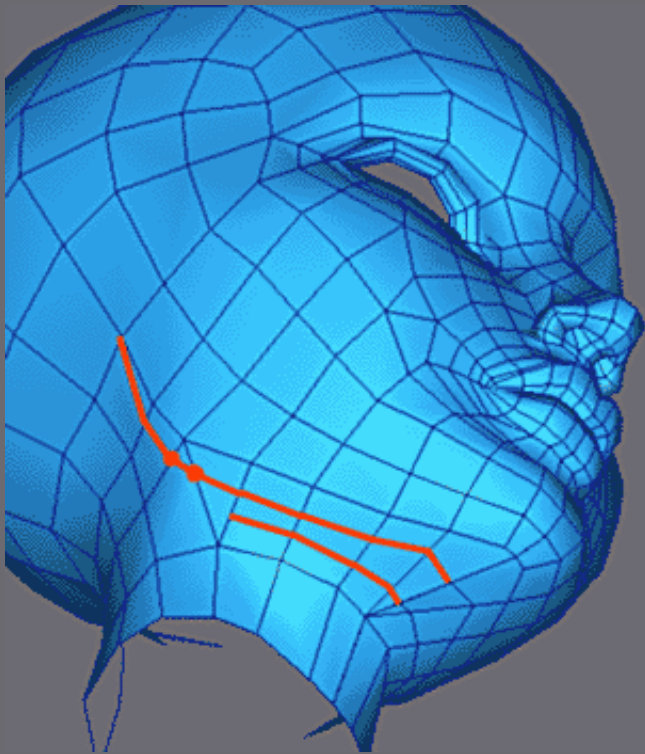
Extrusion of the nape of the neck.



Extrude before neck.



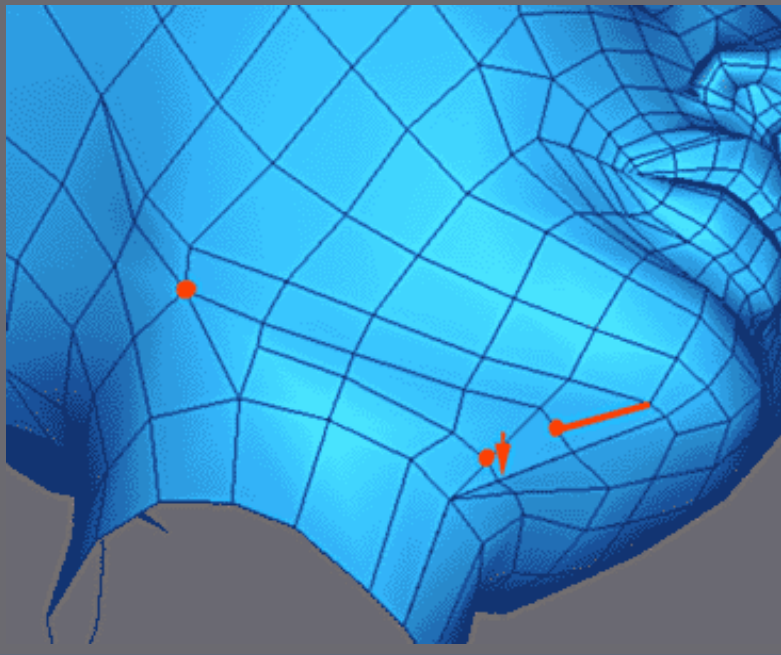
Fill the hole with Create Face.



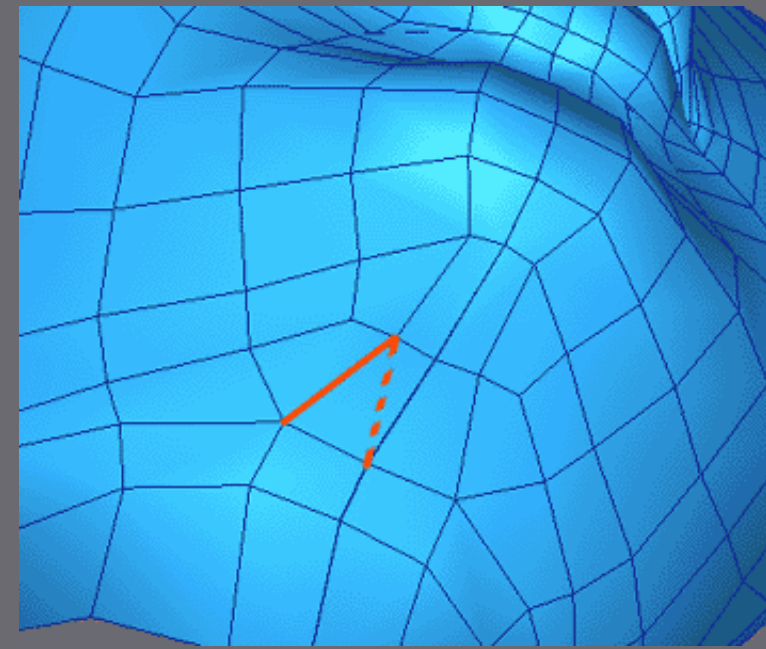
To mark the jaw, first Cut and a second for the junction with the neck.

Select the two marked of a point and then weld the vertices.

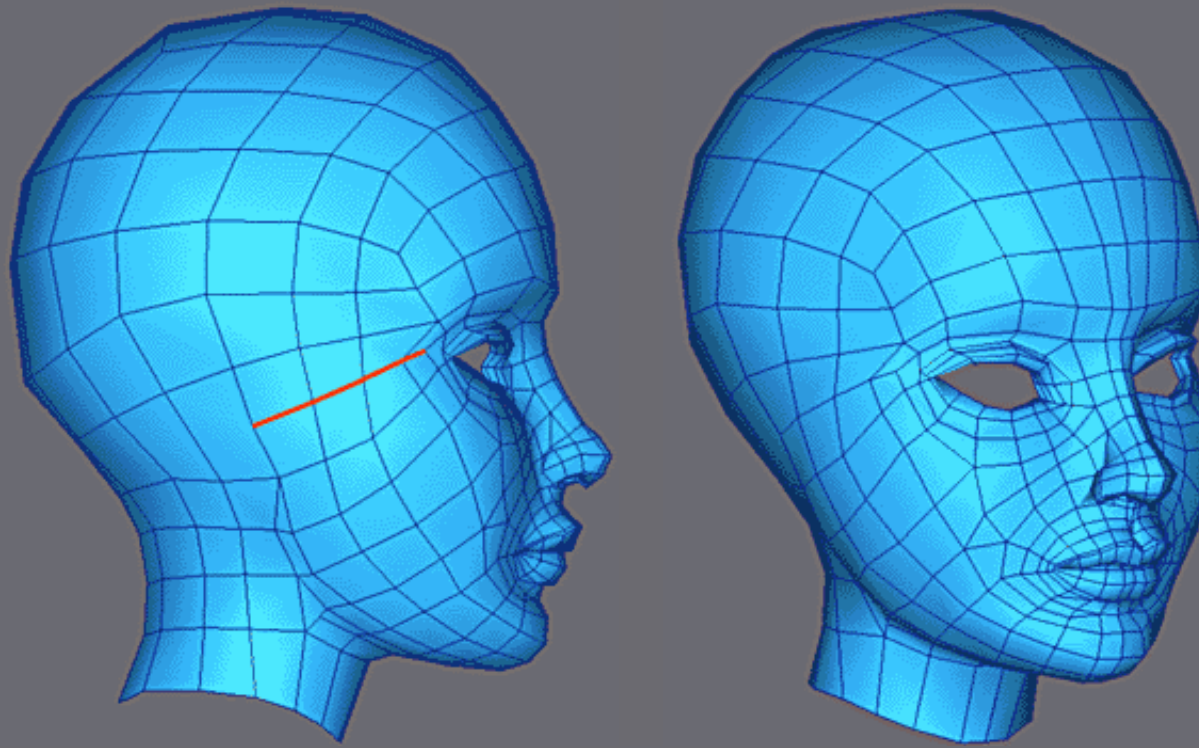




Cut under the chin and Weld Target to put in quadrangle this zone.



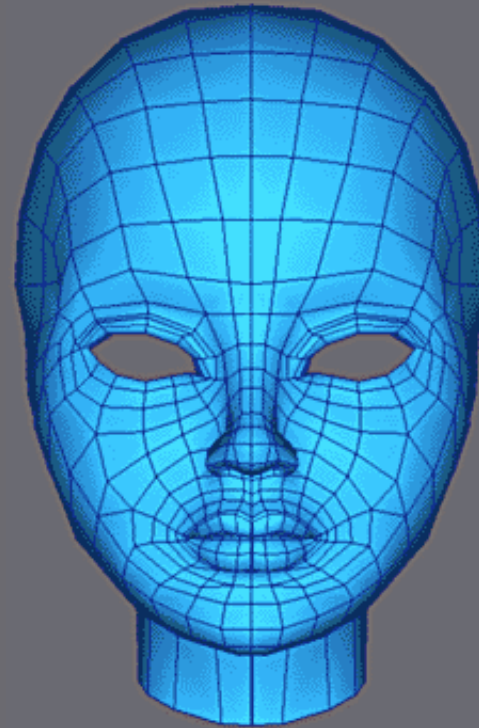
Make visible the edge as shown and hide if you need to form quads in this section

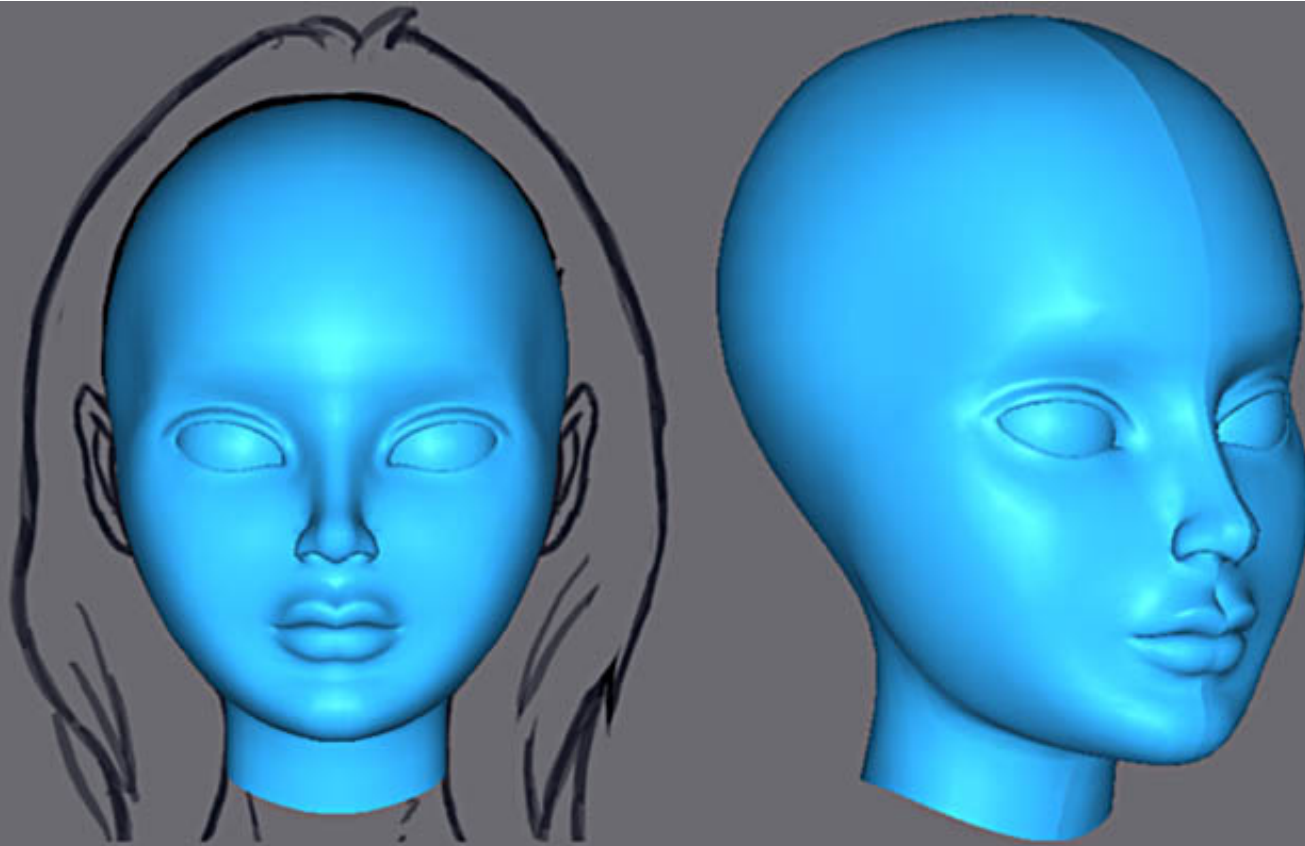


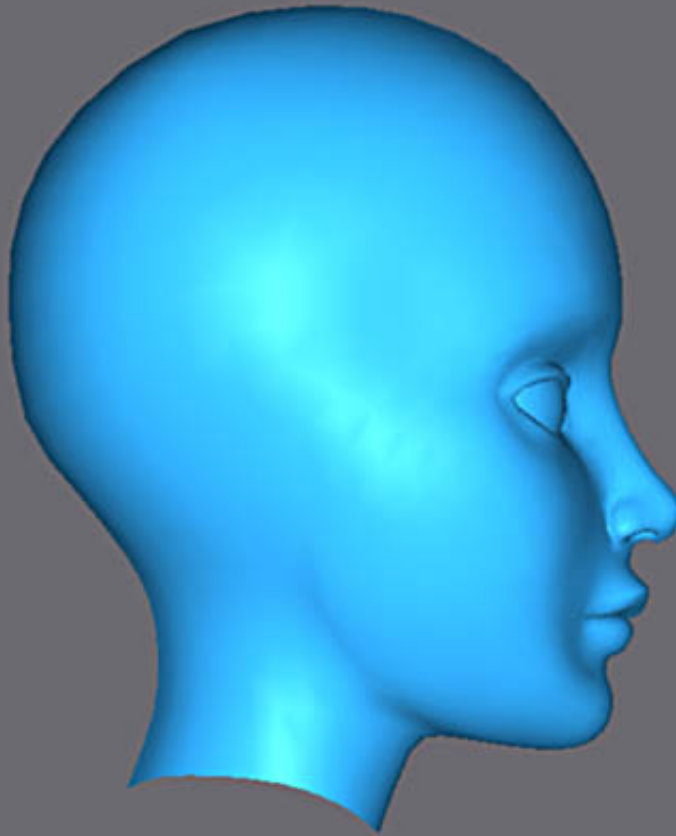
To finish Cut on the temple and here is the finished grid.

See below for the subdivided iteration 2 version in









Ok the text that went here (The whole tutorial was originally in french) is too hard to translate. I think it means dont collapse the stack quite yet cos the low poly mesh is still important for later on ;) - Tom

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Email: [Michel Roger](mailto:Michel.Roger@mr2k.3dvp.com) --- Web: [mr2k.3dvp.com](http://mr2k.3dvp.com)

**3D Total Homepage**

Joan of Arc  
by  
Michel Roger

3ds Max

*Ear*



## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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### Modeling of the Ear

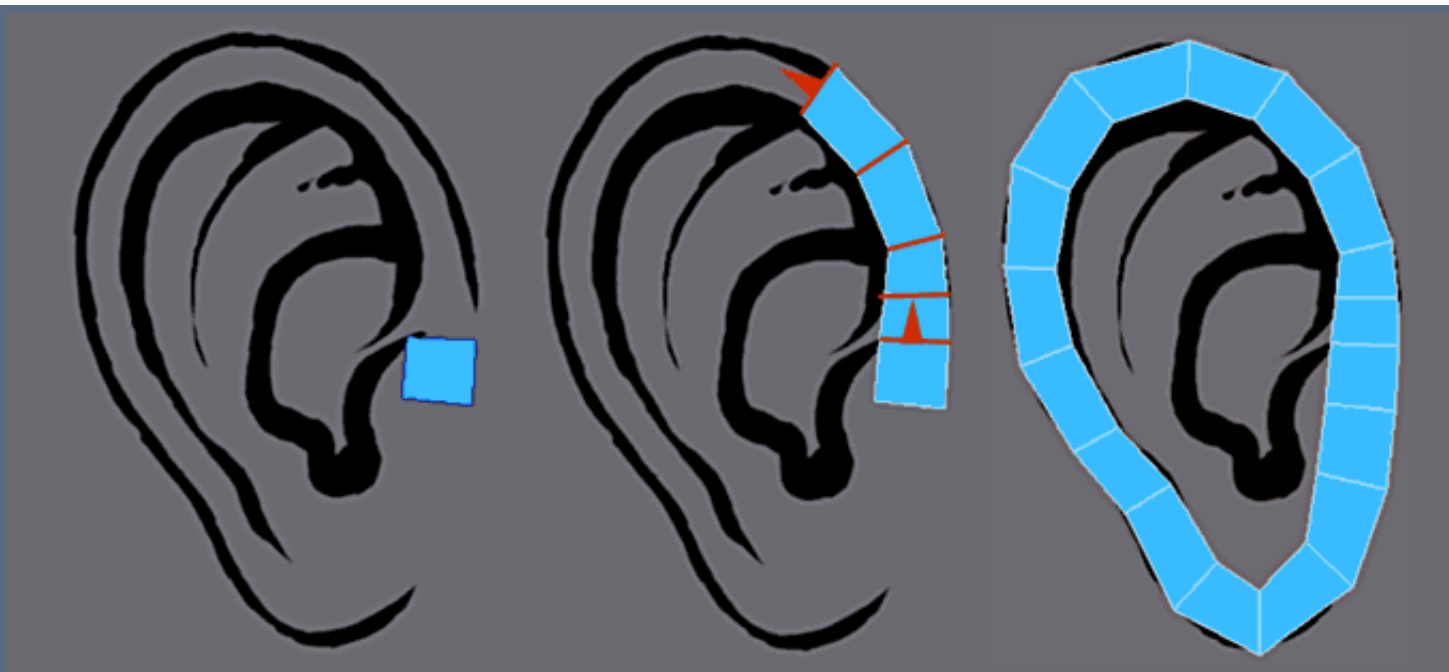


Modelling an ear is a little daunting because it is undoubtedly the part of the human body with the most characteristic details.

However it is not so complicated if broken down step by step

As usual a drawing allows to locate the details with for modelling

There are no two ears identical but they all have approximately the same characteristic details.



As usual, put the image on a rectangular face.

This time as for the head, one starts from a simple rectangular face starting from a shape Rectangle converted into Mesh.

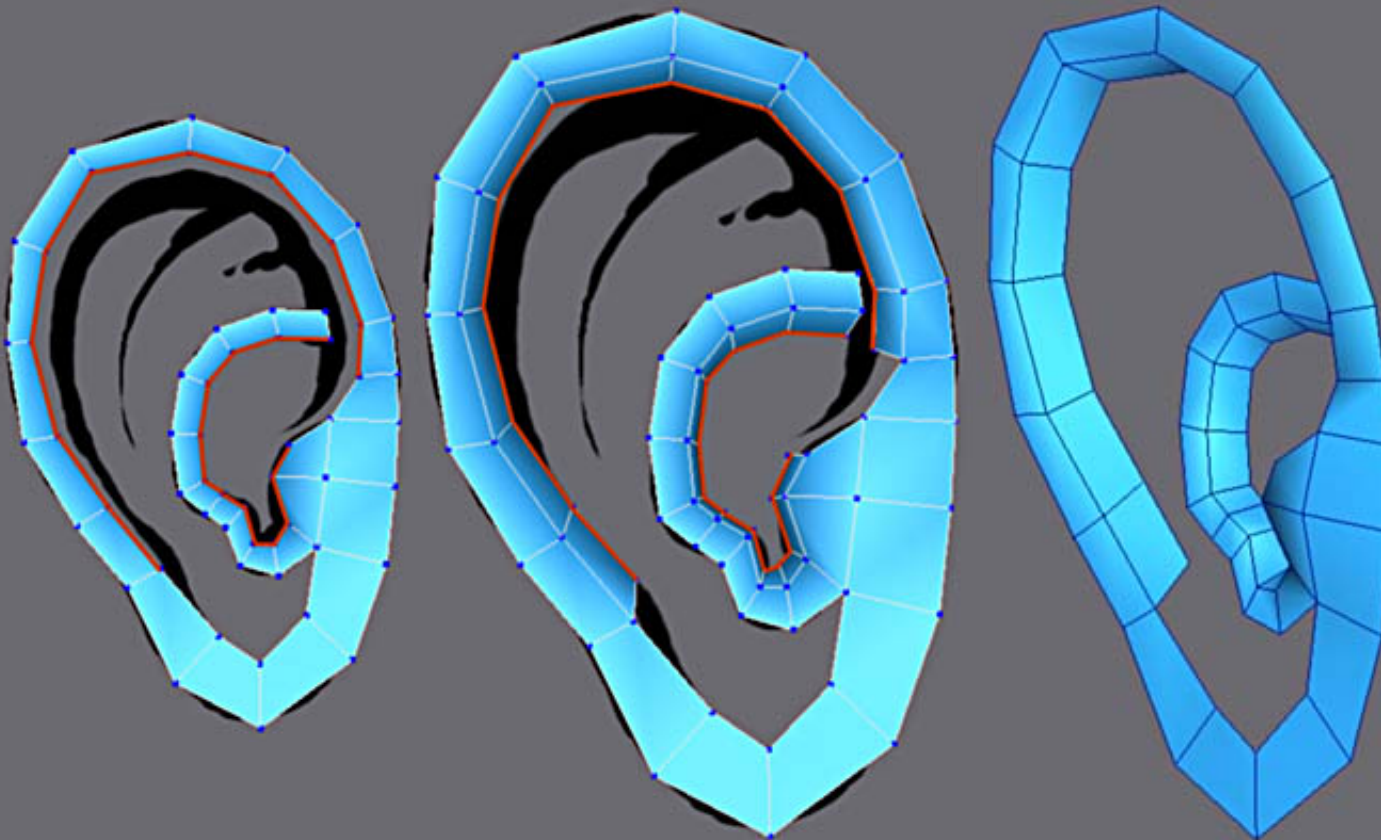
Extrude the edge to form the circumference of the ear by selecting a edge and moving whilst holding the shift key.

Join the band together using Weld on the vertices



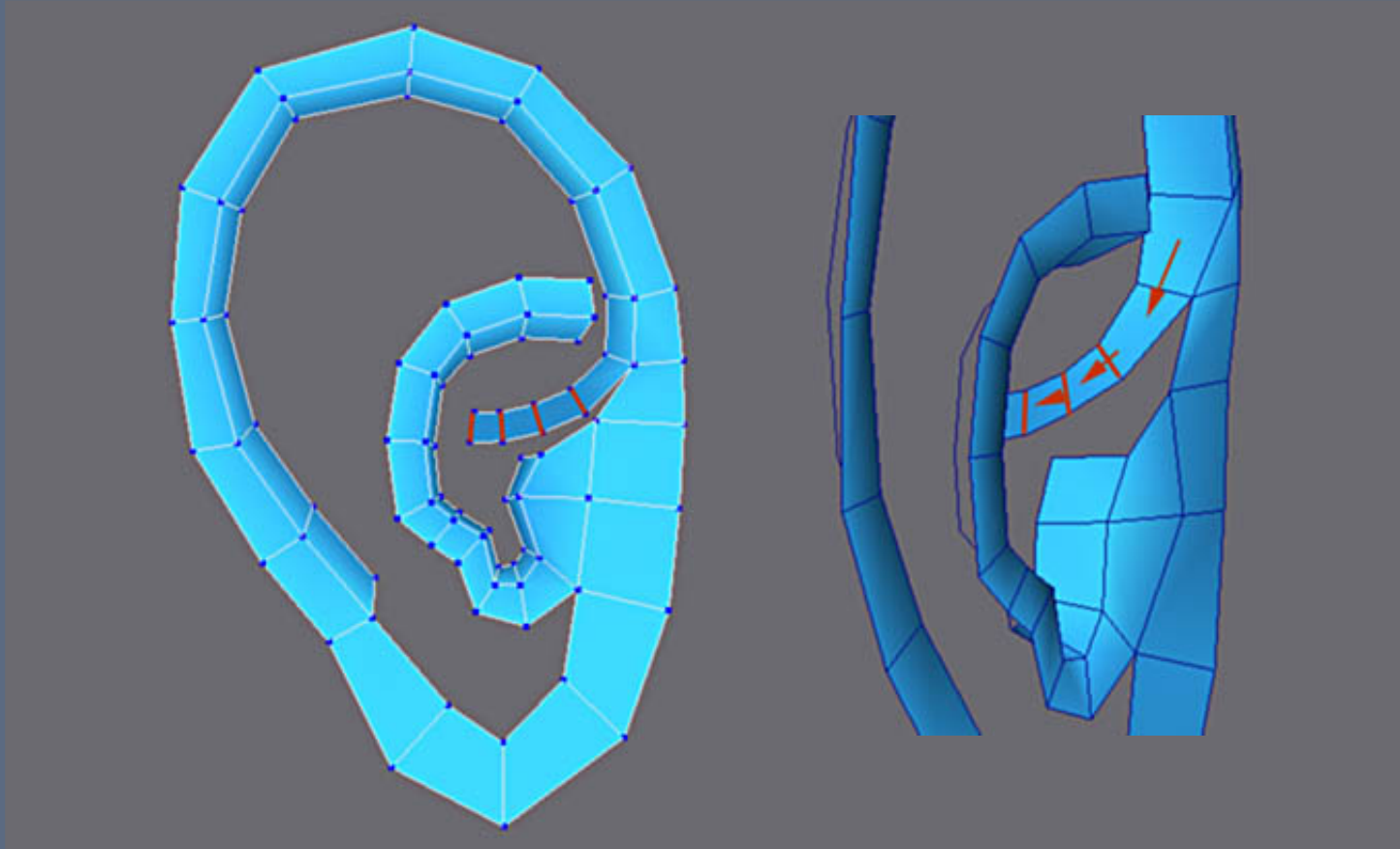
In the same way for the interior part.

Select two edges and extrude them.

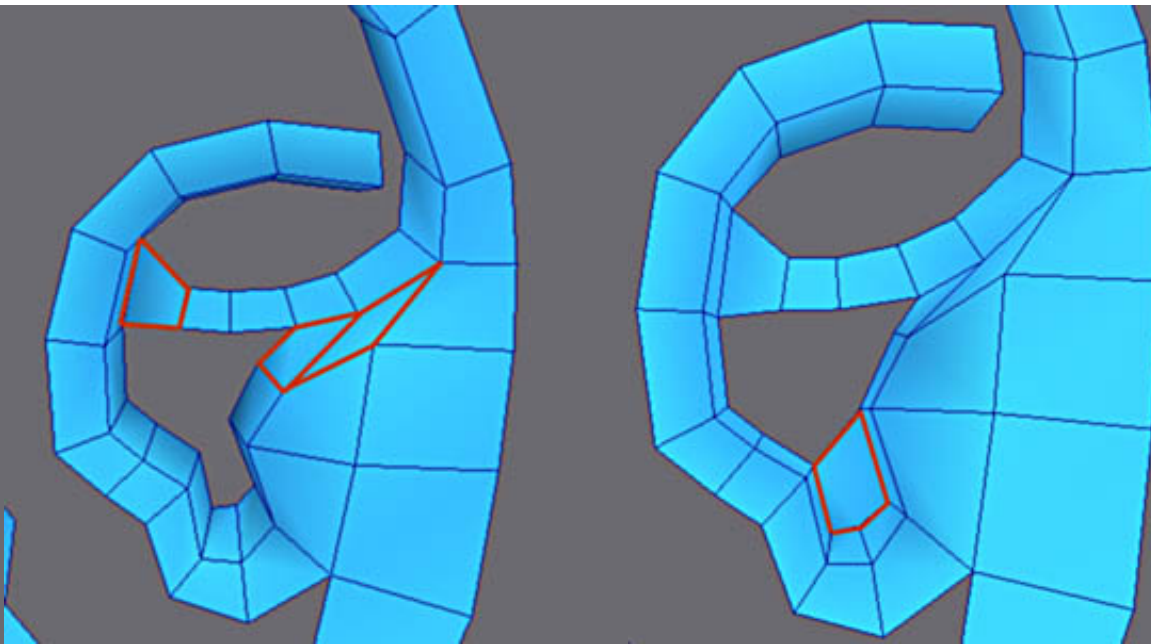




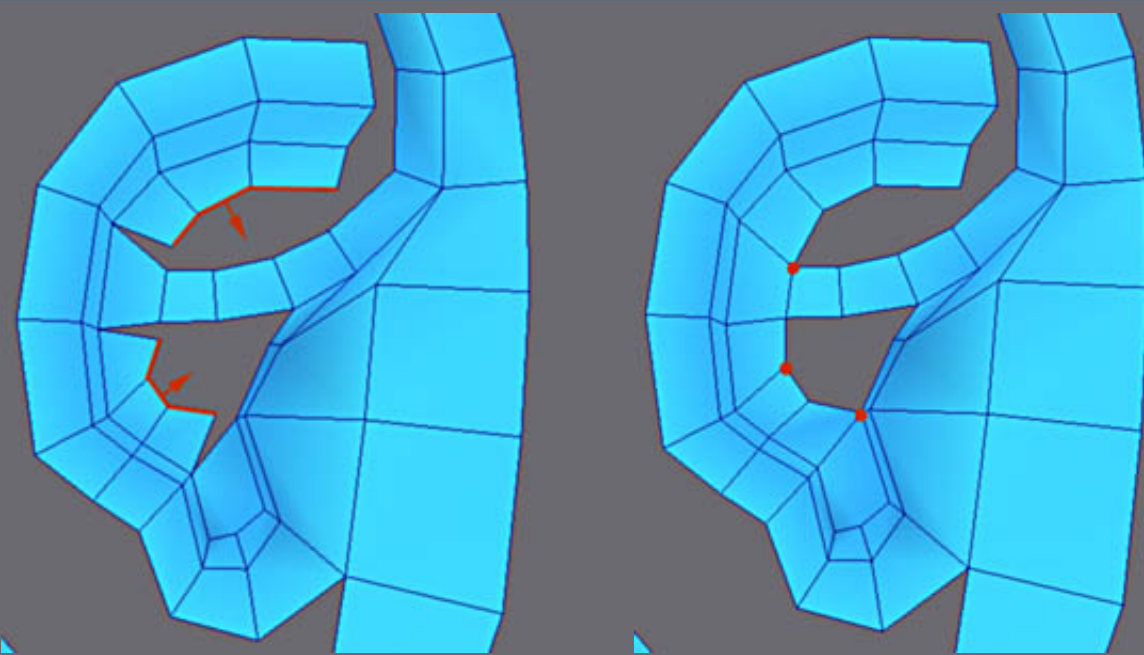
Select the edges like on the left and perpendicularly extrude towards the interior, then make a uniform scale to make the additional sections smaller as shown.



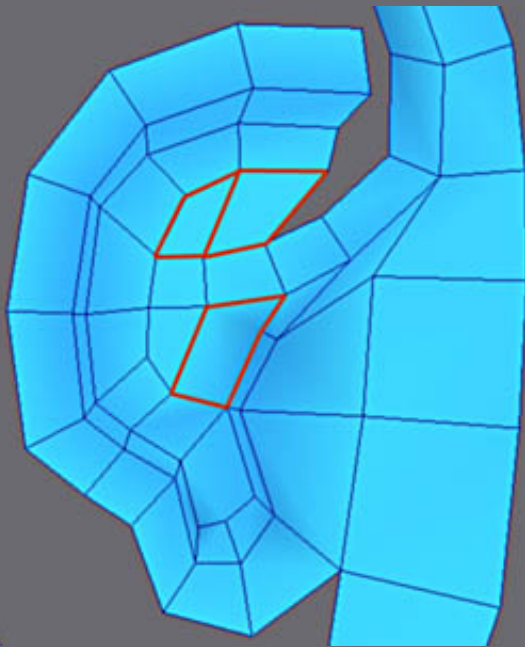
Extrusion of the "slope", this part connects the external edge with my hollow part of the ear.  
Extrude for the dimensions shown then adjust the vertecies to make the slope.



Build the faces marked in red with Create.  
Do not forget to assign the smoothing group to 1.



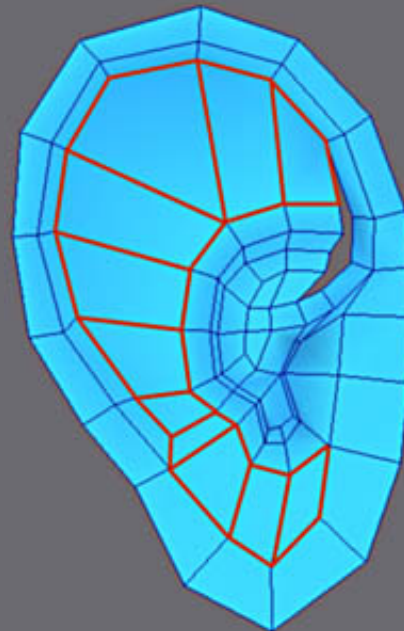
Extrude these edges and weld the vertexes with Weld Target.



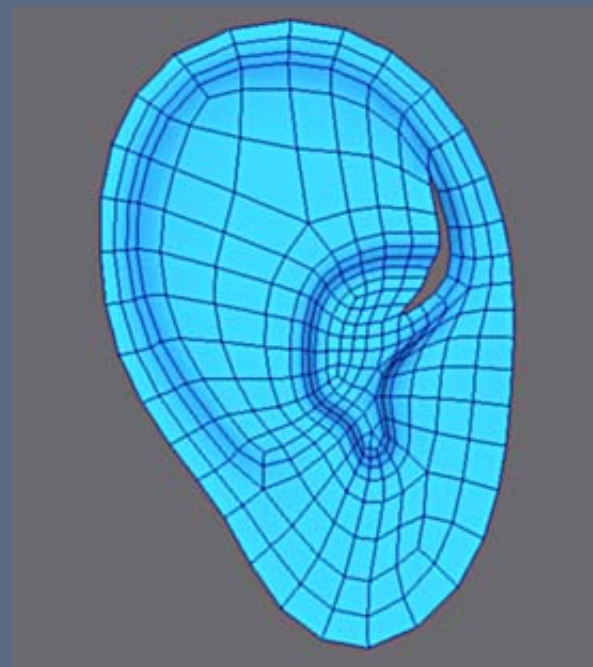
Finally build these faces.

The interior polygon will be used for the end to extrude the beginning of the auditory canal.

Fill the holes as opposite.



Apply Meshsmooth and make any additonal necessary vertex adjustments



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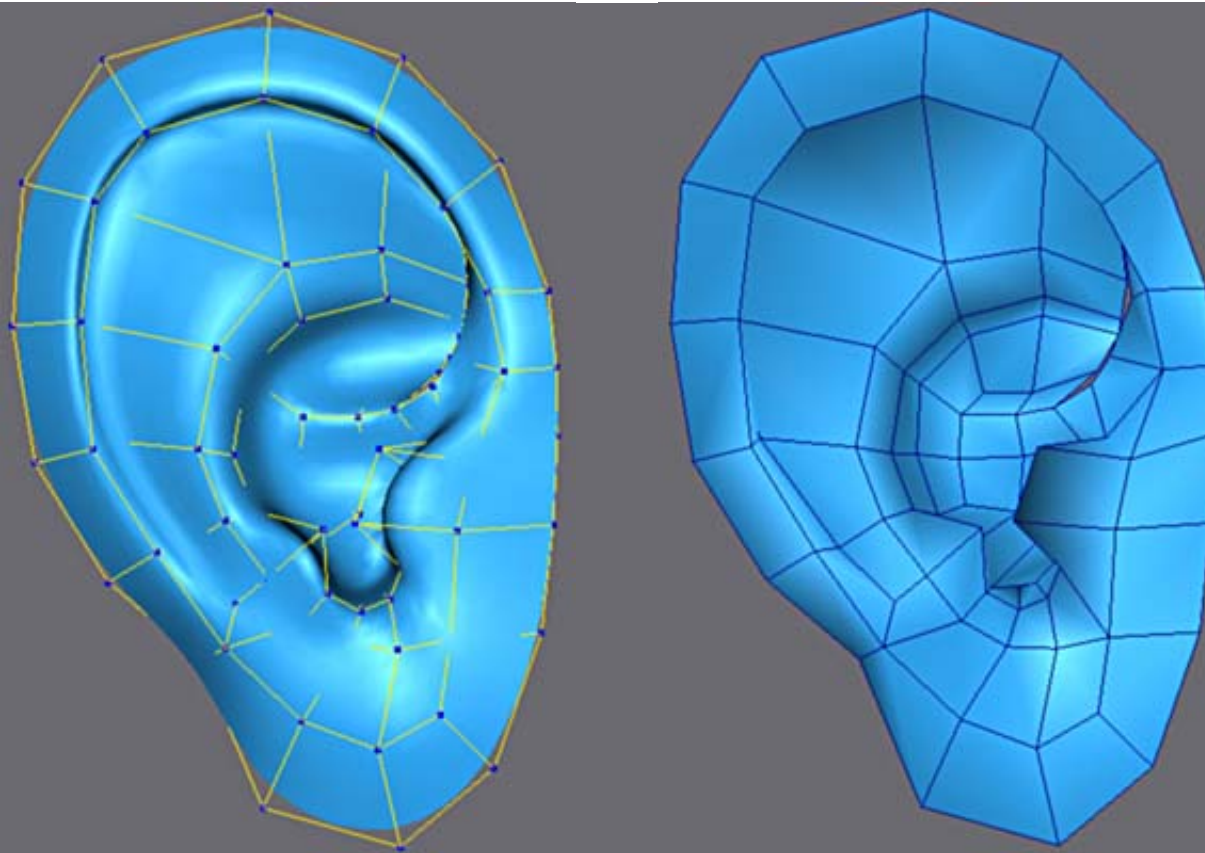
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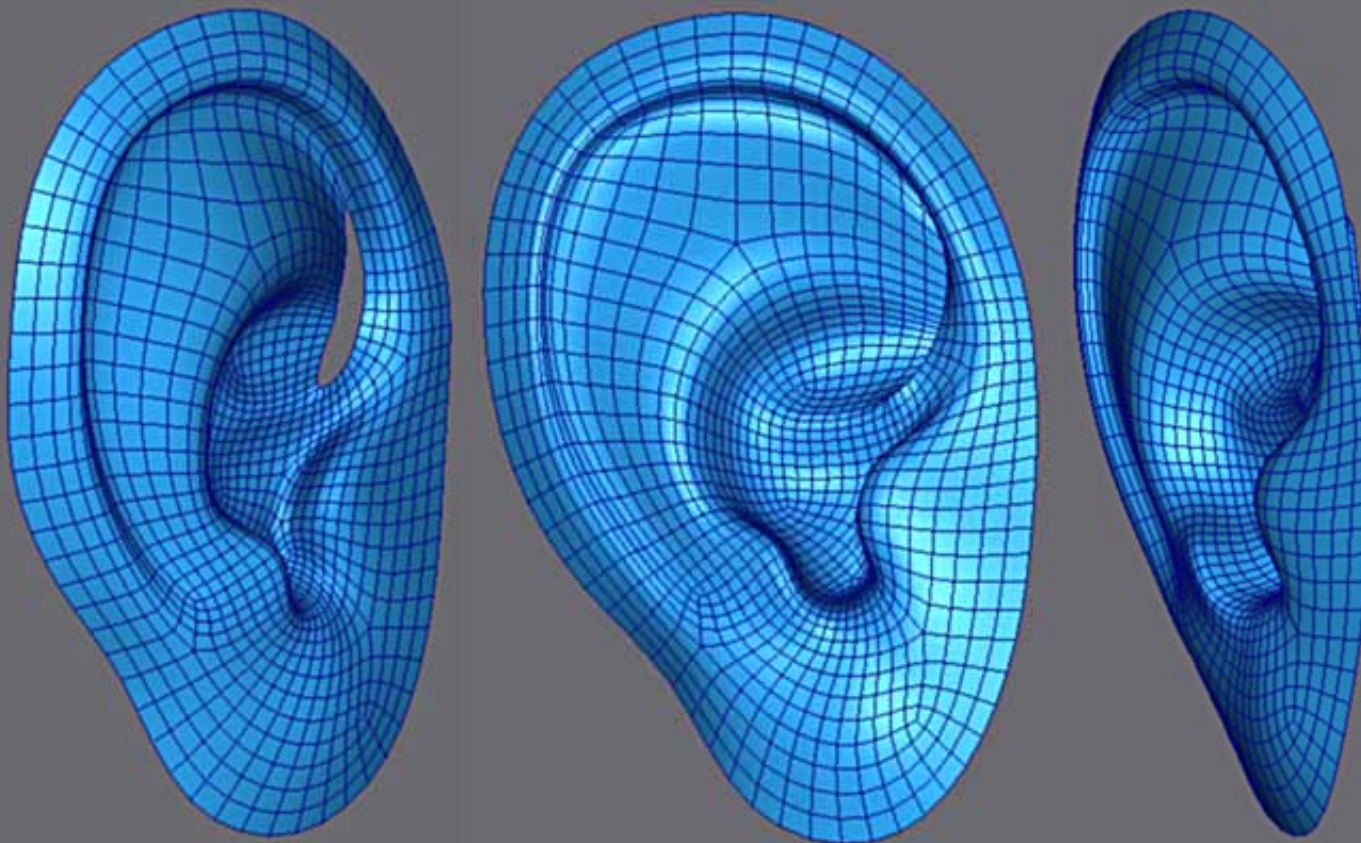
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Modeling of the Ear



Make adjustments to form a 'nice' ear here the modeling technique relies on your anatomical knowledge, also I advise you to stare at peoples ears around you :)

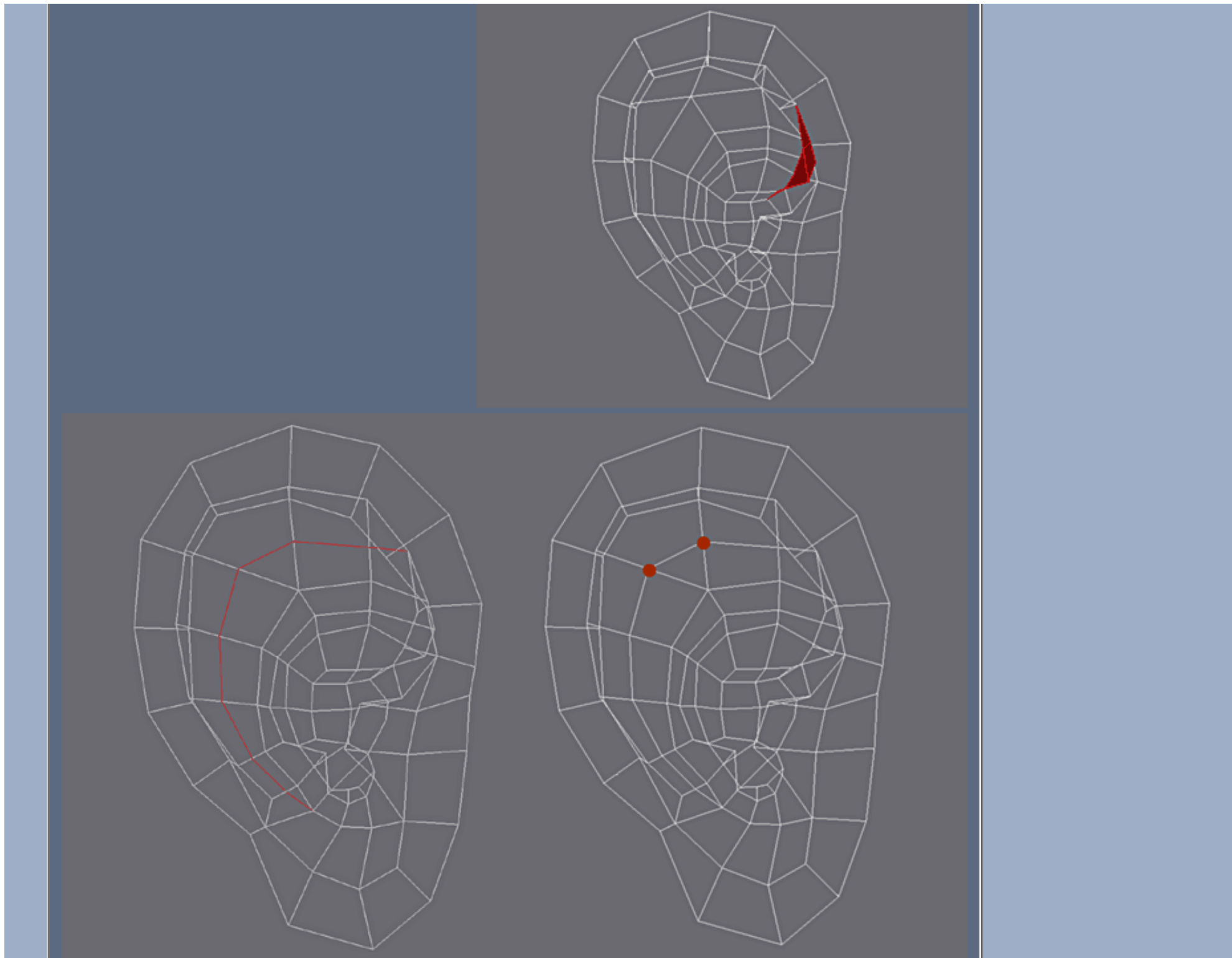




Grid in subdivision 2.

Fill the hole which remains with quads and triangles.



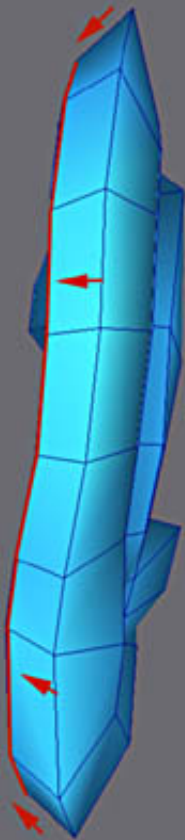




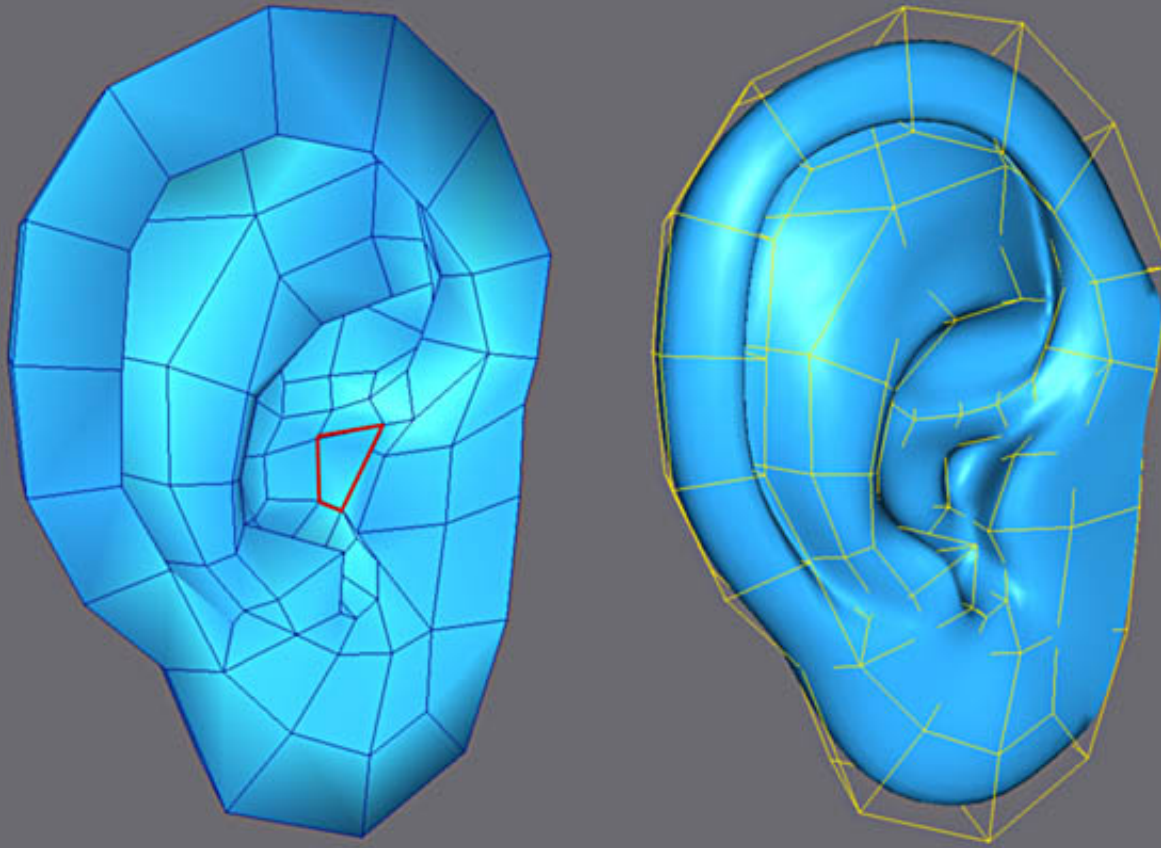
Insert the series of edges (high left).

Select the two vertexes and weld them to remove the triangle

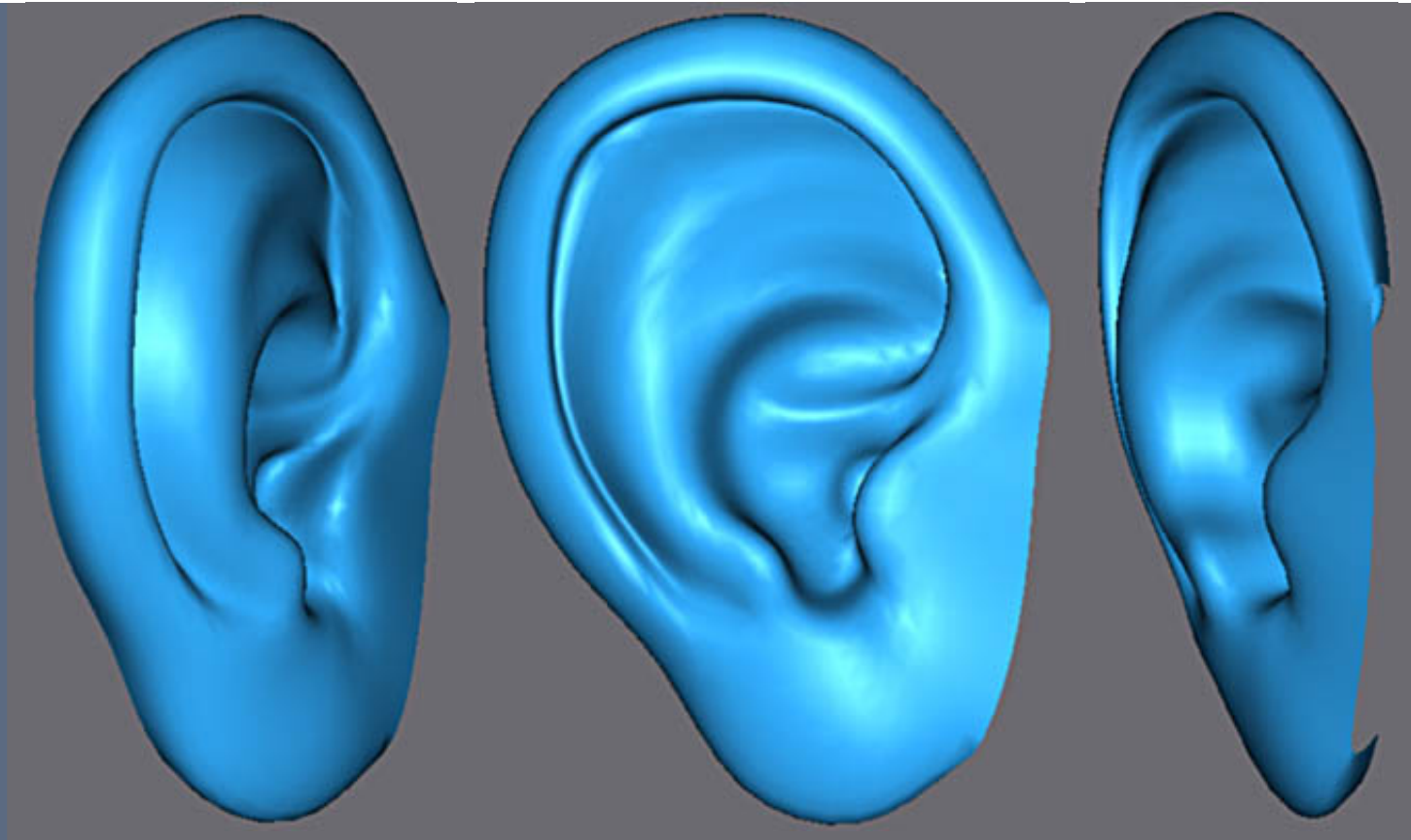
Finally select the external edges like opposite.



Extrude these edges in the direction of the head and made a uniform scale to make the round-off of the ear.



Select the polygon all at the bottom of the hollow of the ear and make one Extrude and Bevel to make the hole of the auditory canal. On right-hand side seen in subdivision 2 with cage LPM.



How the ear looks with subdivision 2 before assembly.  
Put a material with highish specular so you may see the contours of the ear well for any further corrections.  
The ear must be stylized enough and yet have regular curves.

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Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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Michel Roger

3ds Max



*Assembly*

3D Studio Max

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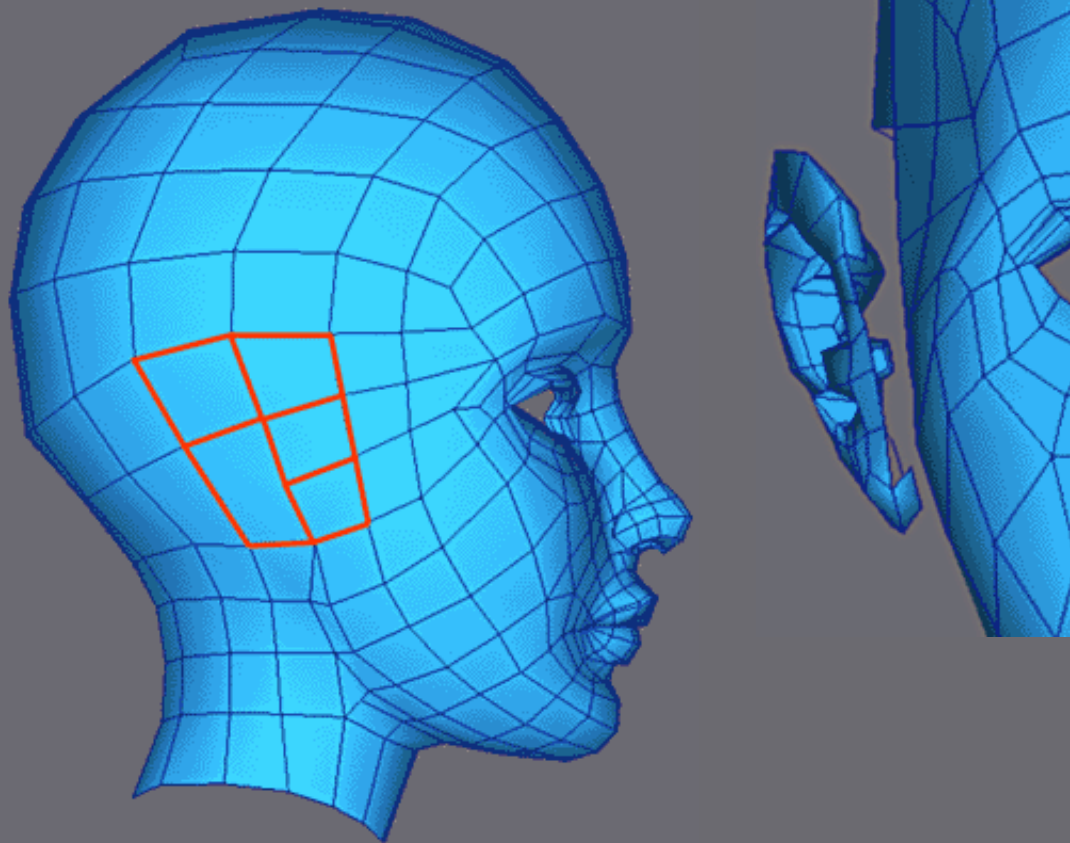
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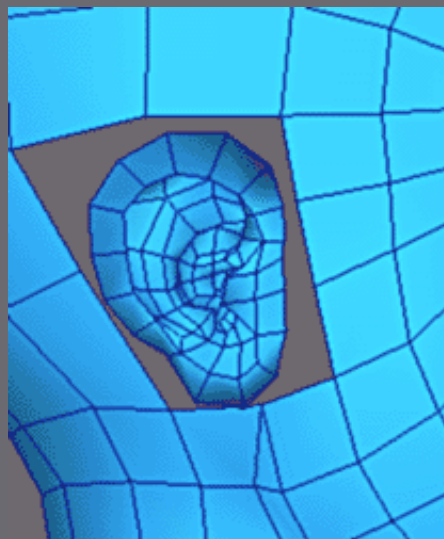


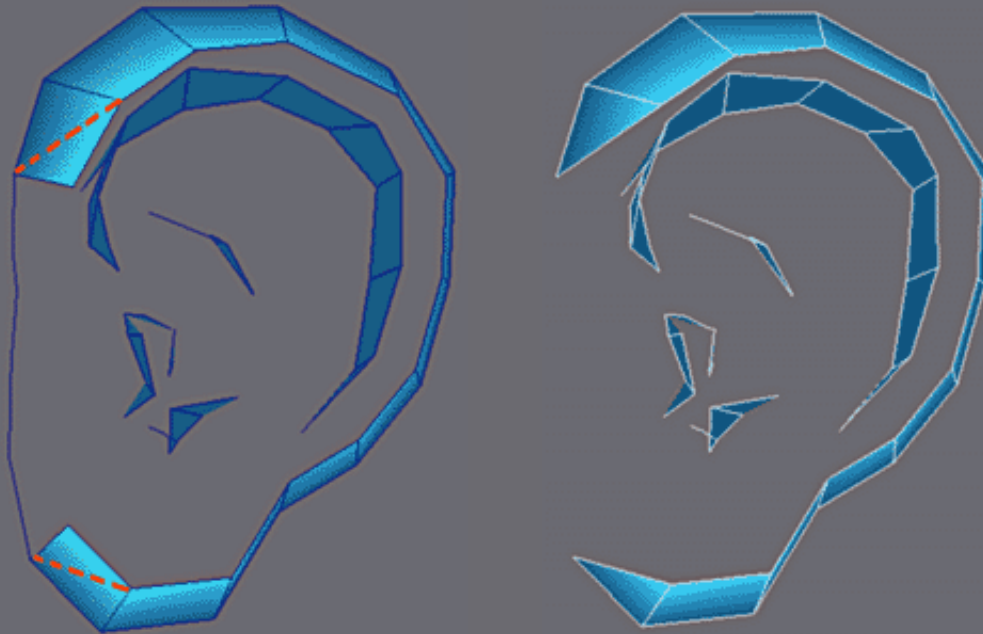
This is a delicate part, of the assembly ear+head.

Select the faces as above and erase them.

Merge the ear in the scene with the head.

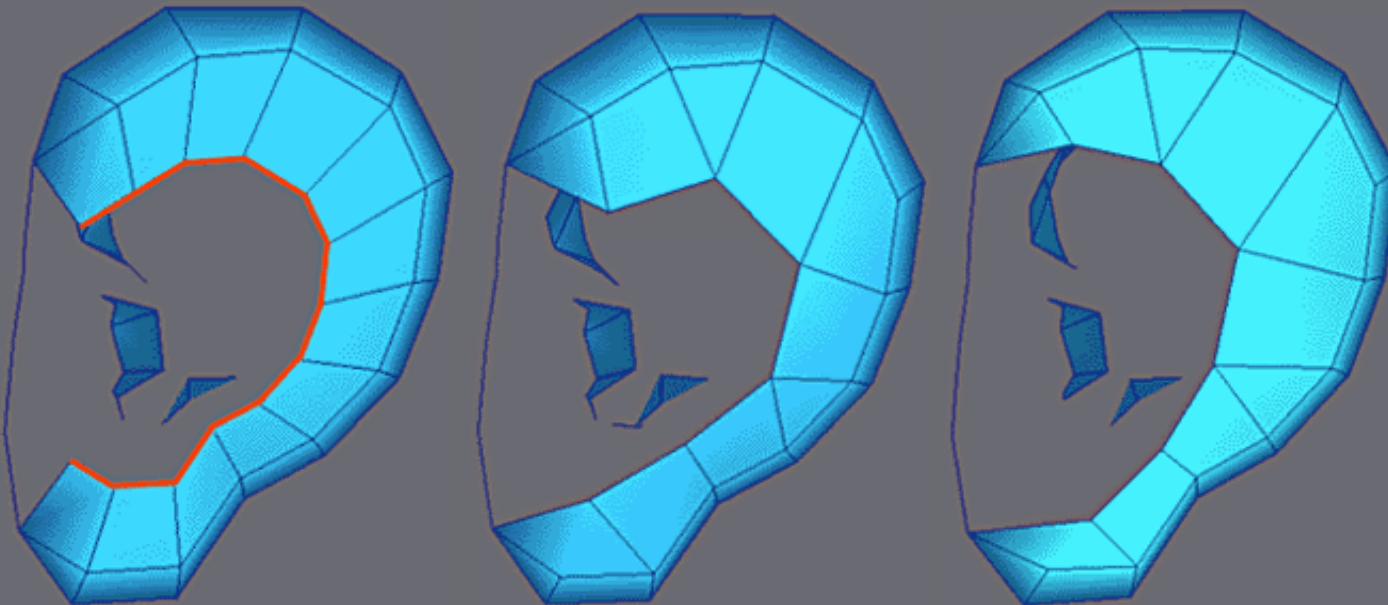
Ajust the scale and direction (in general a light rotation on X and another on axis Z for User).

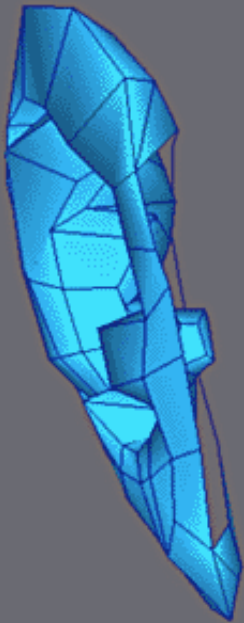




Hide the head.

For right-hand side, (looking into the ear as shown) remove the 2 triangles of the previously extruded parts . Make visible the diagonal edges.





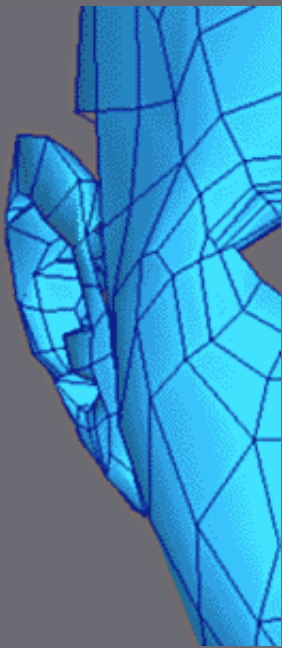
Select the internal edges of the ear and extrude with shift+scale.

To simplify the geometry use Weld Target as in the image above.

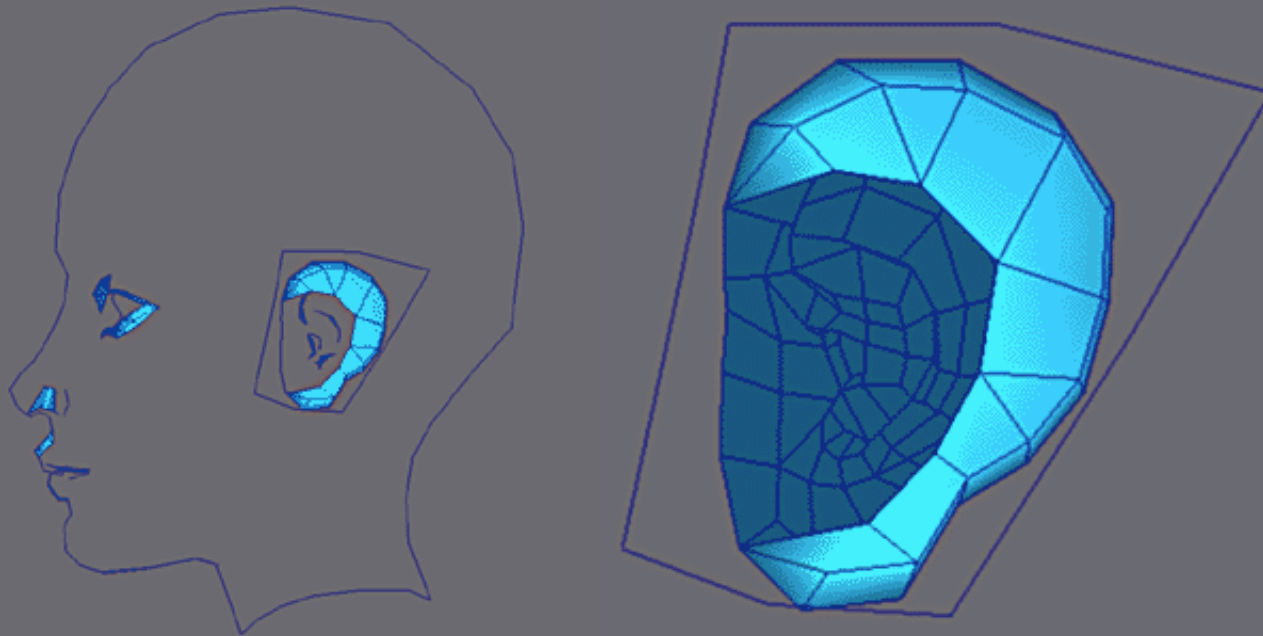
Adjust the vertexes to give a round form which is the part of the ear that will connect to the head.

Put the vertexes approximately on the same plan.

see the countours of the face, and the dimentions of the ear after adjustment of the vertexes.

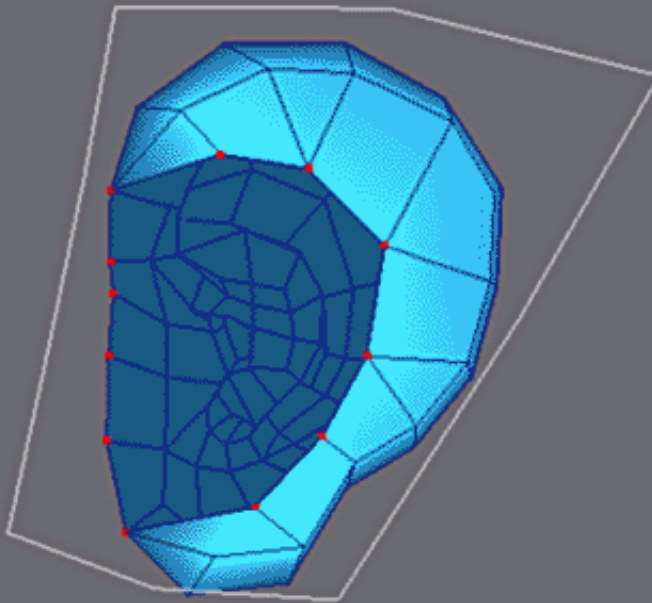


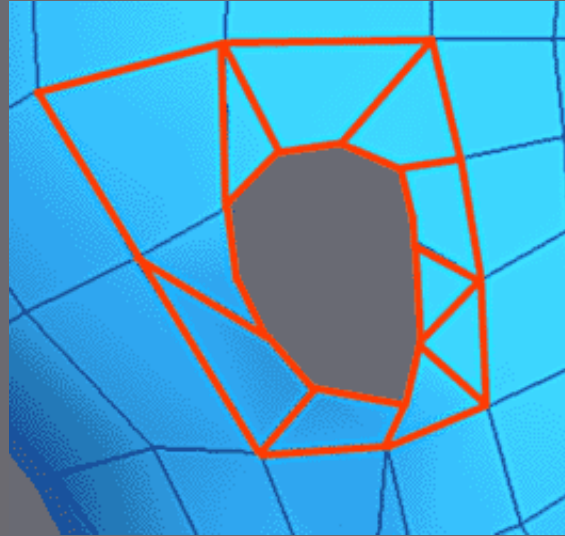
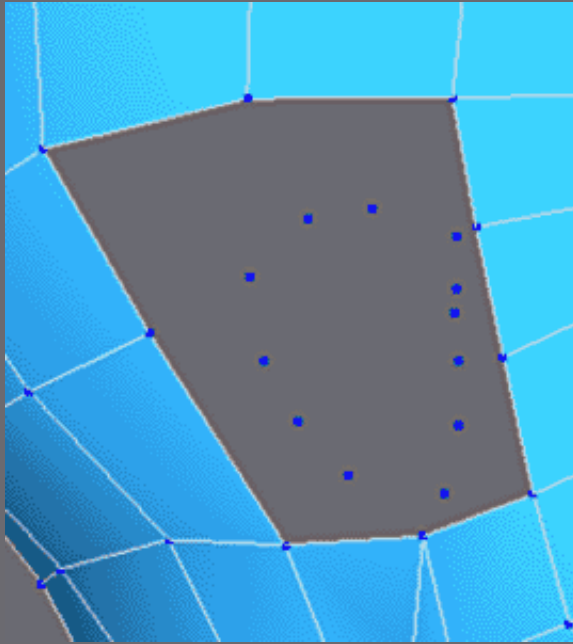
Align the ear compared to cranium.



Select the ear and view its Properties (right click) and Turn off BackFaces Culling. That makes it possible to see the faces whose normals are not directed towards the observer.

Select the head, activate 3d Snap in vertex mode and with Create Vertex, create the vertexes for the head in the same arrangement as the ear ones (as shown)

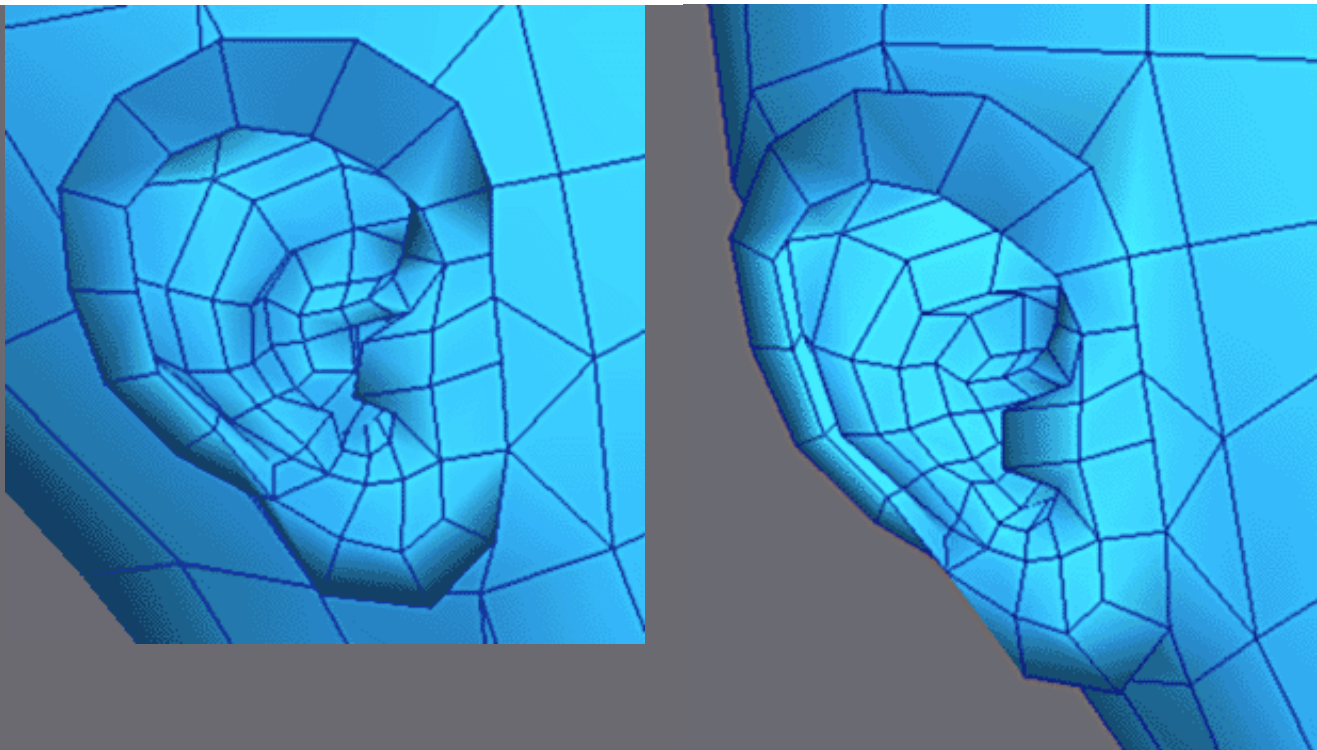




With the new vertices ready in the head you can now hide the ear as these are enough to build the faces that form the of junction of the head to the ear. As usual, make as many quads as you can.

Adjust the vertexes around the edge to give a more regular form.





Place the ear so to align the pairs of vertices on head/ear as close as possible.

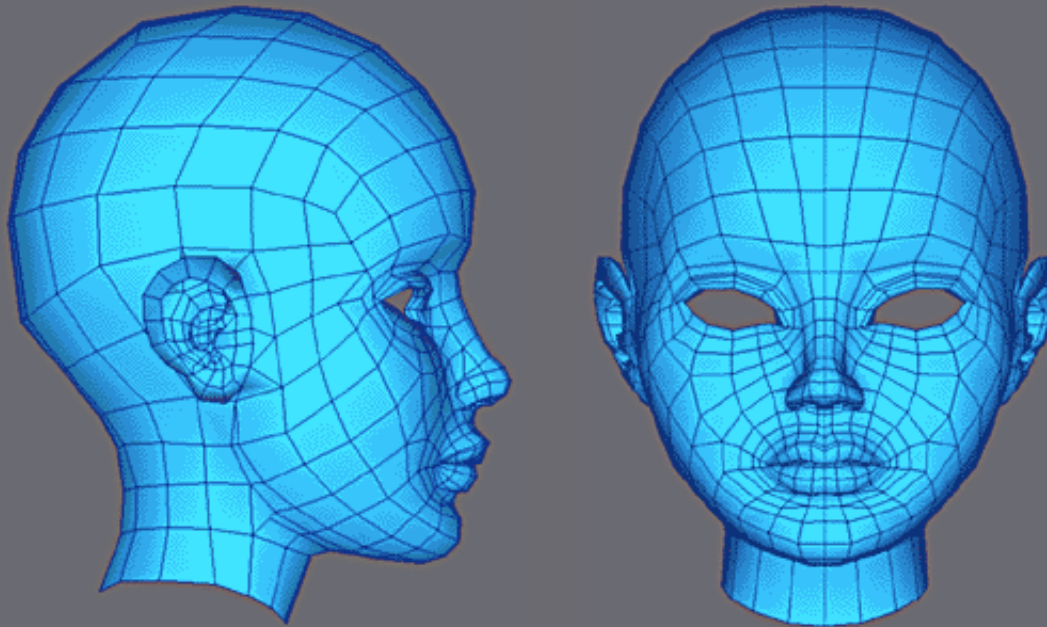
Select the head and then Attach. (check that you have Editable Mesh in the pile of both objects, if necessary, remove a Meshsmooth and collapse the stack).

Select the vertexes pairs and then weld them together.

The ear and the head should now be one with no gaps or holes in this area.

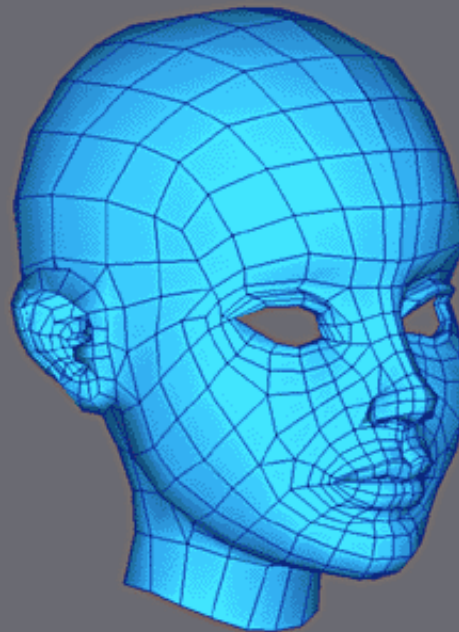
Make any final adjustments of these welded verticies to harmonize the curves of the ear-head join.

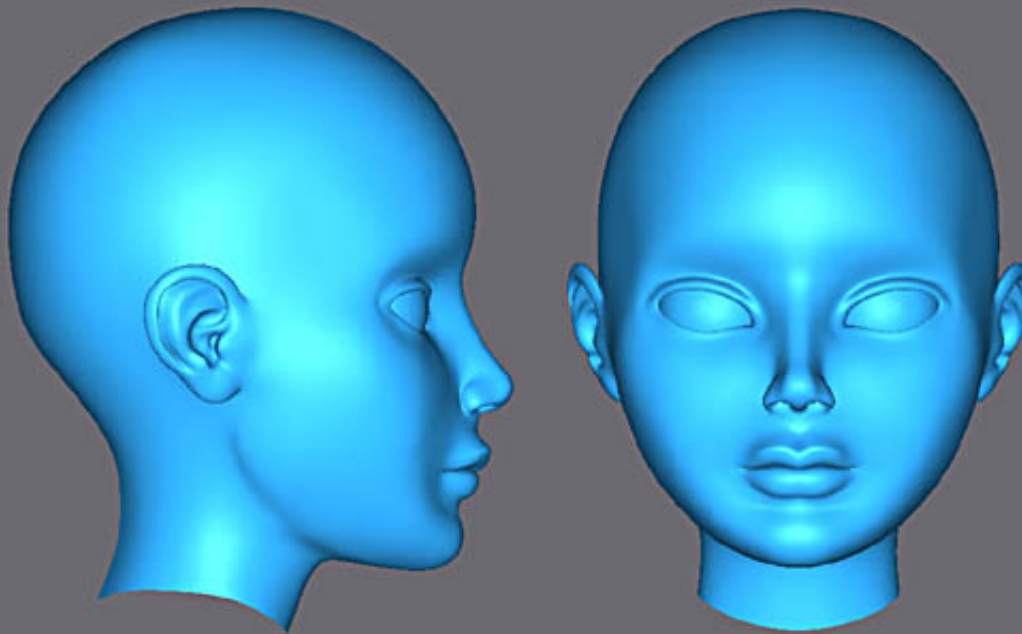




The look of the final low poly cage.  
It is this low polygon mesh that  
you preserves for the next parts.

Click on the images to see them  
large.





Subdivision in iteration 2.

Click on the images to see them  
large.



The next part will be devoted to the modeling of the accessories (clothes, sword, but also the hair and eyes).

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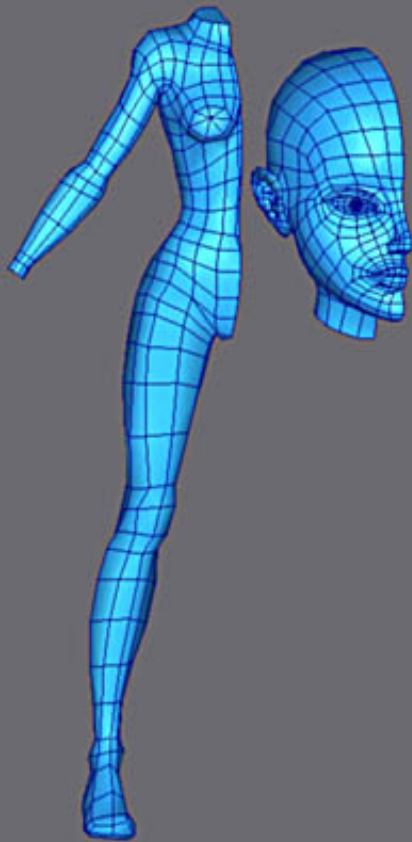
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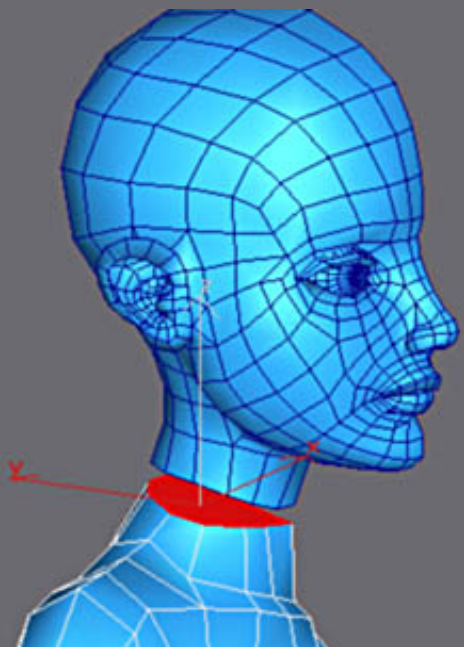
To assemble the body, merge the head and the eye  
in the bodys scene.



Remove Meshsmooth from the stacks of both objects and keep only Editable Mesh.

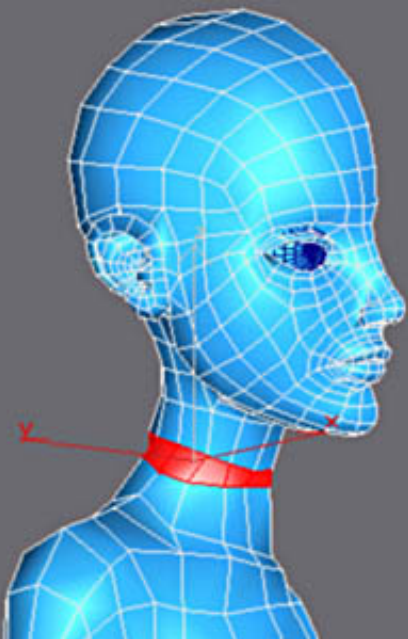


Using the background image as a guide scale the body with a uniform scale.



On the body, erase the polygon in the middle of the neck.

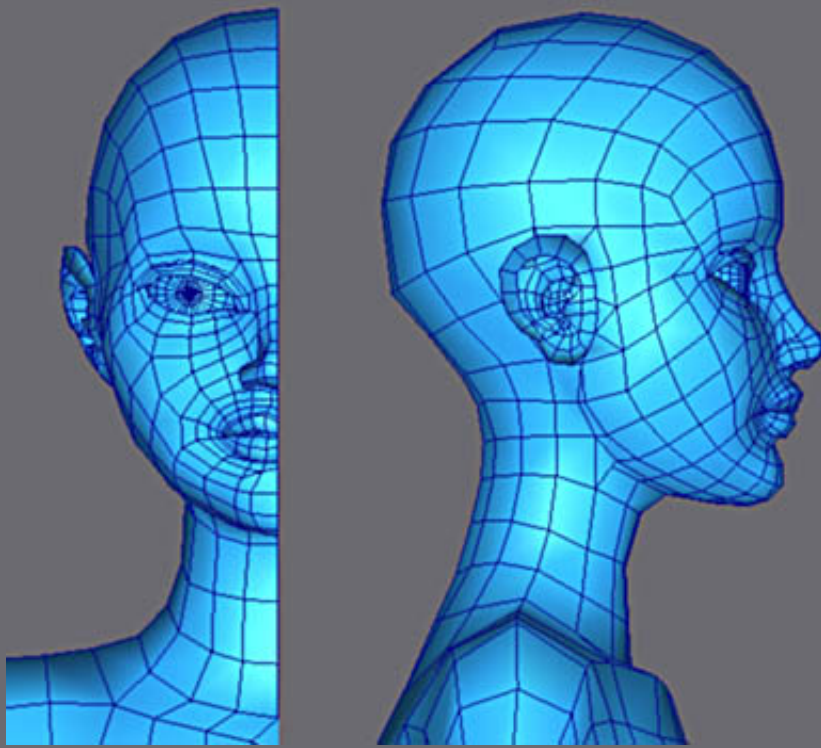
Then with the Attach button, click on the head to make one object.



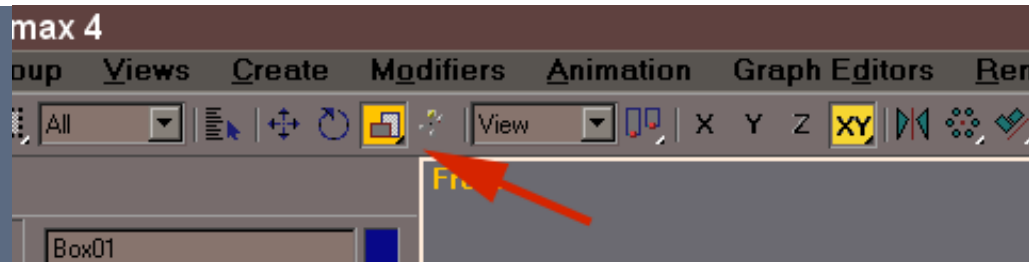
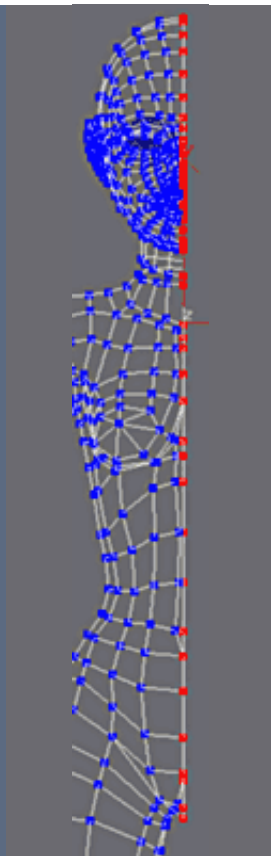
With Create, build the faces to connect the head to the body.

As it happens there is the same number of vertexes in top and in bottom thus one has only quadrangles with the final mesh at this join :)



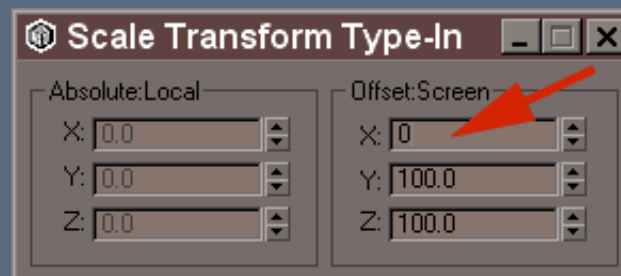


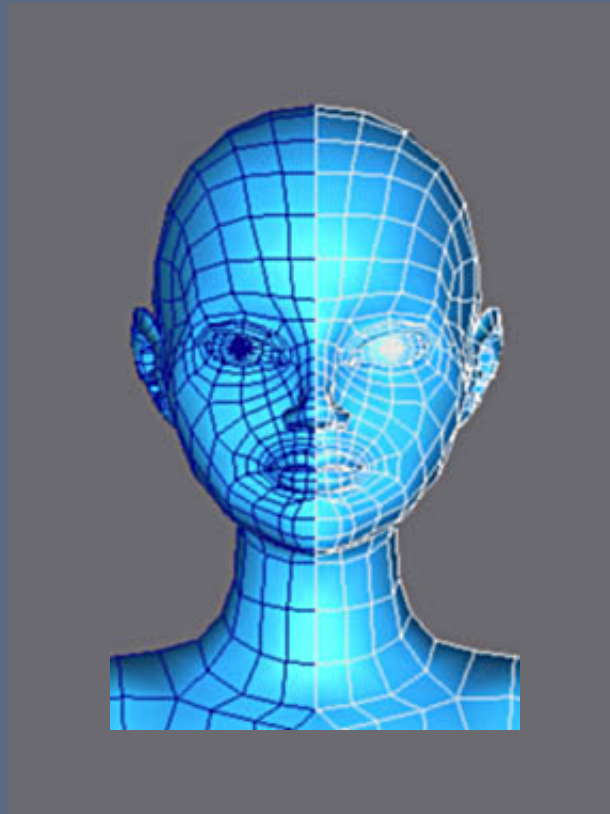
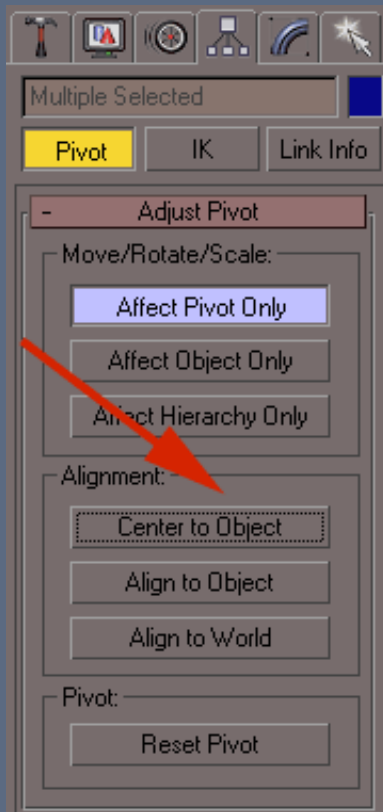
Finally adjust the vertexes of the neck to give a regular form.



To make sure that the vertexes are placed on the bodys axis of symmetry and so all aligned vertically, select them then select non uniform scale and then right click on the icon to open the 'transform type-in' enter 0 in the field of the x axis.

All these vertexes are now perfectly on the same vertical axis.

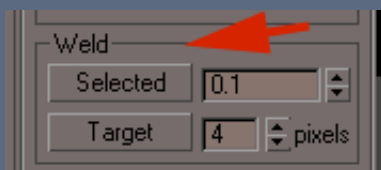
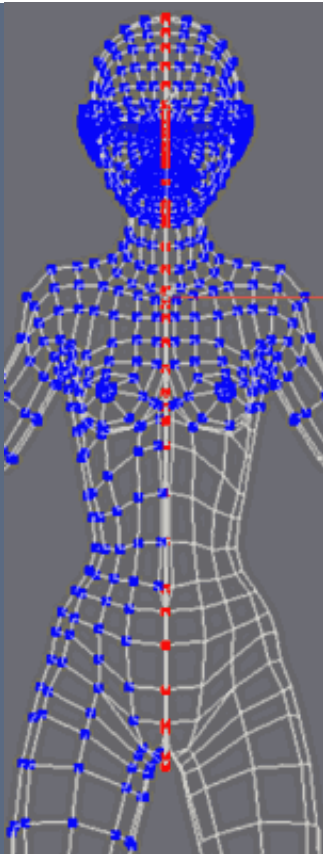




Select all the objects and in the Hierarchy panel, select Pivot, Affect Only Pivot and click on 'Center to Object'. That makes it possible to center the pivots of the objects in their geometrical center. Indeed until now the body and the head had kept the pivot of the initial starting object

It is easier to move the right part of the character after the copy to mirror in Copy mode

Select the left part and with Attach activated, click on the right part.



Select the vertexes of the body's axis of symmetry

To weld the two parts it is enough to apply Weld with a low value.

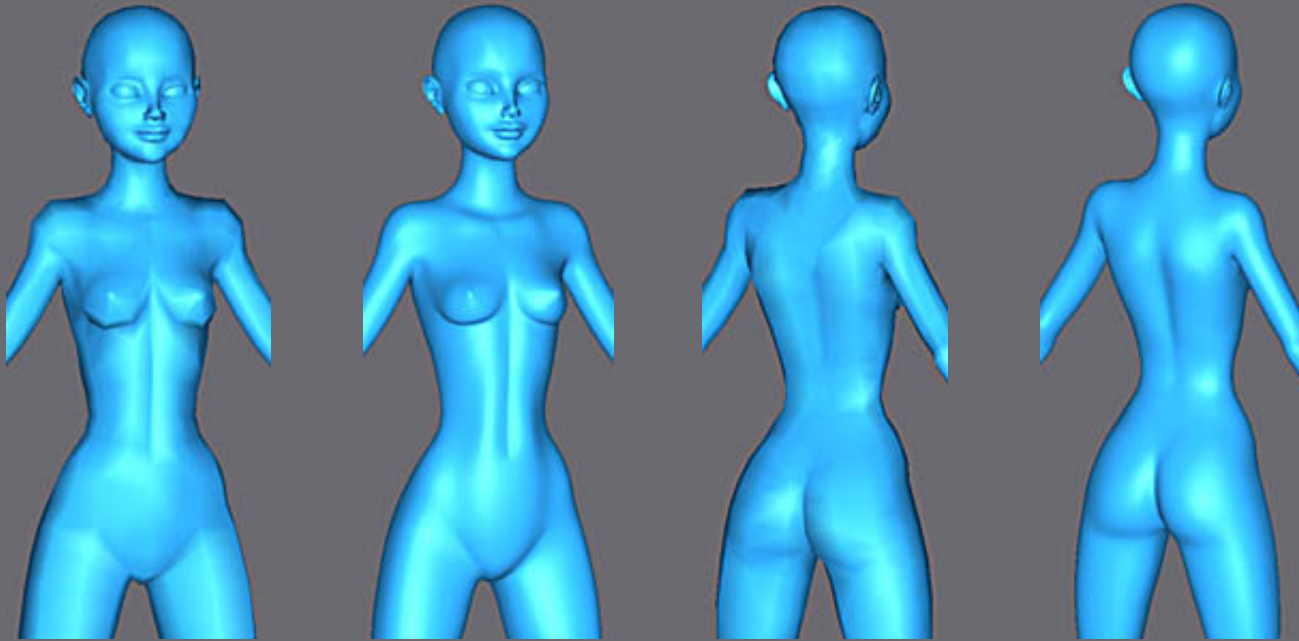
This value indicates a distance to which vertexes within this value become welded together.

To be sure to weld the vertexes in their pairs check that the number of selected vertexes after Weld is half of those initially selected.

If it is not the case, decrease the tolerance of Weld etc...



Here, max indicated 166 vertexes before Weld and 83 after thus they were welded in their pairs as desired...



Check visually that they are all correctly welded by looking at the model in low poly.  
Then apply a Meshsmooth modifier.

Click on the images to see them large.

As usual, preserve the low poly model for the next parts (dont collapse!)

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Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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Joan of Arc  
by  
Michel Roger

3ds Max



*The Sword*



3D Studio Max

Modeling Joan of Arc by Michel Roger



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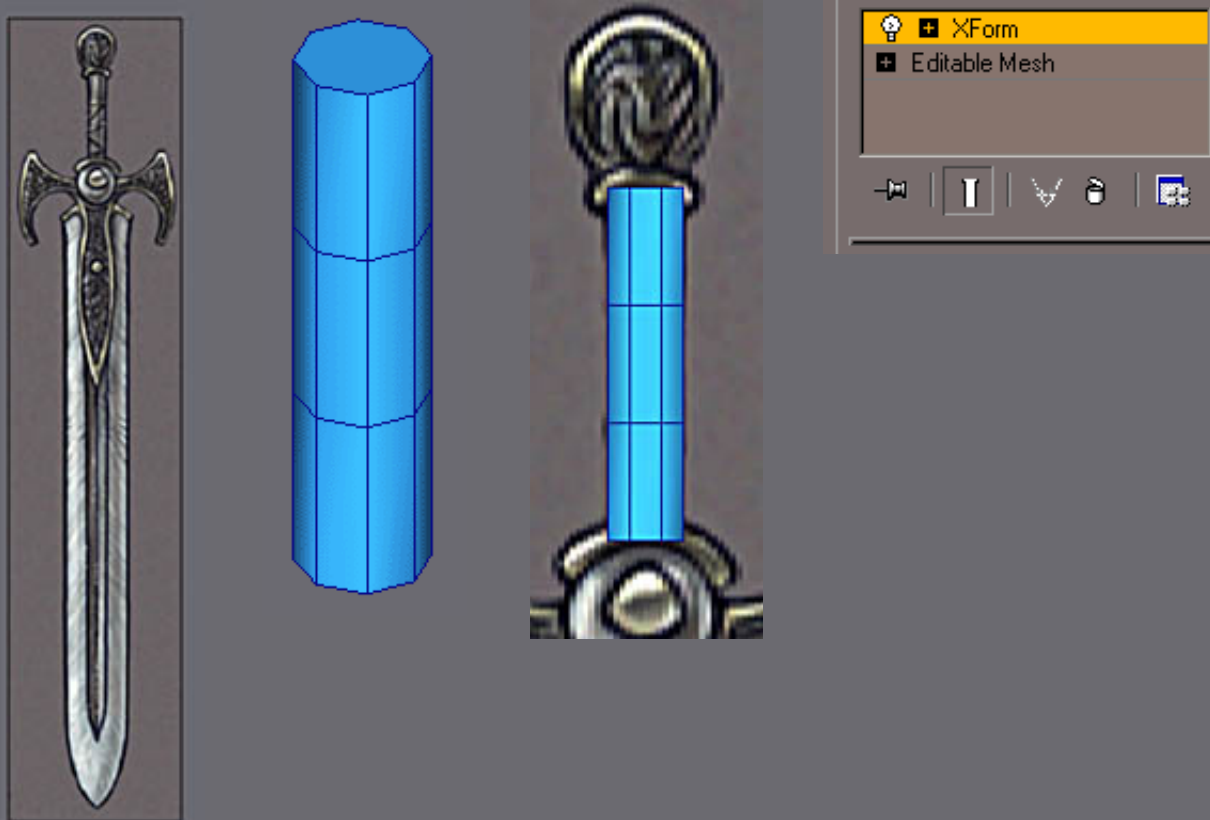
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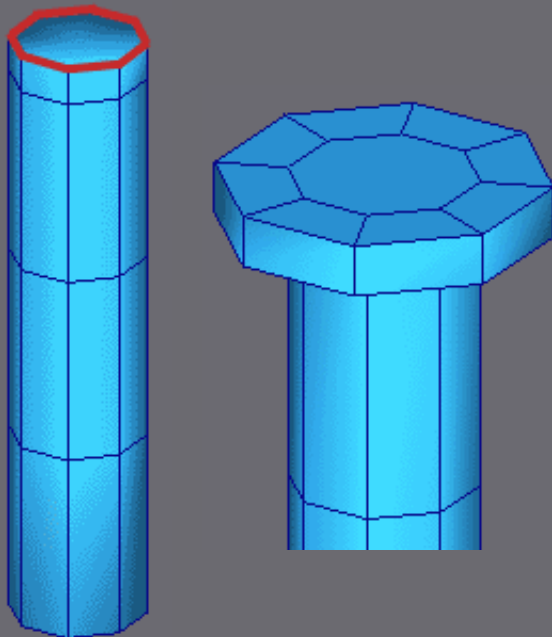
Modeling of the sword



The sword is the occasion to show a new face of the polygonal subdivision on max 4. The major part is devoted to modeling and towards the end you will see the new functions of Meshsmooth on max 4.

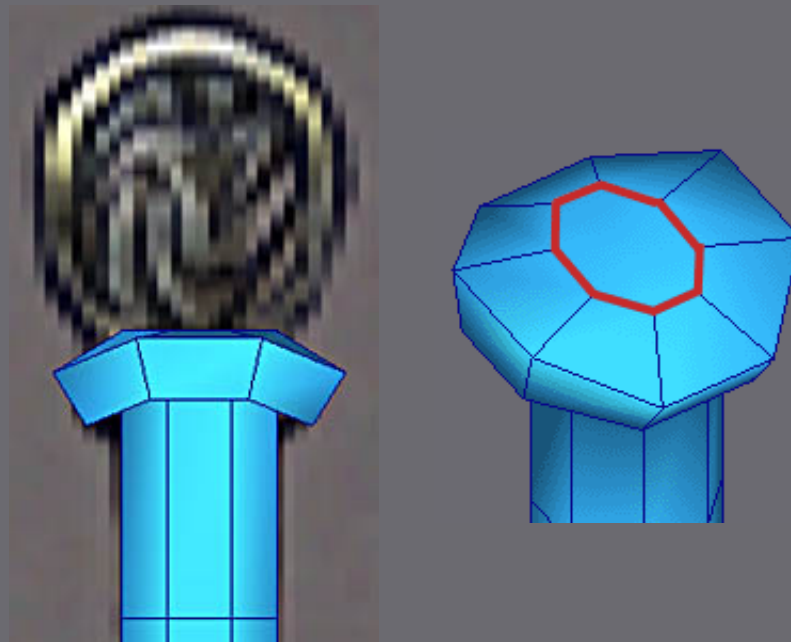
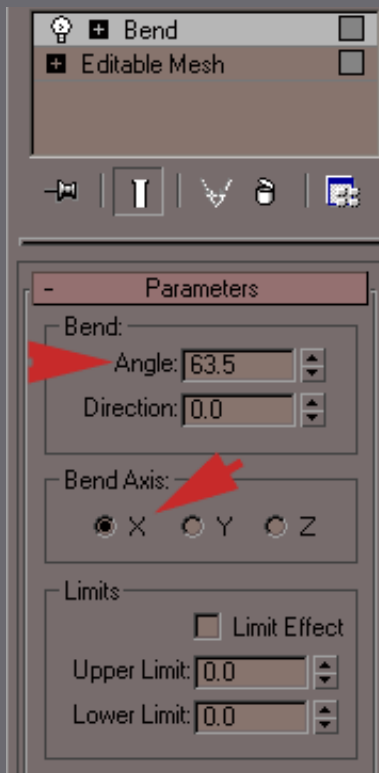
As usual, to aid the modelling we use a drawing of the sword.  
[To download the image here.](#)

One starts with a cylinder with 8 sides, make a rotation of  $22.5^\circ$  on the vertical axis so you have a line of polygons staright on in view Front. Apply a Mesh EDit and XForm to initialize the position of the object after rotation. Collapse the stack.

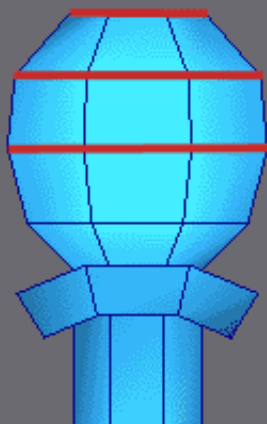


Extrude the face top then select the new faces faces for a second extrusion ( use local mode of Extrudes as with all Extrude of this tutorial).

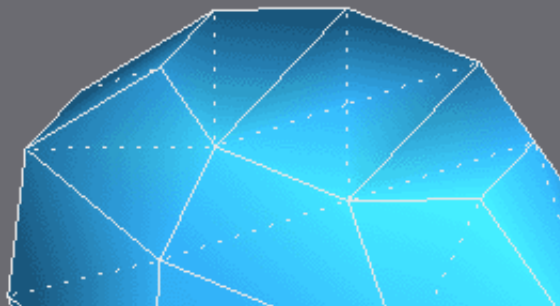
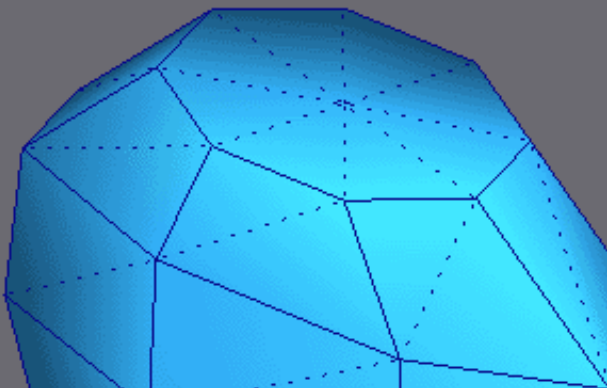
Select the faces of the edge.



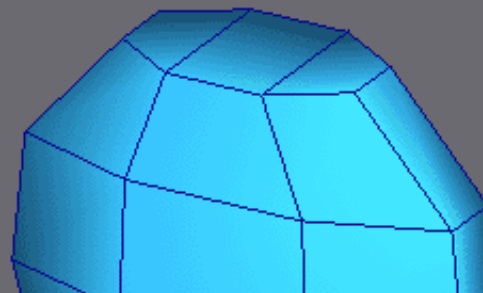
Apply a bend modifier. Choose the X axis and by modifying the angle deform the faces like above in the picture.  
Select the central polygon and scale - non uniform on axis Y

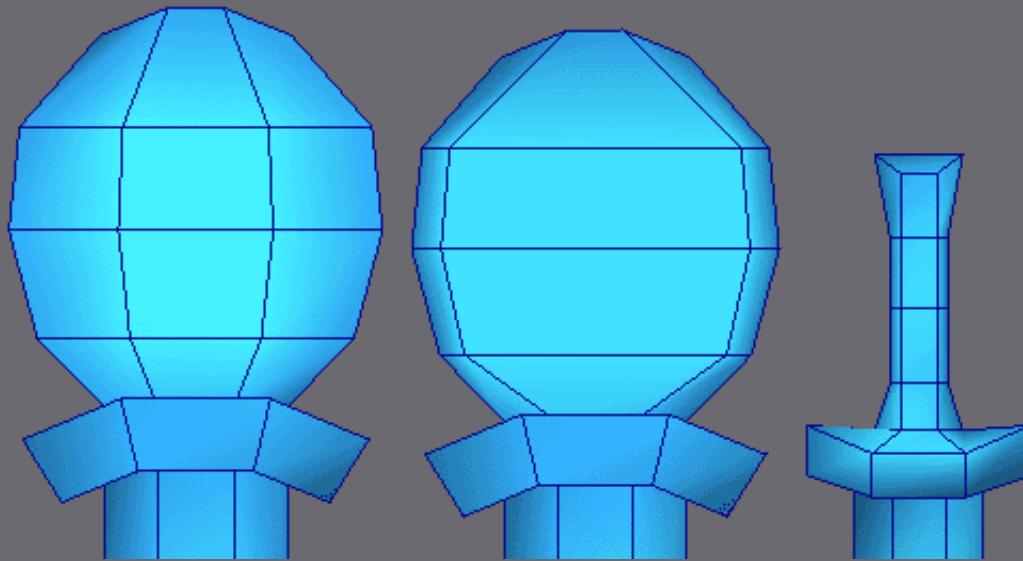


Extrude this polygon like opposite.  
Adjust the profile by scaling non uniform on X.

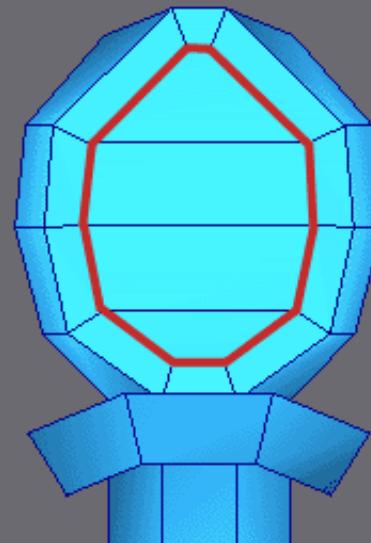


At the top, turn the edges and weld the vertex of the center to obtain the poly mesh as opposite.

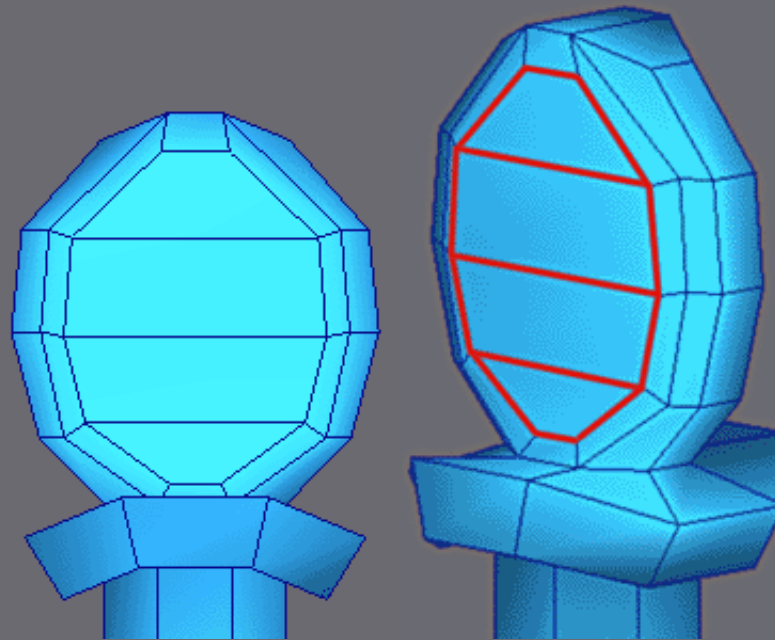
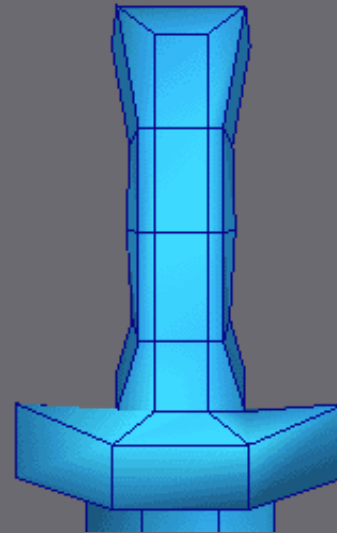




Adjust the vertexes to finish the round-off.  
Select the vertexes of the center and scale non uniform to make the faces as shown



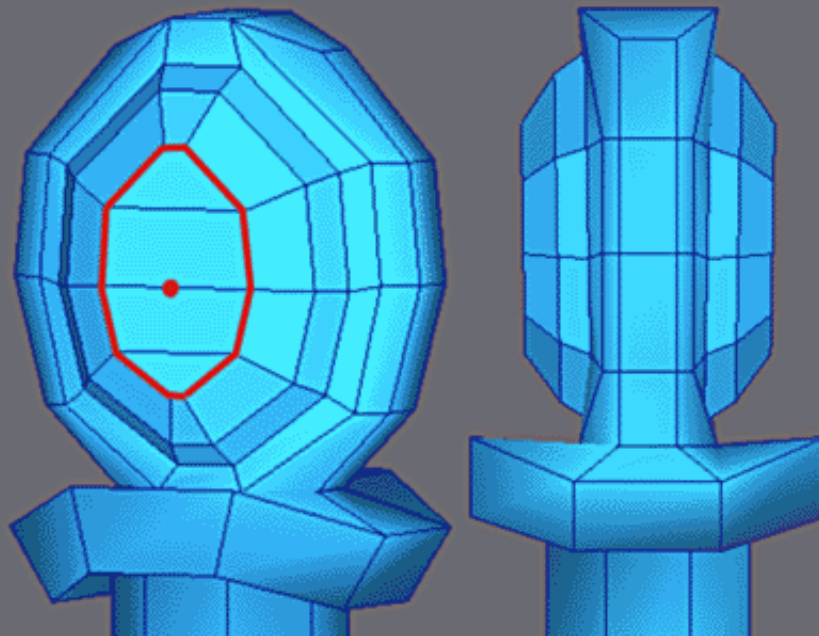
Select the faces as in the picture and then extrude followed by  
Bevel like opposite.



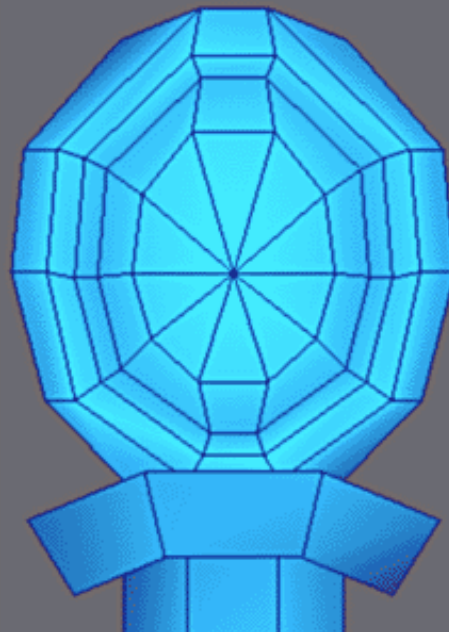
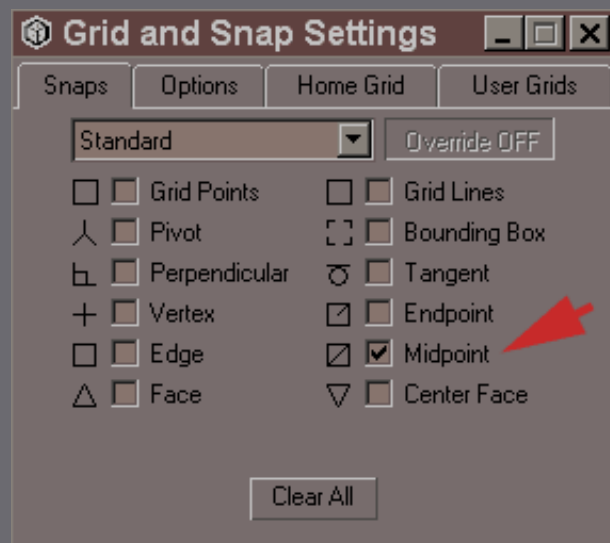
Adjust the vertexes like opposite by scaling non uniform on axis X and by Moveing on Y.

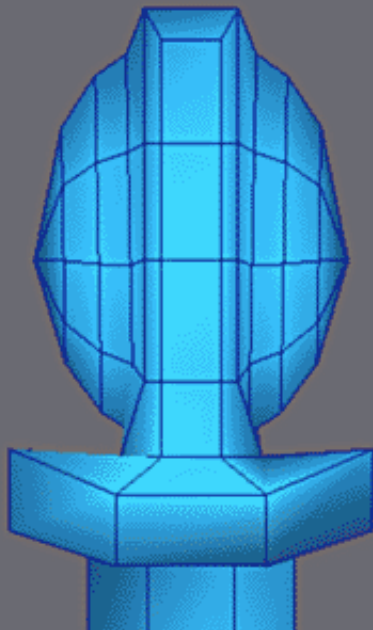
Select the faces of the center and apply Make Planar to make them plane.  
(Button in bottom of the roll-out of Edit Geometry of Editable Mesh).



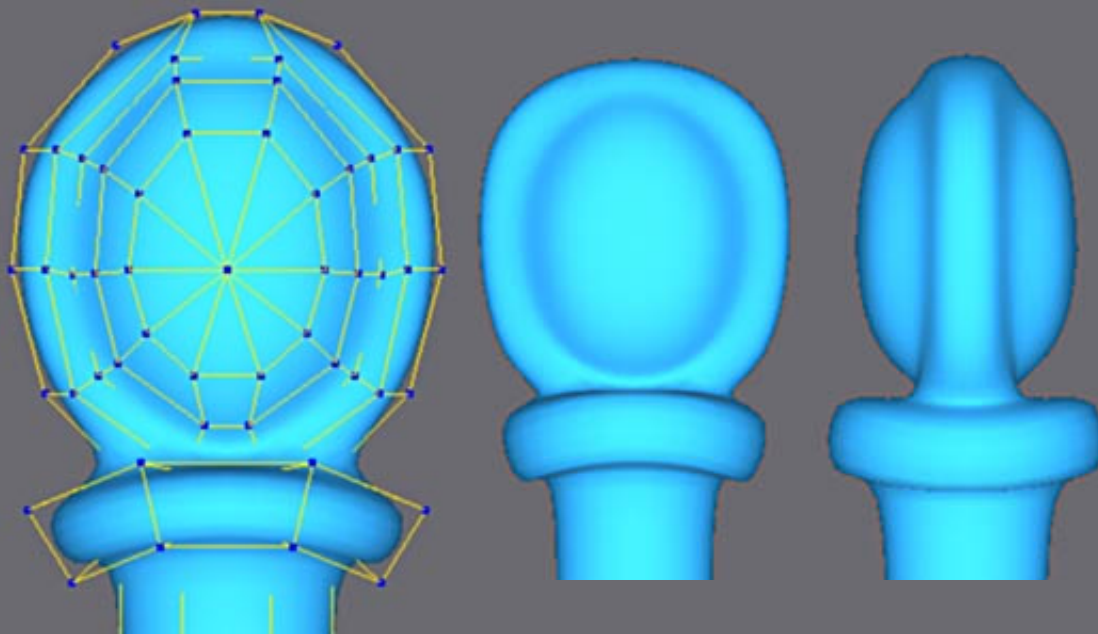


Extrude these faces and form the round-off with Bevel.  
Insert a vertex as in the picture in the edge with Divide after having activated the 3d Snap in Midpoint mode (below).

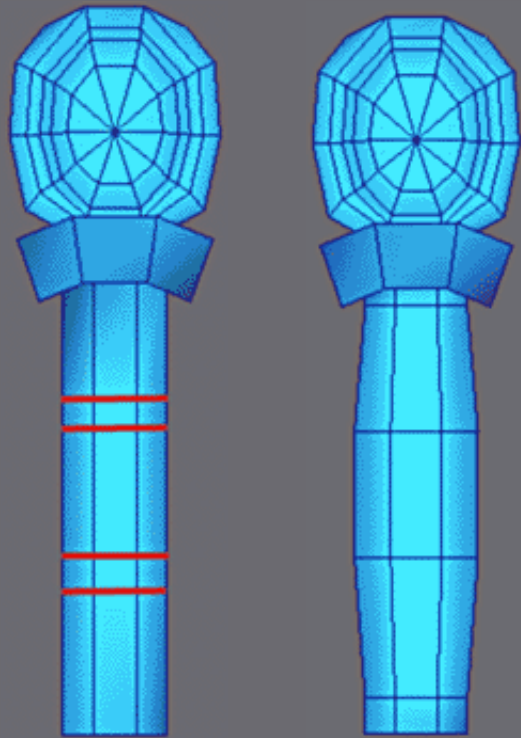




Turn on make visible edges like above.  
Adjust with a non uniform scale the vertexes top and center.



Apply Meshsmooth and as with the preceding sections, you can now adjust the low cage definition and view the high poly version. Once adjusted remove Meshsmooth and return to the low poly.



Select the handle's edges and then Chamfer.

Move the two new edges as shown on the right.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



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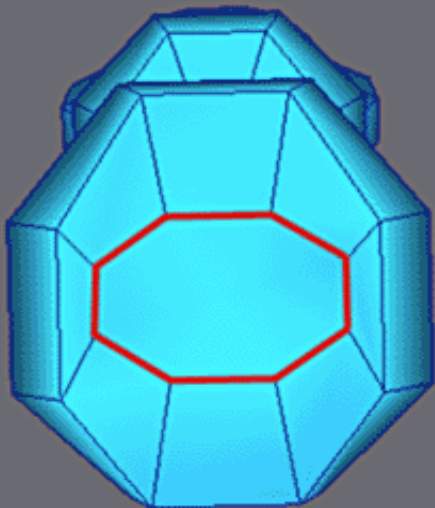
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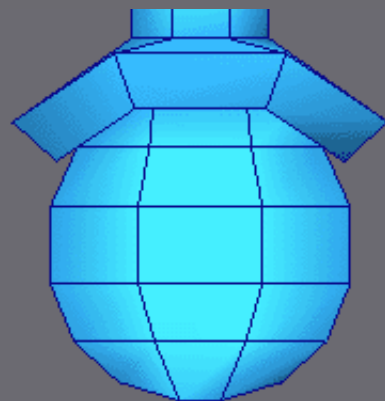
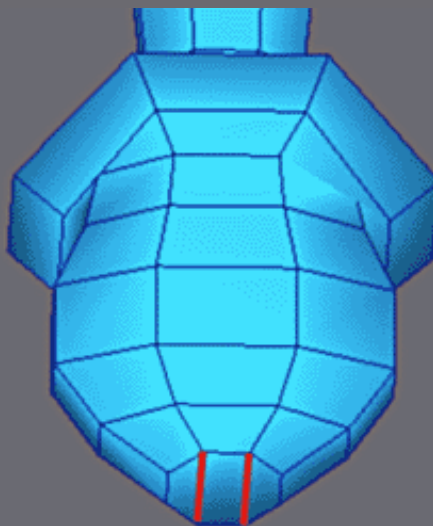
### Modeling of the sword

As for the top, Extrude and tighten the faces with Bend.



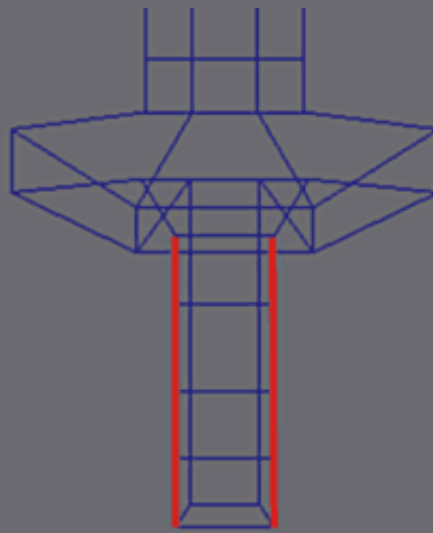
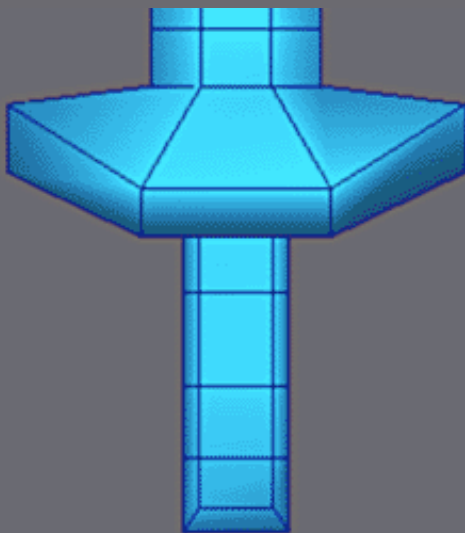


Select the polygon as in the picture and flatten it with a non uniform scale set to the axis Y.



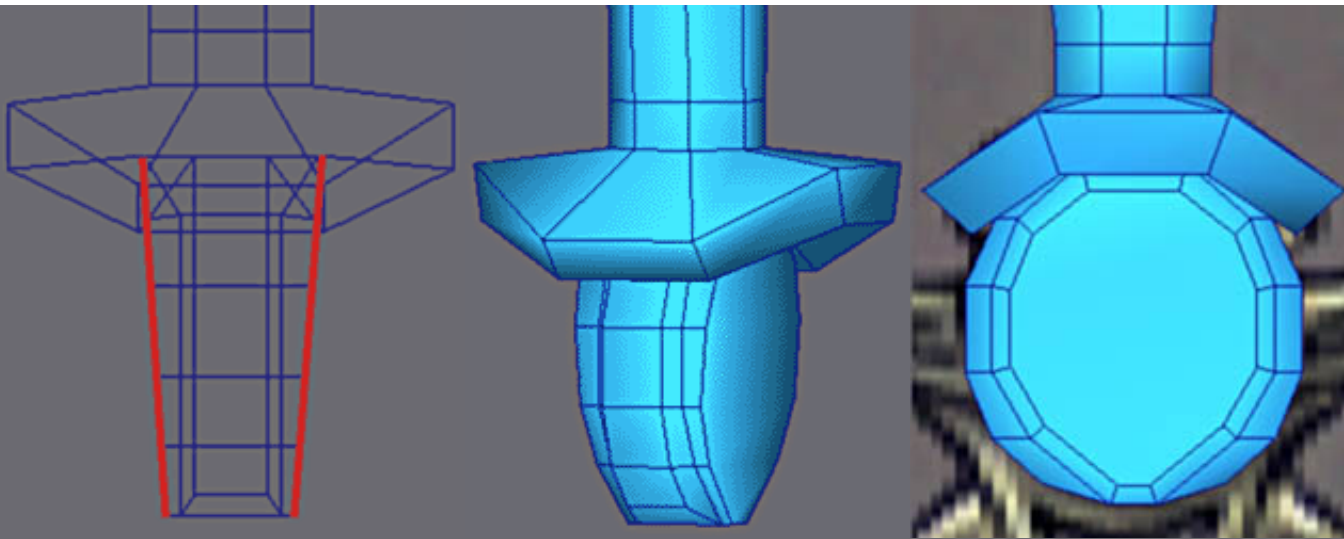


As in the preceding page, simplify the mesh at the end, round and scale the vertexes to obtain the result opposite.

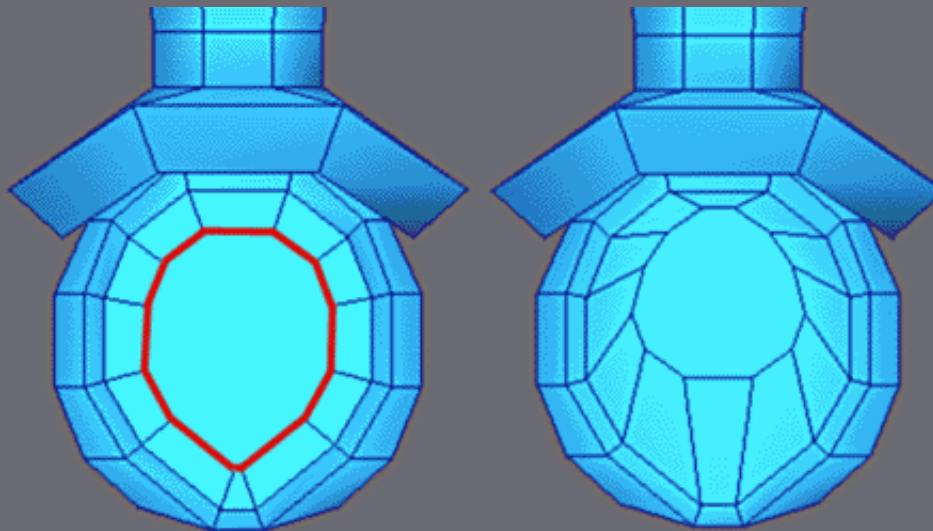


Make a non-uniform scale to adjust the dimensions of section indicated

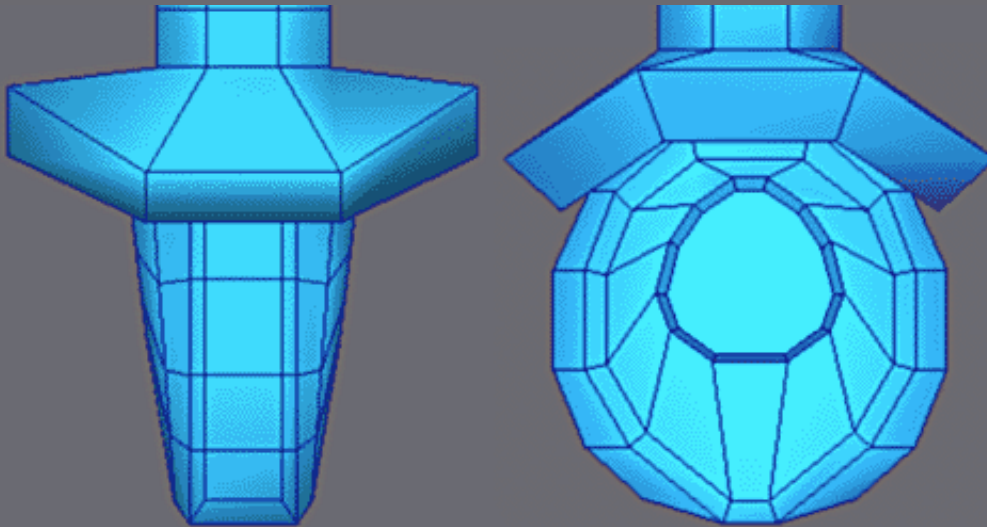




Extrude the faces as in the picture and finish with Bevel.



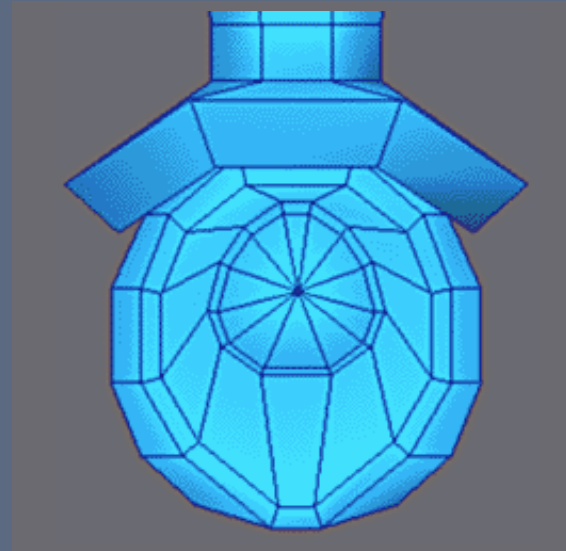
Extrude the faces and Bevel again, adjust the vertexes to obtain the result above (scale non uniform on X and Move on Y).

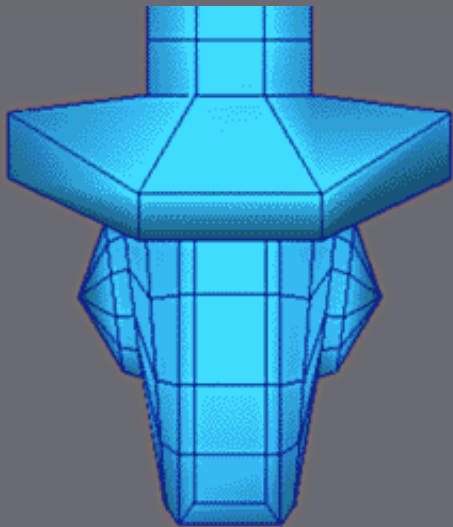


Aim for the dimensions above.

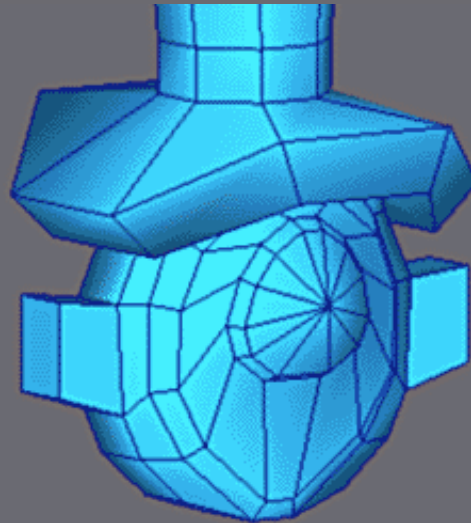
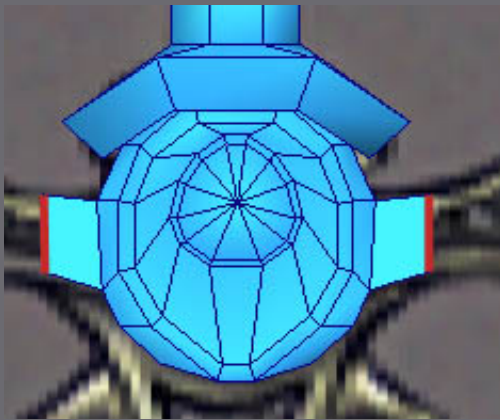
Extrude the central polygon.

Insert a vertex and make the edges visible as on the last page.

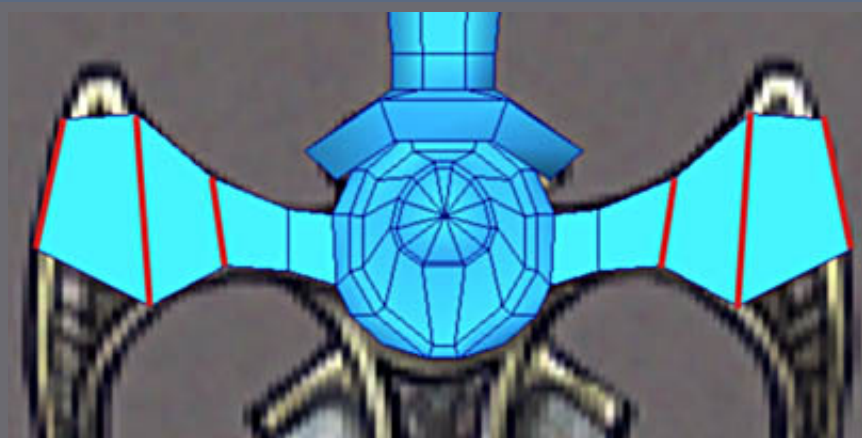




Aim for the dimensions shown after scale  
non uniform on Y of the central vertexes.

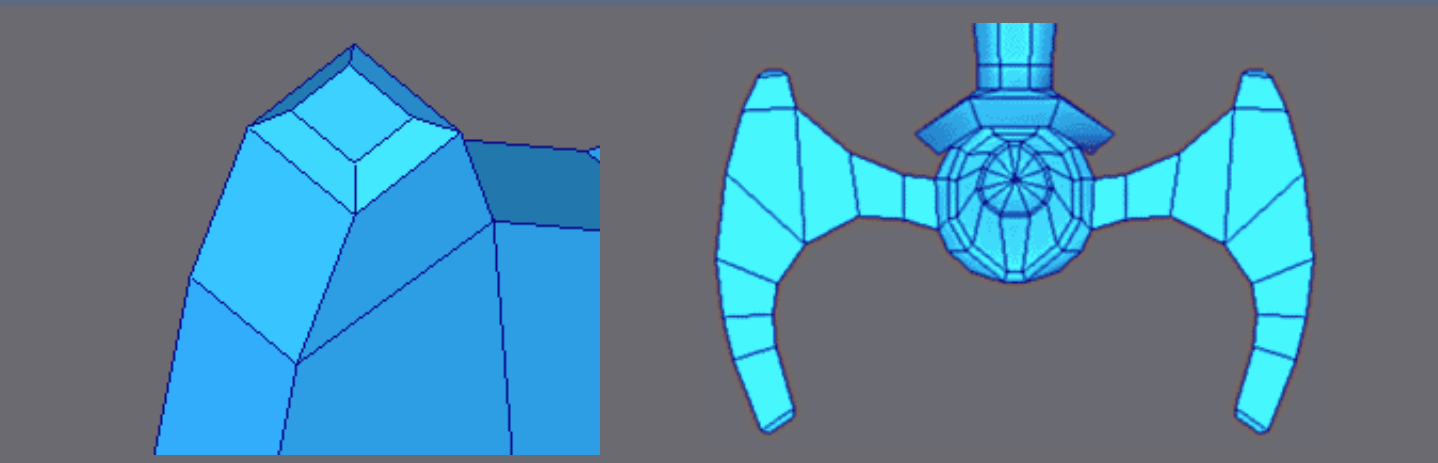


Extrude the faces simultaneously.

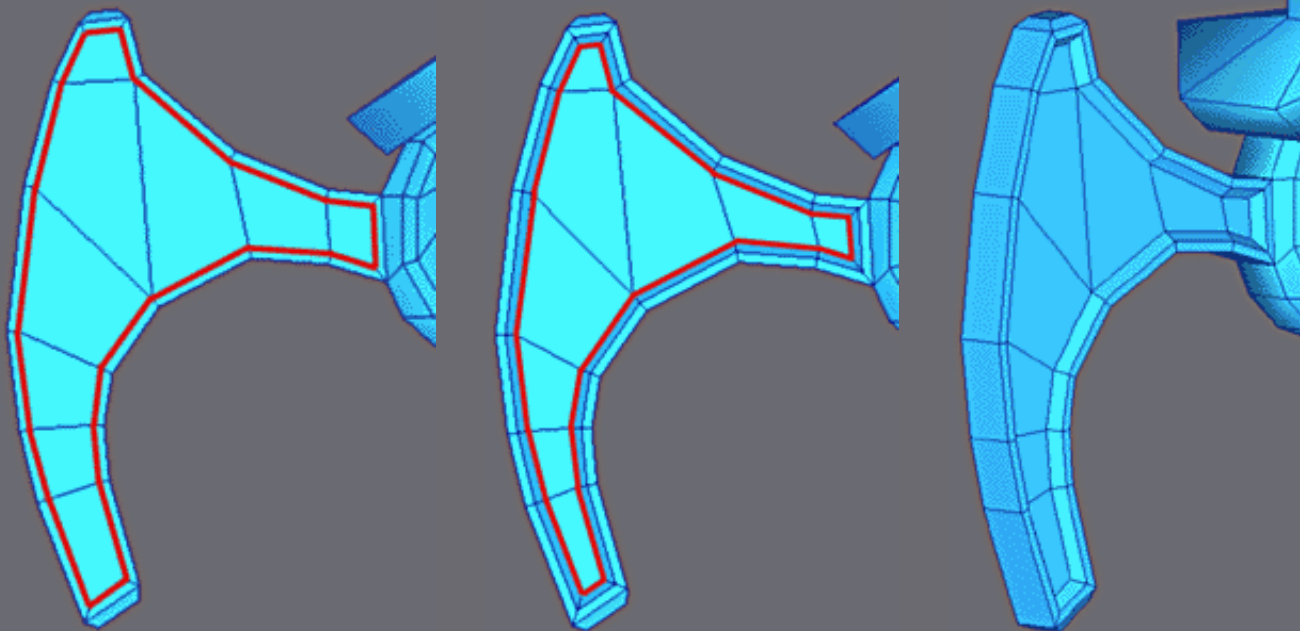


Continue in the same way to make the following ones.

Use non-uniform Scale on X to position the vertexes horizontally and Move Y for the vertical.

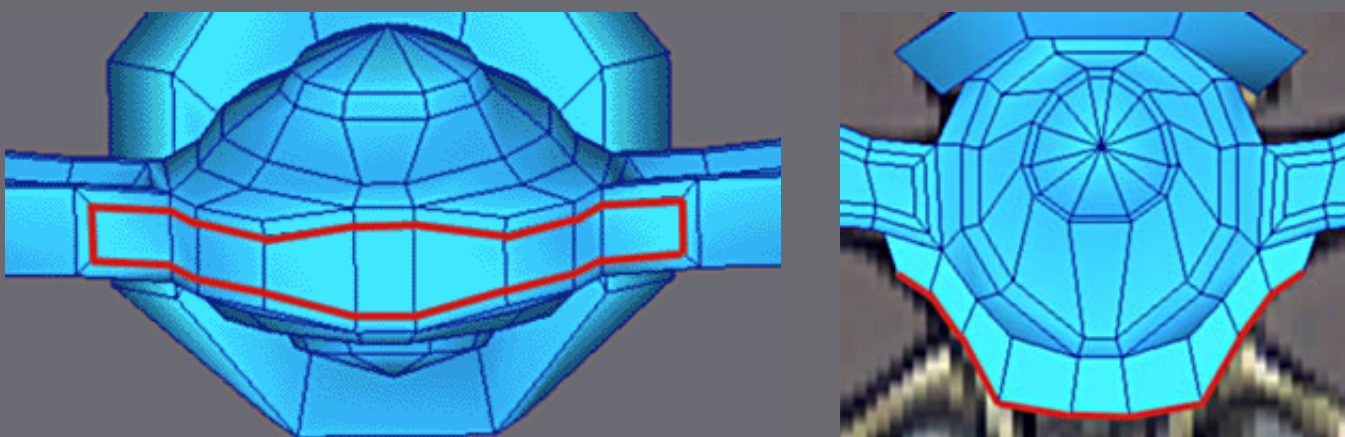


Finish extrusions like above.

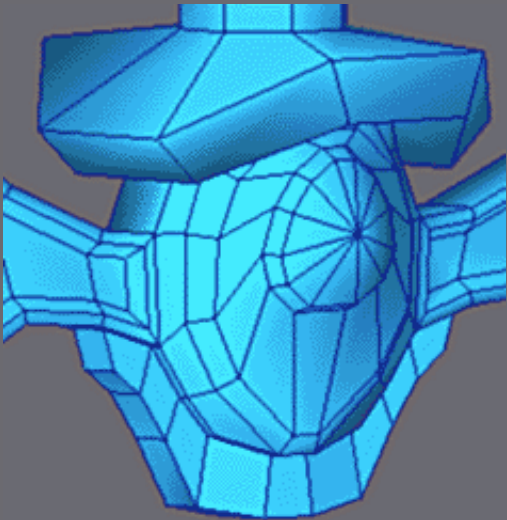


Select the faces as in the picture and make one Extrude and Bevel, then repeat with a negative Extrude/Bevel to make the hollow.

To do one Extrudes without the news face not moving it is enough to move frankly vis-a-vis extrusion then totaling zero with the roll up of adjustment of extrusion. Then Bevel makes it possible to decrease the size of the extruded face, one thus creates a setback or an edge.



Select the faces of the lower part, then Extrude/Bevel as shown above left and then repeat as in above right picture



Make any minor final necessary adjustments.

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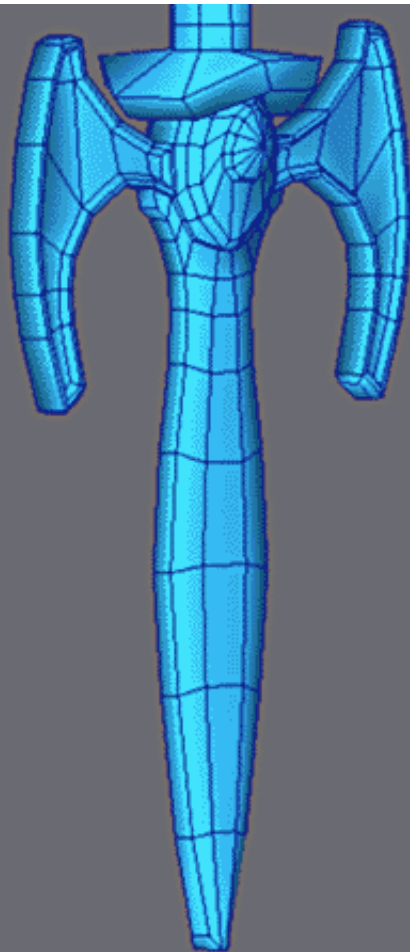
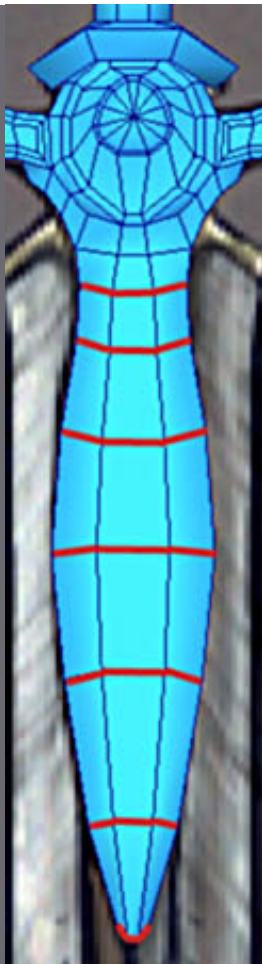
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Modeling of the sword

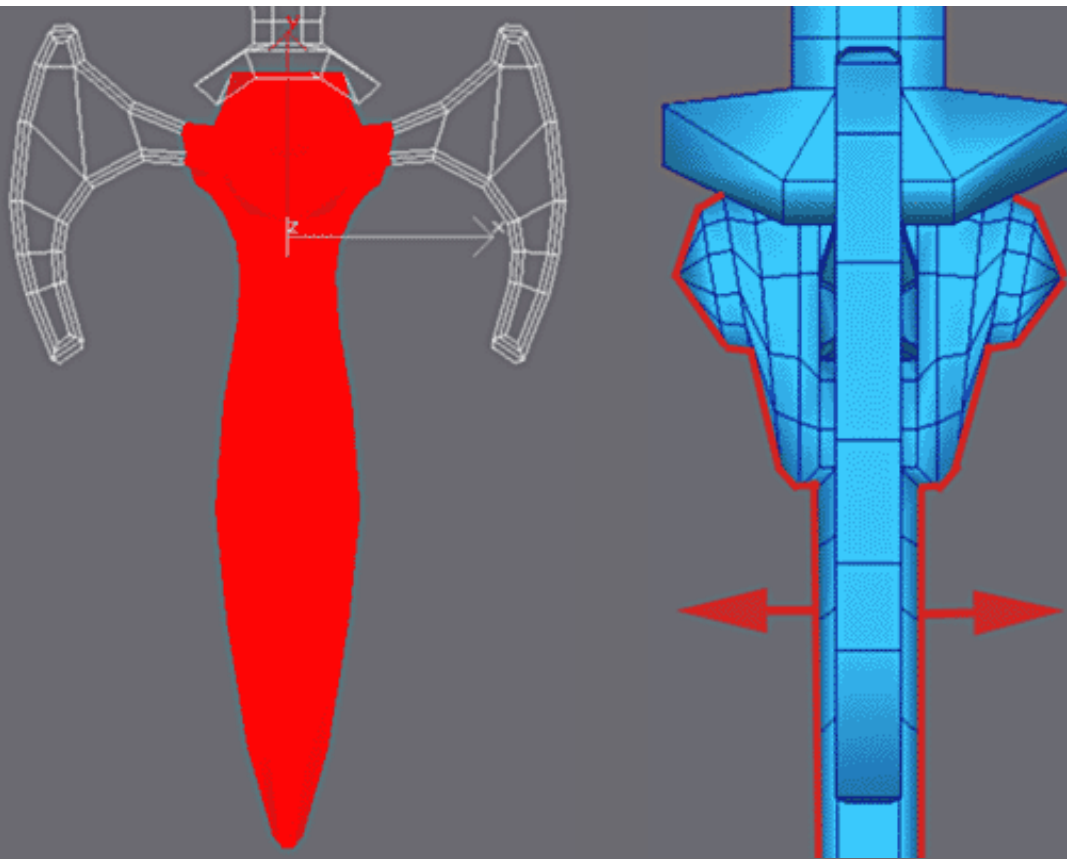
Then Extrude the main body of the



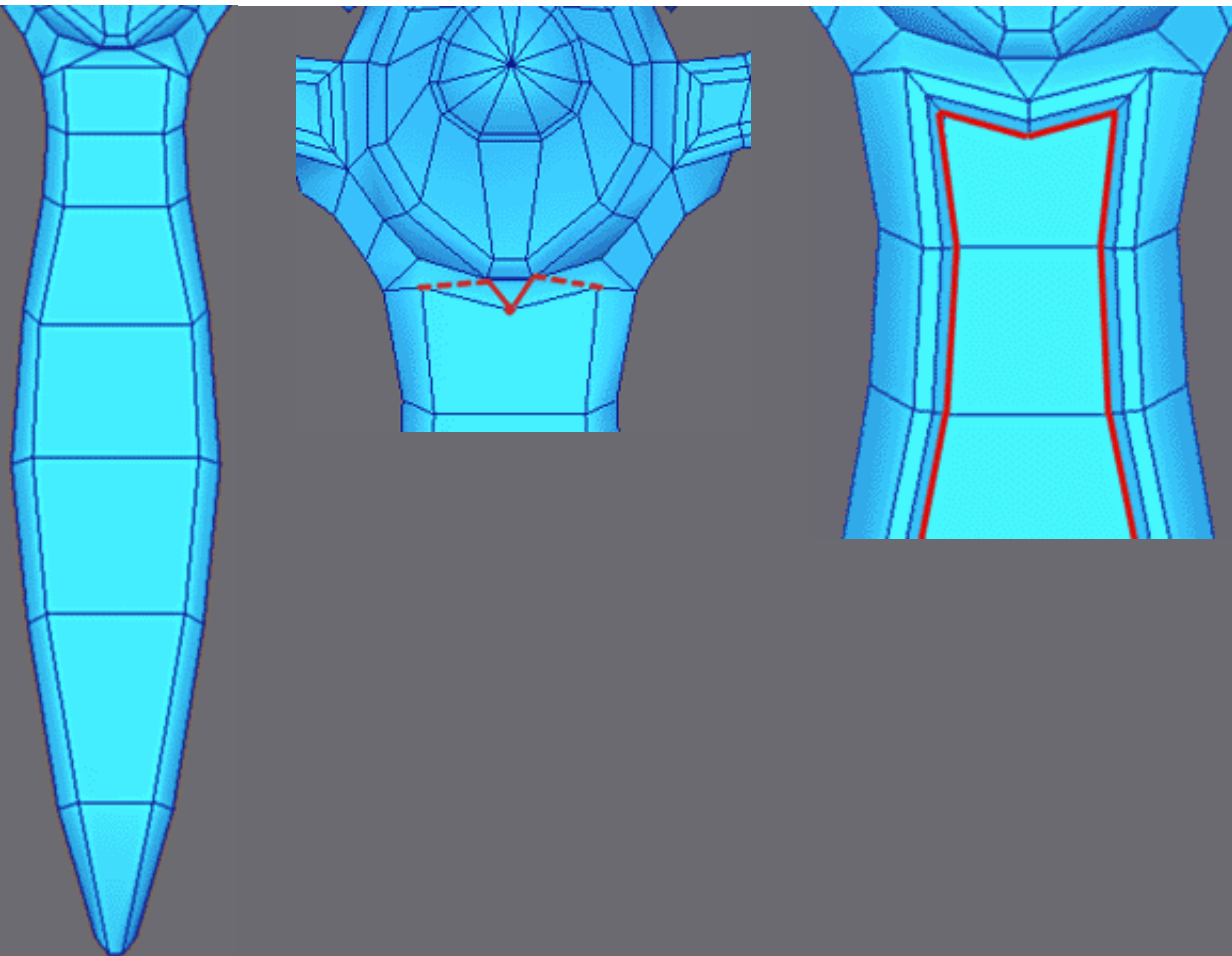


blade.

Adjust on X with scale non-uniform.



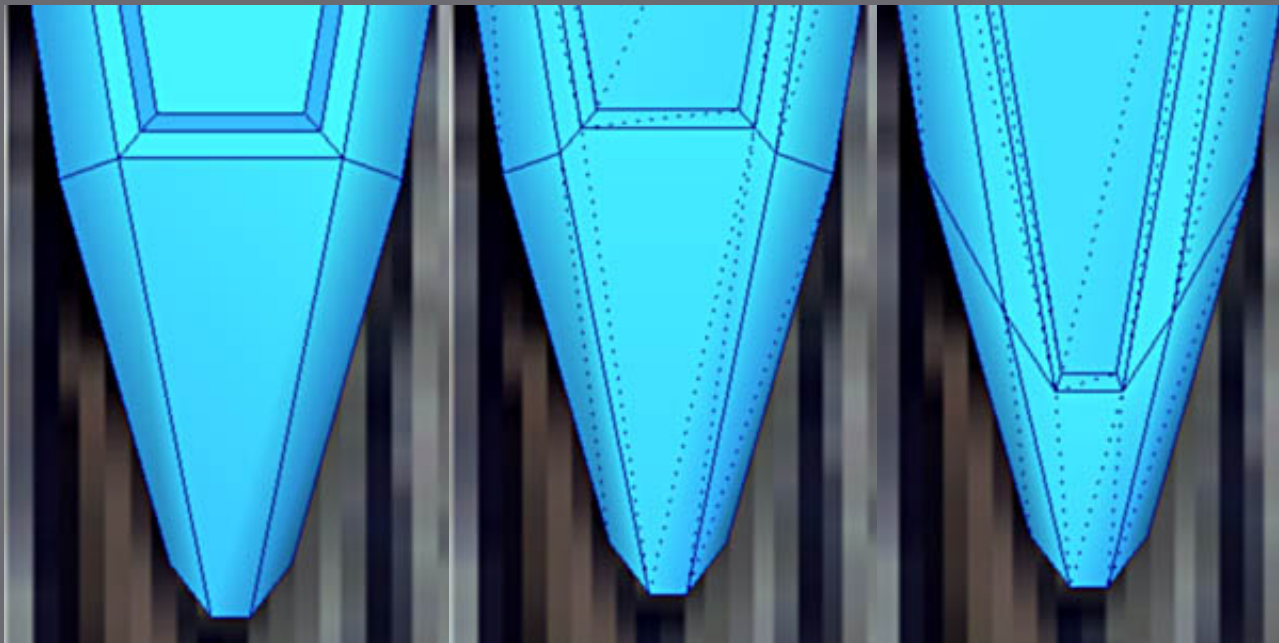
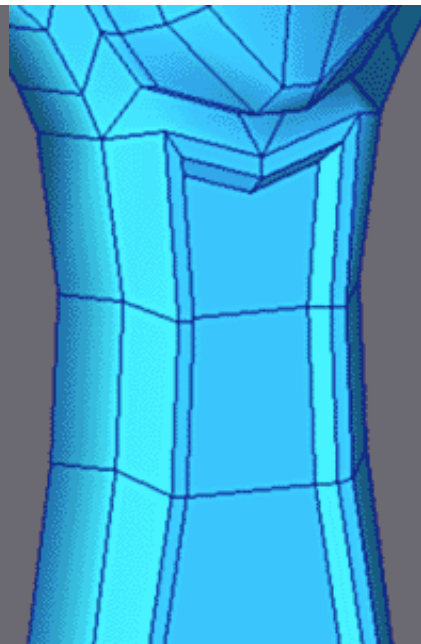
Select the faces in red and adjust the dimensions using a scale non-uniform on the y axis.



Adjust the vertexes like above.

Insert a vertex into the edge as shown with the 3d Snap on set to Midpoint, hide the 2 edges and make visible the 2 others.

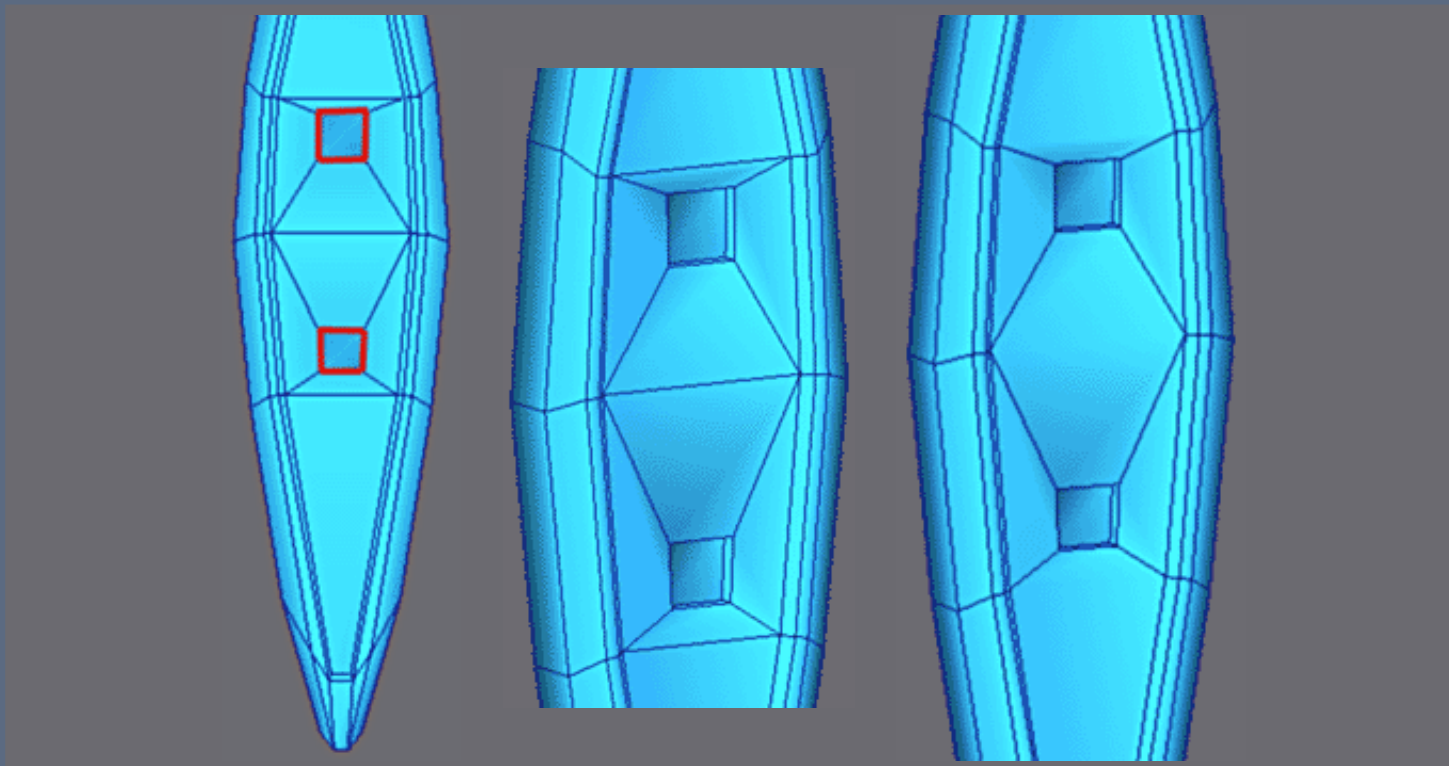
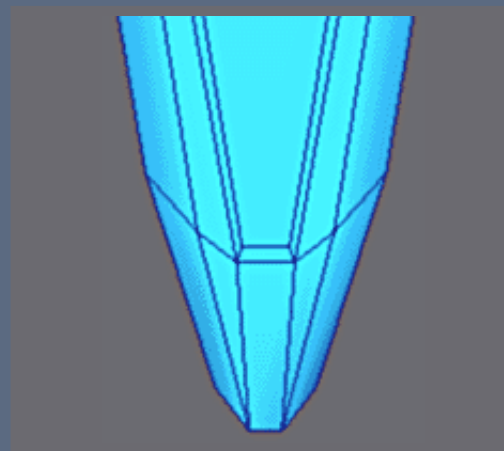
Select the faces as in the picture and then follow a series of Extrude/Bevel to create the edge and another for the hollow.



On the point, make the horizontal edge like above.

Then move the vertexes downwards.

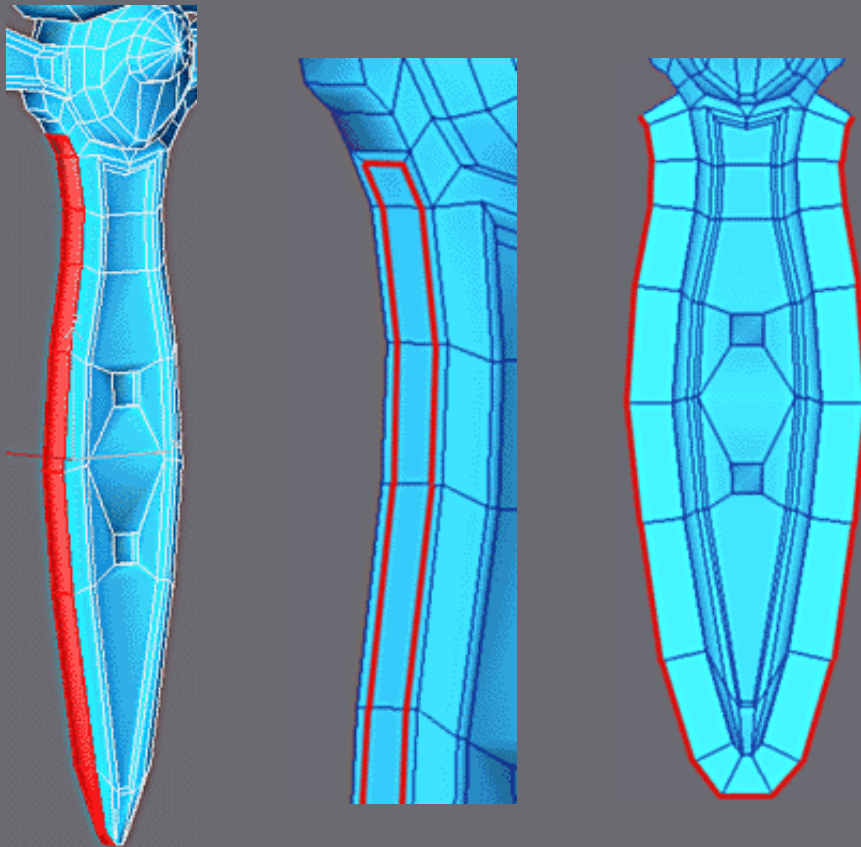
Lastly, make visible the 2 edges like opposite.



For drillings, select a quad as shown, use Extrude/Bevel and adjust the vertexes to have a square. Extrude again into negative for the hole.

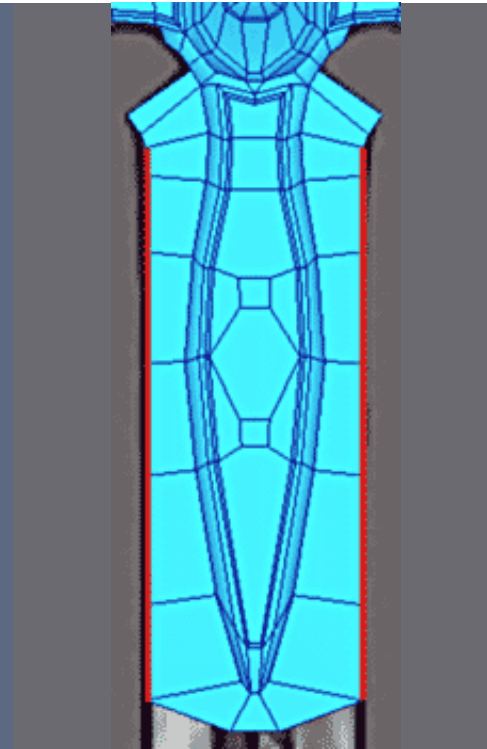
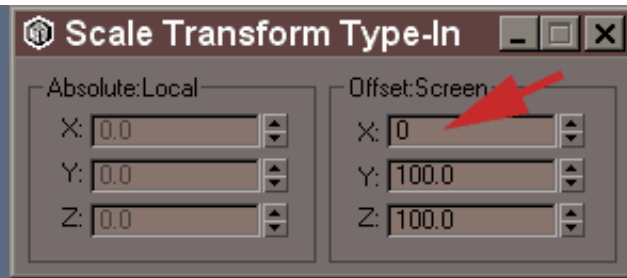
Start again for the second hole.

