:: Tutorial - Boxmodelling a car ::

All taken from the following post from the cgtalk.com-forums
http://www.cgtalk.com/showthread.php?t=156460

Modified by 3W_Neo
http://www.thirdwar.ch

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:: INTRODUCTION ::

Many of you requested me to make a car modeling tutorial, and because of the bad weather we have here and the other difficulties about finally making the environment for the S2000, now I have plenty of free time

I will use 3DSMax5, and the VRay render engine.
About the model: I have chosen a Nissan 300ZX. That car has many angular parts, so this makes our work a little harder (rounded objects are easier to model, just think about the Audi TT or the Fiat 500 with its well known tutorial).

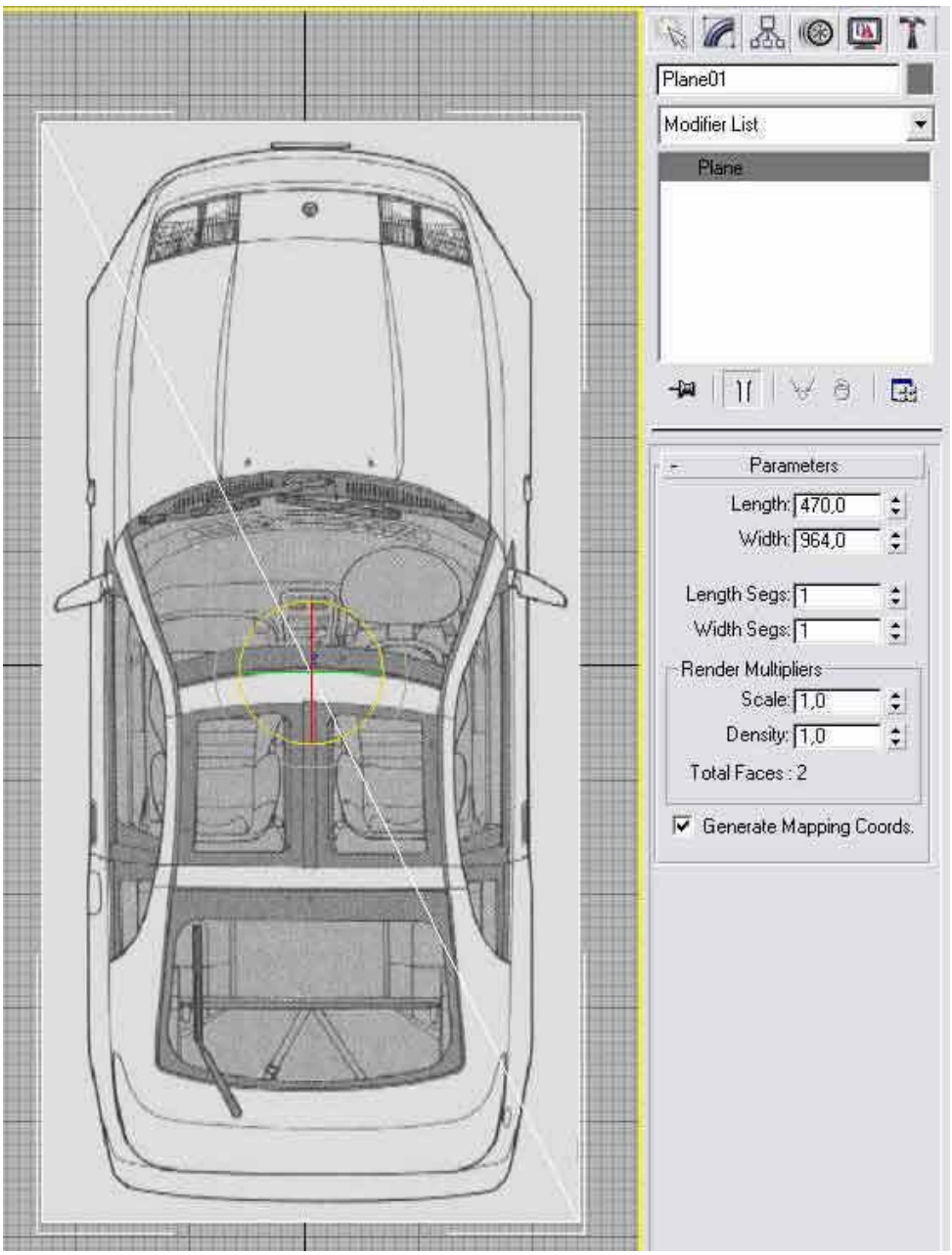
You can find a very good blueprint at www.onnovanbraam.com, but you have to search the net for additional reference pics, except you don't have one in the garage. I will put on such pics as well, but if someone knows any good source, please let us know.

The tutorial will be accessible in html format at www.abbys.hu as well.

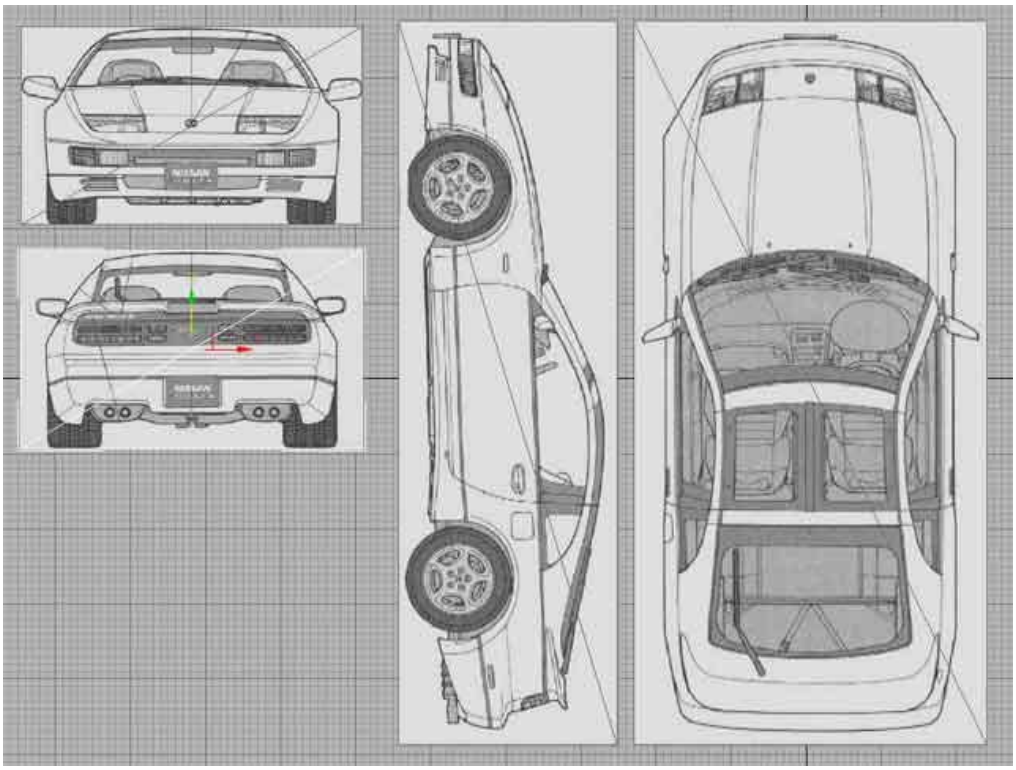
I hope you will like the way I make this whole thing, and please, if something is not clear (about modeling or about my English) just tell me!
I will start with the first steps tomorrow, and I will put on the work at night.
What else? Have fun!

:: GETTING STARTED ::

As I mentioned, first we have to get a good blueprint and make sure that it's correct. I mean for example, that the side and top views have the same length, or if you select a part from one of the pictures, its position must be the same on the other views.
I had to edit some things on the blueprint, but I won't upload the ready ones. Try finding the mistakes and correcting them by yourselves!
When you are ready, the next thing will be to put the pictures on planes in MAX.
If you make sure that the "Length" and "Width" parameters of the planes are the same as the pictures' dimensions, there will be no problem about fitting.
(On the blueprint there is a Japanese version of the car, so the steering wheel is on the right side. If that disturbs someone, just flip the texture)

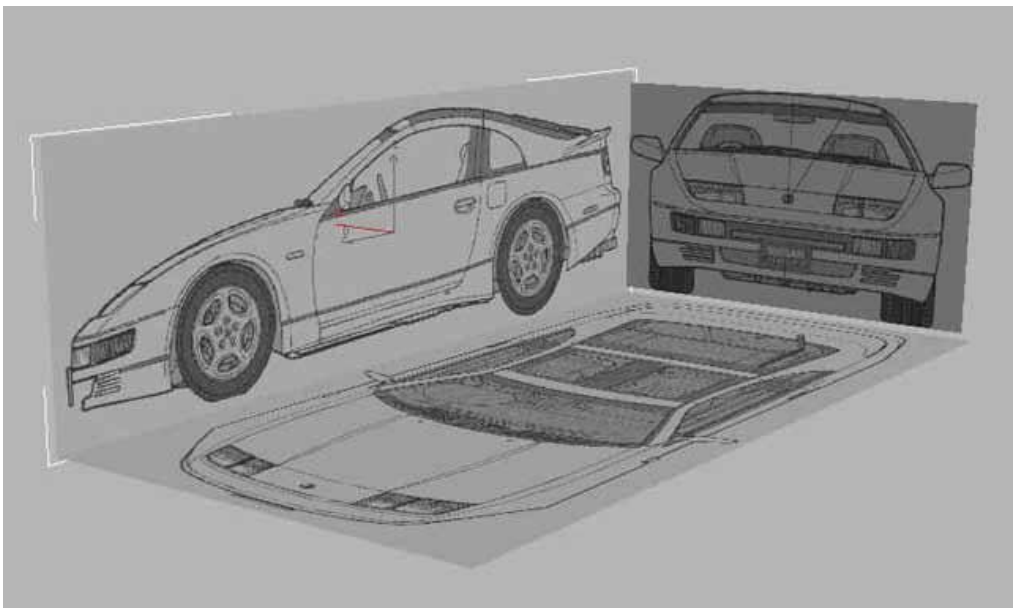


If you are ready with the planes, you will get something like this:



As you can see, the mirrors have different dimensions on the front and back pictures. That could be a distortion because of the perspective, or just some mistake from the one who made the blueprint. But never mind, I think if we ignore the back view when making the mirror, it will be okay.

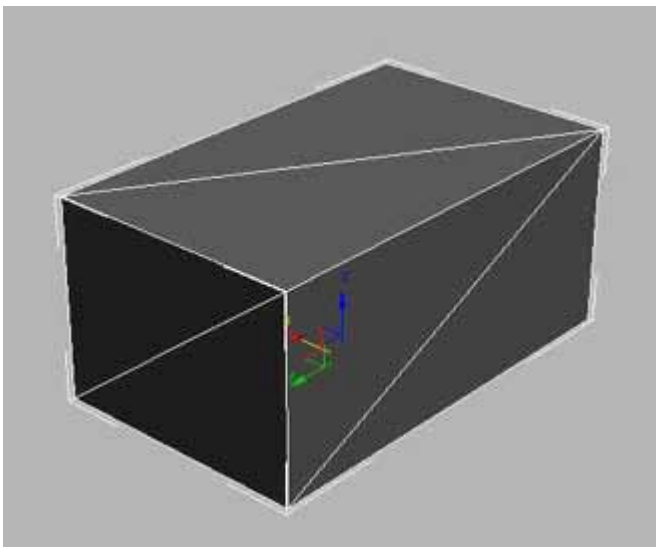
After that, we place the planes something like this:



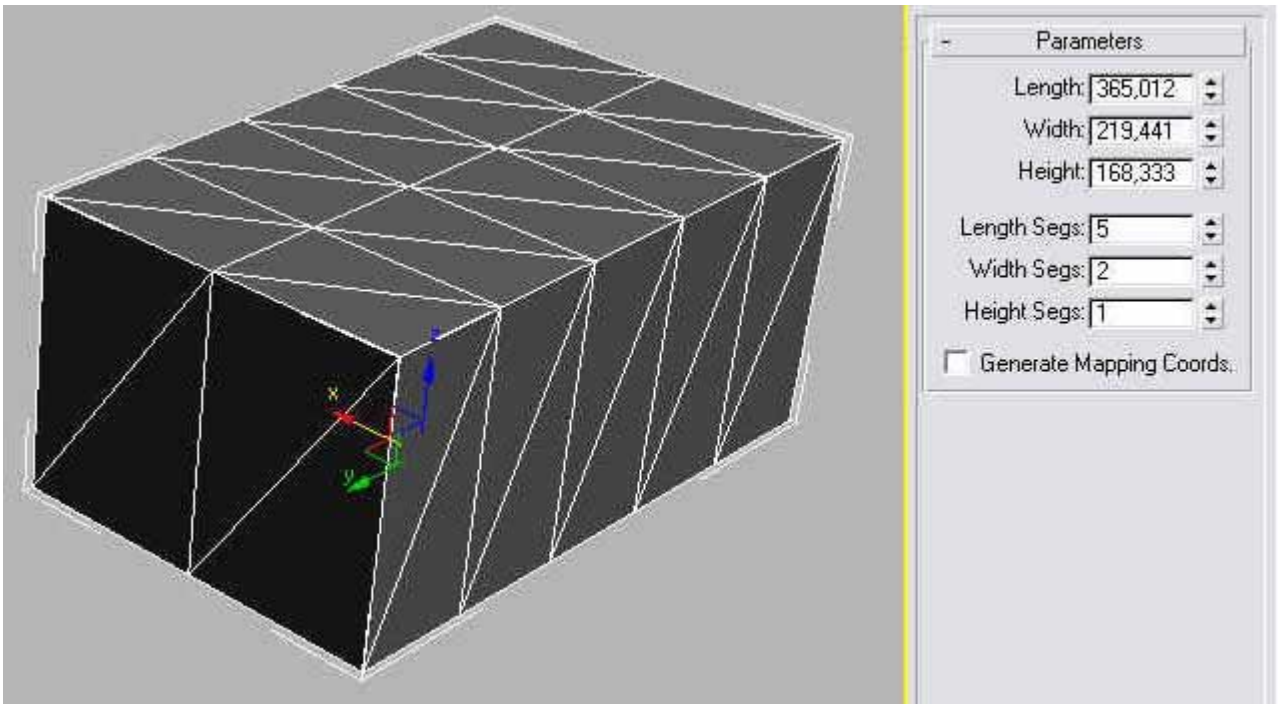
It would be wise to set the top view's x coordinate to 0 (its centre will be the centre of the MAX world).
With that, we are ready with this phase, so let's begin the modeling!

:: MAKING THE MAIN SHAPE OF THE BODY ::

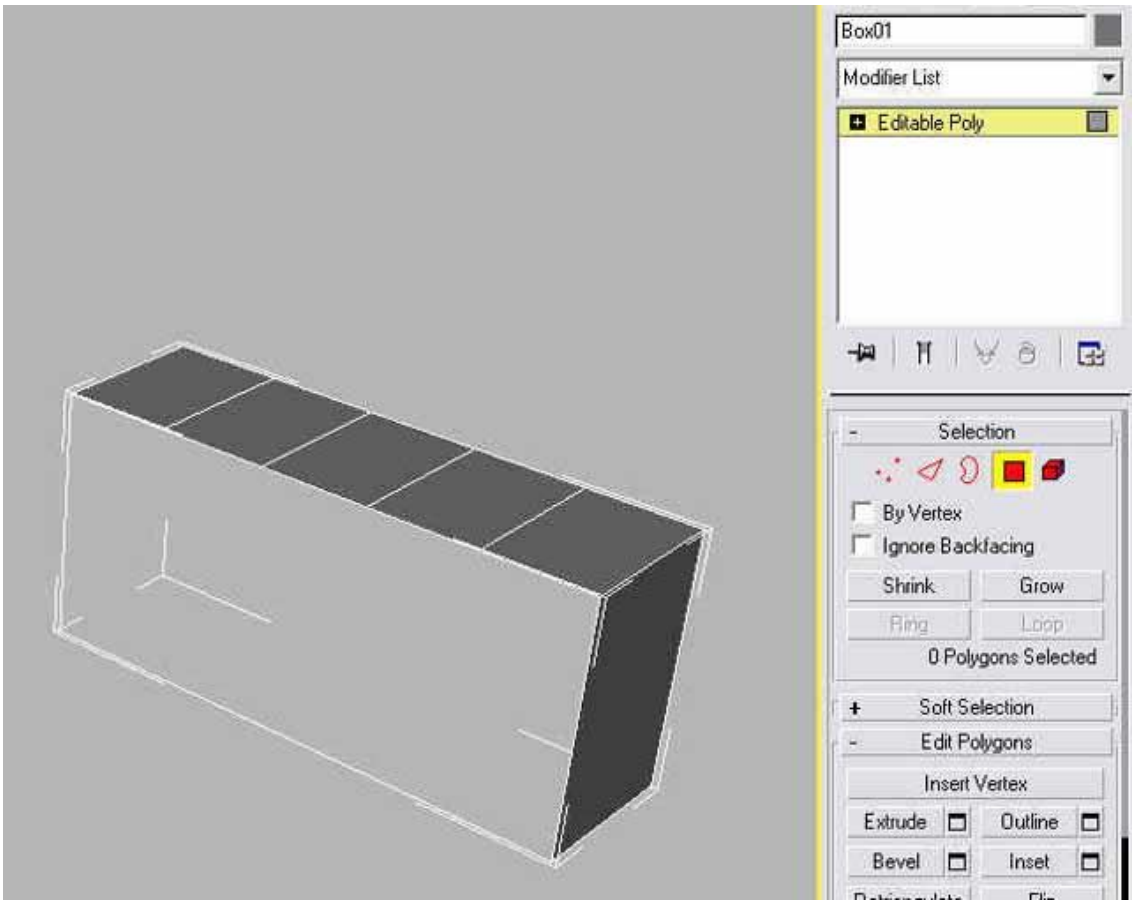
First of all, we make a box. We will model the entire body from this box, that's why it's called "Box Modeling"
We don't care about the dimensions, just put a box in the middle of the blueprints (x coordinate: 0).



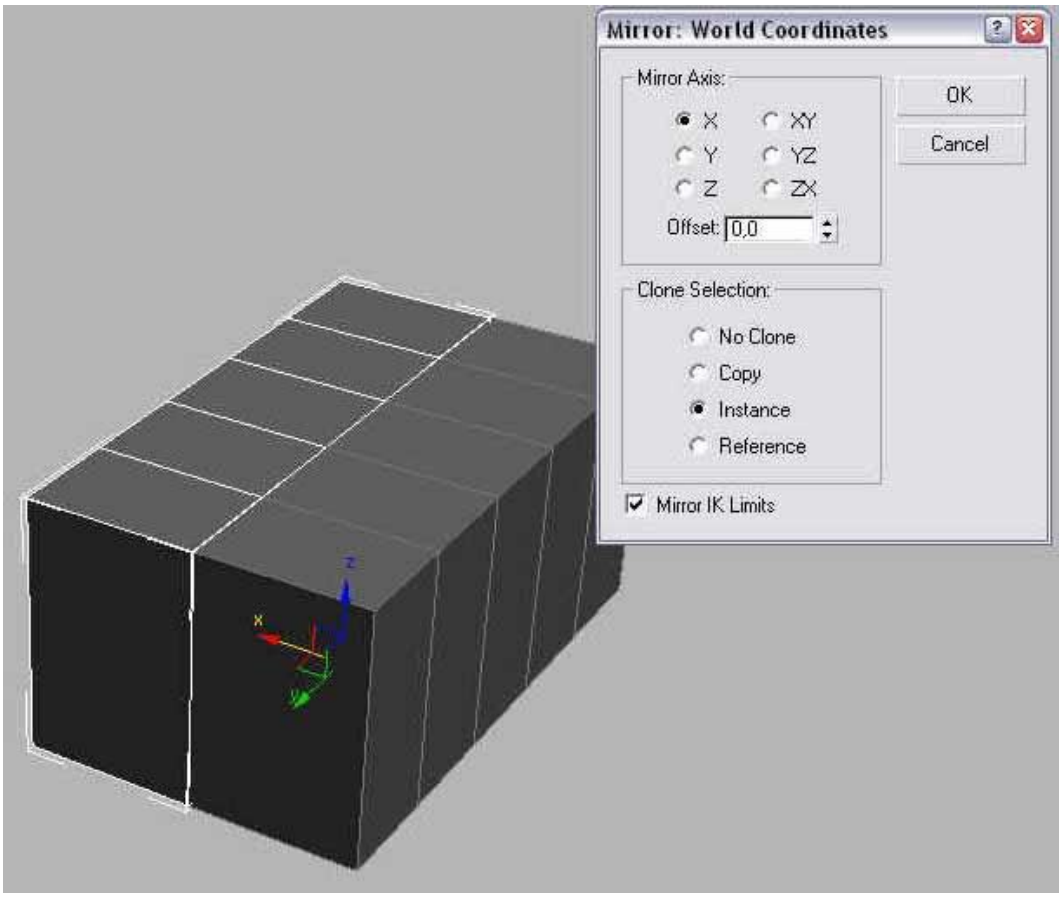
After that, we set the segments. We need 2 segs for "Width" (we will work only on half of the body) and 5 for "Length" (hood, windshield, roof, rear windshield, trunk).



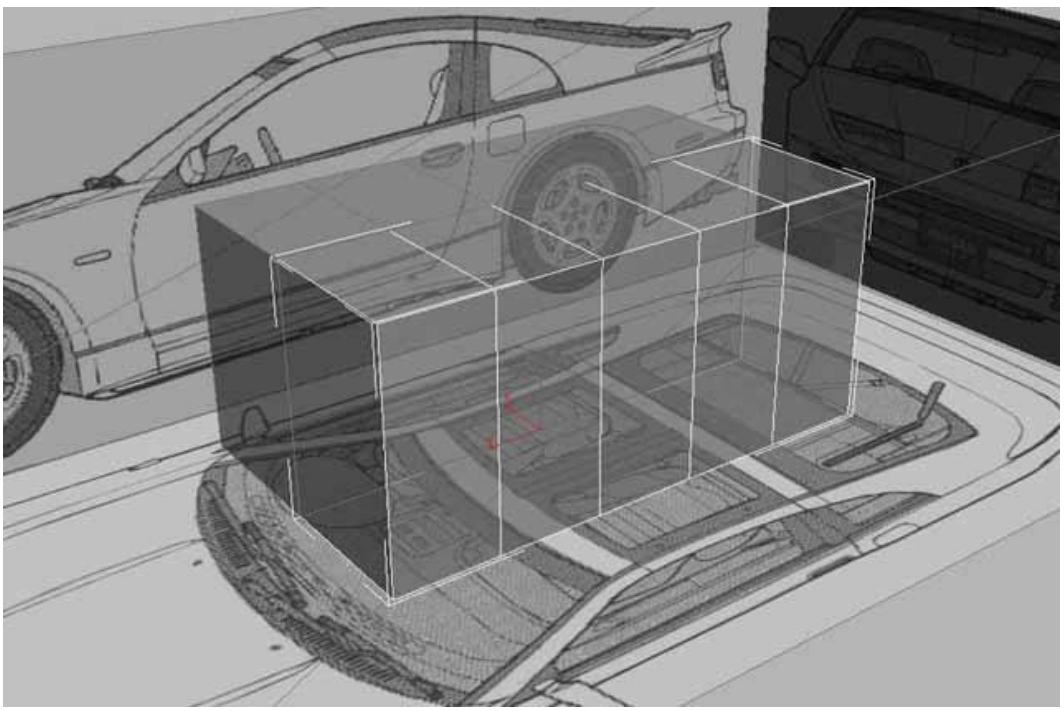
Then we convert it to poly, and delete the polygons from one side.



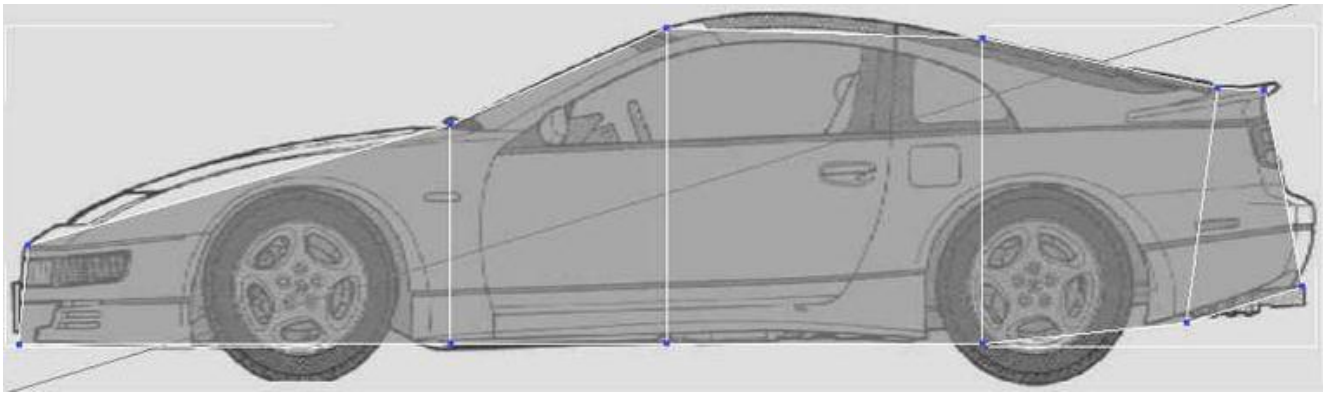
Next step will be to mirror our object.



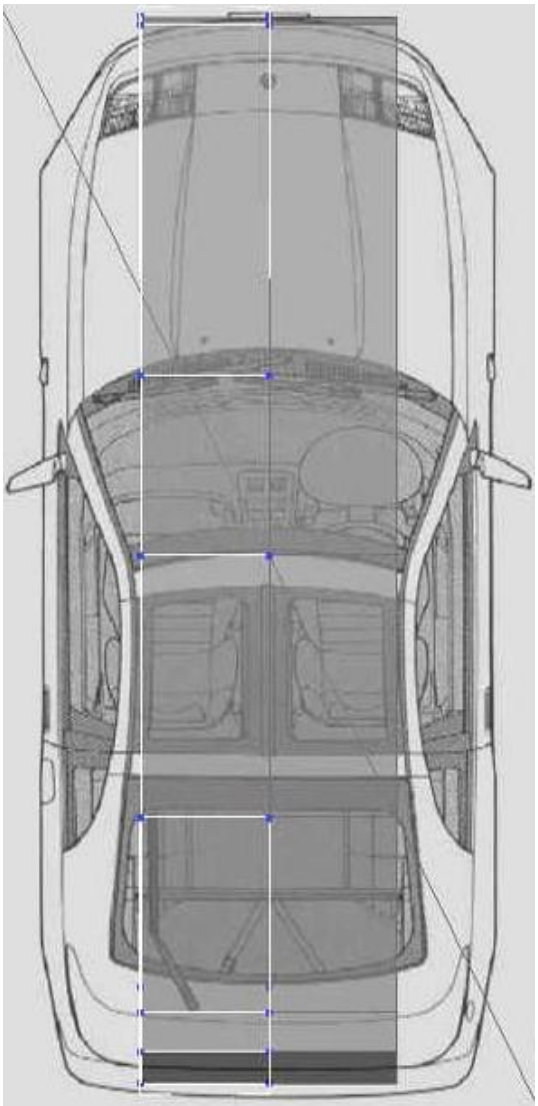
Of course we need to see the blueprints behind the object, so check the "See-Through" option in properties, or apply a standard material with opacity set to 60 (or else).



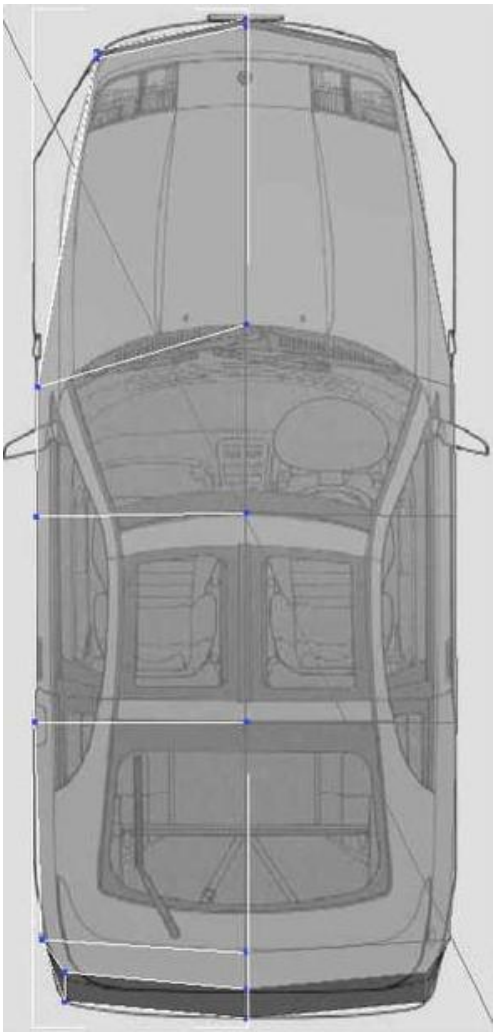
Now change to left view (make sure that in left view you see the left side of the car) and move the vertices to the appropriate places on the blueprint until you get something like this:



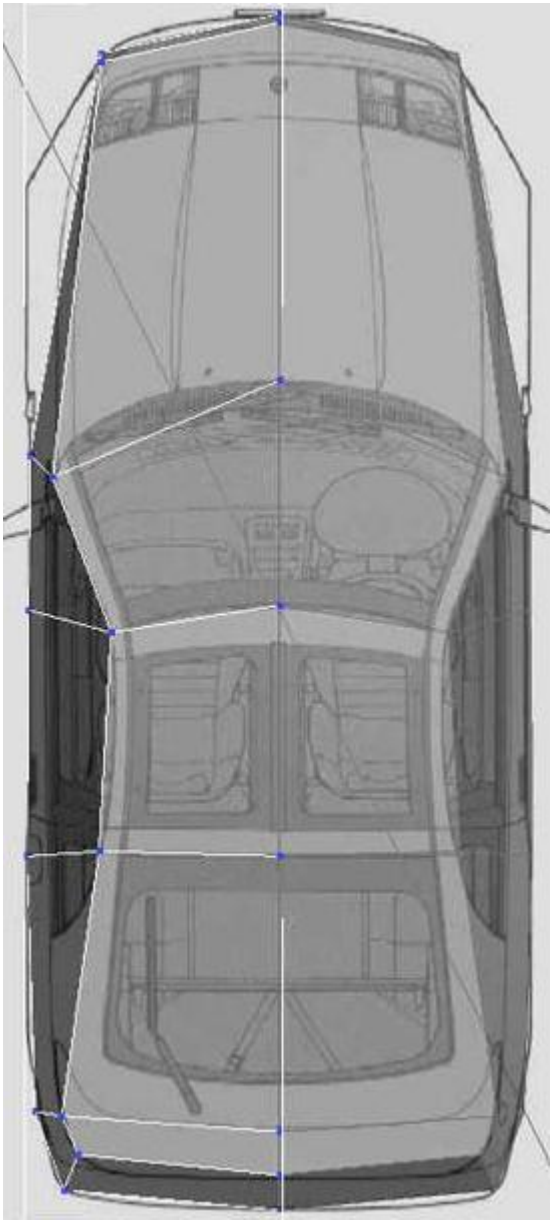
The top view should look something like this:



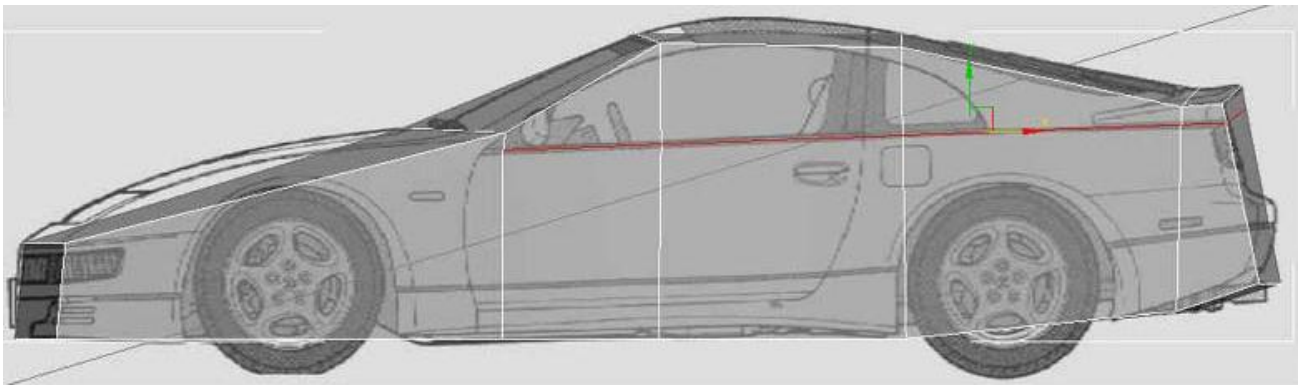
Now move the vertices here as well. First, move all vertices to the very side of the blueprint:



Then move the upper vertices to fit to the curve made by the side of the windshields and the roof:

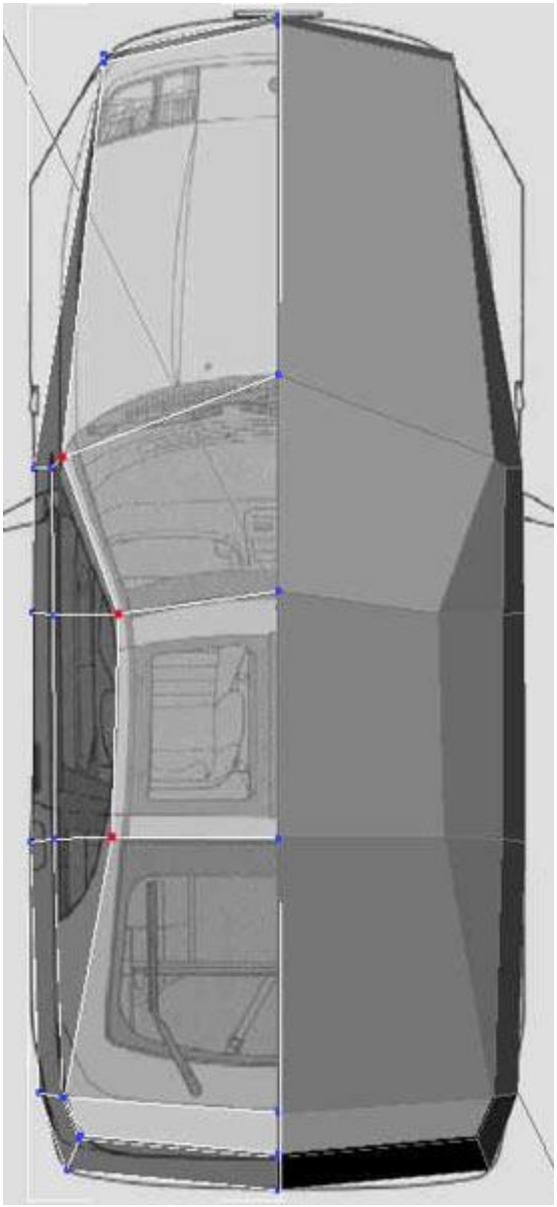


Do the same in left view.
Now we will add the first additional edges using the cut modifier:

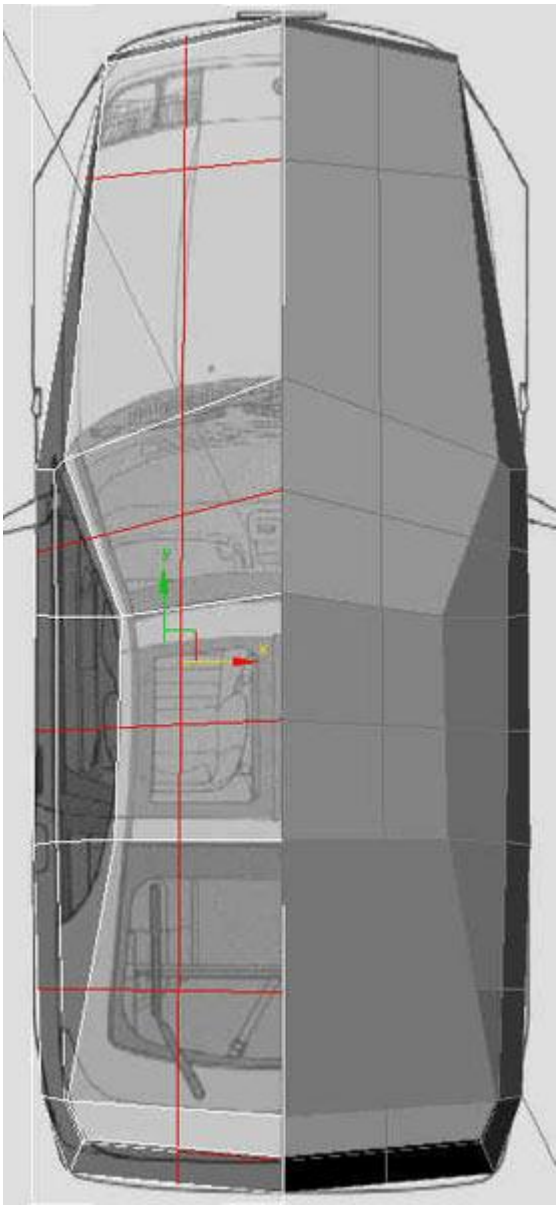


We got a pentagon by this move, but don't worry, we will correct it later (always try to build your models only from quadrangles!!).

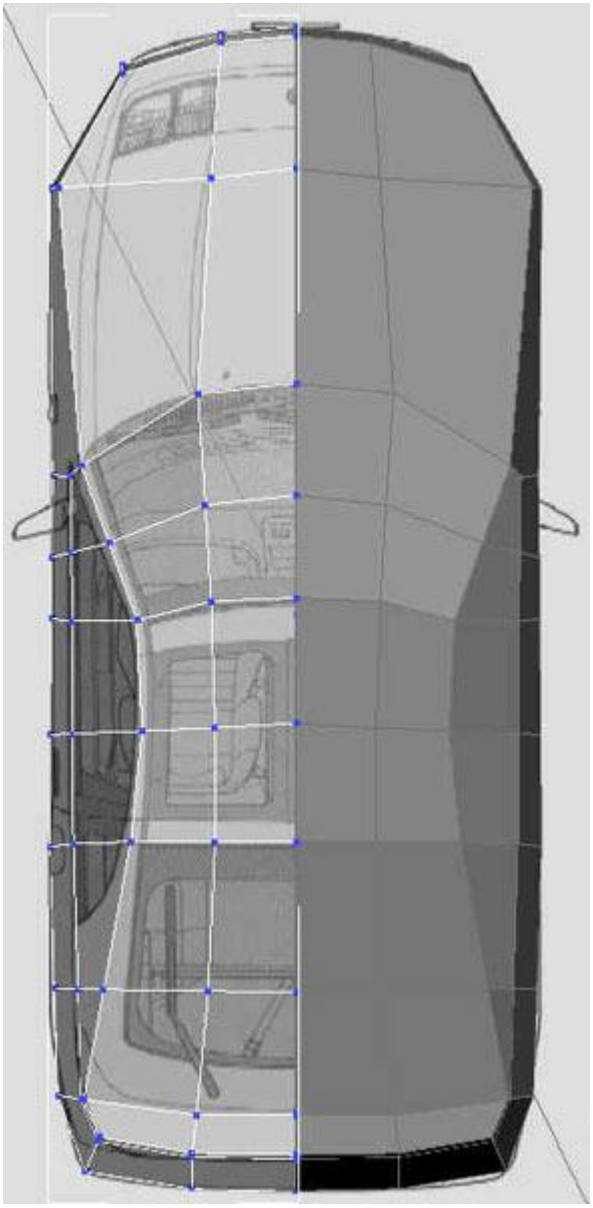
In top view, move the vertices belonging to the roof curve (the red ones on the picture) to the middle of the body parts.

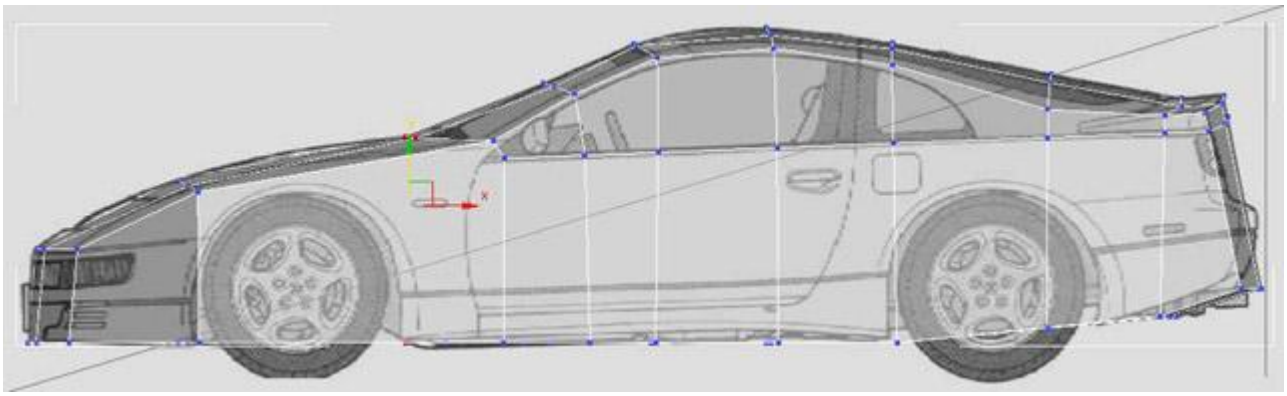


Now we will add more edges to the model. You can use slice, quickslice or even the tessellate modifier.

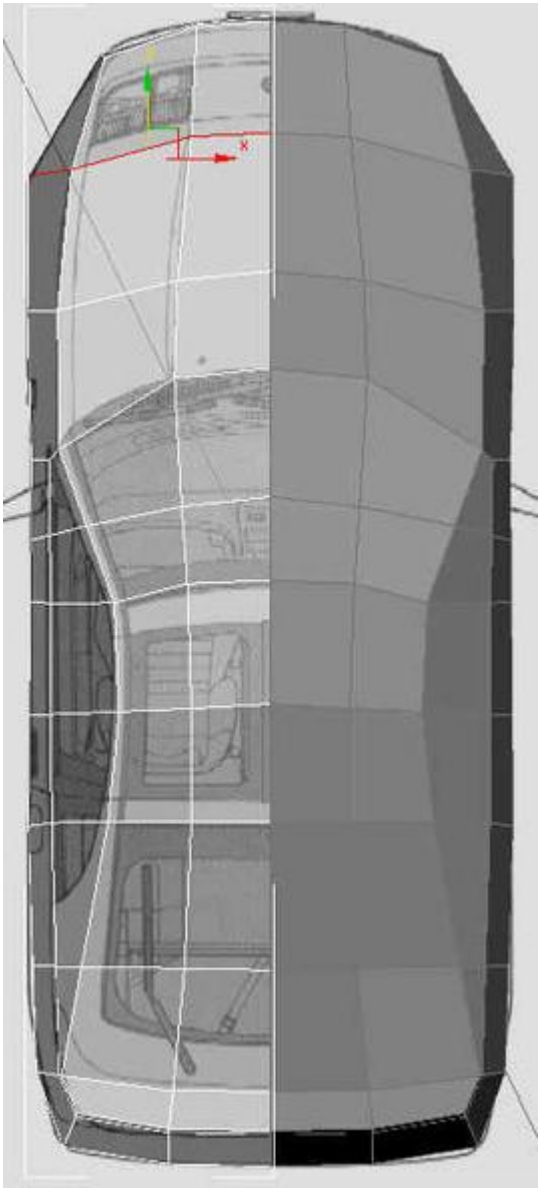


After that - as usual - we move the vertices to fit the blueprint.

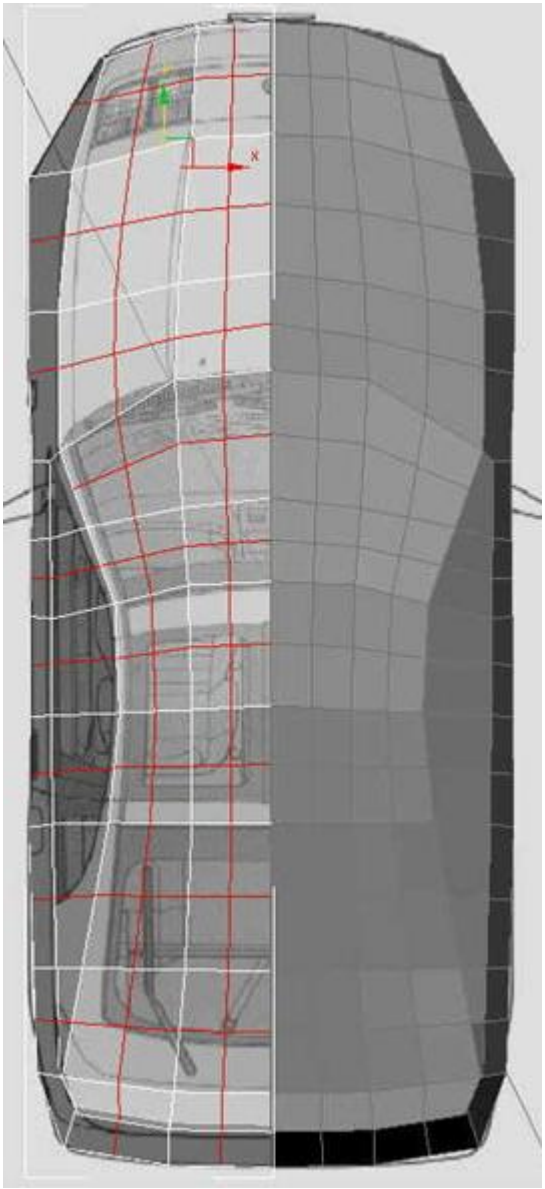




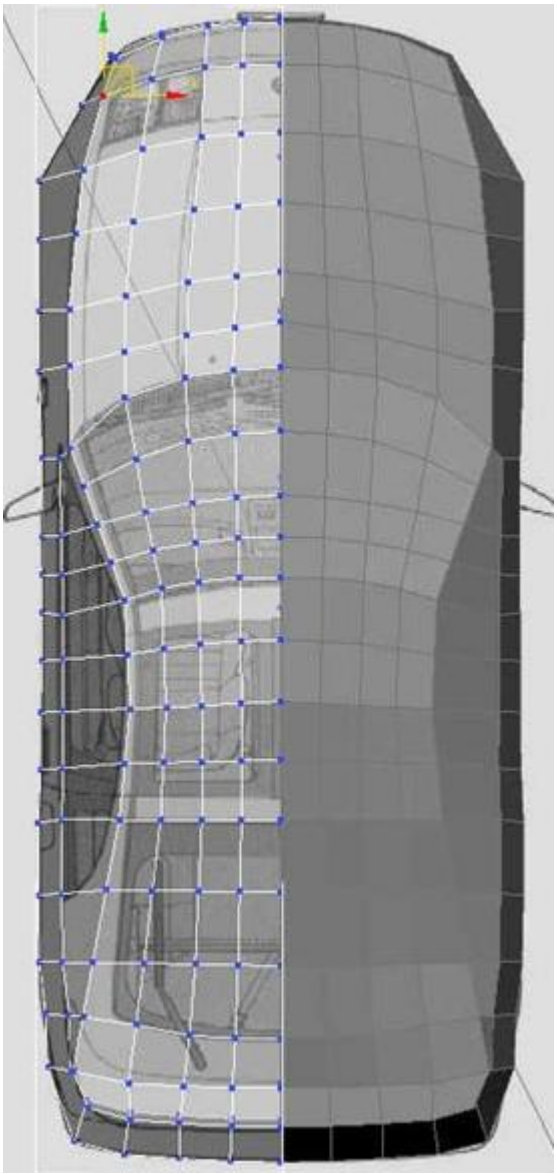
Before the next move, the hood-part needs another loop of edges:



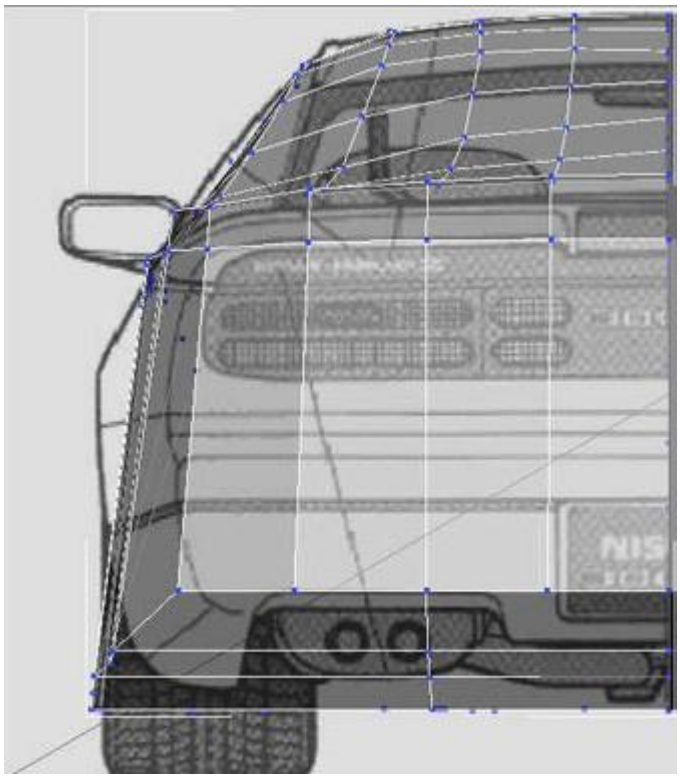
Then we repeat the whole thing:



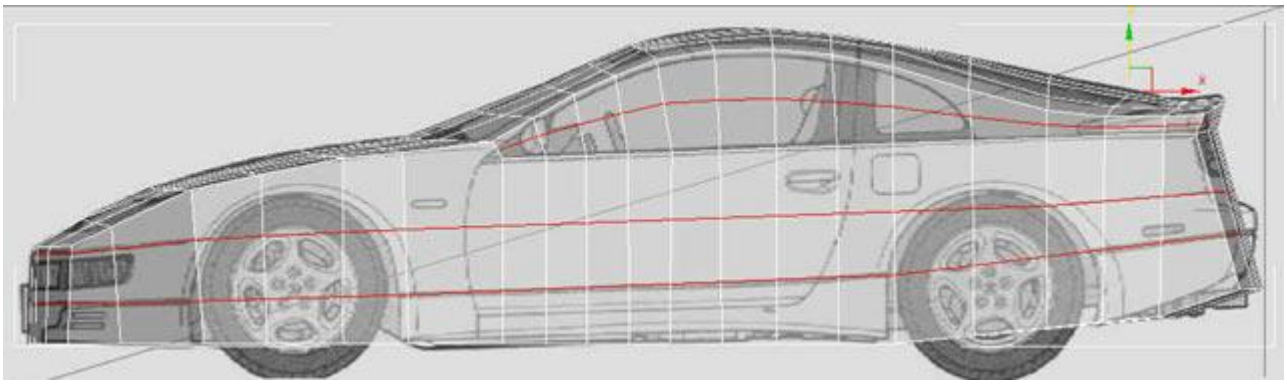
We got a quite dense mesh now; we will make it denser only when we cut the shapes of the different parts (doors, lights, etc).
Once again make the vertices-moving part:



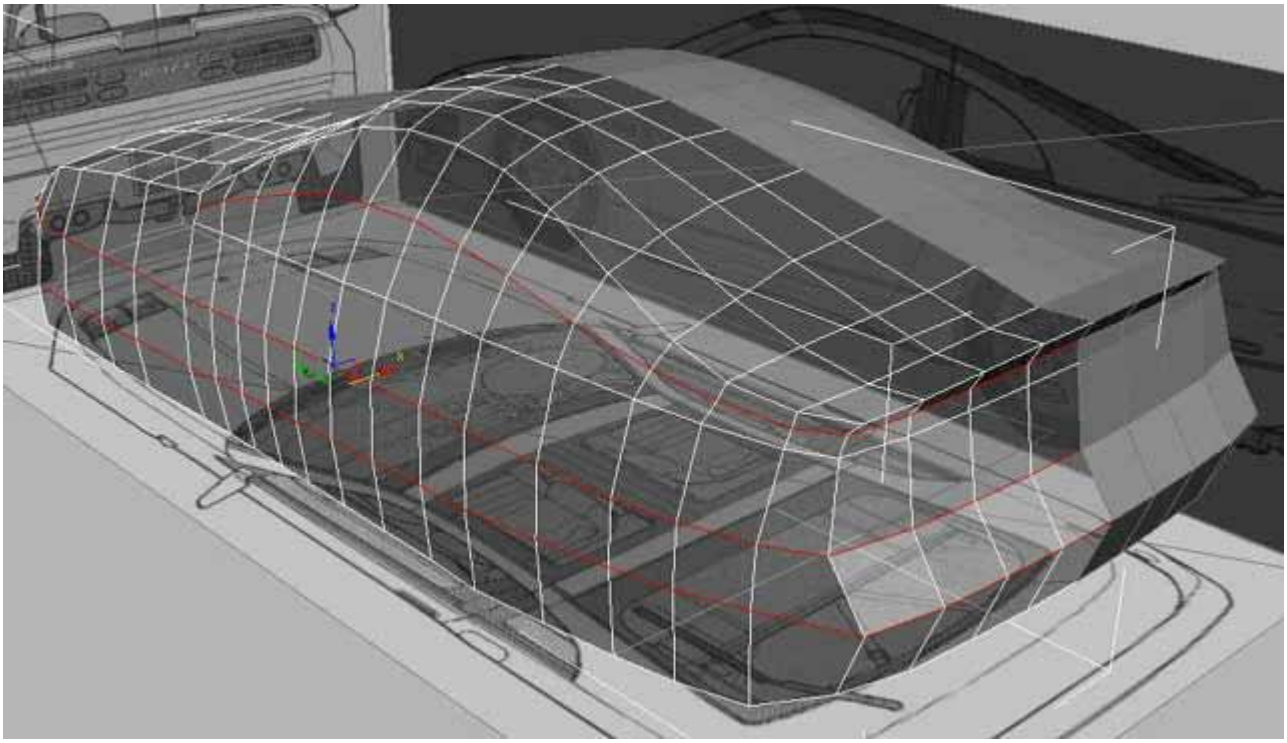
I got a little problem with the blueprints. The top and side one are fitting to each other quite well, but the front and back one are not correct. The line of the roof fits on these too, but the lower parts of the windshields are not there where they have to.
Because of this, I will prefer the top and side views. But we have to use the other two looks as well, at least for making the curves (made by the vertices) clean and smooth.
If this annoys you, you can try to correct the blueprints, but it won't be a disaster if you don't. If your blueprints are totally correct, and you cannot see what I'm talking about, congratulations! You did well by the blueprint-editing phase



Now we make some edges to the side of our object:

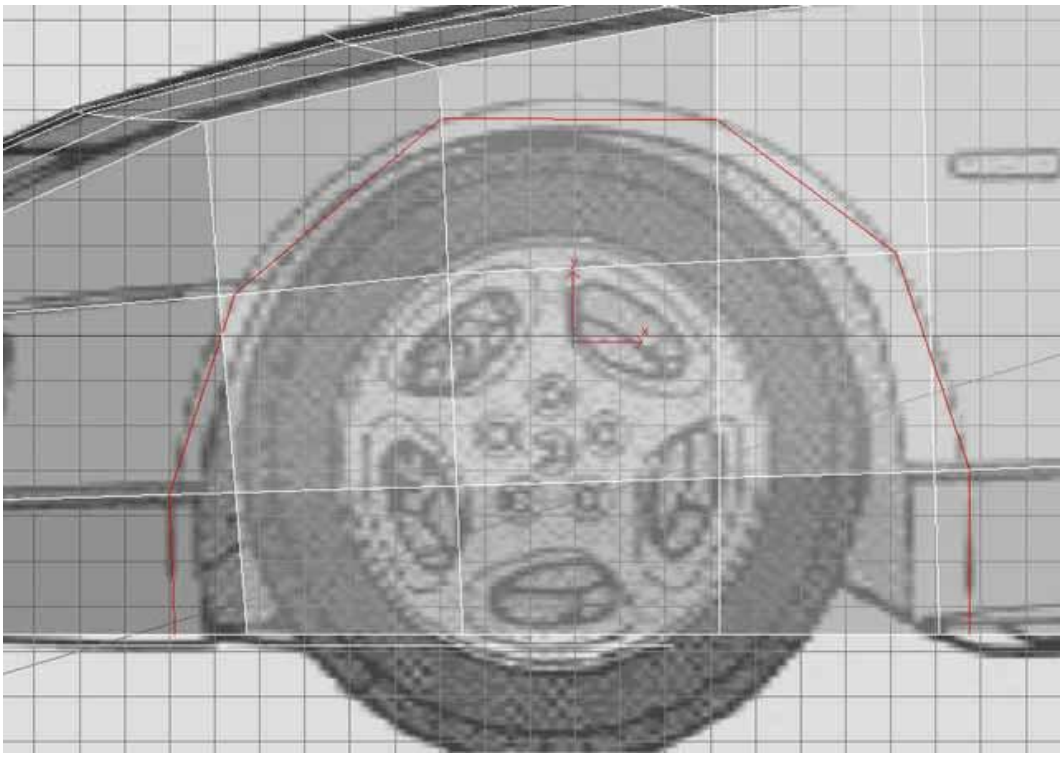


You can look at the reference pictures to see what shape the side has, and make it look like so. You can also use the back and front blueprints for that. After this, our object begins to look like a car:

