

# TUTORIAL: MODEL & TEXTURE

## SKILL LEVEL: STARTER

### REQUIRED TOOLS:

- Oxygen 2
- TexView2 (is part of BIS Editing Tools)
- GIMP (or another graphic program, preferably one which supports layers)
- Google & Wikipedia

### INTRODUCTION

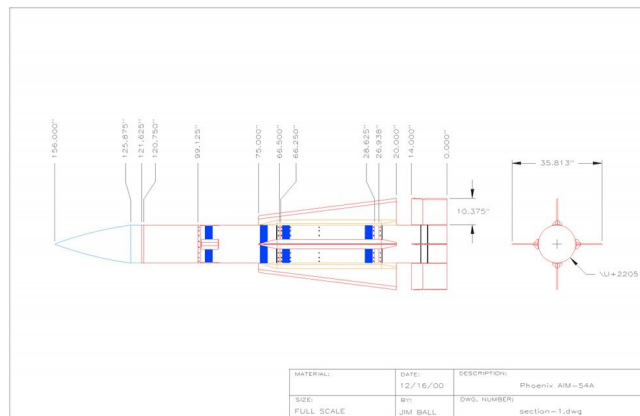
Hello friends, so you're interested in creating addons for Arma 2? Be my guest on this beginners tour through O2 and GIMP. Myself, i've also started modelling and texturing just a few weeks ago and i found out, once you mastered the general handling of the above software, you'll be able to create high quality addons in a reasonable timeframe.

### STEP 1 : RESEARCH

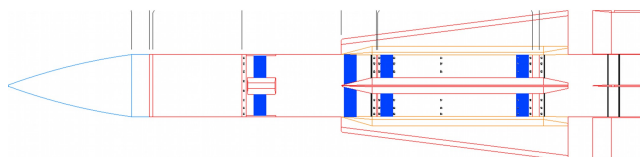
If you already started O2 and/or GIMP...close them down. The very first steps doesn't start there but on the internet. The very first step is research, mainly good reference pictures. For this tutorial we will create a air weapon, a AIM-54 Air-to-Air missile. So launch up your browser and either start on Wikipedia or on Google picture search.

We need a good picture (might also be a drawing) showing the missile from the side, as far as possible without perspective stretch.

We're lucky, see what i've found:



This picture is perfect to design the 3D model. But we need the side view fitting the picture. So we cut this part out:

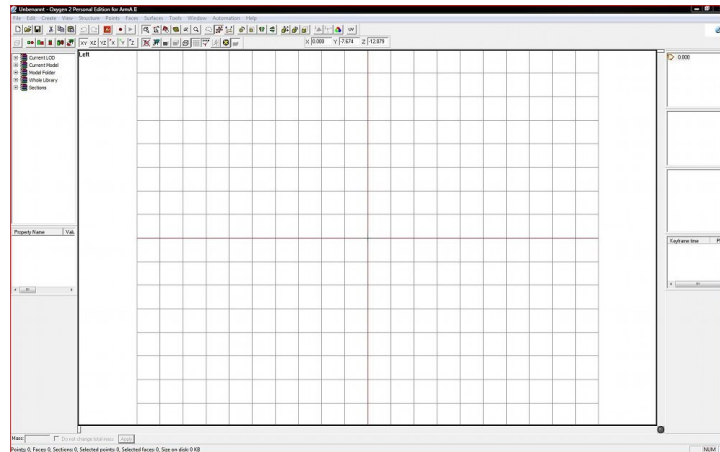


This picture will be our blueprint to draw the missile. Important here is that the picture size is  $n^2$ , also 1024x512 as example. Valid values: 2,4,8,16,32,64,128,256,512,1024,2048 and 4096.

Make sure that the pic does fit horizontally as this size will be our size reference for scaling at the end. So in height it doesn't matter if there is a lot of white space. Use Texview2 to convert it to .pac format.