Finally remove the horizontal edges. That gives a better smoothing with Meshsmooth in this case.

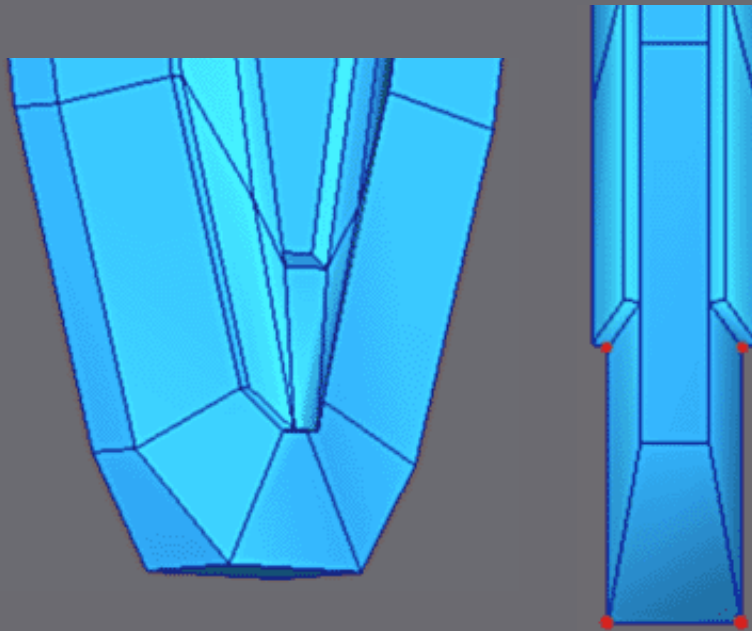


For the blade, always Extrude/Bevel as shown

Extrude the faces to build the blade.



Adjust the vertexes on the top of the blade as shown above and continue to align the others perfectly

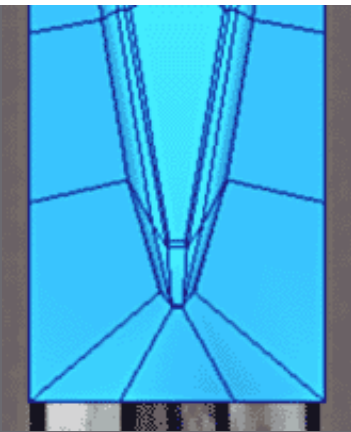






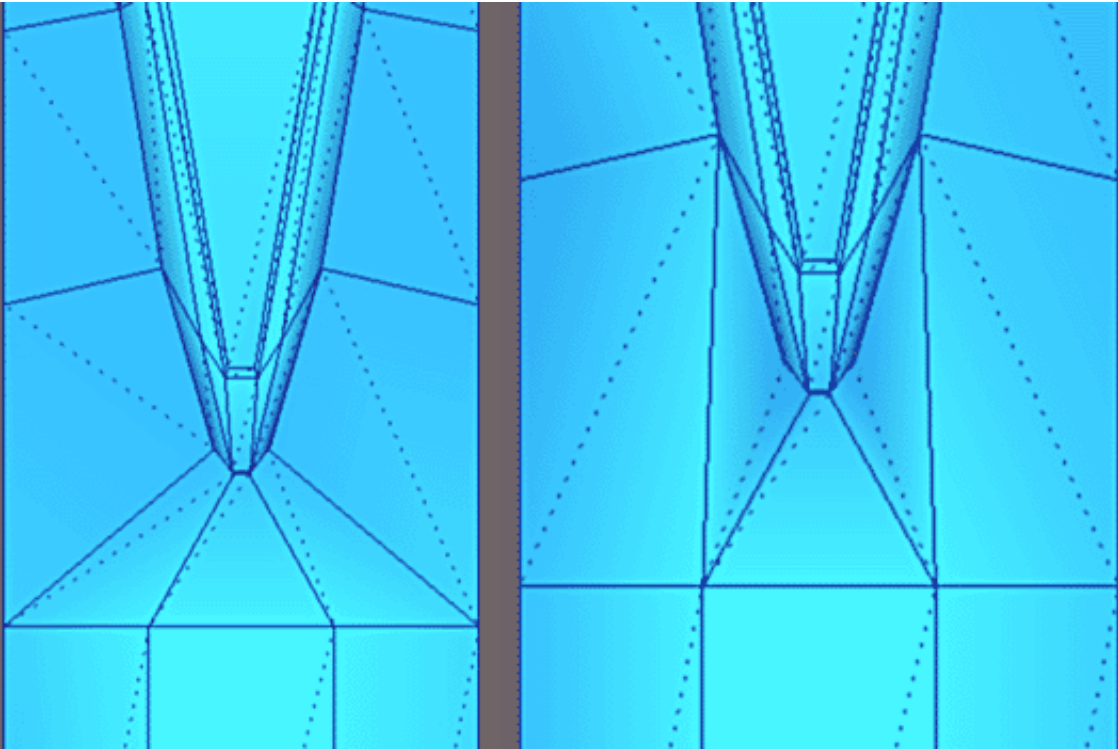
When it come sot the point of the support of the blade.

select the vertexes in red and made a scale non-uniform on the axis Y.



Ajust the vertices on the y axis to  
obtain the horizontal row

Then extrude the remainder of the  
blade and use scales non-uniforms for  
the point.



Adjust the edges at the point of the support of the blade to obtain the structure above.

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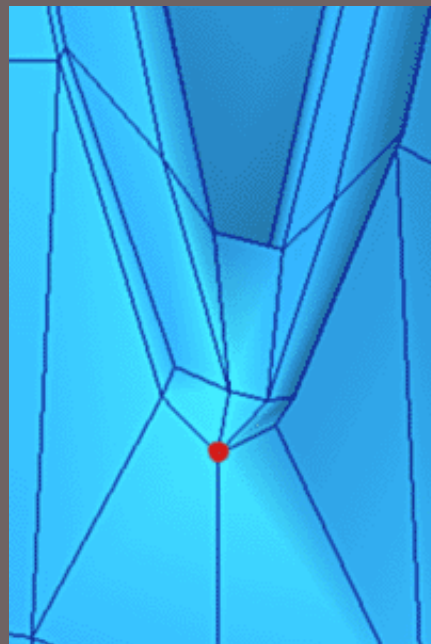
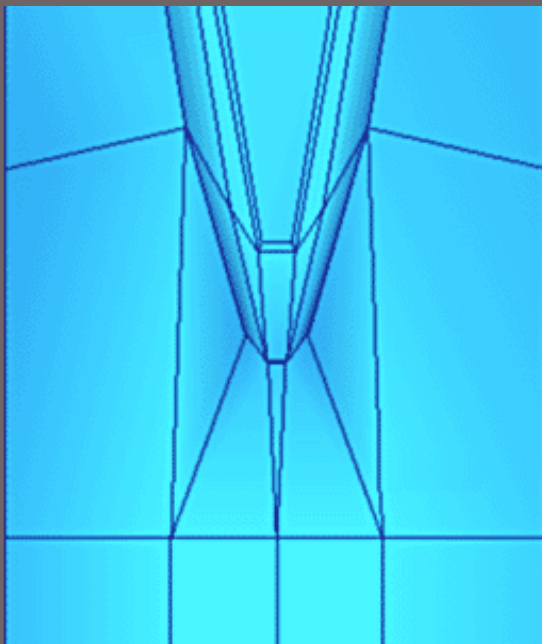
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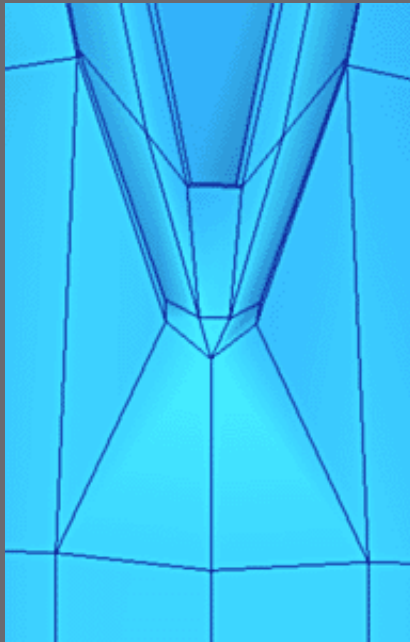
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### Modeling of the sword

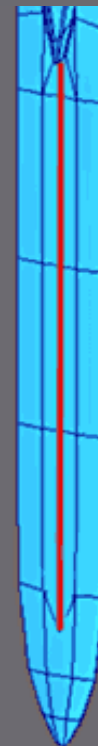


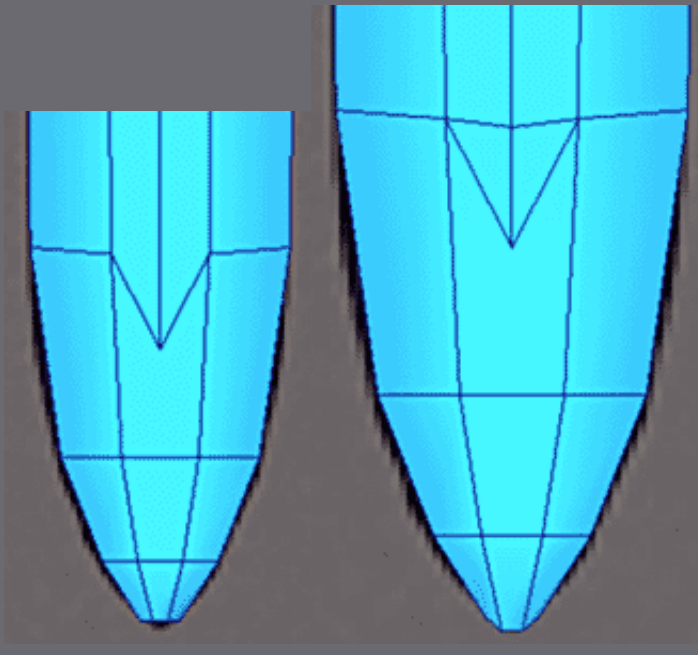


The blade needs a hollow.  
For this we use a series of Cuts  
with the 3DSnap Midpoint activated  
(top left).

Simplify the point by welding the  
vertices as shown top right.

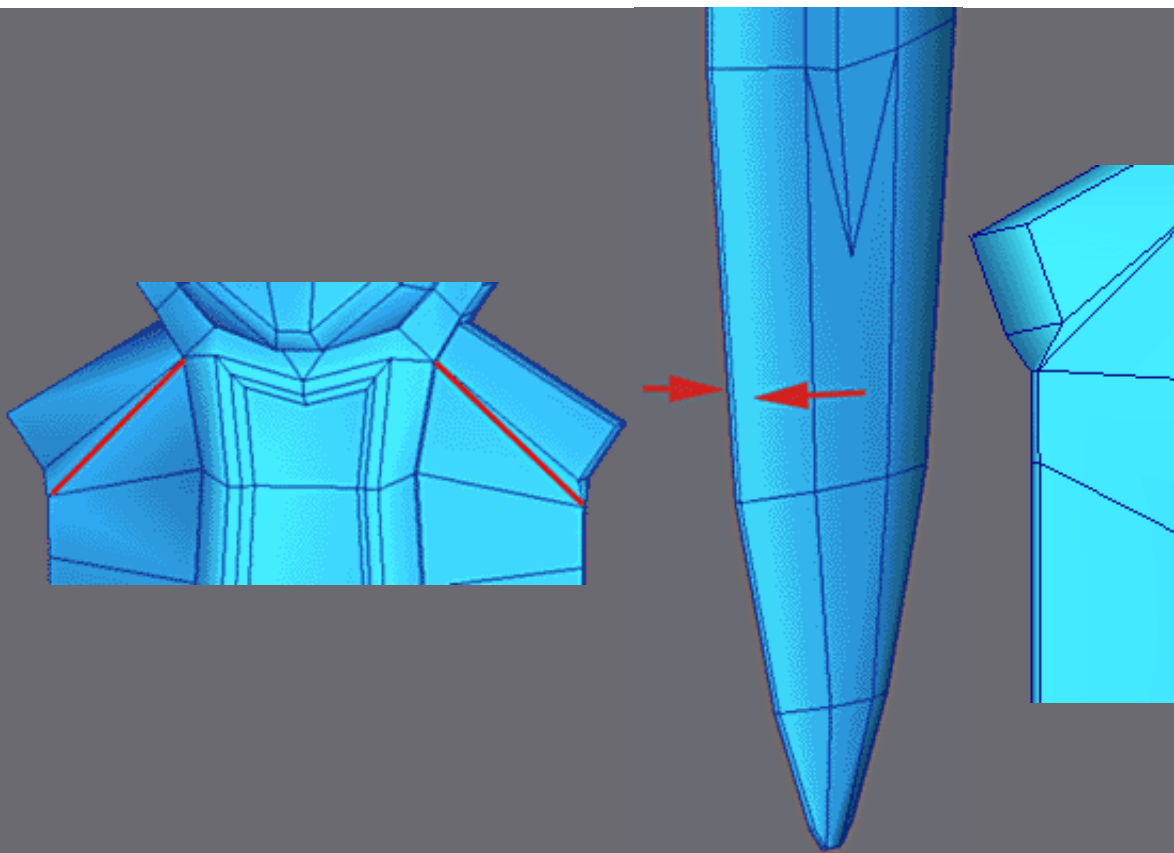
To form the furrow, select the central edges of both sides and make a scale  
non-uniform on the axis Y to get the right dimensions.





Pull down the vertex from the end of the furrow like opposite.

Insert a vertex with Divide and make additional edges as shown.

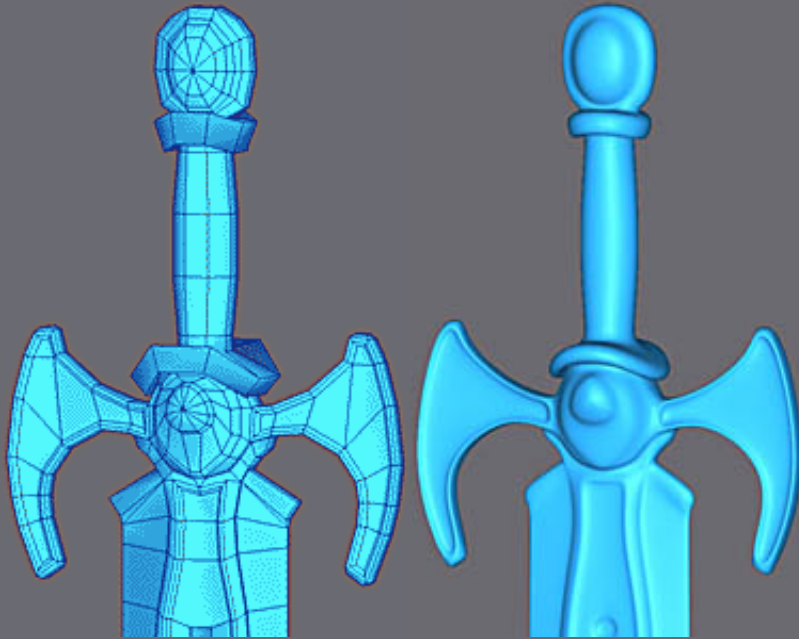


Finally to finish, on the top of the blade, make the diagonal edges visible and use a scale non-uniform on the vertexes of the edge of the blade to refine it. Note that the top is not thinned.

Modeling finished.

Smooth with meshsmooth, Nurms





mode, iteration 2.

Click on the images for bigger versions

Max 4 introduced the possibility of modifying the smoothing of the object with different values for separate vertices.

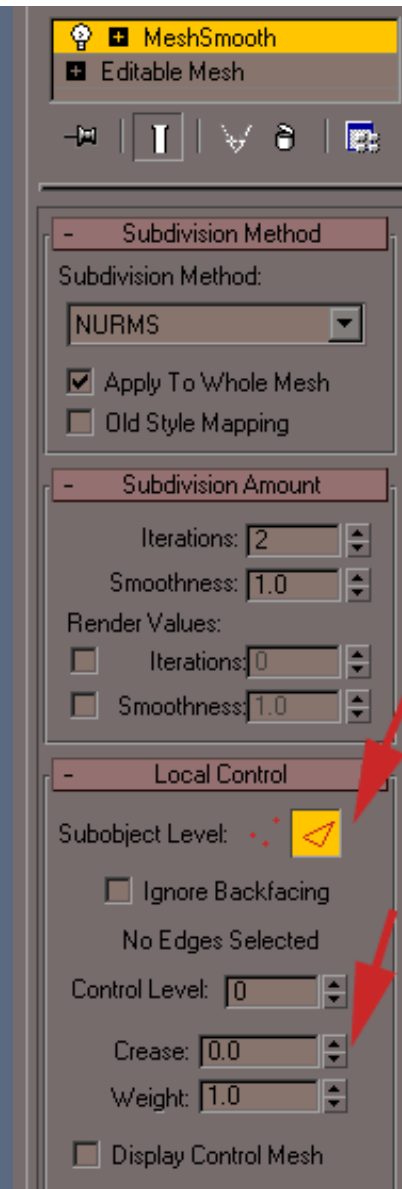
That in particular makes it possible to create edges more or less sharp, to locally decrease or increase the radius of curvature of smoothing.

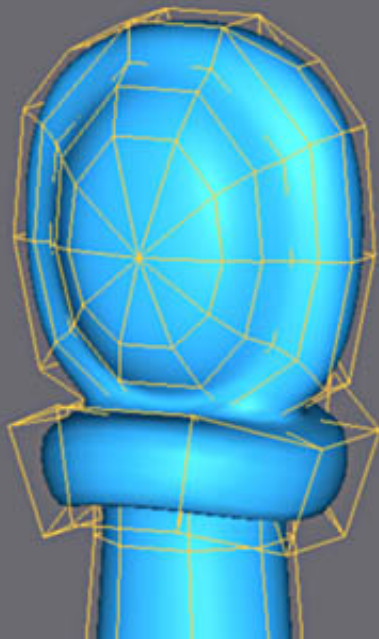
Subobject Level makes it possible to choose if you work with the vertexes or the edges.

Control Level makes it possible to choose its level of influence, namely 0 for the grid equivalent to the low poly (here in this tutorial one limits oneself to this level), 1 with the mesh resulting from an iteration 1, 2 of the mesh of an iteration 2 etc.

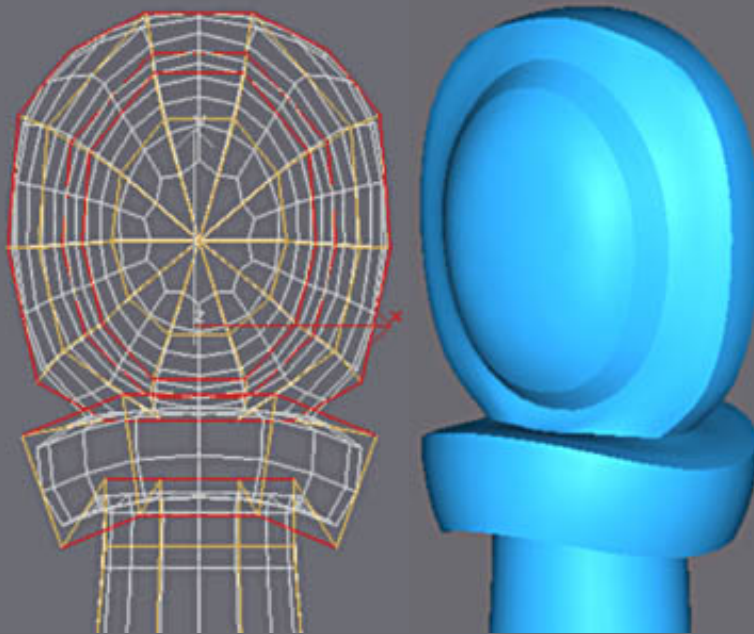
Of course you can also move the vertexes or edges but it should be better done on the low poly mesh

Crease and weight functions in Edge and Vertex mode makes it possible to indicate the level of distortion of the selection.





When one clicks on Edge or Vertex (while activating in this case Display Mesh Control) a low poly cage appears over the subdivided mesh.



Continue in Edge mode and select like opposite.

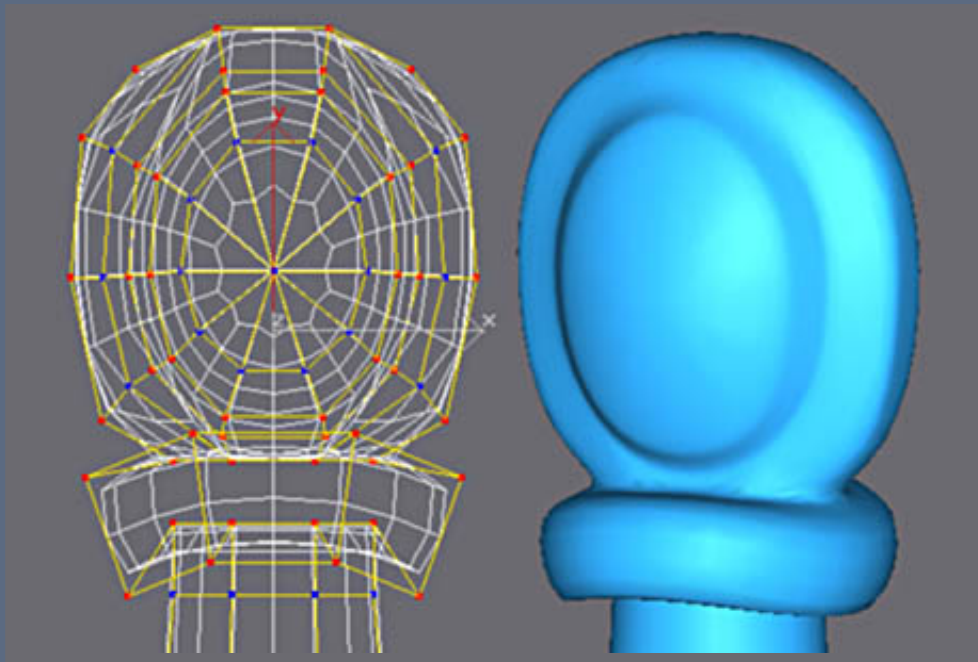
In the Crease field enter value 0.5.

In iteration 2 one sees the result clearly.

That resembles the use of Smoothing Groups for smoothing but it is less brutal, the edges are not confused with the low poly mesh as with Smoothing Groups.

Following this test you may now reset the deformations by clicking reset edge weights

This panel allows you to rest the influences without having with all to start again...



In vertex mode select the vertexes as opposite and enter value 20 the Weight field.

This time not of edge but the curve of smoothing is modified according to the attractile vertexes.

That makes it possible to avoid adding edges with chamferings for example to harden smoothing, and thus limiting the number of faces in the subdivided mesh.

Another point of interest for the later texturing stages, as you will see that more in detail in part 4 but it should be known that if one puts the co-ordinates of textures on the low poly mesh and then makes the subdivision with of Crease, Weight etc, those are absolutely not deformed. It is thus very practical because it is much easier to put co-ordinates and to improve them on a low poly mesh...

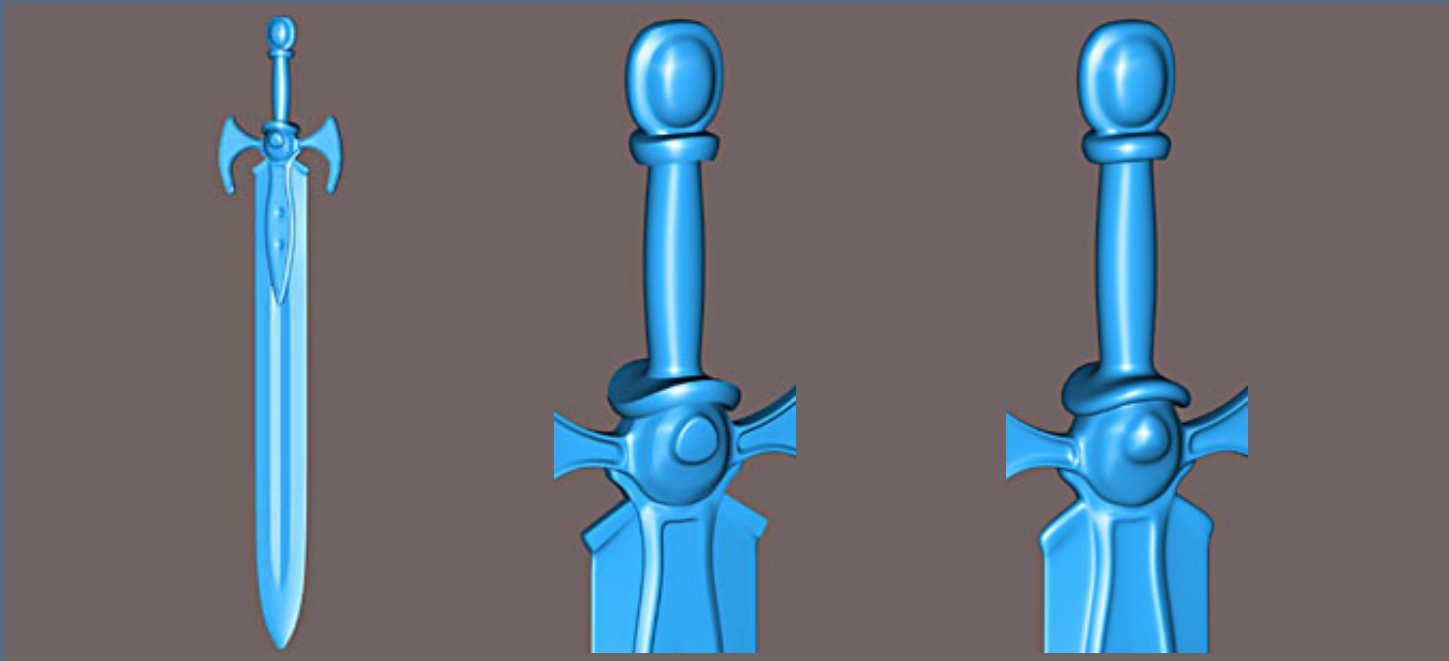
All that will be detailed in part 4.

It should be noted that the low poly mesh should not re-edited when you have started to adjust the Crease or the Vertexes in the meshsmooth modifier.

If there is a need to change the low-poly geometry (move, scale, rotate of the elements of the low poly) then you should not add vertexes, to insert edges etc.

By doing that you change the order of these elements (vertices) and Crease or Weight of Meshsmooth will start to apply to different parts of the mesh.

The edition of Meshsmooth is thus to be added to a finished a completed object.



The finished sword on meshsmooth iteration 2. Here I gave only one dimension an angular crease. By way of comparison the last image presents the sword with Meshsmooth by default.

Click on the images to see them in (very) large.

This technique of adjusting the subdivided object will be used for the remainder of the accessories, in particular the armour. That simplifies the adjusting and saves polygons for the final object.

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Email: [Michel Roger](mailto:Michel.Roger@mr2k3d.com) --- Web: [mr2k3d.com](http://mr2k3d.com)

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Joan of Arc  
by  
Michel Roger

3ds Max



*Armour legs*



## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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### Modeling of the armour of the legs.

To model the accessories you need be able to permanently see the picture of Joan.

[Download this here.](#)

Go in the Utils Panel and click on Asset Browser.  
If it is not present, clicks on More... or add it in the list of Utilities .

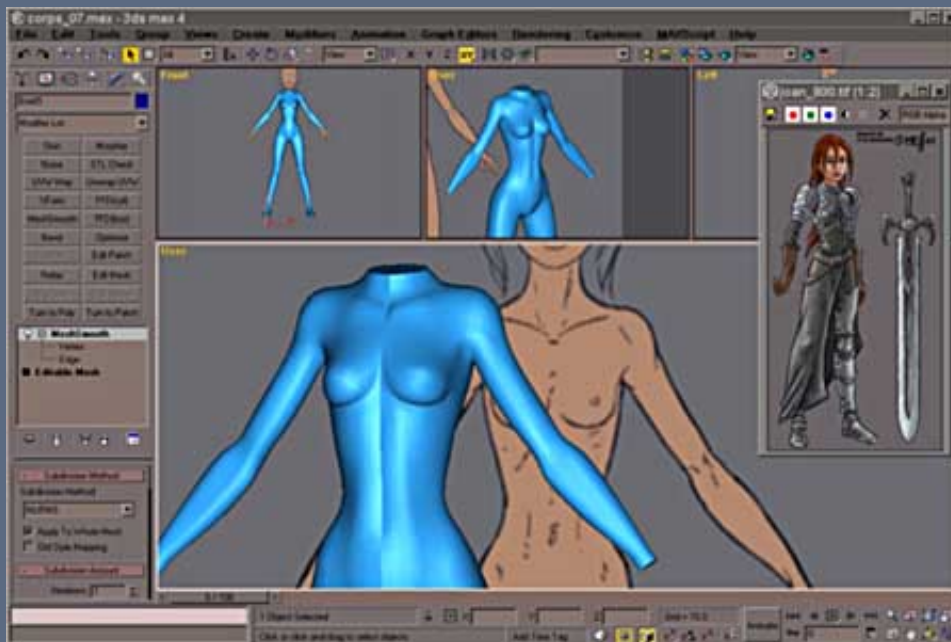




Asset Browser makes it possible to visualize display files, the ones supported by max.

It also allows you to surf on the Net in a window of max but it is necessary to have a large screen for really benefitting from it.

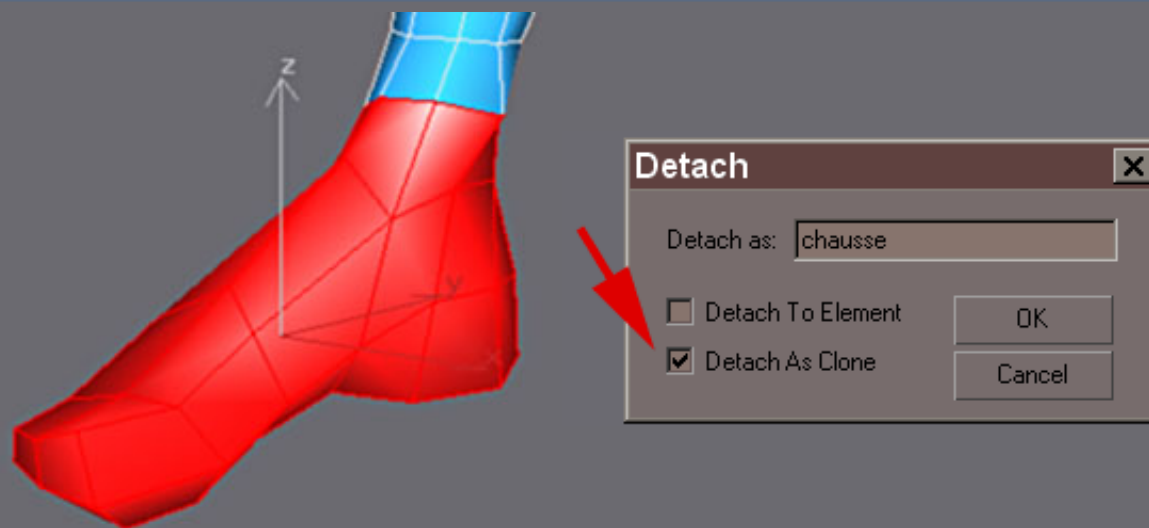
Click on Joan in the folder where you saved the image.



There is now a window with the image always visible .

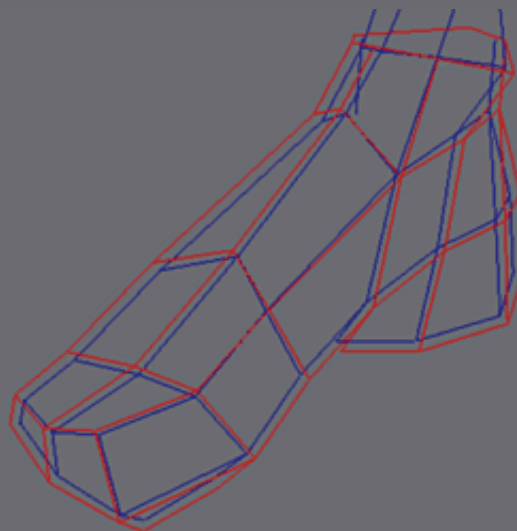
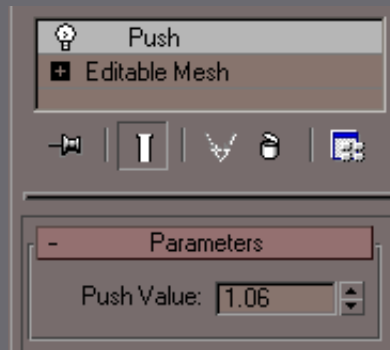
One can zoom in and out with  
Ctrl click left or right.

You are now ready to start.



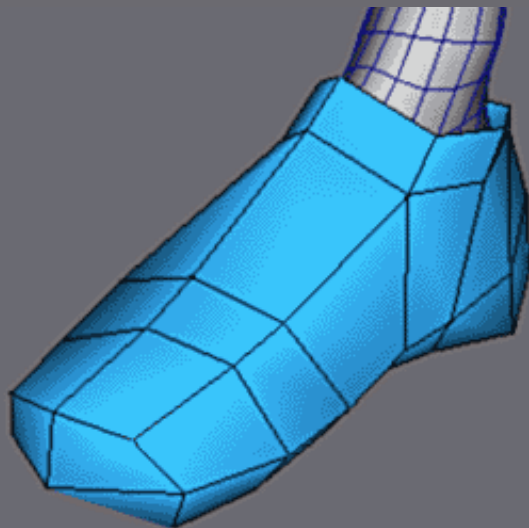
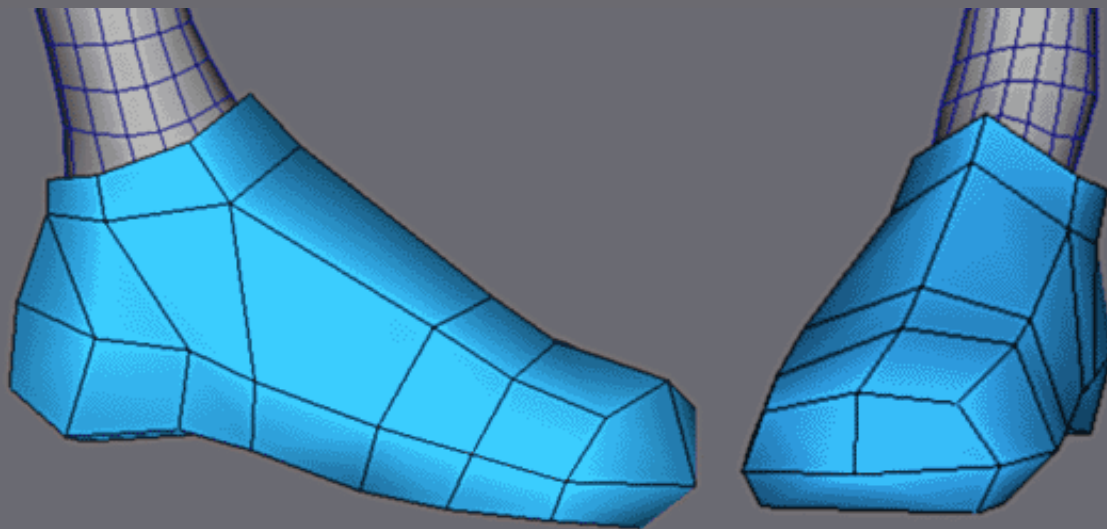
For the parts of the leg armour you will use a detached foot from the body mesh.

This is a time saver. For that, select the faces in red like above and make Detach by ticking Detach Have Clone. That creates an object with the faces selected while preserving the intact starting object.

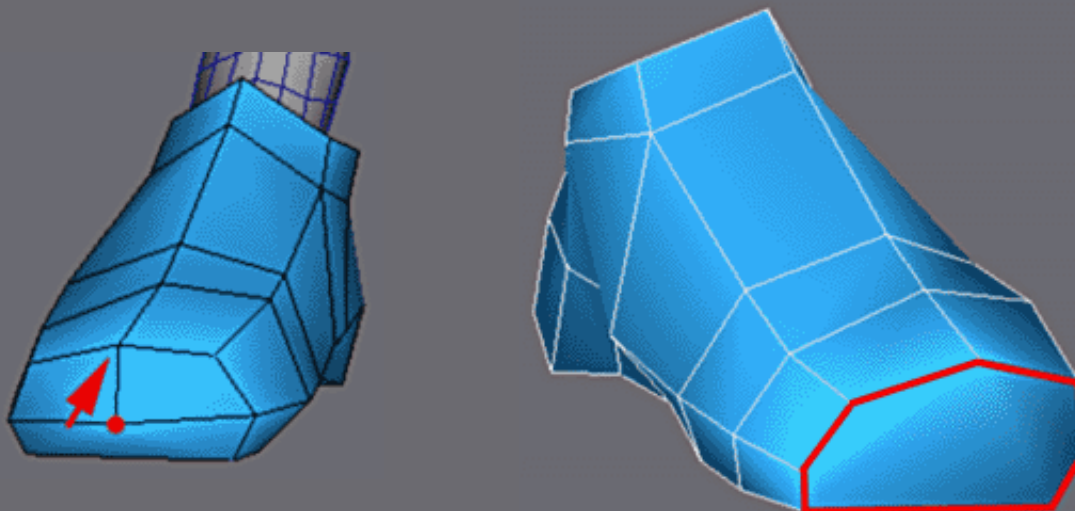


The shoe must cover the foot perfectly, apply a modifier Push to the object and vary the value of Push to "inflate" the grid.

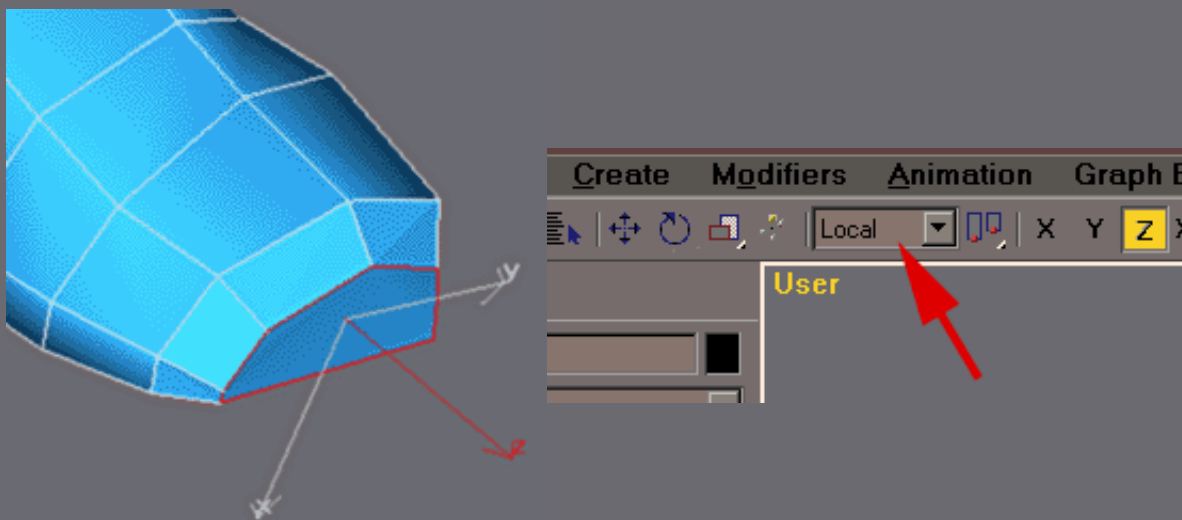
With the difference of Scale which increases the volume of an object compared to a fixed point, Push increases volume according to the direction of the normals of each vertex. The object dilates.



Adjust the vertexes to give a good form to the shoe.

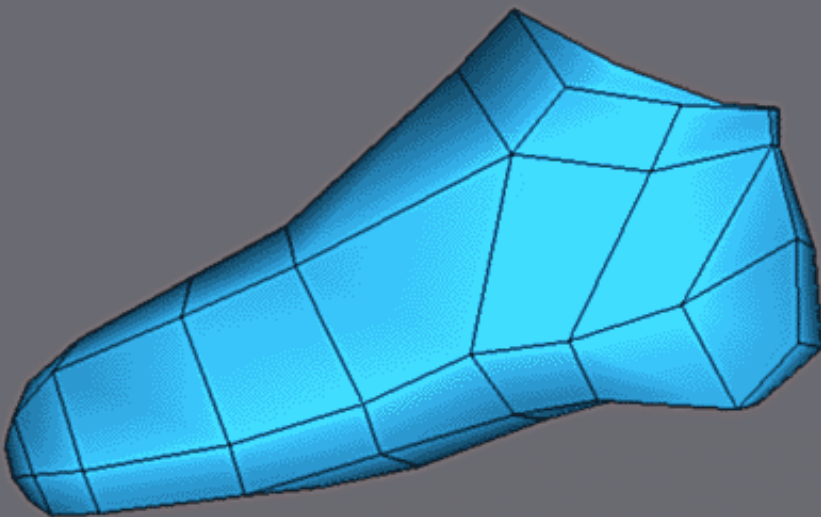
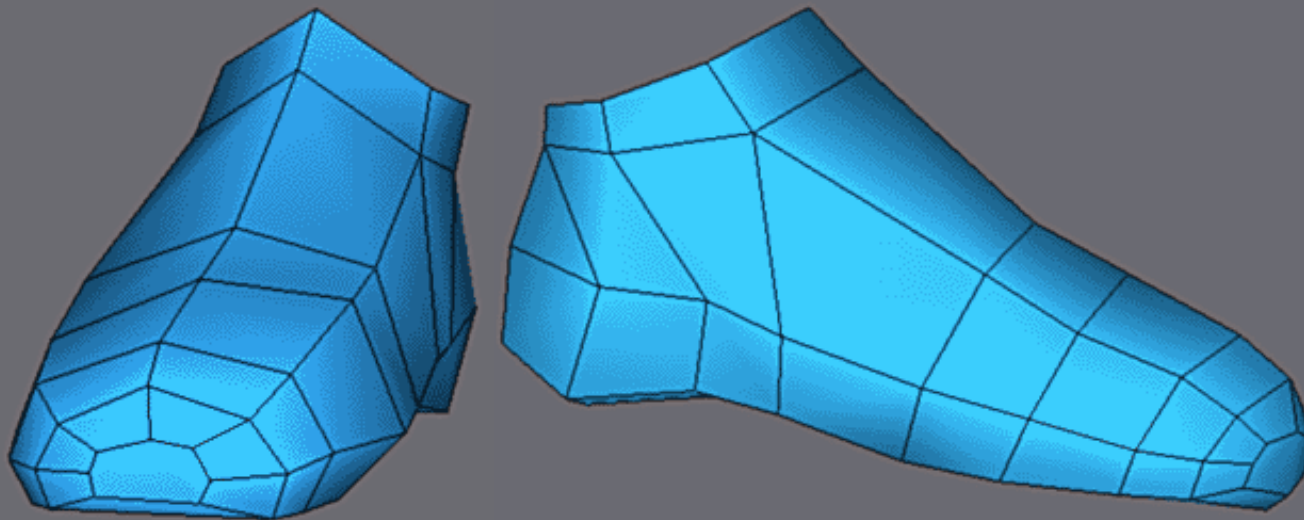


Simplify the geometry by welding the vertex of the model (weld target) to form a polygon at the end.  
Also make in align to a flat plane.



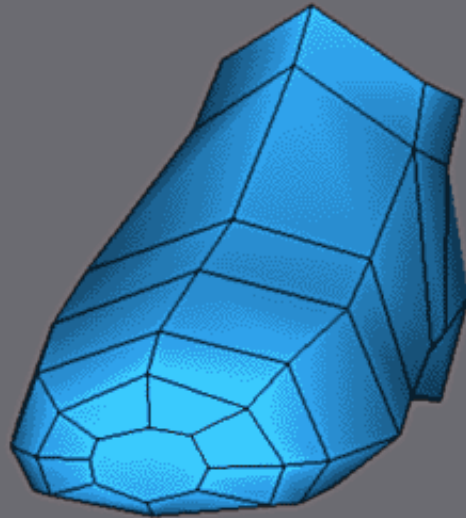
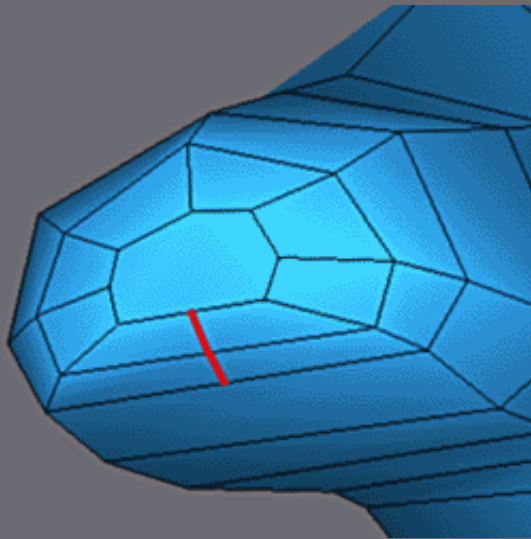
Extrude this polygon in local mode (extrudes local) and apply Bevel.

It should be noted that one can improve the Extrudes thereafter by activating the Local axis Move, axis Z representing the direction of extrusion (and also the normal of surface).

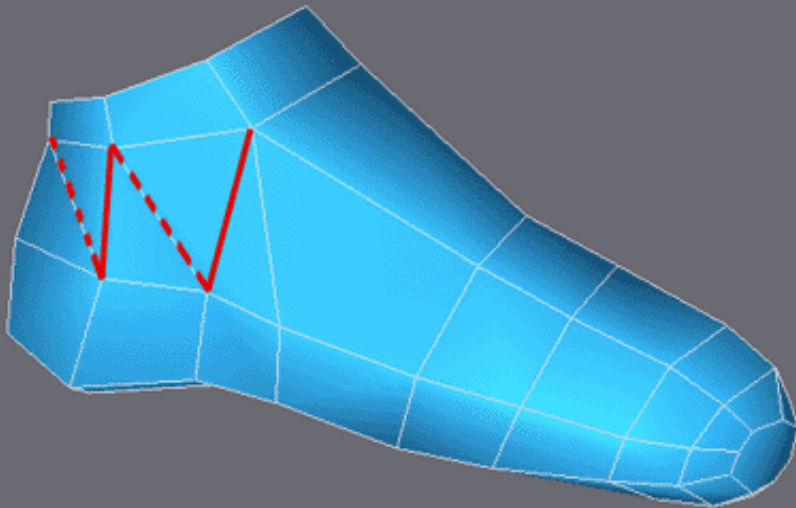


Extrude and Bevel again.  
Adjust the vertexes to have this  
form.



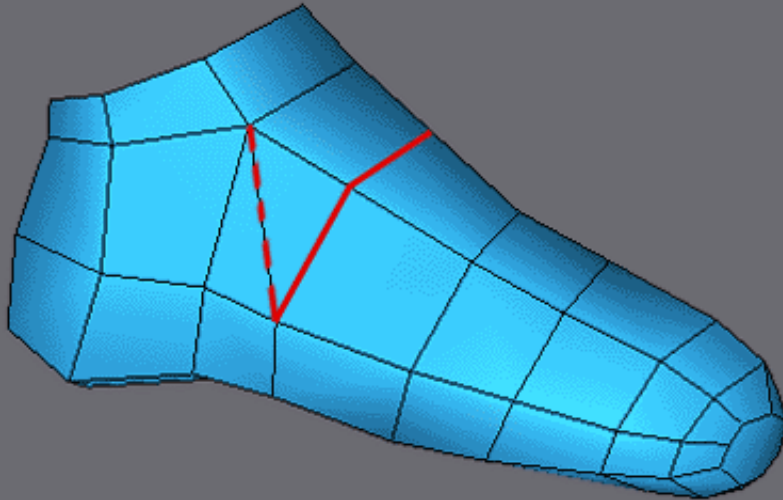


Insert vertexes with Cut like shown and finish the round-off of the point of the shoe.



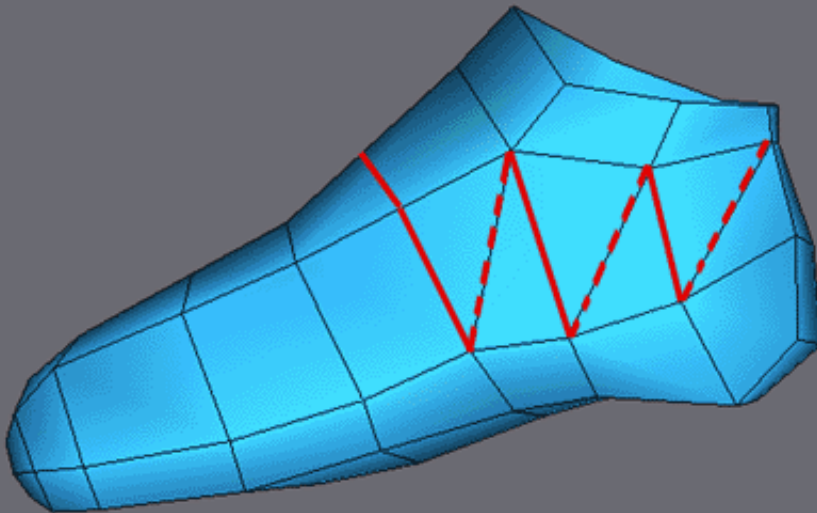
Make visible the edges in red  
and invisible the edges in dotted  
lines.





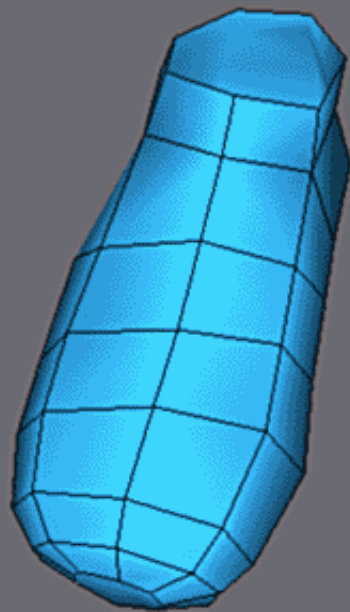
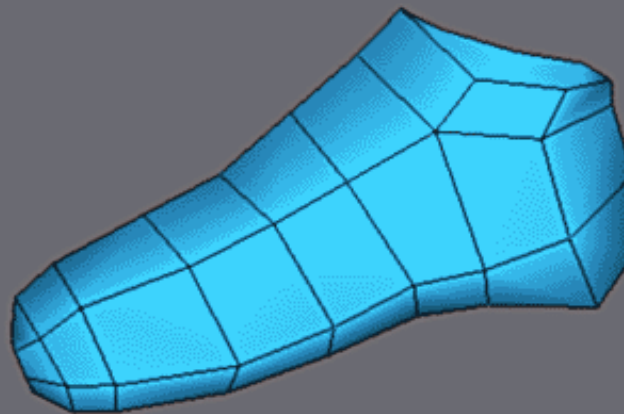
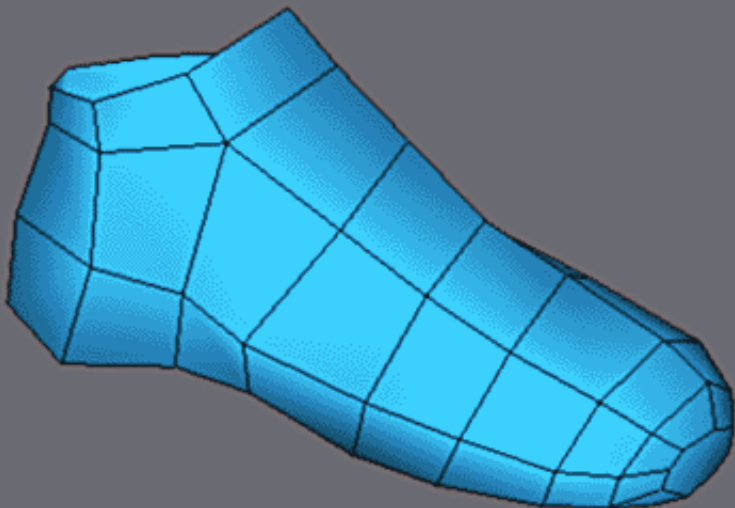
With Cut divide the faces as opposite.

Hide the dotted edge.

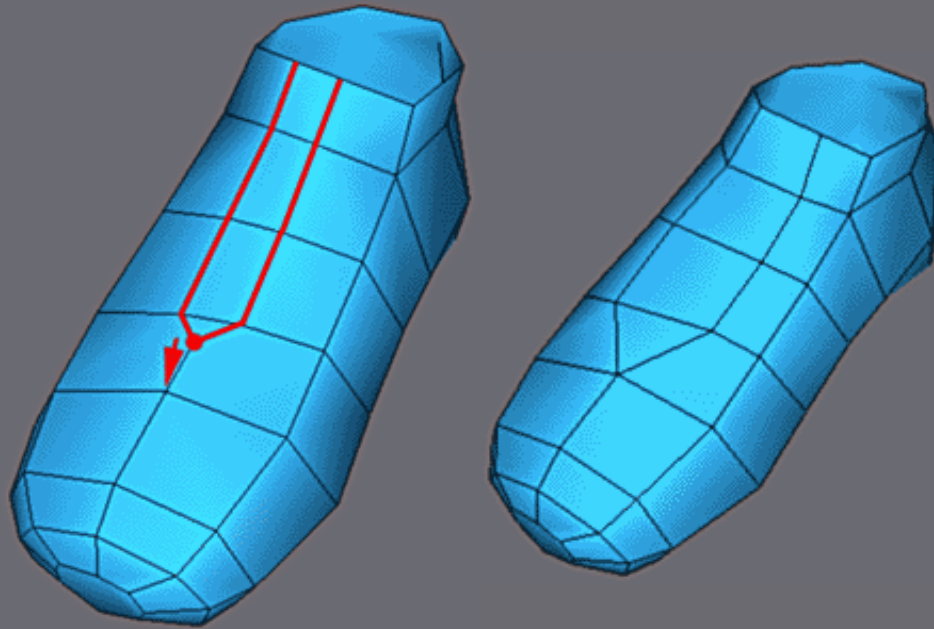


Similar operations for the inside of the shoe.

You find you have a maximum of Quads which is always good for future smoothing.



Aspect of the shoe.



With Chamfer Edge, duplicate like above and weld the extreme vertex with Weld Target.

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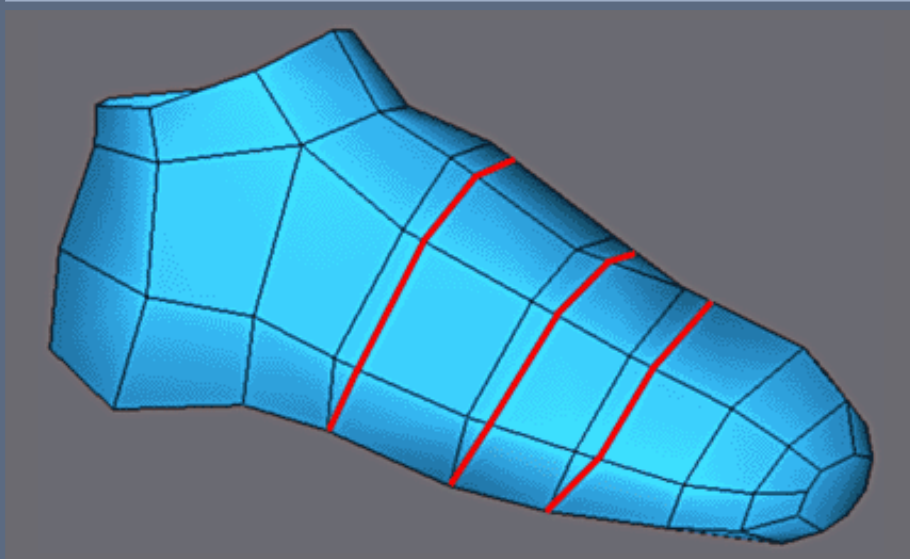
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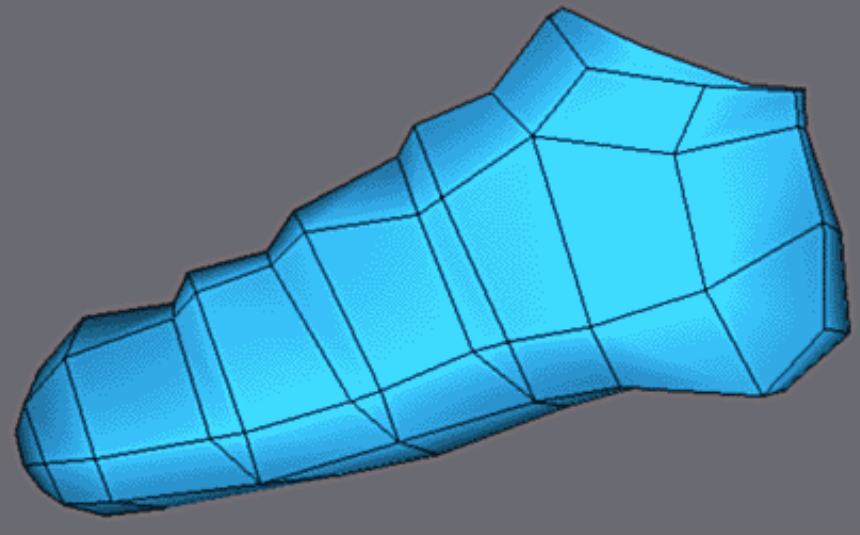
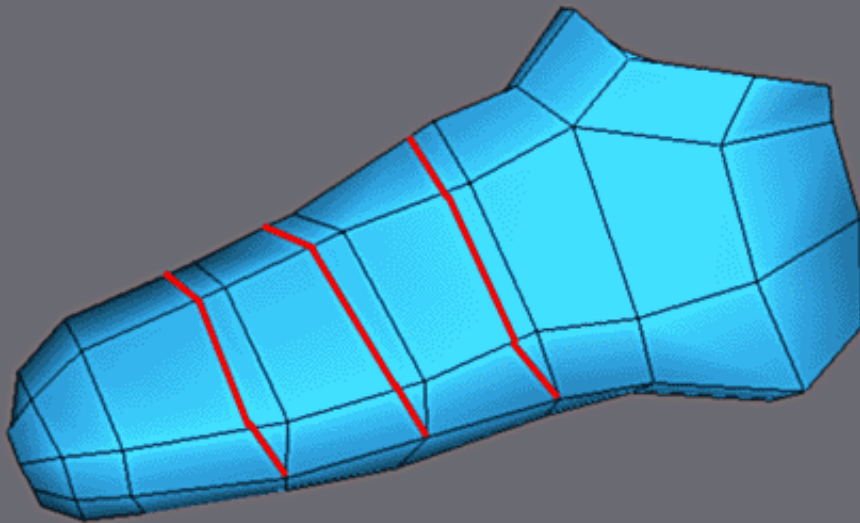
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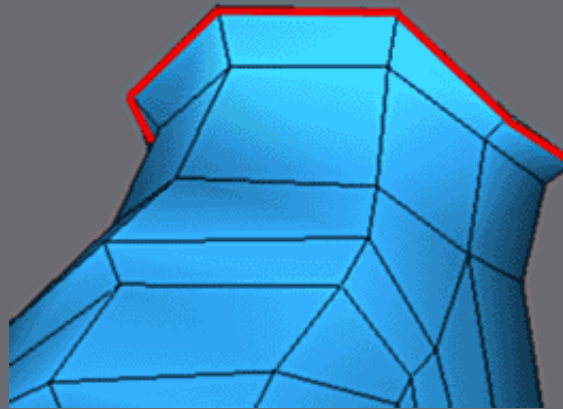
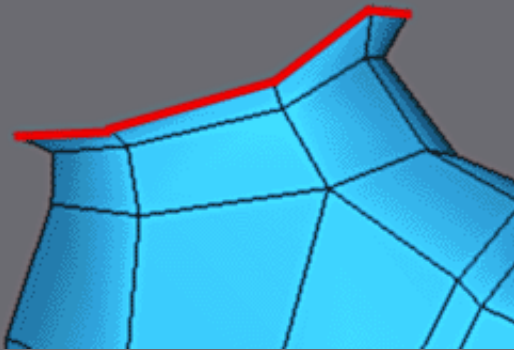
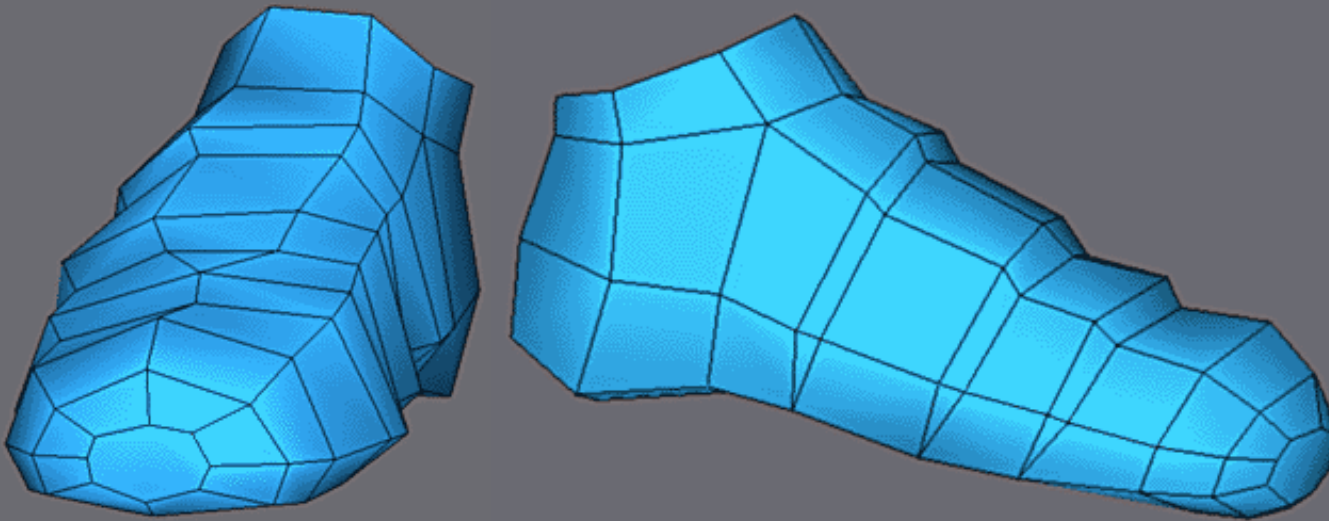
#### Modeling of the armour of the legs.



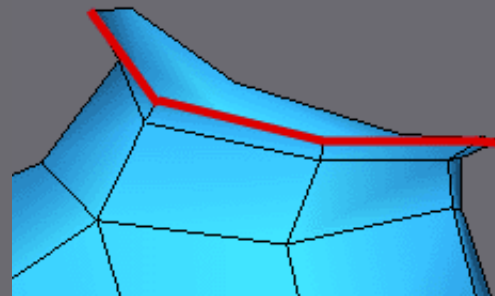
Insert the edges in red on the top as shown

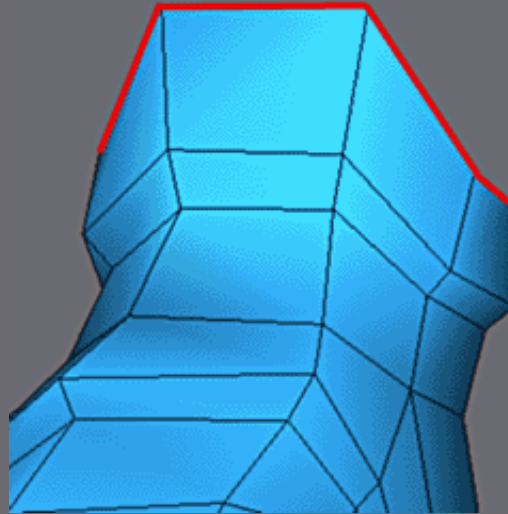
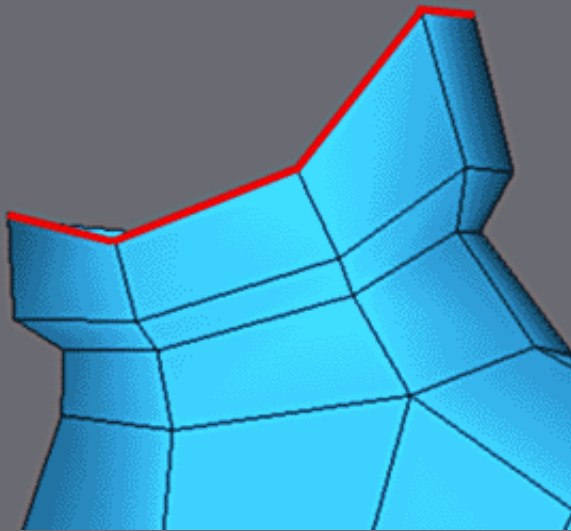


Adjust the vertexes as on the images

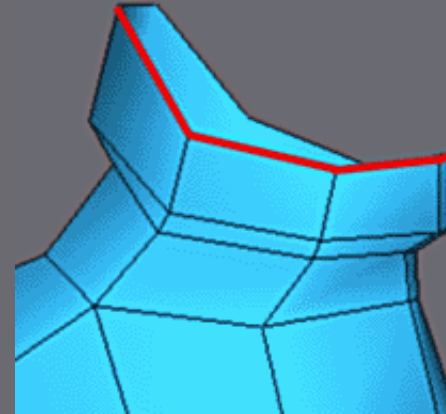


On the part of the ankle, extrude and adjust the edges as on the images.





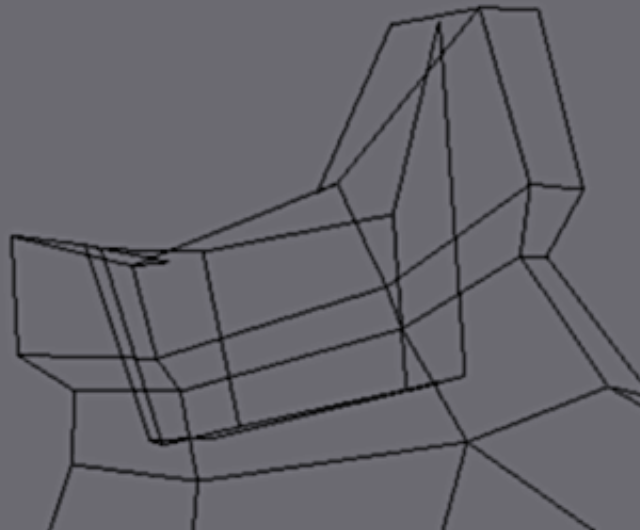
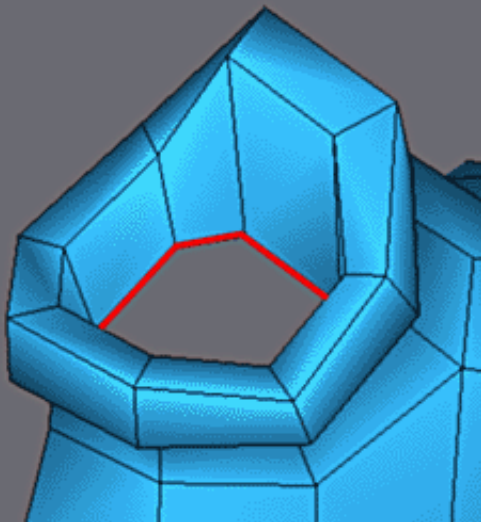
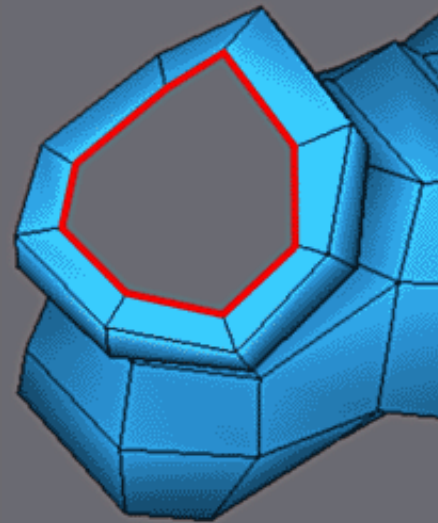
Cotinue as here.



For the edge, uniform Shift+Scale to extrude inwards

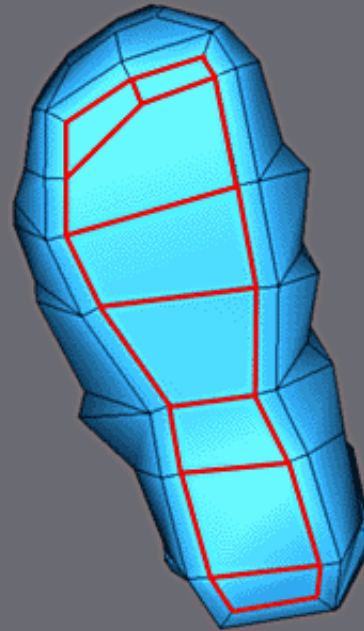
Adjust to have a regular edge.





Finally to finish, a last extrusion downwards to simulate the interior of the shoe. Adjust the vertexes to result in a more regular form.

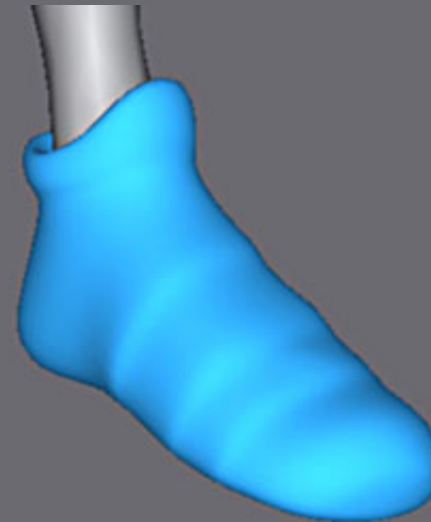
Make an extrusion for the sole with one Extrude and Bevel only.

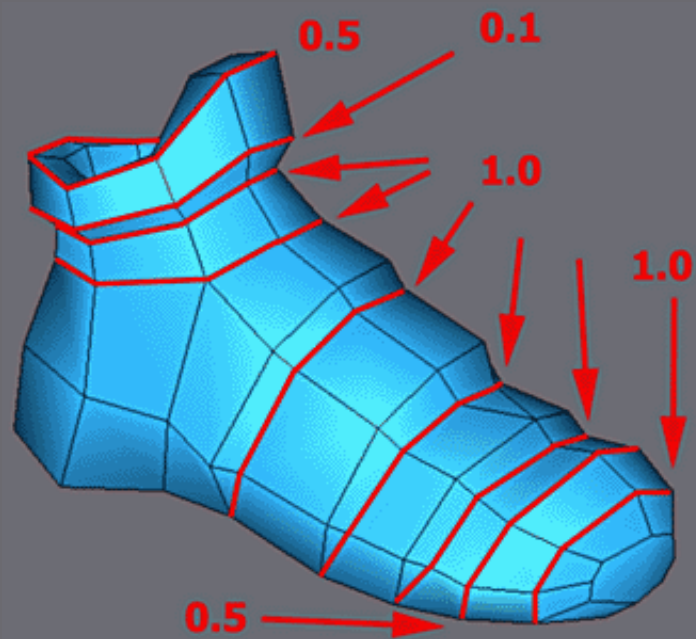


To preivew the final mesh after smoothing, apply Meshsmooth temporarily.

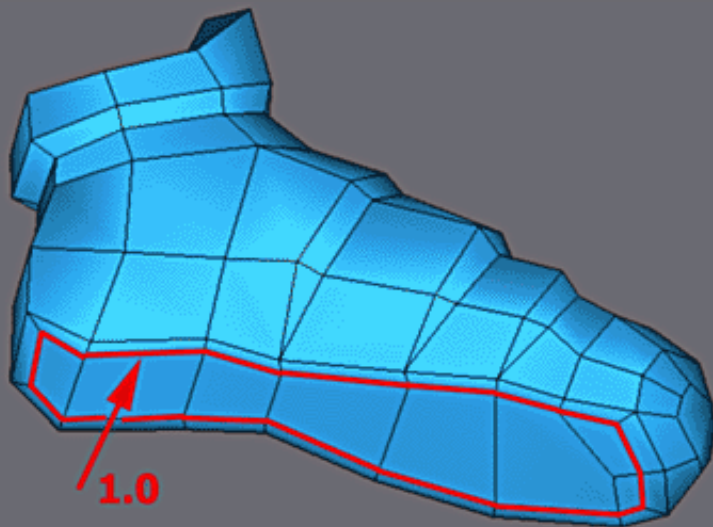
Possibly adjust the vertexes of the LPM cage to give a more regular form.

(see [here](#) for more precision ).

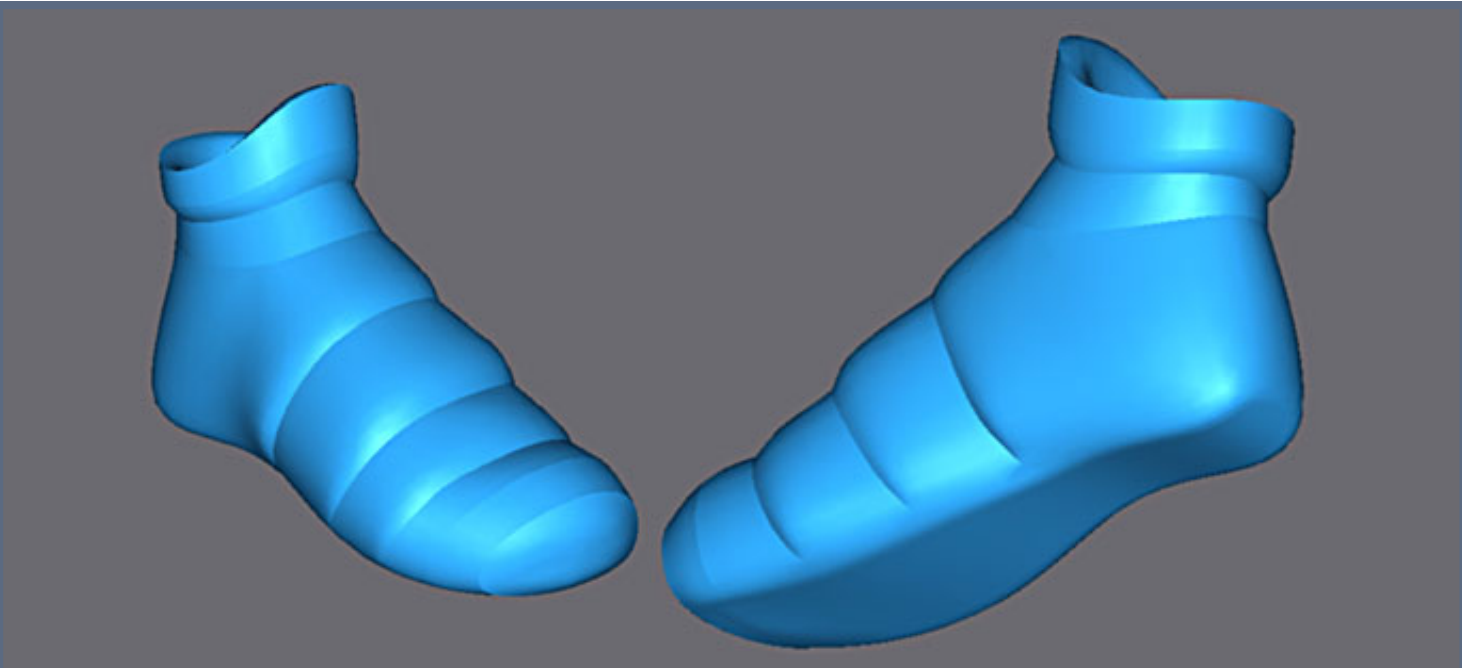




Here are the Values of the Crease parameters in the Meshsmooth modifier.



(see [here](#) for more precision ).



The look of the shoe with finalised creases.  
As usual preserve the intact stack with Editable Mesh and Meshsmooth.

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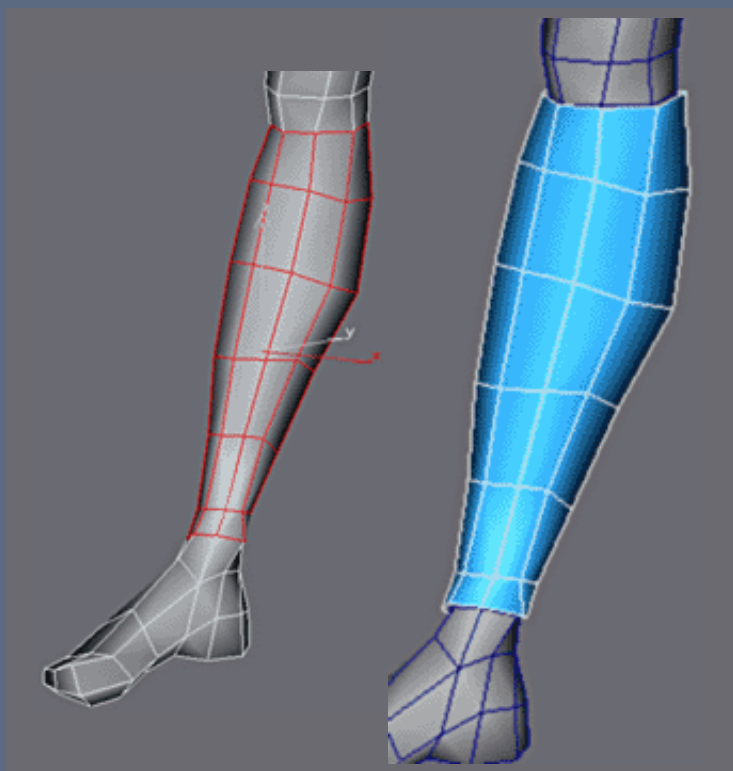
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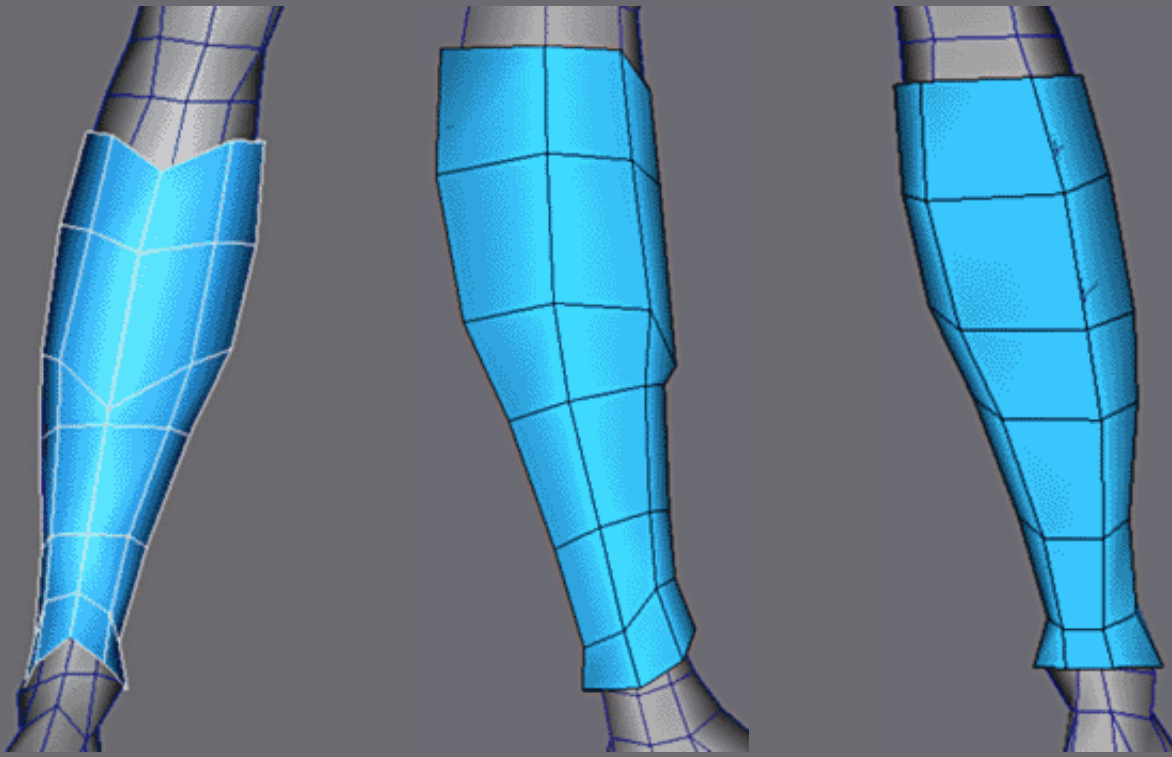
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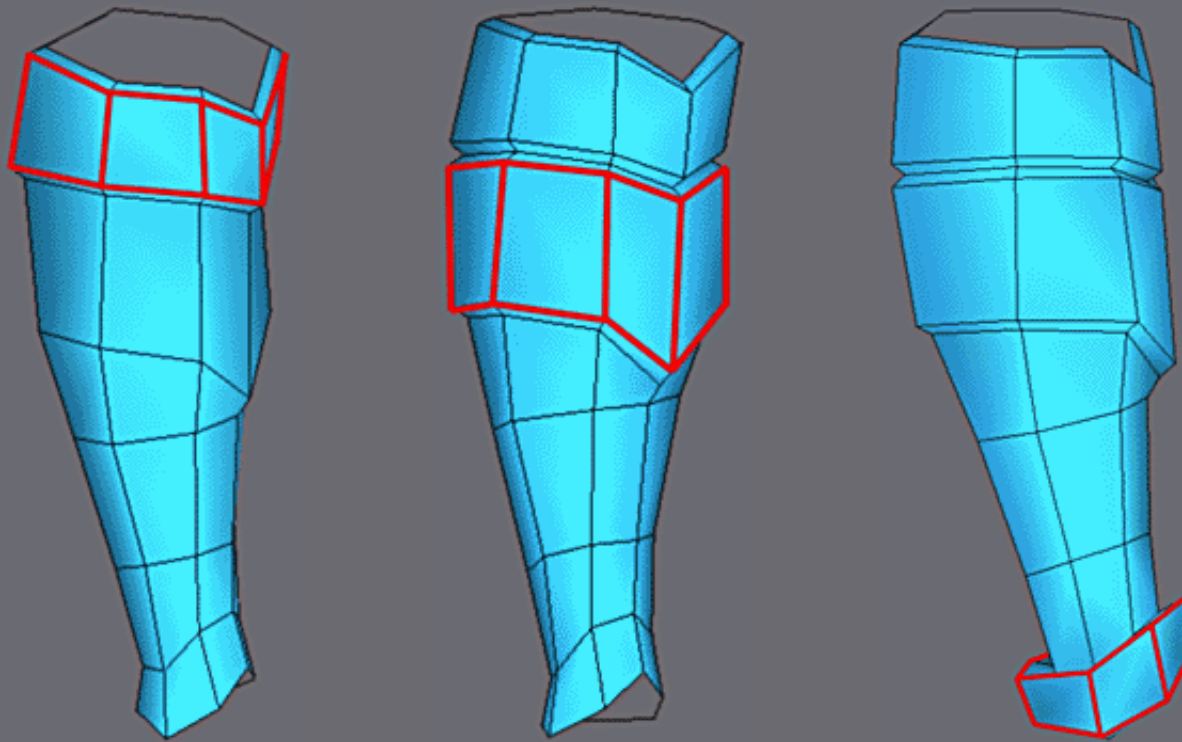
#### Modeling of the armour of the legs.



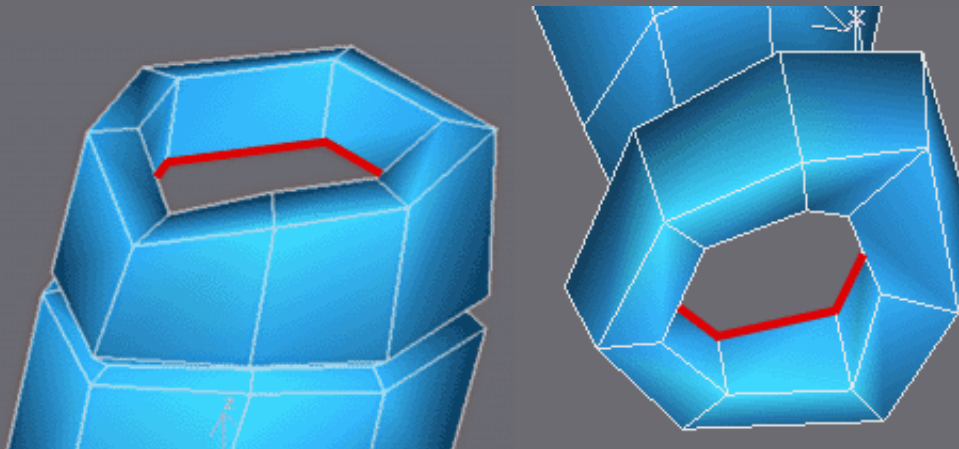
Similar procedure for the armour of the leg, select the faces in red, Detach to a Clone and apply Push.



Adjust the vertexes like above in the front views, with to obtain these dimensions.

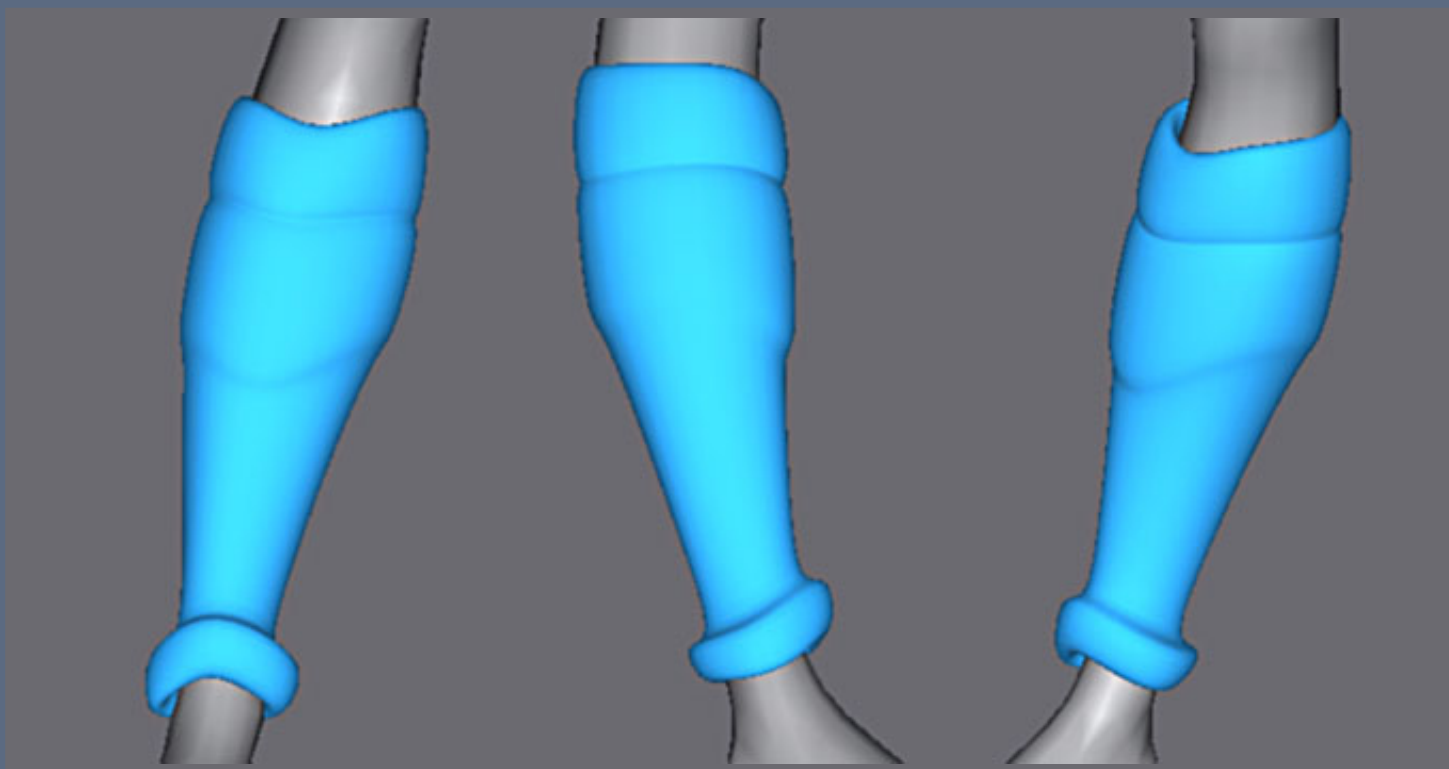


Extrude the faces as above each time with Bevel.



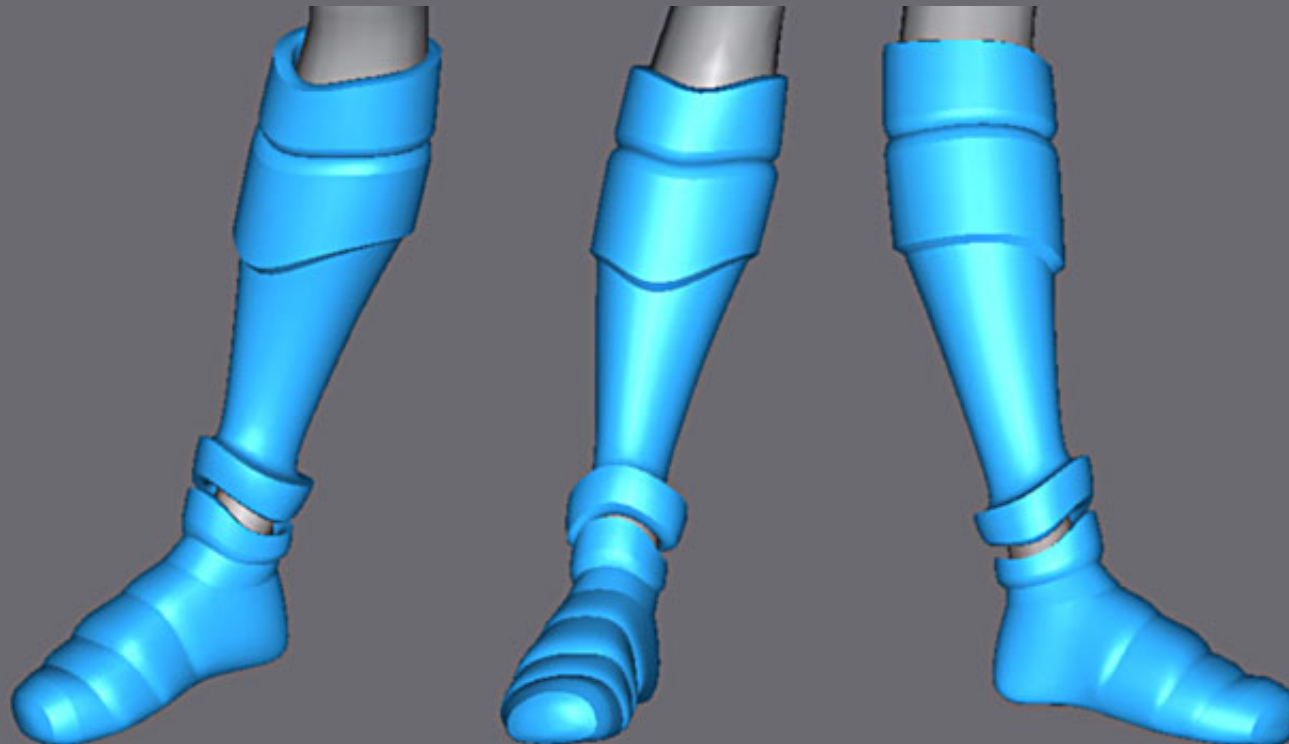
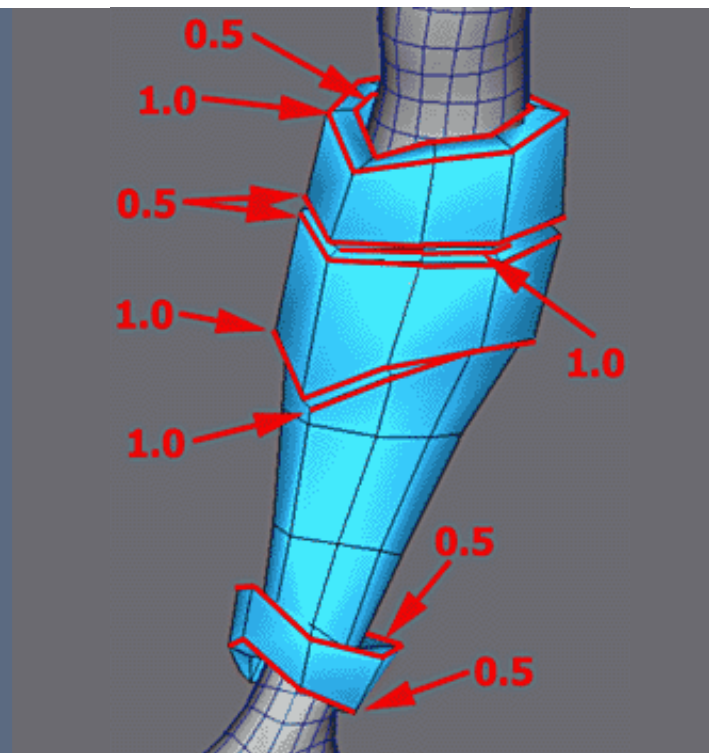
Extrude an edge then back for the interior.



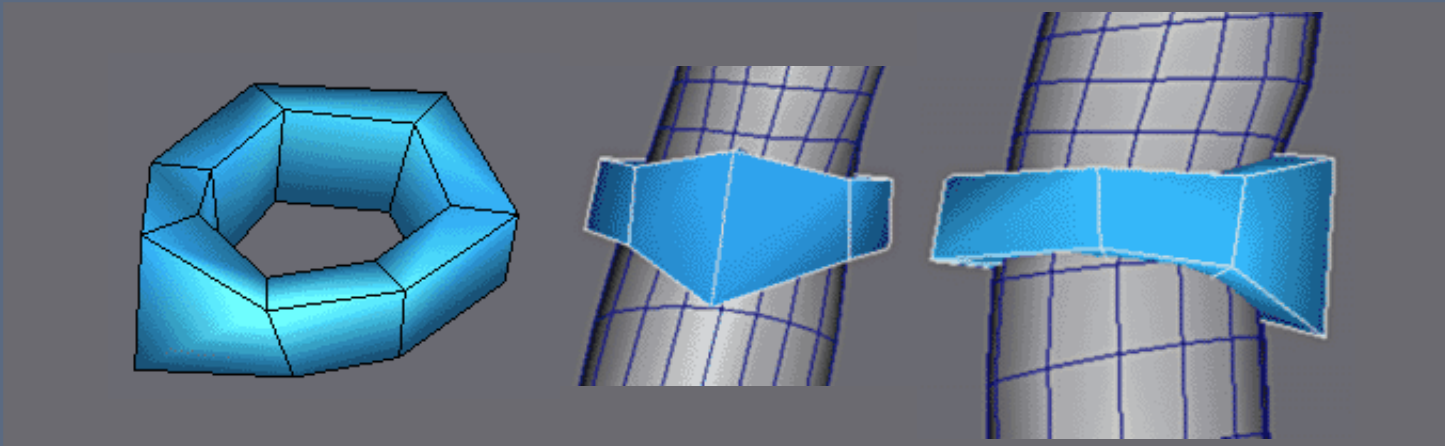


Apply Meshsmooth, improve the positions of the vertexes of the low poly mesh if necessary until you have a regular form from every angle.

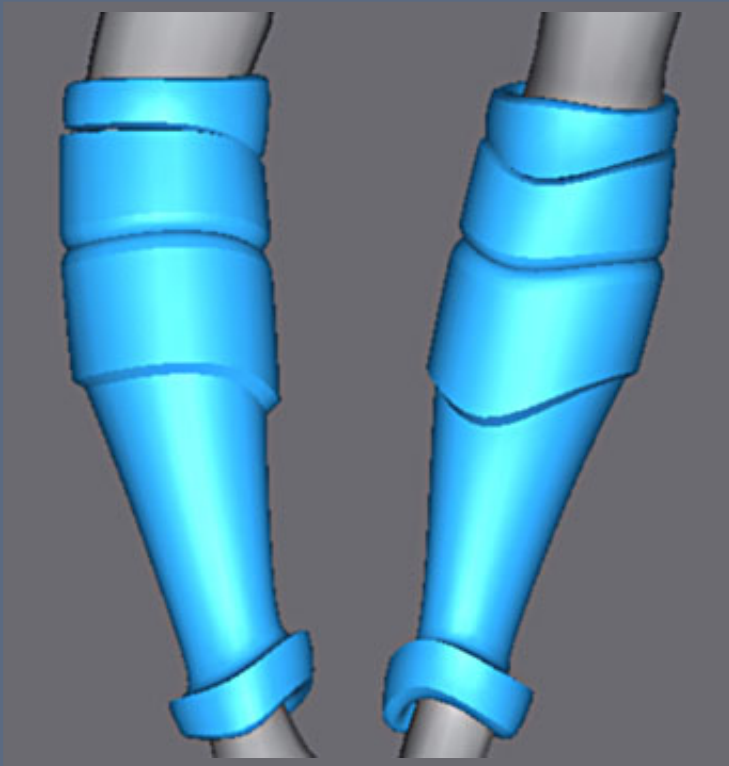
Crease Values to accentuate the edges with Meshsmooth.



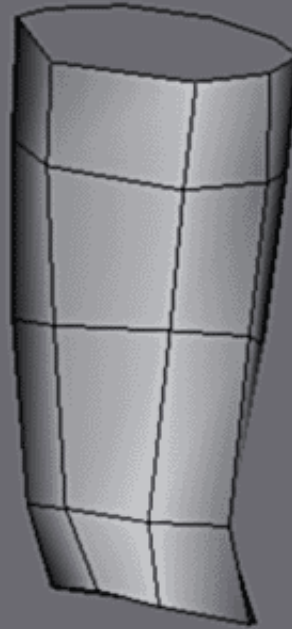
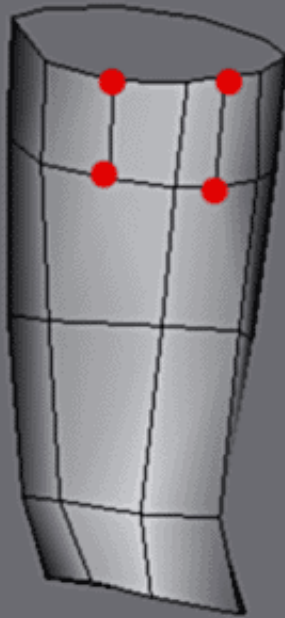
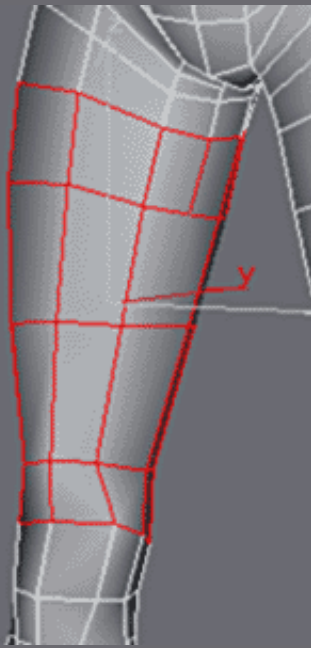
The armour of the finished leg.



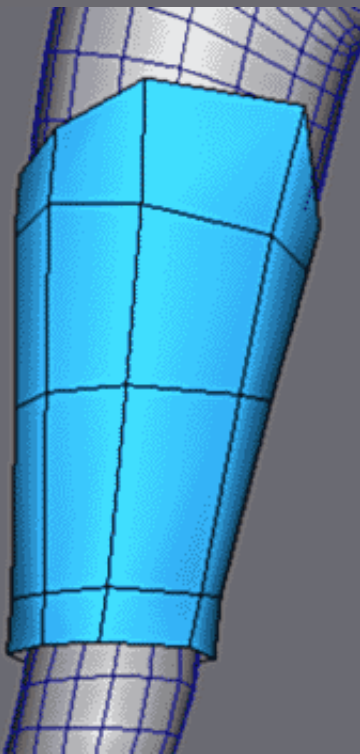
For this small part of armour to the top of the legging, start from a primitive Tube with 7 dimensions and adjust as above.



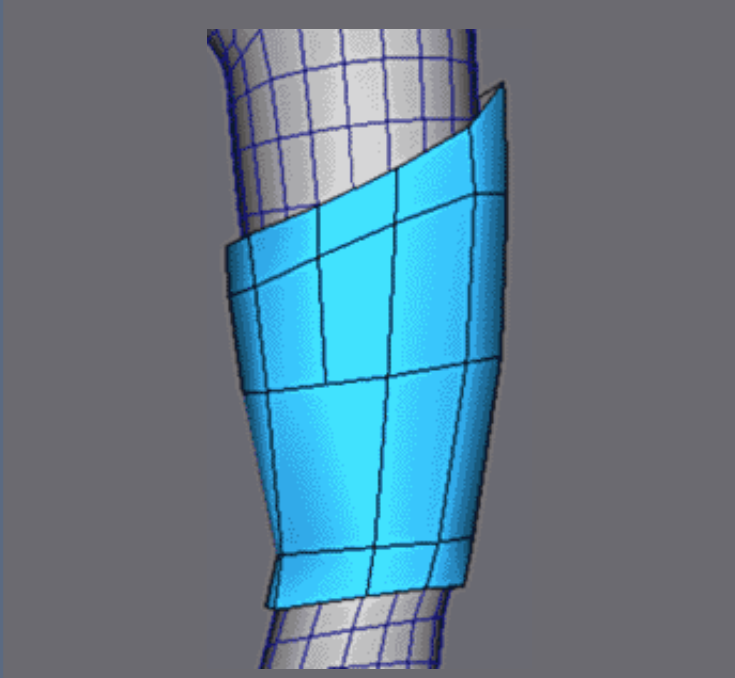
Finish the adjustment of the vertexes so it ties in with the legging.



For the armour of the thigh, same procedure as before.  
Simplify the geometry by welding the vertexes marked in red (Weld Target).



Start to adjust the armour like opposite so the faces  
have these dimensions.



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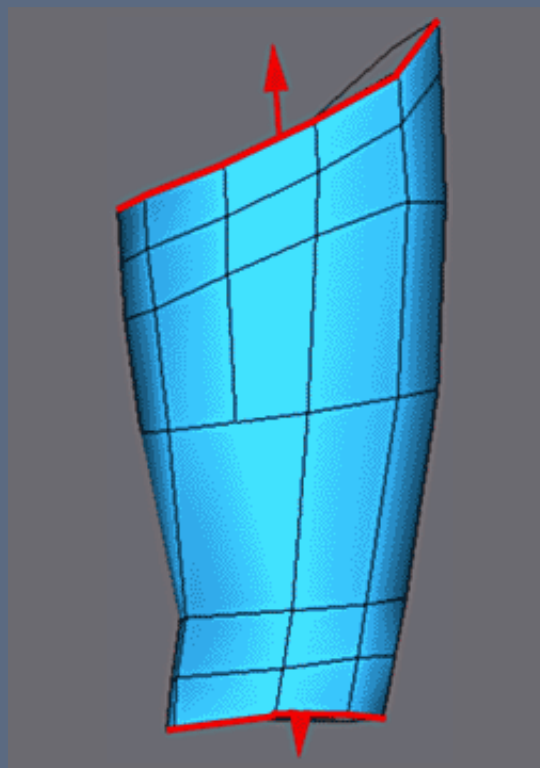
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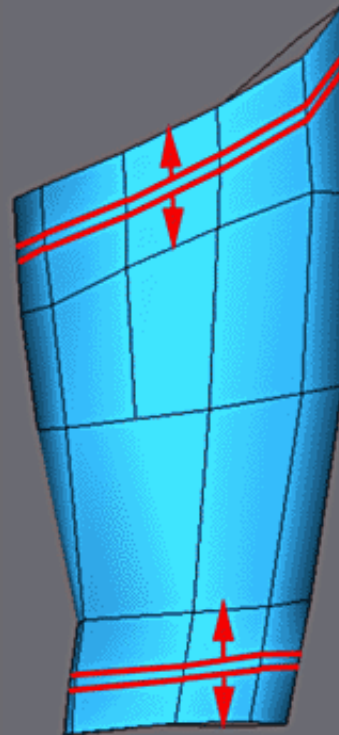
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### Modeling of the armour of the legs.

Extrude the edges once at the top and bottom.

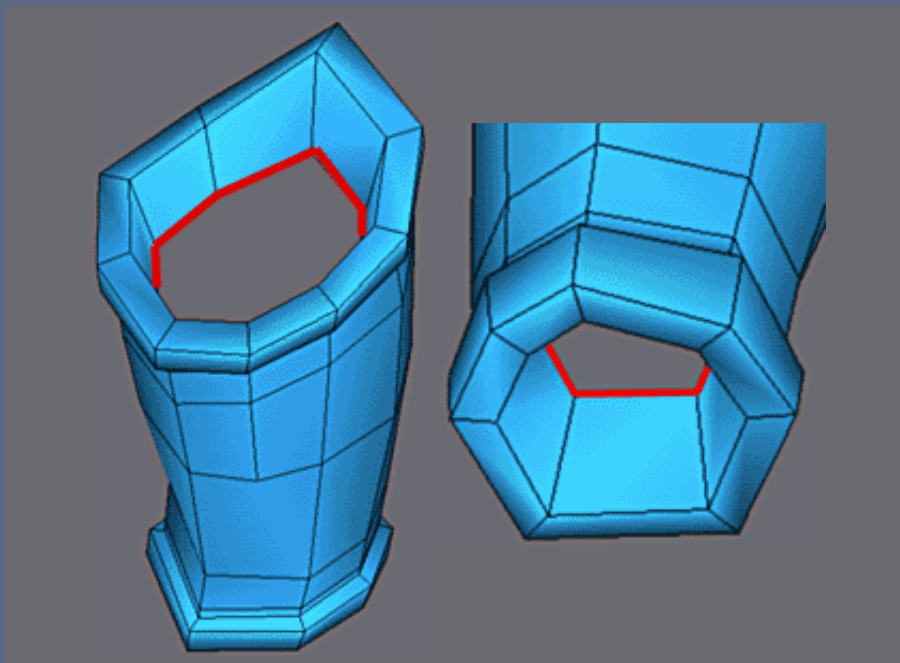
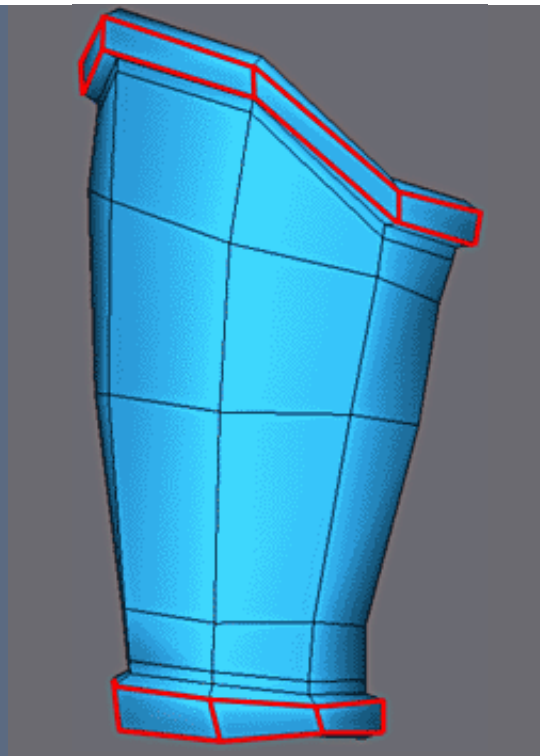


With Chamfer Edge, duplicate the edges as opposite.

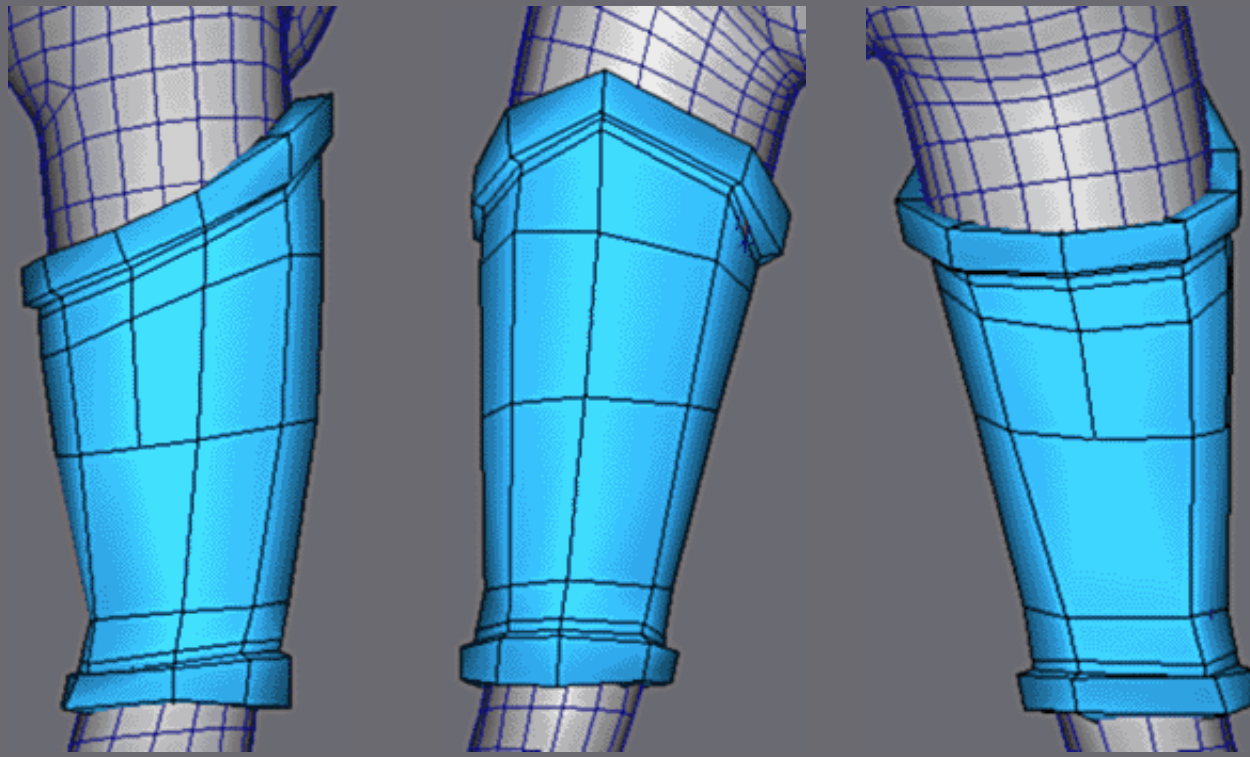


Extrude and make Bevel on the band of faces in top and bottom of the armour.

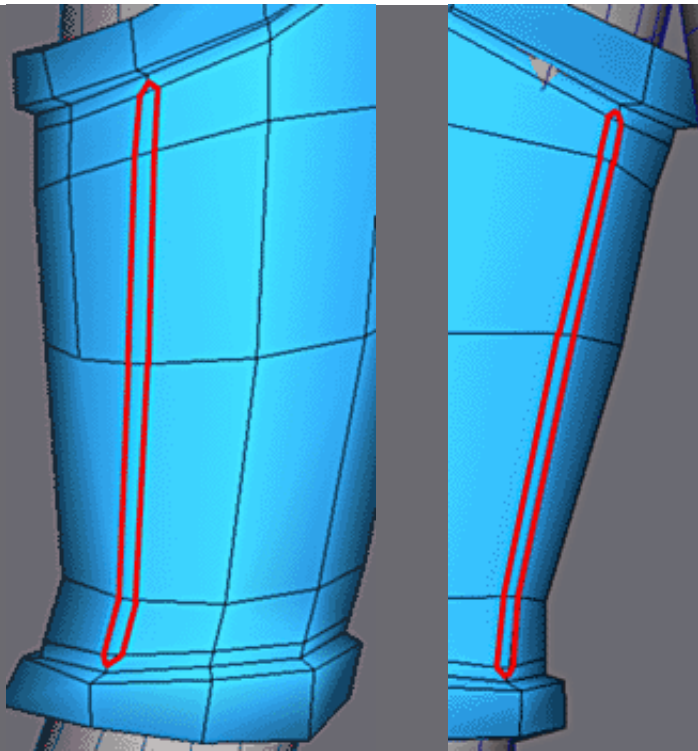




Extrude the interior.

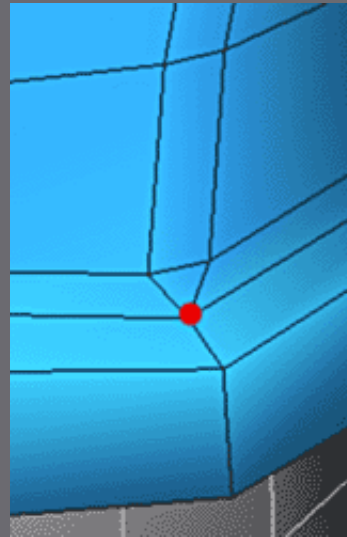


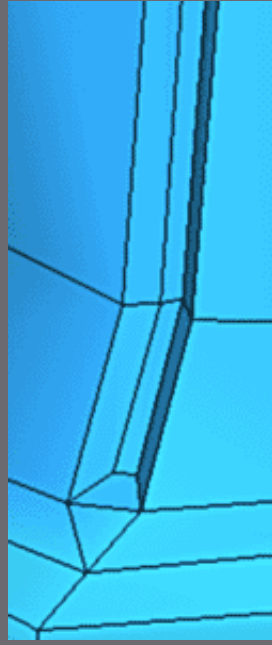
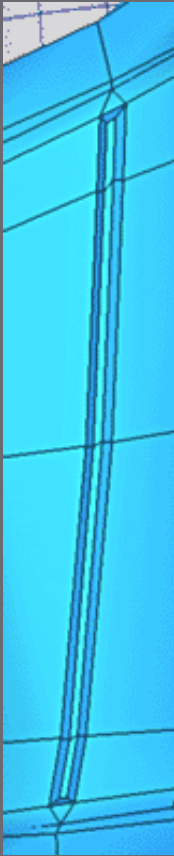
Make the adjustment according to the body, for with dimensions in each view



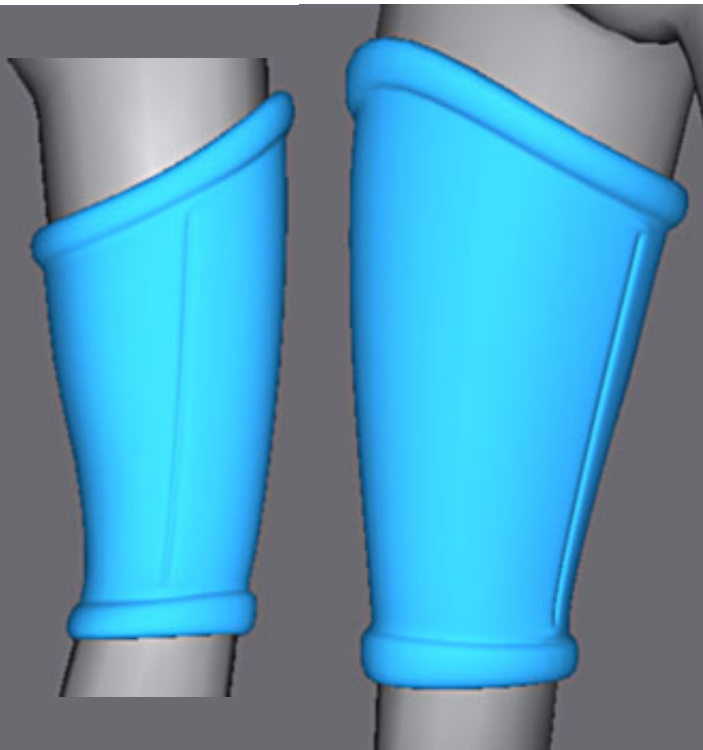
Duplicate the edges on both sides  
armour.

Weld the vertex of each end as opposite.



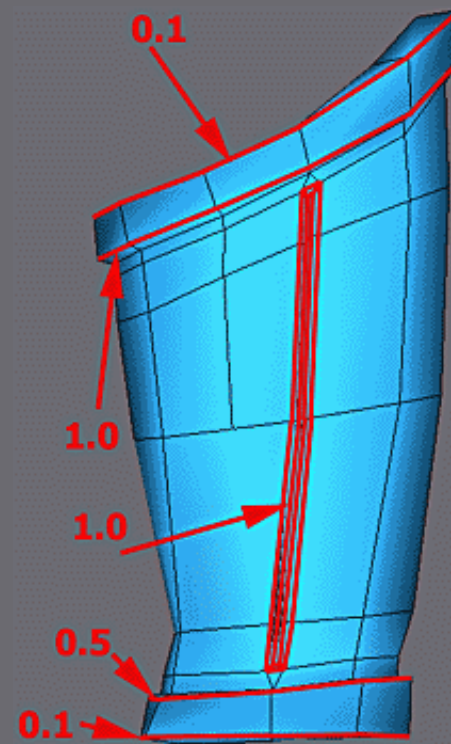


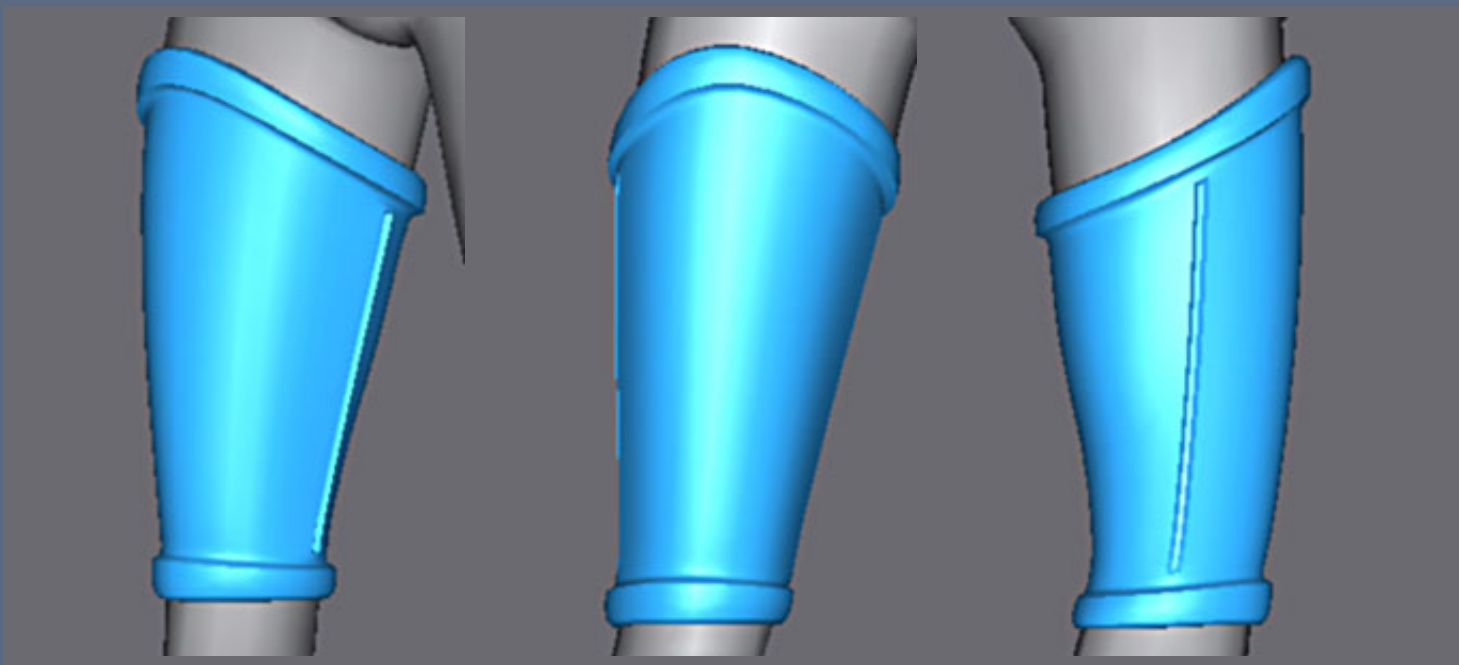
Finally Extrude and Bevel to build a groove.



Apply Meshsmooth and finish the vertex adjustment

Crease values of Meshsmooth to accentuate the edges.





The armour of the finished leg.

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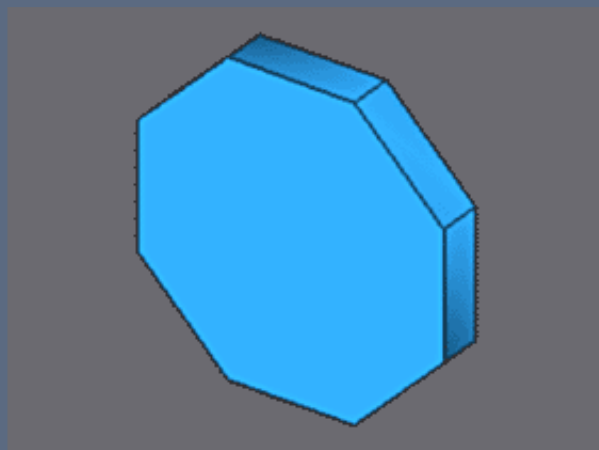
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### Modeling of the armour of the legs.

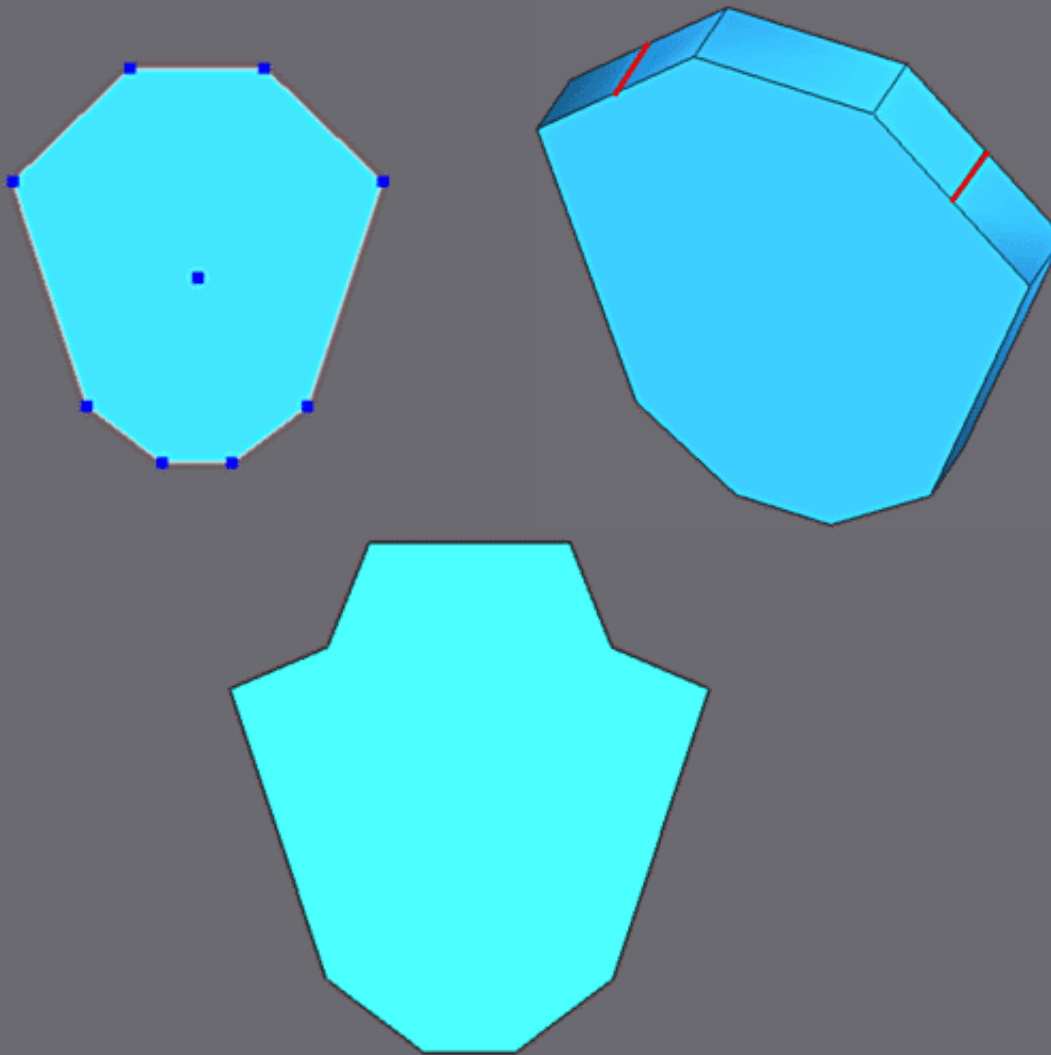
With the end of the knee protection

Make a primitive Cylinder 8 segments

Apply a rotation of 1/16 of turn i.e.  $22.5^\circ$  to the y axis



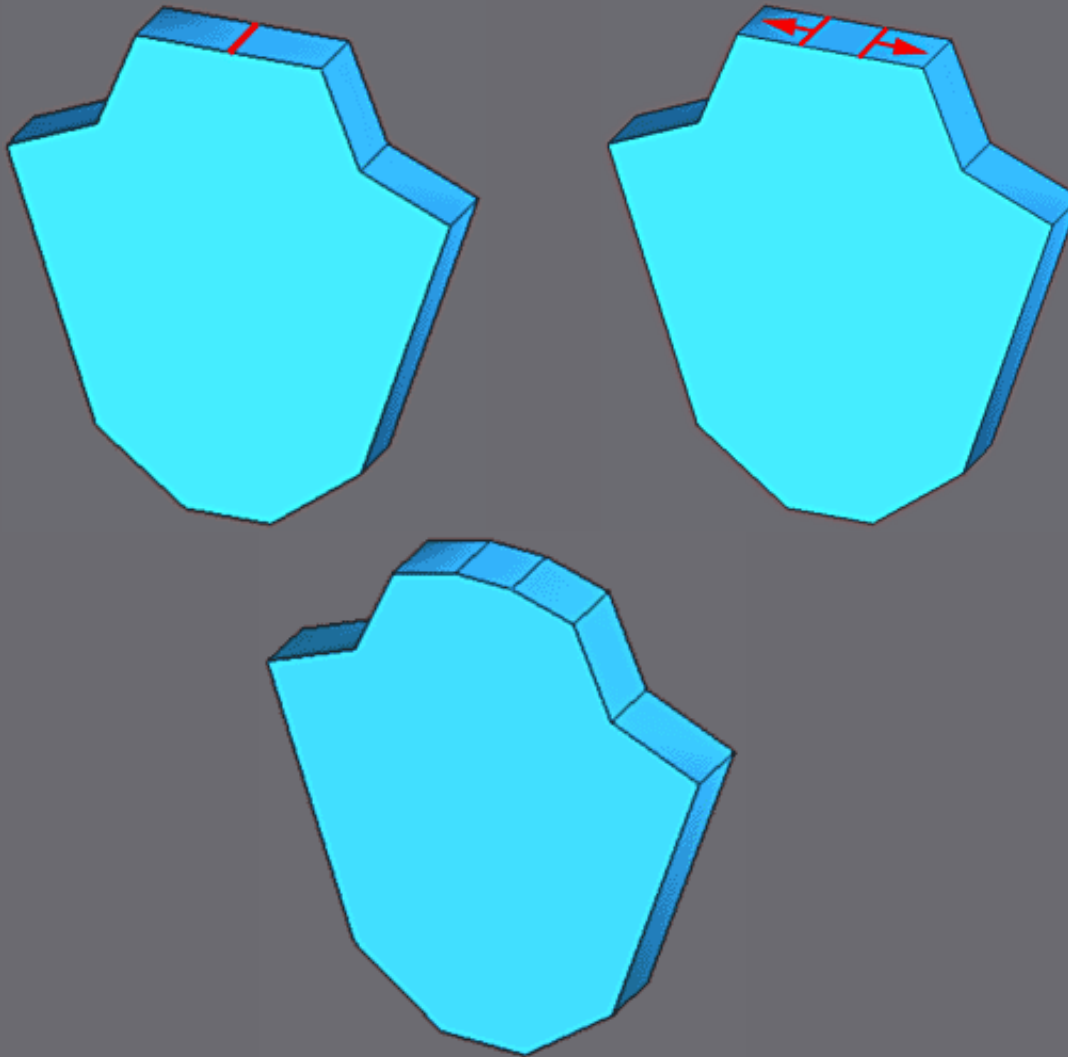




Adjust the form with non-uniform scale to preserve symmetry.

With the 3DSnap activated at MidPoint, insert vertecies as in top on the right.

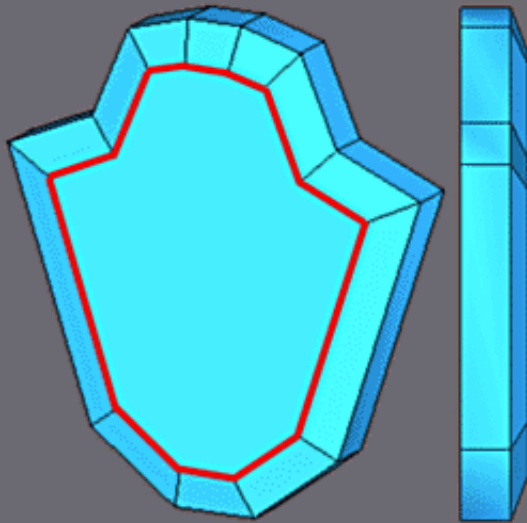
Adjust the new vertexes like above (Move on axis Z and non-uniform Scale on axis X for User).



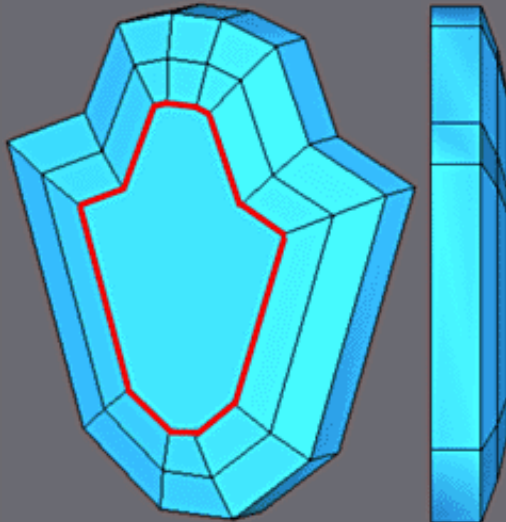
With the 3DSnap activated at MidPoint, insert vertexes as in top on the left.

Use Chamfer Edge to duplicate the edge.

Adjust the round-off.

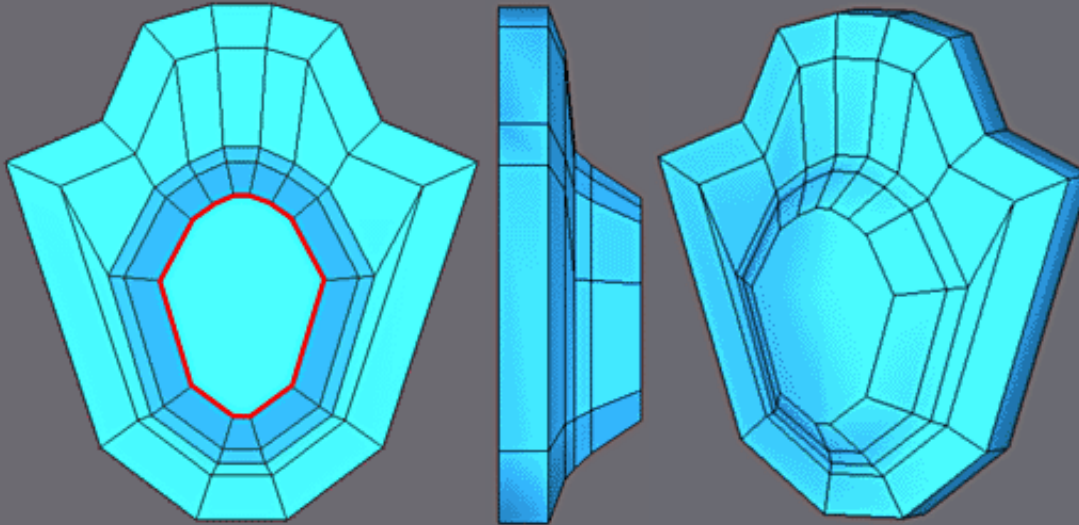
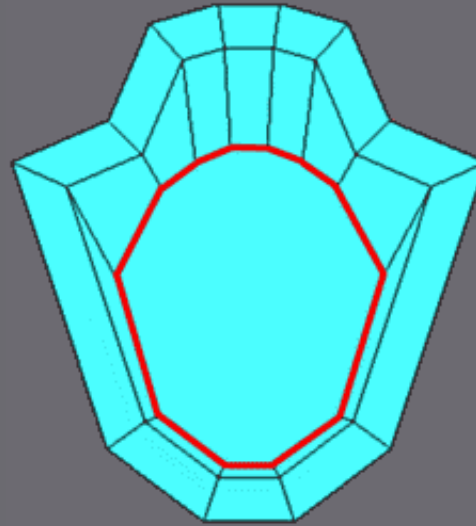


Extrude and Bevel the polygon.

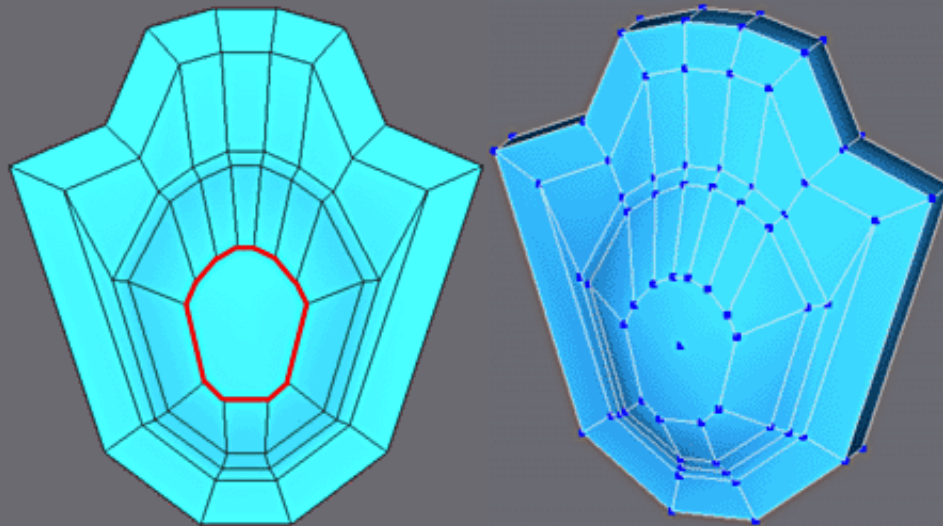


Repeat the operation once more.

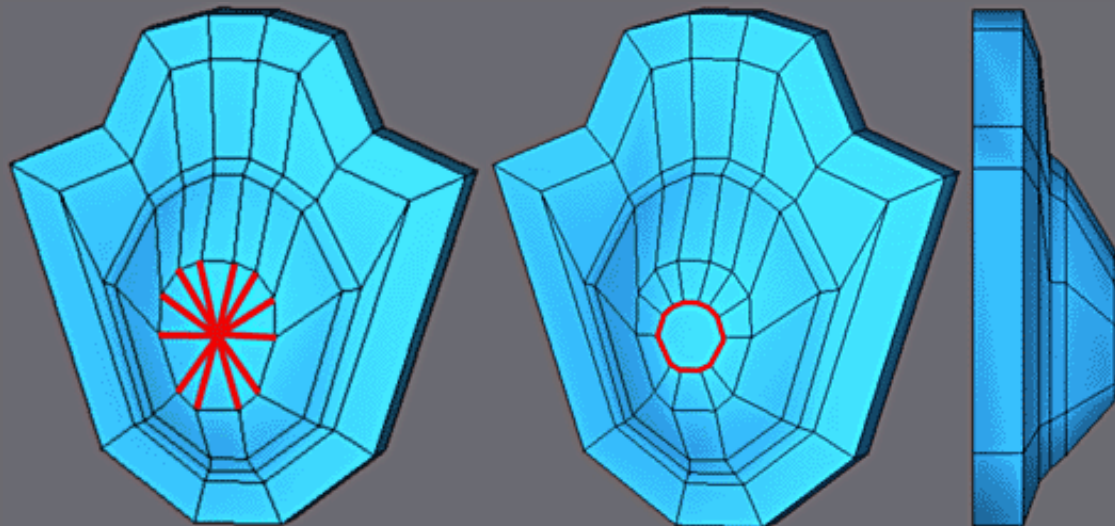
Adjust the vertexes to obtain this form.



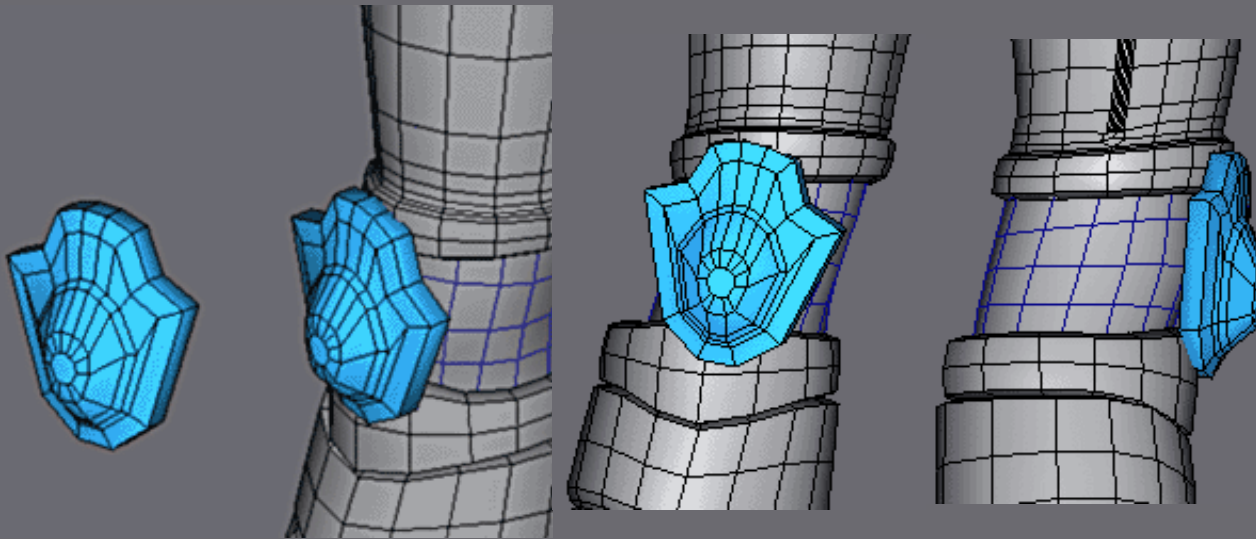
Extude and Bevel twice like above.



For face adjust the vertexes to obtain this form.

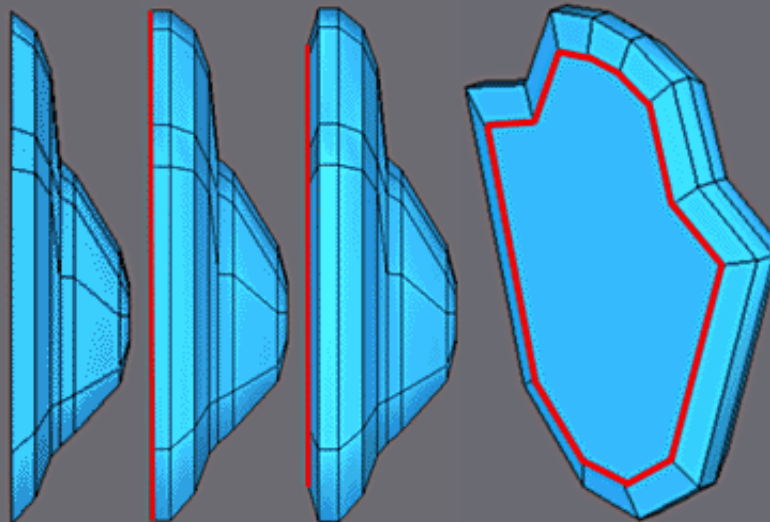


Make the edges visible in red and Chamfer Vertex to still insert a polygon and to finish the round-off.

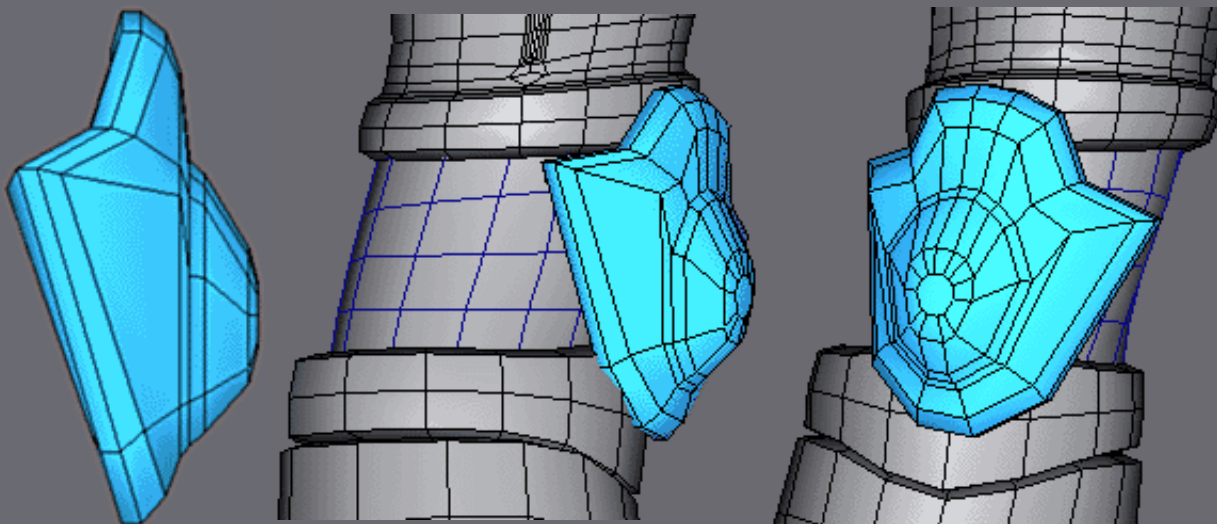


Make an instance copy of the model and place it in the correct position on the knee of the body model

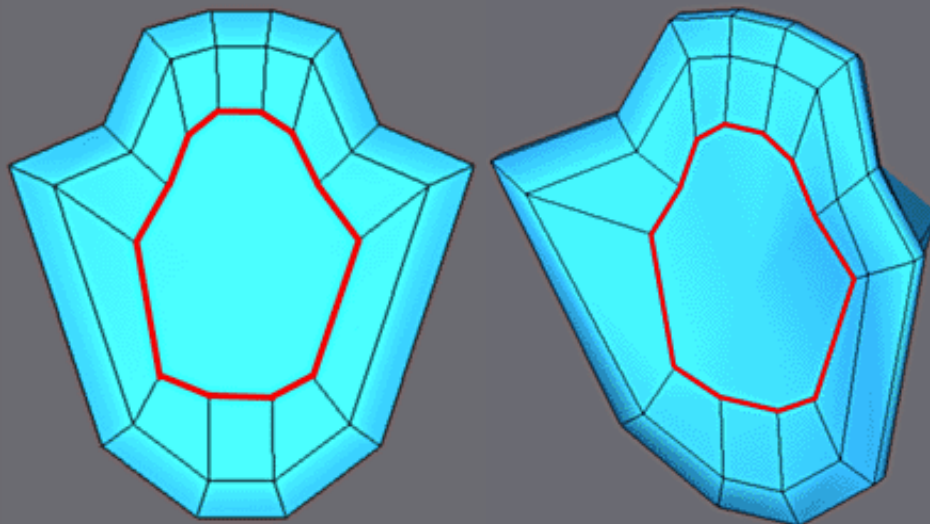
Continue to model the original object and the copy will be updated in real time.



Reduce the thickness of the dimensions and extrude the polygon twice to obtain the result above.



Move the vertexes to obtain these dimensions and check the result on the copy in position.



Lastly, on the back part of the object, extrude and Bevel to form a hollow.

Finish by applying Make Planar to this polygon.

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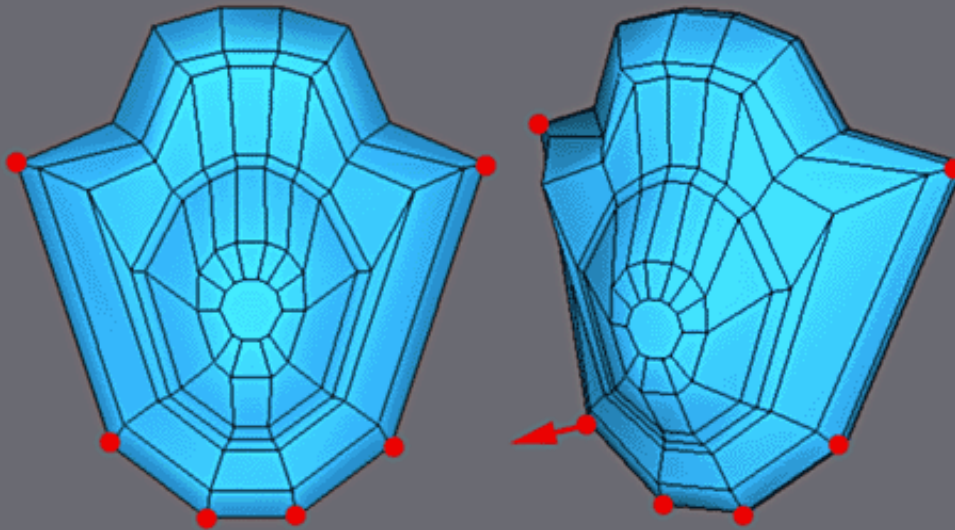
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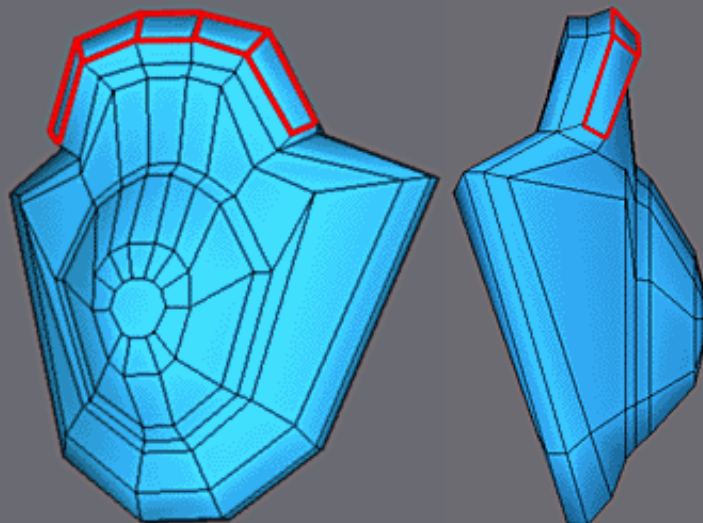
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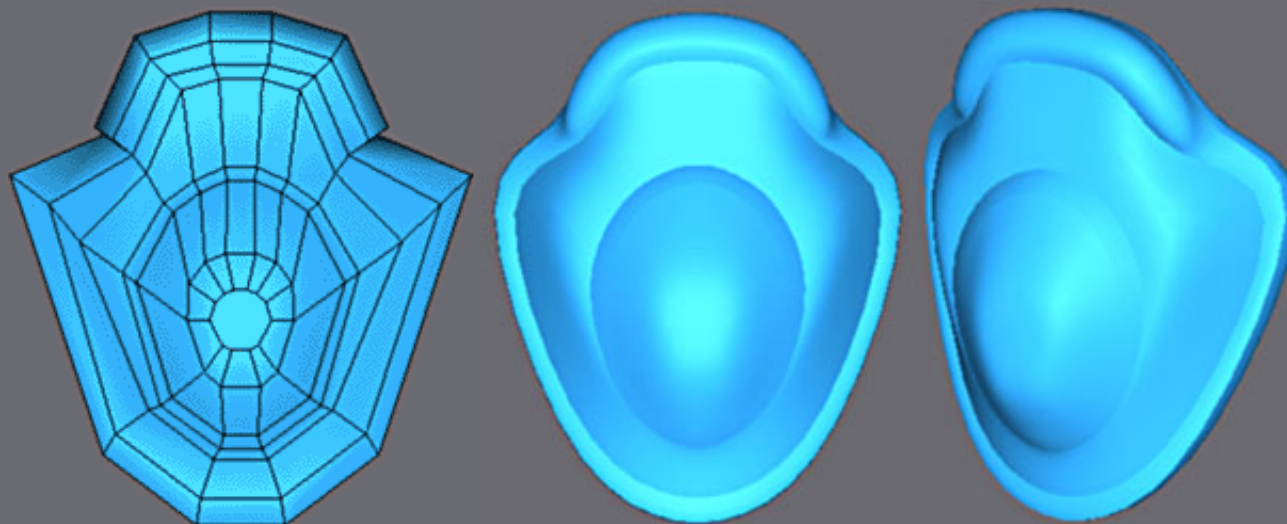
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**Modeling of the armour of the legs.**

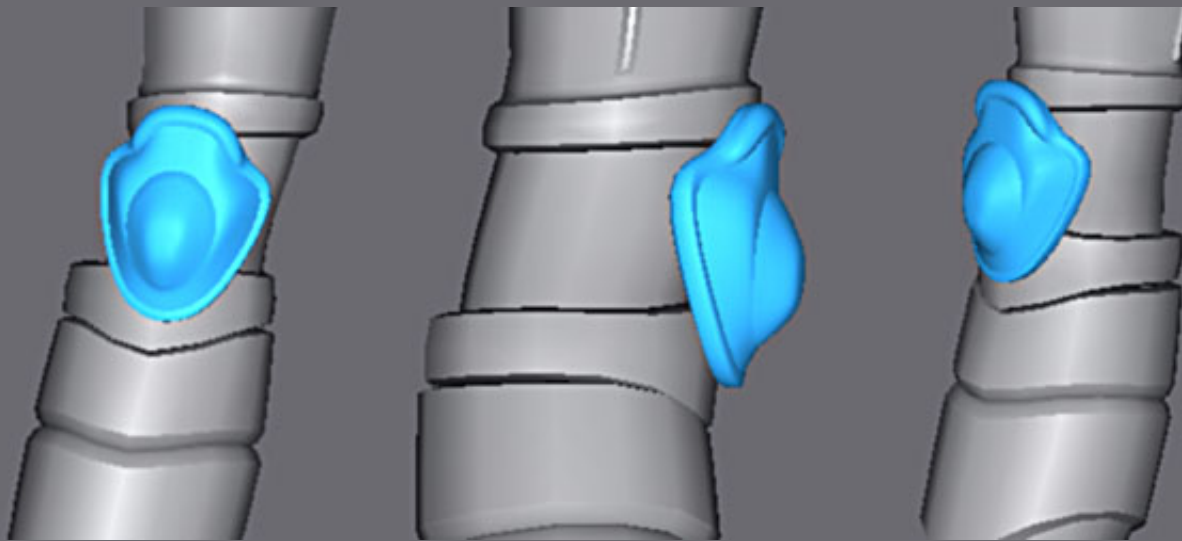
Select the vertexes in red and for User déplacez the worms before on the axis Y.



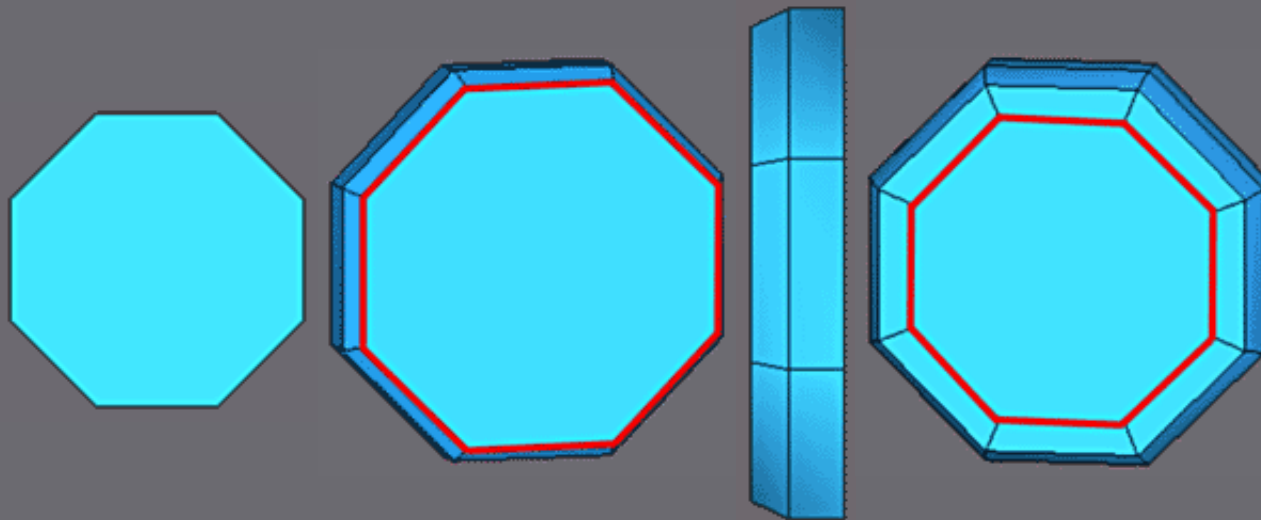
Extrude and apply a small Bevel on the faces in red.



The object finished with Meshsmooth and some Crease.



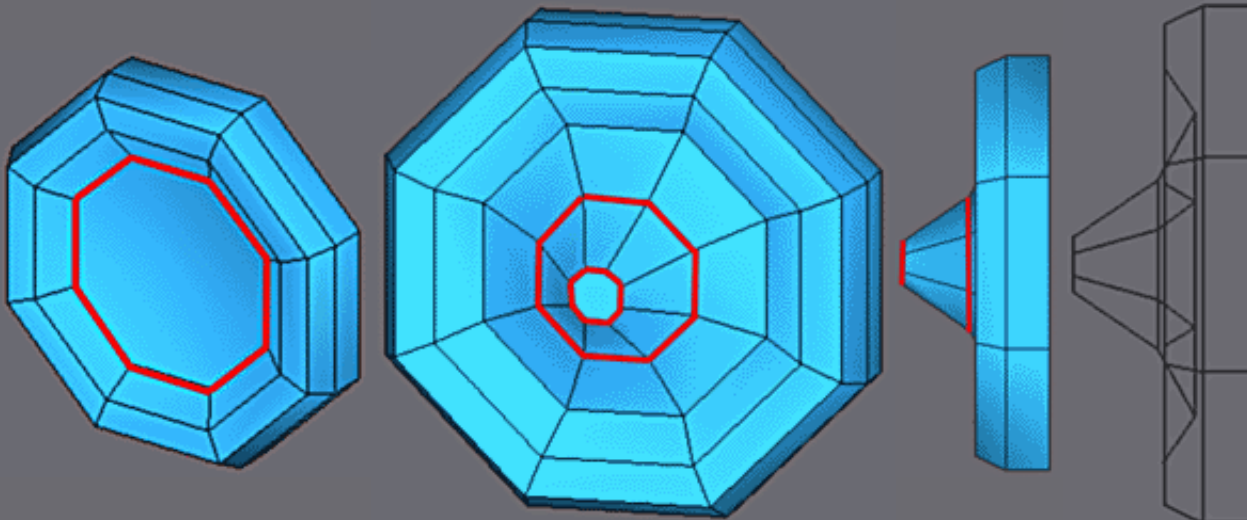
The copy in position on the knee.



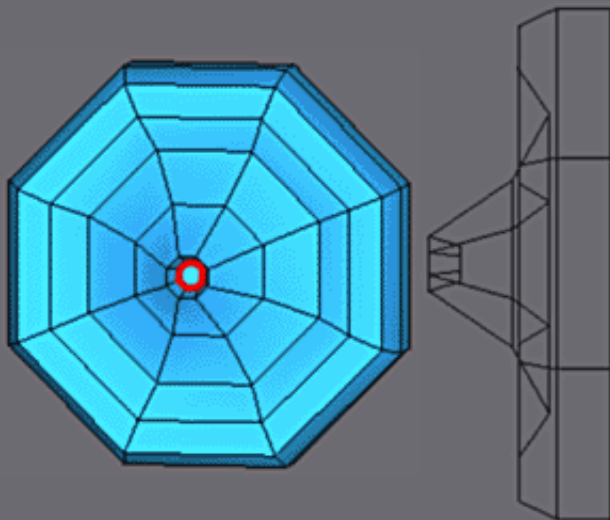
I added a part along the same lines of the design - a side protection to the knee.

From a Cylinder primitive with 8 dimentions, made a rotation of  $22.5^\circ$  on axis X

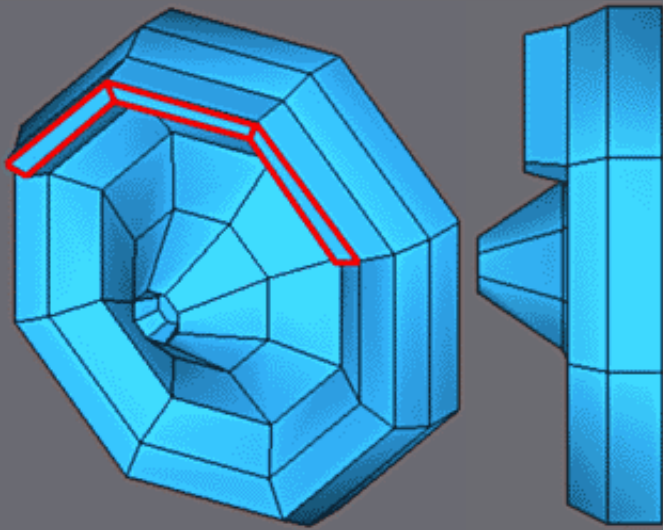
Make 2 Extrude/Bevel for the to form this mesh above



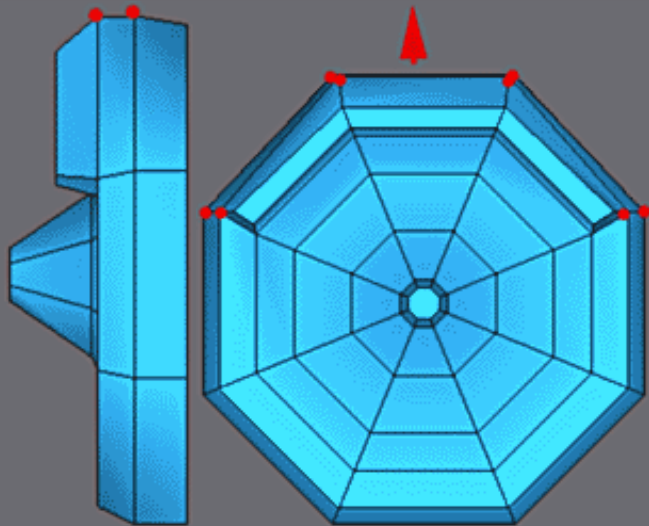
A series of Extrude/Bevel like above.



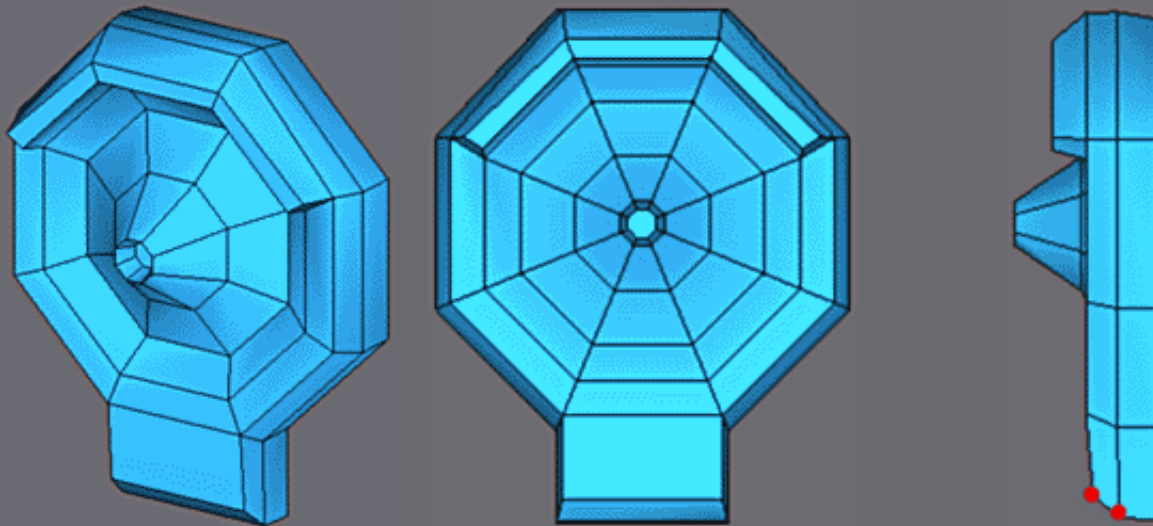
With one negative extrude made the hollow  
at the point.