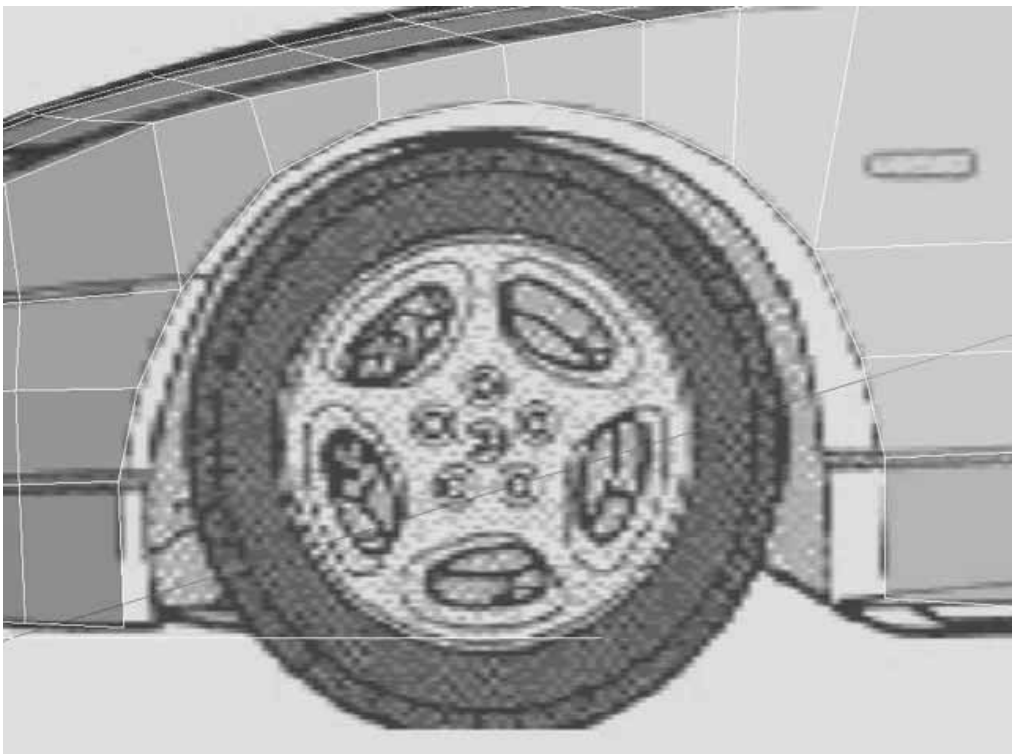


:: CUTTING TIRE HOLES ::

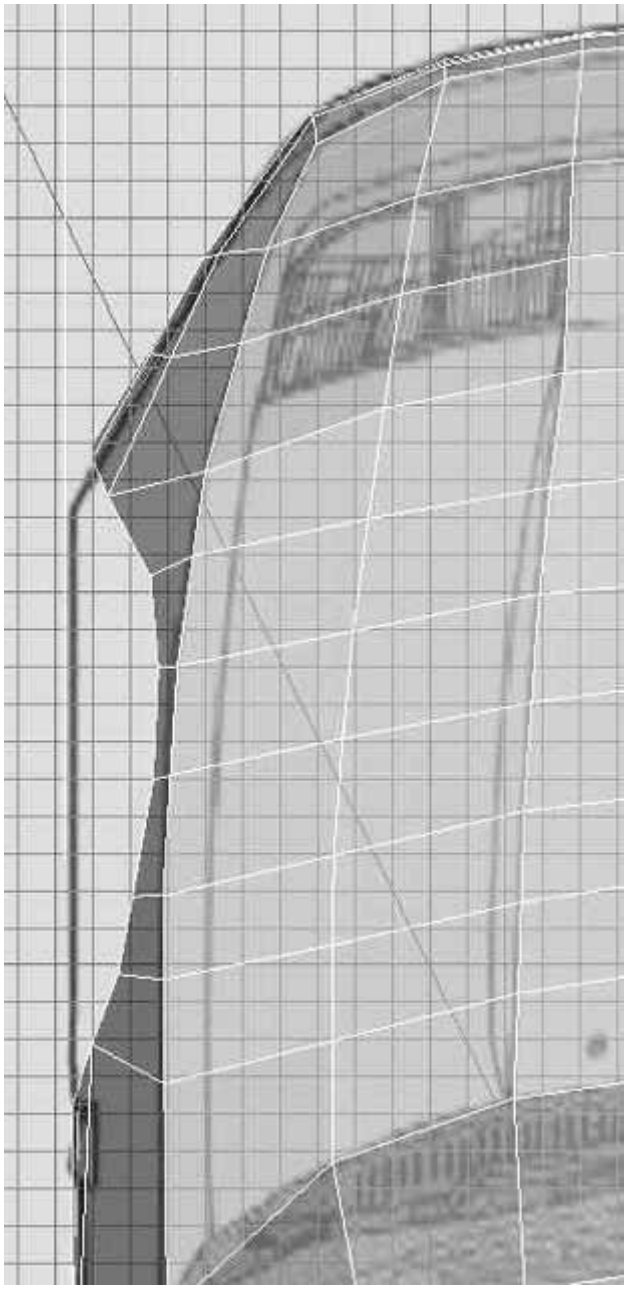
Let's start with the front "wheel-hole" (sorry, I don't know the exact word). As you see on the blueprint, the hole has another line outside, so we will start there. Just use the cut modifier to make the base shape:



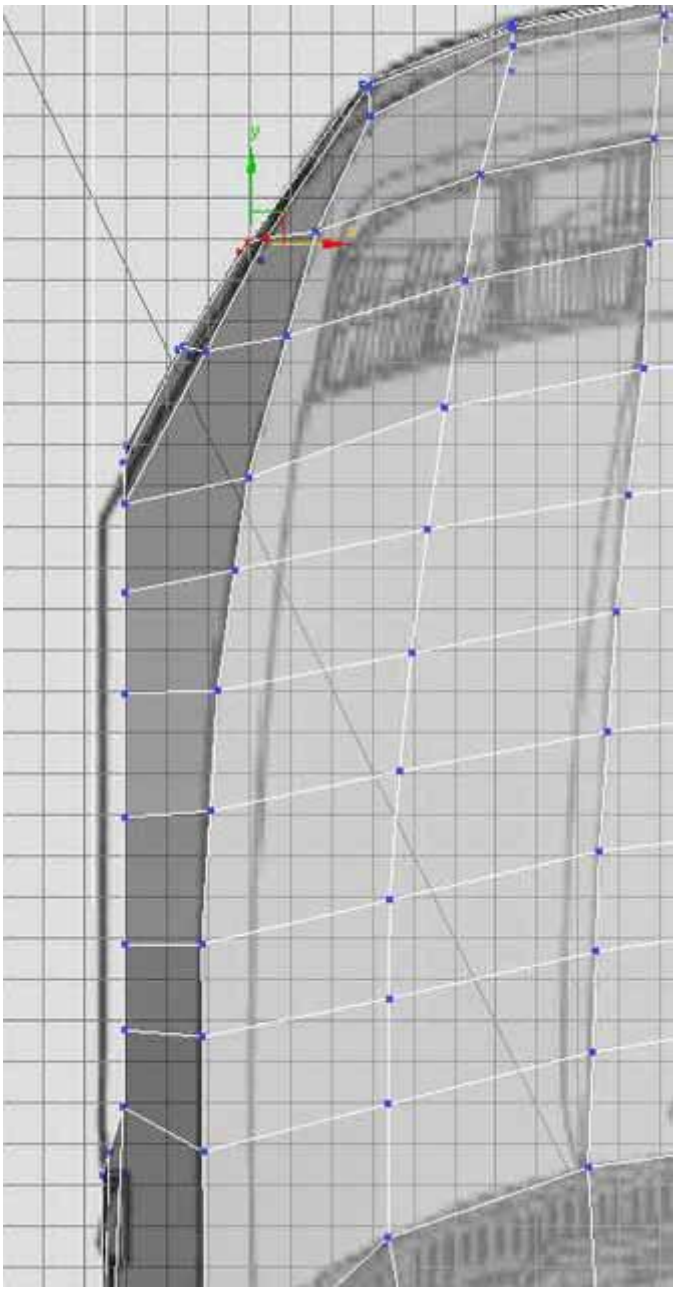
Don't care about making triangles and pentagons by this move, it's easy to correct it. Just use Target Weld and cut if it's necessary.
We need additional edges to make the curve more clean and round-like. Don't forget to cut the edges to some end of the object. In this case, this end is the middle of the hood:



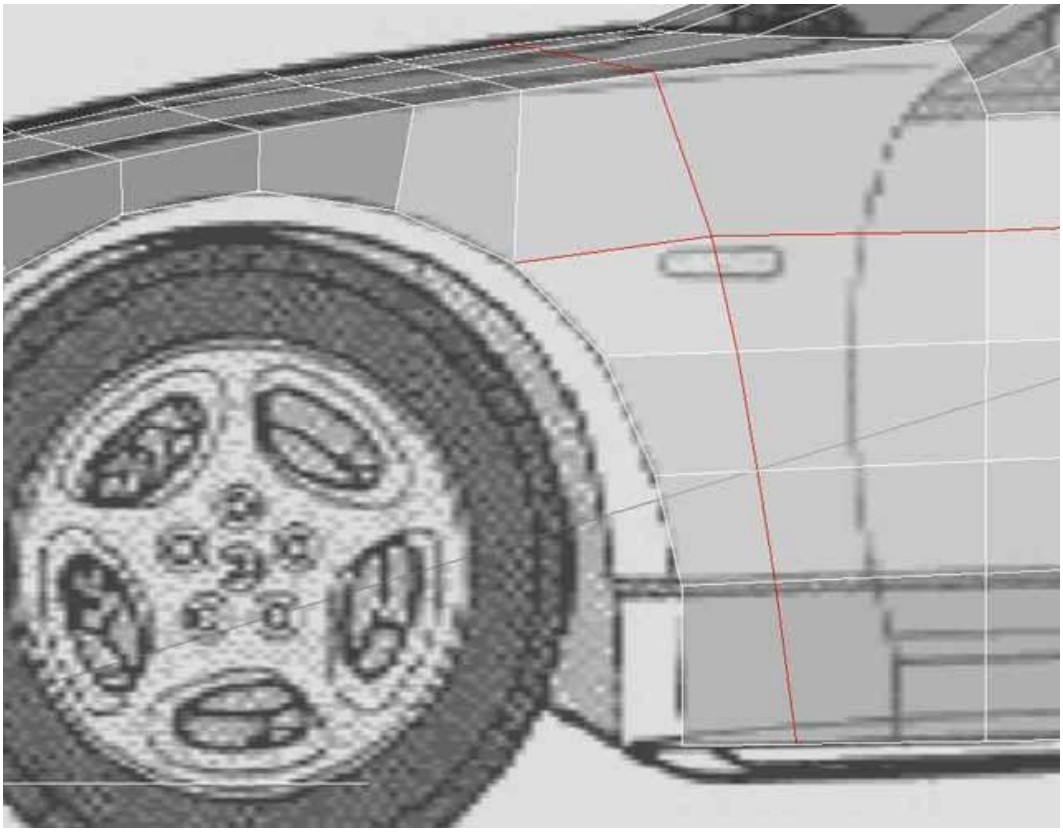
I also deleted the inner polis, because they are unnecessary. We now model only the body, so you can delete the bottom polis as well. As you change the view to Top, you may see something like this:



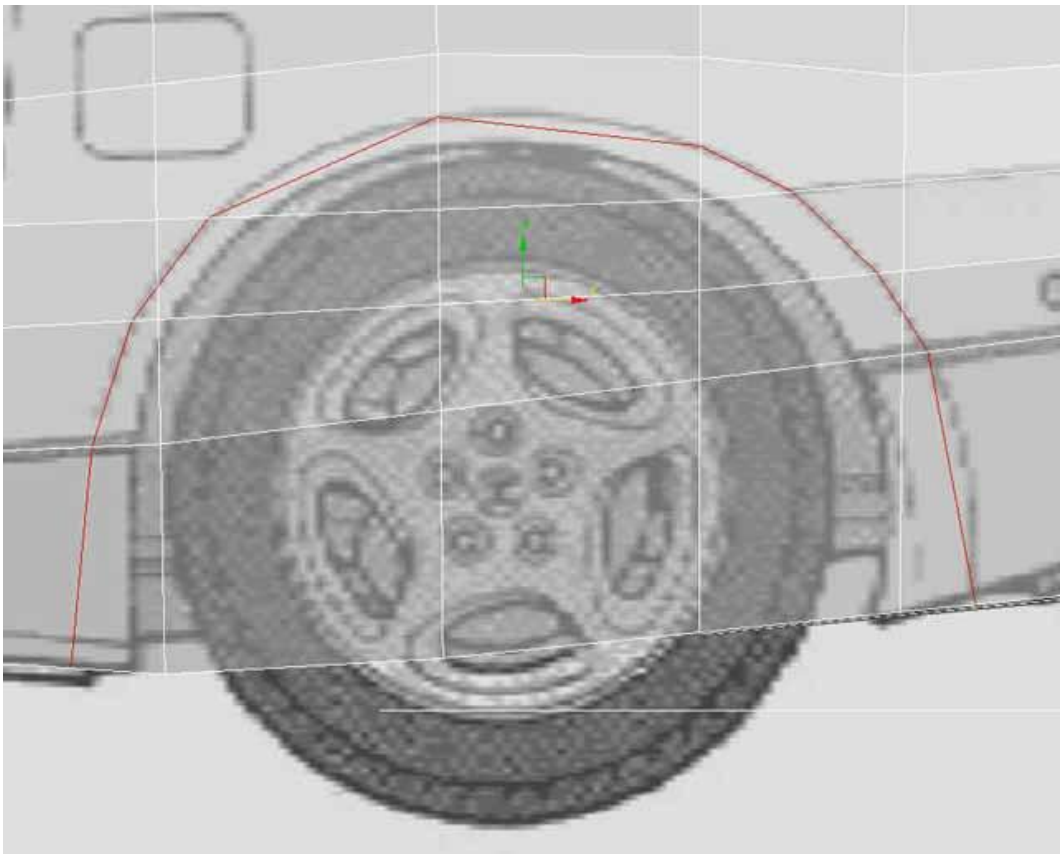
Don't worry, we just have to move the vertices to fit the blueprint.

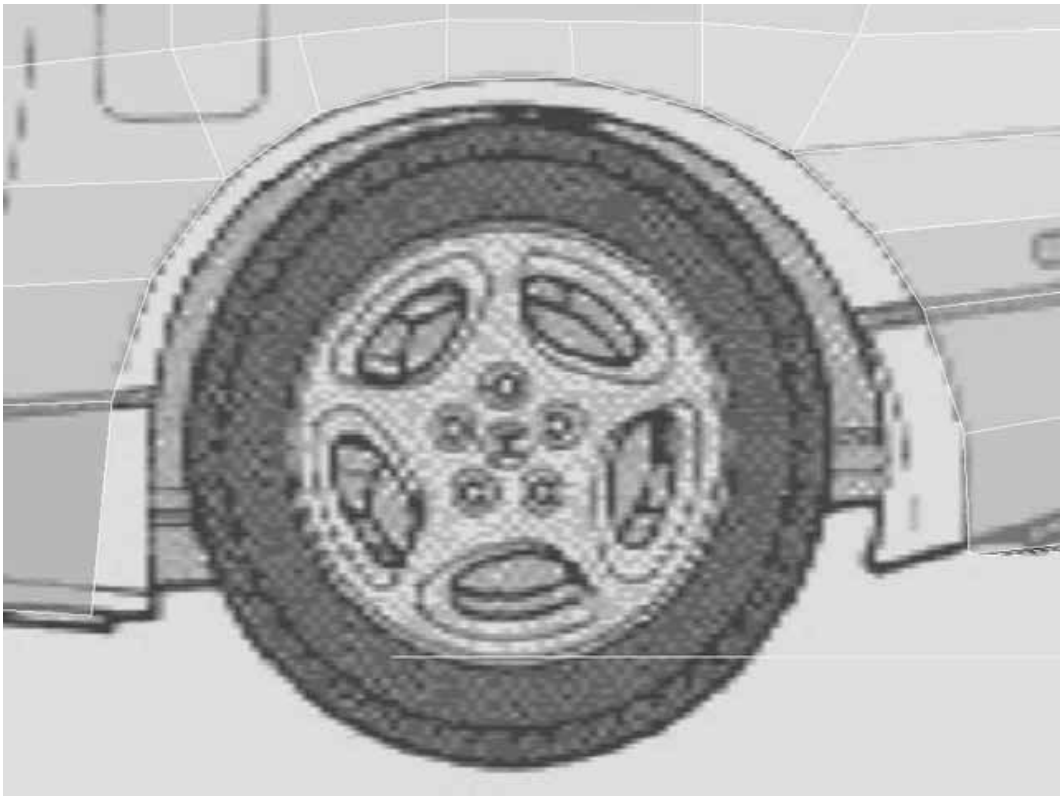


I added two other edge-loops to the side to make the polis have nearly the same dimensions (this will help when we apply subdivision)

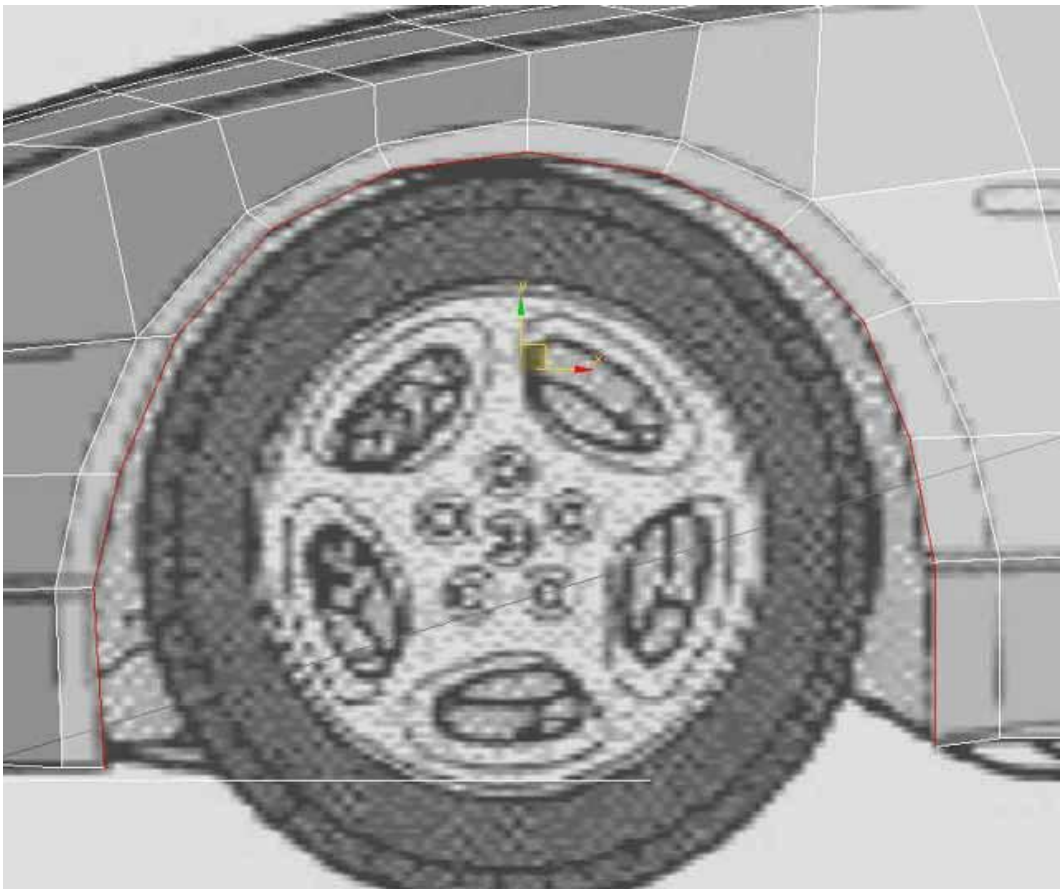


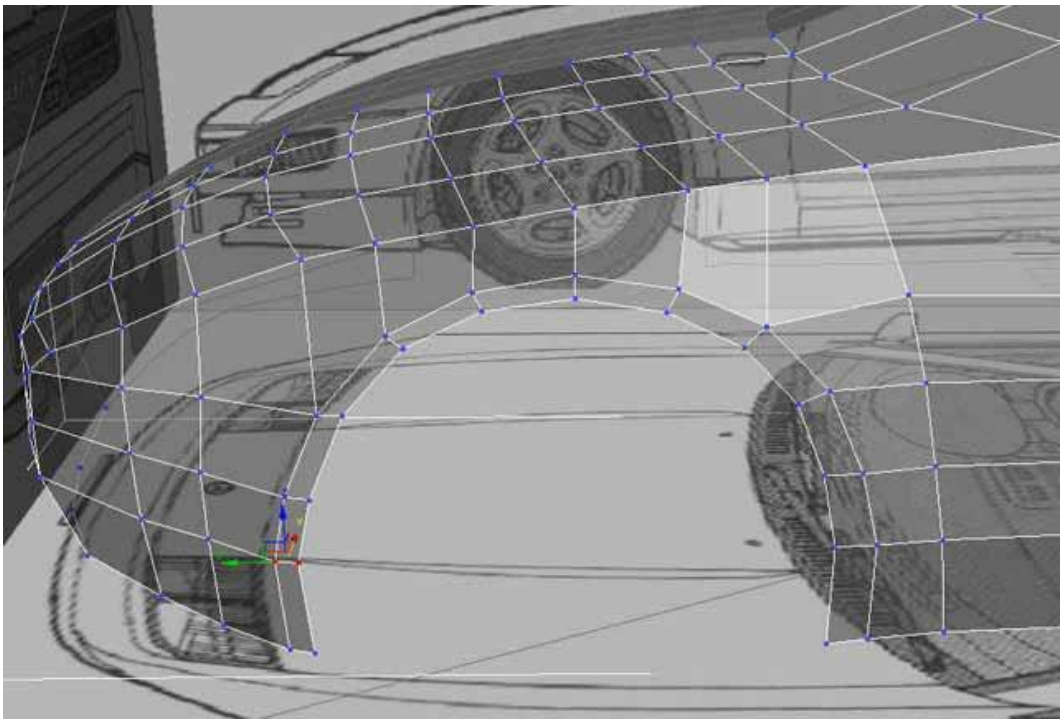
Now go to the rear part of the car, and make the same things as we did with the front part.



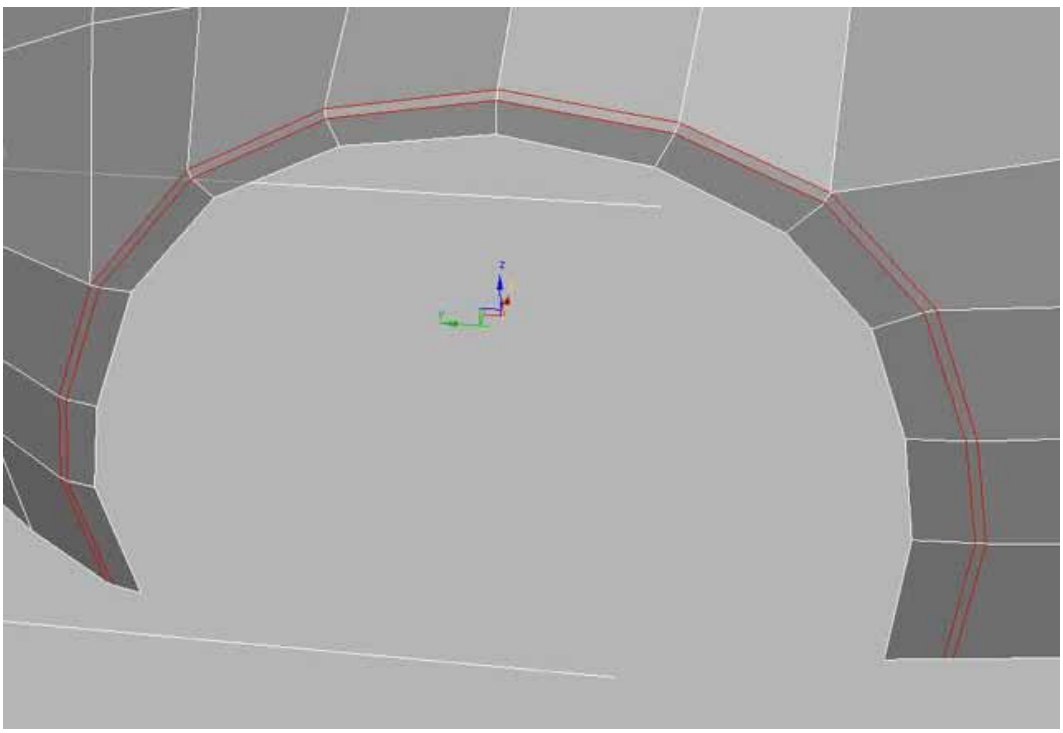


Next step will be to make the inner curves at the holes. You can simply shift + drag the edges in scale mode and then move the vertices to their right position.

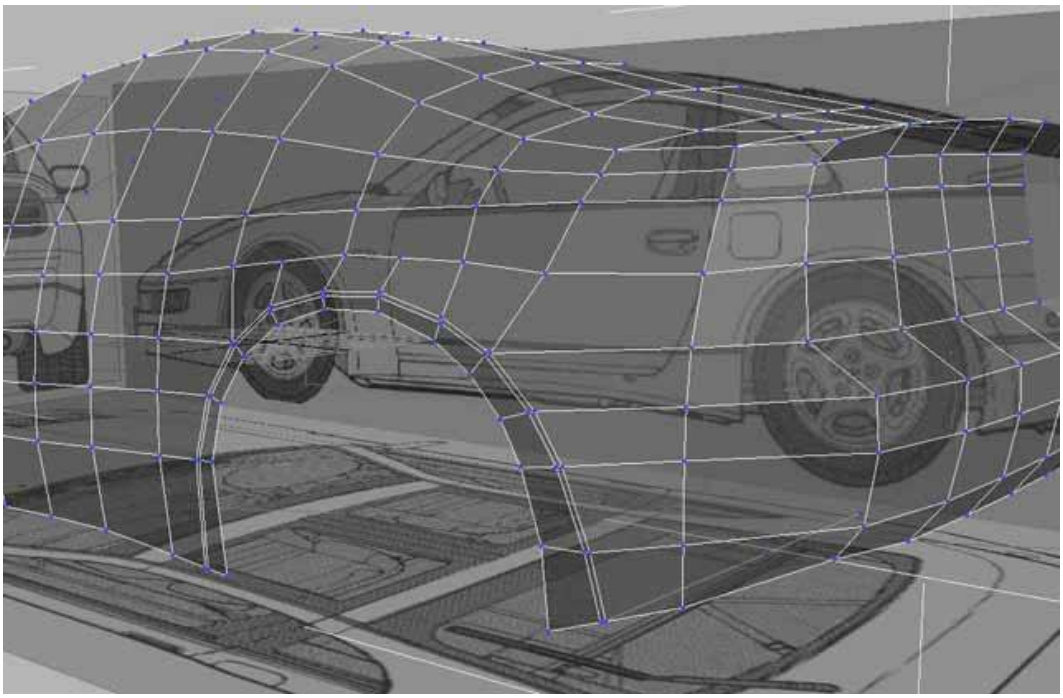




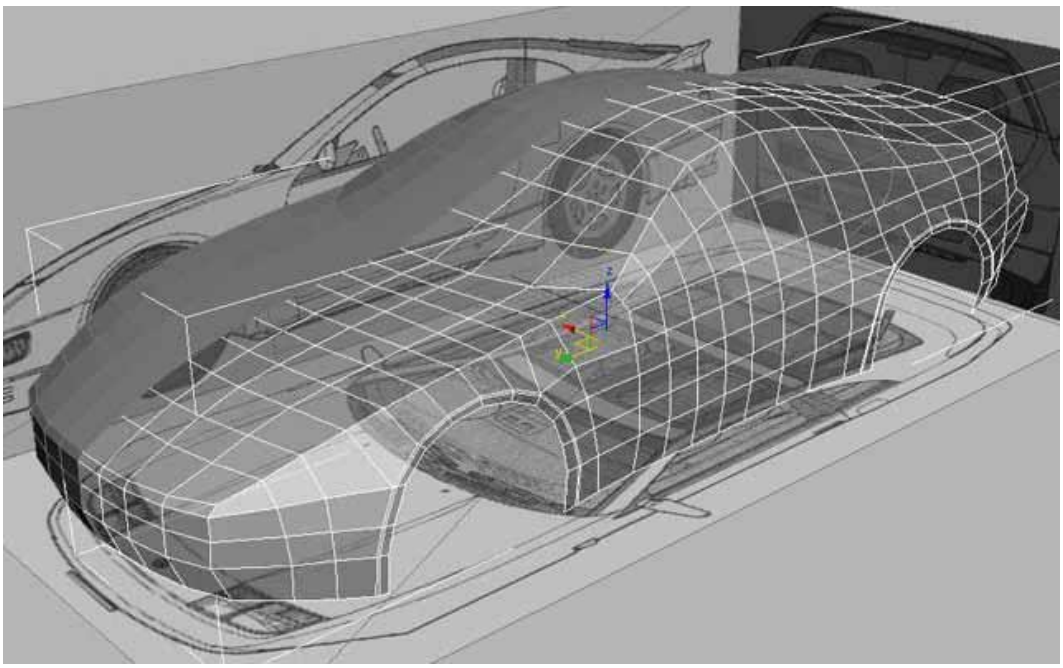
When you are ready, select and chamfer the outer "curve". This will add the right shape to this part. You can change the material to some shiny one, and turn on subdivide with 2 iterations and see how it looks.



Do the same with the other hole.

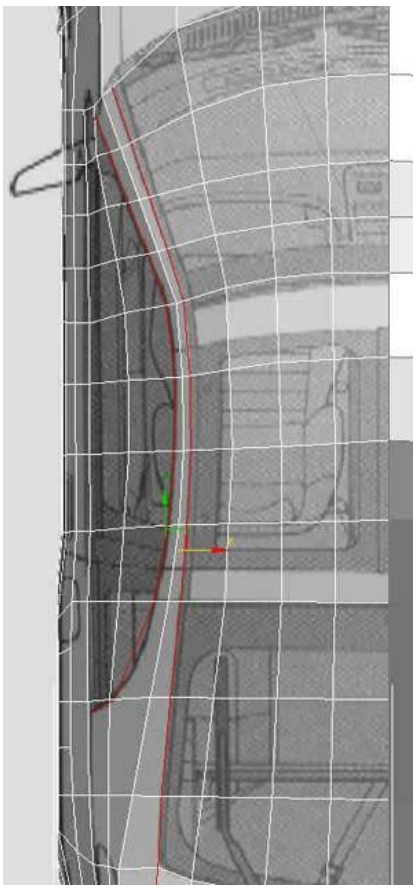


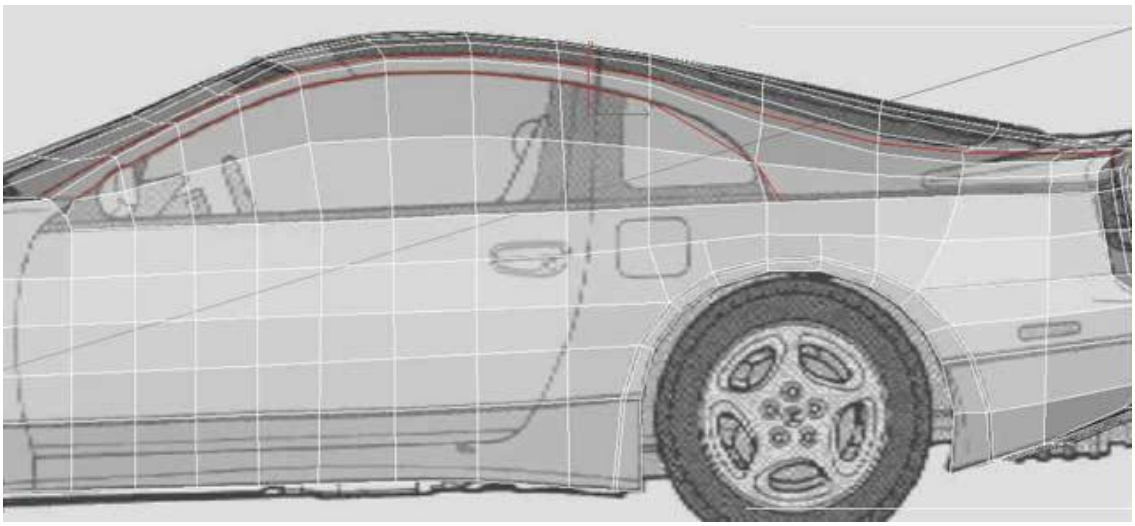
If you did well, you should have something like this:



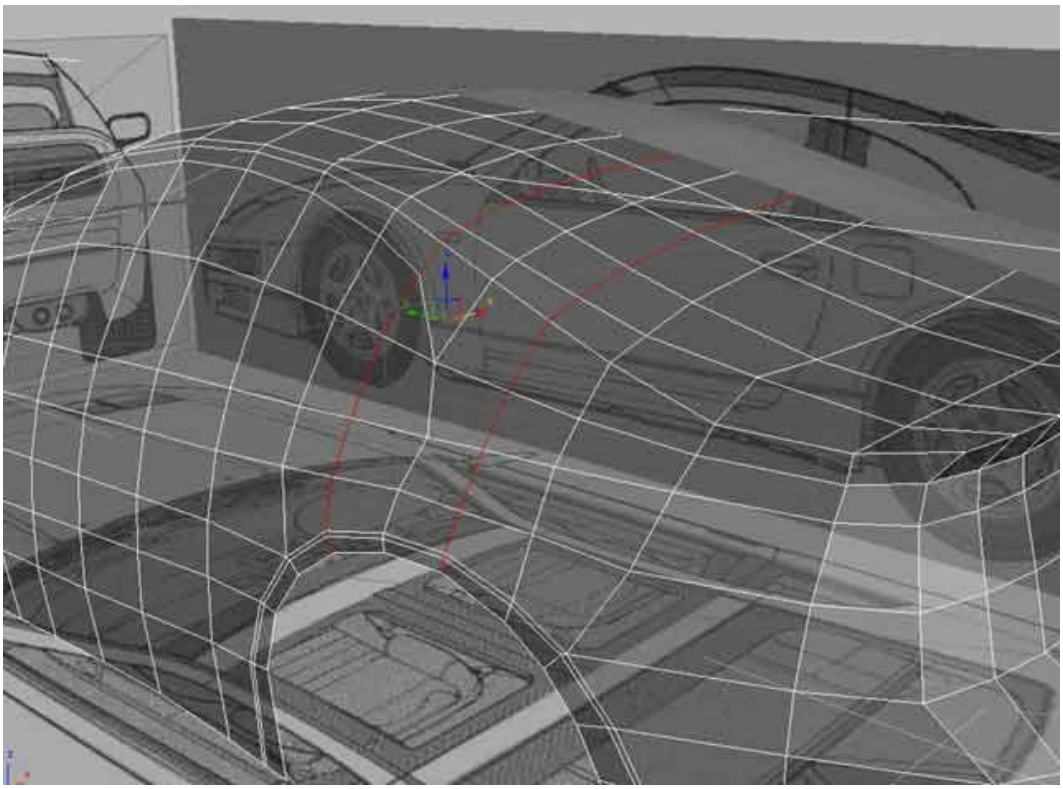
:: BODYPARTS ::

In this chapter, we will make the outlines of the different body parts (hood, doors, bumpers, etc.).
In the chase of bumpers, we are already ready, because at Chapter 2 we have added the lines to fit to the top of the bumpers.
So let's continue with the door frame. We have an edge-loop in the middle of this part, but now let's make two more at the edge like this:

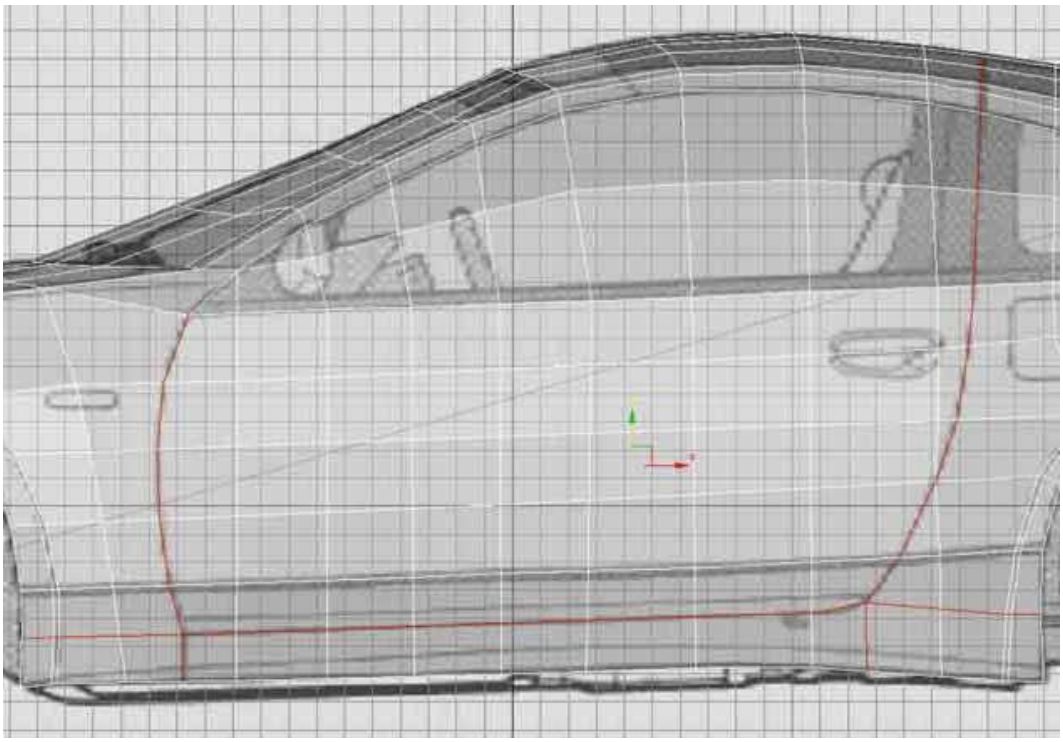




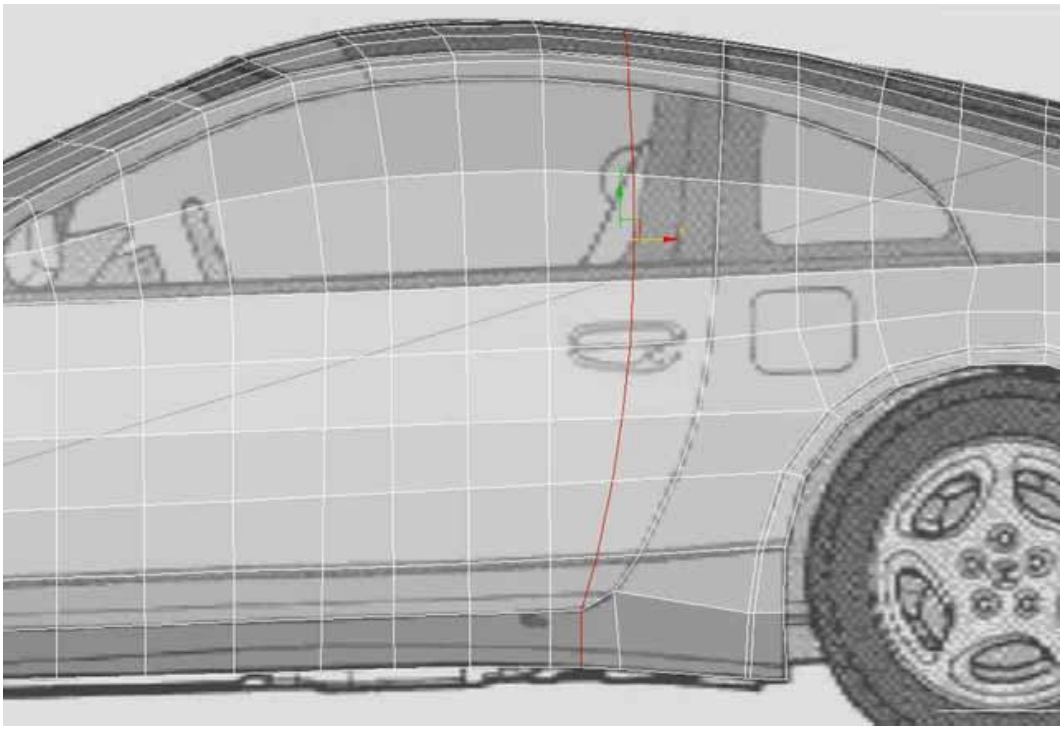
At the previous chapter I left two edges "open" when I made the tire hole. Now I continue them to make the curves of this part more detailed.



Next step could be the outline of the door. Simply use cut, as always and if you get others than quadrangles, correct them (in some place I still left triangles or other non-quadrangle, but in those cases it doesn't count, you will see soon why).

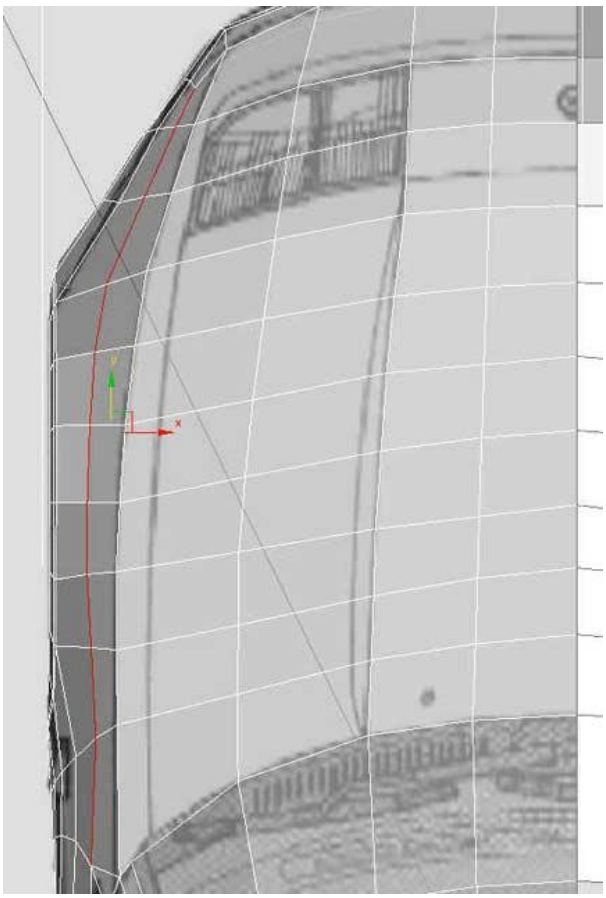


To make all polygons clear around this outline, I had to add an edge-loop right here:

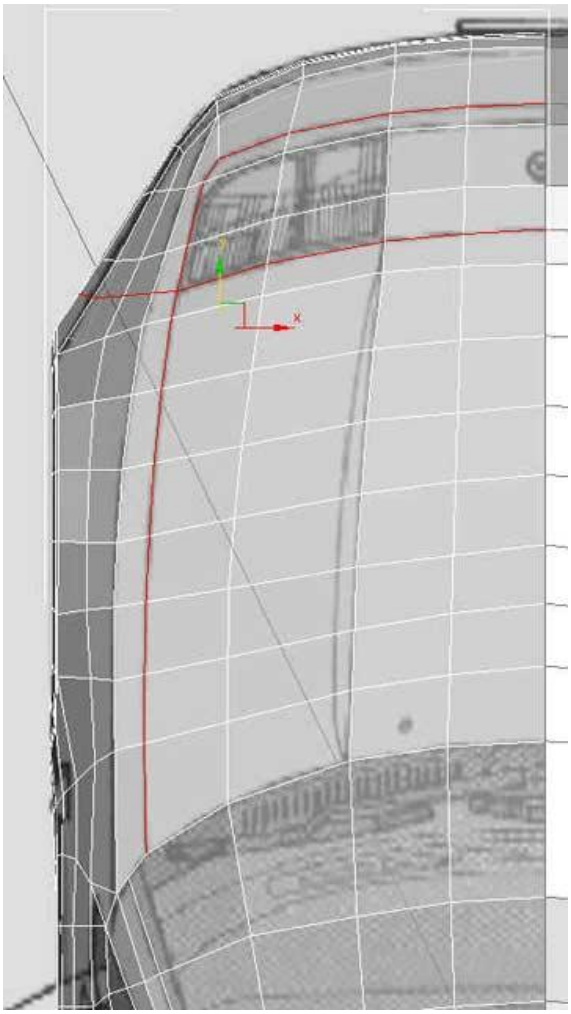


As you can see now I have only quadrangles here.

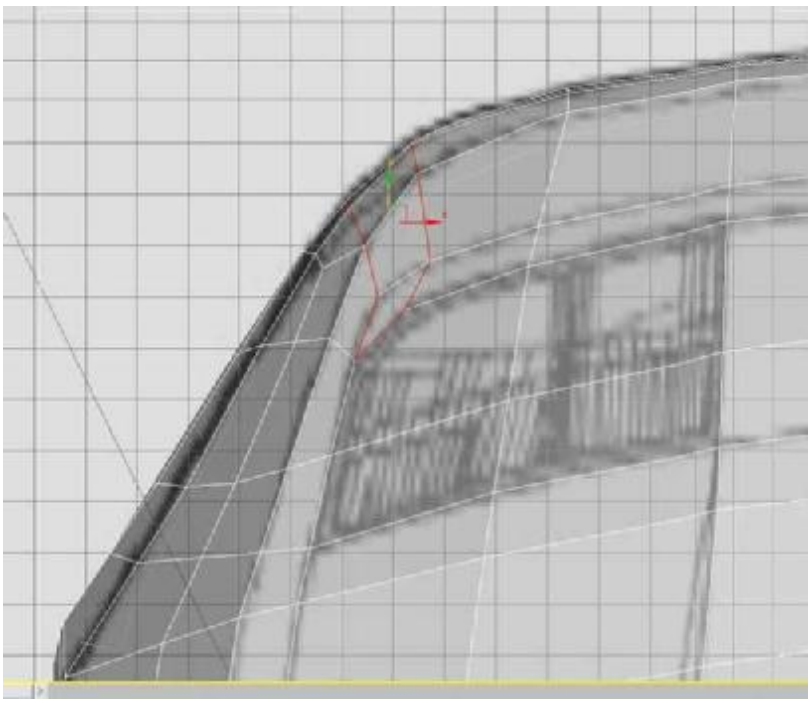
It's not an outline, but we have to continue an edge-loop started at the first step in this chapter:



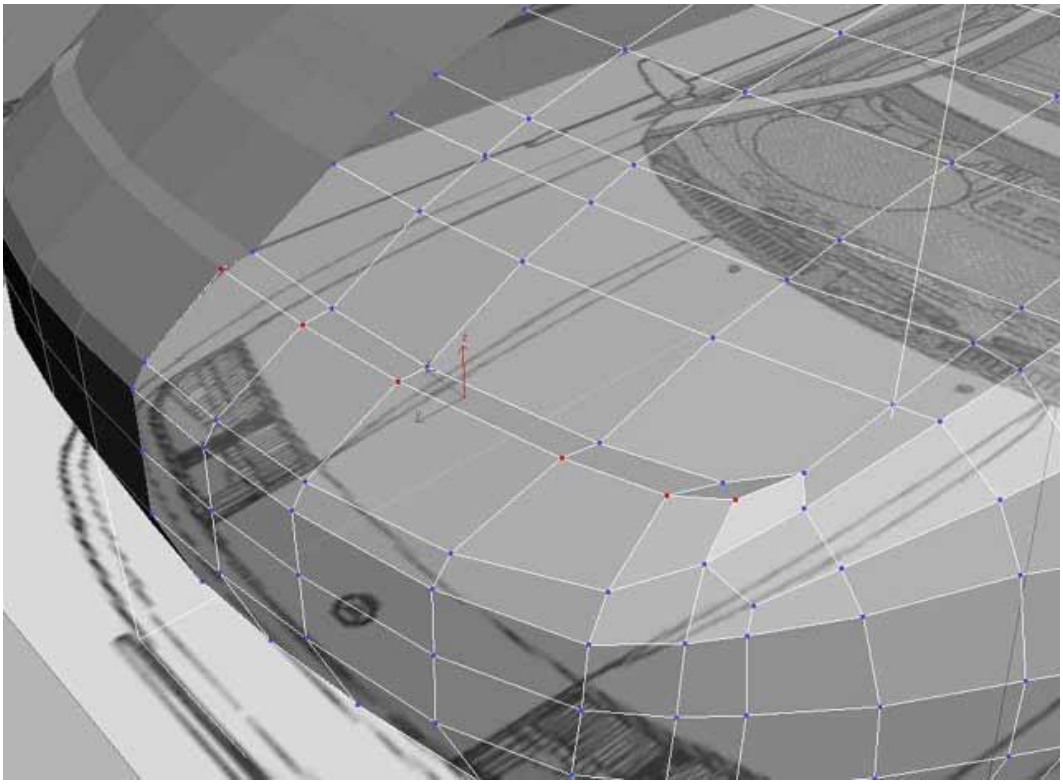
Now we make the outlines of the hood and headlight:



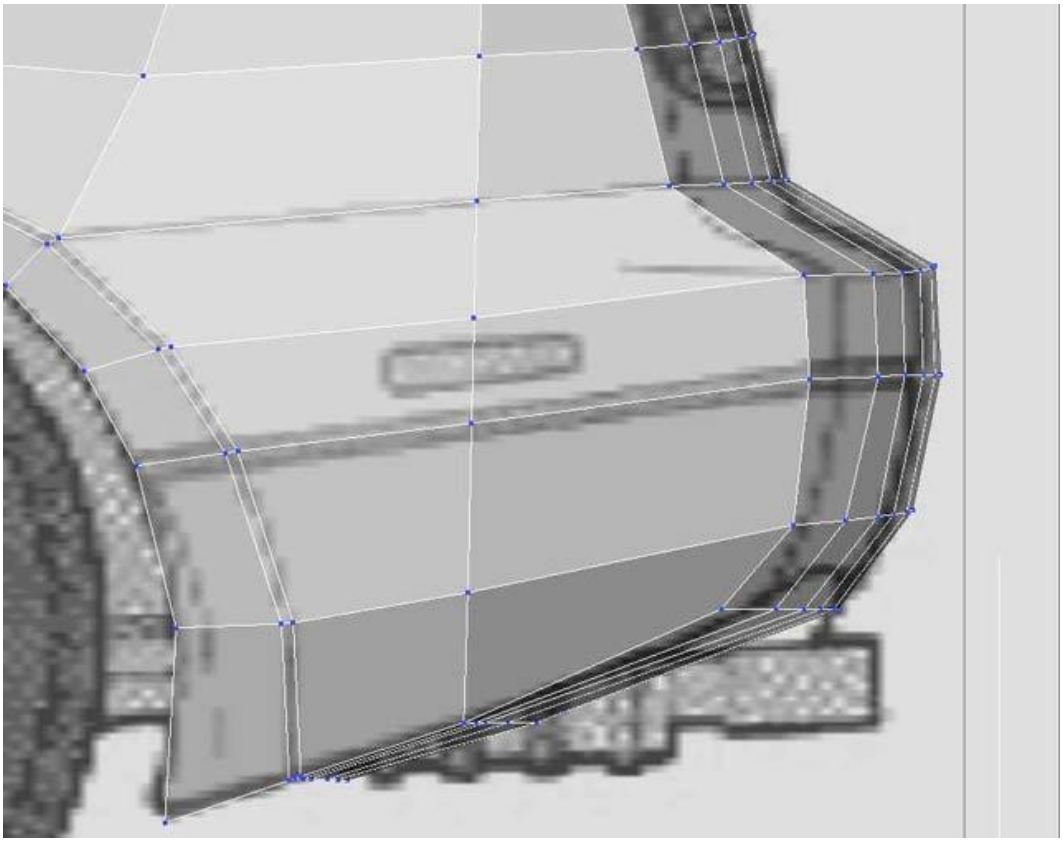
With a little modification we get a cleaner and more correct curve for the outer side of the headlight:

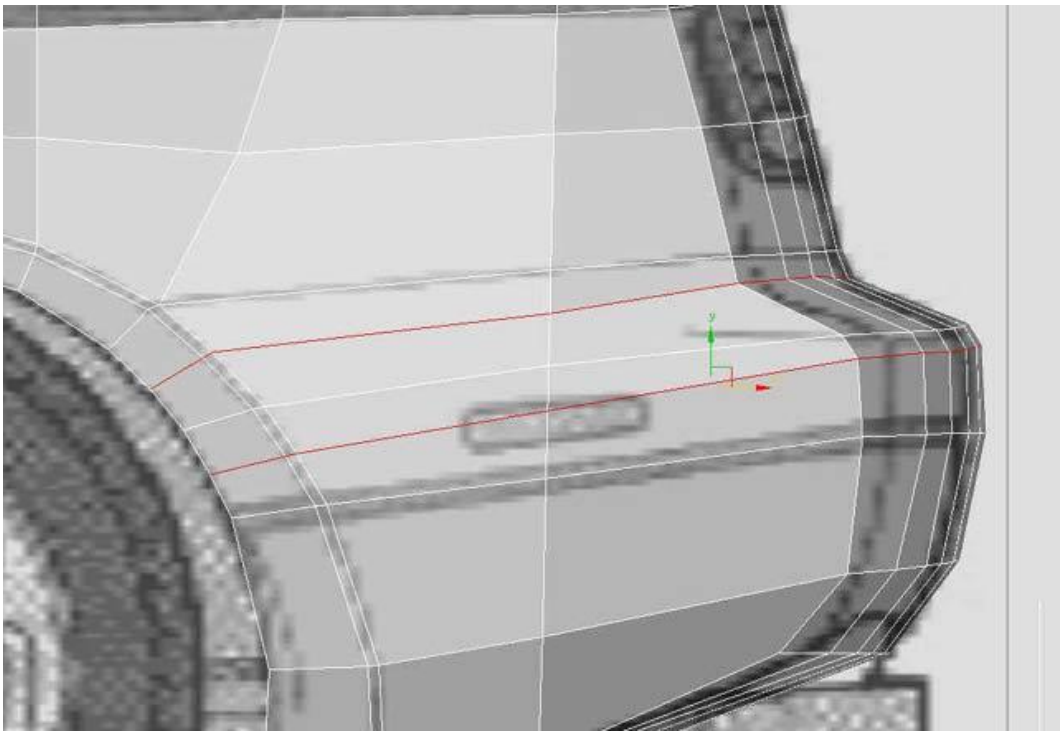


This isn't an outline either, but if we are here, why don't we add some shape to this part. Just move the outer vertices a little up:

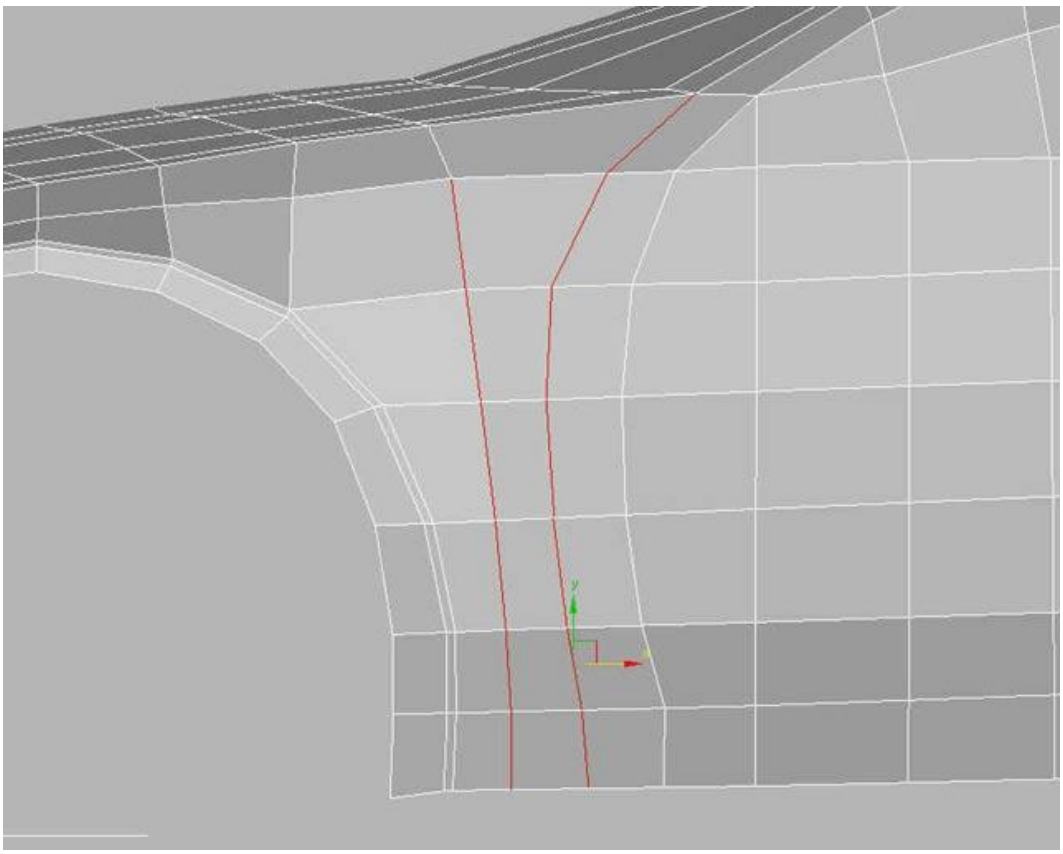


Also just some little modification but with this we can add the right shape for the rear bumper:

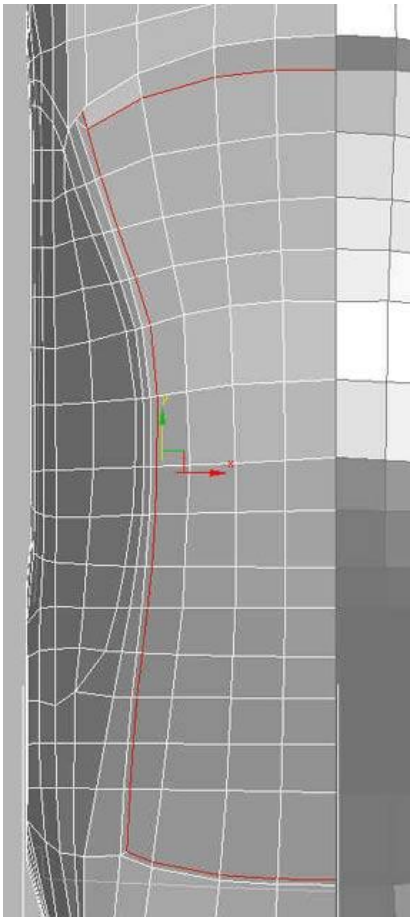




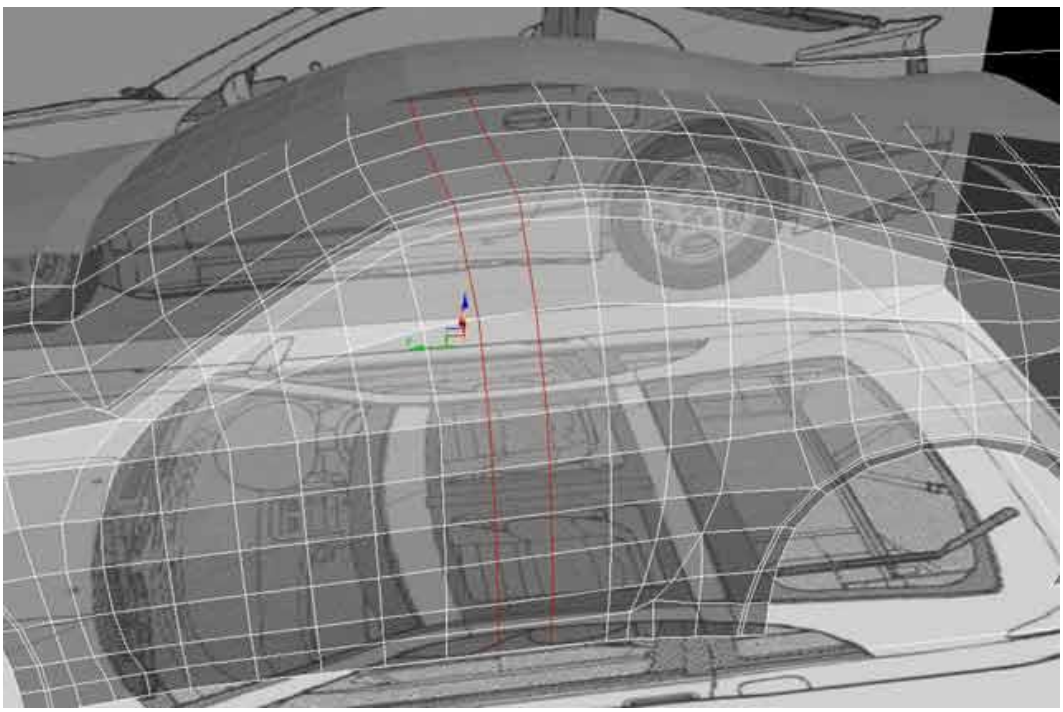
For removing other non-quadrangles at the future place of the mirror I modified it a bit:



Now we cut the outlines for the windshields. This move adds the outlines for the "rubber-lines" between the windshield and the surrounding parts:



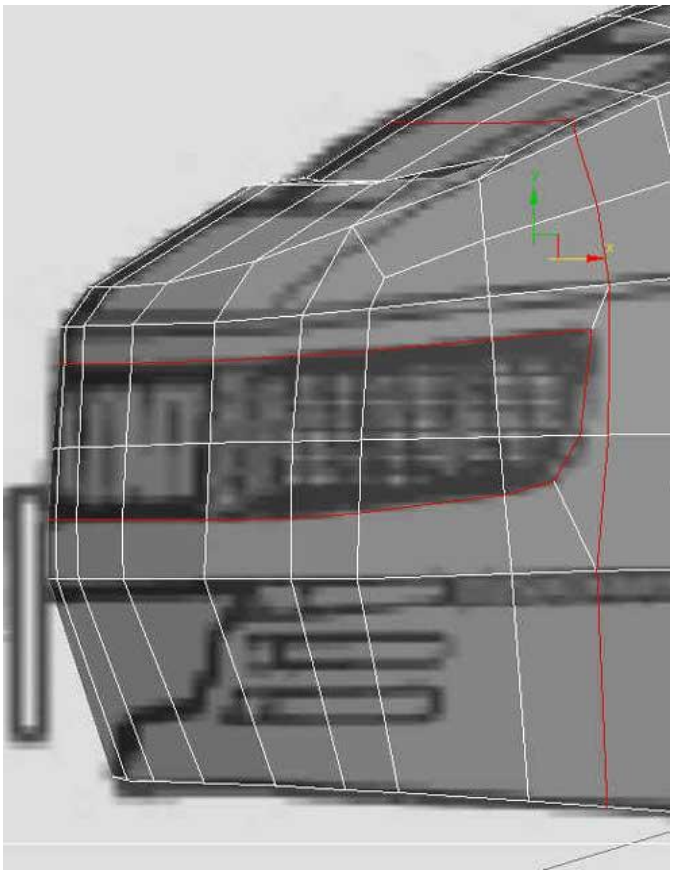
For the outline of the roof I had to add another edge-loop here:



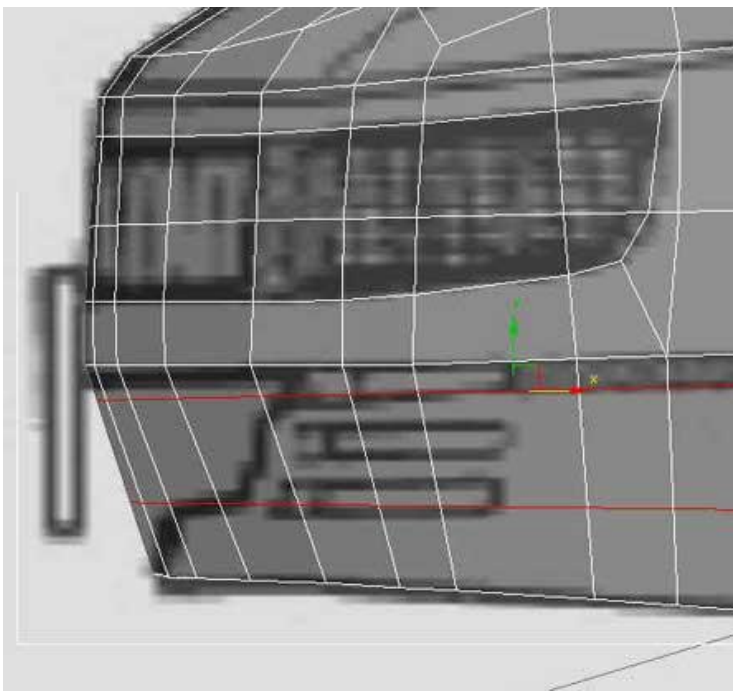
You can do this simply using chamfer.