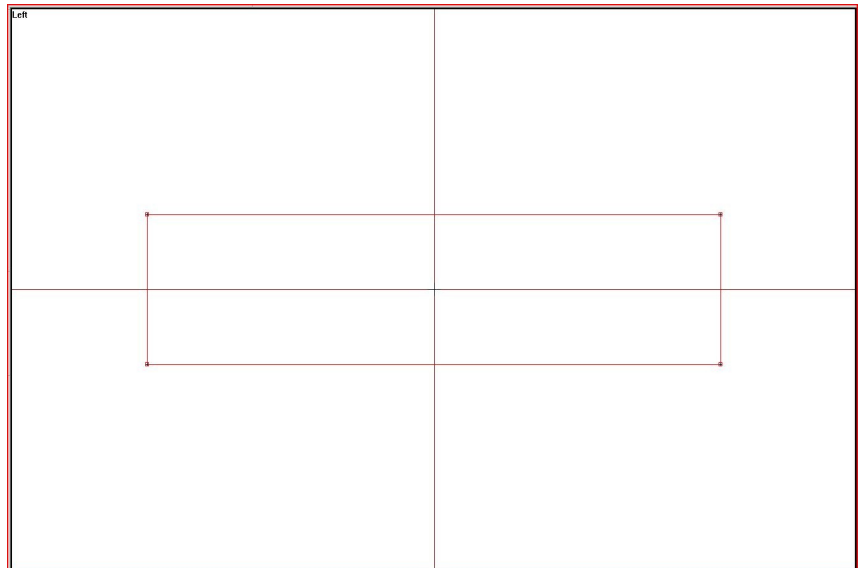
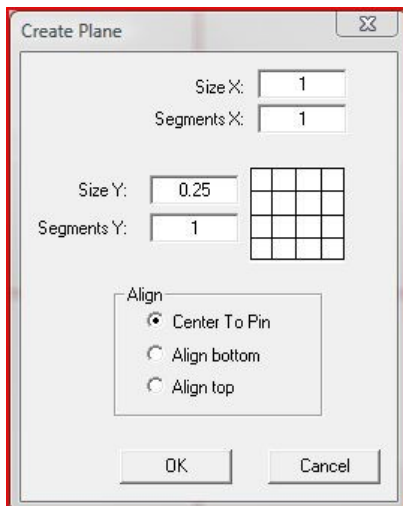
## STEP 2 : PREPARING BLUEPRINT

Now we can open O2. As our Blueprint is showing the missile facing left, make sure your view is set to left also.

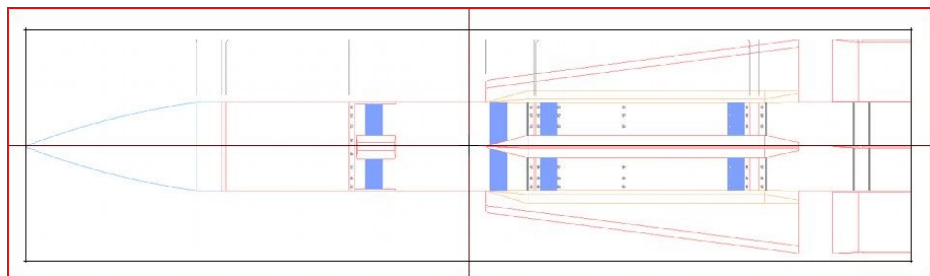
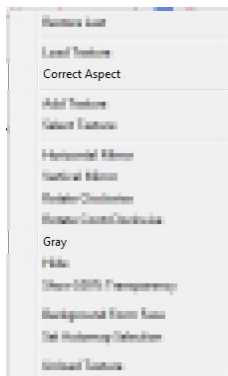


Next, we will set up our blueprint. We have to know our blueprint picture size, in our example it is 2048x512. The height is  $\frac{1}{4}$  of the width or 25%.

So create a plane (Menu -> Create -> Plane) with size 1x0.25.