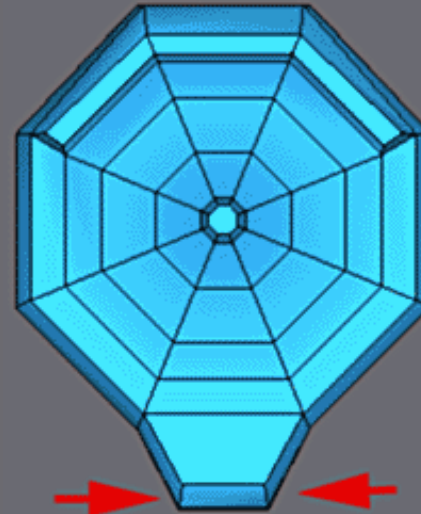
More Extrude/Bevel.



Adjust the vertexes as shown

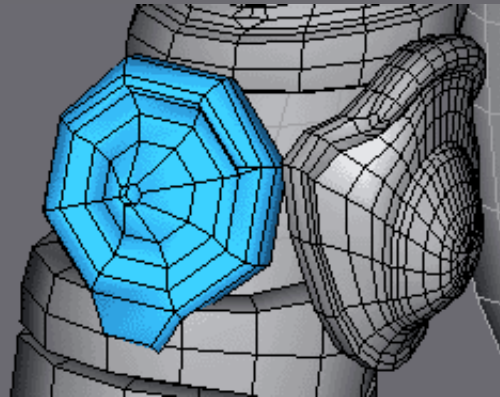
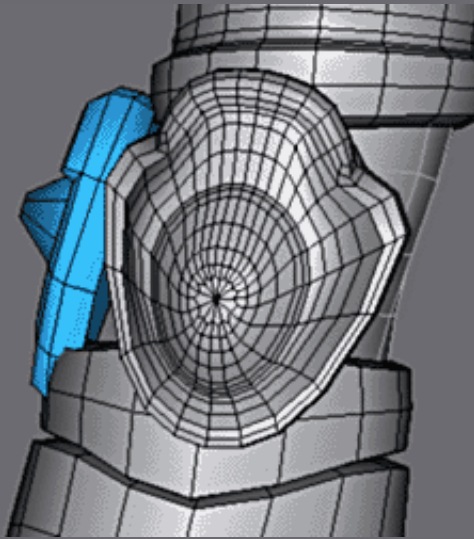
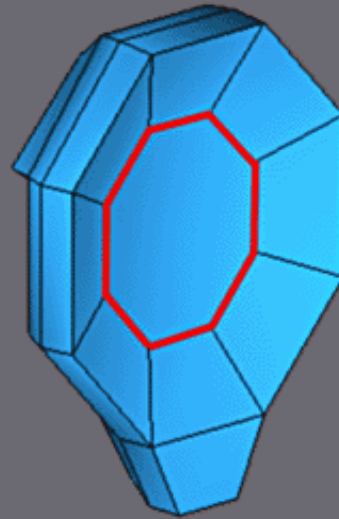


Extrude the 2 faces of the lower part, adjust the vertexes as shown and make a non-uniform scale to narrow the base.

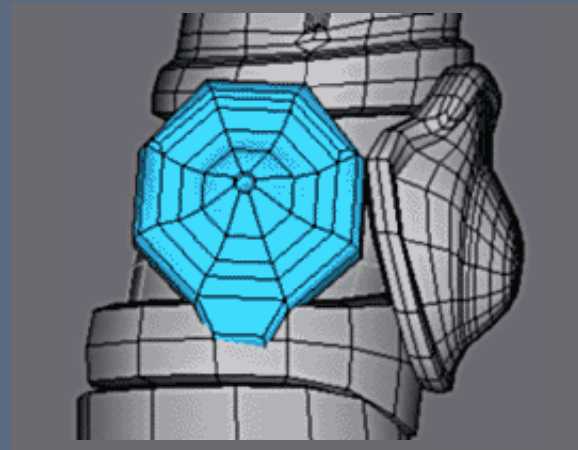




Finally with the back of the object, Extrude to form hollow then Bevel.



As for the preceding object, made an instance copy to place on the leg as on the images.

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Email: [Michel Roger](mailto:Michel.Roger@mr2k.3dvf.com) --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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Joan of Arc  
by  
Michel Roger

3ds Max



*Armour bust*

3D Studio Max

Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: mr2k.3dvf.com

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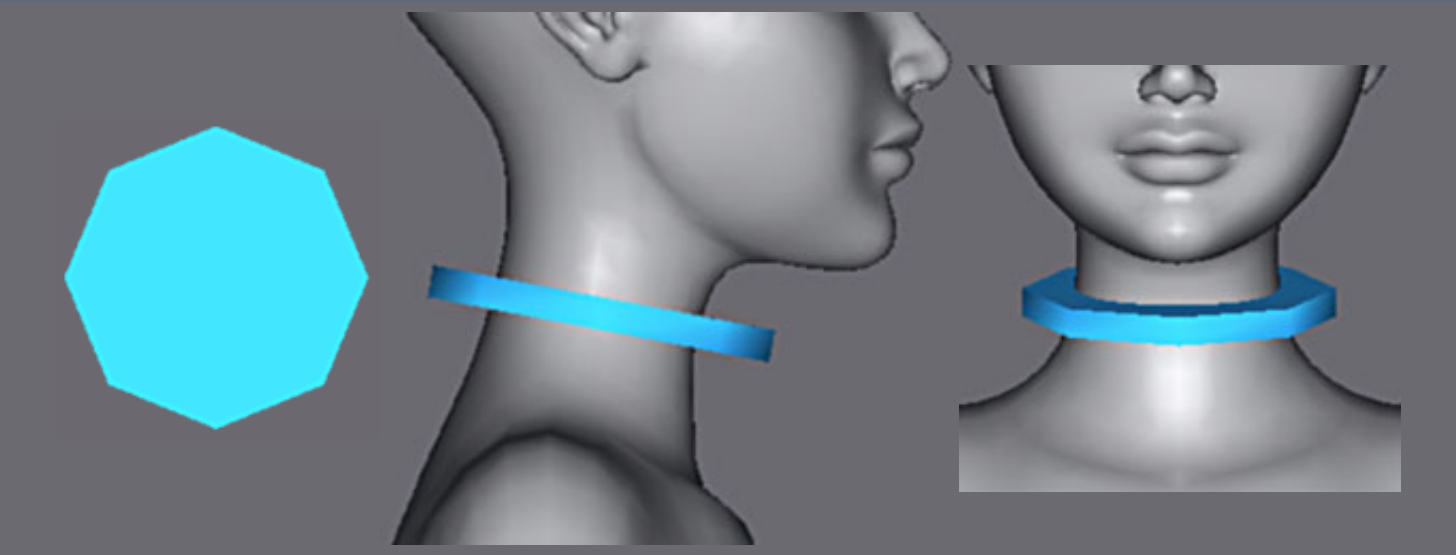
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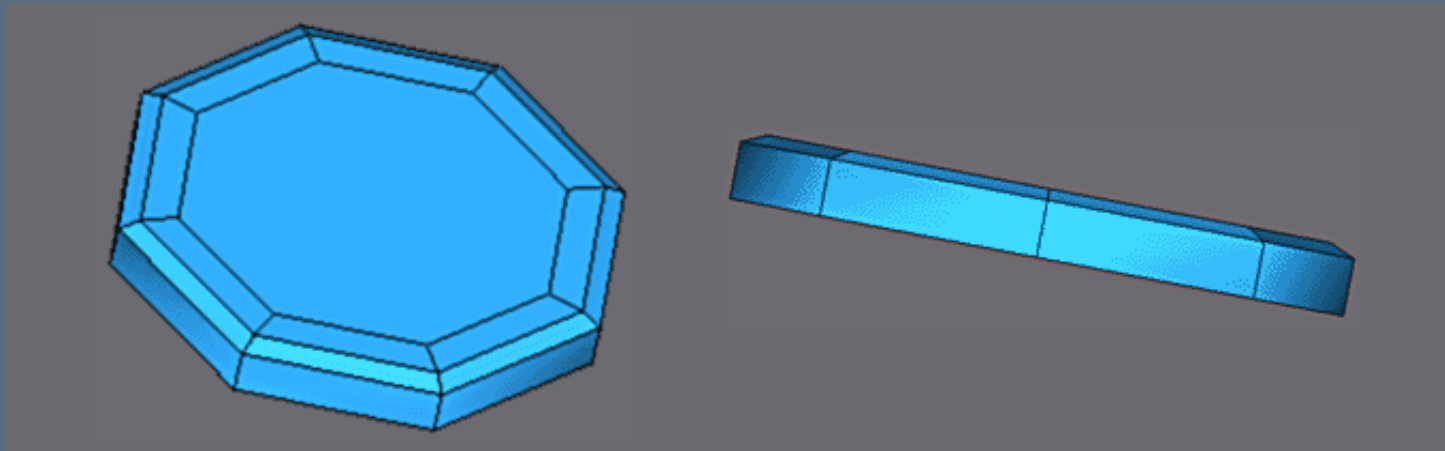
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Modeling of the armour of the bust.

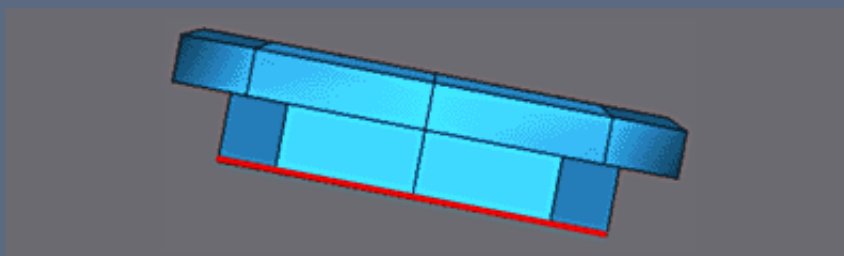
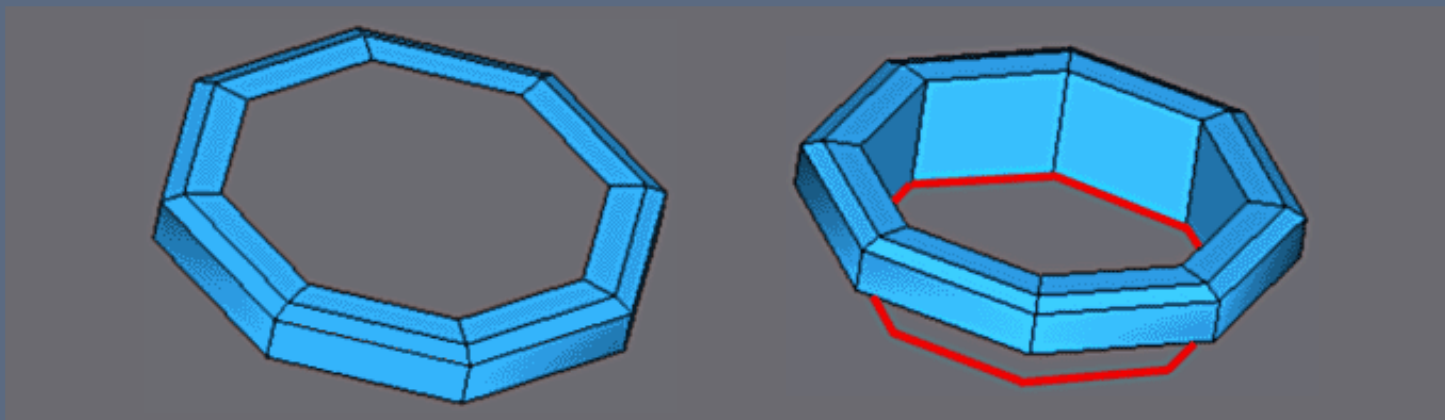


This time, we are tackling a large piece of work, with the sword it is undoubtedly the object most difficult to model of this tutorial.

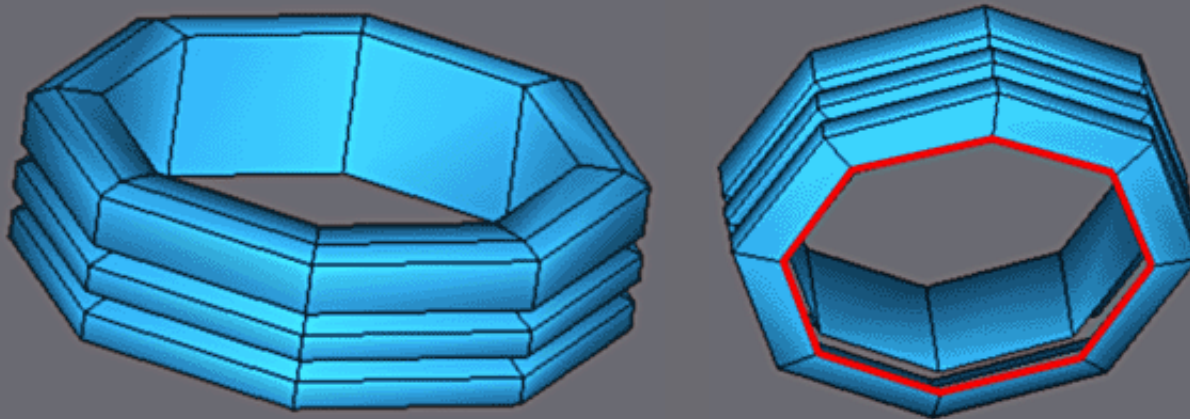
Make a Cylinder Primitive for the top, with 8 side dimensions. Position as on the image and Adjust its proportions.



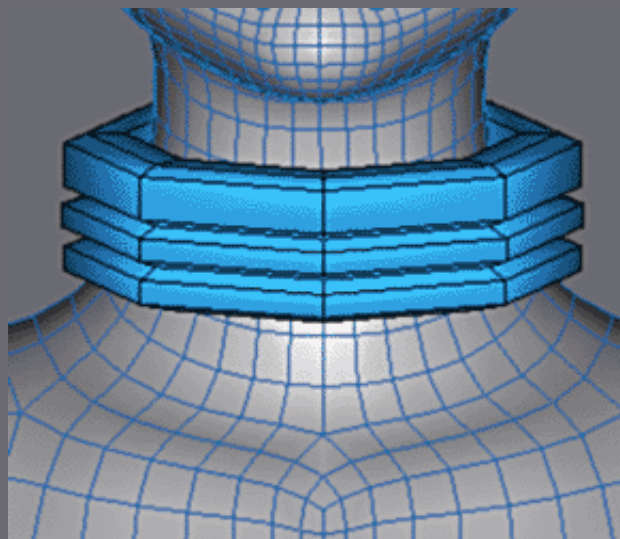
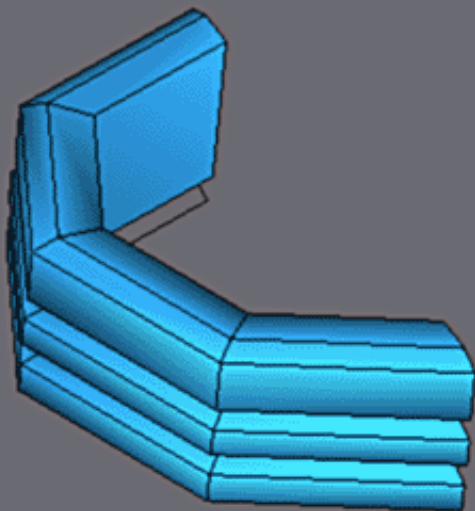
Extrude and make Bevel on the polygon of the top, made then a withdrawal move.



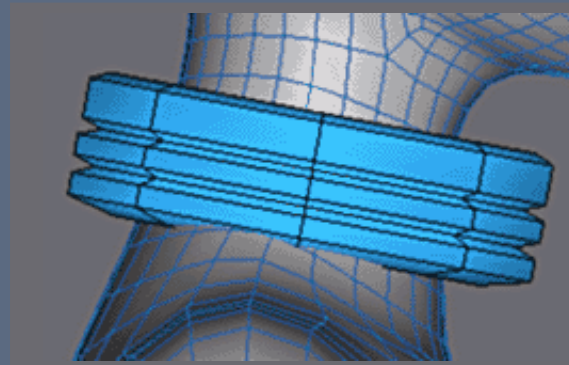
Erase the central polygon, and extrude downwards in the axis of the object, i.e. by activating the Local co-ordinates.



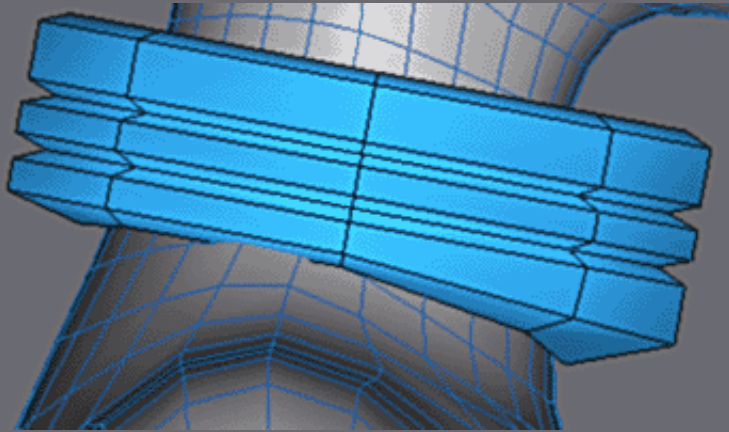
Make a series of Extrude/Bevels by preserving the same values.  
Finally remove the central polygon.



As we continue it is easier to erase half of the object and make a  
mirror copy.

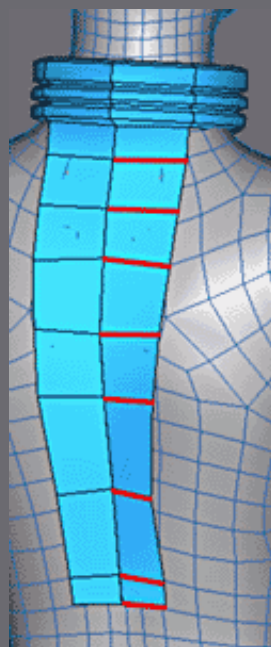




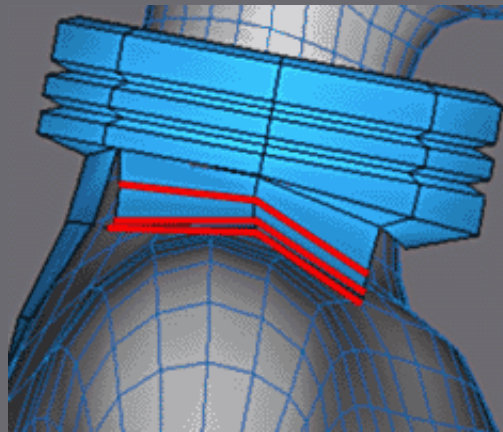
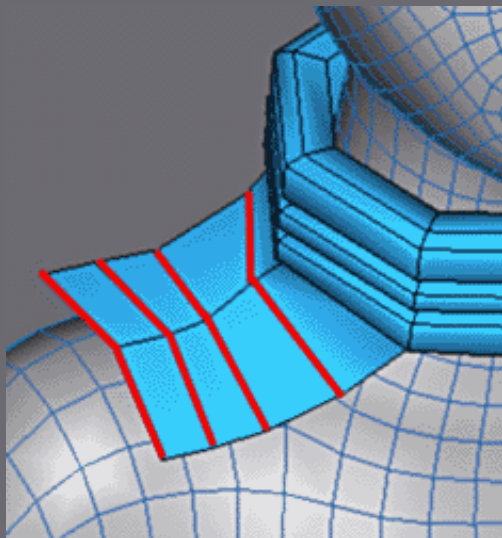


Adjust the vertexes of bottom.

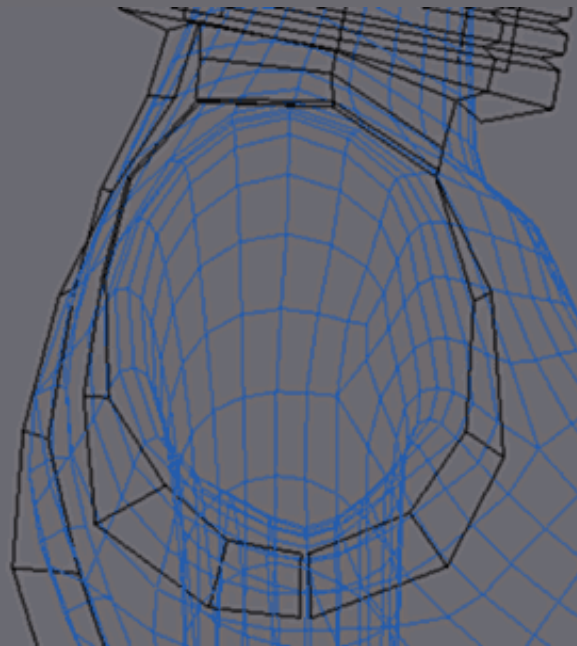
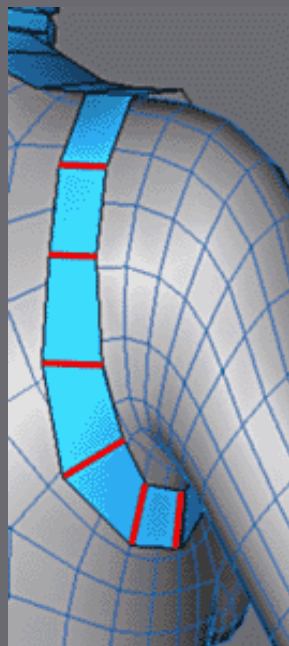
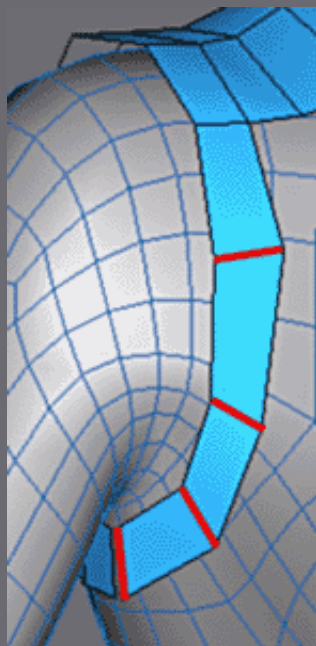
In the back, extrude the edges like opposite.



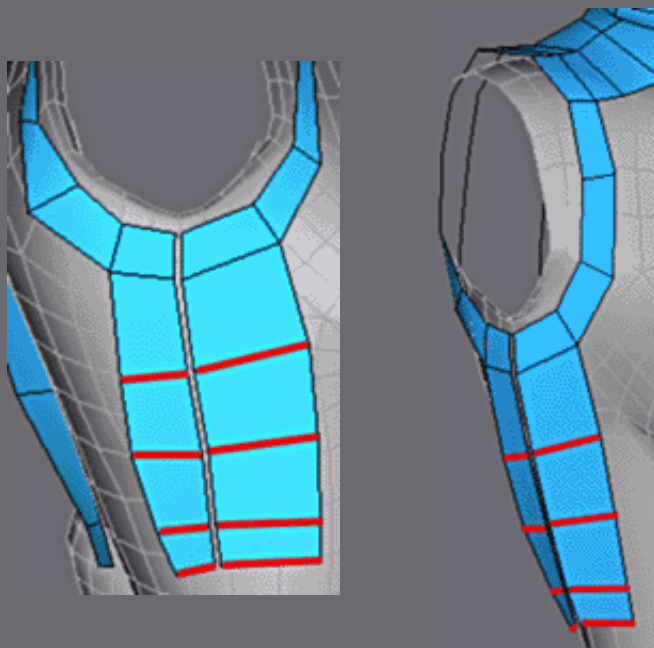




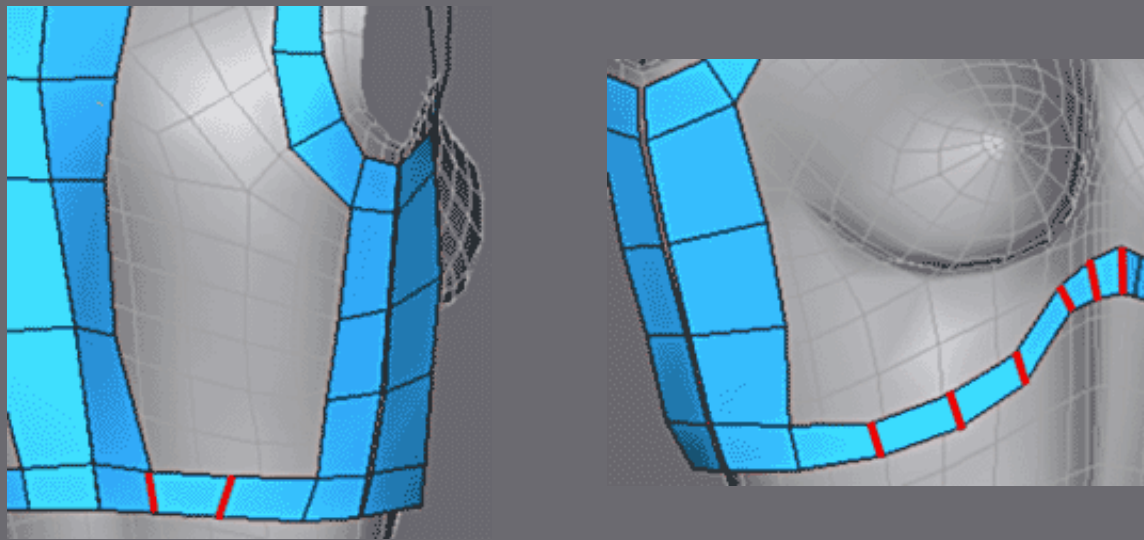
In the same way laterally, then adjust the vertexes so that surface follows the top of the body.



Extrude edges and adjust the vertexes as shown, in front and behind. Weld the vertexes at the junction of the faces.



Continue with Extrusions to form the dimensions as shown.



Lastly, complete the outer limits of the armour, always with edge extrudes.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



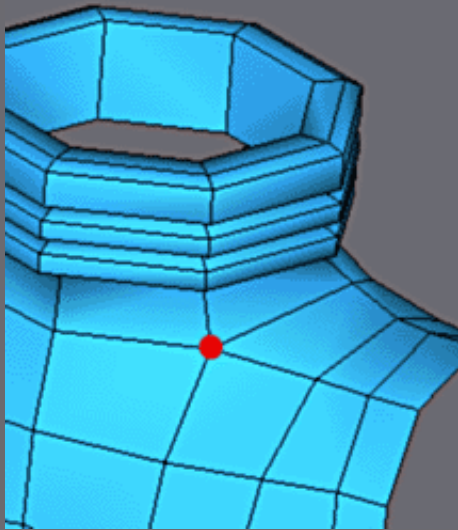
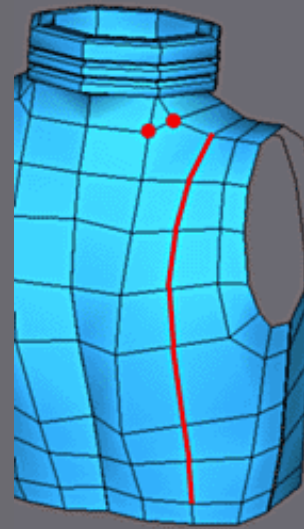
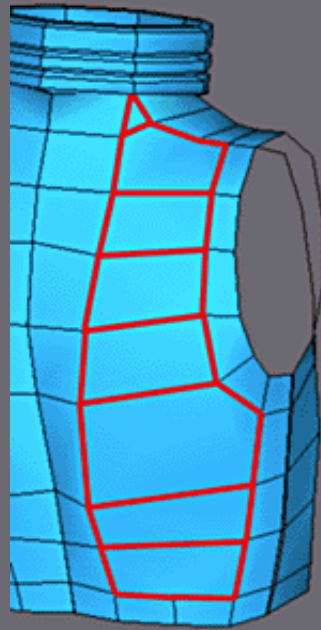
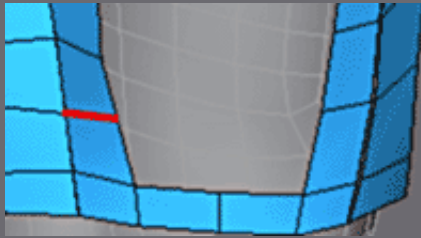
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#### Modeling of the armour of the bust.

Extrude the front part towards the neck.

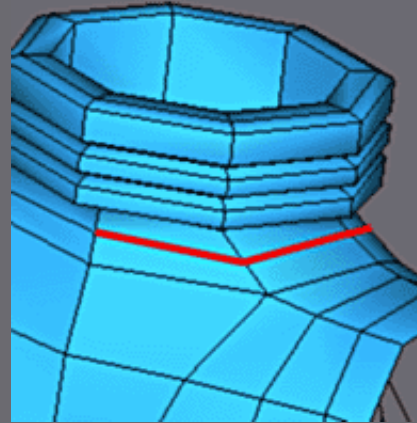
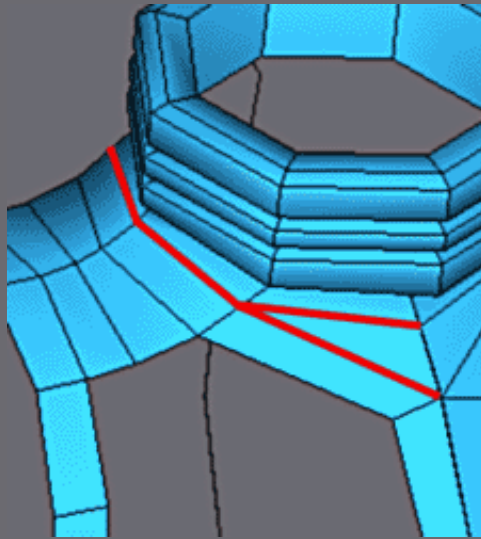
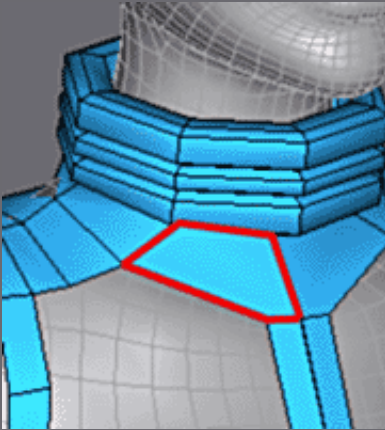




Insert a edge with Cut in bottom of the back and build the grid as shown.

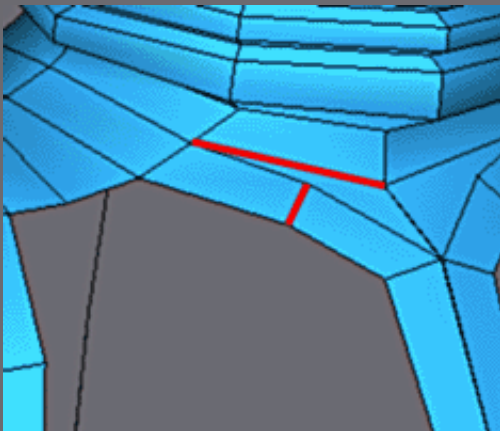
Insert the edges vertically.

Lastly, select the 2 vertecies in red and weld them into one.



Build the polygon to connect the front part to the neck.

Insert with Cut the edges all around the neck.



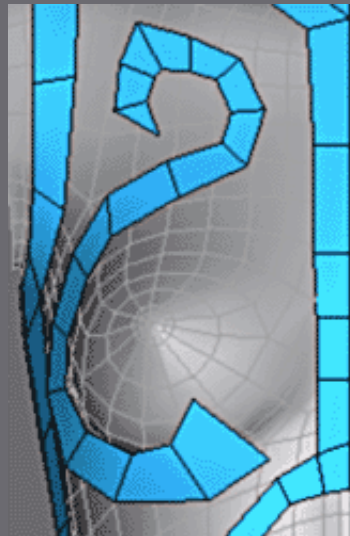
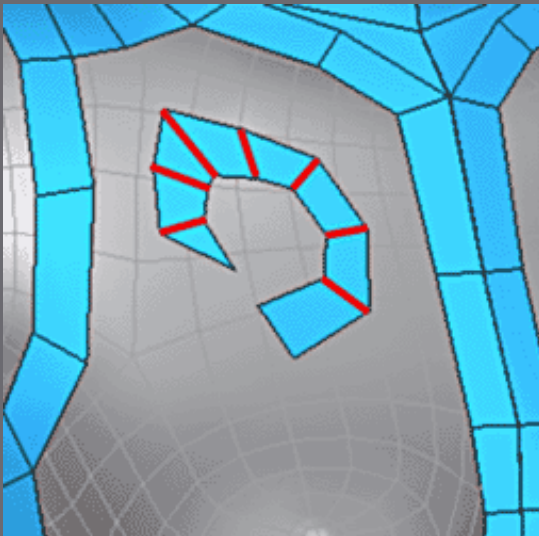
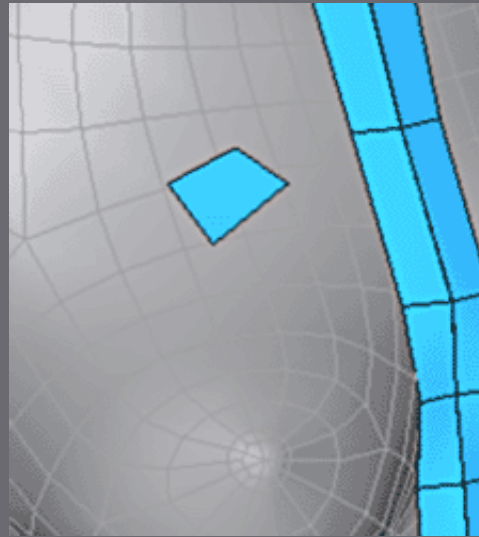
Add a division with Cut.



One now will model decorations on the front of the armor.

For that select a face and with shif+Move make an Element copy.

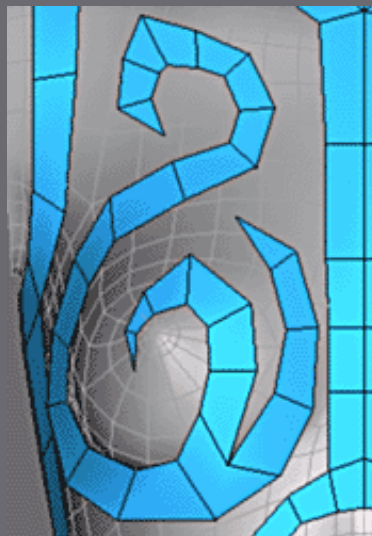
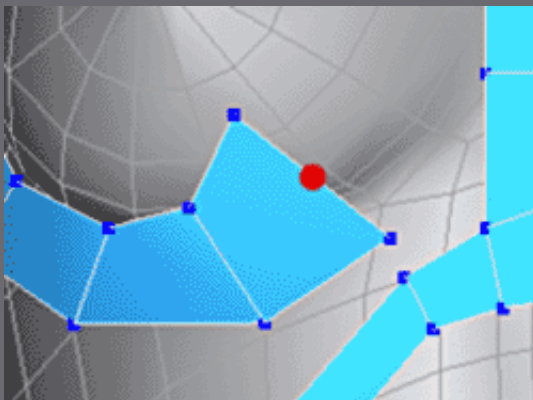
Position there on the chest just away from the body.



Then extrude the edges to make a snake of faces, for the point at the end, use Collapse Edge.

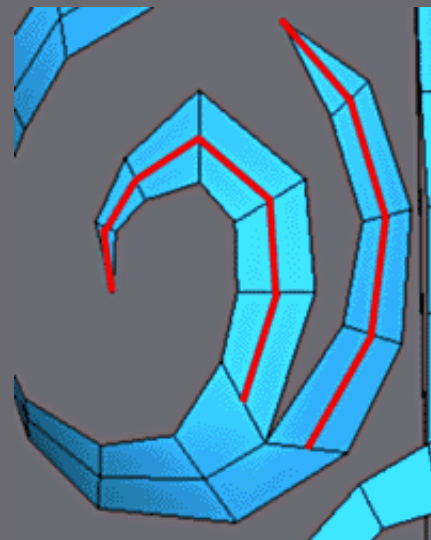
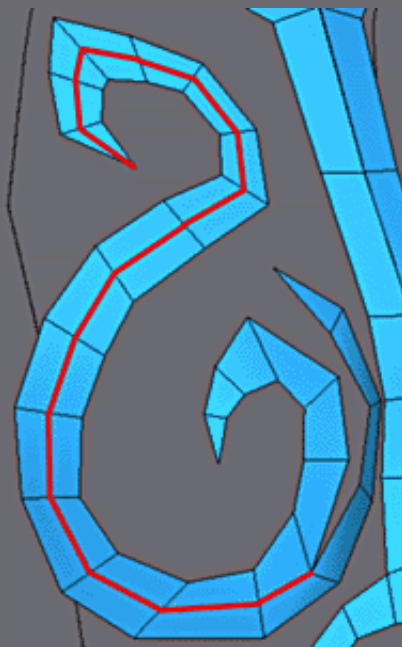
Adjust in the user view the vertexes to have a harmonious curve as shown.





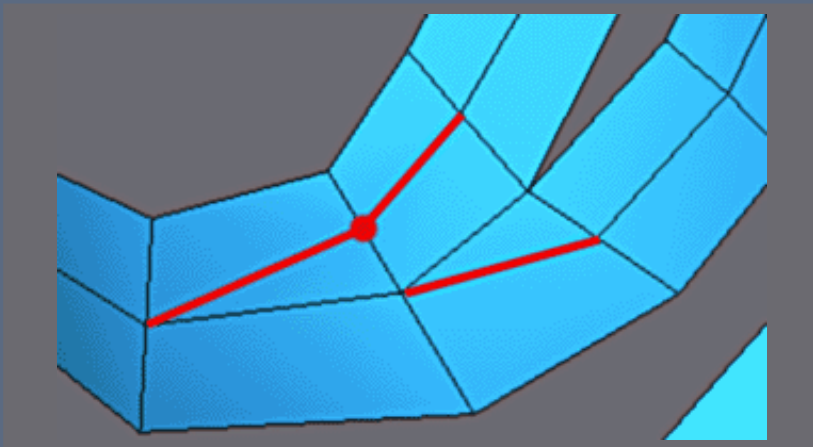
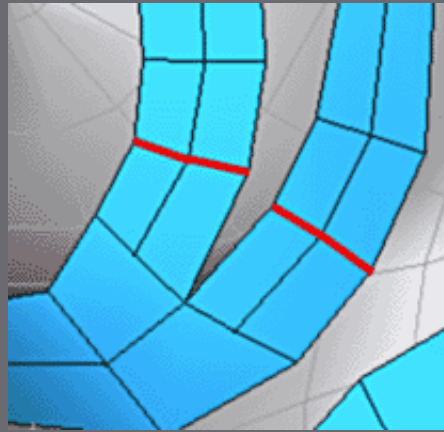
Insert a vertex with Divide into the edge, and continue to extrude the two curves.

The final result depends entirely on the care which you take to build this foundation, therefore try to spend some time here.



Insert into the model central edges with Cut, after having activated the 3DSnap in MidPoint mode.

Insert two new divisions here.



Lastly, insert a vertex with Divide and make visible the edges in red.

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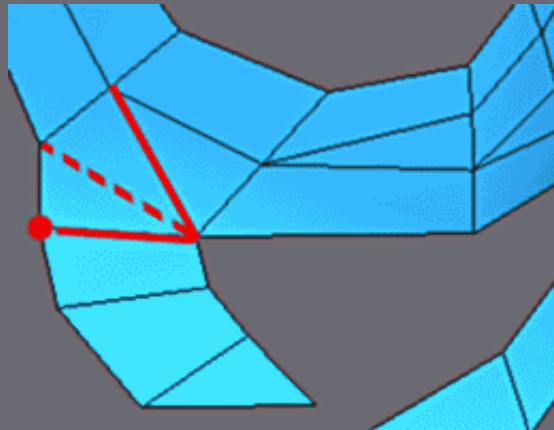
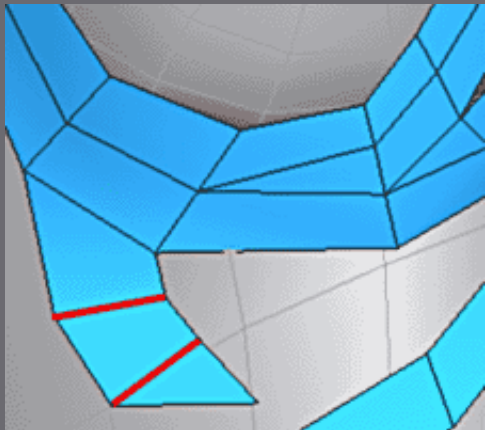
### Modeling Joan of Arc by Michel Roger



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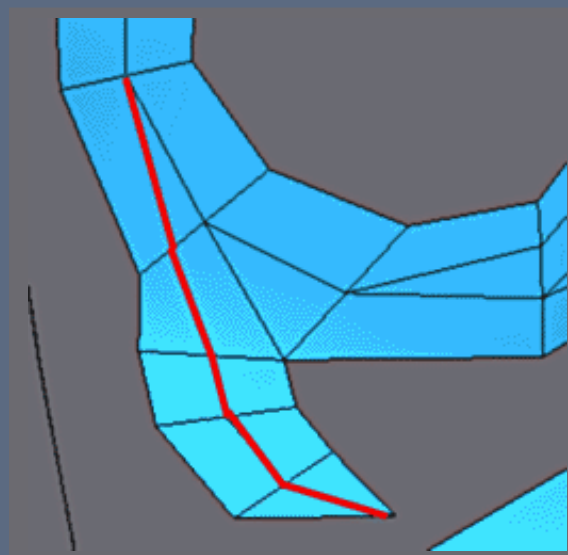
#### Modeling of the armour of the bust.



Extrude the edges to build the point.

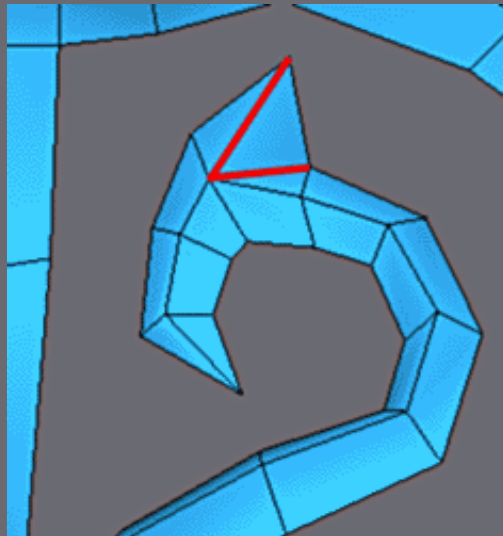
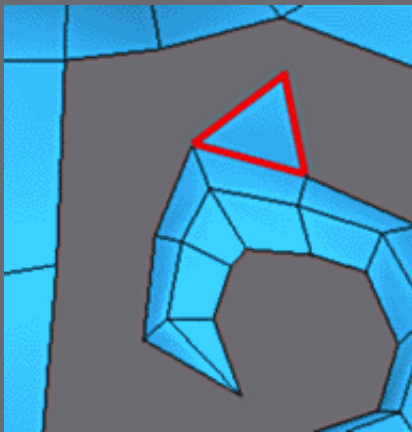
Insert a vertex, then make visible the edges in red and the dotted red one invisible. (high right).

Lastly, with Edge Cut , insert a division into the model by activating the 3DSnap MidPoint.



Make any additional vertex adjustments to form nice rounded curves.

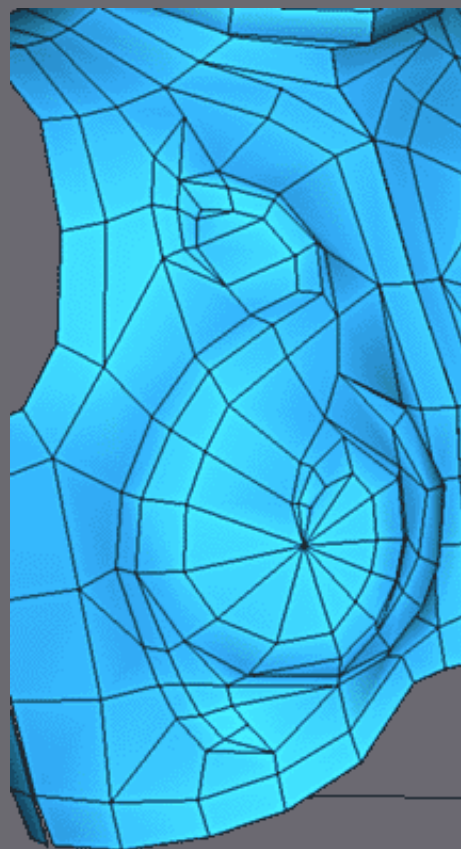
Add Meshsmooth to check out your fantastic bit of modelling :)



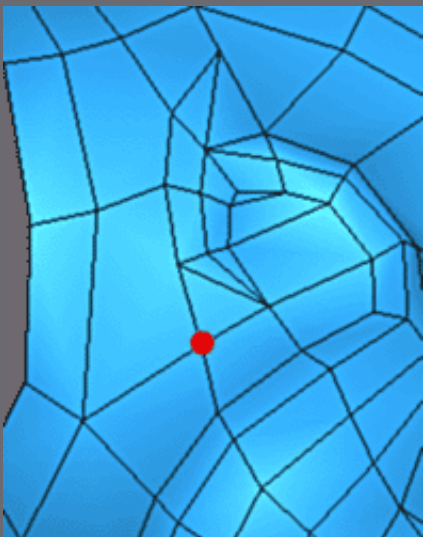
Finally to finish the decoration, add a triangle by extruding the edge and by collapsing it.  
Then make visible both edges like on the right.

Now it remains to build the faces to connect decoration to the remainder of the armour.

Go for as many quads as possible (rather than triangles)



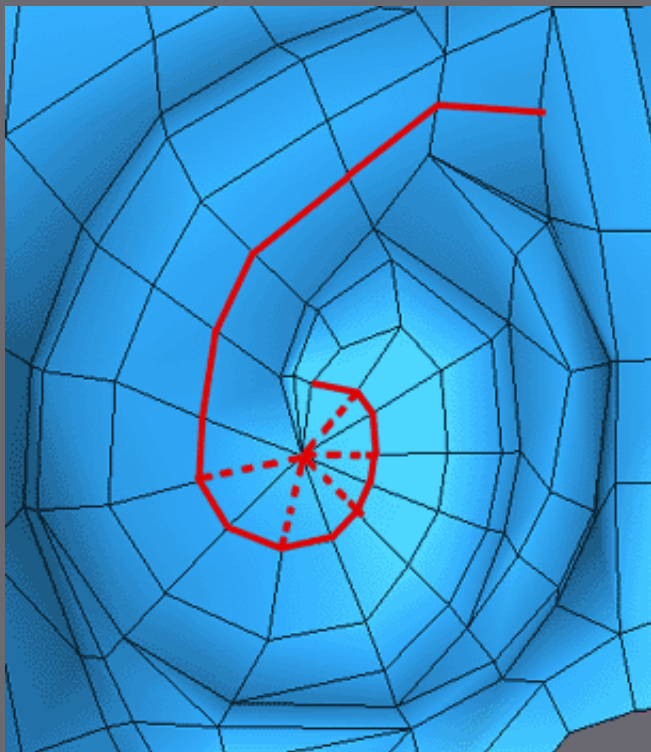




Apply Meshsmooth to check the surface quality.

Possibly make any necessary vertex adjustments.

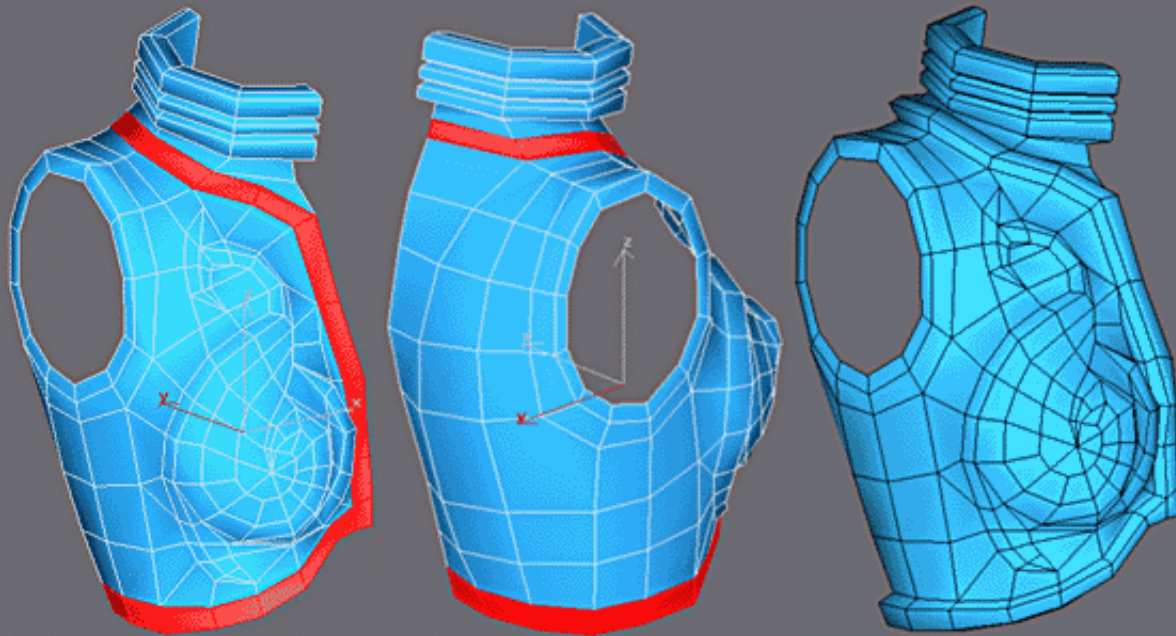
Here the smoothing is not perfect so I added a vertex and arranged the edges.



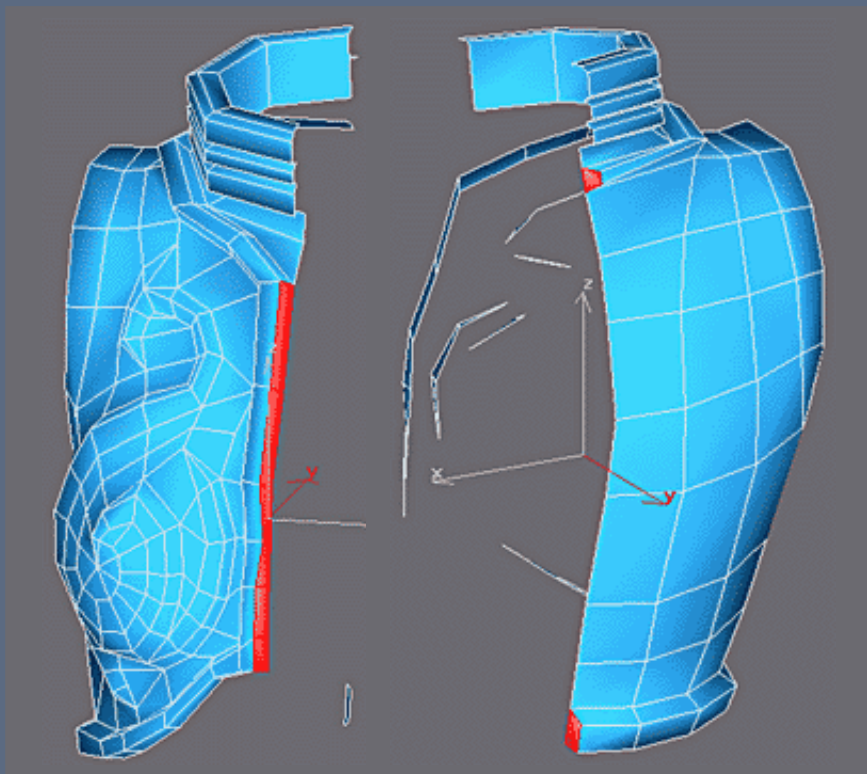
To improve the surface of this part, insert the edges in red with Cut.

Make invisible the edges shown in dotted lines.

As usual, do not make vertex adjustments in the meshsmooth level



Select the faces in red and then Extrude/Bevel.

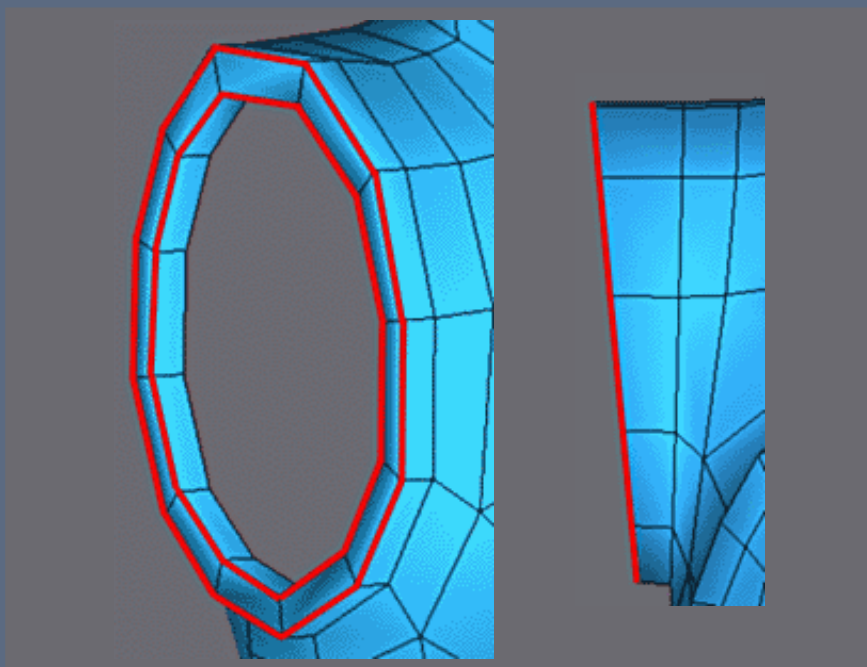
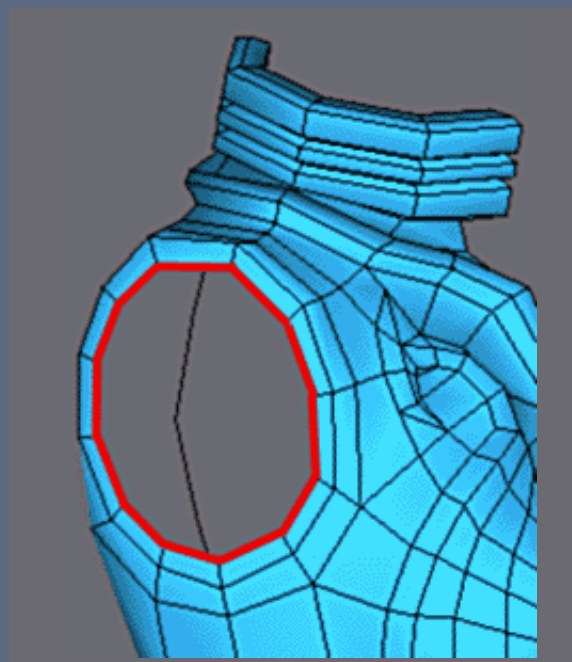


Erase the the faces shown in red before following the last extrusion.

They are not necessary as you will see when joining the two halves of the armour.



Extrude with Shift+Scale the faces opposite.



Select the faces like on the left, apply Make Planar to have a quite plane surface.

Extrude as on the left

Then angle the Faces with Rotate on Y.

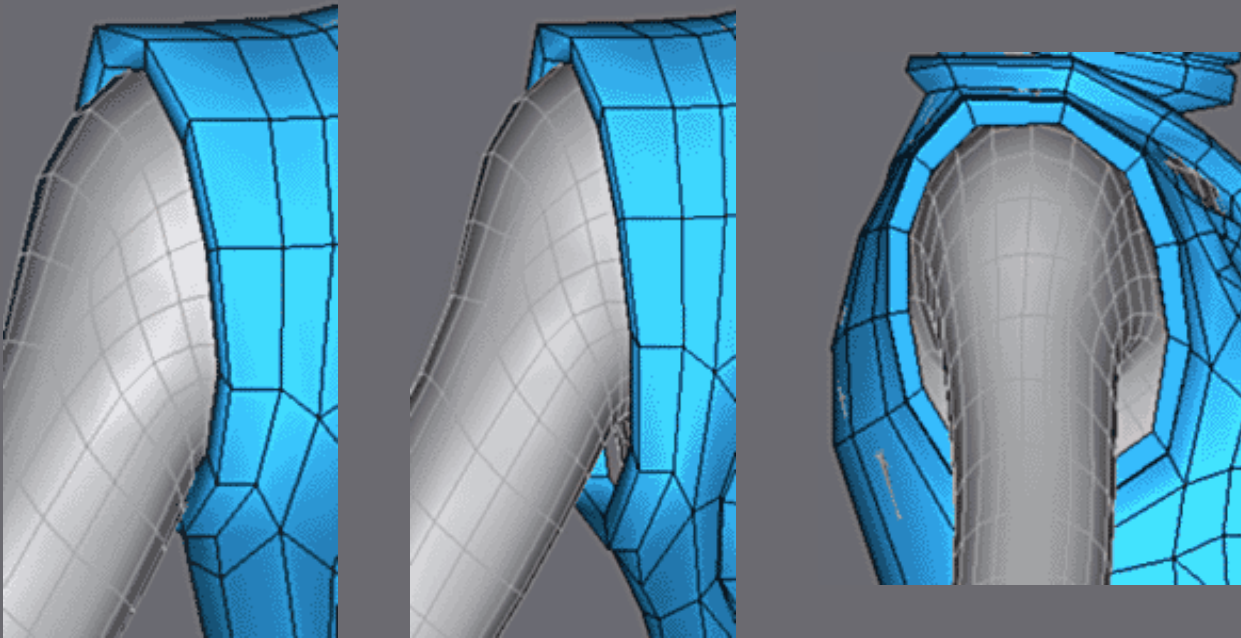
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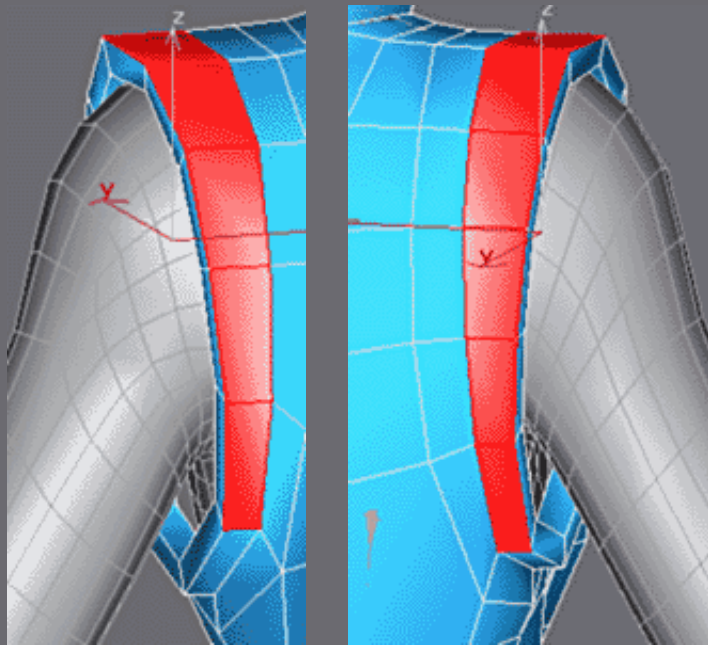


**3D Studio Max****Modeling Joan of Arc by Michel Roger**

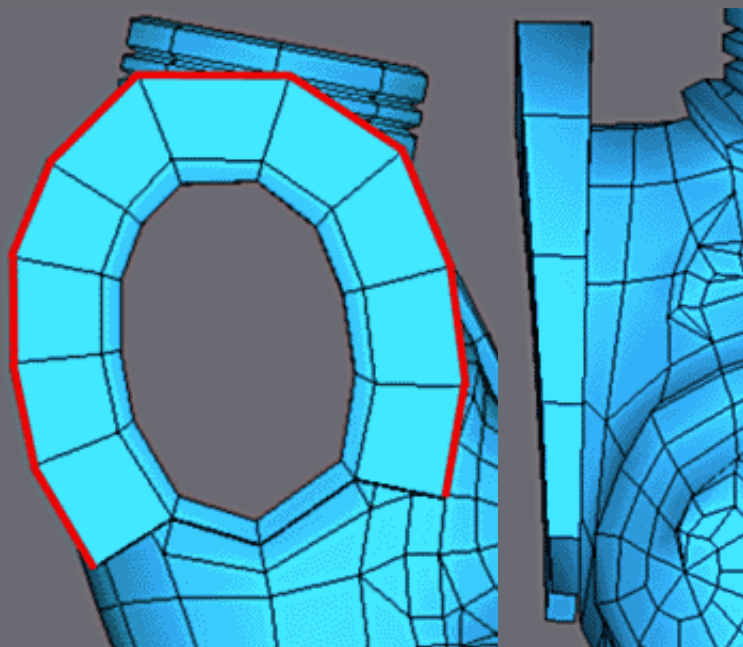
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[Back](#)[Page 1](#)[Page 2](#)[Page 3](#)[Page 4](#)[Page 5](#)[Page 6](#)[Next](#)**Modeling of the armour of the bust.**

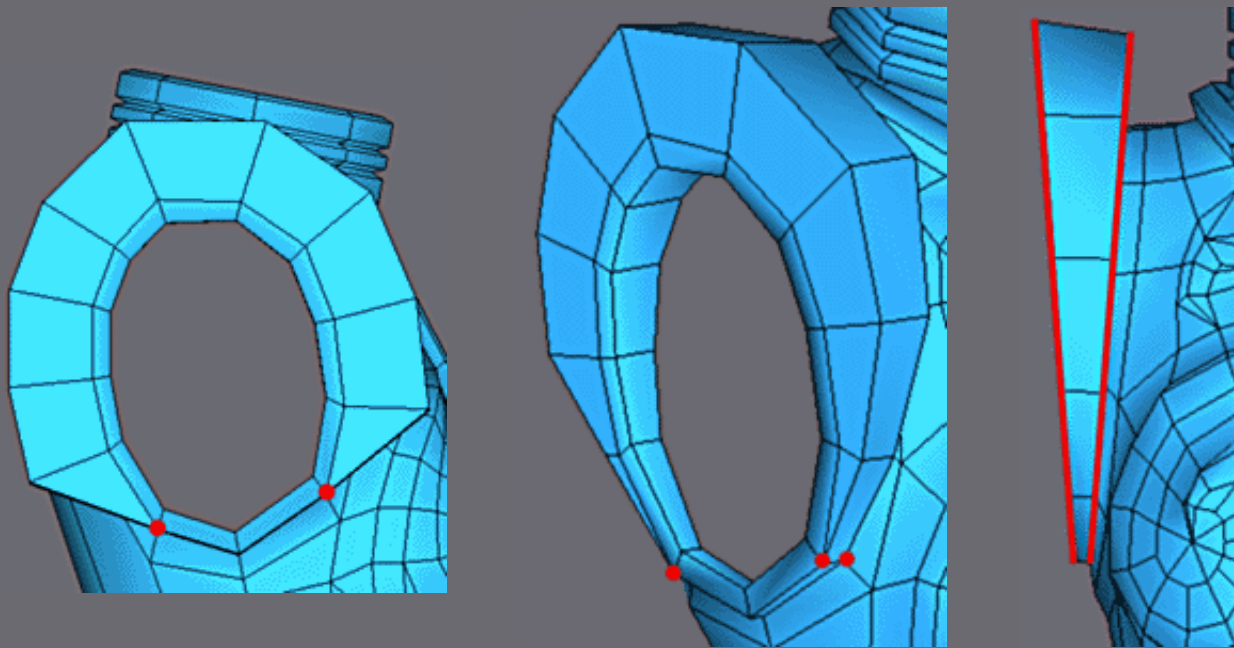
View the body against the amour and adjust the vertexes to increase the area under the armpitt.



Select the faces in red.



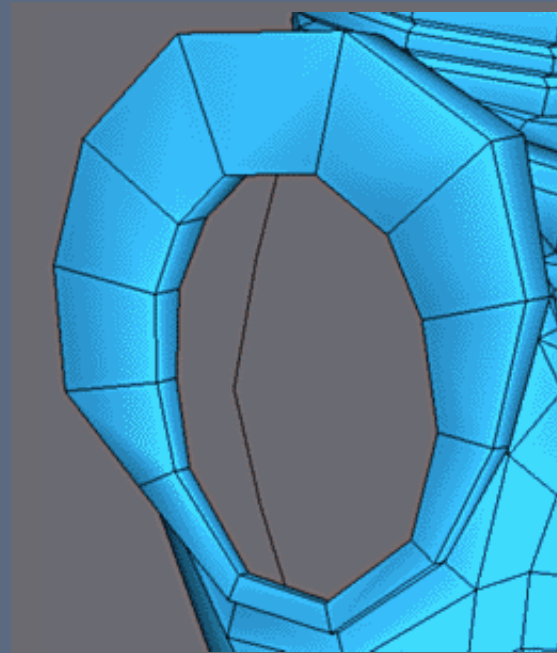
Extrude as opposite.

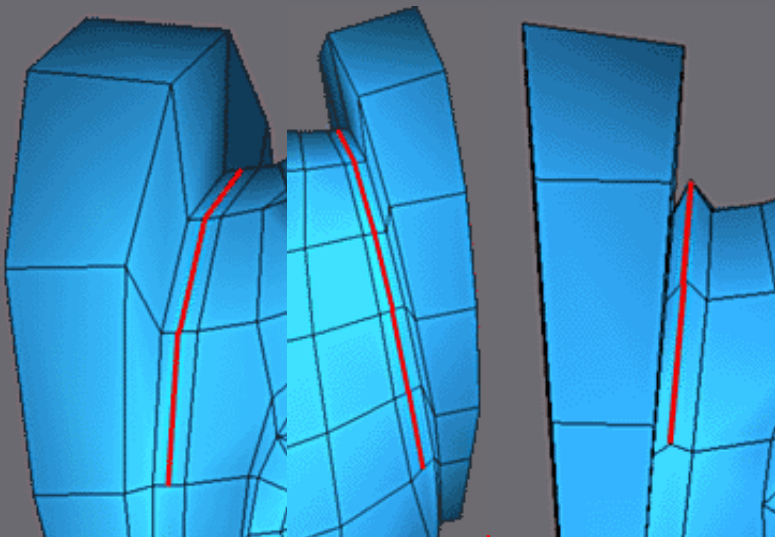


Weld with Weld Target the 4 vertexes at the bottom to have a connection as shown in the image.

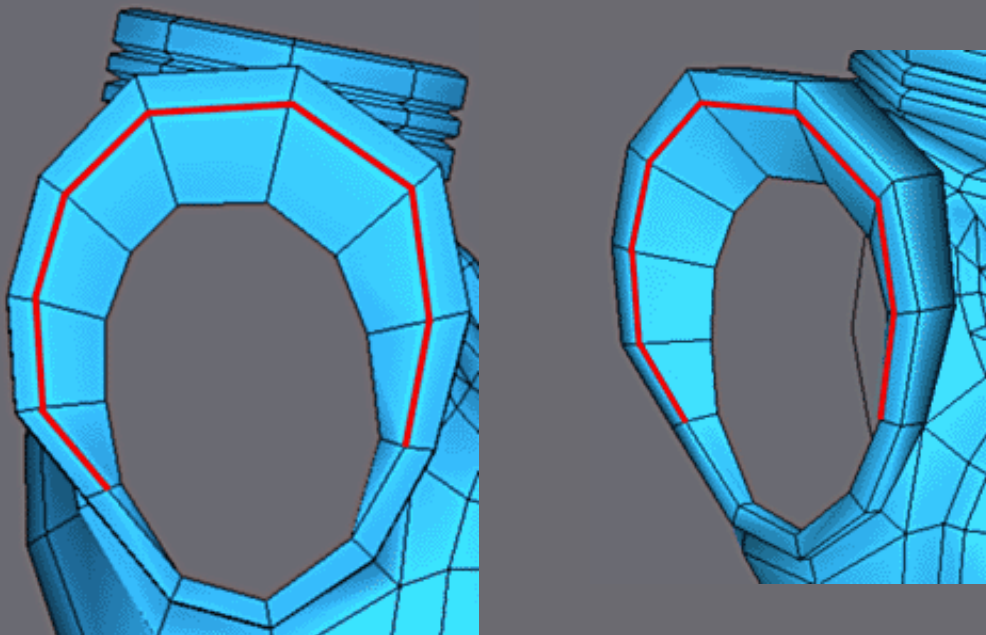
Finally apply Make Planar to the faces to have plane surfaces.

Simplify the geometry by welding the interior vertexes as shown opposite.



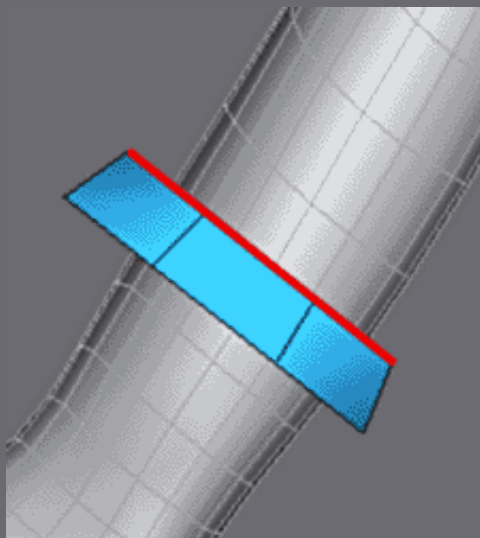
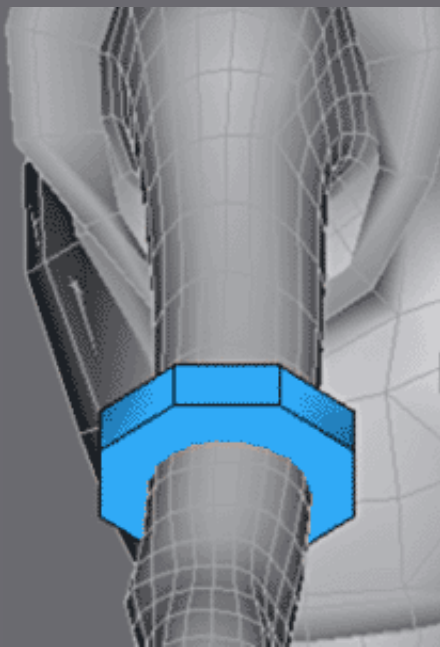


Insert a series of edges in front of and behind and move the vertexes to make an edge (use move with local axis selected)



Move the edges in red towards the outer edge as shown.



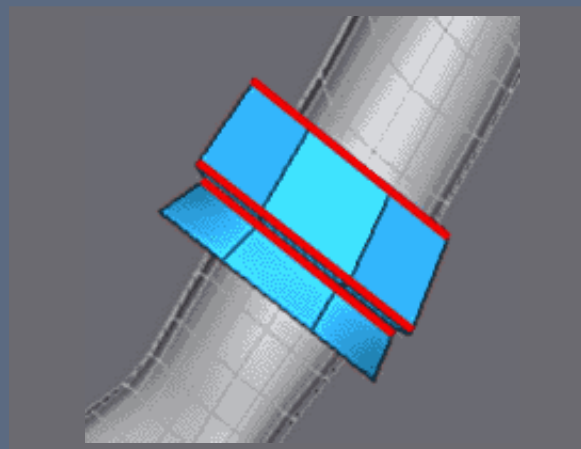


For the armour of the arm, start from a primitive cylinder with 8 dimensions, apply a rotation of  $22.5^\circ$  and adjust whilst compared to the arm like above.

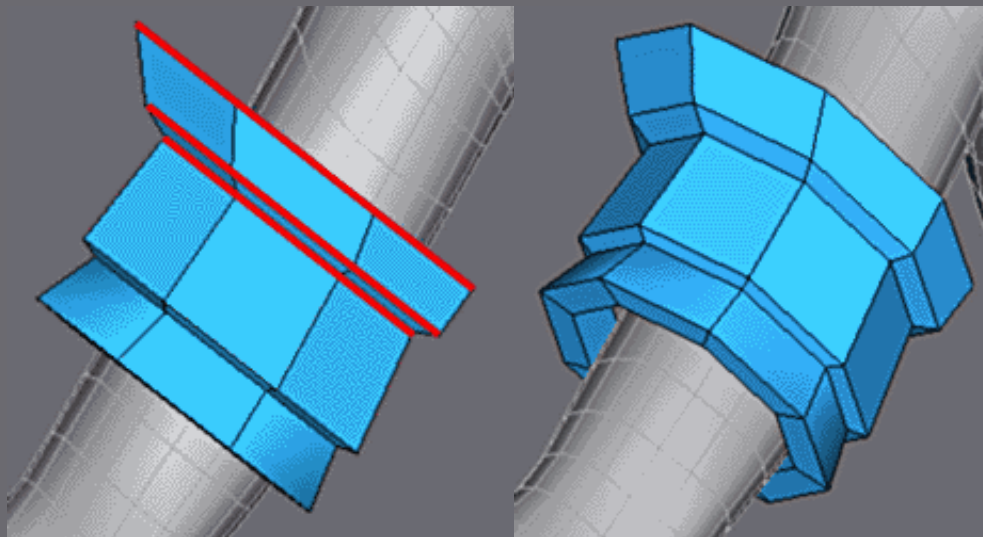
With a uniform scale, adjust the size of the face in red.

Make a series of Extrude/Bevels like opposite.

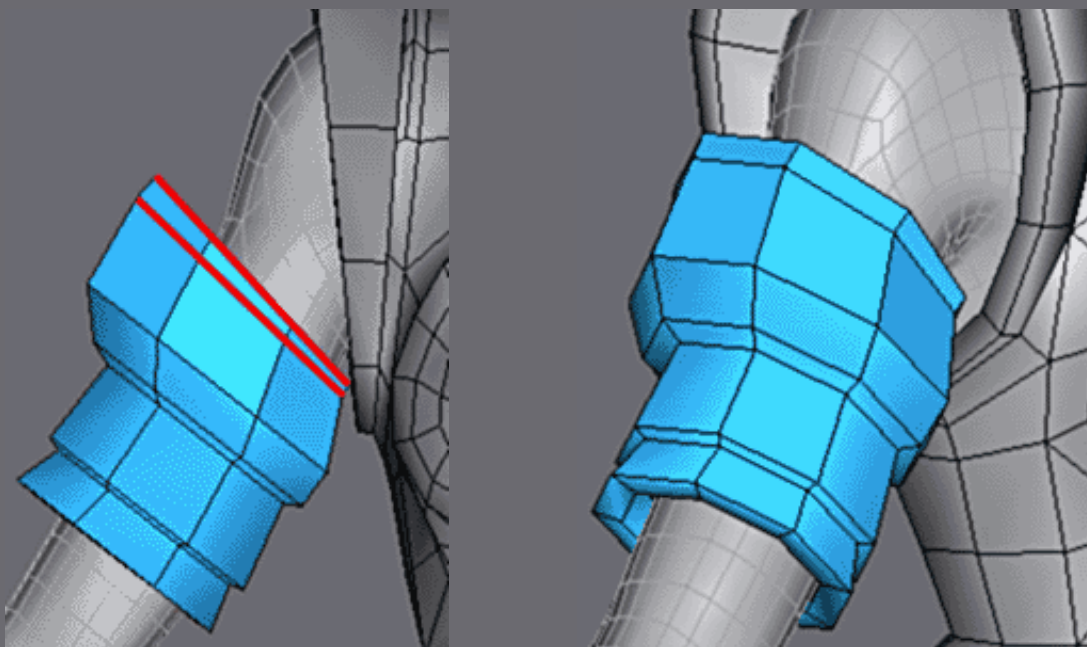
Adjust the new polygon as shown.







another a series of Extrude/Bevels. Adjust the resulting polygons once more.



In the same way make these two extrusions.

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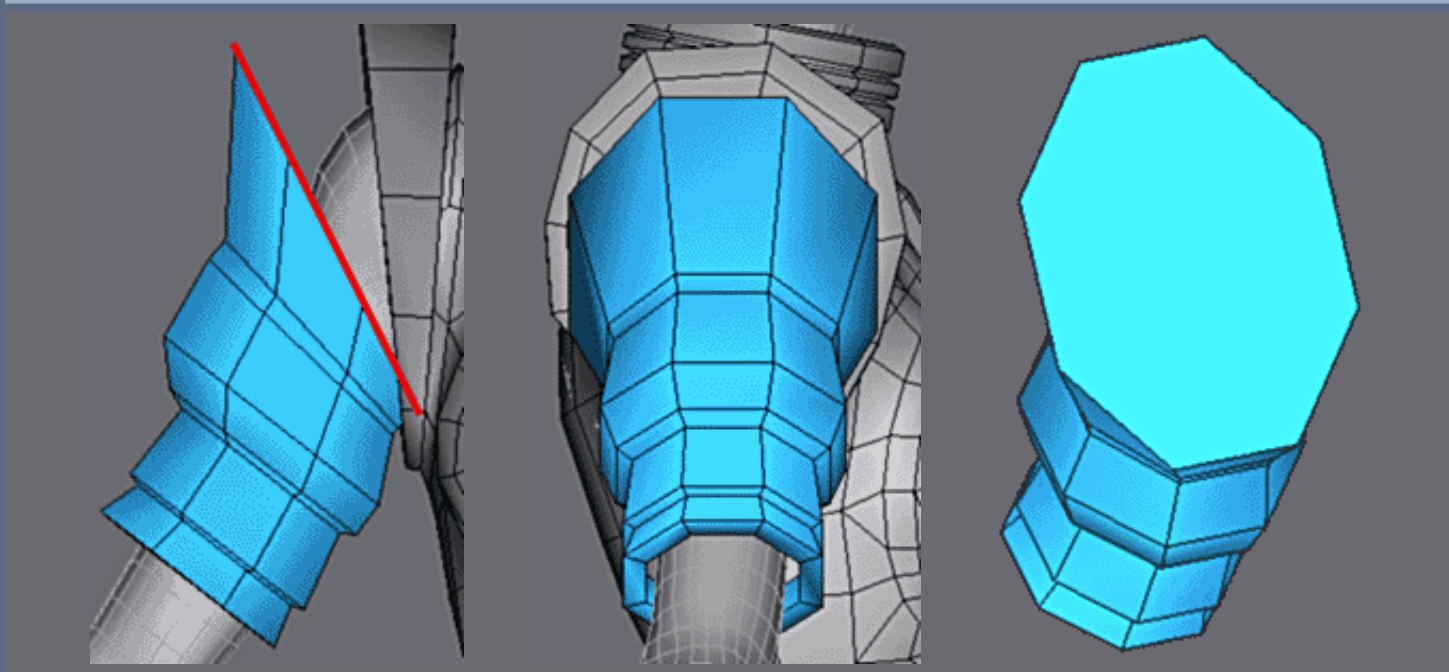
## Modeling Joan of Arc by Michel Roger



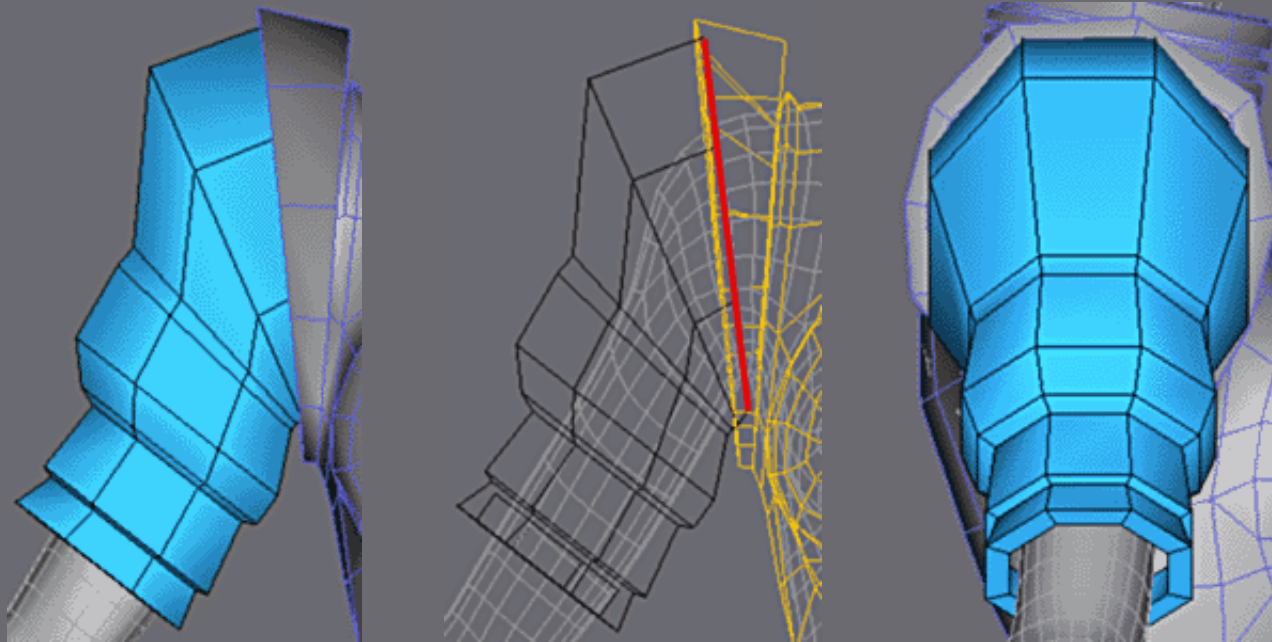
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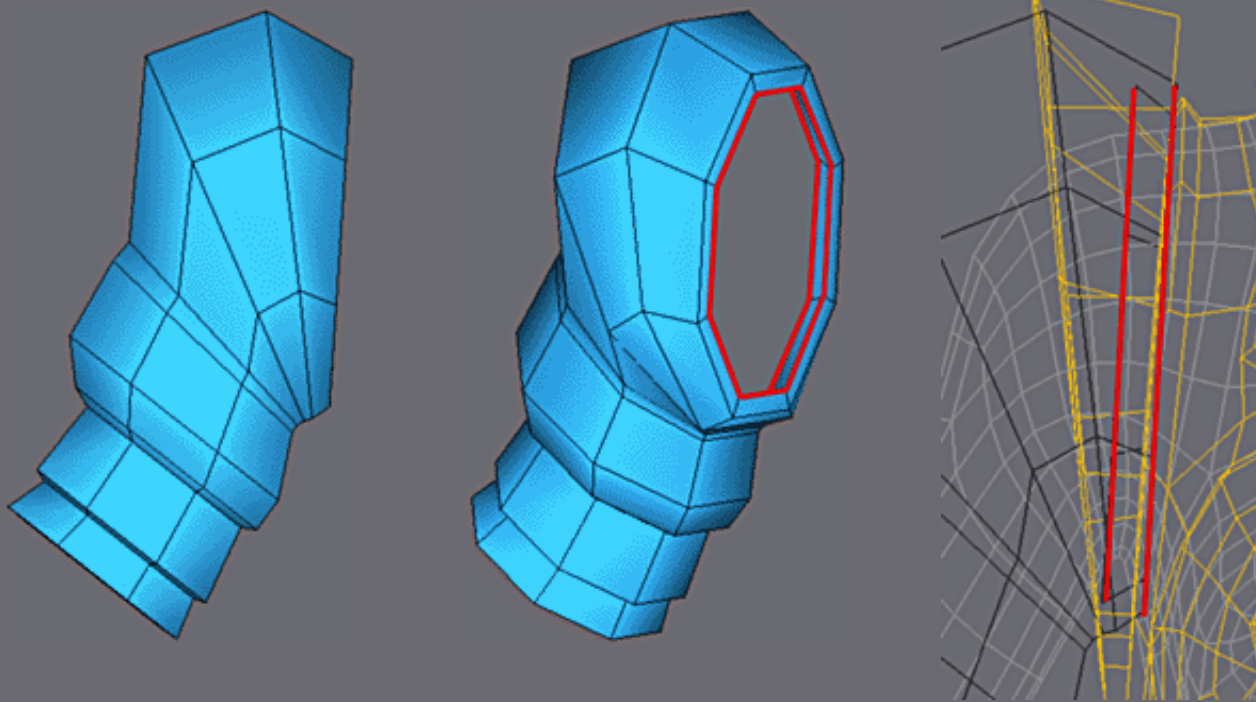
## Modeling of the armour of the bust.



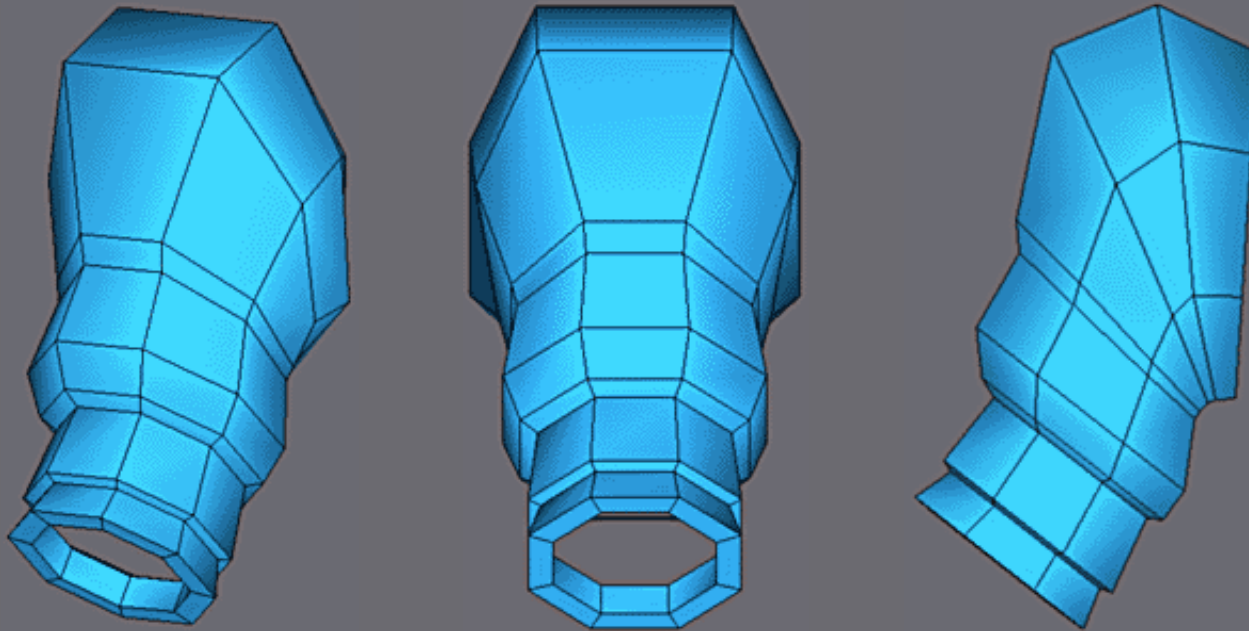
Make an Extrude/Bevel and a rotation for face.  
For with dimensions, make non-uniform Scale on the polygon to narrow its section along the Y axis



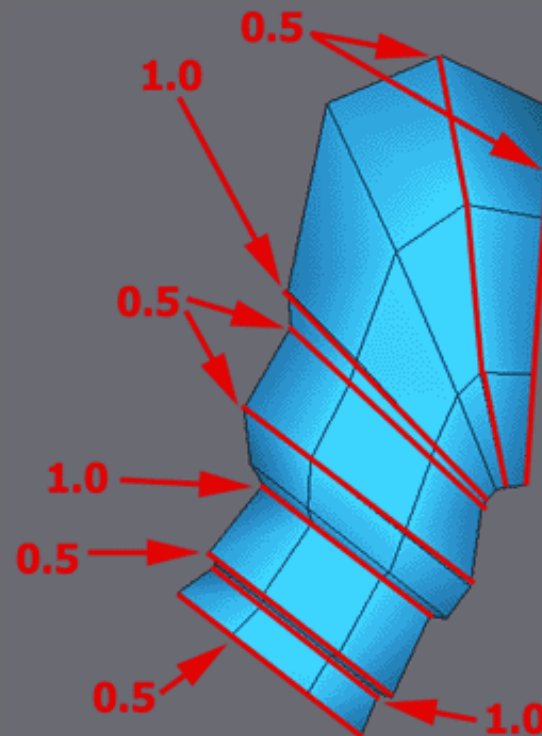
Make Extrude/Bevel.



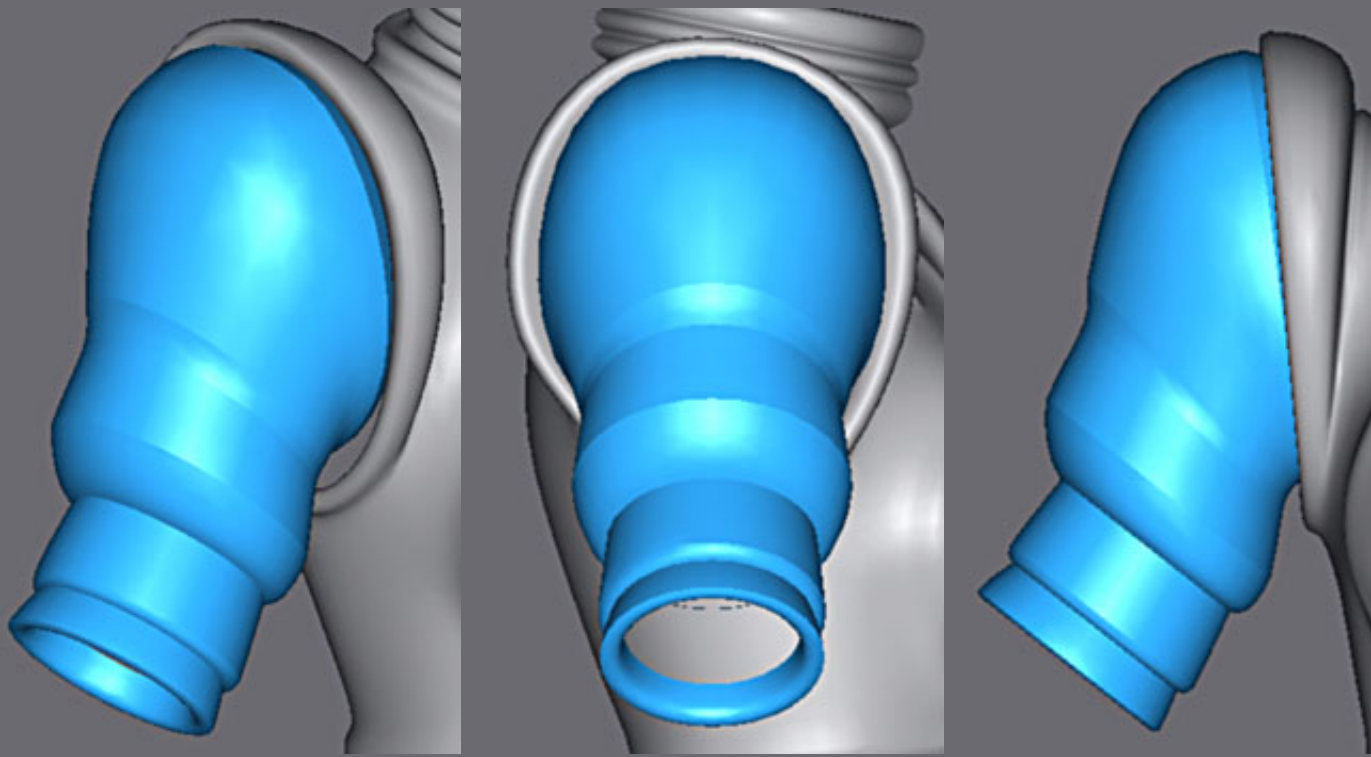
Finally to finish, three Extrude/Bevels with the shown edges to form the interior part.



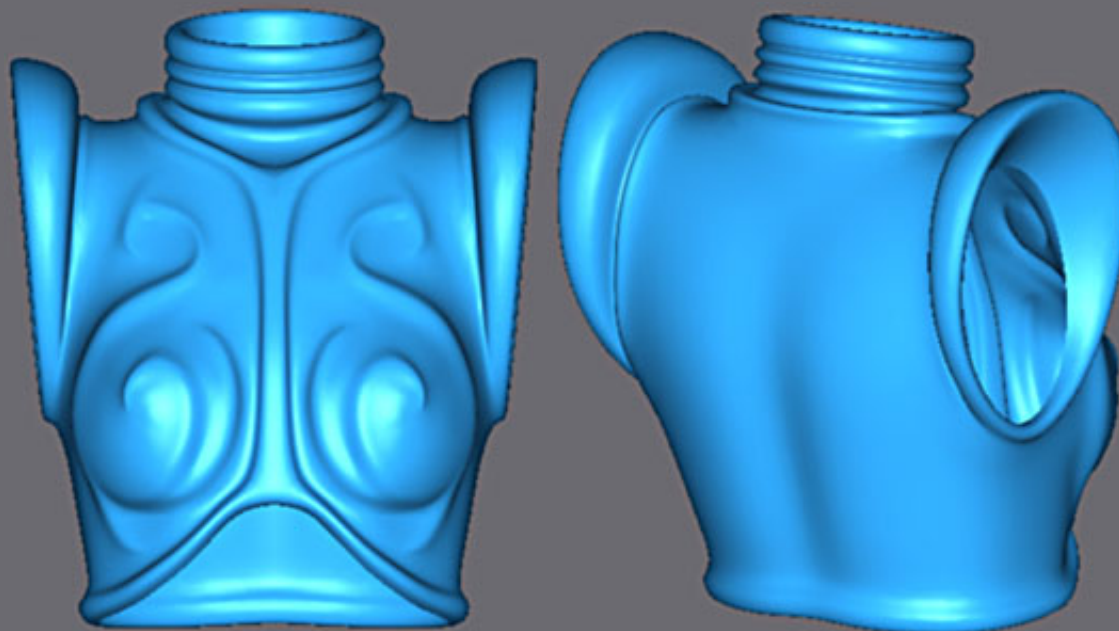
Here are the Crease values for the Edges in Meshsmooth.

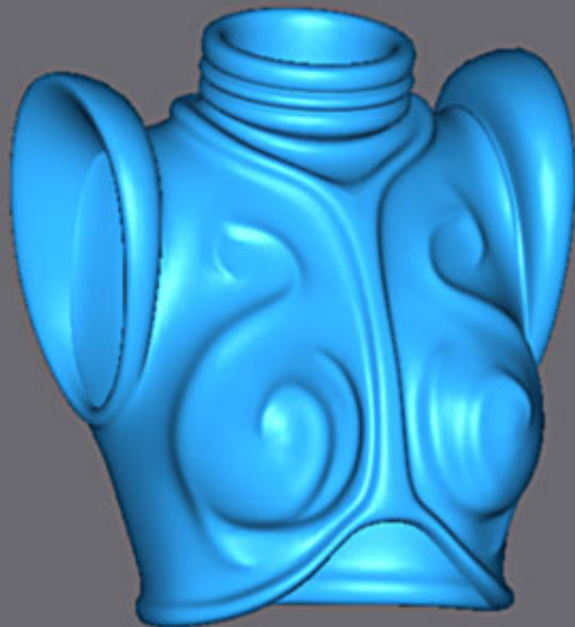






Finish the adjustments with the low poly cage to have a good alignment between the armour of the arm and the armour of the bust.





In the same way weld the two parts of the armour that for the body (see [here](#) ).

Here it is necessary to weld the object before setting the Crease weights.

If one adjusts them on a half, after Attach the order of the edges in memory is modified and then the Creases are found a little everywhere on the mesh...

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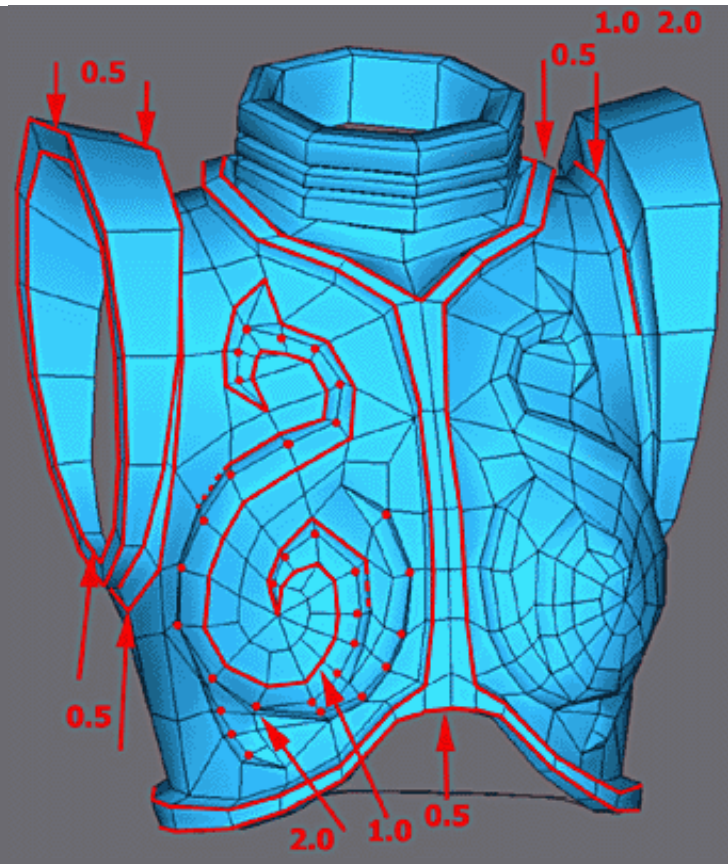
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Modeling of the armour of the bust.

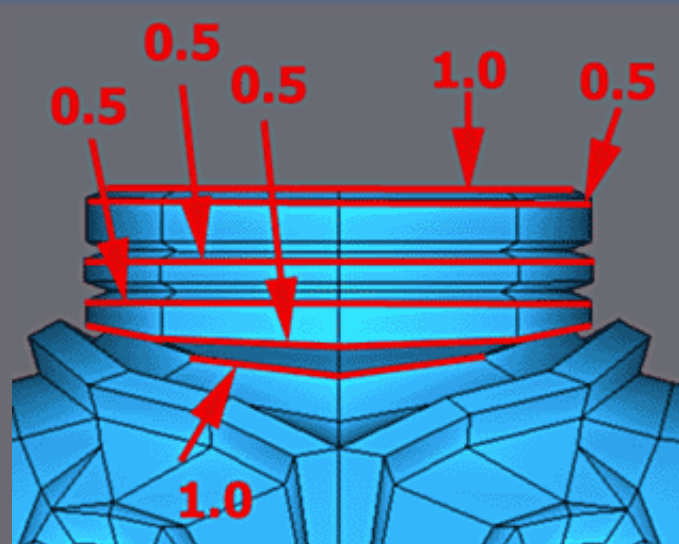


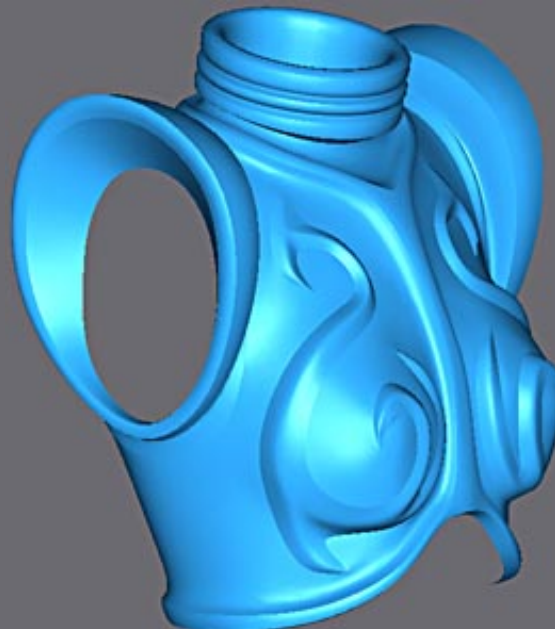
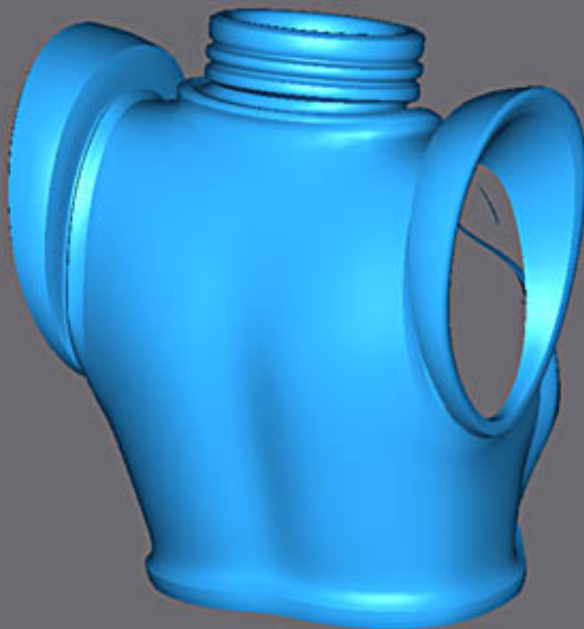
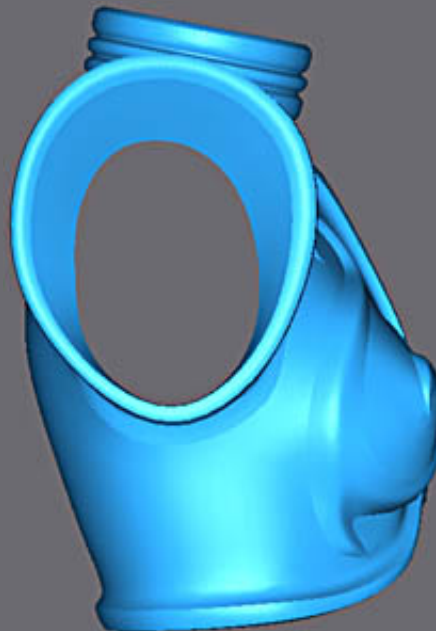
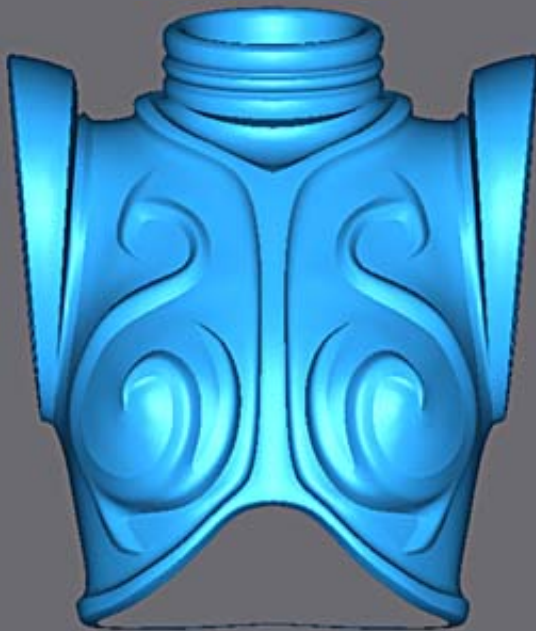
Values of Crease.



In addition to Crease, on the vertexes here on the decoration, Weight is added to accentuate the round-off.

Value of Crease (continued).





The armour of the bust finished in iteration 2.  
Click on images to see them large.

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Email: Michel Roger --- Web: mr2k.3dvf.com

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Joan of Arc  
by  
Michel Roger

3ds Max



*Hair*

## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: [Michel Roger](#) --- Web: [mr2k.3dvt.com](#)

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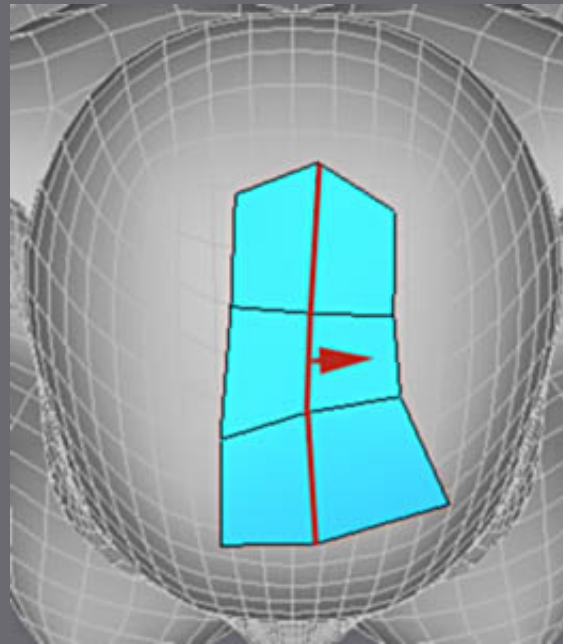
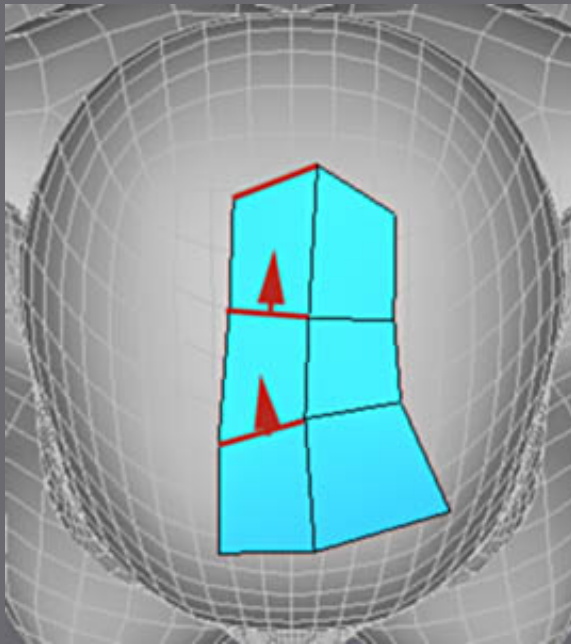
### Modeling of the hair

This part, is rather delicate in detail, as I prefer to produce a good quality mesh.

Technically the modeling of the hairstyle is not complicated, all the difficulty lies in modelling creases and curves.  
It is thus a good exercise of modelling in itself.

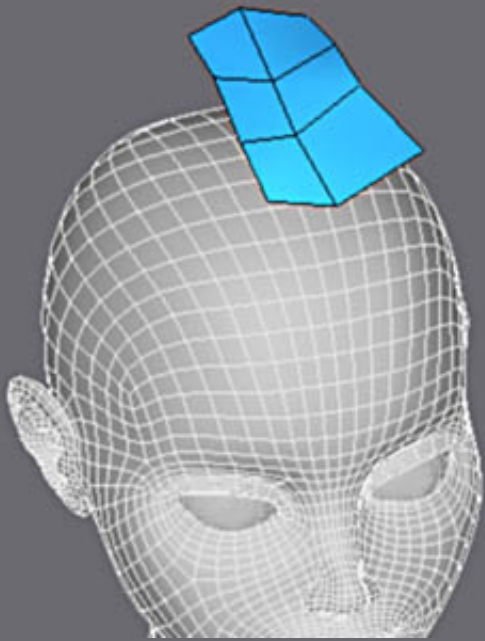
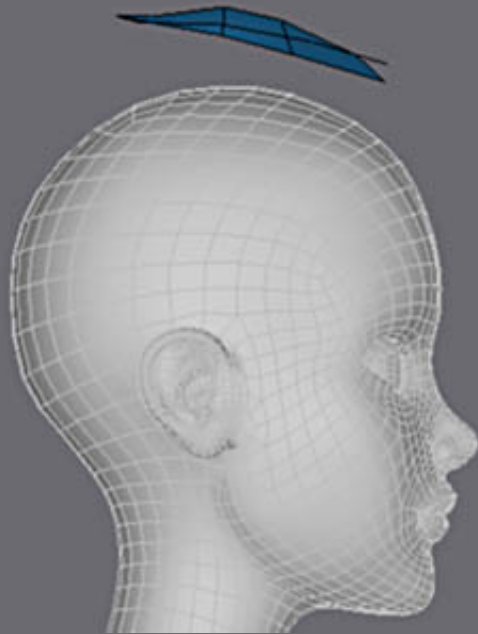
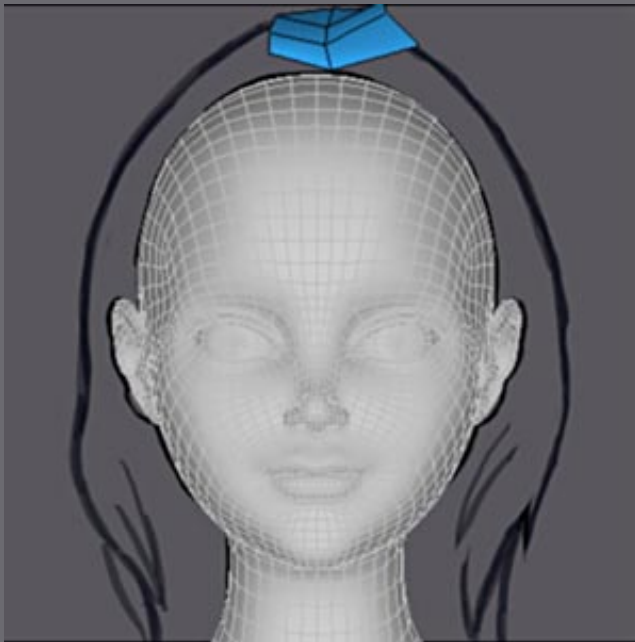
Initially, you can guide yourself by working from the drawing of the head of face.

Create a rectangular face on top starting from Shape Rectangle, then add Mesh Eddit or you can collapse the stack into an Editable Mesh.

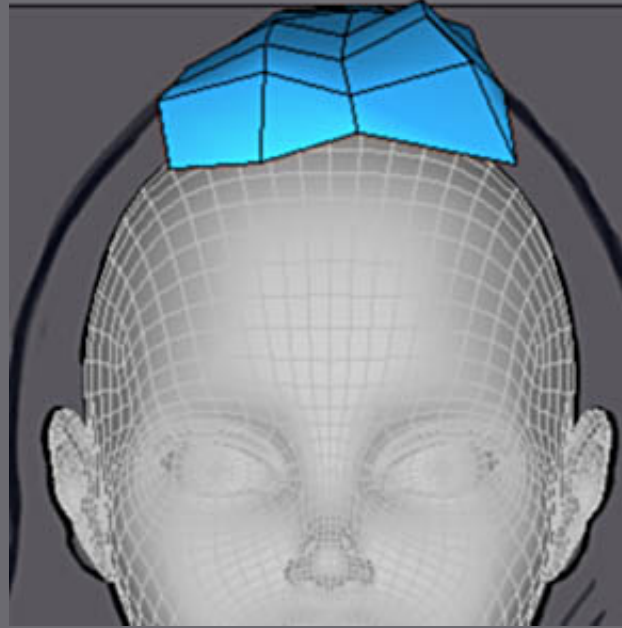
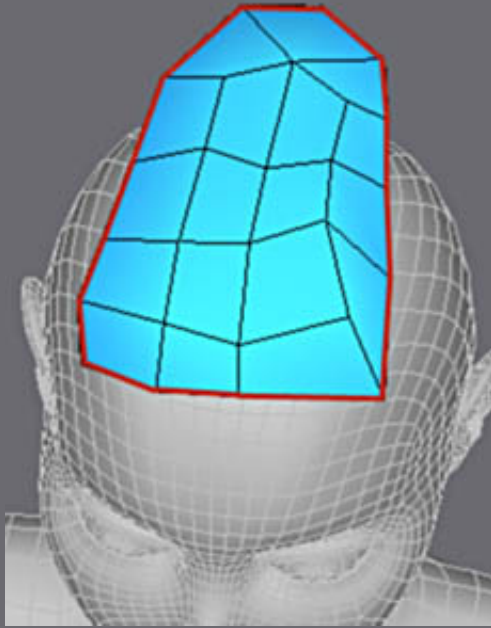


Using the top view, it is enough to initially extrude a edge towards the back of the head and then laterally like above.



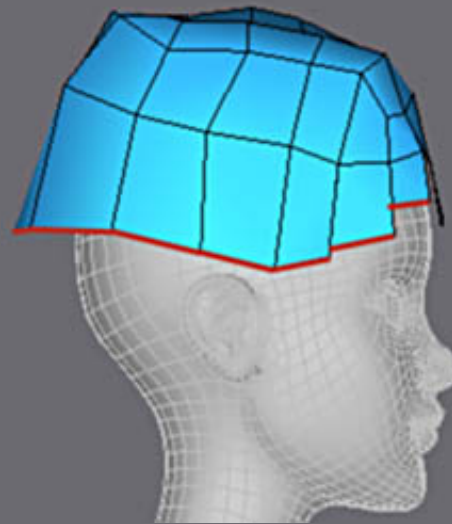
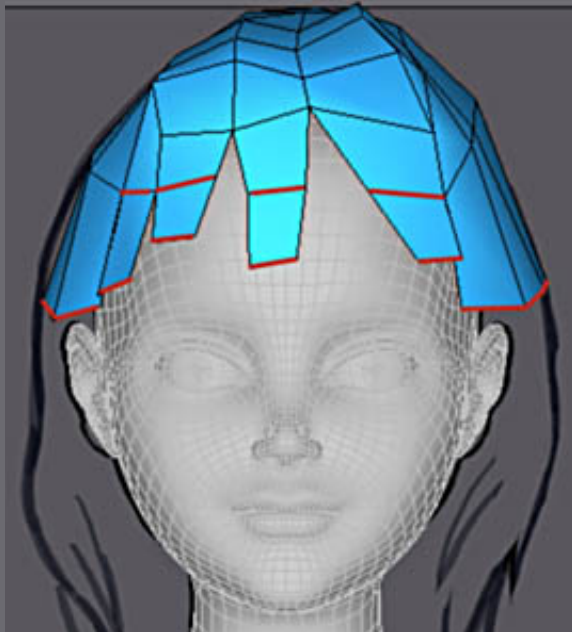


Adjust the verticies to start to give the form to the beginning of the hairstyle.



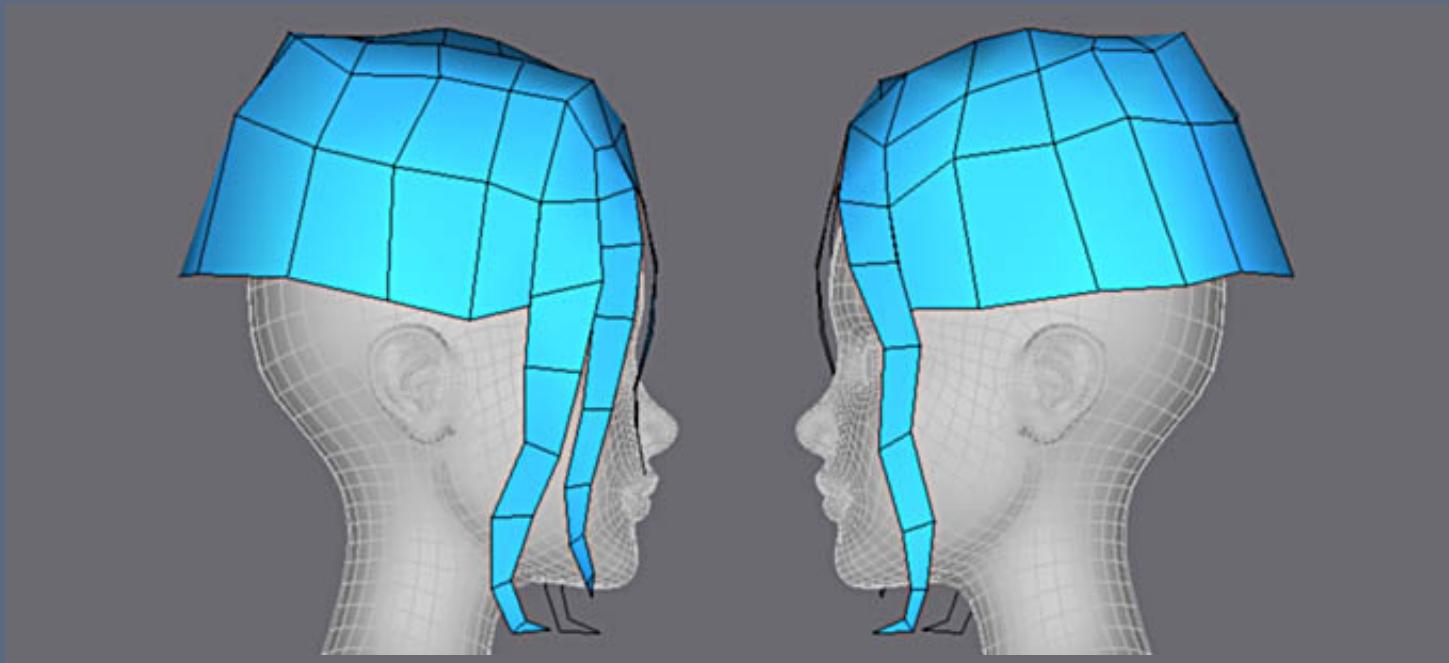
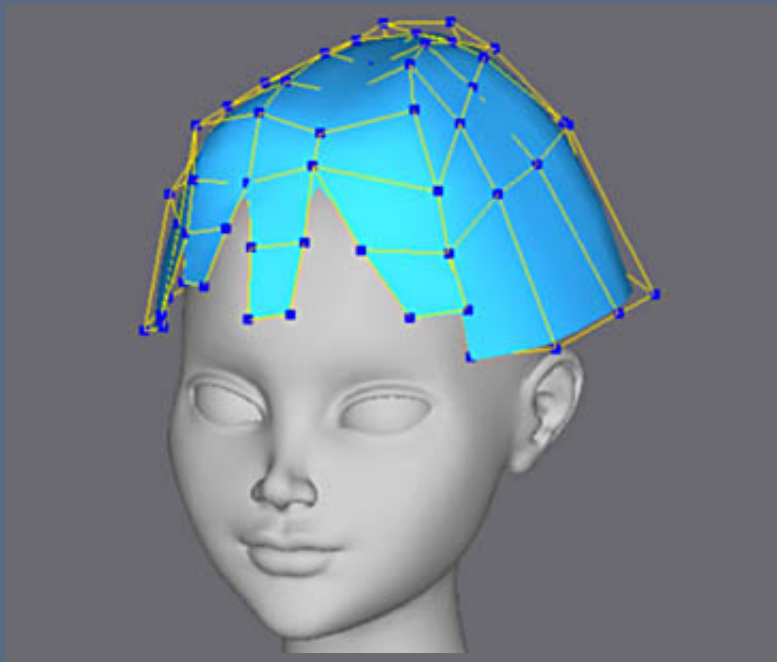
Select the outer edges with Select Open Edges and make an extrusion with uniform Shift+Scale.

Adjust the vertices.



On the front of the head for the beginning of the mesh, it is enough to extrude in turn the edges like above.  
Make in the same the remainder of the edges but you can do all sets at one time.

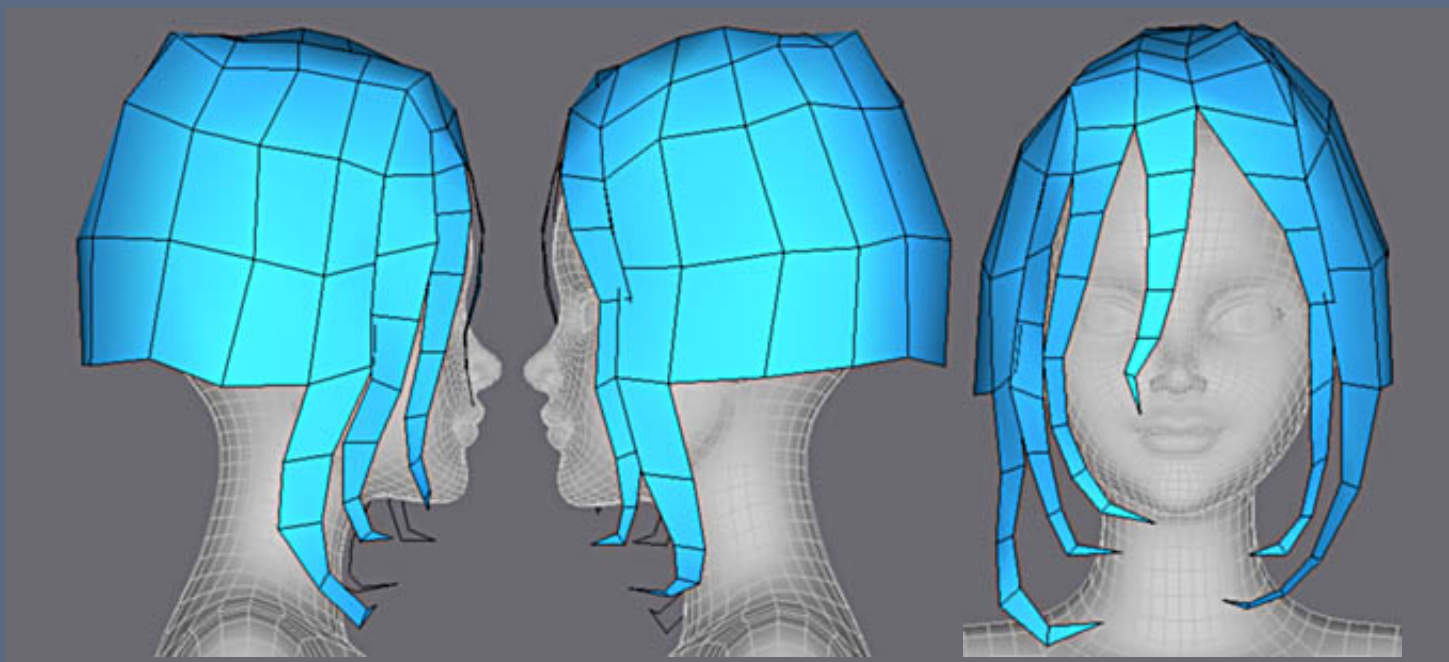
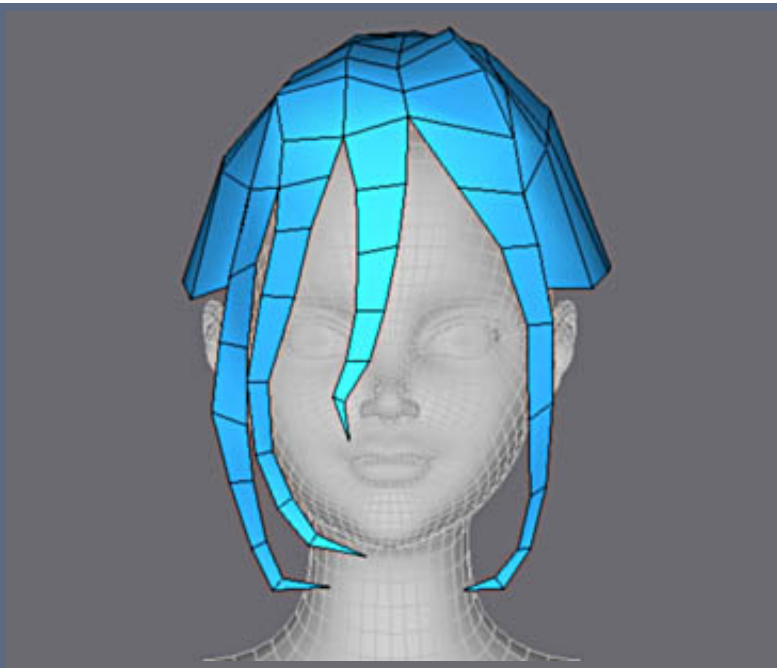
At this stage one can apply Meshsmooth and adjust the general form with LPM cage.



Extrusions of the mesh.

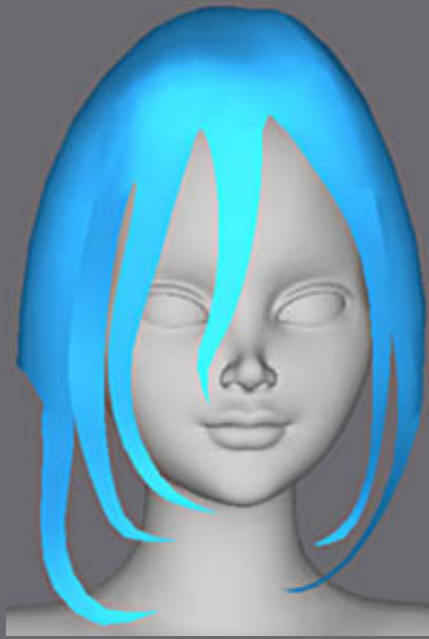
The end finishes at a peak, for that use Collapse Edge.

Adjust the mesh well to give them 'nice' forms from every angle.



Select the others edges on around the nape of the neck and continue with Extrude Shif+Move.

With activated Meshsmooth, stop to adjust the vertices of LPM cage.

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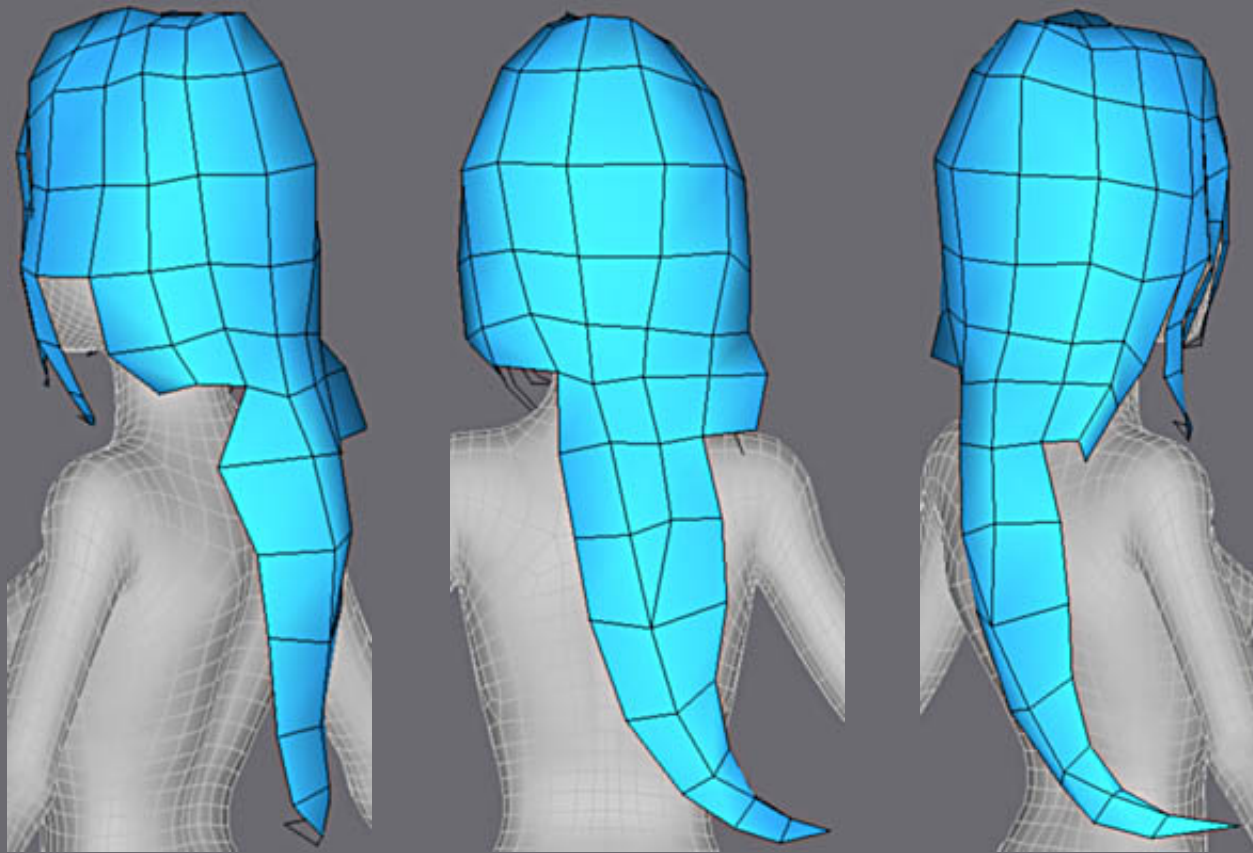
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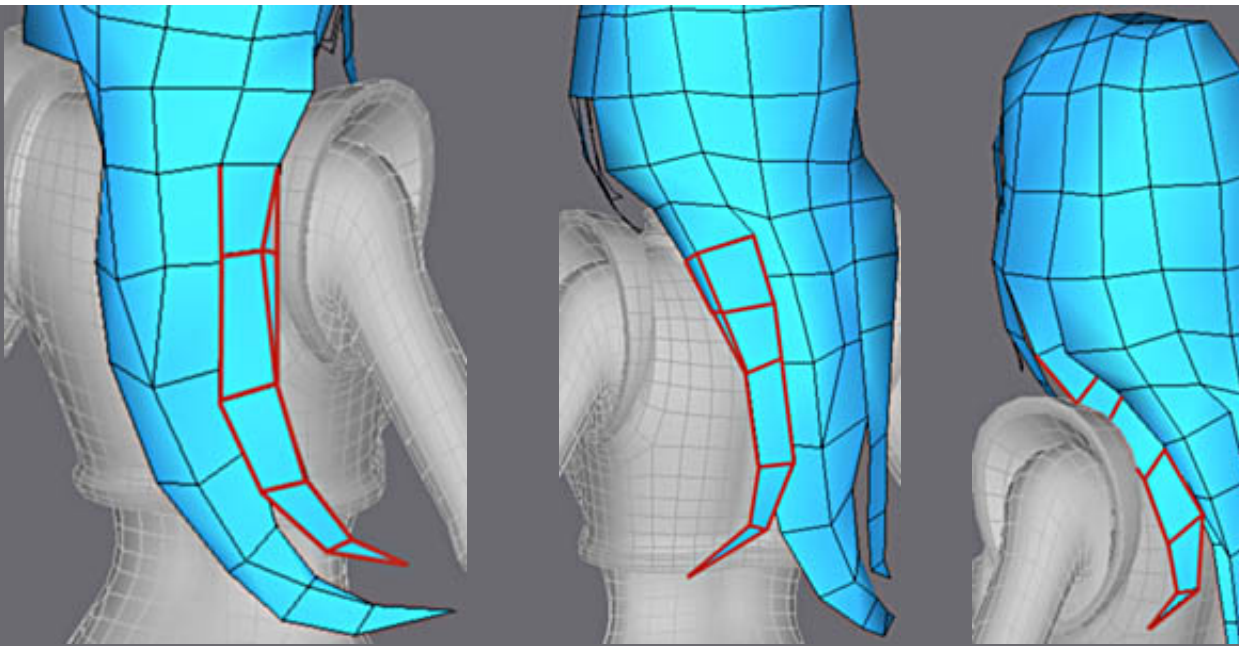
Modeling of the hair



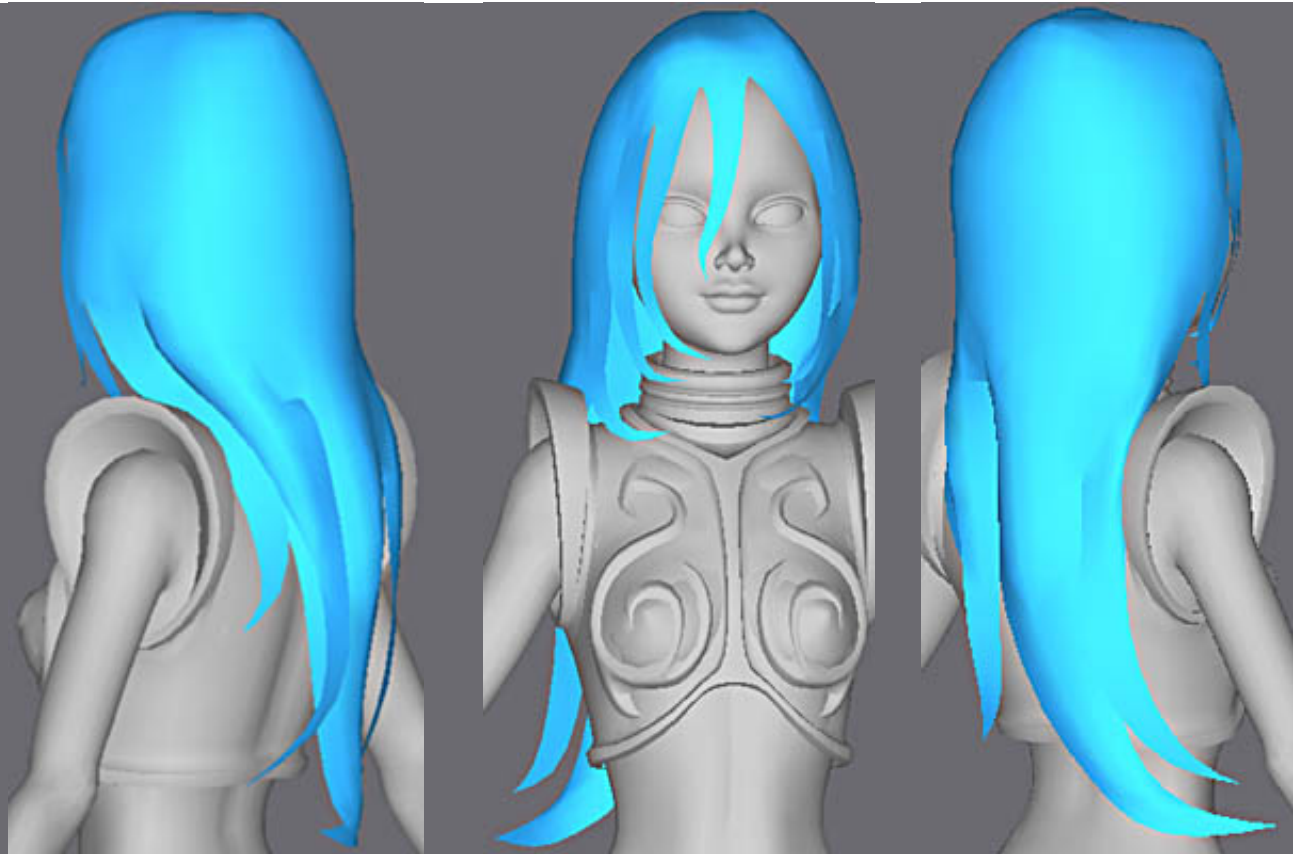


To form the large mesh at the back, is still carried out with extrusions.  
It should be noted that certain outer extrusions are stopped are early so you can go back and make them into a different strand

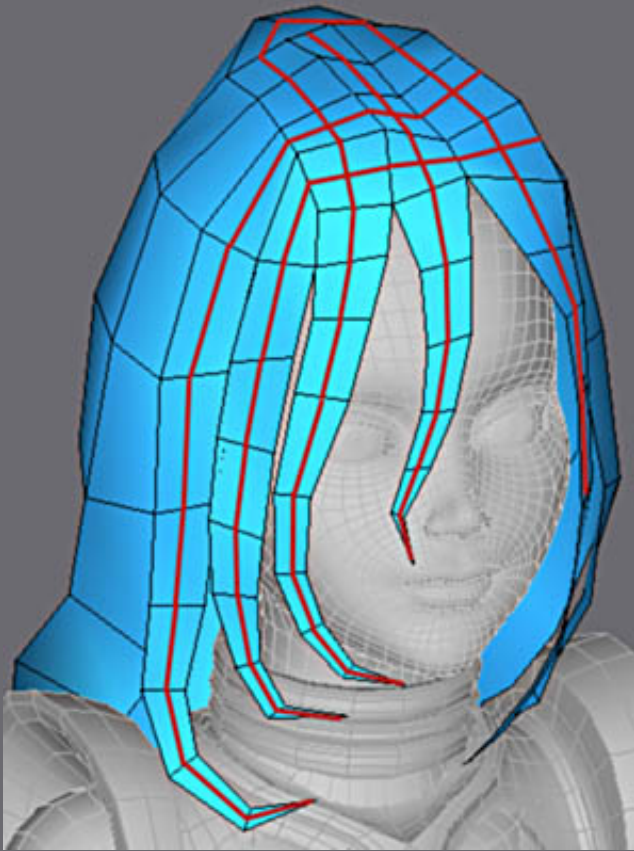




Three strands each with large dimensions  
Here it is necessary to spend time to adjust the vertecies to give pleasant forms.



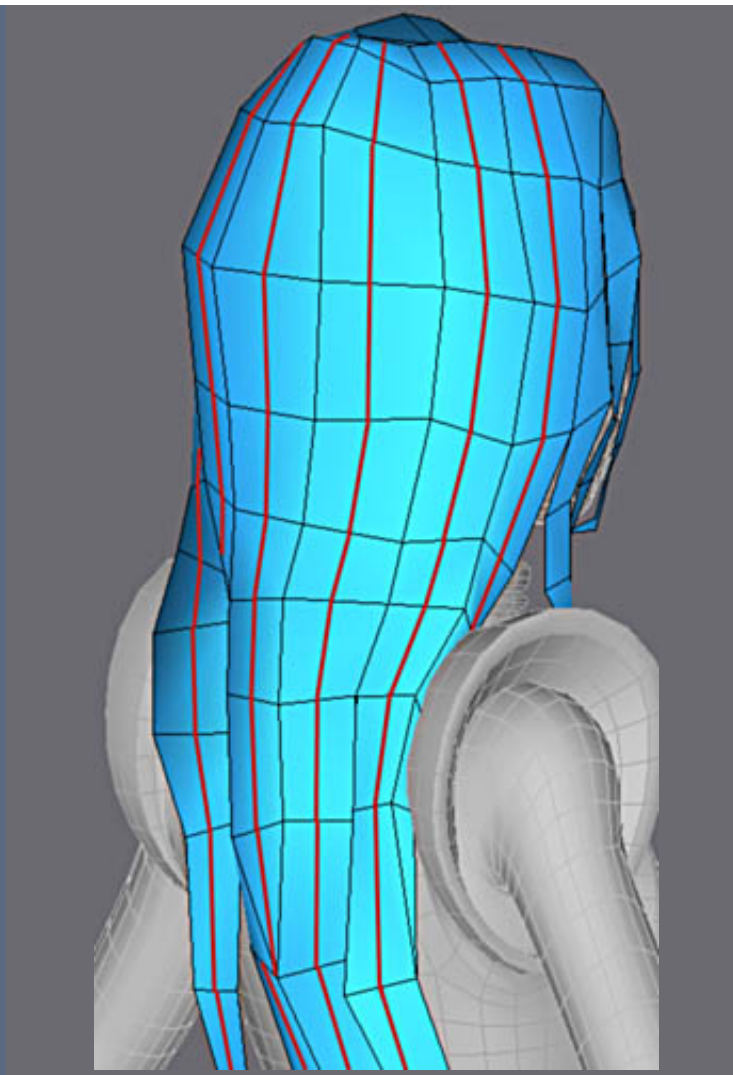
The hairstyle in initial version, with Meshsmooth Nurms iteration to 1.



To finish modeling, it is necessary to add divisions along the wicks.

Use Cut Edges for that.

Make in the same way for the remainder of the hairstyle.



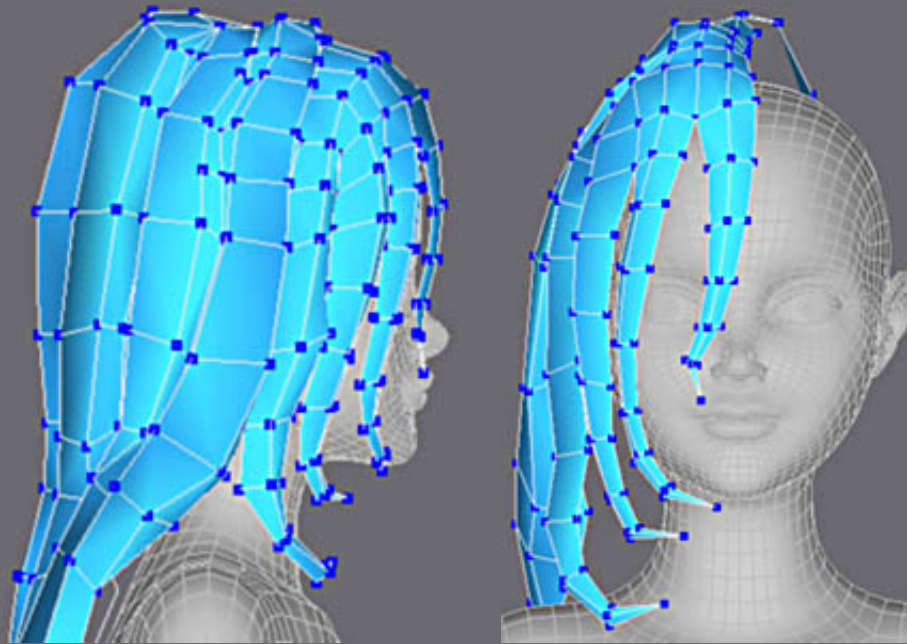
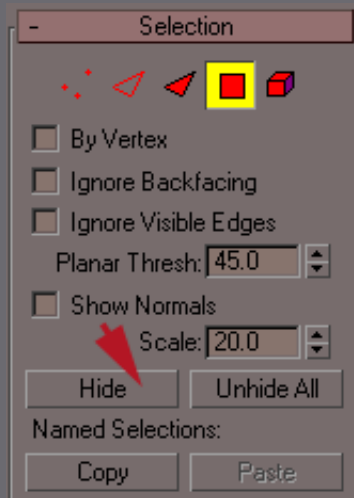
I would like to mention an irritating bug in max 4 that is present with the cut function.

The cuts have a tendency to not appear where your clicks instruct them to.

To correct that, you can add one To modify XForm on the object and collapse the stack (delete any meshsmooth first)

If you have an instanced copy on the go you will have to delete and re-clone this but now the cut should fuction fine.





With all the edges inserted, to be able to effectively adjust the LPM cage it is practical to hide half of the faces of the hairstyle.

For that select the faces then click the Hide button.

One can then more easily move the vertexes for with dimensions without being obscured by those from the other dimensions of the hairstyle.

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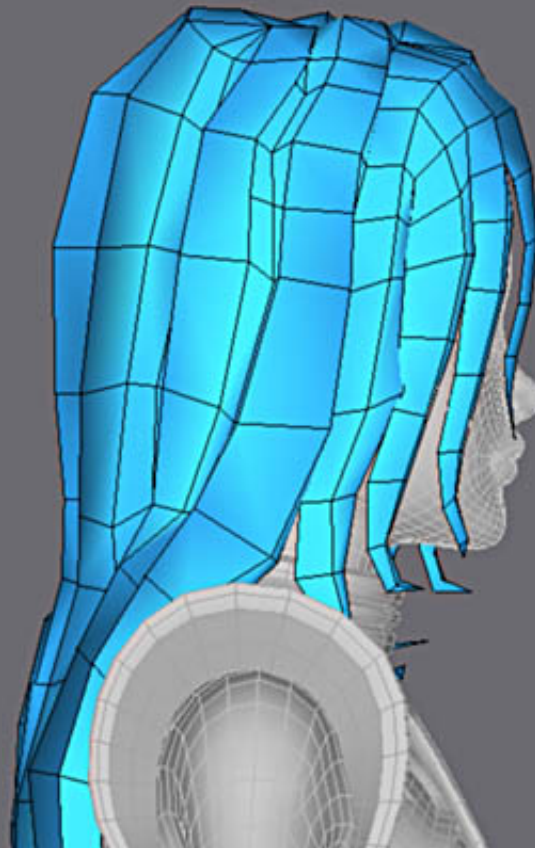
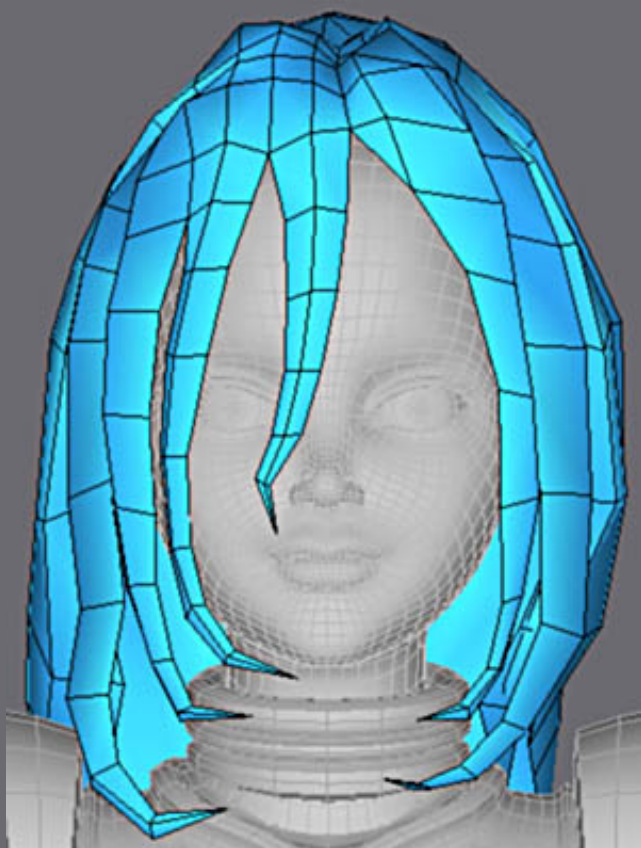
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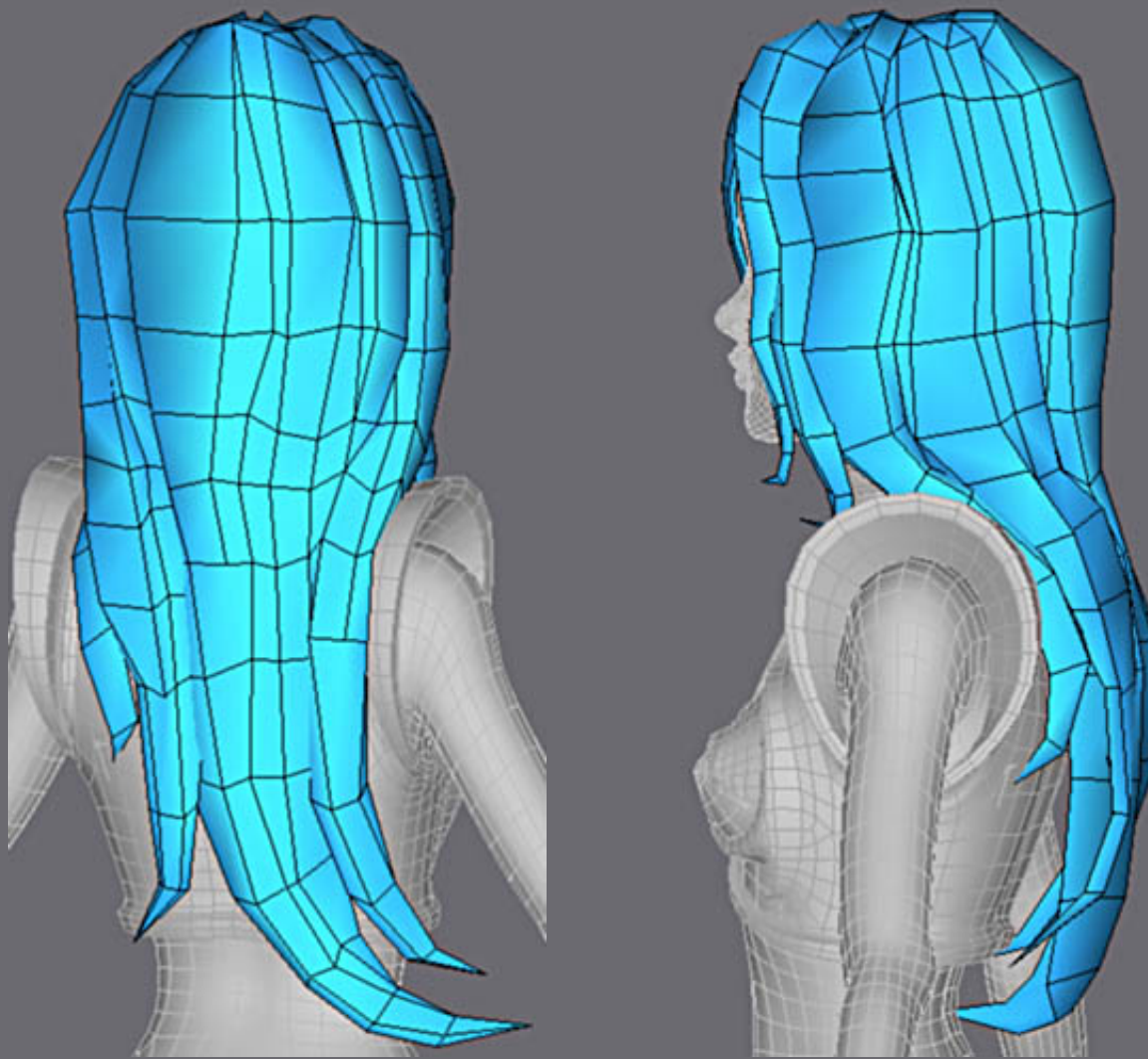
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Modeling of the hair

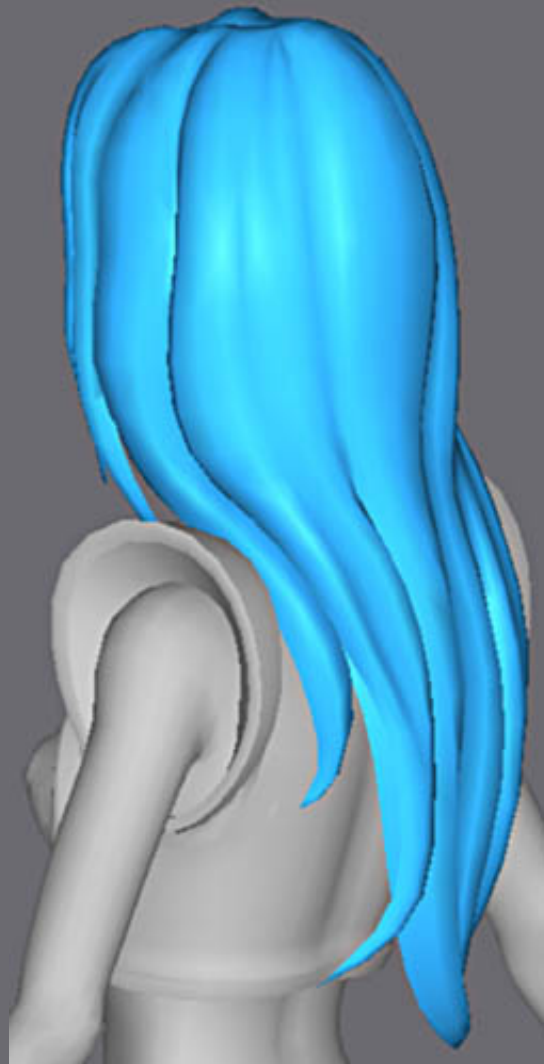
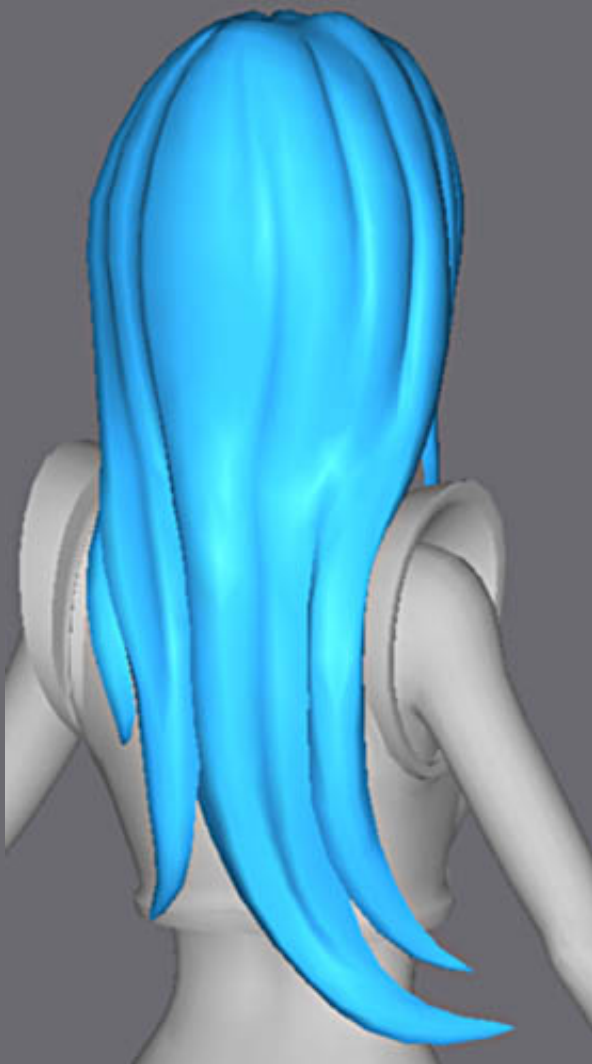


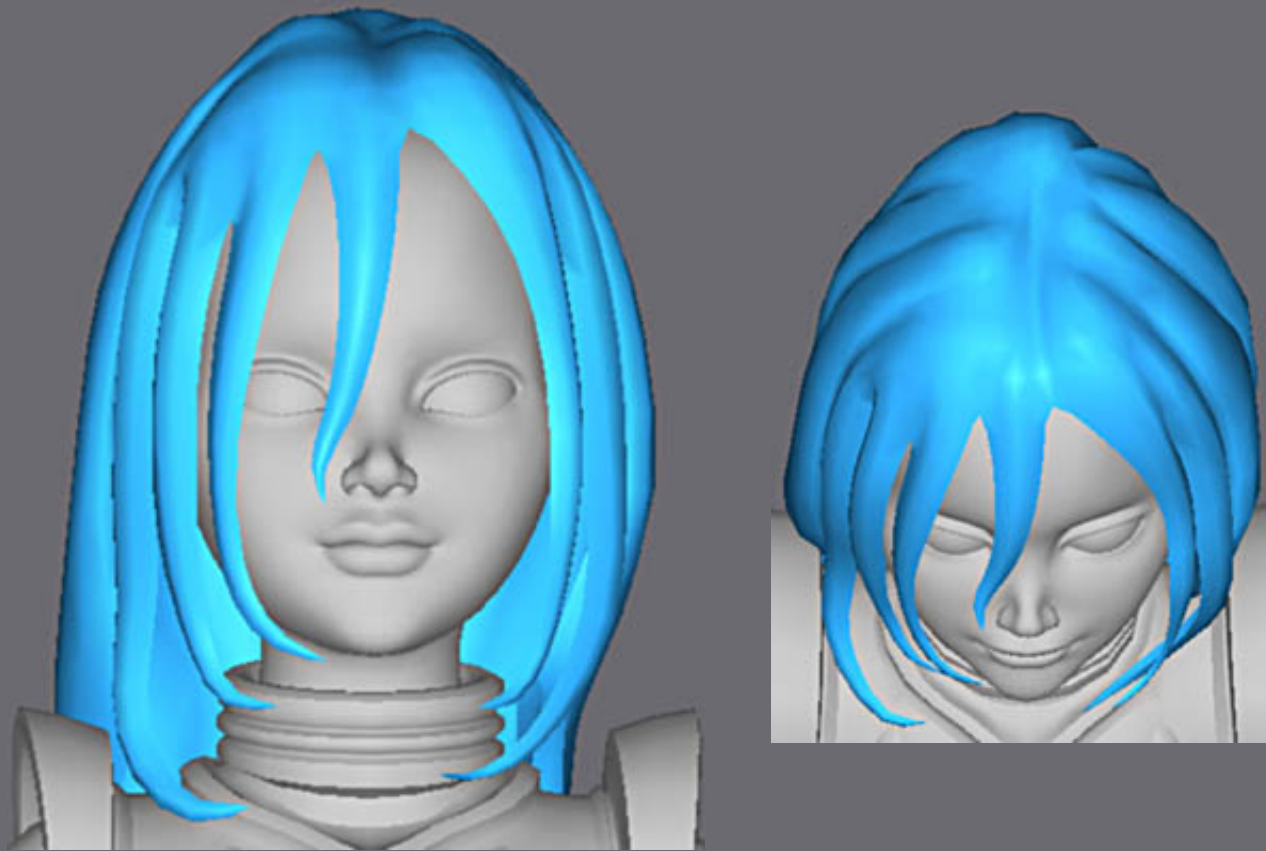






The hairstyle once all adjusted vertexes.  
This stage is not difficult technically but requires a lot of patience to result in a good form.





The result with smoothing iteration 1.  
Here the provisional material is in 2-sided mode, the faces thus render and show both sides disregarding their normals

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Joan of Arc  
by  
Michel Roger

3ds Max



*Glove*

## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



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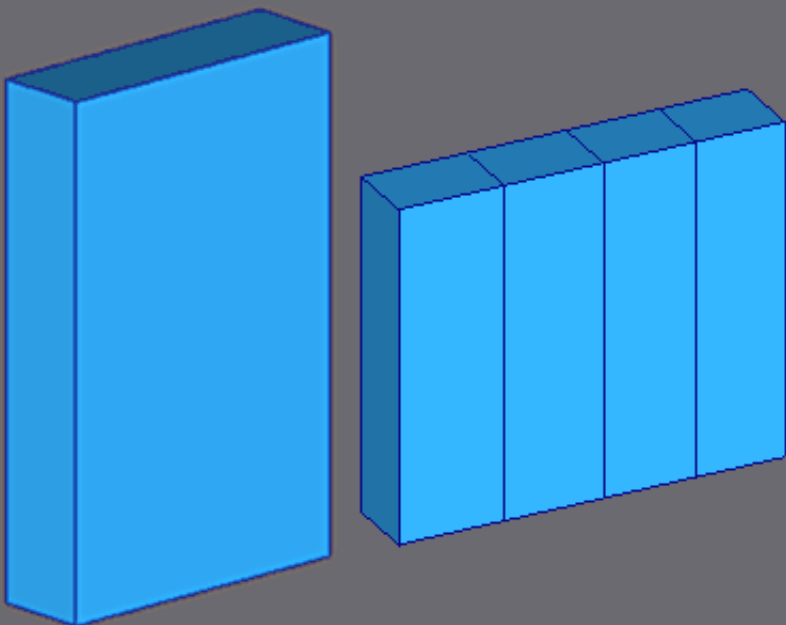
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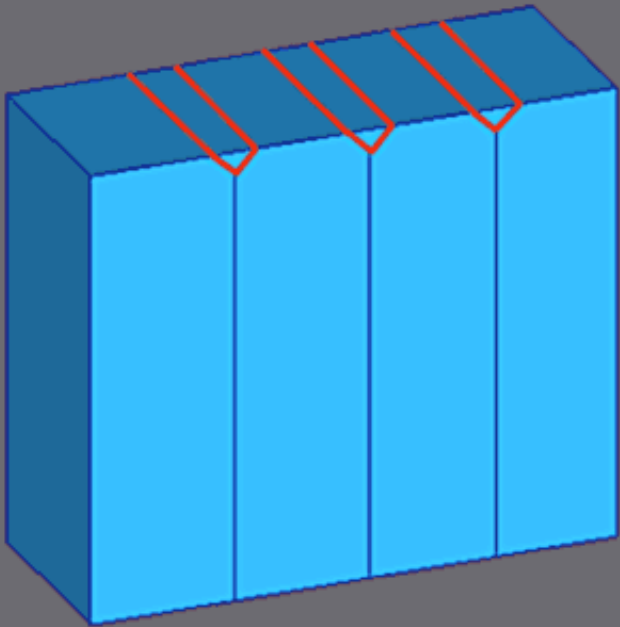
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### Modeling of the glove.

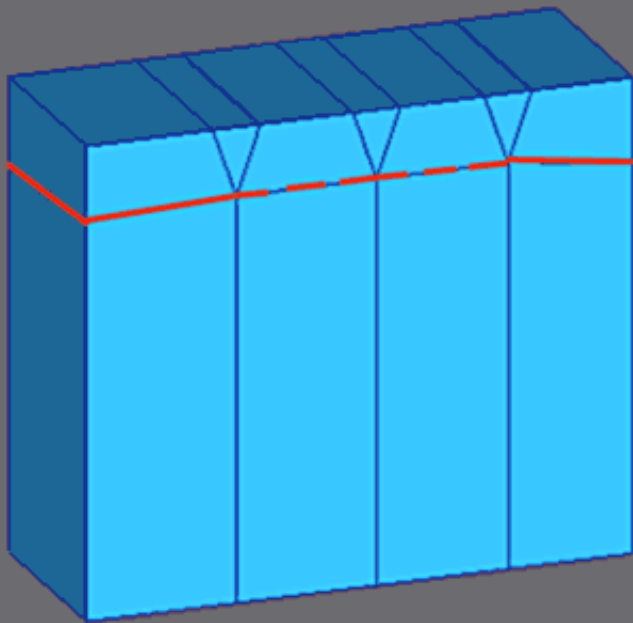


To modelling of a glove amounts to modelling a hand with some simplifications.

The starting object is a cubic primitive which one extrudes 3 times with dimensions to obtain 4 vertical divisions.