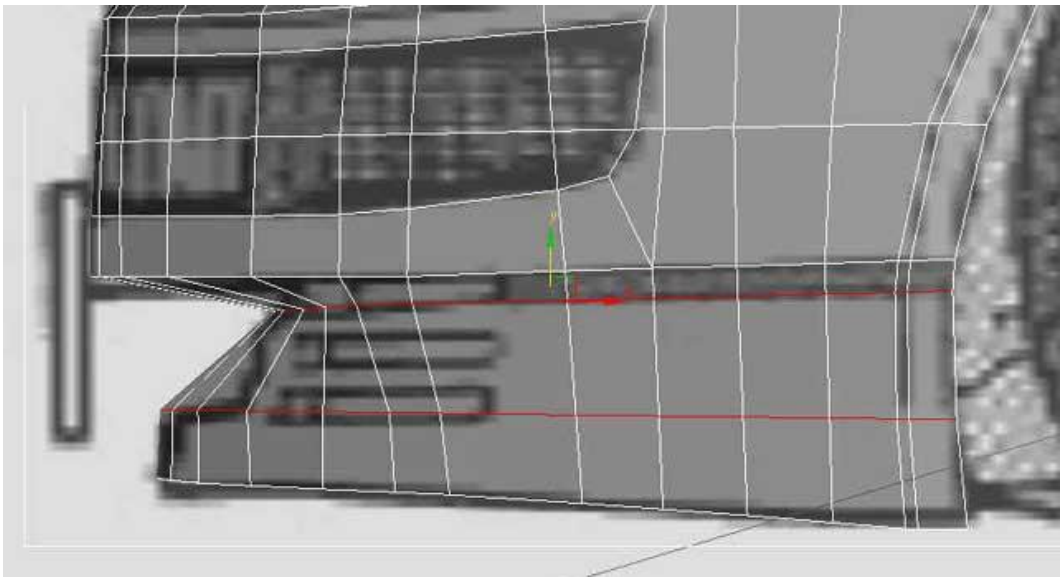
:: FRONT BUMPER ::

Let's start the front bumper.
First we cut the outline of the big upper hole. I also added a new edge-loop.

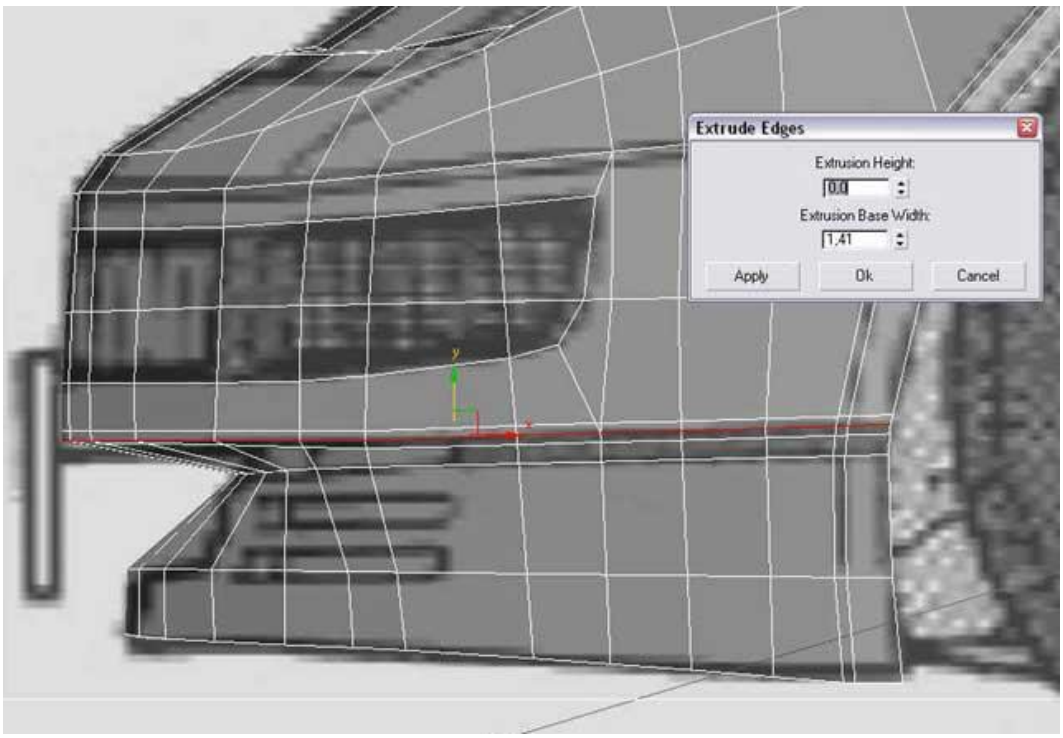


Then cut two other edge-loops by the bottom, and use them to add a basic shape of that part.

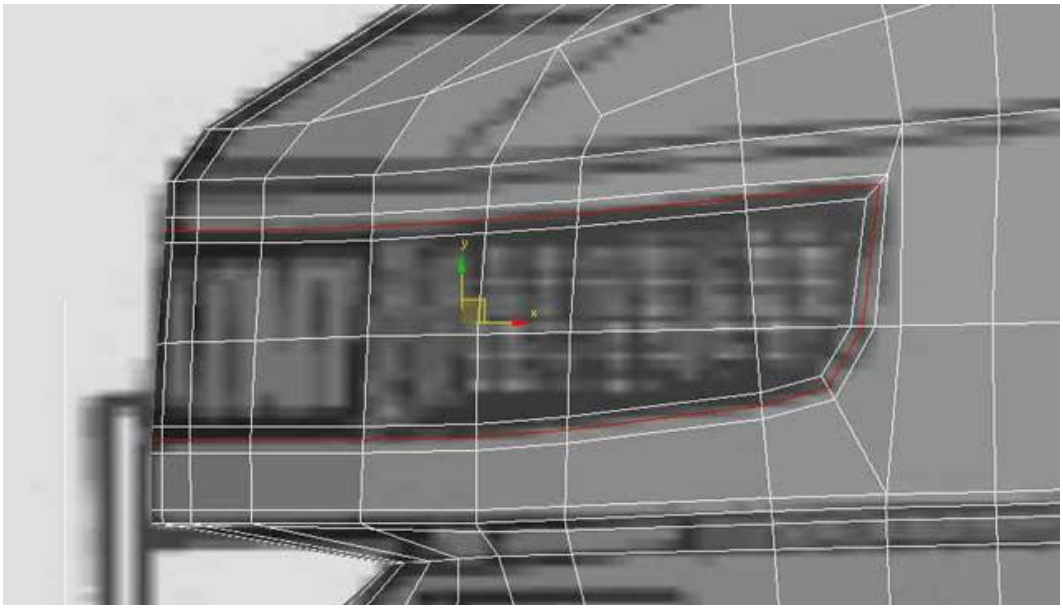




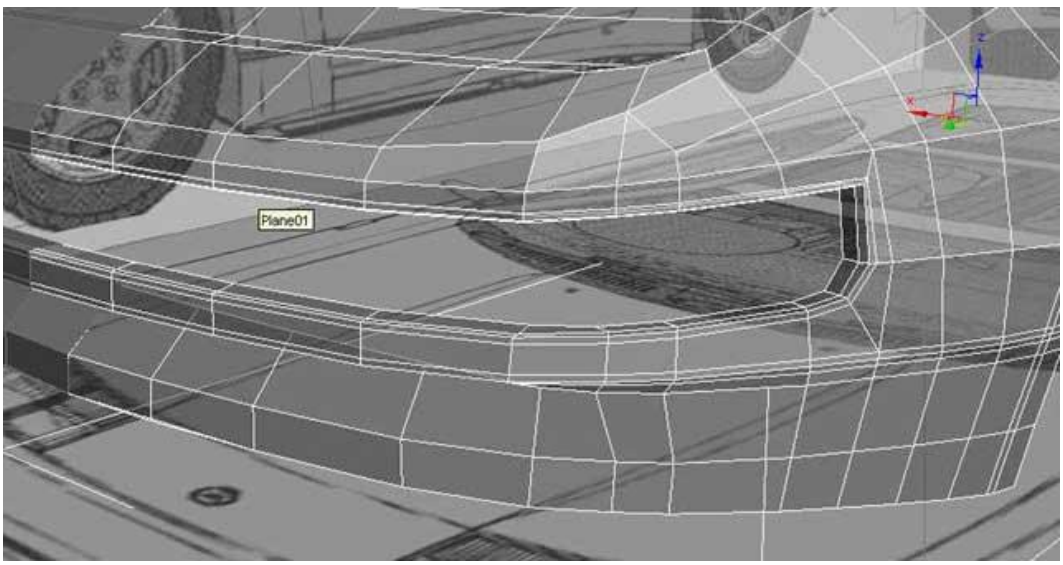
If we want to make a clean round edge we will use the extrude modifier. Try this on one of the edge-loops. Set the Extrusion Height to 0.0 and experience the Base Width parameter (if didn't use this before).



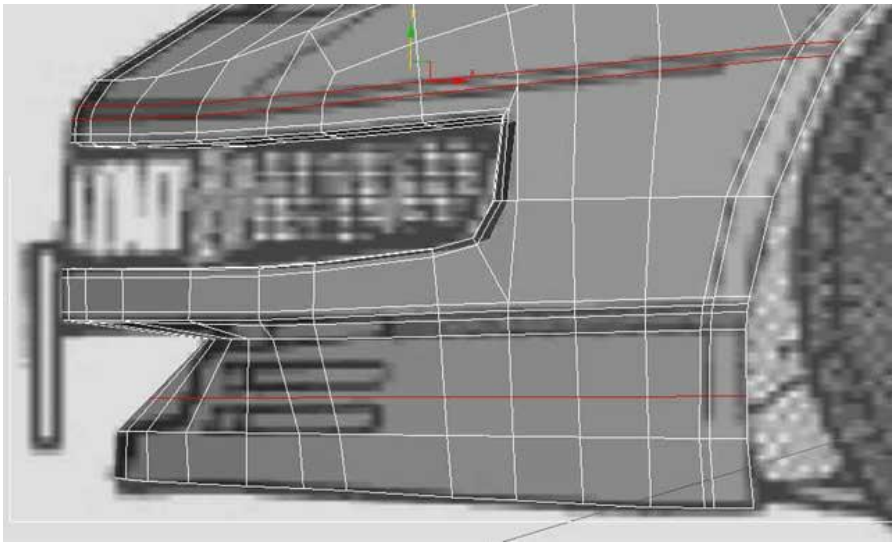
Use extrude at the outline of the upper hole as well.



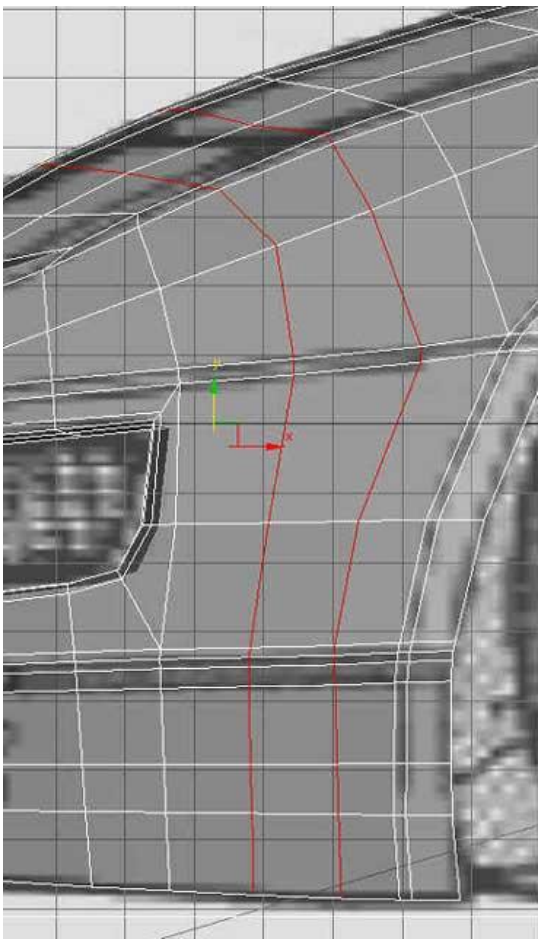
Now select the inner polygons of the hole and extrude them back twice. Don't forget to delete the newly born but unnecessary polygons in the middle of the hole. Delete the polis you originally extruded as well.



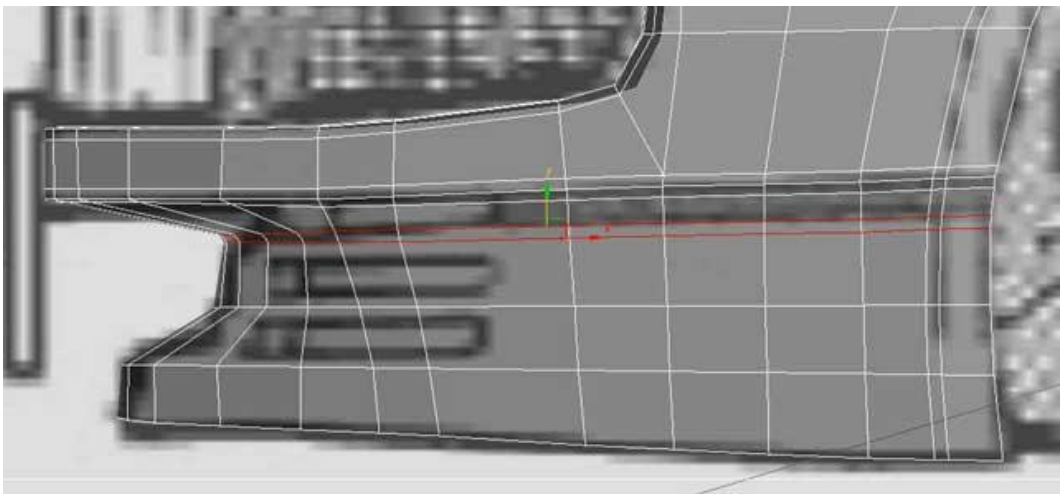
Add some new edge-loops as shown on the picture:



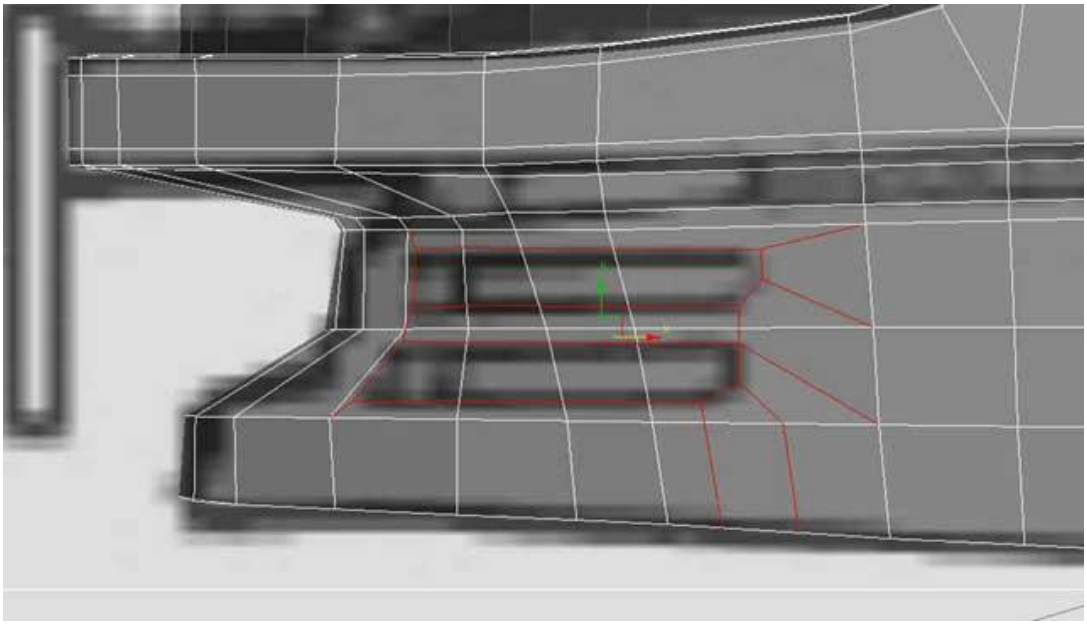
Modify this edge-loop a bit so it will make our work a little easier later:



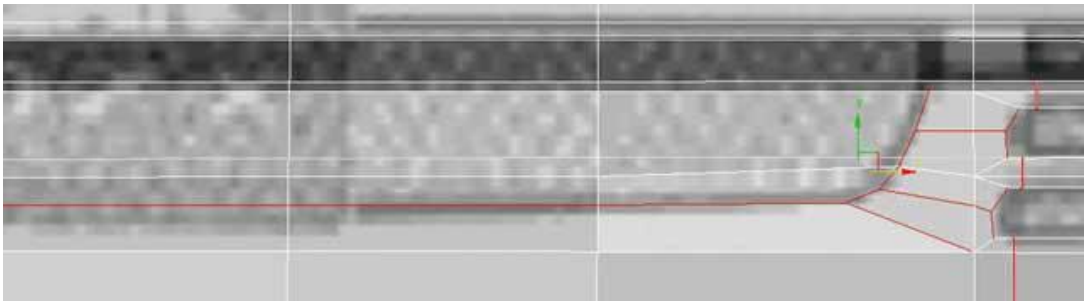
And new edge-loop again:



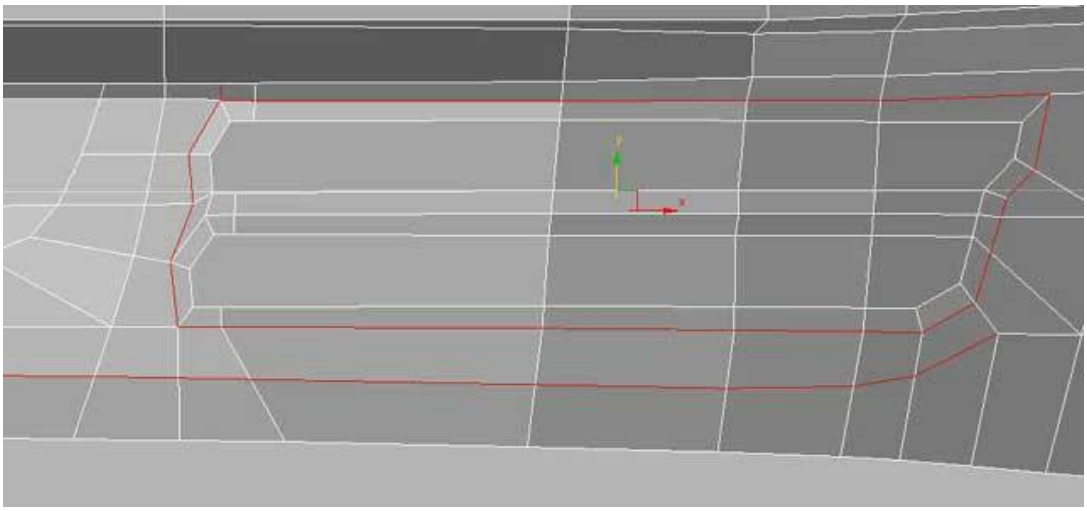
Now cut the outline of two of the smaller holes on the side:

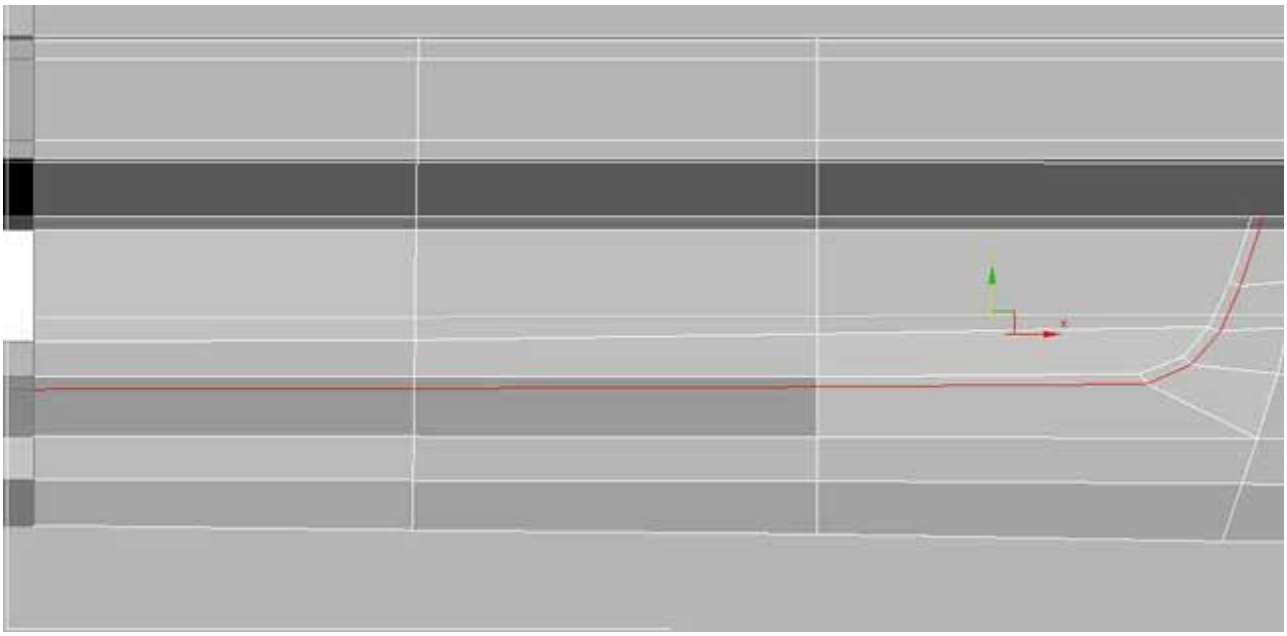


Cut the lower big hole as well:

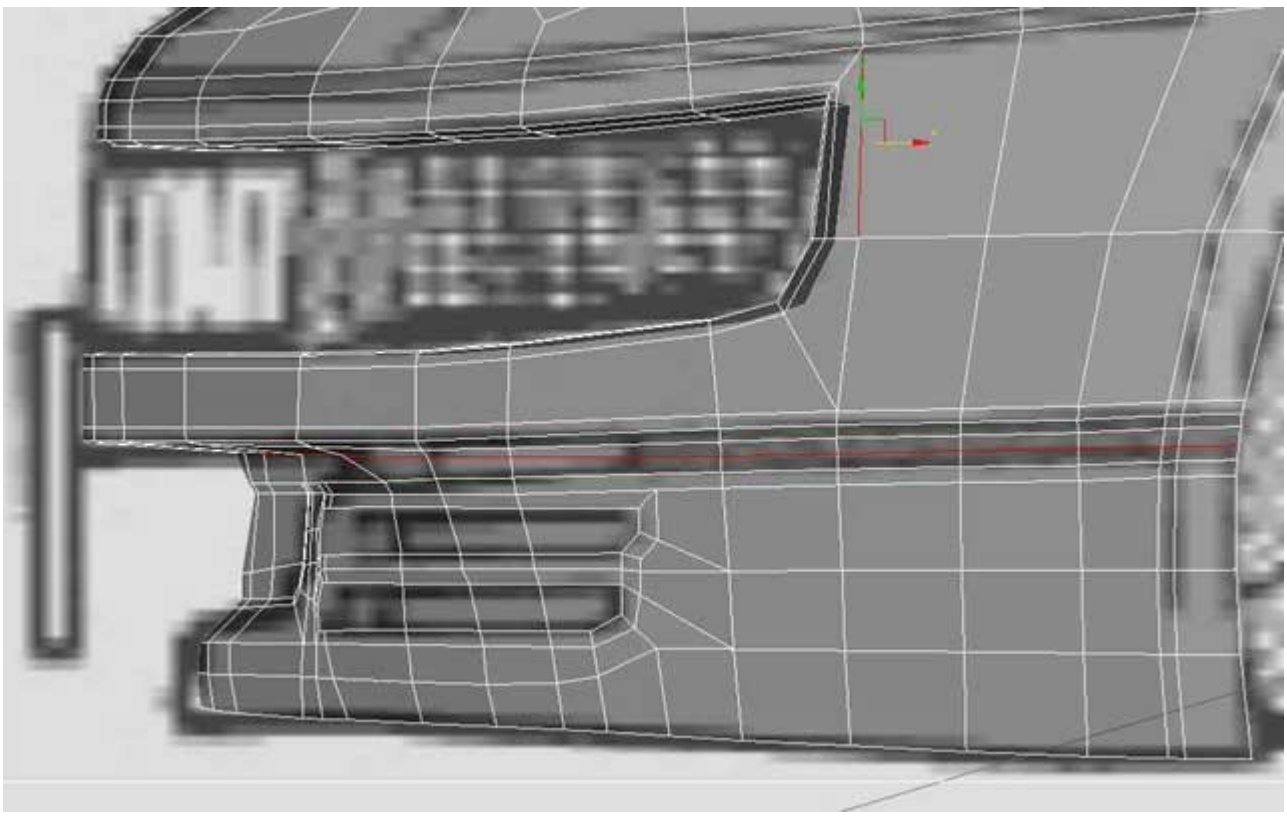


Make frames to all the three new holes.

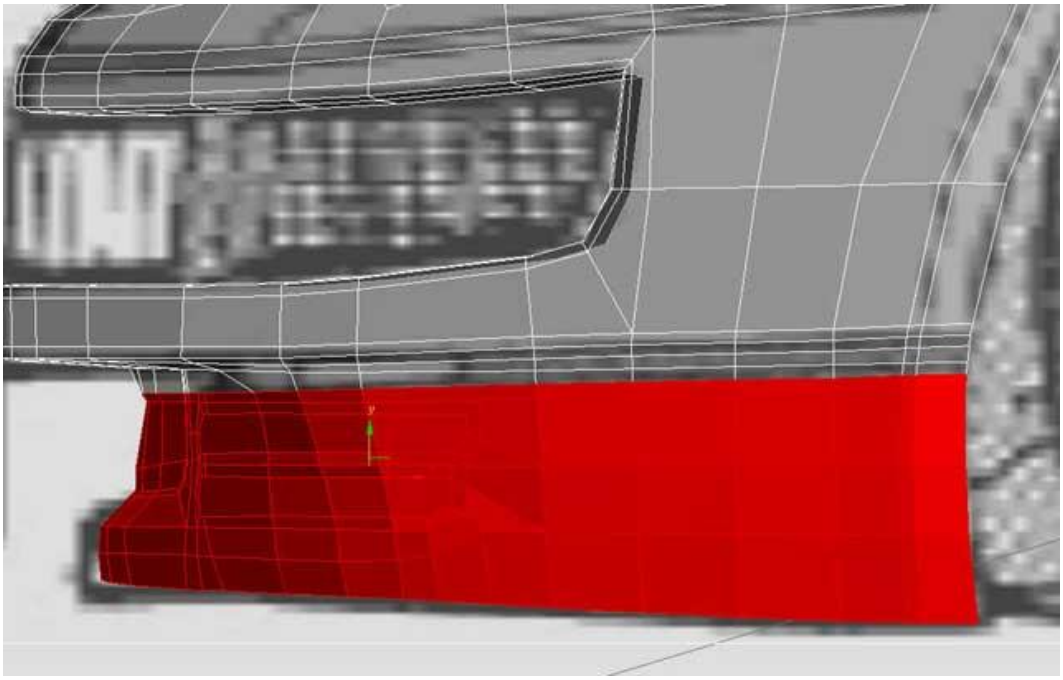




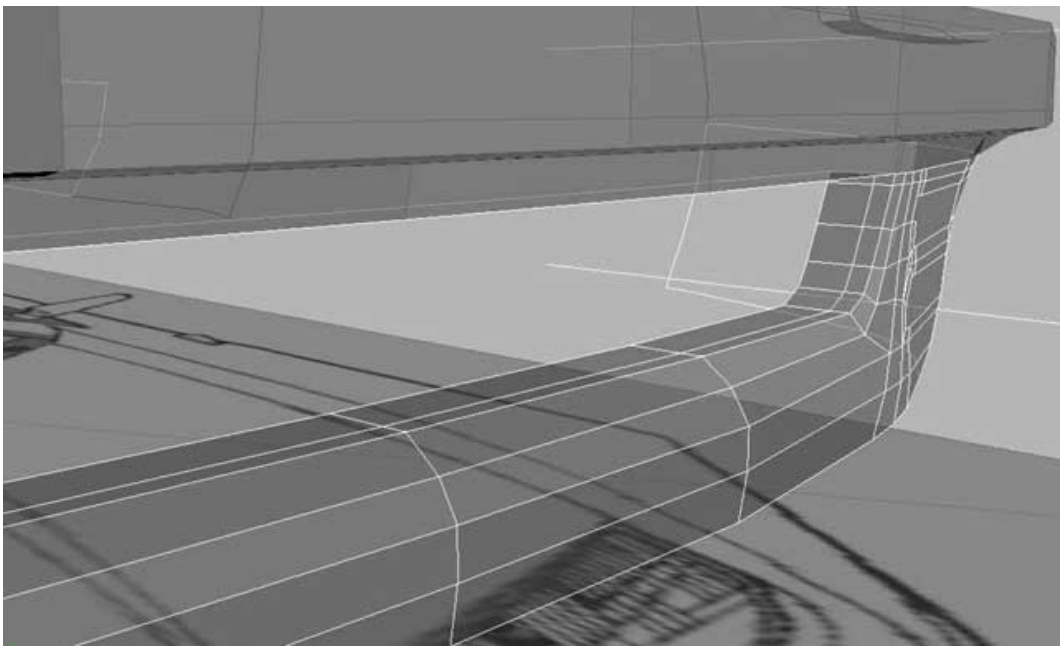
Another edge-loop to make the shape more clear:



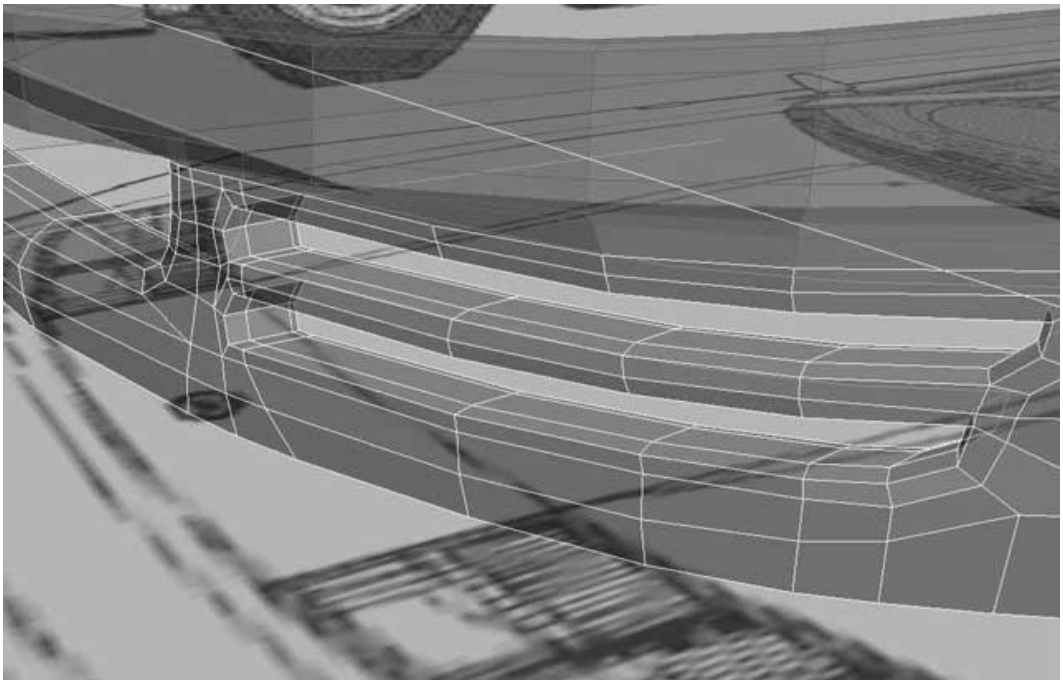
I think (as I can see on my low quality reference pics) that the lower part is an independent, so select the polygons belonging to it, and detach them.



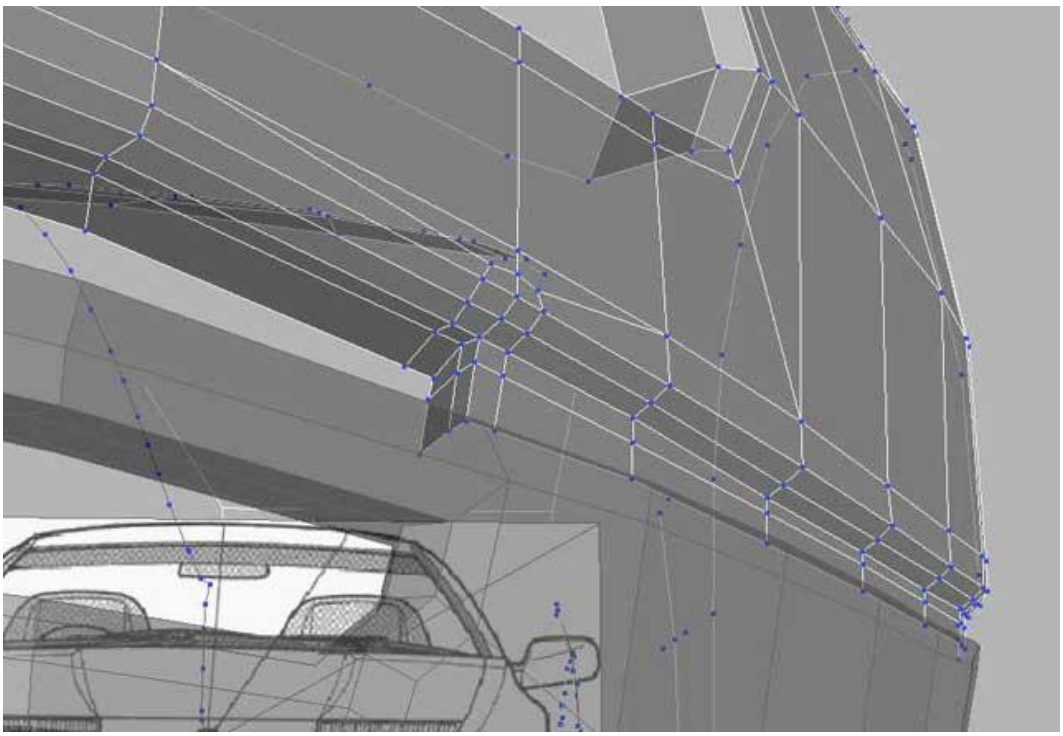
We going to make the lower hole with another technique: delete the polygons from the middle, select the outline edges and shift + drag them twice.

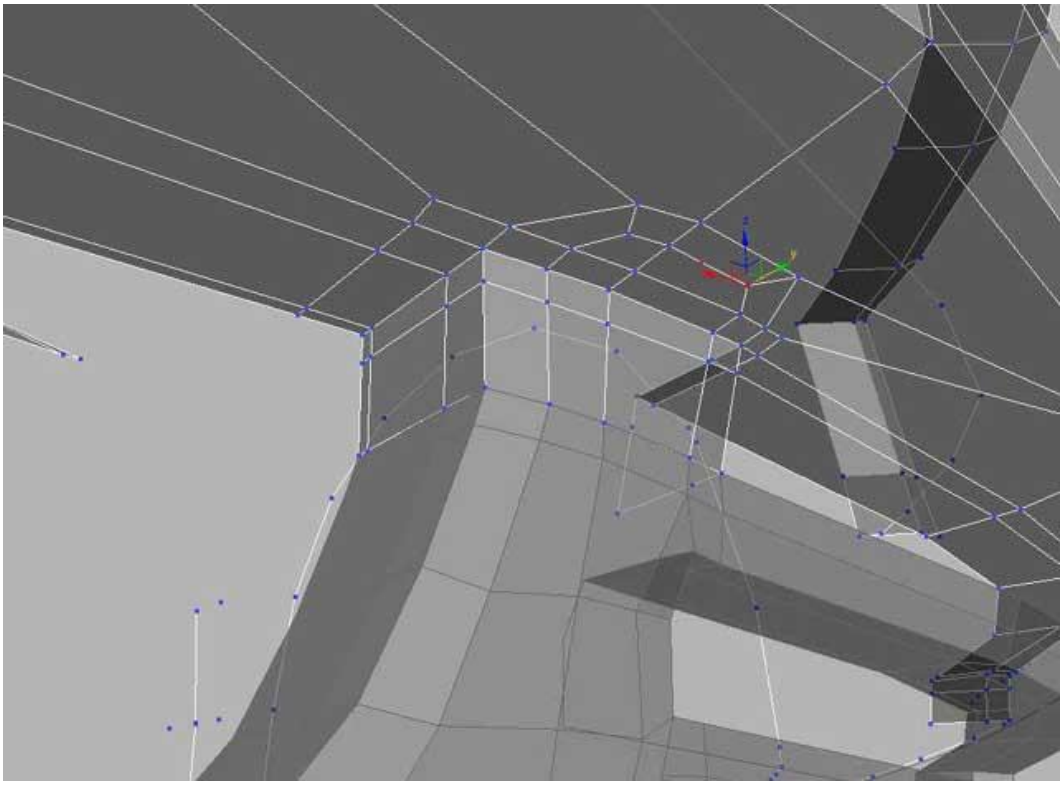


Do the same in the case of the side holes:

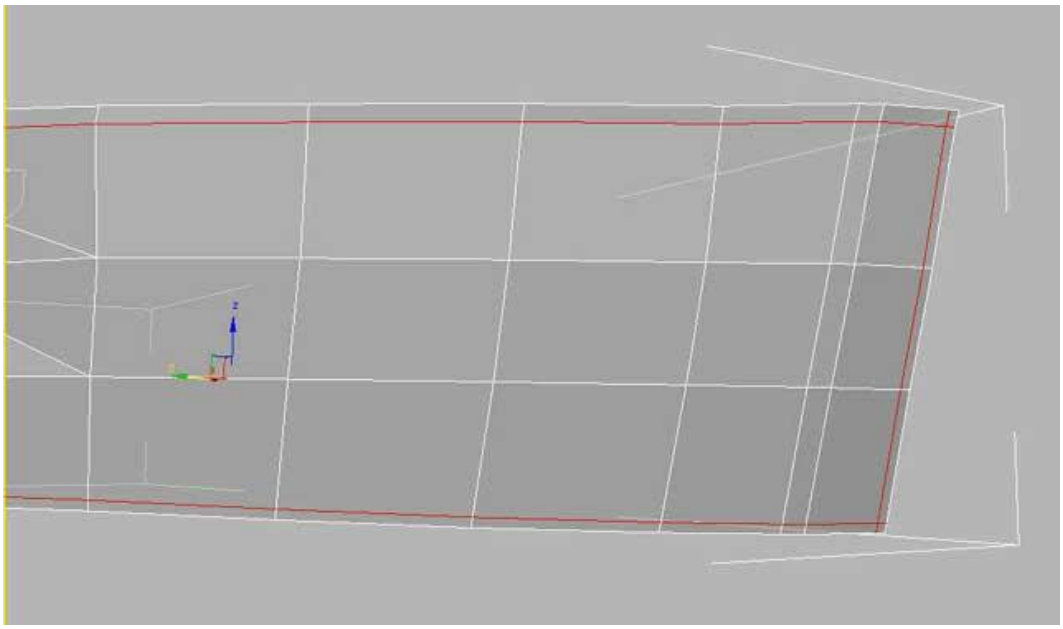


On the side there is a third hole as well (above the two we already have). Let's practice the previous shown techniques with it!

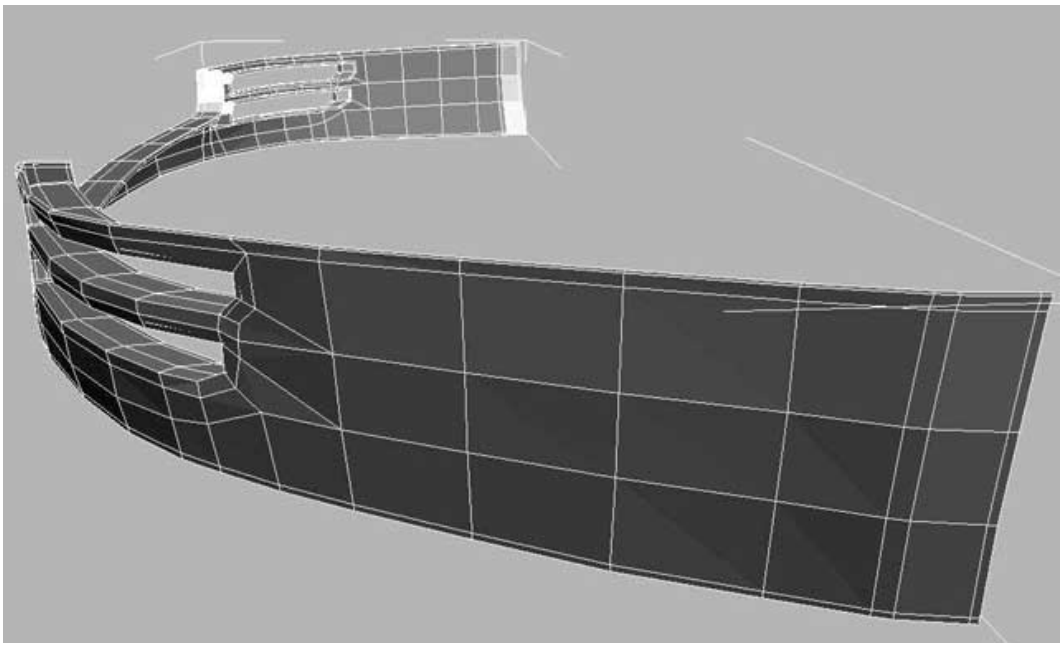




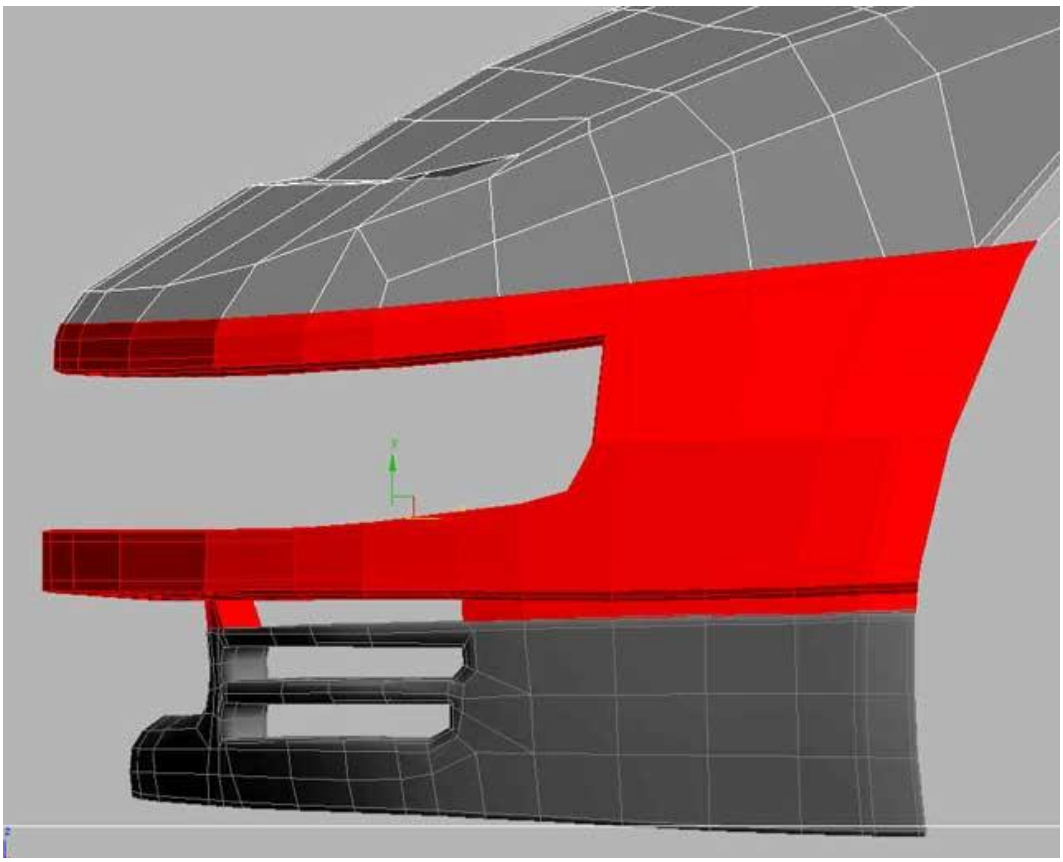
Now we have all the details on the lower part. Now we extrude all the edges on all the "edges" of our object.



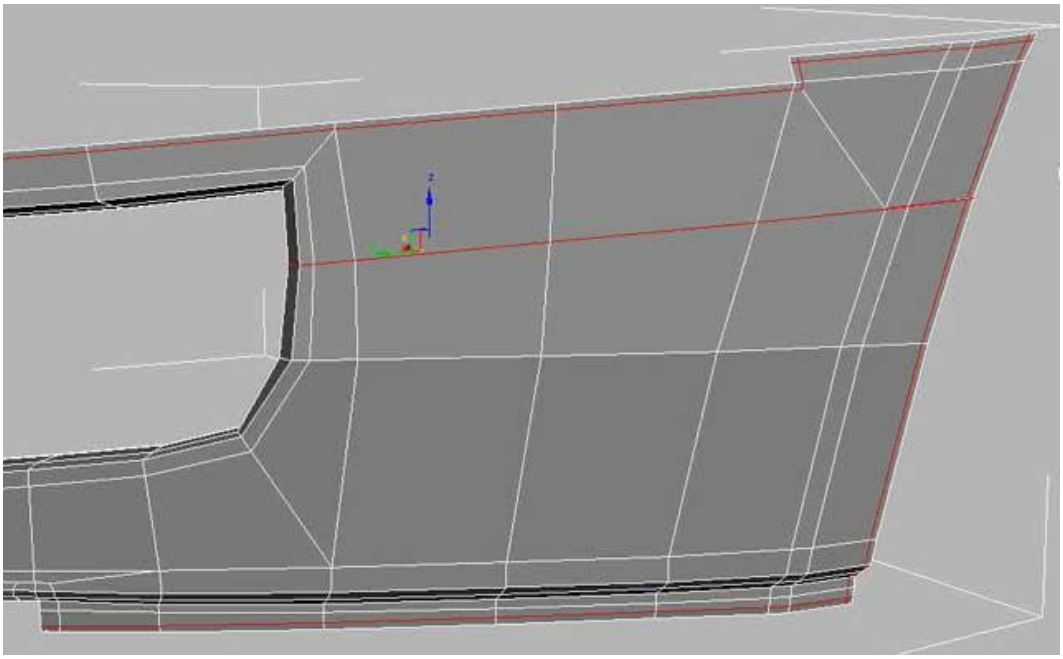
Then we make a copy of it, attach them, weld the vertices in the middle and then we add the solidify modifier to add thickness to the part. Solidify is a plug-in for previous MAX versions, in MAX 6 it's called "Shell".



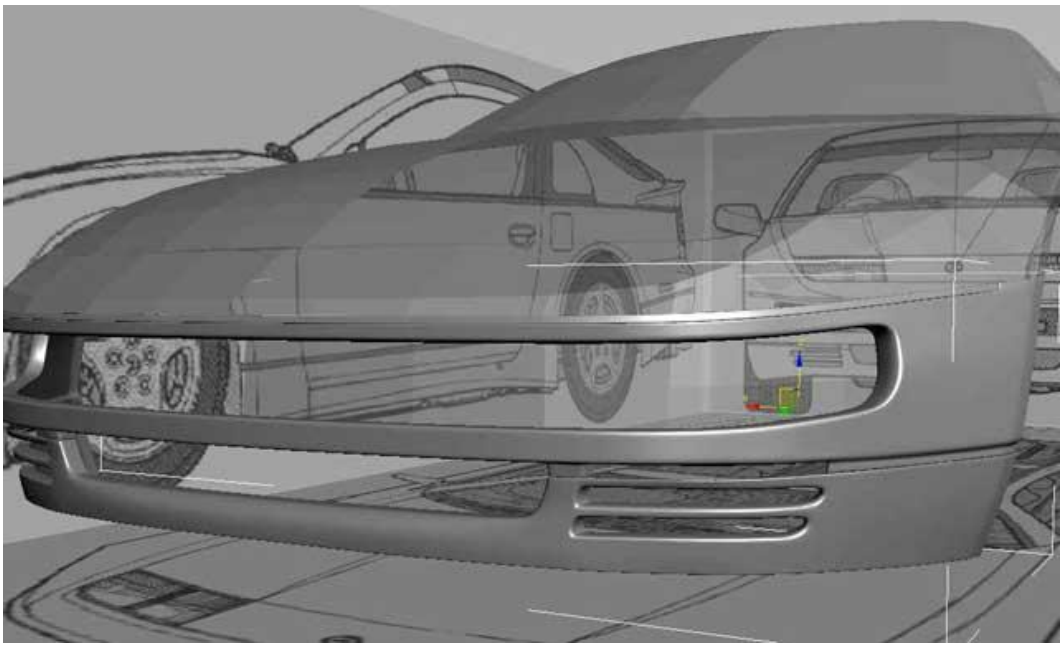
Now detach the upper side of the bumper from the body, and do all the same way.