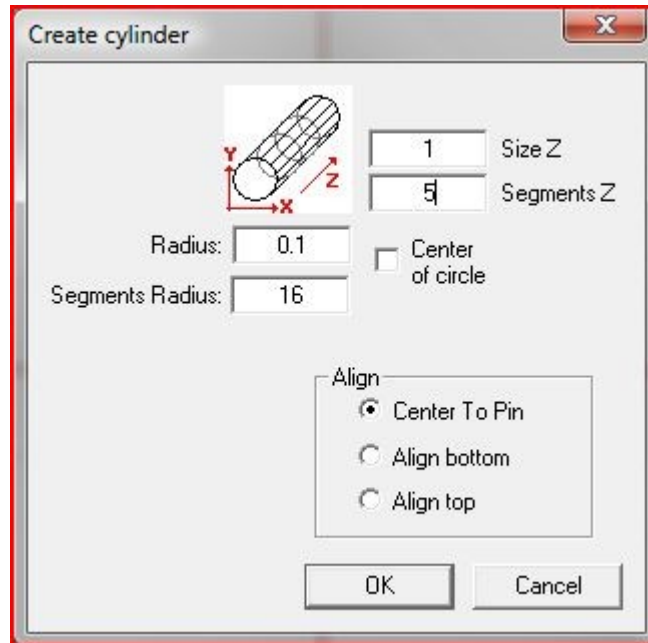
This plane is our size reference for the blueprint. Press A on your keyboard, draw a square exactly on the created plane and right click in it. In the opening menu, select „Load Texture“ and load the previously prepared blueprint picture. After that, right click again in the blueprint pic and select „Correct aspect“ and once again, selecting „Gray“. When all this you've done, press A again on your keyboard.



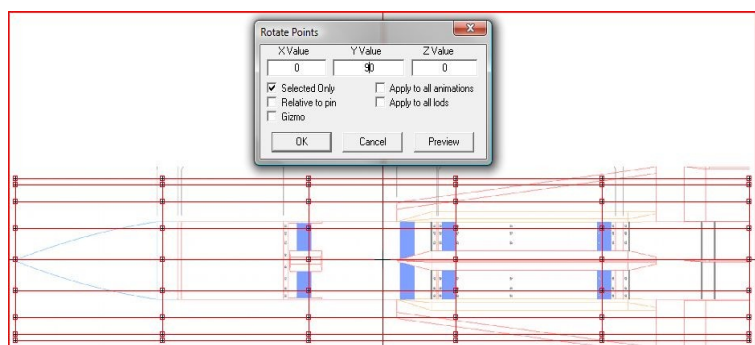
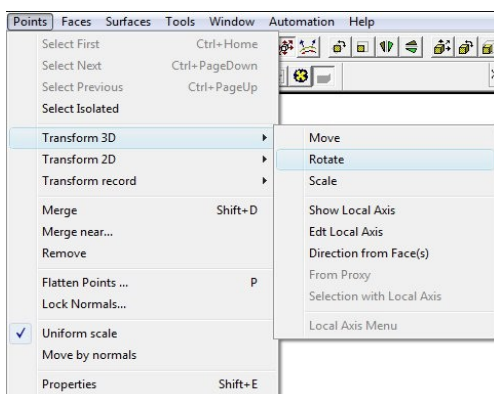
Our blueprint is almost ready, now we just to have delete the previously created plane. It has done it's job as size reference and is no longer needed. Now we can start modelling the missile.

### STEP 3 : MODELLING THE MAIN HULL

Ok, let's start creating the missile body. There are several ways to form it, i personally prefer to work with a single cylinder. I suggest you follow me and later you may experiment with other ways. Press F8 to open the „create cylinder“ selection window:

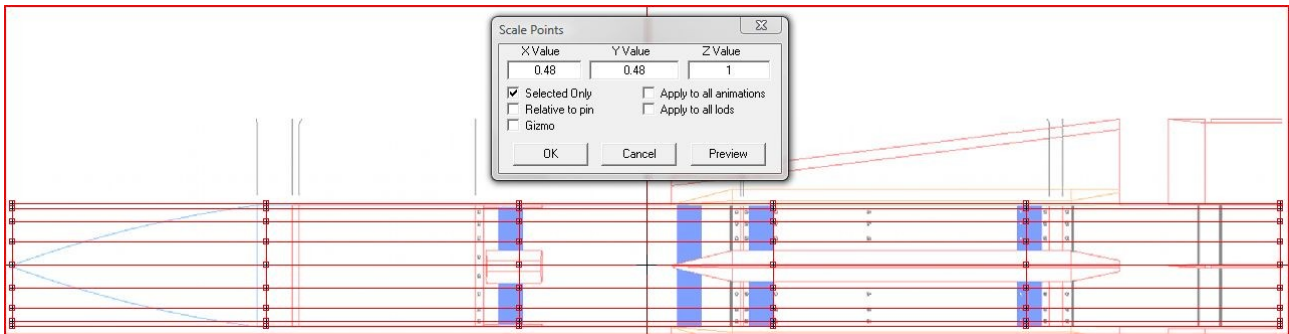


Size Z represents the length of our missile. Remember, we started with a plane with size 1 horizontally, so we are still working with this reference size. We create 5 segments which will be used to form the cone. The radius will probably not fit yet but we can adjust this later. Select Segments radius with a number with the power of 4. This will become important when we go into texturing. Hit „OK“ to create the cylinder. As you see, it is aligned into the wrong direction now so we rotate it. Click „Menu -> Points -> Transform 3D -> Rotate“ to open the rotating menu. Type in „90“ into the Y value field.



At this point you might have noticed that the blueprint picture doesn't resize when zooming in and/or out using the mousewheel. Just hit + or – on the numpad and the blueprint pic will resize it to fit the selected zoomlevel.

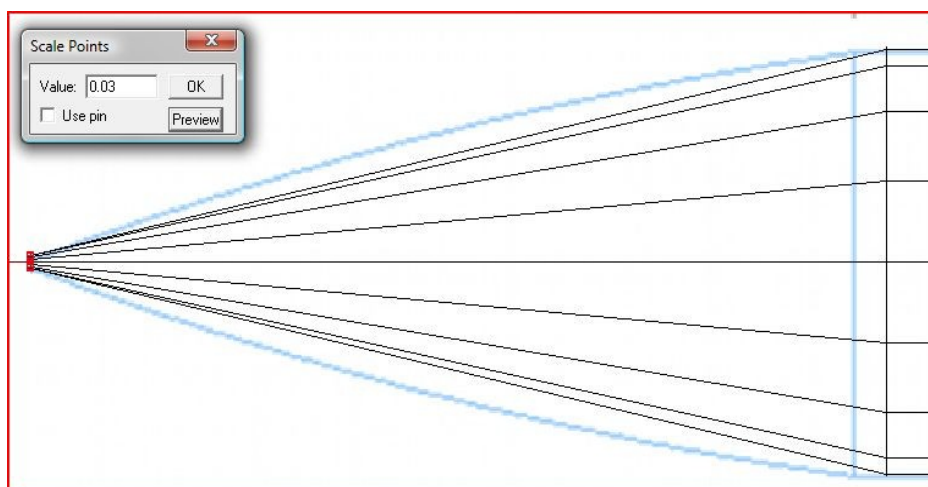
By now, the cylinder is too big so we will scale it down a bit. Go to „Menu -> Points -> Transform 3D -> Scale“. Luckily you don't have to try blindfolded as it has a preview function which will show you the result visually while you adjust values. Remember not to scale it's length.



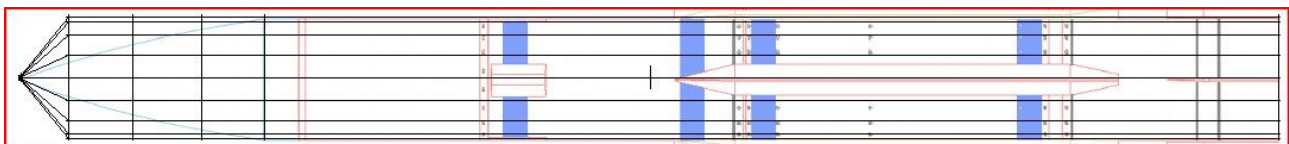
This fits pretty well i think. Now change selecting mode to „Select points“ by pressing V on your keyboard. We will now form the cone. Select the points on the most left.