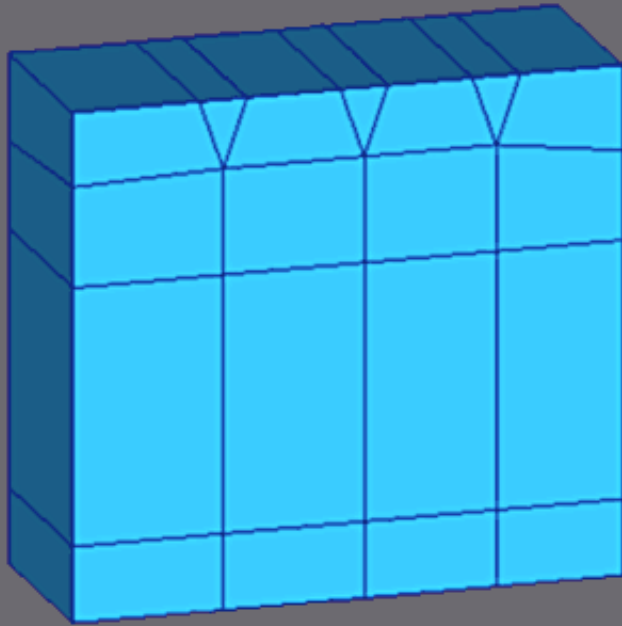
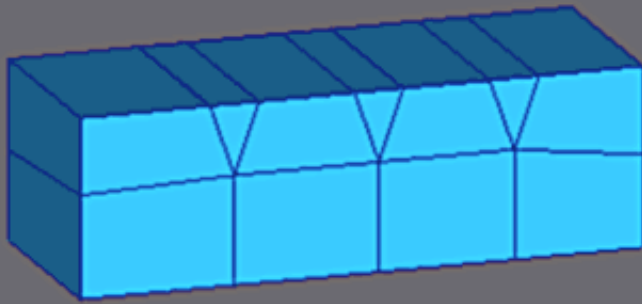


Chamfer the edges at the top to prepare the separation of the fingers.



Move downwards the vertecies of the triangular faces.

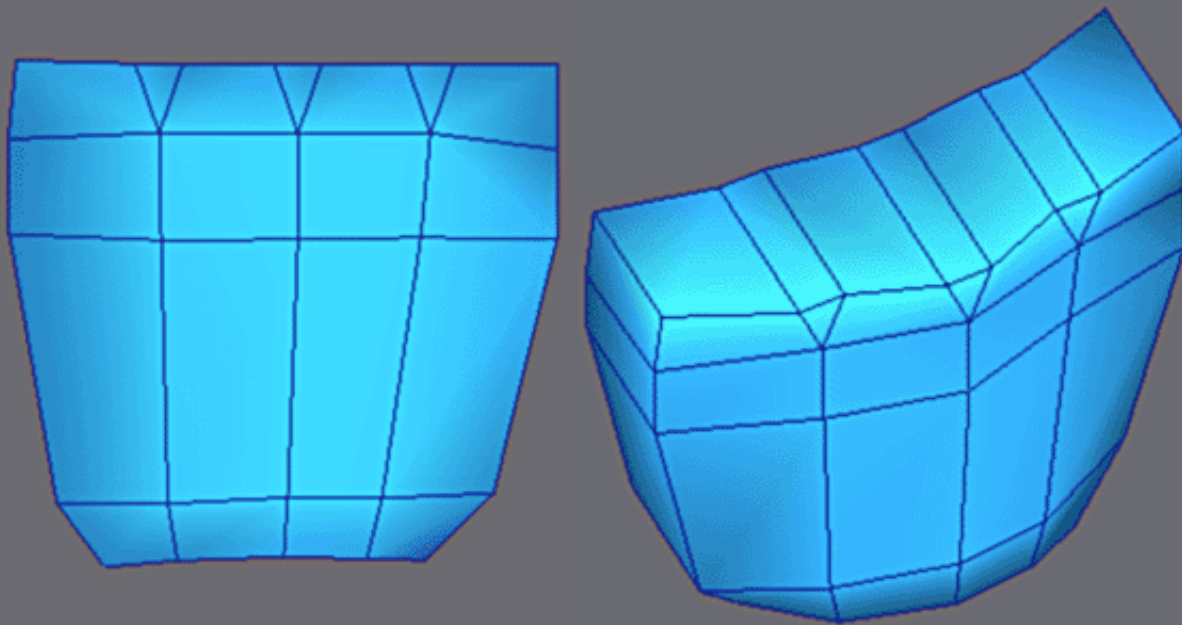
Then with Cut and Turn Edges complete the division as opposite.



Move the vertecies up from the base then  
make 2 extrusions of bottom faces.

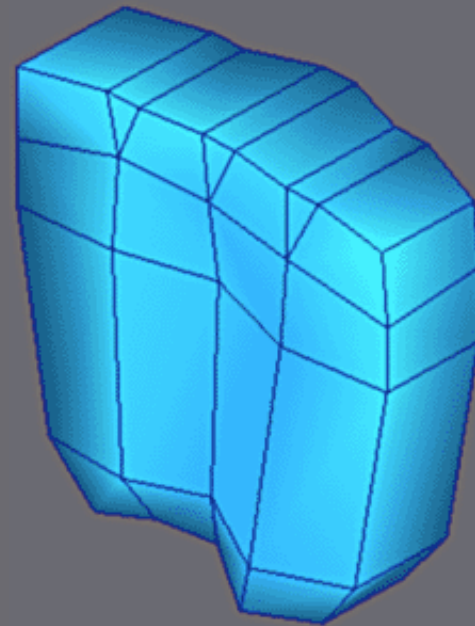
you now have the basic form to begin the  
palm and the back of the glove.

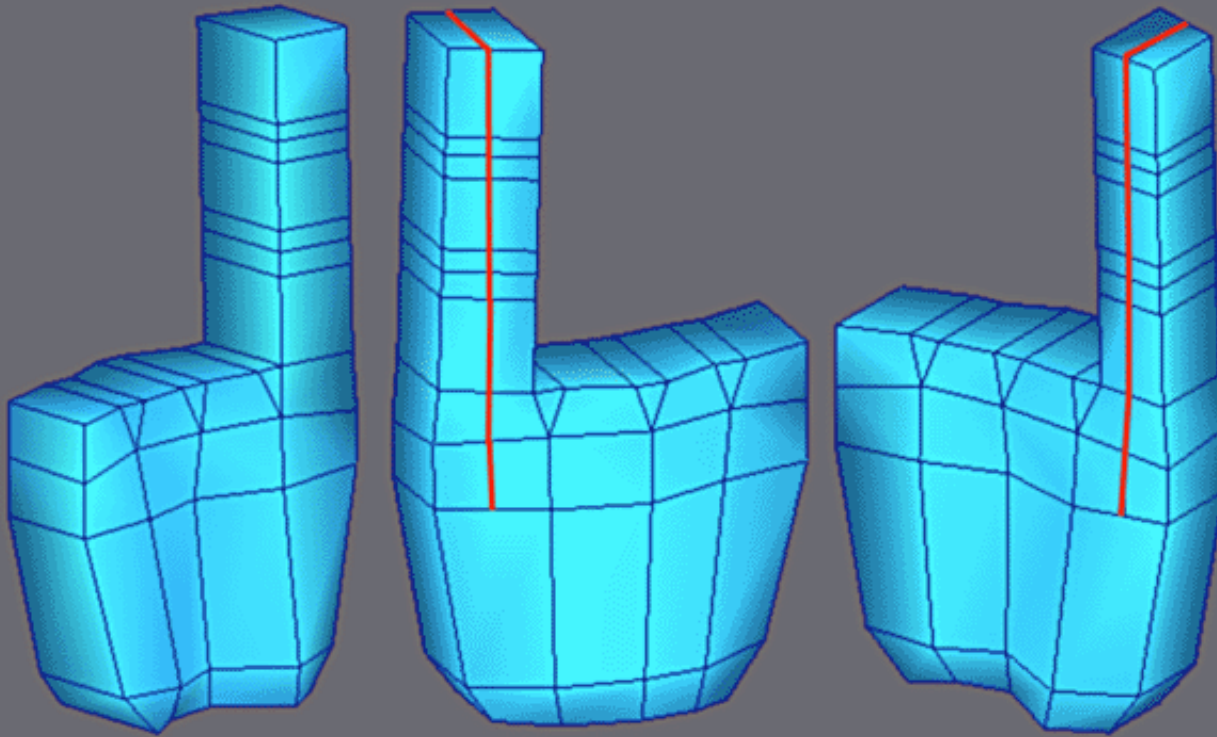




This stage it is necessary to give it a more anatomical form, without building in too much of the details.

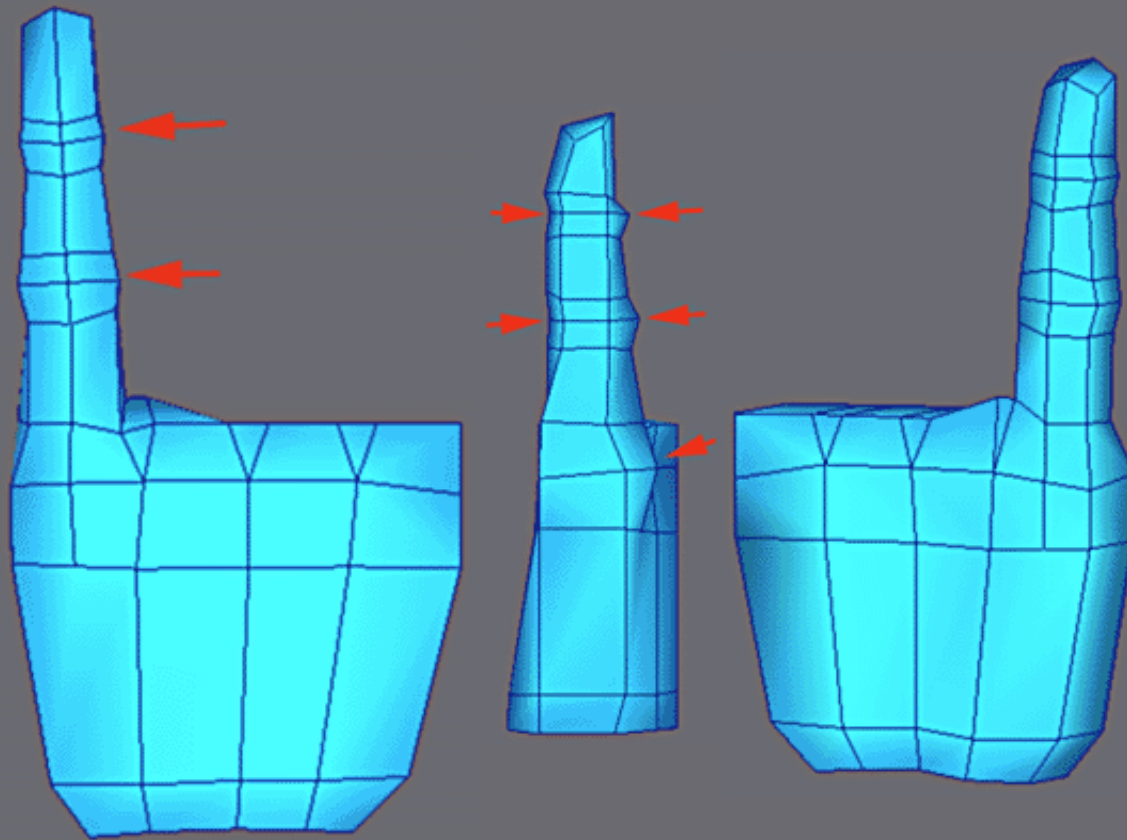
Throughout this tutorial, it is usefull to continually observe your own hand.





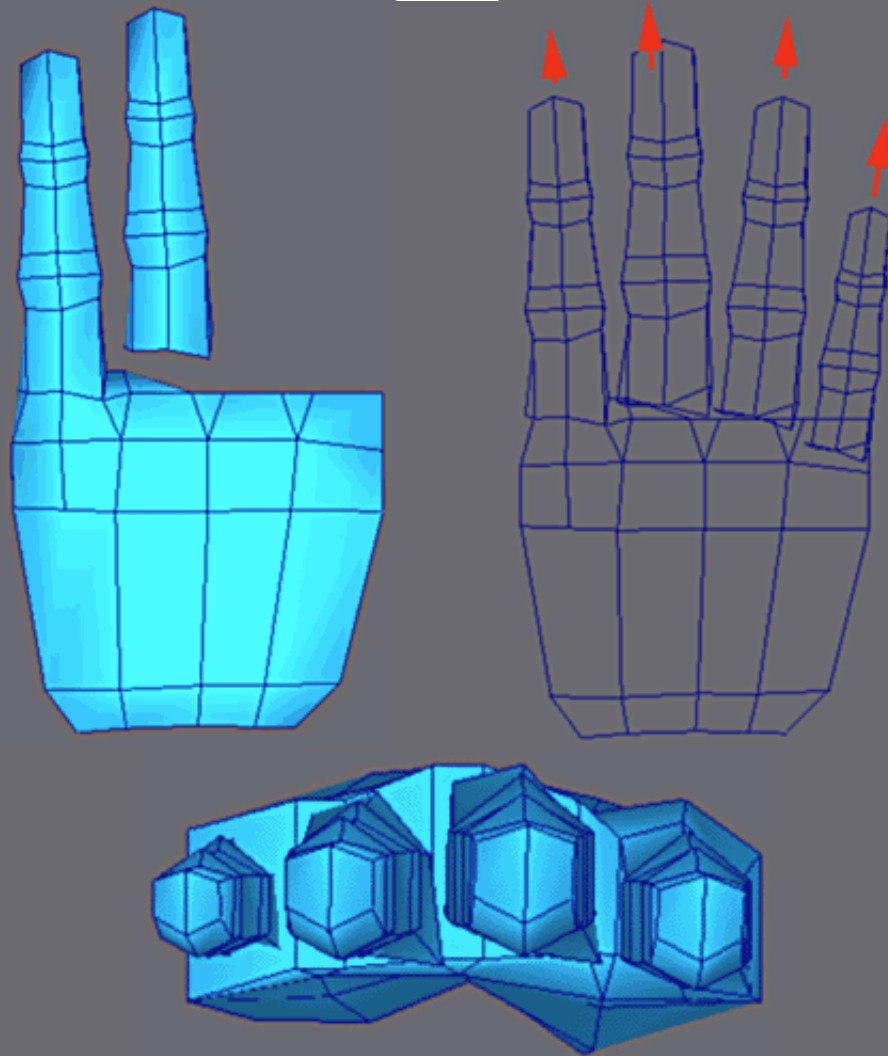
The index is extruded as above, Take care to place segments in the areas of deformation for when the skeleton is assigned.

Then with Cut Edge, insert a division around the center of the finger as shown above



Make the details (arrows). You can apply Meshsmooth to have an idea of the final result and continue to adjust LPM cage.

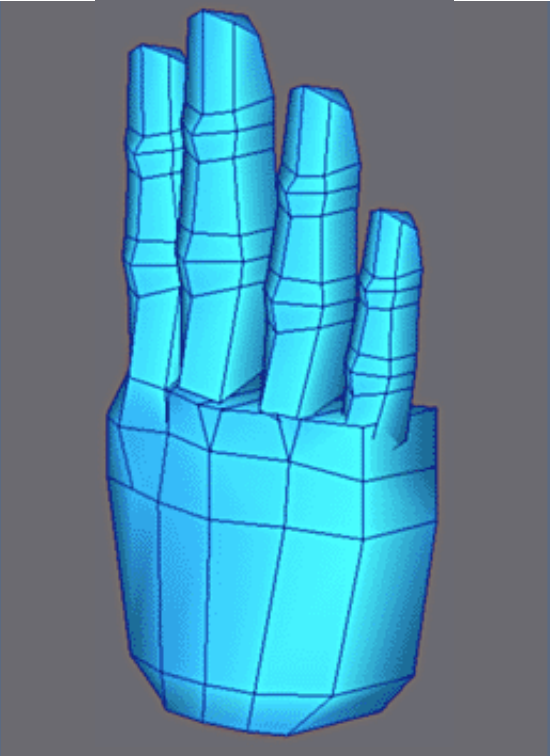
It should be noted that the fingers are not parallel but radiate from a starting point located towards the wrist.



Once index finger is completed, duplicate it by selecting its faces and with a shift+move make an Element copy.

Repeat the operation 4 times, adjust the orientation, size etc.

For the end of the fingers, those are placed so the ends for a circle's arc



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## 3D Studio Max

## Modeling Joan of Arc by Michel Roger



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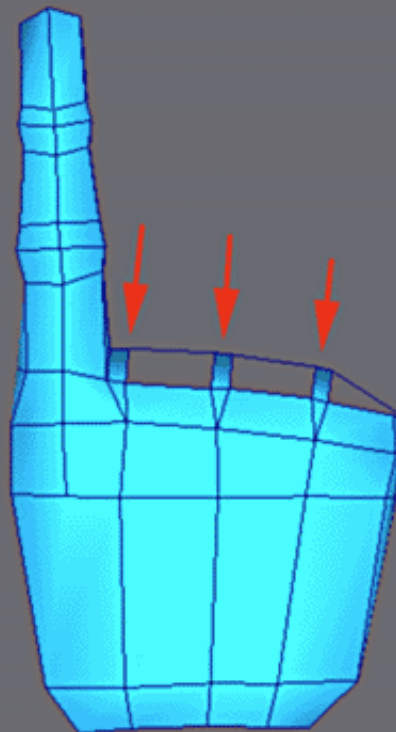
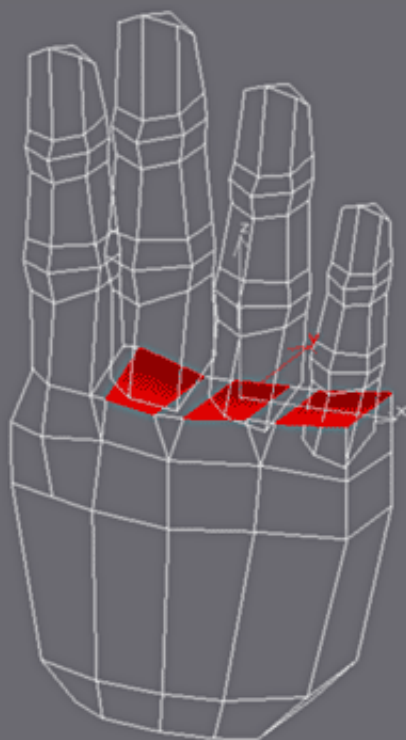
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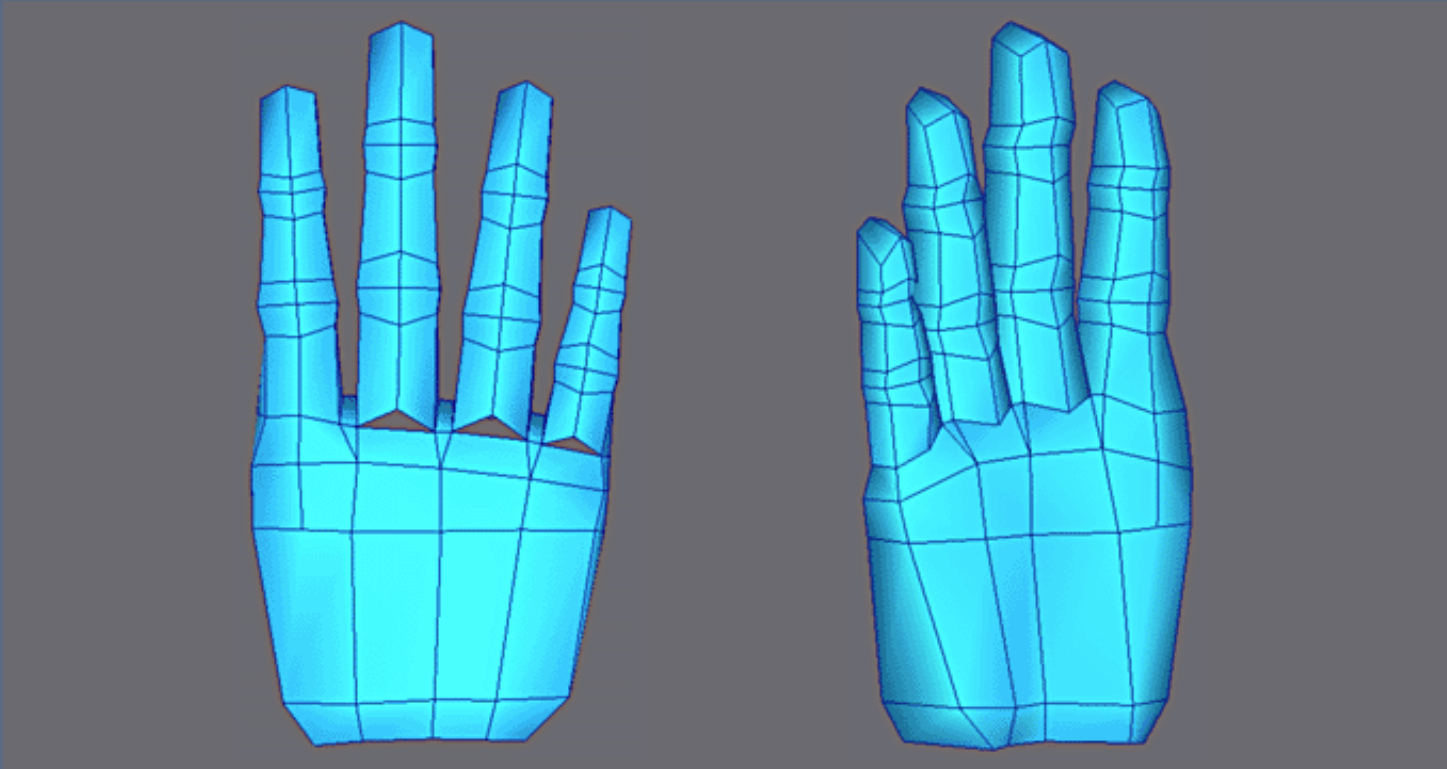
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## Modeling of the glove.



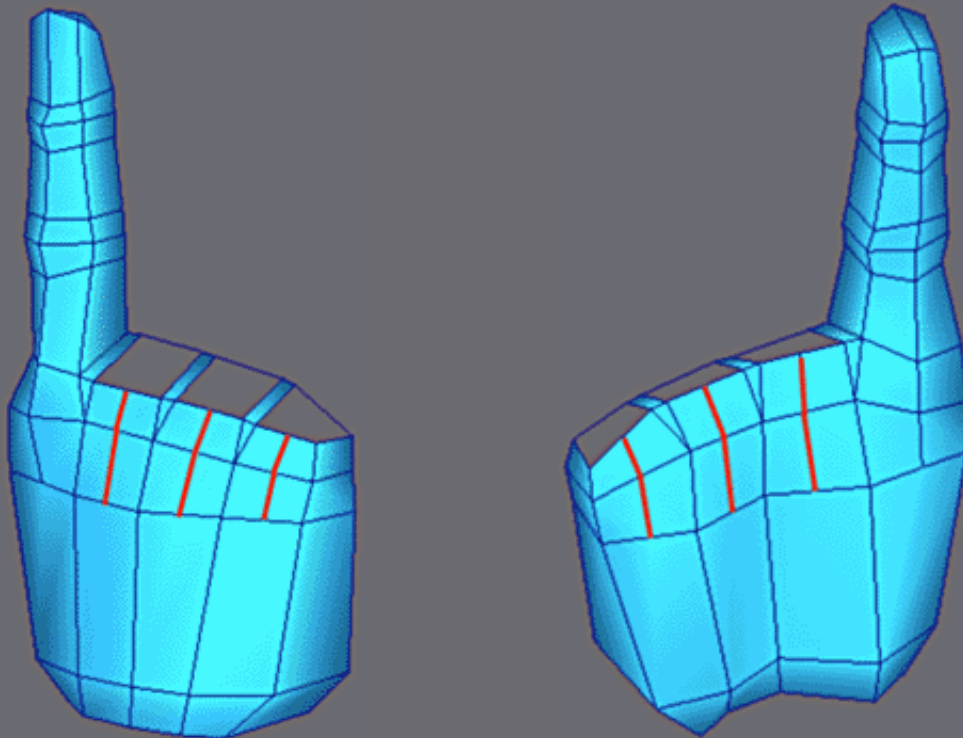
Erase the faces in red, as this where the fingers will be welded with the hand.

Move to the top of this join the vertecies indicated by the arrows.

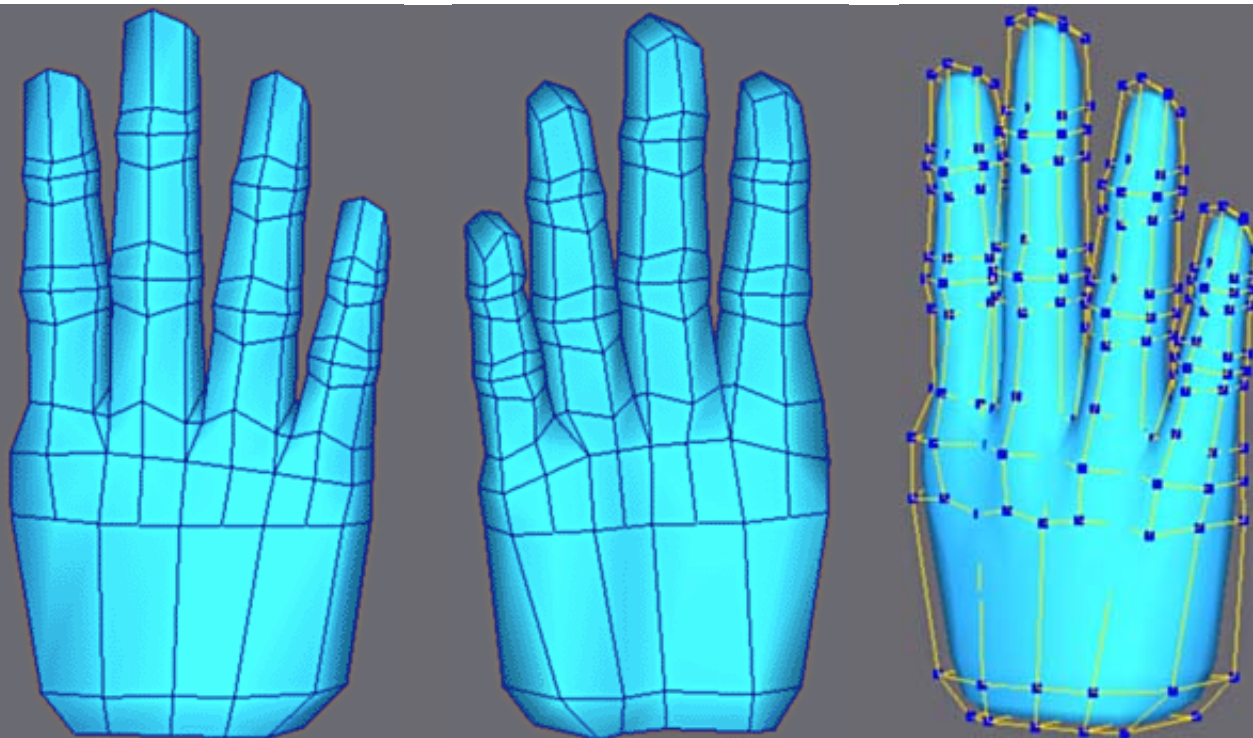


Adjust the vertecies and align them with the function 3d Snap in vertex mode.



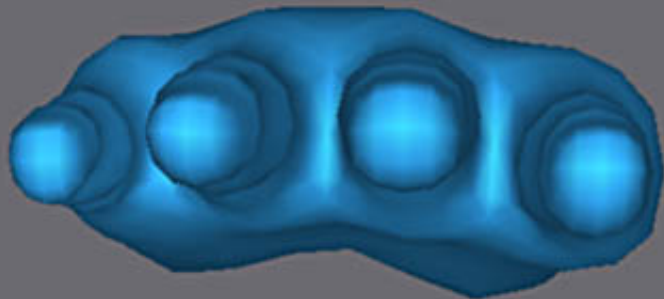
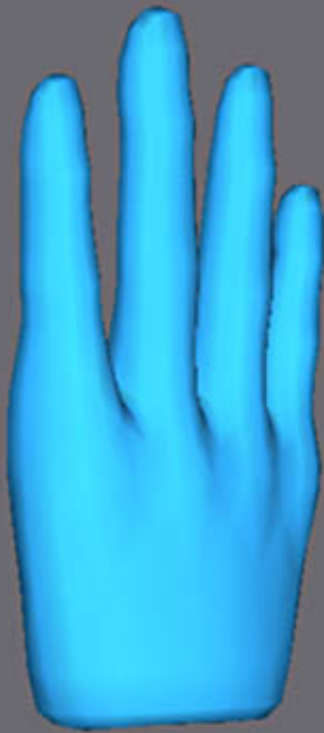


Add divisions with Cut Edge to allow the welding of the fingers on both sides.  
(hide the other fingers by using Hide Element)

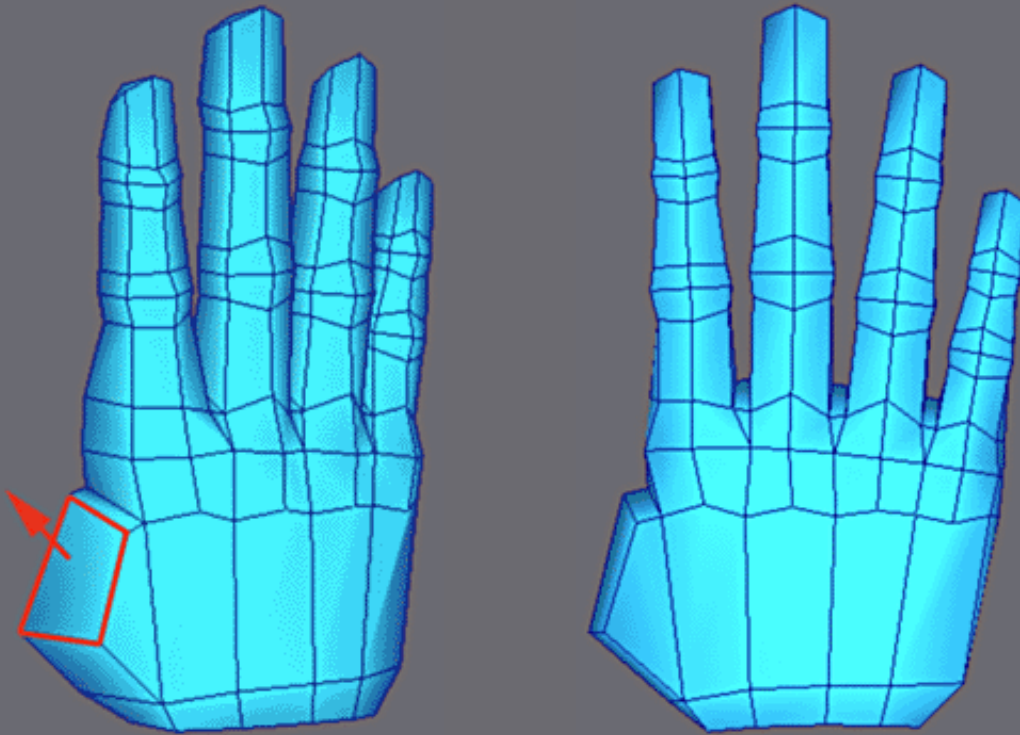


Stop to align the vertexes and weld the model into one with Weld Selected.

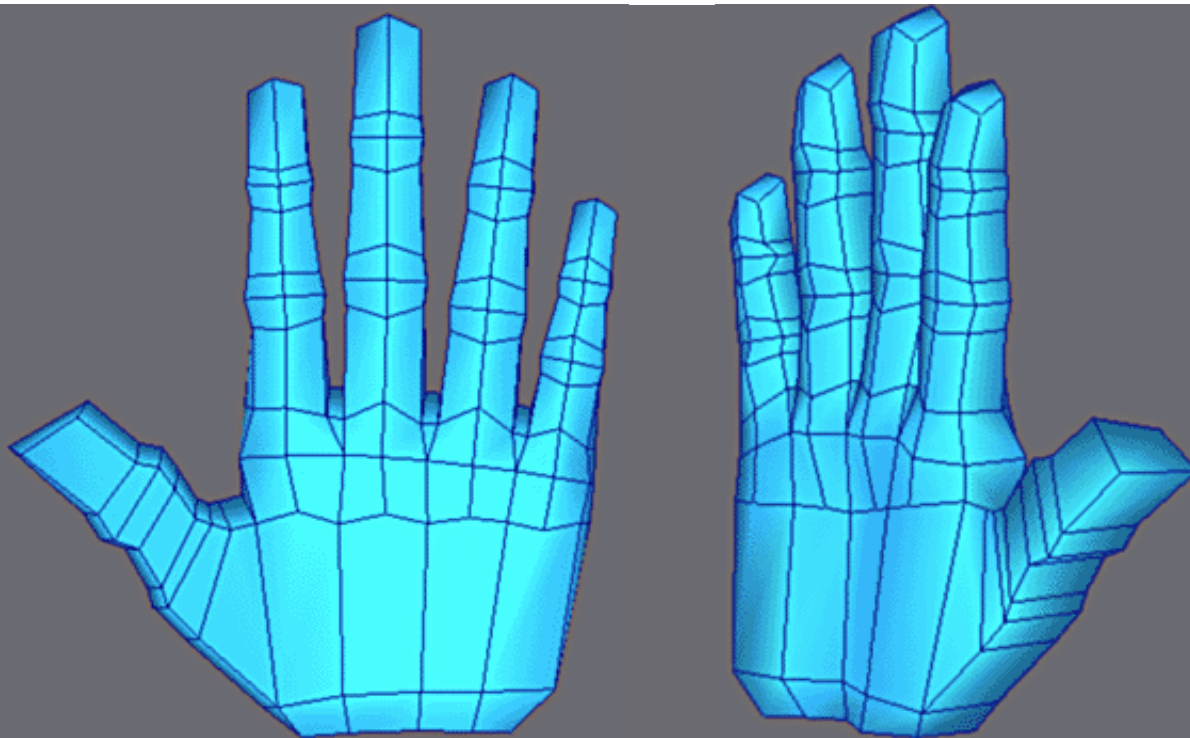
Finish the adjustments by viewing Meshsmooth and working with the LPM cage



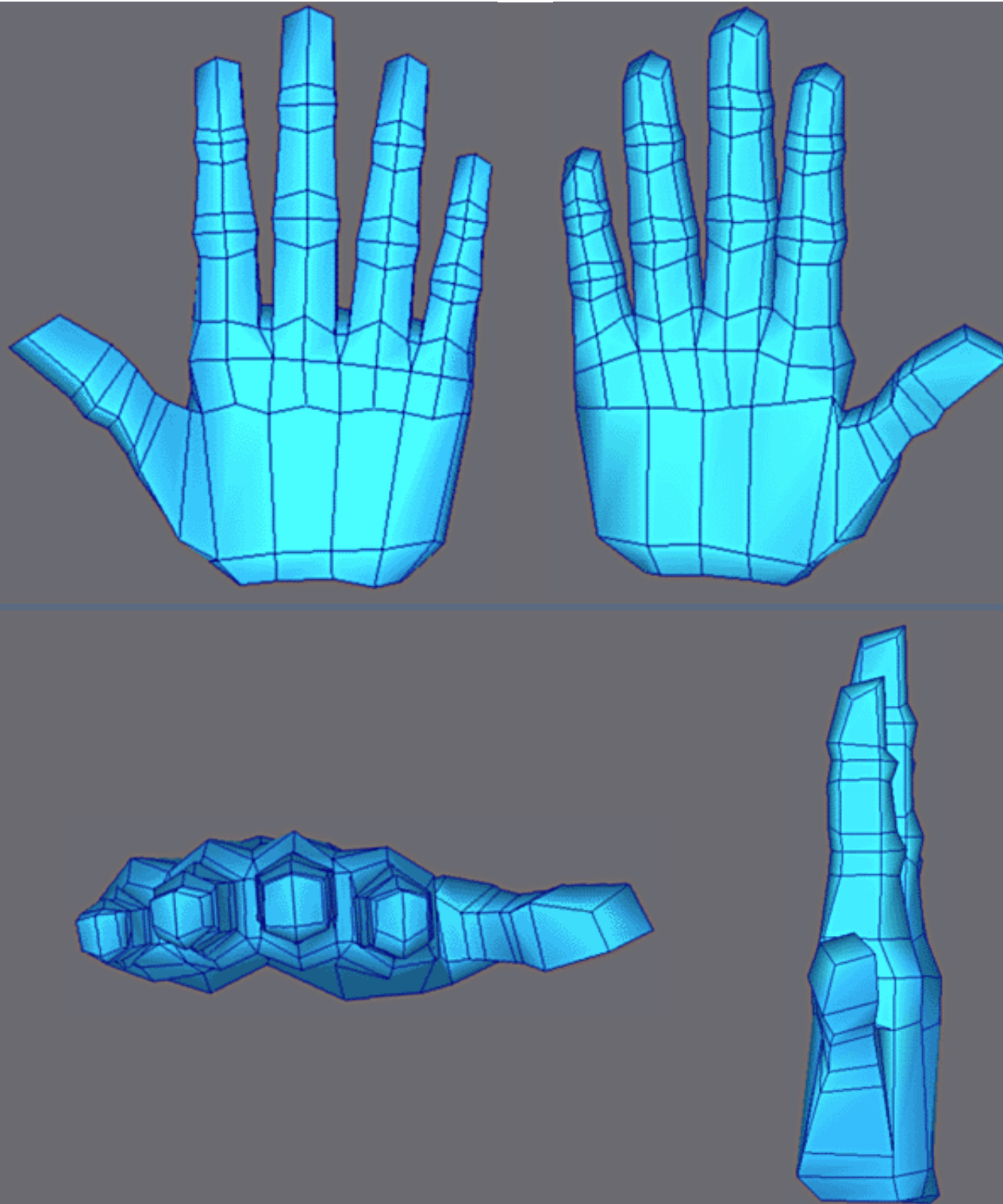
Aspect of the glove from different angles.



Extrusion of a face for the thumb.  
After the first extrusion, make plane the rectangle, that improves the extrusions to come.



As with the fingers, extrude the thumb completely and adjust the vertices to give a more anatomical form.



Aspect of the hand after adjustment of the thumb.  
This part takes time and skill so observe your own hand wel to get the llok right I:)

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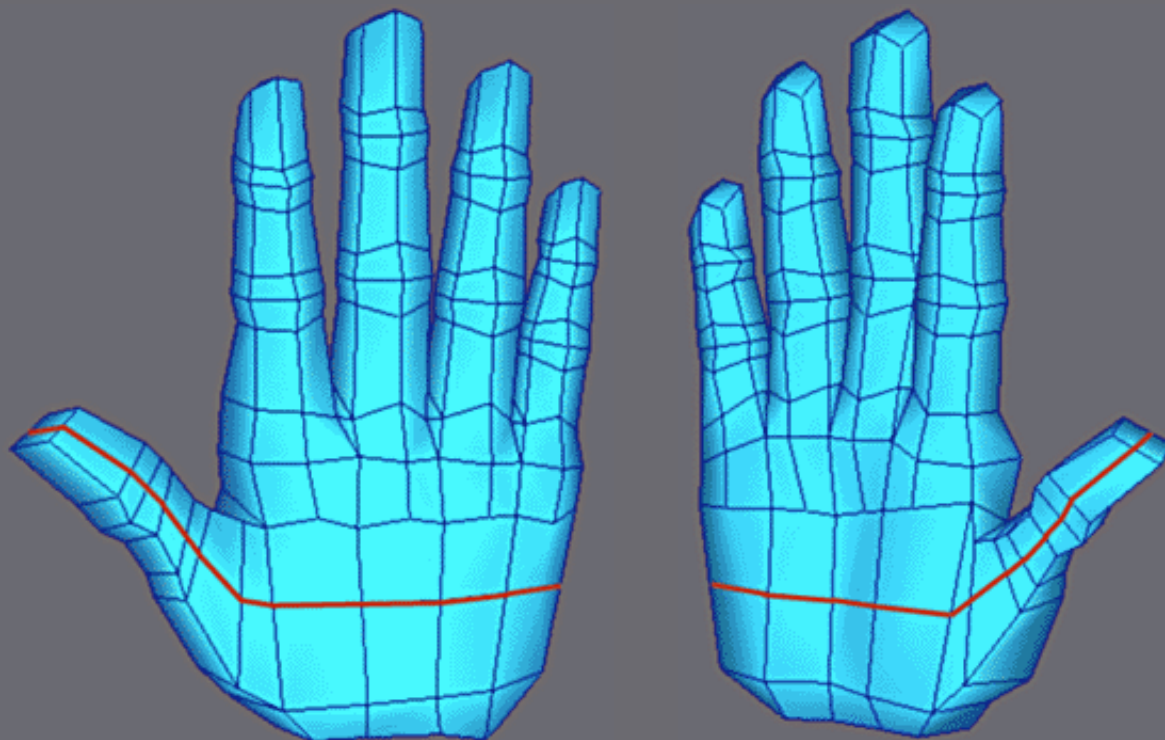
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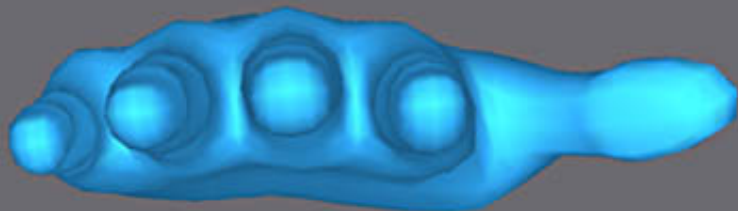
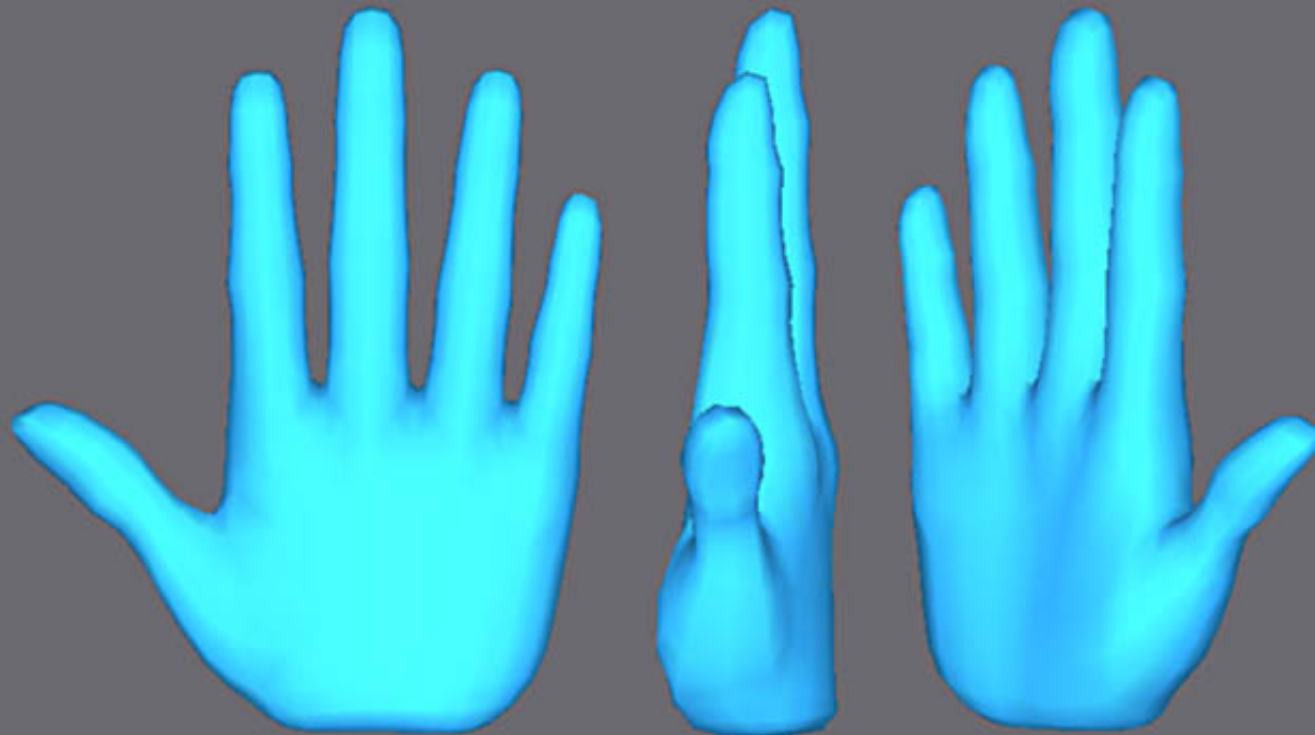
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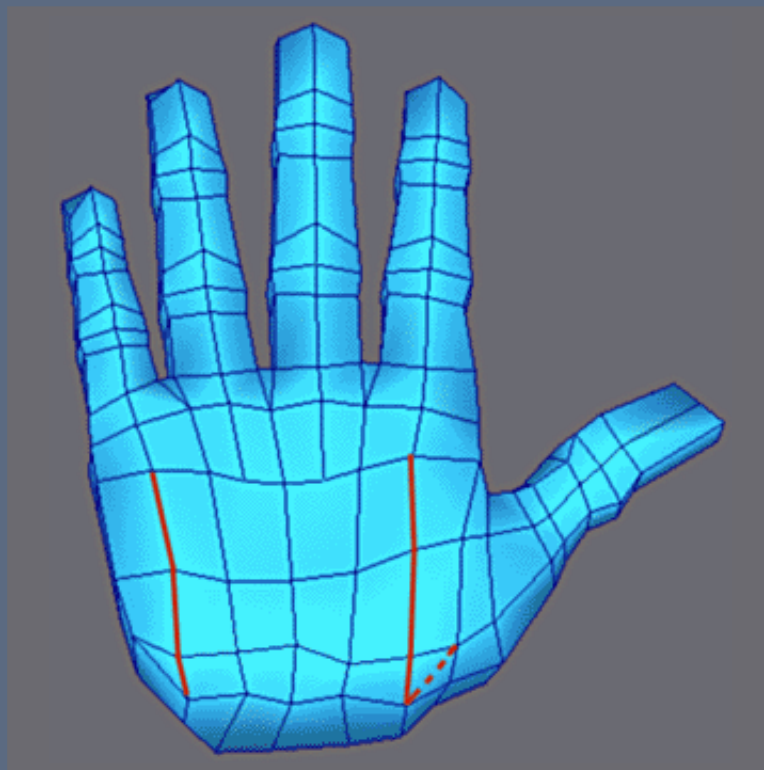
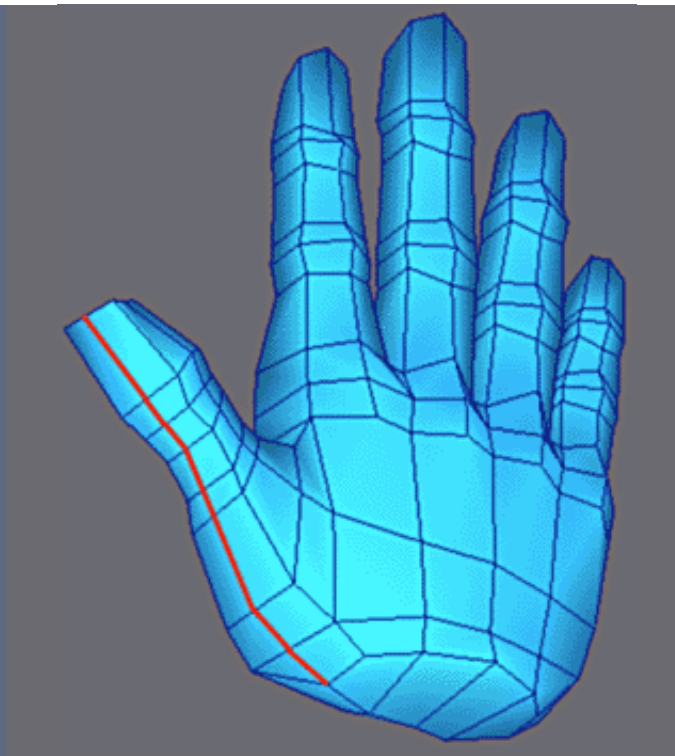
**Modeling of the glove.**

Insert a division on both sides of the glove with Cut Edge.

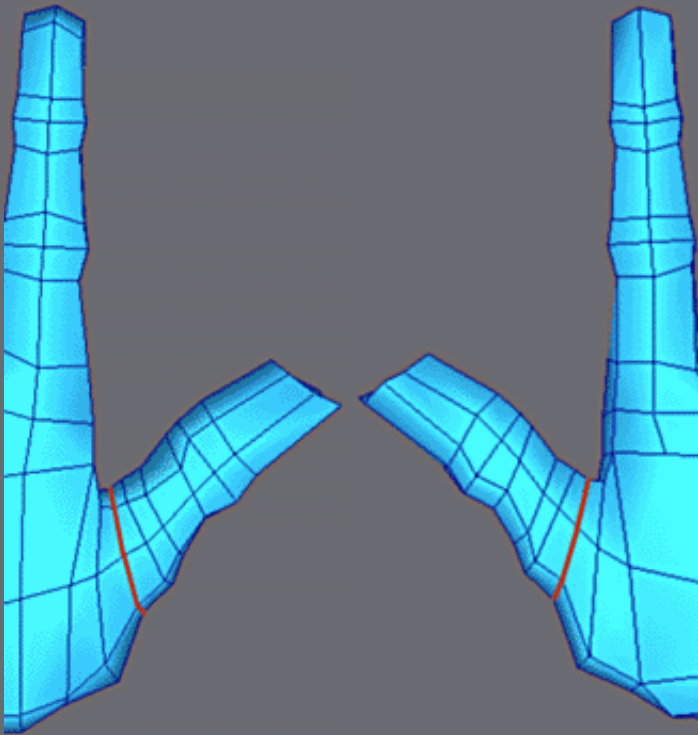


Aspect of the hand after smoothing.

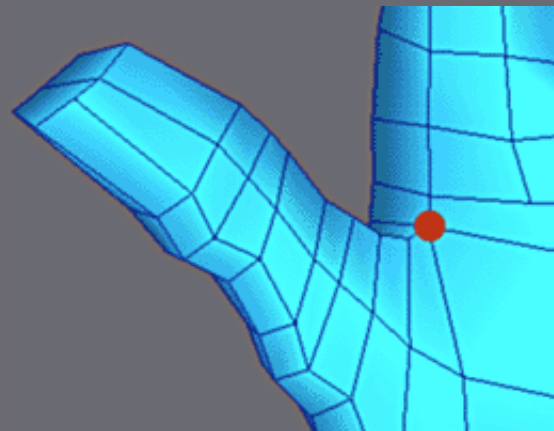
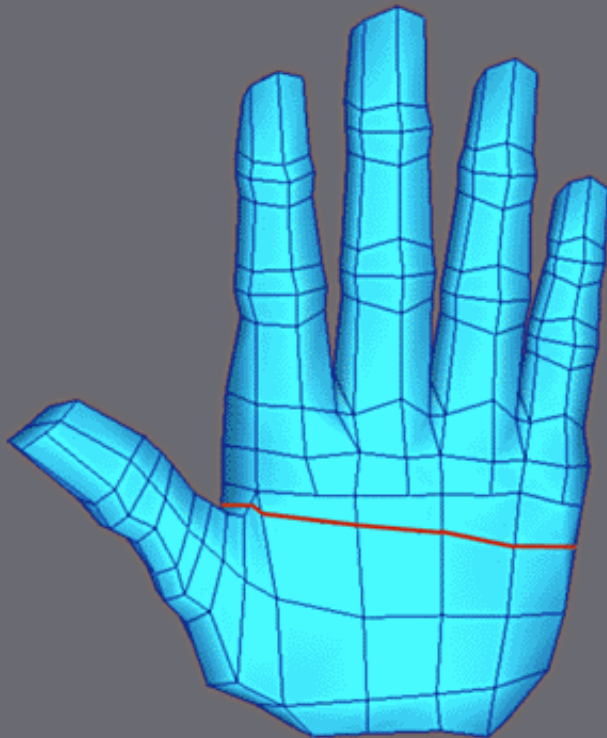
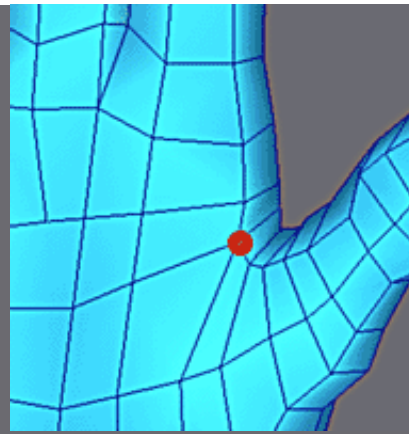
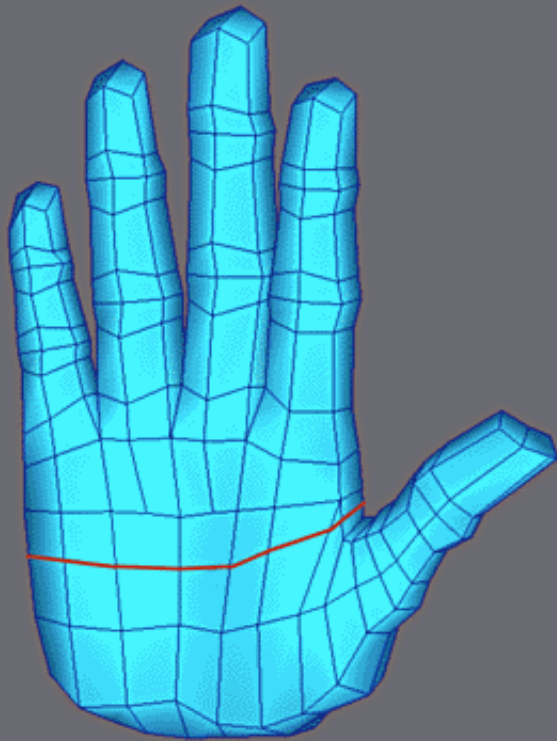
Insert this division with Cut Edge.



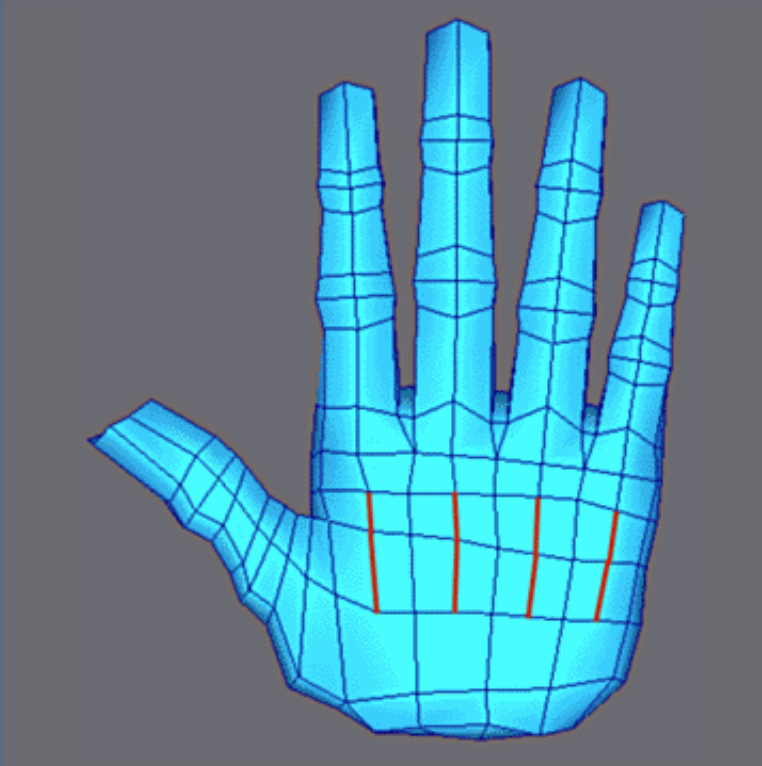
Insert these divisions on the palm and make the dotted red edge invisible to form a quadrangle.



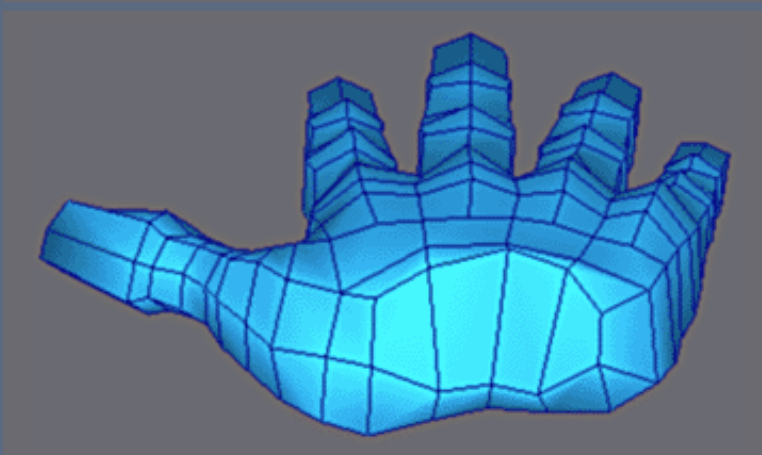
Add an additional division at the base of the thumb.



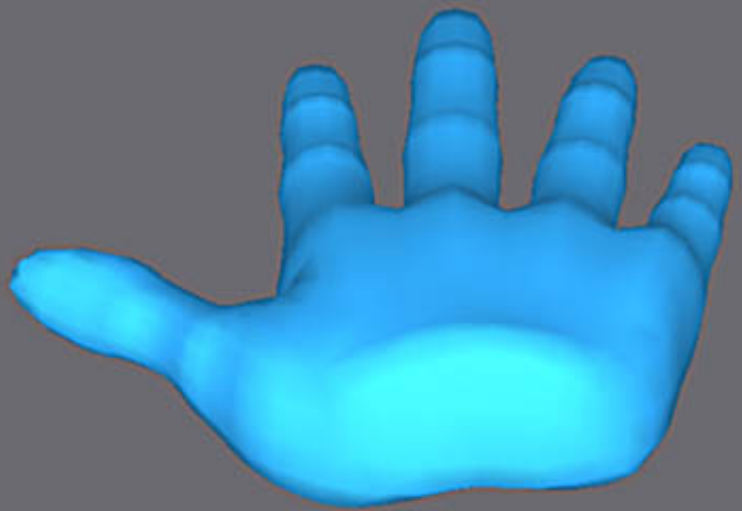
Insert a division on both sides of the hand and with Collapse Vertex, eliminate the 2 triangular faces.



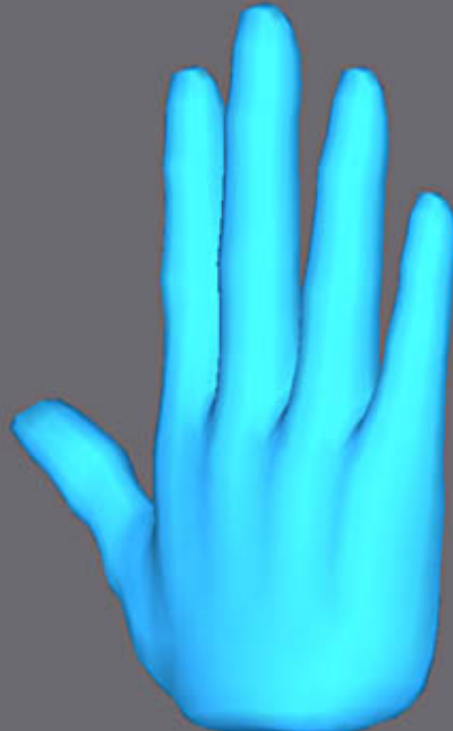
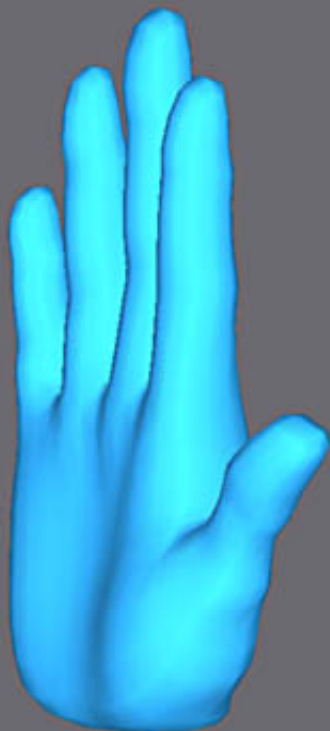
Finish with divisions on the top of the glove as shown.



The look of the final LPM glove



Subdivision with Meshsmooth set to 1



Aspect of the glove after smoothing.

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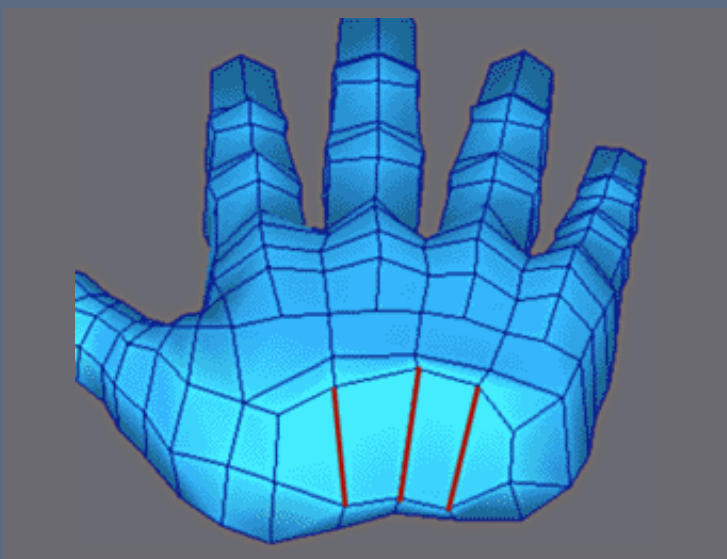
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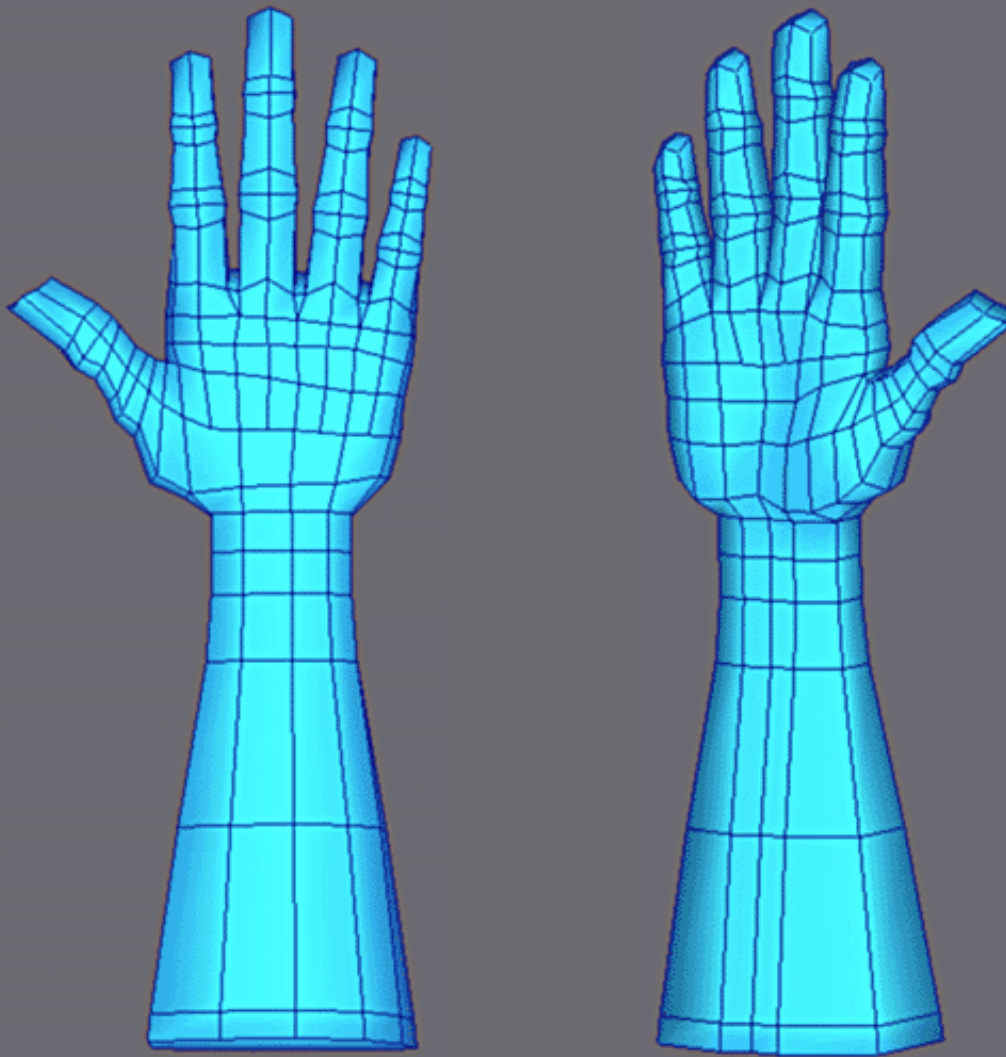
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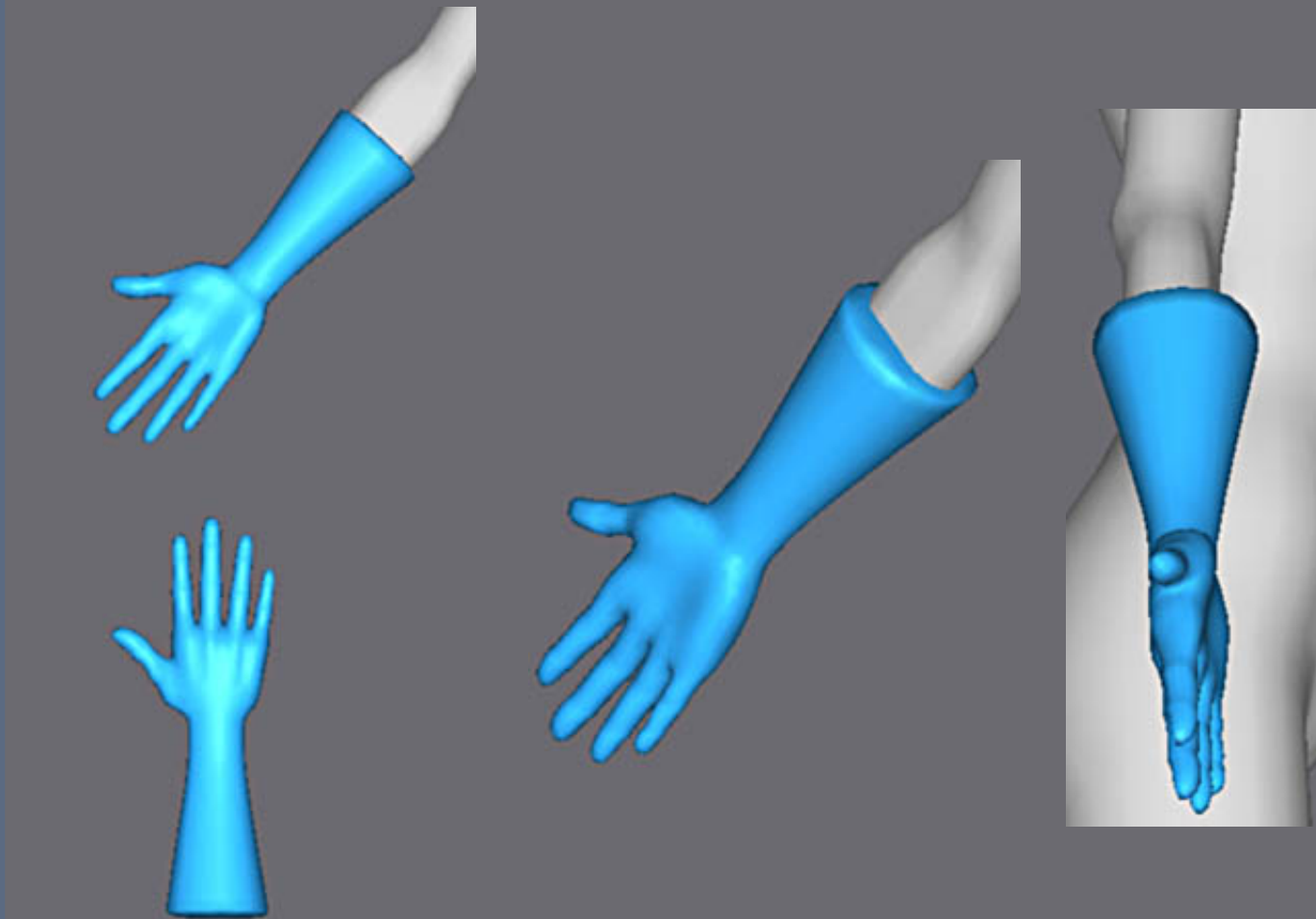
### Modeling of the glove.



Make these edges invisible and make Planar the polygon thus obtained.



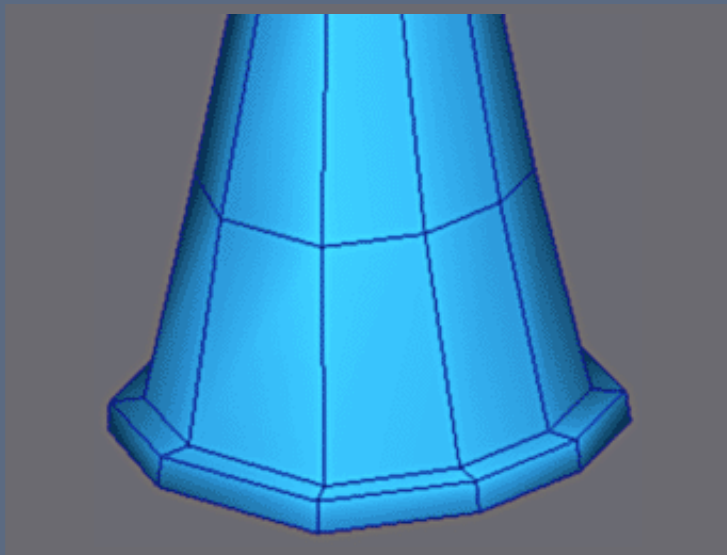
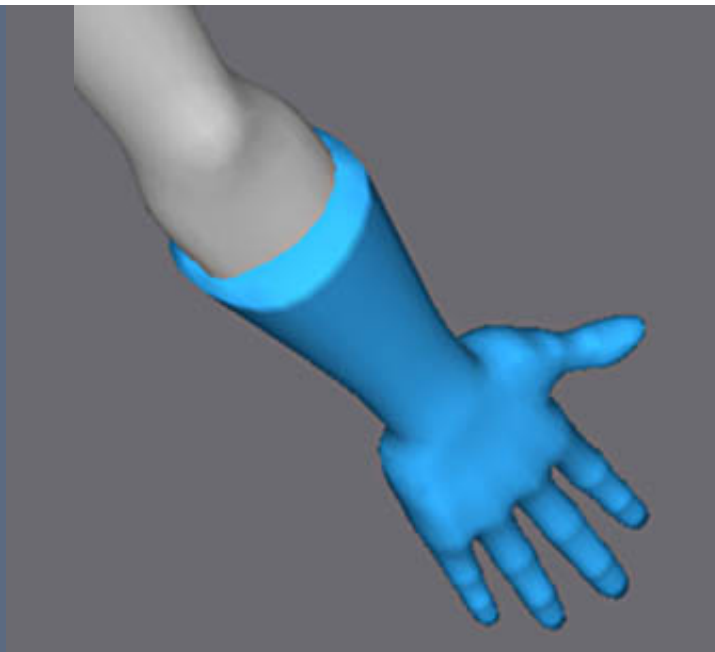
Extrusion of the sleeve of the glove with Bevel to change the size.



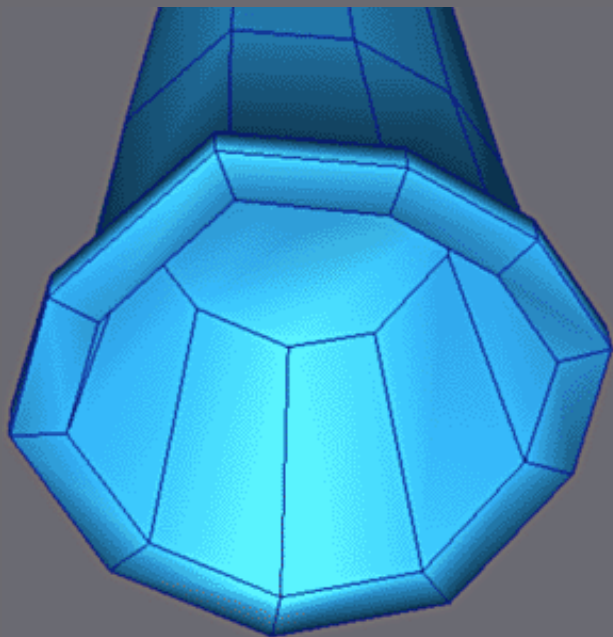
This stage it is necessary to place the glove on the body of Joan for the adjustments.

Set the appropriate scale to match the body

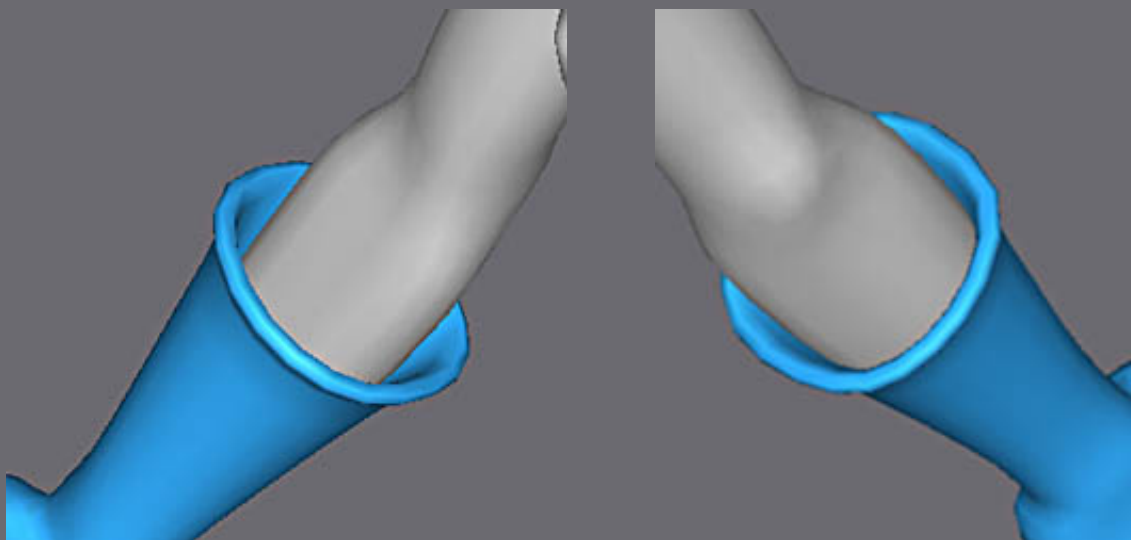
see above, only the Instance copy of the glove is positioned, the original remains in place because this position is more practical as this time to continue modeling.



Adjust to make more regular if necessary and then extrude the edge to form this lip.

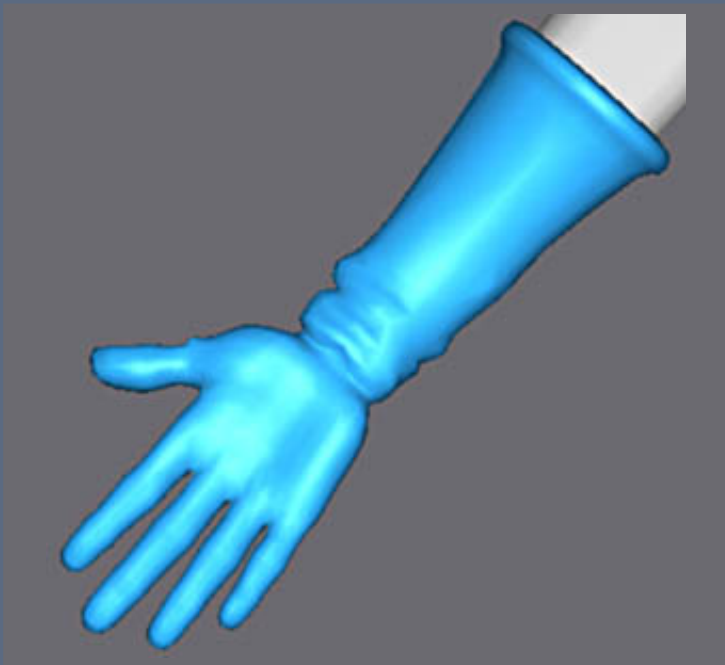
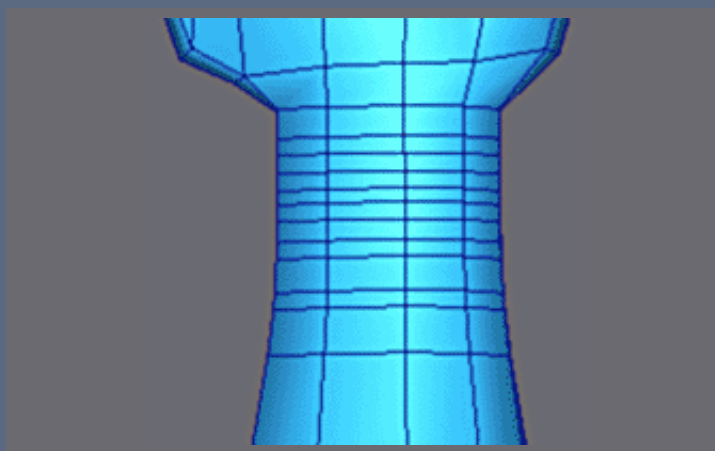


Lastly, Extrude back the interior of the sleeve.



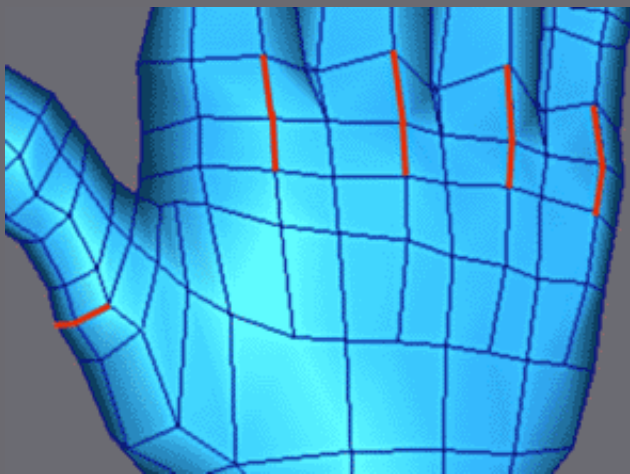
Aspect of the glove on the positioned copy.

For the folds in the wrist section, select the horizontal edges and Chamfer to duplicate them.

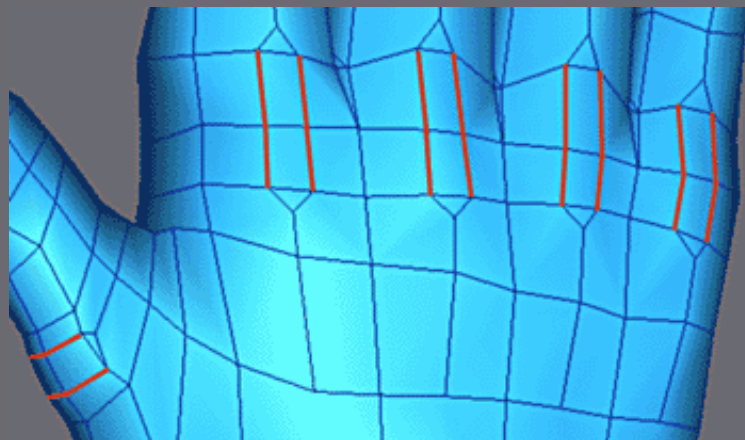


It is then enough to adjust the vertexes on cage LPM and to see the result on the subdivided version.

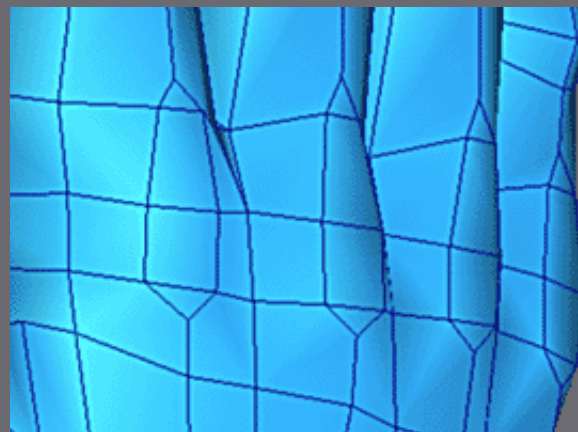
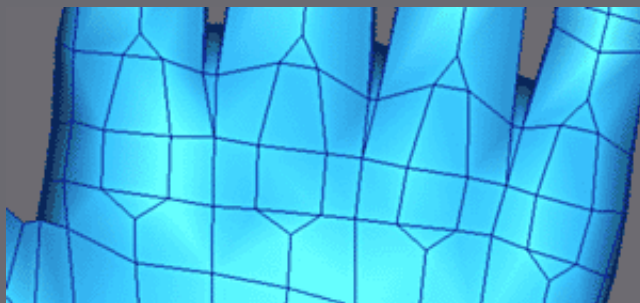




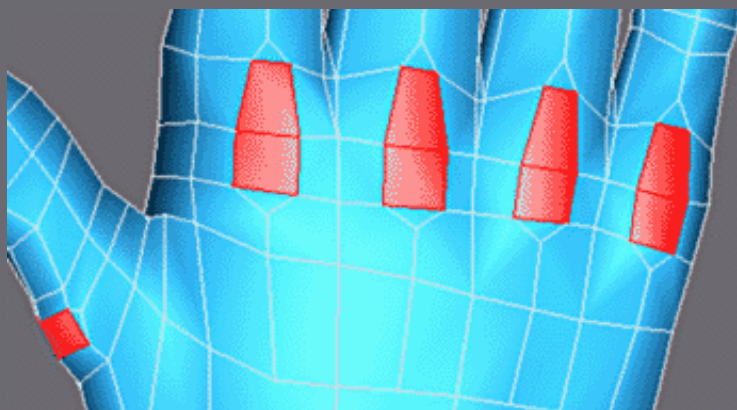
Select the edges as opposite.



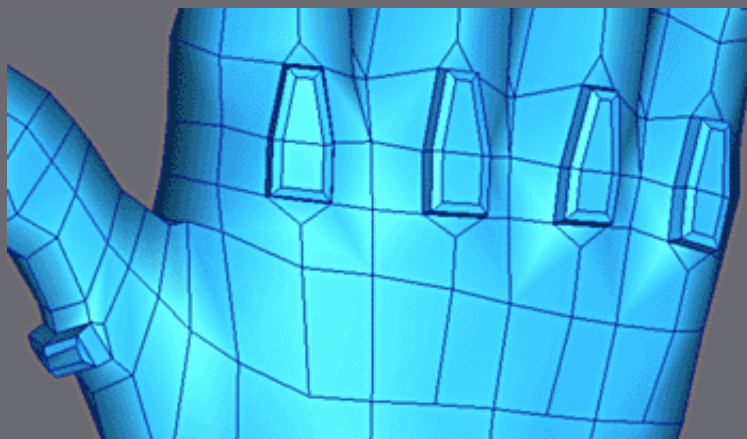
Apply Chamfer to duplicate them.



For the dimensions of the faces, adjusted the vertexes thus created.



Select the faces in red.



Make Extrude/Bevel and repeat the operation a second time as shown.



Aspect of the glove after smoothing.

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*Accessories*

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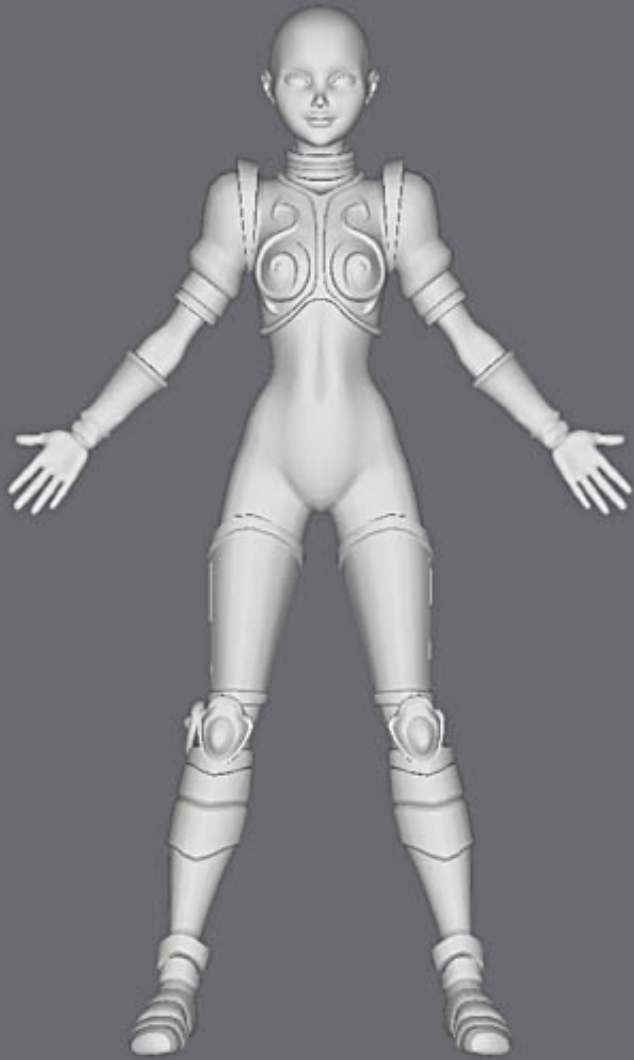
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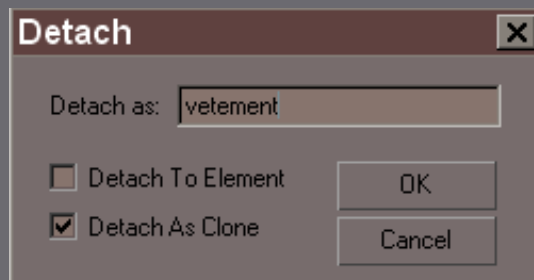
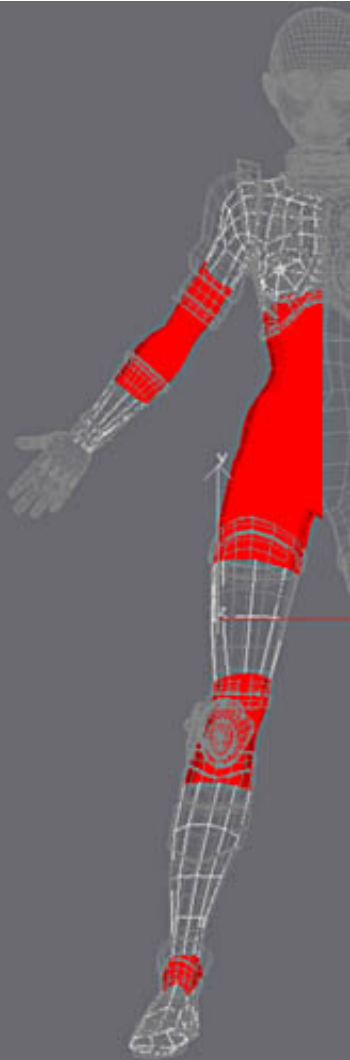
Modeling of the Accessories.



Joan is now equipped with the parts of the armour and the gloves.

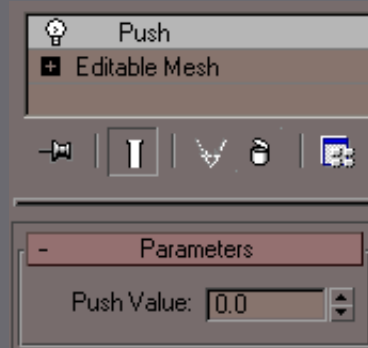
The hair is hidden as is not useful in this part.

The first thing to be added is the garments which are worn between and under the armour.



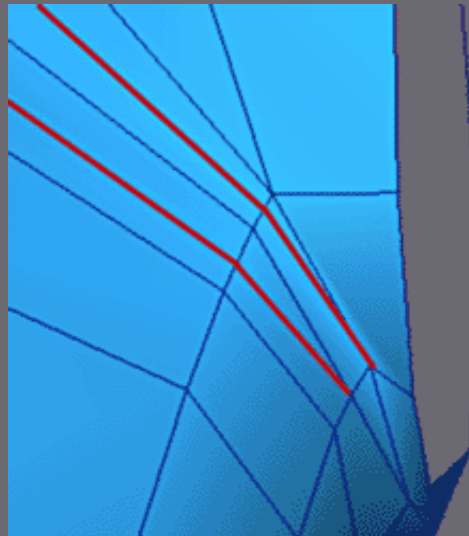
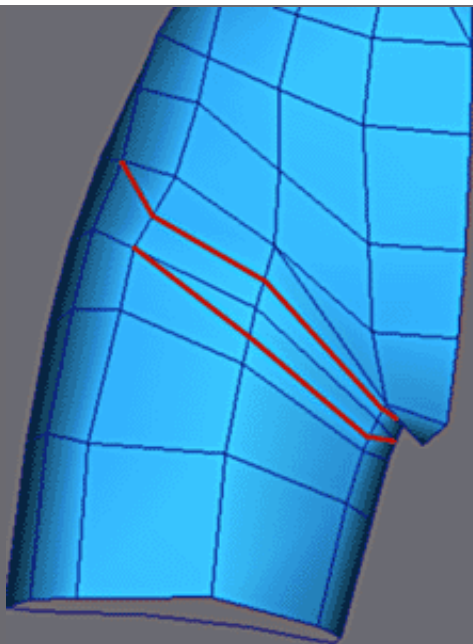
Select the faces in red, and use Detach faces. Choose 'As Clone' to keep the original body intact





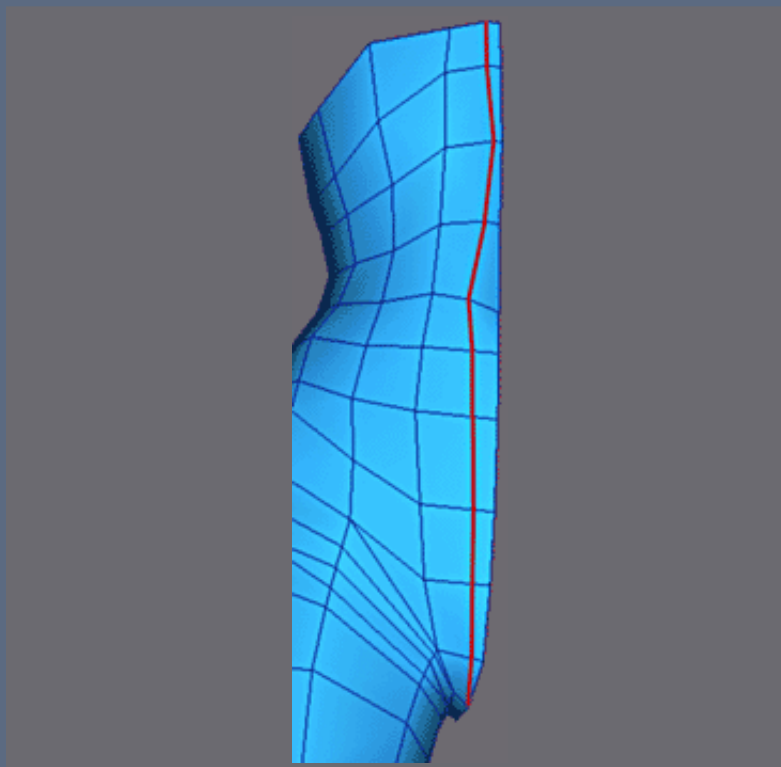
Apply Push to clothing, this makes it possible to inflate the mesh and thus evenly move it away from the skin.  
(Push acts upon the normals vertexes whereas a scale acts upon the center of the object)

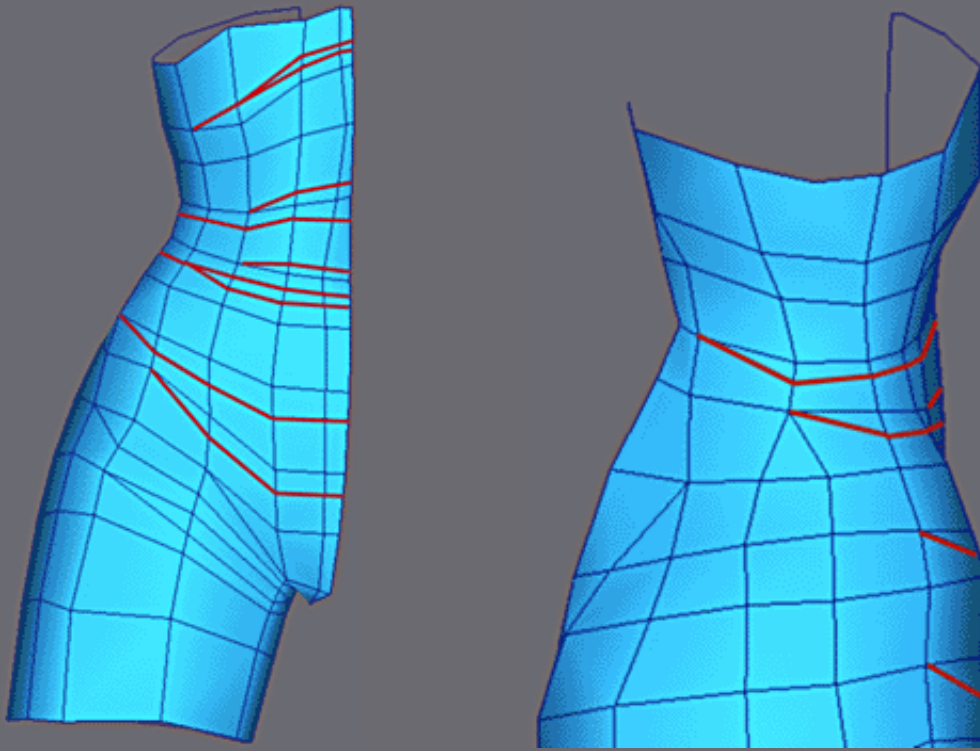
It is ok that the cloths limits exceed parts of armours, we can adjust these later when meshsmooth is in the stack.



Insert edges into the groin to make the folds.

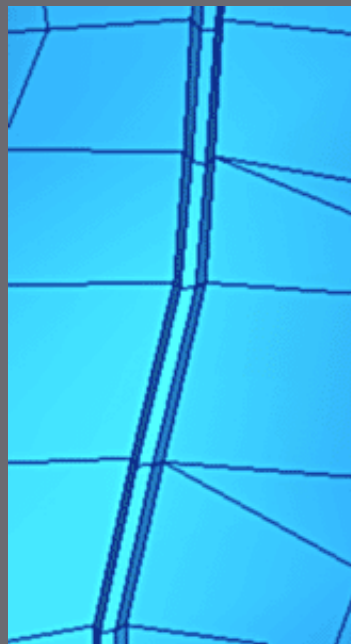
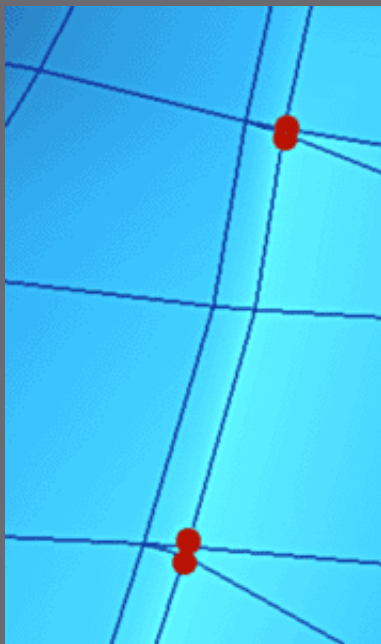
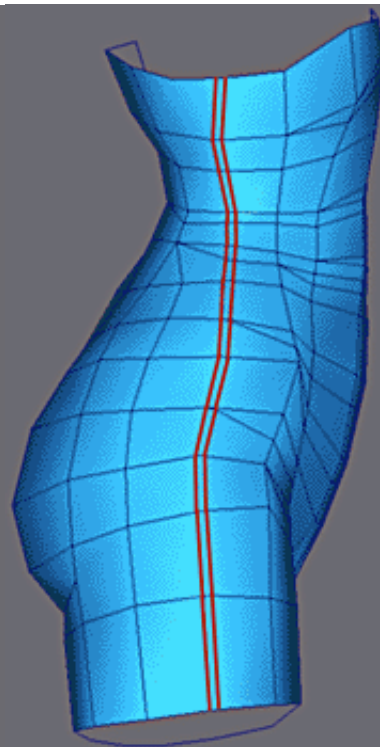
For the verticle/central seam, insert these edges.



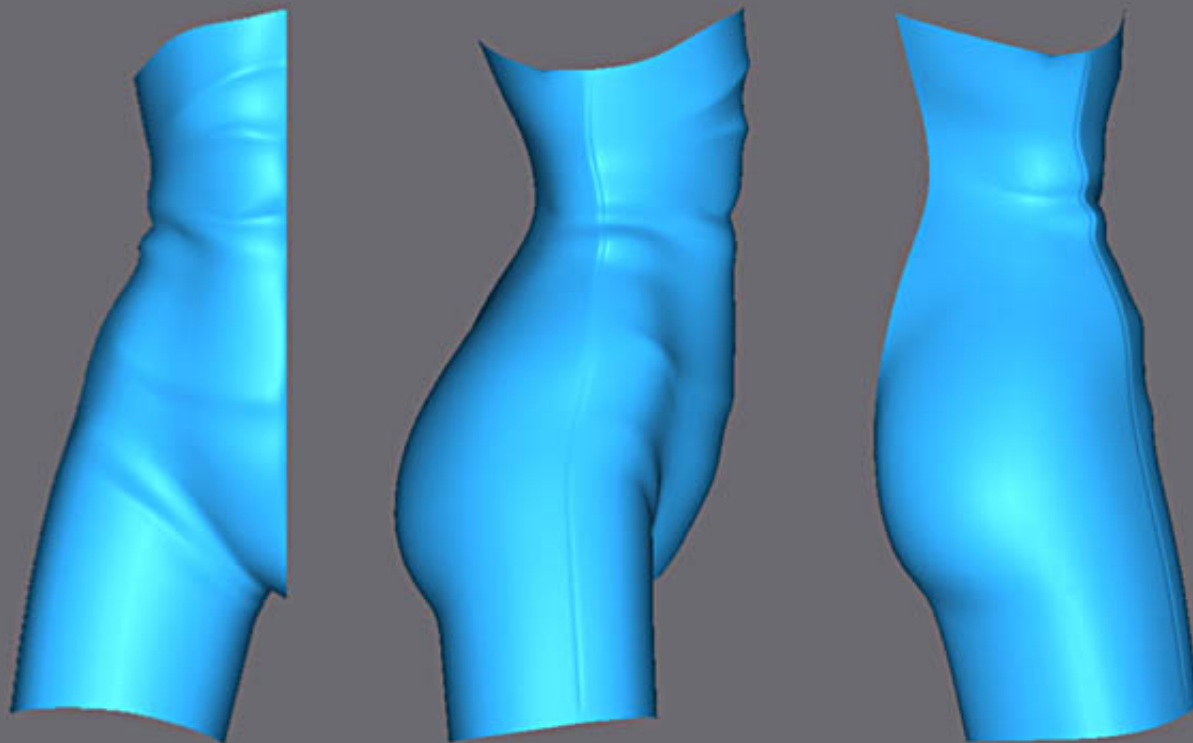


In the same way for the folds on the body.

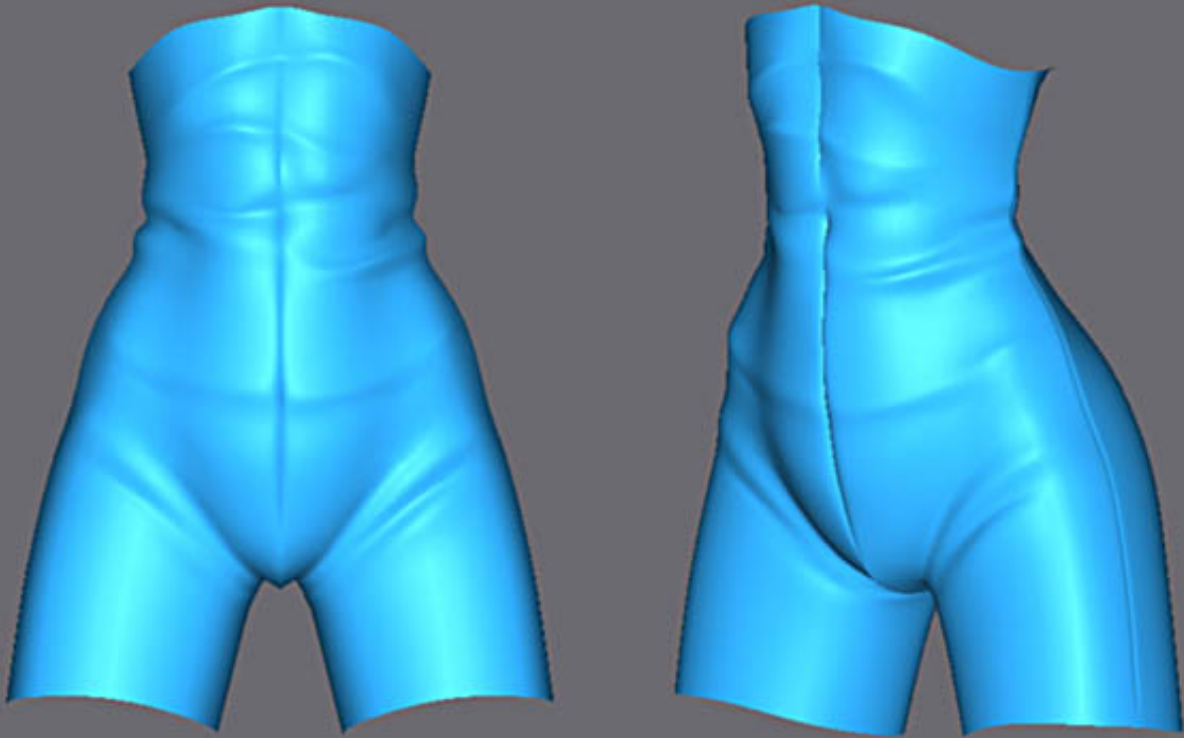
For this long seam use chamfer.



Simplify the geometry by using collapse vertex, resulting in more quads and less tri's  
Finally apply one negative extrude



Apply Meshsmooth and adjust the vertexes which were added to model for the folds.



Make a symmetrical copy and then loose the symmetry of the folds by adjusting the vertexes once more.

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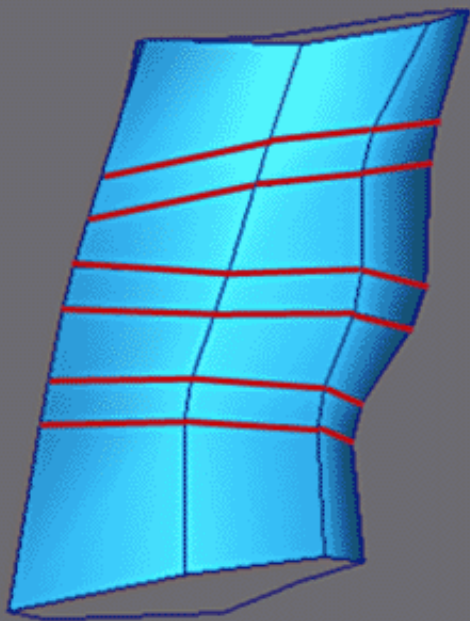
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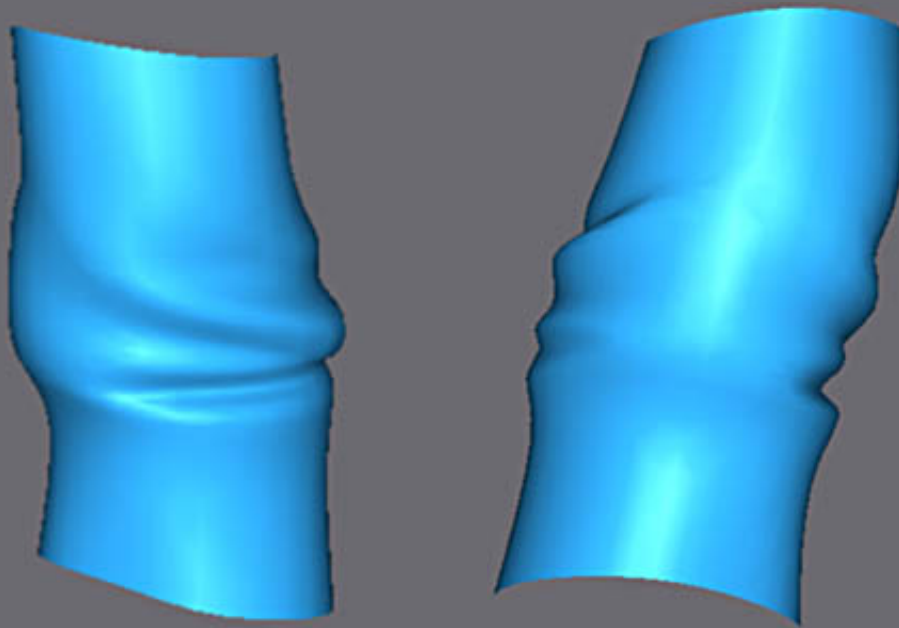
### Modeling of the Accessories.



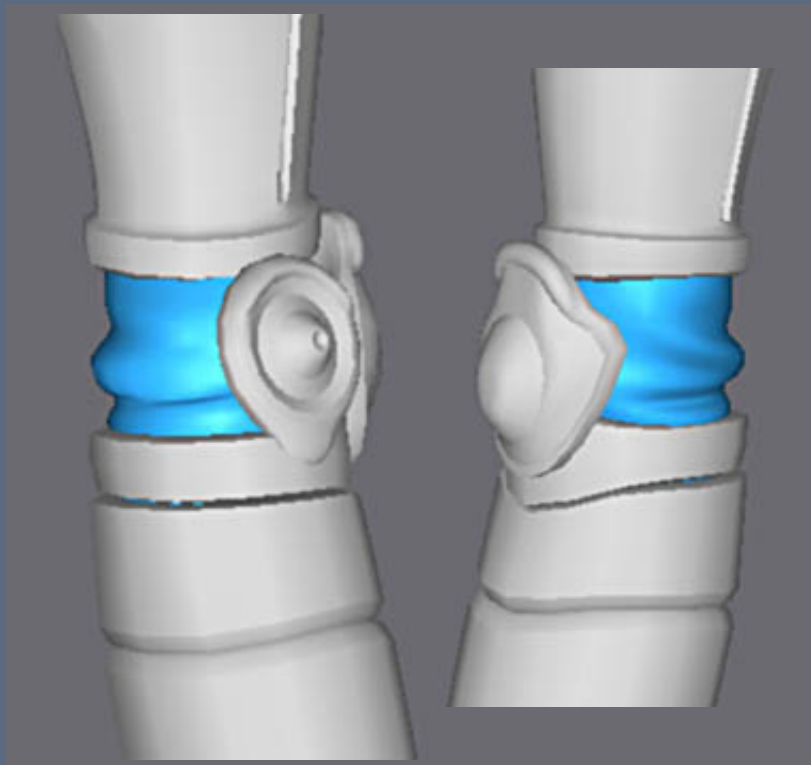
For the folds in the knee area, use the same method as before

Select the edges and apply Chamfer to duplicate them.

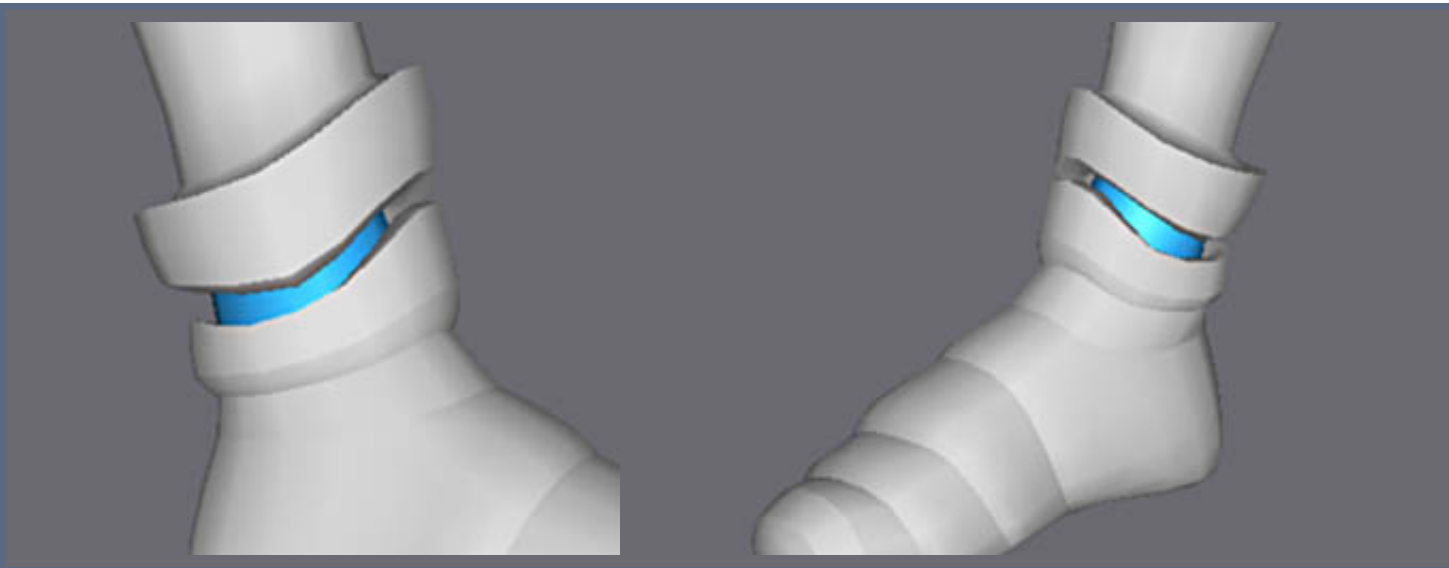




Adjust LPM cage to form the folds on the smoothed version.

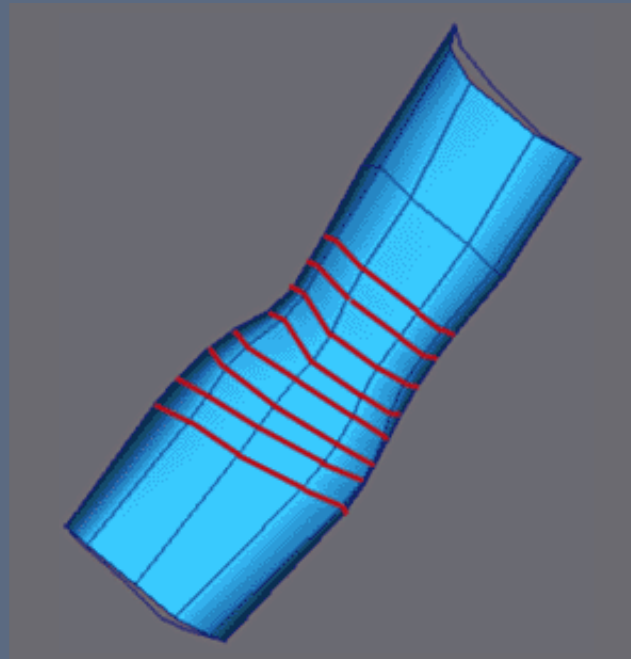


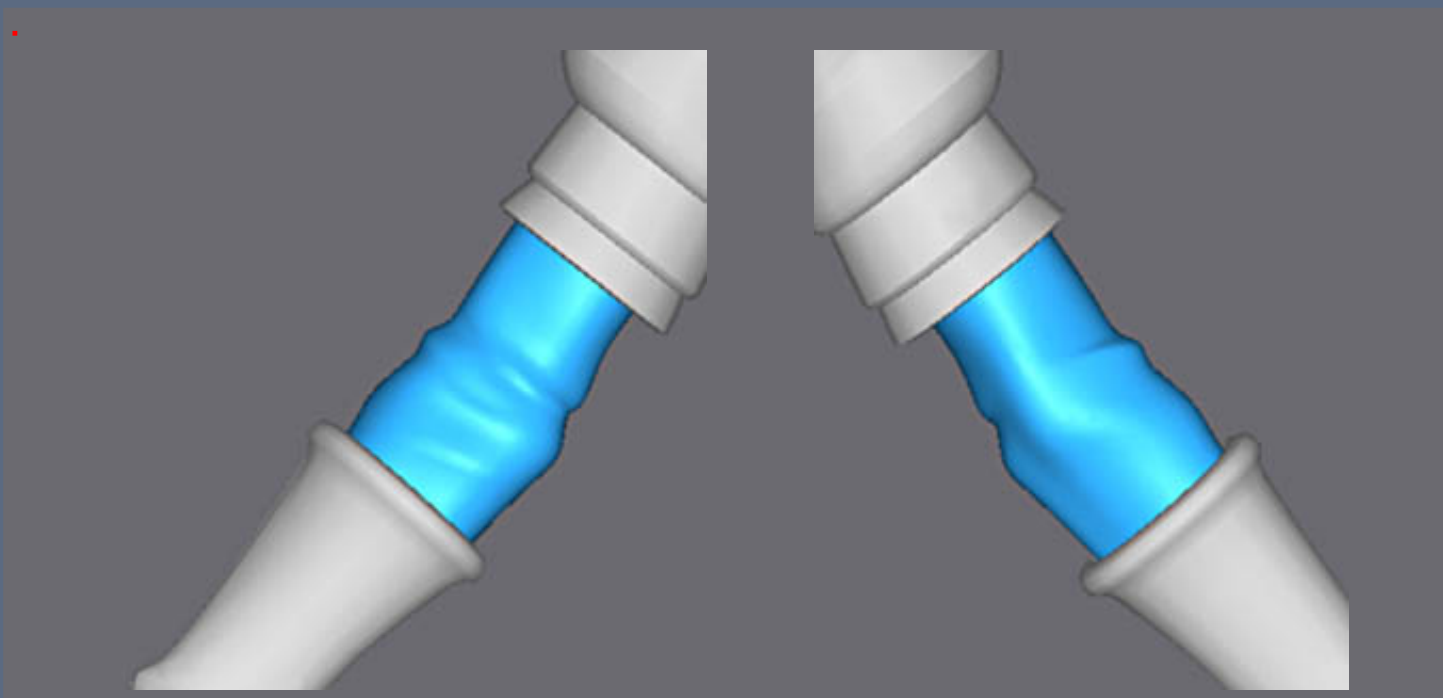
Finish and check the adjustment with the parts against armour.



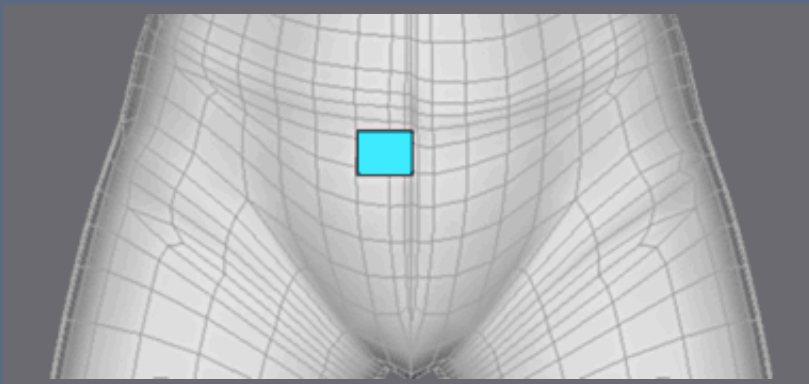
For ankle, nothing in particular is needed, just check the limits do not exceed the armour.

As for the knee, an even procedure with duplication of the edges.

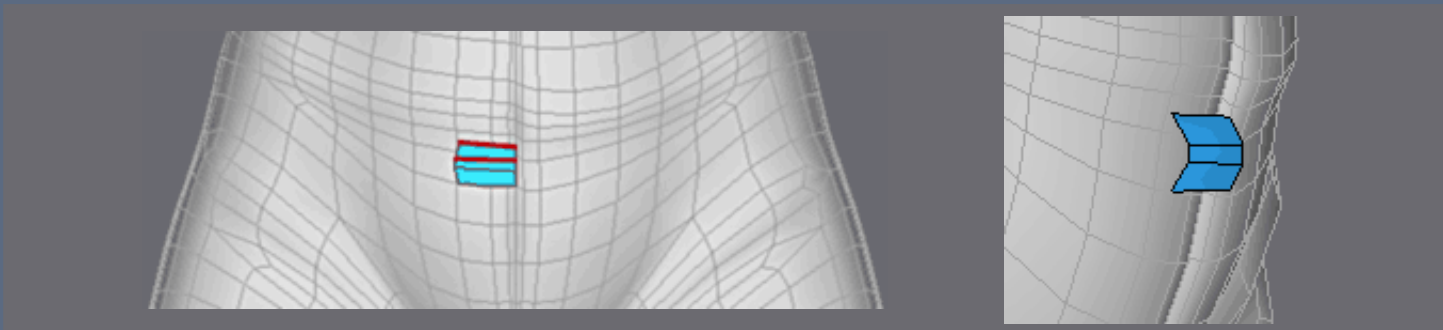




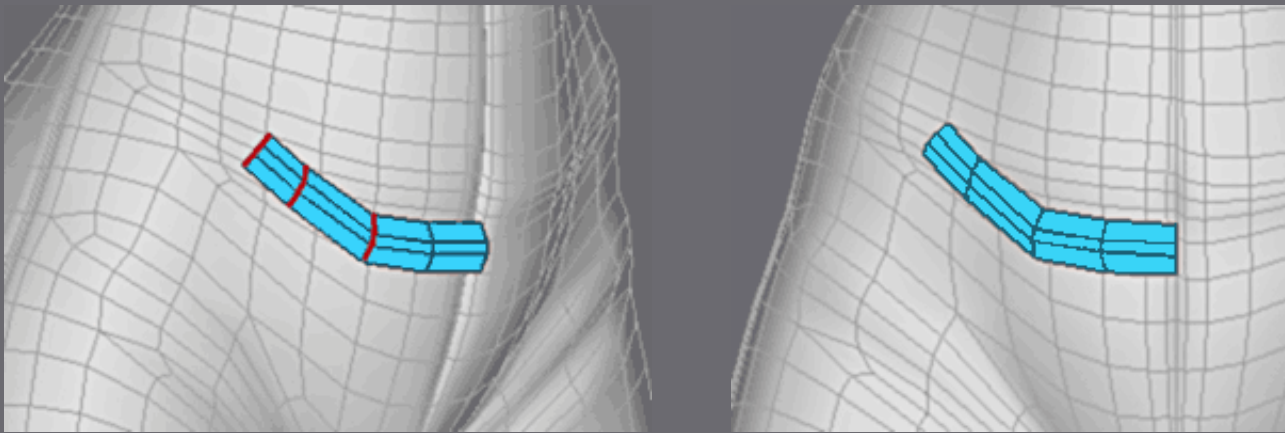
And adjustment of the folds whilst viewing the model with Meshsmooth applied.



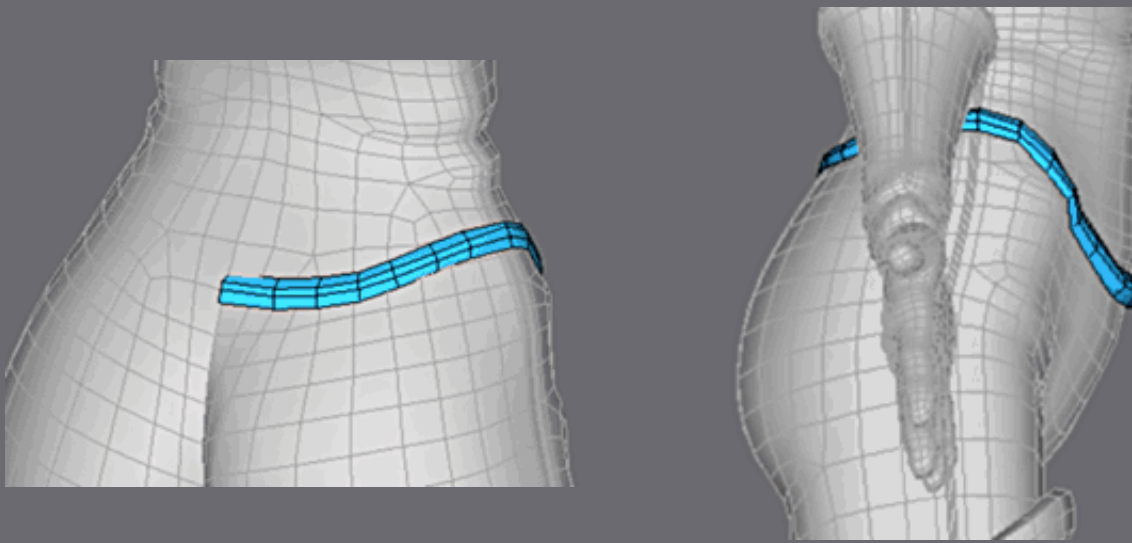
For the loincloth, start with a simple rectangle, this is a Shape Rectangle then converted into Mesh.



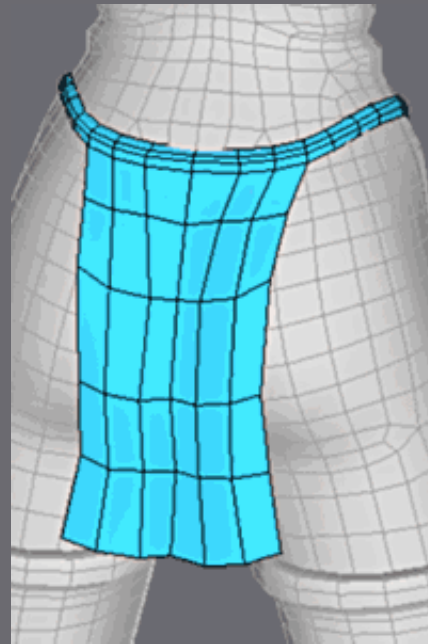
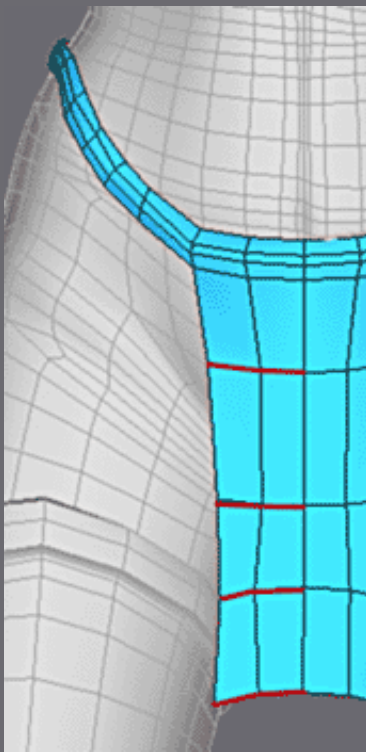
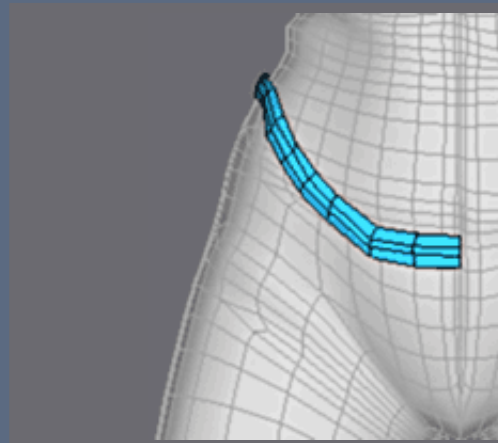
Extrude an edge to have 3 quadrangles.

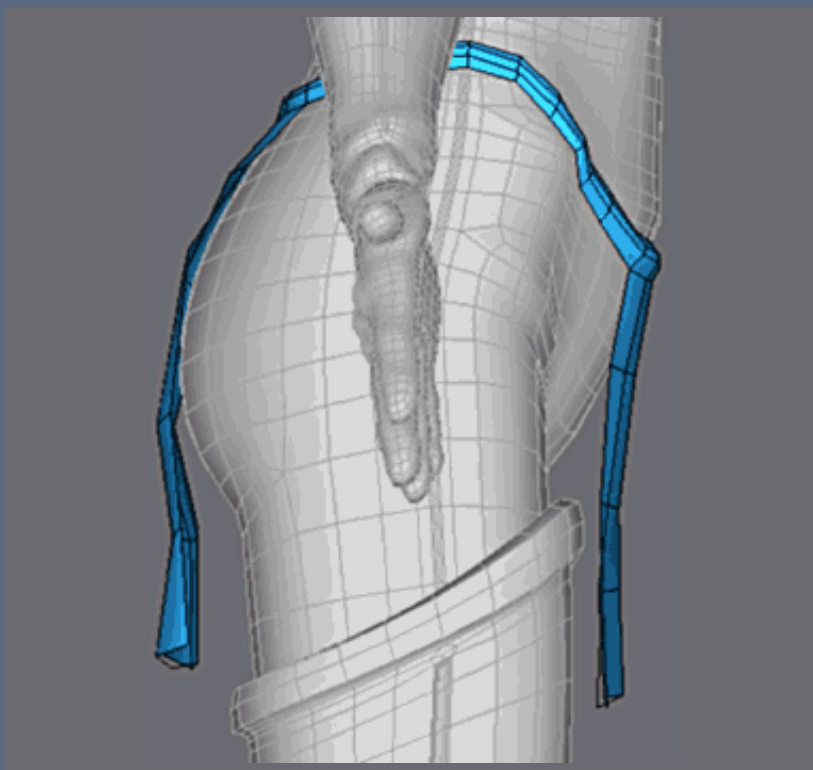


Extrude like above while following the form.



Continue around and behind.





Extrude the fabric part in front and behind.

Apply Meshsmooth and finish the adjustments.

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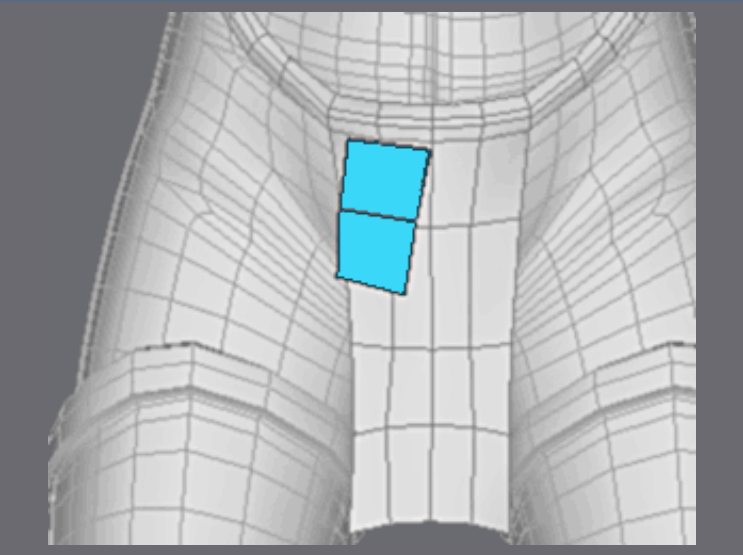
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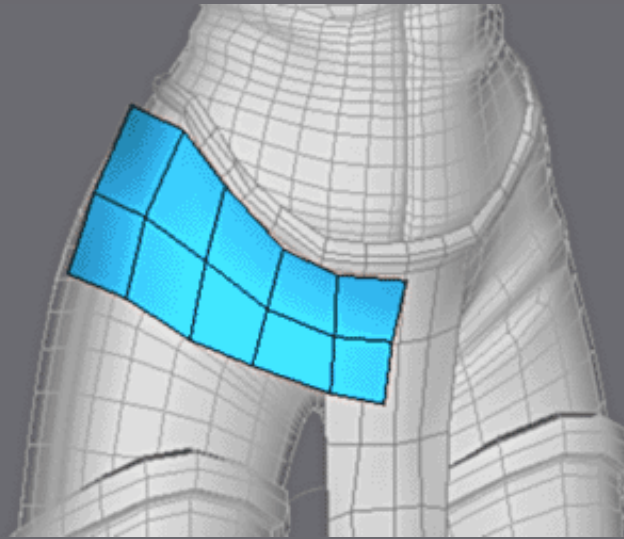
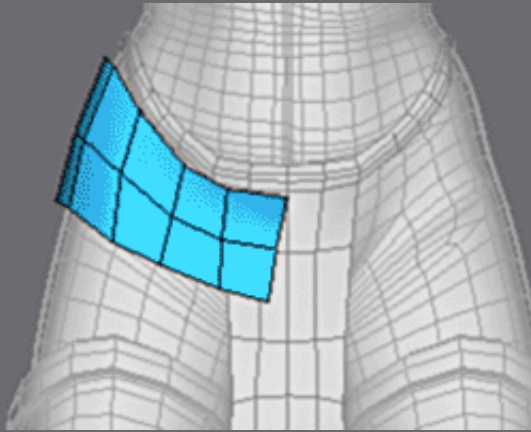
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Modeling of the Accessories.

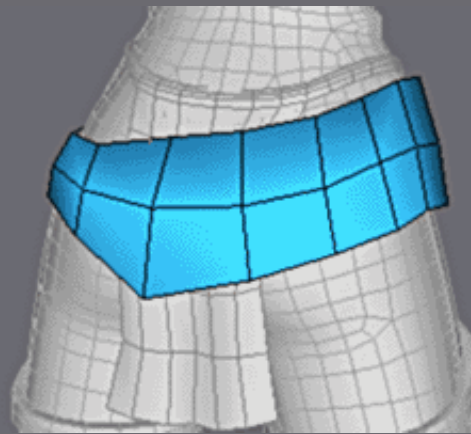
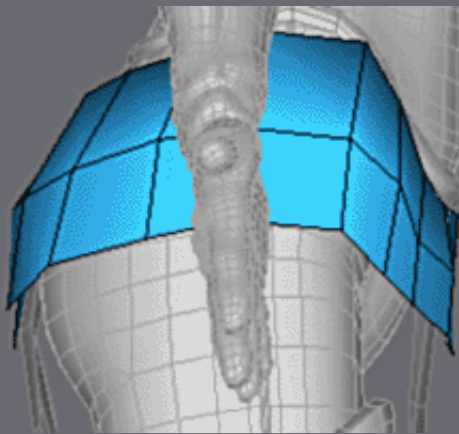
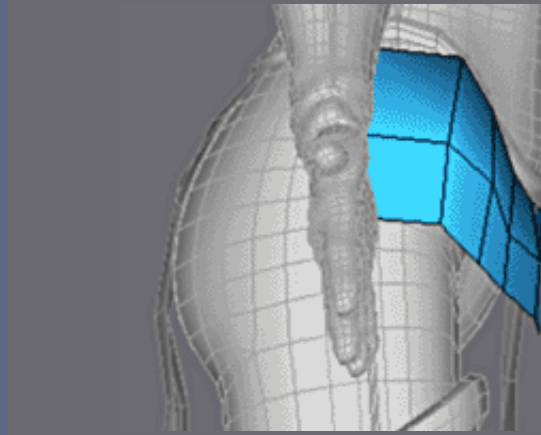


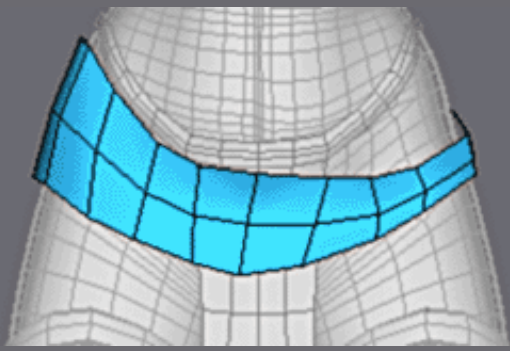
For the skirt, start with a single quadrangle.



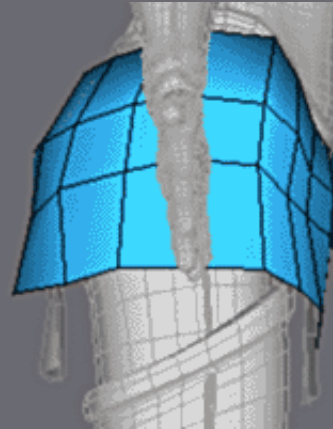
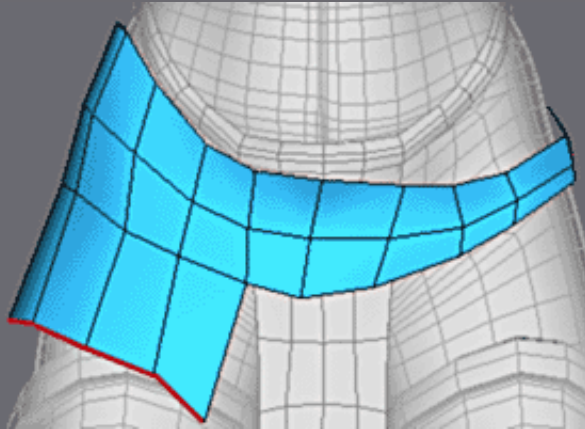


Extrude the edges.



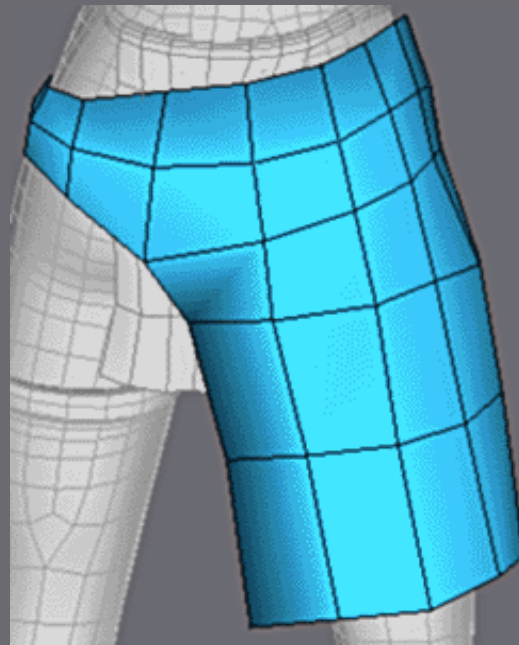
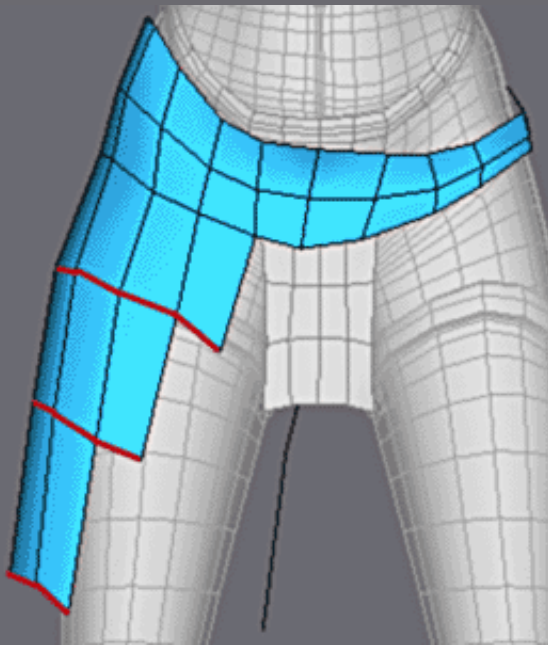


Continue around the body and weld with the junction  
with Weld Target.



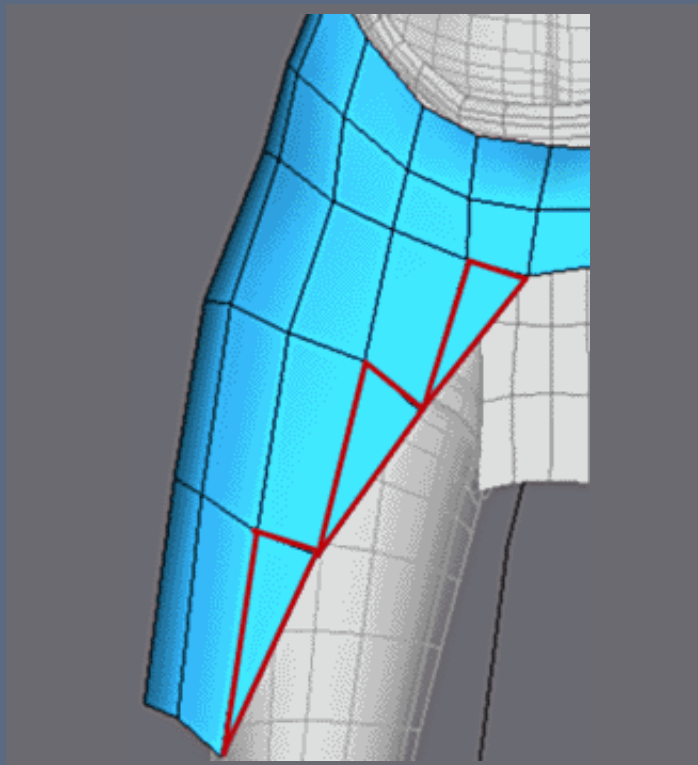
Extrude the side of the skirt down

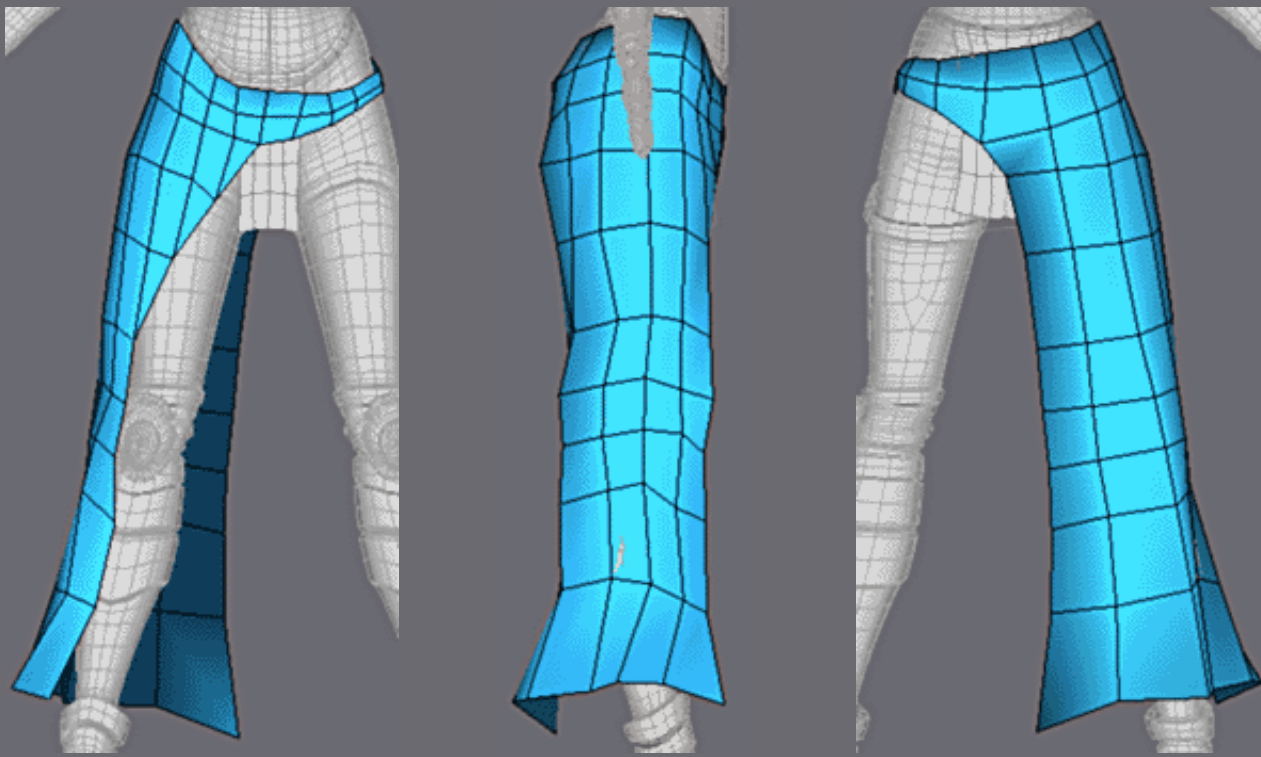




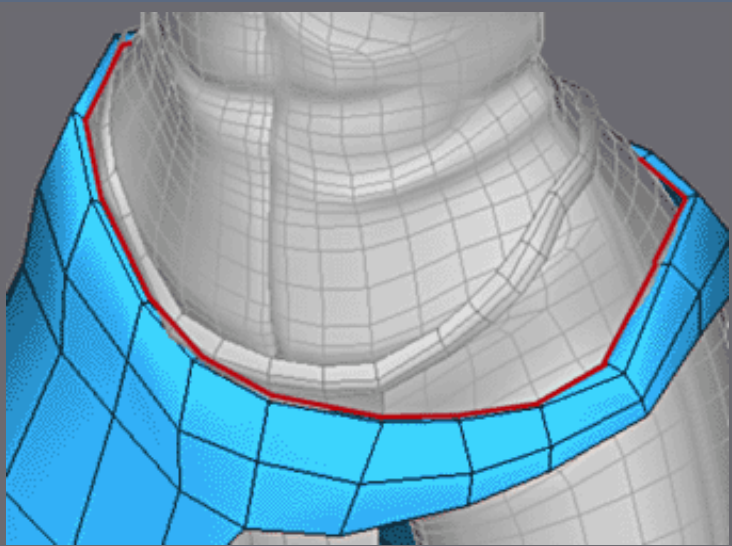
The extrusions of the front and back

Additional faces with Create Face.





Extrude the remainder of the skirt.



To make a better finish extrude the top as shown and round off.

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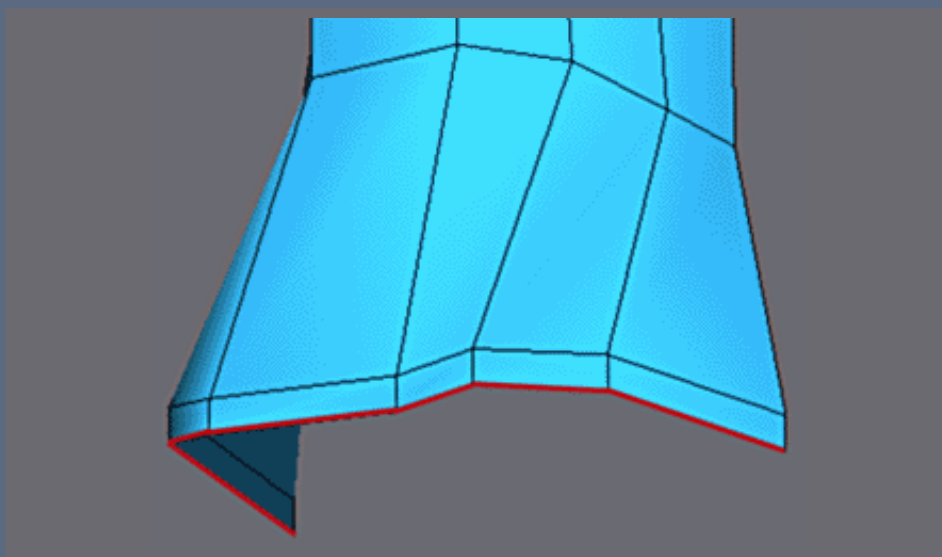
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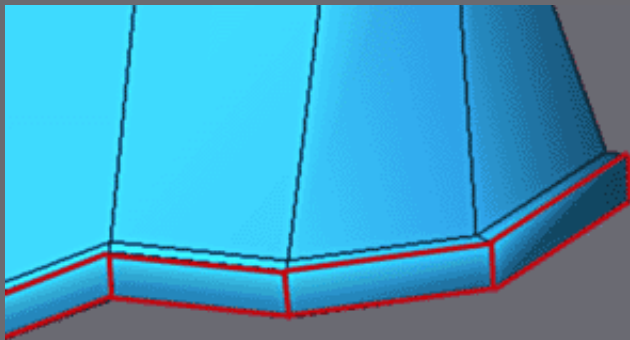
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#### Modeling of the Accessories.

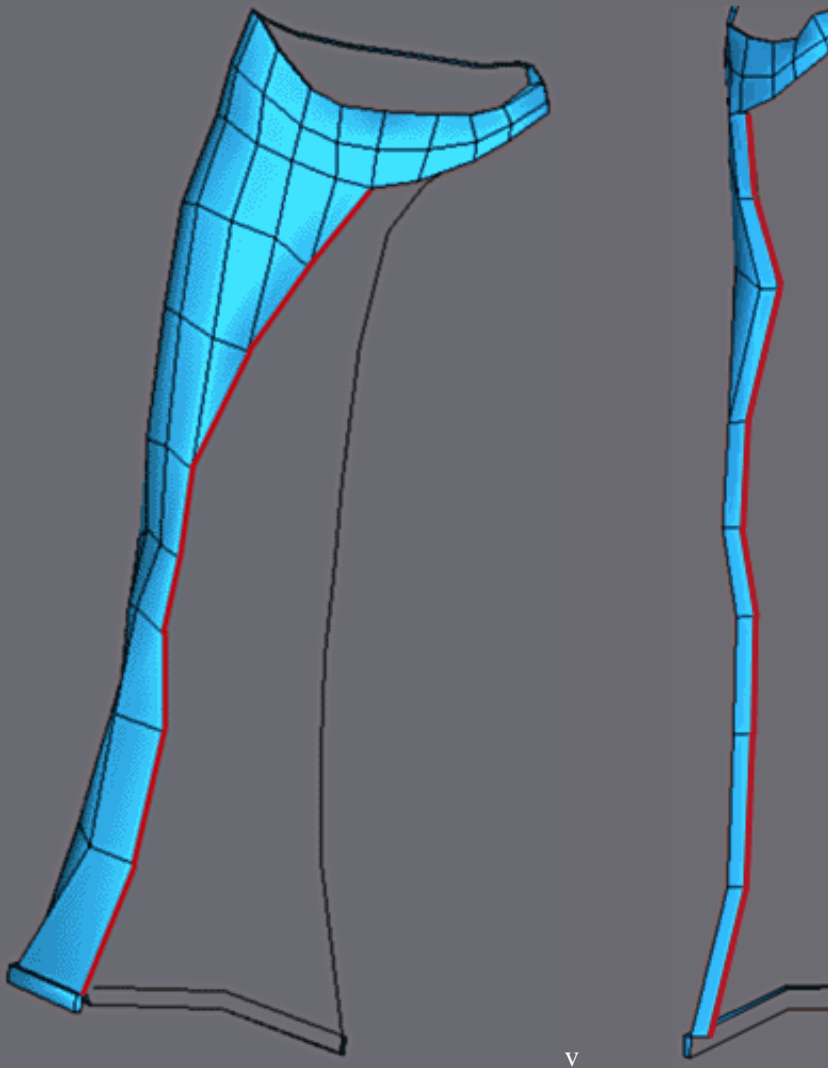


On the bottom of the skirt, make a small edge extrusion



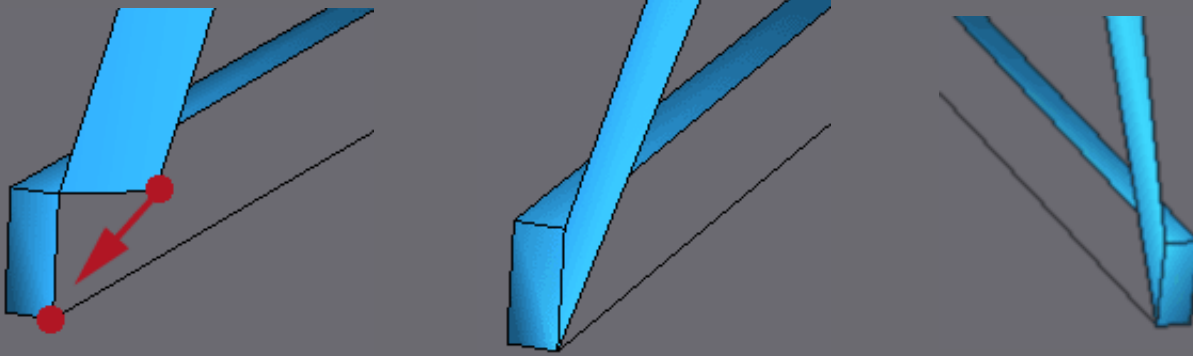


An additional extrude as shown

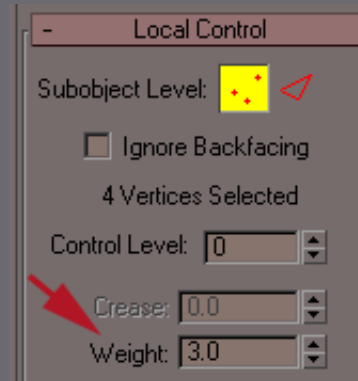
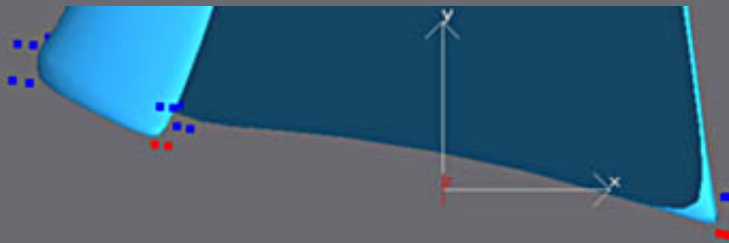


Here we simulate the thickness of the cloth by forming the edge with another extrude

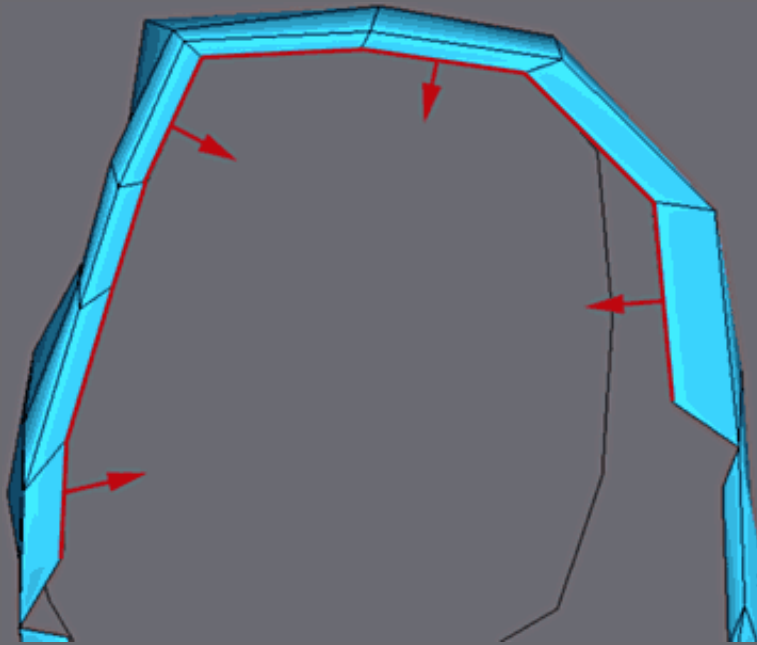
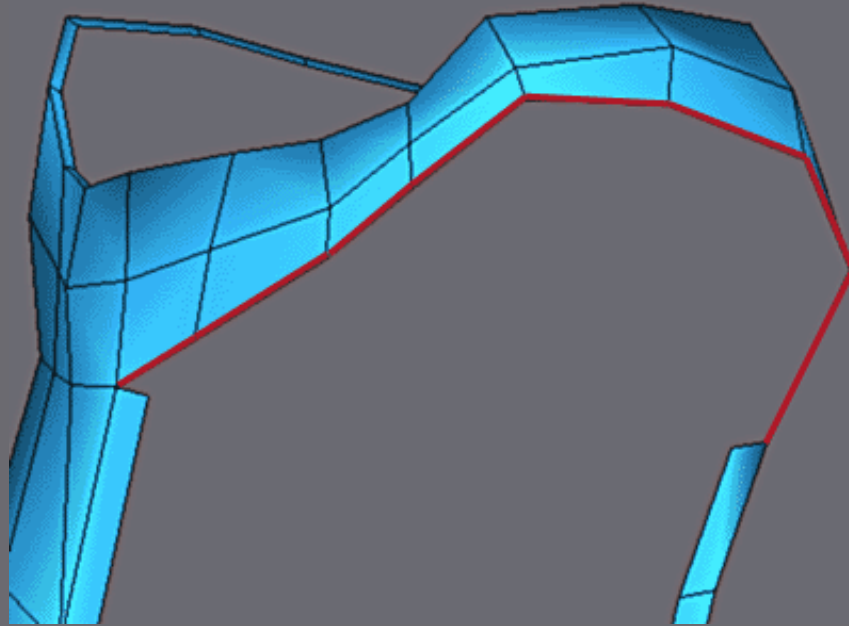




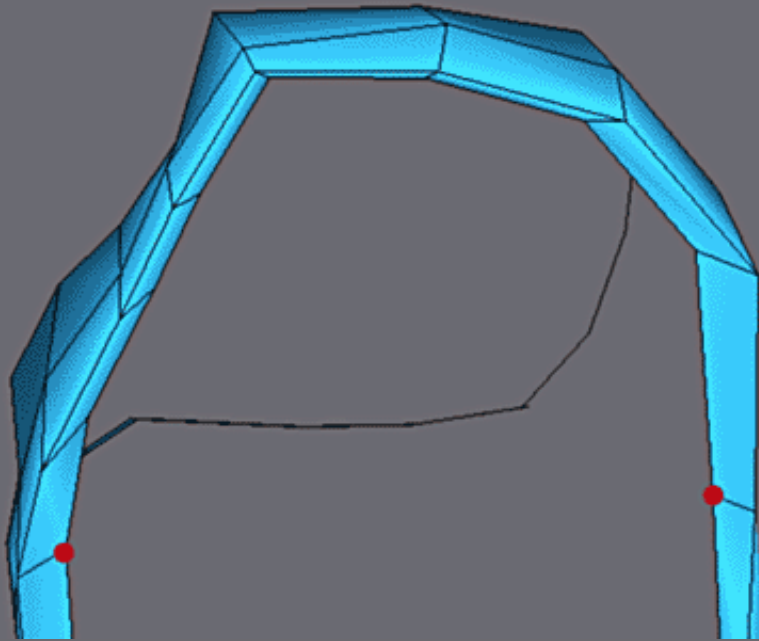
Weld the vertexes at the bottom on the edge, front and back



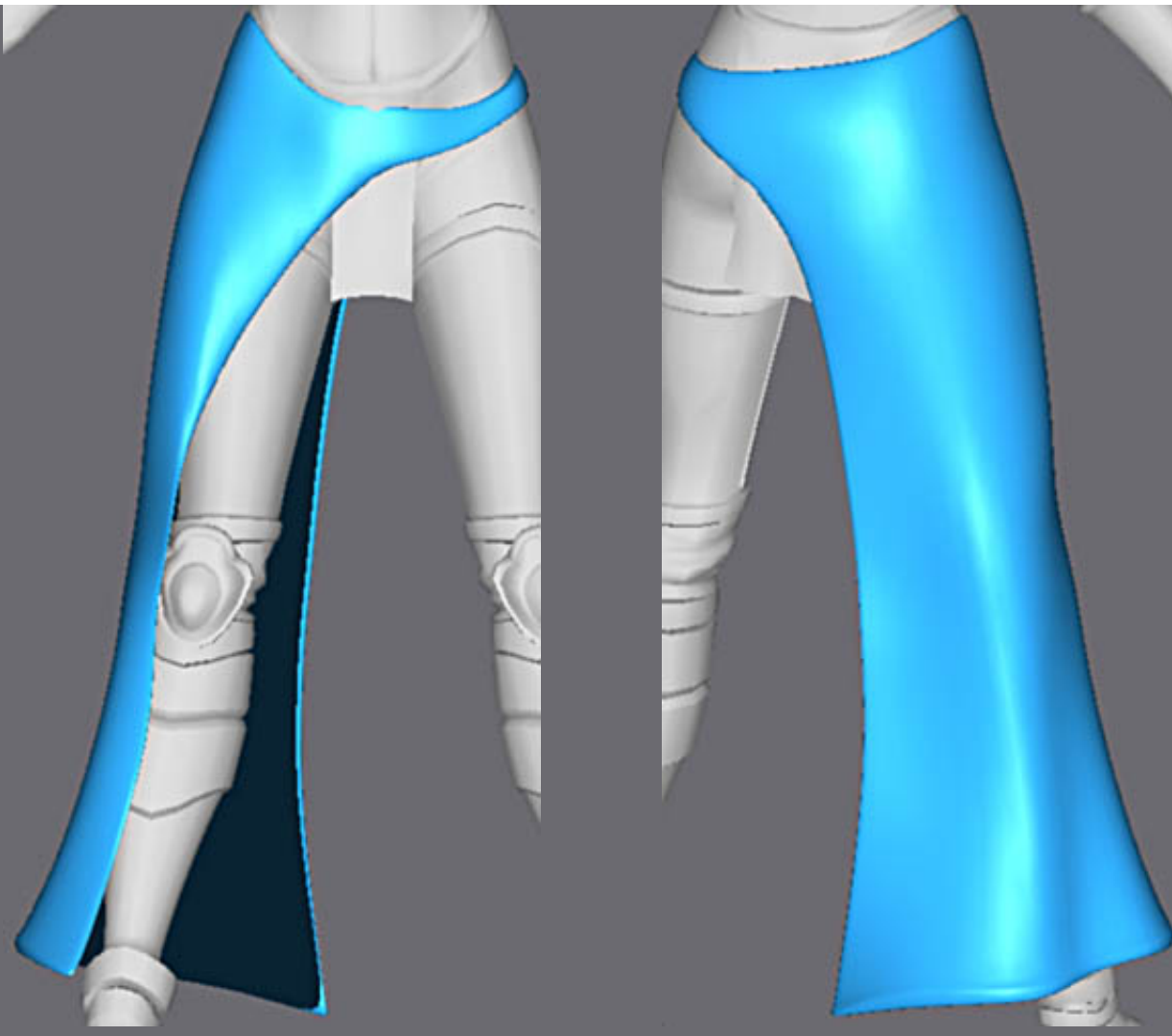
Apply Meshsmooth and increase the Weight of the extreme vertexes to 3.0.



Lastly, finish the extrusion of edge on the high part with Shif+Scale.



Weld the vertexes with Collapse  
Vertex.



Adjust the skirt with LPM cage and Meshsmooth.

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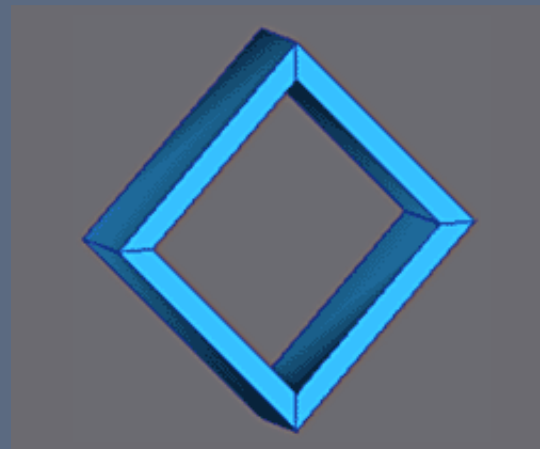
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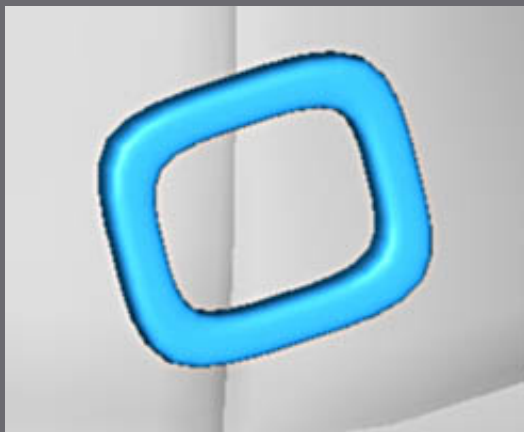
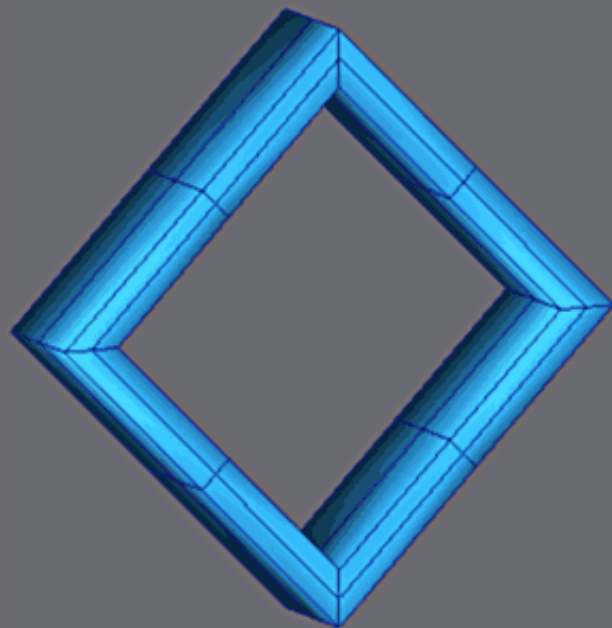
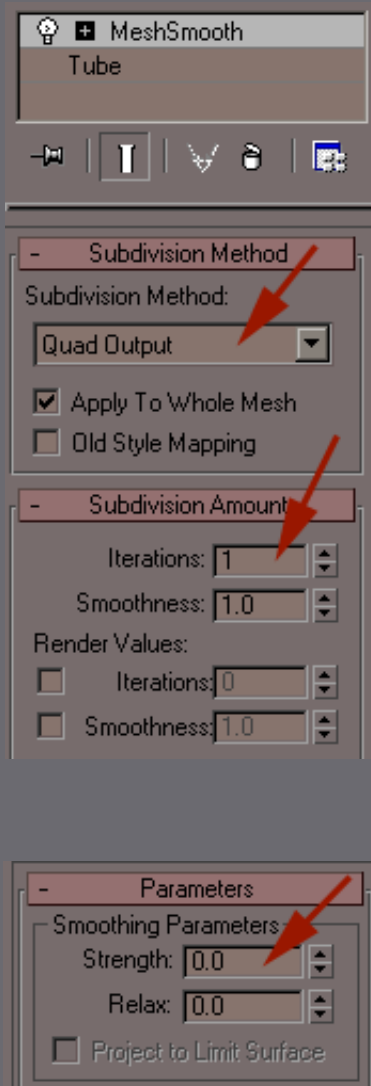
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### Modeling of the Accessories.