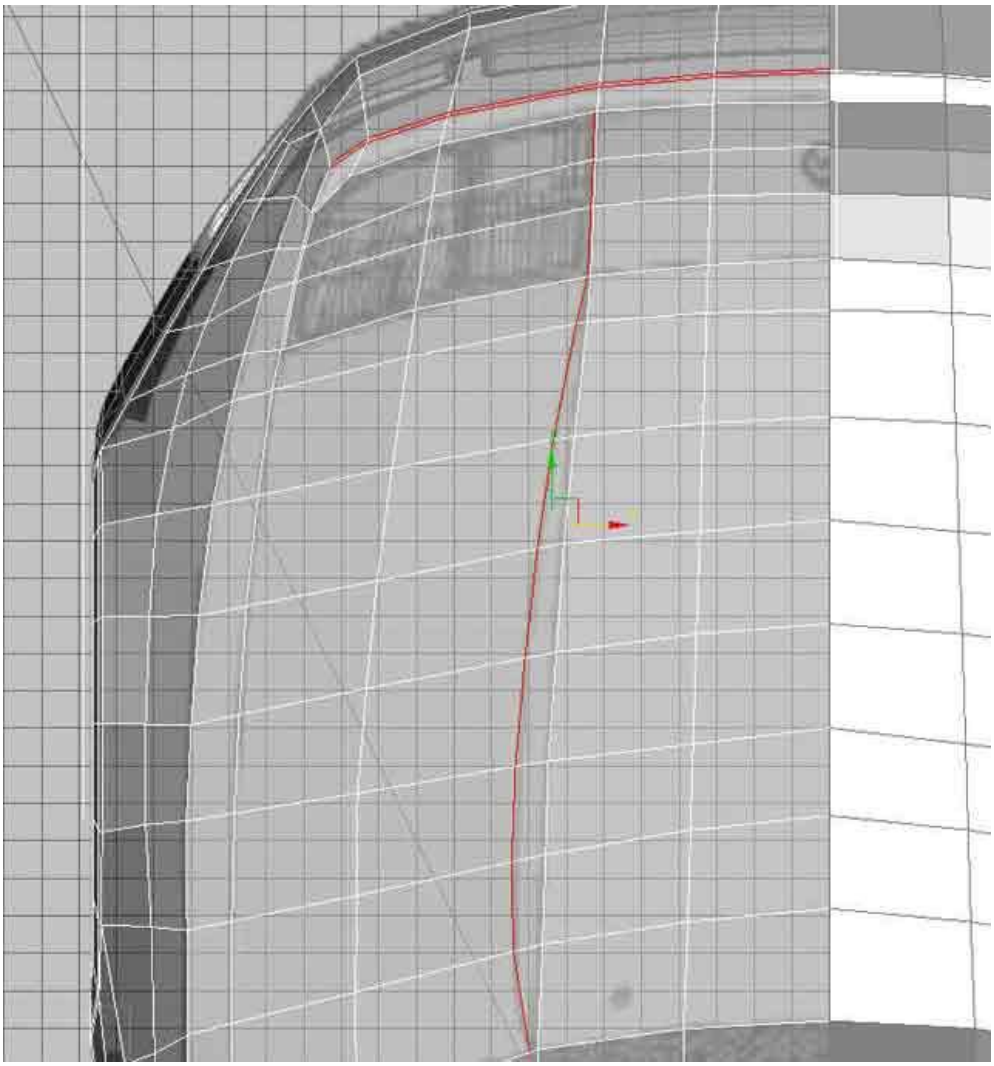
I added another edge-loop to make some shapes cleaner.



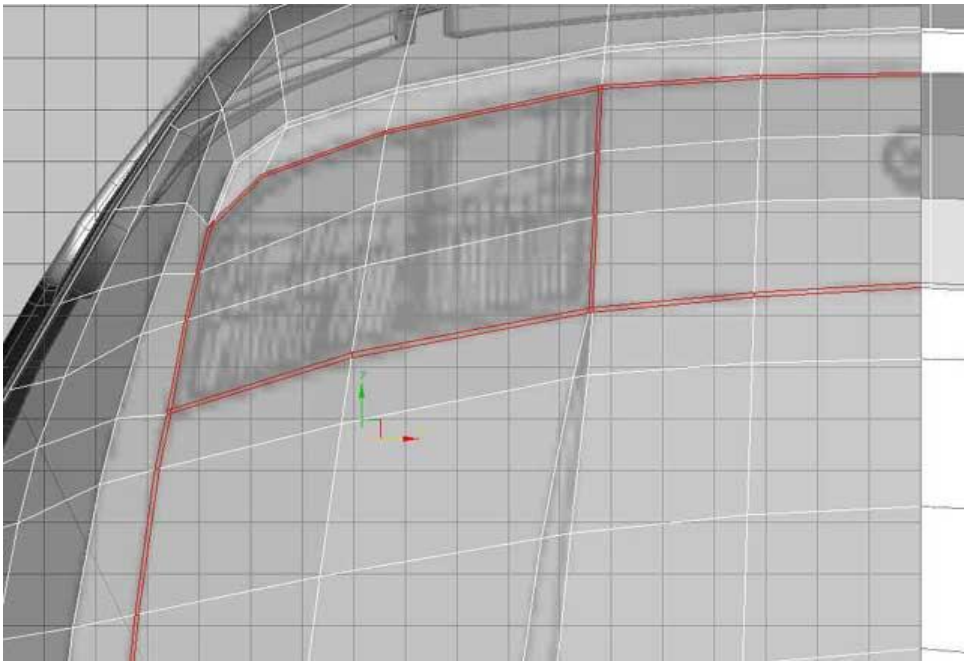
After this, we are ready with the bumper.
On the last picture I added a shiny material and subdivision to see how it looks when ready:



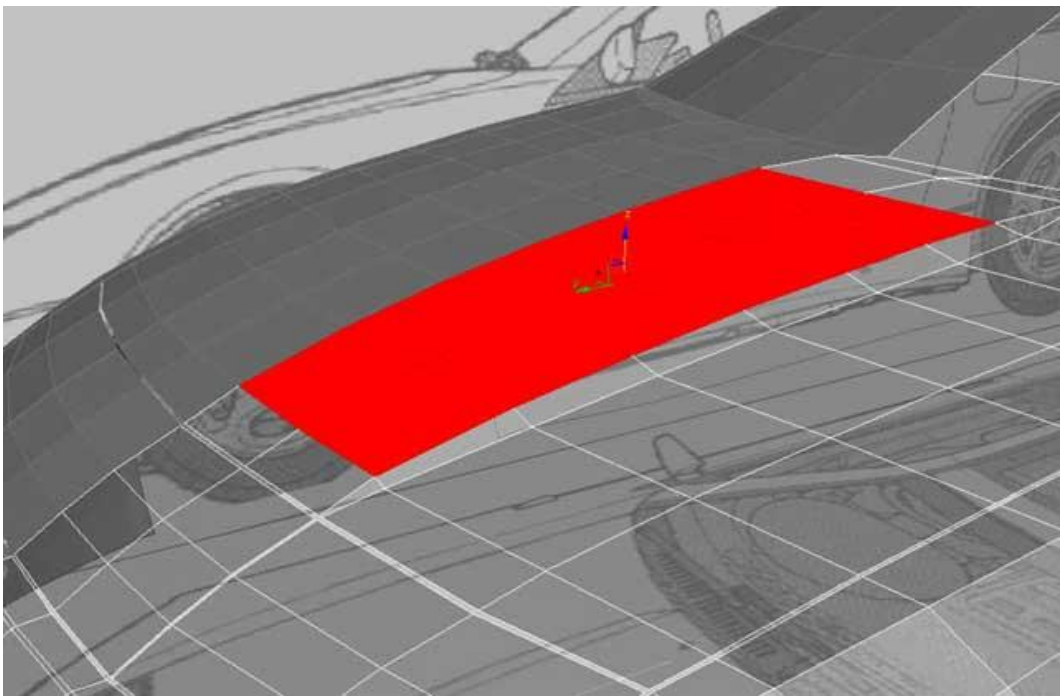
First I add some edges to make the shape of the hood and the part before the headlights.



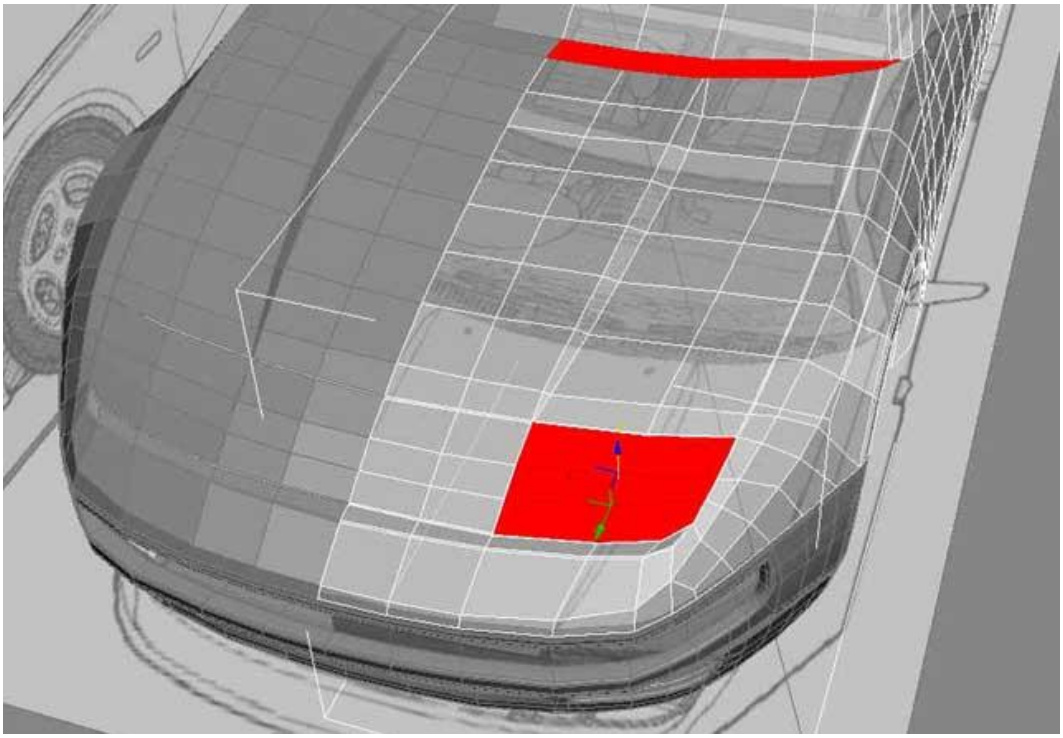
The hood, the headlights and the part between the headlights are independent, so we make a little aperture between them. You can either cut or chamfer the surrounding edges, and then simply delete the unnecessary polygons.



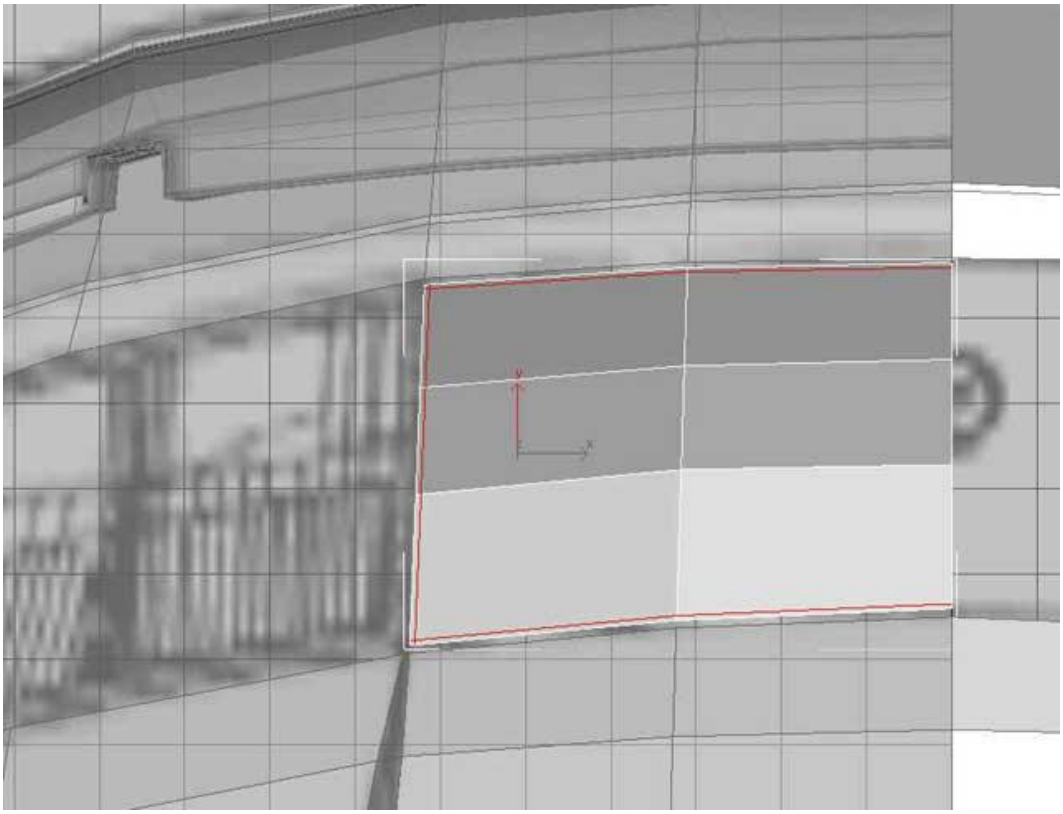
We need to move up the inner polygons of the hood a little.

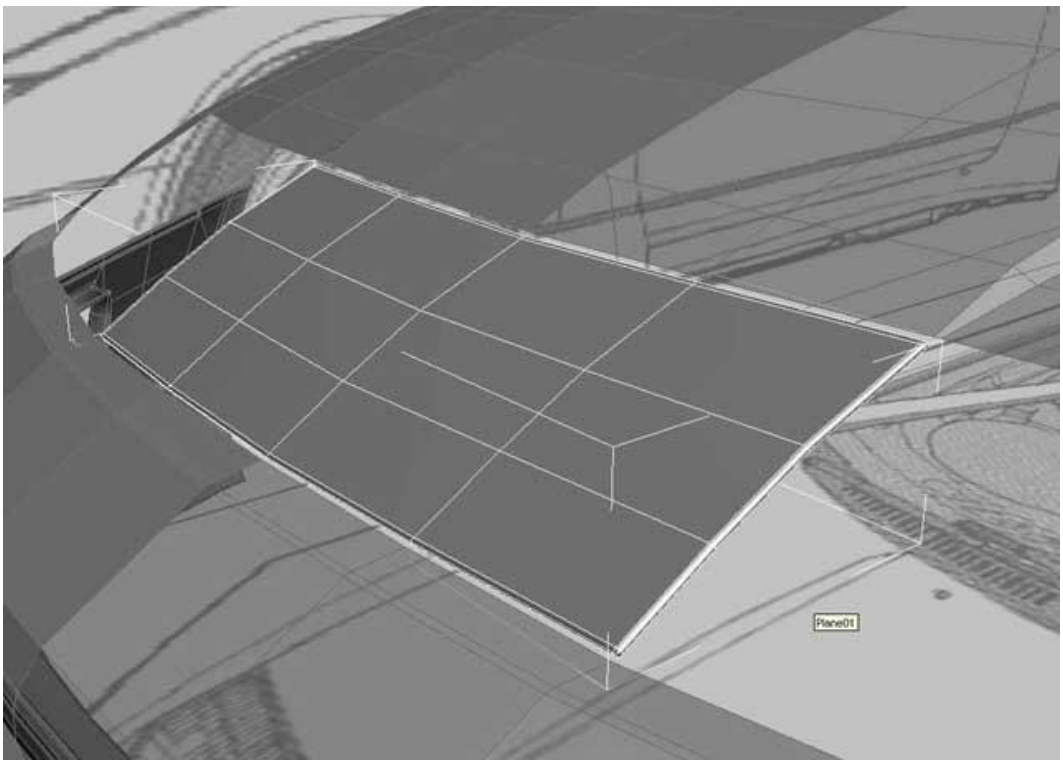


We will work with the headlights and with the part between the hood and the windshield later, so select the polygons belonging to them and detach.

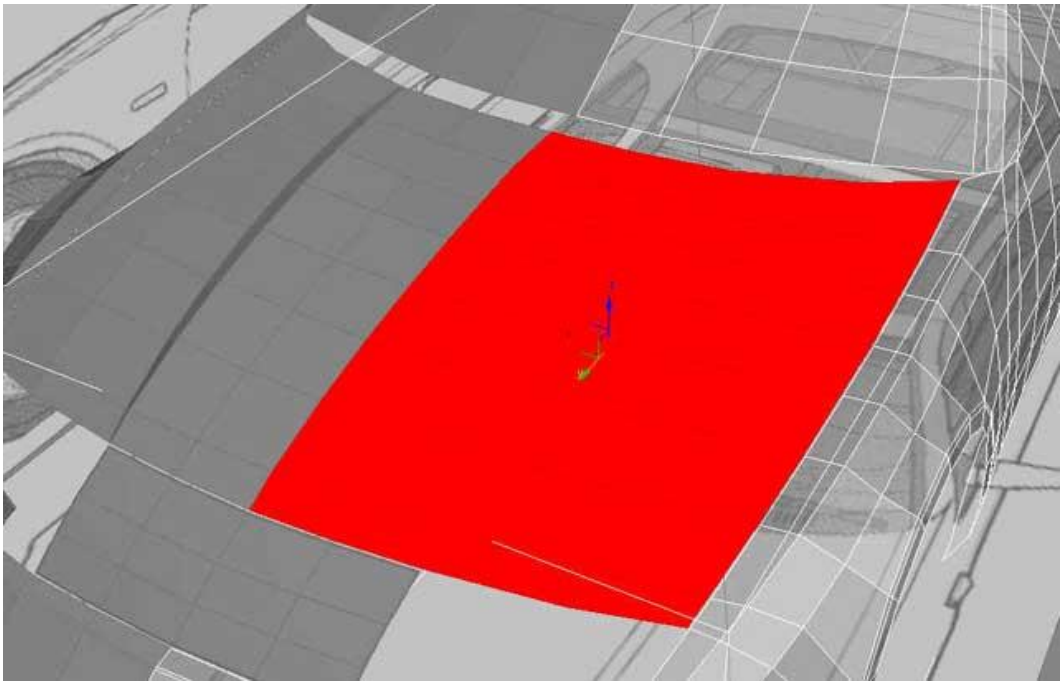


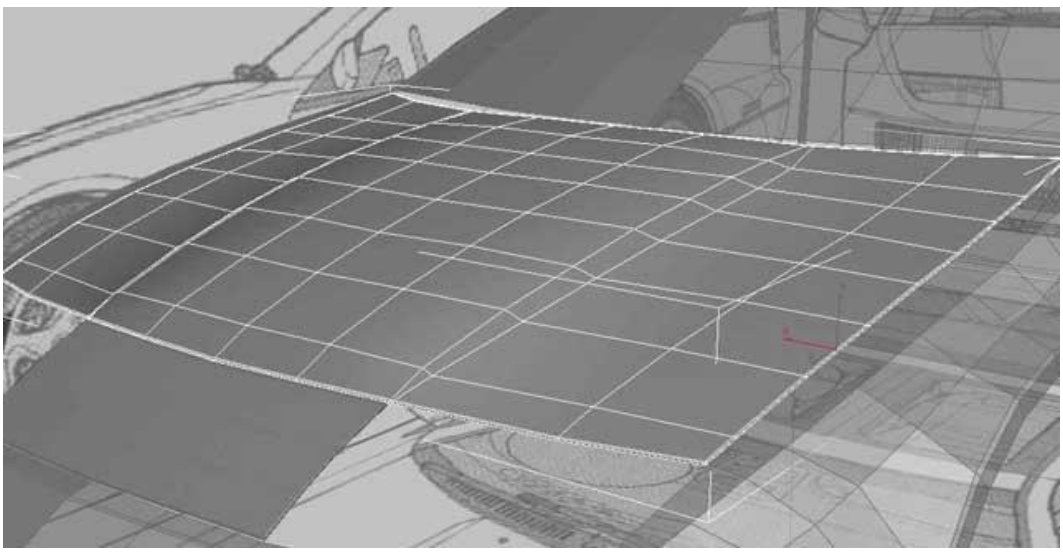
Detach the part between the headlights as well. Extrude outer edges, make the other side using mirror, attach, weld vertices and add solidify.



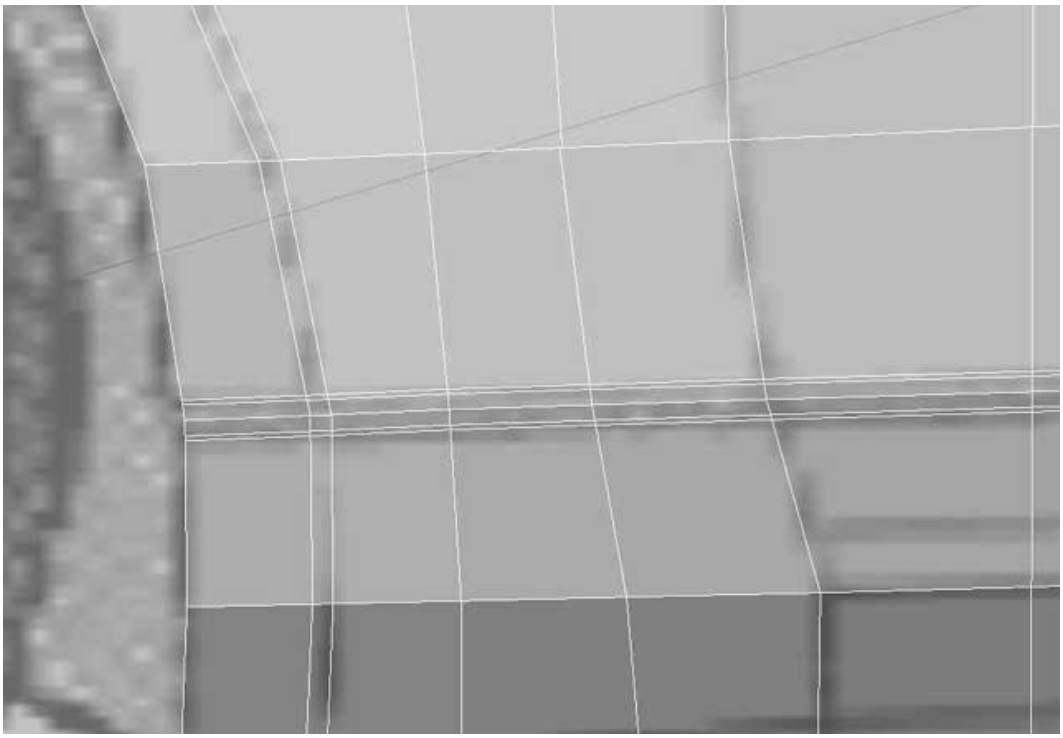


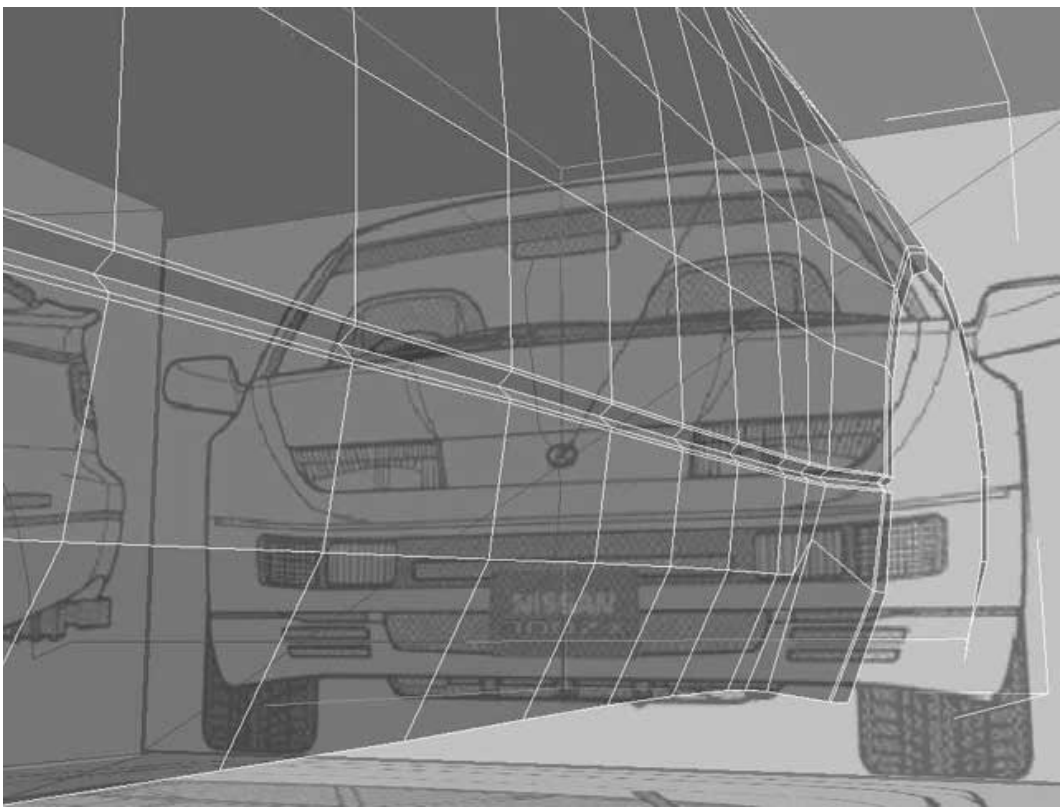
Now comes the hood. Just do the same, extrude and solidify.

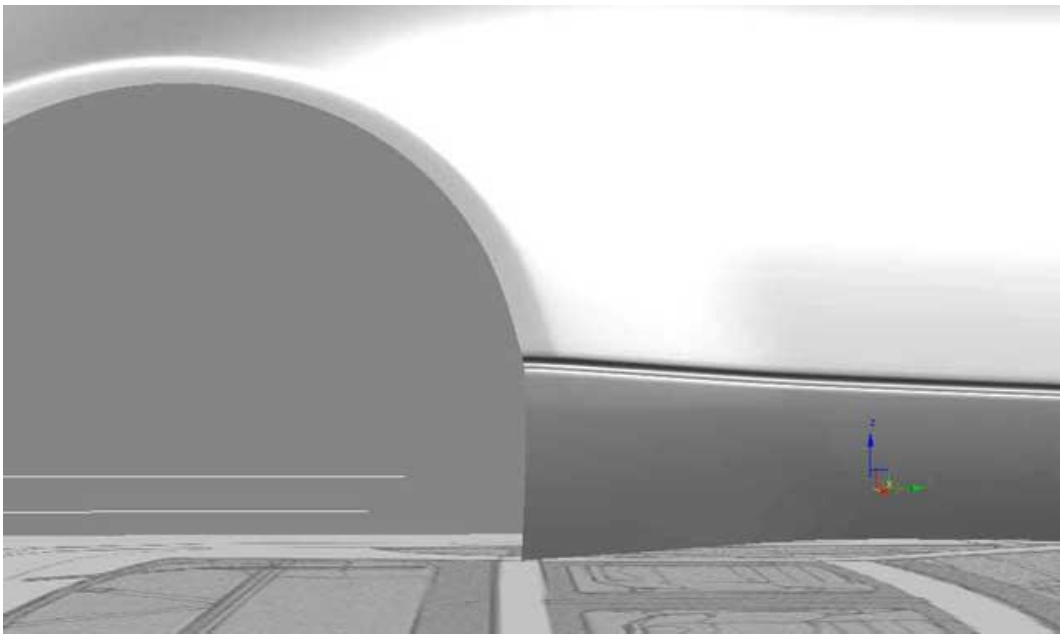




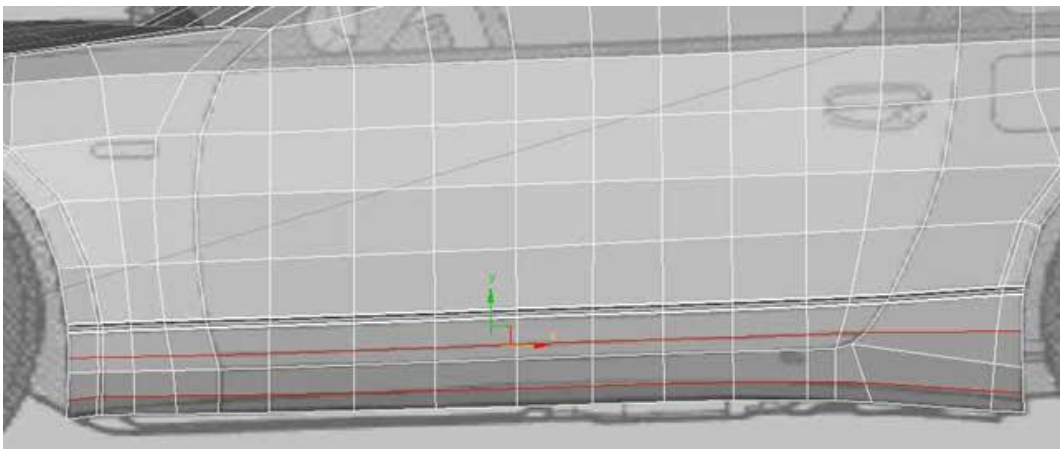
Before the next move, we need to make the stripe on the side of the body.



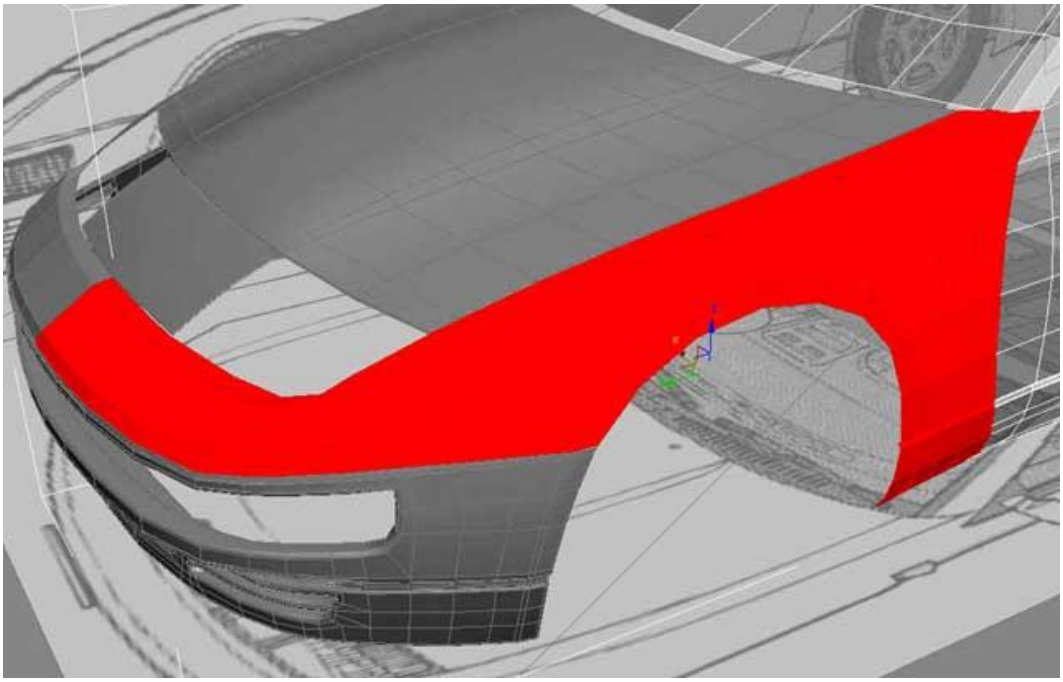




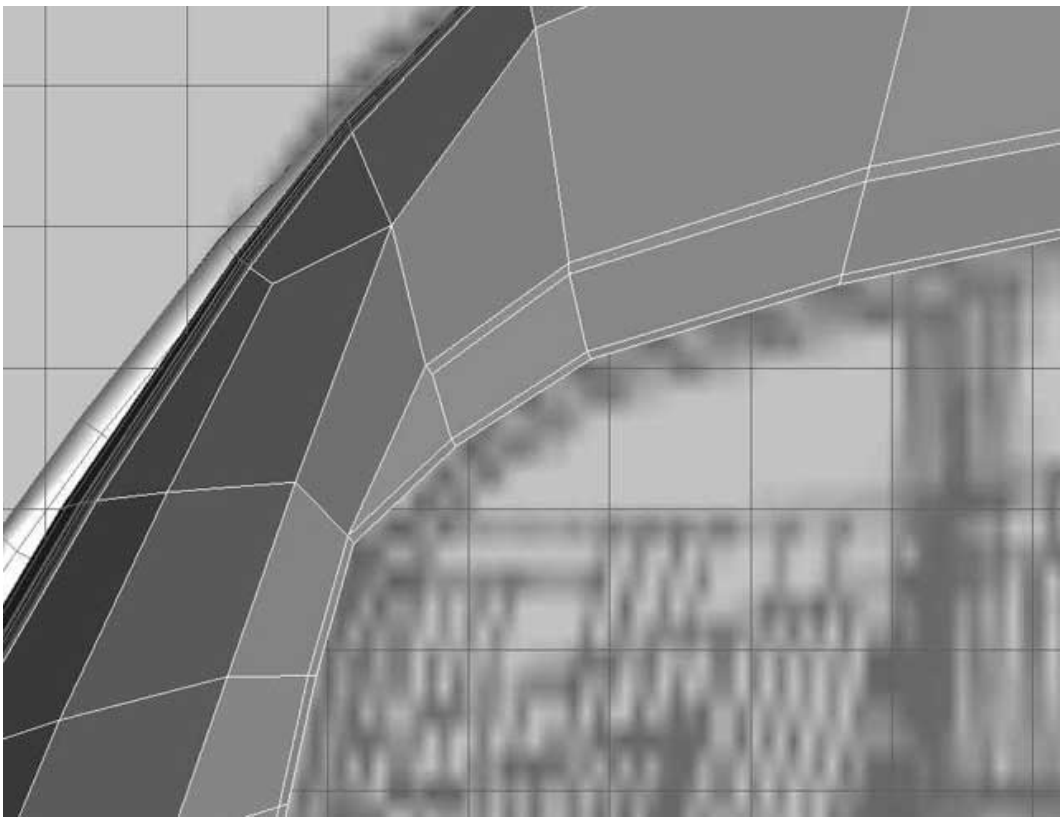
I also added some new edge-loops on the side because of the shape of the bottom of the door and the side skirt.

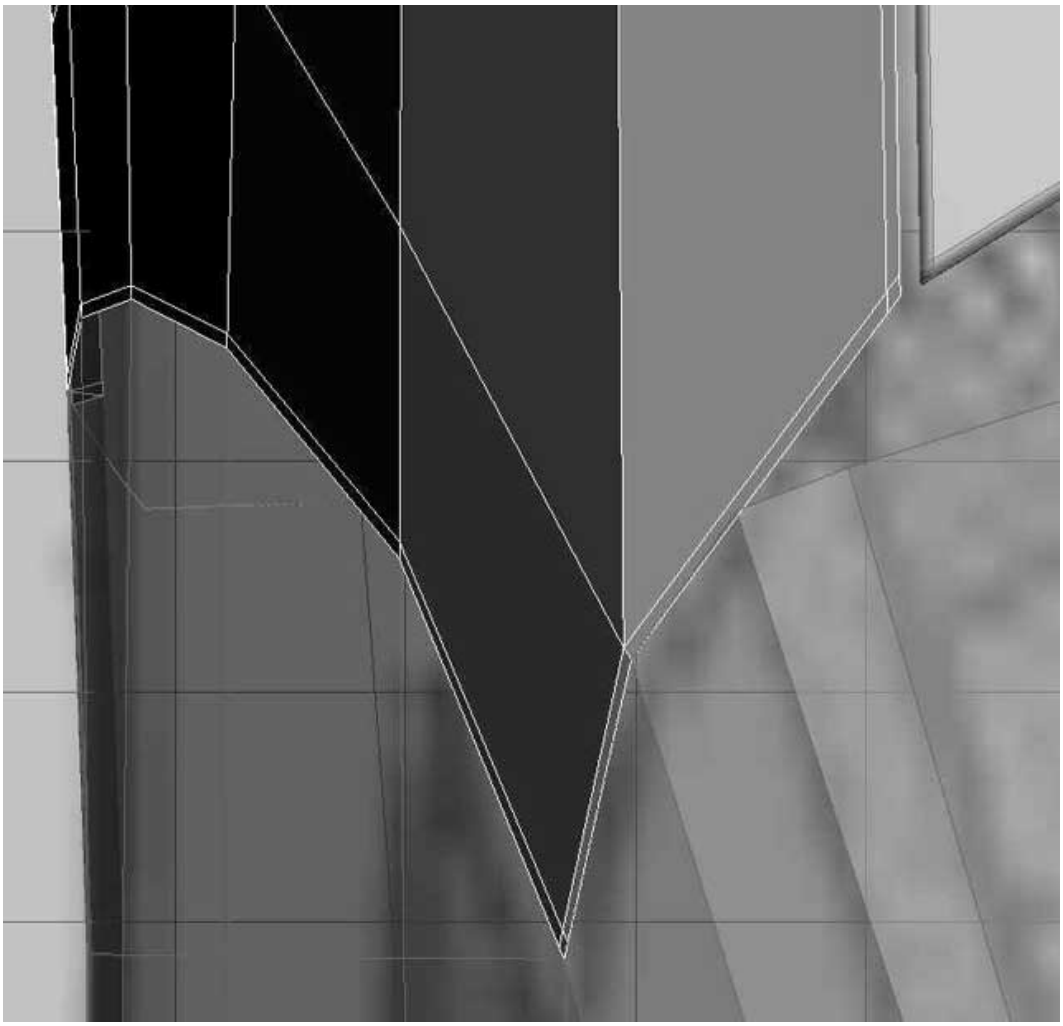


Now we can detach the rest of the front and give thickness to it too.

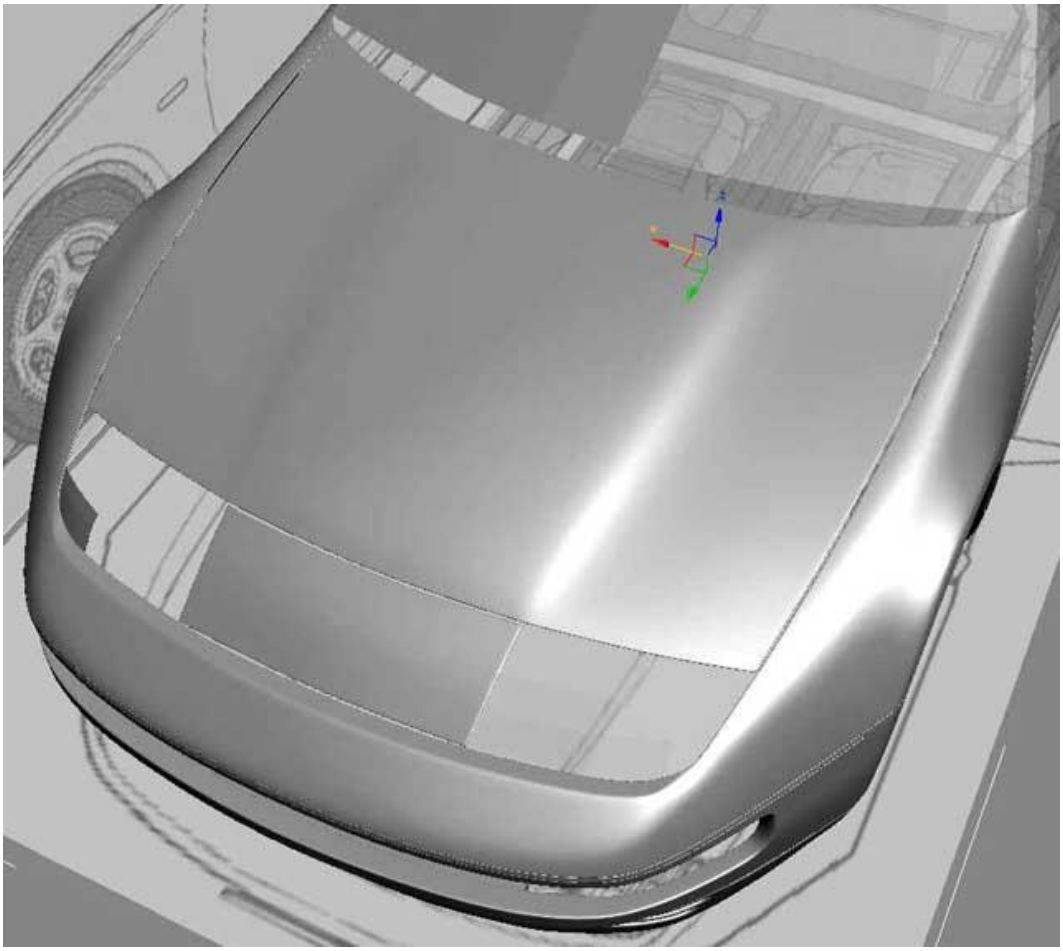


Extrude all the outer edges:



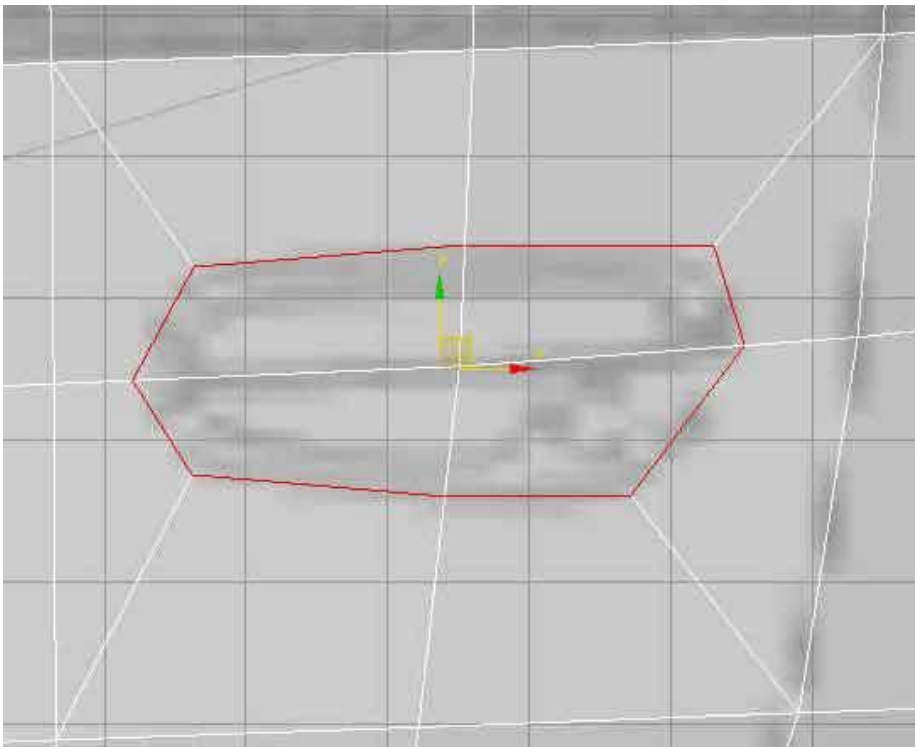


When ready, the front looks something like this:

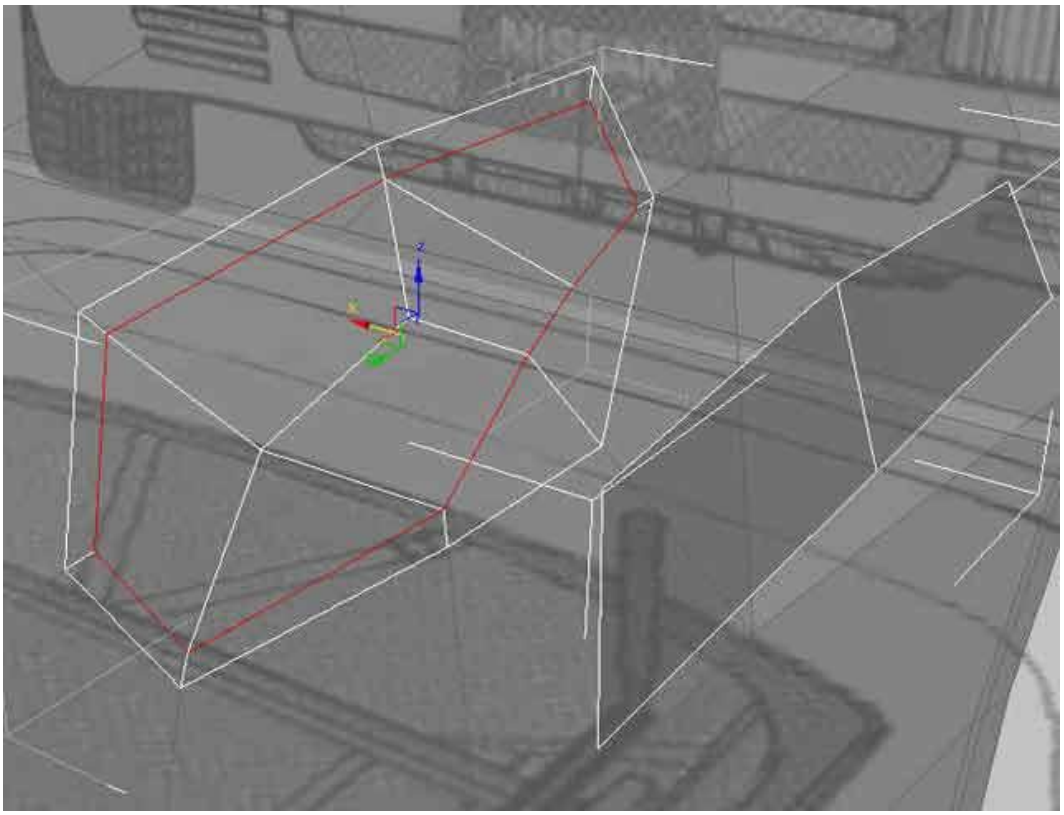


:: DOOR ::

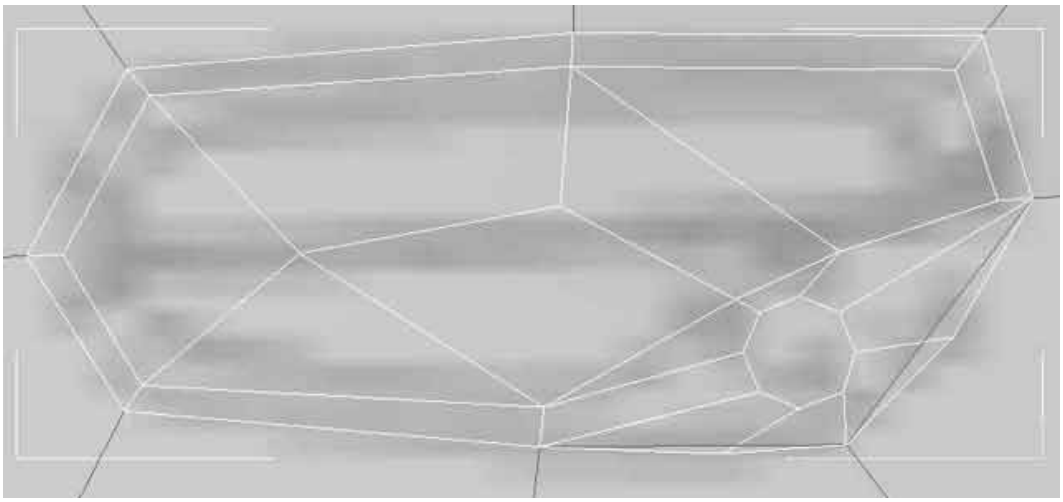
First cut the outline of the door-handle.

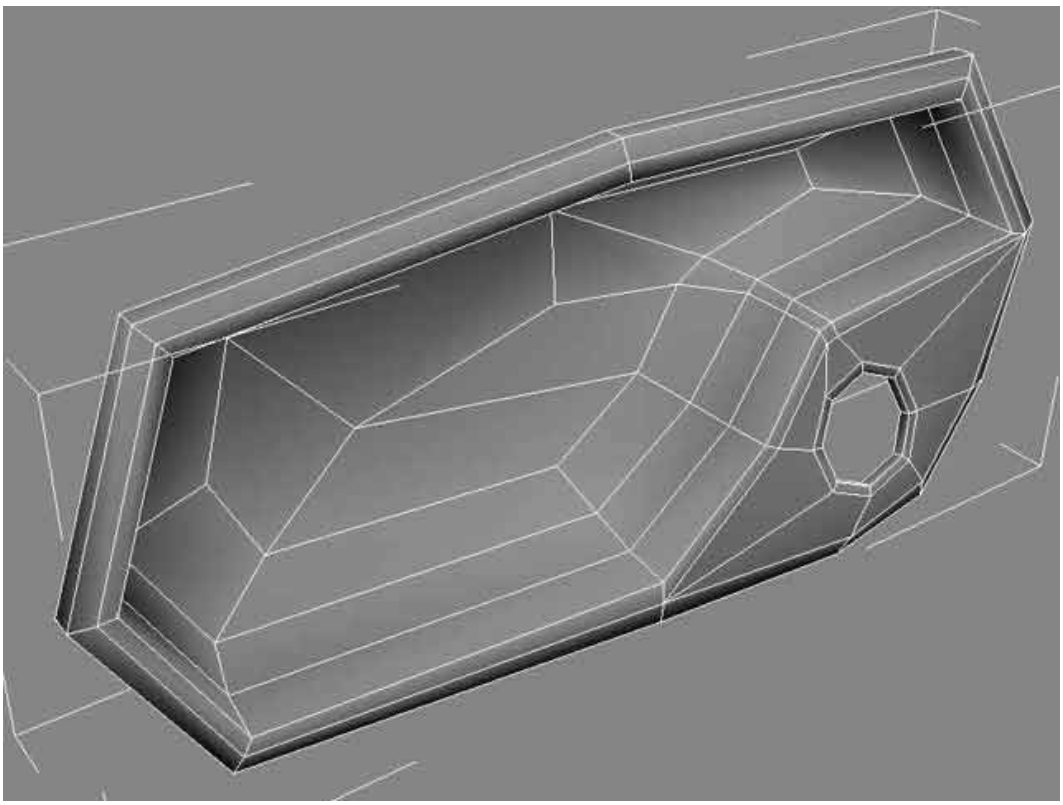


Then detach the inner polygons that will be part of the door-handle.
Add some basic shape by insetting the polygons and modifying it in some places.

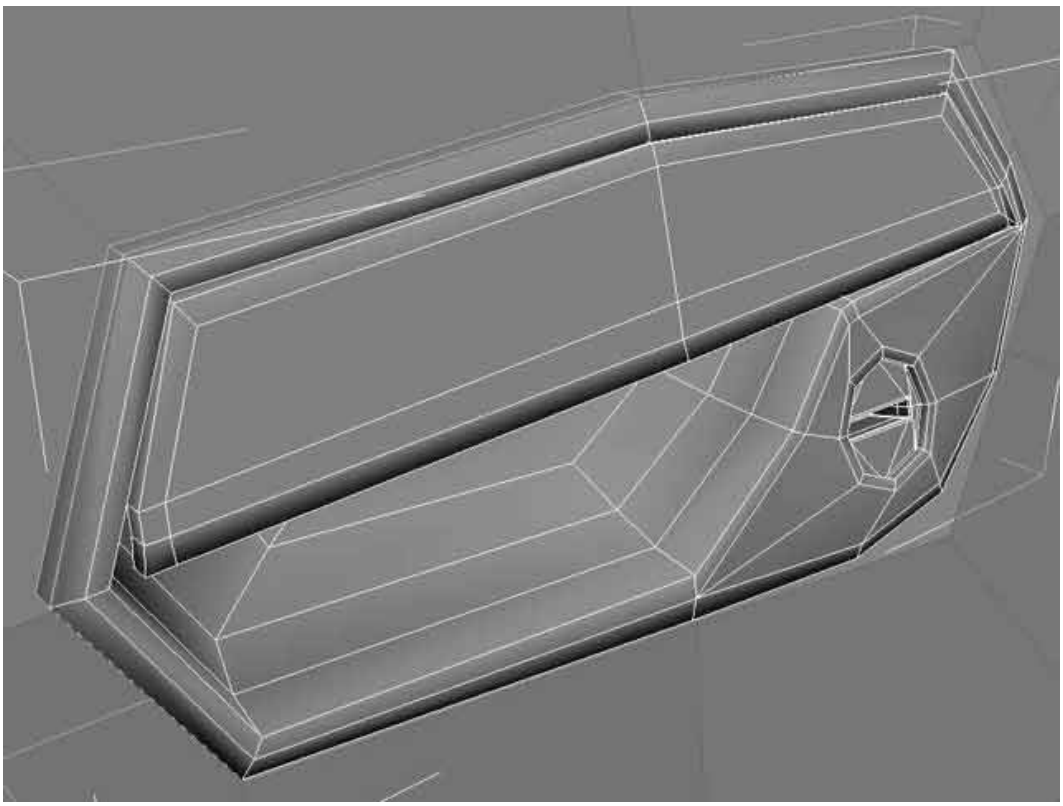


Cut a circle for the keyhole and continue making the shape. In this move I had to add additional edges and grow the segmentation of the outline. This is not lucky, because it has not the same segmentation as the hole that we left on the door. I suggest turning on subdivision to both objects so you can see the difference between the shape of the outline of the door-handle and the hole of it. When subdivision is on, go to the vertex sub-object level and correct where they are not fit each other. That's not an elegant move, but I don't know better at the moment.

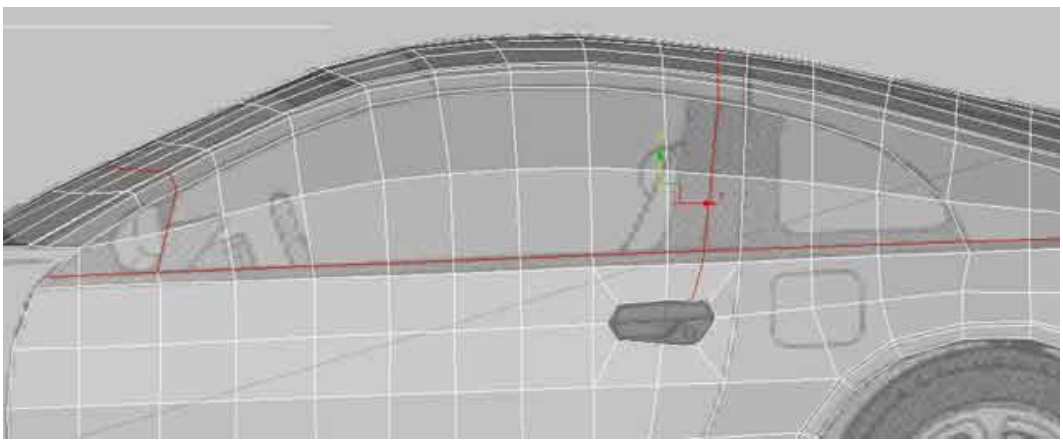




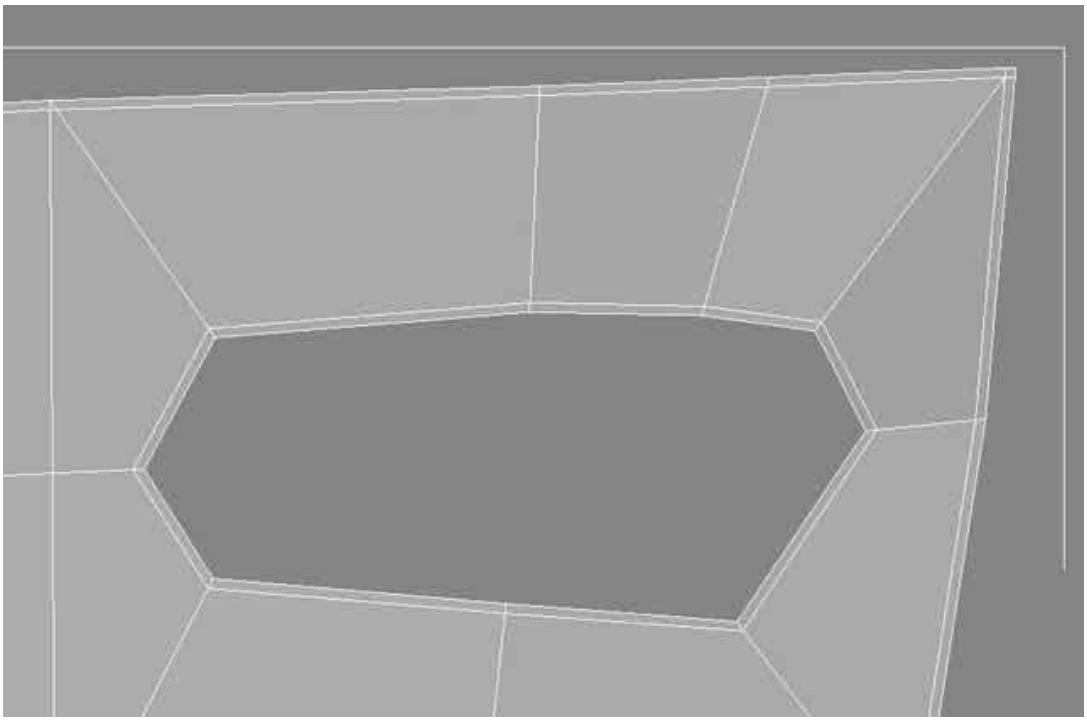
Now make the handle and the inner part of the keyhole.