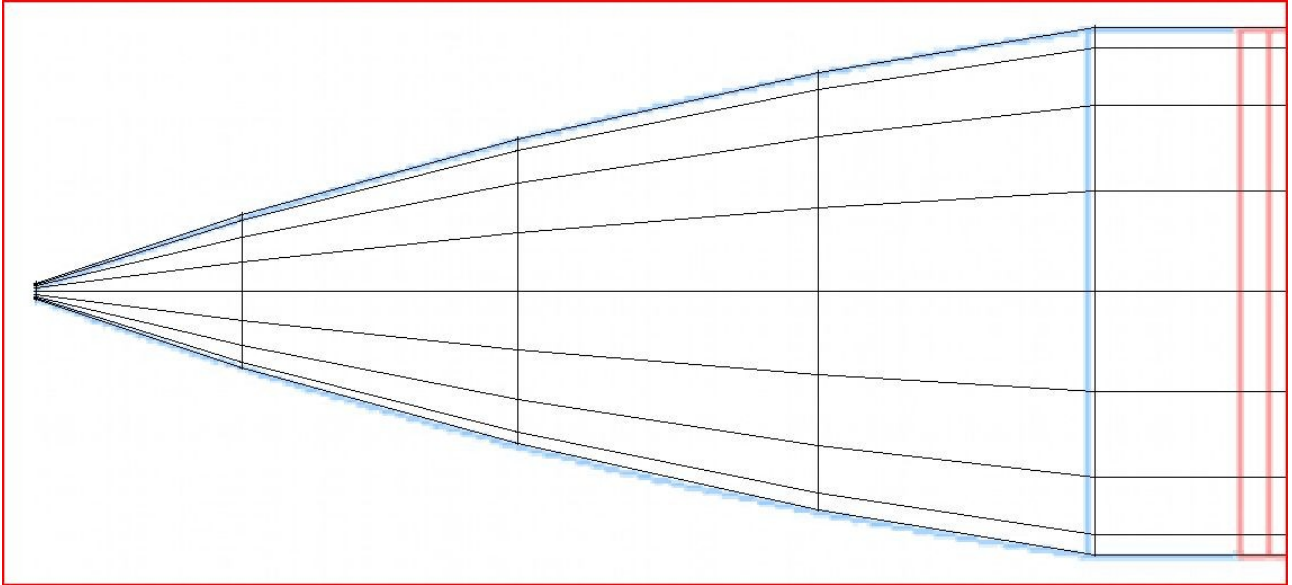
Now it's up to you. Either you merge the points into a single point which will result in a dome pretty pointy like a dart. Personally i think just a extreme scaled down point looks better, more „rounded“. But this is up to you to decide. If you want the dart-like dome, press „Shift + D“ to merge the selected points. For the rounded version, go to „Menu -> Points -> Transform 2D -> Scale“.



Now we have to move the remaining segments to the dome region. Select the points of the segments next to the domes end and move it to the left. Be aware that you don't stretch it up or down but keep it straight. Do this with all segments points except the right edge (duh).



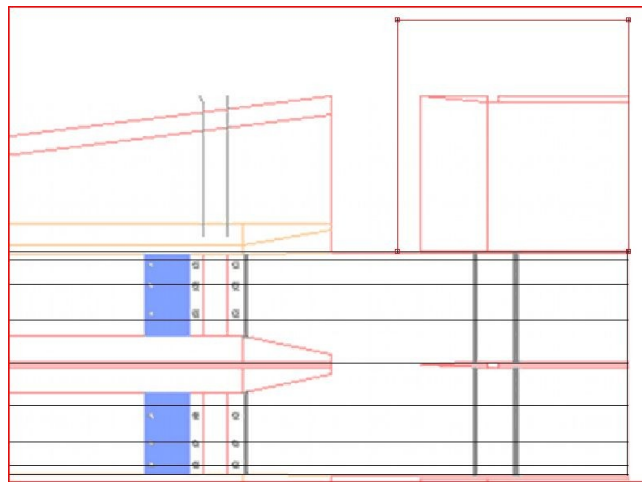
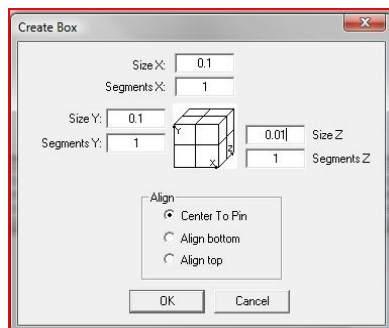
As final steps, select again each segments points and scale them the same way as you did before.