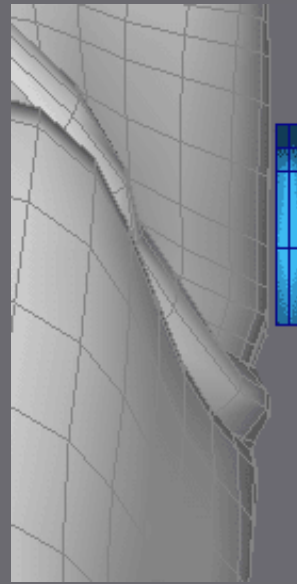
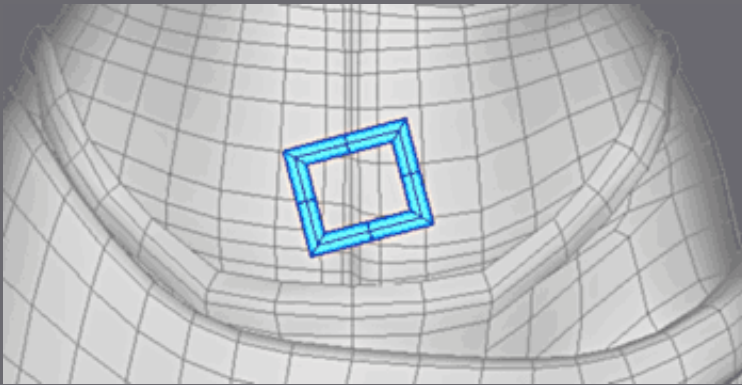
The loop of the belt now.

You start from a Tube primitive with 4 with dimensions and the other parameters set to 1.

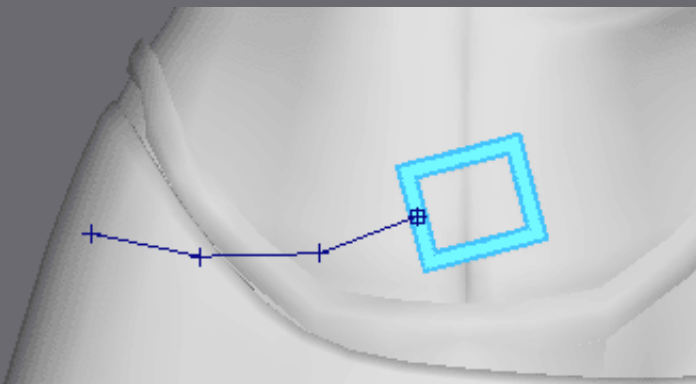




Apply Meshsmooth in Quad Output mode with an iteration of 1 and Strength at zero. That makes it possible to divide each face into 4 and keep good form for an additional Meshsmooth in Nurms mode.



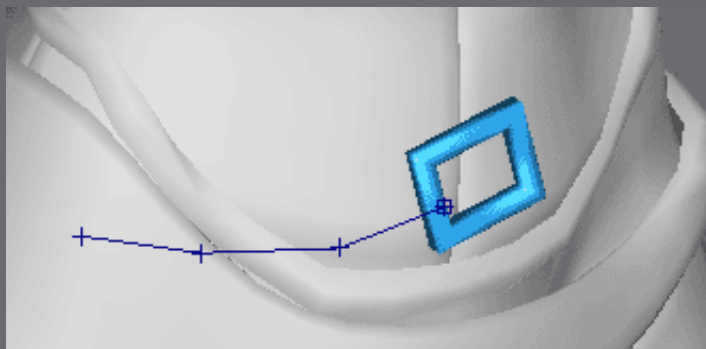
Position here



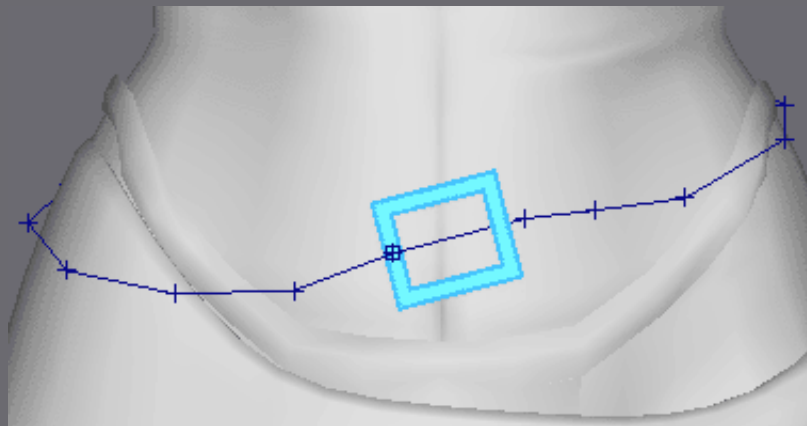
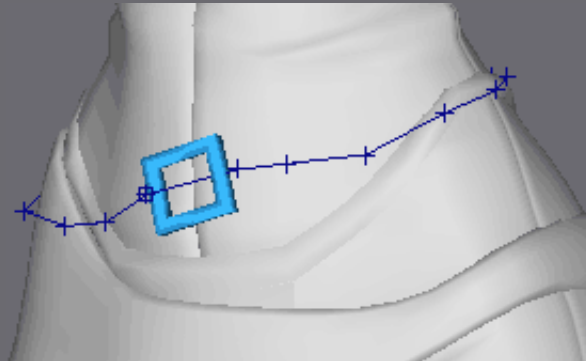
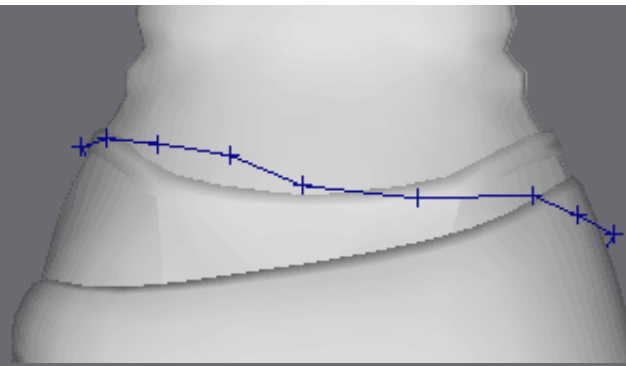
A new form of modelling begins for the belt

The extrusion of the mesh according to a spline.

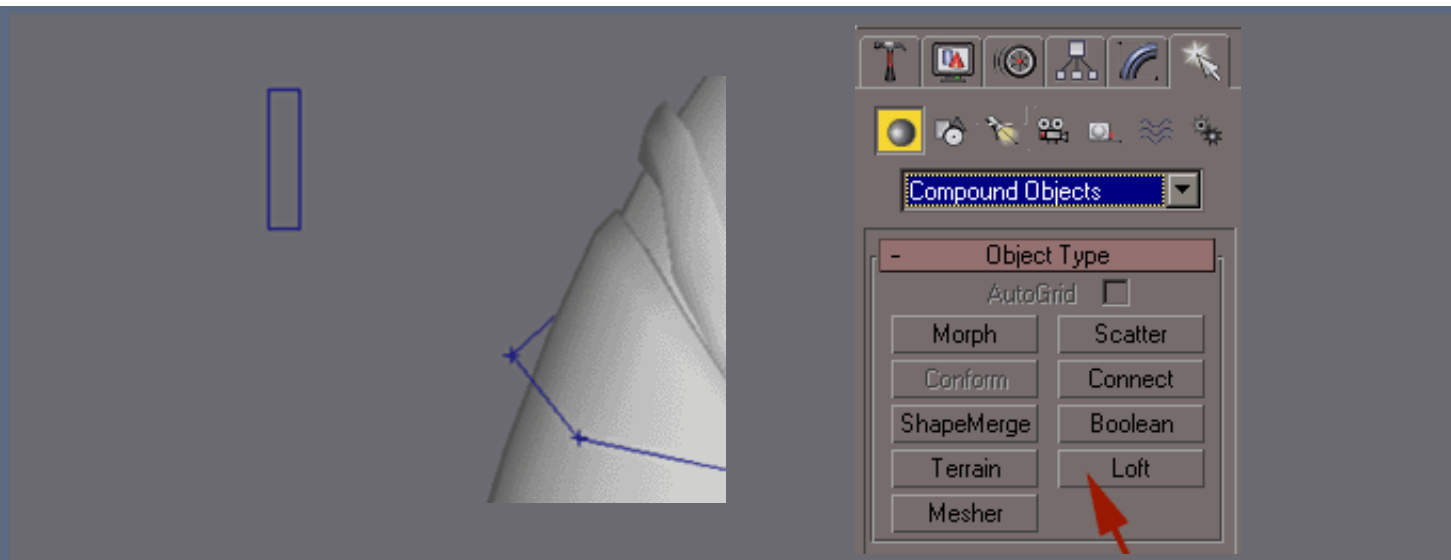
For that create a spline and set its points to Corner type.





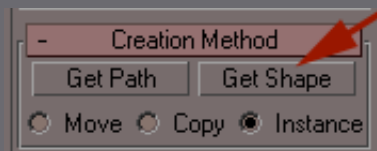


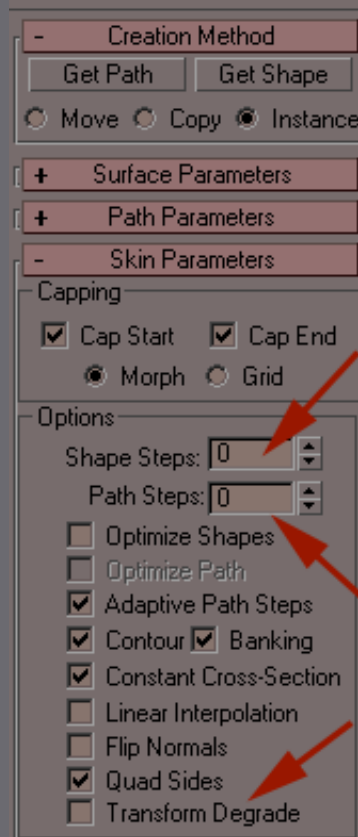
Complete the spline and move the points regularly around the waist



In the front view, create a Rectangle Shape.

Then in the Create Panel select Compound Objects, select Loft

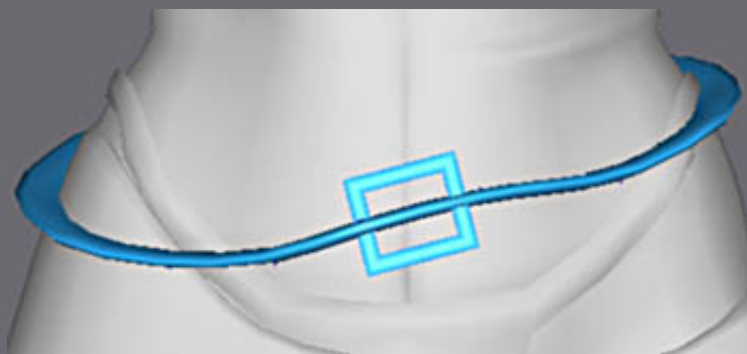




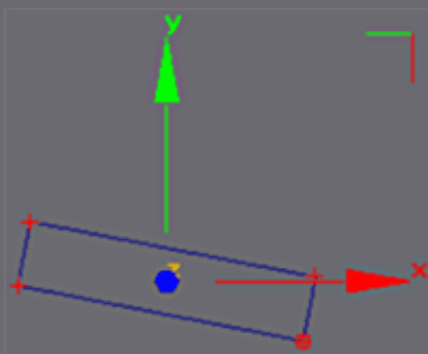
In the part Method Creation, click on Get Shape and select Rectangle Shape.  
Thus the rectangular form will follow the spline (the path).

In Skin Parameters set Shape Steps and Path Steps to zero to obtain the usual LPM type.

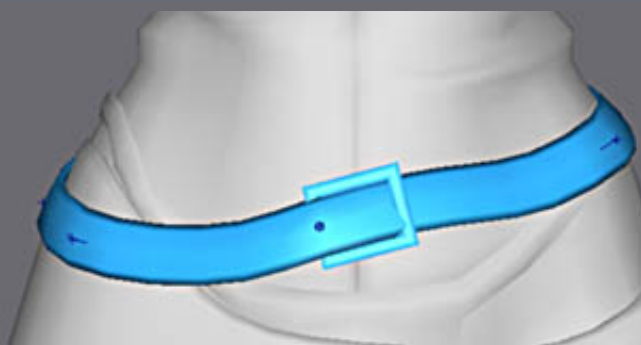
Remove Transform Degrade tick, that makes it possible to see in real time the modifications made to the spline and the starting shape.



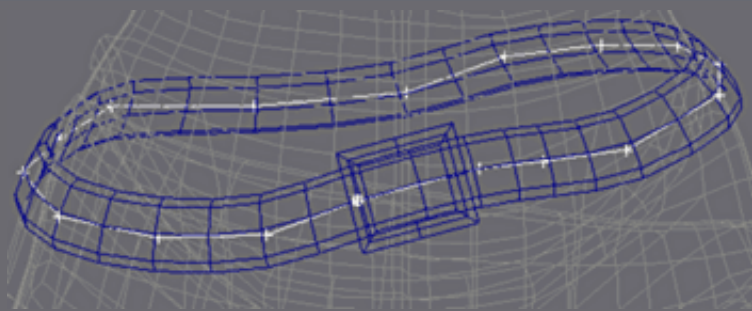
The shape that followed the spline is good but is badly directed



To correct that, select the right-angled shape, and in vertex mode to apply a rotation in Selection Center mode.



Apply the rotation and watch the update of the orientation of the belt.



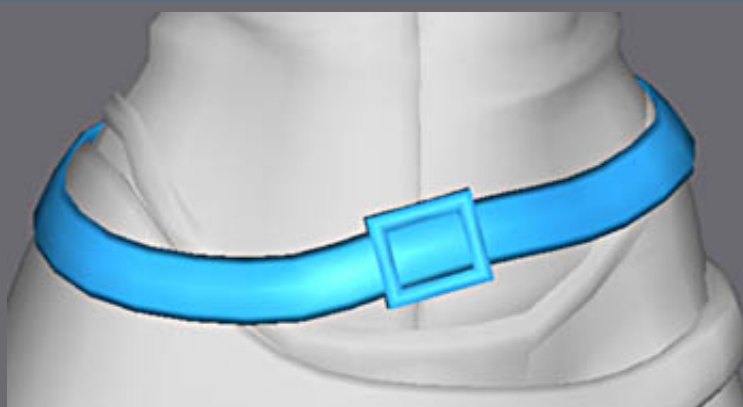
The belt may be poorly positioned against the body in some places so you can adjust the vertices of the spline and view the update of the final model even with a Meshsmooth added as above.

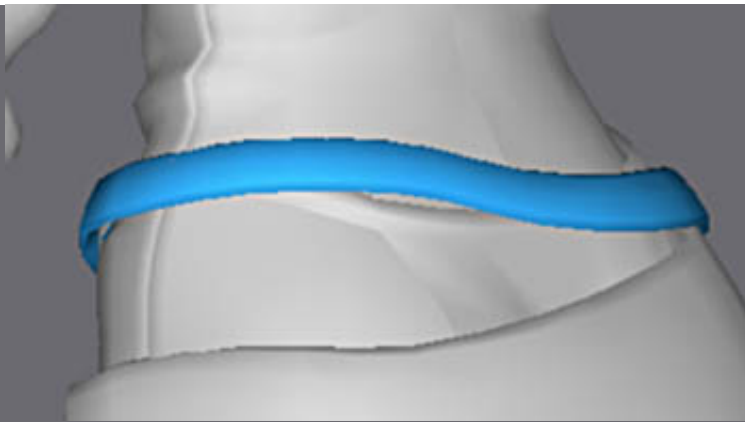
You can even add more points of control on the spline with Refine

The Loft function of max is very powerful and very flexible, it is in my opinion one of the most perfected functions of this 3d software.

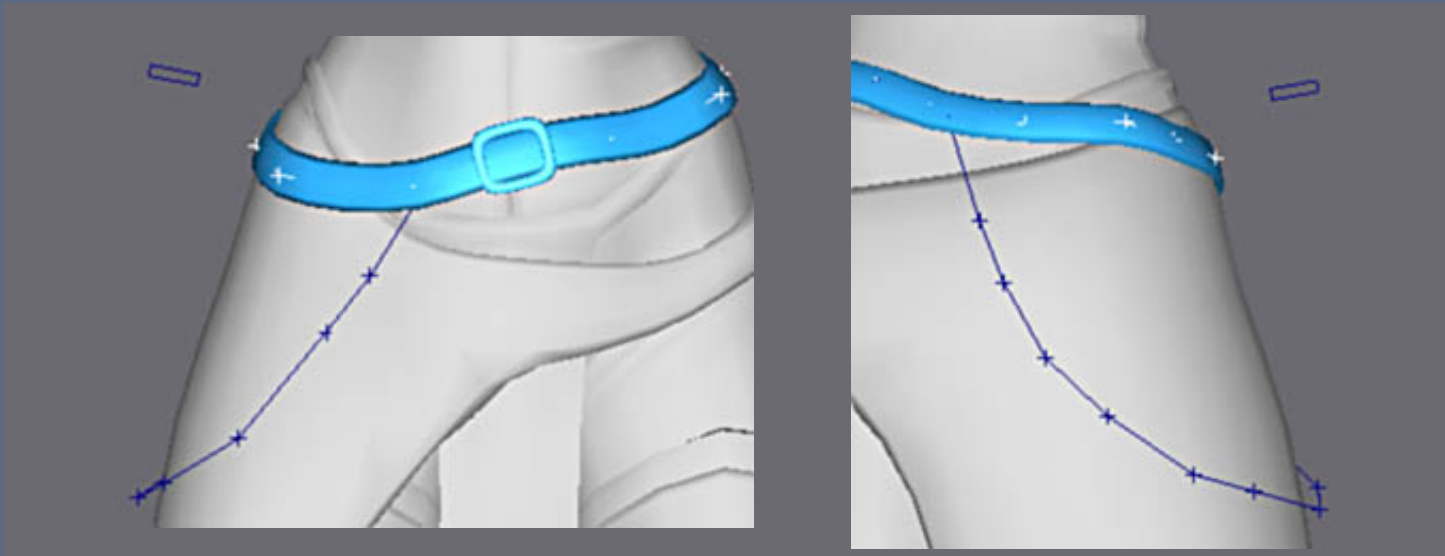
Certain software competitors are far from offering the same facility.

A whole tutorial could be made only on this mode of modeling so much there are possibilities...

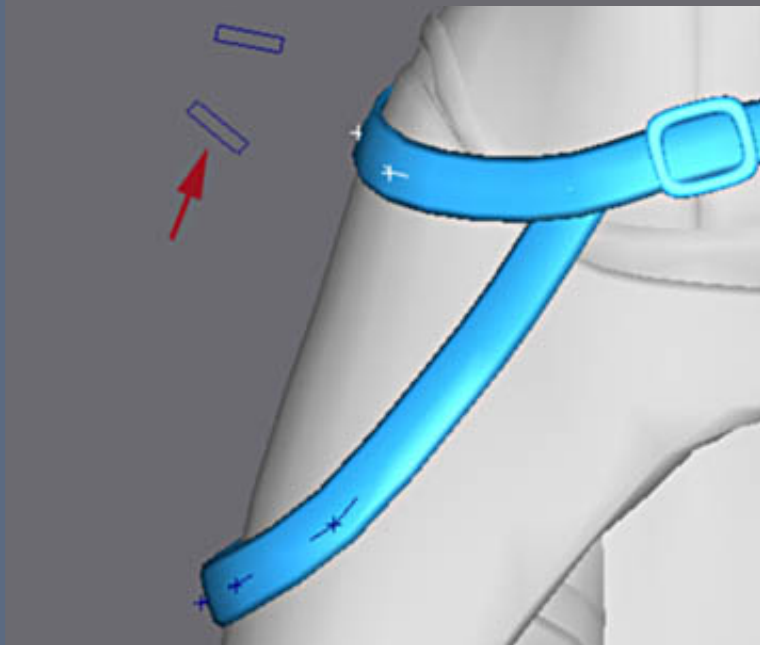




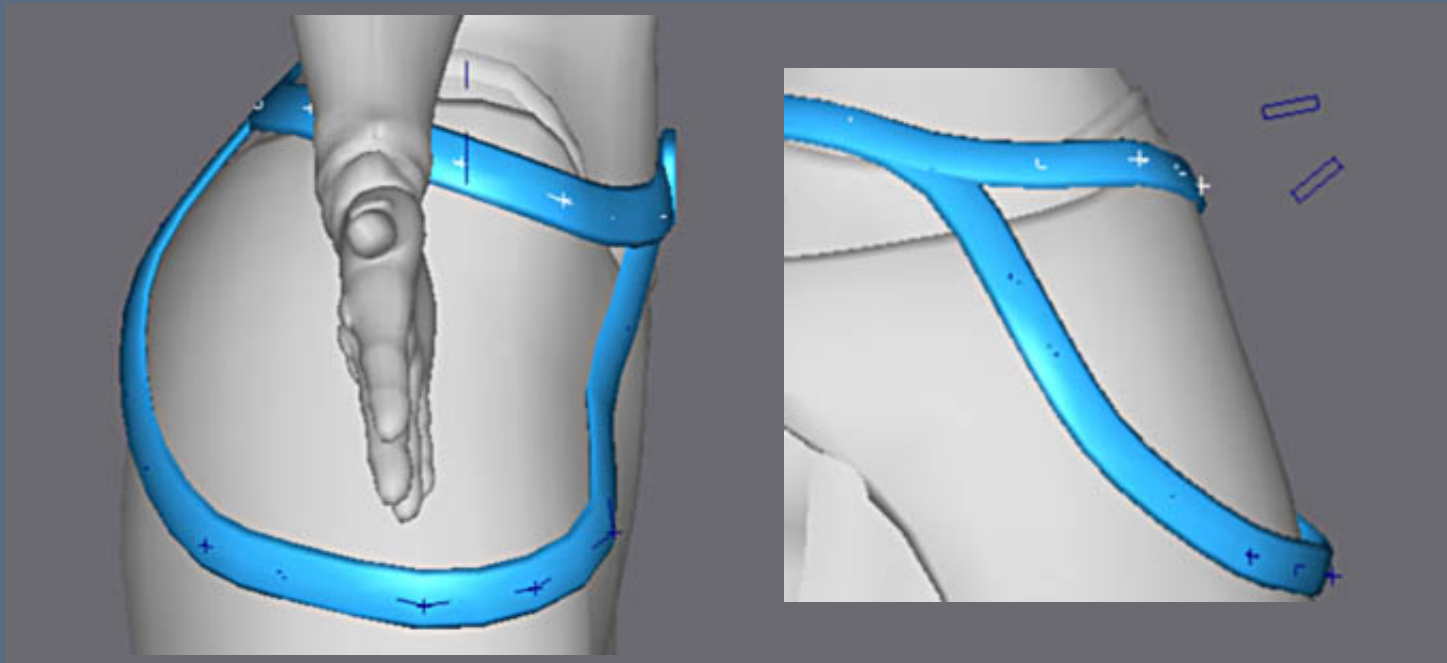
The belt after adjustments.



The same procedure for additional belt sections.



Again a secone shape is rotated in vertex mode the set the orientation



The second belt after adjustments.

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Email: Michel Roger --- Web: mr2k.3dvf.com

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Joan of Arc  
by  
Michel Roger

3ds Max



*Uv texture*

3D Studio Max

Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: mr2k.3dvf.com

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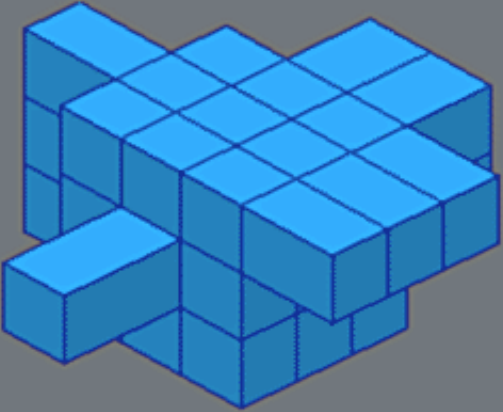
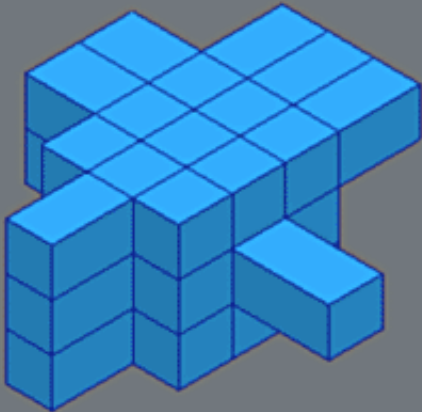
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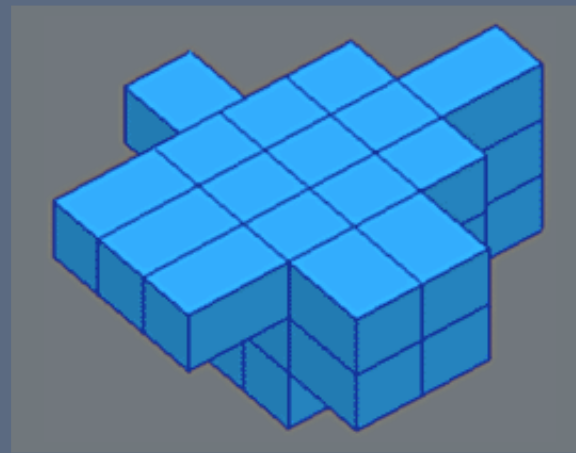
Bases

This is a presentation of mapping in max, Material ID and the materials Sub-Multi Object.

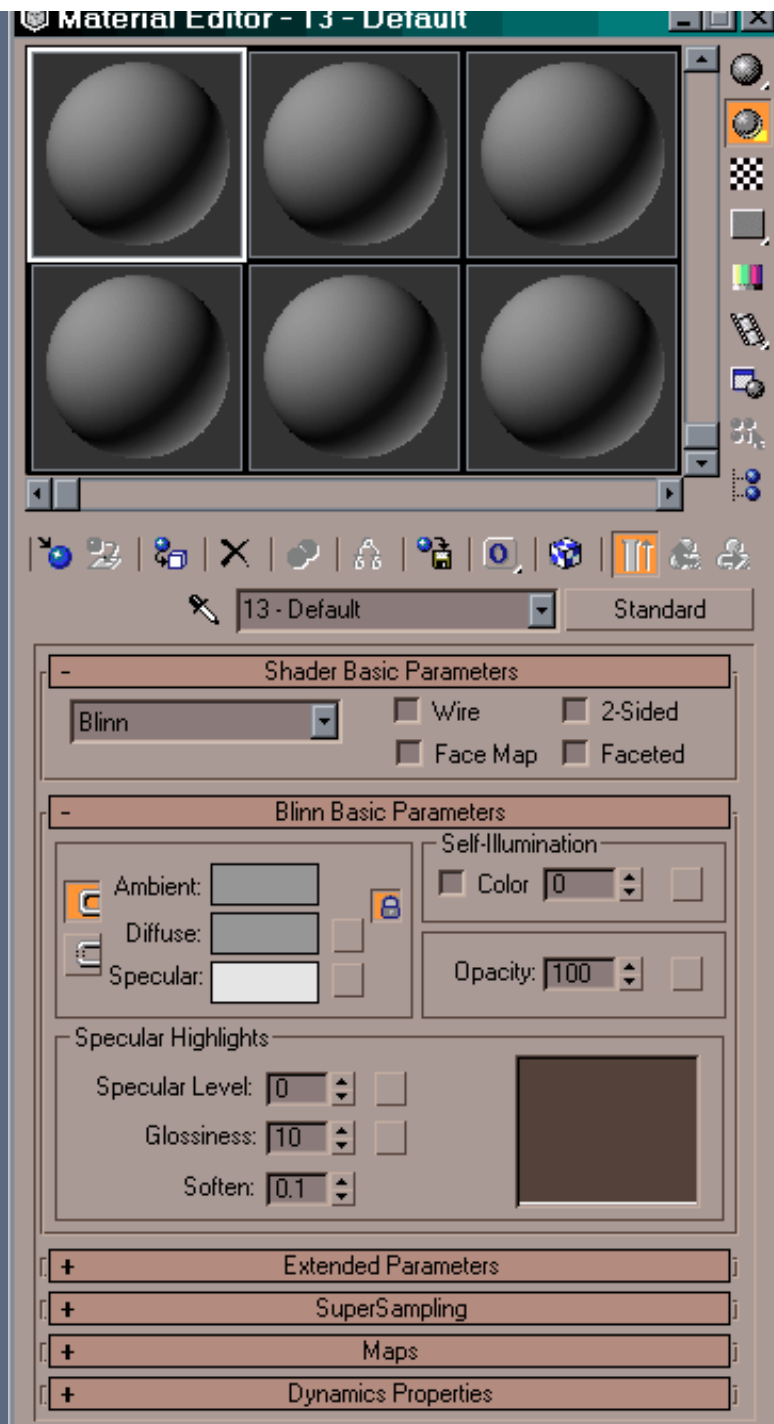
How to assign several textures to an object, how to place the mapping coordinates, how to apply them, improve them and finally how to Unwrap the texture for use in a 2d paint package.



To illustrate all this, we will use a simple cube with three divisions and some extruded faces as you can see opposite.



By default during its creation, an object does

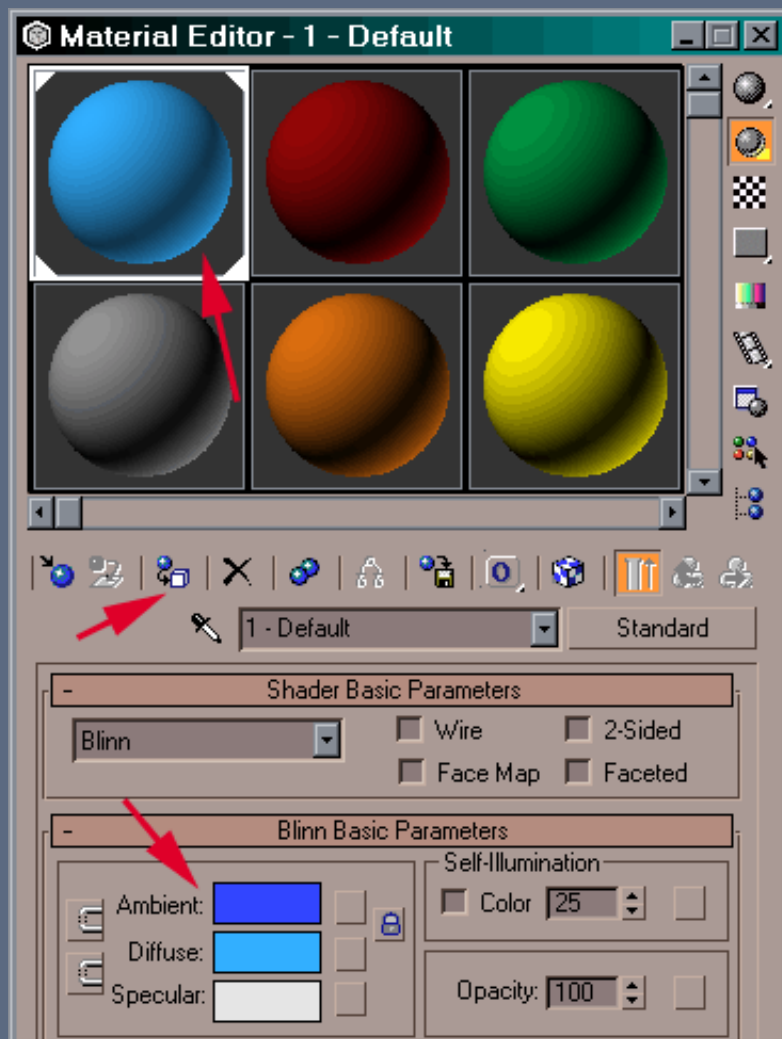


not have a true material, it just has a color chosen by chance.

To apply a particular material we use the Material Editor.

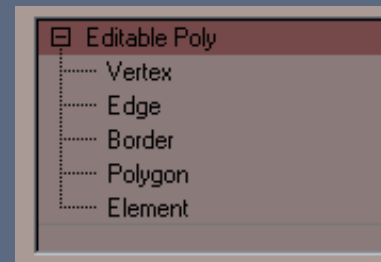
Material Editor is a relatively powerful editor.

In top of the unused material slots (in gray) on which we come to apply and visualize materials.



To apply just select a slot and change the color Ambient, Diffuse etc.  
Make the same changes for the others slots opposite, just use different colors.

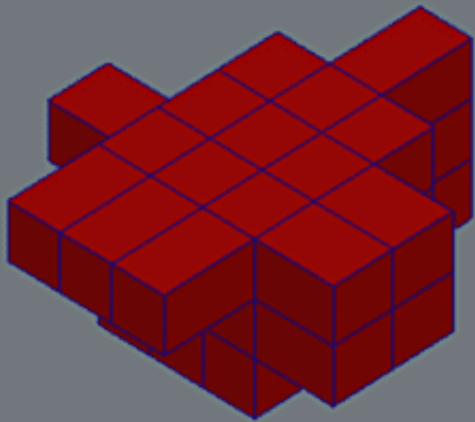
To apply a material to the object, just select a Material as shown. Now Select your object then click on the Assign Material to Selection icon.



Note that the framework of the slot changes and 4 white bevels appear indicating that this material is currently assigned with an object in the scene.

We can also Drag and Drop a material directly onto an object in the viewport to assign it.

Select your red material and assign it to the object, note that bevels of blue material

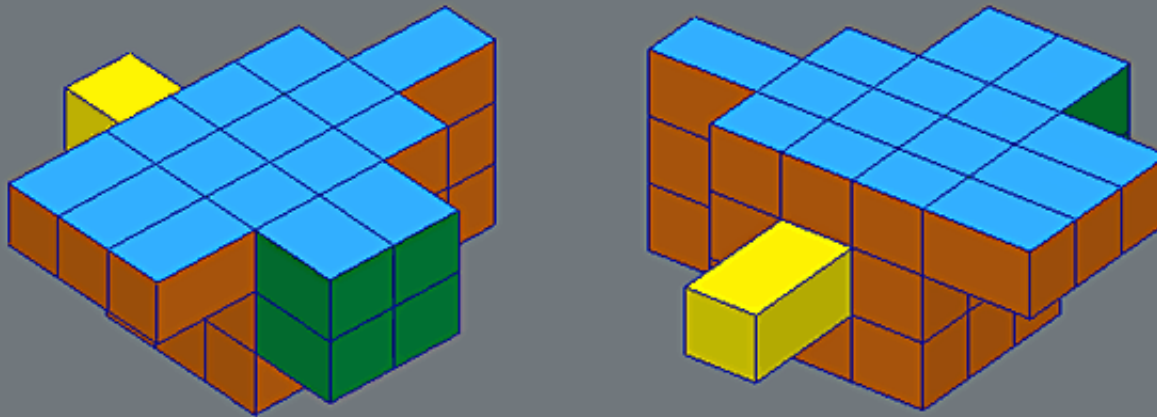


disappear because it is no longer assigned in the scene anymore.

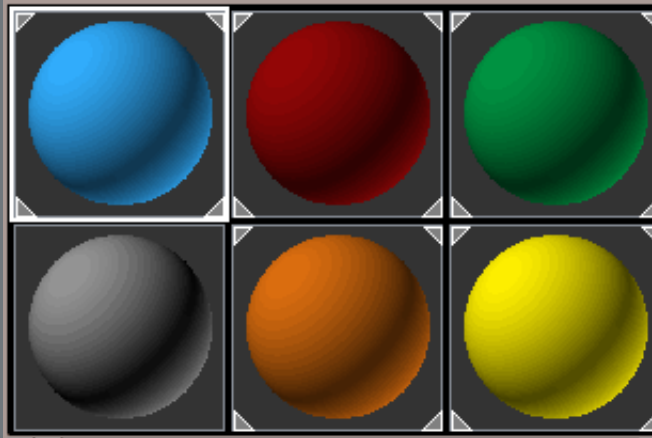
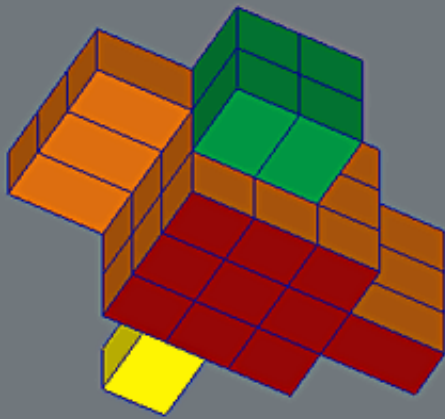
How to apply several materials to the same object?  
For that we need to use sub-object mode. We work in Poly Edit or Mesh Edit mode using polygons or elements.

Select the faces you want, choose another material and assign it.

This time the material applies only to the selection.  
Repeat this operation until you have assigned all 5 materials.





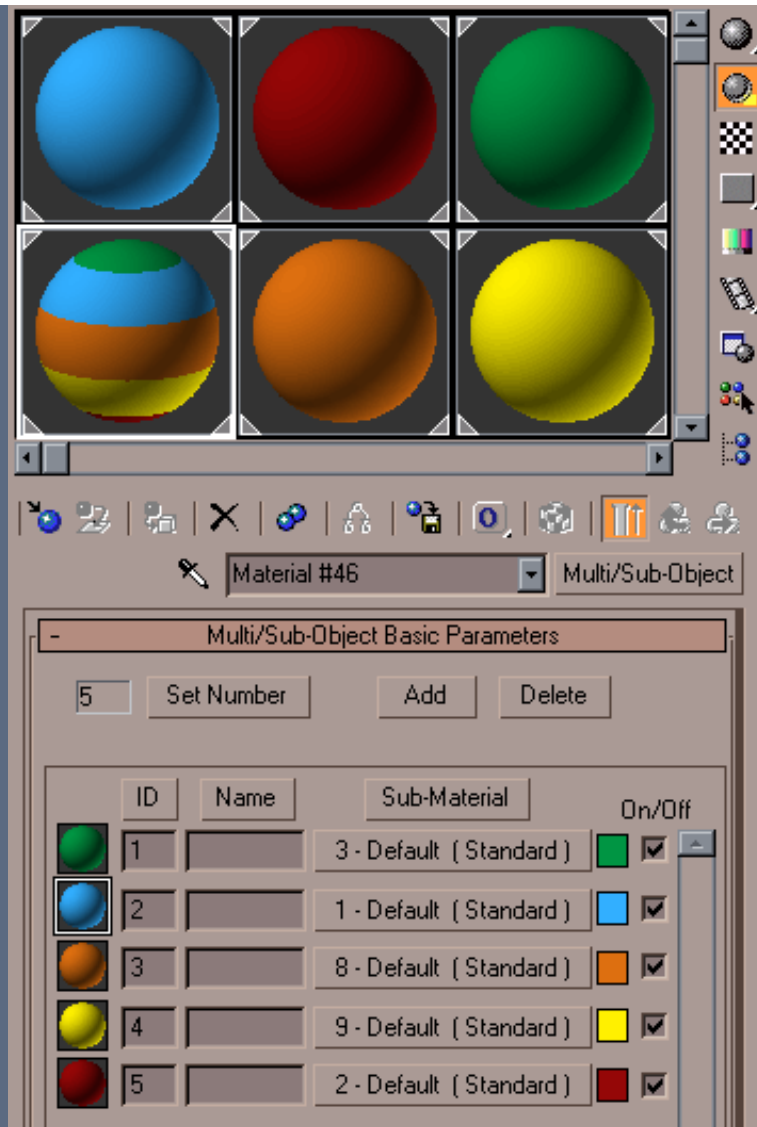


The object with 5 materials applied. Note that all 5 slots have their corners beveled.  
Deselect all the faces of the object then go back into object mode.



In Material Editor, select a free slot, click on the Get Material Icon, Select from Scene. This makes it possible to recover the Material applied to an object.

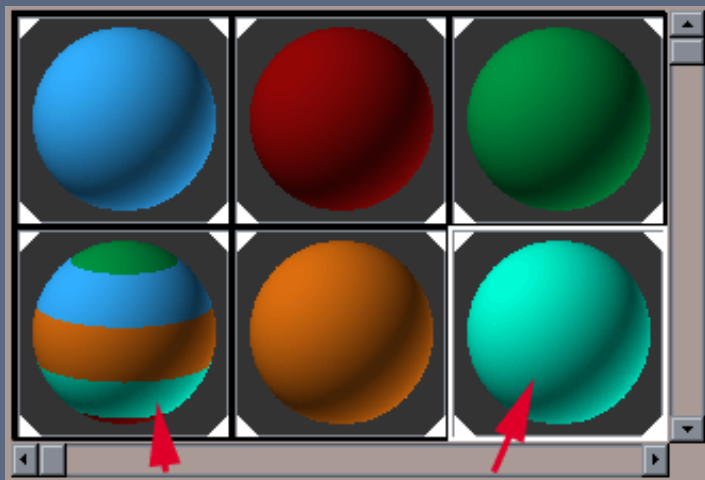
Here we find ourselves with not a material of the Standard type as by default but one of the Multi/Sub-Object type.



With this type of material we make it possible to apply several textures to an object.

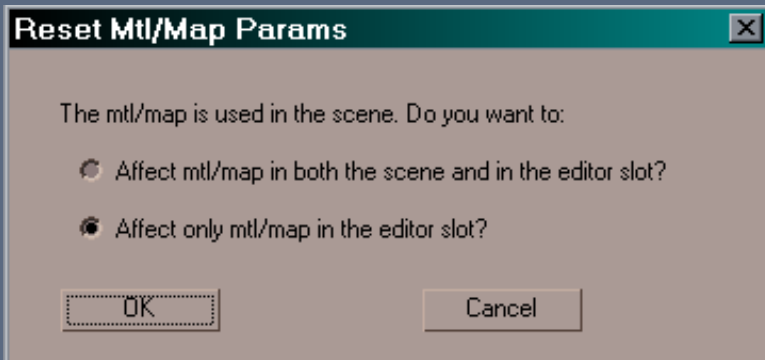
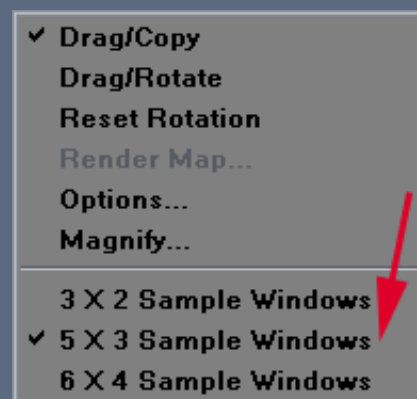
So you see we can create it as we did, by assigning Standard materials with a selection of faces.

Or we can create a Multi/Sub-Material, from scratch (setting a number) and then applying each Sub-Material as we did with our sample material.



Note that if we change a material in a slot, the Multi/Sub-Object material is also updated because they are dependent on each other (an Instance).

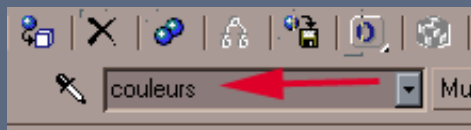
Before going further, let us clean the slots of Material Editor. For that we right click on a slot and in the menu which appears select 5x3 Samples. We now have more smaller slots.



Select the Original color slots and click on the Reset Map icon.

A Dialogue Box appears, select Affect Only in Editor Slot because we do not wish to erase material already assigned with the object.

This procedure makes it possible to release the slots for later use, and because we cannot see all 24 Material Editor Slots on screen at once we may from time to time



wish to clear these slots.

(3DSmax is not limited to 24 materials  
fortunately:))

Erase all the slots and find the material of  
the object, use the Get Material Icon, Select  
from Scene as we did previously.

Name this material in the field designed for  
this purpose.

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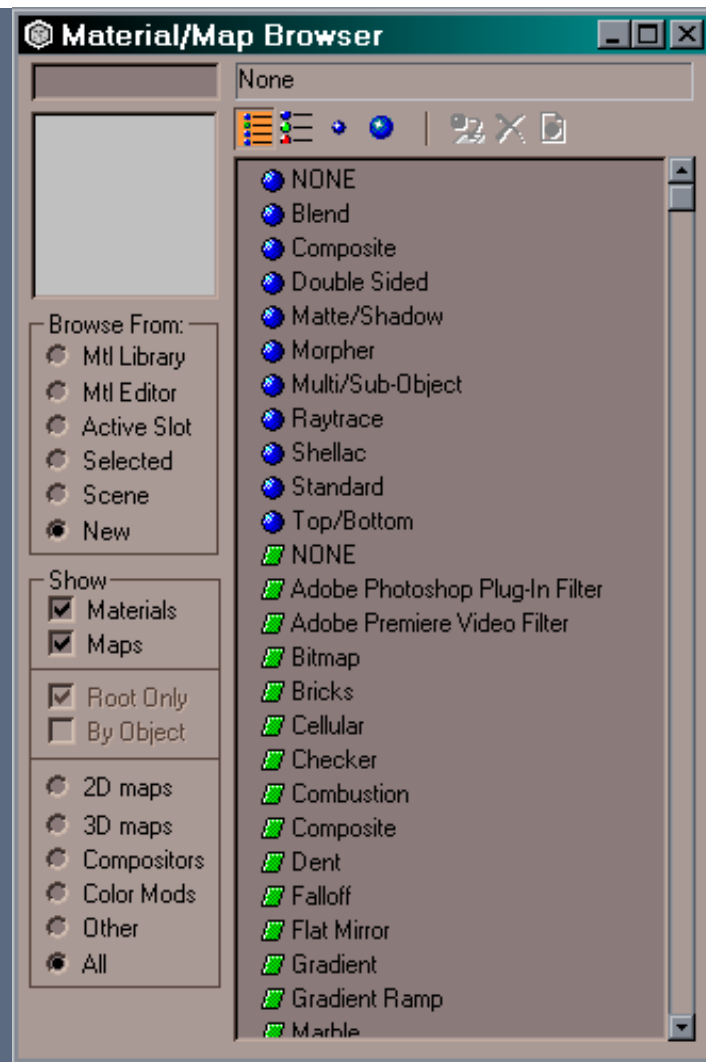
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## Bases



To manage an objects materials we should not be satisfied with the slots, they are just there to allow us to edit them.

A further step is necessary to use the material libraries.

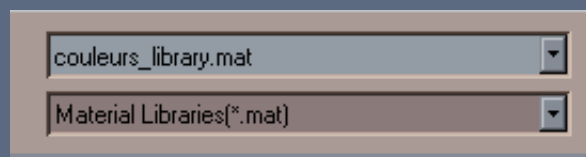
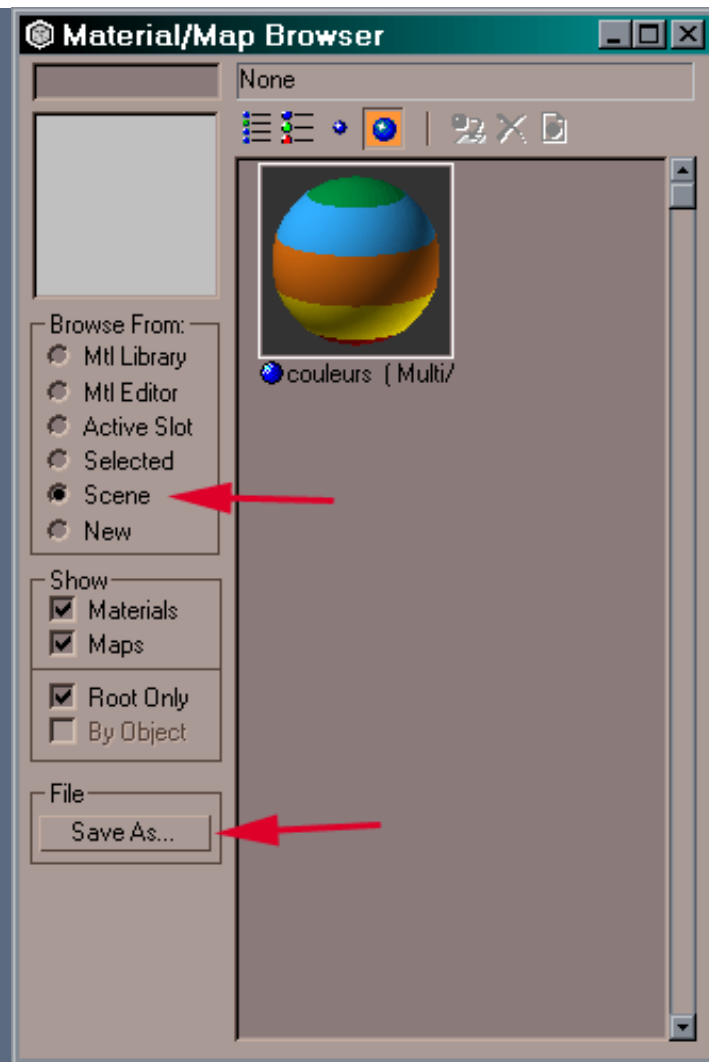


A material library is a \*.mat file, and in them we can record hundreds the materials.

That makes it possible to constitute reusable material libraries from other \*.max files.

Click on the icon Get Material.

The window Material Browser appears.



By default max saves a material library, into a 3dsmax.mat in the Matlibs directory.  
To create your own library, within the framework use Browse From and select Scene.

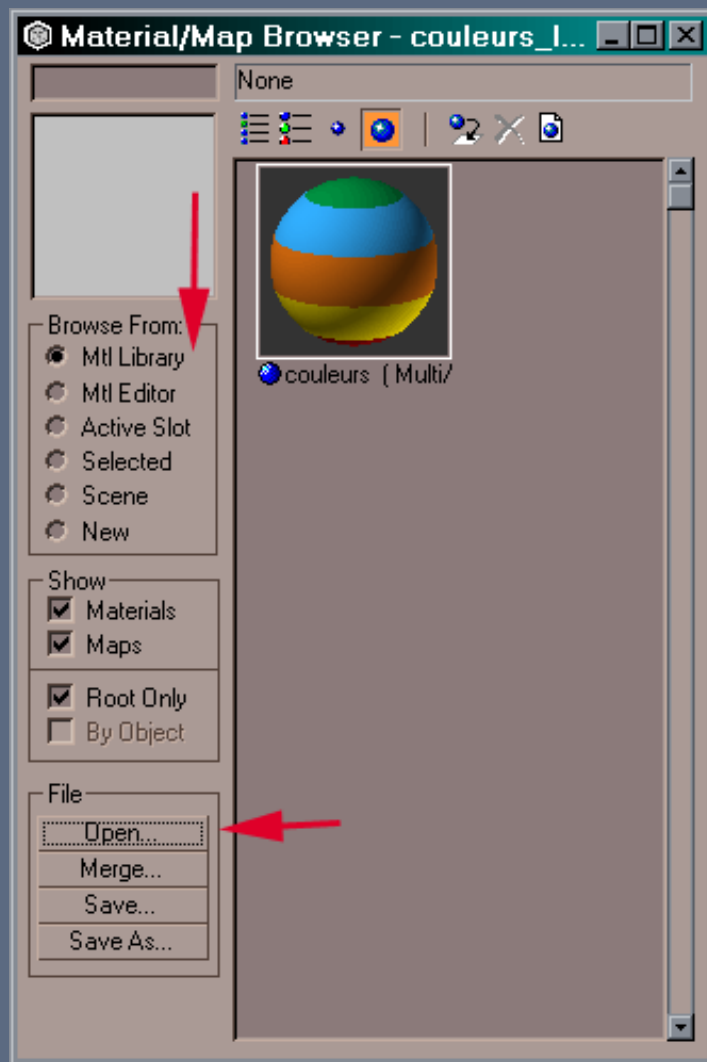
Only one material exists for the moment, it is the Colors material created previously.

Select Scene in the Browse From: Palette then Click Save As, to save our working Scenes Mat file with a name of your choice.

It is good practice to associate a library with a project so as not to confuse its use with the other \*.max files.

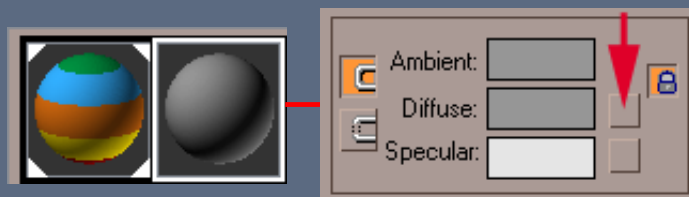
Although we can still use these materials in any other scene.





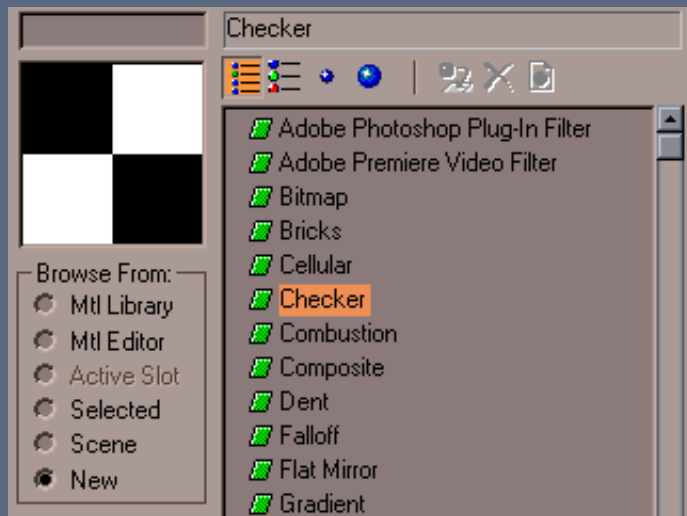
Select the Mtl Library.  
To charge your library Open your premade \*.Mat file.

Note that we can amalgamate several libraries with Merge.



Let us create another material in the slot on right-hand side.

Click on the square opposite Diffuse.

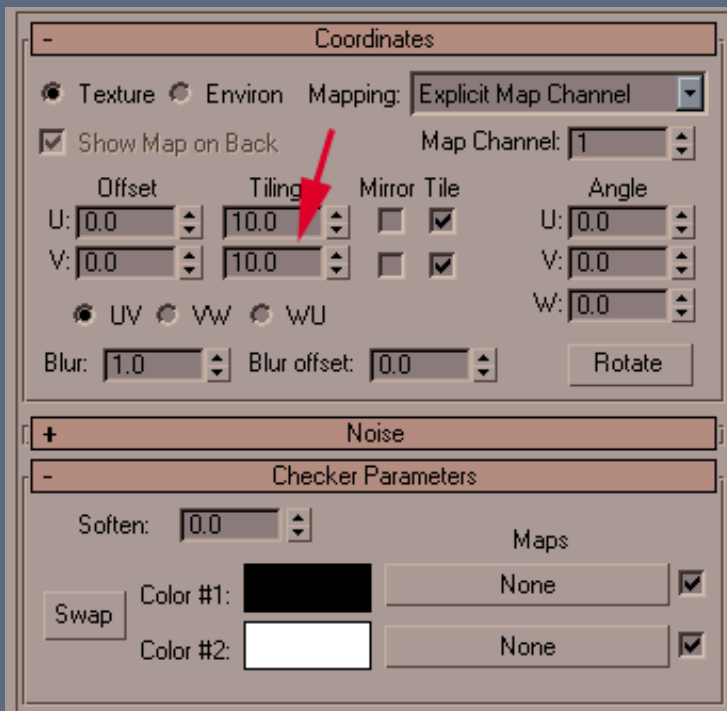


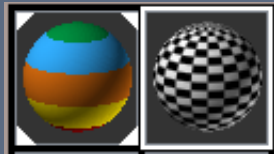
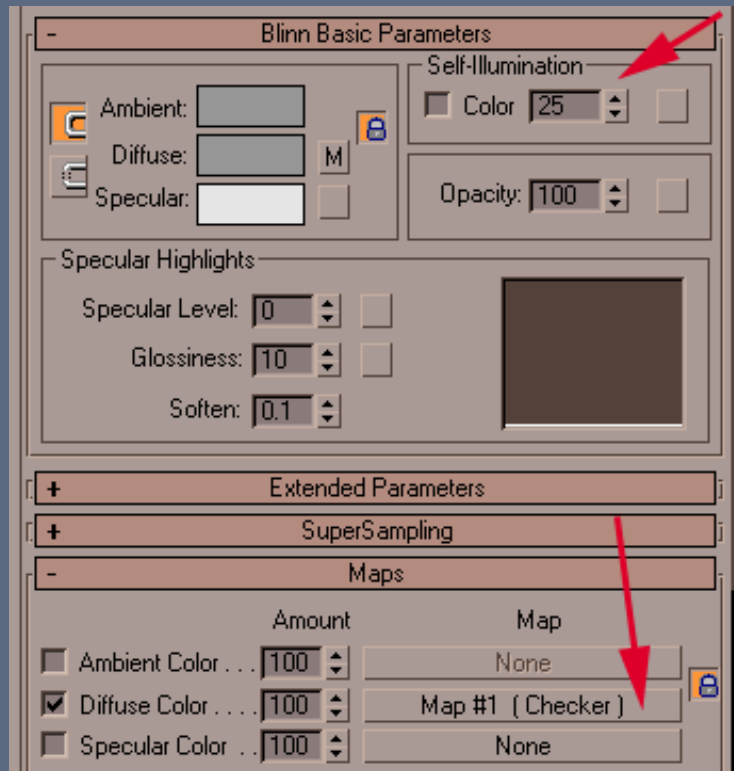
Material/Map Browser appears, click Checker.  
Here we will use the procedural texture of checker.

A procedural texture is a texture generated mathematically by max and avoids having to use a bitmap file for example.

Within the Coordinates framework, change Tiling (repetition of the image) to 10 for both U and V.

The checker now repeats 10 times on the object.





Go up a level in Material Editor, by clicking the Go to Parent icon.  
This returns us to the top level of our material.

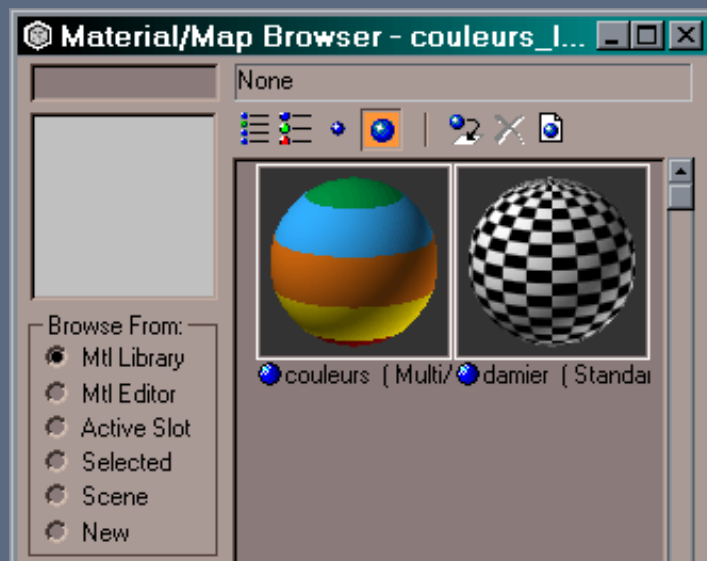
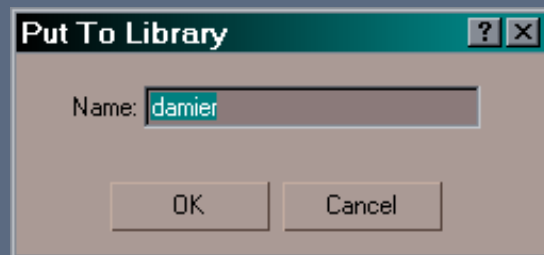
Within the Maps framework, the Channels Diffuses Color has the Checker texture assigned.

Name the material checker

It should be noted that the channels Diffuse Color is now also a material (a sub-material of the material checker), and we can name them as needed etc.

For the needs of legibility all the screen captures of textures are at Color Self-Illum 25%.

This is not needed for you own work.

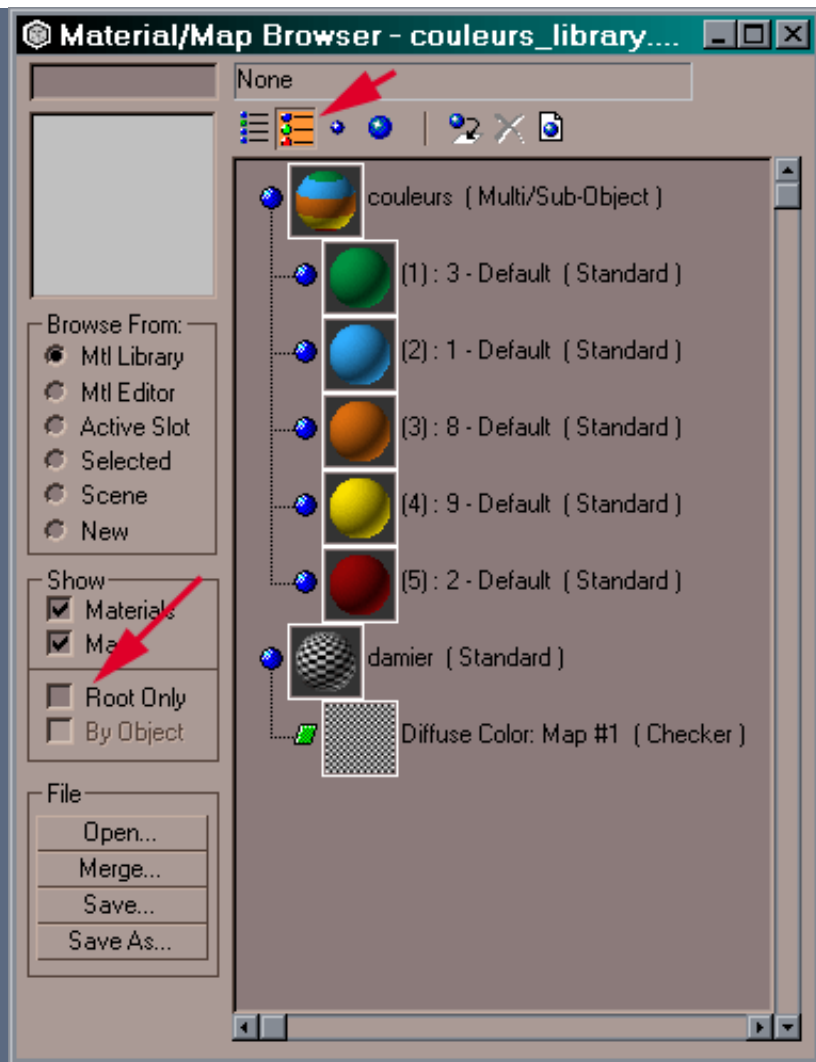


To put this new material in our library, click on the Put to Library icon.

Max requires a new name, but we can leave the name as is, namely checker

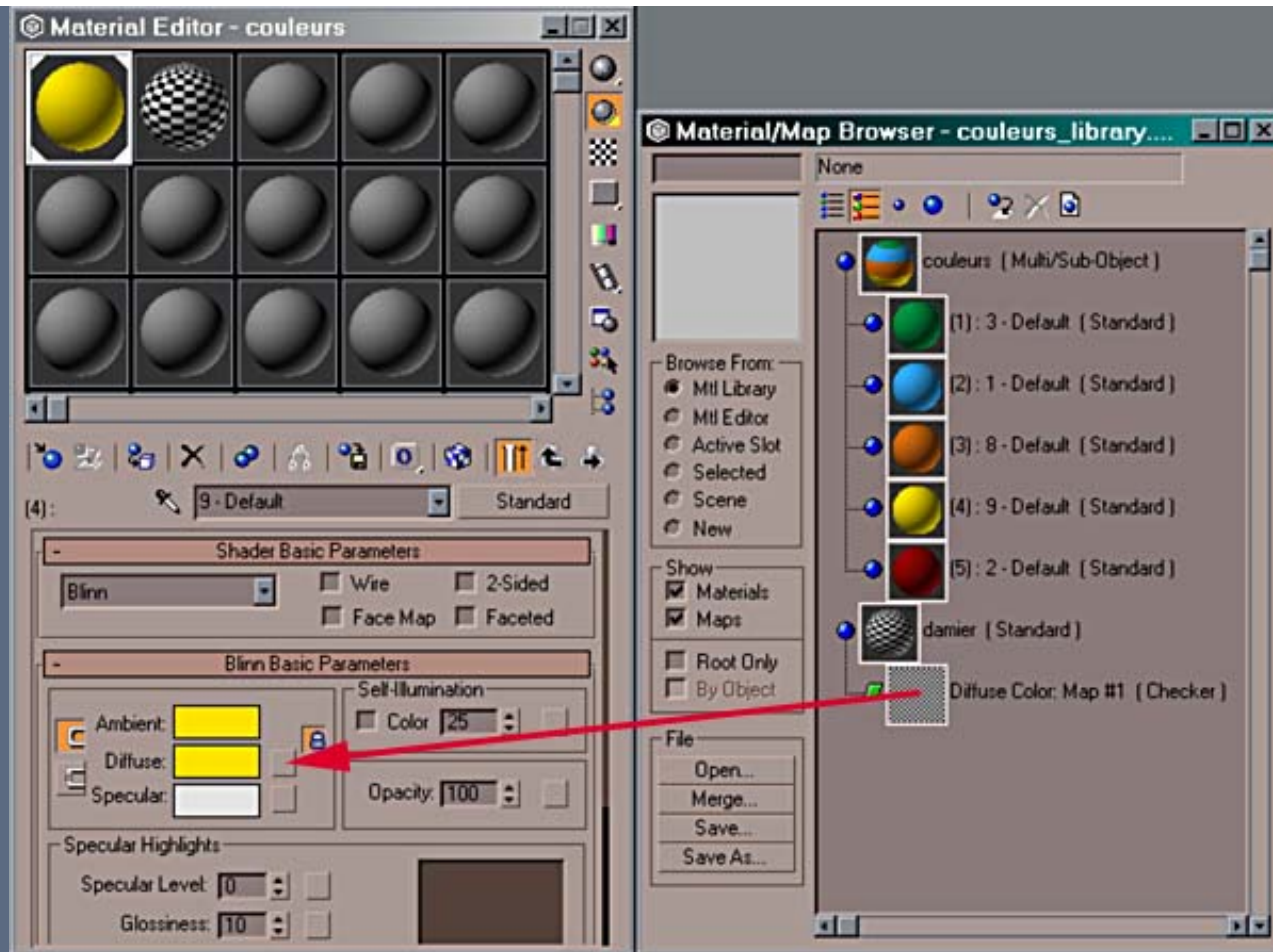
It is good practice to give explicit names to materials, this avoids confusion. We can then come back to a scene a few months later and remember what we were doing back then.

If you open the Material/Map Browser, you will see your new material there.



By changing the view as shown opposite (uncheck the Root Only option) we can see the tree structure of our materials.

The levels of tree structure can be very complex and Material/Map Browser makes it possible for them to be found quickly.



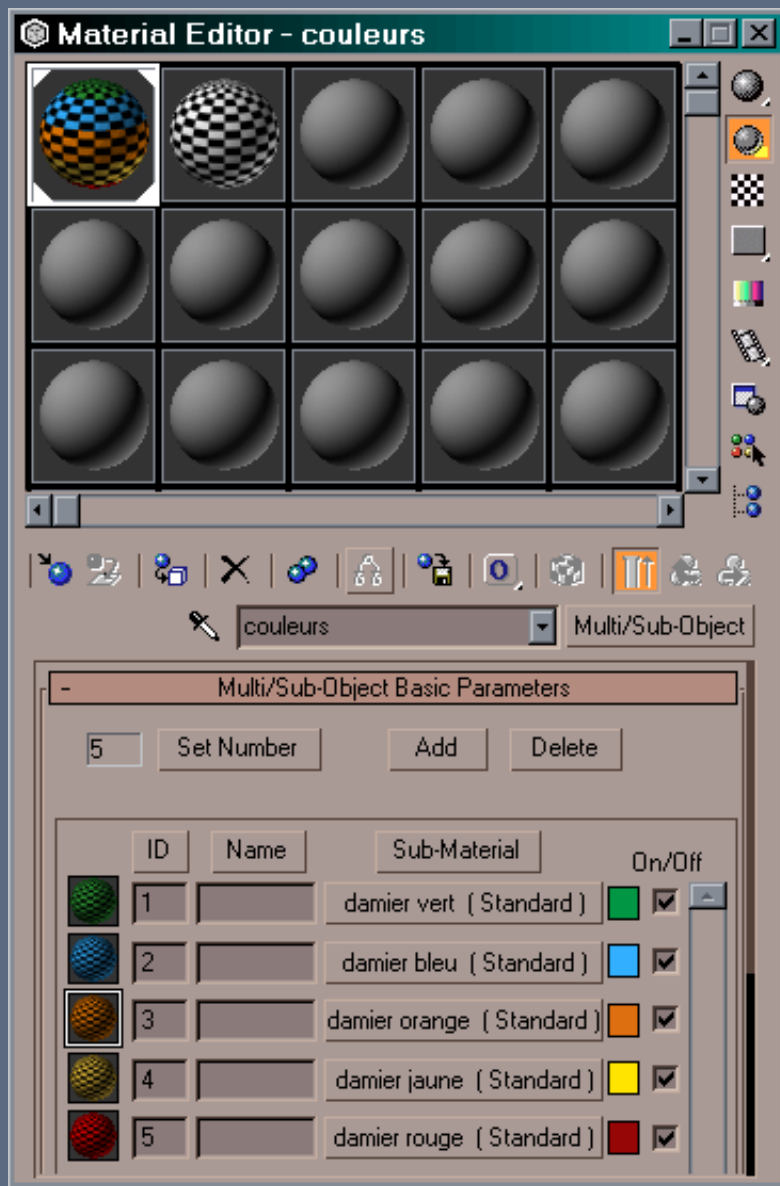
Return on Material Editor, select the "colors" slot material then click on the yellow Sub Material. Make a drag and drop of the Checker material from the Material/Map Browser on the framework opposite to the Diffuse map like above.

That makes it possible to quickly copy a material to the Sub-Material of another slot.

Repeat the same operation on the other Sub Materials.



To move from one Sub Material to another, use the icon Go Forward.



Change the white color of each checker to the original's diffuse color.

Name each Sub-Material in the same way that you would a Standard Material.

It should be noted that we can add another name in the Name column.



We will now apply mapping coordinates to the object.

The mapping coordinates indicate to max how a bitmap texture or 2d procedural (in this case Checker) is projected on an object.

(a 3d procedural texture such as Noise do not need mapping coordinates because they are made from a calculation, a function in 3d space and are independent of the object itself).

By default an object does not have mapping coordinates, it is necessary to define how to cover an object. In the case of a very simple object like a primitive Cube or Sphere, the standard projection of coordinates (also called mapping) covers the object perfectly.

In the case of a complex object such &as we have here we need several projections of these coordinates.

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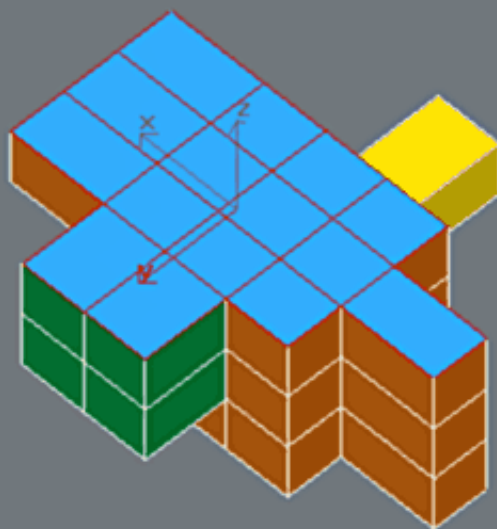
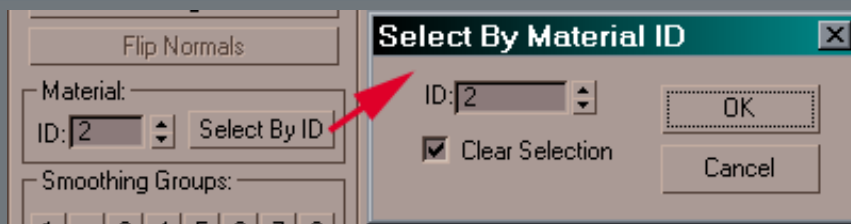
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## Bases



To assign mapping coordinates for each material, we select the corresponding faces.

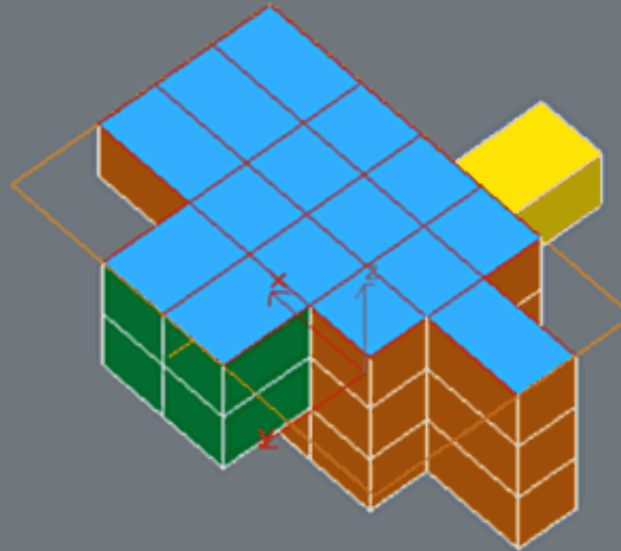
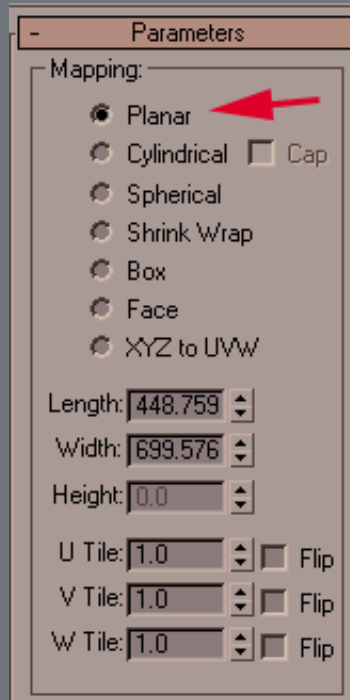
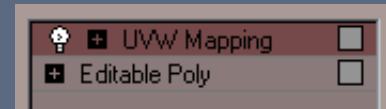
In Surface Properties Material, Mesh Edit or Poly Edit click on Select by ID.

The Material ID is the number of the sub-material applied to the object.

Here there are 5 Materials ID and the blue material has for Mat. ID 2.

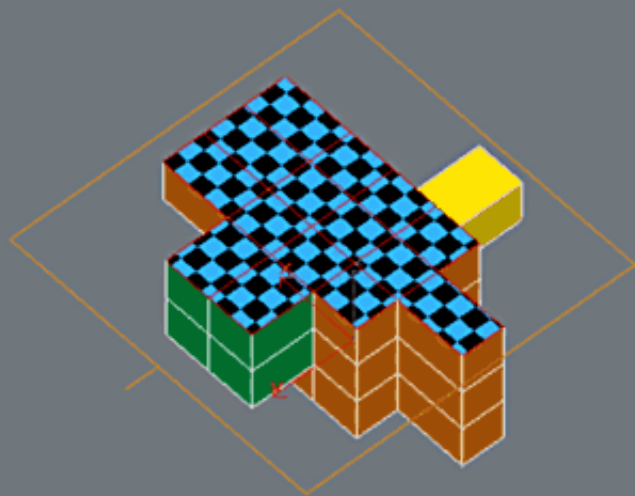
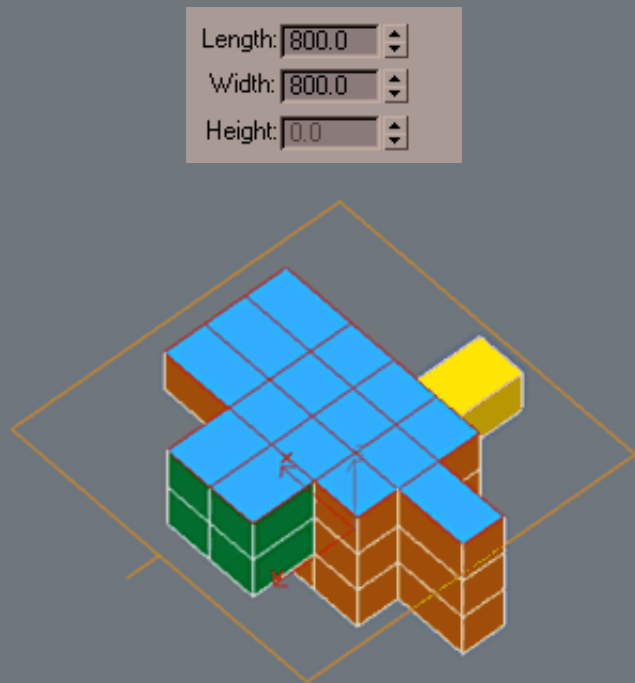
## Apply UVW Mapping. Why UVW?

3d uses XYZ for coordinates the objects, for the mapping coordinates UVW are used.



By default, Planer projection is that will work well as it is what we need here.

Note the rectangle which appears in the viewport, it is the representation of the projection that the mapping coordinates use.



By default, max dimensions objects with the dimensions of the selection with planer mapping.

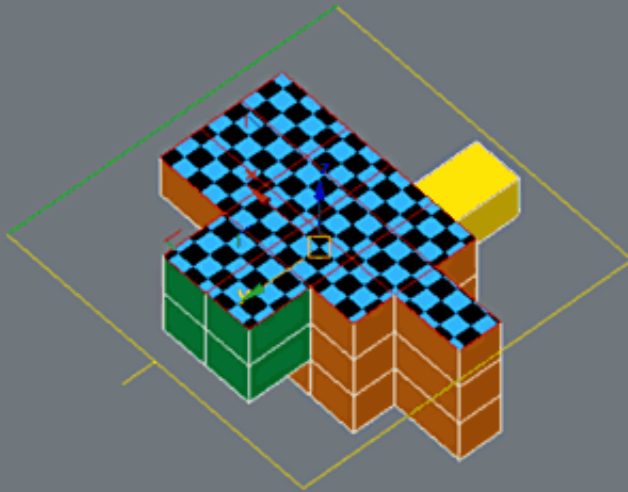
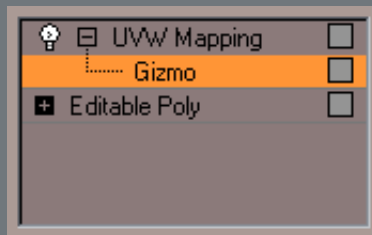
We will set the same values in Length and Width to have a square projection.

Indeed it is necessary to provide a square texture and if possible in the dimensions of 128x128 pixels, 256x256, 512x512 etc.

For optimal use RAM it is preferable to use these dimensions.

To see the texture applied in the viewport, activate the Show Map icon.

This should be activated for each material applied.

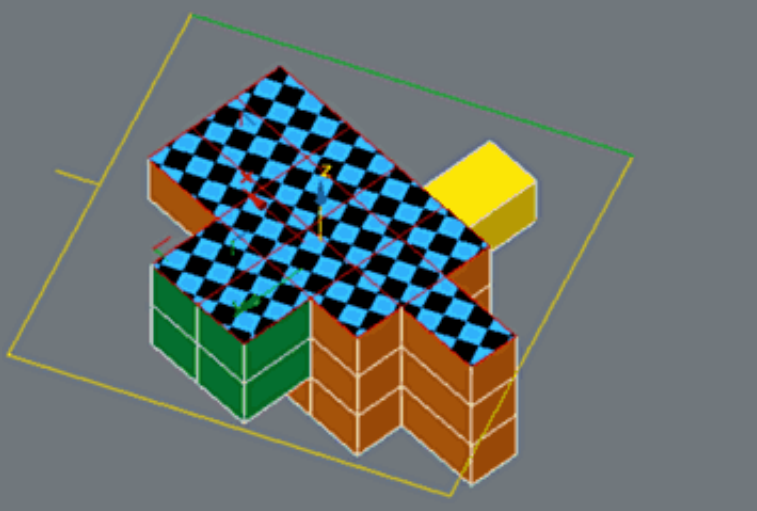


The representation of this rectangle in mapping is called a Gizmo in max.

If we Edit in sub-object mode modifying UVW Mapping by selecting the Gizmo, this becomes easy to handle just like a simple object.

We can now edit the Gizmo with all the normal editing Tools such as Scale, Rotate & Move.

The orientation of the mapping is given by the green feature for the axis of U and by the yellow segment for V, the W axis is perpendicular.

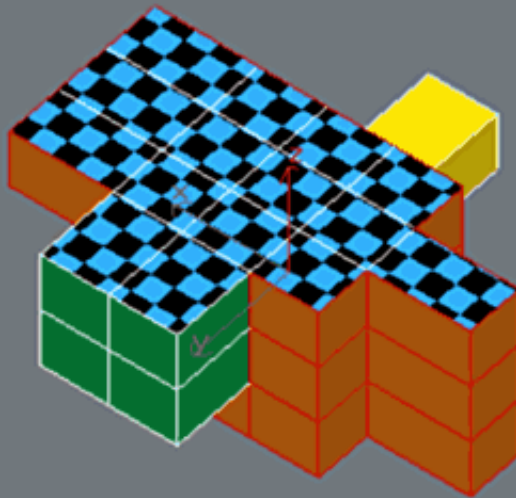
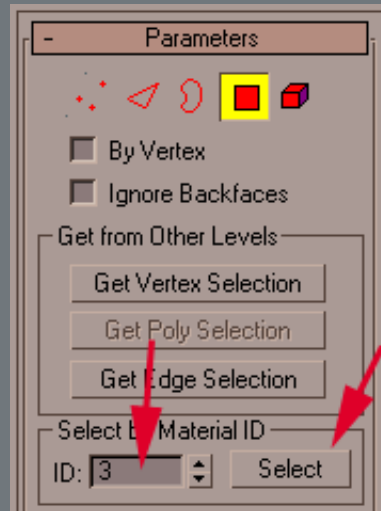
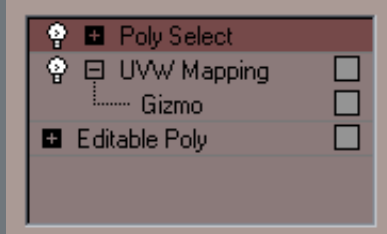


Rotation the Gizmo on the Z axis.

The texture follows this rotation.

To cancel use Ctrl Z.

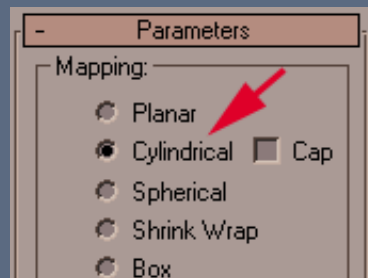
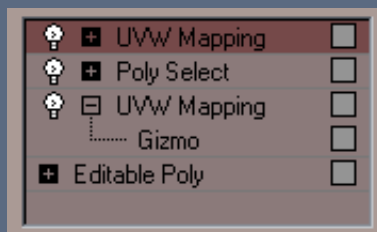
Also while holding the Left Mouse Button if you tap the Right Mouse Button, this will Cancel your current edit. This works for all editing within max.



To continue mapping the object, for each Material ID select the corresponding faces then apply mapping coordinates. (also called UV to make it shorter).

Apply the modifier Poly Select or Mesh Select according to the nature of the object.

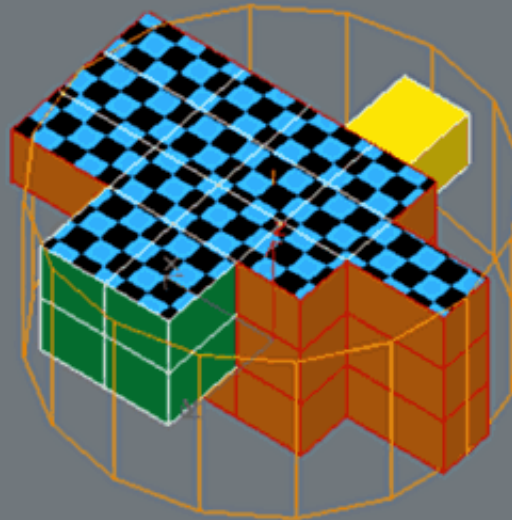
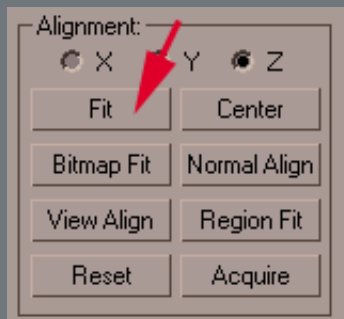
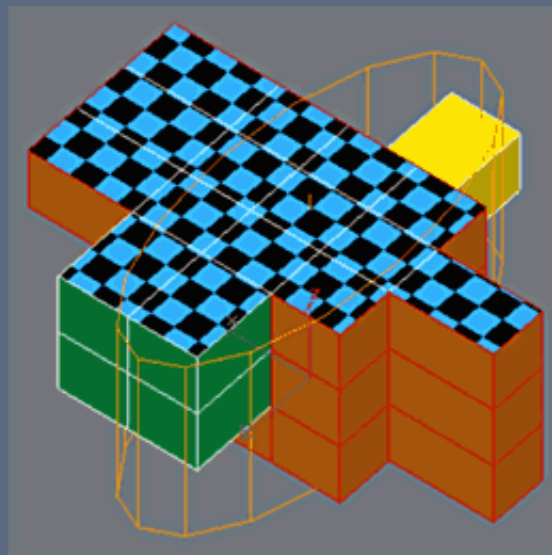
The oranges faces have Mat. ID 3, therefore enter 3 then Select.



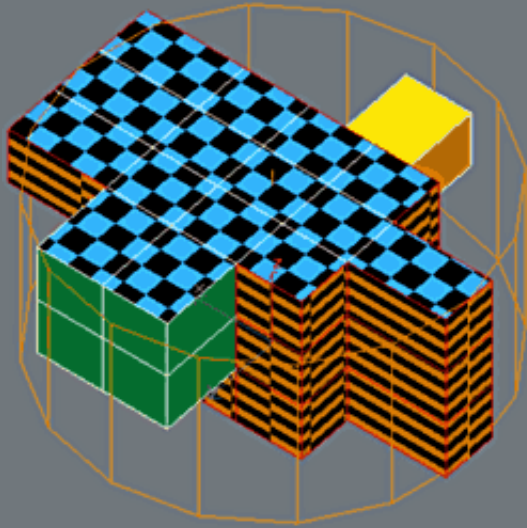
Apply UVW Mapping.

And change to Cylindrical Mapping.

Cylindrical Gizmo appears but it is out of proportion with the dimensions of the selection.







To set it to the right dimension, click on the FIT button. "Upper Left Pic"

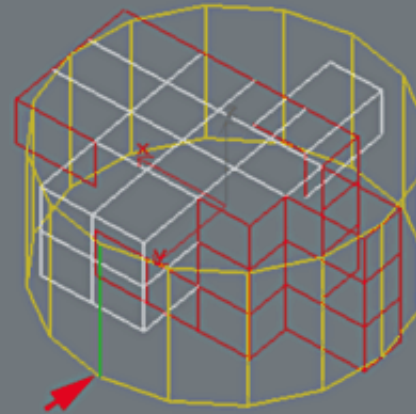
Apply the Orange faces with the Checker material.

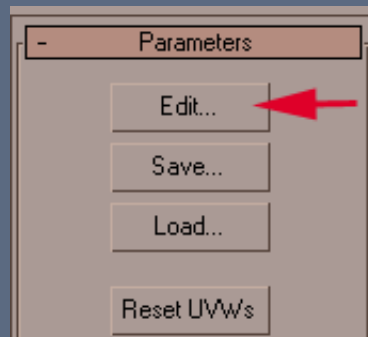
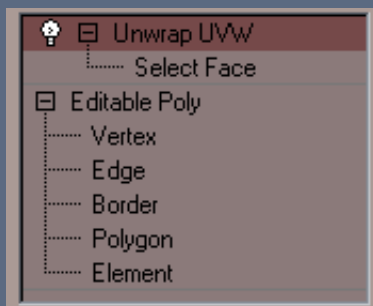
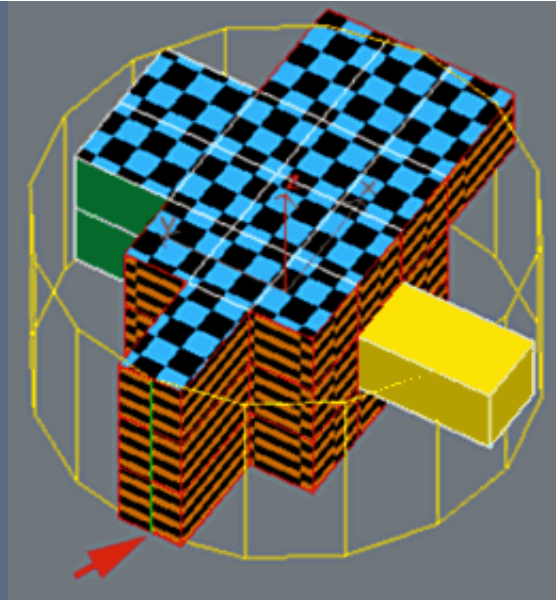
As for the Gizmo, a green reference mark indicates where the mapping joins itself.

Apply a rotation to make it coincide with the middle face. In this case about 90 degrees.

Note that the checker is completely deformed because the object is not cylindrical.

Nevertheless it is still this type of projection which will allow your mapping to conform quickly here.

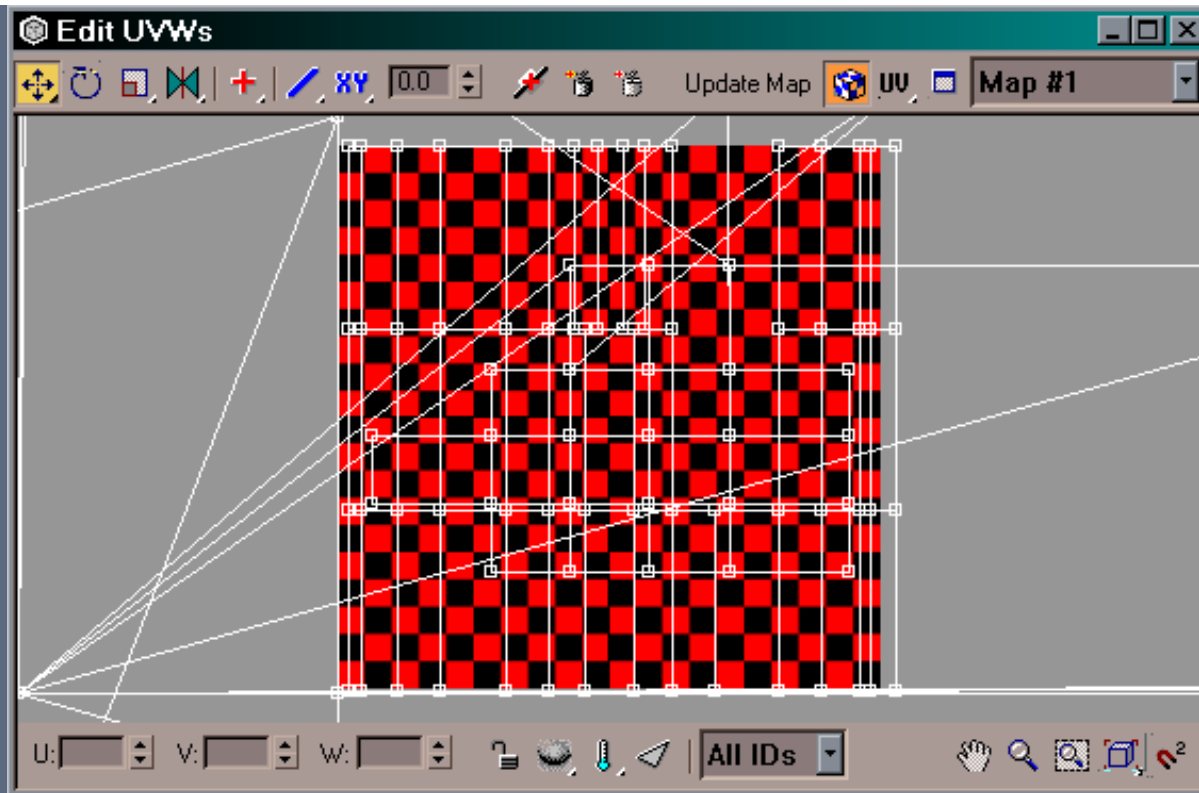




Correct the mapping coordinates with Mesh Edit or Poly Edit on a traditional object.  
Collapse the Stack.

Ensure that the Object has Collapsed and apply Unwrap UVW.

Click on Edit...



The UV editor opens and the object lines appear.

These lines correspond to the mapping coordinates assigned with each face.  
If they do not have any, max puts anything in there place:)

The checker corresponds to the texture of first Sub-Material of the object.

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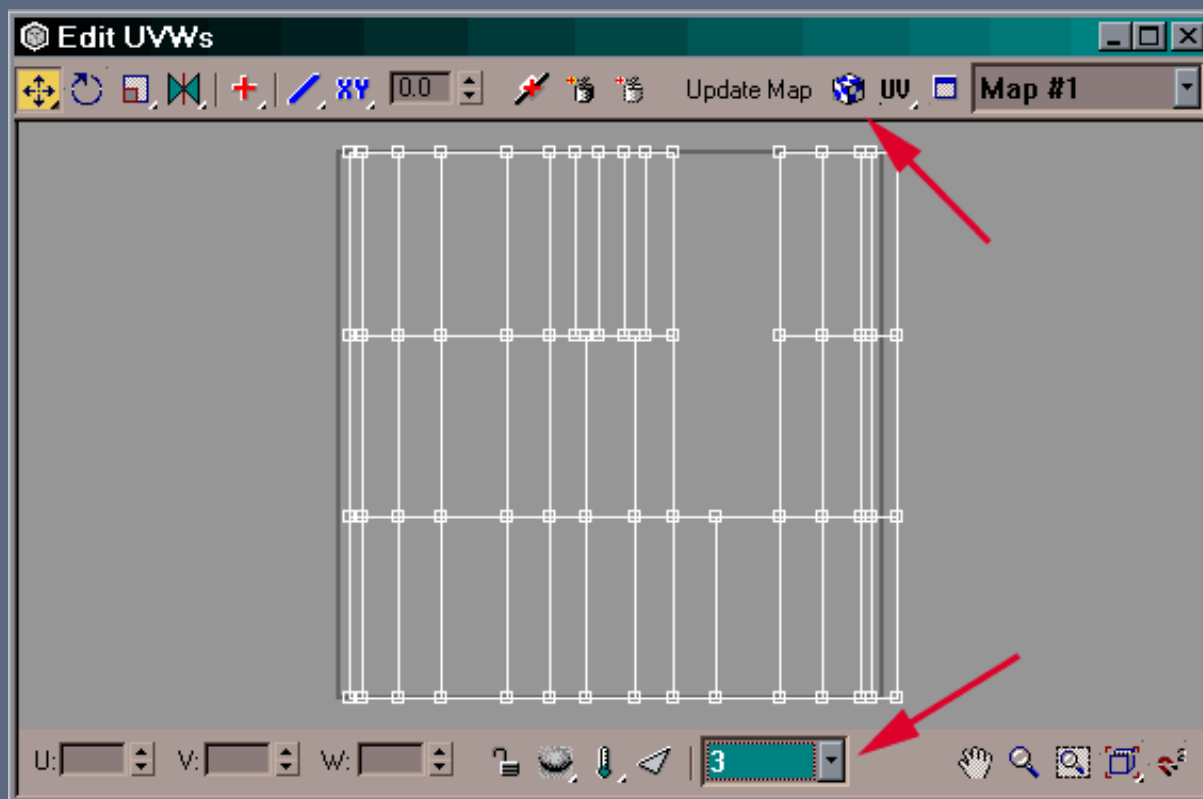
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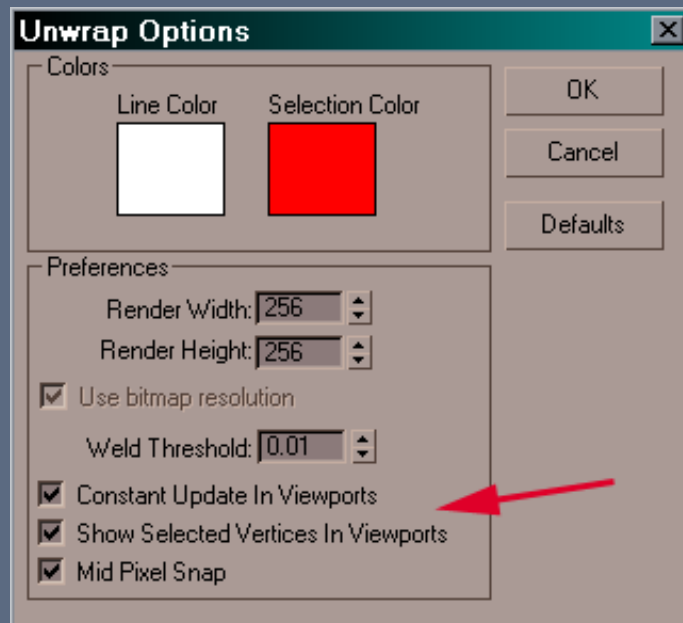
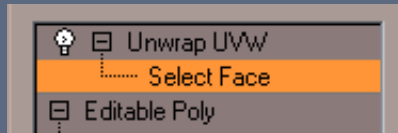
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## Bases



To clean up the congested view of the material use the show map icon and instead of showing All ID' S, select the ID 3 corresponding with the orange checker that we want to view.

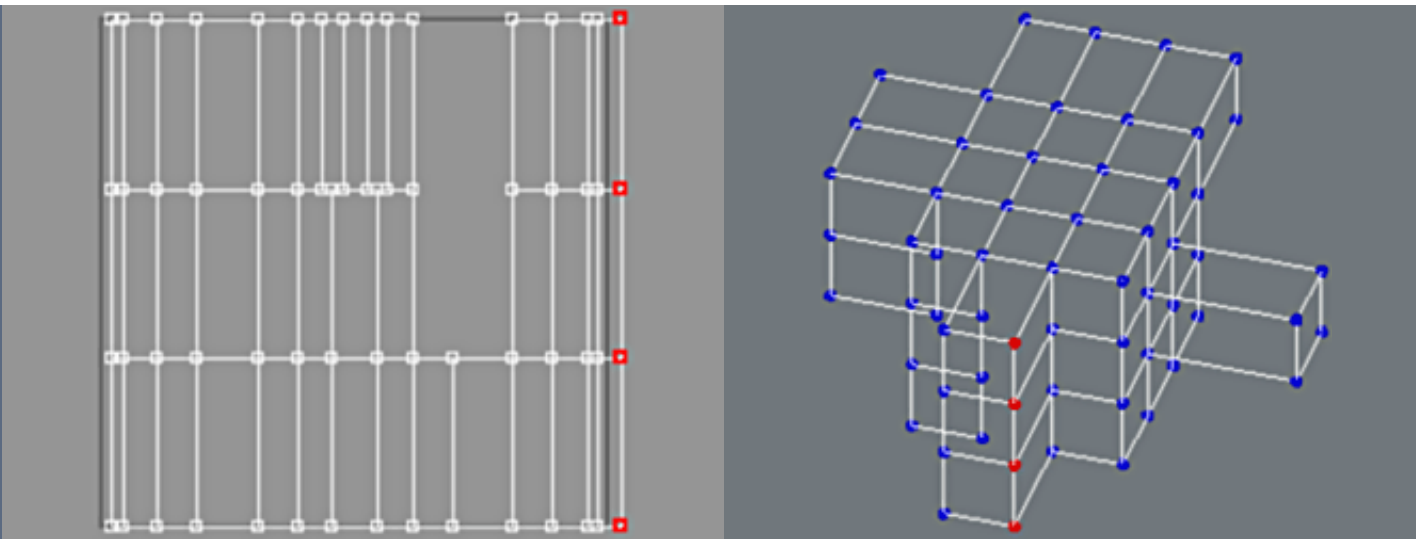
All that remains is the UV assigned faces having the ID 3.



Now in sub-object mode select "Select Face".

Go into the option Edit UVW while clicking on the Unwrap icon Options.

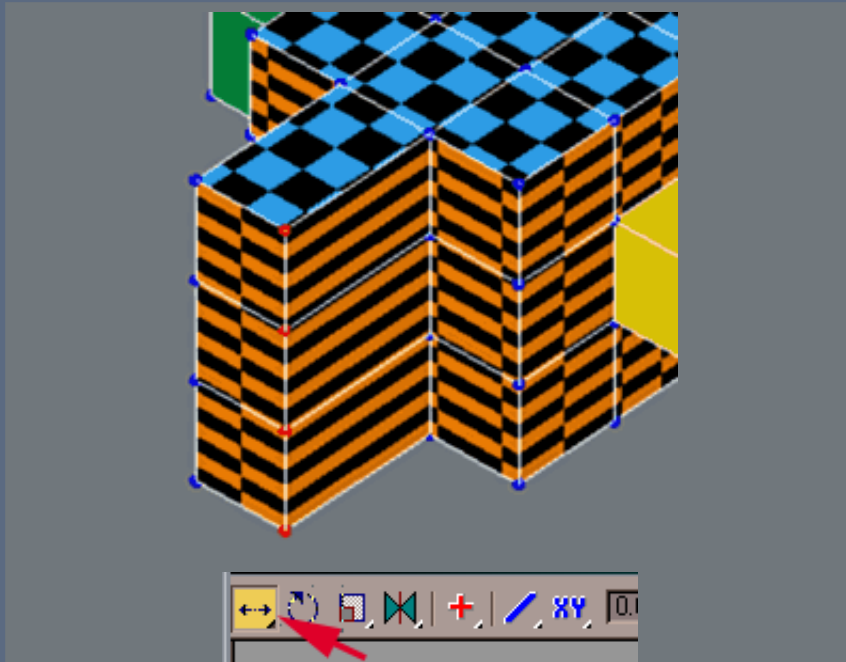
To activate Constant Update and Show Selected Vertices.



Select the common points on the right, and in the viewport the corresponding vertices are also selected.  
Although projection is in 3 dimensions, we work in 2d on a UV plane.

The goal being to obtain one UV plane unfolded without distorting the checker.

Rather than working with the object in 3d, with the tools of traditional modeling, we move the mapping coordinates onto a 2d plane, which is simpler and faster.

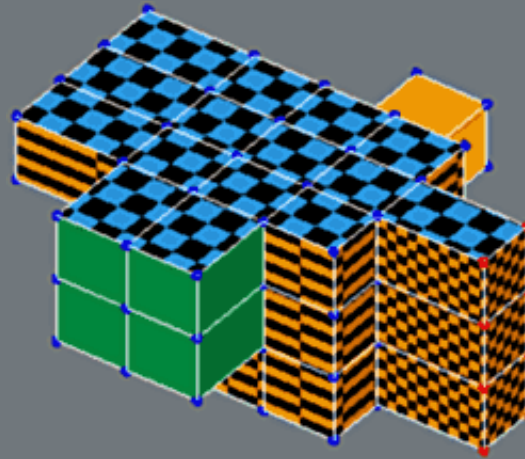
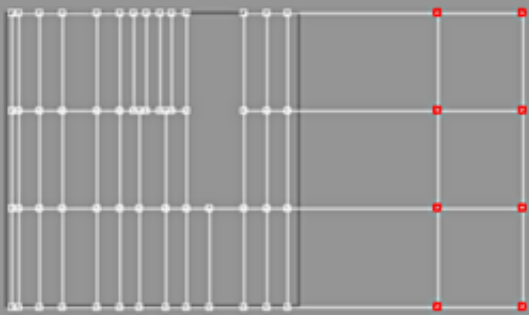
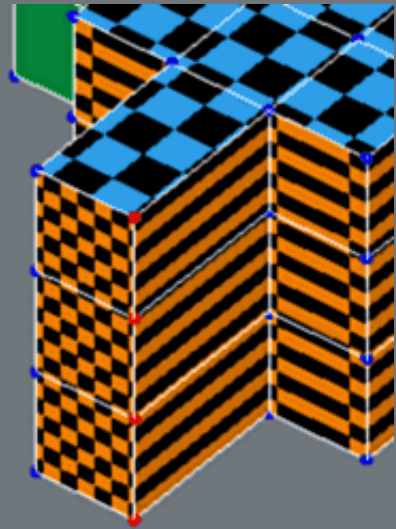
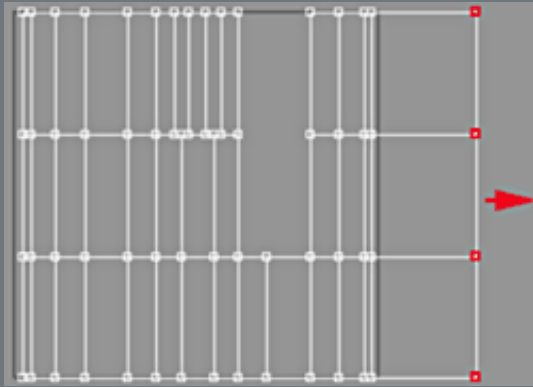


We will be move the points Horizontally until the checker texture is no longer stretched.

What we have just done is equivalent to a mapping these 3 polygons only.  
Here that goes quickly because it takes less operations to select it then it would to map etc.  
Because we only move the points in 2d space.

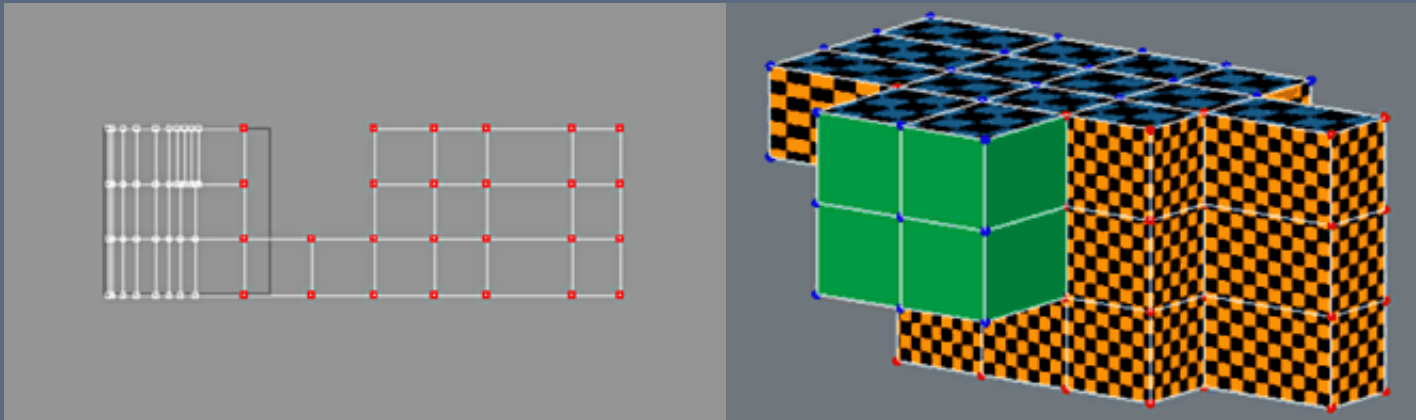
We will make the same adjustments for the other points by watching the result in the

viewport.

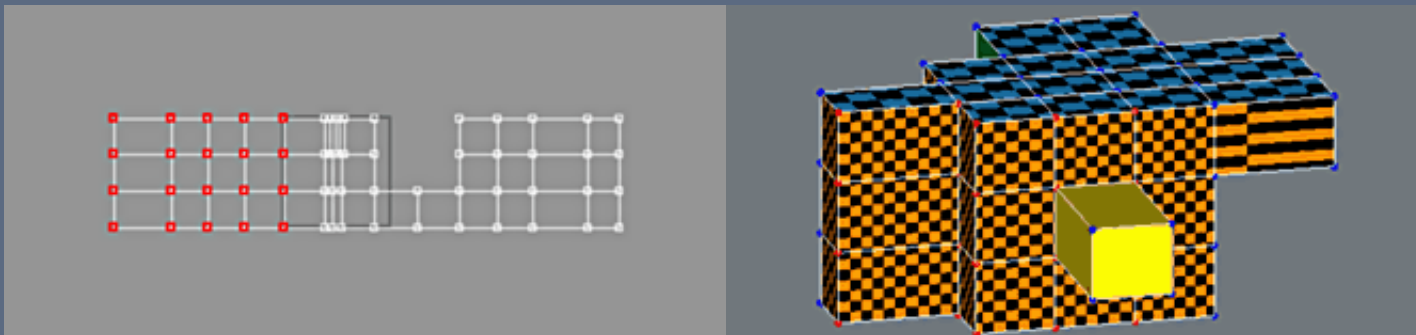




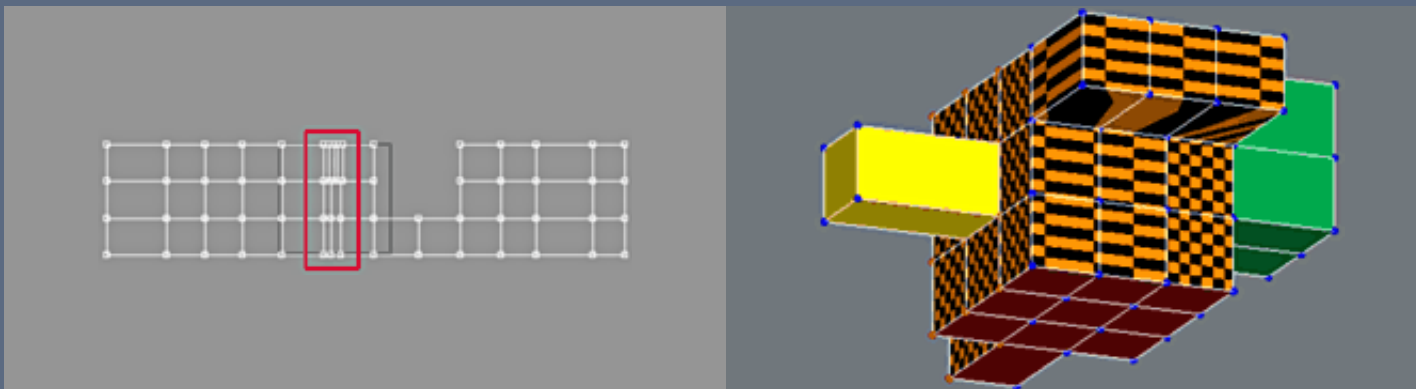
Drag select the next set of Horizontal points and move them cleaningup the texture as we go.



Continue for each column. At some stage you will need to select the points from the other side.



Even them all out to match the dimensions.

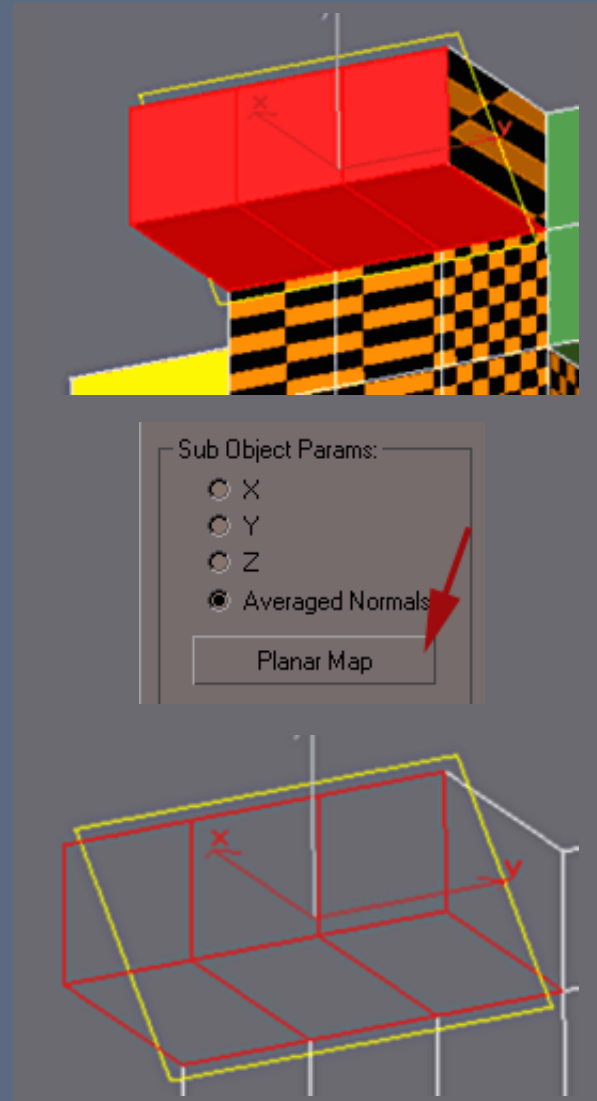


Here we arrive at a delicate part of the object because it is not good enough to just move the points, it will be necessary to detach the UVs as we would detach the faces of an object then apply the mapping.

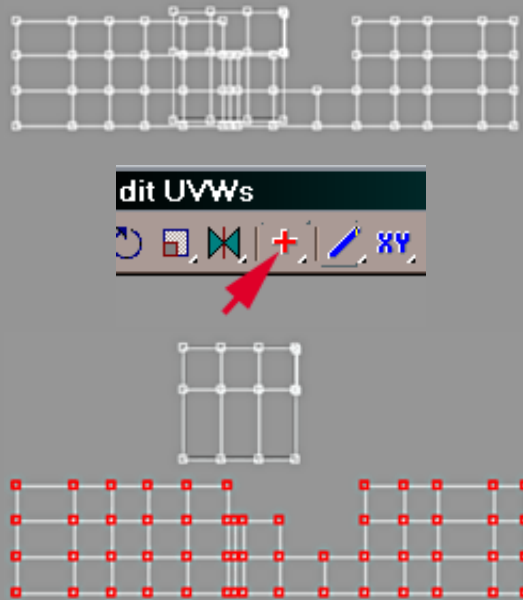
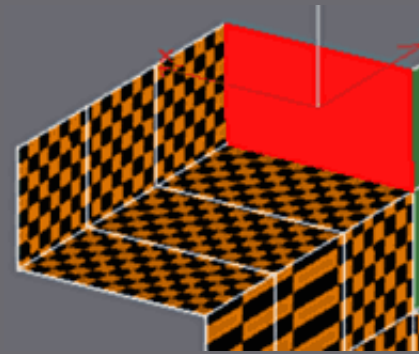
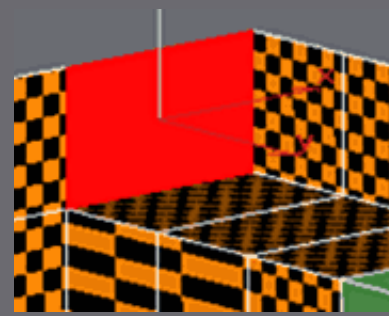
You may get a different set of faces than the ones shown by the pictures to the right but the process is the same.

Select any faces that don't conform, as shown opposite in User View (always in UVW Unwrap : Select Face mode).

Click on Planar Map, and select the faces to receive mapping according to the average of the normals.



Make the same selection for each of the two faces at the ends, and one after the other apply a UV Map.

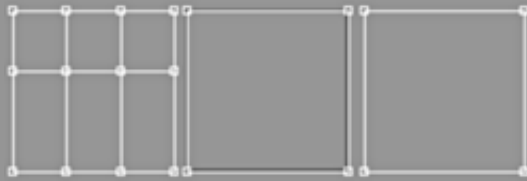


Open Edit UV and select the ID 3.

We can see that the successive mappings are superimposed.

To put them in order, select a point of the main piece of UV (a set) and by clicking several times on the Expand Selection icon, extend the selection automatically with all the UVs.

Finally move the selection.

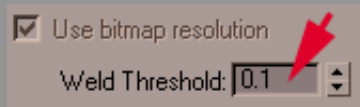
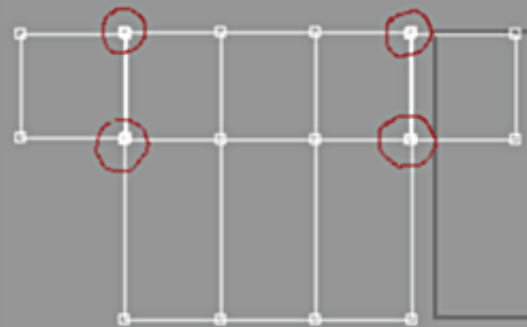


The 3 other sets of UV that come from the mapping are superimposed. The gray square which appears in the center of the Edit UV screen represents the mapping of the Gizmo.

The three maps preceding the Gizmo are dimensioned with the exact size of the selected faces.

To separate them click once on a point and use the Expand Selection icon to recover the complete set.

Move the set and repeat this operation as above to have the 3 pieces of UV.

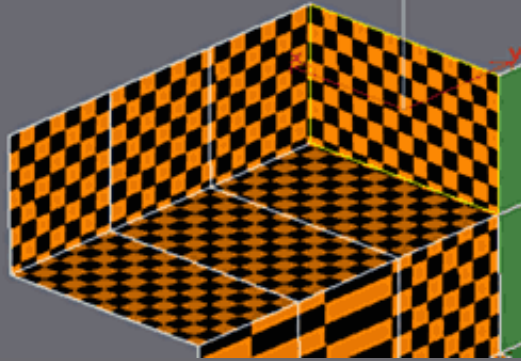


Depending on the faces you needed to manipulate you may need to do this next step.

Move the vertices east to Redimensionalize the squares then weld them to the like vertices with the Weld Selected icon.

Check that you weld the points between them in the viewport of the corresponding points.

We can regulate the tolerance in Unwrap Options.



Use Scale non-uniform if required for the horizontal or vertical lines.

Keep adjusting the UVs according to the viewport until you have the pattern matching.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



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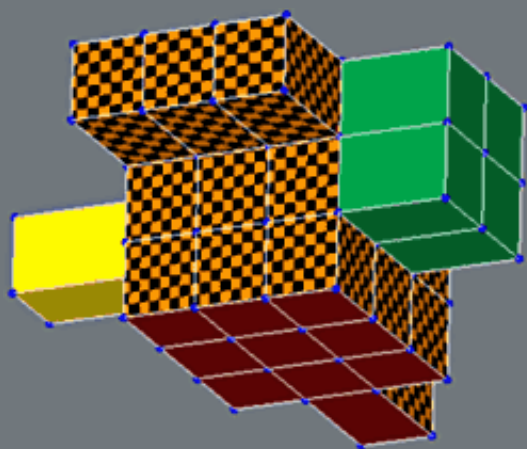
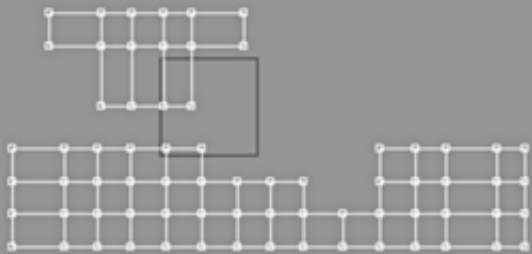
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### Bases

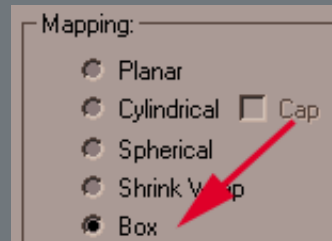
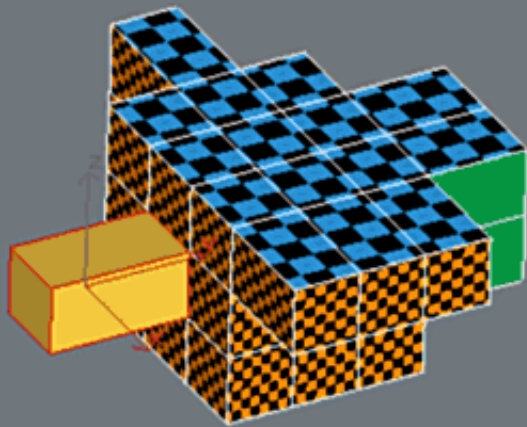


Now that we have adjusted the UVs leave a nice map.

Your face sets may be different to the ones shown by the pictures to the left.

Collapse the Stack.  
With checker in ID 3 now correctly mapped on the object.

Collapsing the Stack after each Unwrap is not needed but that frees up some resources and we can always improve the UV thereafter...



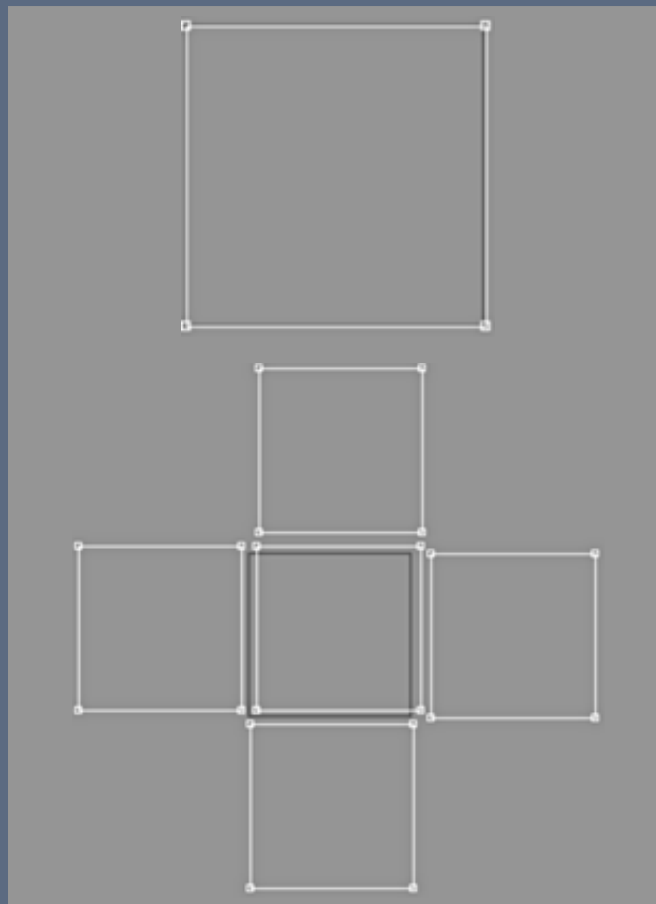
For the yellow checkerwork (Chechmate ID 4), select with Select ID then UVW Map in mapping Box.

In Unwrap UVW, one sees only one square, makes UV of it are superimposed.

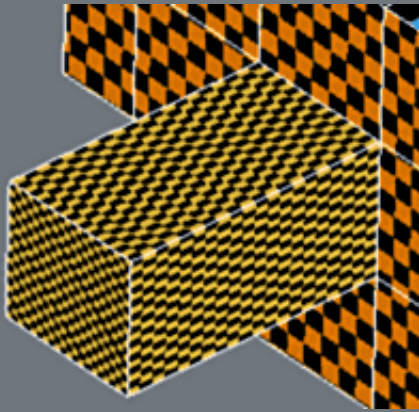
Click on a point then Extand Select.

Move UV to separate it from the others.

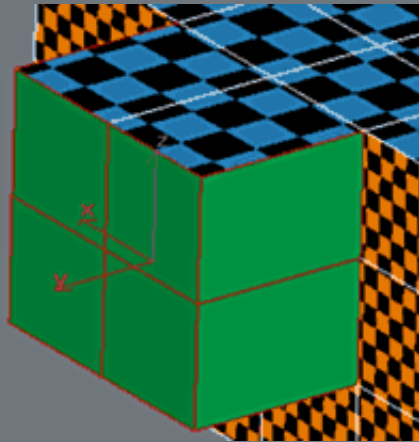
Repeat the operation jusqu'à what there is superimposed no more UV.



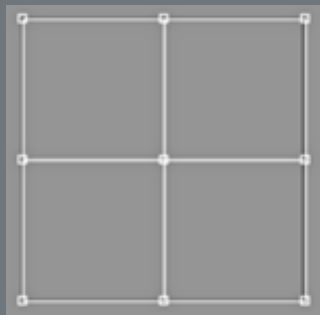




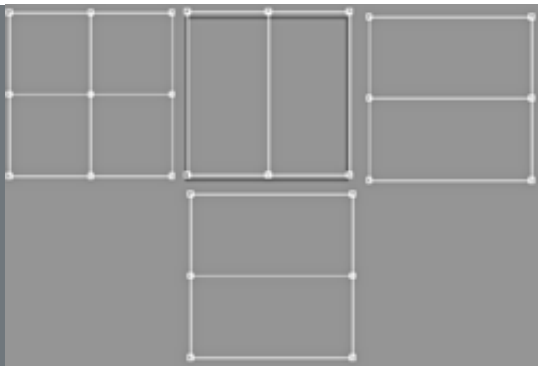
The checker is stretched we will regulate it later



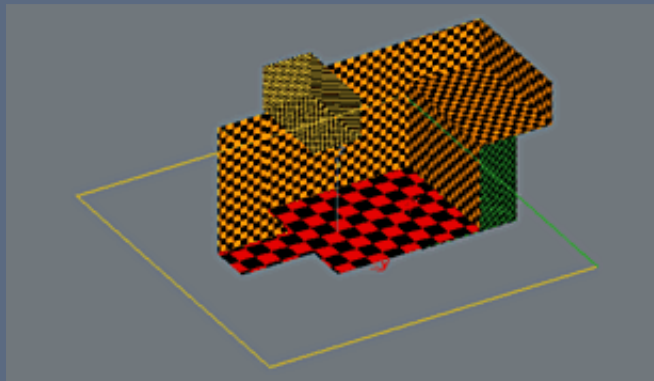
Make it the same as the green checker (ID 1).



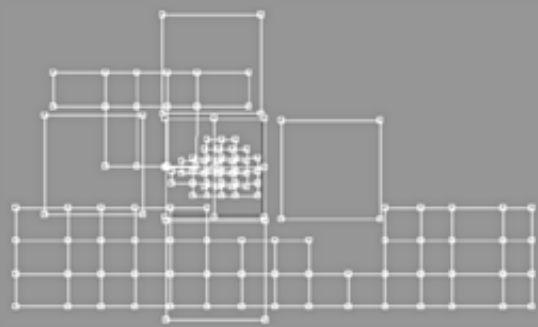
Select Expand and separate the set from the UV.



For the red checker, place a Planer map it.

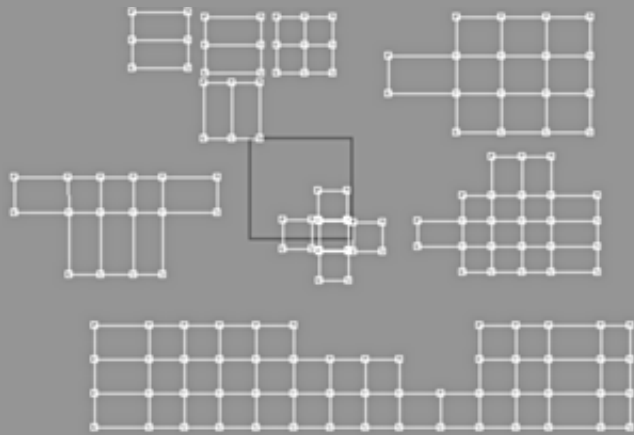


We now make a Full set of UVs from all 5 IDs with the whole UV rearranged.  
This board could then be used in photoshop to paint a full texture for our object.



In Object mode Select Unwrap.

View all ID's, then move them about until you have  
know superimposed sets of the UV.

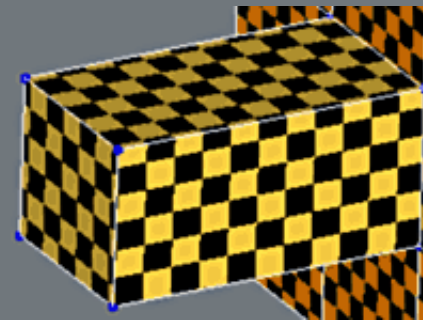
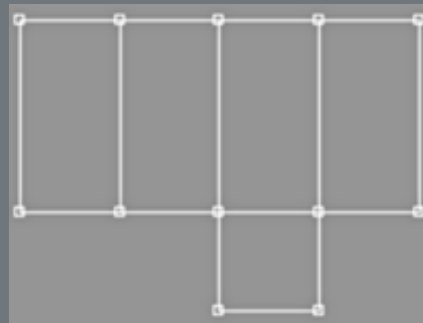


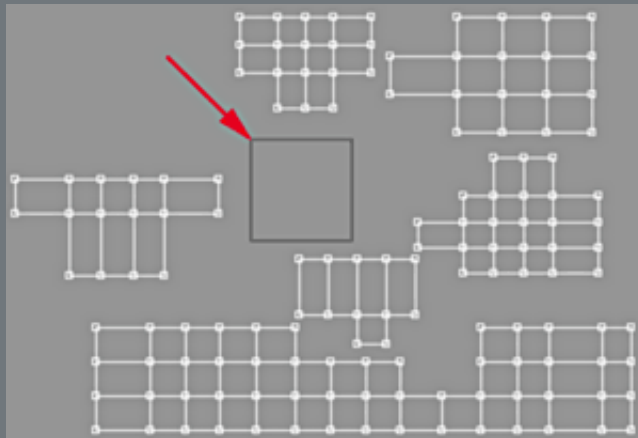
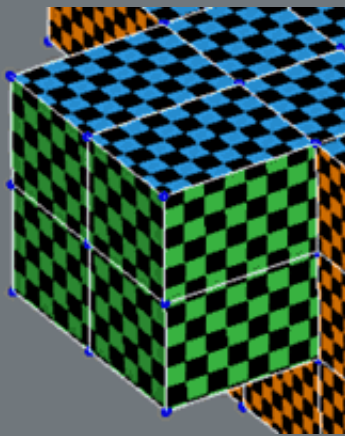
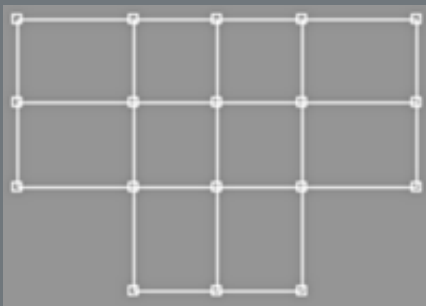
Use Expand Select to put them in order.

Isolate Checker ID 4 and weld the UV vertices, viewing in the viewport will help you repair the orientation of the UV.

Now adjust the UVs so as to correct the formations of the checker.

Remembering that if you select a point and nudge the Weld Threshold up. You should see its matching pair lightup, thus making it easier to lineup the sets as required.



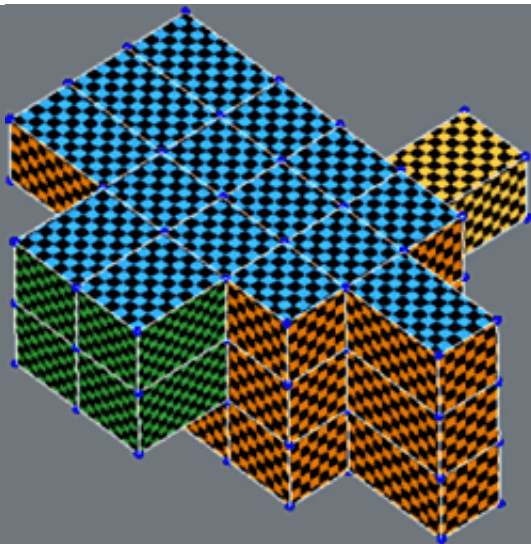


Even everything out for Checker ID 1.

Although we can move, scale etc. as we wish in the UV Editor, we need to make a flat base for the UVs so that those IDs contained in the square are in the center of the UV Editor window.

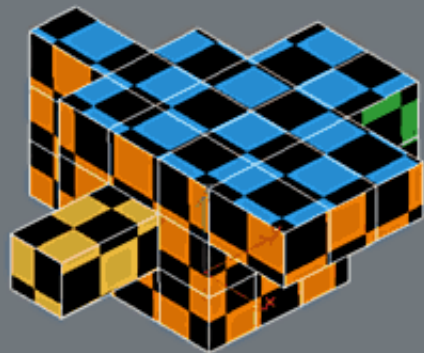
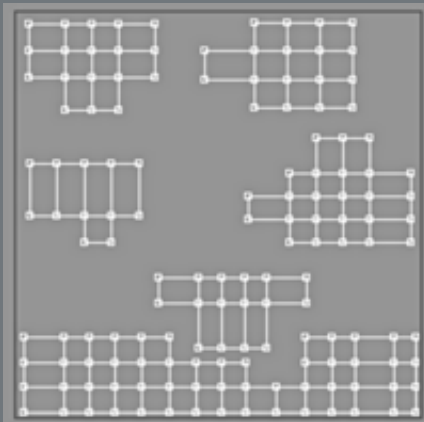
The coordinates of the UVs must lie inside our gray Square. Beyond this the texture repeats on itself.

Before we scale the set of UVs. Position them in the square so they are coherent in the UV Editor



window, i.e. part of the object does not have a mapping too fine and another too large.

Visualize the scale of the sets of UVs so that the whole of the checker has the same size.



Then select all the pieces and uniform scale them to fit them in the large square.

Just position the other sets in the remaining space.

Now we Collapse the Stack for the last time.

Here the goal is to make a single board of texture, and thus make only one bitmap to texture the object. It is generally more practical to manage because there is only one bitmap file to handle.

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## 3D Studio Max

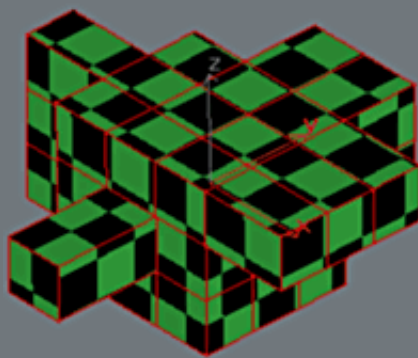
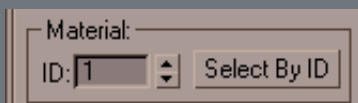
### Modeling Joan of Arc by Michel Roger



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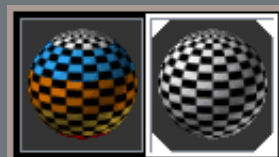
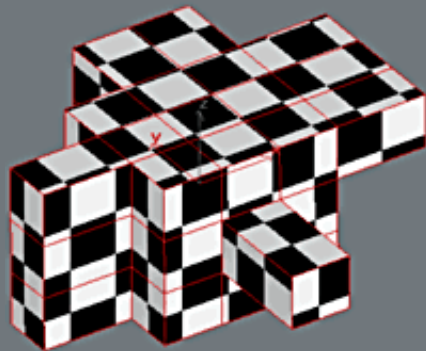
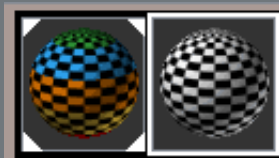
#### Bases



Now we have a Multi/Sub-Object material that we want to map to the object that has only one texture. To clean the Checker ID, select the object in Sub-Object mode and enter 1 in the field ID.

The object does not have any more that one Checker ID but it has the Multi/Sub-Object Material assigned.





Now we have to create an image of our UV.  
For that we can capture the UVs Editor screen but you are better off using a small plugin named Texporter as this does a much better job.

Texporter is Freeware and can be downloaded here:

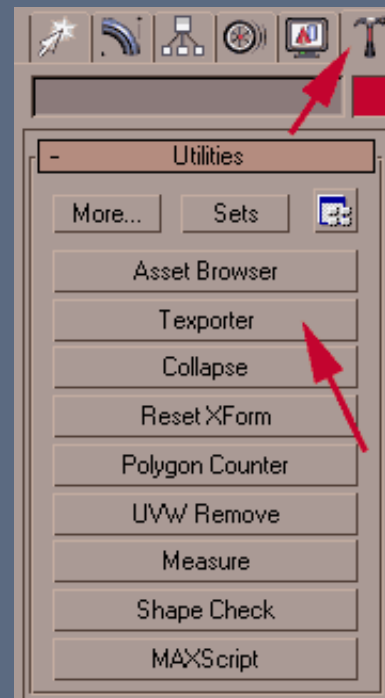
[Texporter Web site.](#)

Place it in/Plugins Directory of 3DSmax.  
You will find it in the Utils panel, add it in the list with the Sets icon.

In object mode assign the checker material.  
Now we see that the material slot Multi/Sub-Object does not have any beveled corners, proving that it is not assigned to the scene any more.

If you use Unwrap UVW, we see that it has only one Checker ID.

Also note that changing the ID does not affect any UVs on the object, fortunately:)



It can generate an image of the UV in any size requested,  
This is great for textures like 2048x1024 by ex:)

To generate the capture of an object, set your requested  
height and width then click the Pick Object button, followed  
by selecting the object you need to unwrap.

Parameters

Image Size (pixels)

Width : 800

Height : 400

UVW Channel:

☒ Map Channel: 1

☐ Vertex Color Channel

Pick Object

Display

☒ Polygon Fill

☒ Edges

☒ Edges Only

☐ All Lines

☐ Wrap Around

☒ Backface Cull

☐ Only Selected

☐ Only ID: 1

☒ Mark Overlaps

Colorize by:

☒ Smooth Colors

☐ Constant: [Color Picker]

☐ XYZ

☒ Face Normals

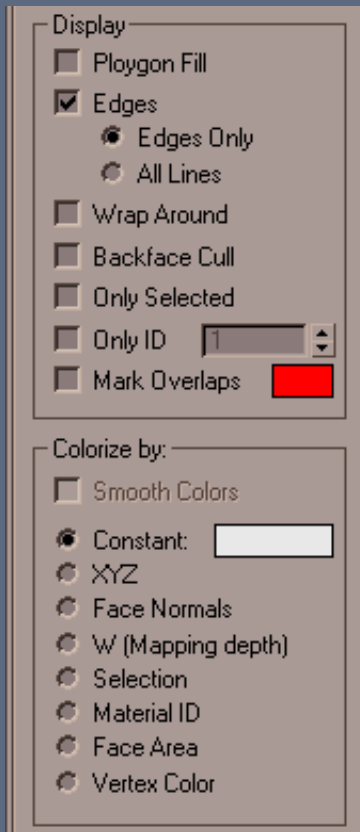
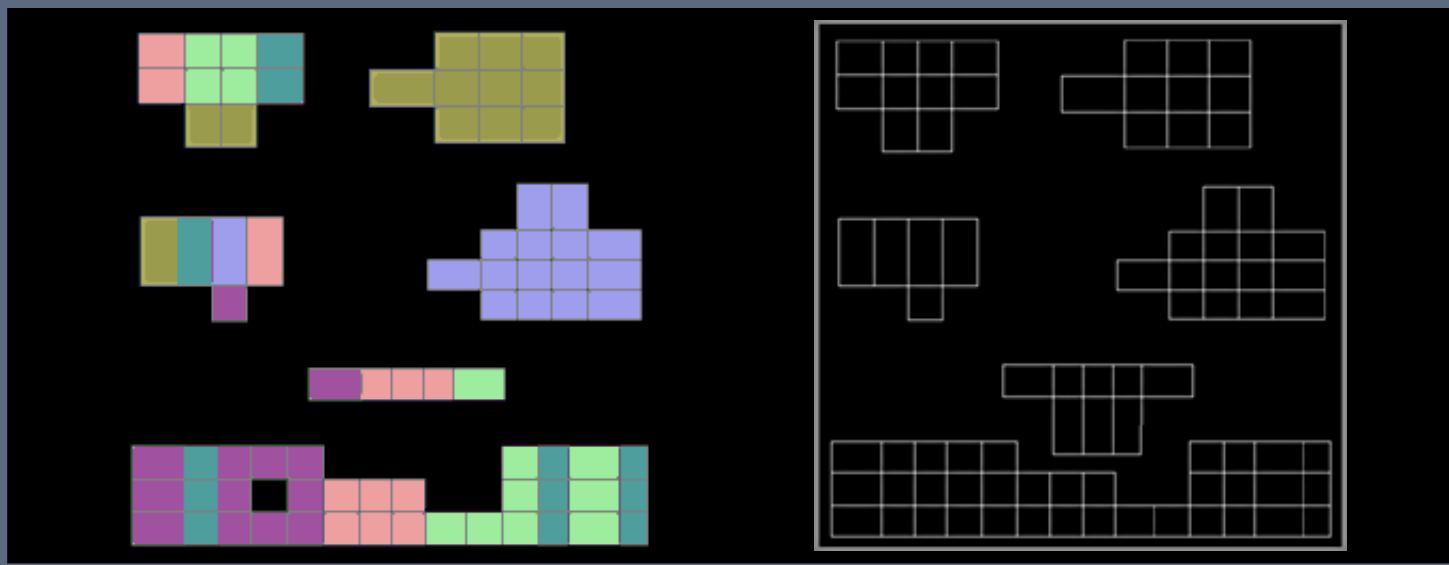
☐ W (Mapping depth)

☐ Selection

☐ Material ID

☐ Face Area

☐ Vertex Color



The top left picture shows the default mode settings for Texporter with filled polygons according to the normals of the object.

The pictures to the top right and opposite, show the adjustments needed for maximum visibility in Photoshop.

Then open the file in Photoshop or any other 2d paint program and check the result by replacing the Checker material with the bitmap texture file.

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Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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Joan of Arc  
by  
Michel Roger

3ds Max



*Sword map*

## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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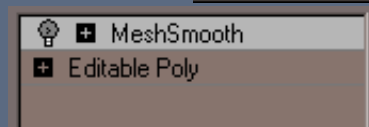
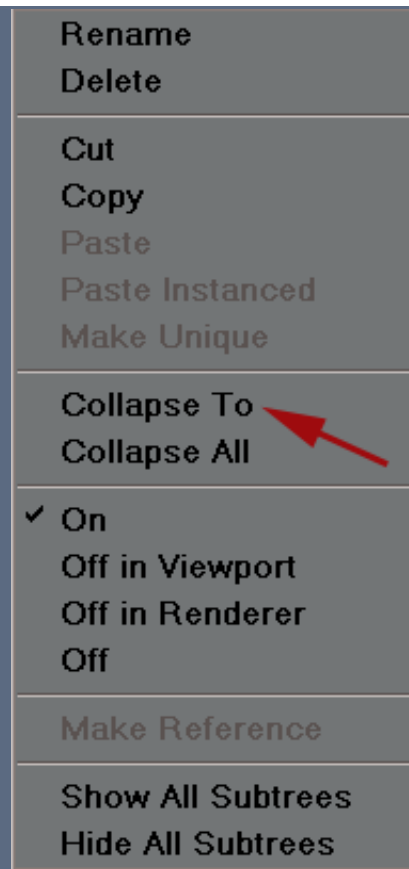
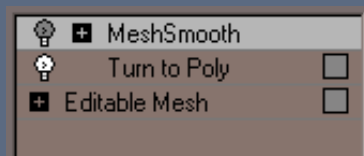
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### Mapping of the Sword

We will begin this section by texturing the sword. Before we launch into making the UV co-ordinates though it is necessary to think about how the materials we are going apply are made up.

For example here will have a single texture sheet but various other metal materials will be applied to different parts of

In the same way as the modelling we will work with the LPM and let the meshsmooth worry about the high poly version. This gives us far less polygons to set UV maps for.



In Max 4 it is better to work with polygons and not the usual mesh. This enables a better smoothing of the texture.

Apply a urn to poly modifier above the edit mesh and then right click it and select Collapse to.

The object is now an Editable Poly.

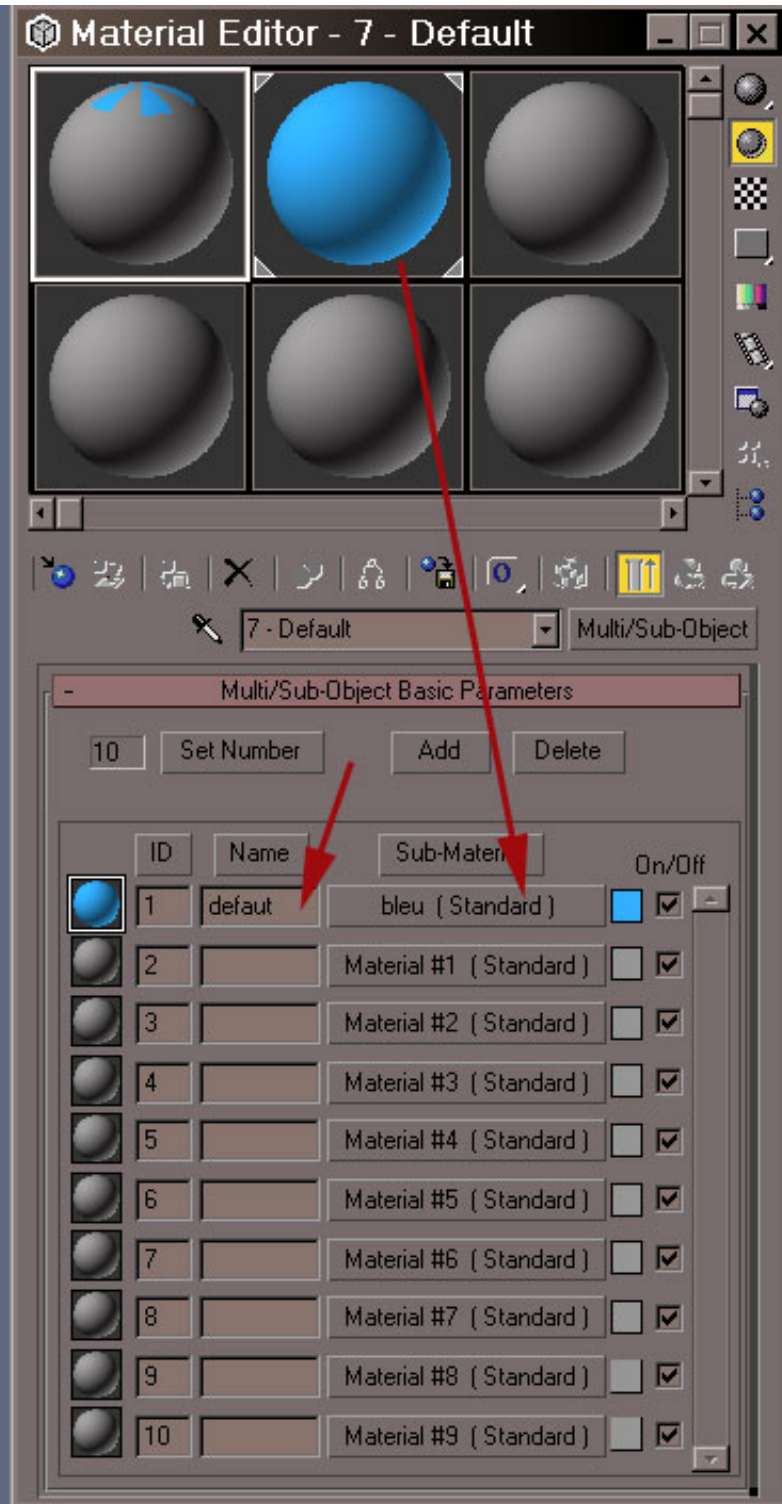
Note that one does not lose the meshsmooth settings for the creases and weights etc.

We will assign a separate material ID for each different part of the sword where a separate material will be used

Click on the image to see it large.







Create a Multi-Sub/Object material.

By default Max Defines 10 Sub-Materials.

The ID 1 will be assigned to the parts of the sword whose UV were not yet defined, so it is easy to see what remains to be done.

One can make Drag and Drop of the default blue material into Sub material 1.

One can also name this Sub Matériau, here default.

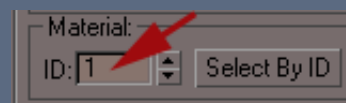
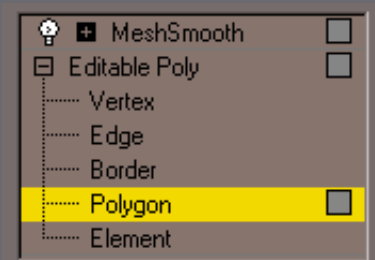
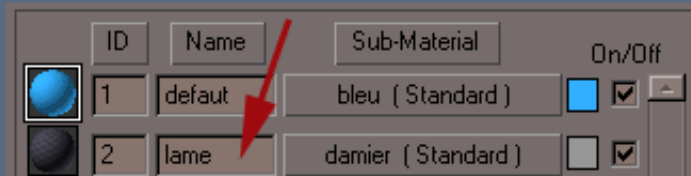
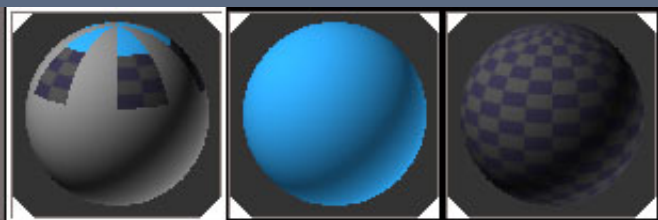
Finally give a name has this Multi-Sub/Object material, here Epee.



To assign this material to the sword, select when done and drag and drop the material slot on the object.

It may be that some faces of the object have a ID material different from 1, in this case, to clean the ID, select all model in Element mode, enter value 1 in material ID (Surface Properties roll out).

All the faces have now the ID 1



Create a material checker with Tile of 20 for example.

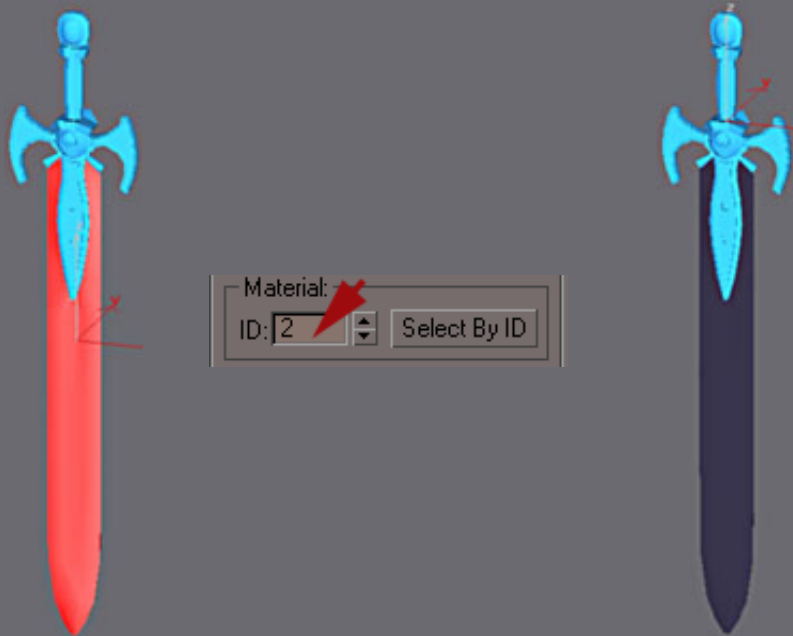
Then with Drag and Drop it with into ID 2 in Instance mode.

This material will use to adjust the UV of all the sword and it will be copied each time as an instance, one can thus easily change Tile for all with the original material

The ID 2 will be the material of the blade.

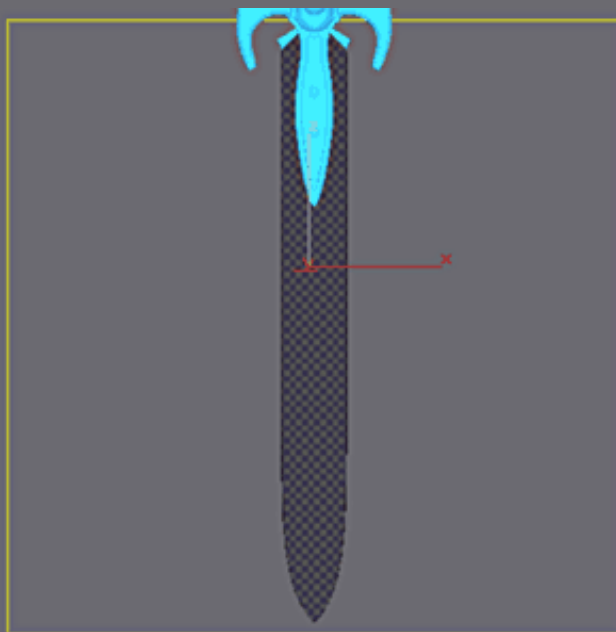
in polygon mode select all the faces of the blade

Enter Material ID value 2.



The selected faces change color, the checkerwork does not appear because UV are not defined.

(do not forget to activate the posting of textures in the material checkerwork).



Always in sub-object mode with the faces selected in Editable Mesh, apply a planar UVW Map

For direct Gizmo of mapping correctly, use View Align in View Face, Center and the FIT to fix it on the selection of faces.

Finally the board of texture will be square with equal values in Length and Width.

Here you do not need to improve UV.

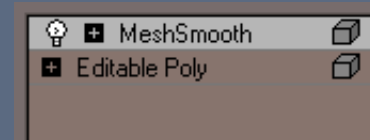
Length: 400.0

Width: 400.0

In the stack, right click on the UVW Map, and select Collapse To to simplify it.

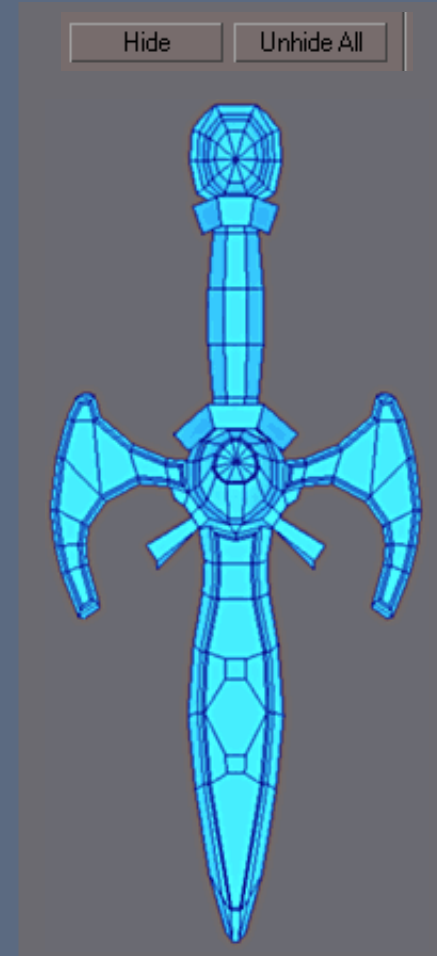
Thus helps with memory speed

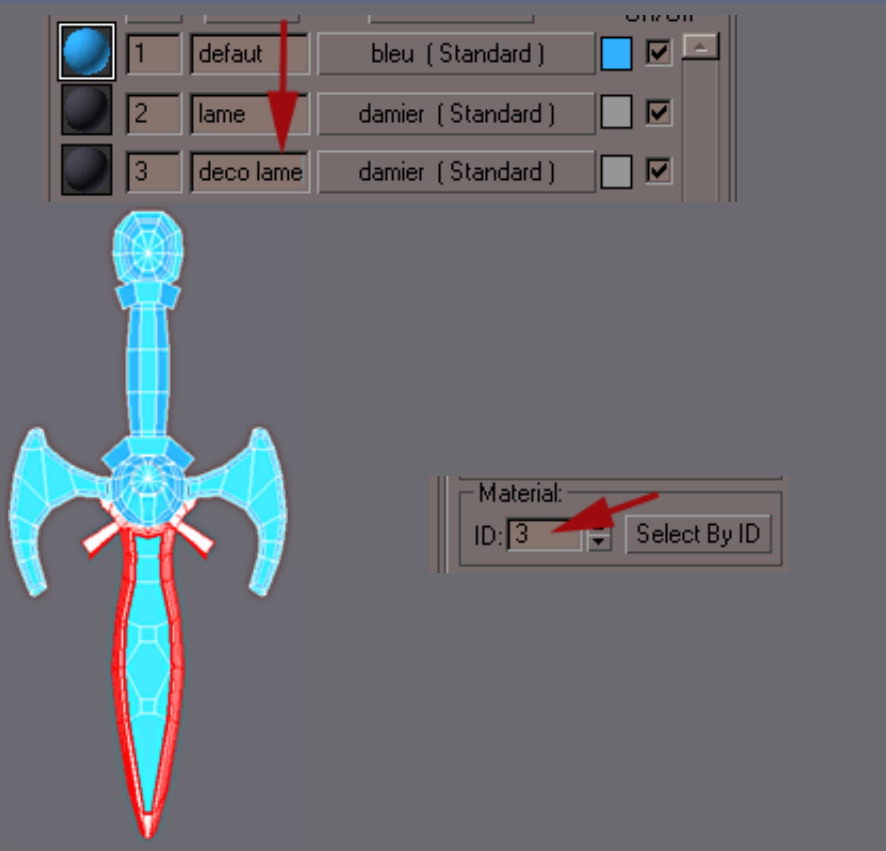
Meshsmooth remains on top and one does not lose the adjustments on Creases or Weights.



Return to Editable Poly in Polygon mode, benefit from the still active selection to hide the faces already textured with Hide.

By making this operation after each UVW Map, it becomes increasingly simple to select the not yet textured faces.





In Material Editor, copy the checker into ID 3

Select the corresponding faces as shown then apply Material ID 3.

As previously, apply to these faces a planar UVW Map, then enter the same values in Width and Length to have a coherent mapping with that of the blade, proceed as before.



select the faces opposite and  
apply the checker ID 4.

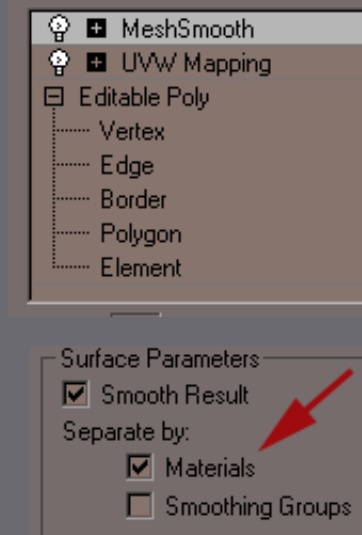
Another planar UVW then  
'collapse to' the stack

Click on Meshsmooth, you can see that the higher density mesh still maintains  
the correct mapping

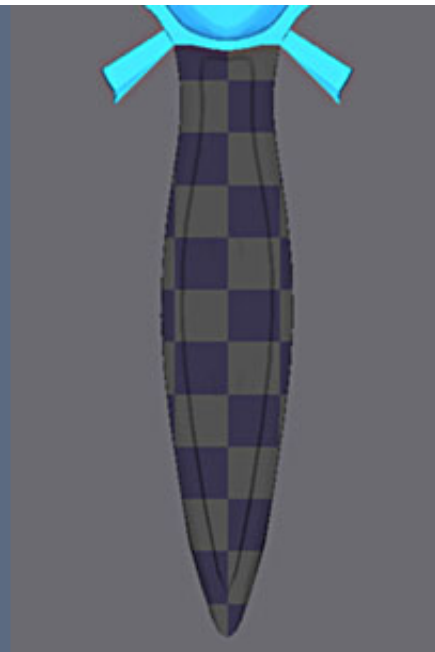
To still improve one thing, activate Materials in Surface Parameters, that  
smooths according to materials.

There are thus clearer and better smoothed material limits.