For the next move, I added the following new edge-loops:

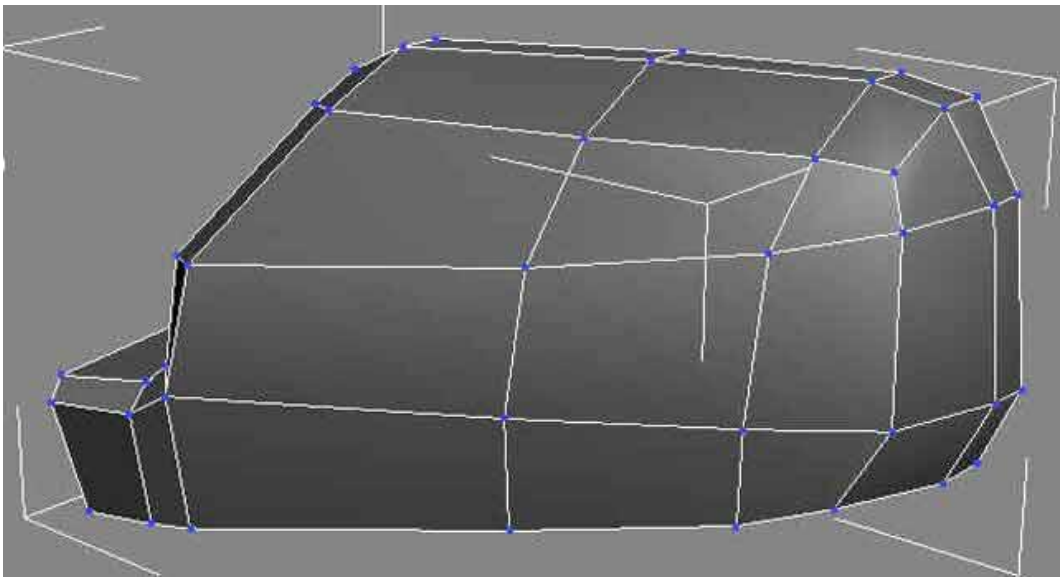


Now extrude outer polis as usual then add solidify.

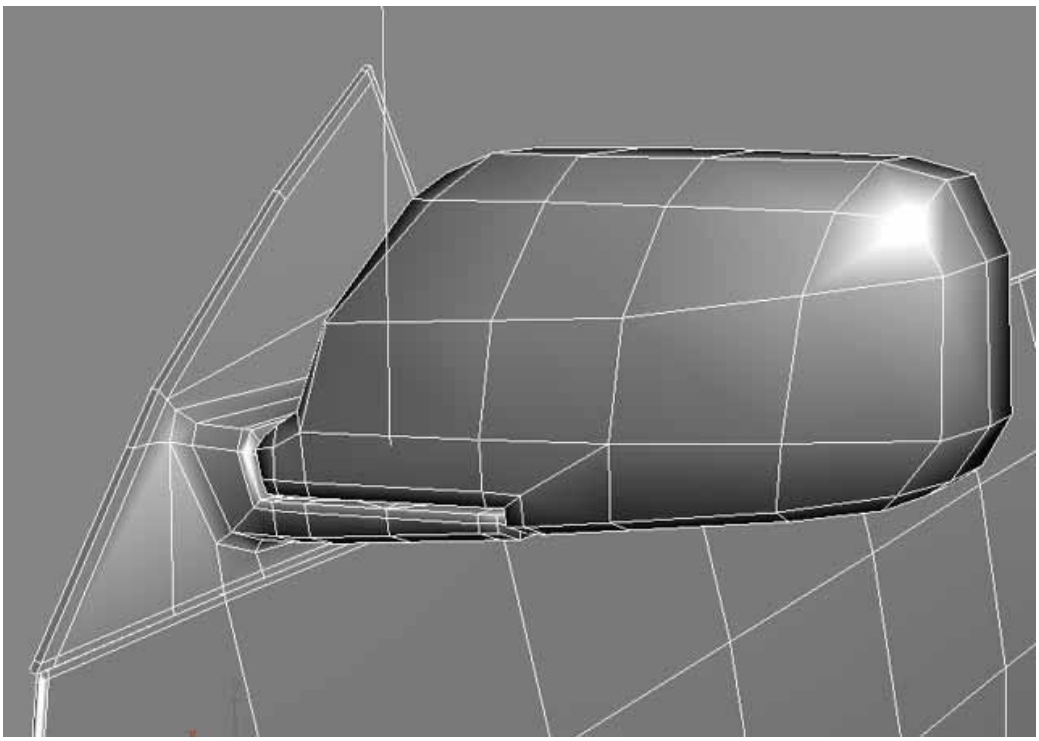


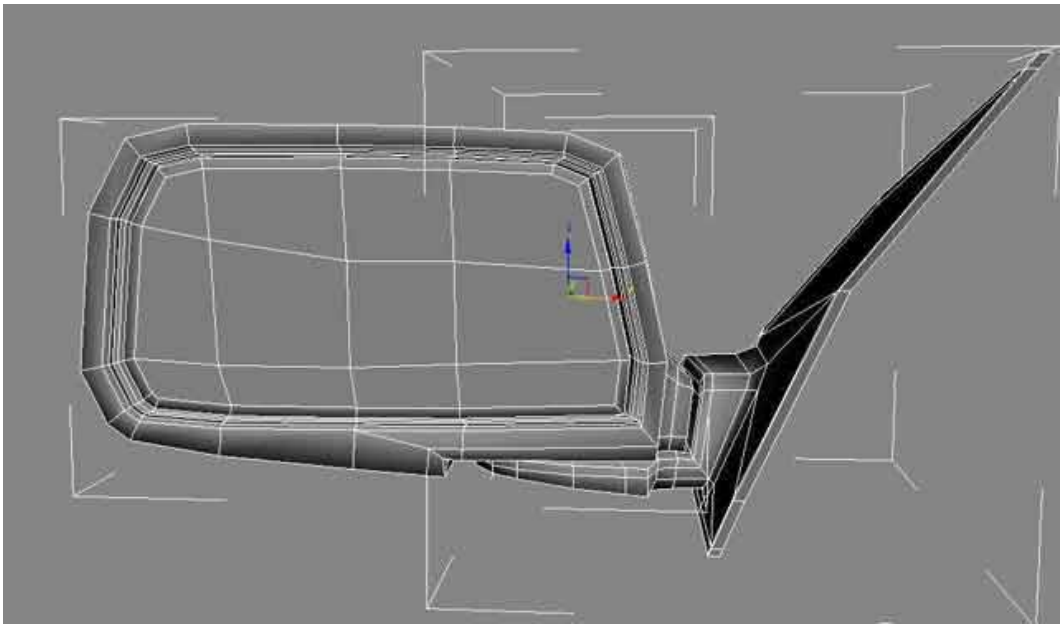
We are ready with the door handle:

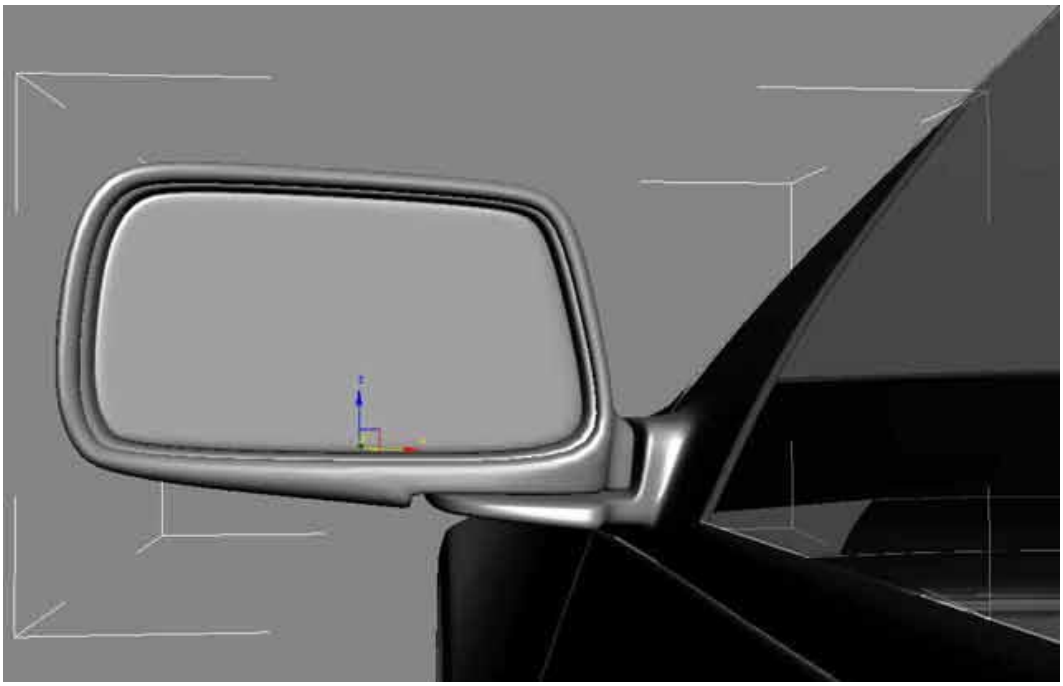
Now make the outer rear-view mirror. When I made this, I didn't have any real good reference so it's not exactly correct, but I think it shows the way how to make this part.
First add a basic shape:



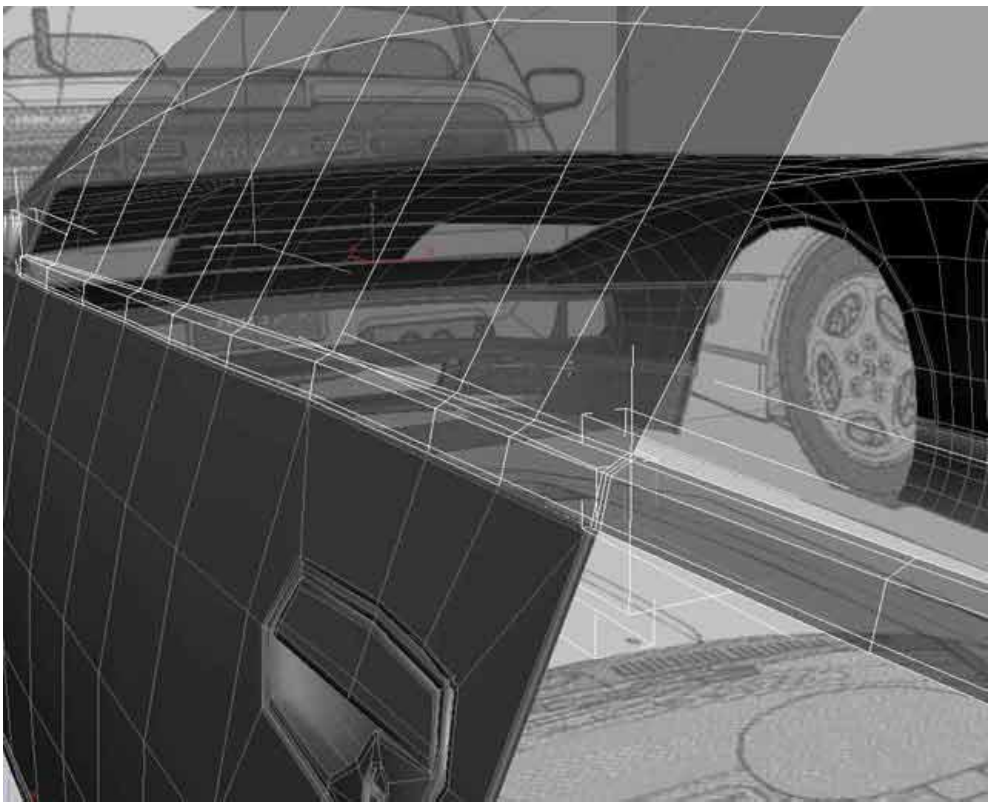
Then finalize the shape and attach the mirror to the door at the tri-angular part.



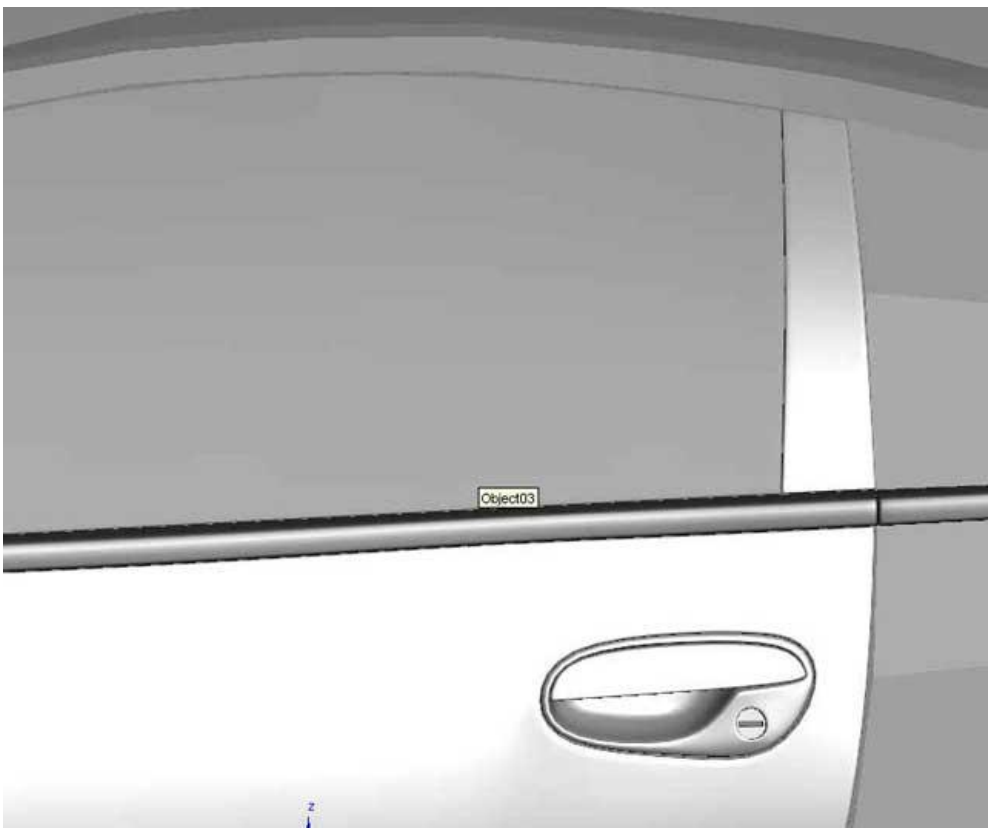




Now detach the glass and rubber-parts from the main object, and give them some shape and thickness as well.

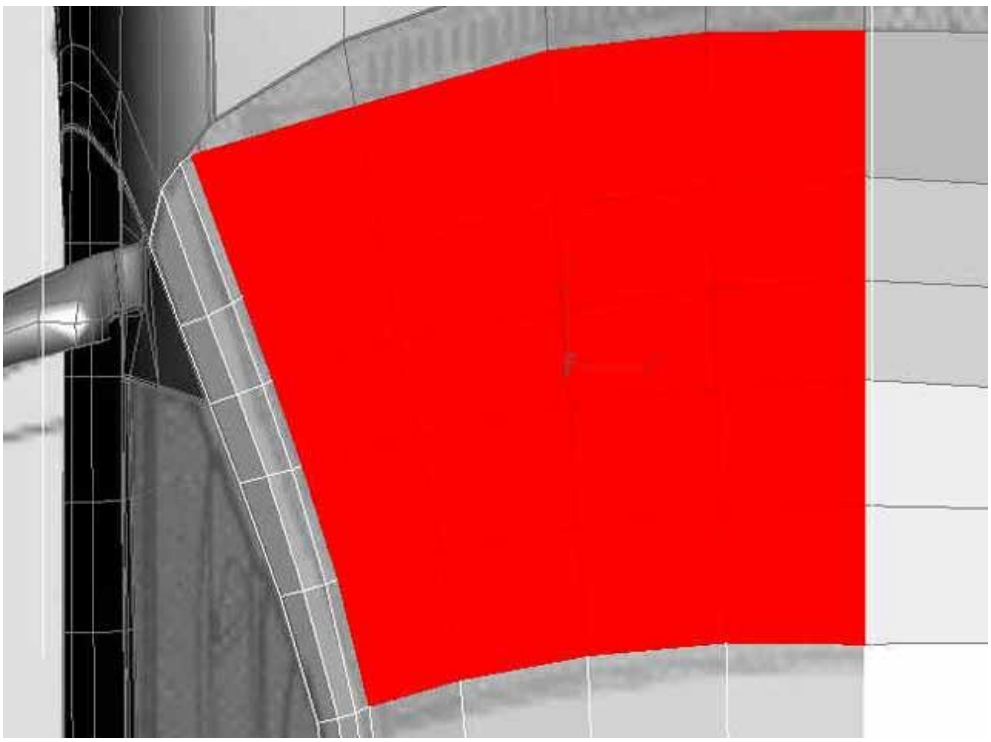


The ready door:

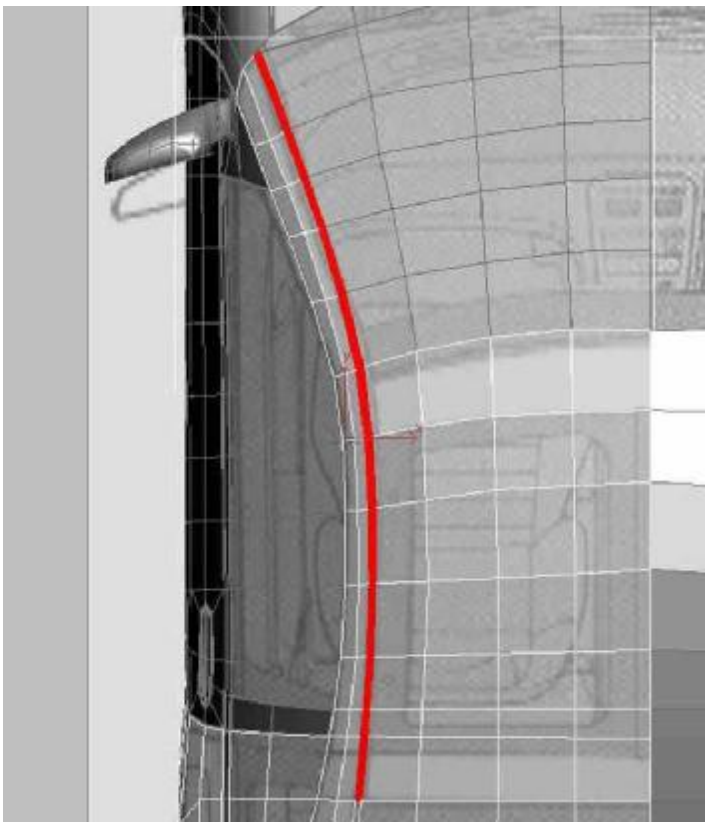


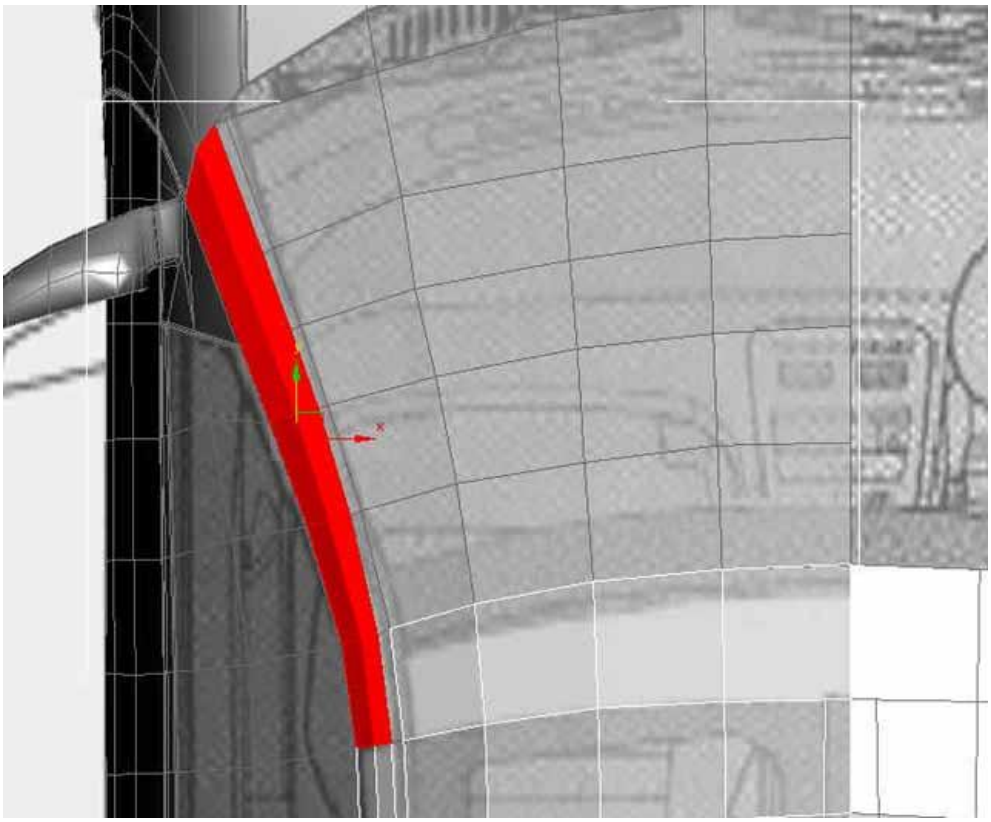
:: ROOF AND WINDOWS ::

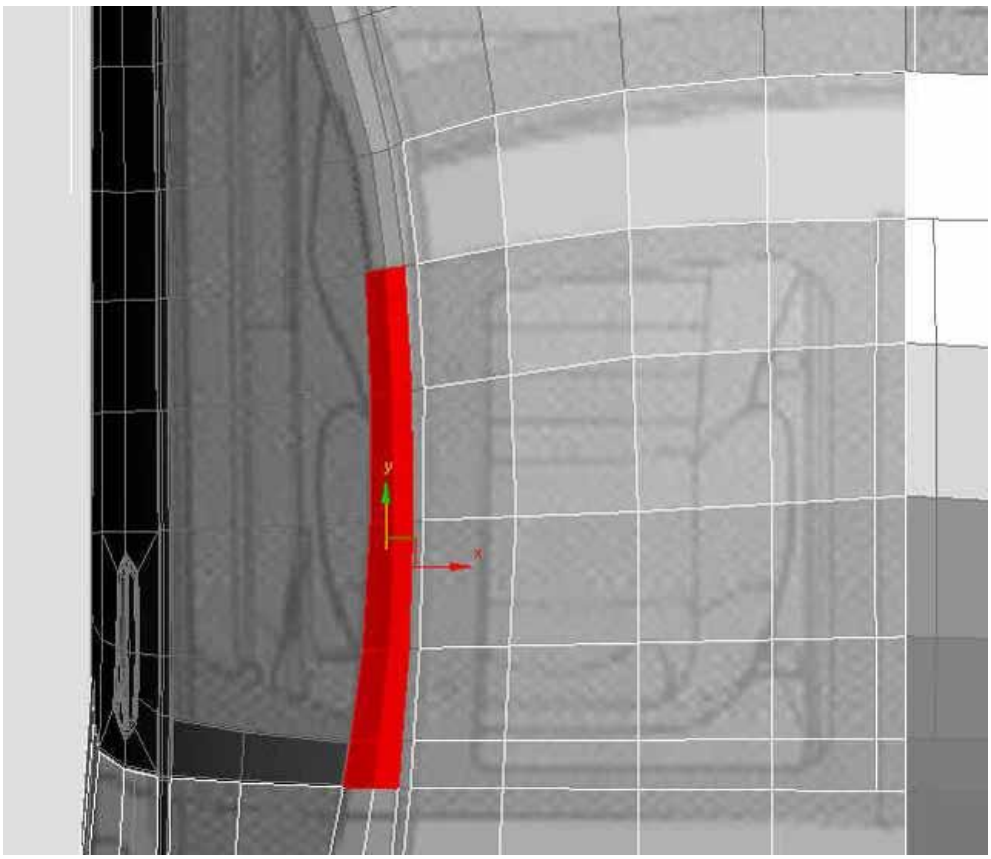
We will have a quite easy job at this part, because the modeling is almost ready here already. We only need to detach the different parts - quite many.
I started with the windshield. The usual thing, detach-extrude-solidify.

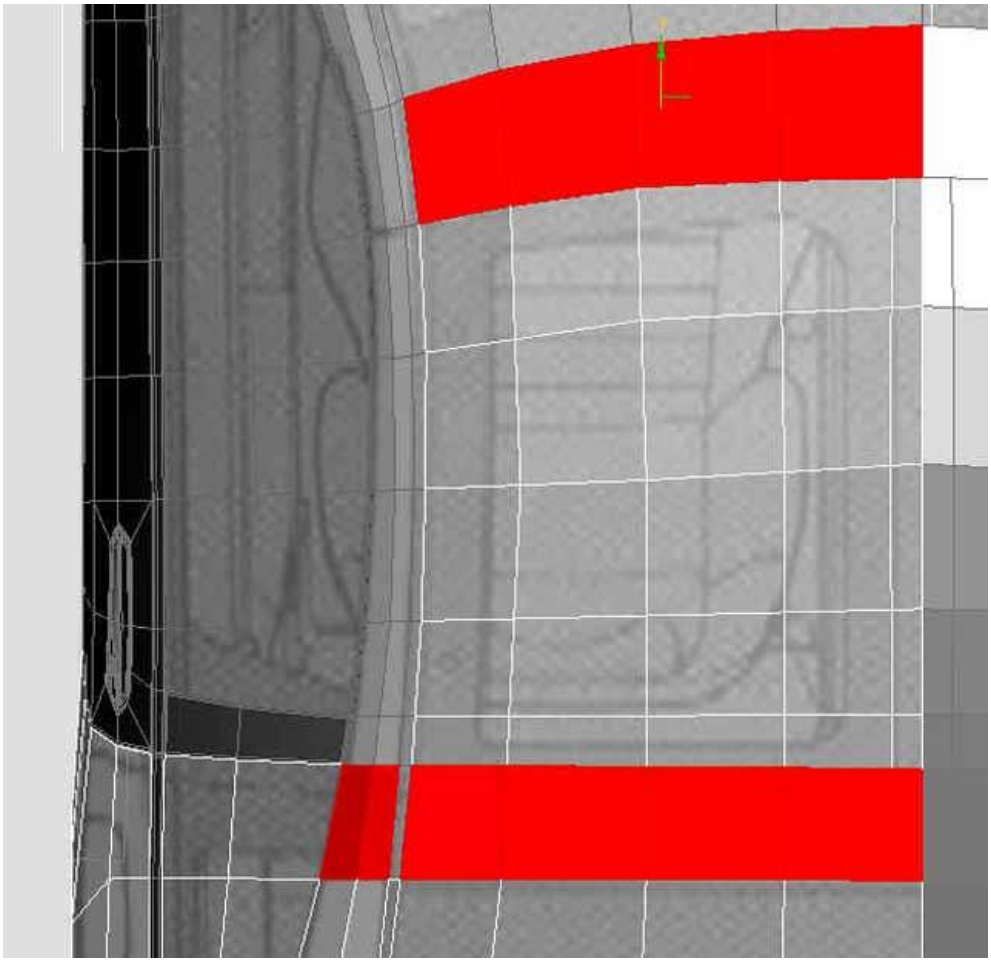


Do the same with other parts:

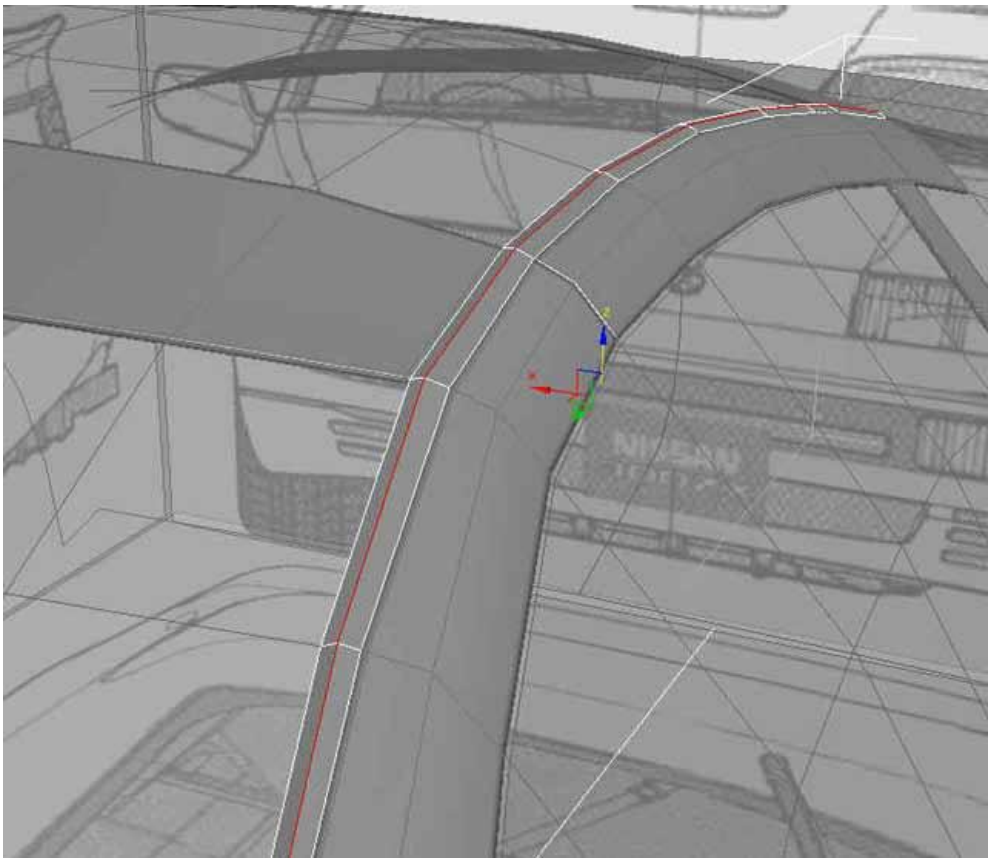




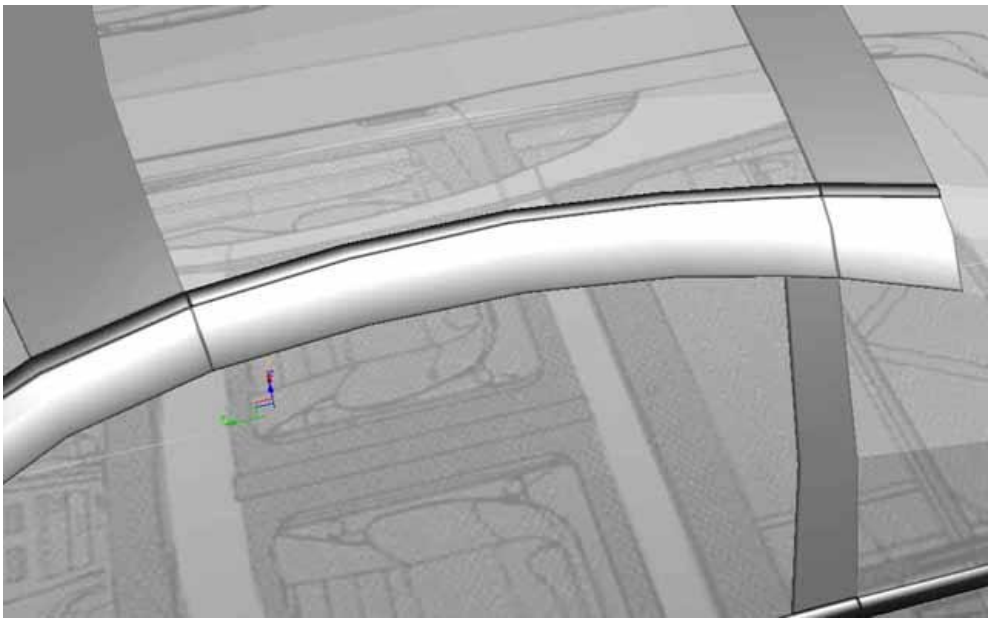




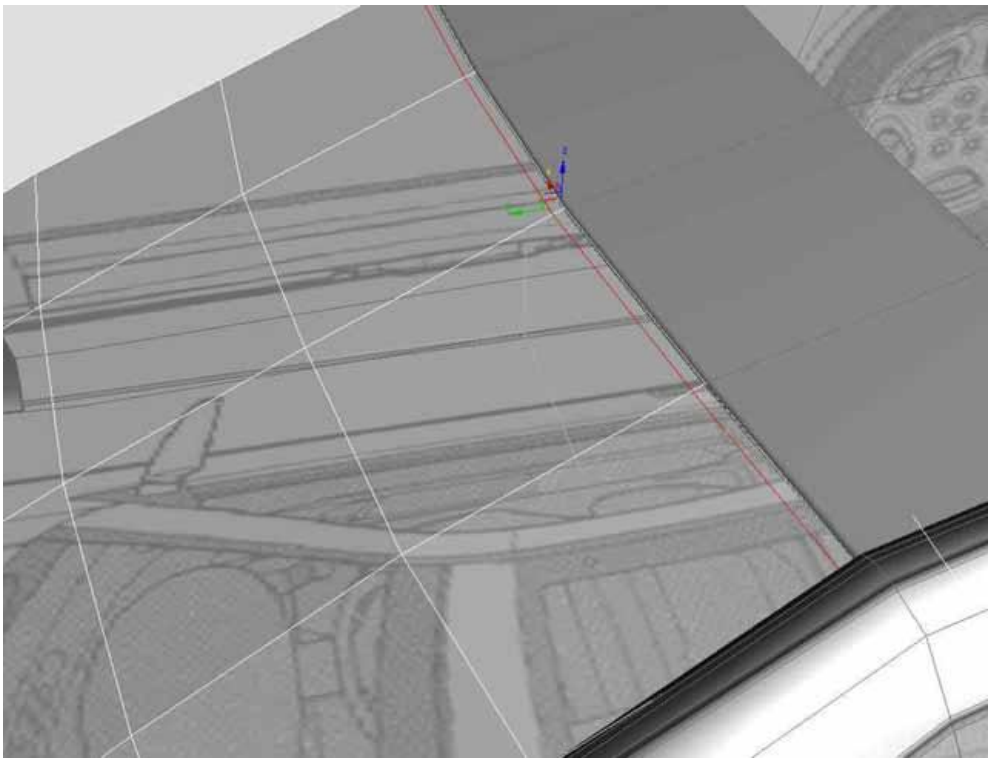
Now pick the rubber-line between the roof and the door and add another edge-loop. You can do it simply with extrude. When ready, move the new edges a little upper to make some round shape to this part.

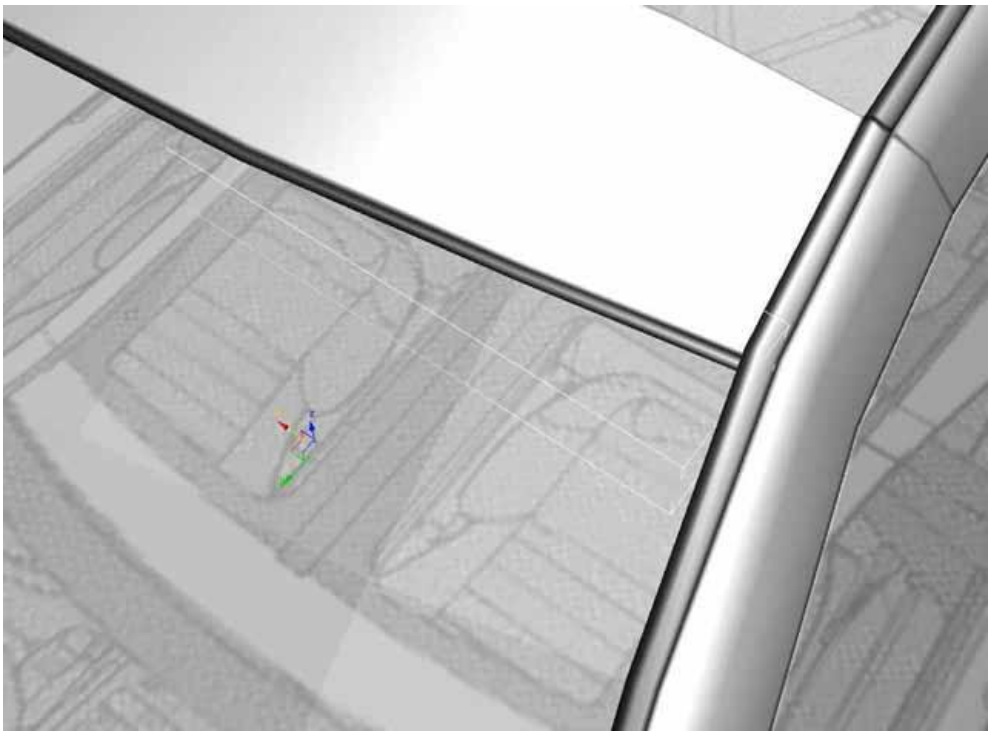


This object needs further detaching, it stands from three pieces.

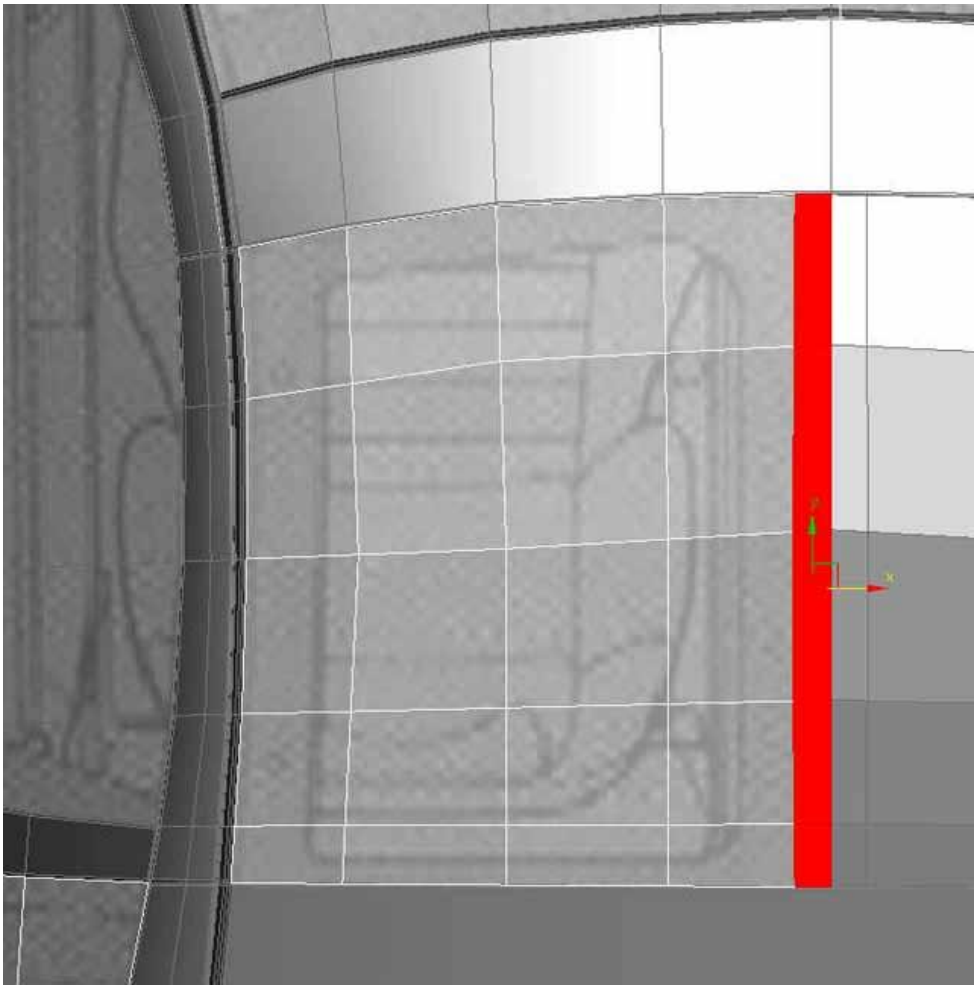


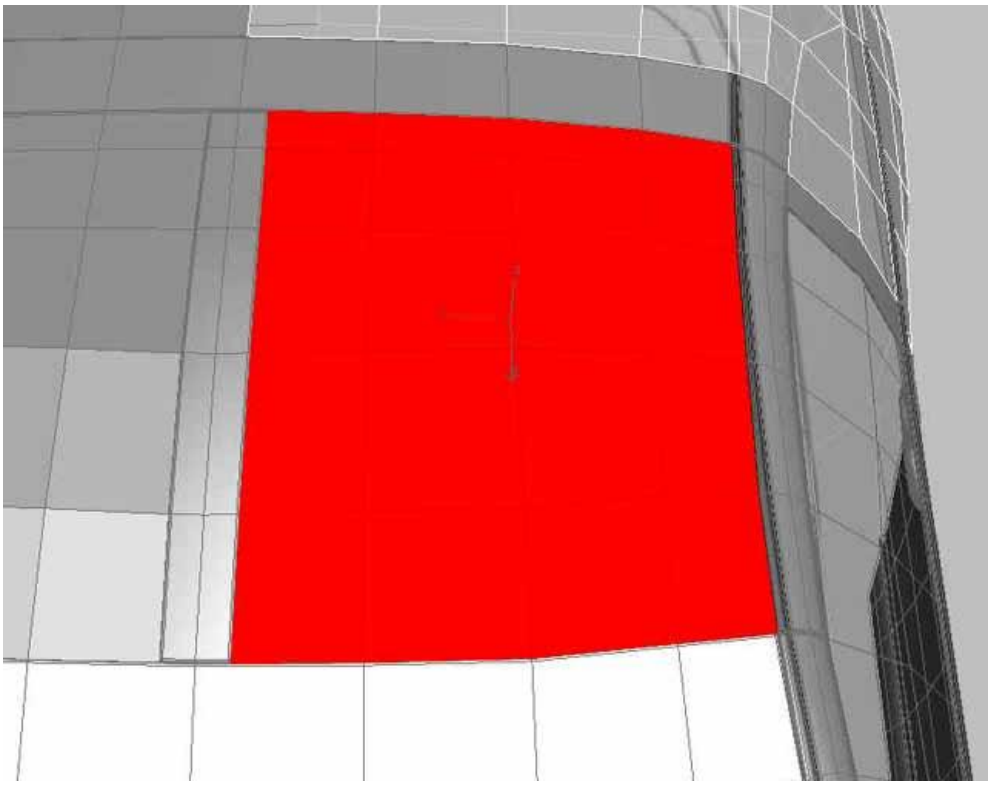
We need another rubber-line between the windshield and roof. That's very easy to make:





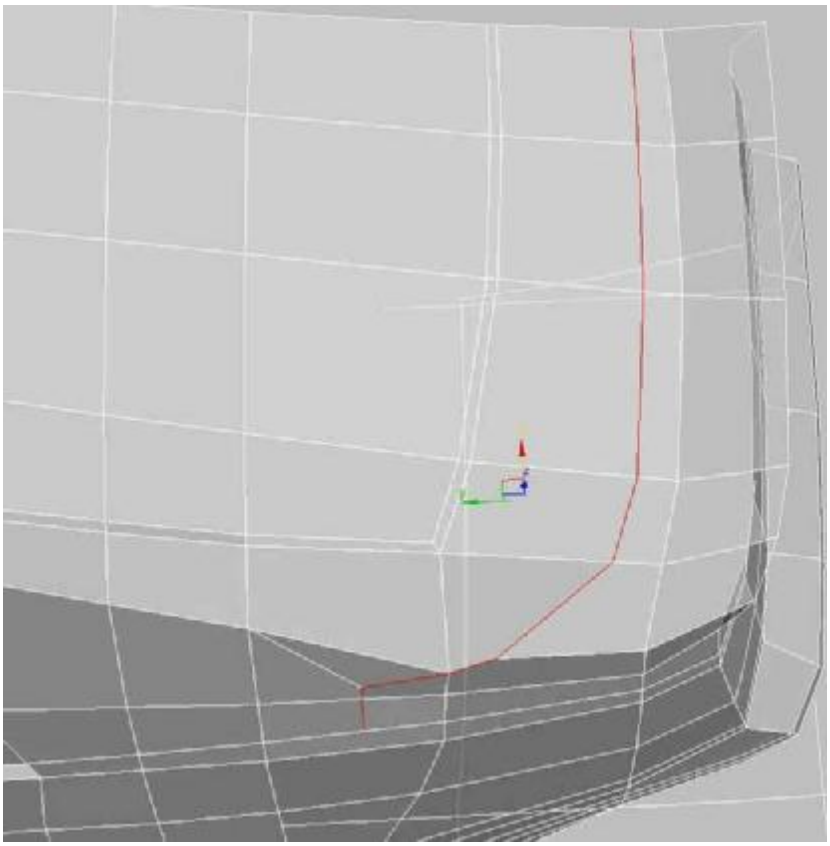
The inner part of the roof isn't in one piece as well:



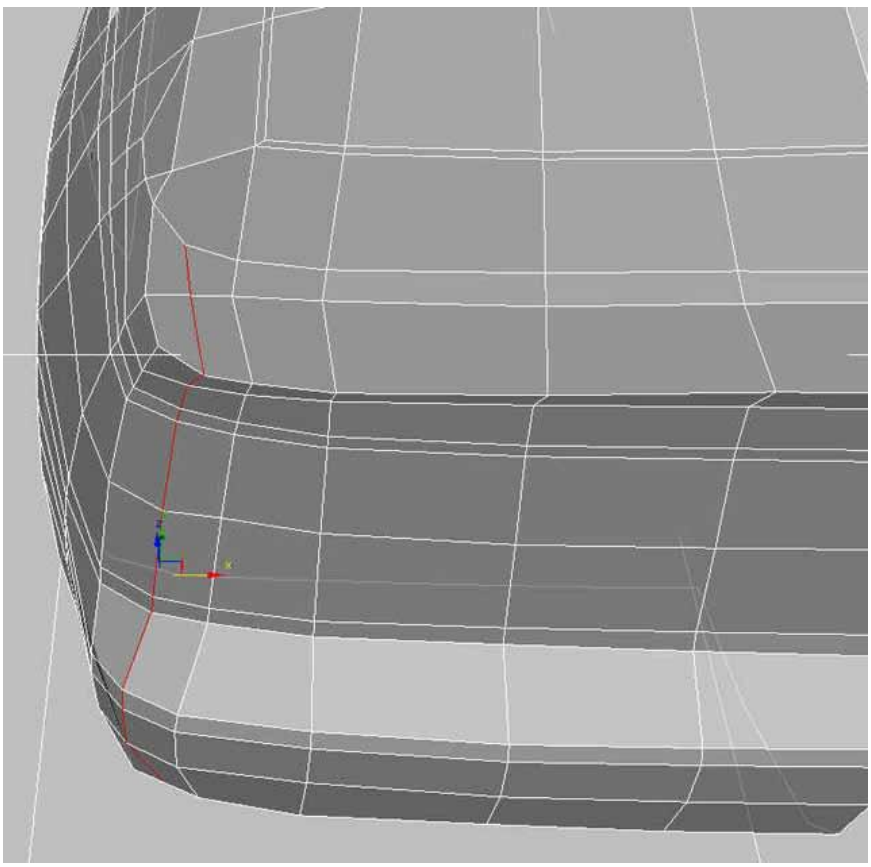


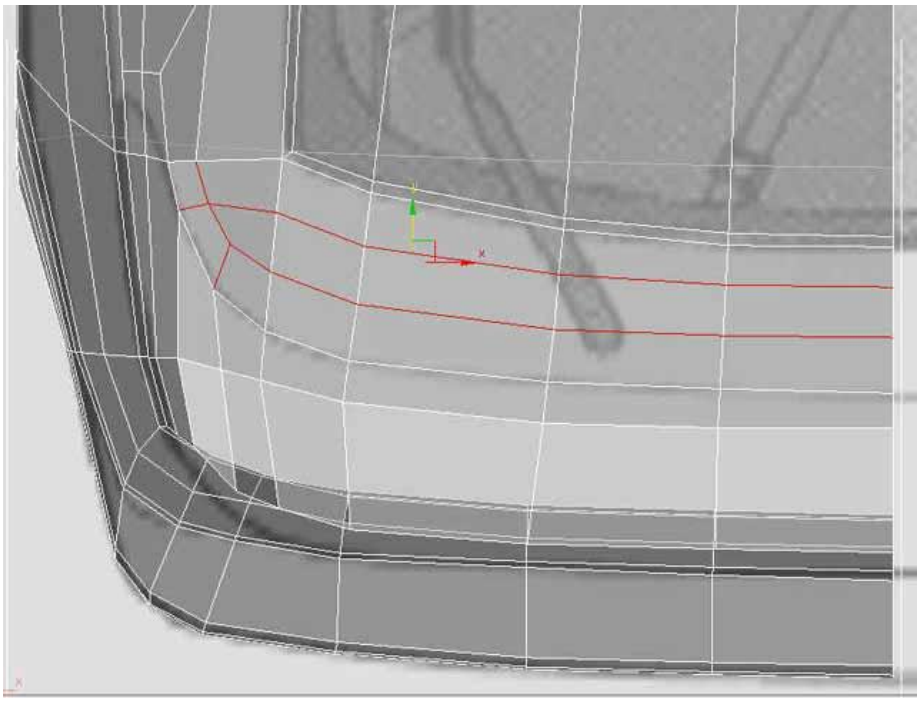
And so we are ready with the roof as well.

Now we are going to make the trunk with the rear wing. First cut the outline for the wing.

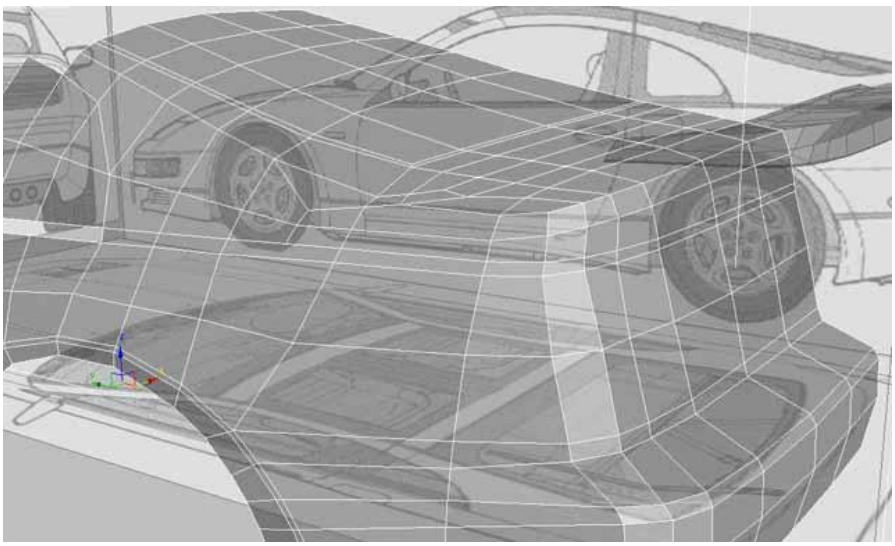


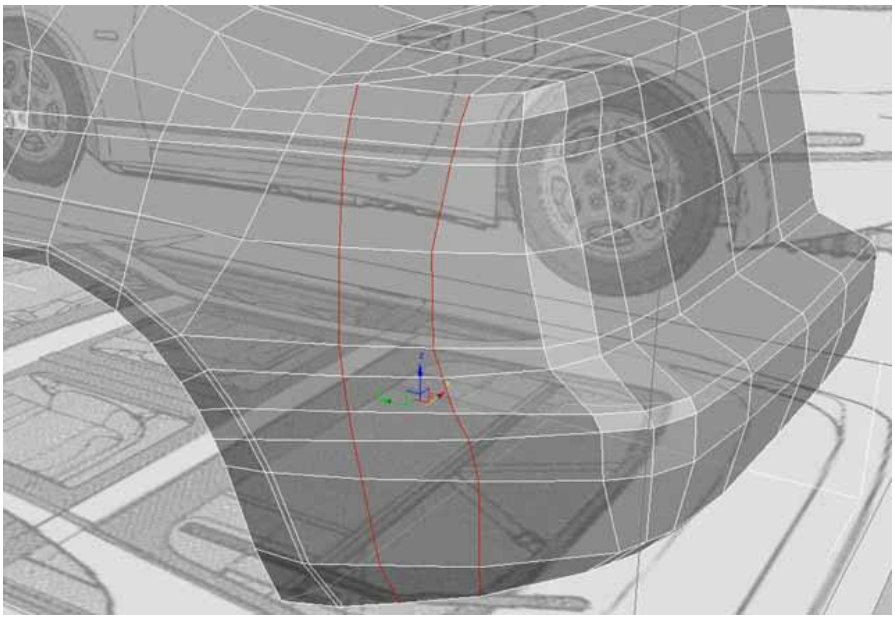
I modified this part a bit to keep making only quadrangles.



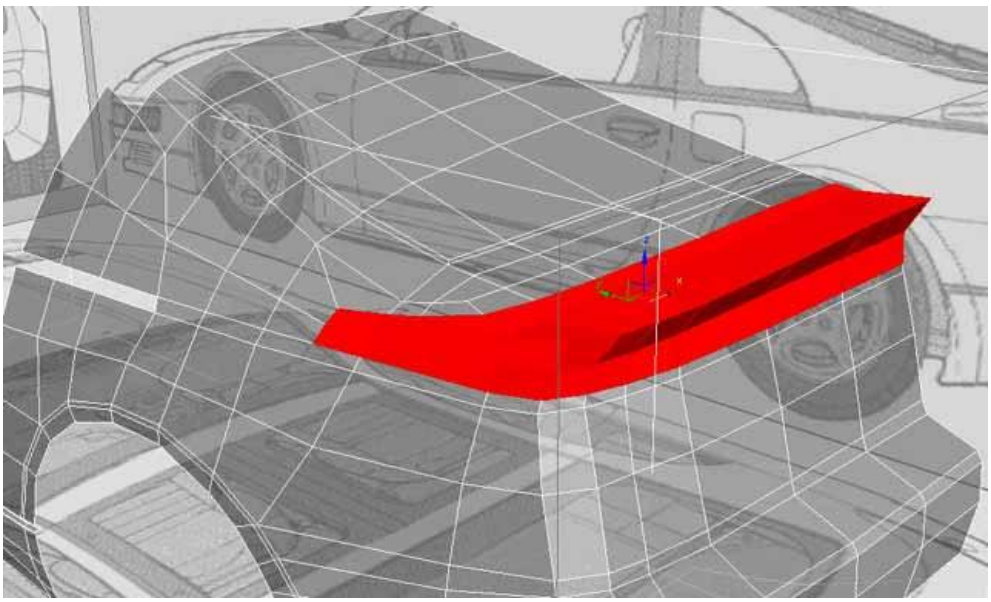


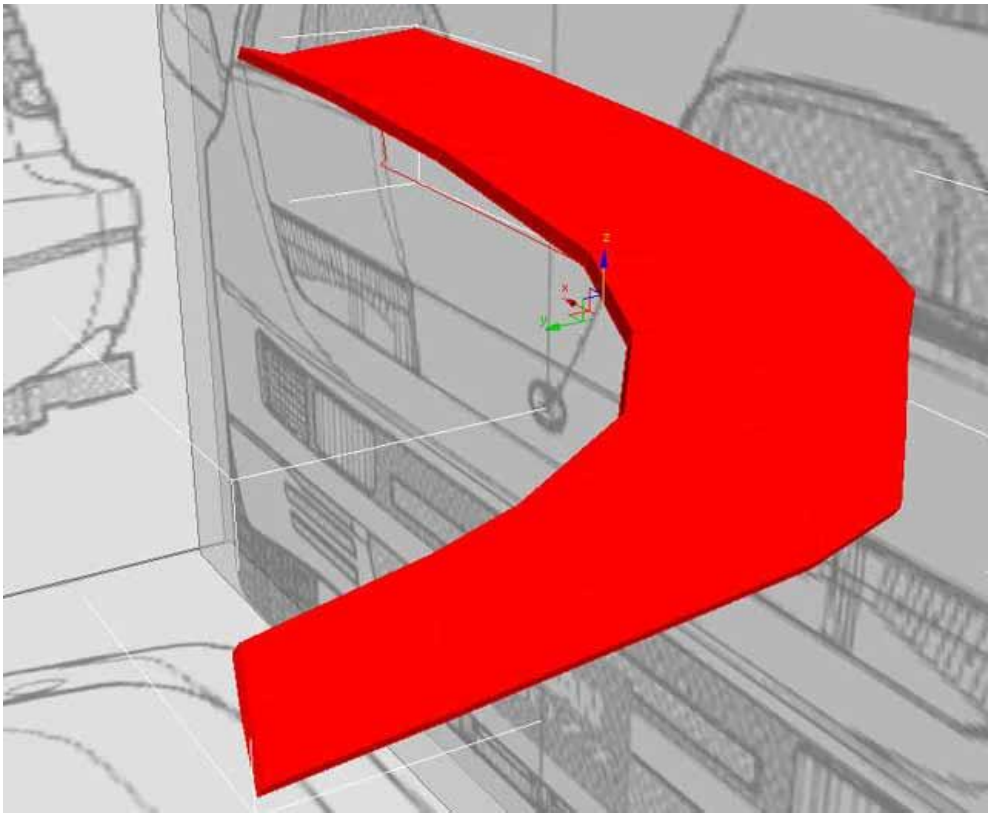
I made a copy from the body (shift + drag) and removed the wing from it by moving the vertices and making the main shape without the wing.