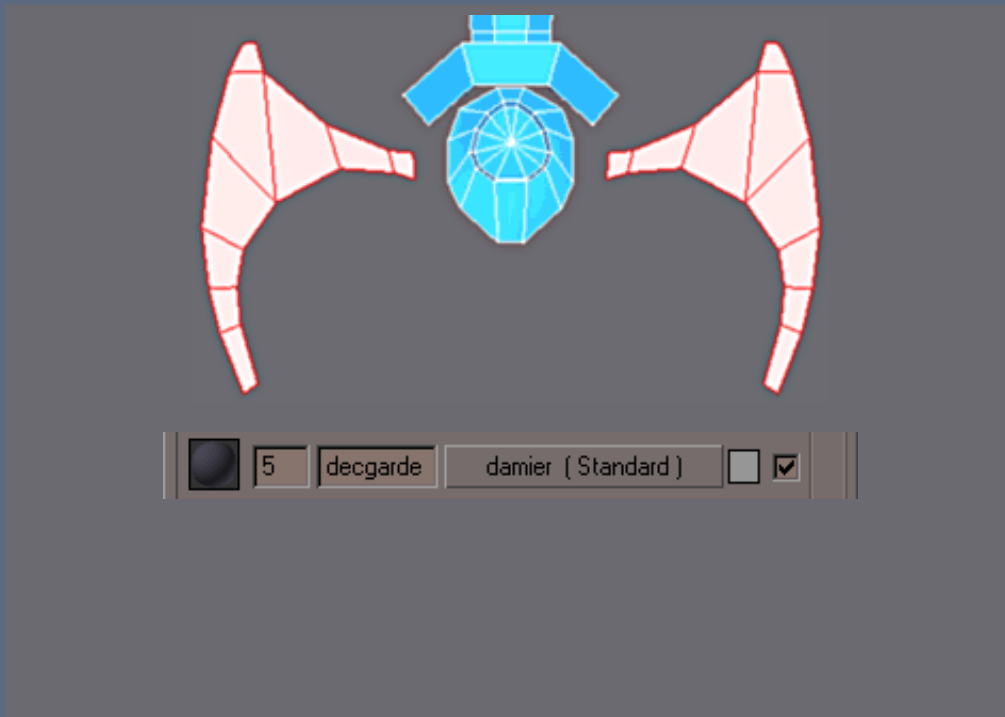
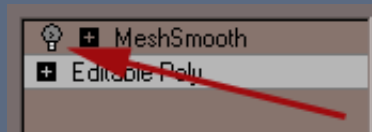
As before, click on UVW Map and Collapse To.







Note that one you can temporarily suspend the effect of a modifier while clicking on the icon bulb next to it.

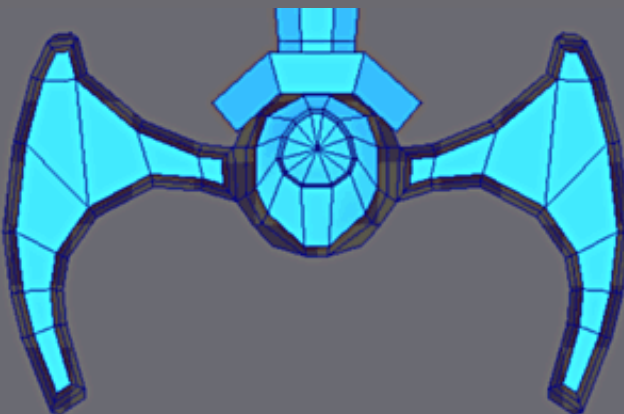
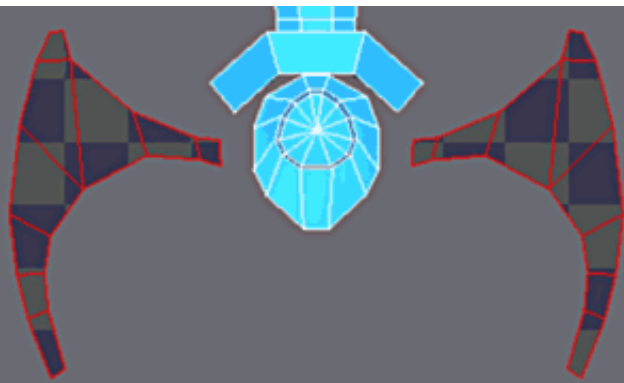


Select the faces opposite.

Create matériel ID 5, assign to these faces then apply a planar UVW map.

Always give same dimension to the Gizmo when mapping.

Collapse To.



Make in the same way material  
ID 6

This part is the most complex to  
map correctly, for the moment  
one is satisfied to apply a planar  
map to these faces

The adjustment will be made  
once all faces have the checker  
material

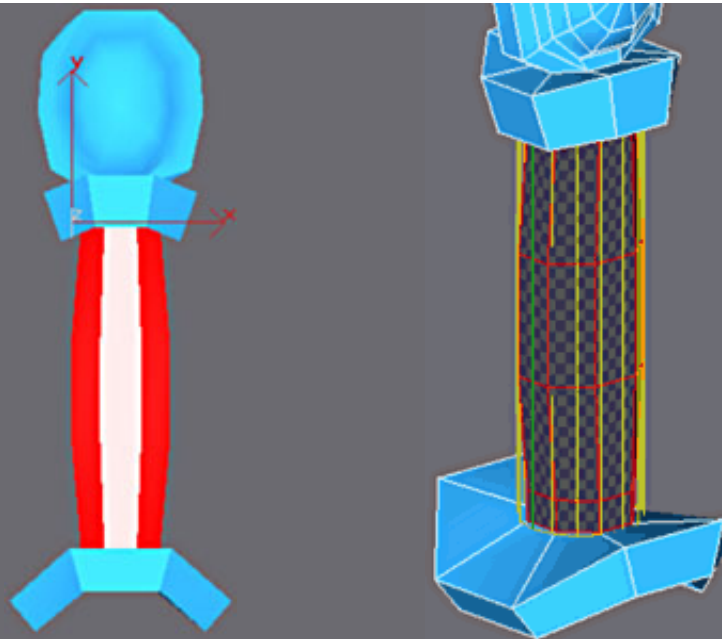


The ID 7 and 8 are for the central decoration of the guard.

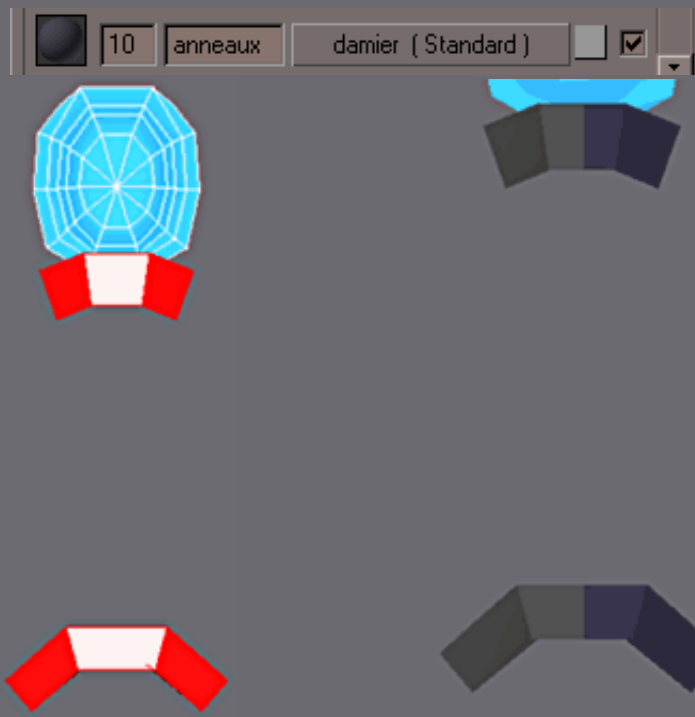
Select the corresponding faces, external with ID 7 and interior faces with ID 8.

Apply planar UVW again

For the handle, ID 9 and mapping cylindrical.



With the Gizmo of mapping a rotation of  $90^\circ$  on the axis of Z so that the seam falls in line with the one on the handle.

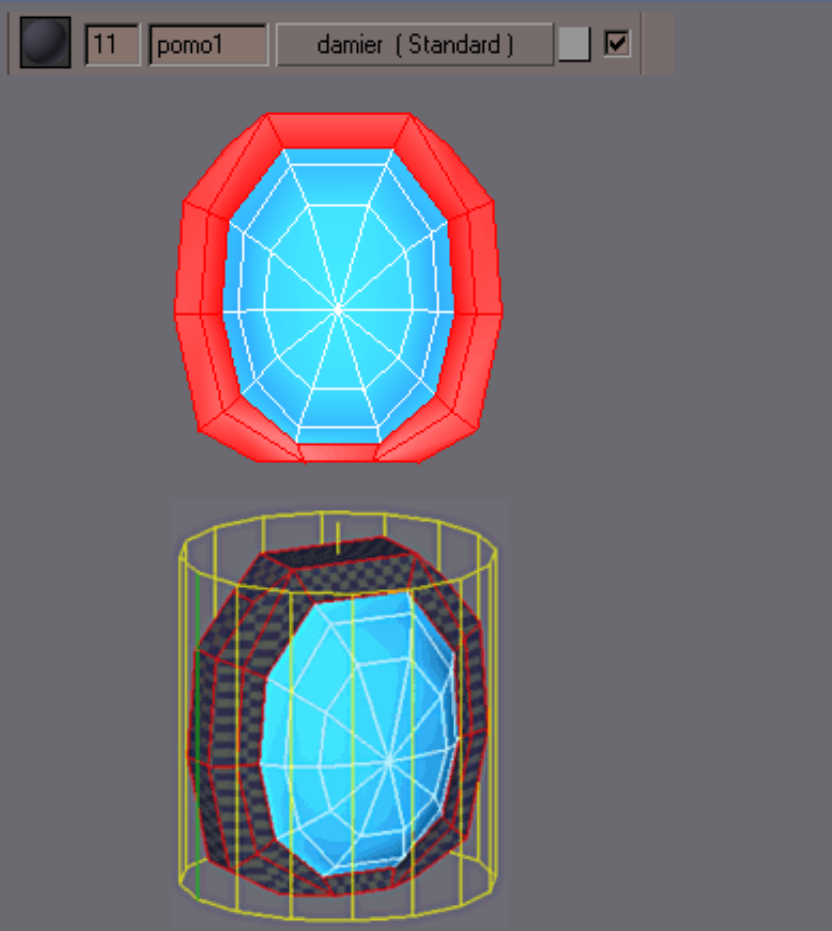


Same procedure for the rings, with cylindrical ID 10, mapping and rotation of Gizmo.



Arrived at this stage all the slots of Sub Materials are used.

To add some click on Add.



The pommel with the ID 11 and always a cylindrical mapping and the rotation of Gizmo.


12

pomo2

damier ( Standard )

☐

☒



Finally to finish with the ID 12, a planar map.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



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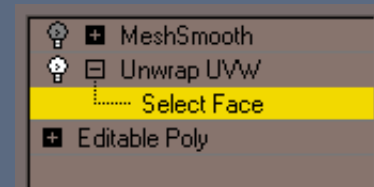
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### Mapping of the Sword

In the preceding page we used several Material ID's to quickly map all separate sections.

We will now finalize the UV's of all the faces while re-examine each checker pattern in Unwrap UVW.

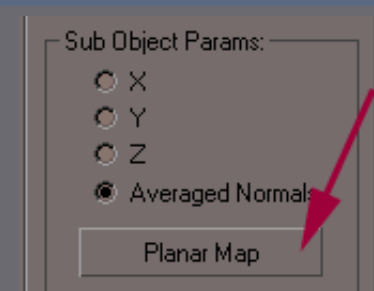
Click on Editable Poly ensure that no faces are selected.  
Apply Unwrap UVW and continue in 'Select Face' mode.



Open edit UVW.  
Select the ID 3 Checker.

Using Unwrap Options Show Selected Vertices in Viewport.

On this ID certain faces have UV's that are stretched because of the

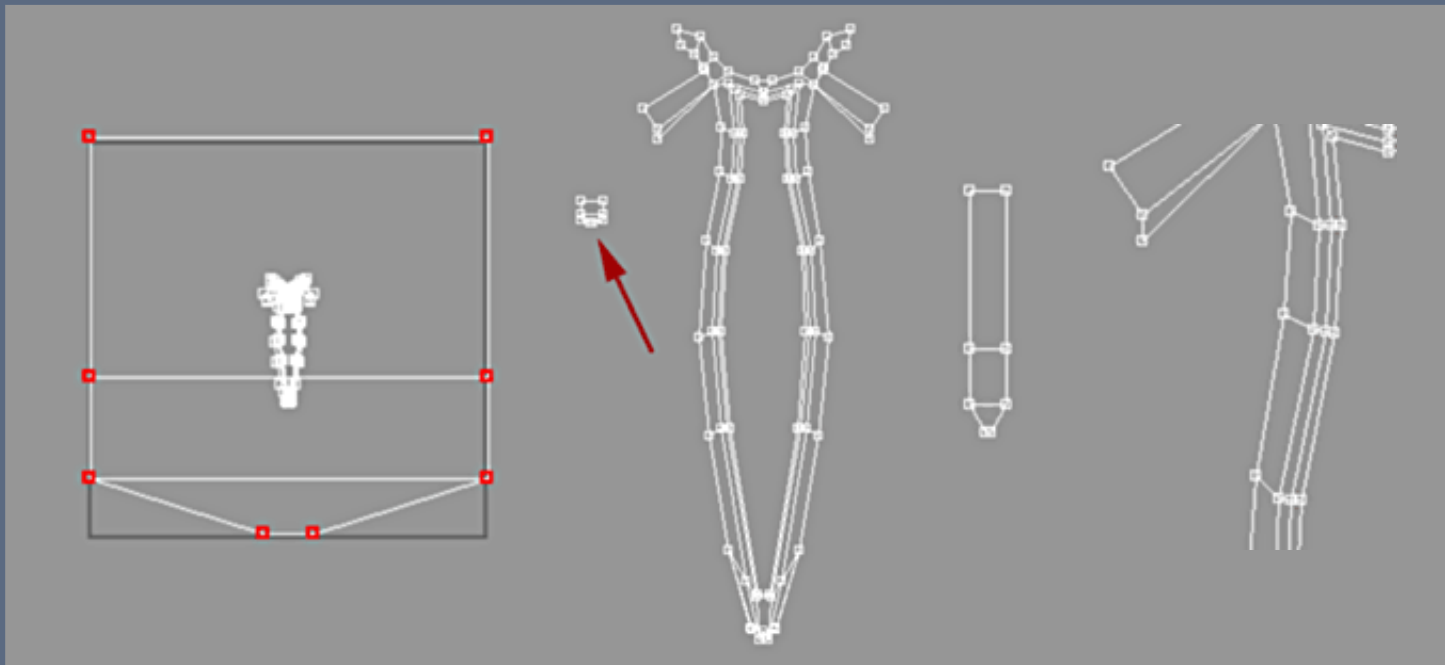
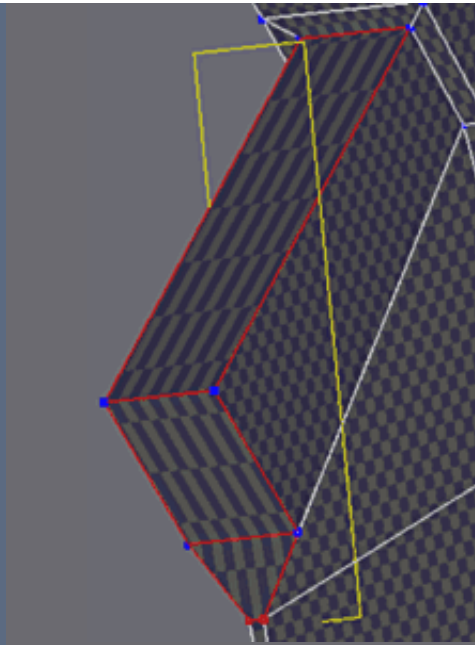


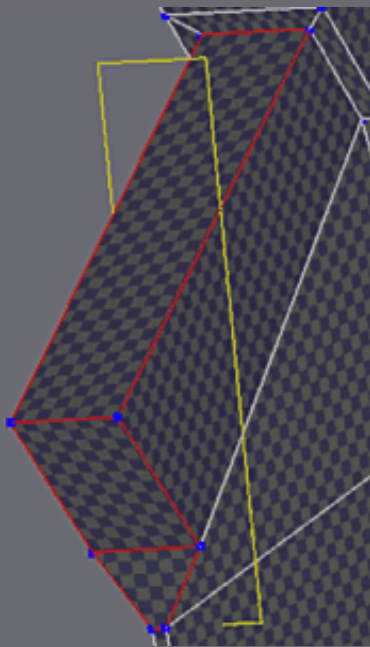


planar map for the face of the preceding page.

Select the faces on top of the blade as shown and apply a Planar Map.

Rotate and move the mapping Gizmo so that it takes its orientation from the average normals of the selected faces.

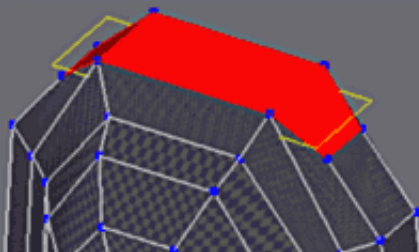




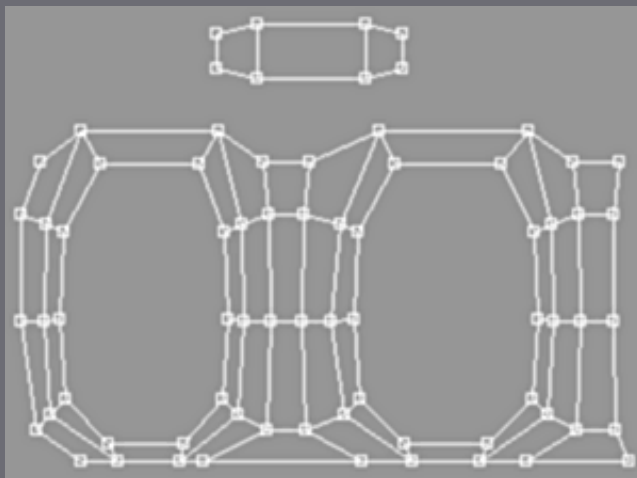
We can see UV's correspondents, in the window of edition, marked in red. See here we deform entirely to fit the UV's square.

We need to redementionalize this set of UV's so that the mapping is coherent with the remainder of Checker ID 3. Initially, uniform Scale until the visual checker in the viewport\All Users \Application

Finally a non uniform Scale on the remaining UV sets with the same dimensions.



For the ID 11, select the faces of the top and apply a Planar Map.



Scale the UV and finish the adjustment on the pommel.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger

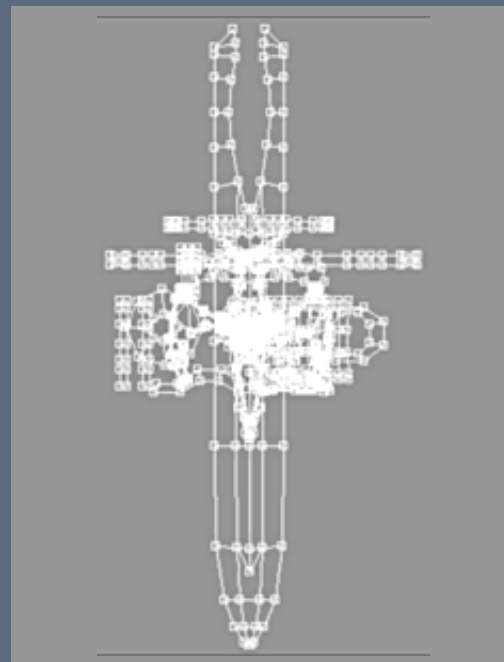
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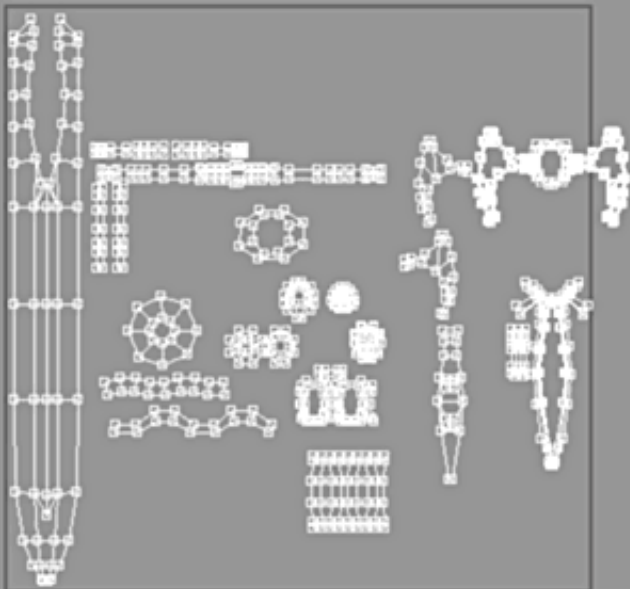
### Mapping of the Sword

Now that all UV are correctly adjusted it is necessary to prepare the final texture.

Select All IDs.

With all the ID sets at the same scale. We need to rearrange them so that they lay flat.

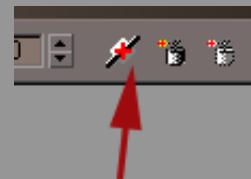
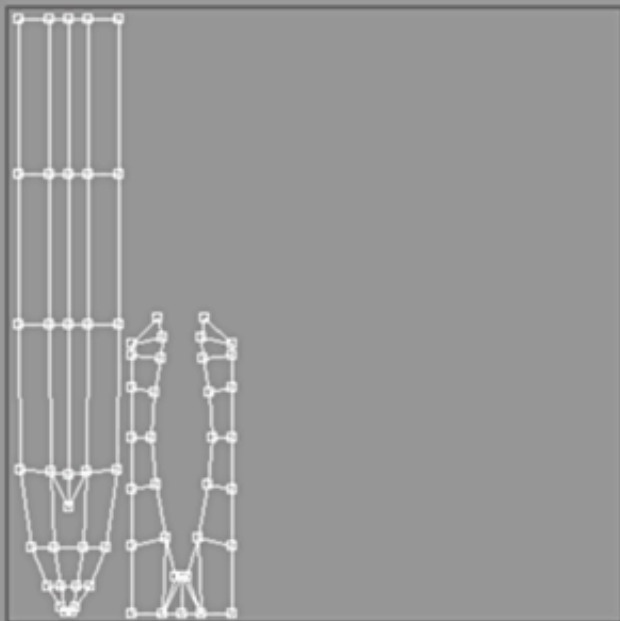




With Expand Selection start separating the various sets.

At this stage we arrange the other sets right of the Blade.

If we leave things like that, all the sets have no problems but we waste a lot of space on the board.

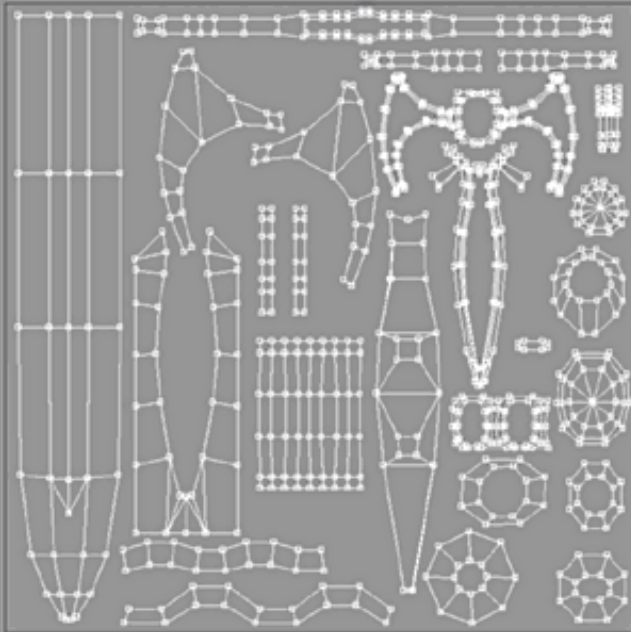


We will split the Blade into two sets of UV and thus will be able to increase its definition on final texture.

Select the points top and click on the Break Selected Vertices icon.

Then move the selected points.

All the points of the selection are no longer welded anymore, for the remainder it is enough to Weld Selected with the corresponding icon (regulate the threshold with 0.001 in Unwrap Options).



Then arrange the remaining UV sets a like a little puzzle.

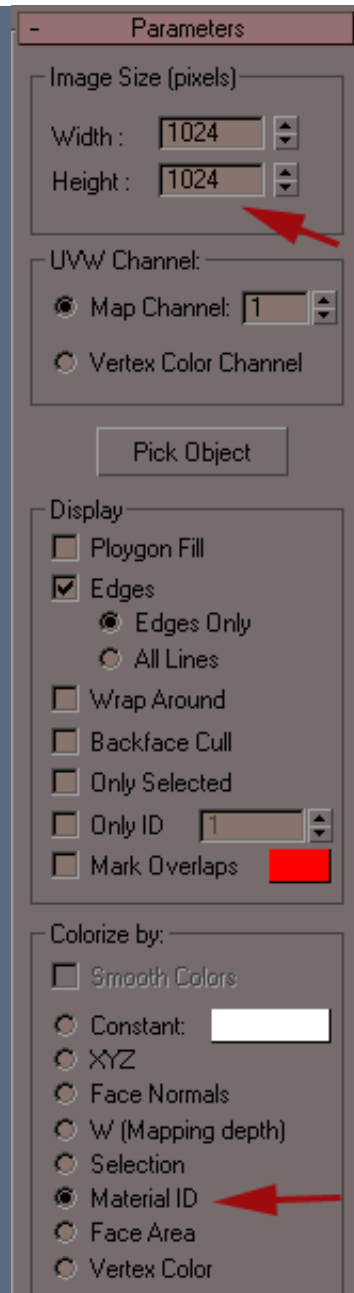
Note that certain sets of UV were increased the definition on the texture.

They correspond to the parts of the sword which need it most like decorated parts etc.

That also make it possible to use all the space available on the board.

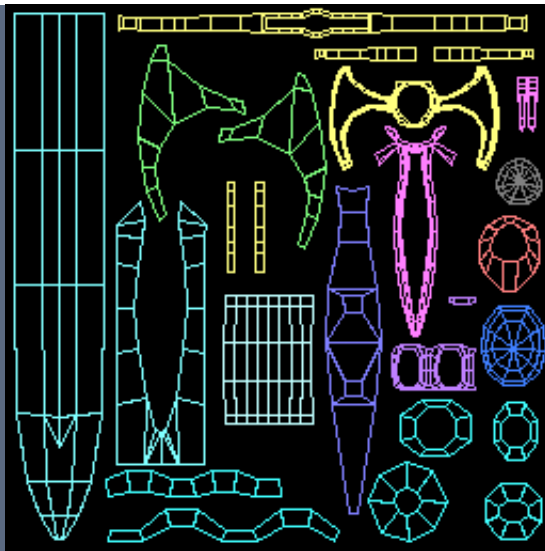
Now we need to generate a beautiful image of UV with Texporter.

Here texture we make is 1024x1024 pixels.



I colored the edges in Material ID mode for locating the ID on the board.



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Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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Joan of Arc  
by  
Michel Roger

3ds Max



*Clothing*

## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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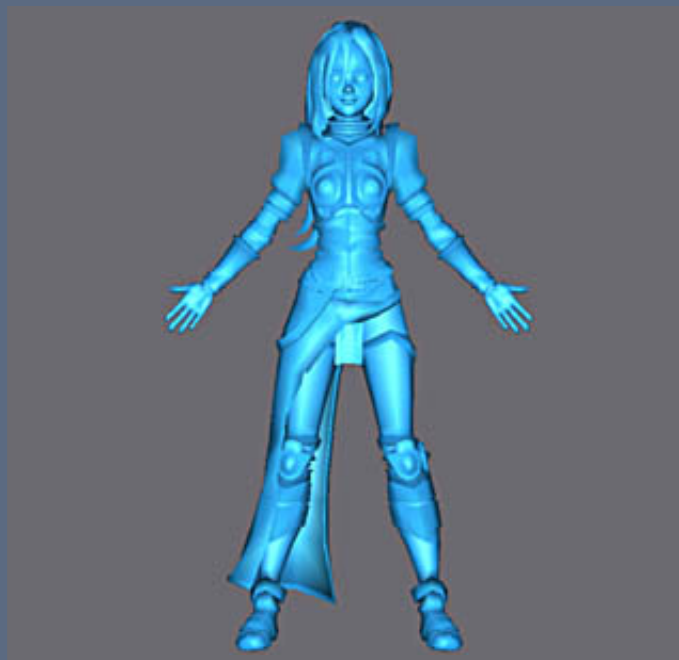
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### Mapping of Clothing

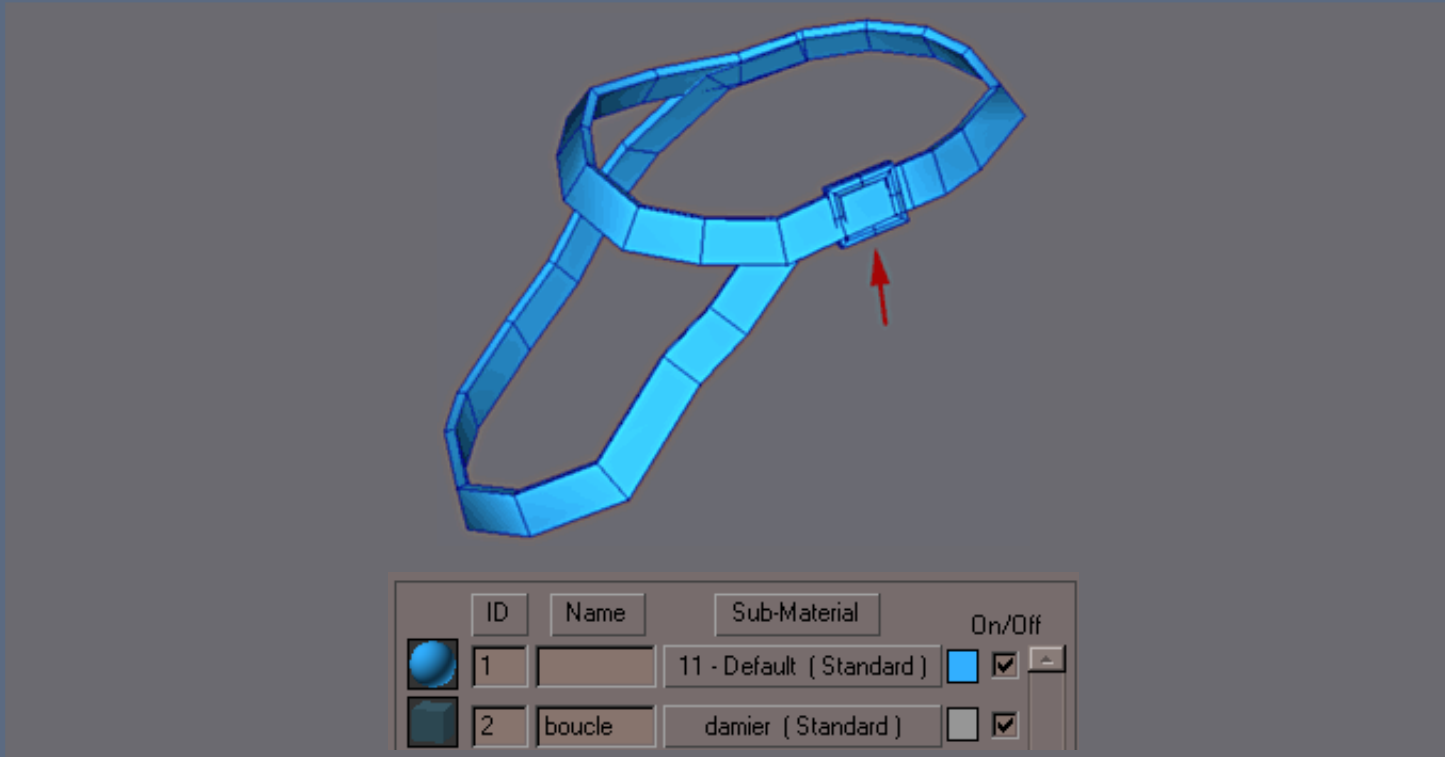
This is where the mapping of the character starts.  
Apply the same material to all the objects and assign  
Material ID 1.

Although the character is composed of separate objects  
with the use of a Multi/Sub Object material it makes it  
possible to gather the maps.

There will be three multiple materials, for clothing, the armor  
and the body even with the head and the hair.

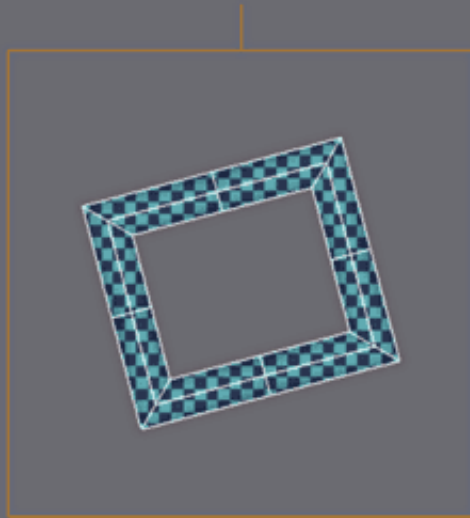
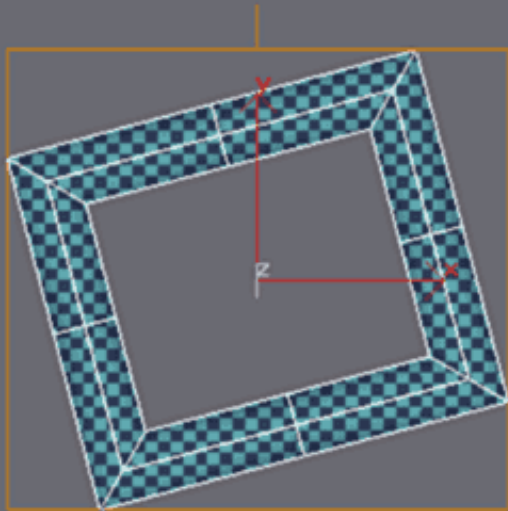


As for the sword, convert the objects (except the belt which is a Loft object) into a Polygon with Turn To Poly, and Collapse To the Stack without touching Meshsmooth.



Change the Standard type into Multi-Sub/Object and keep the previous material in this new material.  
Create another slot with a Checker material within the Diffuse Slot.  
Name this "Authority" in Sub Material ID 2.

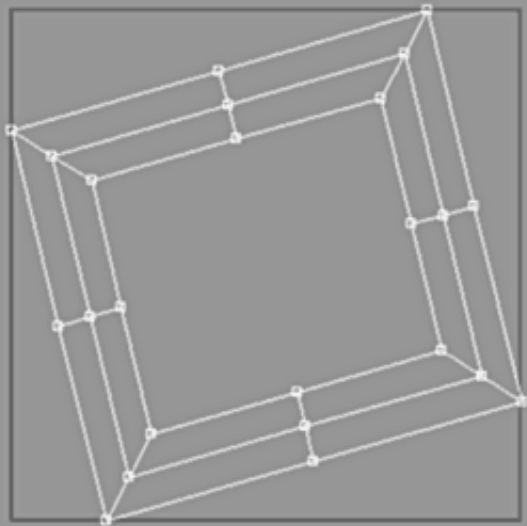
We will start with the Belt Buckle.



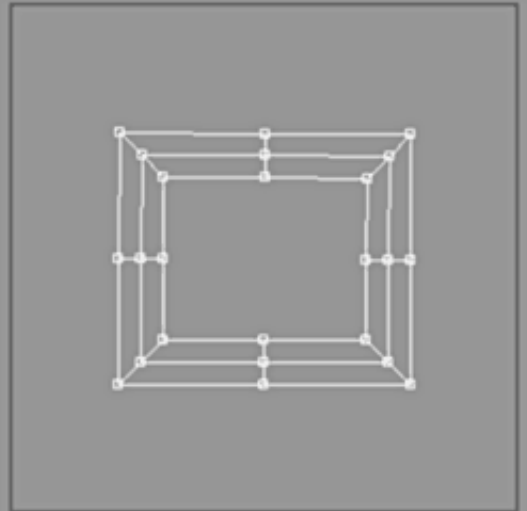
Assign the ID 2 to the Belt Buckle.

Ensure that no face is selected on the object then apply a Planar Map to the faces.

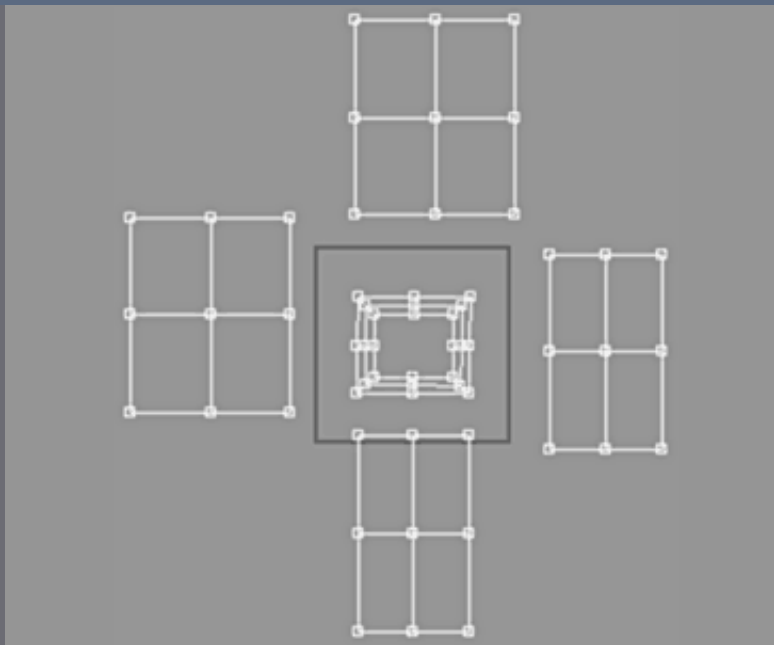
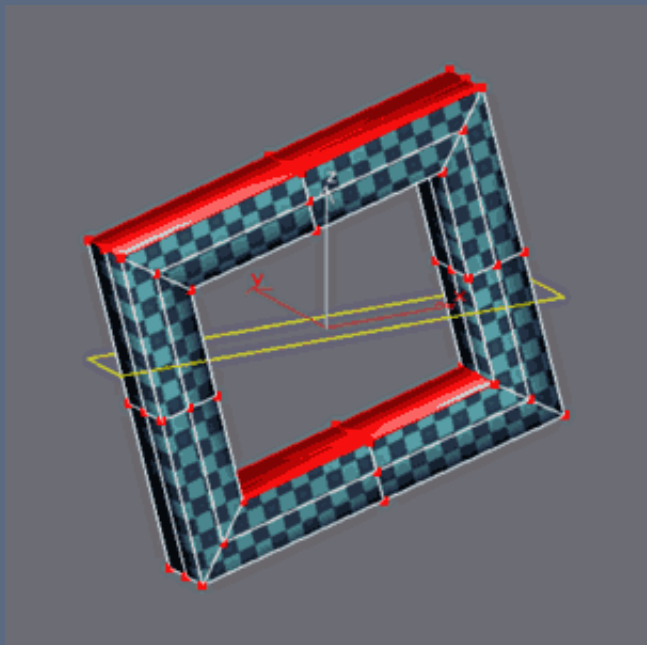
Resize the Gizmo until you have a square.



Add a UVW UnWrap, then open the UV Editor.



In Face Select mode Rotate the UVs shown opposite.

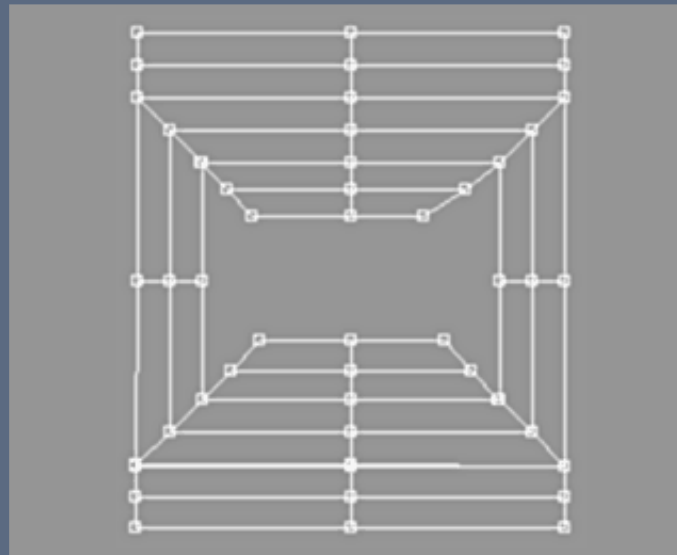


Select the faces shown on the left, Select both the inside and outside faces. Apply a Planar Map in the UV Editor, separate the sets from UV with Expand Selected.

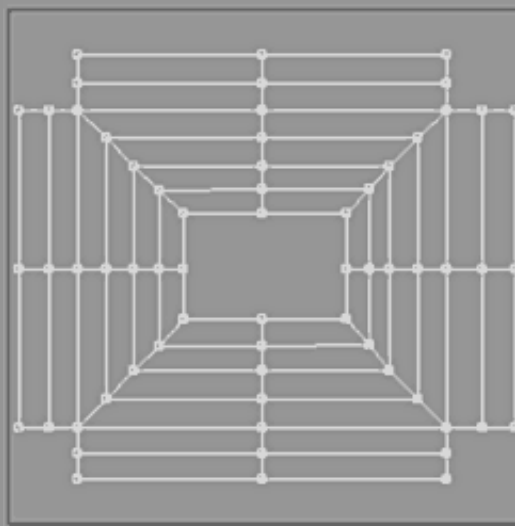
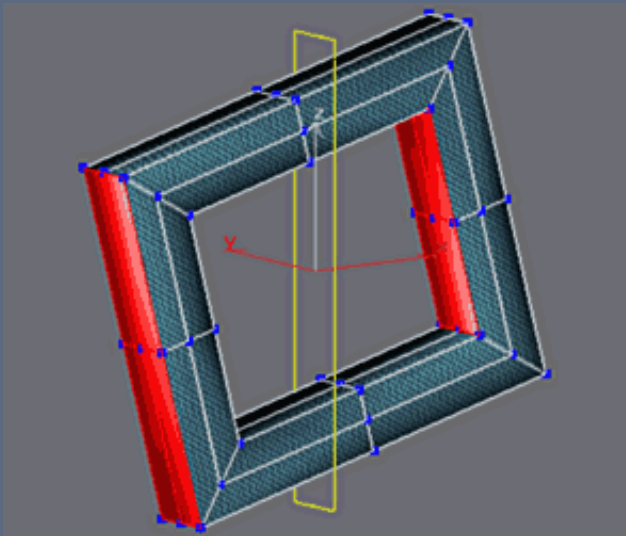
Give the UV sets a good size and place them as shown opposite.

For help Show Selected Vertices in Viewport of the Unwrap Options and locate the corresponding points between the various sets.

Remembering that if you select a point and nudge the Weld Threshold up. You should see its matching pair light up, thus making it easier to lineup the sets as required.



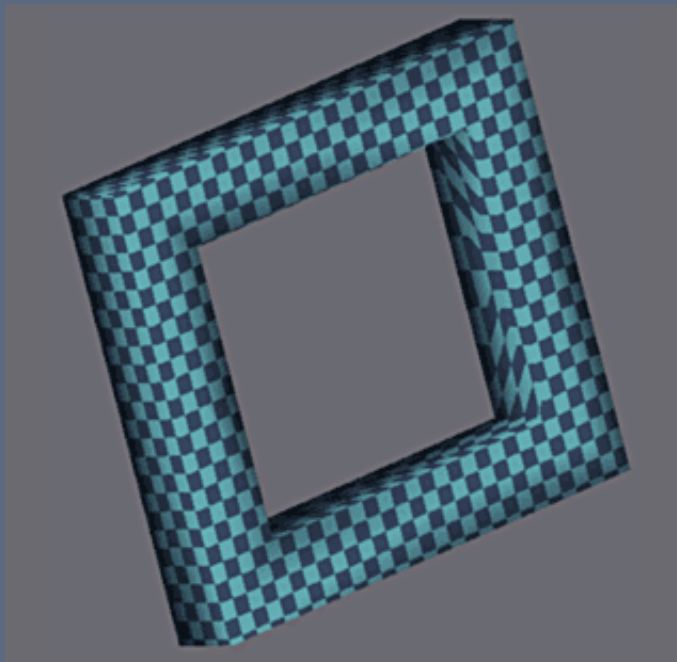




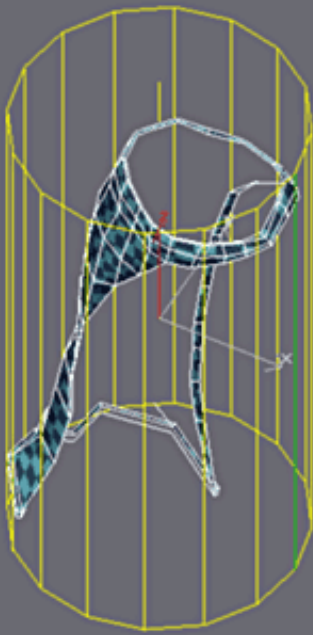
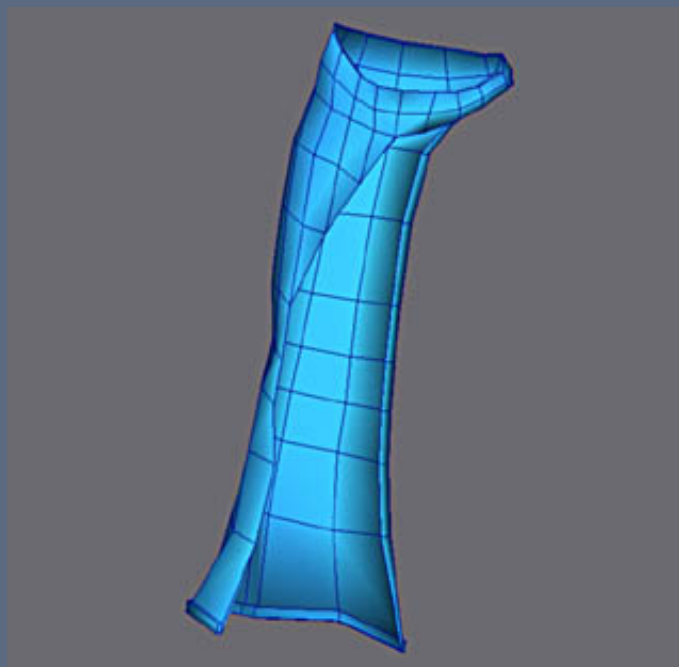
Start again Remembering to Select both the inside and outside faces.  
Arrange the faces as shown then when all is in place weld the points with Weld Selected.

Note that there are deformations on the mapping of the interior but in this case we cannot have a continuity of UV with no distortion...

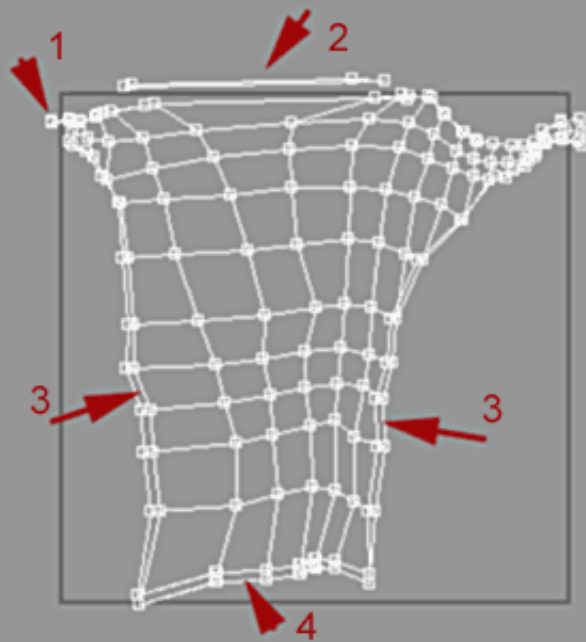
These parts are hidden by the belt and are not significant.



Select the tower of the skirt.



Apply ID 3 for the skirt.  
Here a cylindrical map with the Gizmo rotated to have  
the default UV on the rear most faces.



Here we encounter several typical problems before any adjustment of the UV.

1, with a cylindrical map some faces on the hip line are well represented with the default dimensions.

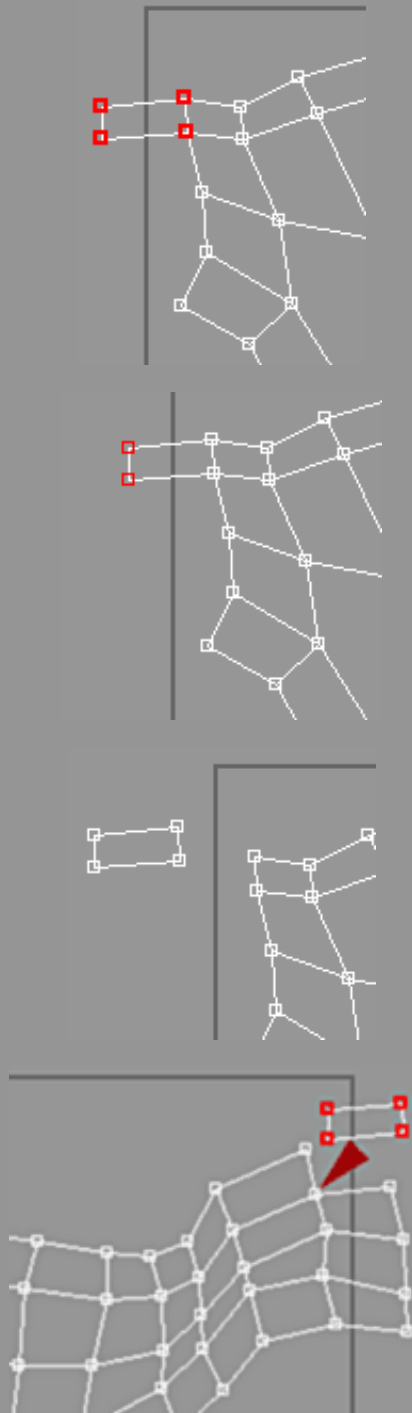
2, a face is detached from the remainder of the UV, because of the cylindrical mapping.

3, UV is superimposed because of the geometry of the object (edge of the skirt).

And finally at arrow 4, the edge of the skirt, it will be necessary to unfold some confused points in the Cylindrical Map projection.



For the edges that overlap just move the points towards the outside.



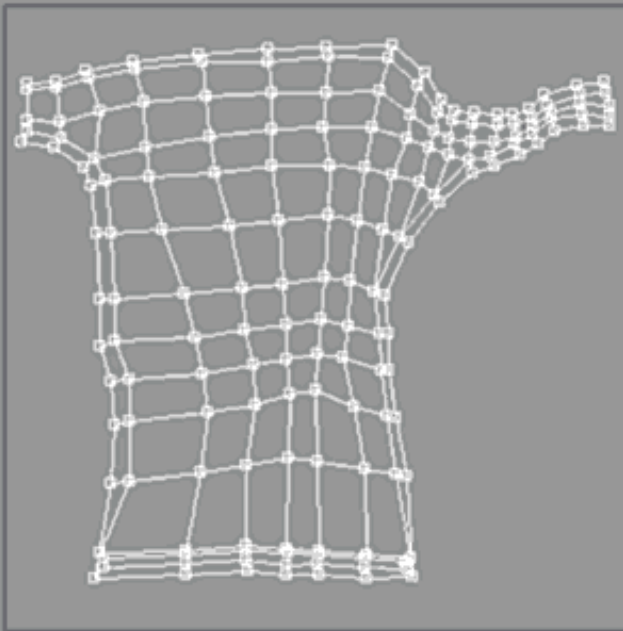
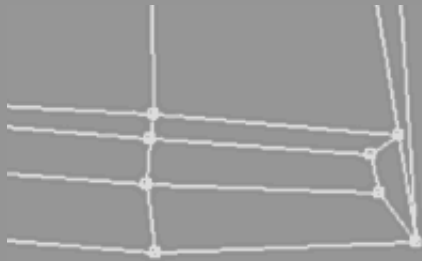
To move a square of UV, select its corresponding points.

Select the two points as shown then use Expand Selection to propagate the selection.

Use Brake Selected Vertices

Finally move the group of points to the other side where the points match.

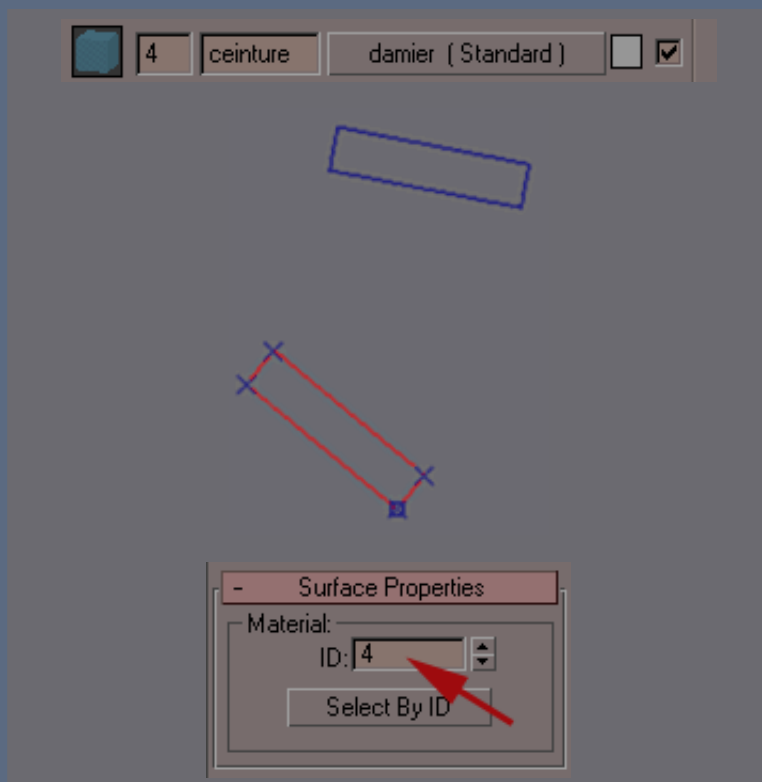
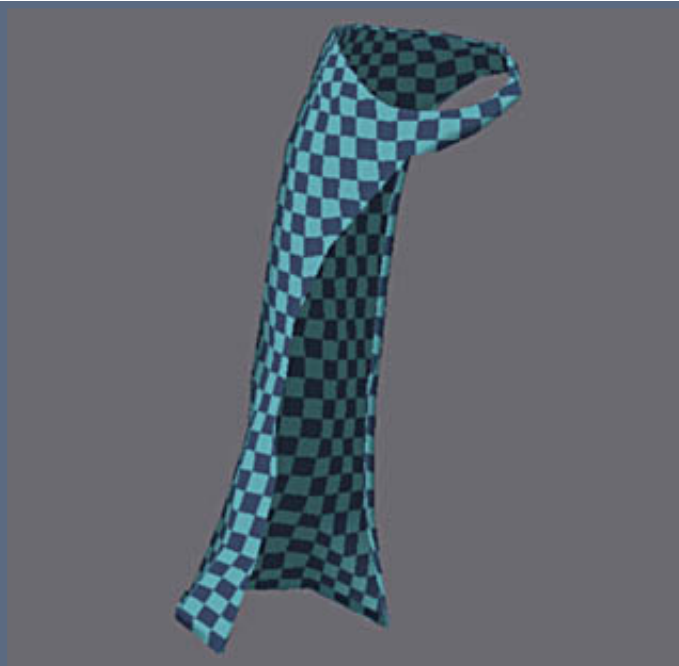
Use the Weld Target icon to weld them moving to the corresponding points.



Adjust the moving UV of the bottom of the skirt.

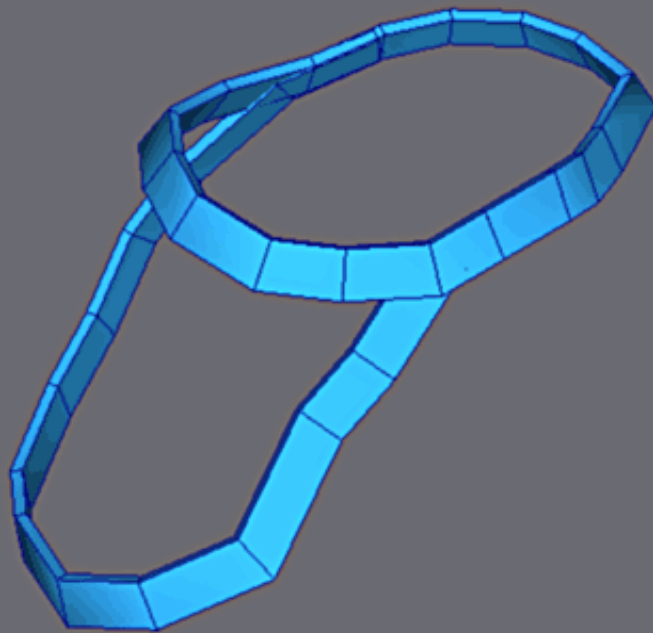
Finally resize this set of UVs to make it return to the mapping squar

The skirt mapped.

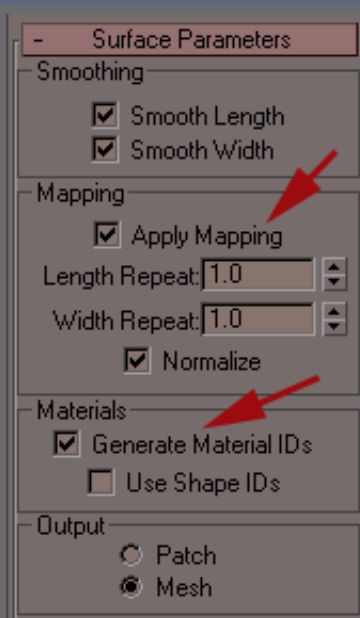


Select the Shapes that were used in the extrusion of the belt.

In Spline mode, assign the ID 4 with the spline.



Click on Loft in the Modifiers Stack of the Loft object.



In the Surfaces Parameters panel, Apply Material Mapping and IDs.

Max will automatic recover the ID of the spline for the Shape and assign it during extrusion.

Within the Mapping framework, increase the Length Repeat to have a non stretched checker.



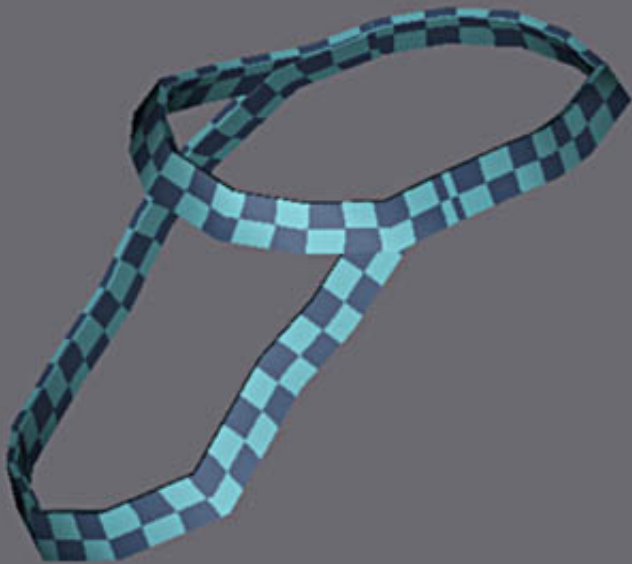
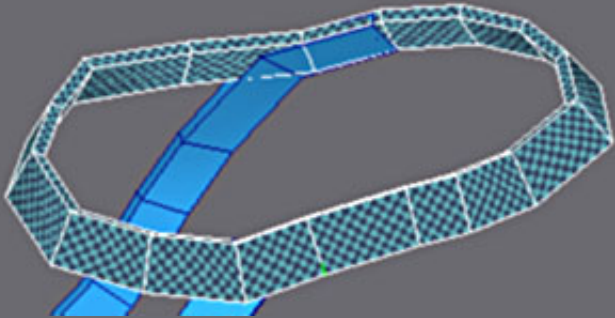
Mapping

☒ Apply Mapping

Length Repeat: 11.0

Width Repeat: 1.0

☒ Normalize



Repeat the same procedure for the other Loft object.



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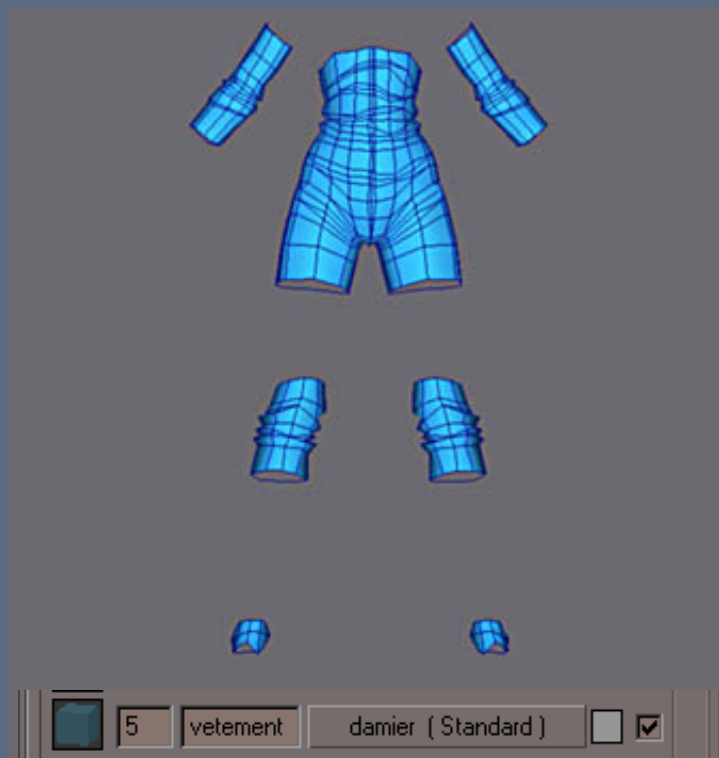
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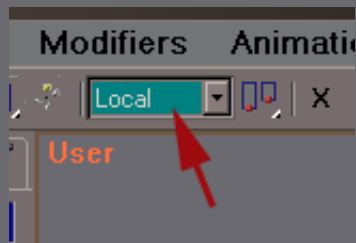
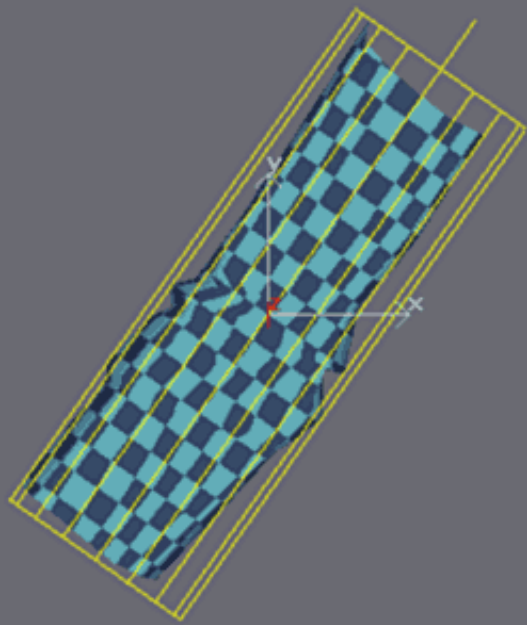
**Mapping of Clothing**

Apply ID 5 to the clothing.

This part of the body must be assembled before putting  
on the mapping.

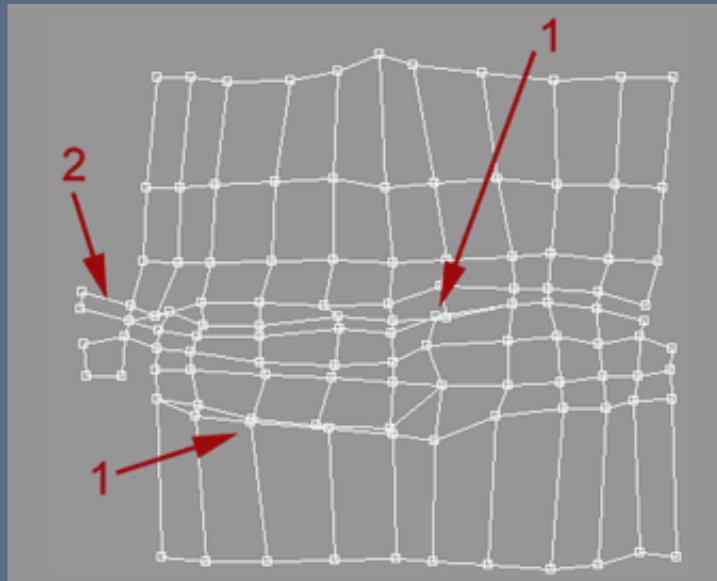
The arms, the knees and the ankles can be mapped with  
our Authority texture to save time.



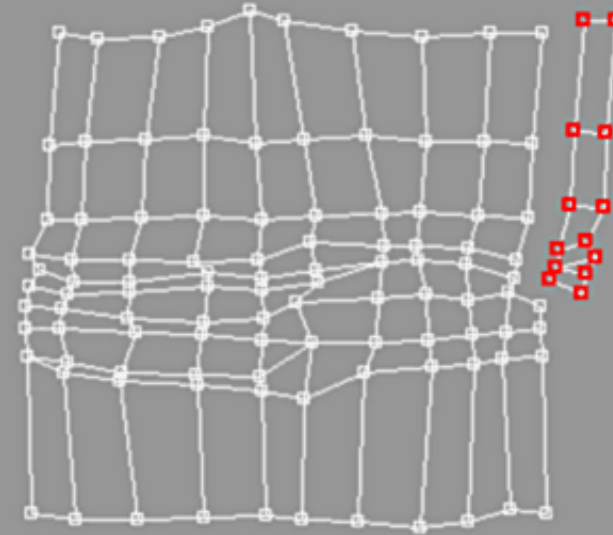
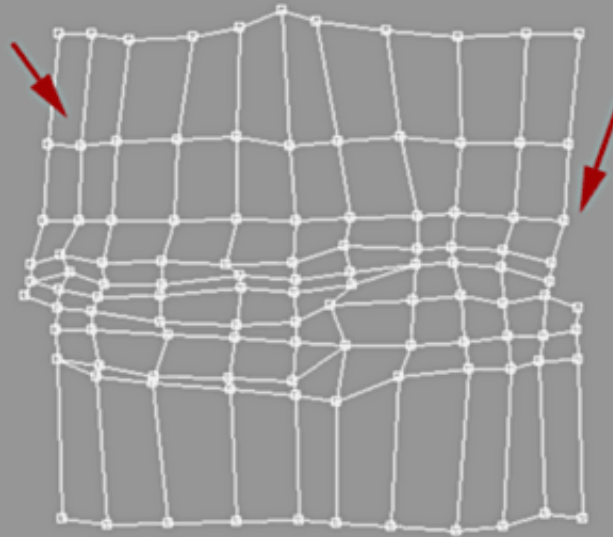


For the arm a cylindrical map which we direct  $-90^\circ$  towards Z on the Gizmo in Local mode, the seam of UV is on the interior and will be less visible on texture.

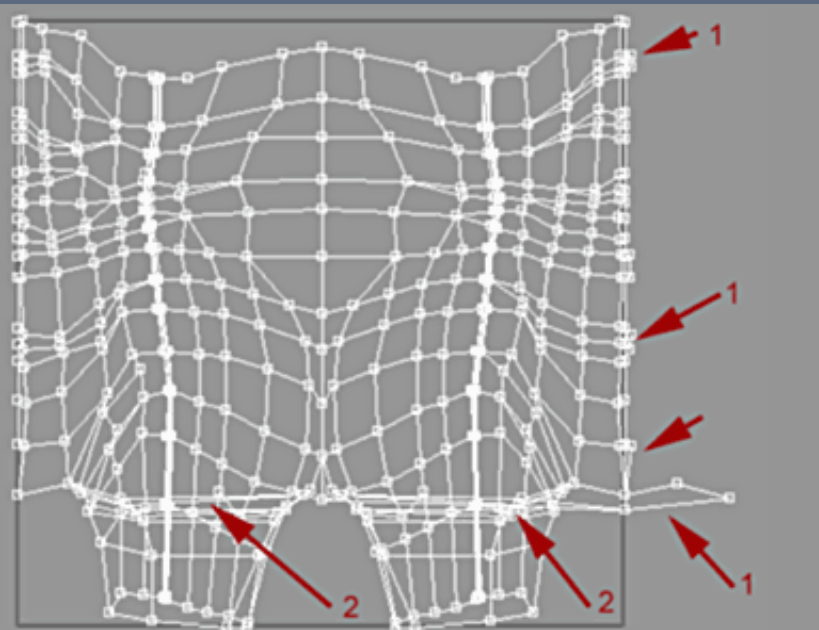
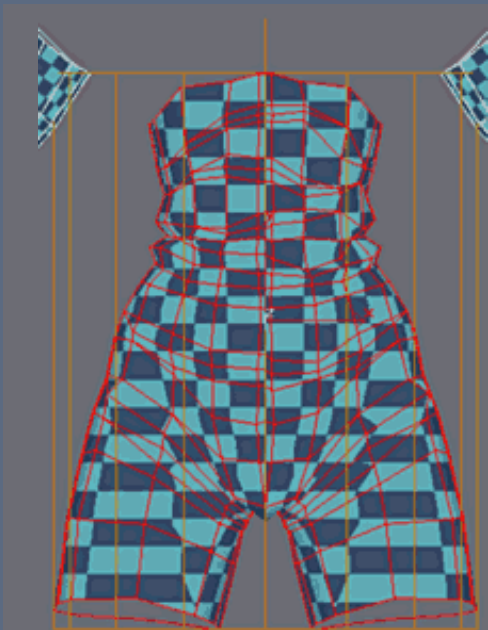
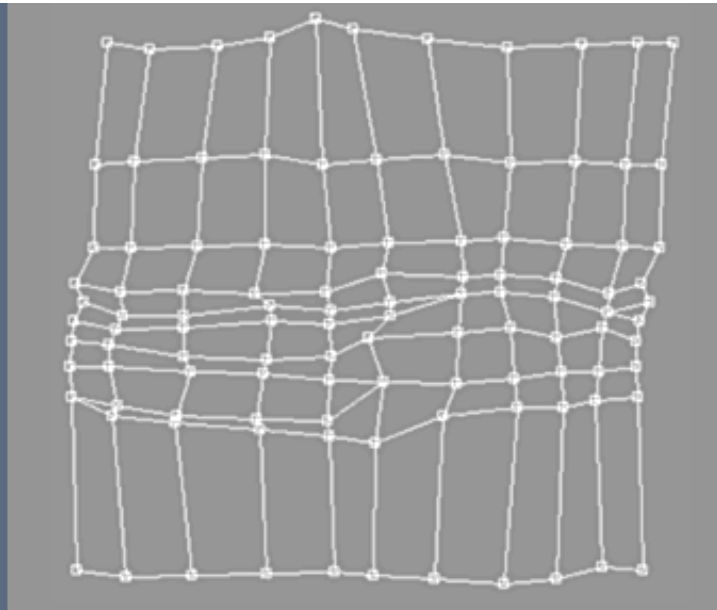
If we Unwrap we find that at arrow 1 the UV points overlap because of the folds and on arrow 2 the UV of cross over badly, it is necessary to detach and move these points.



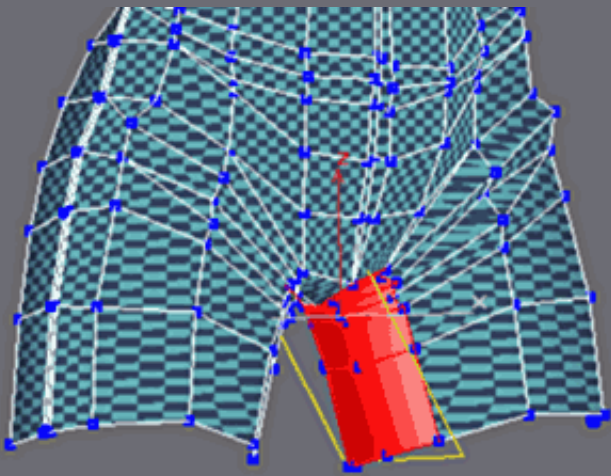
As on the preceding page, detach, move and restitch the UV.



As we see here the superimposed points are now stitched together.

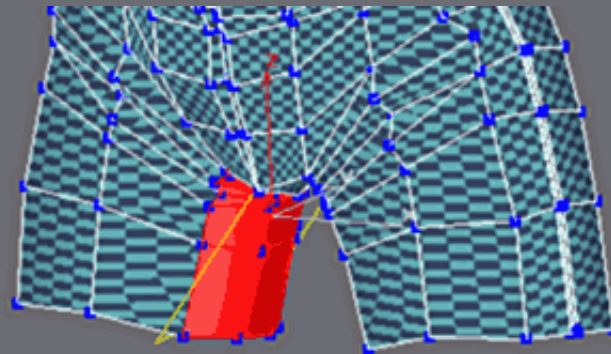


For the body we still use a cylindrical map.  
This time we find at arrow 1 the UV is badly placed, at arrow 2 we find faces between-legs that cannot be correctly mapped with cylindrical mapping.



Use Select Face in the UVW Unwrap mode and select the faces with distorted mapping and apply a Planar Map.

We now create a set of UVs for the Inner Left Leg.

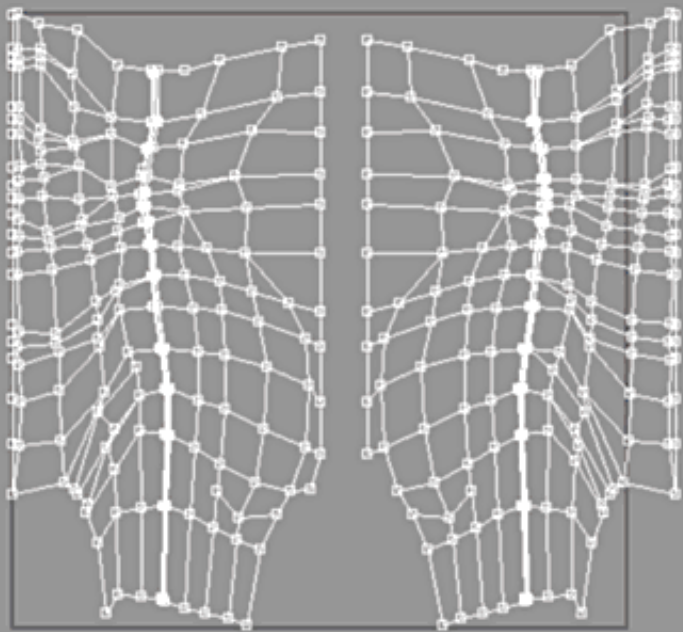


Make the same selection for the other side so as to have a set of UVs for the Inner Right Leg.



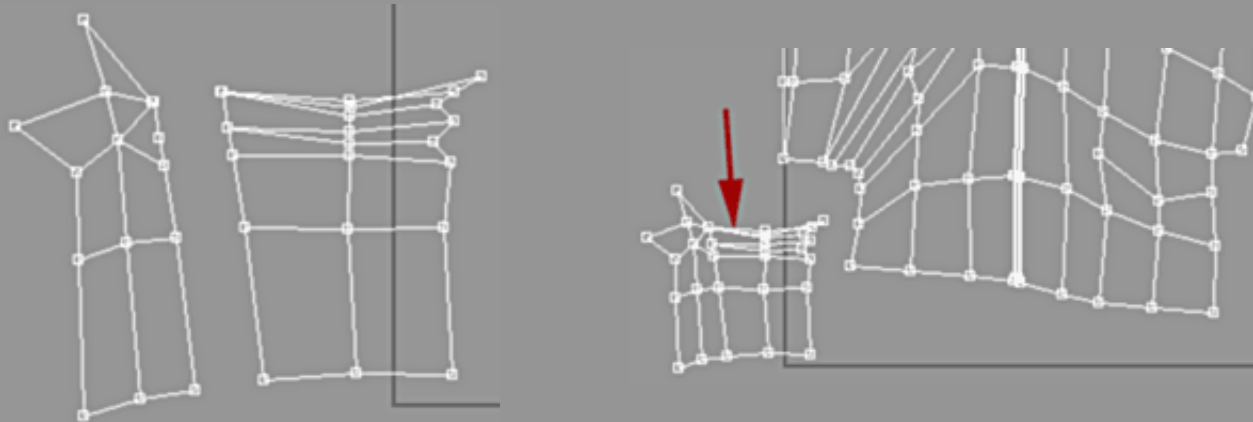
Separate the three sets from the UV.



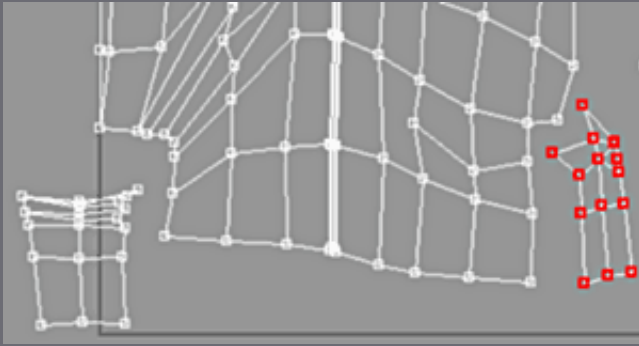


Detach the UV of the body by selecting the points of the axis down the back and use Selected Vertices. Now move a set by using Expand Selection.

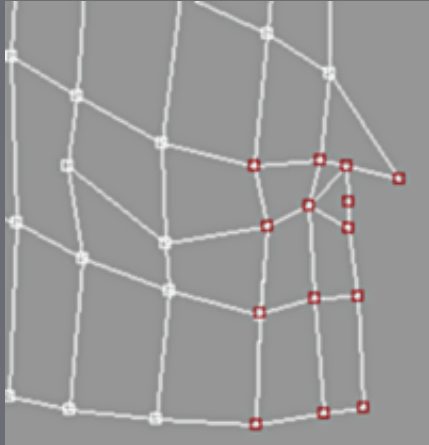
Adjust UV on the belly of these two sets change the creases.



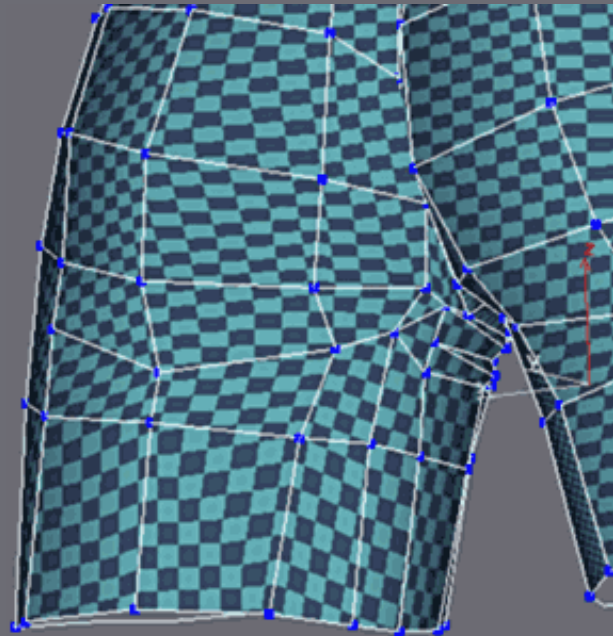
Separate and redimentionalize this set from the UV of the Inner Left Leg.



One part goes to the front and the other to the back.



Weld the UVs and finish adjusting them until you have a regular checker.



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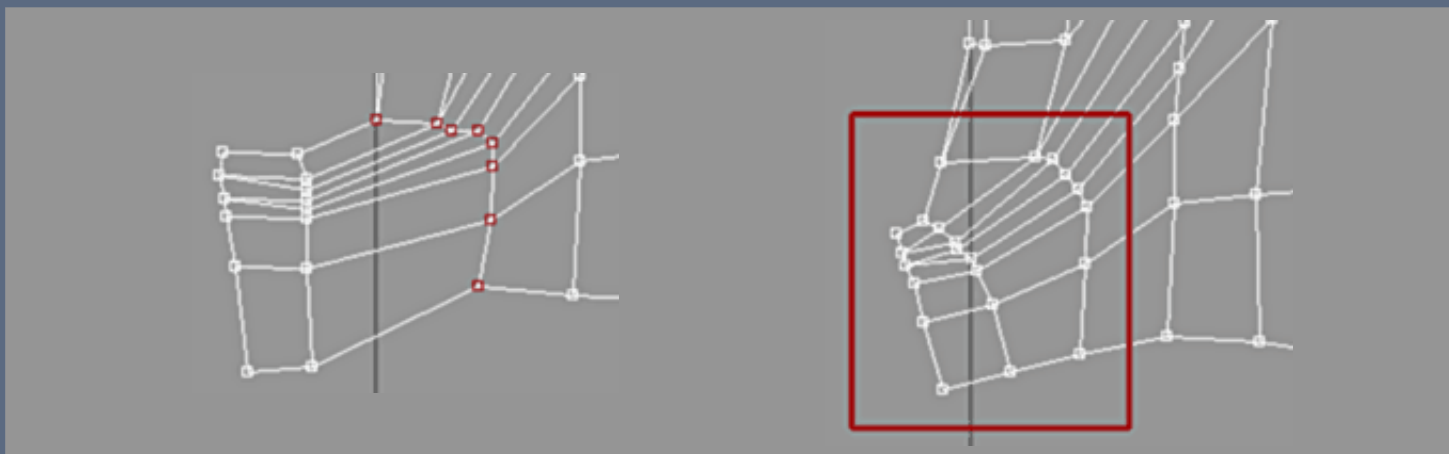
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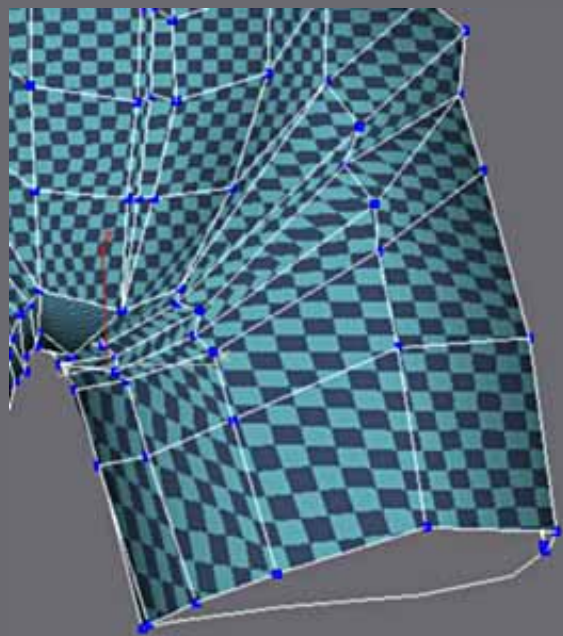
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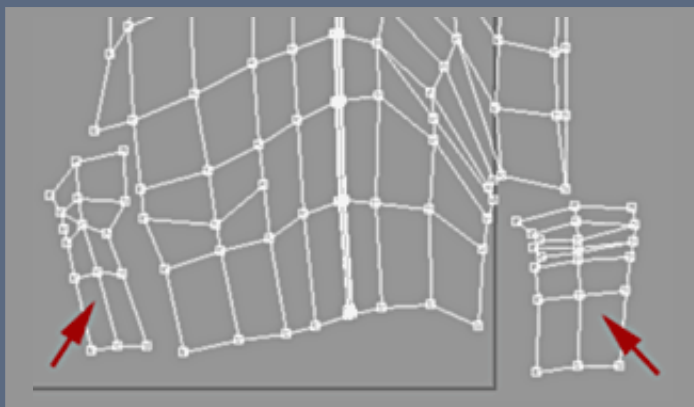
### Mapping of Clothing



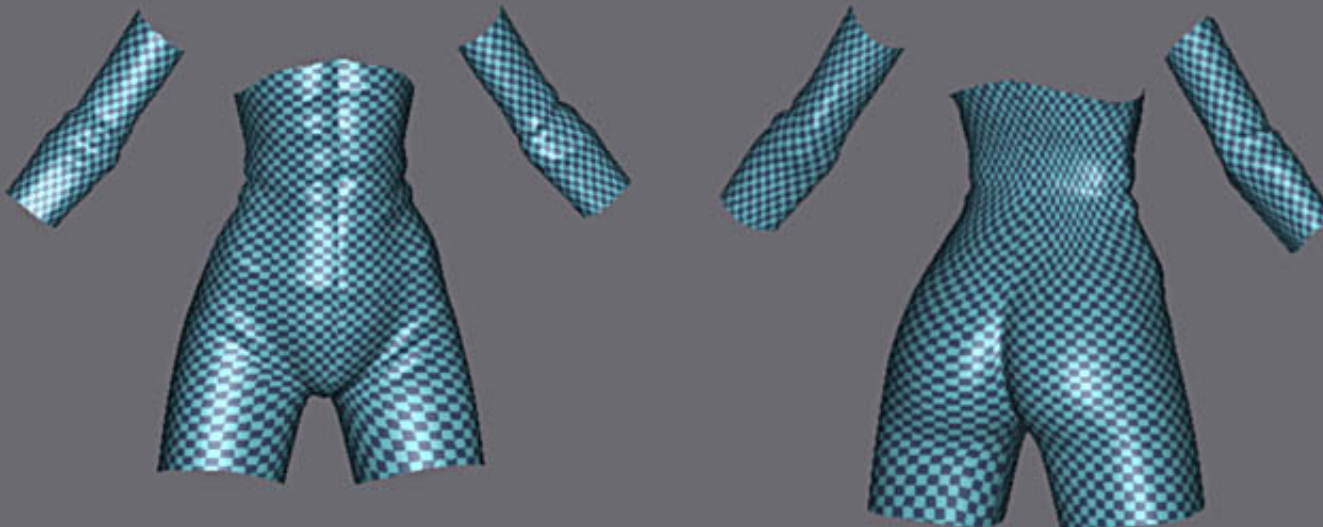
Even the operation on the front part, so that the welding is adjusted.



UV Adjusted.

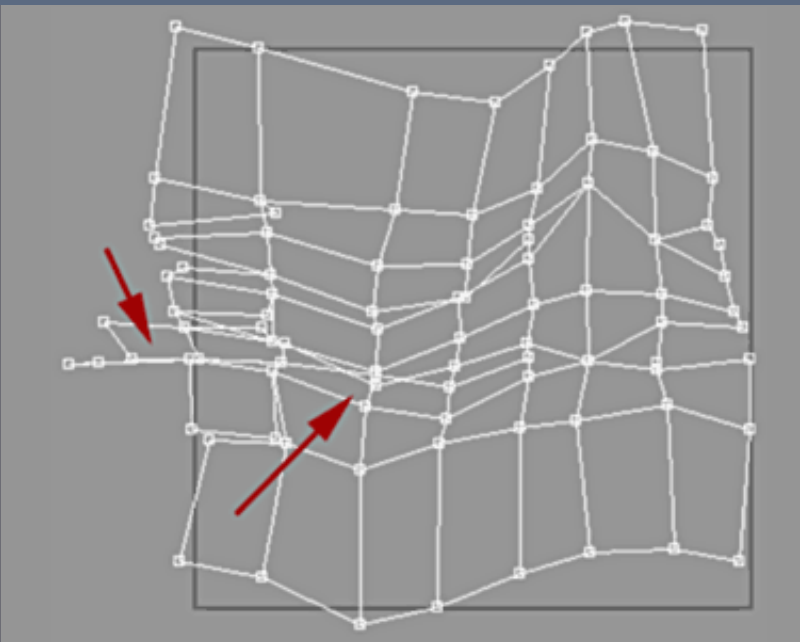
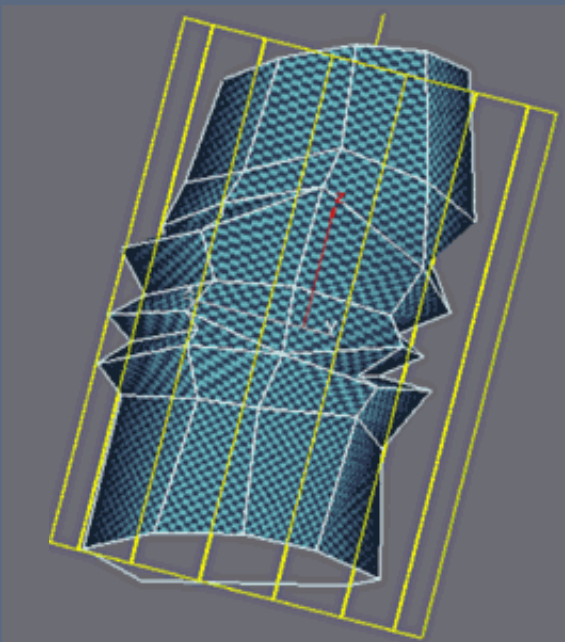


Repeat the same operation for the set of UVs on the Inner Right Leg.

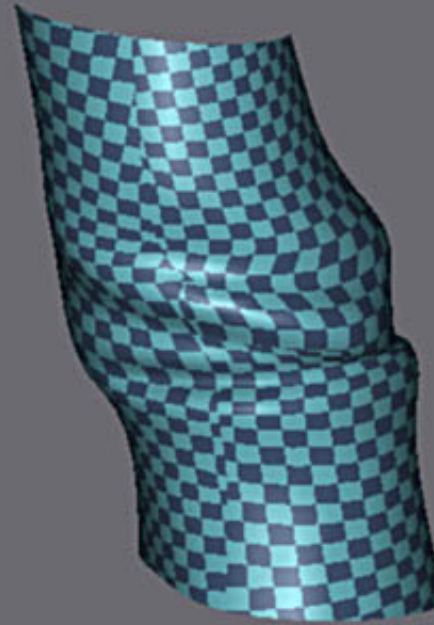
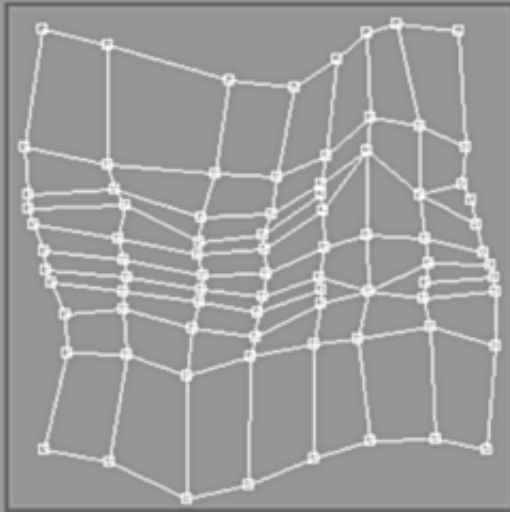


By activating Meshsmooth we can check the regularity of the checker pattern.

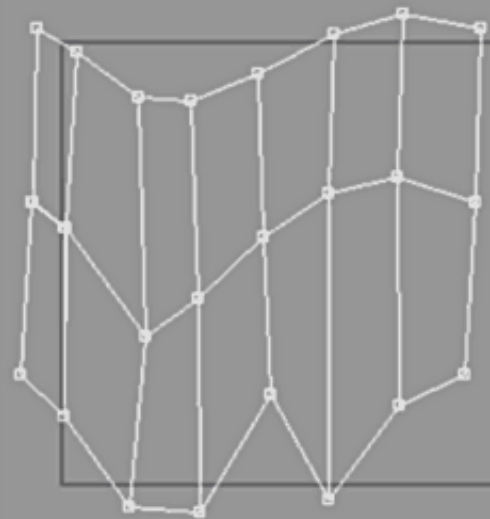
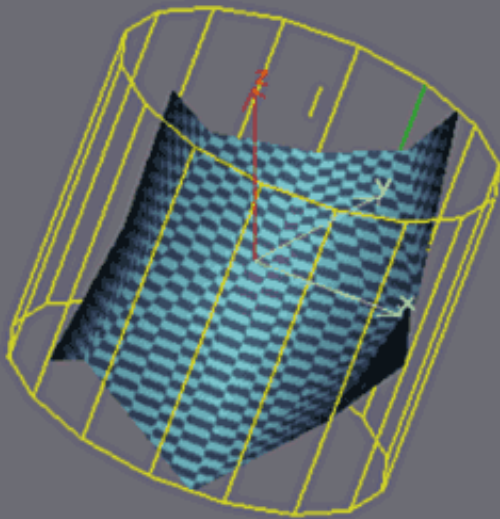
It should be noted that we can continue to adjust the UV with smoothing, modifying it in UVW Unwrap and we can Toggle the Show End Result option in Meshsmooth.



The cylindrical knee with mapping and rotation of  $-90^\circ$  locally.  
In sight UV always same corrections to be made.

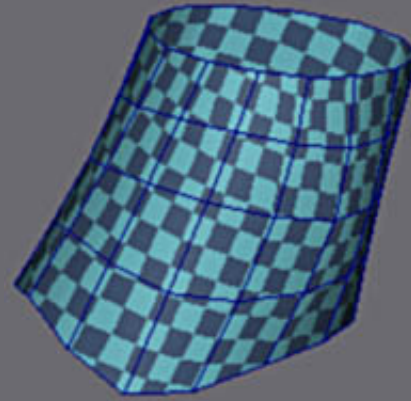
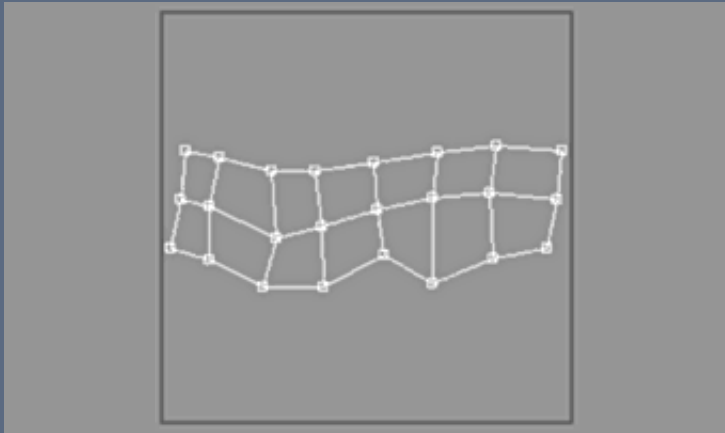


The cylindrical knee mapping and local rotation of  $-90^\circ$ .  
Try to adjust the inside of the UV as to make as small amount of corrections as possible.

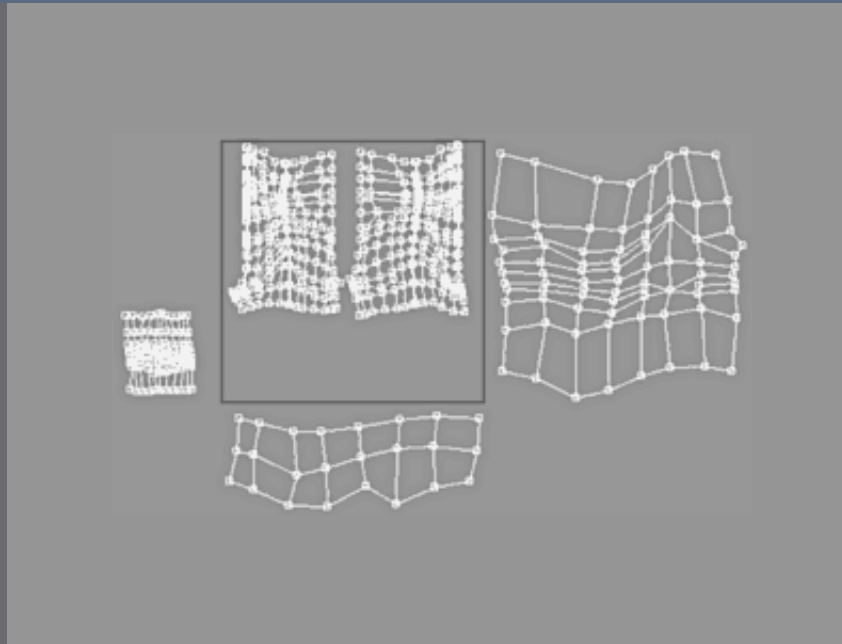


The ankle which is almost not visible with a cylindrical map and crude UVs.





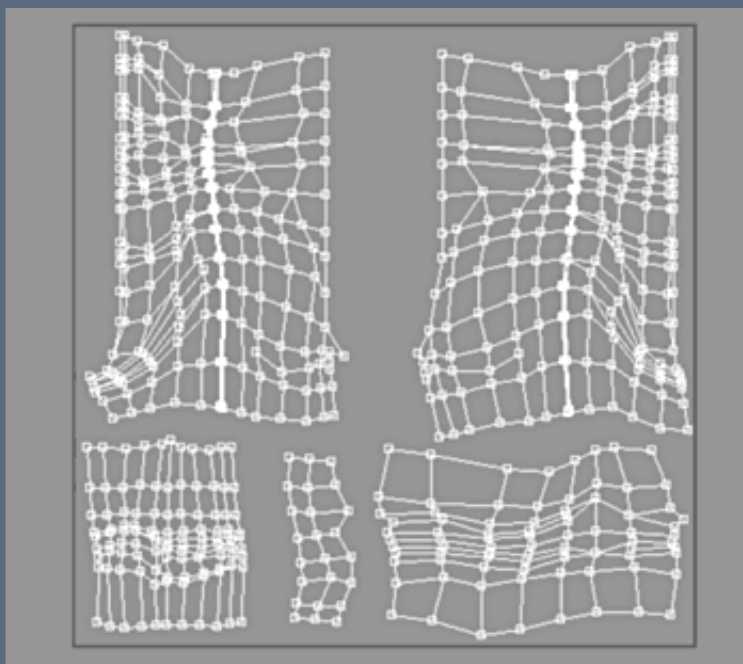
UVs adjusted and meshsmoothed.



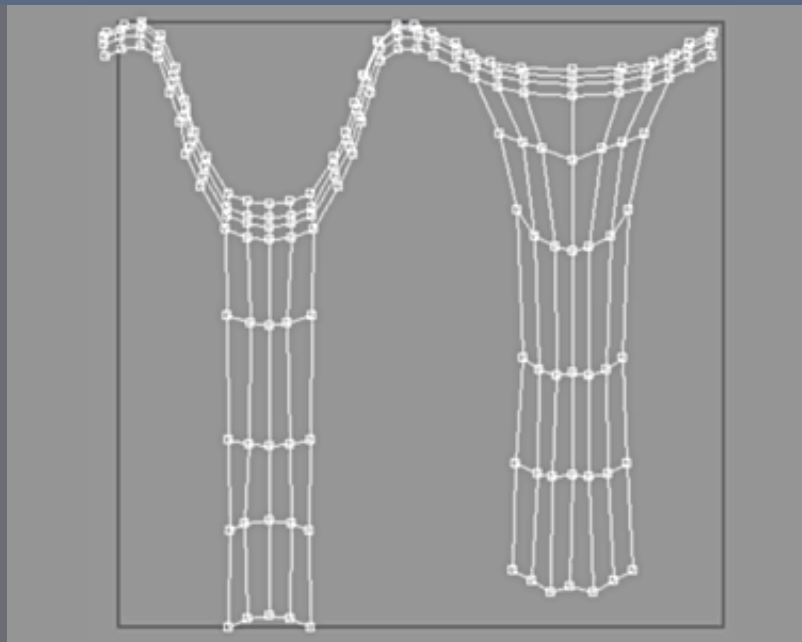
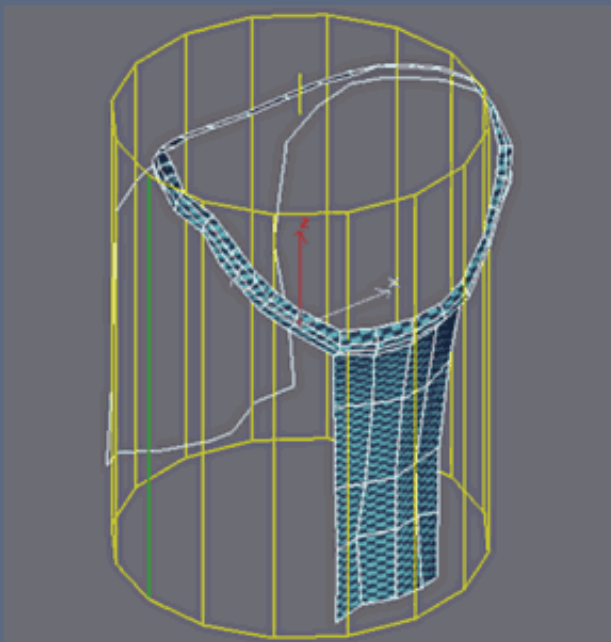
We can make a mirror Copy the arm, knees and ankle and to attach it to the whole of of the object to gather all the clothing.

Deselect all the faces of the clothing object, now go back to Object mode and UVW Unwrap, adjust the UV sets to insert them into a board by mapping an equal size between the objects.

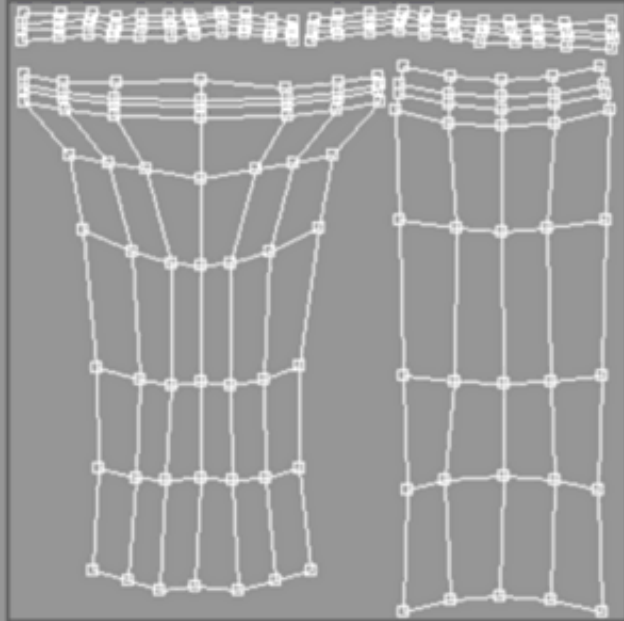
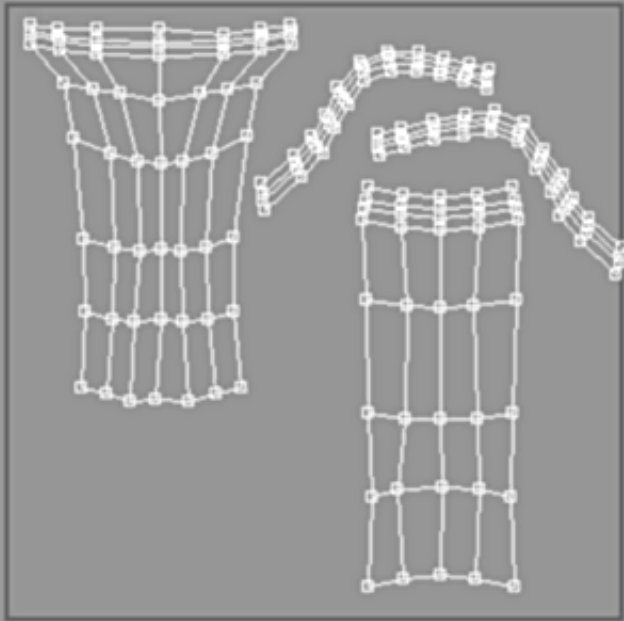
Note that the UV of the ankle was turned 90° so as not to waste space.



The loincloth receives ID 5 and the Checker pattern.



Apply a cylindrical mapping with a rotation of 90°.  
On right-hand side the crude UVs.



Detach several pieces of the UV and adjust them so as to use the maximum surface on the UV board.

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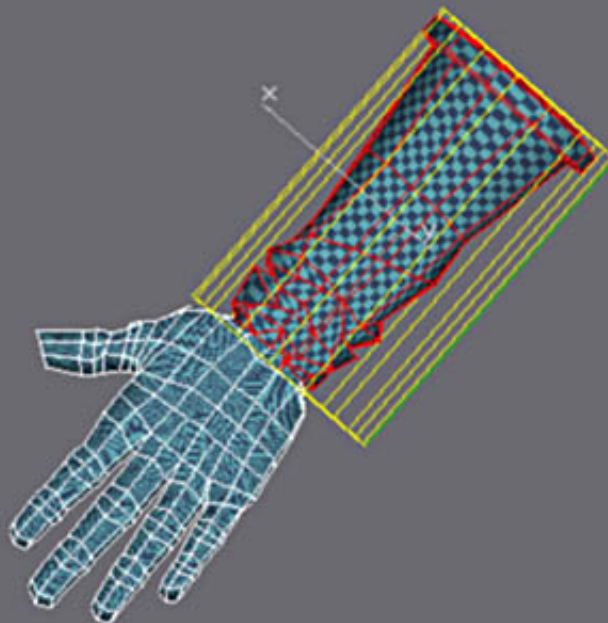
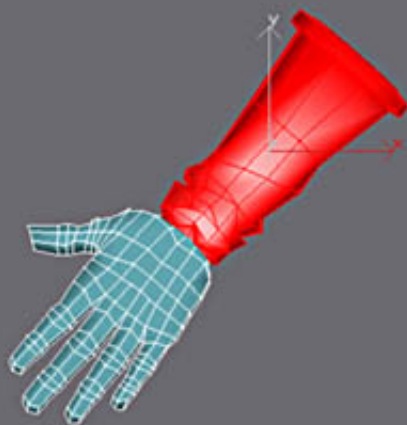
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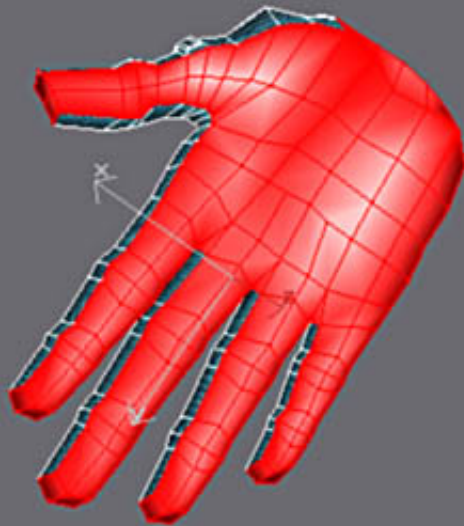
### Mapping of Clothing



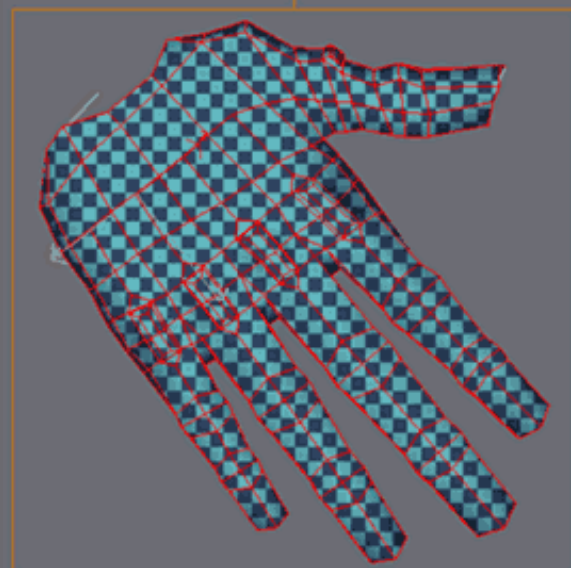
The glove with ID 7 and the Checker pattern.



This form being complex we need to use 3 maps.  
A cylindrical map for the sleeve.

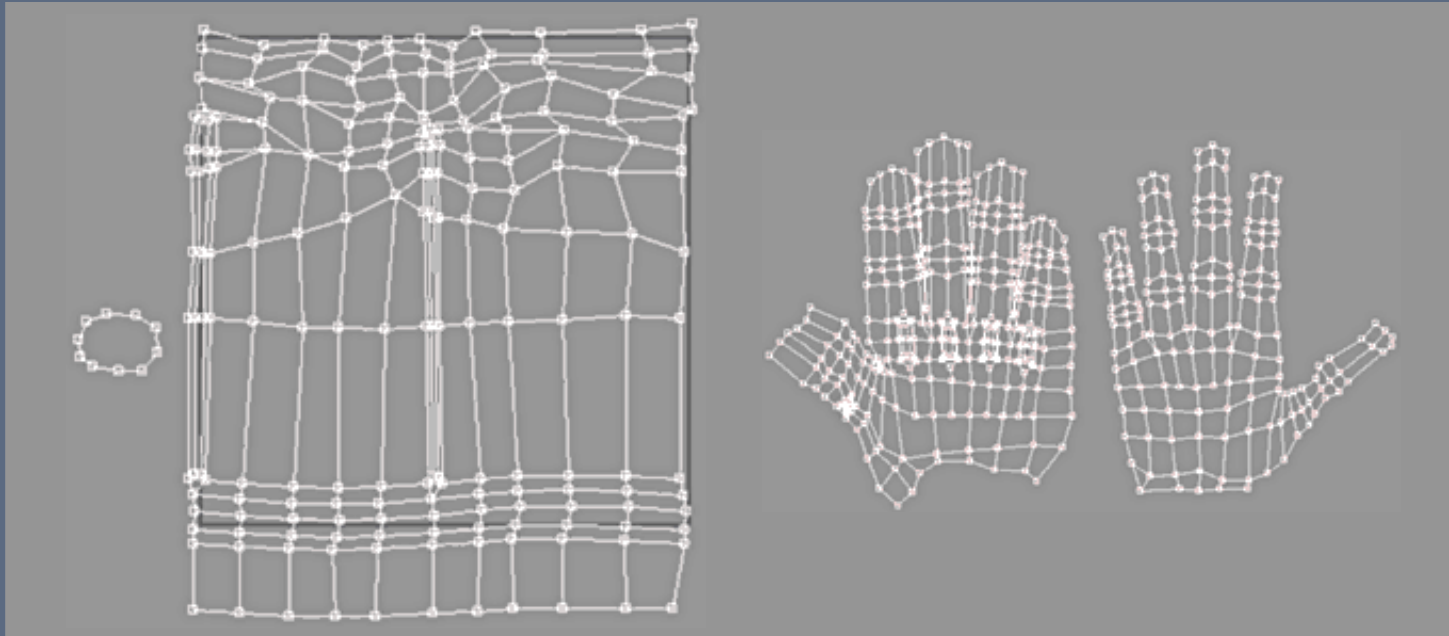
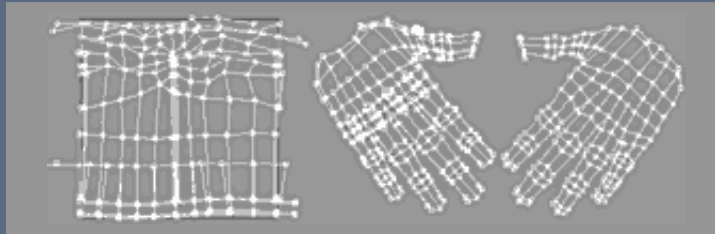


A planar map for the palm of the glove.



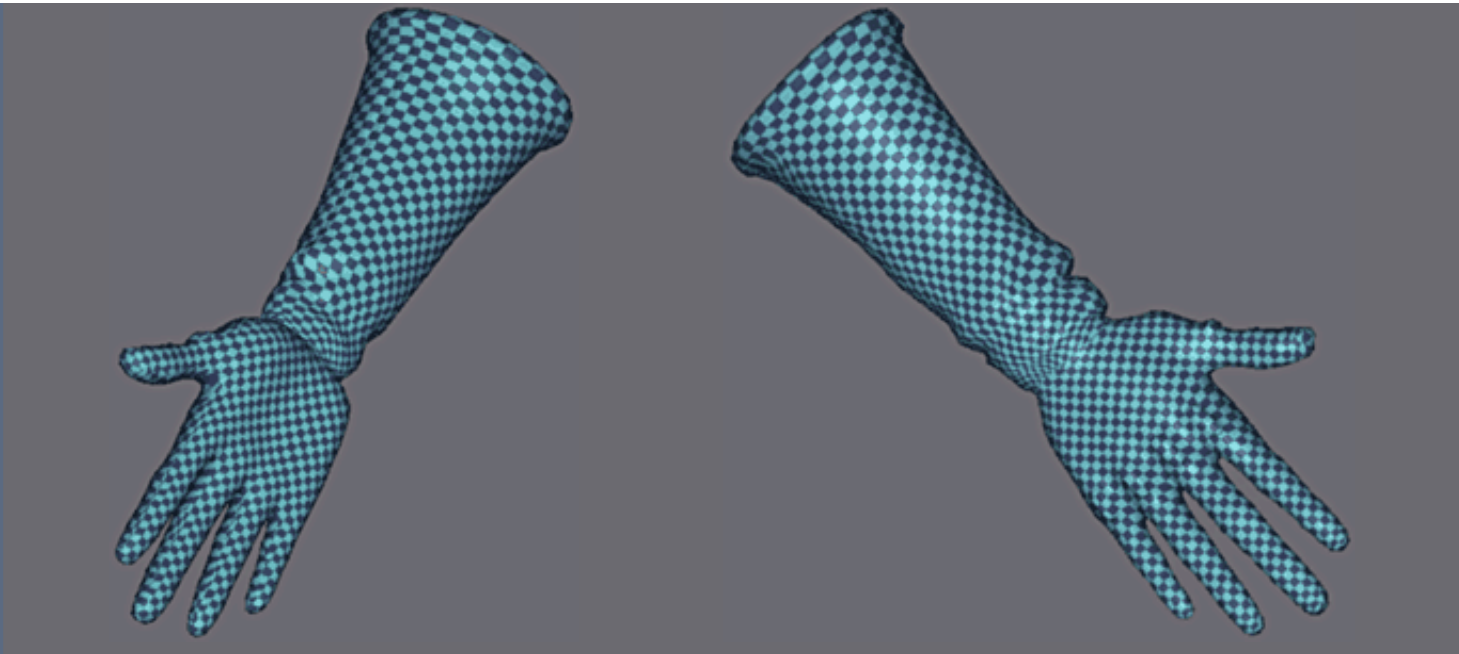
And another planar map for the back of the glove.

In the UV Editor, separate the sets from the UV.



Finally adjust as before to clean up any problems.












The smoothed glove.

It should be noted that the texture between the fingers is always stretched a little because of the small area between the UV of the fingers.

What remains in any event not very visible.

	ID	Name	Sub-Material	On/Off
	1	default	11 - Default ( Standard )	<input checked="" type="checkbox"/>
	2	boucle	damier ( Standard )	<input checked="" type="checkbox"/>
	3	jupe	damier ( Standard )	<input checked="" type="checkbox"/>
	4	ceinture	damier ( Standard )	<input checked="" type="checkbox"/>
	5	vetement	damier ( Standard )	<input checked="" type="checkbox"/>
	6	pagne	damier ( Standard )	<input checked="" type="checkbox"/>
	7	gant	damier ( Standard )	<input checked="" type="checkbox"/>

Checker ID 8, 9 and 10 are not being used, we can erase them with the Delete button.



3D Total Homepage

Joan of Arc  
by  
Michel Roger

3ds Max



*Armour map*

## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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### Mapping of the Armours

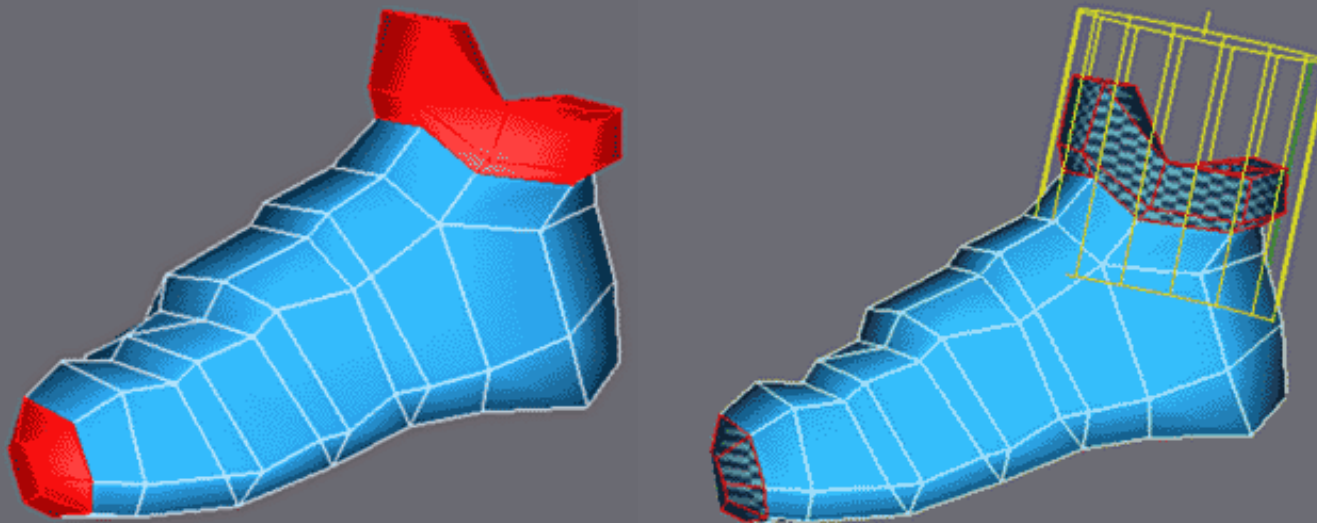
Let us now look at the parts of armor.

Here we will use 2 materials, a material for metal and another for the gilded metal parts as on the design.

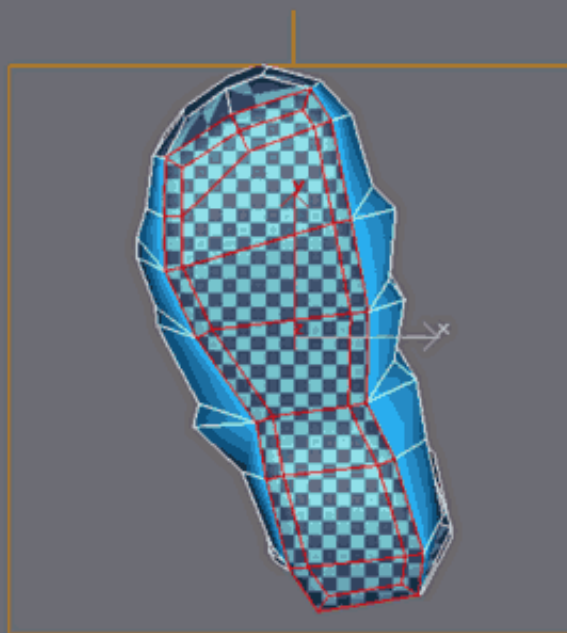
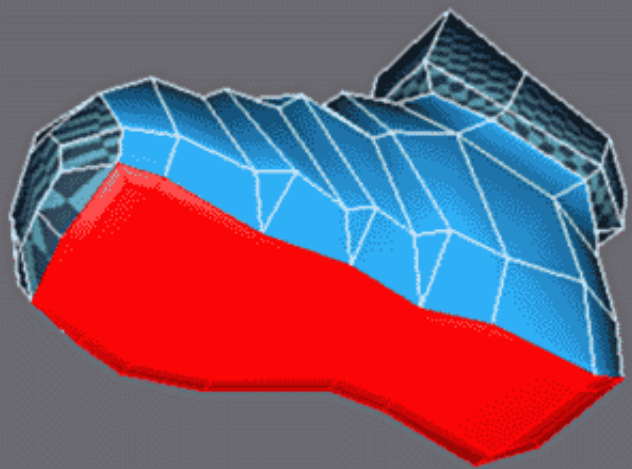


Create a Multi-Sub/Object material again with 3 Sub-Materials as shown.

Always copy the same checker material.

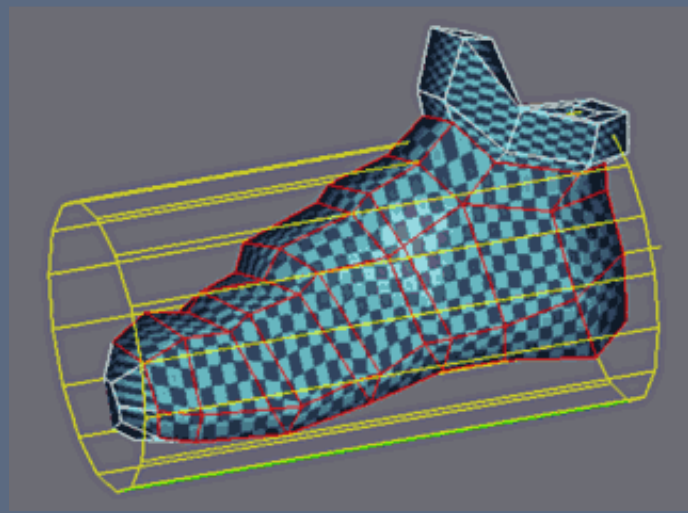


Select the faces that will receive the gilded metal.  
Map the Cuff and the Toe Cap with a Cylindrical Map {ID 3} centered on the ankle.

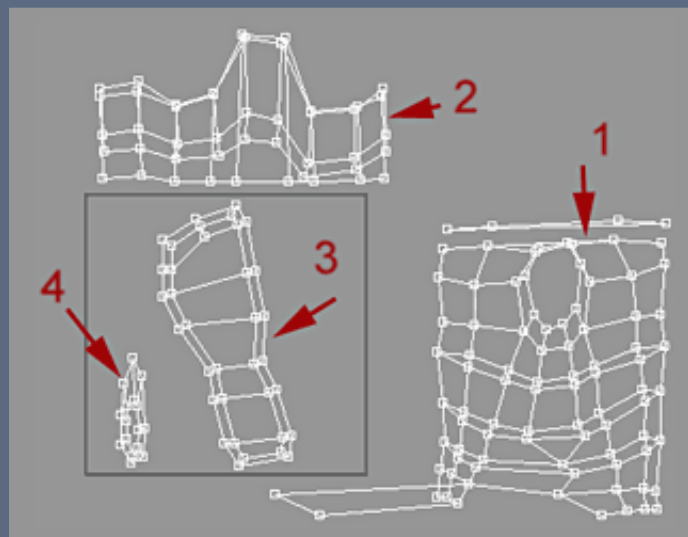


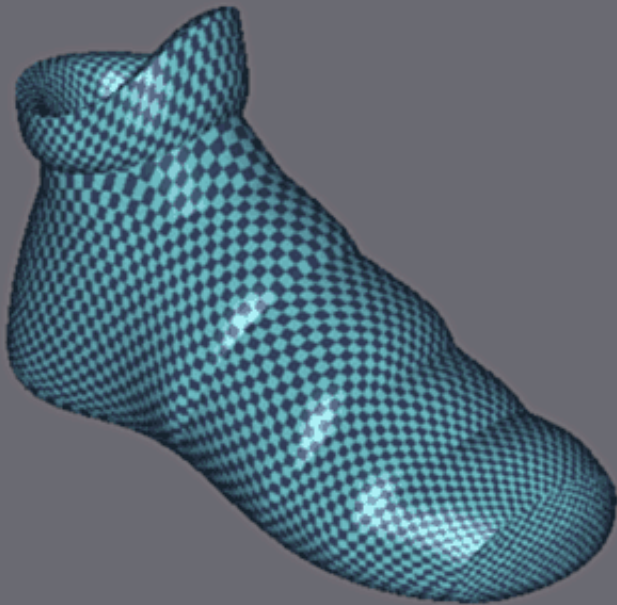
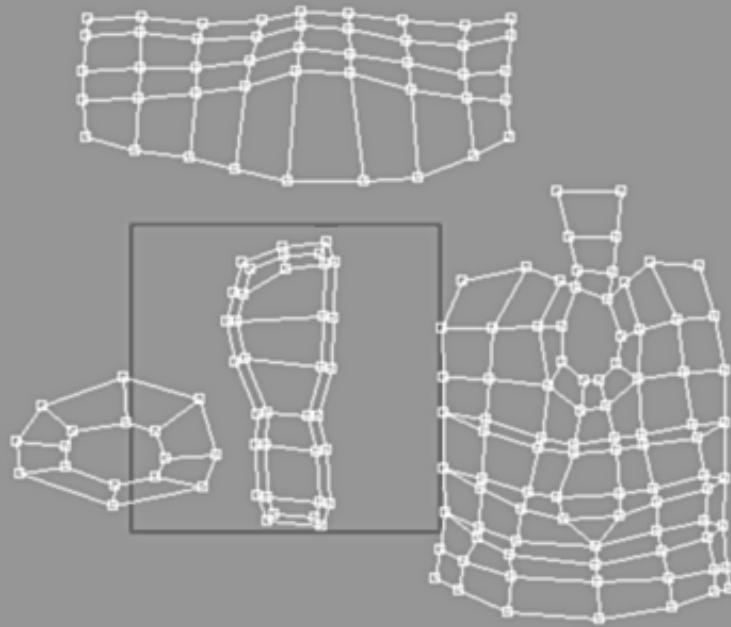
The Soul of the Boot receives the Planer Map ID 2.

Finally the remainder receives the ID 1 and a Cylindrical Map with the seam directed downwards.



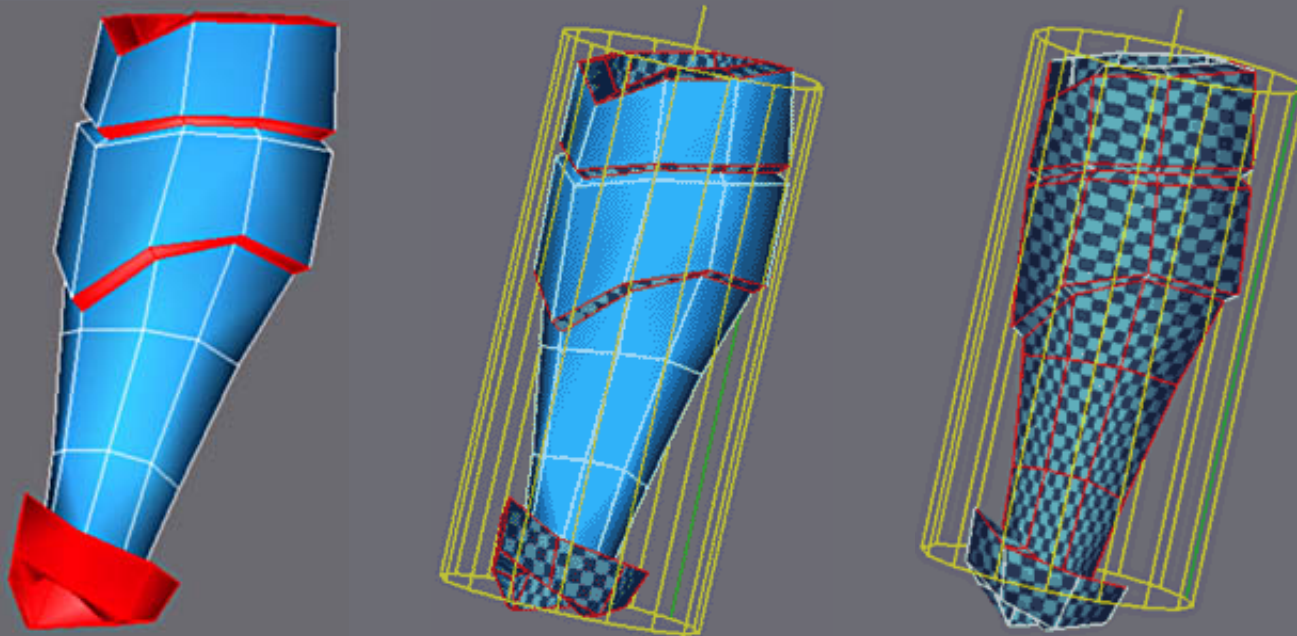
Aspect of the board of UV once the sets are separated.  
ID 1 the Boot.  
ID 2 the Cuff, ID 3 the Soul and 4 the Toe.



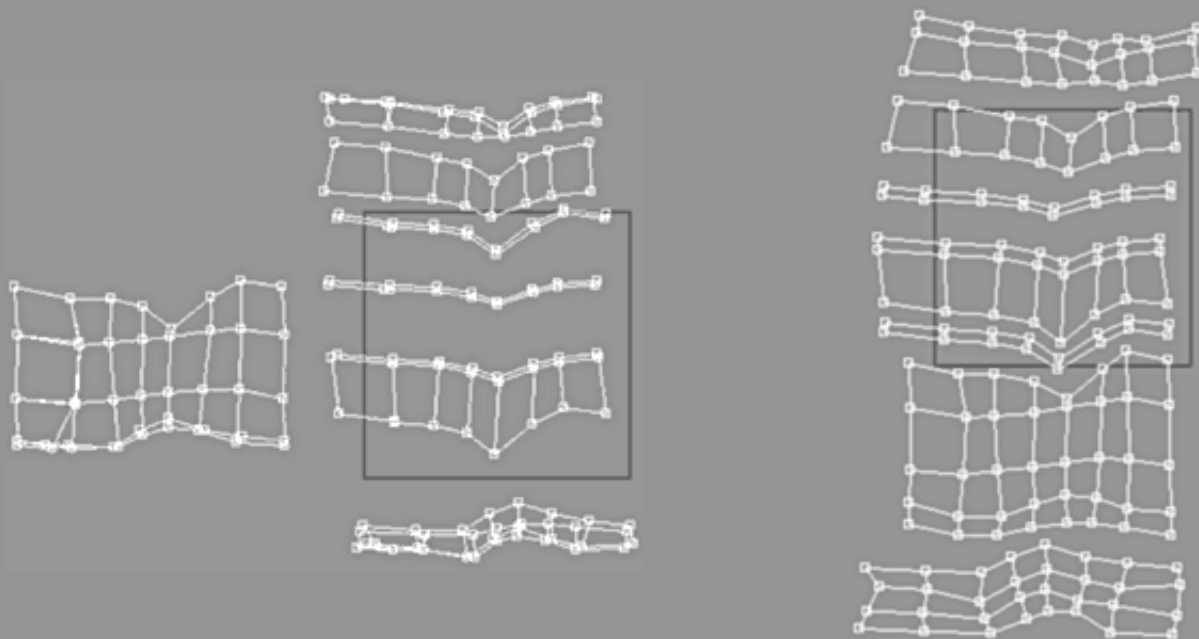


Make adjustments to eliminate any distortions.

Here we don't make a base texture, we will do it at the end once we have all the textured parts of armor.



The Leg Protection on the left receives ID 3, the remainder ID 2.  
with Cylindrical Mapping for each.

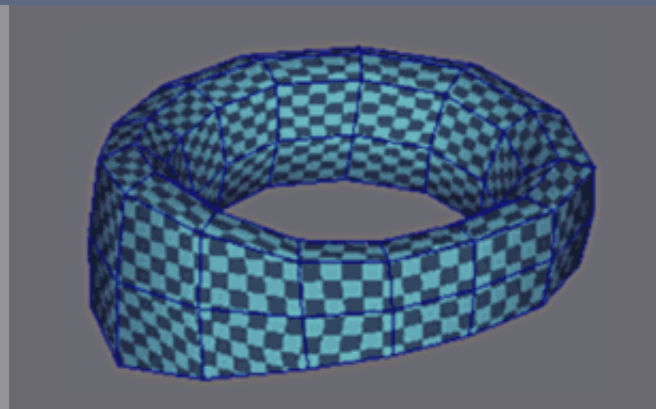
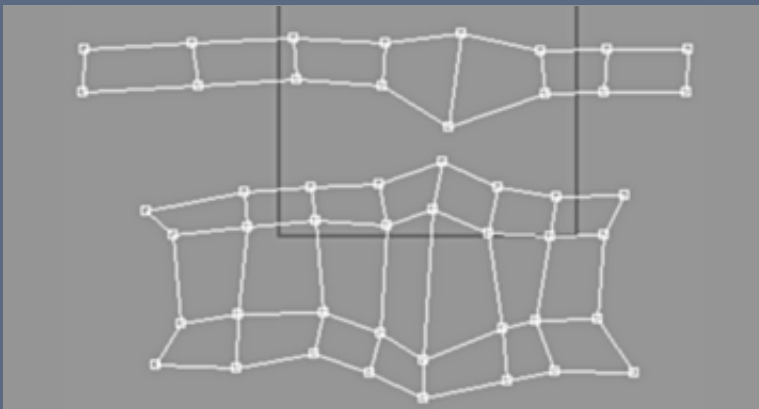
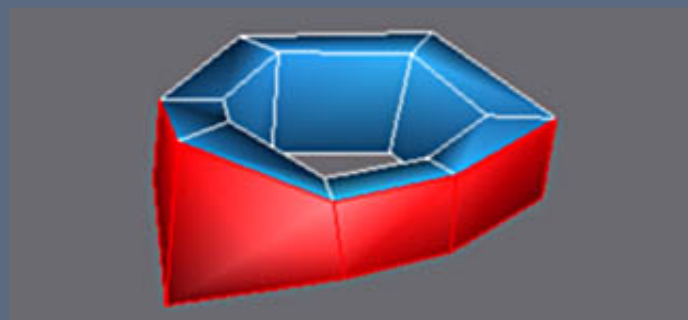
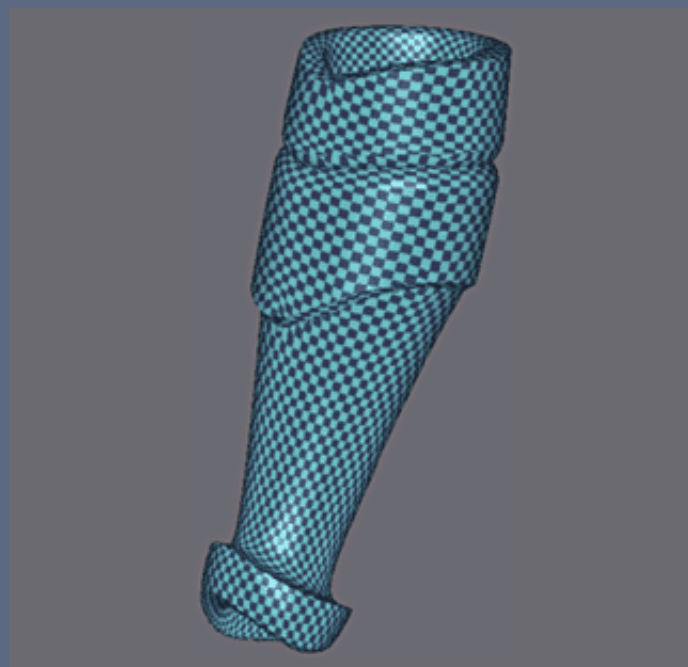




On top left the rough base, on the top right the UVs corrected and at the right dimensions as sighted in the viewport.

Here we separate the UVs, avoid having to worry about the texture in Photoshop, take care not to paint between the various materials and colors.

Select the Knee Protection as shown in red, Apply ID 2. We will apply ID 3 the remainder. Apply a Cylindrical Map to each ID.



The base UV adjusted and the result in the viewport.

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## 3D Studio Max

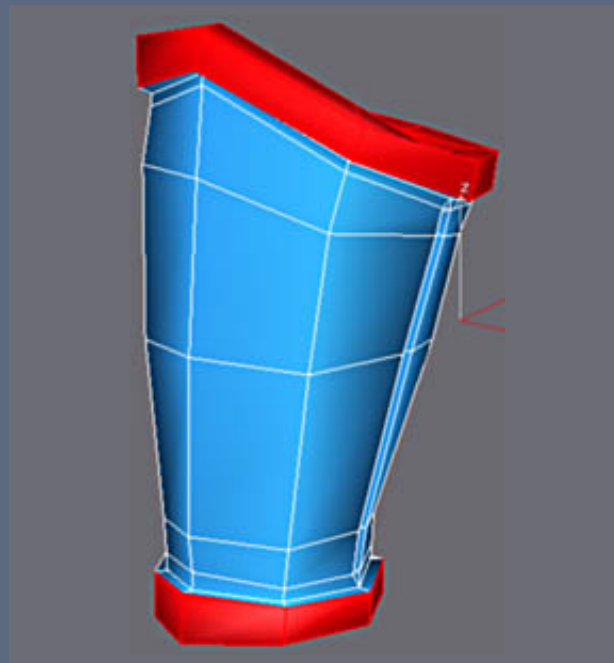
### Modeling Joan of Arc by Michel Roger

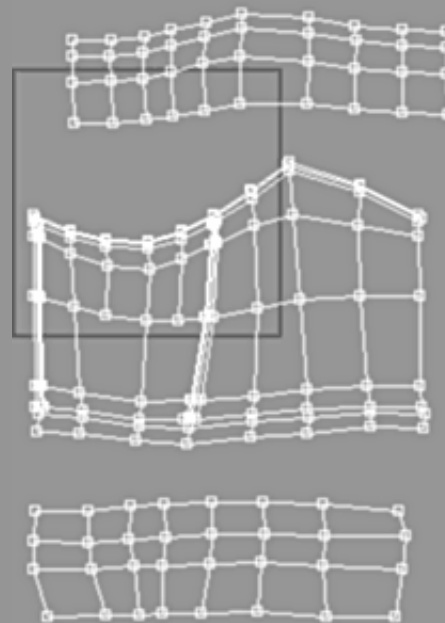
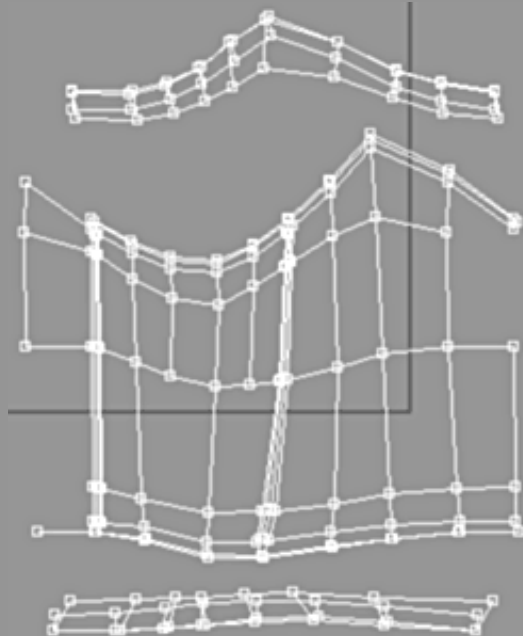
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### Mapping of the Armours

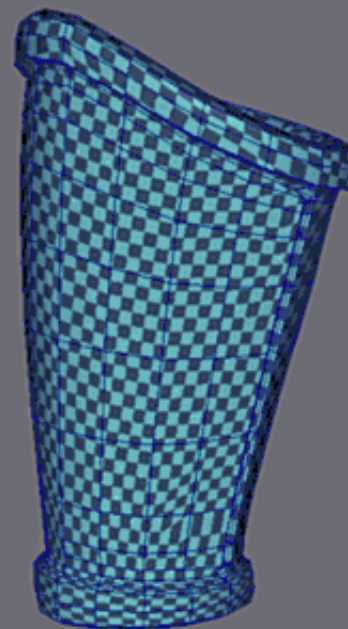
Now for the thigh armor.

The red part will be ID 3 and the remainder will be ID 2.





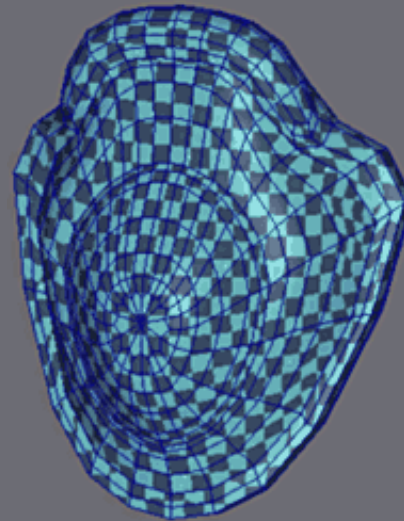
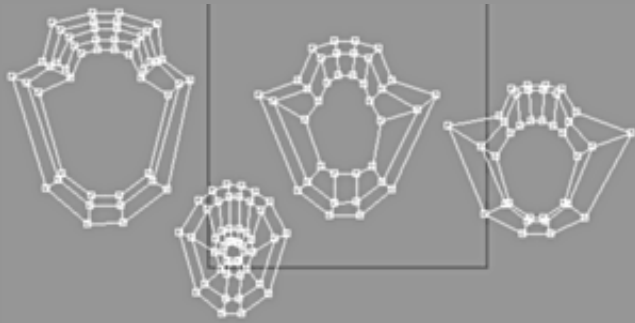
With the UVs corrected the result is in the viewport with smoothing.





The knee protection with the red ID 3 and the remainder in ID 2.

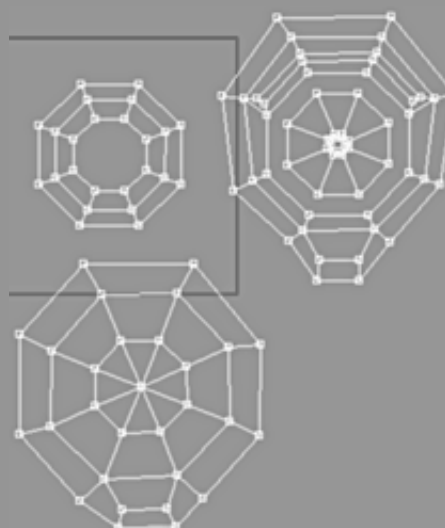
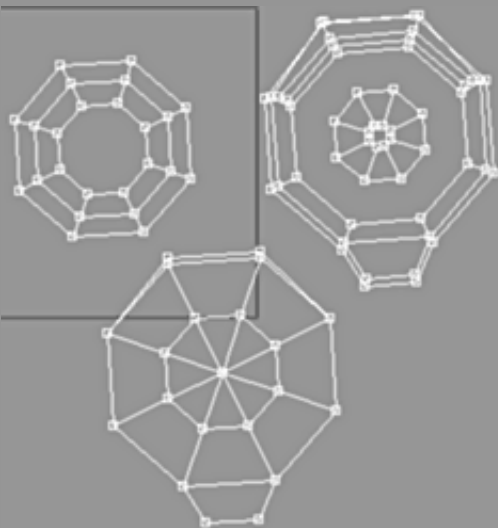
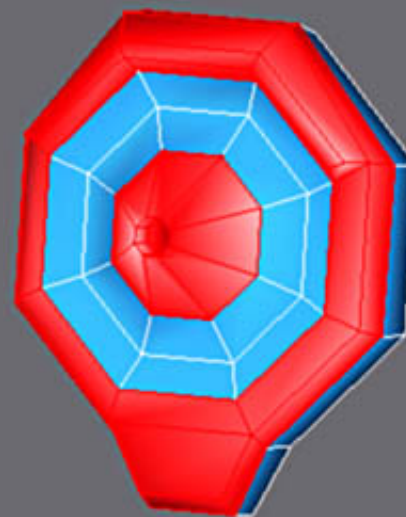
For materials, a planar map for each one.



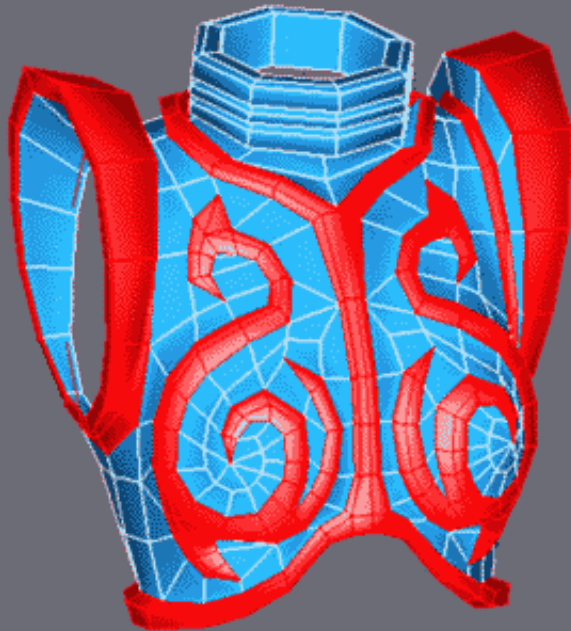
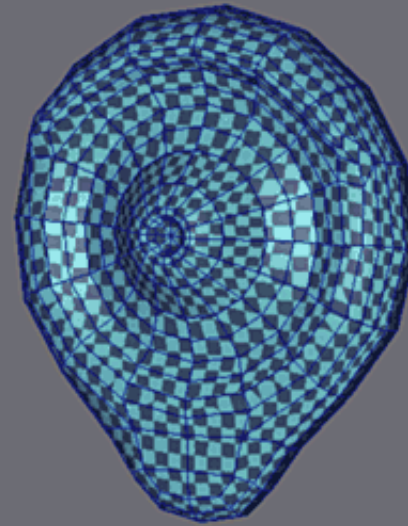
The UV adjusted and smoothed object.

Side protection with the ID 3 in red and the remainder in ID 2.

There are two planar maps.

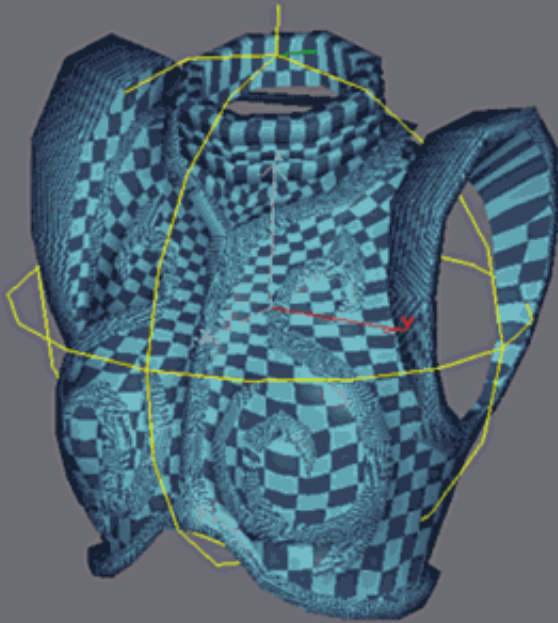


To the top left UVs as crude parts and on the top right after adjustments.  
To the right with the part smoothed.

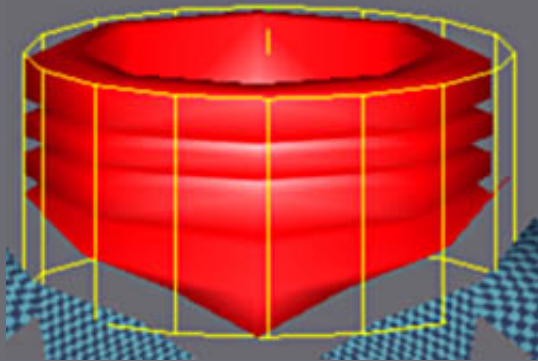


The large piece of the bust armor.  
To the red faces apply ID 3 and the remainder ID 2.

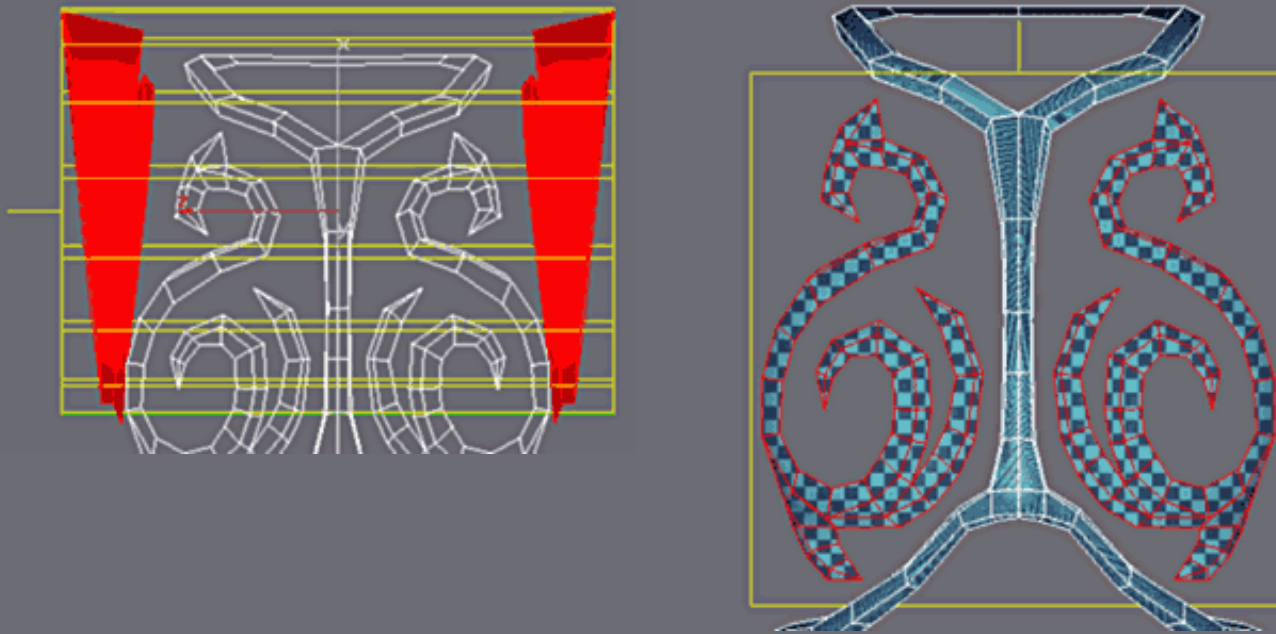




Select the faces with the ID 2 (select by ID) and apply a Spherical Map.  
The use of such mapping seems curious but it is this type of mapping that will give us fewer final adjustments.



For the neck, use a Cylindrical Map.  
(It is far more effective on this part).



Hide the faces with ID 2.

The left picture shows, the faces of Shoulder Protection selected. Apply a Cylindrical Map to this selection with the seam facing down.

For the decoration on the chest, apply a Planer Map.

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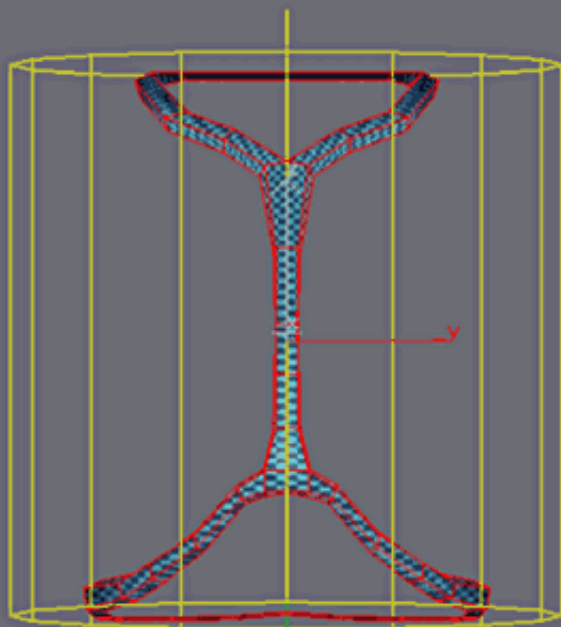
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## 3D Studio Max

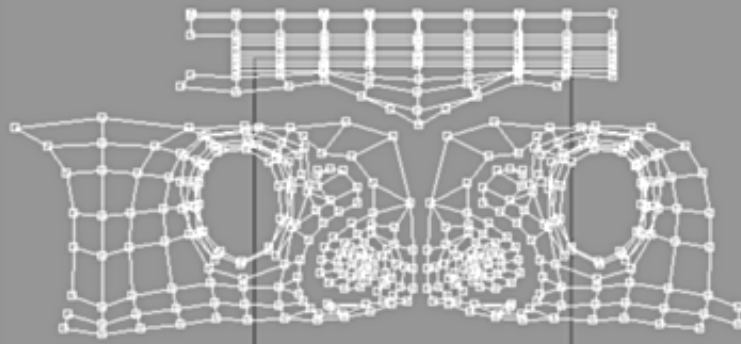
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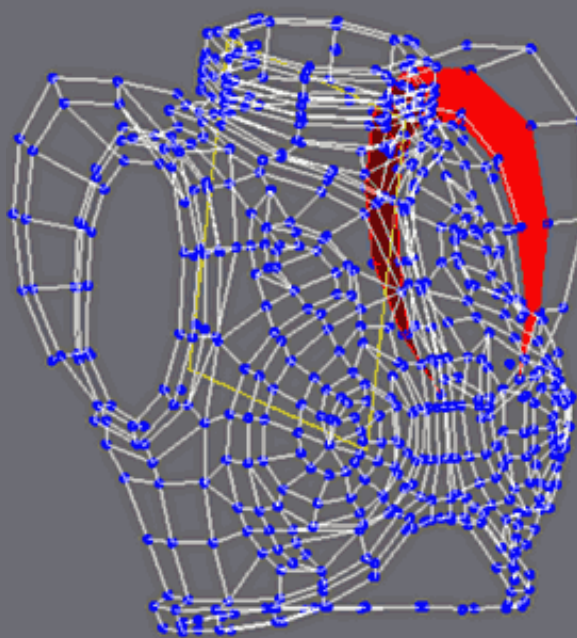
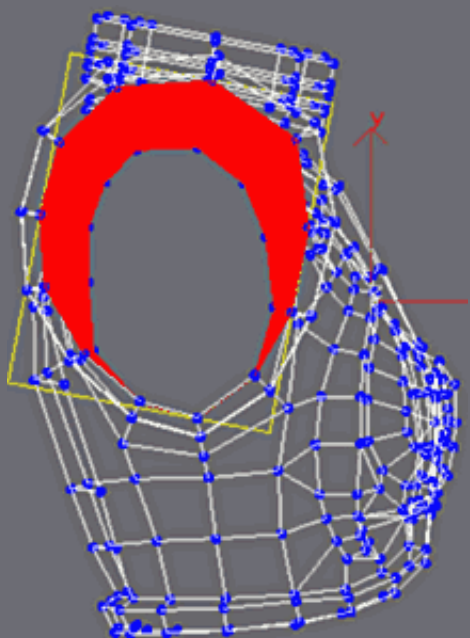
### Mapping of the Armours



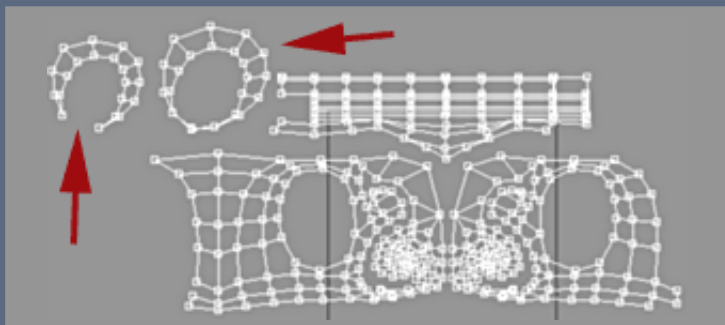
For the remains, a Cylinder Map will do nicely.  
Make the appropriate adjustments to all the faces.



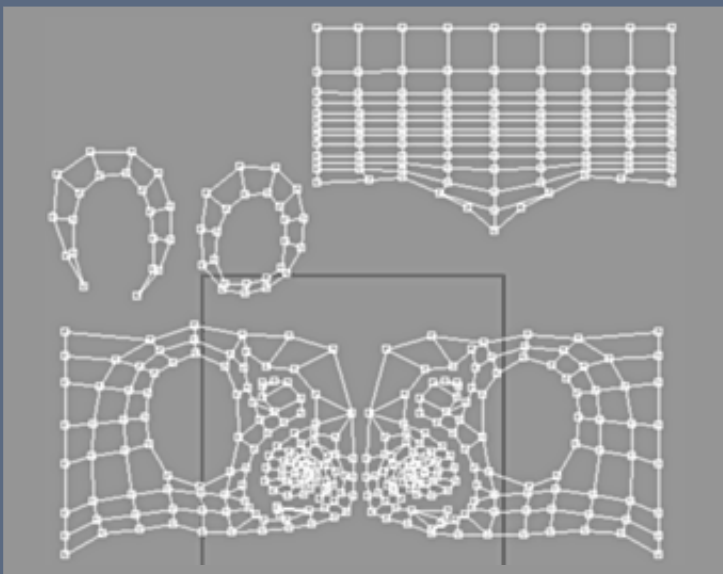
In the UV Editor, Use Face Select mode and show ID 2 only then apply a UVW Unwrap.



Select the faces of the dimensions shown above and apply a Planar Map.

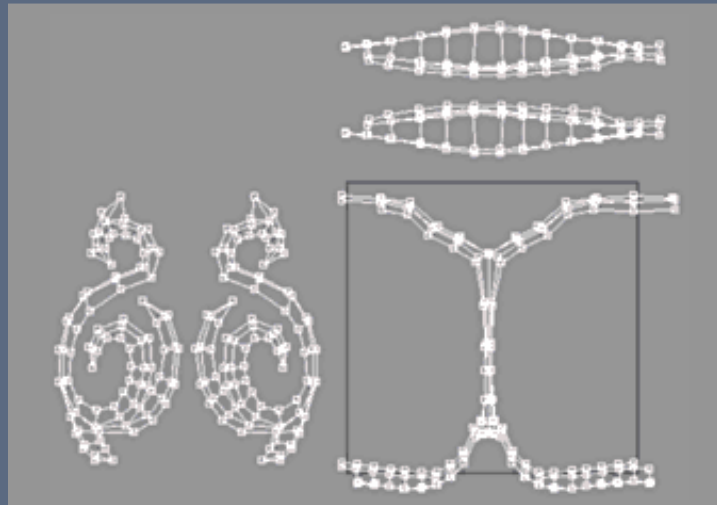


In the UV Editor move and adjust the new UV sets.

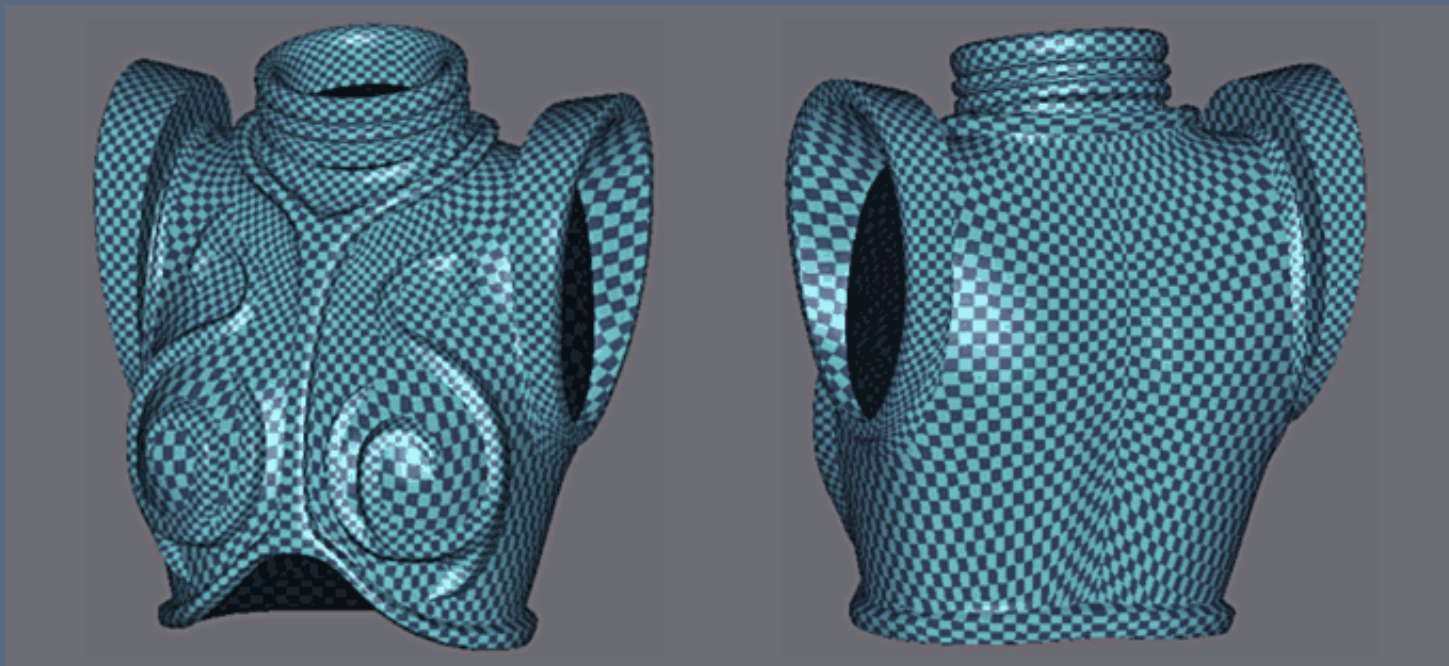
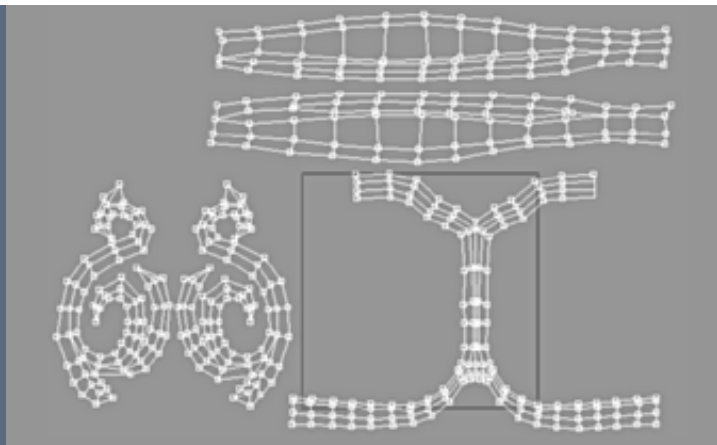


Here we see the UVs adjusted for ID 2.

And now ID 3.

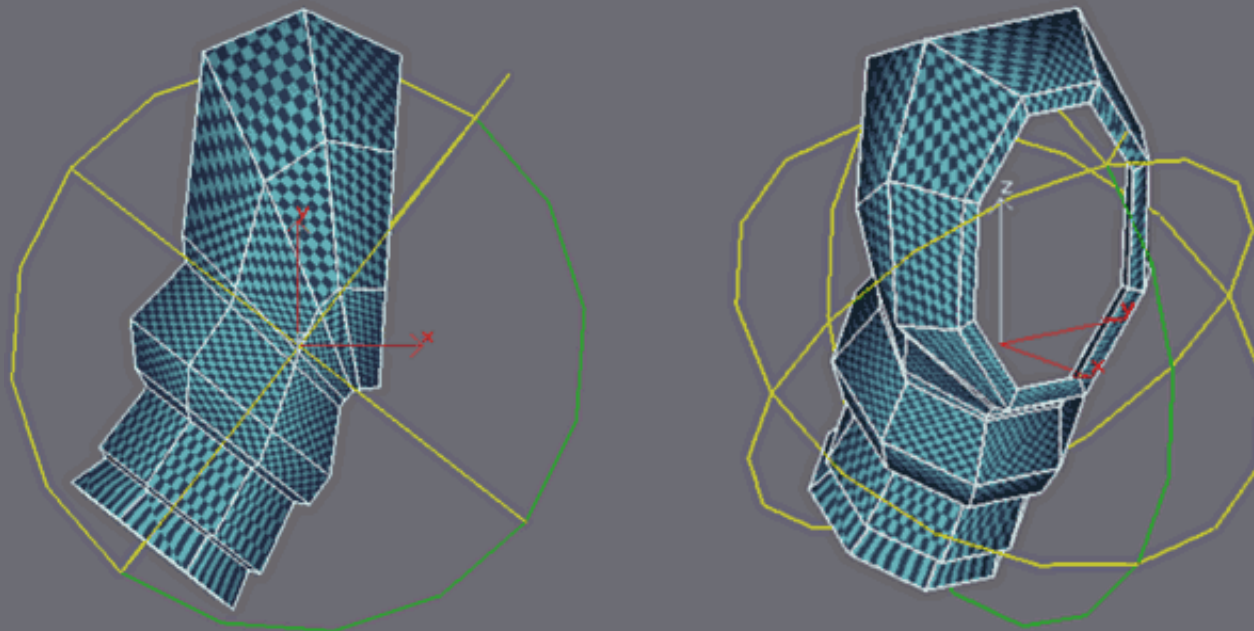


Move and adjust as before.

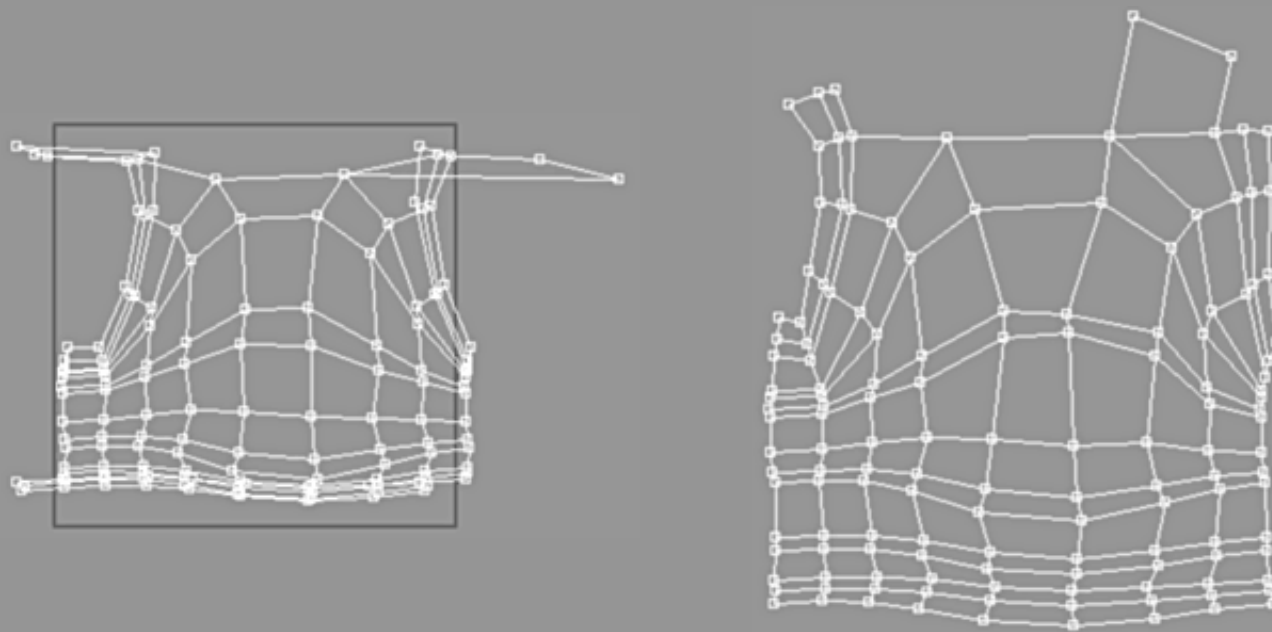


The Bust Armor smoothed with the finished UVs .



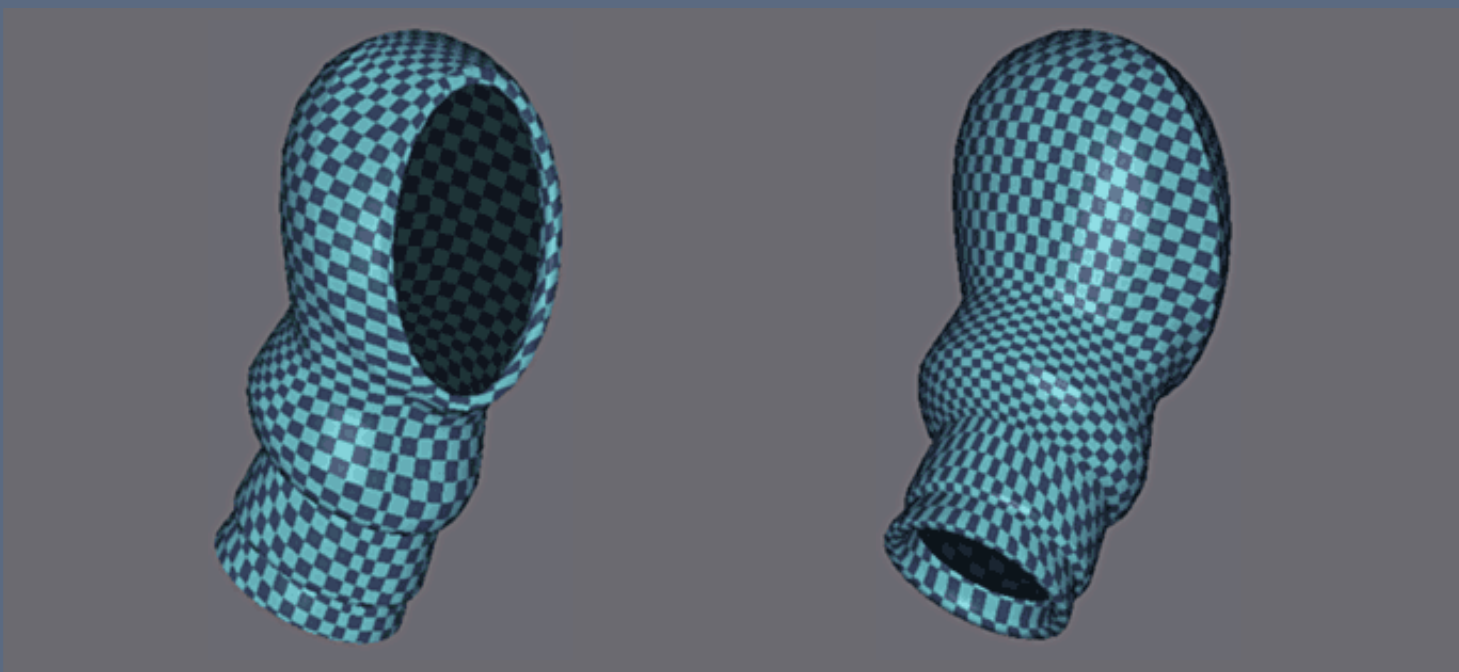


For the Shoulder Armor, We use a Spherical Mapping as it suits this part better than Cylindrical.



UVs before adjustments and after the final improvements.





The piece smoothed and with the adjusted mapping.

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Email: Michel Roger --- Web: mr2k.3dvf.com

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Joan of Arc  
by  
Michel Roger

3ds Max



*Body map*

3D Studio Max

Modeling Joan of Arc by Michel Roger



Email: Michel Roger --- Web: mr2k.3dvf.com

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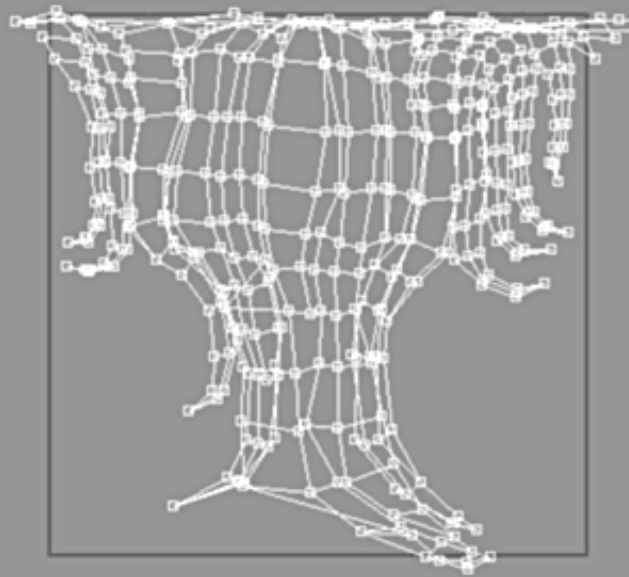
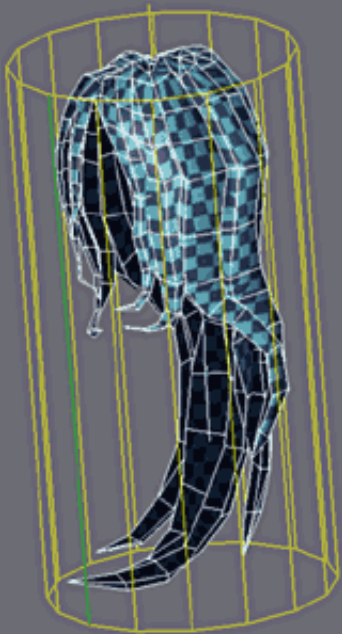
Mapping of the Body

Here we hide the body leaving only the head, a little of the neck and the hair.  
Create a Material with 3 Sub-Materials as shown.

	ID	Name	Sub-Material	On/Off
	1	default	armures ( Standard )	<input checked="" type="checkbox"/>
	2	tete	damier ( Standard )	<input checked="" type="checkbox"/>
	3	cheveux	damier ( Standard )	<input checked="" type="checkbox"/>

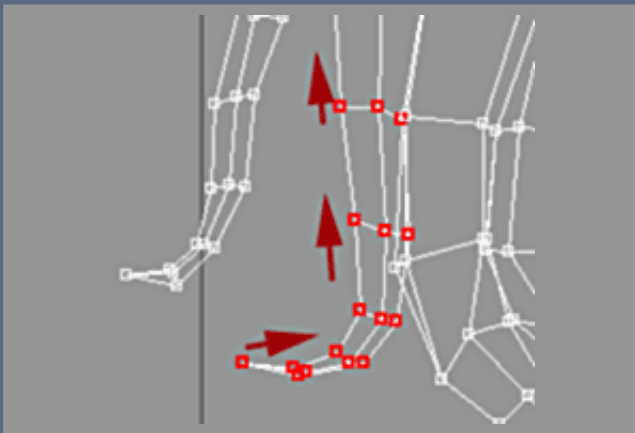


Let us start with the hair as ID 3.



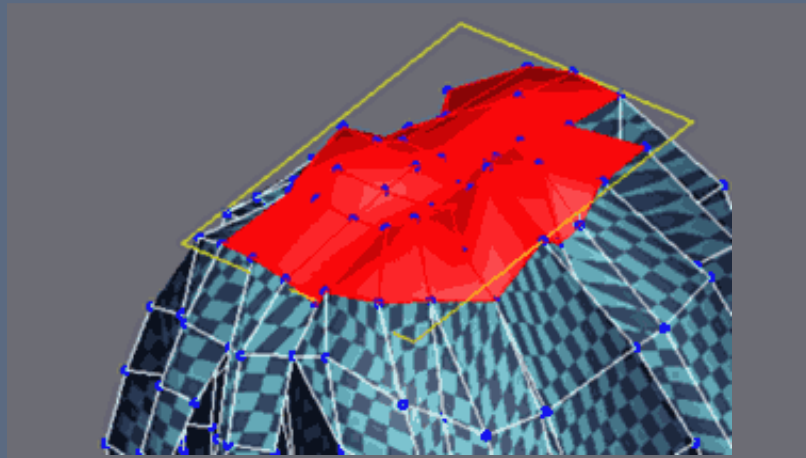
A cylindrical mapping with the seam in the front. On the right-hand side the UV mesh.

Note that at the top of the UV it is completely stretched out and not easy to adjust.

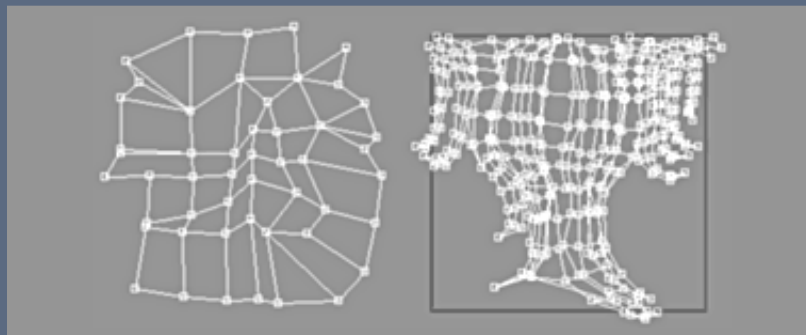


Start to adjust the mesh by moving it from the remainder of UV with the Expand Selection function from the base point.

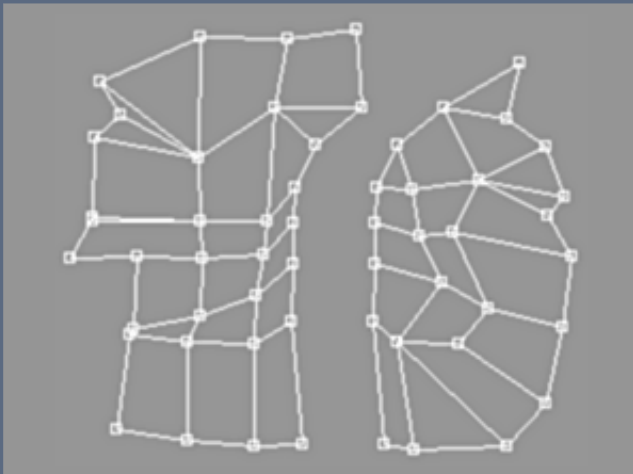
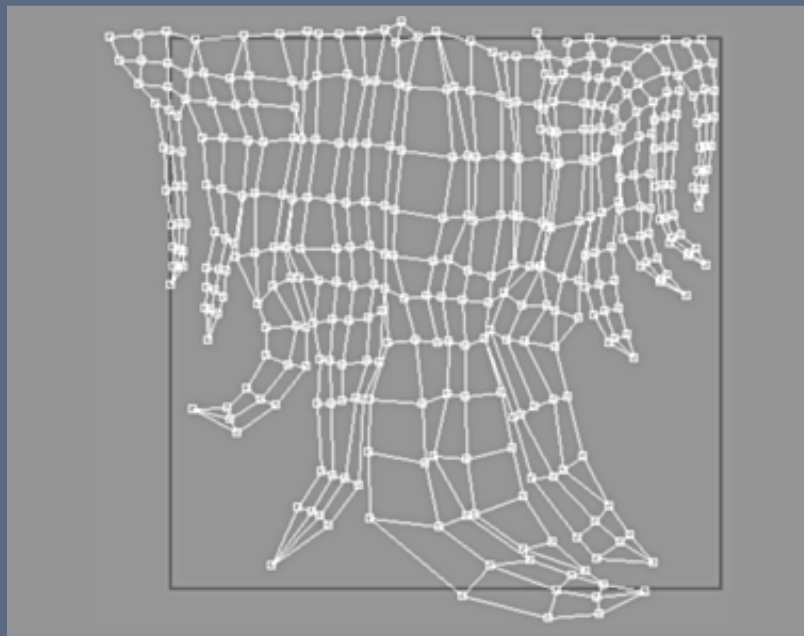
Select the faces of the Scalp and apply a Planer Map.



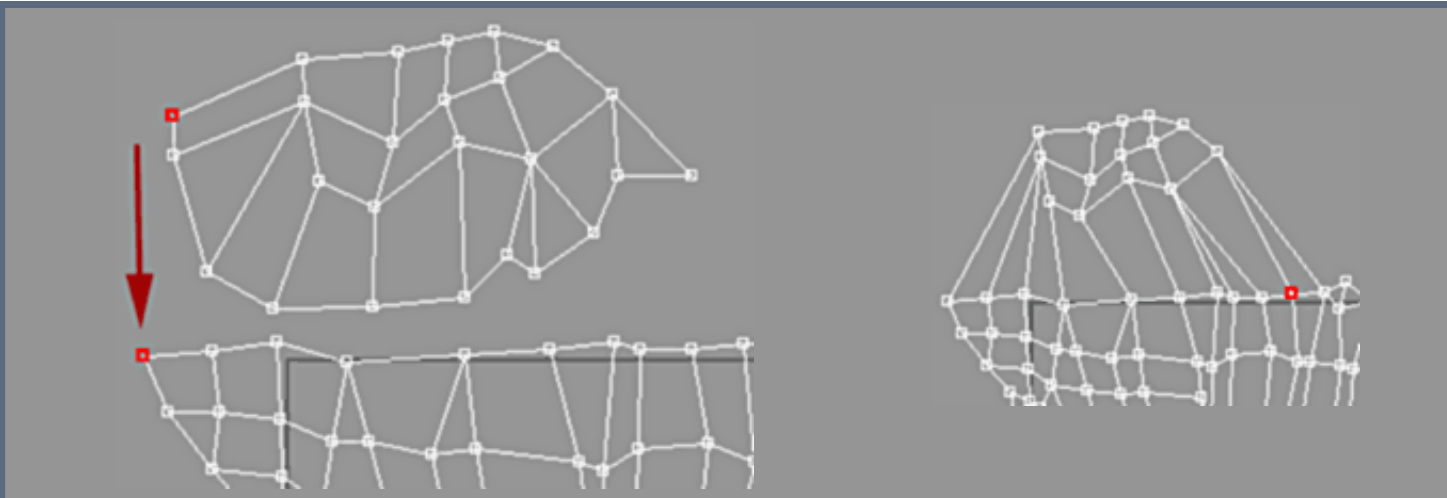
Move the new set of UVs and scale them up to a Large size. We will be knitting the Scalp to the rest of the hair later.



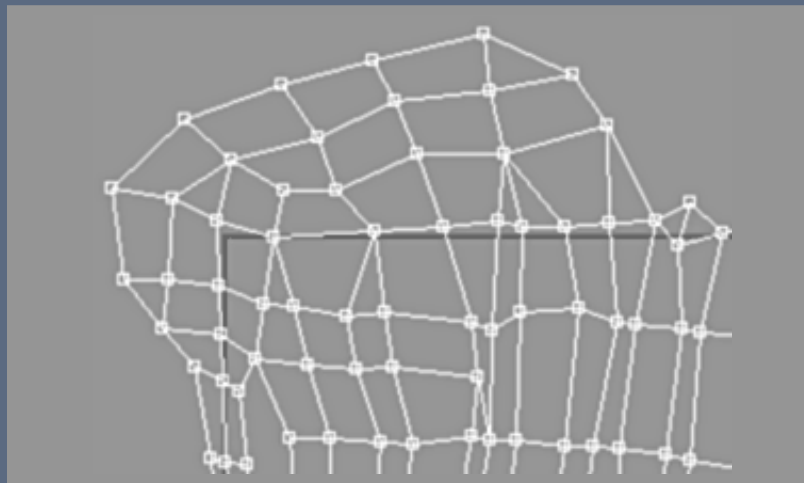
Now adjust the remainder of the hair.



Separate the Scalp UV into 2 parts, use the dividing line from the center of the hair.



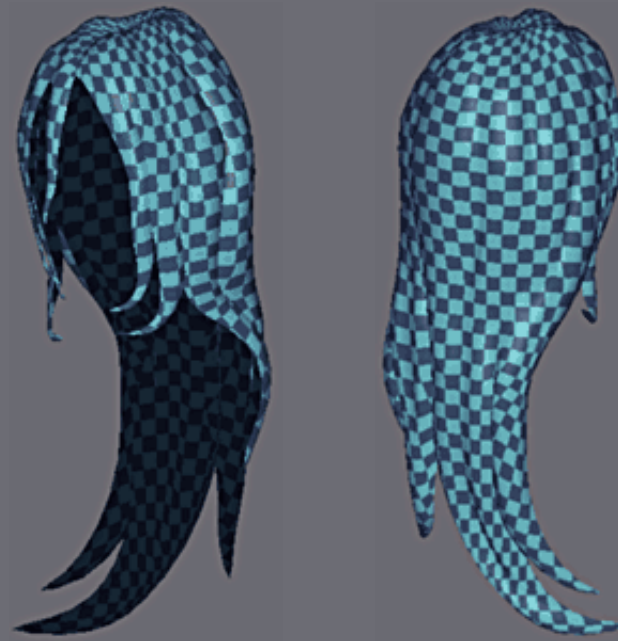
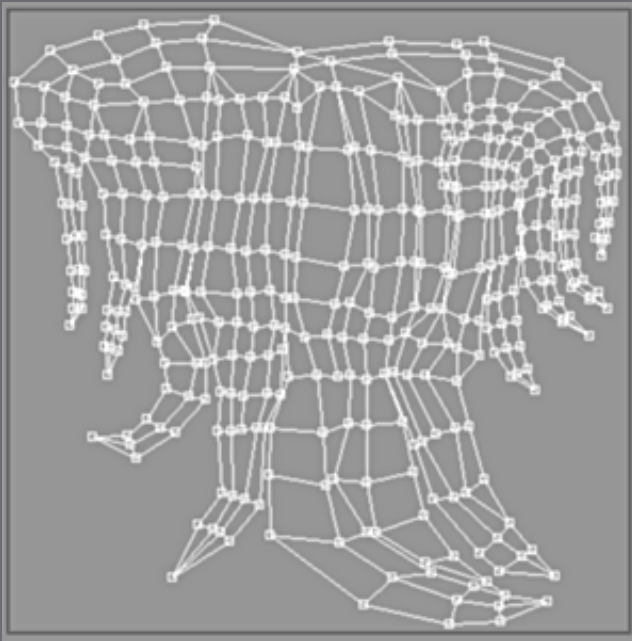
Select the identical points between the 2 sets and then Target Weld the points (in the top right).  
Adjust the remainder of the points correctly.



We do the same again with the other pieces.







The UVs for the Hair are finished and on the right is the object with smoothing.

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## 3D Studio Max

### Modeling Joan of Arc by Michel Roger



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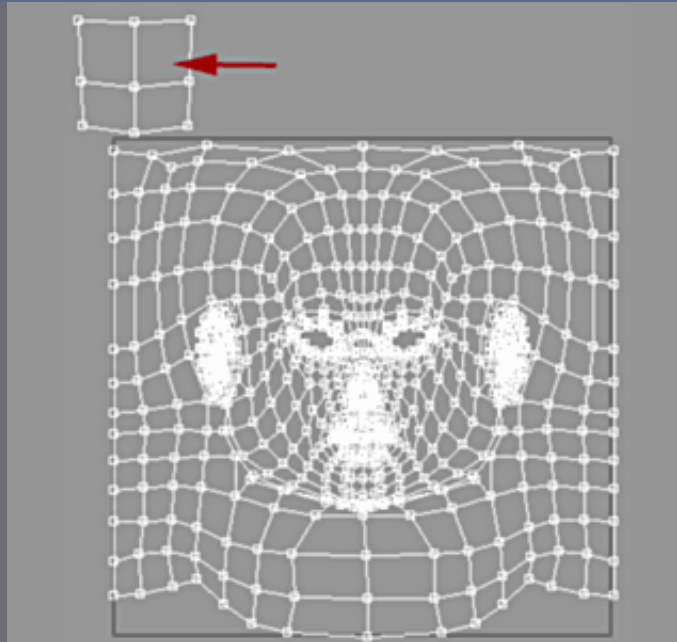
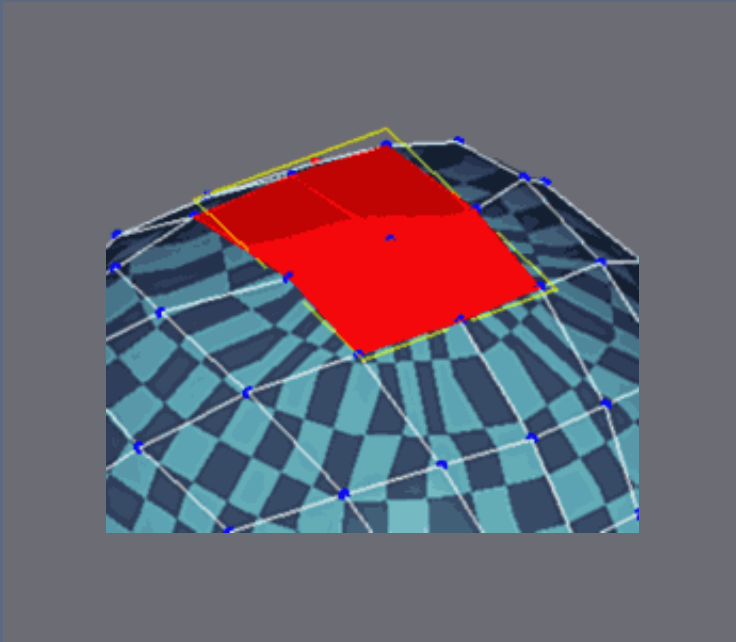
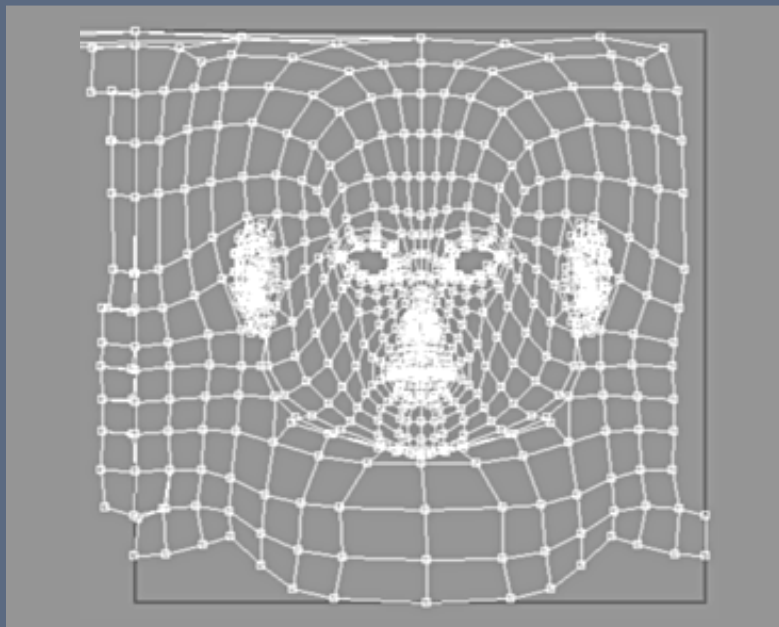
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### Mapping of the Body

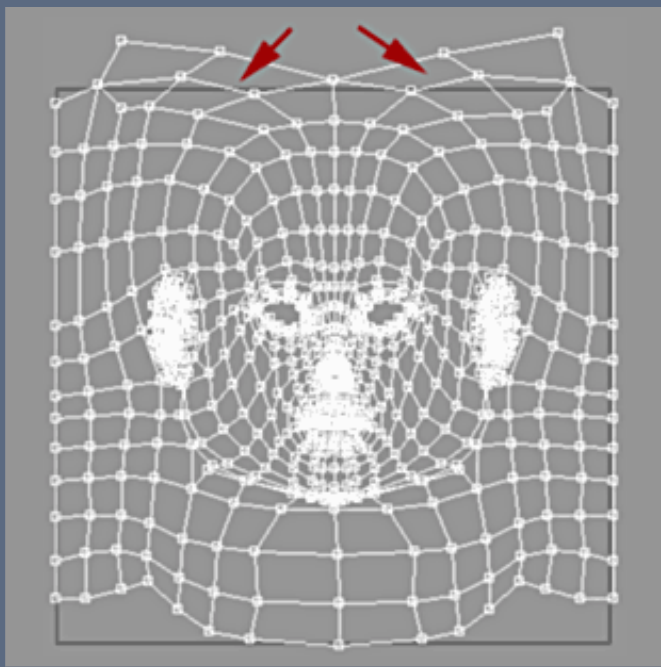
To finish, the head with the ID 2.



A basic cylindrical mapping and UV correspondents.

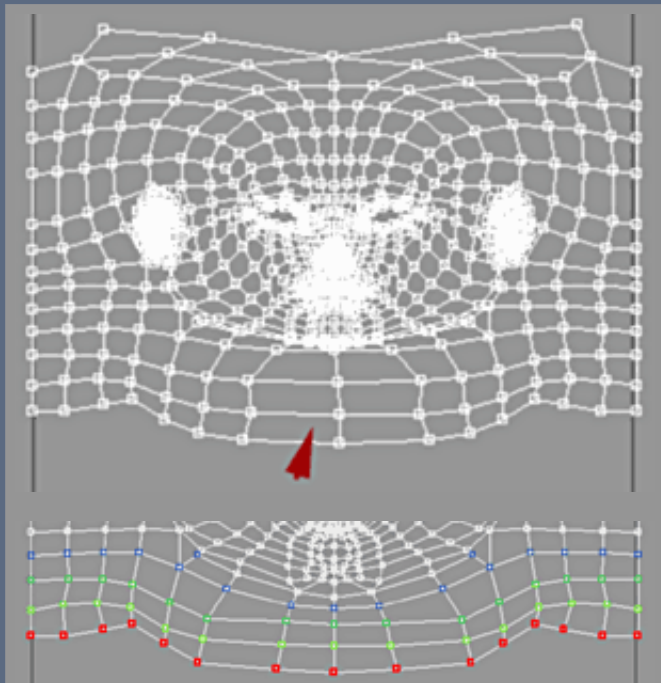


Remappez with a Map Double diffusion in the UVW Unwrap faces with the distorted mapping.  
Separate and put on the scale the new set of UV.



Cross of them two and weld it with the remainder of the UV of the head.

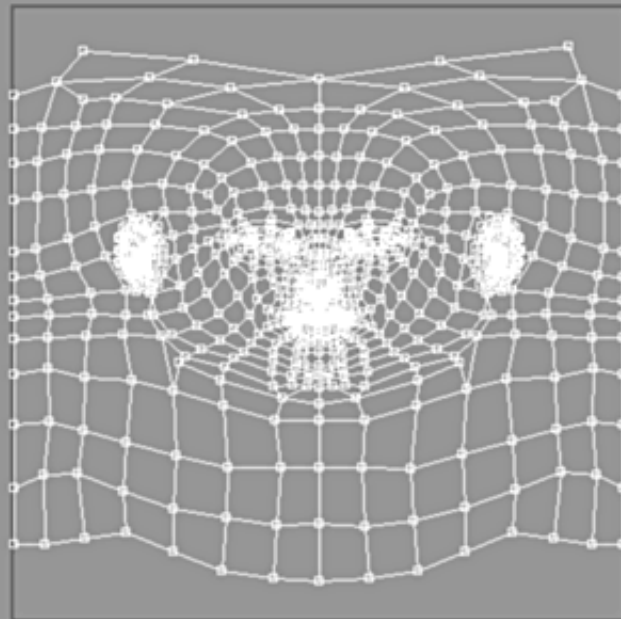
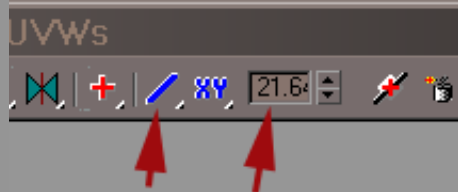
This part will still display distortions but it is under the hair thus that hardly has importance.



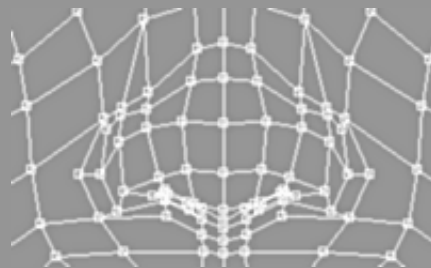
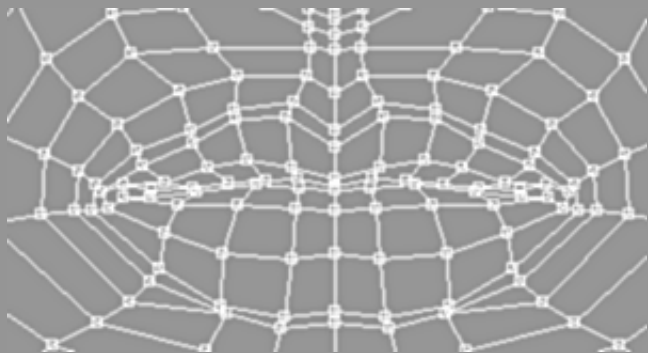
The part of UV under the chin is not well unfolded.

For that select the points of the bottom of the neck and to increase the value of the software selection, the close points change color according to the influence of the selection.

Move to the bottom the points, the unfolding is done carefully and regularly.



Adjust the whole of UV with a scale not vertical uniform.

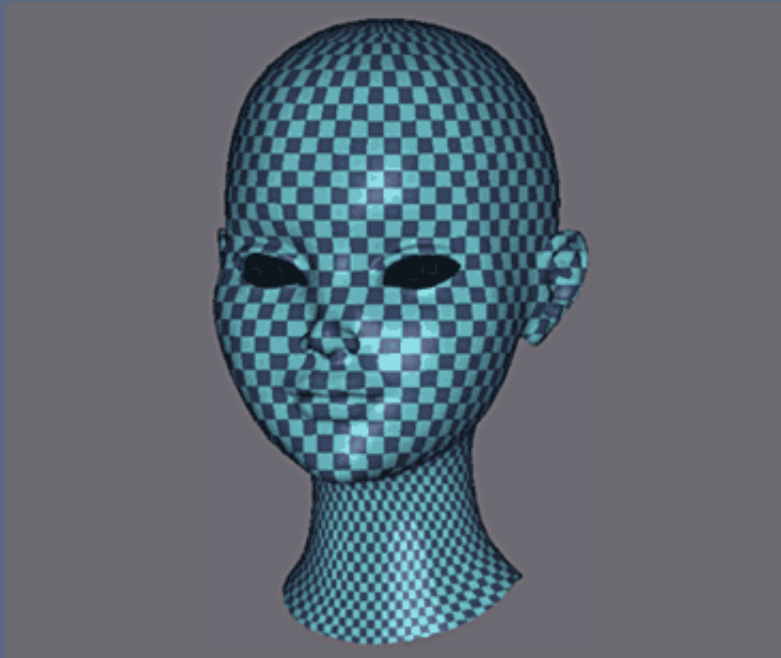


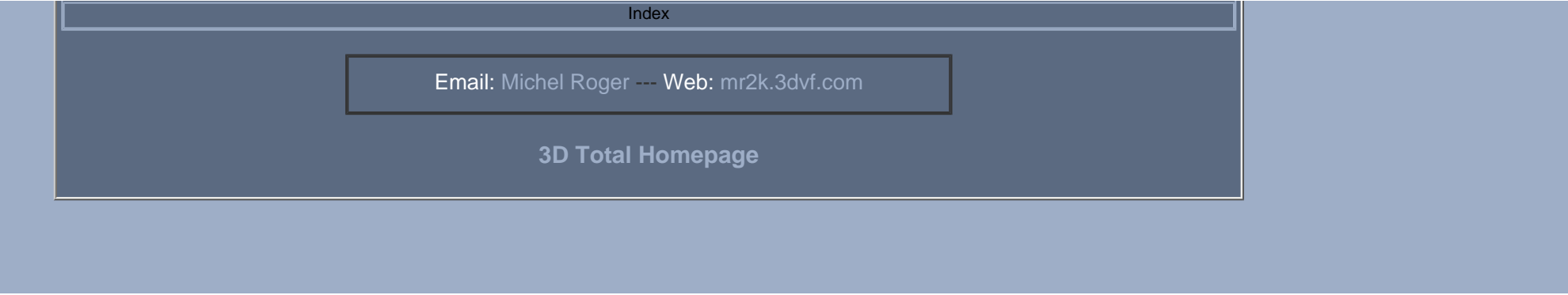


Certain parts of the faces are adjusted more specifically as the mouth, the nose, the eyes, these zones or UV overlap is that it is necessary to unfold.

The ear in this case is just widened, it is hidden partly by the hair and it is not necessary to spend time too much on this part.

The head with the finished mapping.







Joan of Arc  
by  
Michel Roger

3ds Max



*Skin texture*

**3D Studio Max****Joan of Arc****Texture Skin Procedural**

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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A procedural texture is a texture which is calculated at the time of rendering of an image, its principal advantage is that it does not need mapping co-ordinates which cover any surface or form in 3 dimensions.

Its principal disadvantage is that it can have periodic repetition and it especially appears more monotonous than a traditional bitmap texture.

But it remains irreplaceable in the very difficult case such as an ear object polygonal model.

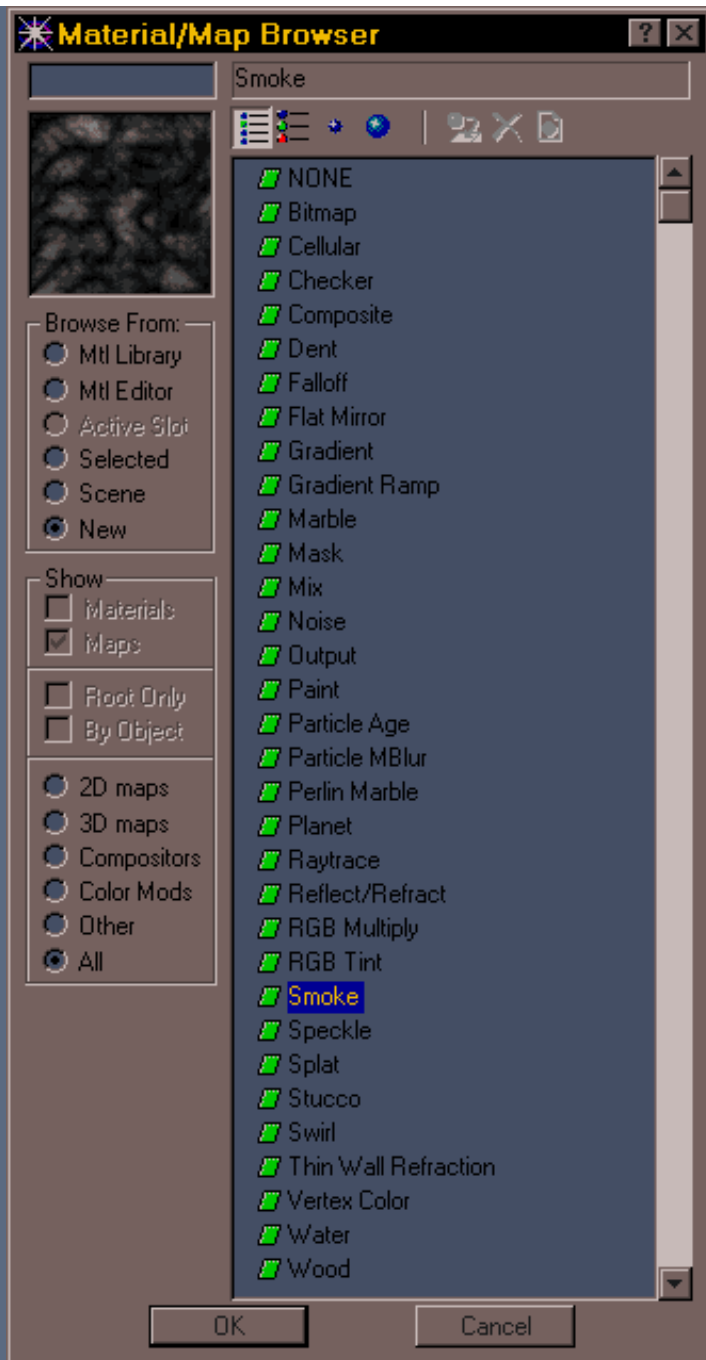
With max (2.5 and 3.0) and its excellent Material Editor we can get so good results...



When I am working on a model, before it is finished, it is pleasant to have a procedural skin texture.

No concern for mapping, just apply the material and it is Practical!

In the Material Editor each texture channel (diffuses, bump, reflection...) can be a different type and standard max 3 offers so much in procedural, effect or bitmap.



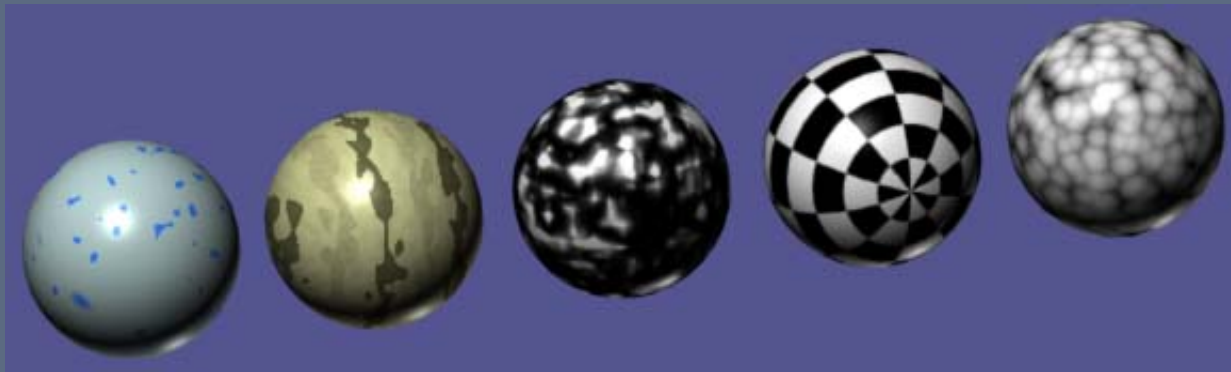
Digimation one of the best creators of plug-ins for max distributes a collection of procedural textures that very interesting supplement the list opposite.

But for the moment we use what we have...

When using procedural textures it is necessary to learn how to use them, also we should not hesitate to test them one by one, by modifying the default settings.

Then we can have fun mixing them, amalgamating them to obtain others from them...

Below some examples (splat, marble, smoke, checker and cellular linen).



Of course it is not with these basic materials that we will make a little credible texture of skin.  
We need to mix between them.

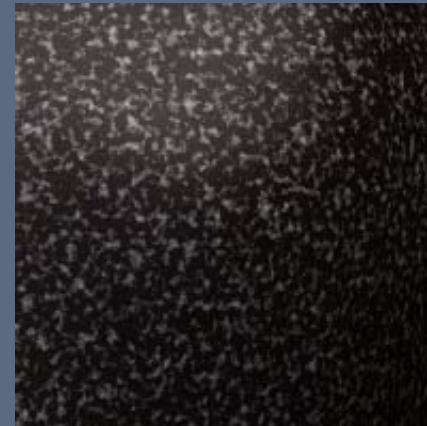
One thing that should be known, it is that a procedural texture has a size, this works with objects on the same scale.

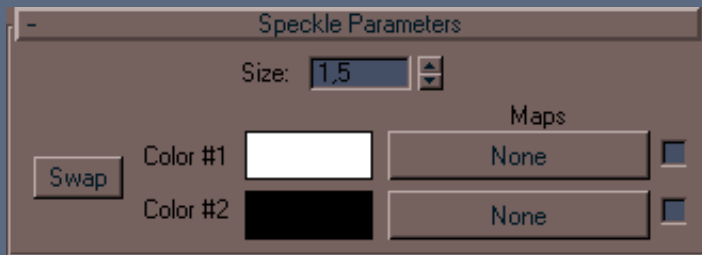
If we wish to apply a procedural texture to two objects modeled in different files, we will have to take care that they have the same scale ratio if not it will be necessary to modify the size of each procedural texture to make it "stick" with the scale of the model...

To start we initially will create the Diffuse part of texture, i.e. the color of the skin.

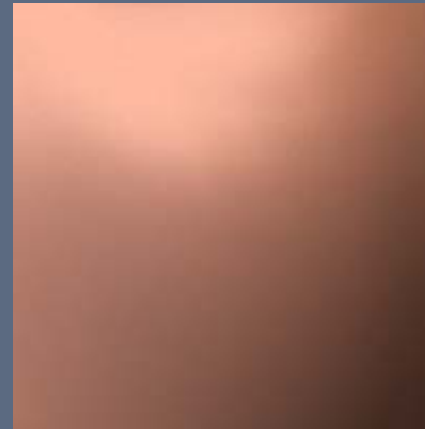
We select Speckle as the type of texture for the Diffuse channel.  
The first thing is to put texture on the model for scale.

To see the material we regulate the colors of texture with black and white the Defaults.

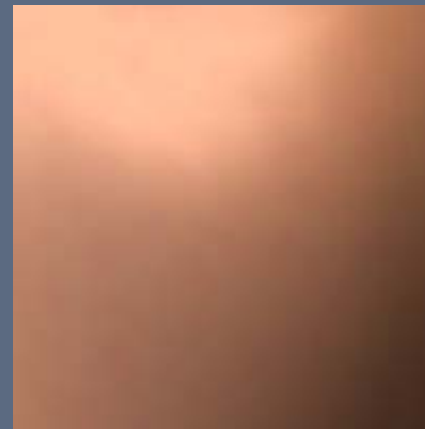


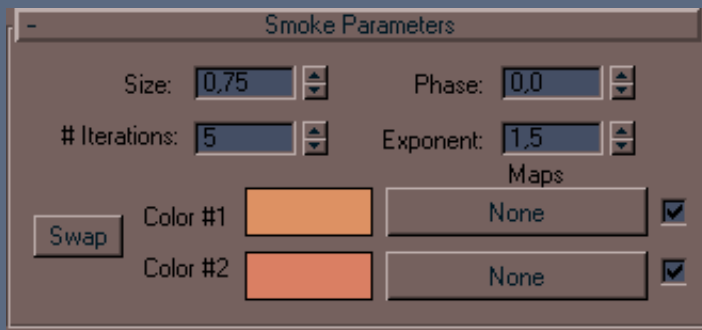


We can change the texture at the place of the colors (Maps frameworks). This is what we will do to simulate the texture of skin, pile up several procedural textures...

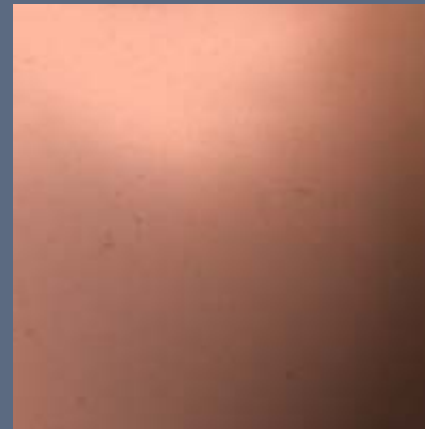
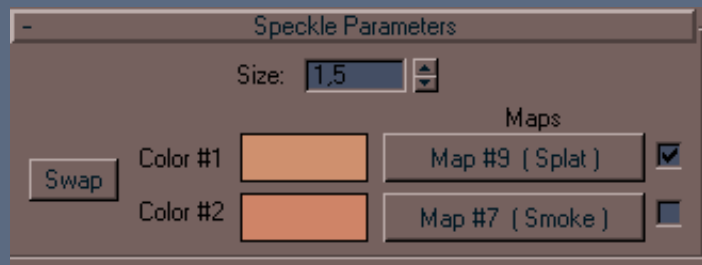


Before going further, we replace the black and white colors with "human" colors.





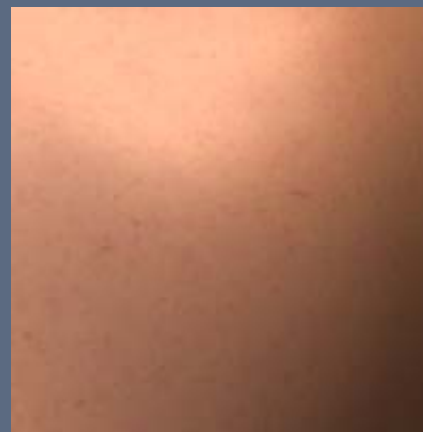
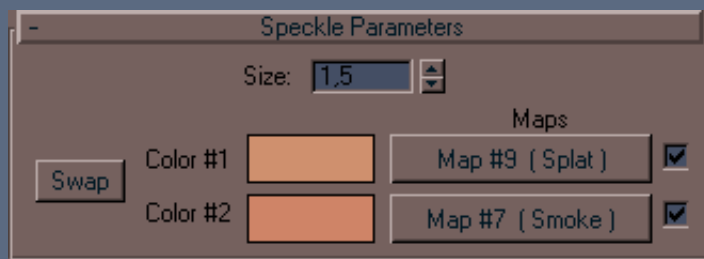
This time we use Smoke. The Smoke Procedural texture replaces the black color in or in this case the bottom slot. Opposite are the adjustments of Smoke. It creates slightly pink spots.



Now, we use the Splat texture in the top slot.

This creates small very irregular brown spots.



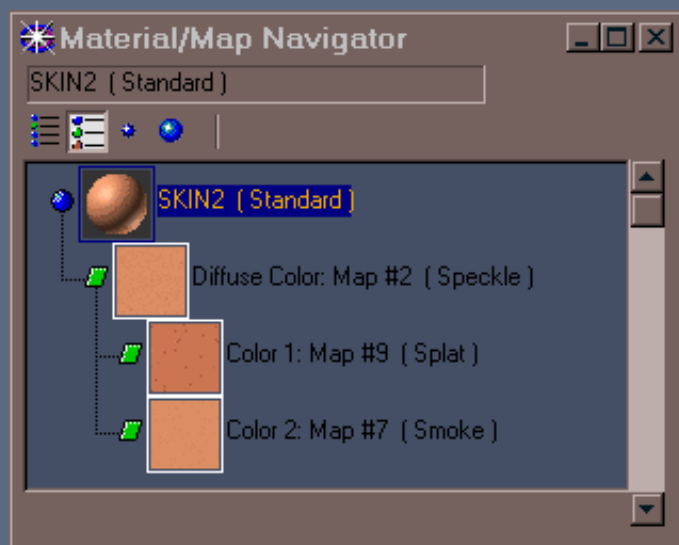


Now we activate two under-textures at the same time.  
We obtain a texture of skin with interesting nuances and small imperfections in the pigmentation.

Of course, such a texture is not photo-realistic but it looks good.  
[Click here for the texture in HD.](#)



For better understanding of the structure of this texture, activate the Map Navigator in Materials Editor.



It is very practical to see all the complex textures with multiple under-textures.  
In this representation, we see that the diffuse channel is Speckle with its two colors replaced by the textures Splat and Smoke.

Of course, we could have fun going further, Smoke itself being composed of two under-textures etc...

In the second part, we add bump for the grain of the skin and we influences the way in which the light reacts on the skin...

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## 3D Studio Max

### Joan of Arc

#### Texture Skin Procedural

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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A convincing texture comprises of three obligatorily channels.

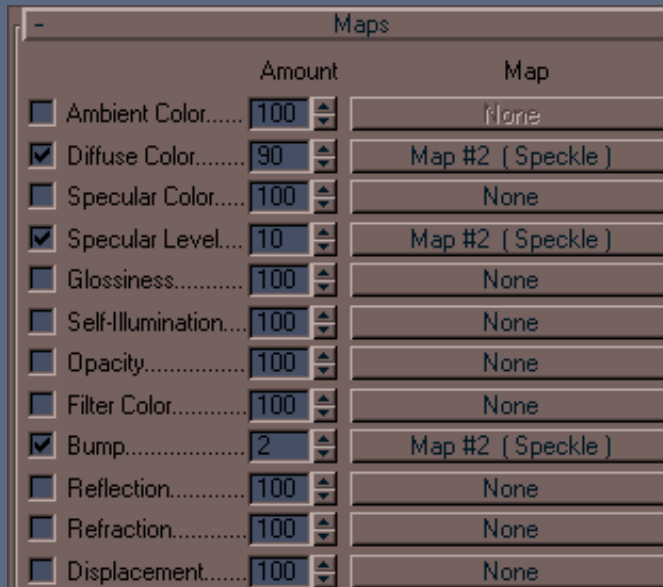
The Diffuse channel gives the general color of the material.

The Bump channel, which gives a relief to material.

Finally the Specular channel or Glossiness to vary the way in which the texture reacts to light.

In the case of the skin texture procedural we quite simply will copy the Diffuse channel into the Bump and Specular.

That makes it possible automatically to reflect the modifications made to Diffuse towards Bump and Specular Level...



When you copy the channel select instance...



Bump + Diffuse.

The dark parts of Diffuse are hollow and the clear ones are bumps.

See image HD.



Specular + Bump + Diffuse.  
The dark parts of Diffuse show less light, the clear ones  
more...

[See image HD.](#)



Now the model with procedural texture.

Of course we could make different procedural textures for Bump and Specular Levels but for our needs on this model under development it is a little superfluous...



Another procedural skin texture with a different structure reveals virtual beauty spots.

In the development of the final texture, we can use a mixing of procedural textures and bitmaps. We use Bitmaps for the characteristic details (make-up, lips, scars etc...) and the remainder is the procedural one which takes care of (above of cranium, ear, nose...).

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Joan of Arc  
by  
Michel Roger

3ds Max



*Shag hair*



## 3D Studio Max

### Joan of Arc

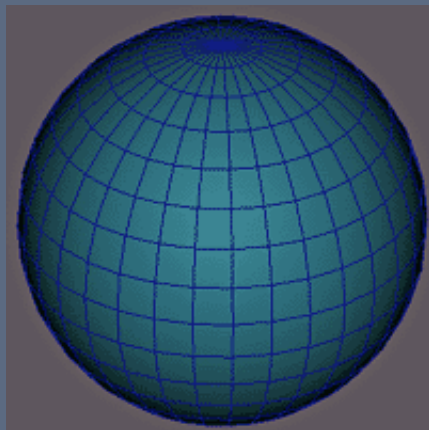
### Shag Hair

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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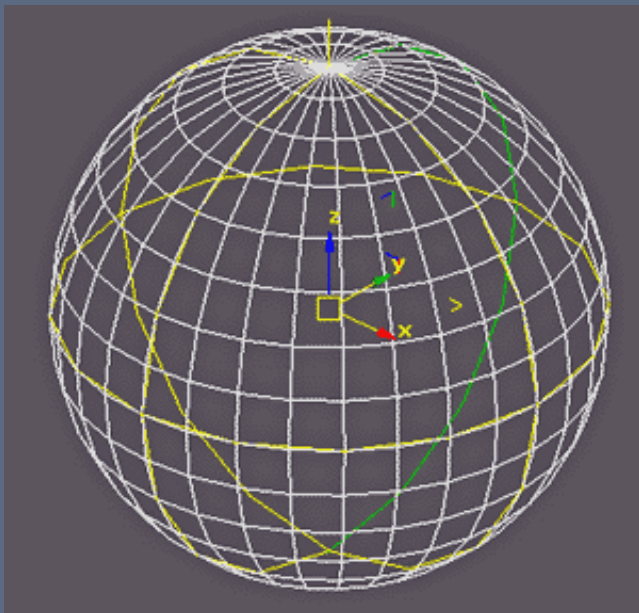
With this tutorial, we will have fun posing hair on a sphere and discover the many parameters of the Shag Hair plugin...

Functions of Shag Hair Plugin can be found at [Digimation](#)



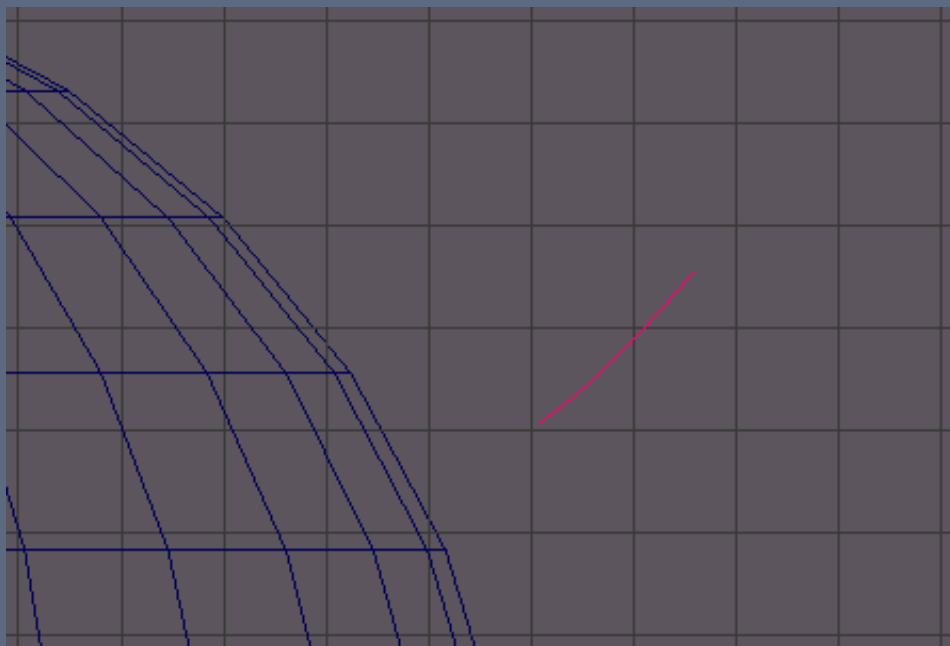
To start, create a sphere with a radius of 100 (Generic unit in Customize/Unit Setup...) and with 32 segments of division. Our sphere should look like this.

Add a spot to light the scene.



Apply a Spherical UVW Map.  
Then collapse the stack.

This leaves us with an Editable  
Mesh.

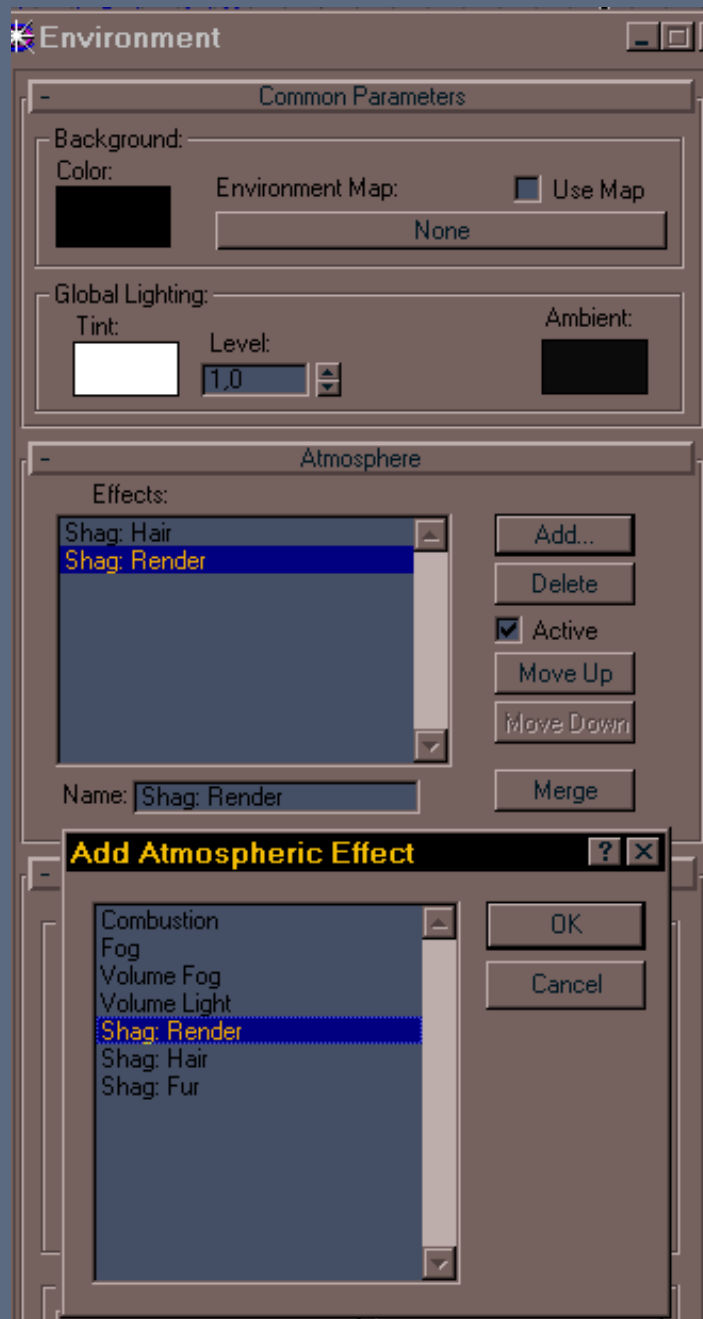


We will create a single hair, the  
prototype of all the hairs that will be  
to added procedurally by Shag  
Hair...

On the Left, we create a spline with  
three control points, and a length of  
15 units.

Edit this Spline and Convert all three  
points into Smooth points.

Apply a modifier of Model Hair (in the Modifiers list) to the hair object.  
For the moment we will not change any parameters of Model Hair.



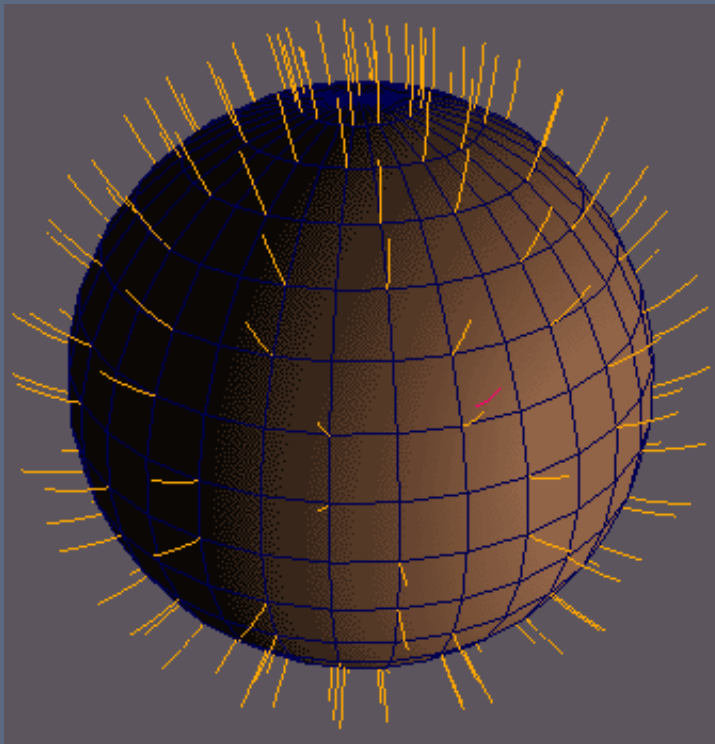
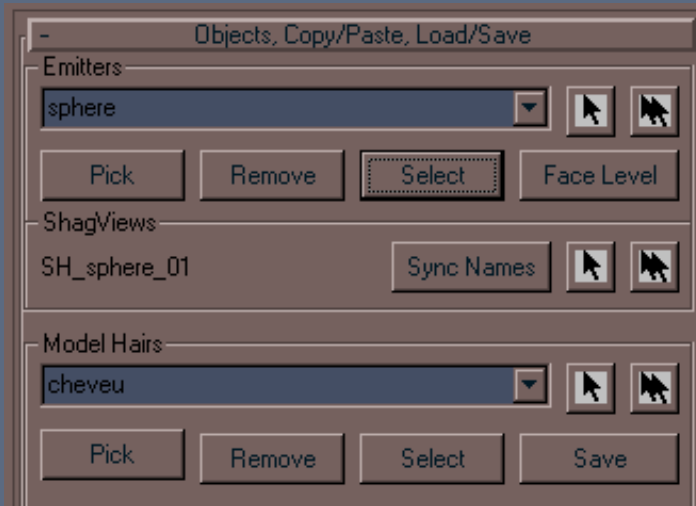
Open the Environment Rendering panel. A window appears and in the Atmosphere selector click Add...

Select Shag: Hair then Add...  
Shag: Render.

We must have Shag: Render to calculate the hair Render time.

It must be placed below Shag: Hair.

It should be noted that we can use as many Effects as needed. This is practical when we use several types of "hair" (hair, eyebrow etc)...

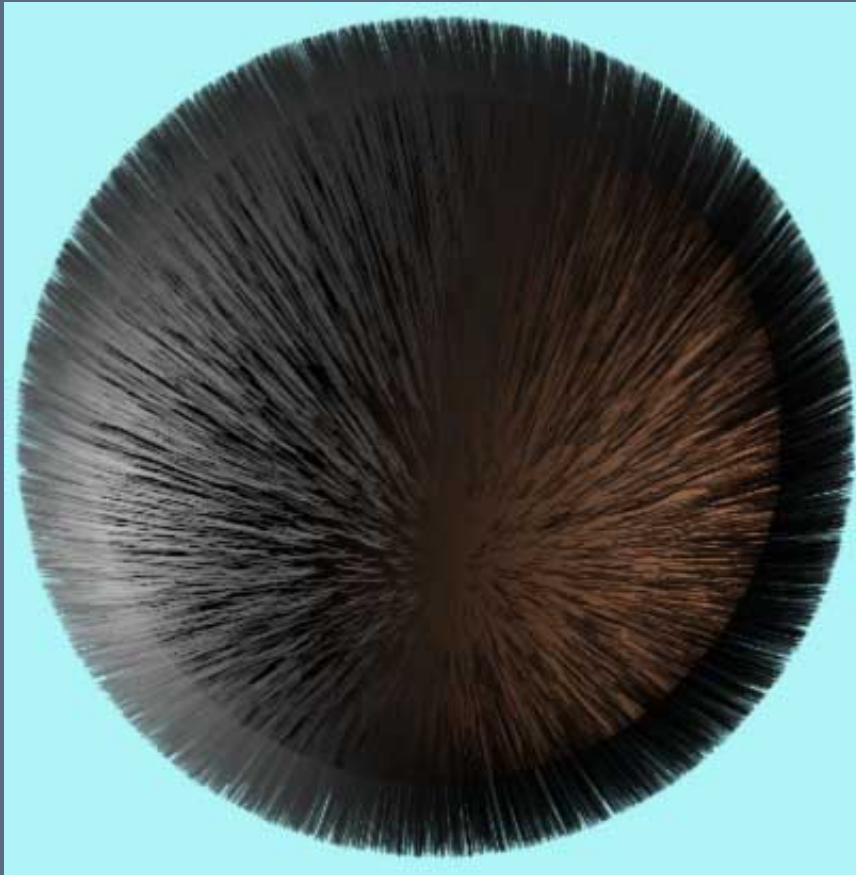


To select Shag: Hair in the Effects window.  
A long series of parameters appear.

In Emitters click on Select and select the sphere object and in Model Hairs, the hair object.

Shag Hair then creates a new object, SH\_sphere01, this coarsely represents the aspect of the hair.  
Choose Perspective view and Render this view.

It should be noted that Effects in max are calculated only through the Camera or Perspective views.



Our result from the default settings  
of Shag Hair.

At present, we will keep the default  
settings of the plugin.

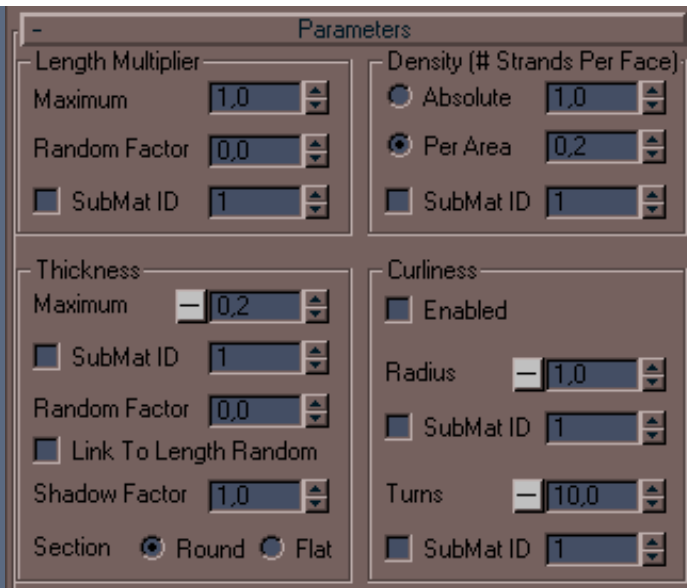
In the top of the Parameters box are  
the values giving the physical  
characteristics of the hair.

For the length Length Multiplier :  
Maximum : coefficient length, 0 to  
1.0.

Random Factor : random coefficient  
variation of length.

0: all the same length.  
1: maximum different lengths.

For the Density density :  
Absolute : coefficient of density per



face. Each face has the same quantity of hair.

Per Area : coefficient of density for the unit of the emission zone. The density is constant whatever the size of the faces.

Attention, density strongly influences the computing time and RAM necessary.  
Modify with prudence...

For the Thickness thickness :

Maximum : maximum thickness of the hair (in connection with the unit of max).

Random Factor : random coefficient of variation thickness, effects the multiply length.

Link To Length Random : index the thickness over the length, a short hair is thinner than a longer one.

To make buckled hair Curliness :

Enabled : activation of the loops

Radius : ray of a loop on the hair.

Turns : a number of loops per hair.

Again this increases significantly the computing time.

Many of the parameters, can indicate a Shag Material ID which will contain the information from a bitmap coded at 256 levels of gray.

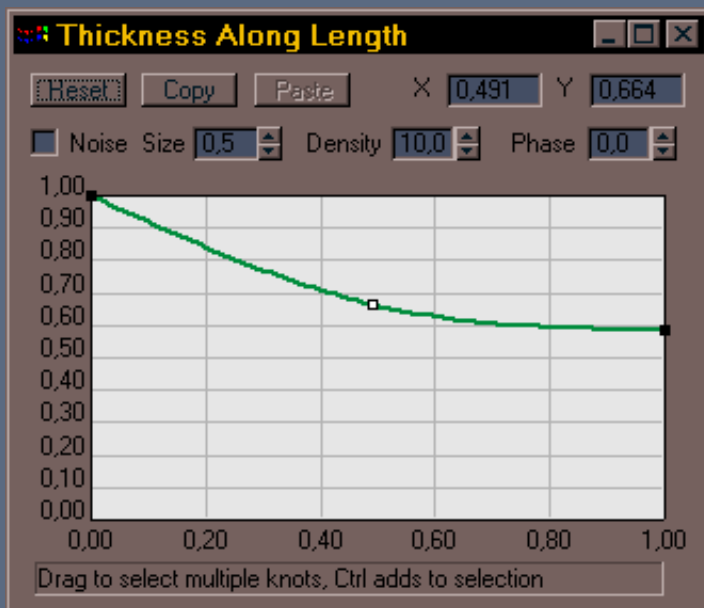
In this case, it is necessary to tick the box SubMat ID and to assign a Multi/Sub-Object Material corresponding to the Emitter object.

It is then easy to make a finely represented texture establishing the length, density, etc... of the hair.

In addition to all that, we can change certain parameters according to the length.

It is the small button .

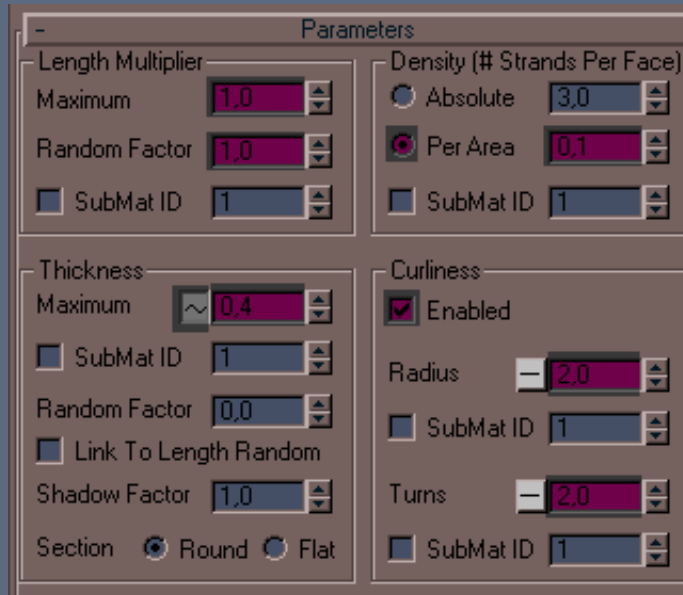
To activate this function, just click the button above and it becomes .



By right clicking the top button we get a window in which we can change the parameters according to the length of the hair.

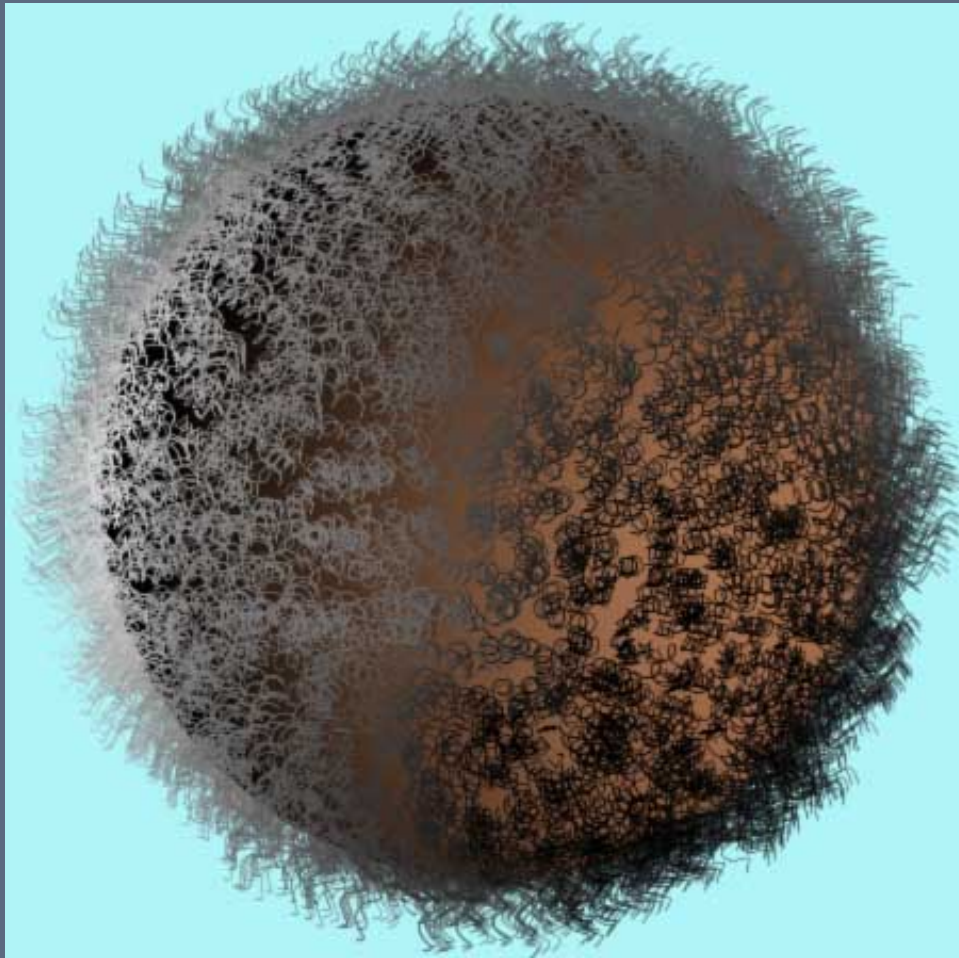
For example for Thickness, the thickness of the hair decrease up to 80% length and is stabilized.

We can also vary the loop radius according to the length...



Change the values hilghted, Choose Perspective view and Render.





And here are effects of our modification!  
Now that we have looked at these first parameters we can attack the others...

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## 3D Studio Max

### Joan of Arc

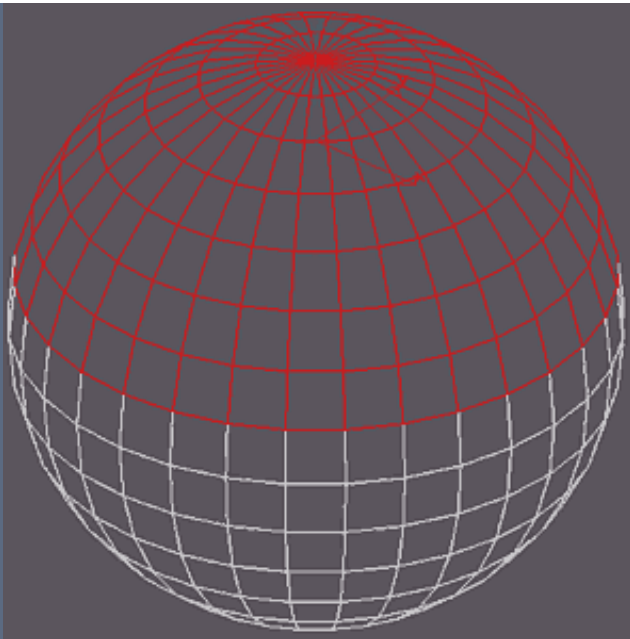
### Shag Hair

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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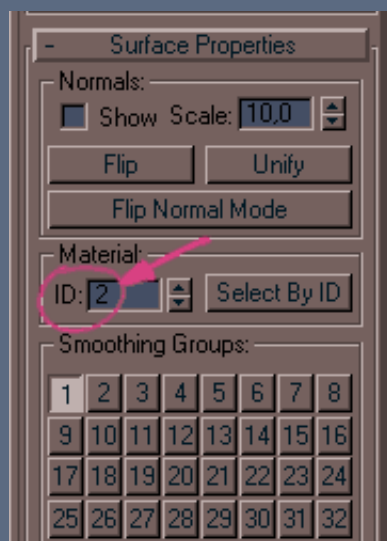
After seeing the basic functions, we will see how to use Materials ID to control the emission zones of the hair parameters with bitmap textures...

Before starting, erase the hair created by Shag in the preceding page (object HS \_ \* \*) also erase the entry Shag Hair in the Environment window.



Keep the hair model.

To select the sphere, change it into an Editable Polygon and select the top part.



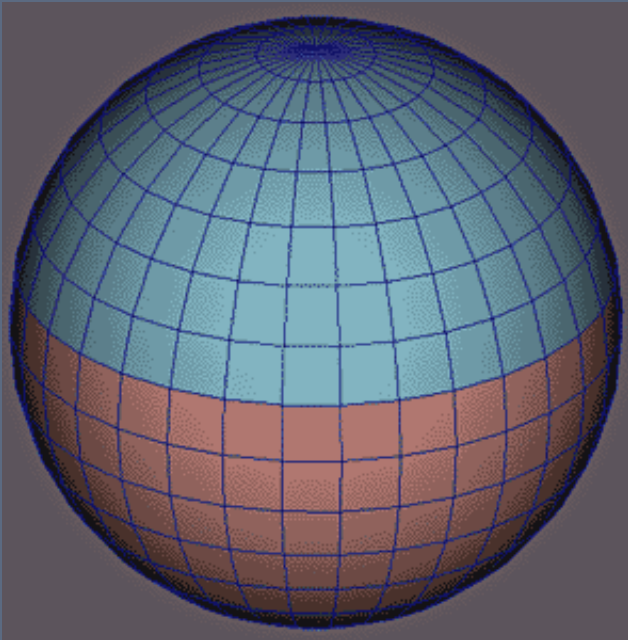
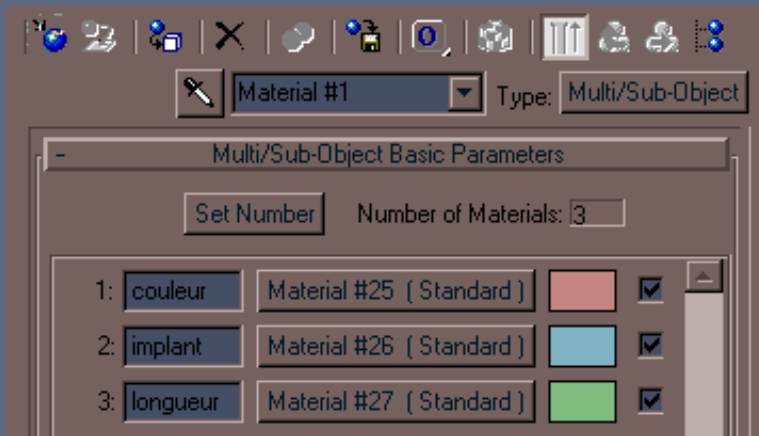
In Surface Properties modify Mesh Edit, and assign Material ID 2.

By default the remainder of the sphere has Material ID to 1 assigned to it.

Then in Material Editor, create a Multi/Sub-Object with 3 materials.

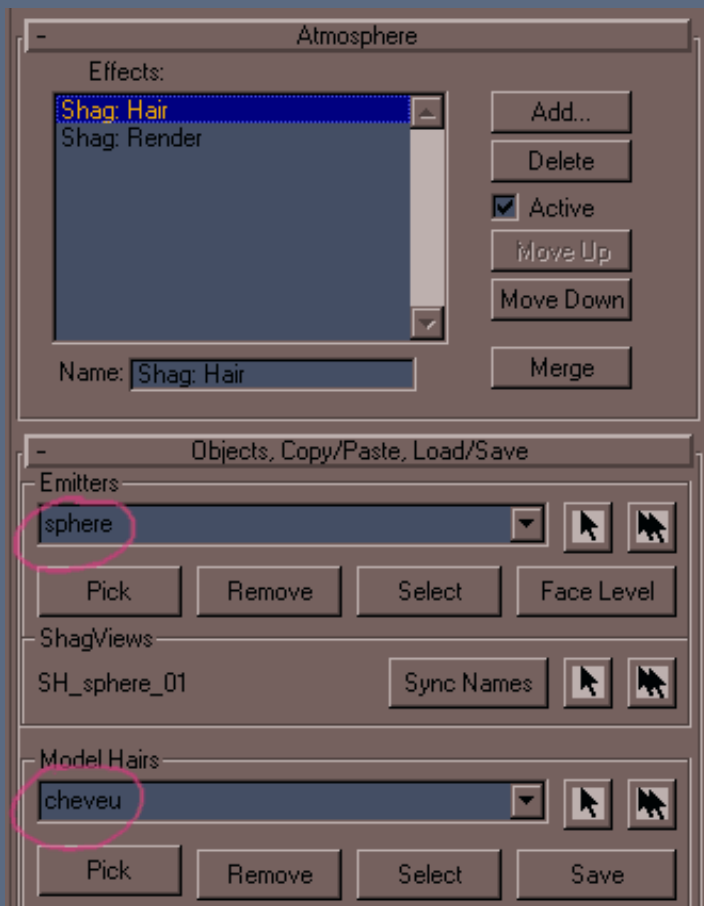
The 1st will have the color of the sphere at the time it started, the 2nd will define the establishment of the hair and the 3rd their lengths.

Assign this material to the sphere.

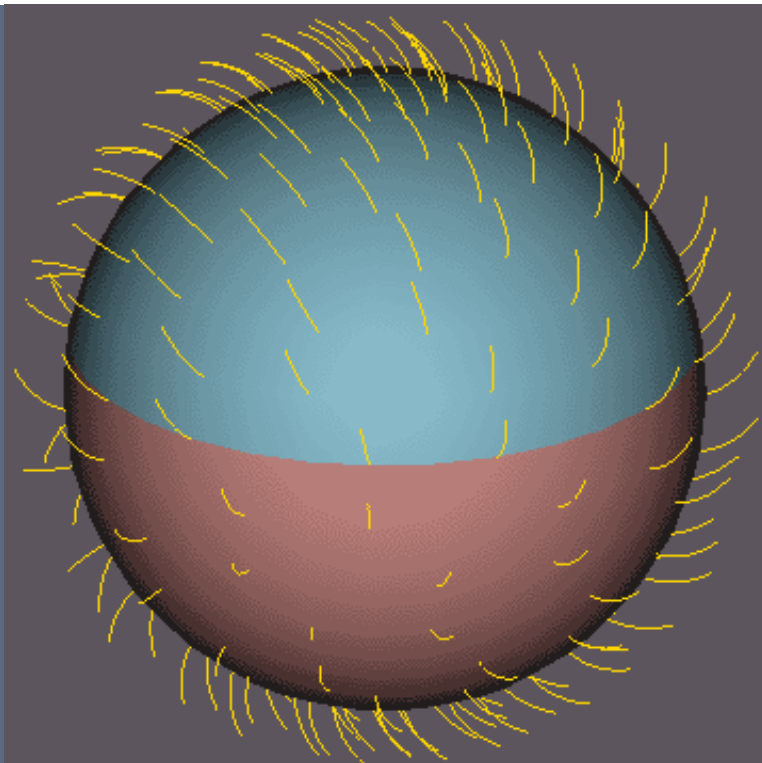


The sphere must have this aspect with the two zones, corresponding to Material ID 1 and 2.

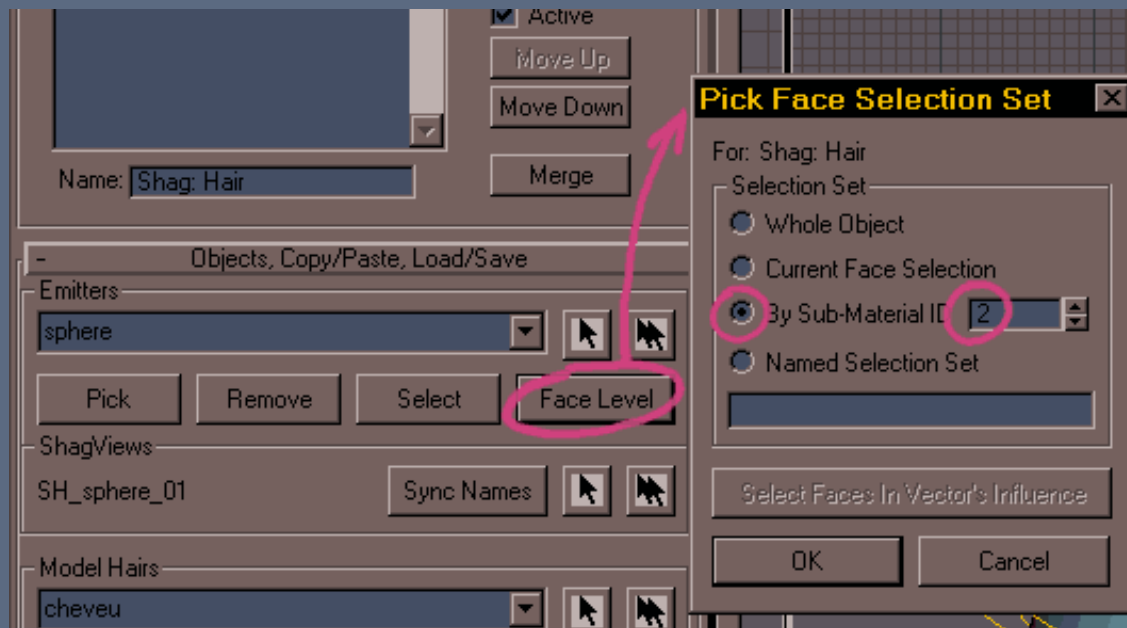
(do not to forget to get out of Sub-Object mode before assigning our new Material)

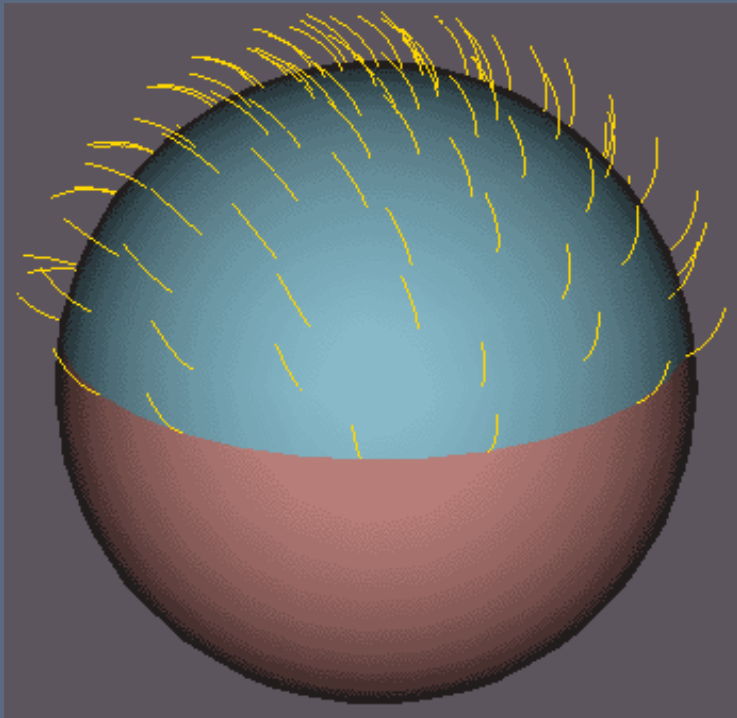


In Environment/Atmosphere add the Effects Shag Hair, Shag Render and assign the sphere its Emitters and hair in Model Hairs.



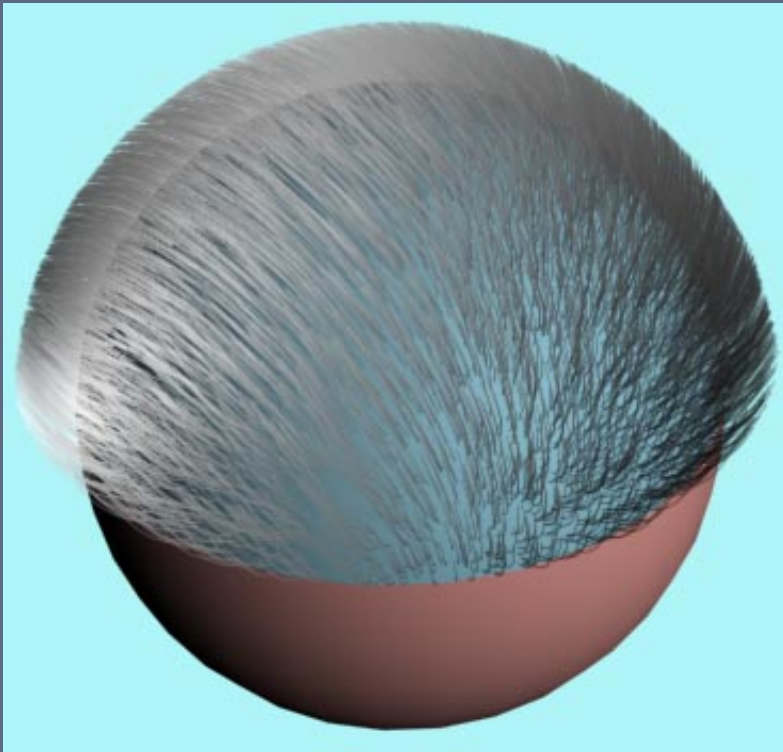
Shag Hair creates the SH\_sphere01 object representing the hair.





Click on Face Level, a window appears, select By Sub-Material ID 2.

Now Shag Hair knows that it is zoned to Material ID 2 which is the zone transmitter of the hair.

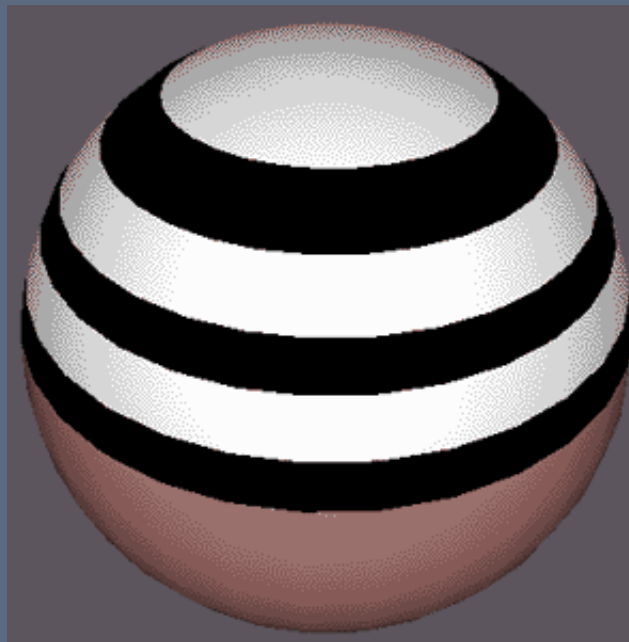


Rendered with the default settings of Shag Hair.

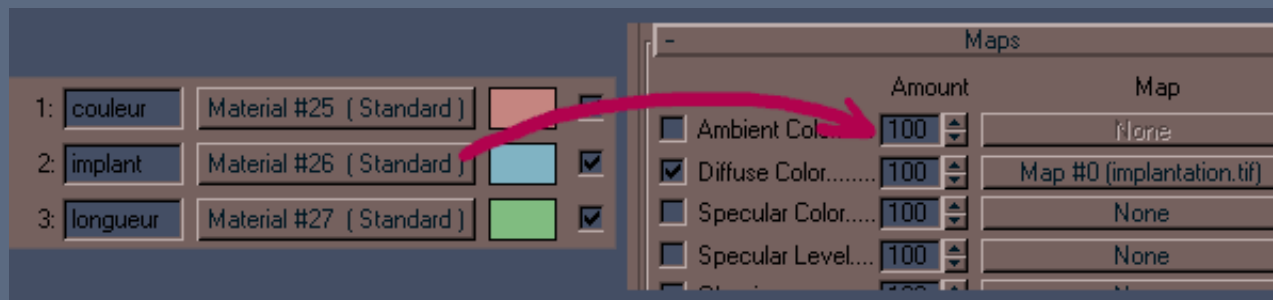
(Sphere radius of 100 Generic units and 32 segments)

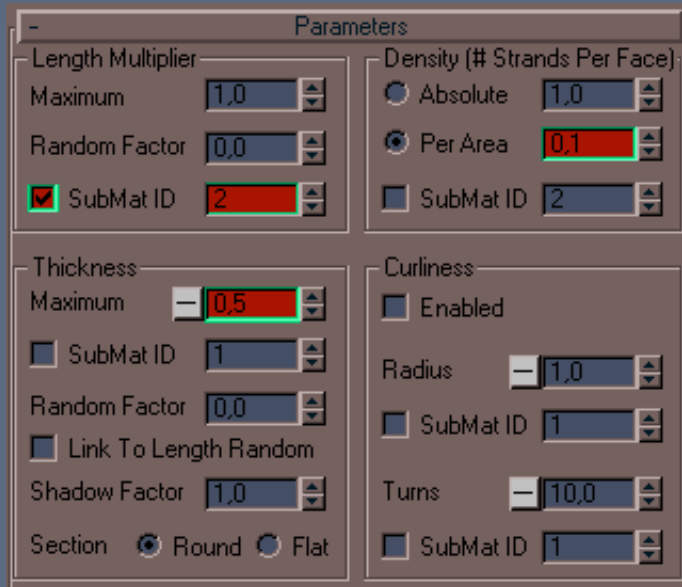
Now we can graphically define the length of the hair.





Create a texture similar to that shown above left and apply a Cylindrical UV Map to Material ID 2.  
 In Material Editor, and in the 2nd Material, put our texture into the Diffuse channel.  
 Activate show texture in the viewport.  
 The sphere should look like above right.

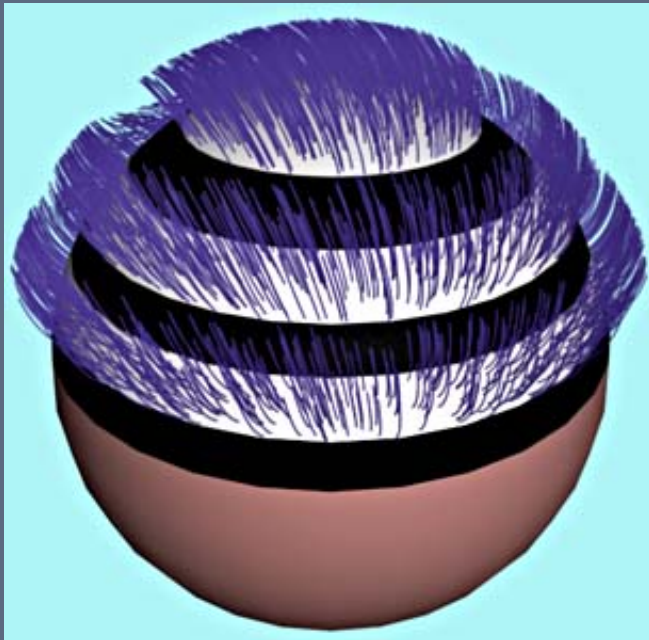




Put the following parameters into Shag Hair.  
Length Multiplier, activate and put a 2 in SubMat ID.

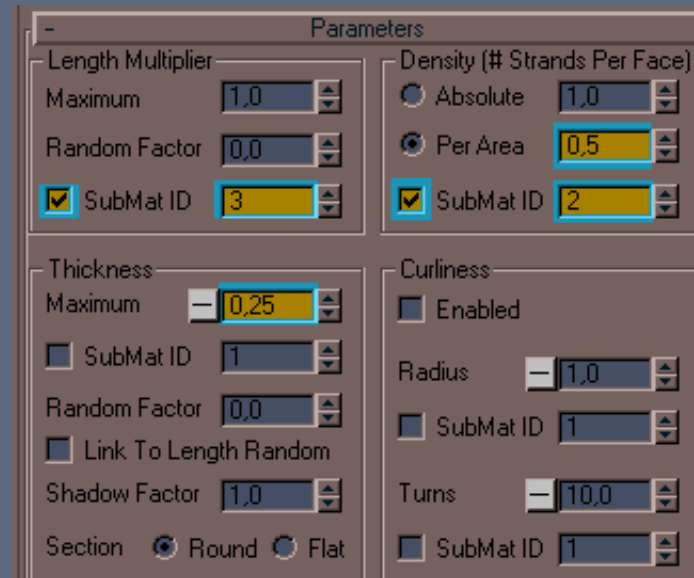
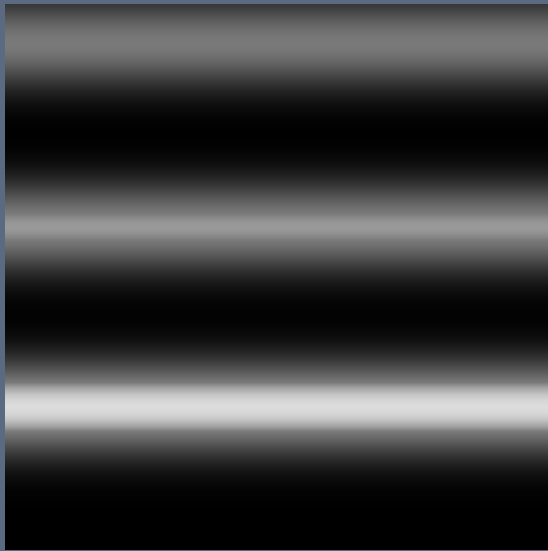
The length of the hair is now a function of the texture  
contained in Material ID 2.

White, hair normal, black absence of hair.  
The intermediate levels of gray would give us  
decreasing lengths.



Apply a rather conspicuous texture to the SH\_sphere01  
object to see the hair well.

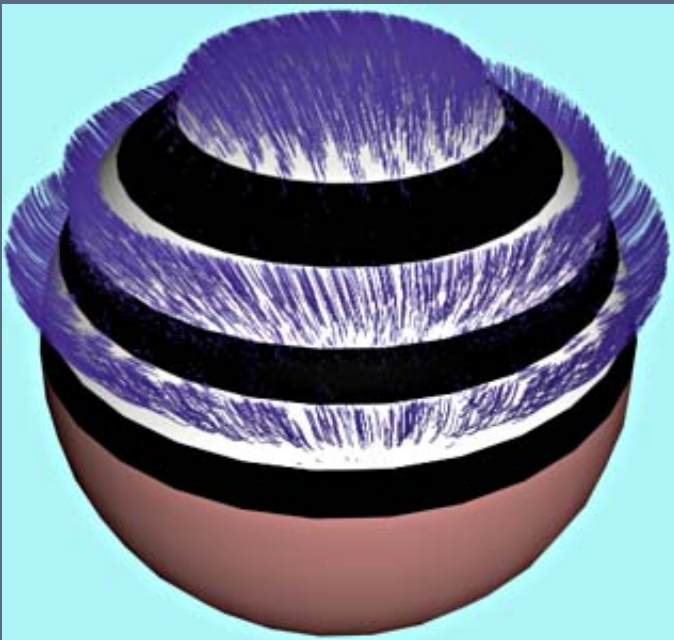
Normally we would have activated SubMat ID in Density  
to establish the same hair. Nevertheless some hairs  
have appeared in the black zones (bug?).



With this texture, we controls the length of the hair.

We add it in the diffuse channel of Material ID 3. For the mapping co-ordinates, Shag will automatically use them in the zone of emission (Material ID 2).

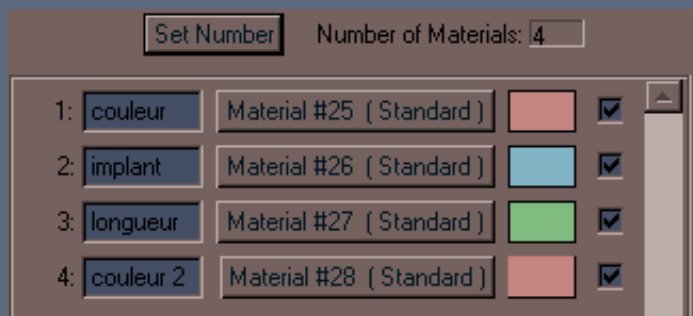
Put these parameters into Shag Hair above right. It should be noted that this time it is the Material ID 2 (Density) which controls the establishment and Mat. ID 3 the length.



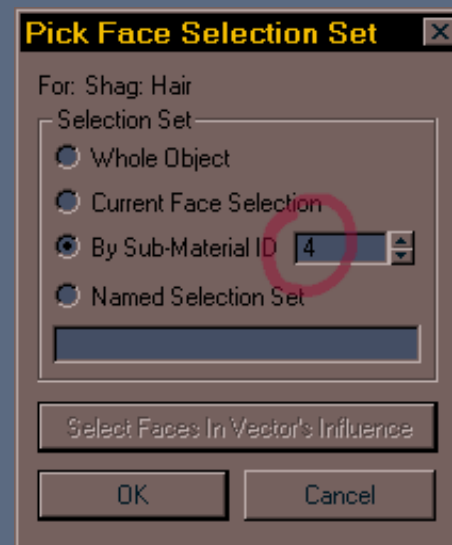
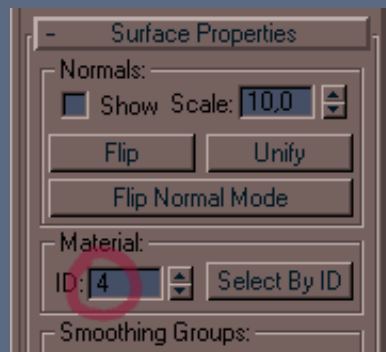
In addition to choosing the zones where the hairs appear, we control their length graphically also.

Now we will put the same color onto the hair that is on the remainder of the sphere.

Up to now it was for checking the texture and coordinates.

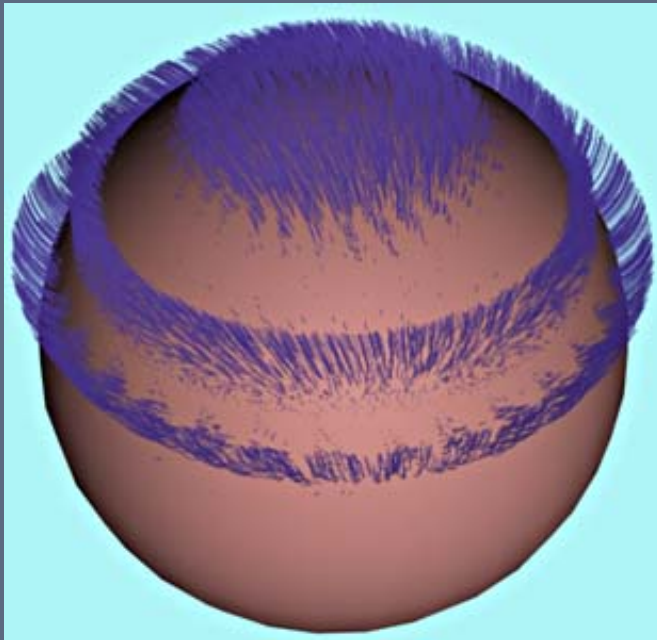


In Material Editor, add a sub-material by clicking on Set Number.  
To copy the same color as the ID 1 (drag and drop then Copy).



Select the sphere, and Polygon mode, select the faces having ID 2 (Select by ID) and replace them with the ID 4. In the Perspective view, there are no more Shag hair points with Material ID 2 and the sphere has a uniform color.

In Shag Hair, click on Face Level and replace the 2 with 4, the hair will reappear in the Perspective view.



Final Render...

There are still some very useful functions, presented on the next page...

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3D Studio Max

Joan of Arc

Shag Hair

Email: Michel Roger --- Web: mr2k.3dvf.com

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For this tutorial on Shag Hair, we will give hair to poor Dina, she is so cold...  
It of course it is recommended that you practice the preceding tutorials before trying the rest of this tutorial...



Start, by creating a Multi/Sub-Object material which we assign to the model.

ID 1 is for the texture of generic procedural skin.

For the moment only the basic color is active.

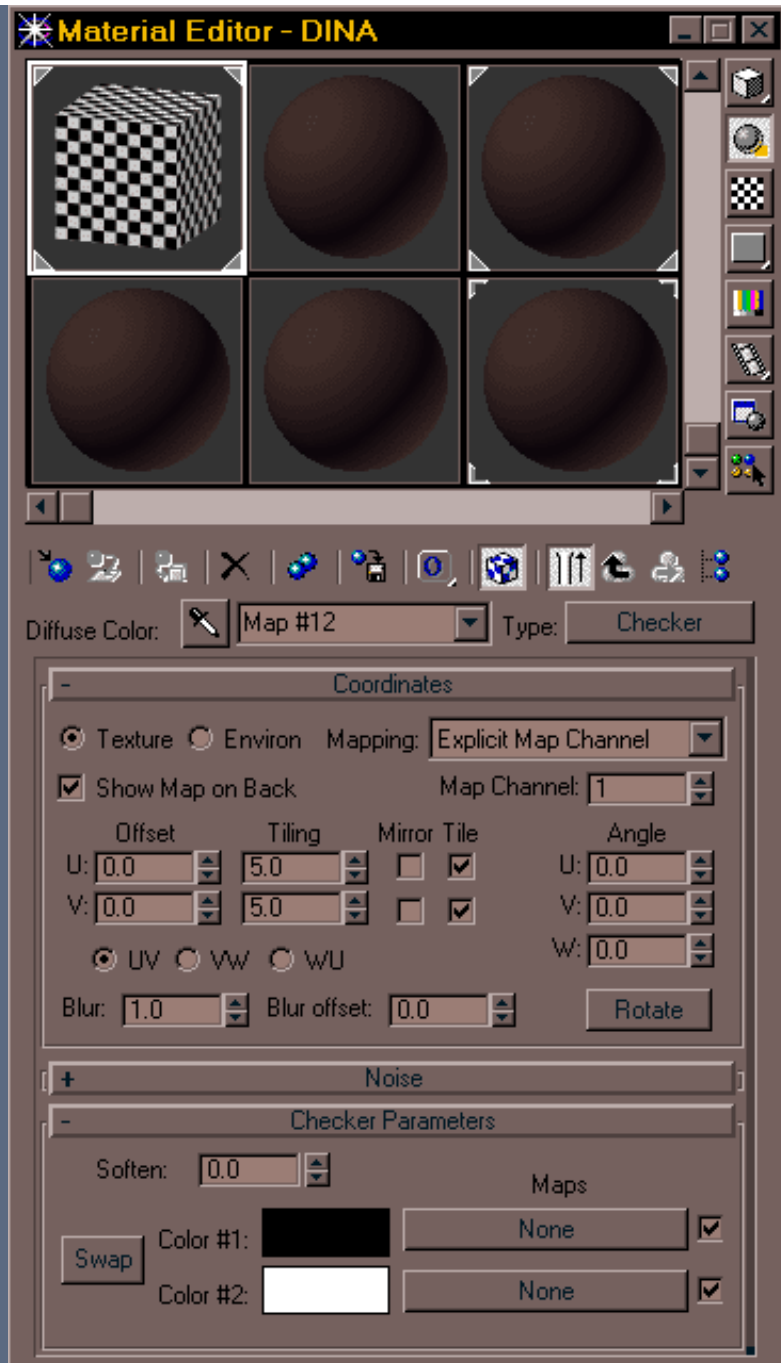
ID 2 will define the storage area of the hair on cranium.

A texture bitmap in gray levels will give Shag Hair the indication of length and density of the hair.



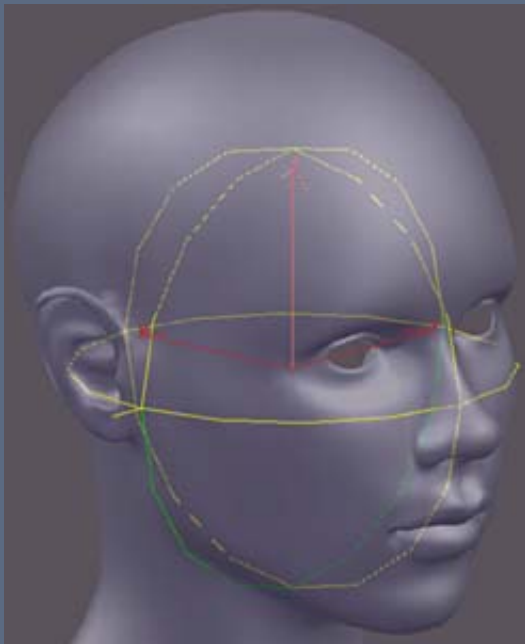


The faces representing the zone of the hair are selected and assigned ID 2.

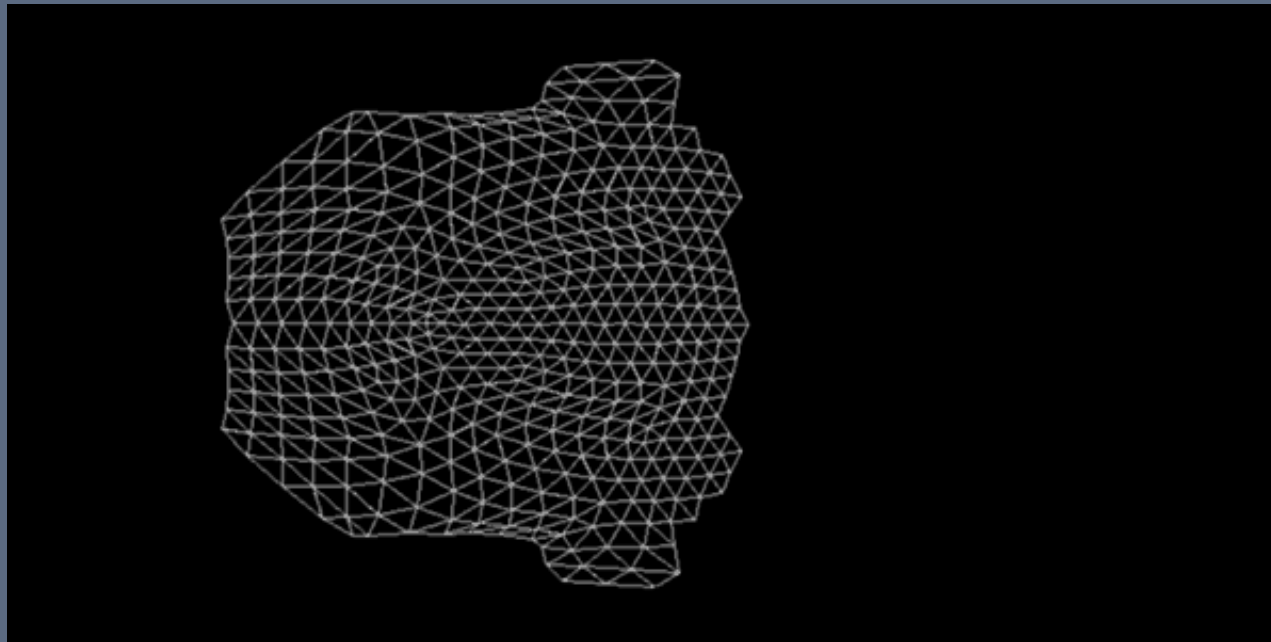


In the ID 2, we define a texture of the material in the Diffuse channel.

This will make it possible to adjust the storage areas mapping easily.



With UVW Map, the co-ordinates of texture is adjusted.  
Here we use a spherical projection, the gizmo is directed to give the best possible result...

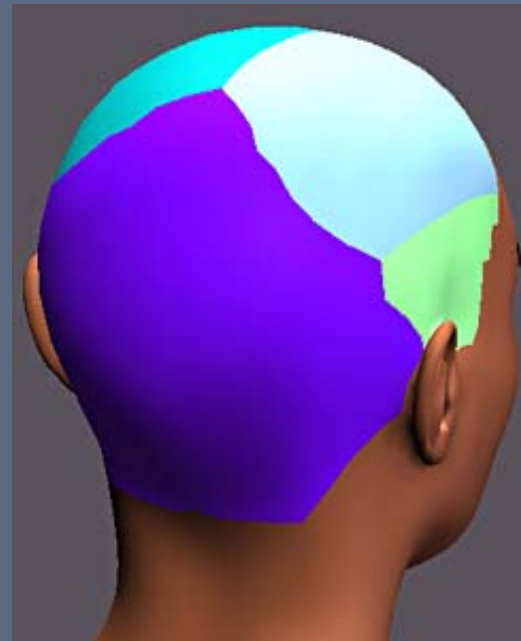


A plugin such as [Texporter](#) makes it possible to recover the UV of a bitmap at the size of your choice, which will be used as gauge in Photoshop to carry out the establishing texture.



The texture of Checker is replaced by establishing texture bitmap.

Information of the establishment will be resolved only at the end, when all the hair wicks are in place.





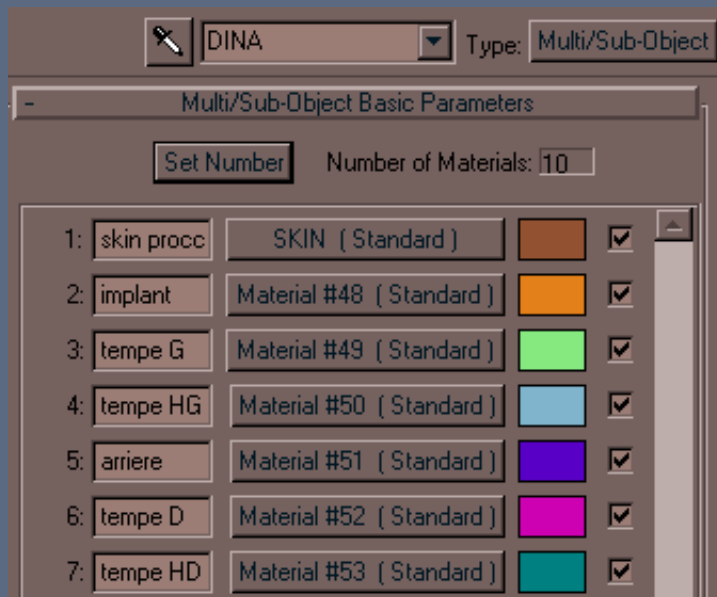
The following stage consists of cutting out the zone of material ID 2 (storage area of the hair) in several emission zones of the hair for Shag Hair.

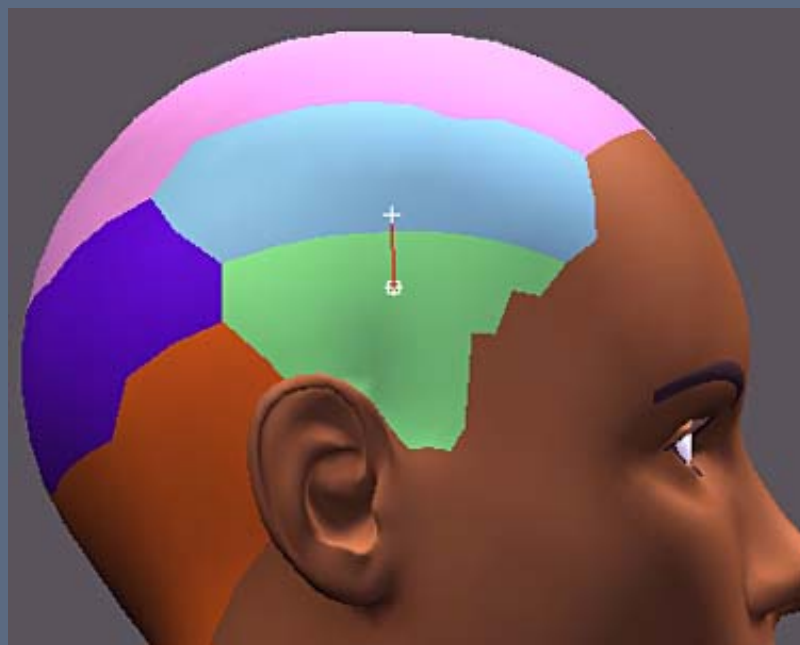
Each zone will have a clean shape for the hair.

All of the zones thus make it possible to carry out a hairstyle more complex than with only one zone.

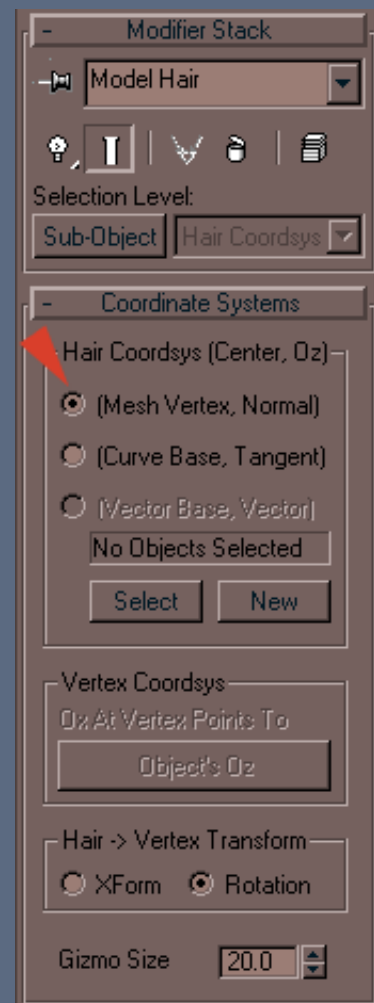
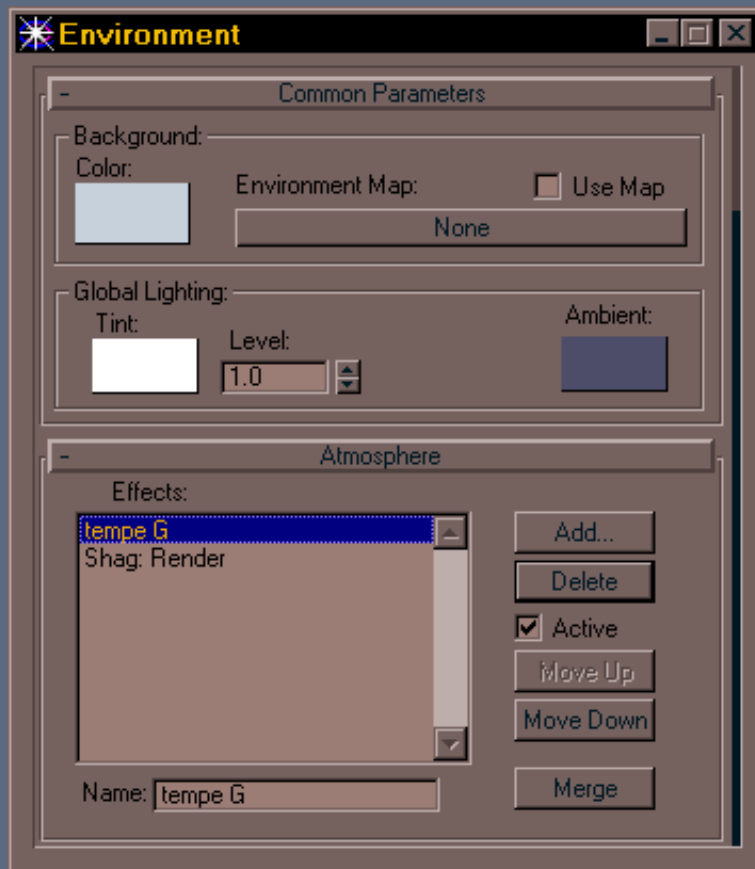
Nevertheless, it is necessary to take care not to define zones, that increasing the time of pre-processing too much.

It is advised to make a sketch or to refer to a photograph for the hairstyle. This avoids time wasting...

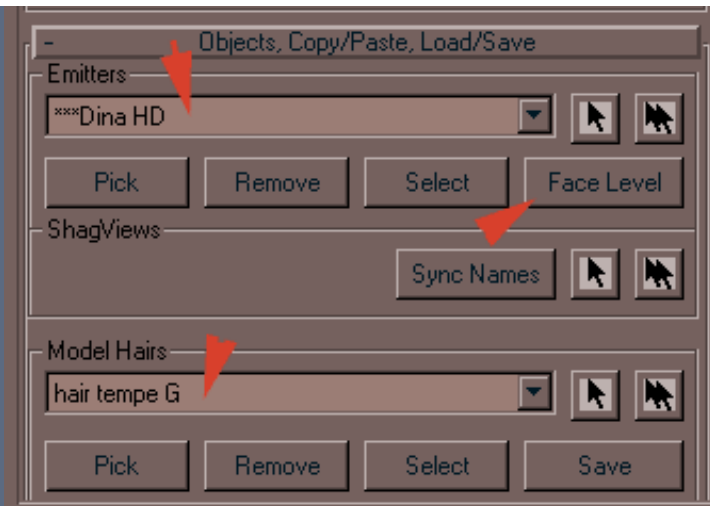




One now will give the shape of the hair a zone of material ID 3.  
For that, we need to make a spline of two points (smooth type) which we suitably position in the zone.  
To find them more easily I call the Hair "temple G" (left).







We apply the Model Hair modifier to the object "Hair temple G".

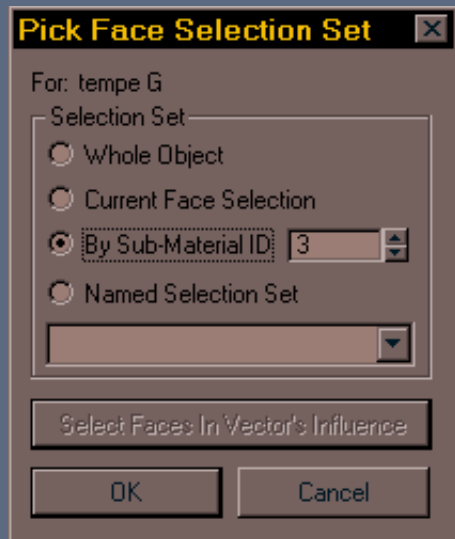
Leave the default options.

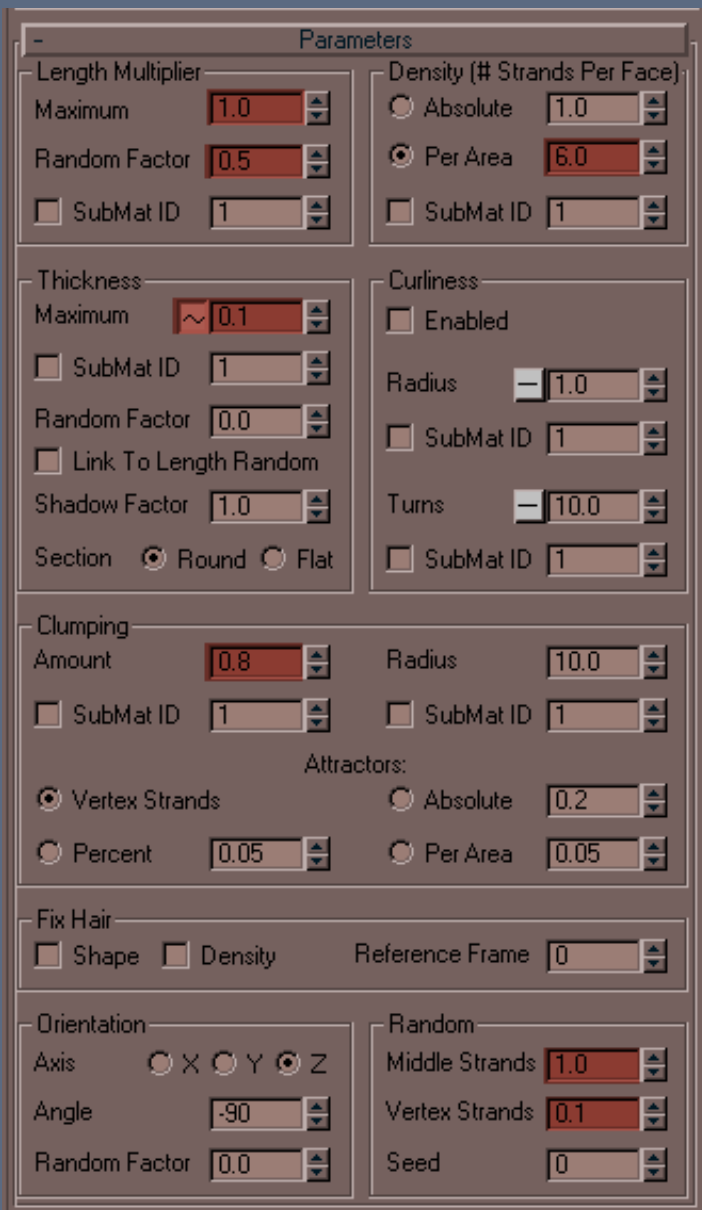
The orientation of the hair will take up the challenge according to the normals mesh (Mesh Vertex, Normal).

In Environment, we add Effect Shag Hair, which we rename "temple G" and add Shag: Render.

Emitter is the "\*\*\* Dina HD" object. Then click on Face Level, this indicates the zone of Sub-Material ID 3.

Finally we select Model Hair "Hair temple G".





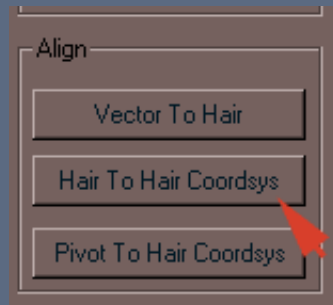
For the parameters, this depends on the size of the object, also it is recommended to leave the default values at first.

See the counters adjustments in this case.

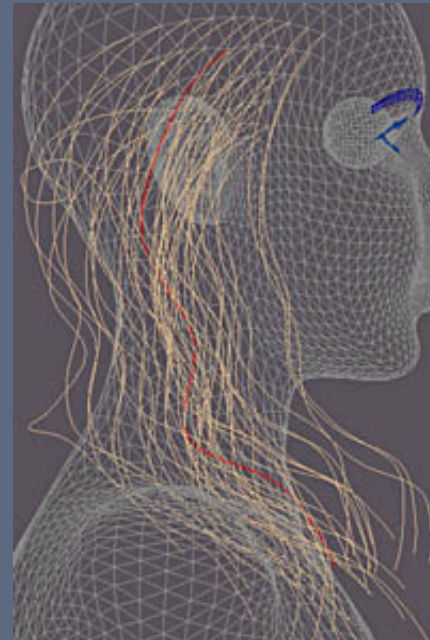
Clumping makes it possible to mark the wicks by gathering the hair towards the point.

Within the Random framework, we can change the way in which the hair is directed.

The base of the hair has Strand Vertex and in the medium hair has Middle Strand.



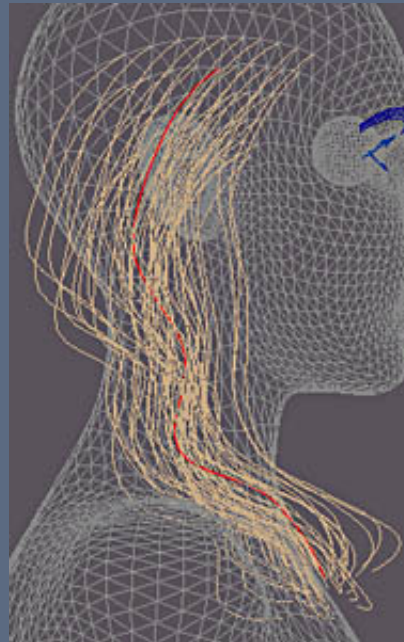
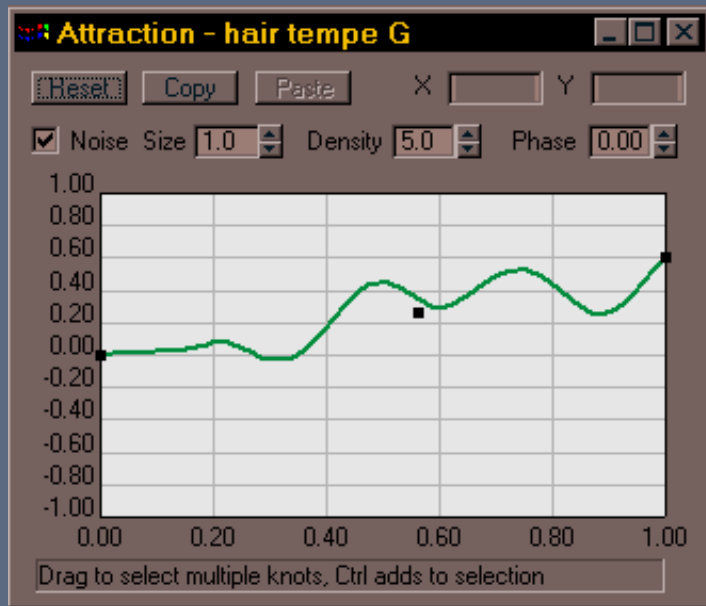
To facilitate the adjustment, and orientation of the hair it is necessary to align the hair models "Hair temple G" with the general frame of reference, here according to the normals of the faces of the mesh.



To modify the shape of the hair. Select the starting spline, in the stack and add vertexes with the Refine function and move them.

That functions well but we notice a little anarchistic hair...





In the Influences, Options of the Model Hair, activate Attraction and regulate it so that we see this throughout the length of the pilot hair.

The hair then tends to gather and follow the pilot hair.

Add noise so as to give the hair more disorder.

Finally the parameter Absolute Direction is adjusted to finish gathering the wicks.



Unfortunately the hair does not take account of the mesh and it is necessary to manually change our settings so that the hair sits on the mesh.

It is possible with the activation of dynamics to animate the hair, that we will do on the next page...

In the following page, one will supplement hair and will regulate the parameters for returned...

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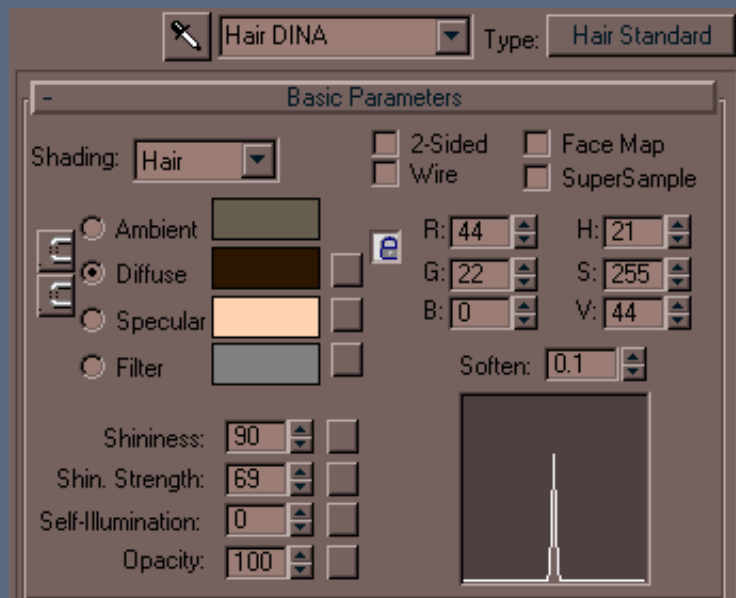
## 3D Studio Max

## Joan of Arc

## Shag Hair

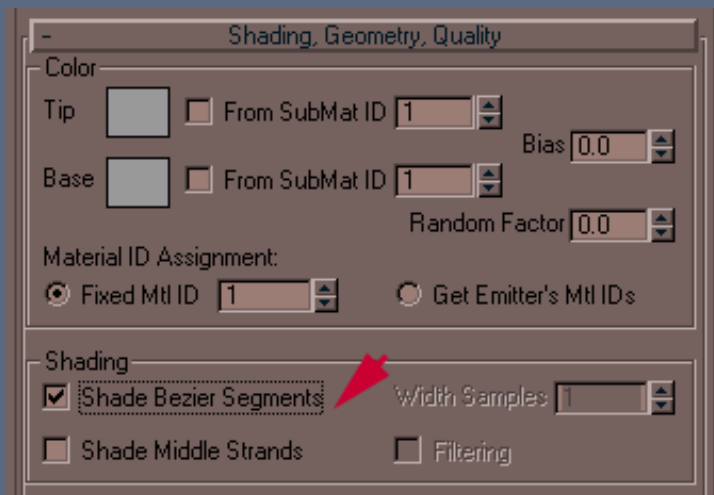
Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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See above the material employed for the hair with the special Hair Shader.  
Assign this material to each wick of hair generated by Shag Hair.

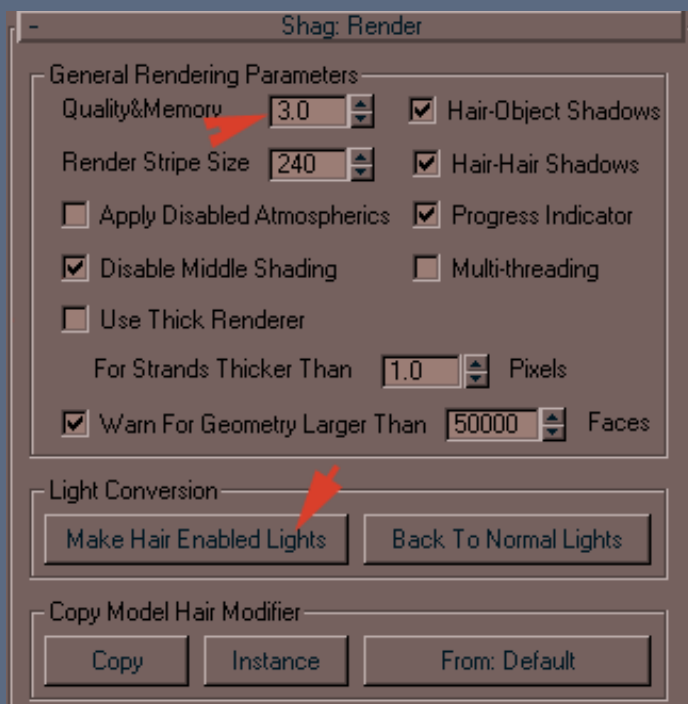




In the options of the Shag Hair roll-up, Shading, Geometry, Quality, activate Shade Bezier Segments this improves the quality of the reflections on the hair.

We can still improve by also activating the Shade Middle Strands but that lengthens the Render time.

You may use this for your final render.



In Effect Shag Render, to accelerate render time we can lower Quality&Memory (of the default 6.0 to 3.0).

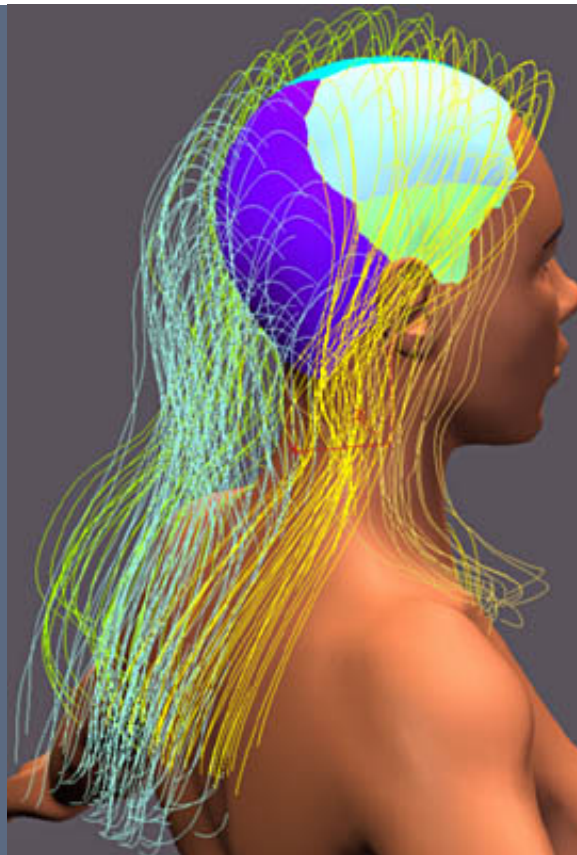
For a simple preview we can also turn off Hair-Object Shadows and Hair-Hair Shadows.

Finally do not forget to convert the lights to normal max lights "Hair" by selecting them and while clicking on Make Hair Enabled Lights.



Here three lamps light the scene.

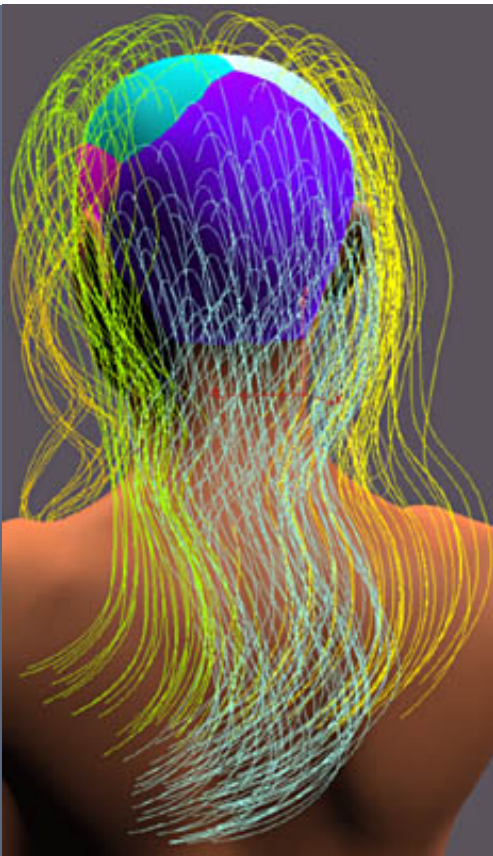
It should be noted that each added light extends the computing and pre-process times of Shag Render.



For the remainder of hair, use the method that is on the preceding page.

We can regulate the density of splines Shown in the viewport while going into the roll-up Shading, Geometry, Quality of Effect Shag Hair (from 0 to 100)

By putting it at 100 we have a good idea of the volume of generated hair.



Picture Quality

Quality&Memory

Viewport Density



Returned settings taking into account the storage area

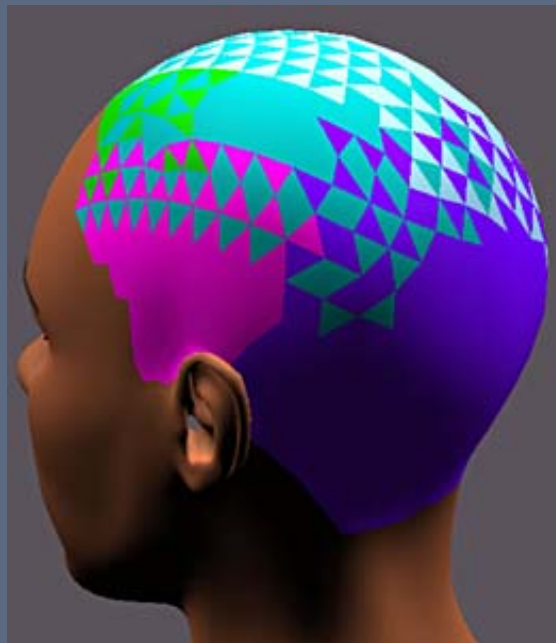




bitmap.

(see page 2 )

Now it is necessary to mix material IDs between the joints to avoid the brutal cuts between zones of Shag Hair.



Seen above overlapping zones Shag Hair.  
 I added two new zones before making two wicks.  
 Once the zones are developed, replace the colors of material ID with the generic texture of procedural skin



Skin texture of material ID 1 is copied by dragging and dropping from the 1st material ID.  
 All for is made ready final





Click on the images to see them enlarged.  
The function Shade Middle Strands is activated (see in top of page).

Later I would carry out tests of collisions between the hair and the mesh, because for the moment, the hair is obliged "to float" with the top of the mesh.

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Joan of Arc  
by  
Michel Roger

3ds Max



*The eyes*

## 3D Studio Max

### Joan of Arc

#### Modeling of the Eyes

Email: Michel Roger --- Web: mr2k.3dvf.com

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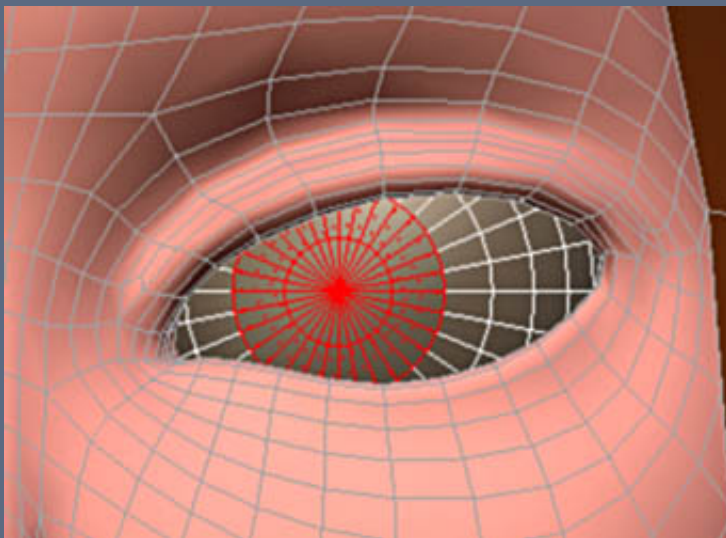
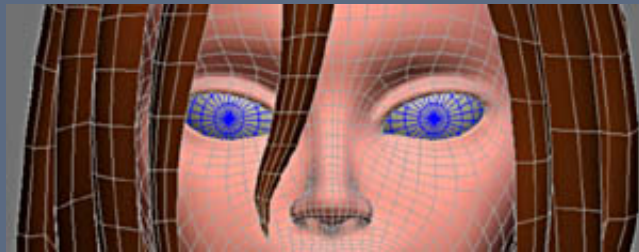
Model an eye and apply textures.

When a character is modeled, the eyes are not an element to be neglected, because it is them which will give a spark of life to the model...

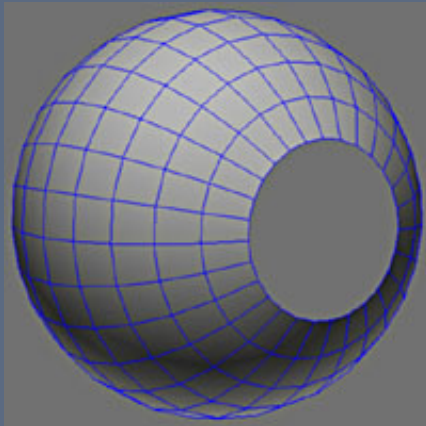
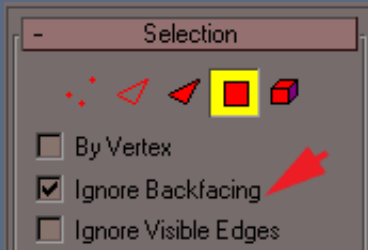
This tutorial is an extension of the tutorial on Joan of Arc but the principle is applicable for any character.



At the time we modeled the head, we used a sphere  
for the eye.  
We did not worry about the division number of it.



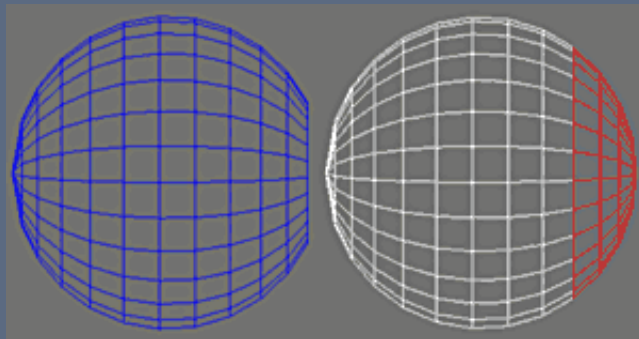
Select the sphere and chose an adequate number of  
segments to have a good size pupil.



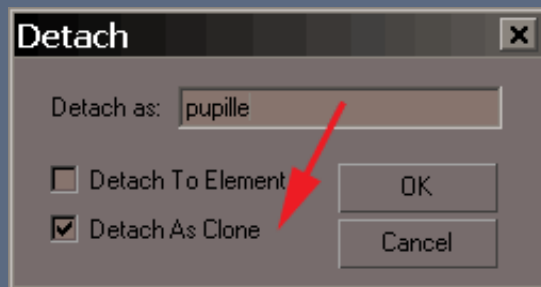
Make a copy of this sphere (Edit/Clone) and hide it, we will need one later.

Select the faces corresponding to the pupil and delete them (activate Ignore Backfacing to select only the visible faces).

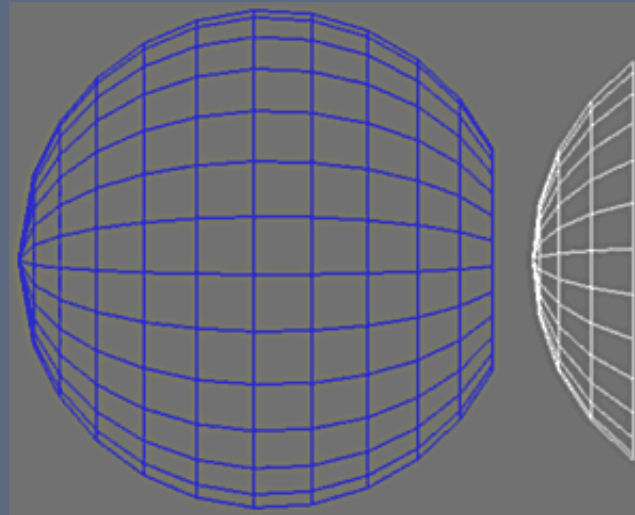
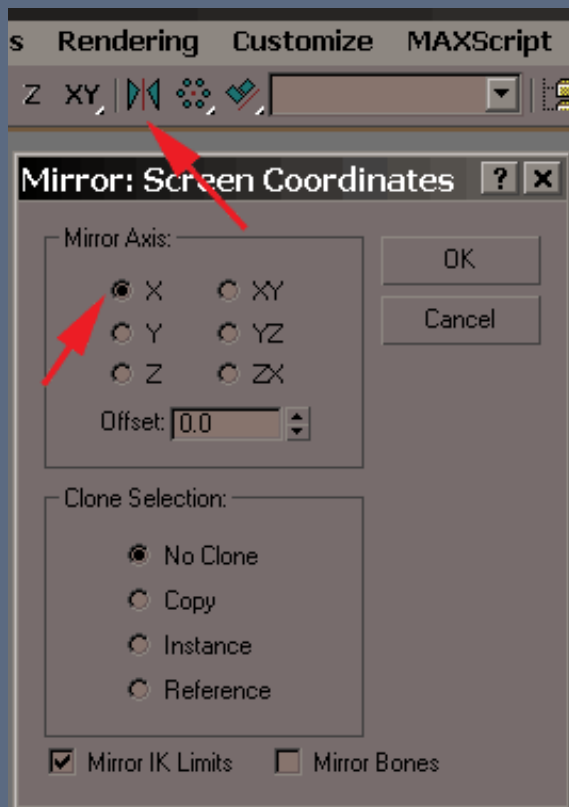
Name this sphere Ocular, duplicate it without moving and name it Cornea copy. Hide this object.



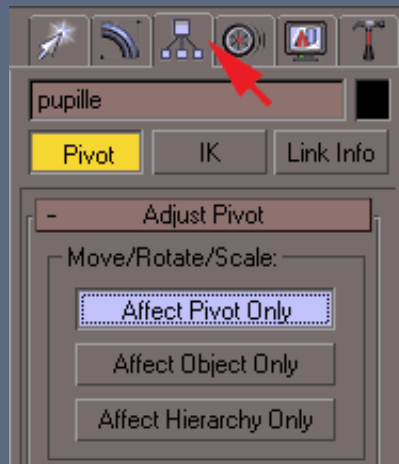
Unhide the first copy of the complete sphere. Select the faces opposite.



Detach these faces and chose Detach As Clone to preserve the intact sphere. Name this object Pupil.

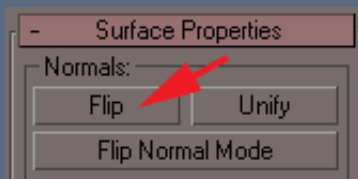
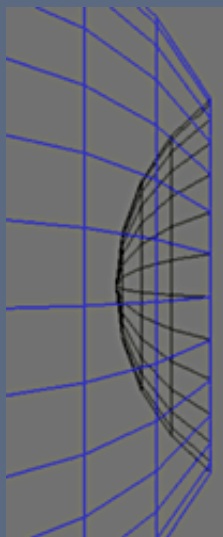
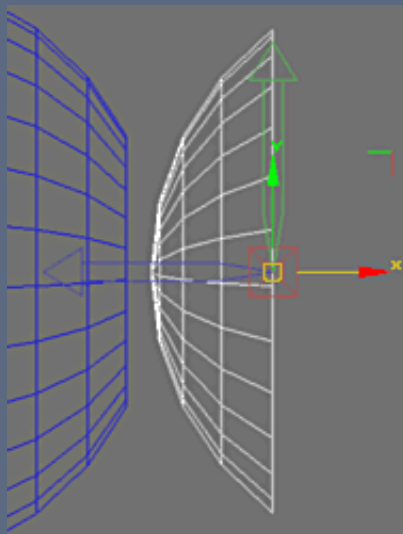


Select the pupil object and apply Mirror to axis X.



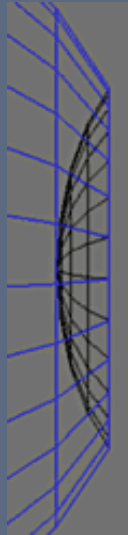
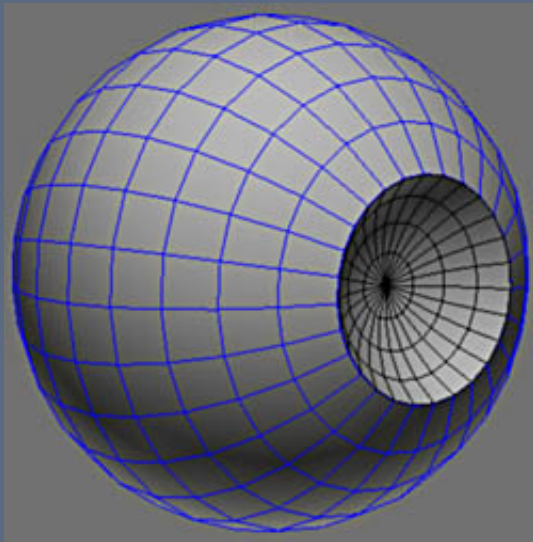
Now redimension the object make it match the eye,  
Move the pivot point as opposite.



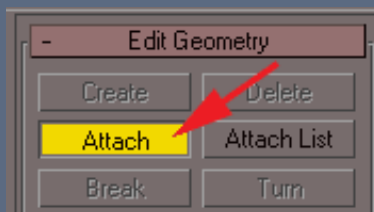


Move the pupil and redimension it with scale.

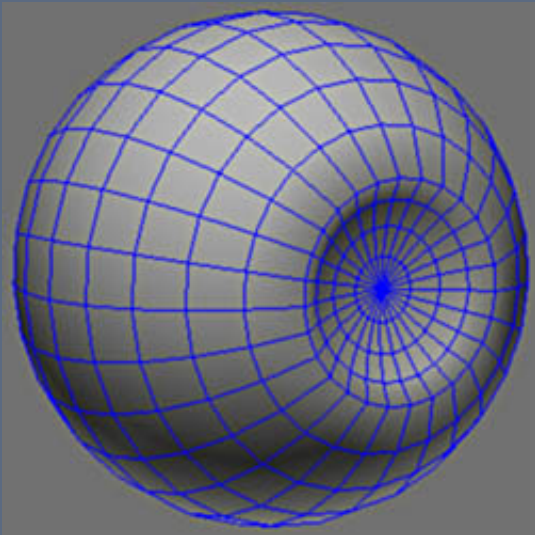
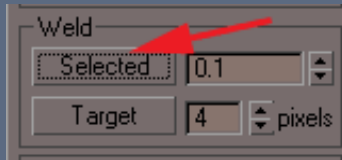
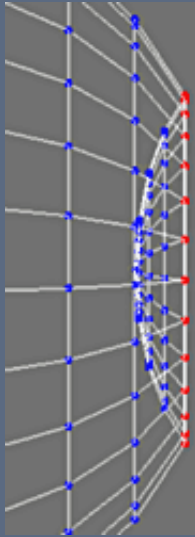
Reverse the normals of the pupil in Face mode.



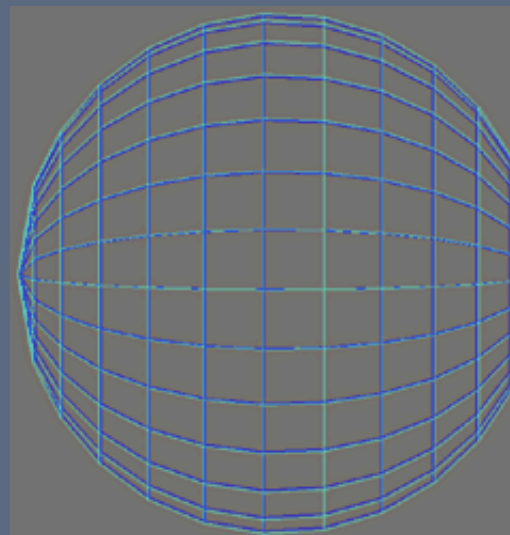
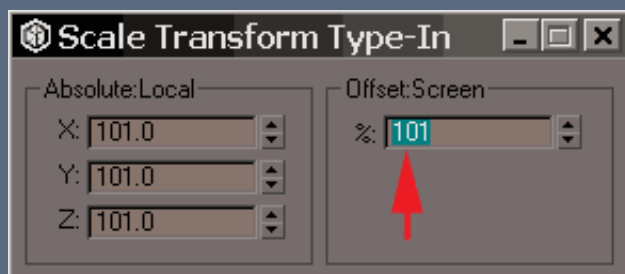
Finally use non-uniform scale on the X axis matching the pupil.



Attach the pupil to the eye with Attach.



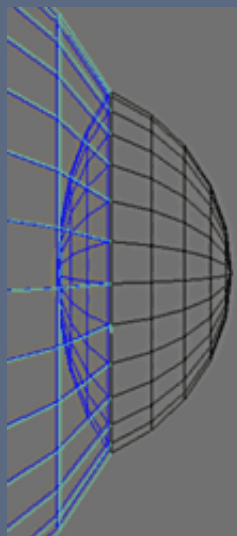
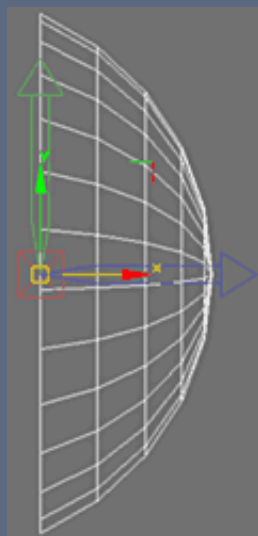
Select the common vertexes and weld them using Weld Selected.



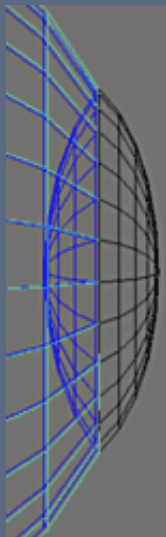
Unhide the Cornea object and apply a uniform scale of 101%.

The spheres are very close but are not superimposed.

The Cornea will be transparent to make it possible to place reflections and brightness on the Ocular sphere



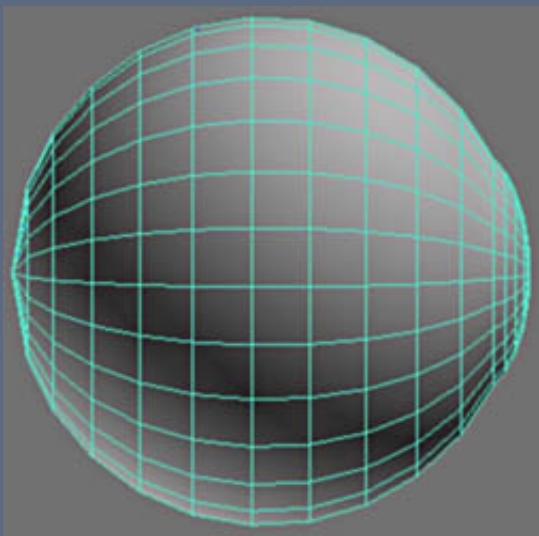
As for the pupil, detach the sphere cap using a pertinent band of faces, place the pivot correctly and adjust the size according to the hole of the cornea.



Squash the cap with non-uniform scale, attach and weld as we did before.

Here the cornea of the eye finished.

Next we will map and texture our Eye...

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**3D Total Homepage**





## 3D Studio Max

## Joan of Arc

## Modeling of the Eyes

Email: Michel Roger --- Web: mr2k.3dvf.com

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	ID	Name	Sub-Material	On/Off
	1	default	armures ( Standard )	<input checked="" type="checkbox"/>
	2	tete	Material #26 ( Standard )	<input checked="" type="checkbox"/>
	3	cheveux	Material #25 ( Standard )	<input checked="" type="checkbox"/>
	4	oeil	Material #23 ( Standard )	<input checked="" type="checkbox"/>
	5	reflet	Material #24 ( Standard )	<input checked="" type="checkbox"/>

Select the Ocular object then Attach the Cornea object.  
Now there is only the Ocular object.

As this Ocular object belongs to the head we will  
assign the same Multi-Sub/Object material to it (see  
the mapping head ).

For that add 2 slots with the Add button and name the  
new Checker IDs.

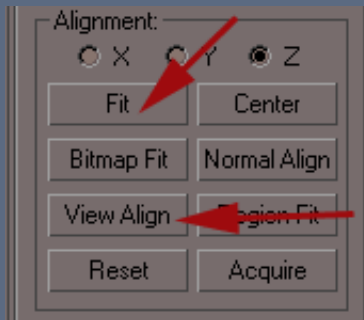
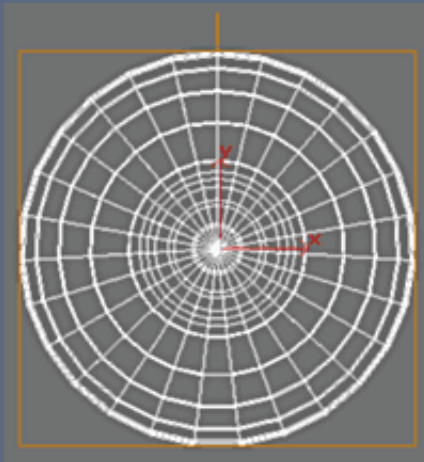
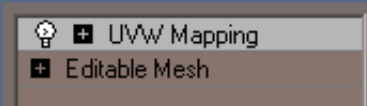
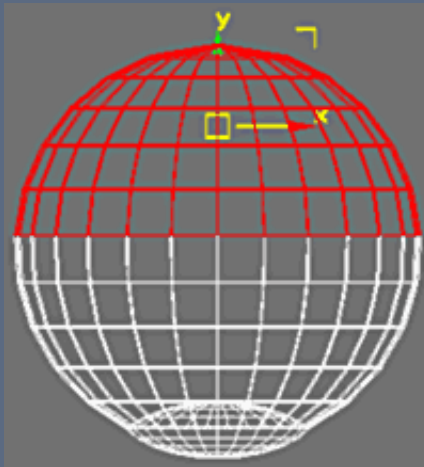
Select the Eye and apply this material to it.