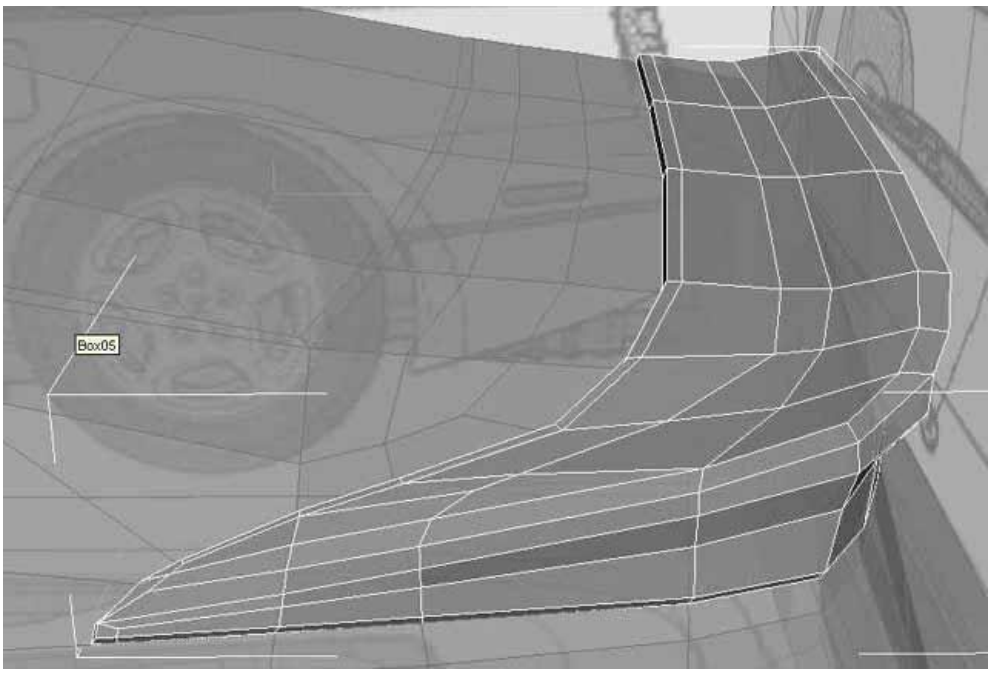


Then (on the other part) I selected the polygons belonging to the wing, extruded them and detached.

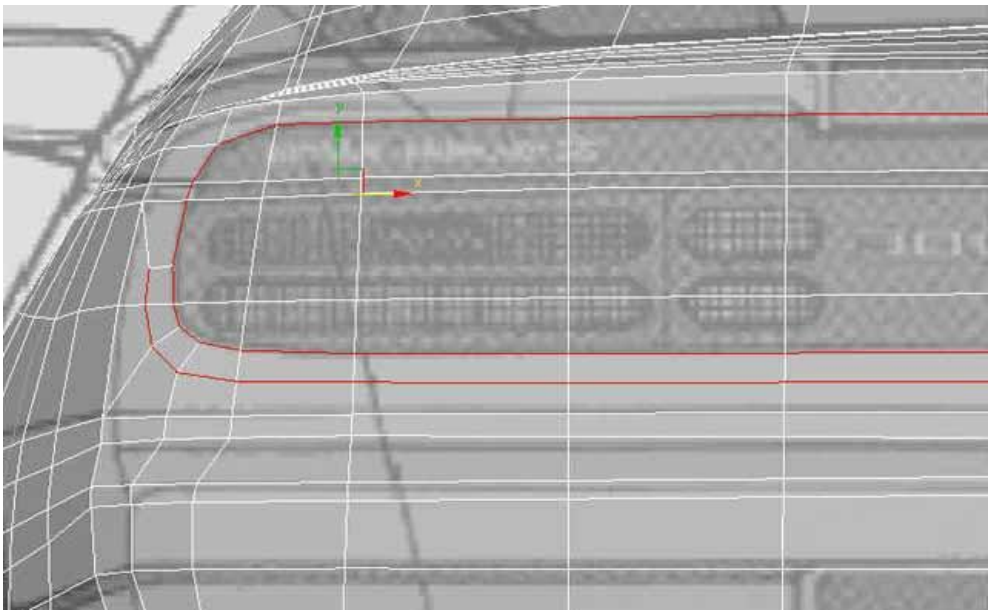




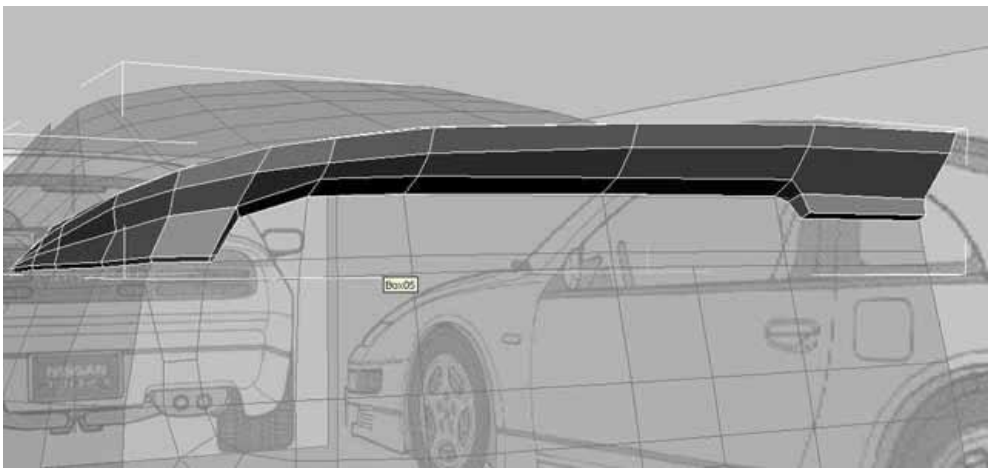
After detaching we don't need the original part, so just delete it. Now align the copied one (the one without the wing) to the wing giving the original position to it.



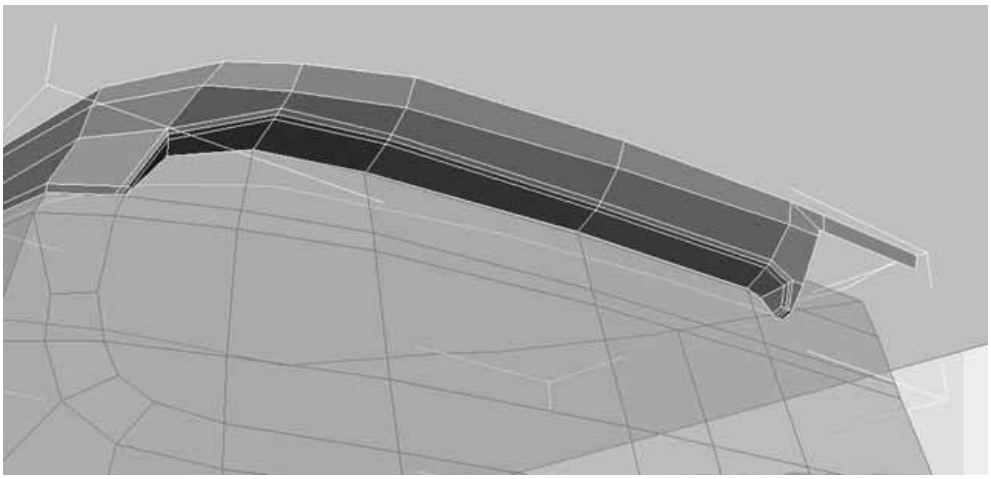
After this I cut the outline of the taillights.



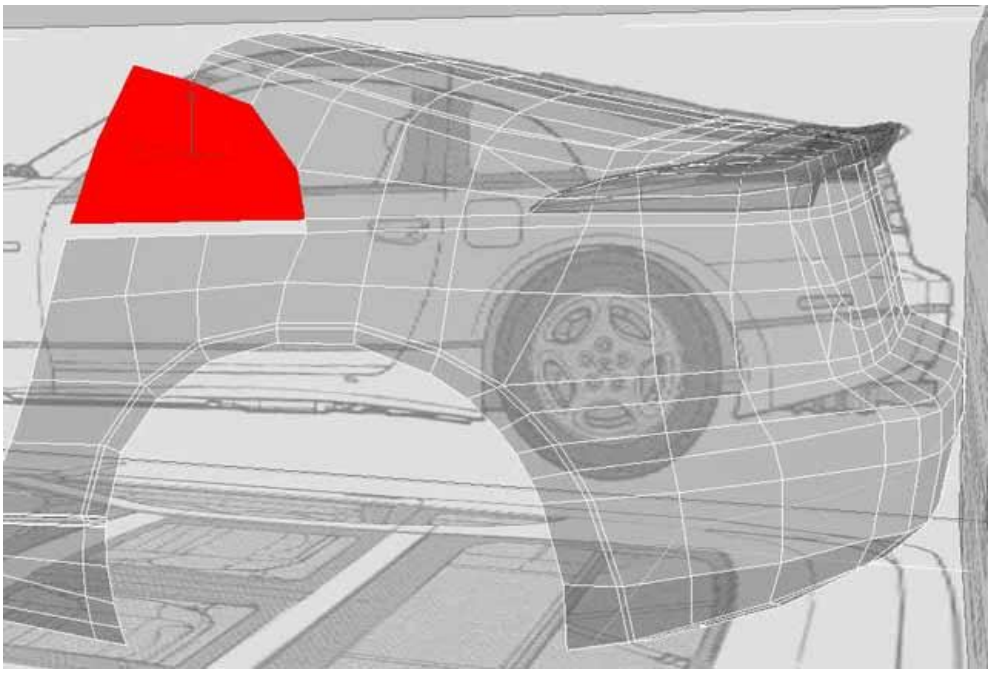
Modify the back of the wing to fit the outline of the taillight.

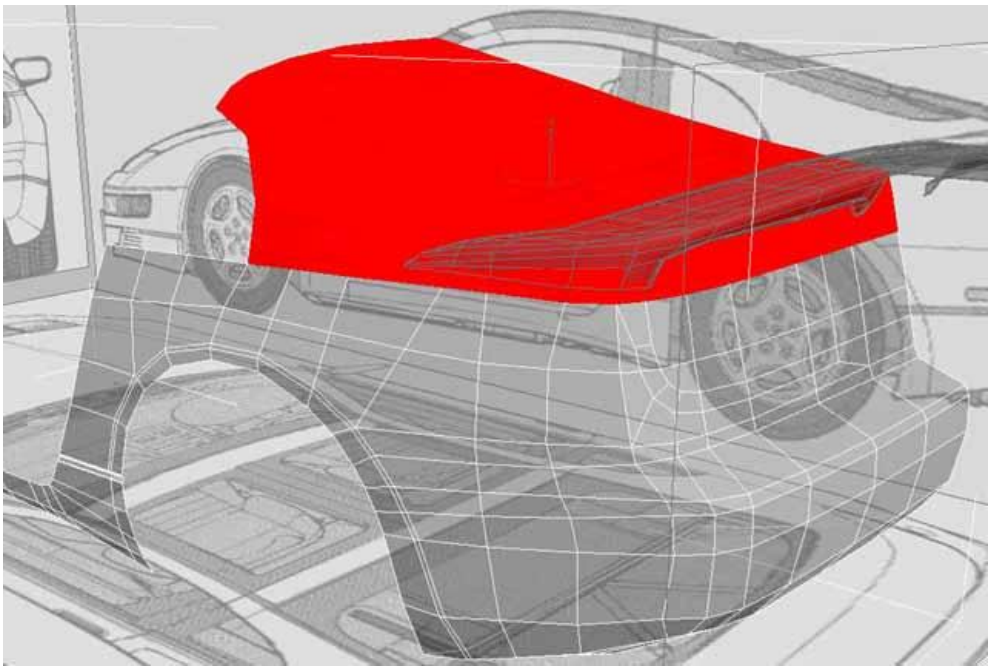


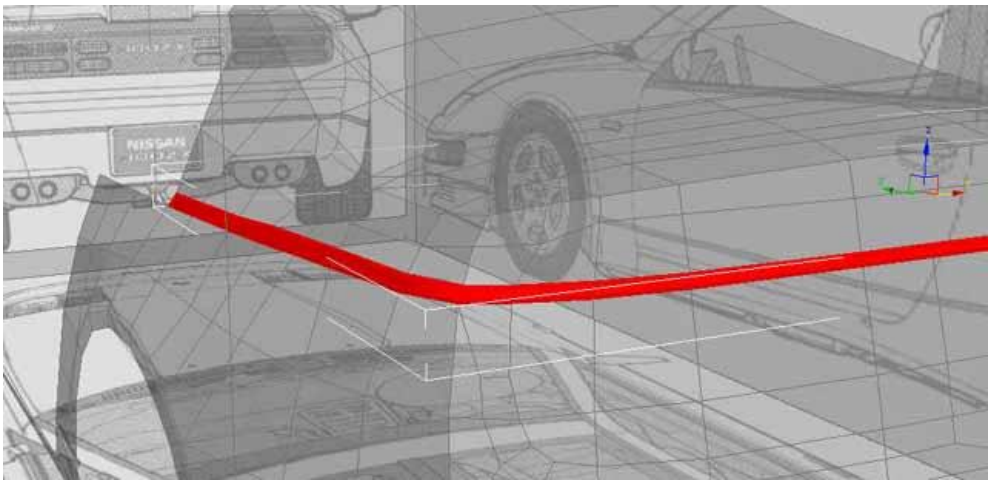
Then make a hole for the additional brake light and add other shapes to the wing.



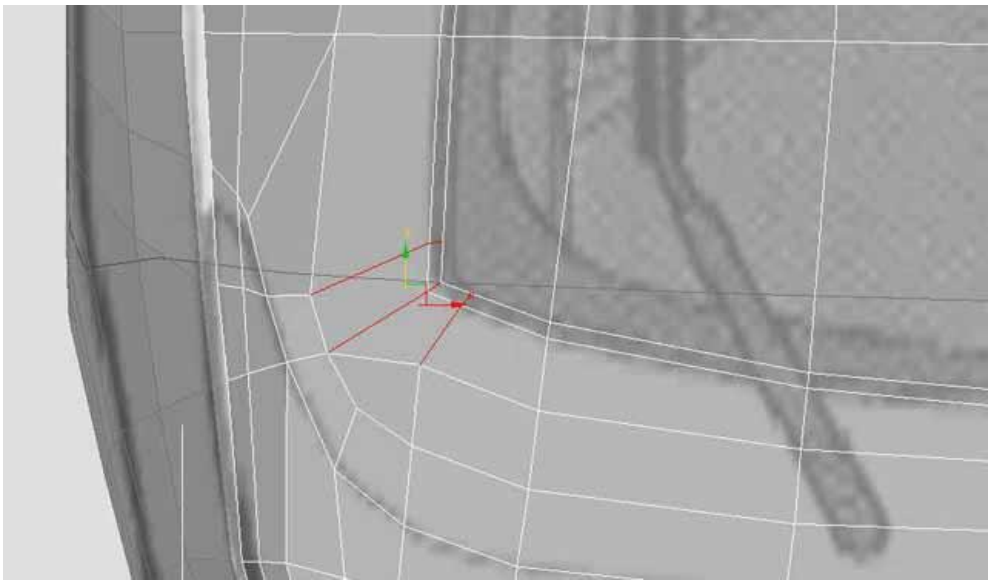
We are ready with the details so the usual detaching-solidifying job can begin here as well.



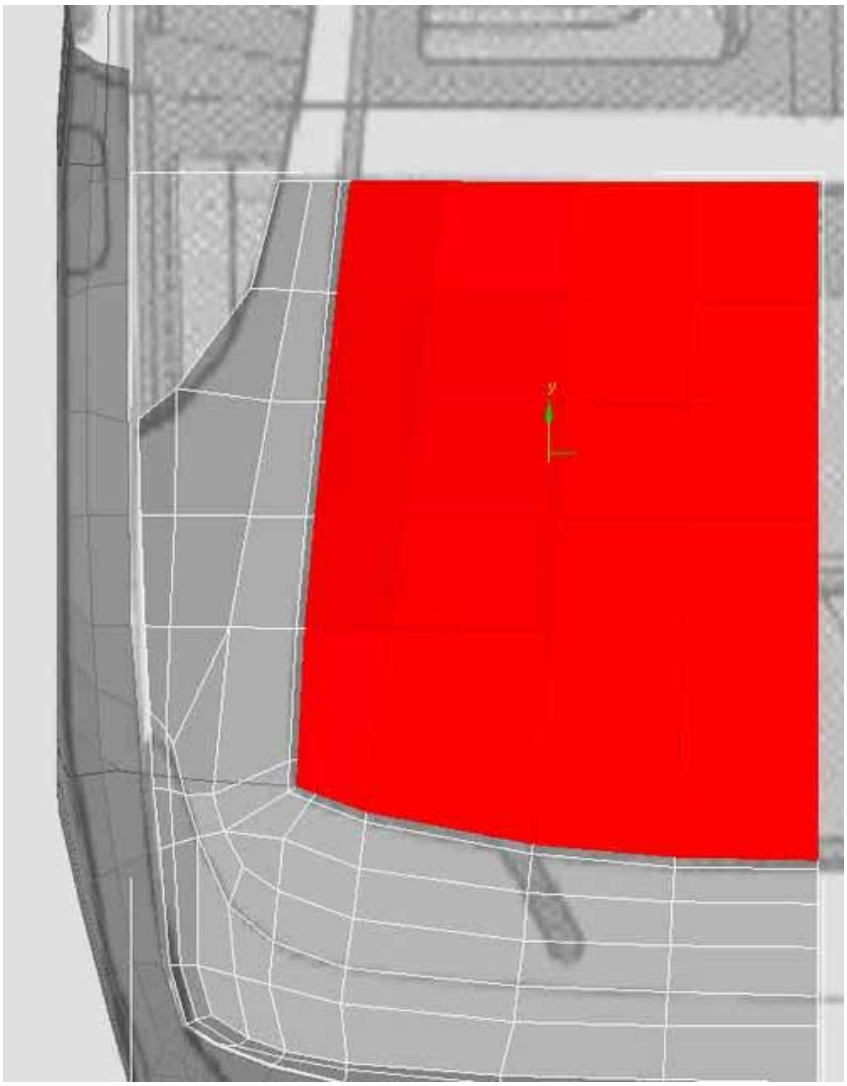


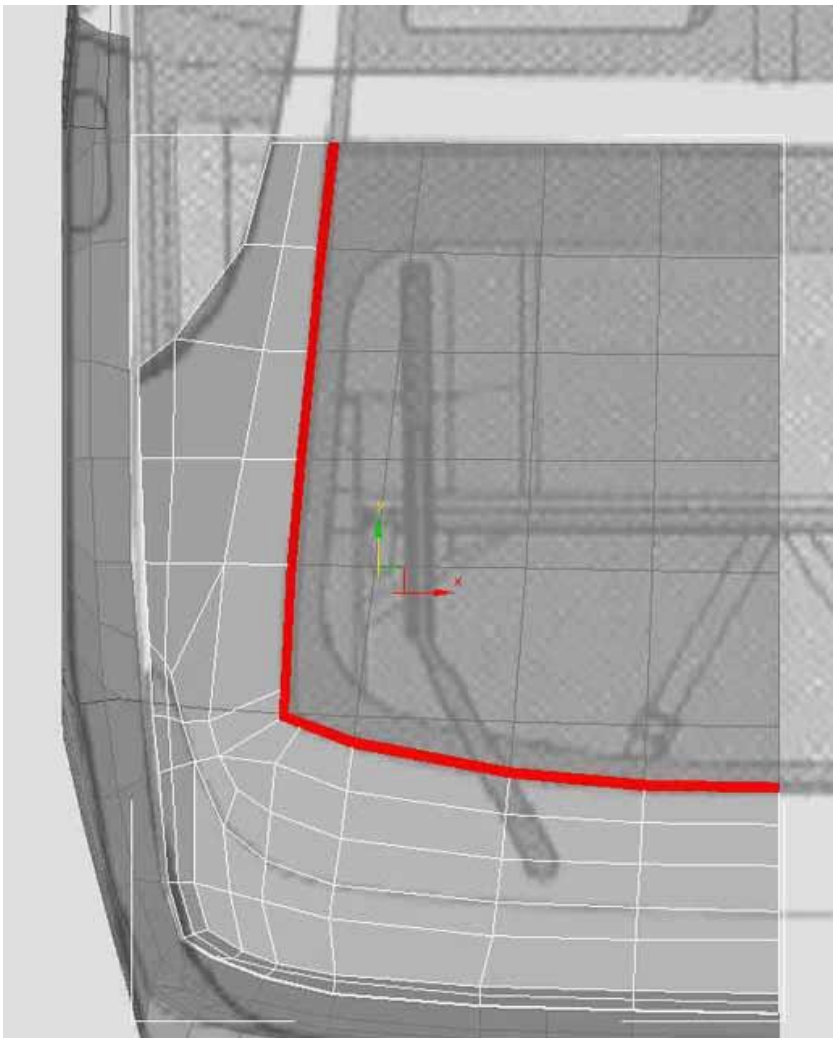


At the rear windshield I added some new edges to make add the windshield's corner a round shape after subdividing.

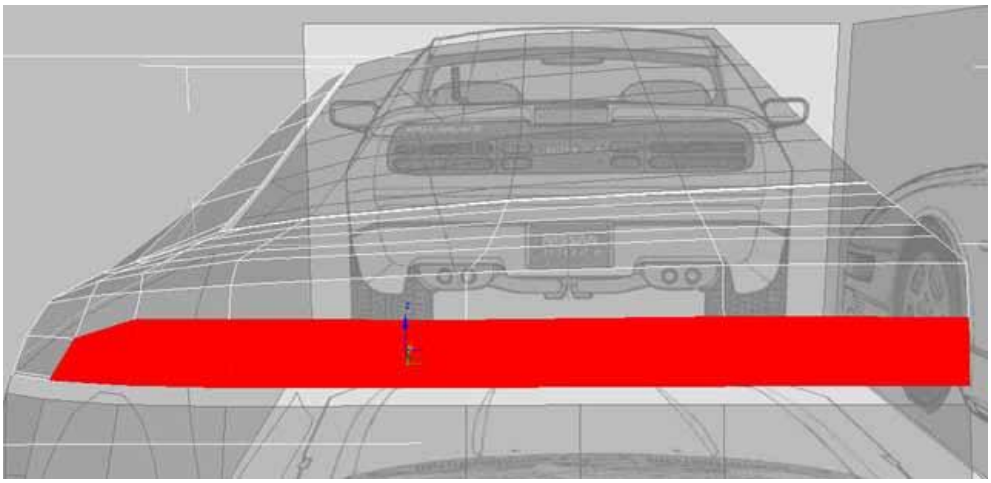


Now we can detach the windshield and the rubber belonging to it as well.

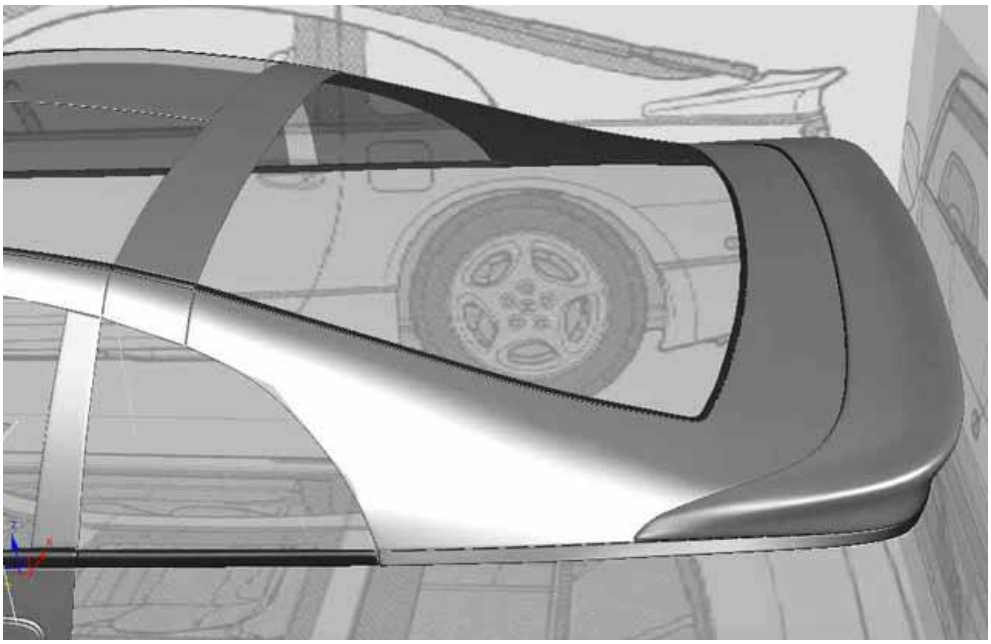




And the top of the taillight-part.

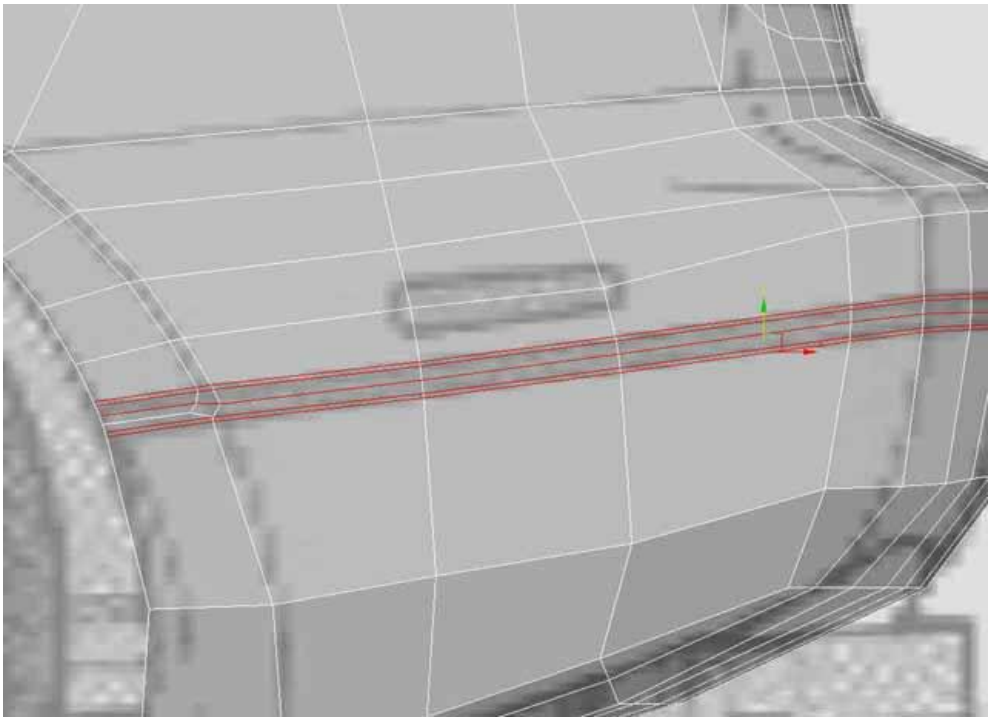


Trunk is ready:

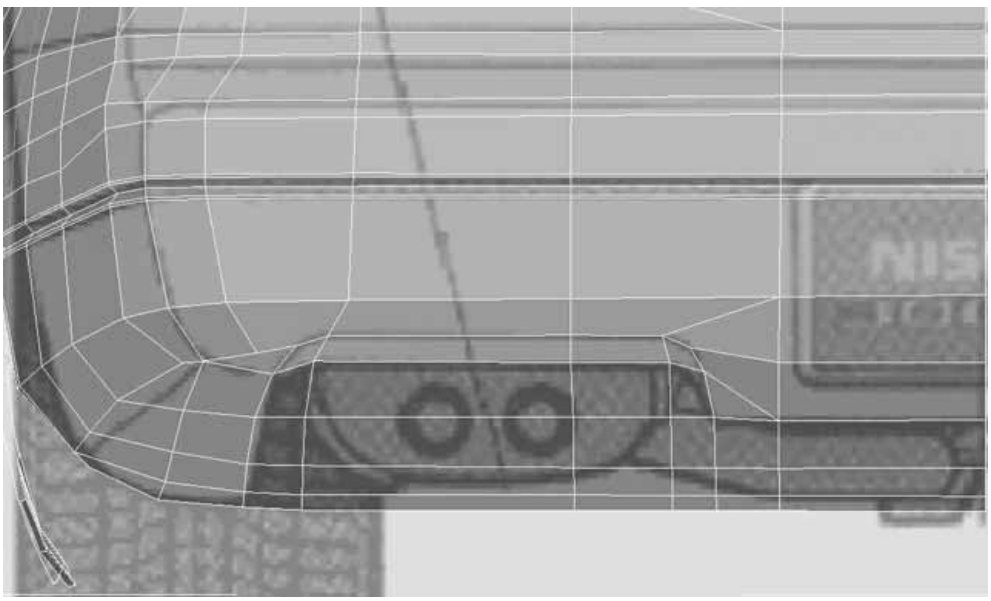


:: REAR BUMPER ::

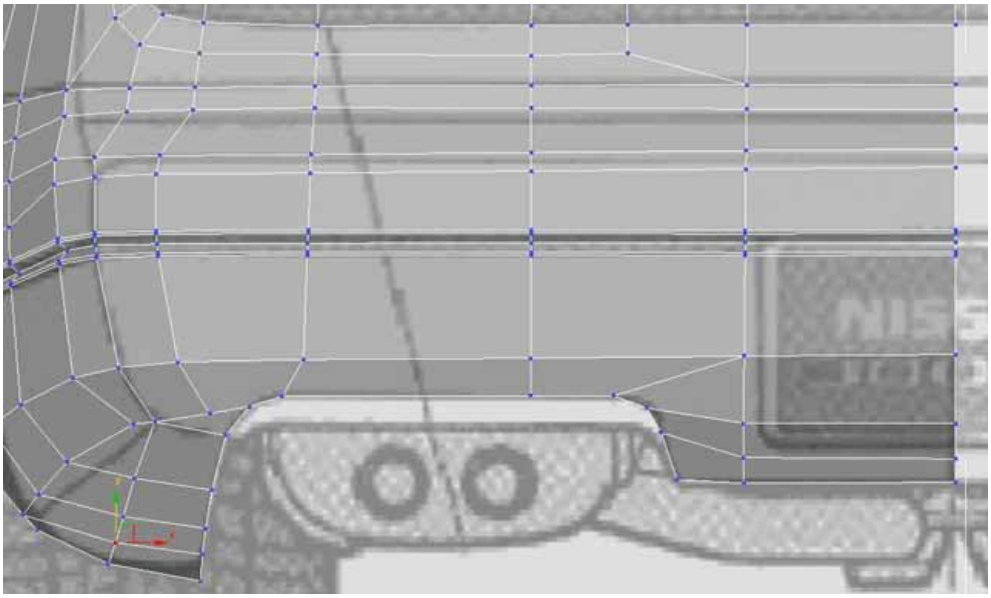
First extrude the line at the "recess" (???) to fit its width. Then chamfer the two new edge-loops a bit and move the inner edge-loop a little inside. I also made the outer line of tire-hole disappear here, because here I could make it without creating any triangles.



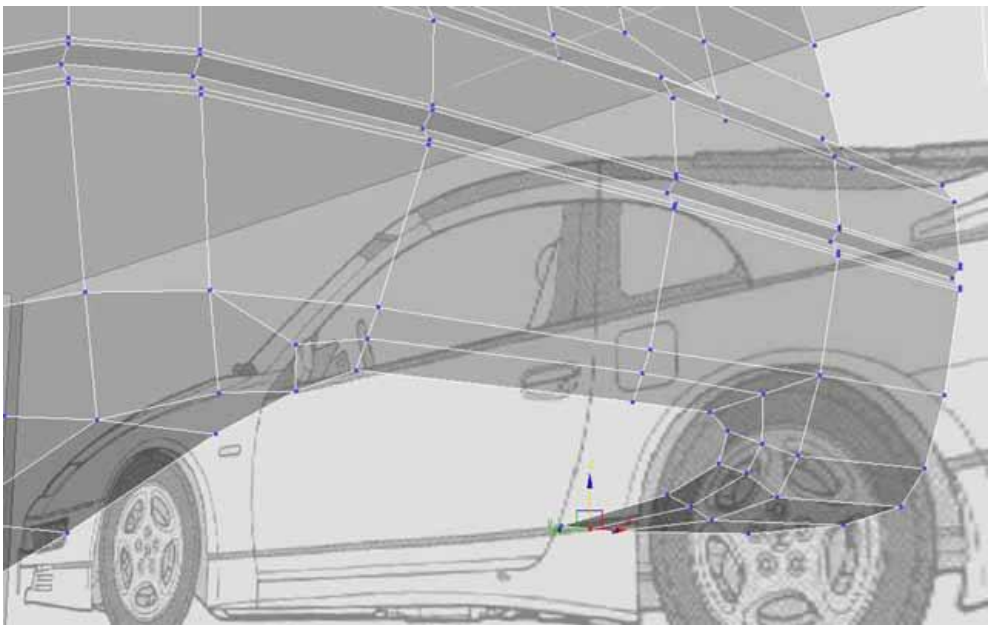
Change to back view and move vertices of the lower part of the bumper to fit its line created by the exhaust-hole and the part below the number plate.



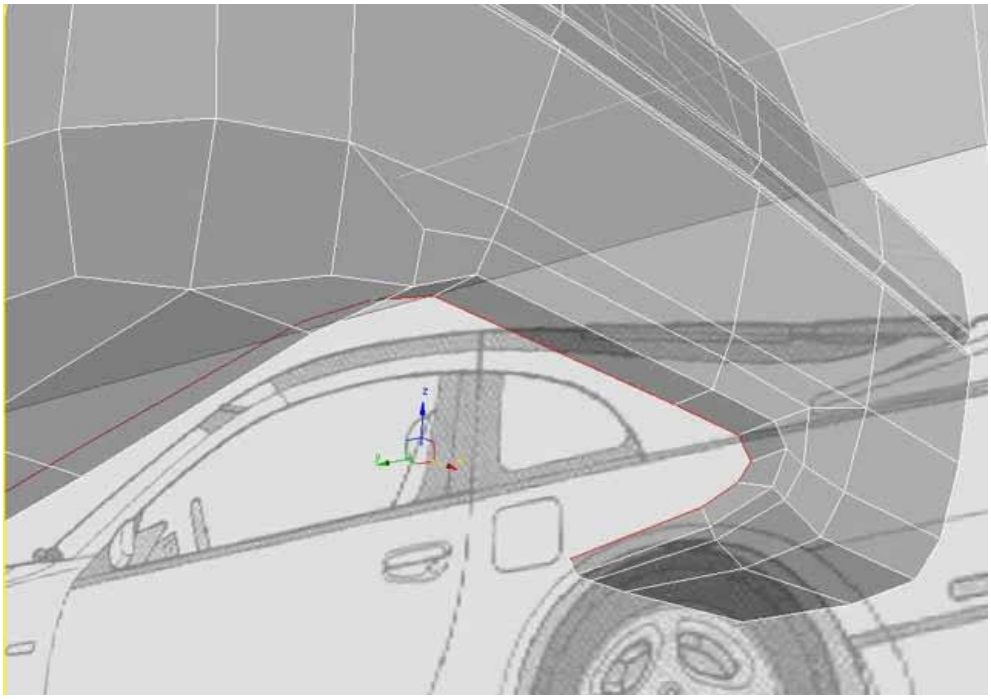
Delete the polygons that are out of the mentioned part, we won't need them.



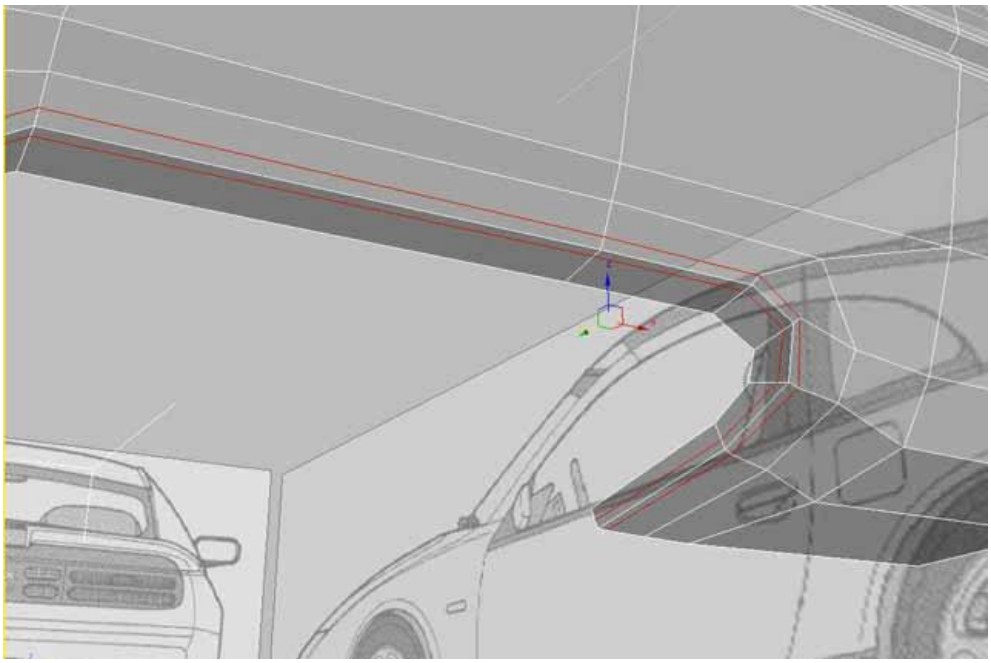
I added another edge-loop to make the surface between the exhaust-part and the plate-part clearer.



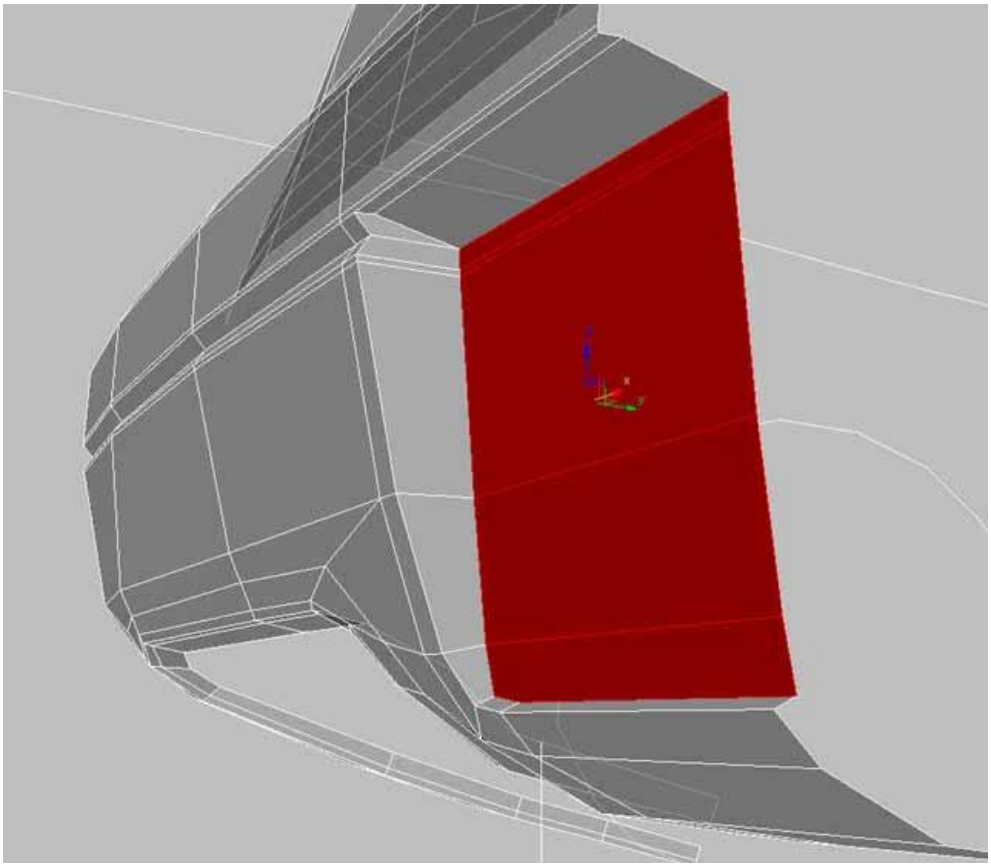
Then I extruded the edges belonging to the exhaust-part in (shift+drag).



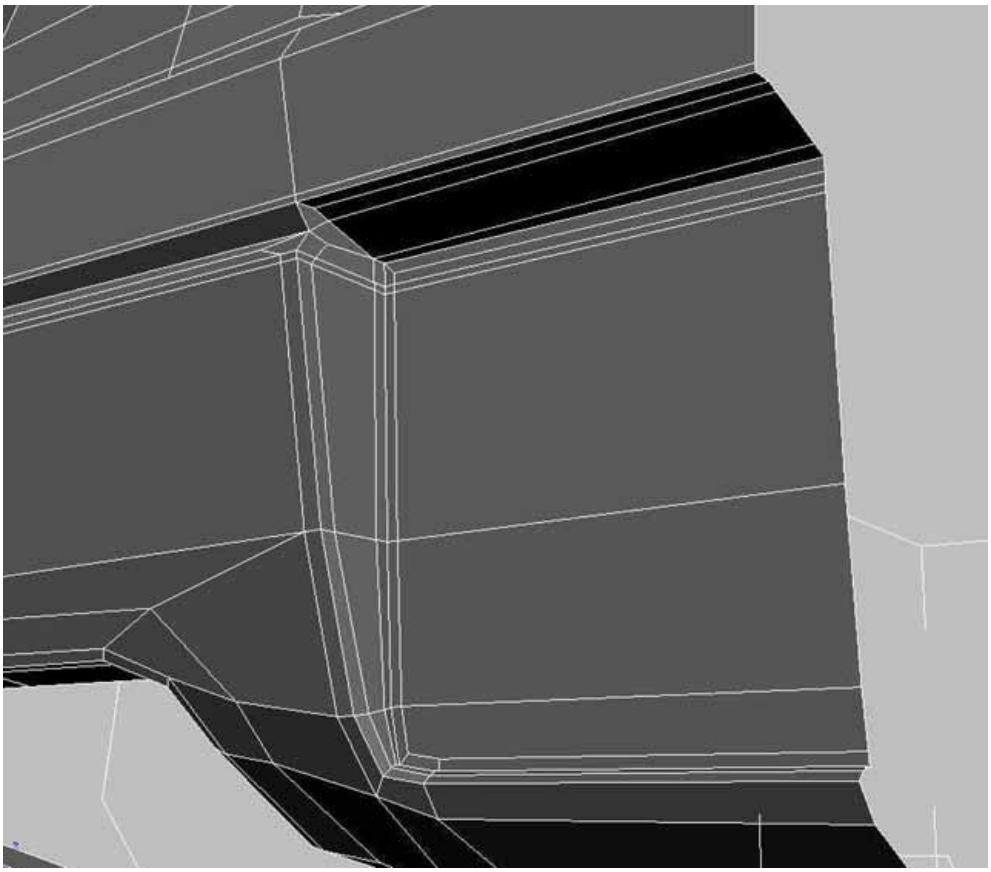
Now extrude the previous edges to make this edge sharp



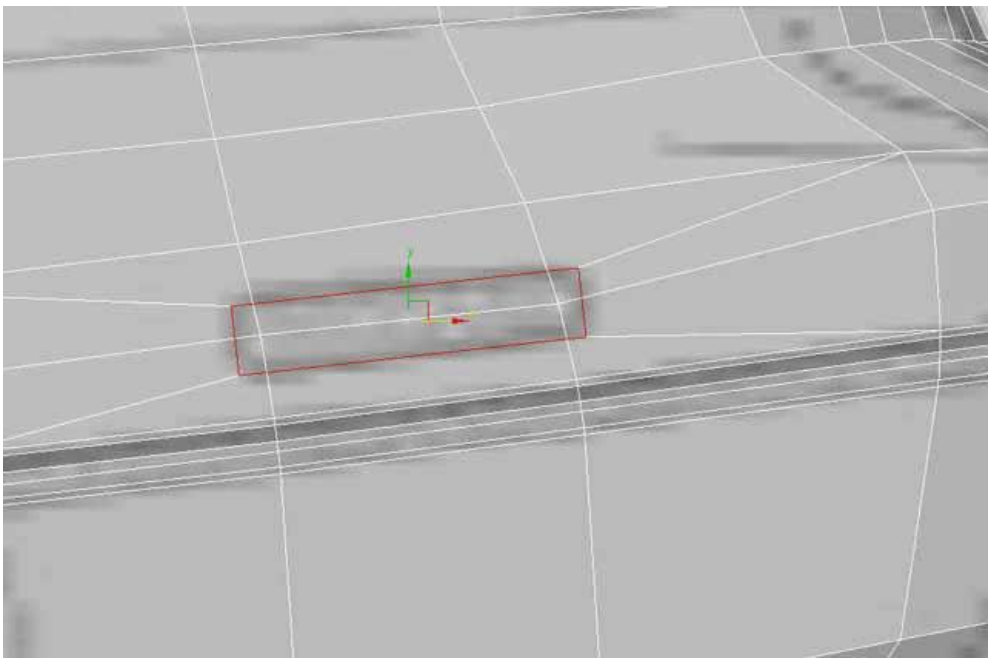
Next is the hollow of the number plate. Select the polis belonging to it and extrude them back.



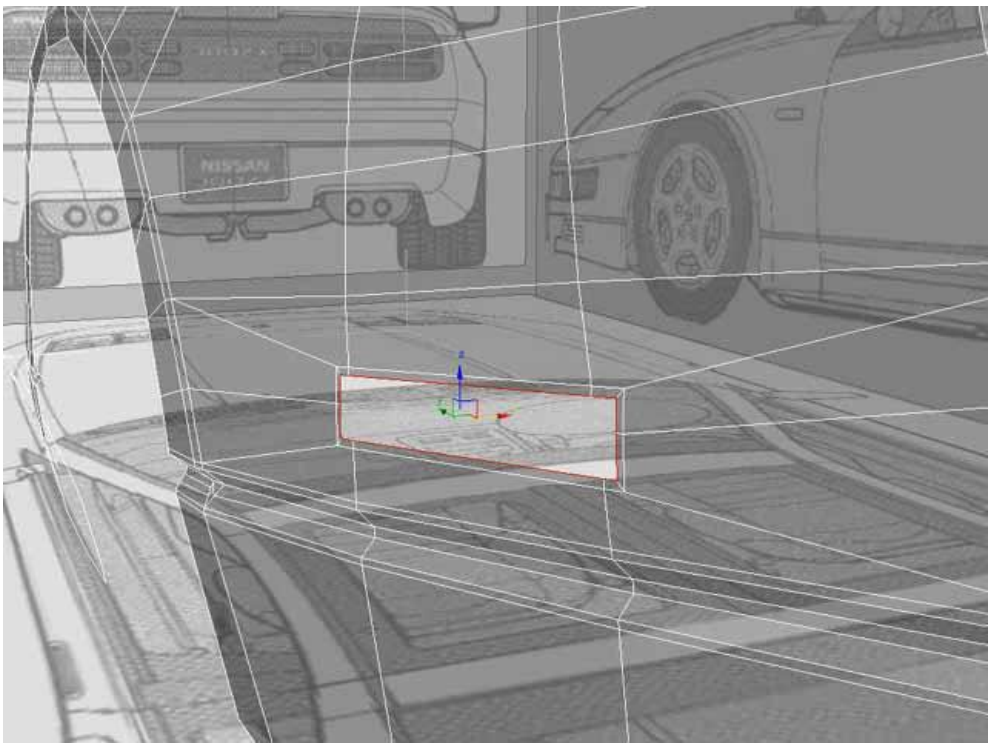
Extrude the edges where the surfaces meet to make them sharp but round.



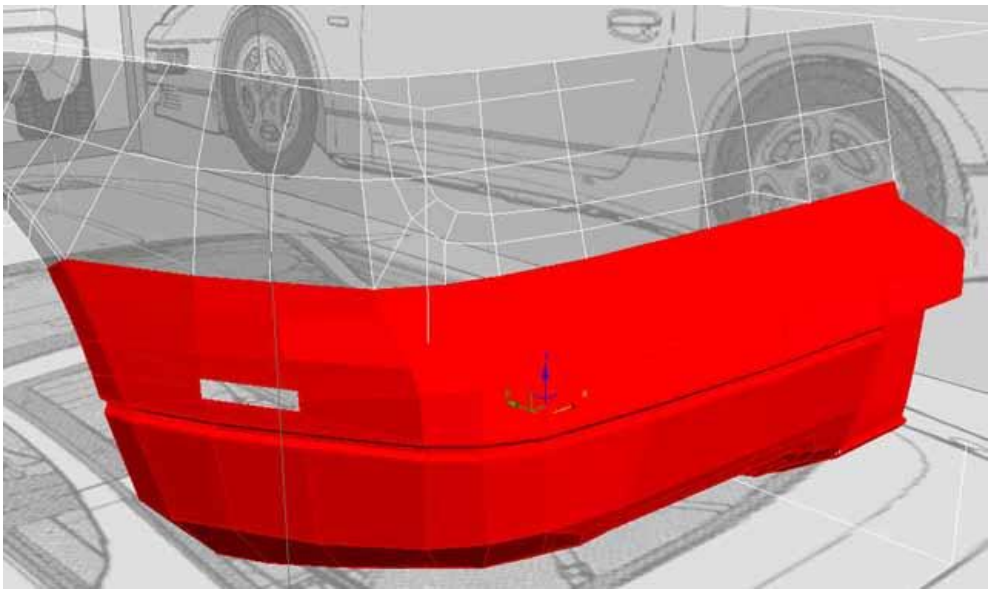
There's only the hole of the turning light left.



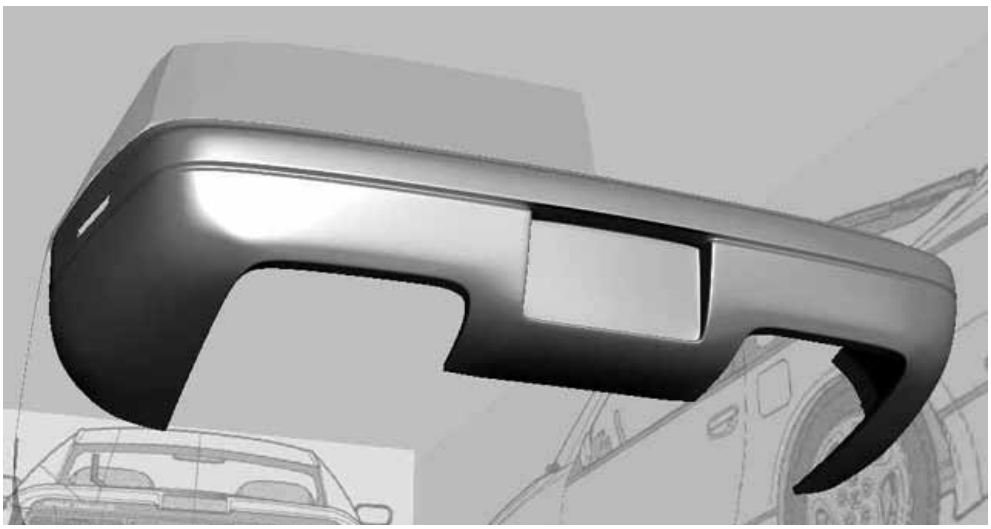
After cutting the outline of it, inset the polis with the same value as you extrude edges before adding solidify then delete them.



When ready, detach the bumper, make a copy for the other side, attach, weld center vertices and add solidify - as usual.

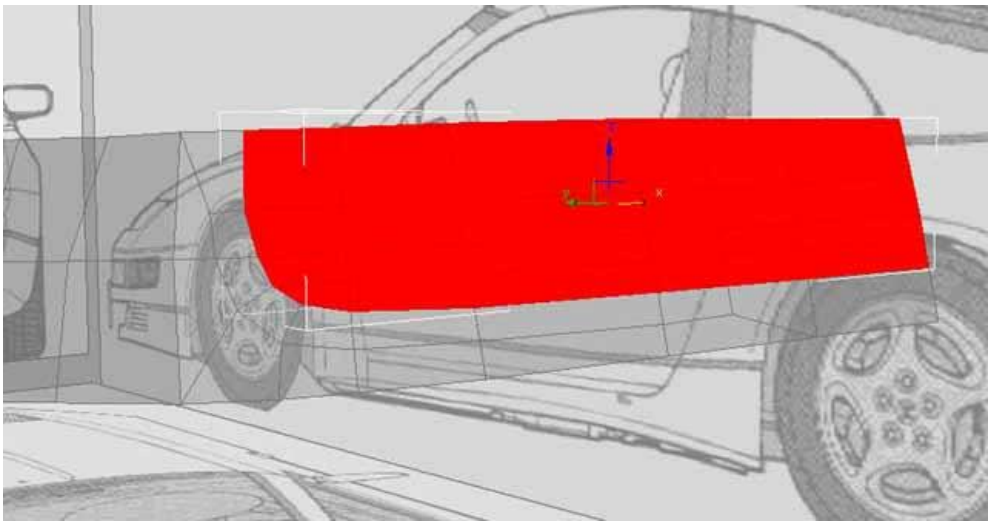


We've got another part ready.



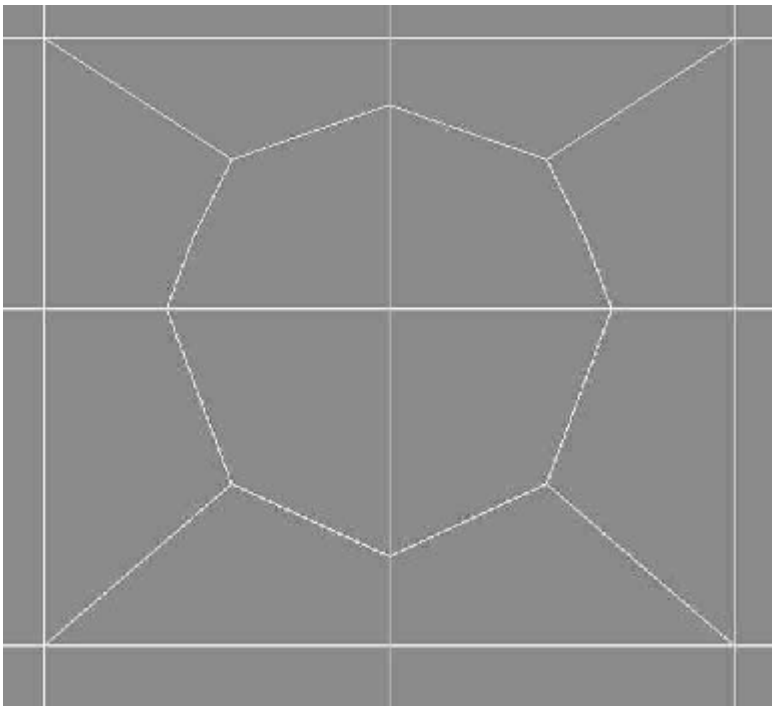
:: REMAINDER ::

First detach the part where the taillight will be.

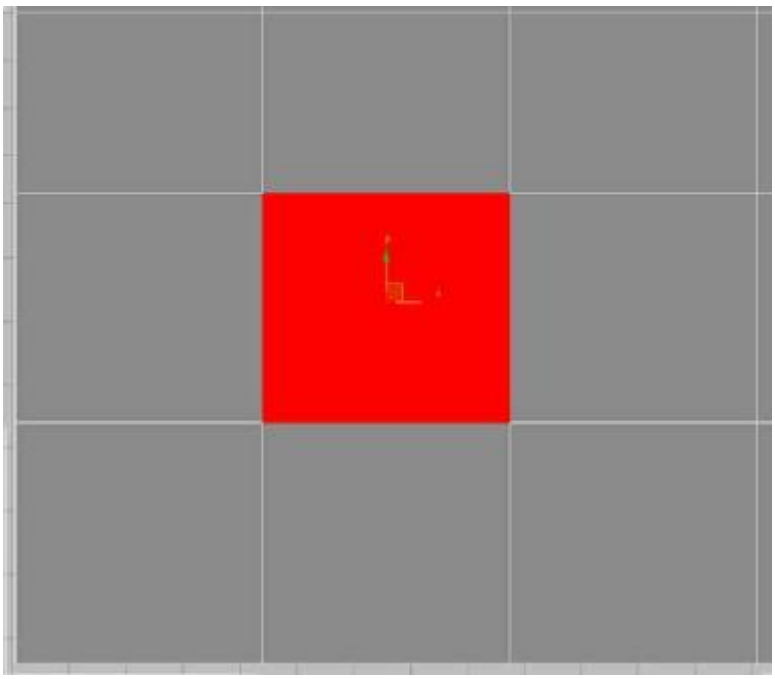


We don't need to add further details - we've already done it in the previous chapters. The only thing we need to make is the fuel cap. For this, make the extruding and mirroring steps first.

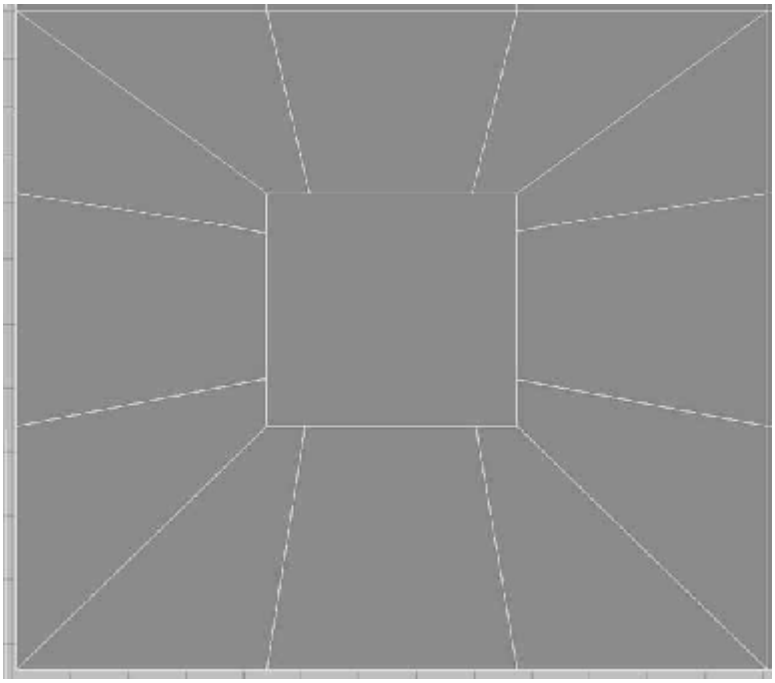
Before we move on, I think I have to make a little explanation on why I will do this the way I will.
So, if we want to make a round hole when using editable poly objects, we need crossing edge-loops. If we have them, it's easy to cut the hole and keep quadrangles everywhere. I mean something like this:



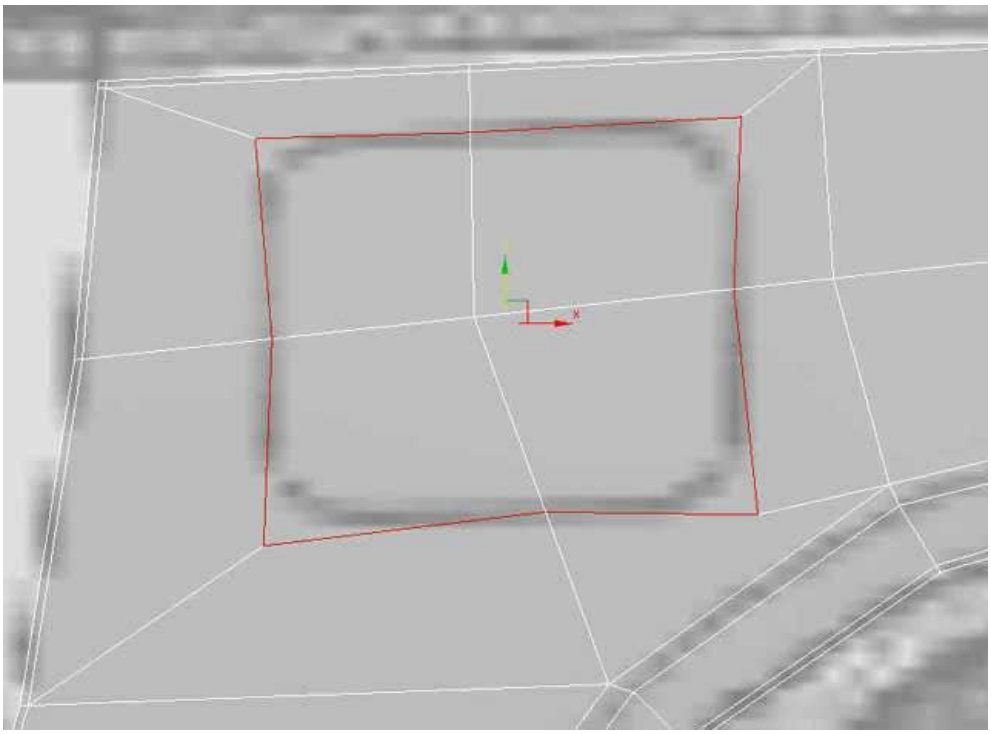
If we want to make an angular hole with rounded corners, we need to have the edges to fit the sides of our hole.

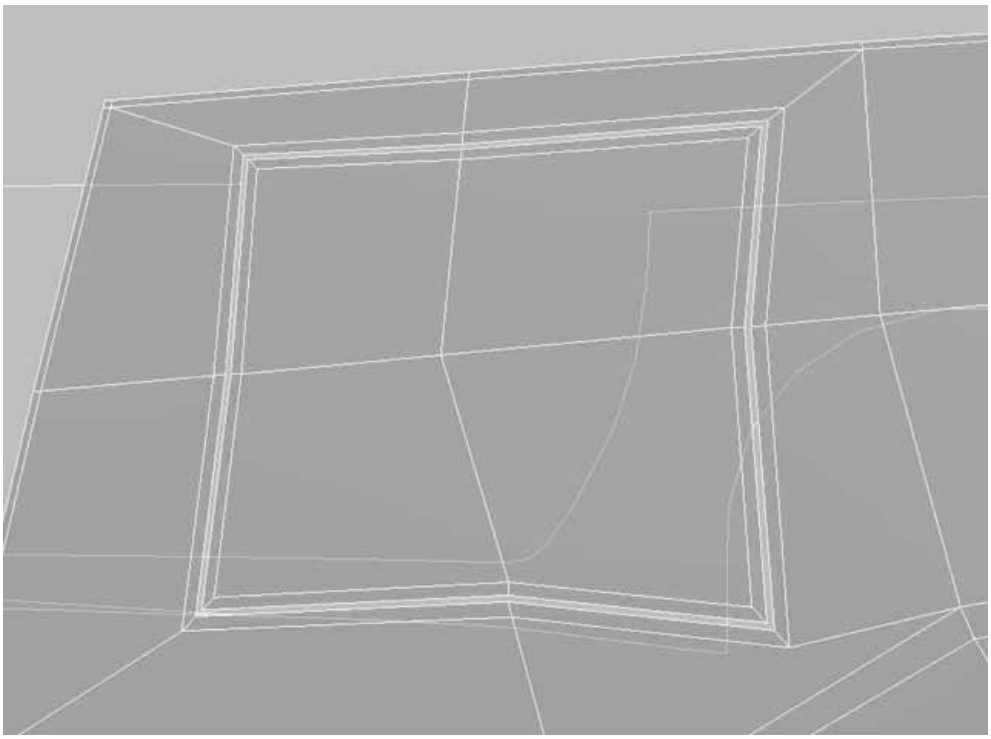


Then we can make the rounded corners easily using cut:

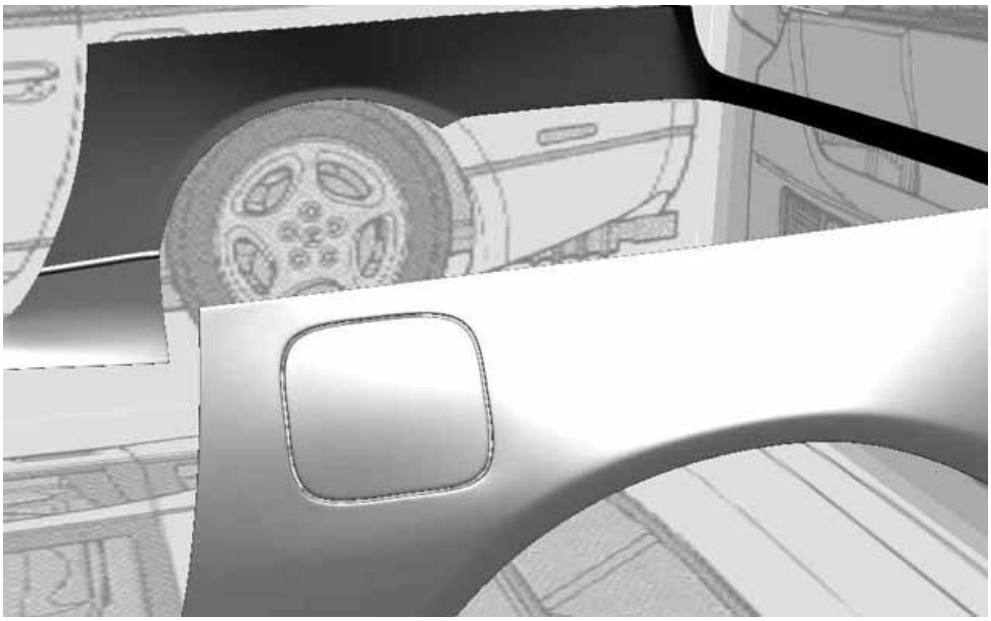


I wanted to explain these two things, because they are elegant and have clear, smooth result.
In the case of our car, I will use a "hybrid" method, because the hole we have to make is halfway between angular and round. It would be better if we use the second method at this hole, and of course you can make it like it, I just want to show a little trick.
At my model, I have crossing edges at the hole. I cut the outline that it don't fit the original outline on the blueprint, but will look like some "star" or something.





And the result is quite satisfying:

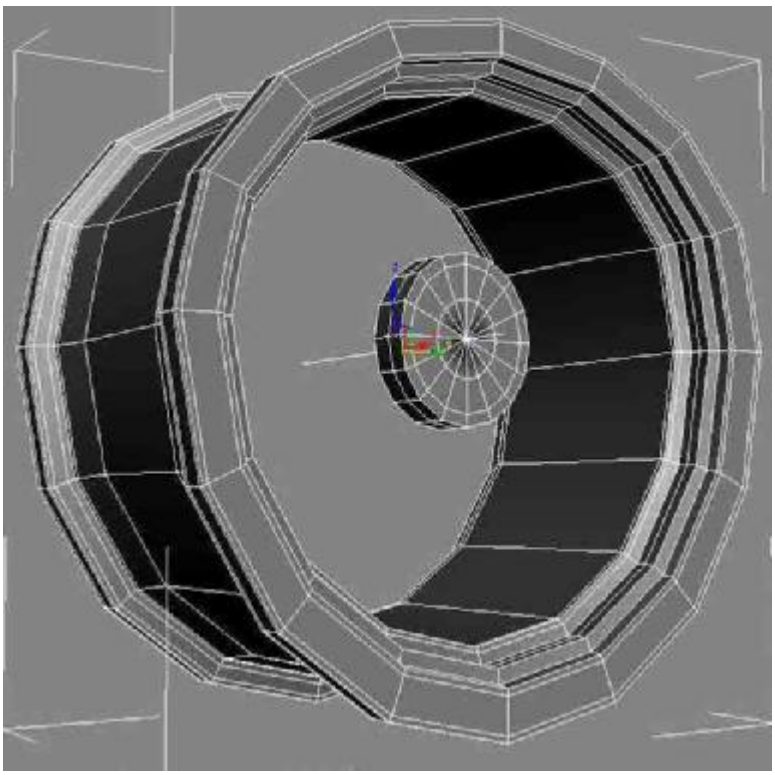


:: RIMS ::

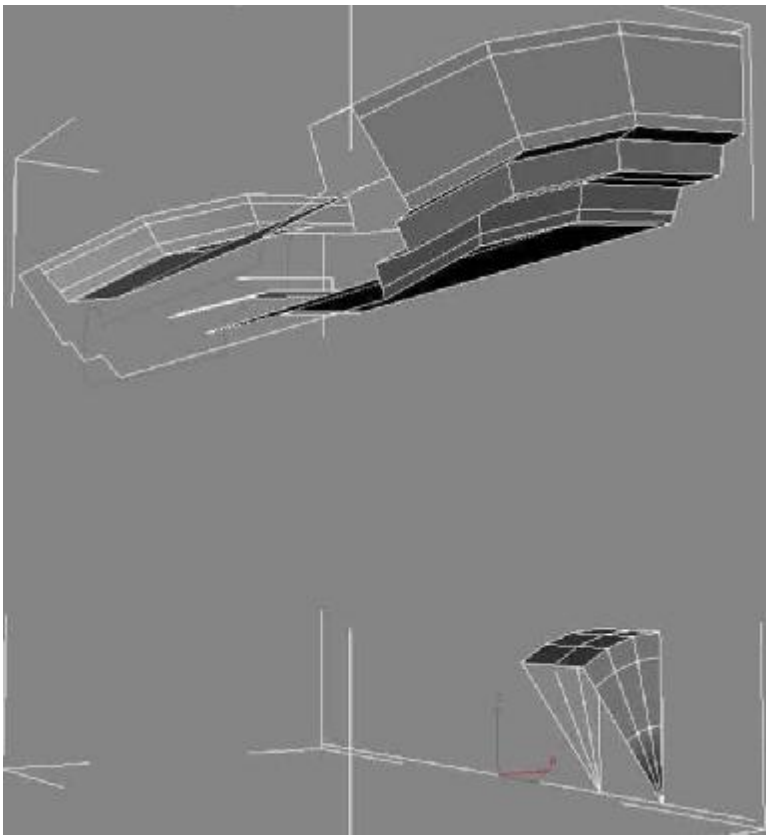
You probably saw already a lot of tutorials in this theme, so I will only show some basic steps.

I usually start it with making a cross-section for the outer and inner part. (It doesn't look exactly this way, sorry for that).

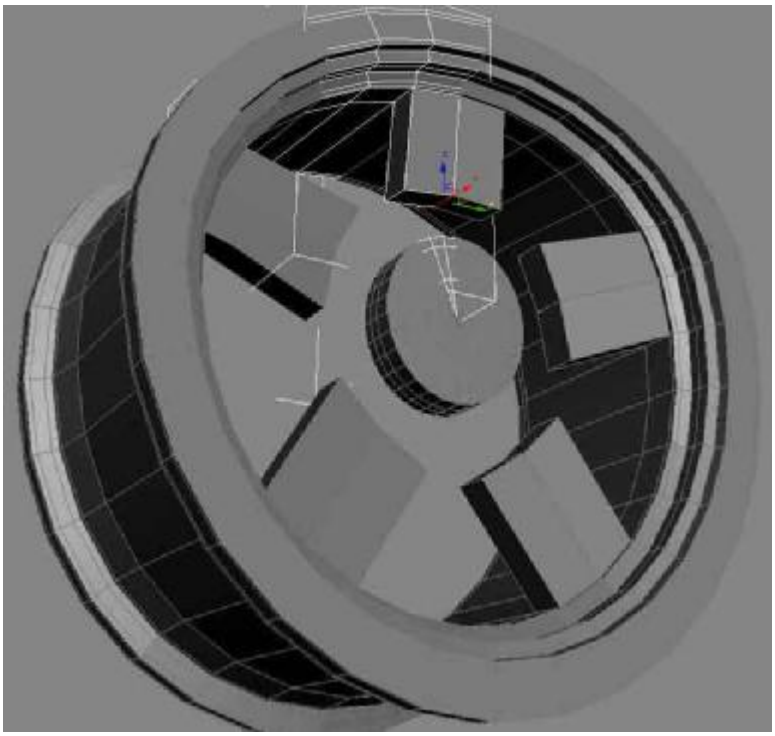
Then I add the lathe modifier.



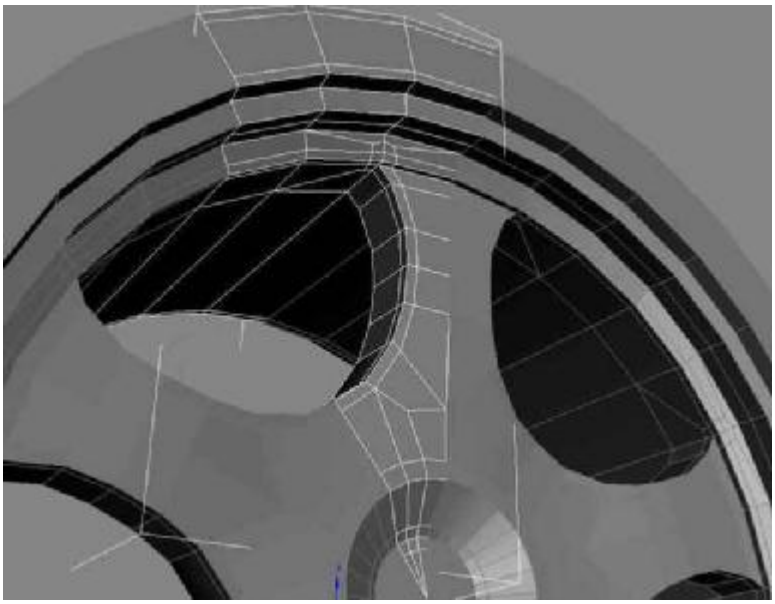
As we (usually) have a centre-symmetric model to make, we only have to work with one side of one single spoke. For example: if we have a 5-spoked rim, we only have to model 1/10 part of it. That will help us setting up lathe. We don't need the entire 360 degrees-object, only 36. The segmentation you add to the model is depending on the shape of the rim. 3 or 4 should be enough.



Now we make all the other pieces using the array tool, making instances all around.
As for the spokes: only extrude from the inner or outer sides.



If you have this, you only need to make the shape of your rim.

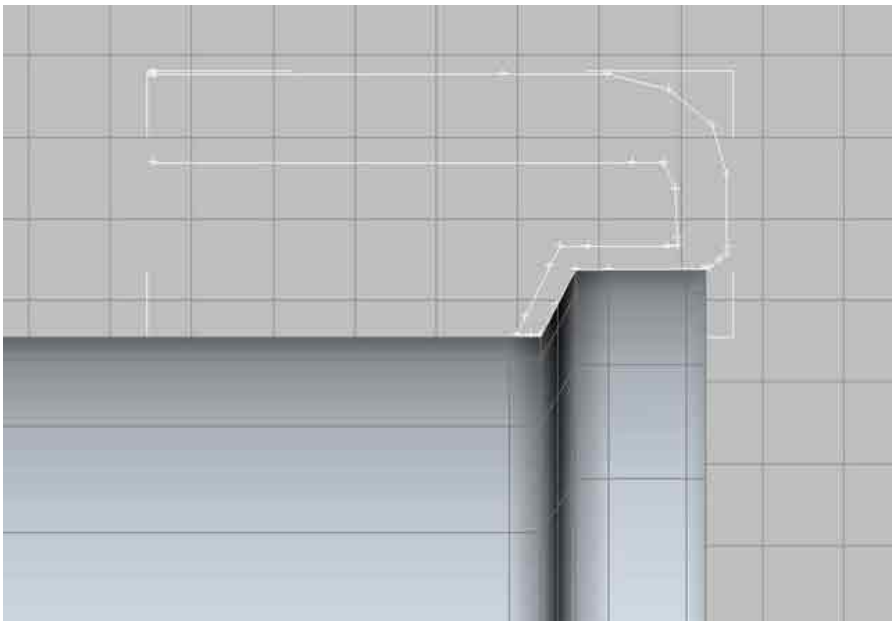


That's some basic shape, there is a lot more to do.
For references, see the official sites of momo, Enkei, OZ, MAG, ect or if you want, make something unique.

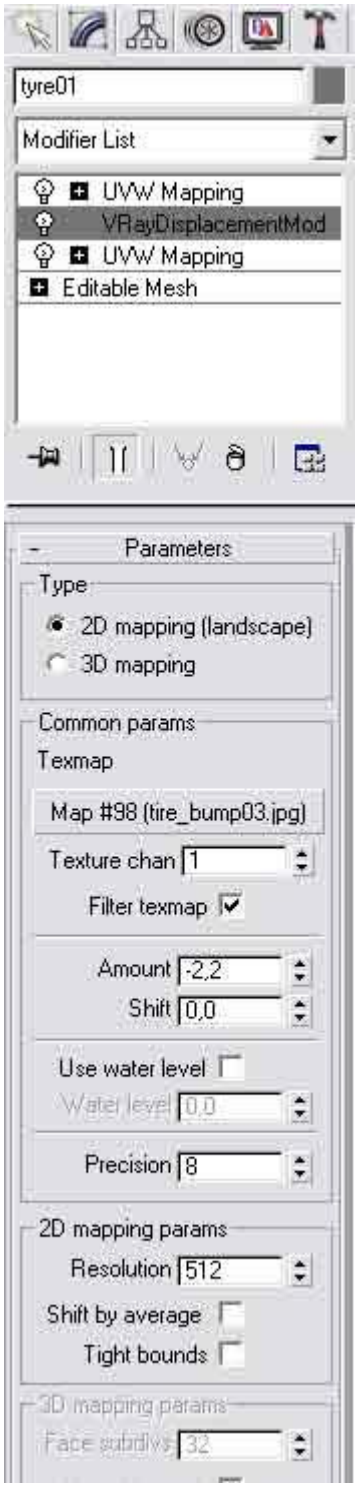
Here is mine:

:: TIRES ::

We will start this part the same way as we did with the rim. First, we draw a cross-section for the tyre.



Then we add the lathe modifier. I tried making the ribbing (I'm not sure this is the correct word) with a V-Ray feature called MTD. I don't know much about this; it's some kind of displacement. But I can say that it worked very well.
We won't model the ribbing, so set the angle of the lathe modifier to 360 degrees. After this, I transformed the object to poly, and added subdivision with 1 iteration. If you drew the cross-section using Bezier vertices, you don't need this step, but you have to set the iteration of the lathe modifier to a higher value. The main thing is to get a tyre with a dense-enough mesh.
Now we need to make a texture for the ribbing. For references, see some manufacturer's sites (Yokohama, michelin, Goodyear, pirelli, bf Goodrich, etc.). If ready, add the texture to a cylindrical map.



We won't need the texture on the material, it's only for help setting up the UVW map. If setup is ready, remove the map from the material. Now add the "VRayDisplacementMod" from the modifier list. You have to add here which texture you want to use and on which map channel is it. Play a little with the amount property to get an ideal deep for the ribbing.

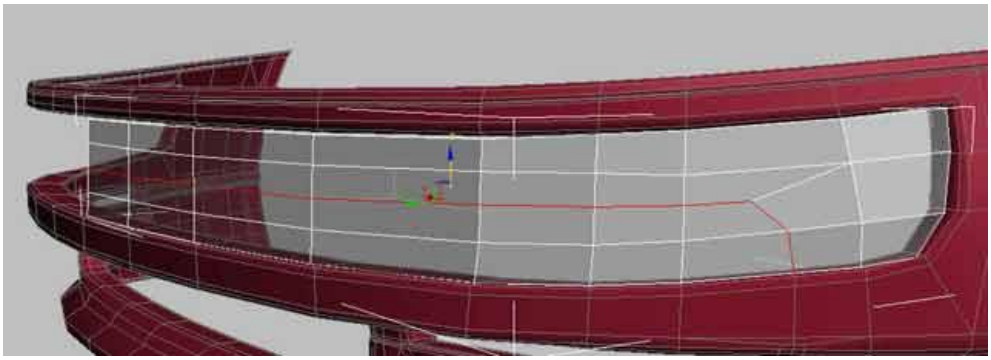
I got something like this:

We only need to make a texture for the side of the tyre. That can't cause any problems. I tried to make this using MTD as well, but it made some strange mistakes so it's a simple bump map on my tyre:

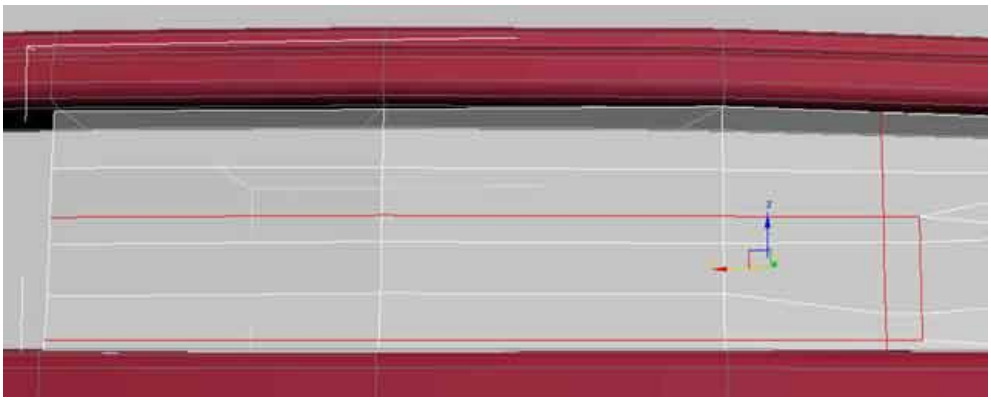
Render will be slower but we spared a whole lot polygons.

:: LIGHTS ::

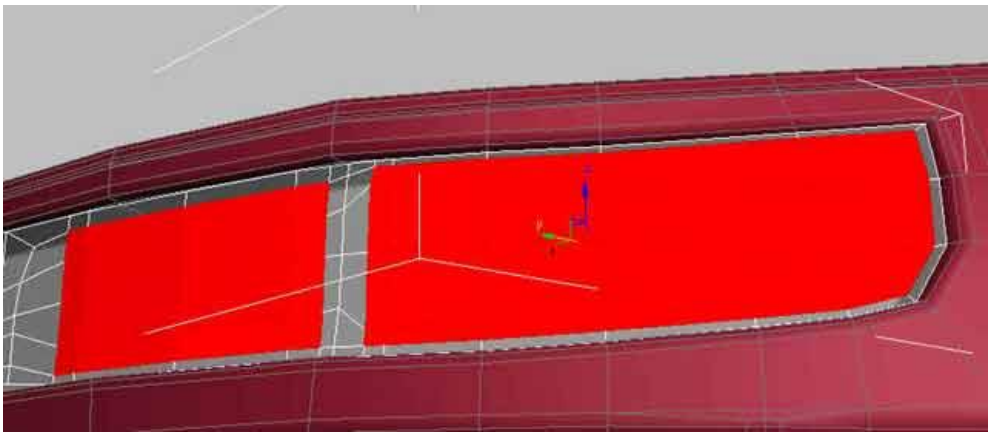
Let's start with the lights and accessories on the front bumper. First of all, I took the detached part and add a new edge-loop to keep the main segmentation.



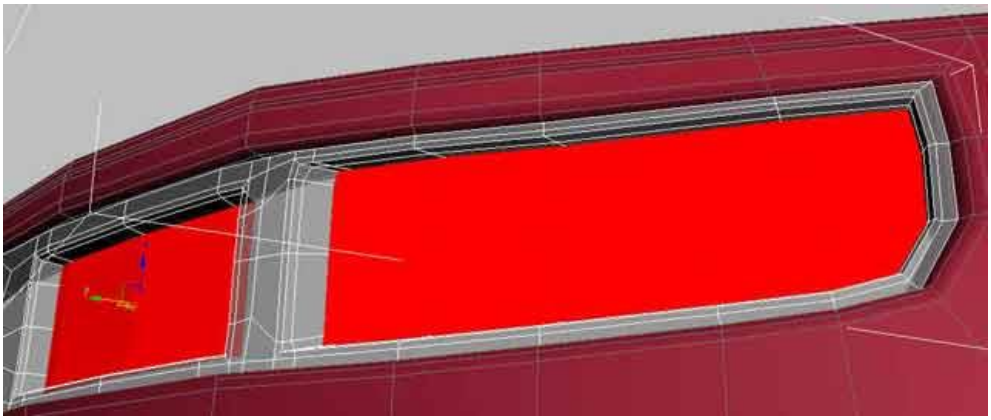
After this we need to cut the center holes outline.



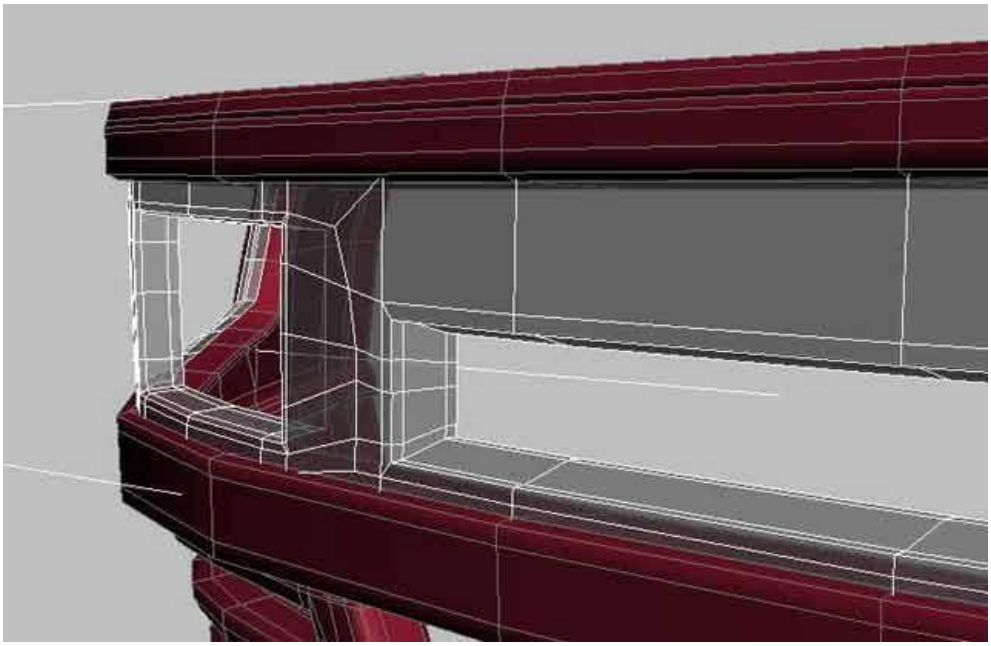
Outlines for the two lights here:



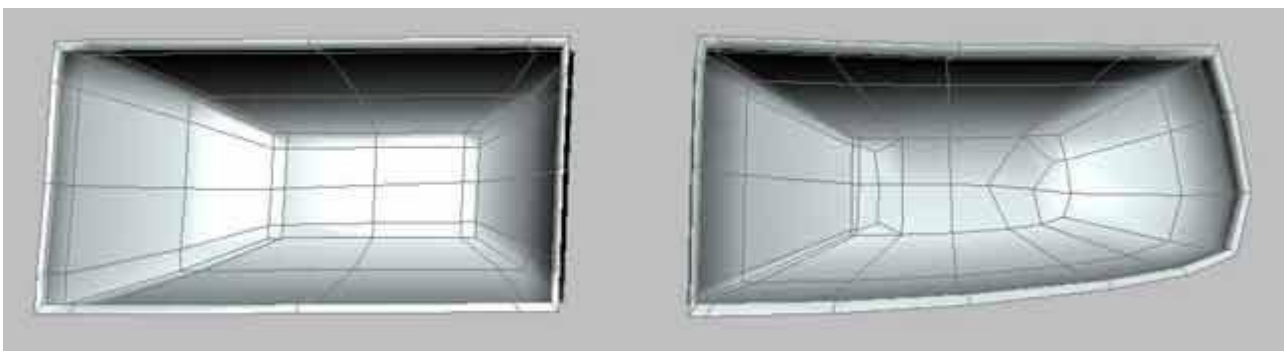
After detaching the main polis and extruded outer edges to make them round:



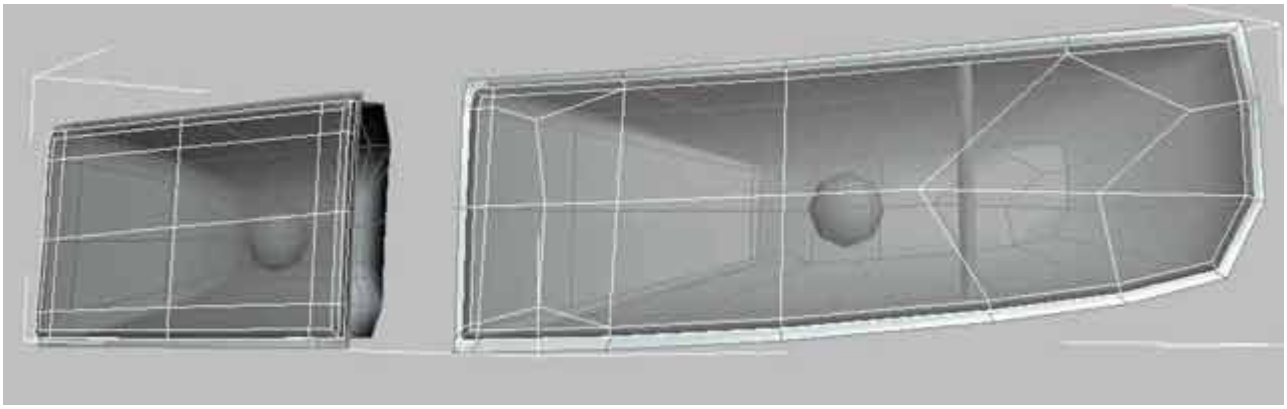
Do the same with the hole and delete the unnecessary polis.

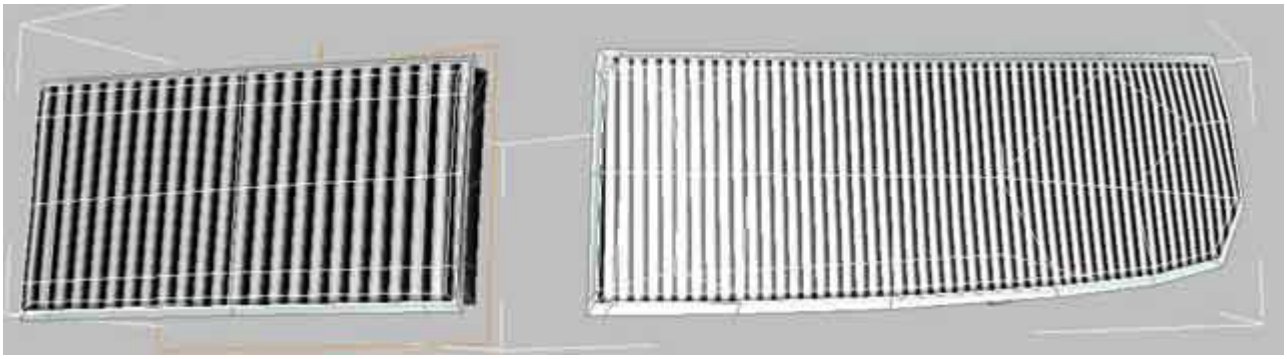


Then make the inner part of the lights.

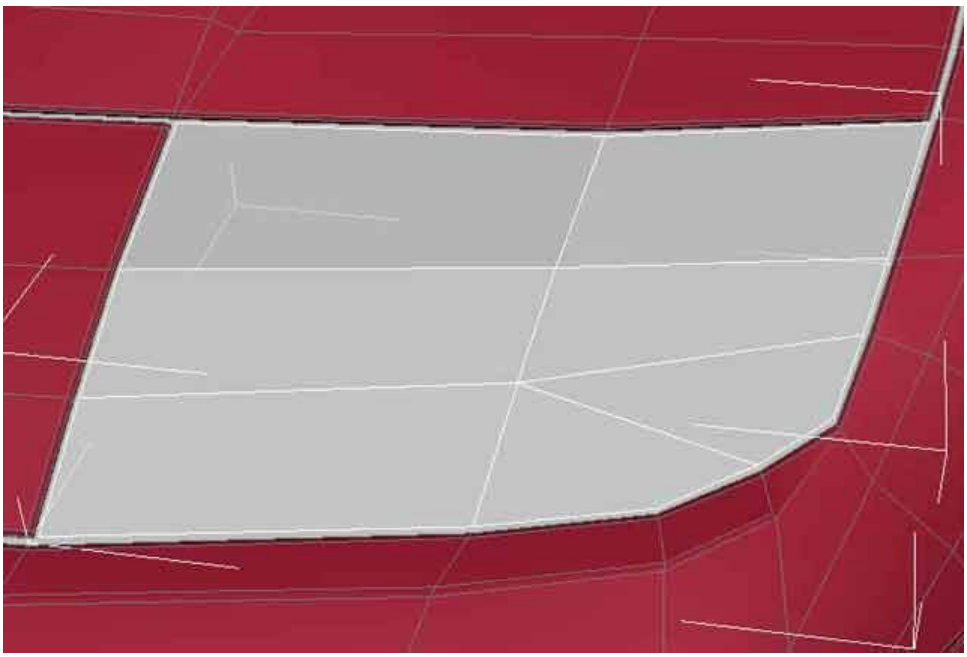


Make the glass-parts as well and add UVW map modifier and a glass material with bump map.

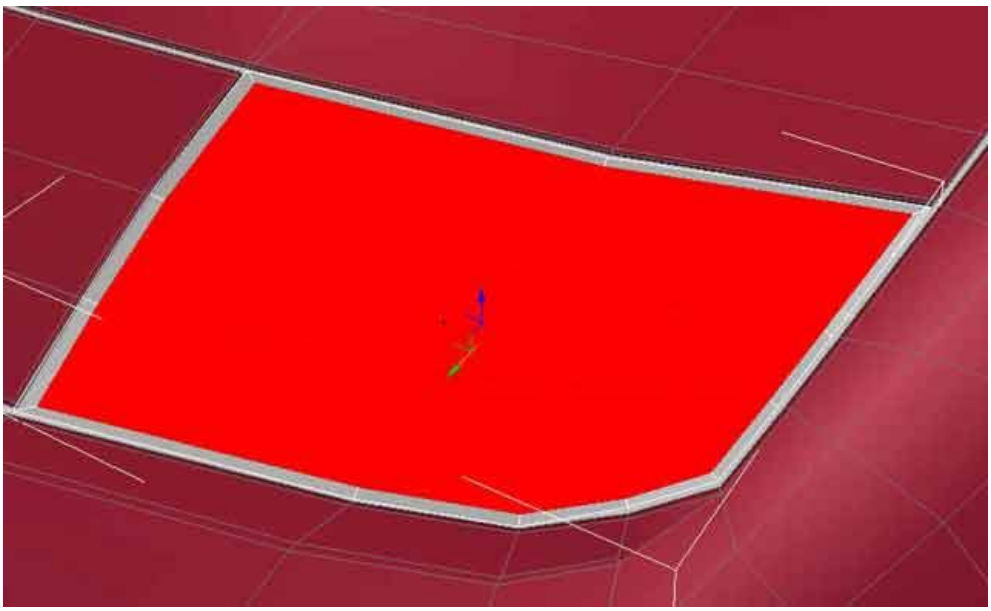




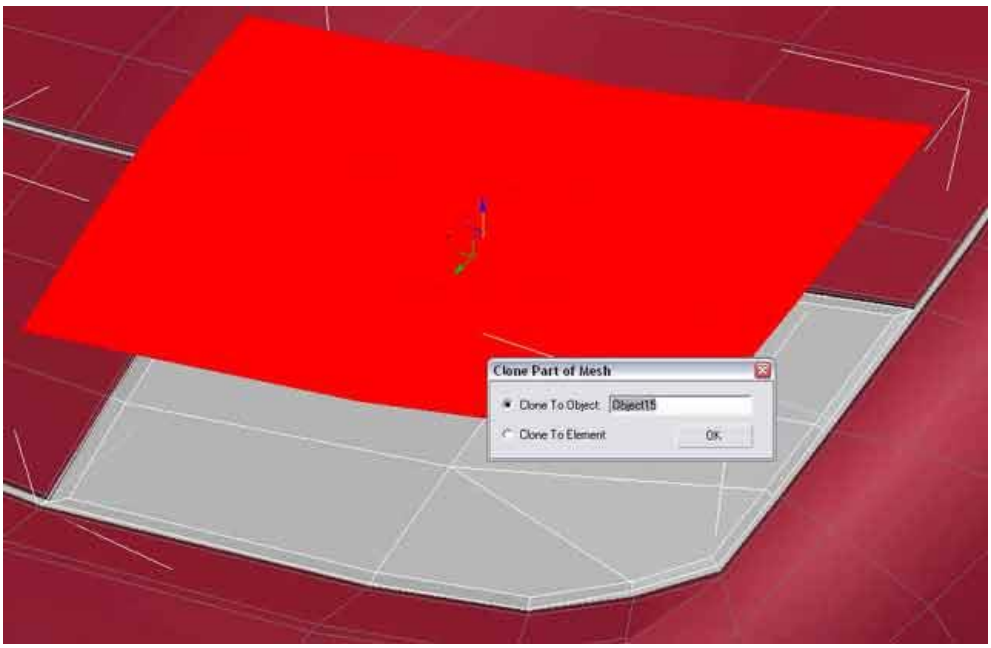
Now comes the headlight.



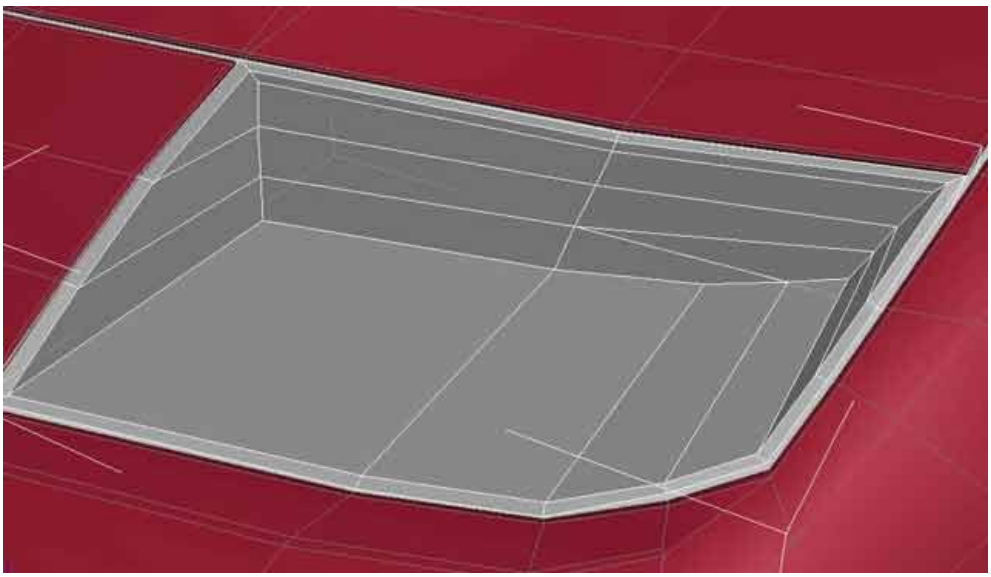
To make the inner frame-part, first inset the polis.

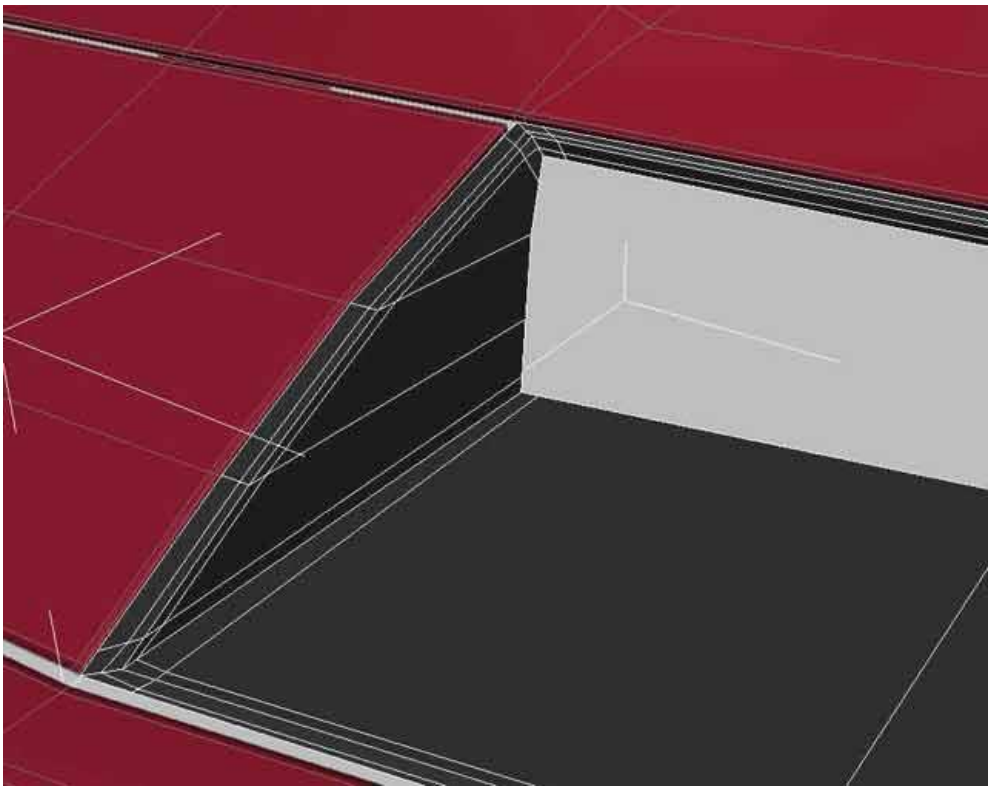


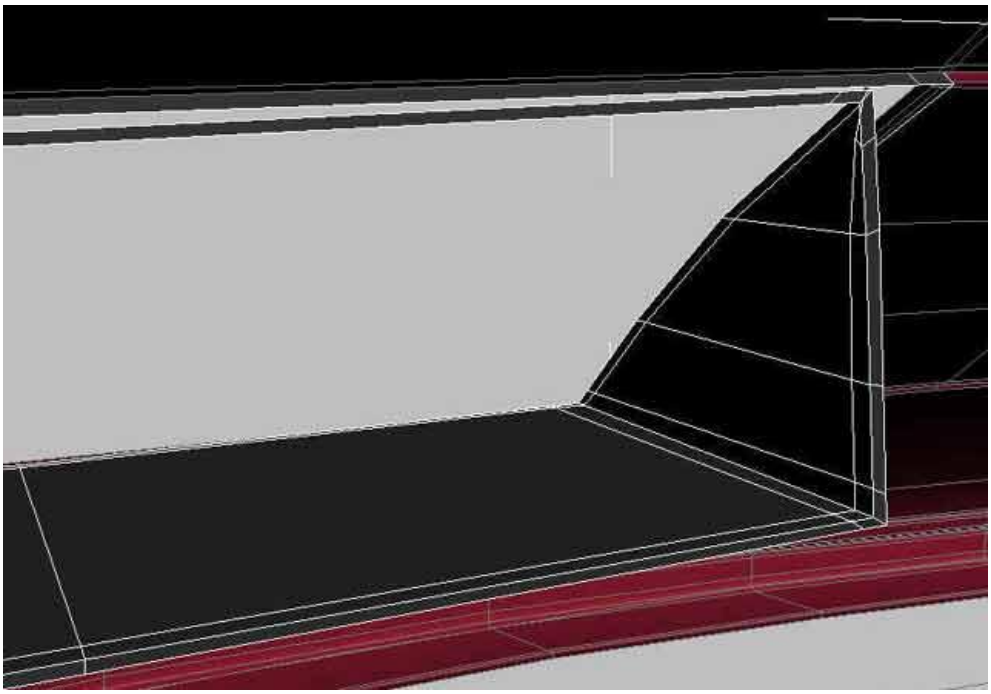
Make a copy from these polis, we will need them at the glass-part.



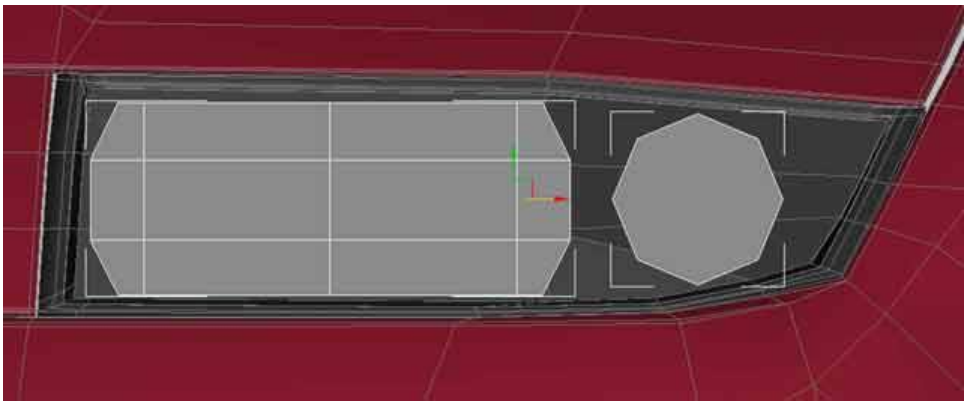
Add the shape of the frame.



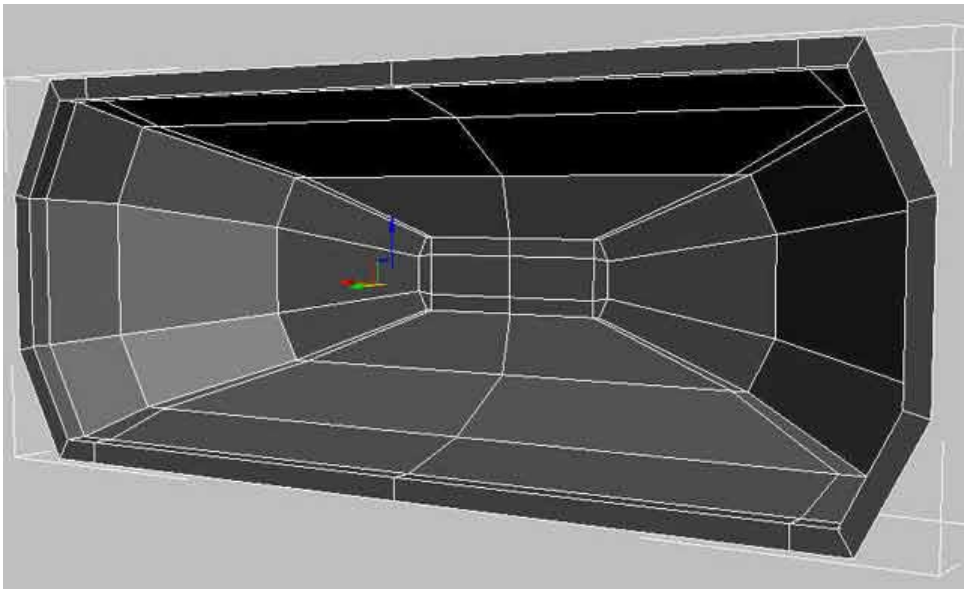


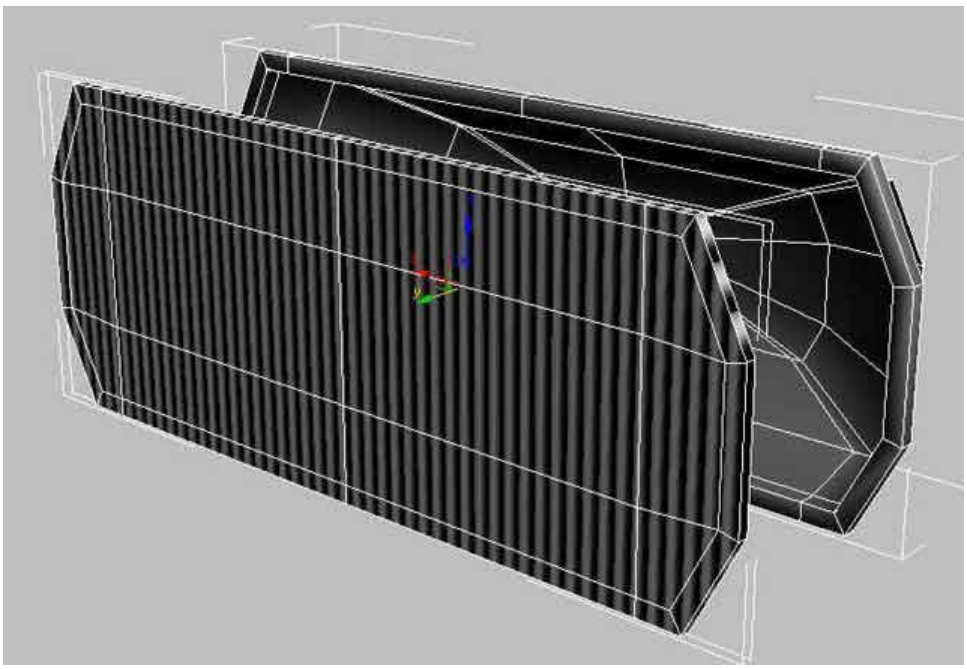


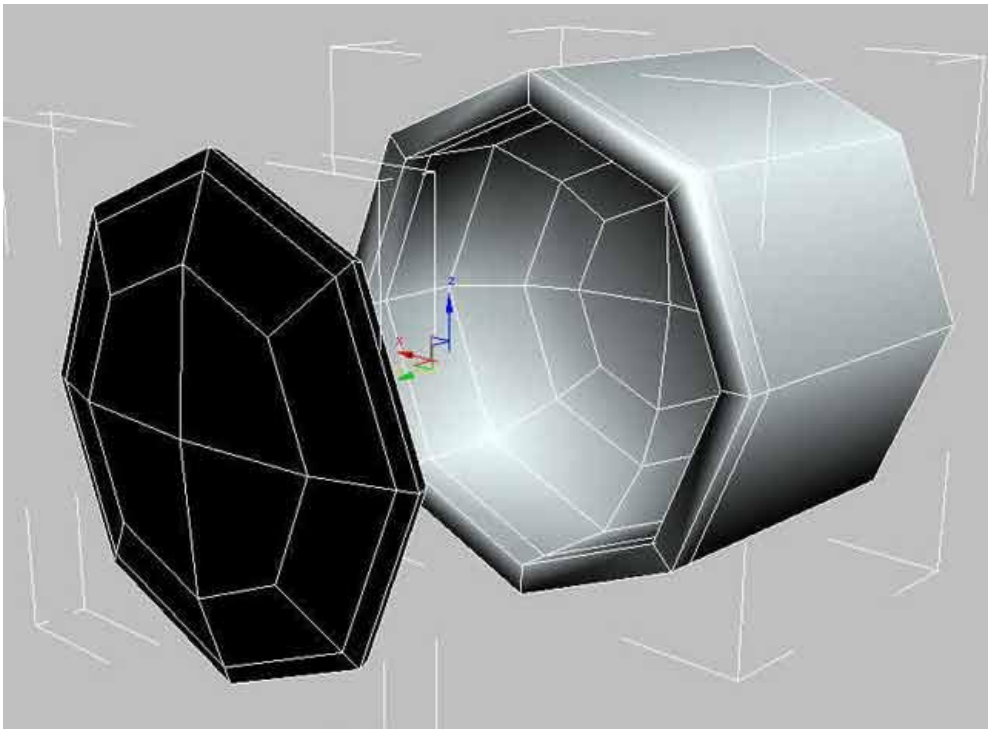
If it's ready, we need two light-parts, a rectangular and a cylindrical one.

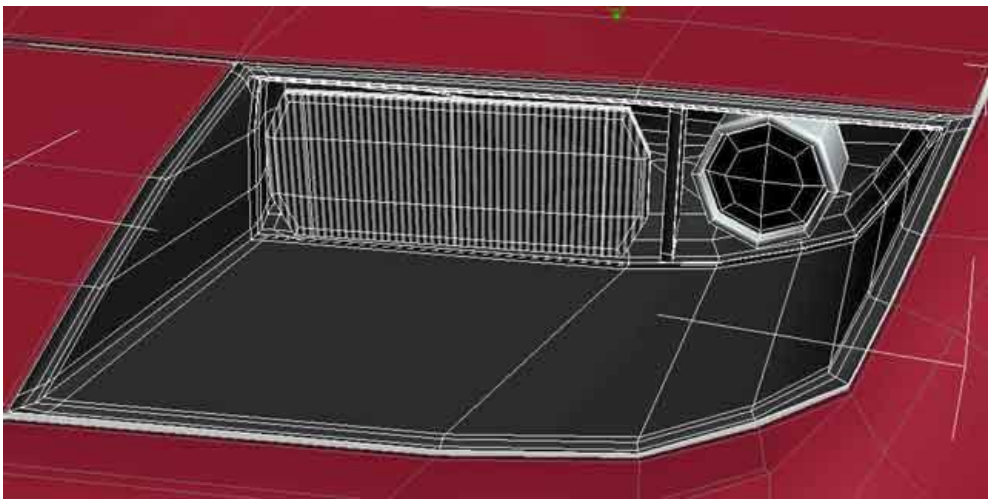


Make their shape and move them to their place.