Select the internal sphere in Element mode and enter  
4 within Material ID, start again for the external sphere  
with a value of 5.

For more precision on all that, to see the Bases of the  
mapping .

Material:

ID:



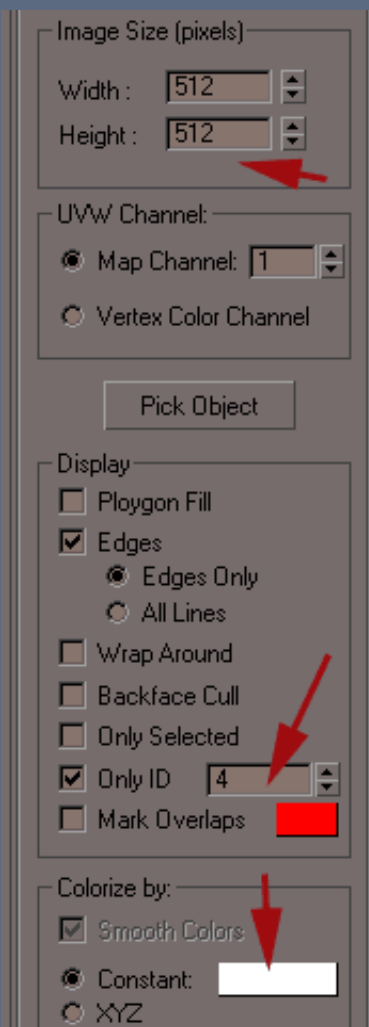
Before placing the co-ordinates of mapping, select the faces shown and delete them.

If we could see it we would need the full sphere. This not being the case we can safely delete the back half.

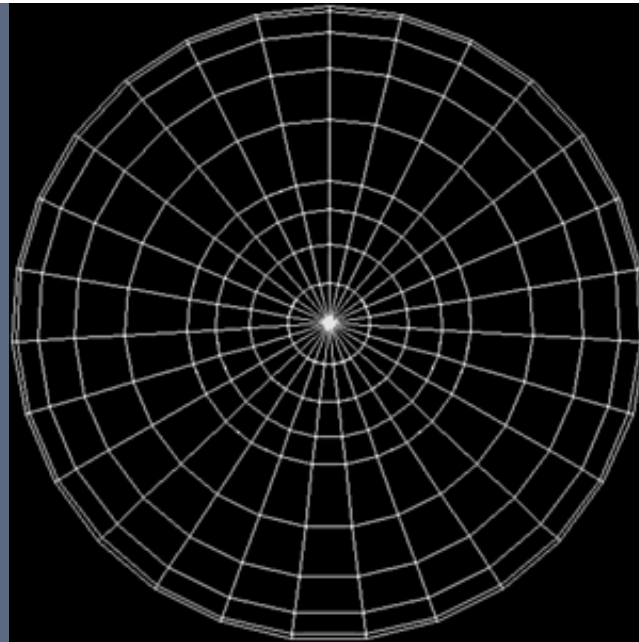
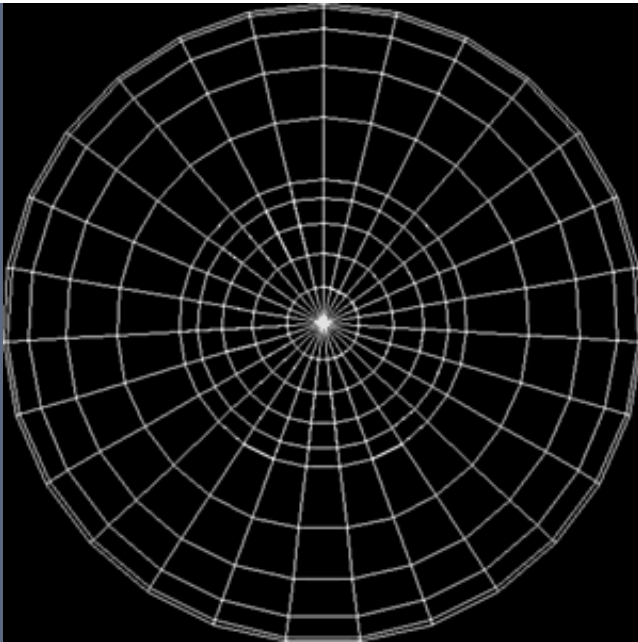
Apply a Planar Map in face mode.

Adjust the mapping Gizmo with View Align and FIT.





With Texporter ([see more details here](#) ), enter 512x512 for the size of the texture, then capture Only ID 4 to recover the UV of the eye and Only ID 5 for the Cornea

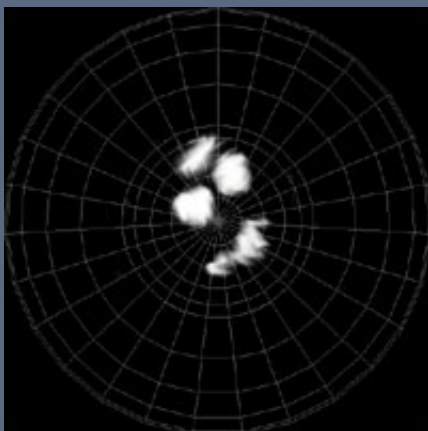
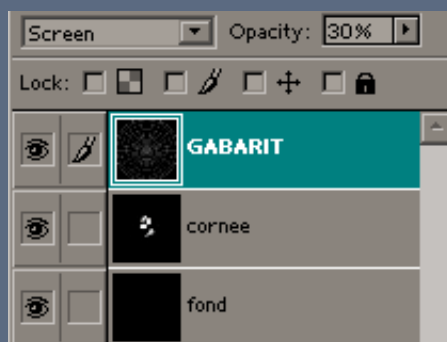


On left the UV of the Cornea and on the right those of the Eye.  
Now goto Photoshop and begin textures according to these guides.



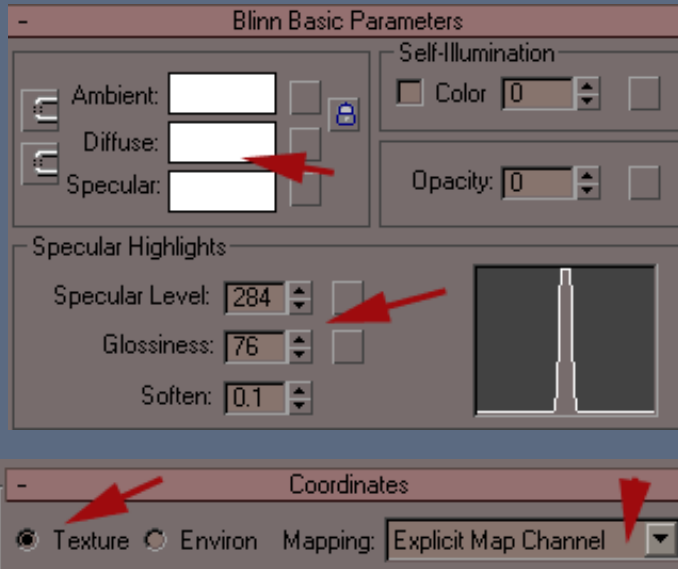
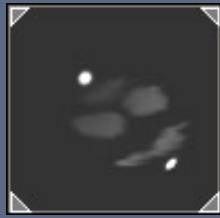
In Photoshop, place the Guide image of UV on a Layer and apply negative or invert color, using Multiply mode will give us the transparent white.

Add copy layers for each part of the eye texture, to facilitate the final improvements.



Make the reflections in the same way for the texture of Outer Eye, but this time use the Guide image in Screen mode to have the transparent black.

Save the textures in TGA, TIFF or PNG format and KEEP the Original PSD files with all the copies. Checker ID 4 corresponds with the eye, place this in the Diffuse channel of the Ocular.



And in Checker ID 5, set the colors to white as opposite, boost the specular and place the texture bitmap in the Reflection channel this time, with a value of 20% or less. Take care to activate the mapping by UV, by default it is Environ which is active.

This way makes it possible to add reflections on the cornea without having recalculate an exact calculation of the raytrace environment...



Adjust the orientation of the eyes (the second eye is a simple copy not a mirror of the first).



Some renders with basic scanline.  
You can go back and customize the shaders of the eye to give a more personal look to your materials.  
Click on the images to see them into large

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3D Total Homepage



Joan of Arc  
by  
Michel Roger

3ds Max



*Bones*



## 3D Studio Max

### Joan of Arc

#### Bases

Email: Michel Roger --- Web: mr2k.3dvf.com

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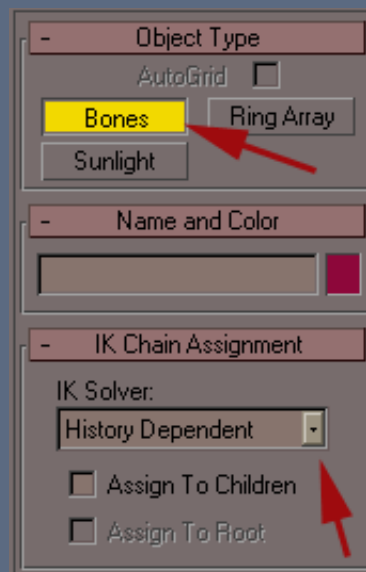
When a character is finished, modeling and editing of the UV. We can even before the texture is finished (with the proviso of not improving the geometry thereafter), begin the editing and the integration of a skeleton to the character.

In max this skeleton can be made up of any kind of objects, Primitives, Mesh or Poly and even splines.

Nevertheless it is preferable to use objects envisaged for this purpose. With the construction of the skeleton it will be simpler and fast.

This skeleton will make it possible to control the character via parameters of skinning, defining how each bone deforms parts of the body.

There is no concept of muscle in basic skinning but for a simple case as here, this is sufficient.



The Bones objects (Os) are in the Create panel, while clicking on the icon Systems (gears) we find the Bones button.

We can define several types of chains of bones, useful for animation but here We are interested in giving a simple skeleton to our character.

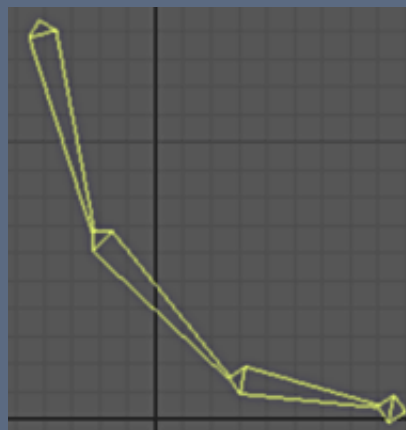
Click on Bones then History Dependent as the type of IK Solver.

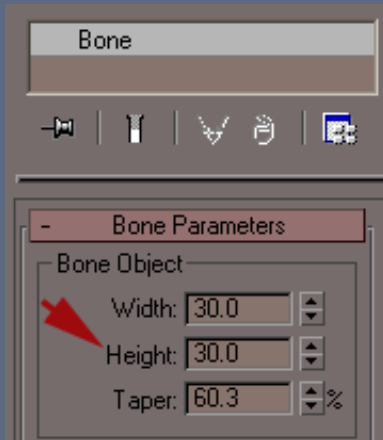
In fact we find ourself in direct kinematics, that is to say that the bones parents order with the bones children, whereas it is precisely the reverse in inverse kinematics (logical!).

Trace the chains of bones in the view Front as shown right.

To finish it, made a right click.

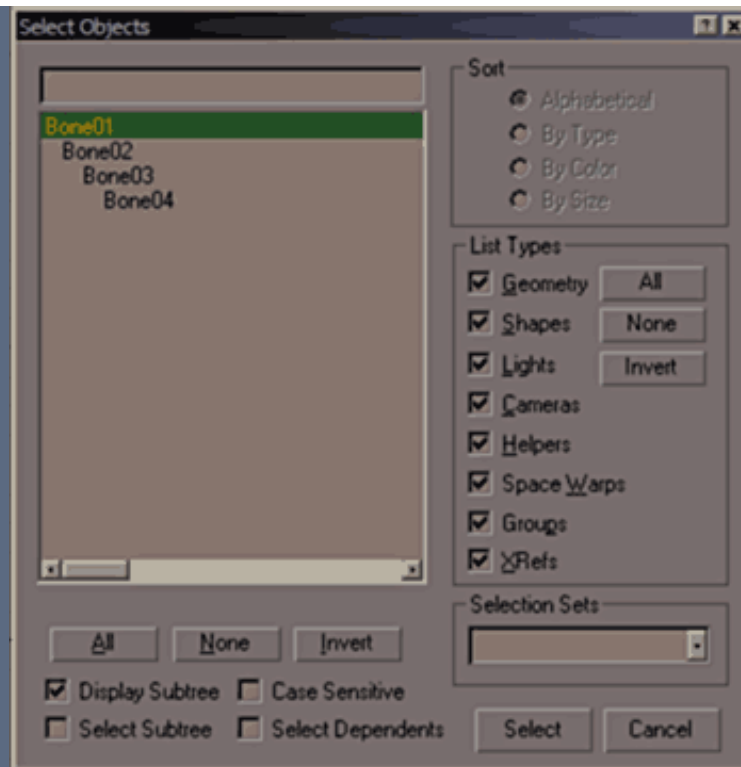
The bones objects are built end to end and their axes of rotation are already correctly positioned.





Click the Modify panel. Select a bone, the root bone e.g. (the bone relative of all the others in the hierarchy of the skeleton), in general the first bone created.

We can modify the thickness of the bones and the way in which it finishes, fine or broad. These adjustments are only visual and do not influence the bone behavior or skeleton.

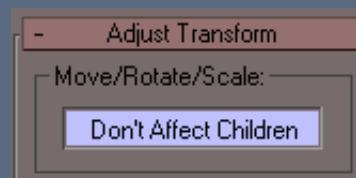


Press on H, the short cut by default will show the Select Objects.

Tick the box Display Subtree, that allows us to see the hierarchy of the skeleton.

It is then simple to select or to know the bone relative of all the others, the root, it is that which is closest to the left edge of the window.

We can of course constantly re-elect the bones.



It is not obvious where to place chains of bones at first. Moreover to lengthen or narrow a bone it is not recommended to use the Scale function, this will not change any value and lead to problems thereafter.

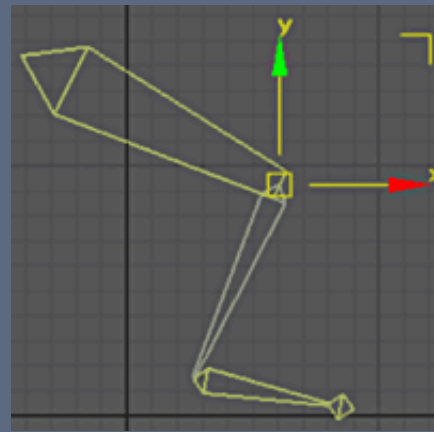
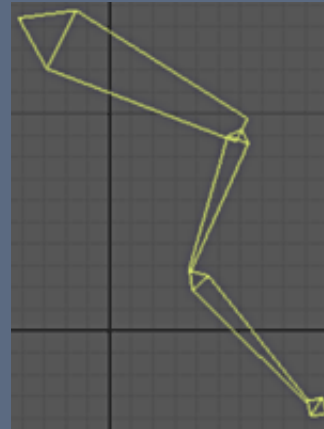
For that, it is necessary to go in to the Hierarchy panel, click on Pivot then within the framework Adjust Transform, to activate Don't Affect Children.

Maintain the joint between two bones opposite top and move this joint.

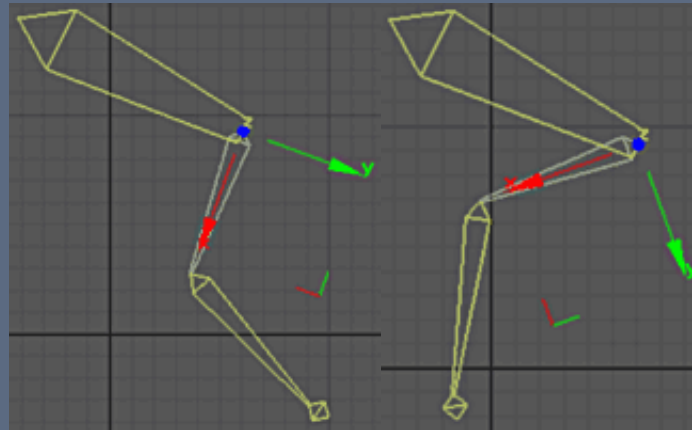
We can then easily modify the shape of the chains of bones and make them coincide with the shape of leg.

We can repeat the operation on each joint.

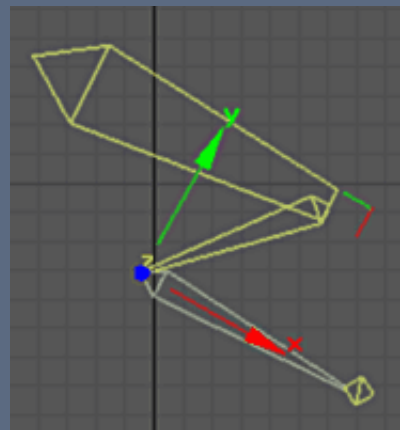
To move the chains as a whole, un-tick Don't Children Affect, select the root and make your Move.



When rotating, it is better to use Local mode of the tool rotation.



Click on each of the bones, we can see their appropriate local axes, we can carry out the rotation still refining the bones as to match our object.



Now we will simply skin an object with a very simple skeleton.

Create a cylinder with 12 segments of with dimensions for example, with enough length to increase the horizontal sections so as to have regular divisions.

In view Face e.g., create a chain of 3 bones as we see here.

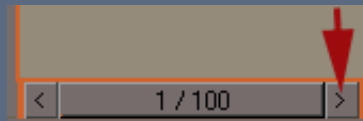
Correctly position the chains on the axis of the cylinder.

This chain will become the skeleton deforming cylinder at the time of the inflections.



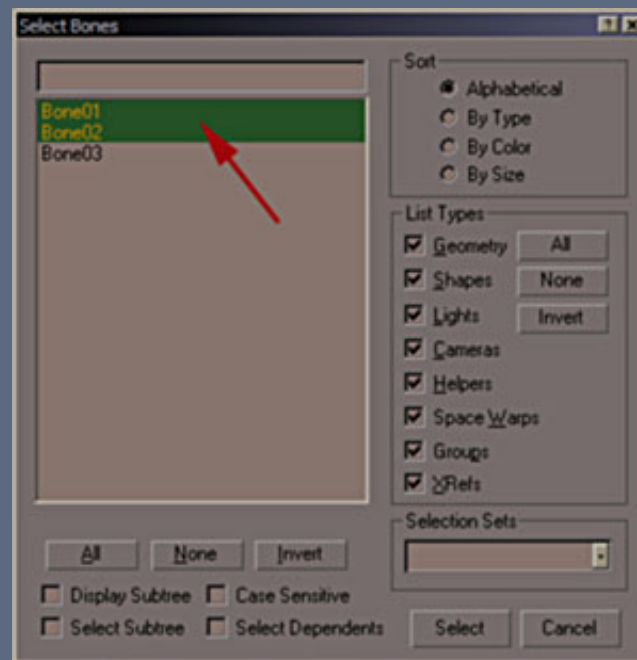
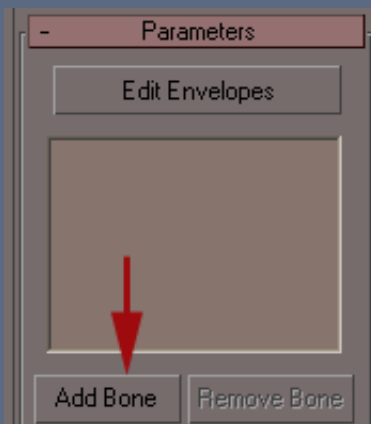
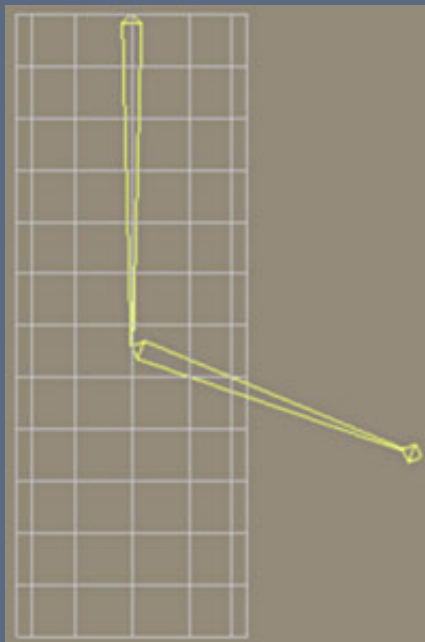
We now will Set how each bone influence the cylinder.

Select then apply a Skin modifier to it.

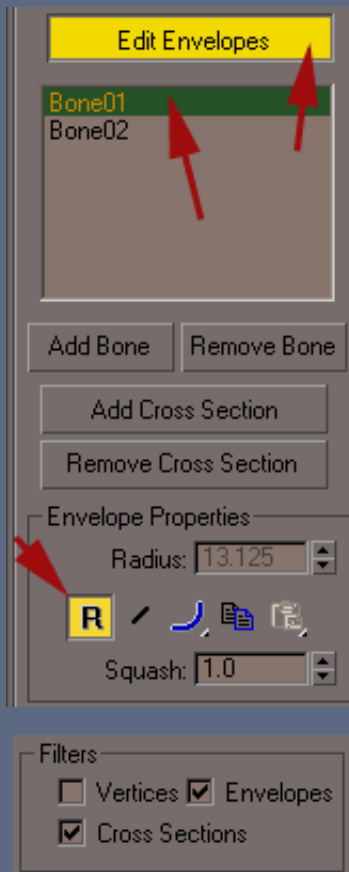


Activate the Animate mode and move a frame the animation bar. Select the second bone, use rotation Local mode, to carry out a rotation of approximately 45° opposite.





Select the cylinder, then modify the Skin Parameters click on Add Bone.  
In the window which appears select the two first.  
That makes it possible to indicate the bones that will influence the cylinder.



Click on Edit Envelopes, on Bone01 and in Envelope Properties, activate the Relative mode.

This mode makes it possible to influence a vertex between several bones, that allows soft and progressive inflections, the contrary mode by default is absolute, where each vertex is influenced only by one bone (rigid envelope for example).

In Filters, ensure that Envelopes and Cross Sections are active.

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**3D Studio Max****Joan of Arc****Bases**

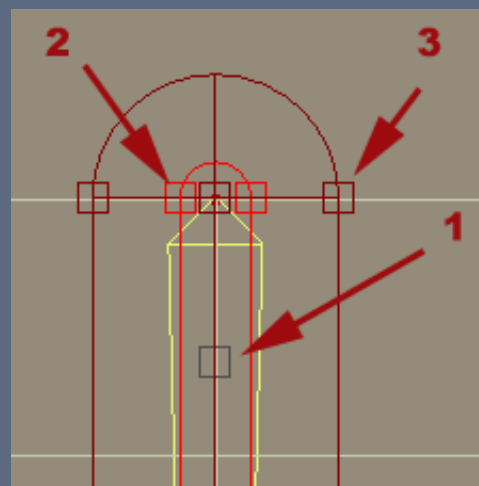
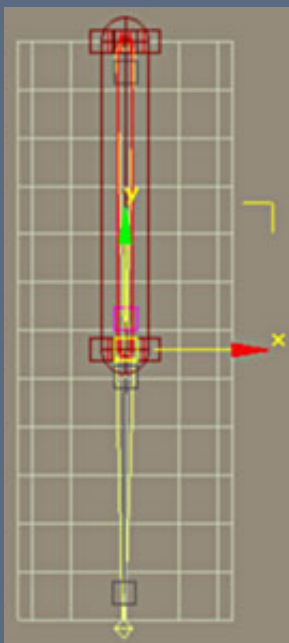
Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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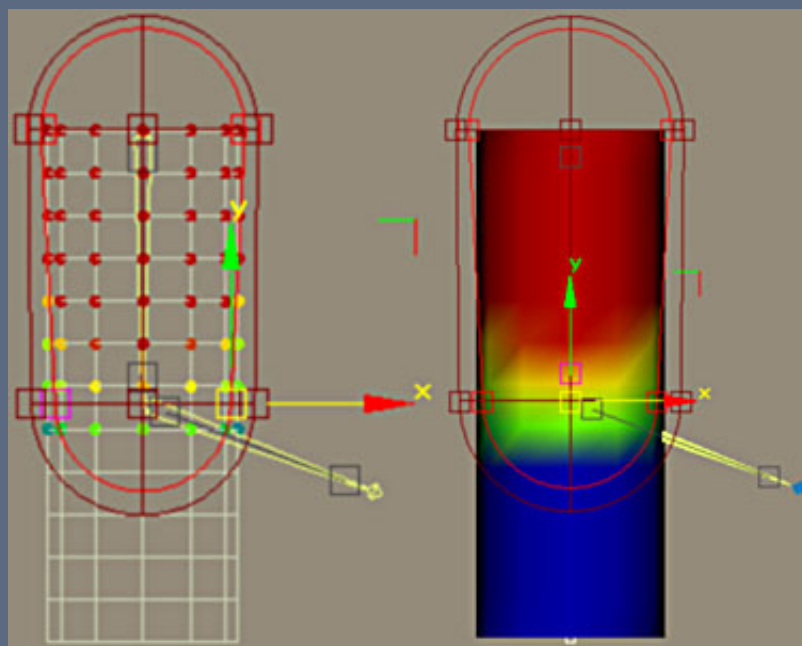


In the viewport, we see appropriate manipulators around Bone01.  
They make it possible to simply adjust the zone of influence of the bone on the object.

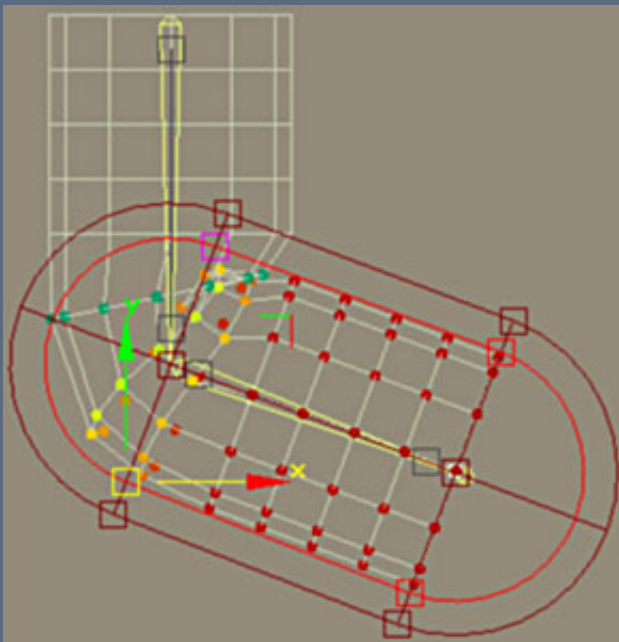
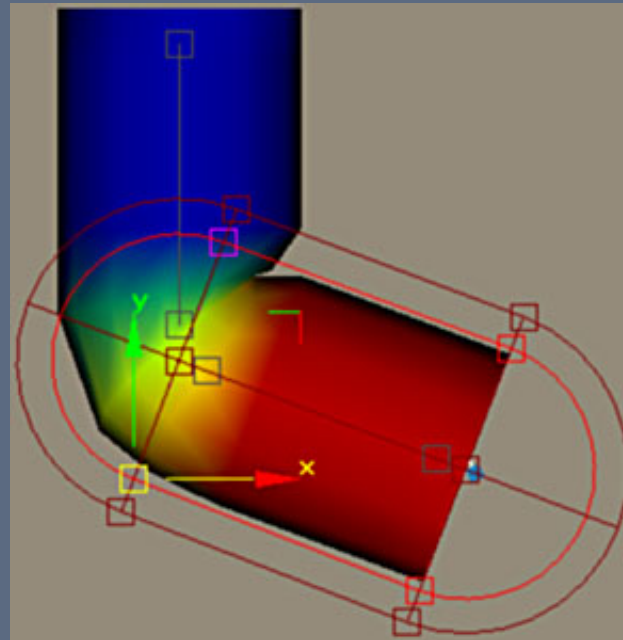
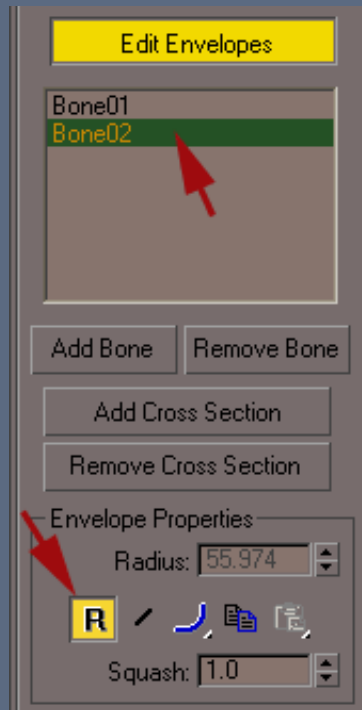
In 1, it is the handle we move one of the ends of the envelope (active Envelopes filter). Indeed the zone of influence of a bone can be shifted compared to the axis of the bone or even external with this one.

In 2, handles regulate the 100% influence of the bone and into 3 the 0% (filter Cross Section), thus defining the volume of decreasing influence.

This filter selection makes it possible to select or not these handles and thus avoid errors in handling during editing.



Adjust the influence like shown above and note the colors the object takes on.  
The force of influence of the bone on the object, are red 100% influence and blue 0% influence.



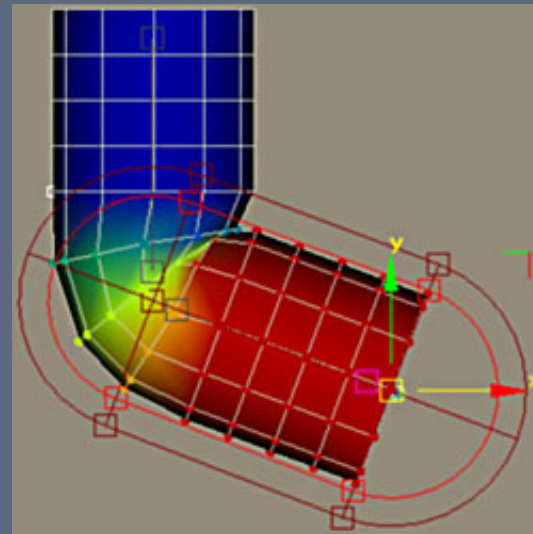
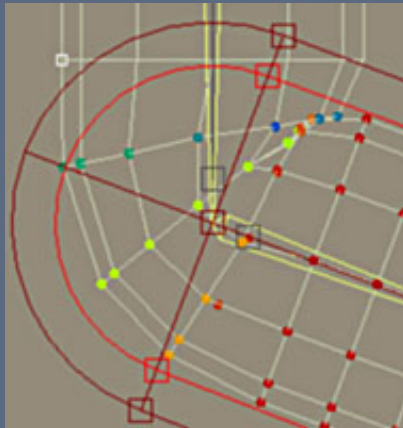
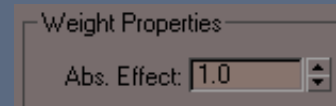
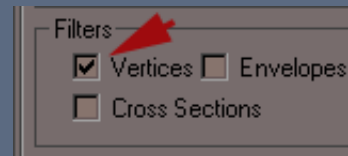
Now select Bone02, activate Relative mode and move the handles.

This shows that the object is directly attracted by the bone according to its influence.

This first adjustment makes it possible to make a fast but coarse skinning.

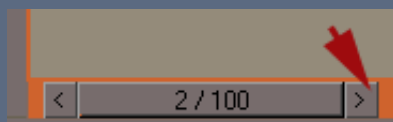
In Filters, activate Vertices, one will refine the skinning by changing the influence with the ready vertex.

Select a red vertex, in Weight Properties, value 1.0 appears. This means that the vertex is 100% influenced by Bone02, in other words, it follows perfectly all its movements, it is thus rigid.

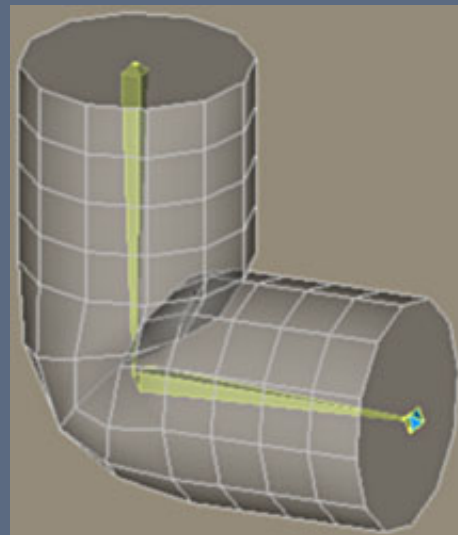
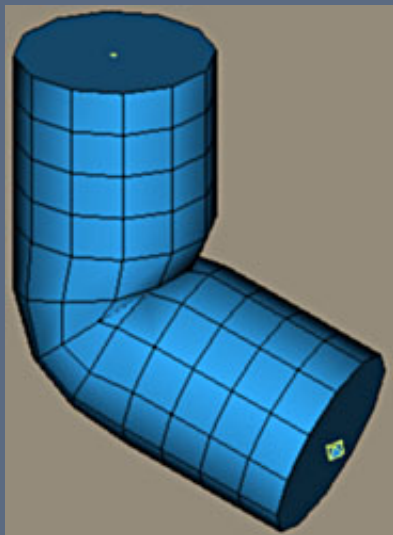


In Filters, activate that Vertices, one will refine the skinning by publishing the influence with the ready vertex.

Select a red vertex, in Weight Properties, value 1.0 appears. That means that this vertex is influenced at 100% by Bone02, in other words, it follows perfectly all its movements, it is thus rigid.



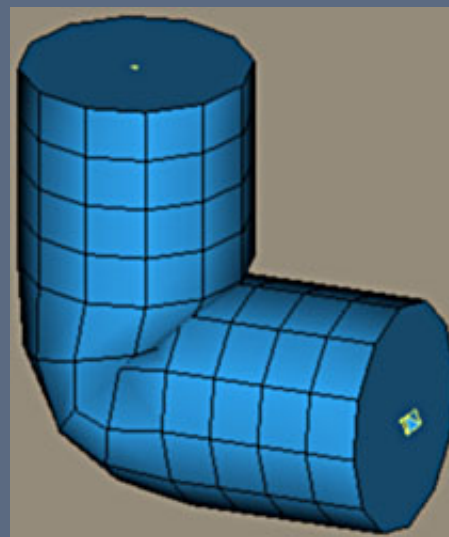
Move the animation bar a frame.



Deselect the cylinder and select Bones02, make a rotation of  $45^\circ$  so as to have a right angle at this time. There are now 3 states of the cylinder, frame 0 with the cylinder at rest, frame 1, 50% of the movement carried out and frame 2, 100% of the movement carried out.

That makes it possible for frame 0 to preserve the object as modeled.

With the frame 1, begin the movement and with the frame 2 in extreme deformation if required.



With this method it relatively quickly becomes very simple to skin a whole character, by adding inflections to each frame and reviewing the skeleton.

The next part it will be with the turn of Joan to receive a skeleton and to be entirely skinned.

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Joan of Arc  
by  
Michel Roger

3ds Max



*Hierarchy*

## 3D Studio Max

Joan of Arc

### Hierarchy & Skeleton

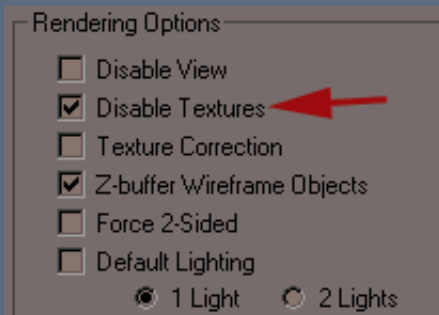
Email: Michel Roger --- Web: mr2k.3dvf.com

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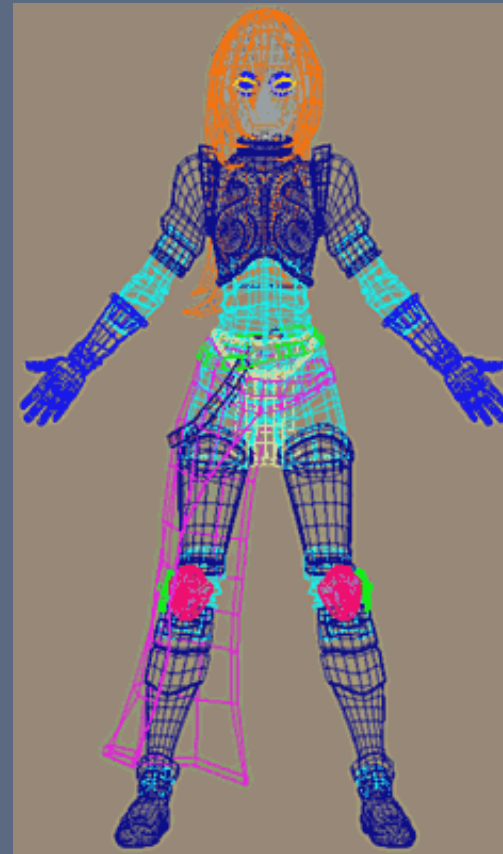
#### Warning:

Here we make of Character Setup for an animation for example but simply to create a skeleton with a hierarchy.

To be able to give installations to Joan. Not opposite and different kinematics but just an animal skeleton in direct kinematics.



Before starting, change the view of the viewport to wire frame, go into Customize/Viewport Configuration.  
This accelerates the refresh rate largely.



Before designing the skeleton, name all the objects of the character. The nomenclature hardly has importance, but it is easier to find parts of our object later, this is practical and logical. Single objects in top of list and the symmetrical ones with the prefix D or G in front.

```

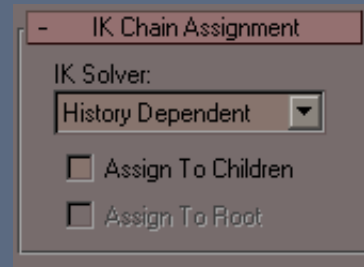
_Armure
_Boucle
_Ceinture
_Ceinture2
_Cheveux
_Habit
_Jupe
_Pagne
_Visage
D axe
D cils
D epaule
D genoux
D Jambe
D main
D oeil
D pied
D tibia
D tibia haut
  
```

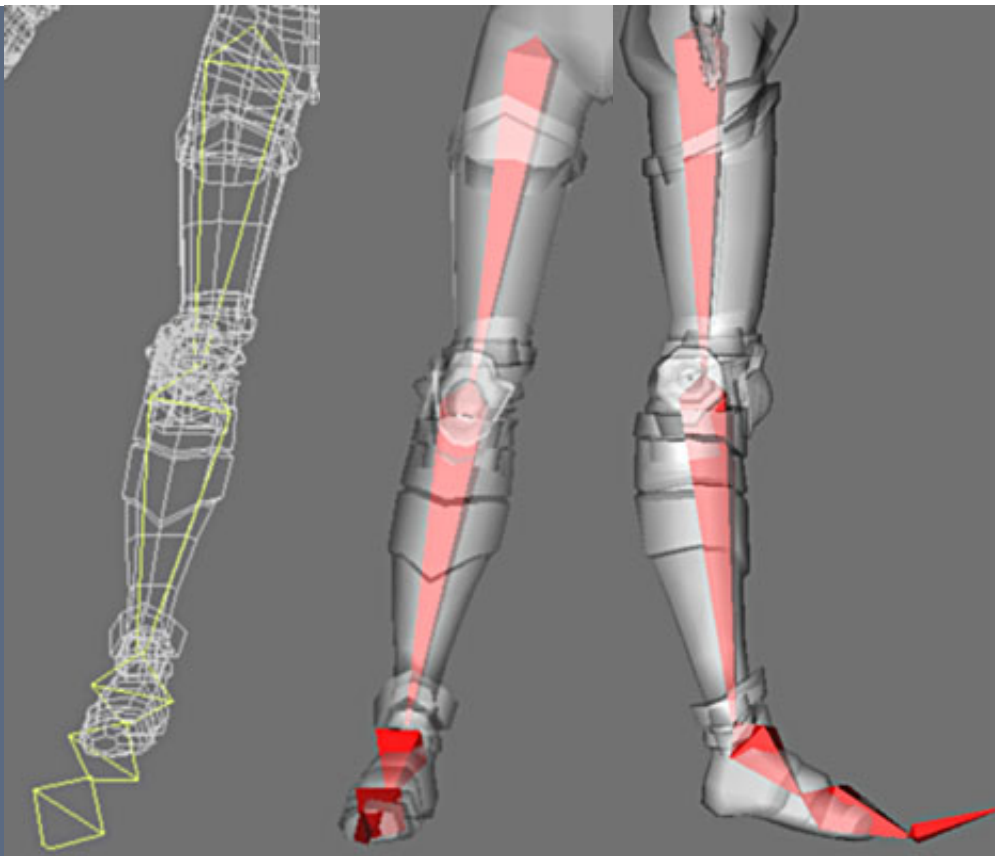
The character comprises rigid parts of armour and of the flexible parts of clothing, the skirt, the hair or the face (neck).

The rigid objects will be simply connected to the corresponding bones by a simple bond and the remainder will be the subject of skinning.

Hide the accessories for the moment and leaving only the body viewable.

Go in the panel Create/Systems then Bones.  
Chose History Dependent.





Build the chains of bones for the leg, as shown in this example. Change the size of the bone in Modify (Width and Height) to adapt it to the model then finely adjust the position of the articulation in the Hierarchy panel after having activated Don't Affect Children.

Finish by adjusting the rotation the bones in local mode

(see Bones bases )

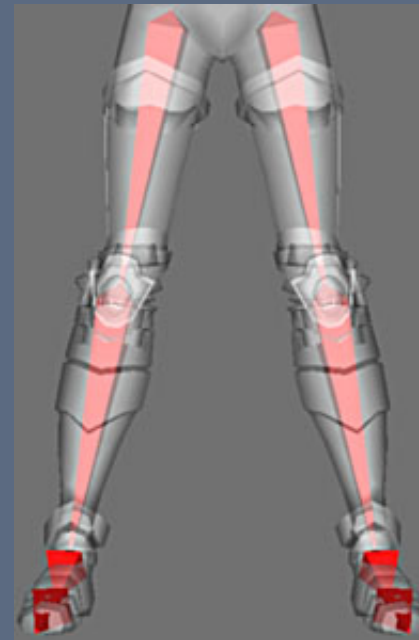
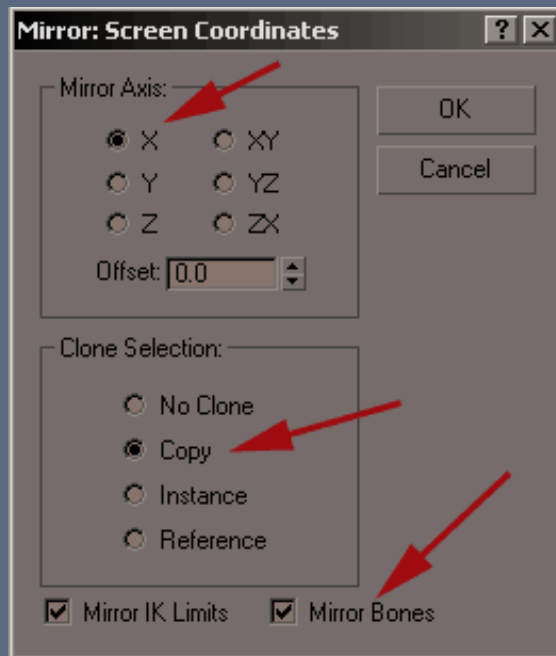
Finally erase the last bone which was used only for the adjustment.



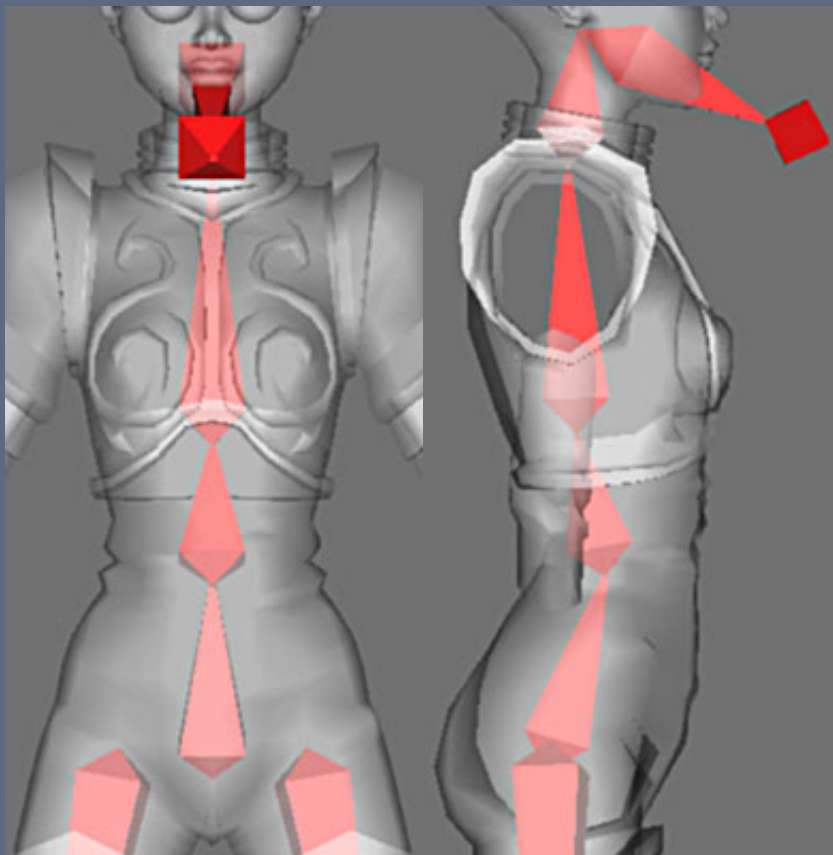
Name the bones, here the nomenclature is B for bone, D or G for the with dimensions we followed by the anatomical name.

```

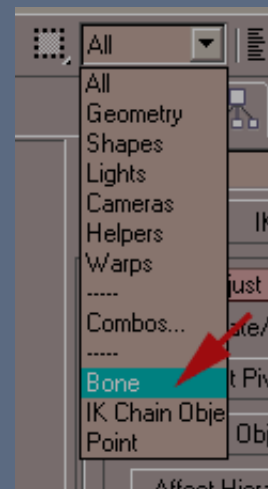
_Armure
_Cheveux
_Habit
_Visage
bD femur
  bD tibia
    bD cheville
      bD pied
bG femur
  bG tibia
    bG cheville
      bG pied
D axe
D cils
D epaule
D genoux
D Jambe
  
```



Select the chain of bones and in the Front View make a Mirror Copy according to X, activate Mirror Bones to make a symmetrical copy local axes of those.

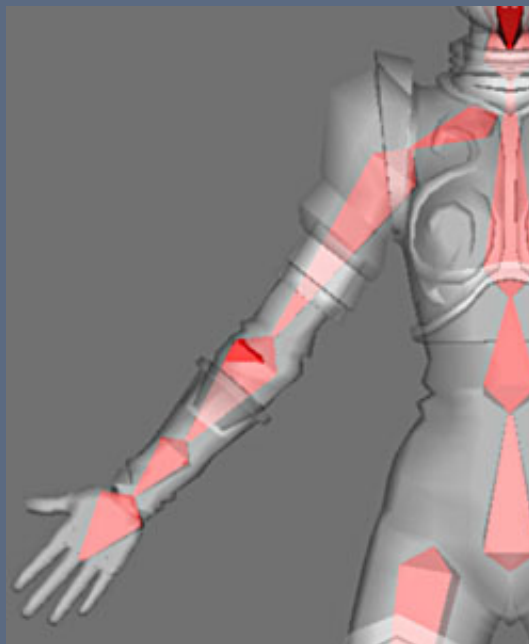


With the tower of the spinal column. Select the bones, activate Bone in the type of selection object.  
As previously adjust the articulations.



Name the bones.

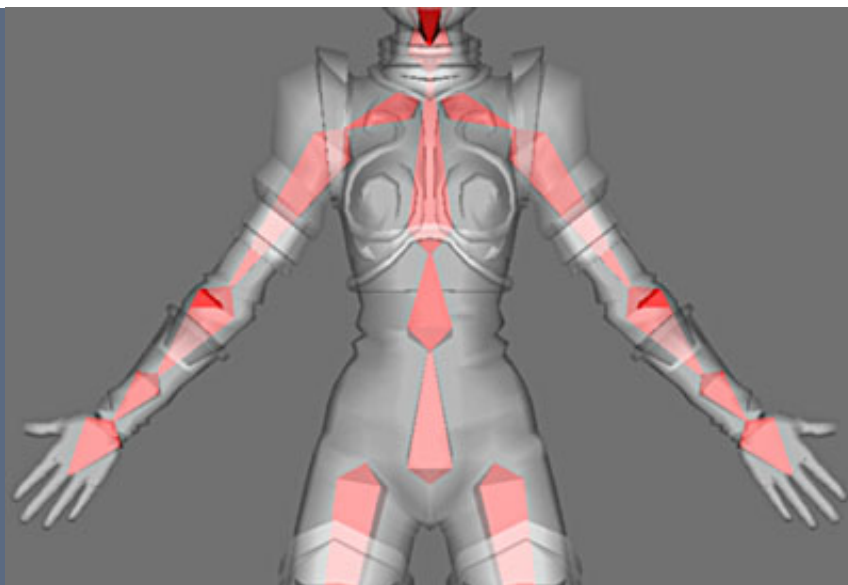
bV bassin  
bV vertebre 01  
bV vertebre 02  
bV cou  
bV tete







Chains of bones of the arm. Note that before arms two bones receives, to allow the movements of pronation and specific supination to this part of the skeleton.



bD clavicule  
bD bras  
  bD avant bras 01  
    bD avant bras 02  
      bD main  
bD femur

Name the bones and make them symmetrical.

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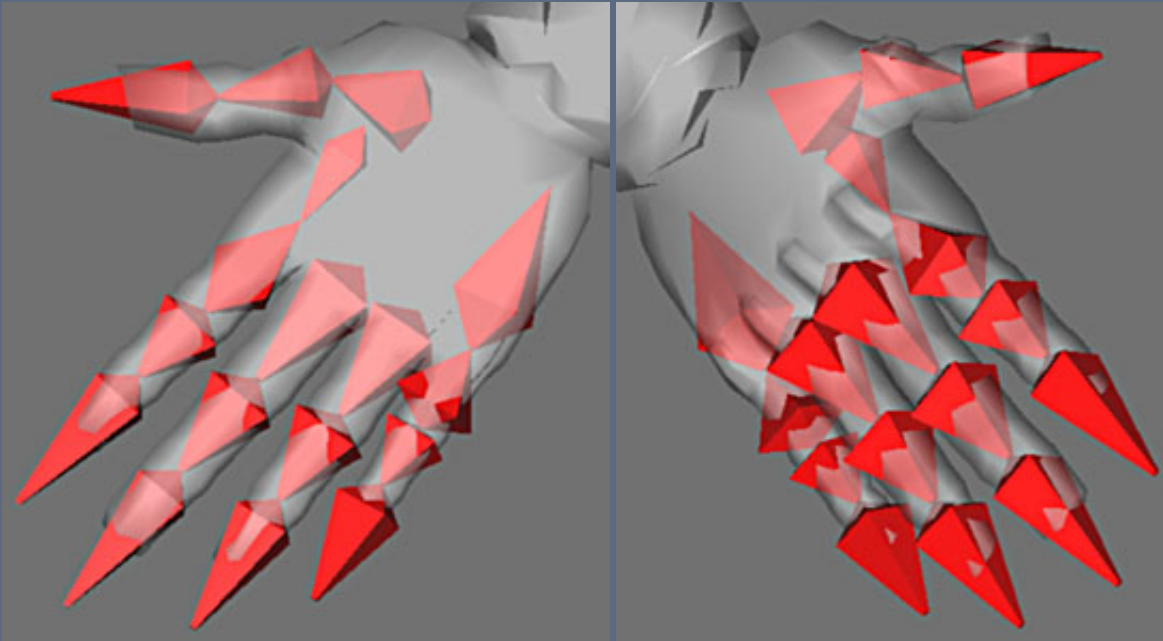
3D Studio Max

Joan of Arc

Hierarchy & Skeleton

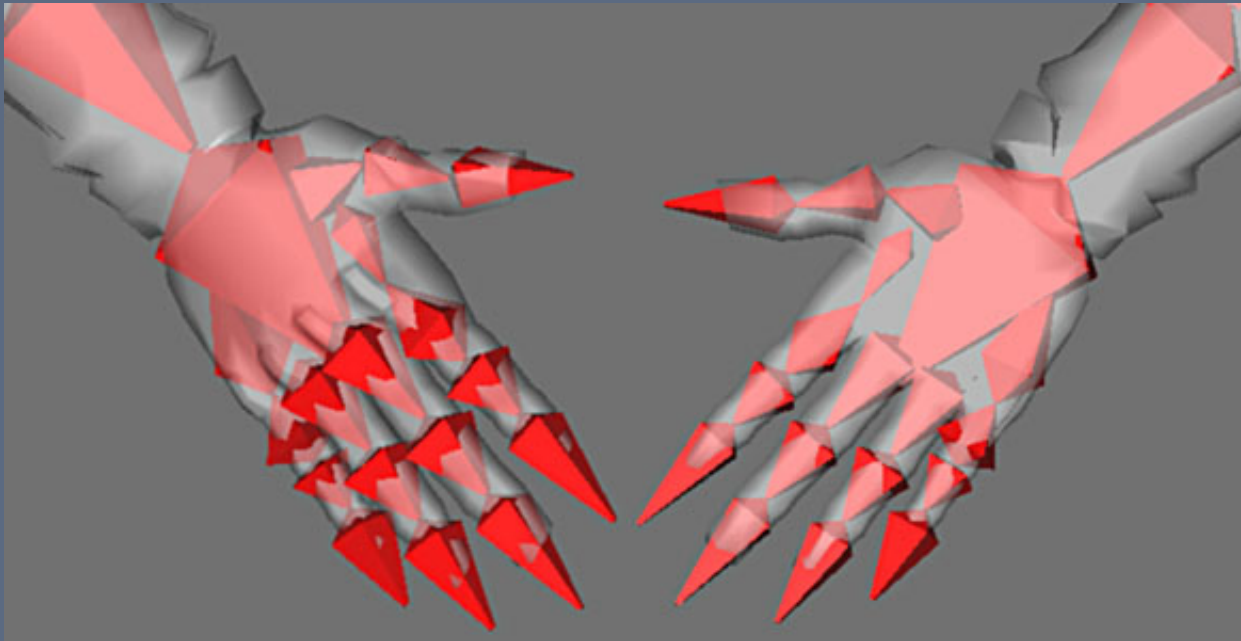
Email: Michel Roger --- Web: mr2k.3dvf.com

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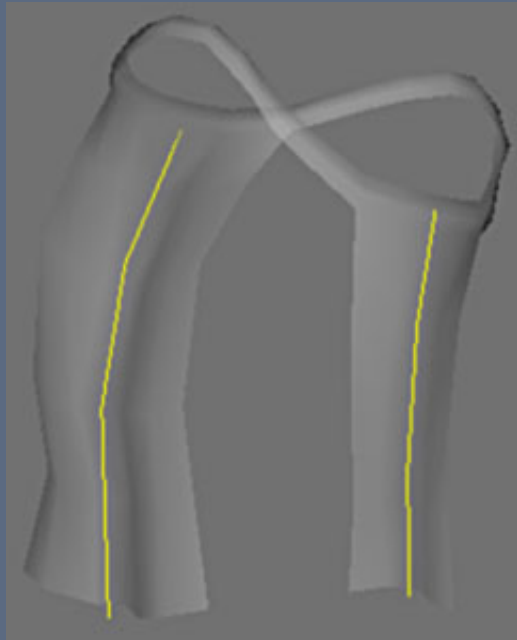
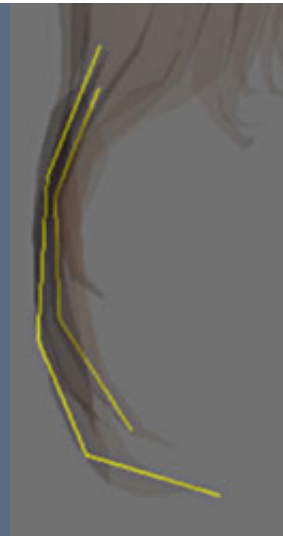
The Bones of the fingers with nomenclature on the right.

bD index 00  
bD index01  
bD index 02  
bD index 03  
bD majeur 01  
bD majeur 02  
bD majeur 03  
bD pouce 01  
bD pouce 02  
bD pouce 03  
bG annulaire 01  
bG annulaire 02  
bG annulaire 03  
bG auriculaire 00  
bG auriculaire 01  
bG auriculaire 02  
bG auriculaire 03

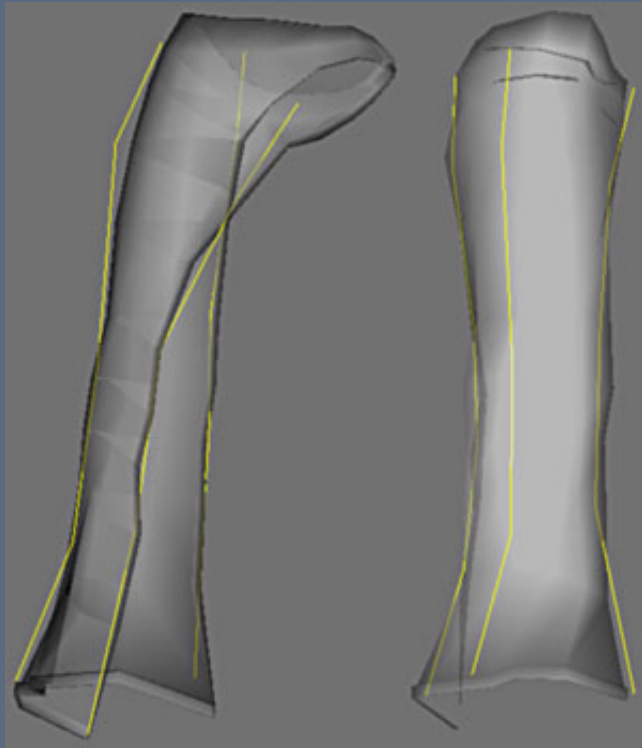




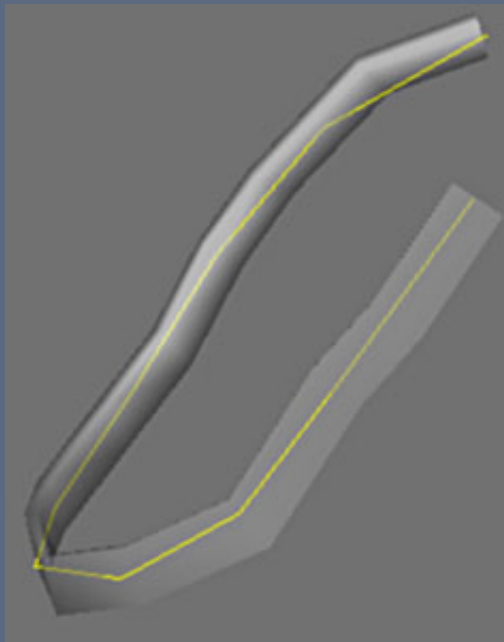
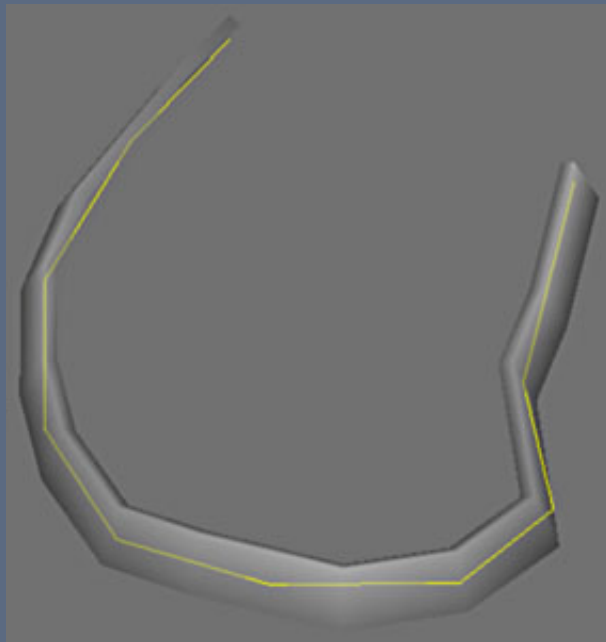
When regulating the hair mesh, rather than using traditional Bones objects we can use Splines. Each spline is seen as a bone but a bone which we can move the points of controls freely.  
Here all 5 splines correspond to mesh.



The loincloth with two splines



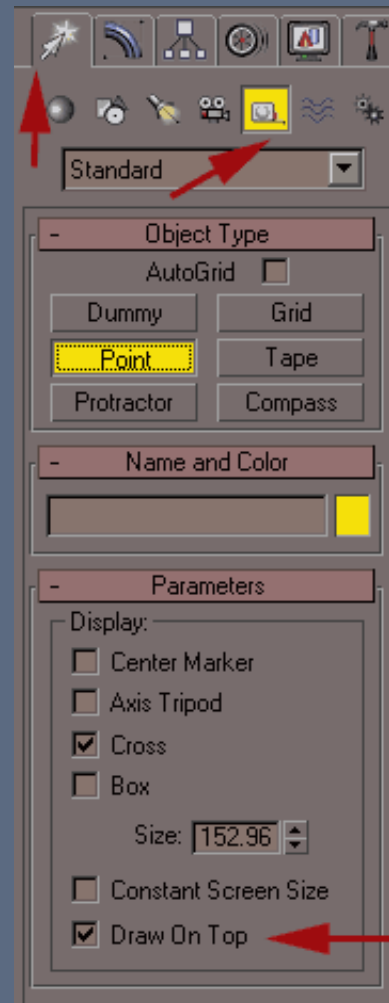
And also finish the skirt with 3 splines as well as  
the belt with a spline.



To finish the preparation of the hierarchy of the skeleton it is necessary to create what is called the ROOT. A relative object all of bones use which is used to move the character as a whole.

Go into Create/Helpers then Point.

Select and Draw one Signal and make this Point object quite visible over the other objects.





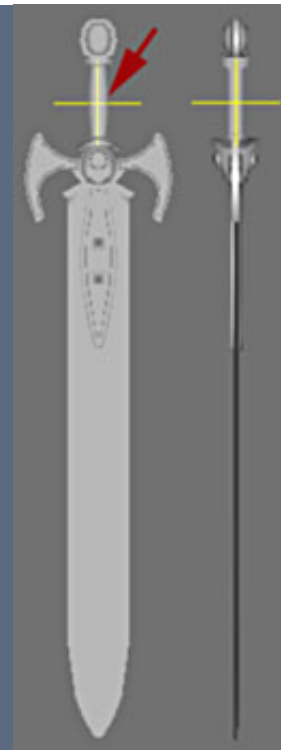


Create it at the base of the character between the feet opposite.  
Name it ROOT.

Make another the same way for the sword while placing a Point on the handle as opposite.

This point will be the manipulator of the sword to direct it or move it for example.

Nomenclature for the bones splines, should be as comprehensible as possible.



bS ceinture  
bS cheveux avant  
bS cheveux D  
bS cheveux dos D  
bS cheveux dos G  
bS cheveux G  
bS jupe arriere  
bS jupe avant  
bS jupe cote  
bS pagne arriere  
bS pagne devant

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Joan of Arc

Hierarchy & Skeleton

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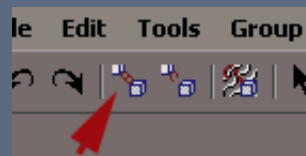
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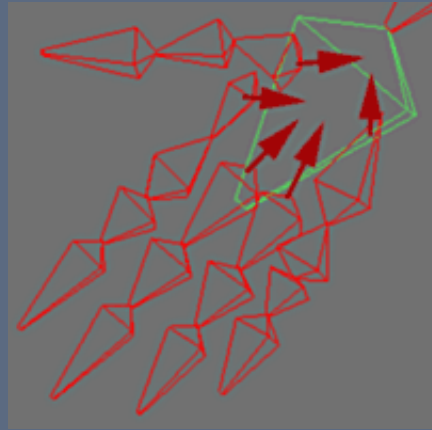
Hide all the objects except the skeleton



Now we need to join the dependent parts of the skeleton so as to make one skeleton.

Activate the Select and Link icon, click on a bone of one of the fingers (the first its chain) then move the cursor until meeting the hand bone, the icon changes form, release the left button and the bond is made.

Repeat the operation for each finger. Each finger is now connected to the hand (linked).



Do the same with the hair splines by linking them to front of the head.



Connect the Shoulders on the bone vertebra.

Connect the Femurs on the bone to the hips.

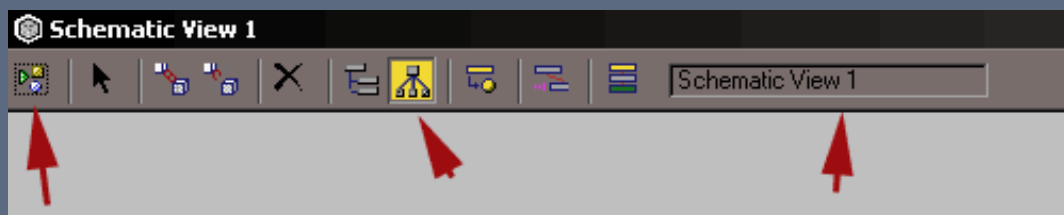
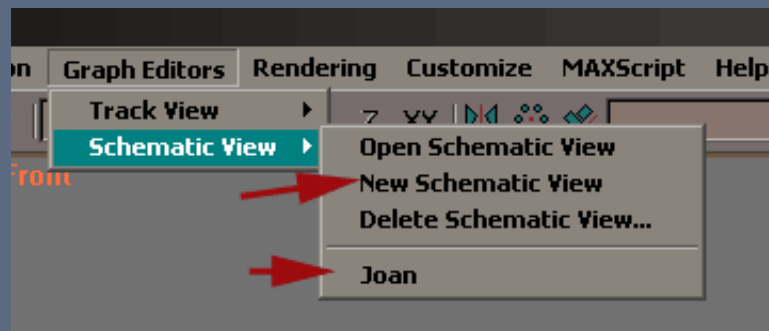




Finally connect the hip bones to ROOT bone.

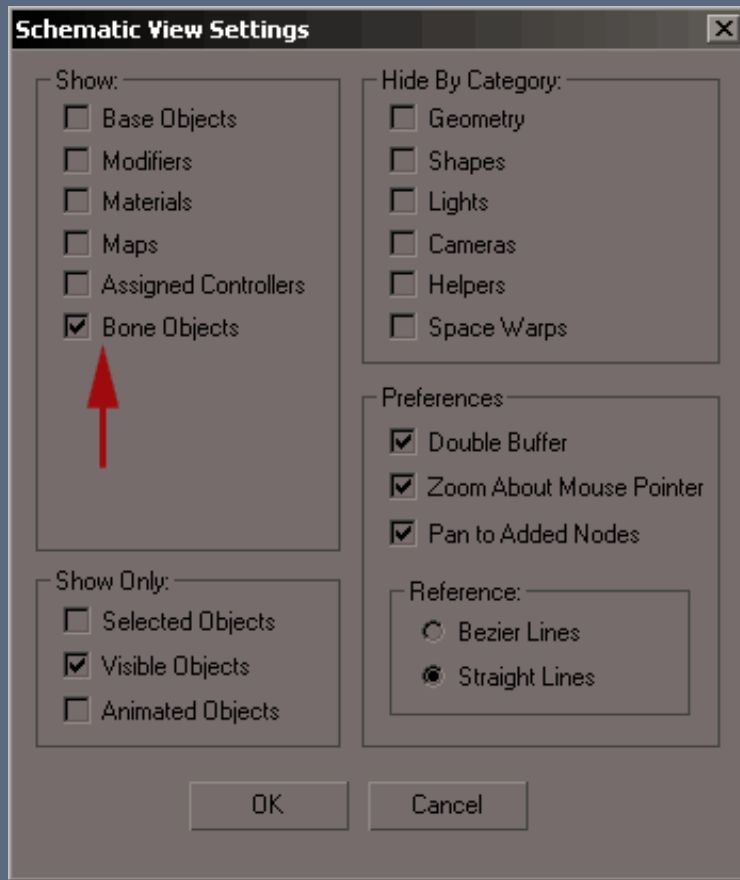
Also connect the control point of the sword to the right Main bone.

Now when you move ROOT bone, the skeleton should follow (without displacement).



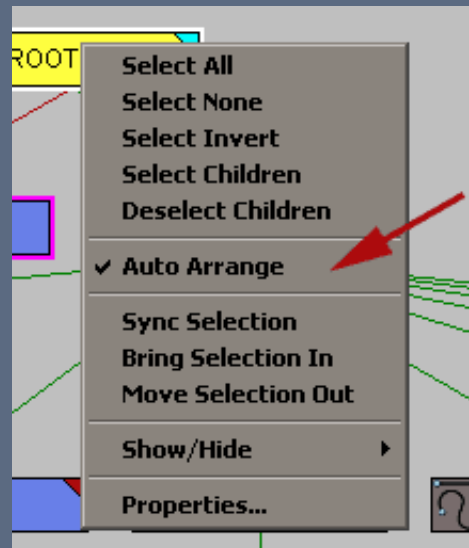
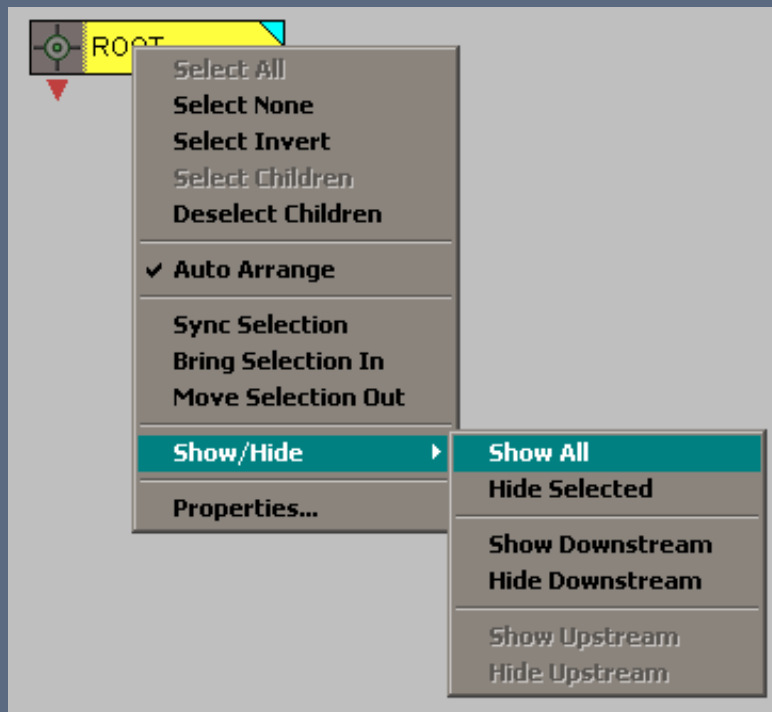
We can See the whole of the hierarchy of the skeleton by using Schematic View.  
In Graph Editor then Schematic View, made New Schematic View.

In the window which appears we can name it, here Joan, click Reference mode then click on Filters.

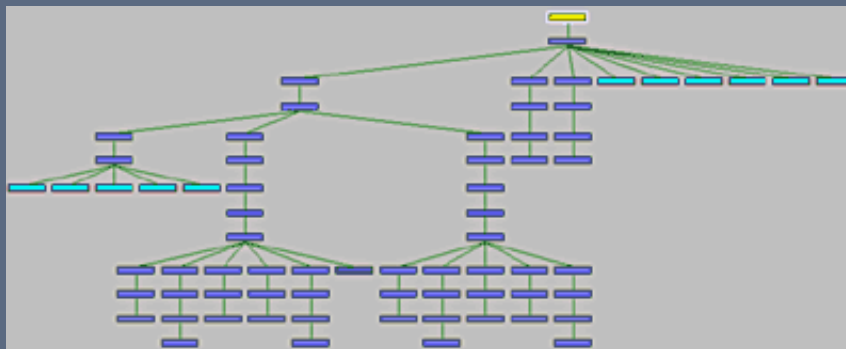


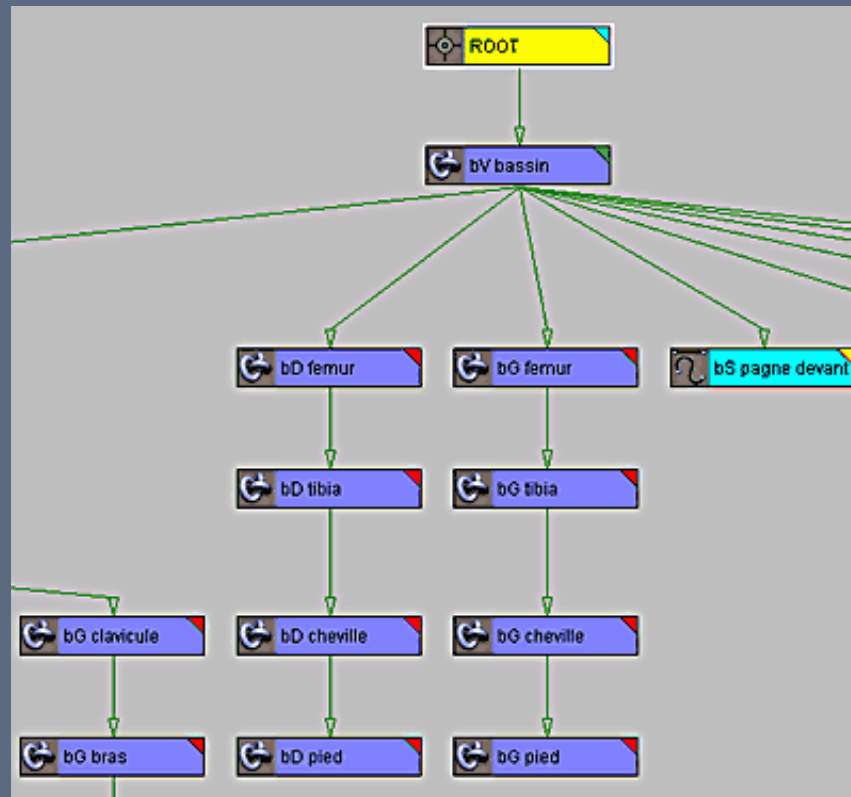
Show only the bones to simplify the graph.





Right Click on the ROOT, activate Show All and Auto Arrange.





The whole skeleton is Displayed, we can zoom and see the names and check the hierarchy.

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Joan of Arc  
by  
Michel Roger

3ds Max



*Skinning*

3D Studio Max

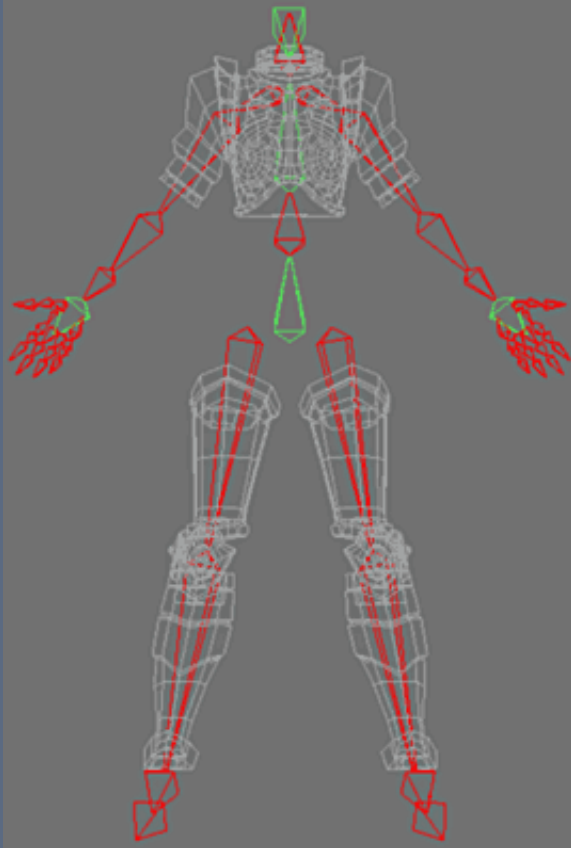
Joan of Arc

Skinning

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The first part of the skinning is not really one since the armour parts do not need variable influences compared to the inflections of the bones.

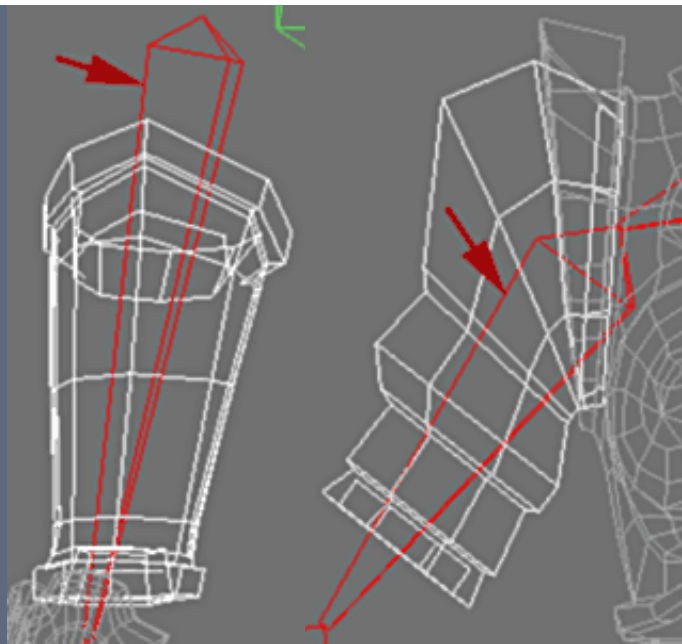
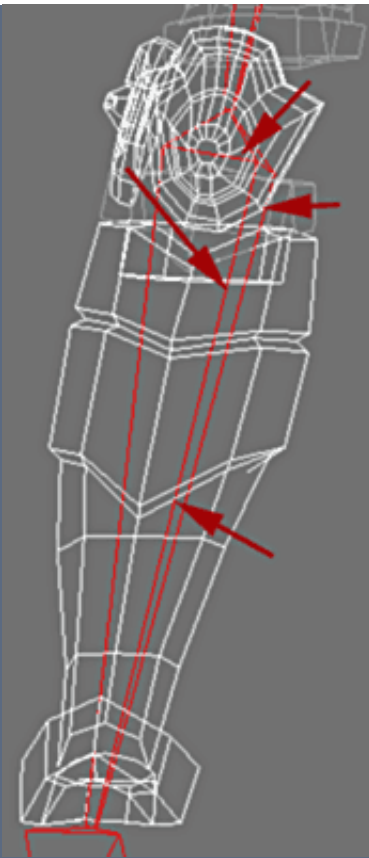


They are satisfied to follow the static movements of those.

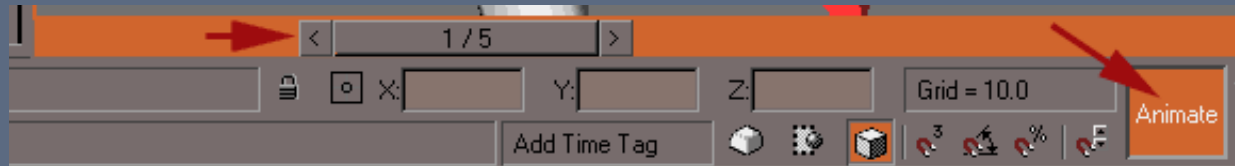
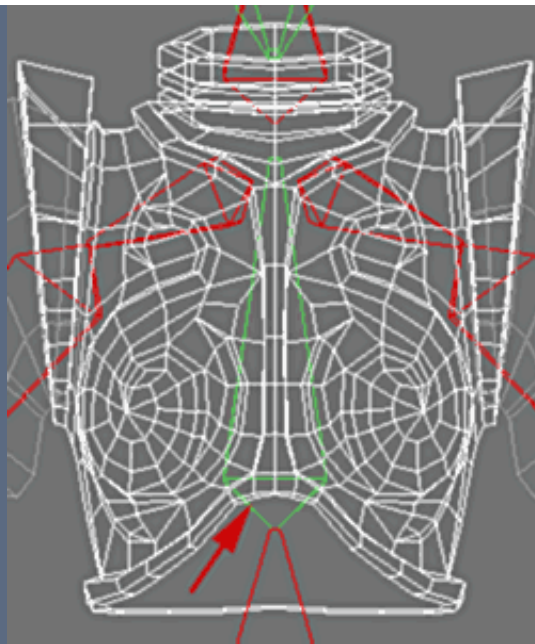
Hide the objects other than the armour parts.

We will bind ("link") the parts to the bone using the function Select And Link.





Bind the parts of the legs to the bone Tibia, the part of the thigh to the bone Femur, the part of shoulder to the bone Bras and the armour of bust to the bone Vertebrae 02.

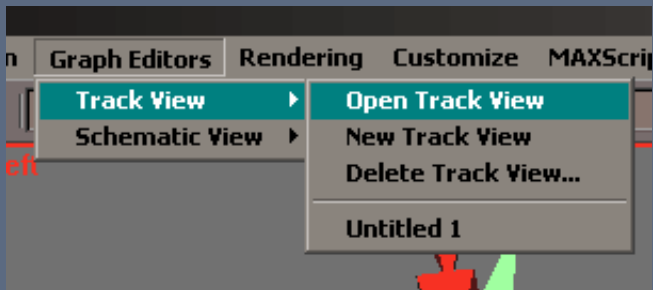
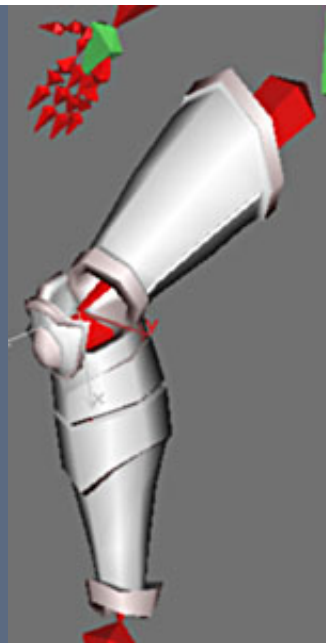


Activate Animation mode and advance the Animation Bar.

Select the Femur bone and rotate it in Local mode bend the leg as opposite, the same way for the bone Tibia. The all of the parts follow the movement of the bones well.

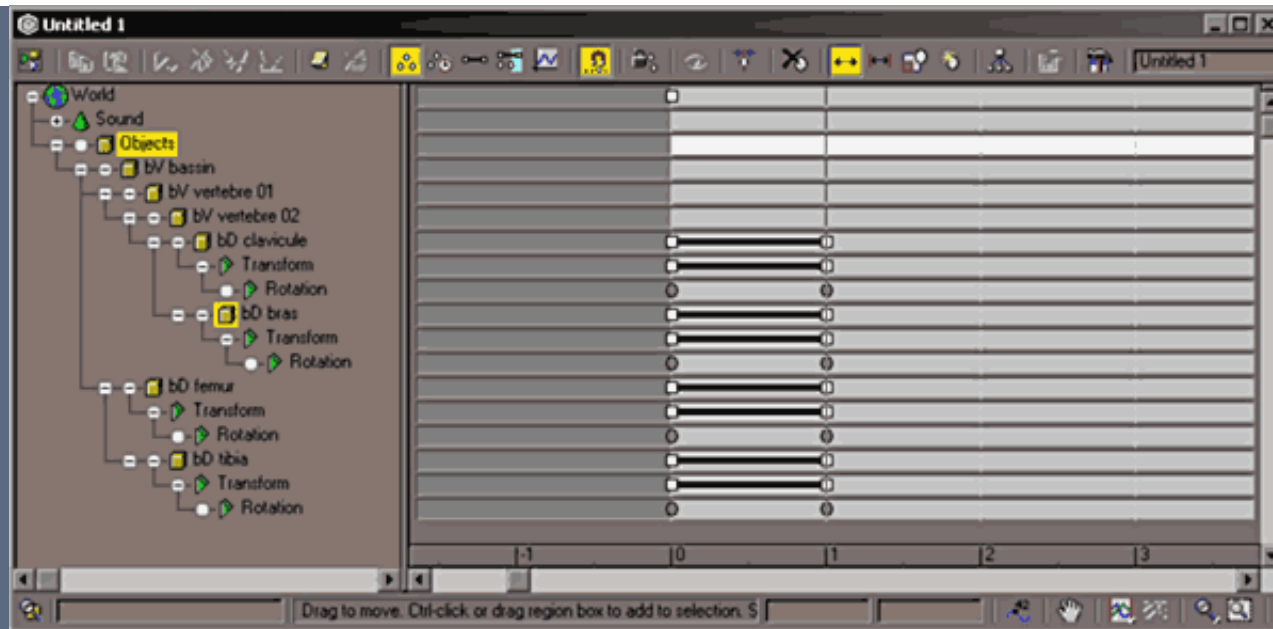
Note: Max will use less resources to bind an object directly to a bone in a rigid way than to associate it with modify Skin with 100% of influence.

Visually the result is the same but not in terms of performance, effectiveness and resources



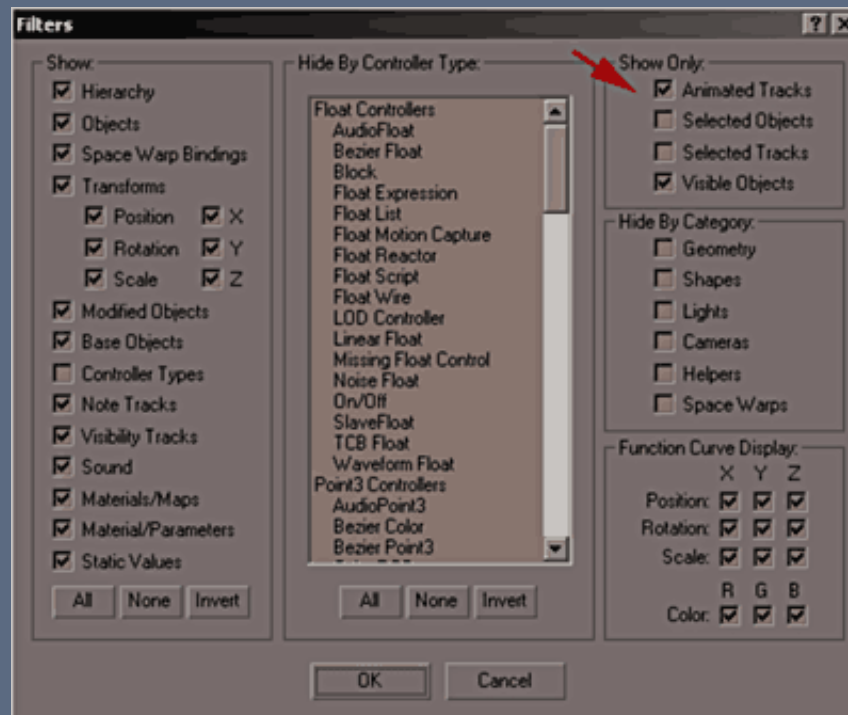
When we animate in max, this creates animation keys, we can view and handle them in the Track View.





This window represents the tree structure on the left of the screen with the handling types associated with each object (rotation, translation, scale etc).

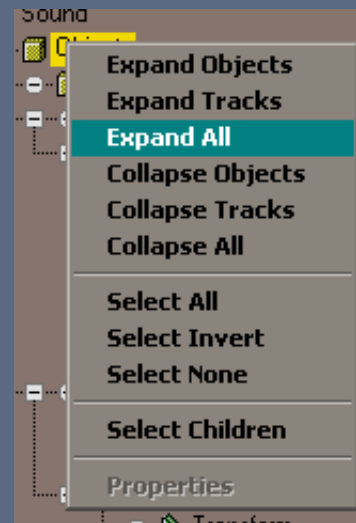
On right-hand side we see the corresponding tracks with the recorded animation keys (gray rounds).





As with the Schematic View we can customize the information shown, making visible only the animated and visible objects for example.

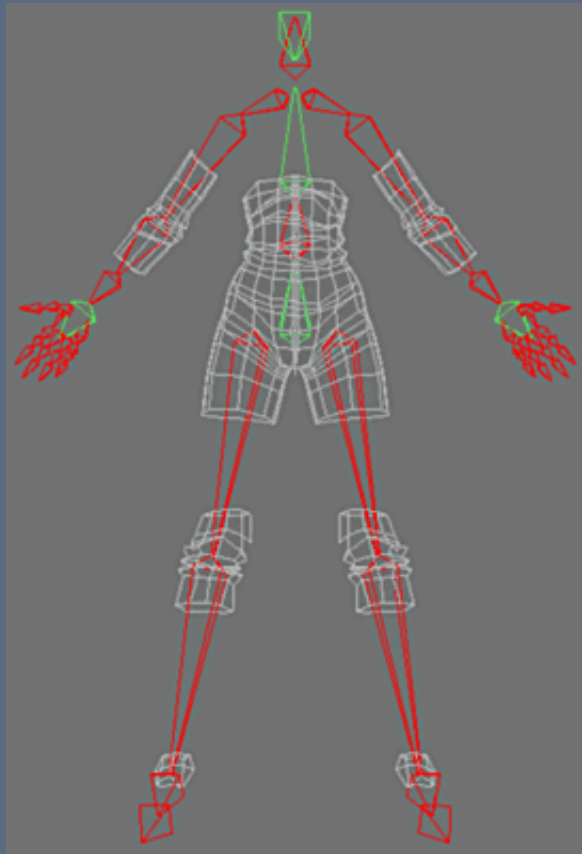
By selecting the Objects icon and right clicking, chose Expand All, that allows to see all the tracks of all the animated objects.



With frame 0, the character is in neutral position and with the frame 1 for example the leg is bent like above. We can copy keys by selecting them then by holding shift, move them to another frame. We can thus give the bone zero rotation while copying the key of the frame 0 from the frame 1 for example.

We can also select the keys and erase them.

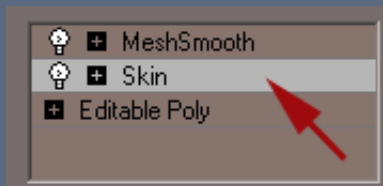




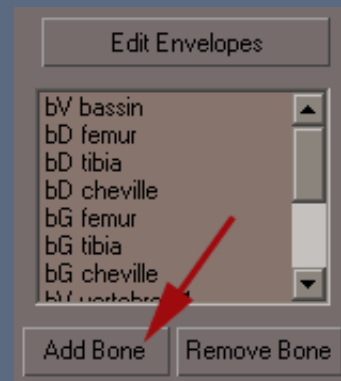
Now moving on to the serious things with the skinning of clothing.  
Show only the clothing and the skeleton.

Place a Modifier of Editable Poly then add a Skin Modifier of to it.

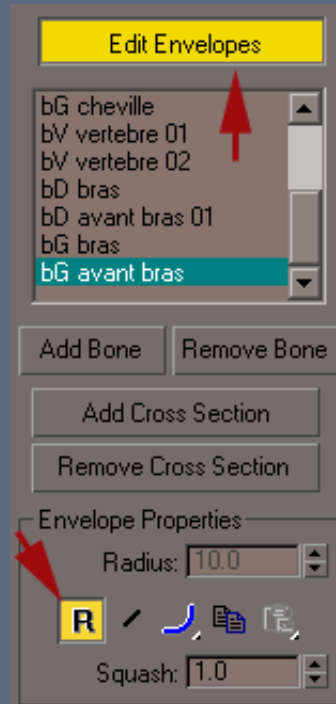
Thus the skinning will be made only on our object in LPM (low poly model or low definition) then smoothed at the end.



In Skin Modifier, add the bones which will influence the clothing.



Use Edit Envelopes for each bone and activate the Relative mode in Properties Envelope.

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## 3D Studio Max

### Joan of Arc

#### Skinning

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Before starting, some councils for skinner quiet:)

The zones of influences overflow of the zone of effective influence of the bone on the mesh, also the first thing to do is put at zero the weights vertexes apart from this zone.

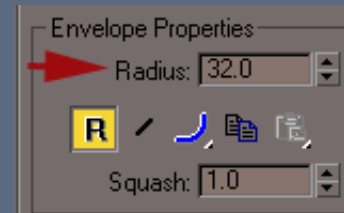
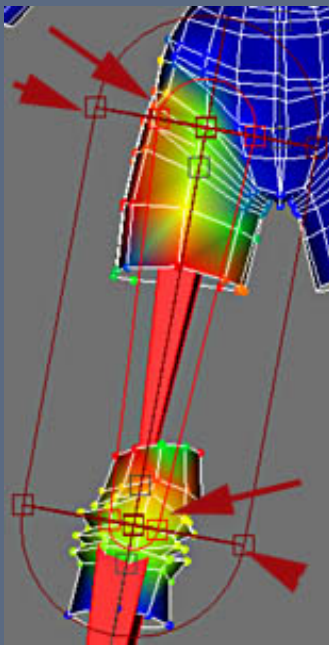
Always ask if such vertex is logically influenced by the bone on which you regulate the weights. If this vertex is influenced only by a bone, put its weight at 1.0 and conversely put 0.0.

The vertexes present on a fold generally receive 0.5 because they are influenced by exactly 2 bones.

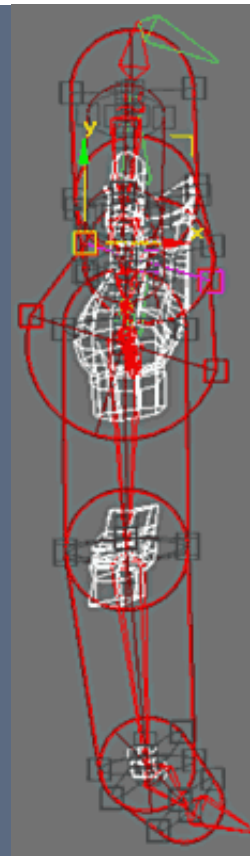
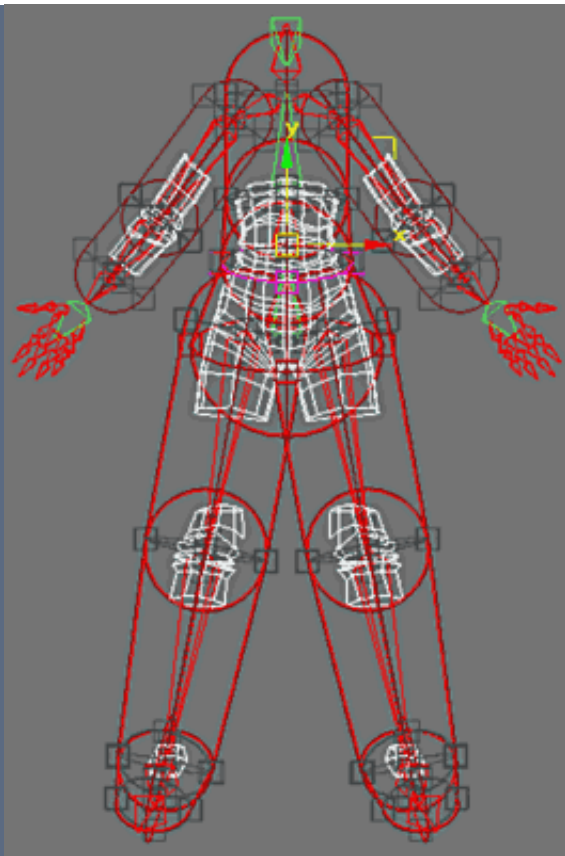
The colors of the weights are invaluable to locate the badly regulated vertexes, a point too different in color from its neighbor is inevitably badly regulated.

Do not regulate the weights starting from only one position but with the whole of the positrons which this part of the skeleton can take.

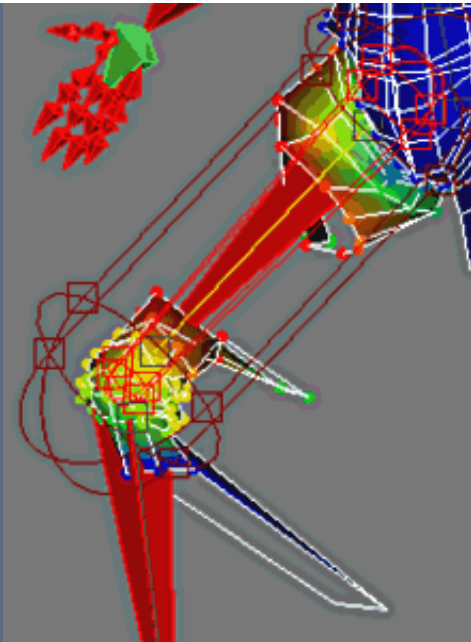
Finally skinning a character is a business of patience and it is here that logic in the adjustments makes shore all that becomes easy and fast.



Select each bone and adjust their zone of influence, by convenience, enter of the whole values and give the same values to the symmetrical bones

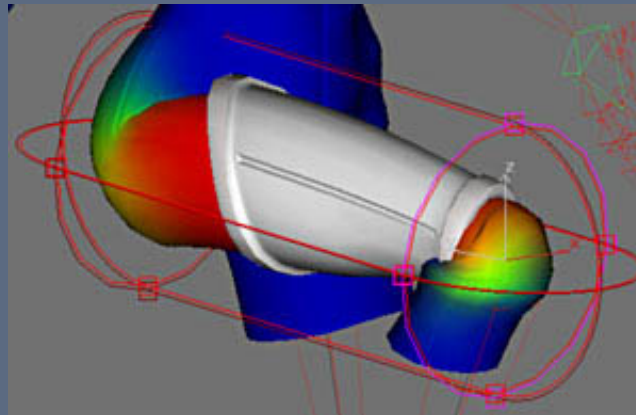
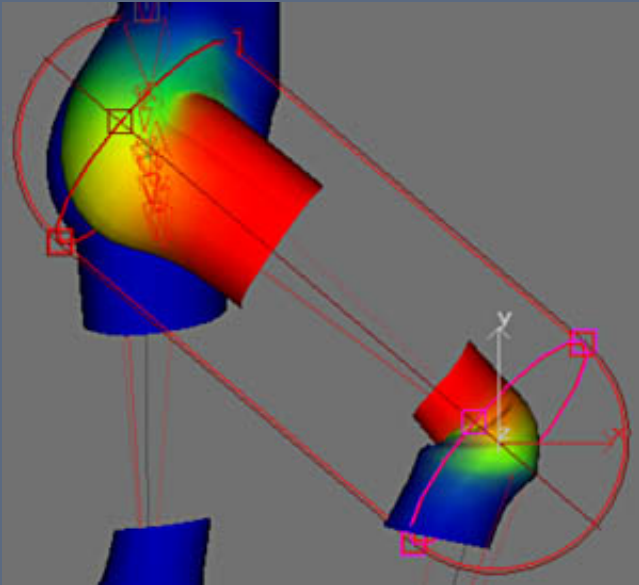


Zones of influences of the bones for clothing.



Viewing frame 1, we can already see how clothing reacts to the skinning.

We can now start to refine the weights vertexes



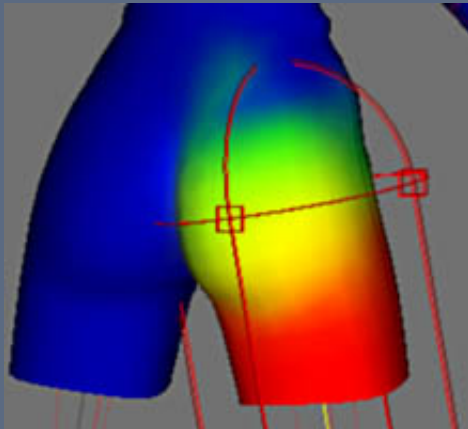
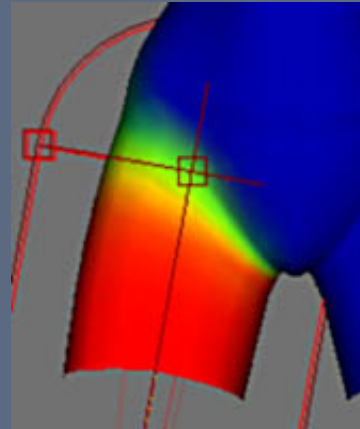


Adjustments finished with two positions, one to 50% and the other at 100% of inflection.

We can see that the red zone representing the points influenced at 100% by the Femur bone is surrounded on both sides of a color gradation going towards blue or 0% of influence.

It will be always be thus in the continuation of the skinning for the bones between two articulations.

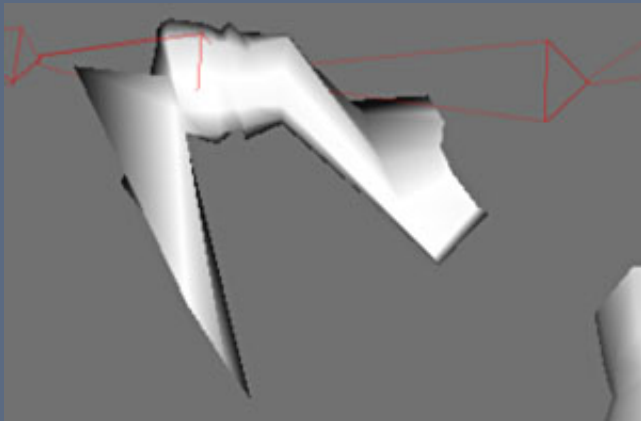
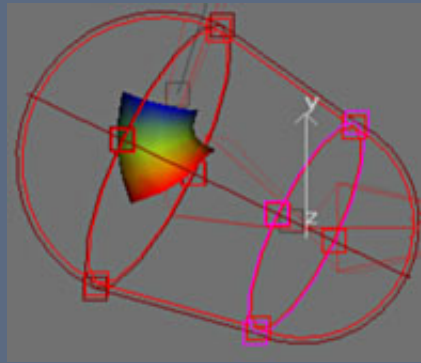
Note that the limit of influence coincides well with the place on the level of the hips.



The influence on the posterior one covers all the buttock.

P our ankle, the lowest band of vertex receives 100% of influence, the band of the medium 50% and that the top 0%.

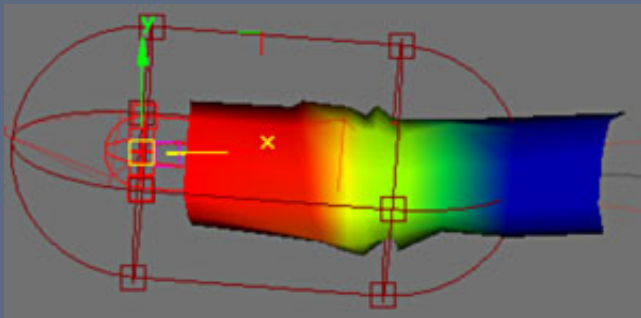
An academic case all things considered for an articulation:)

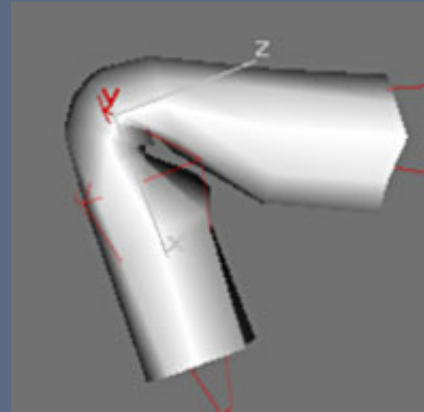
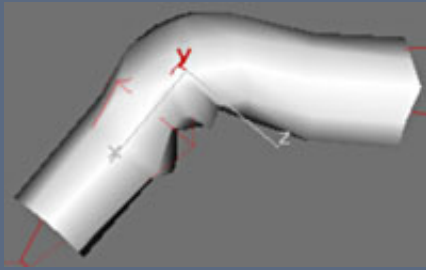


For the arm, before beginning the skinning, make a rotation with the joint of the shoulder to put the arm in the horizontal.

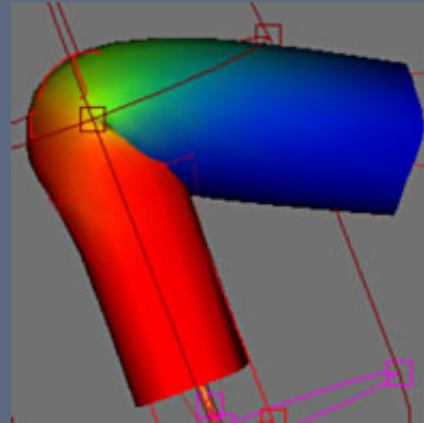
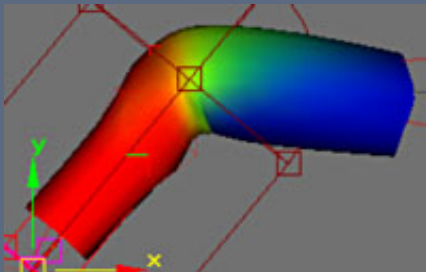
Certain points do not follow and are out of the zone of influenced of the bones.

Select them and adjust the weights to make them follow the corresponding bones.





Top create two positions with frame 1 and 2 for example, start the adjustment of the weights and finalize them.

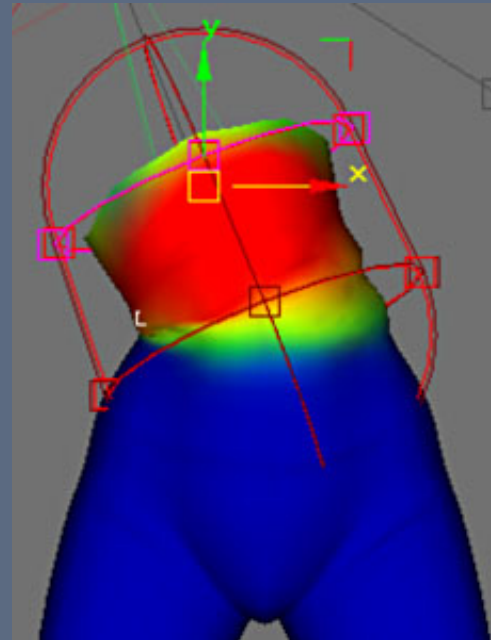
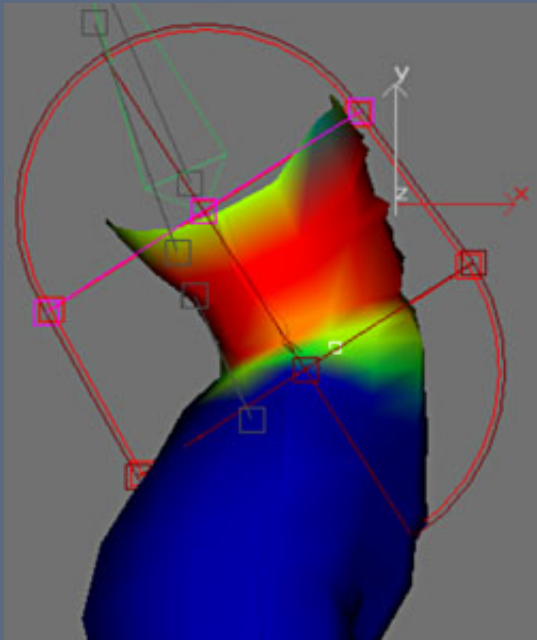


Adjust the weights to have a harmonious folding. We can check the skinning after smoothing by activating Show End Result on the level of Modifying Skin and by putting the iteration of smoothing at 1 in Meshsmooth. It is ill advised to use skin smoothing because the vertexes of the LPM do not follow the inflections

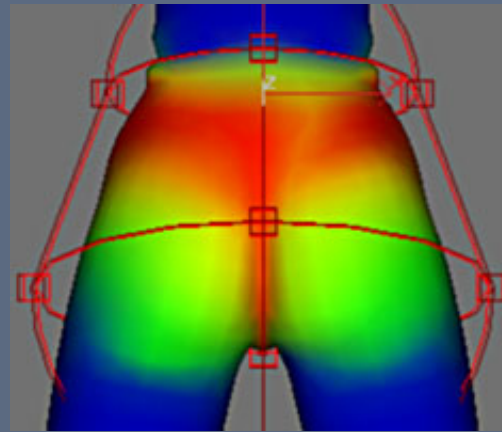
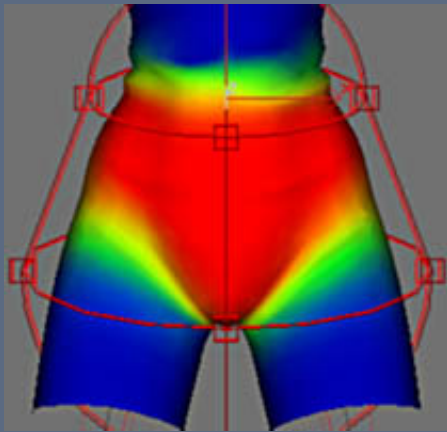
Start again for the other side with dimensions, max proposing symmetry of skinning that is a pity.



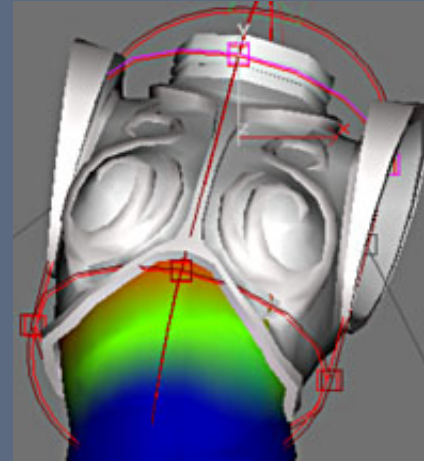
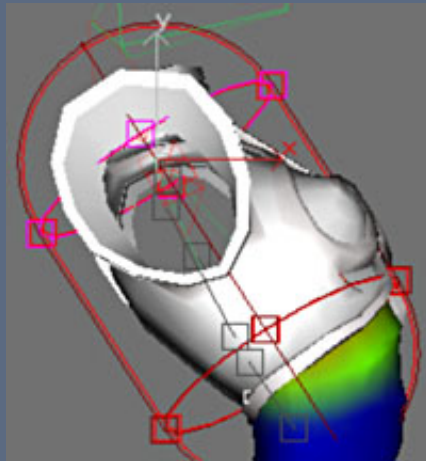
With the tower of the spinal column, rotate of the bone  
Vertebra 01.



And adjusted weights.



The influence of the bone Vertebra 01, on the hips. Note the symmetry of the influences, which makes it possible to check that the skinning is correct.



Even with the bone Vertebra 02. We can view the armour of the bust for see whether that sticks well.

## 3D Studio Max

### Joan of Arc

### Skinning

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

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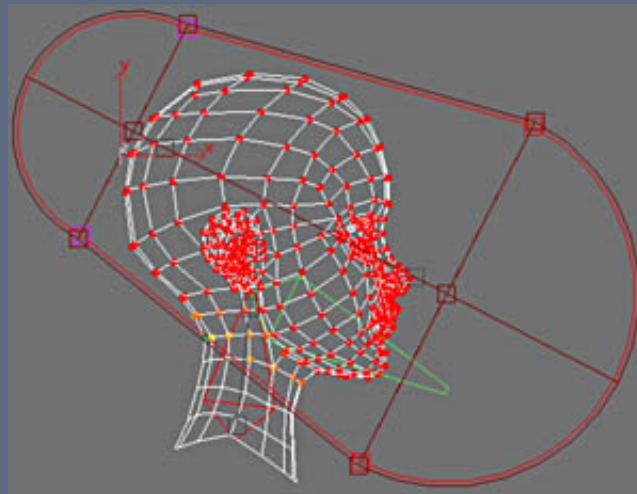
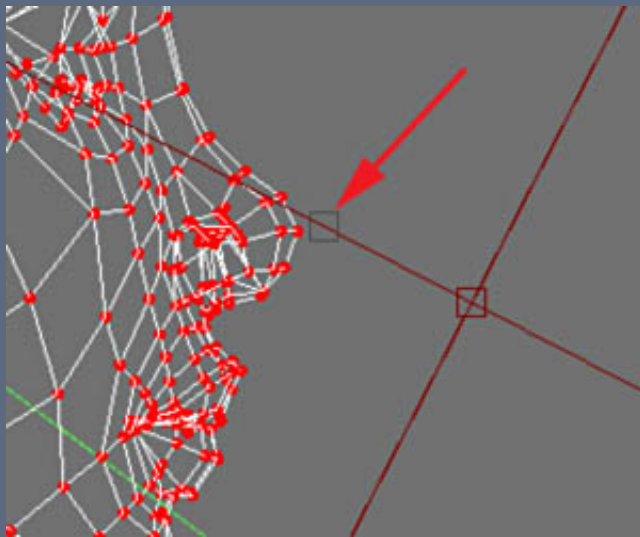
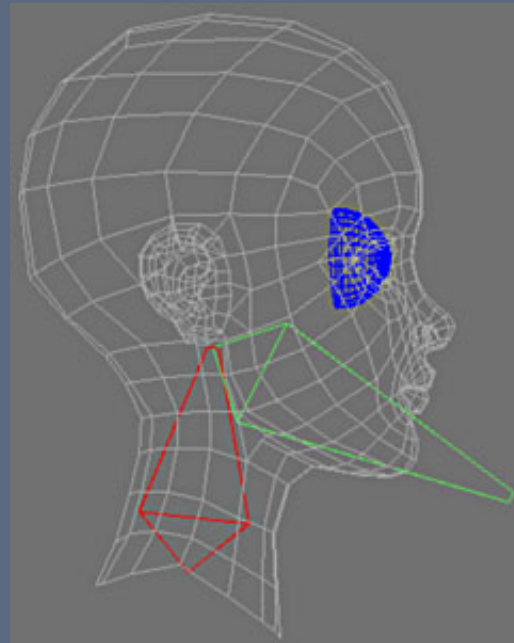
Once we totality skinned the clothing, select the Root and move it.  
Normally all the vertexes of clothing should follow the Root in its displacement.

If necessary certain vertexes that are not influenced at 100% by bones, should be adjusted so that is the case.

Make this checking after each end of skinning on the following objects.

And now the head.

Begin with linking the eyes to the Face bone (in green).

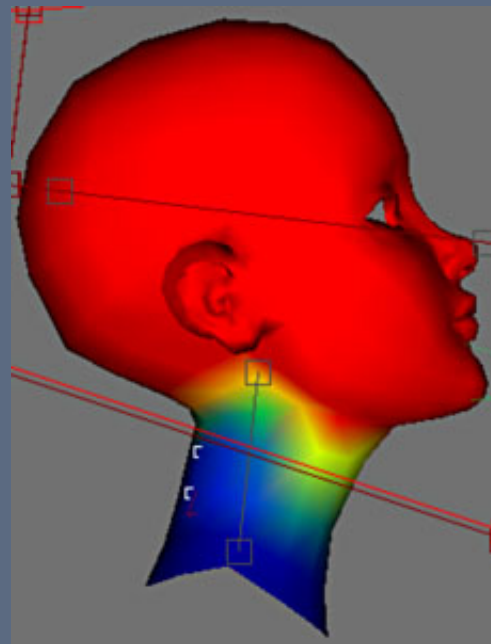
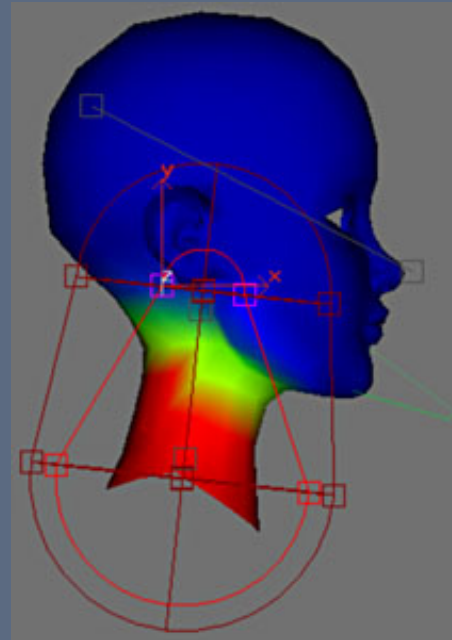
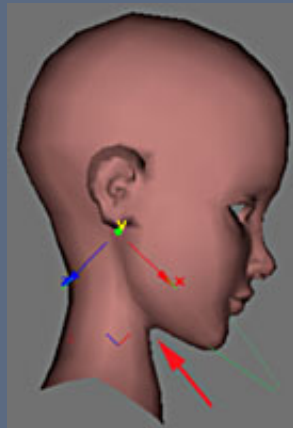
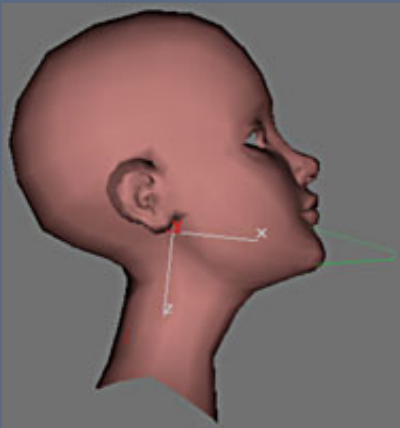


For the head we can trim the work of skinning well by moving the zone of influence of the Face bone as above, by moving the reference marks in gray.

Indeed the zone of influence of anything is not centered on the bone even that is quite practical sometimes.



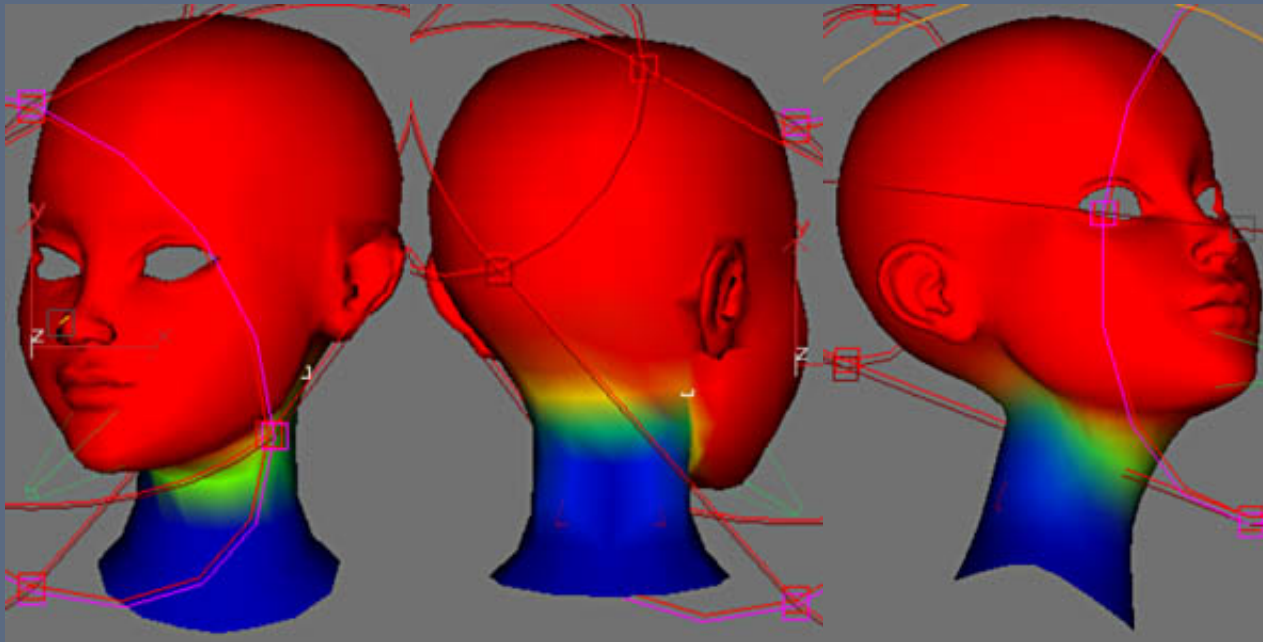
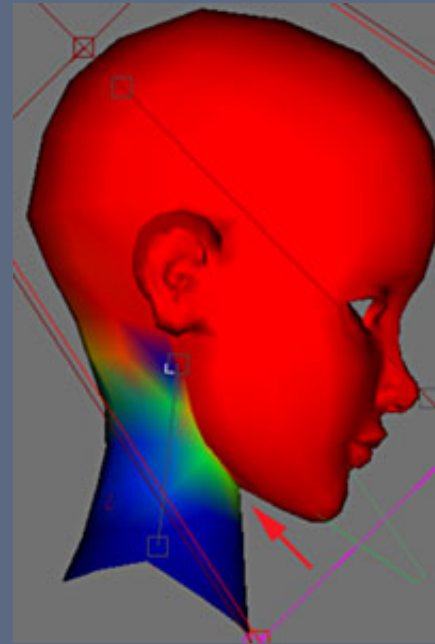
Adjust the zone of influence of the bone Vertebrae 03 as opposite.





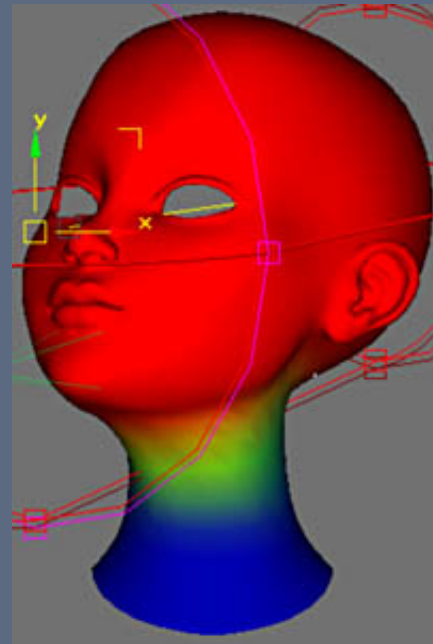
Make two rotations, one tilted back and the other tilted forward with the frame 1 and 2 for example. Start by adjusting the weights with the head tilted back, then finish the head tilted forward correct the joint.

By making the adjustments for with dimensions and by selecting the vertexes two to two in right-angled selection we adjust the weights in a symmetrical way.

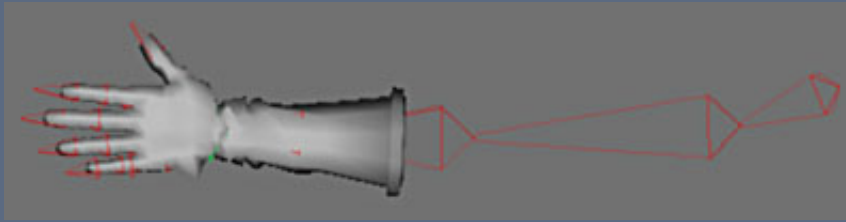


Let us rotate the head right and inclined to check that all occurs normally

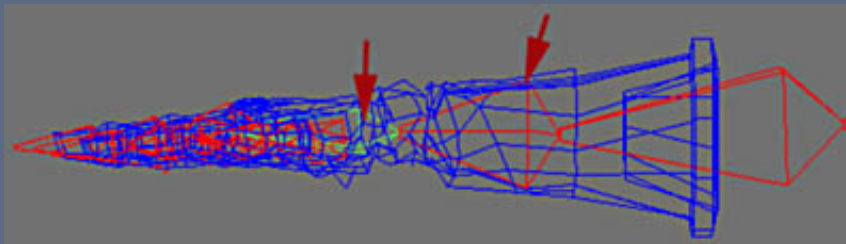
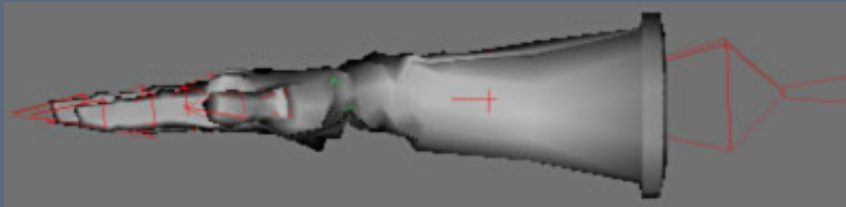
Of course for an optimal result it would be necessary to have more bones for the vertebrae but here it is sufficient with the armour and the hair covering.



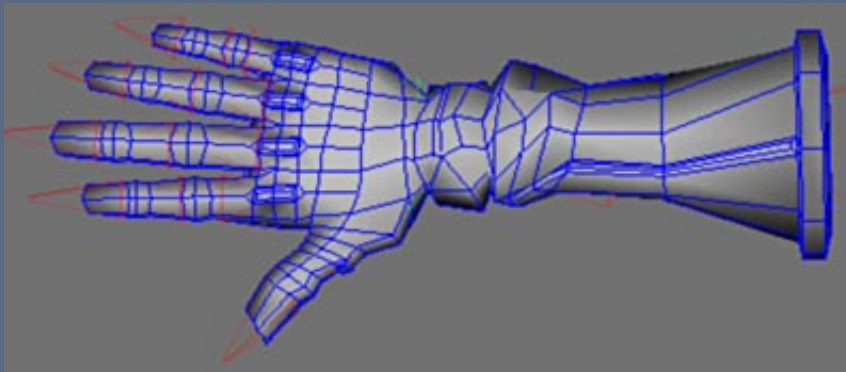
A large piece now with the glove and especially all the fingers..  
Regulate the zones of influences of each bone as previously.

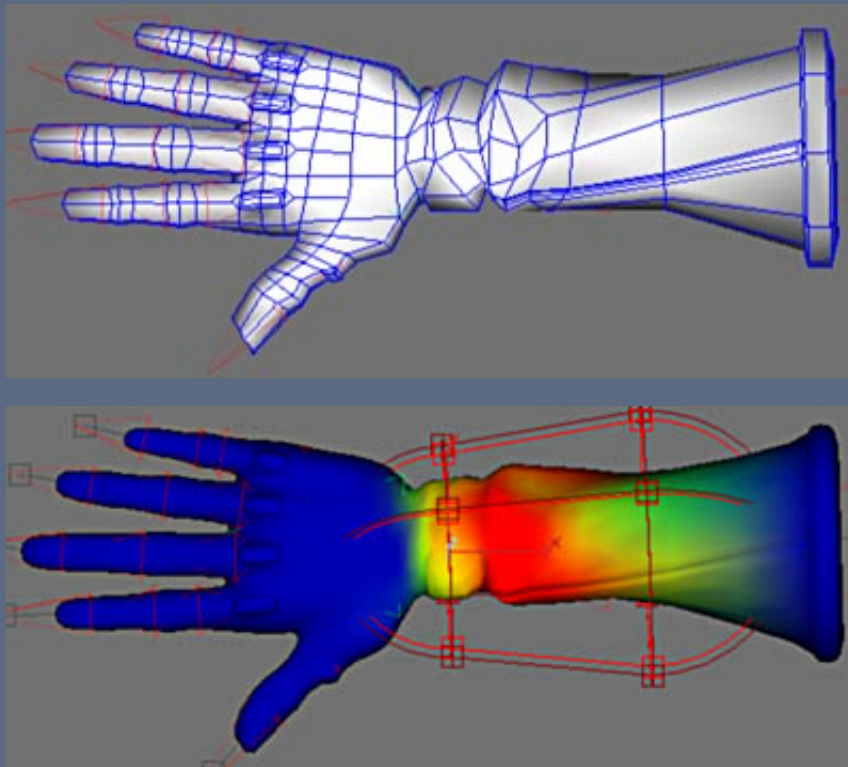


Then rotate the shoulder, bring the arm to horizontal to the frame 1 by ex.



Then carry out a rotation of  $45^\circ$  on the bone Before Bras 2 and the same thing on the bone Main. That makes it possible to place the hand horizontally, it is more practical to observe during skinning.





This rotational movement of before arm is called the pronation.

Adjust the weights to have a regular torsion on the glove.

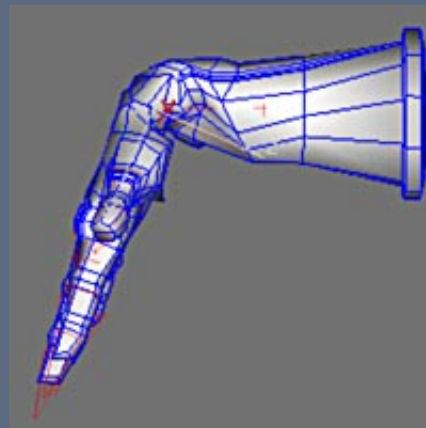
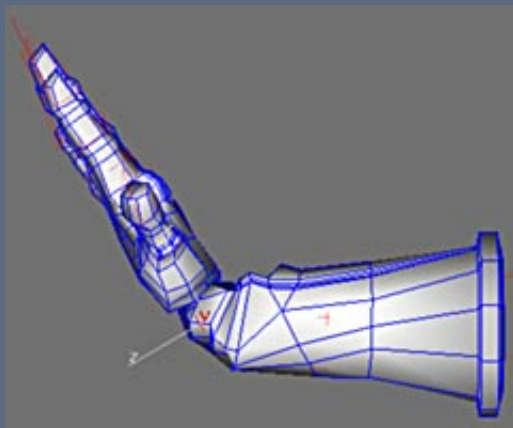
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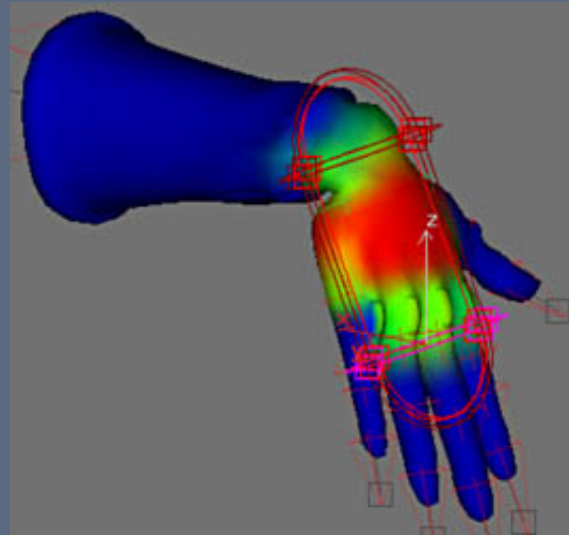
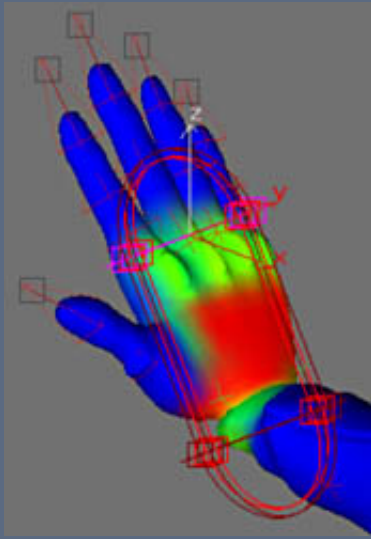
**3D Studio Max****Joan of Arc****Skinning**

Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

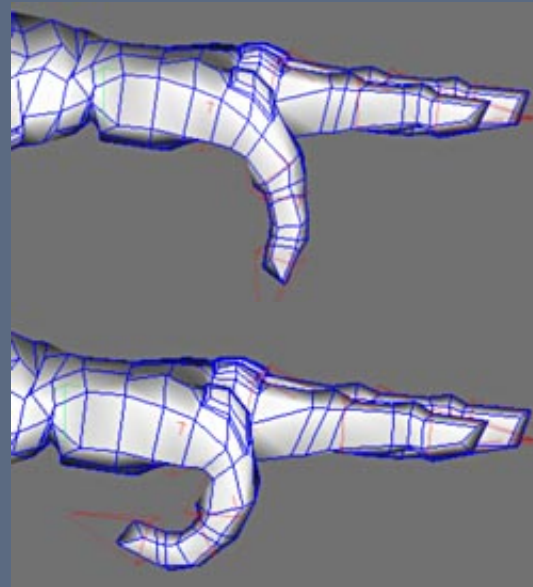
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Turn the wrist to show a raised and lowered position of the hand.

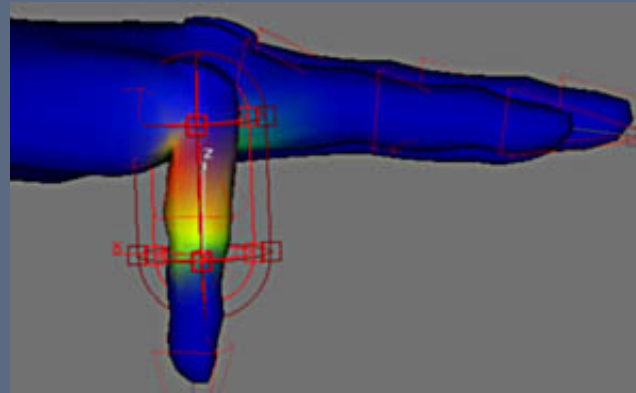
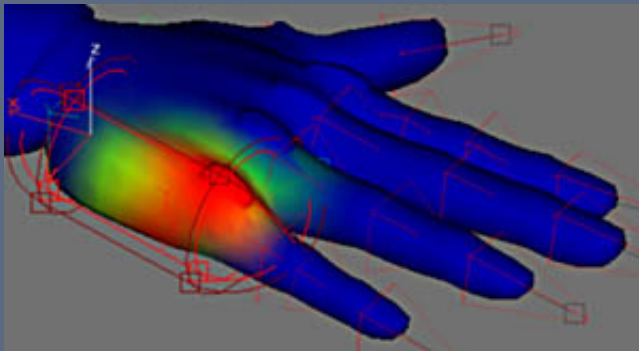
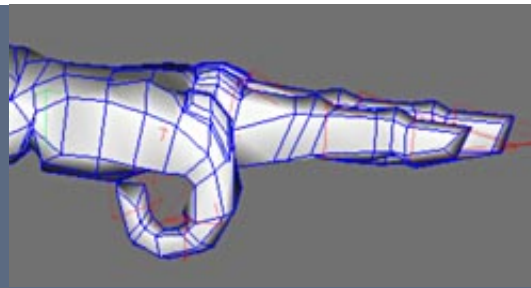


For the moment we deal only with the adjustment of the vertexes of the wrist and we leave the remainder of the vertexes influenced by the Main bone just as they are.

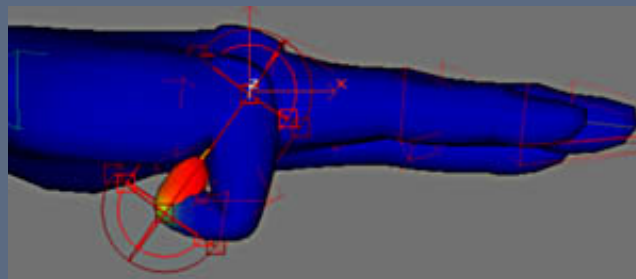
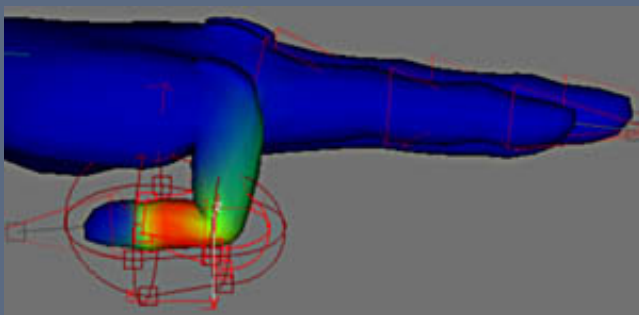


Adjustment of a Finger.

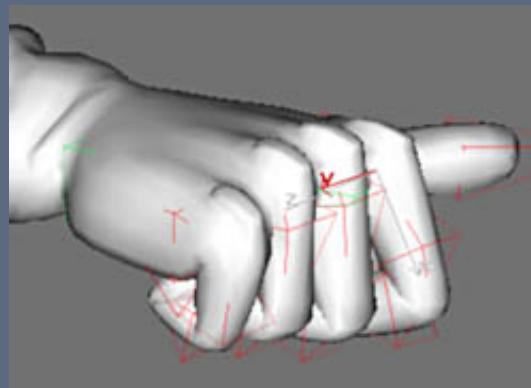
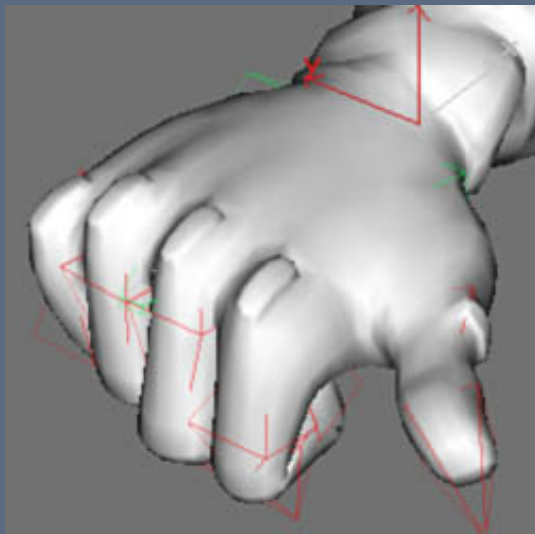
For this it is necessary to make 3 frames each time an inflection is used.



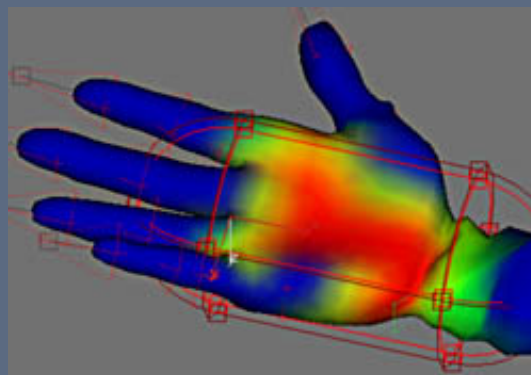
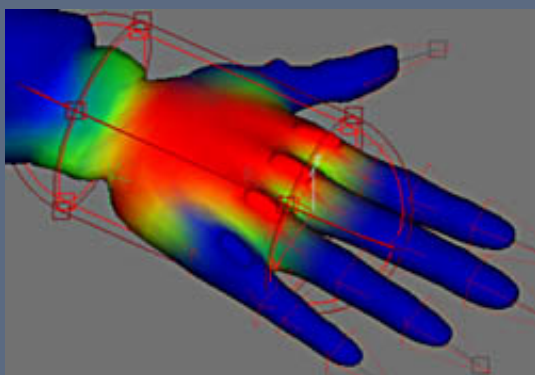
Adjust in each frame the weights vertexes.  
This principle is valid for the 3 other fingers, annular, major and index.





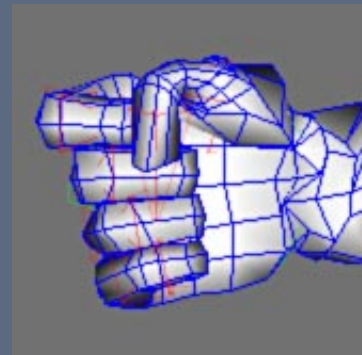
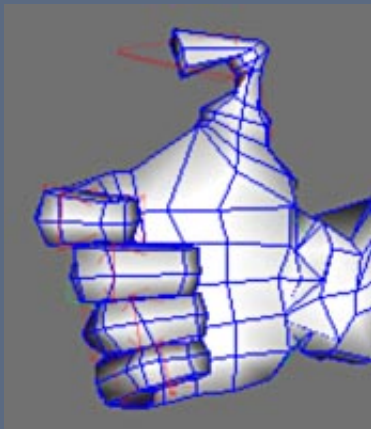
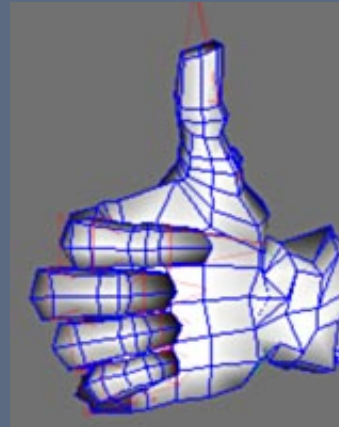
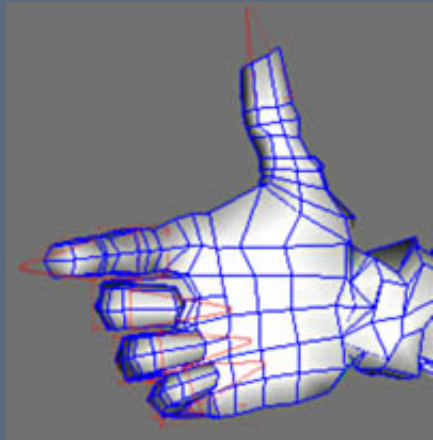


The skinning of the 4 finished fingers.

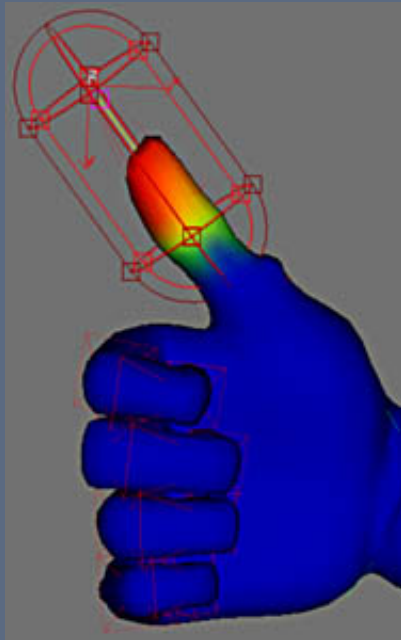
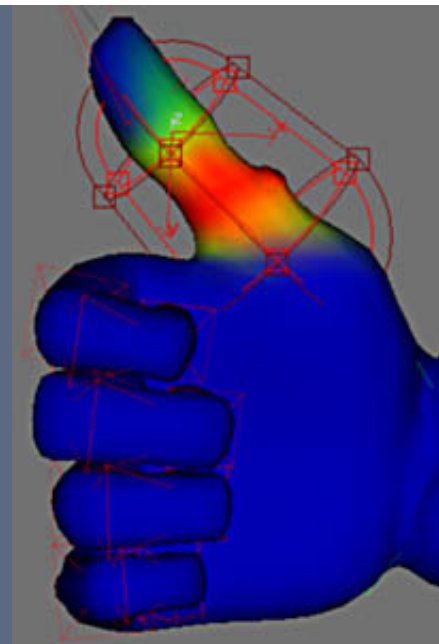
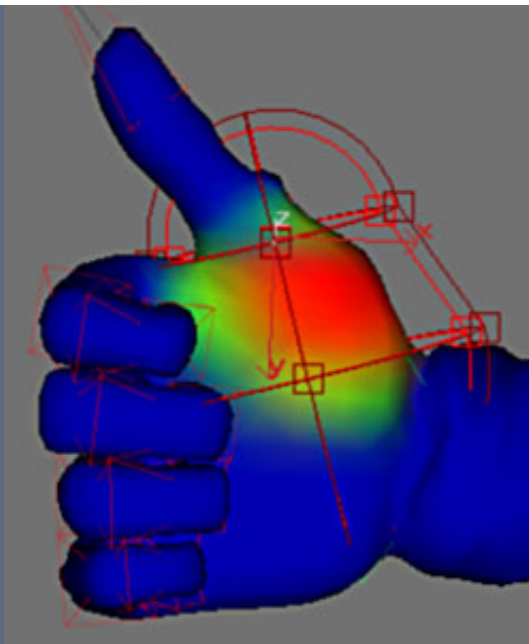


Aspect of the influence of the Hand bone once all fingers are skinned.

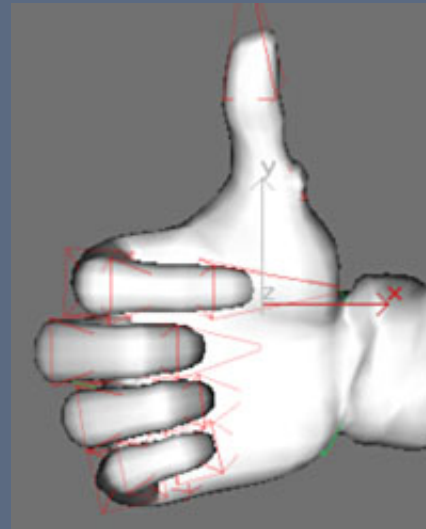
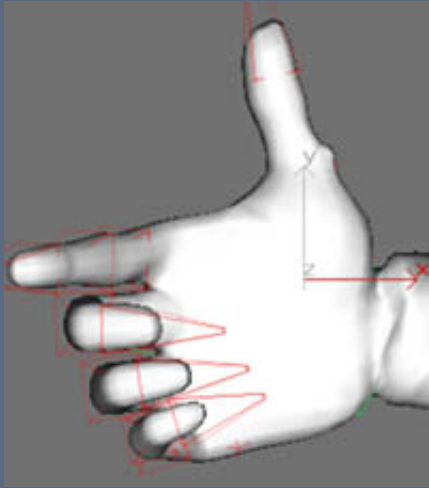




With the thumb now with 4 frames for 4 orientations of the phalanges.

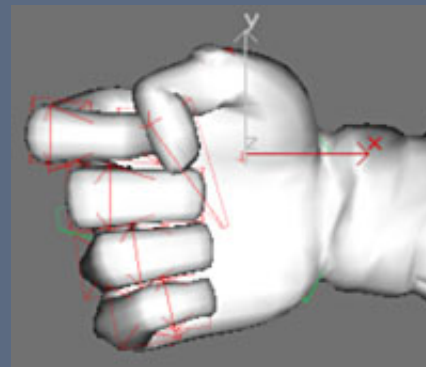


Zones of respective influences of the three bones of the thumb.



Corresponding adjustments.

It is illusionary with so few bones to remake a perfectly moving hand but it is an acceptable approach.

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## 3D Studio Max

### Joan of Arc

#### Skinning

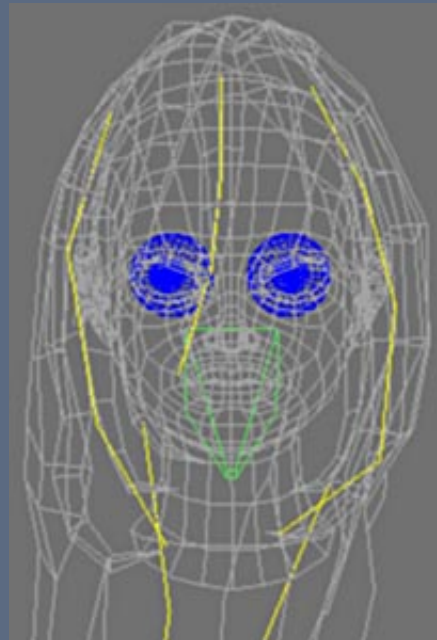
Email: Michel Roger --- Web: [mr2k.3dvf.com](http://mr2k.3dvf.com)

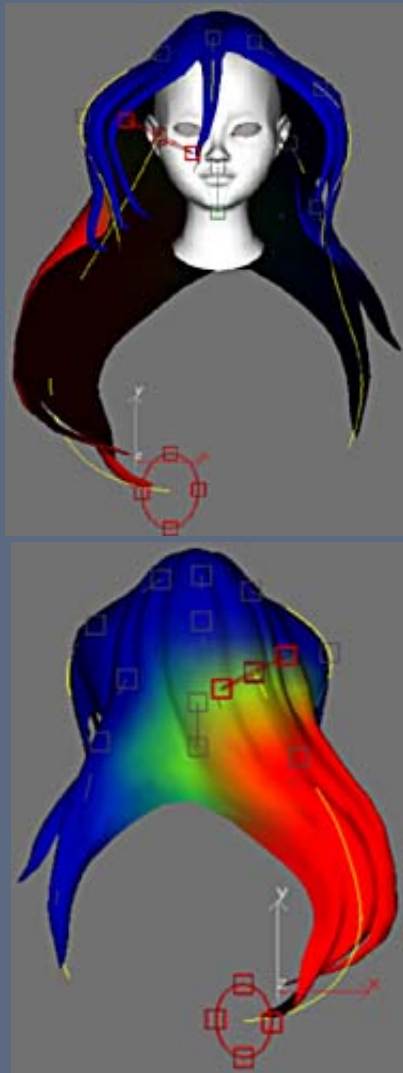
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Now we will skin the wicks of the hair to be able to adjust those when the head turns.  
Theoretically we should use chains of bones controlled by inverse kinematics using a spline (IK Spline) but max 4.x does not have inverse kinematics with spline control (5 does).

Thus here the splines remain elastic, it is thus necessary to take guard not not have too much stretch in the mesh during displacement of their control points.

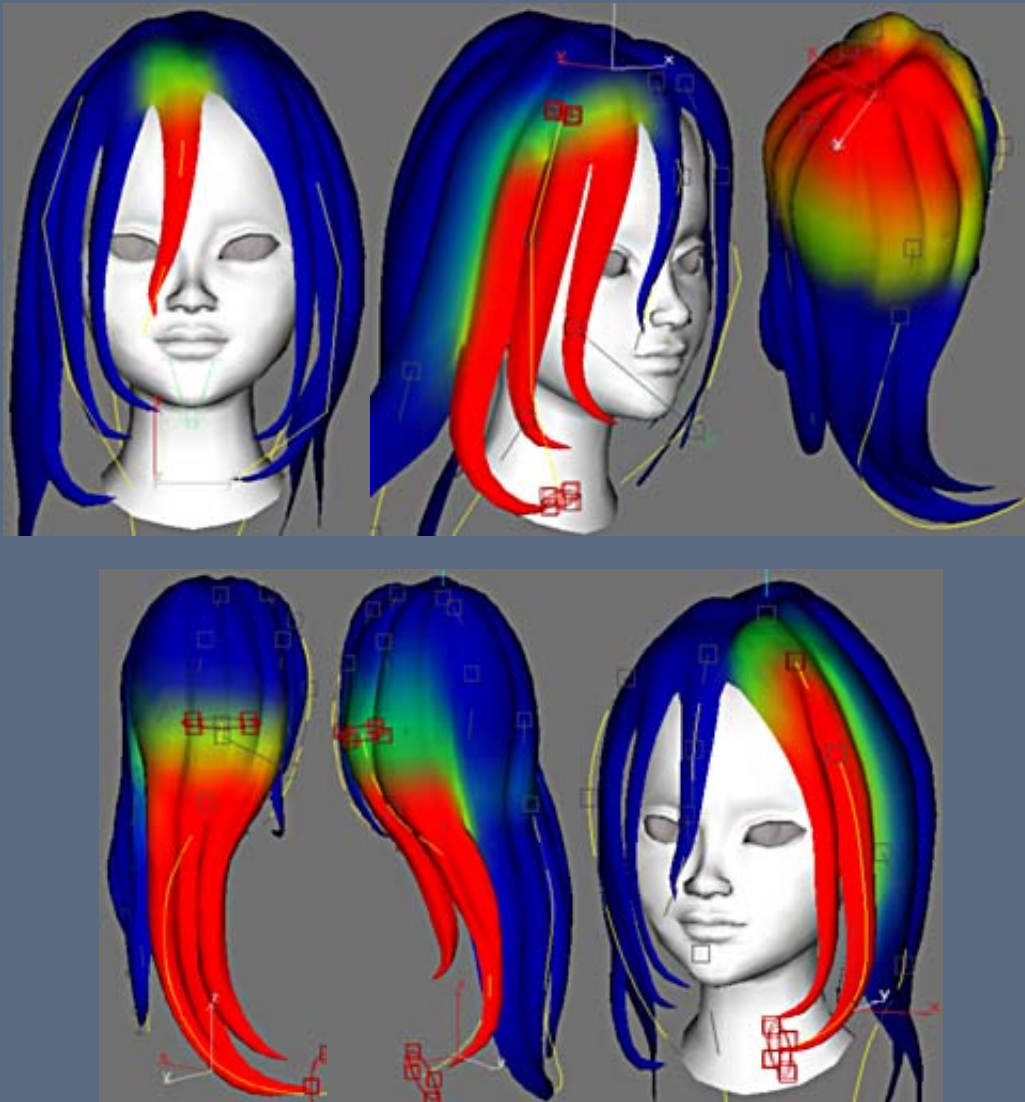
Make shore skin is applied to the hair.



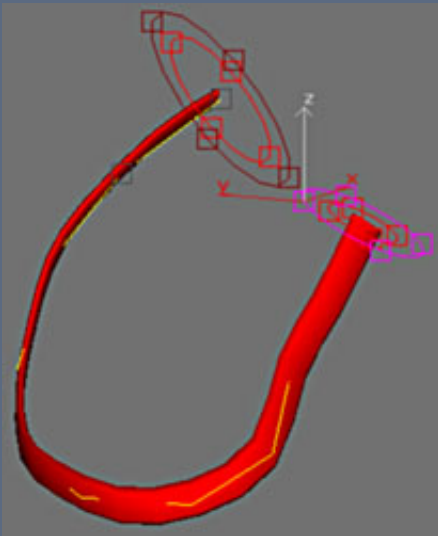


To easily regulate the influences of the splines on the hair, advance of a frame and draw aside the splines (as if there were wind in hair:)

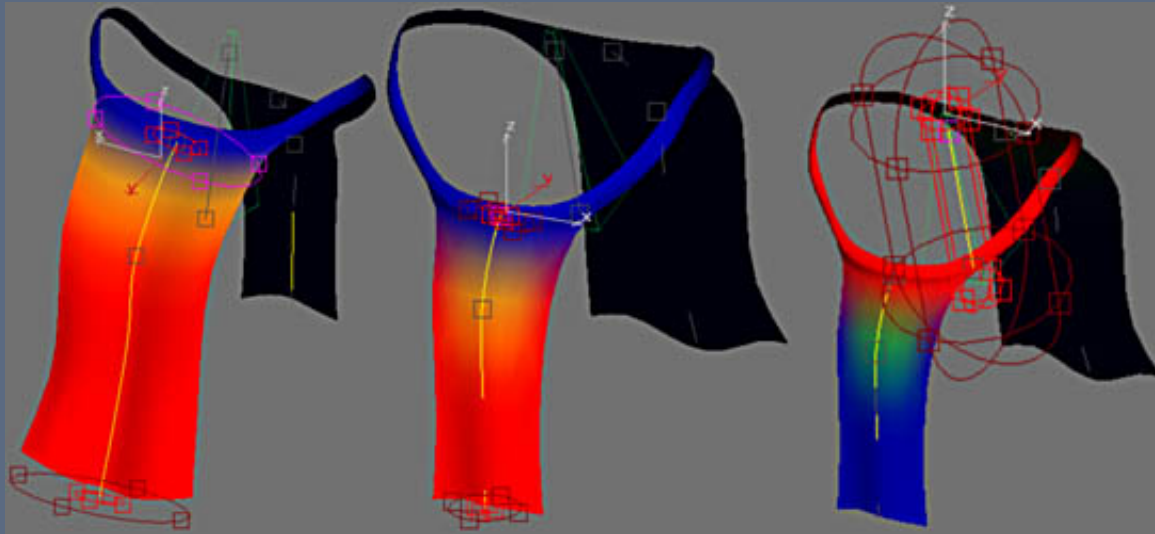
It is then enough to review the influences bone by bone to have a coherent skinning.



Aspect of the influences according to the 4 bones splines and the bone Head (frame of reference 0).



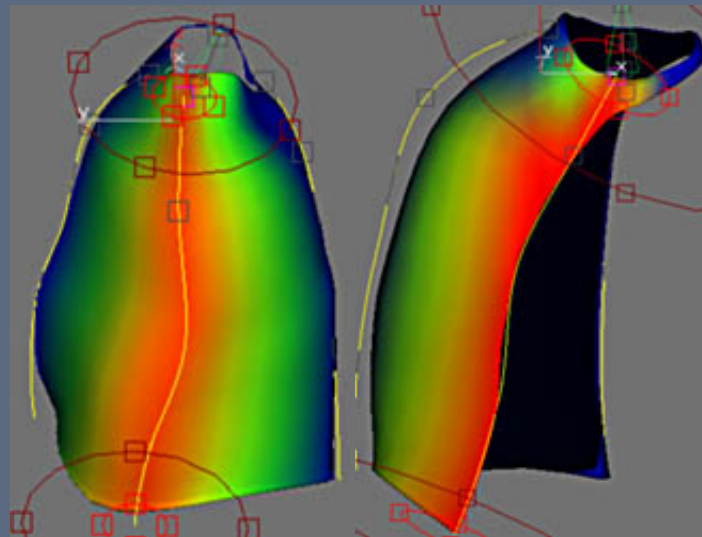
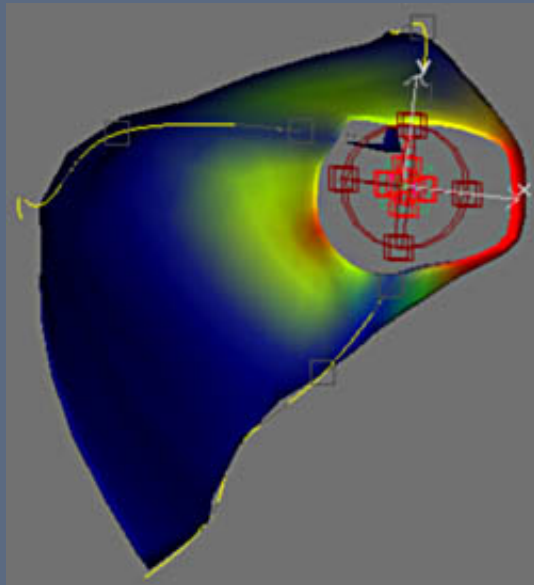
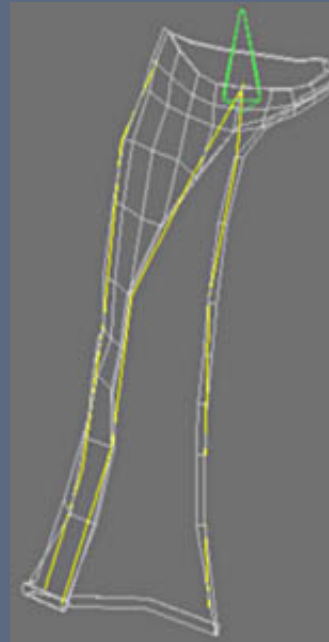
The skinning of the second belt is fast since the spline influence to 100% all the vertexes.



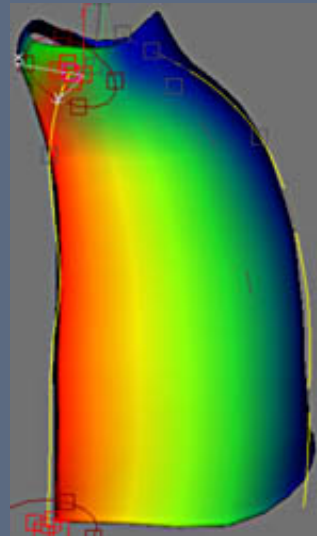
The loincloth with both bones splines and the bone Vertebra 01 (hips)



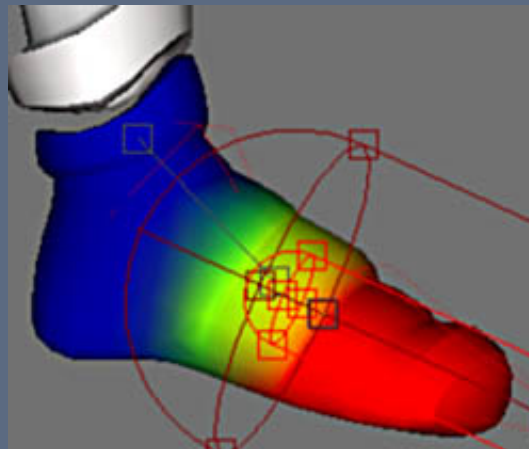
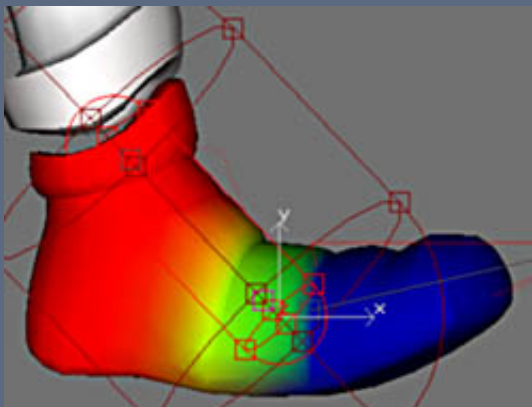
The top of the skirt, with the bone Vertebra 01 for the influence to the size and the 3 bones splines.



As with the hair, advance a frame and inflate the skirt by moving the vertexes of the splines to adjust their influences.



Let us finish the skinning with the shoe.



Two bones, ankle and the foot share the influence as shown above, a formality now:)

And here we are the tutorial of Joan reaches its end, all that remains is for you to make a pretty pose. Finish the part on textures, when I find my monitor 19" and not the 15" with the doubtful colors which I currently have:)

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