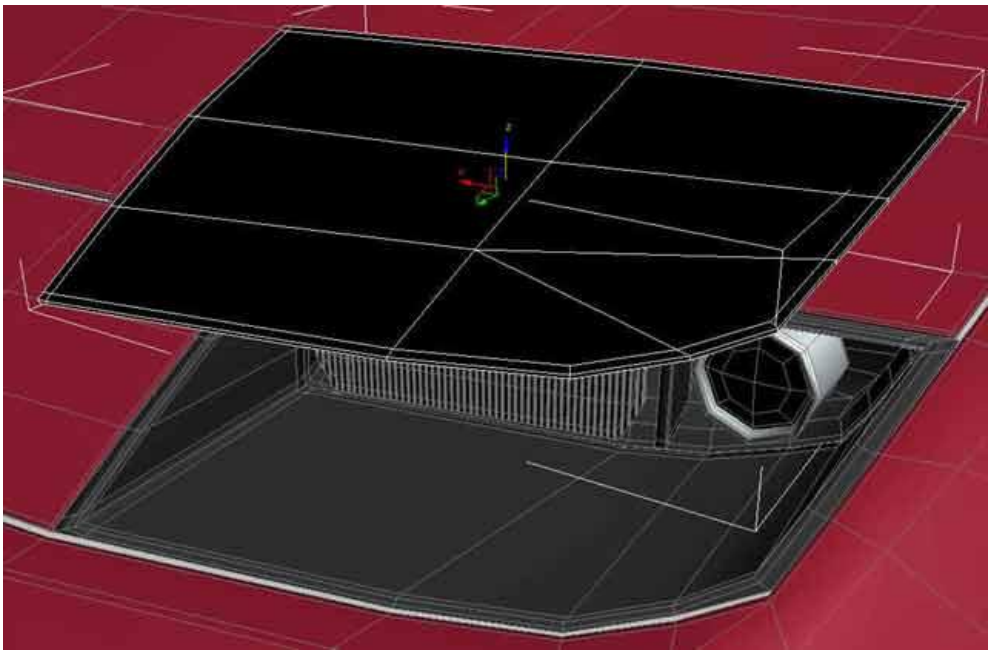




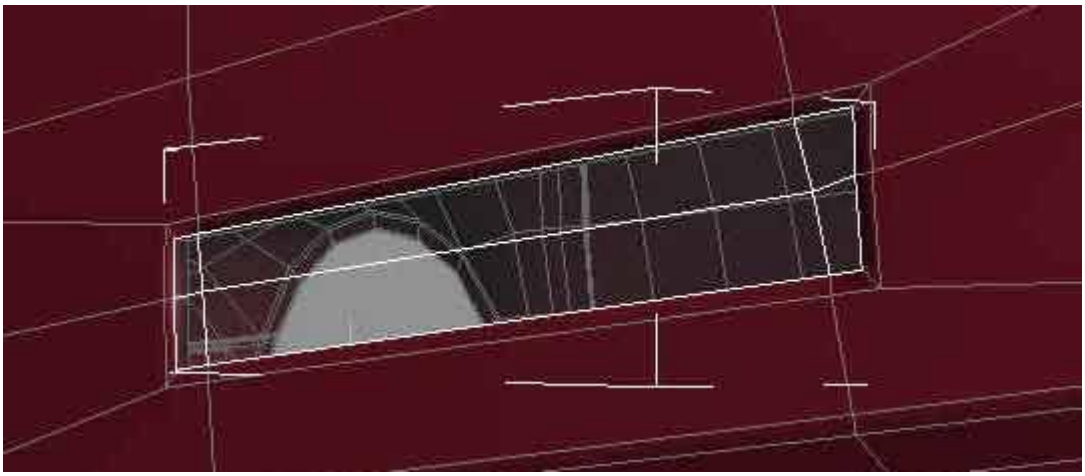


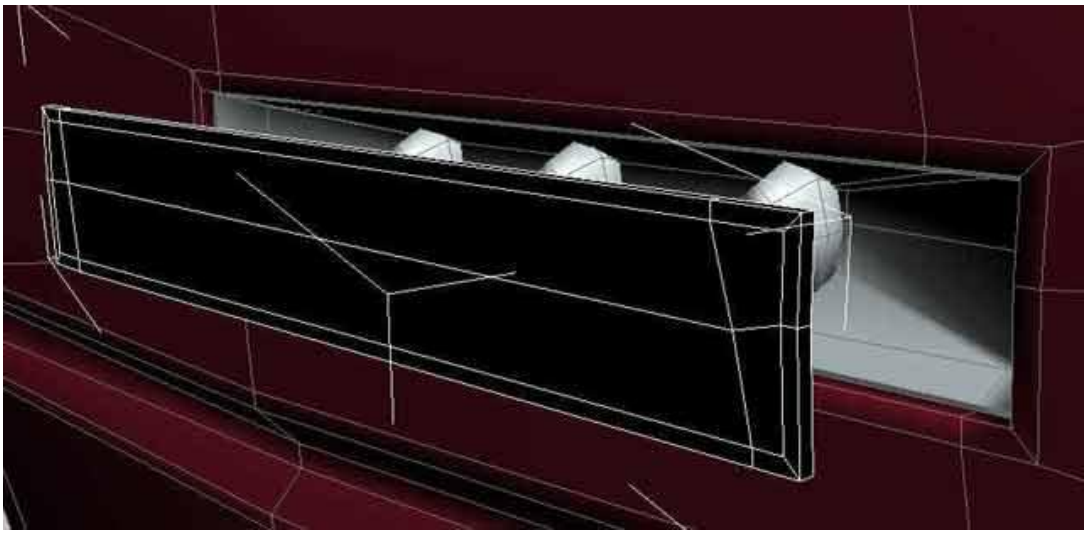


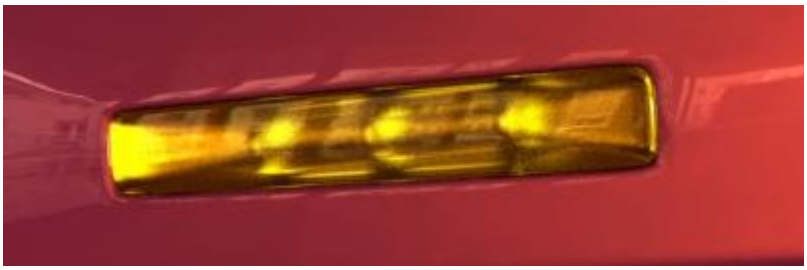
Finally, make the lampshade (?).



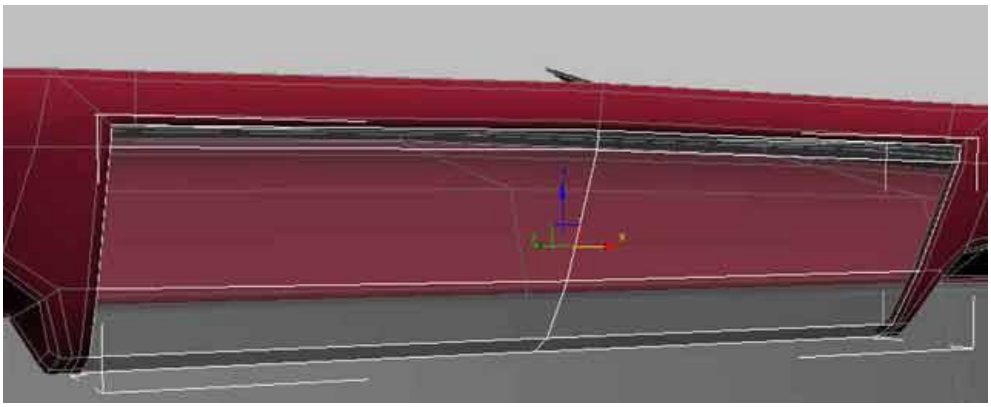
Next is the indicator on the rear bumper. The way is similar: make the inner part with some other objects for better result and make the glass-part.

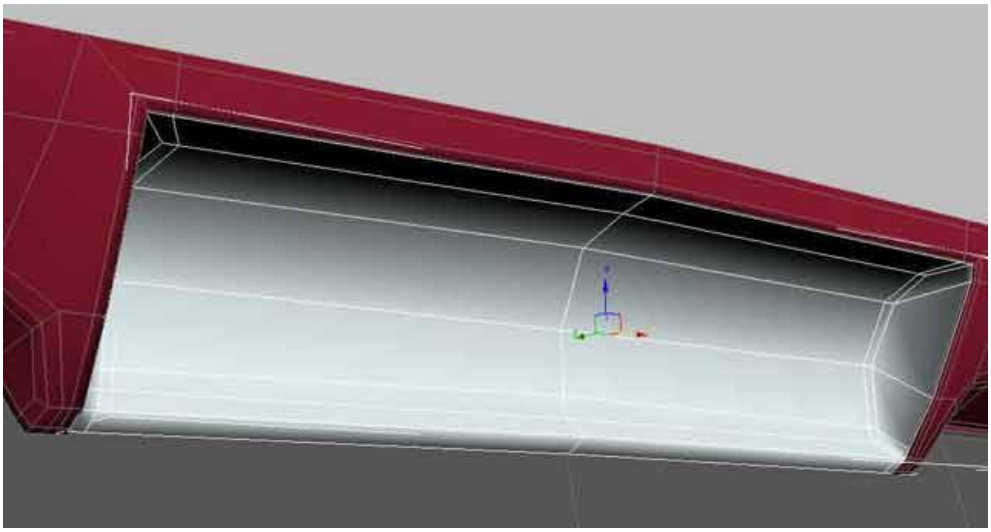


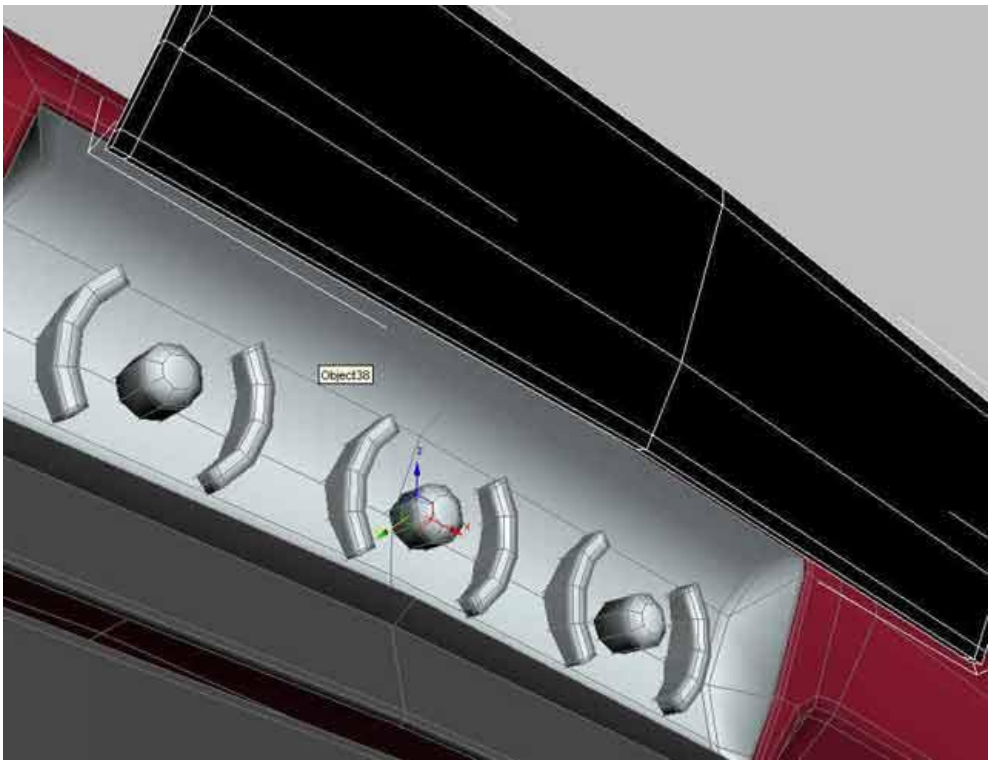




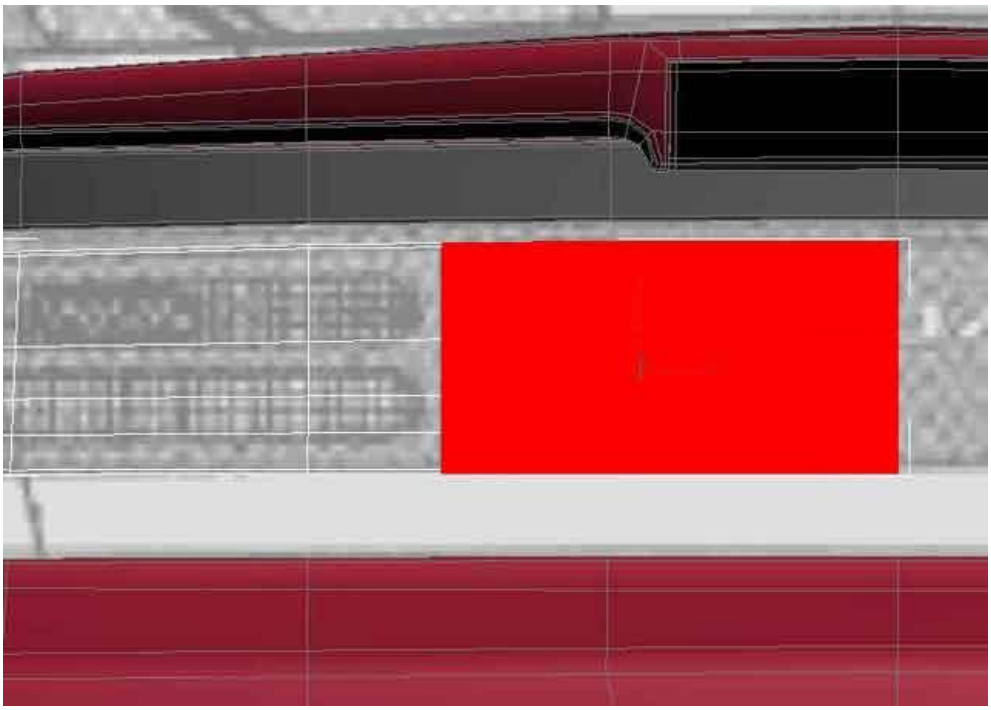
The center brake-light on the wing:



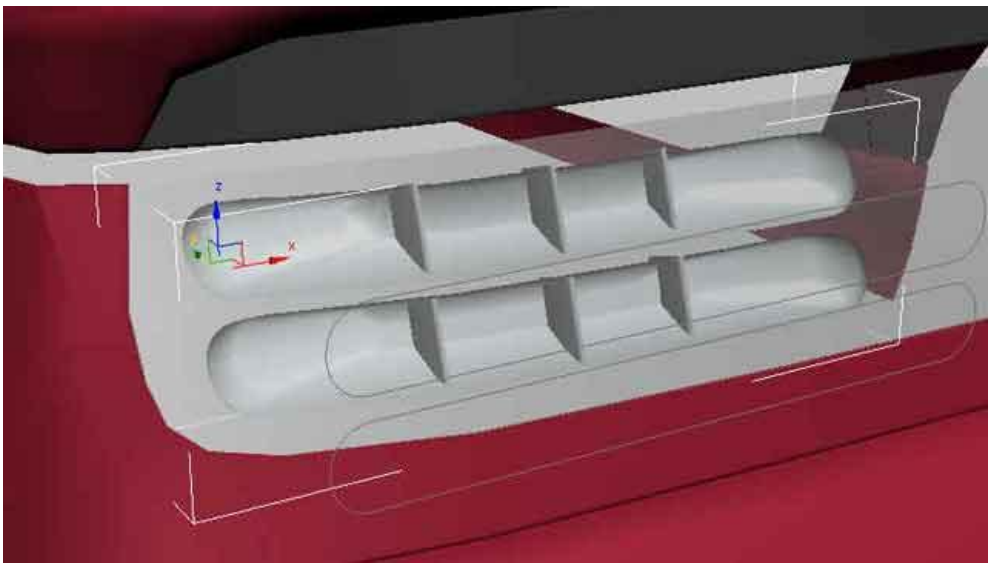




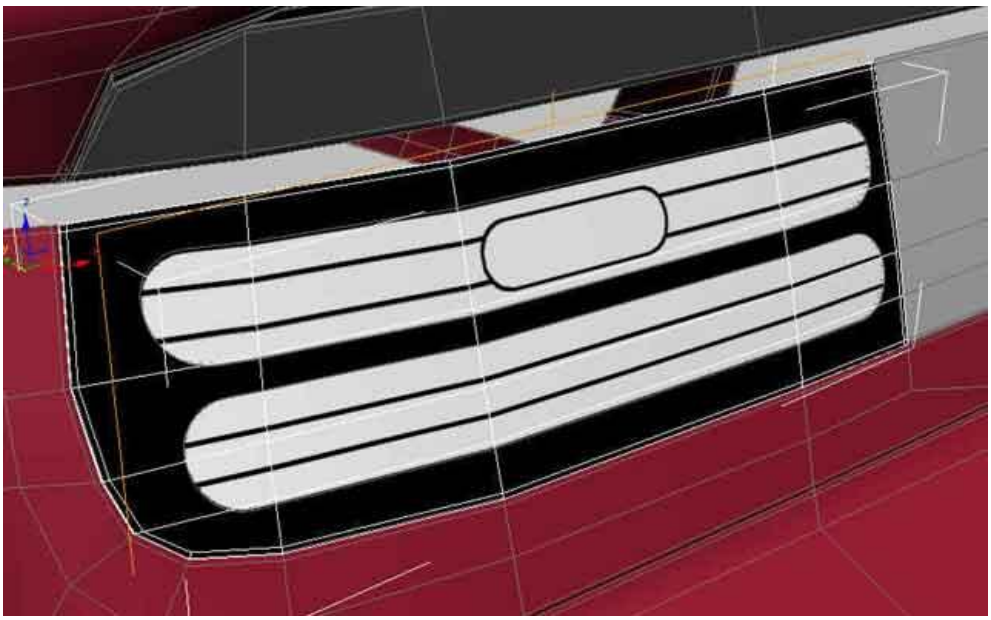
And finally, the taillight. If you look at the taillight you can see that it's three big glasses. The light-parts aren't cutted in them, it's simply painted black where there are no light. I'm going to make this using blend materials.
First detach the middle part from the side.



Then make the inner part.

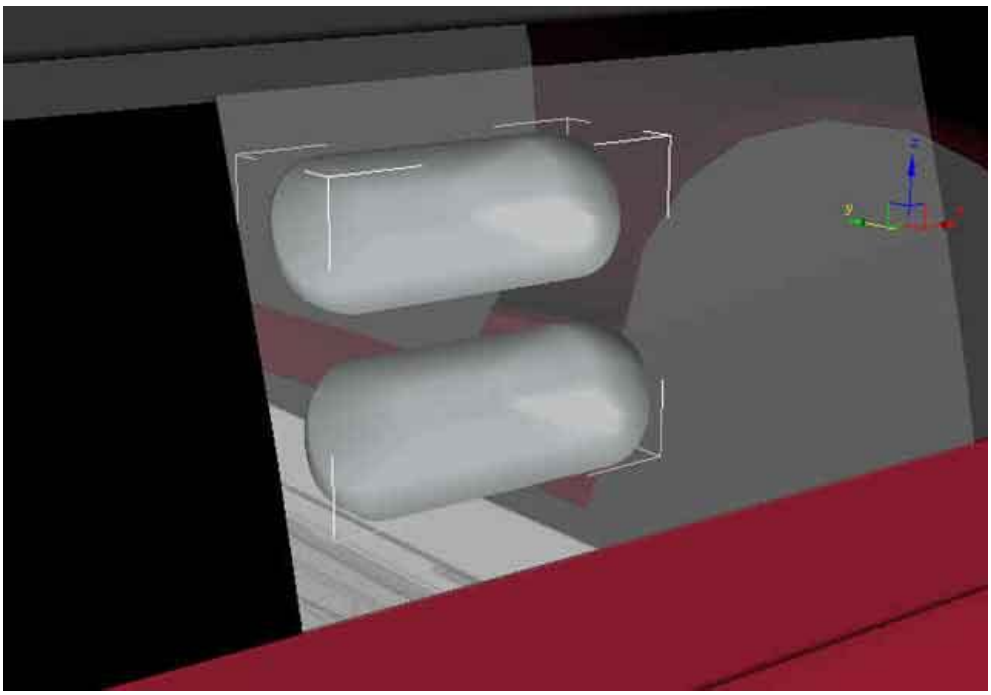


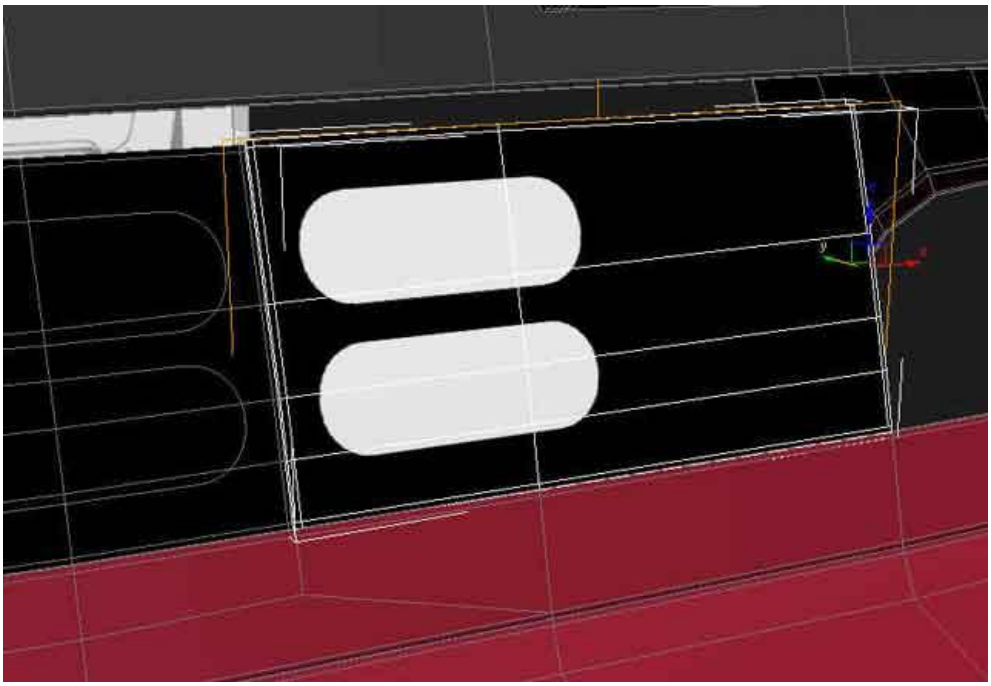
I made an alpha-map for the blend material, looks something like this:



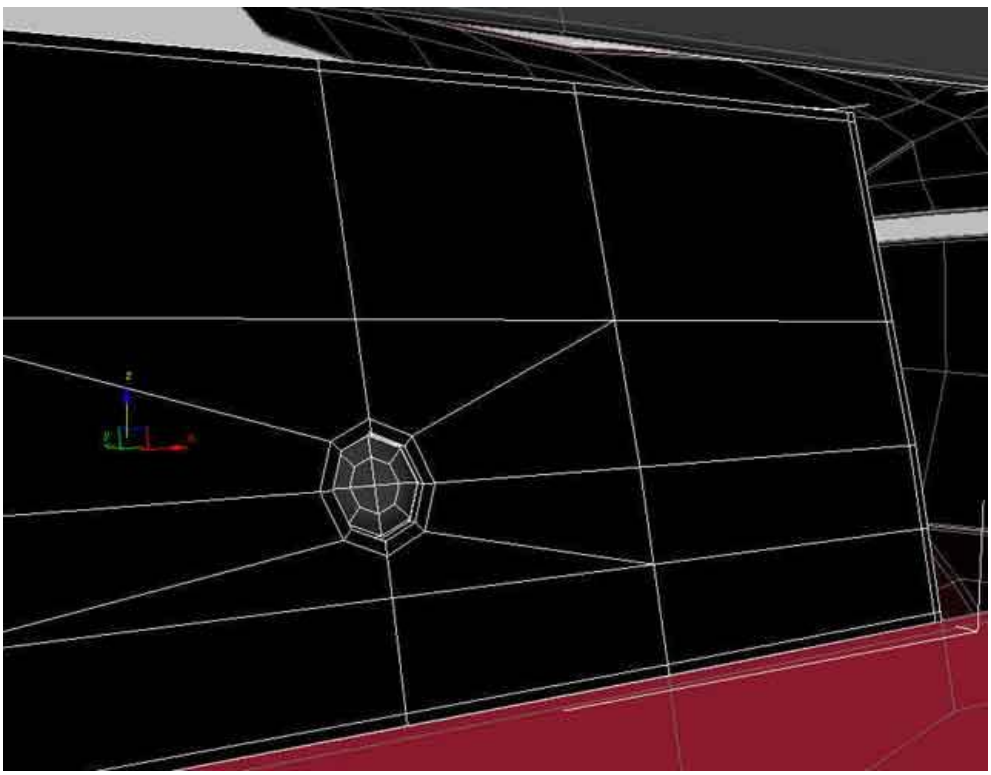
Set up the texture maps then make the blend material.
The mask is the texture I've just shown. The upper material is a black glass-like one, the only difference to a glass is that I left the refraction at the default black "value". The other material is a real glass, with a texture on the refraction map to paint our light's upper part red.

If you are ready, do the same with the inner part.





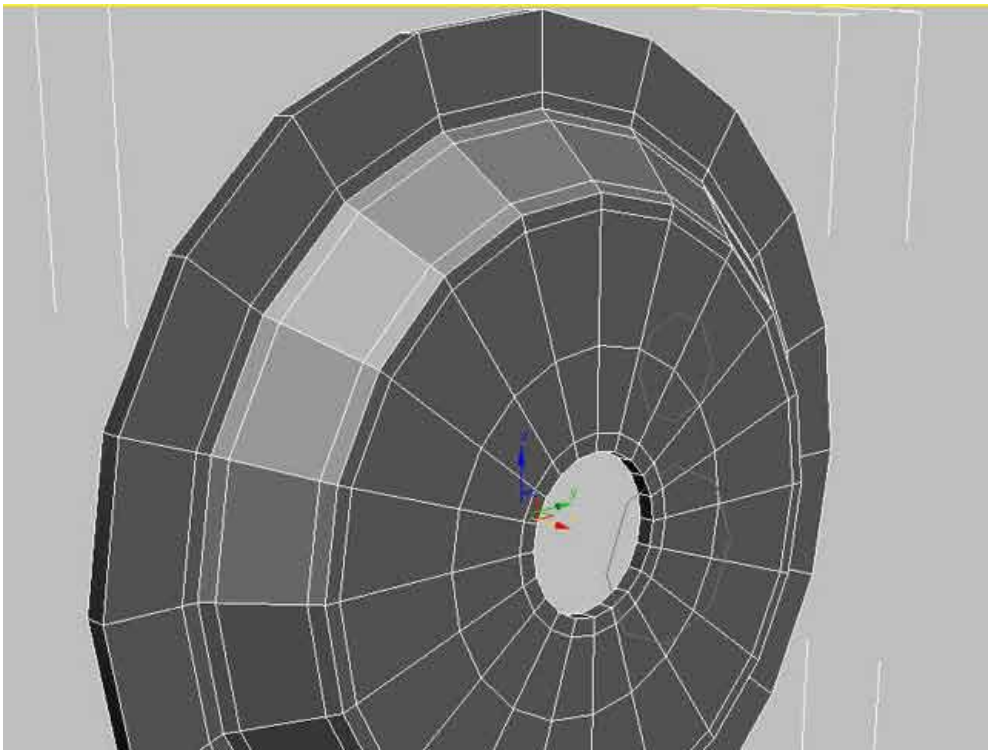
We don't need the other texture this time, but we need to make our blend materials upper slot to an other blend material, because of the "300ZX" text on the middle part. Here comes the black material for the upper and an other dark-red to the lower slot. Don't forget to model the hole for the trunk's opener.



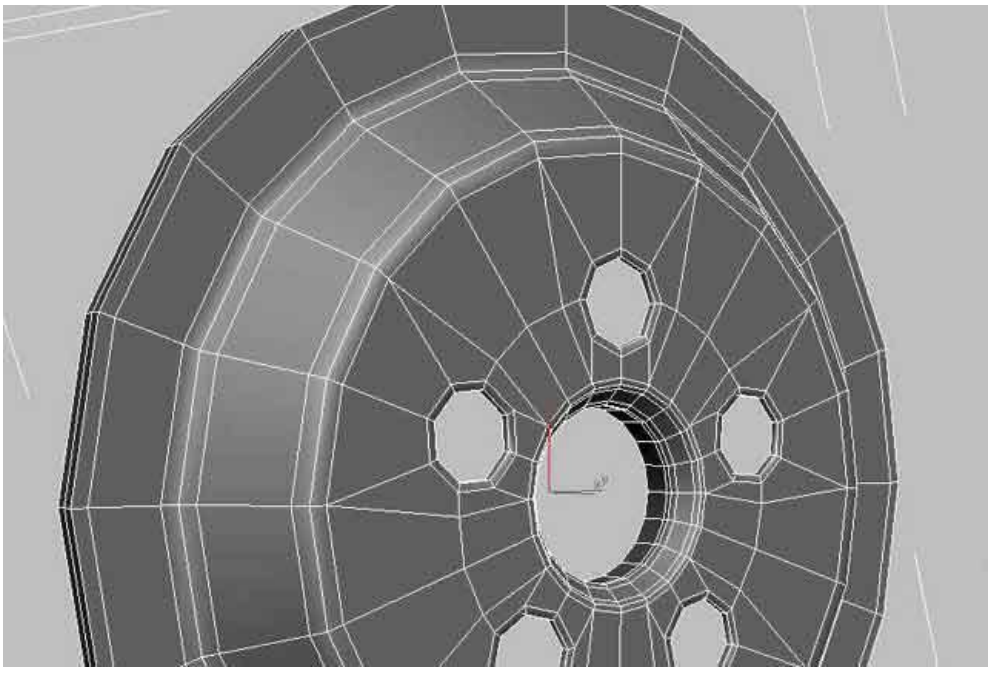
And the result:

:: BRAKES ::

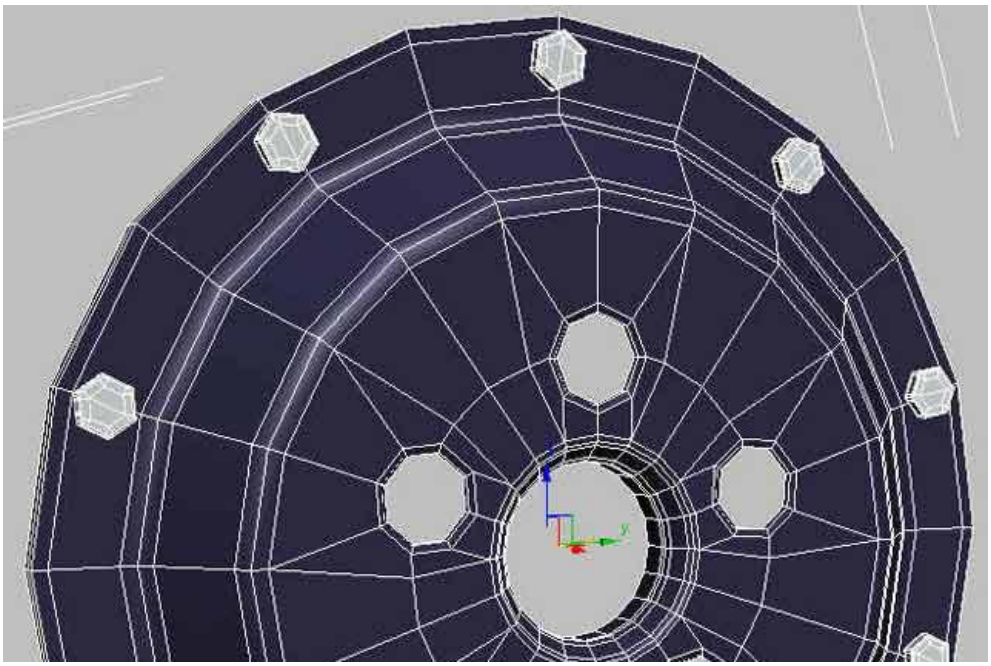
I'm gonna start with the middle part of the brake disc that connects it to the rim.
First I add some basic shape:



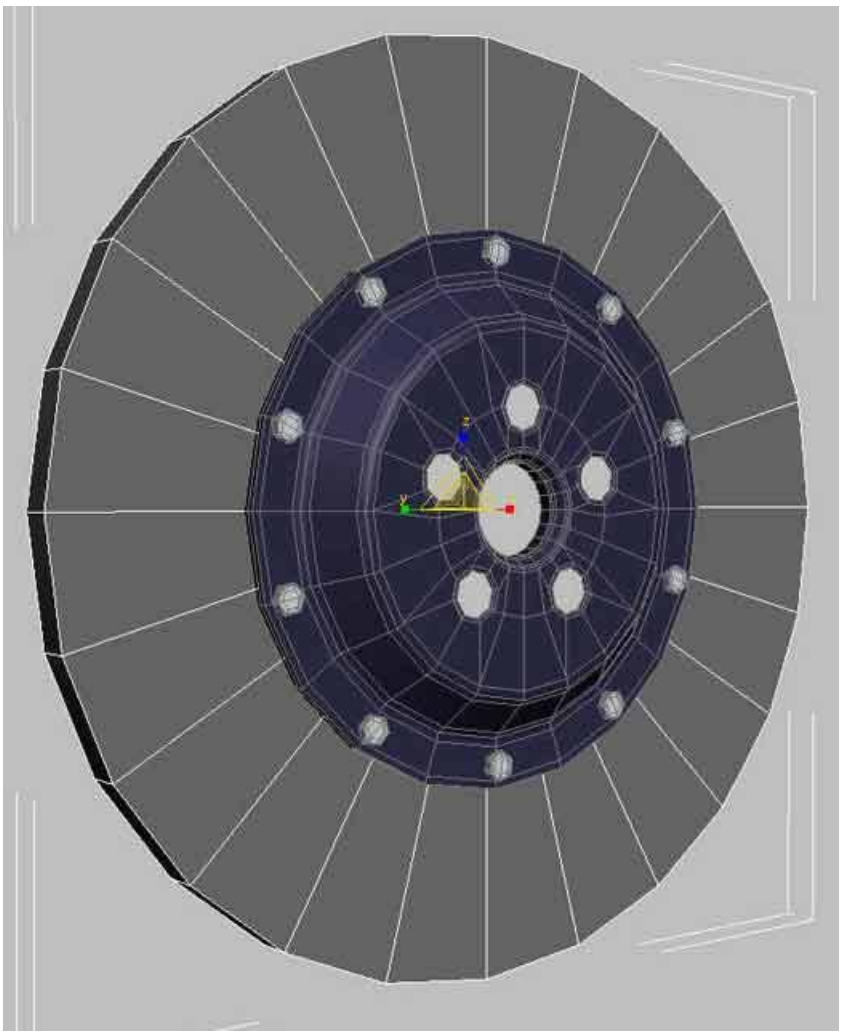
Then the holes of the screws and other.



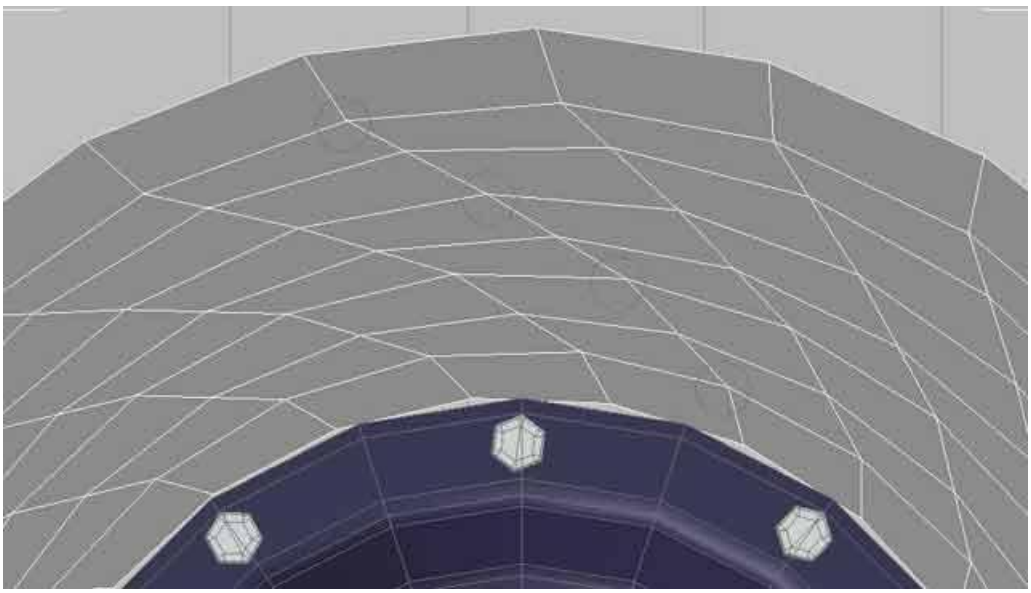
After adding some screws around and apply materials it's ready.

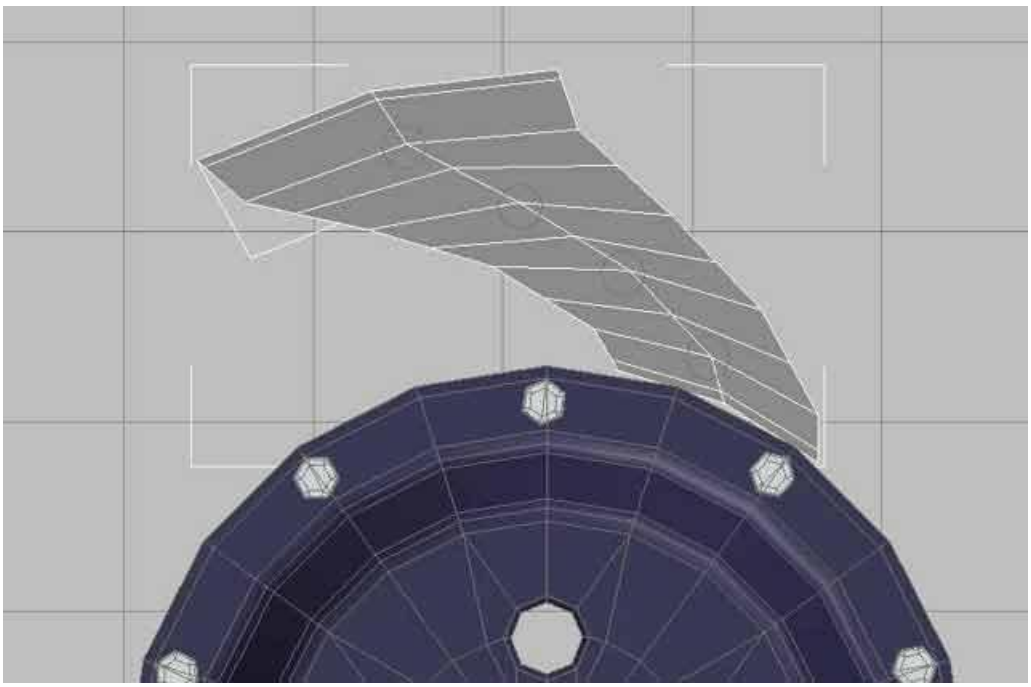


Let's continue with the disc. The base object is a tube.

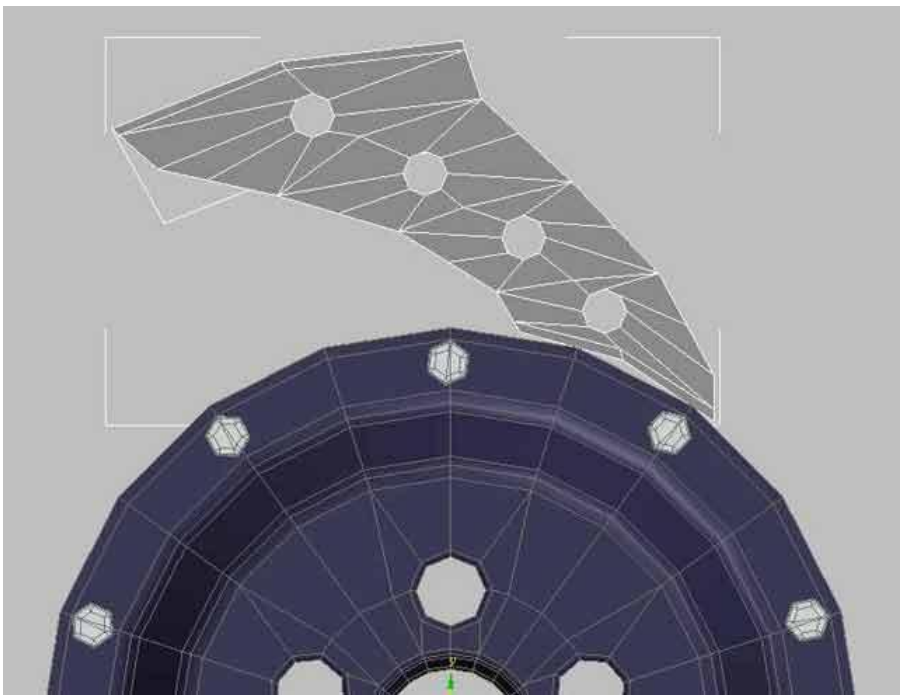


I will make the disc with holes because we have a strong sports scar and it needs strong sport-brakes.
Add the segmentation you want and delete unnecessary polygons.

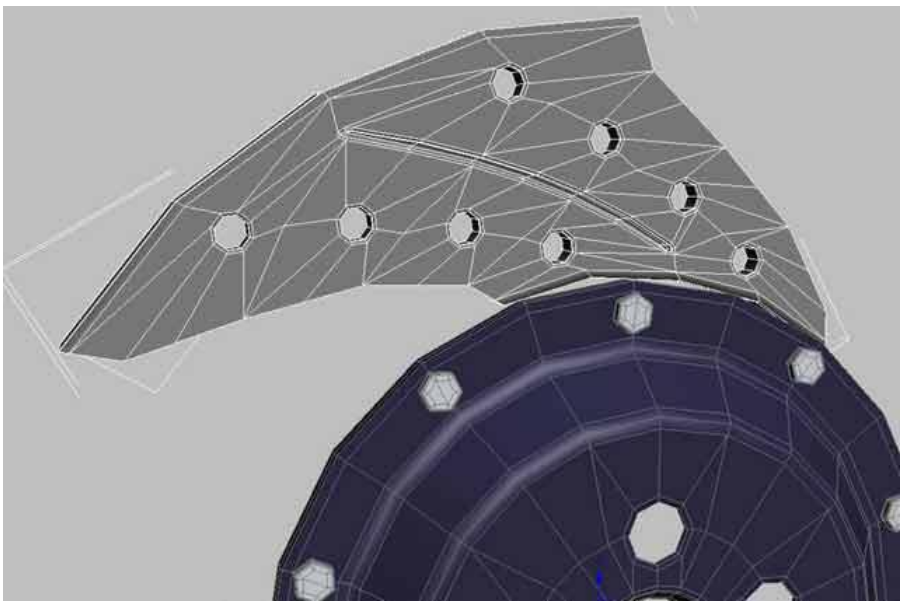




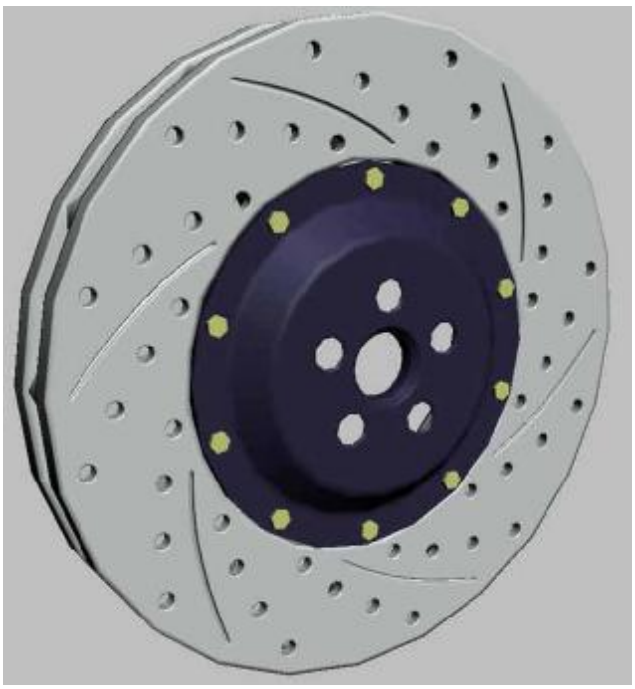
Cut the holes.

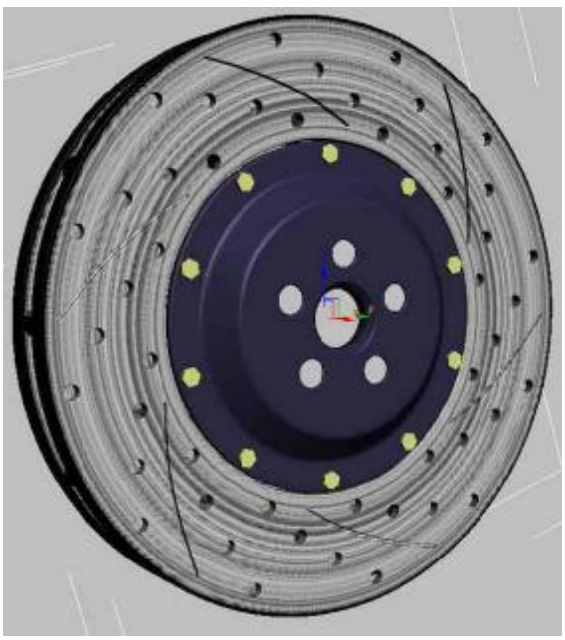


I add an extra cooling-"line" between two rows of holes.

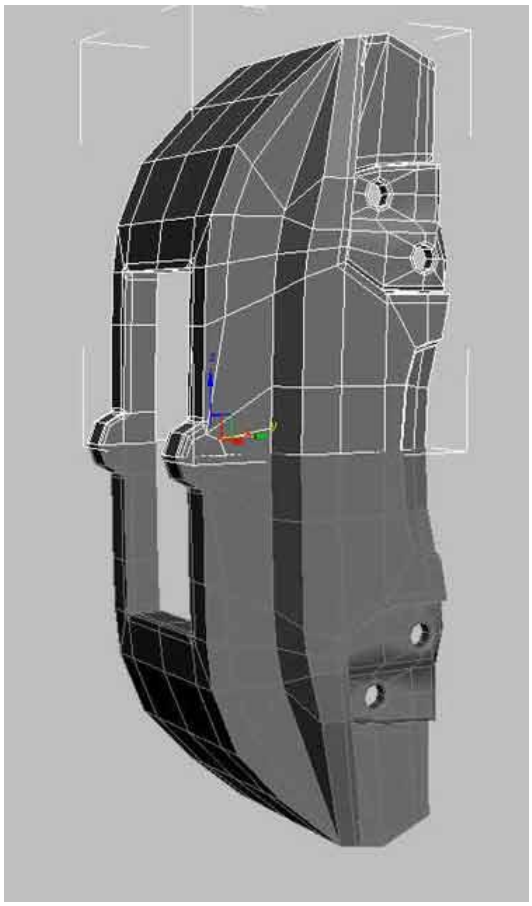


It's ready, so it can be copied around, and attached to one object. I also added a bumpmap to make it more realistic. These brakes have two such discs, so we need one more, and some geometry between them.





There's only the caliper left. For this, you can either find out some good-looking shape or search the web for some reference (try the brembo, AEM, Porsche words in the search-site for example).

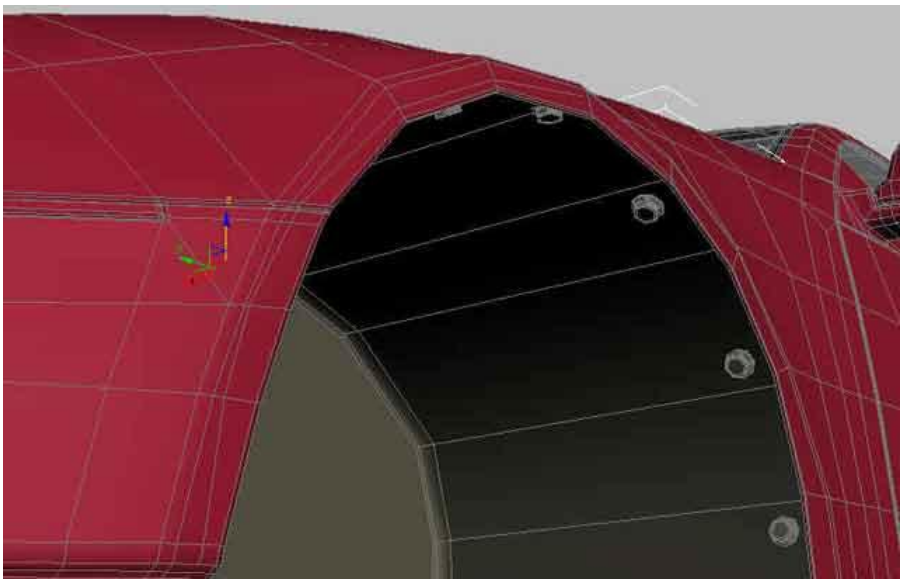


Rear brakes are usually smaller then front ones, because during decceleration the most of the car's mass burdens the front brakes and suspension. Especially, when the engine is placed in the front.
All I wanted say is I made an other disc:

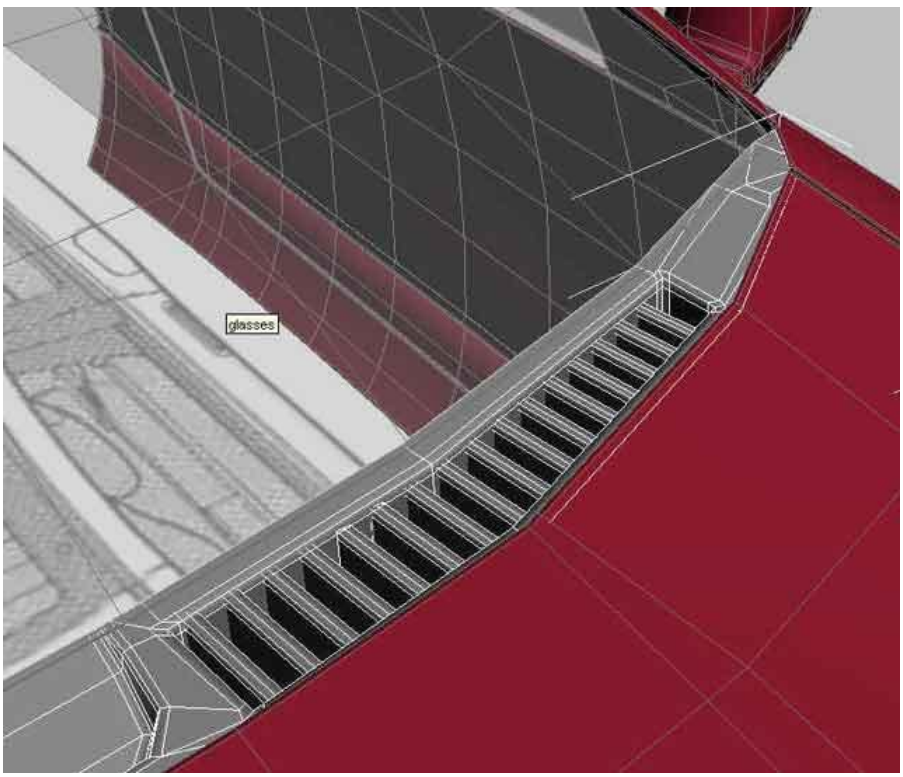
:: ACCESSORIES ::

There is only some little things left on the outside.

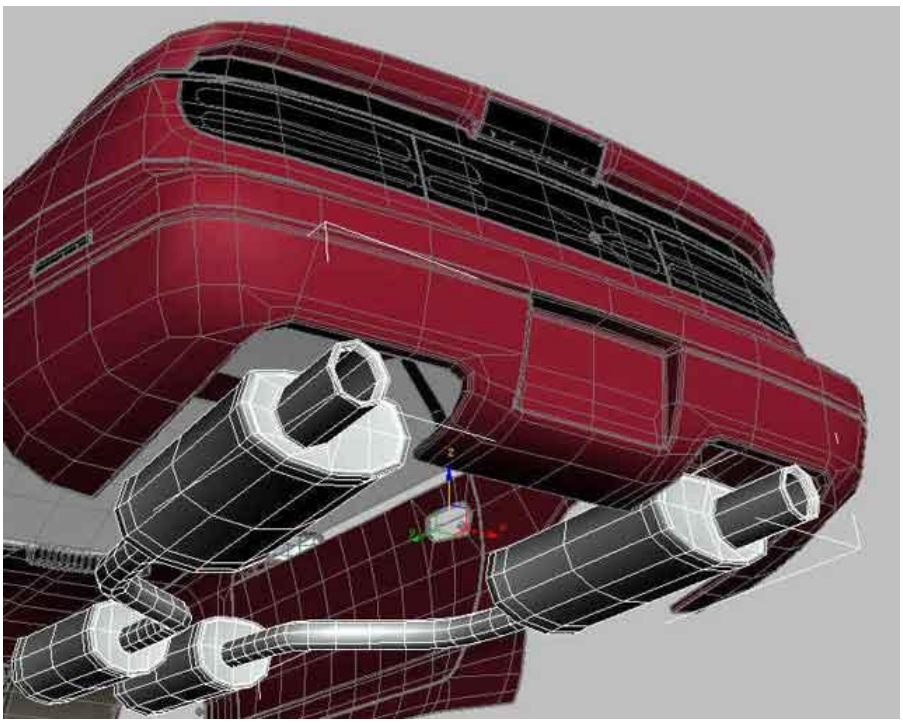
Let's start with some shield around the wheels. It really simple, you can make it starting with a plane and shift+dragging the upper edge around. After fitting outer vertices to the body, I've made some screws around to make it less boring.



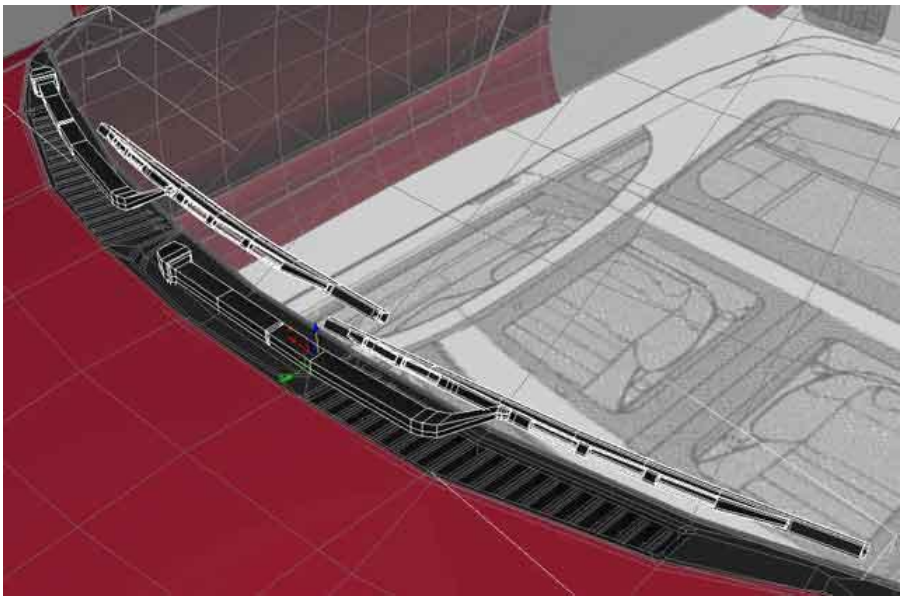
Next could be the part filling the gap between the hood and the windshield.
I simply made some frame and some truss.

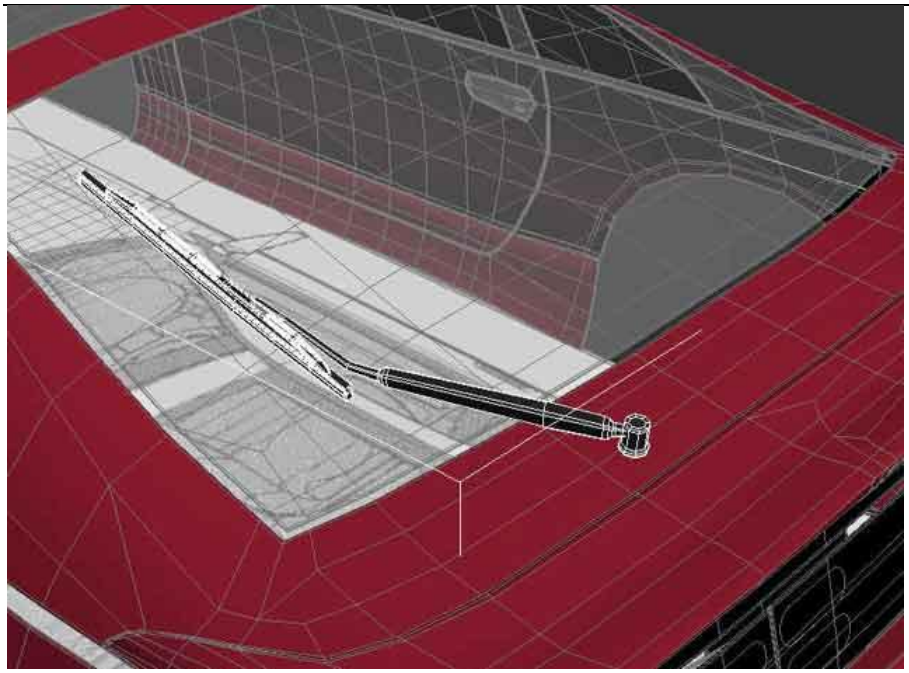


We cannot forget to make a cool exhaust-system. That's really the choice of your fantasy.

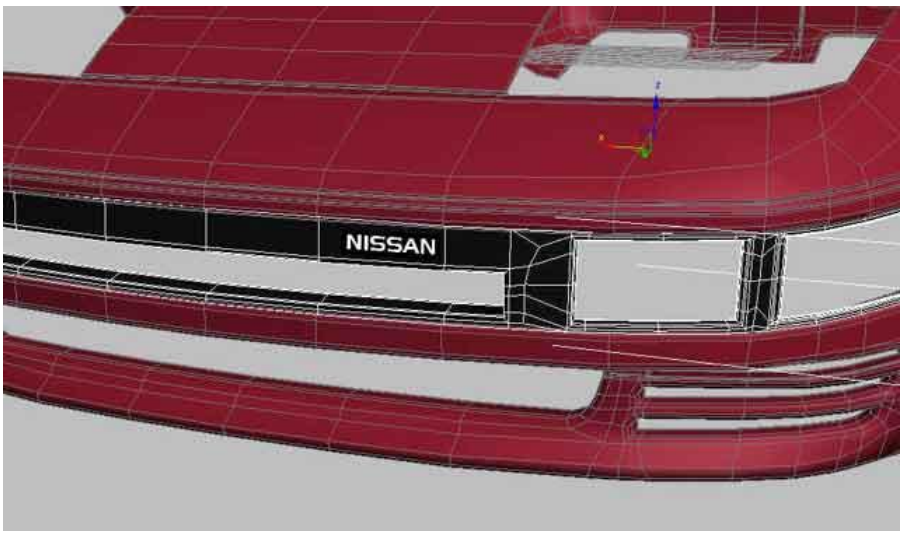


I've made wipers to the front and the rear window too.





And finally, apply textures if you haven't done it already.



:: RENDERS ::

Tuned version: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