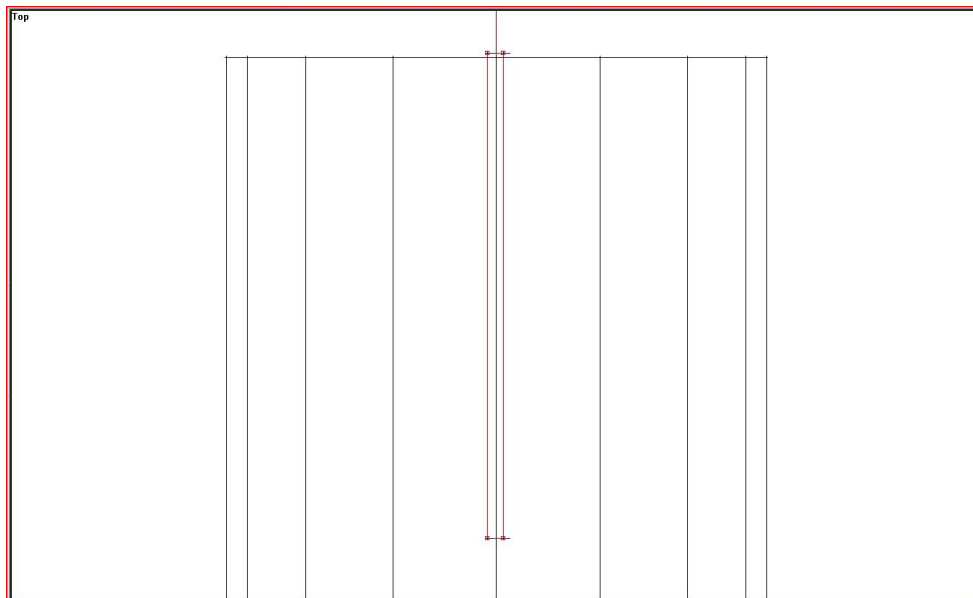
Thats it. The main hull is complete so far, now let's start with the winglets.

#### STEP 4 : MODELLING THE WINGLETS

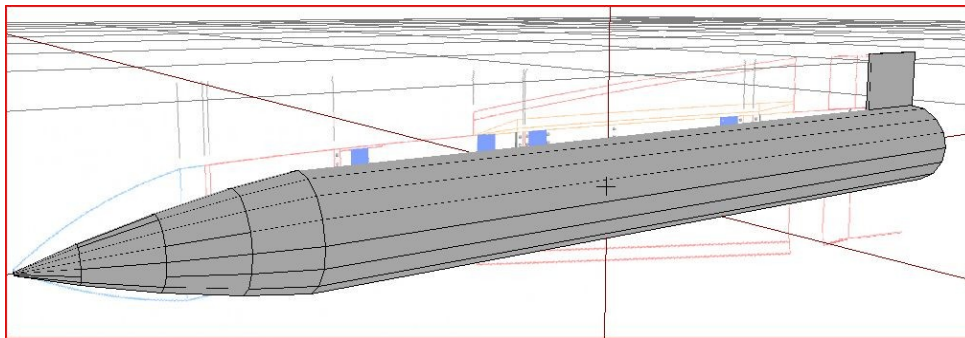
You're still here? Hmmmm, might be i'm doing something right. However, here we go...the Wings (or Winglets, what sentence you prefer). For now, we're doin them pretty simple. You're free to go for a more detailed variant but for now we stay simple. Press F7 to open the „Create box“ dialogue.



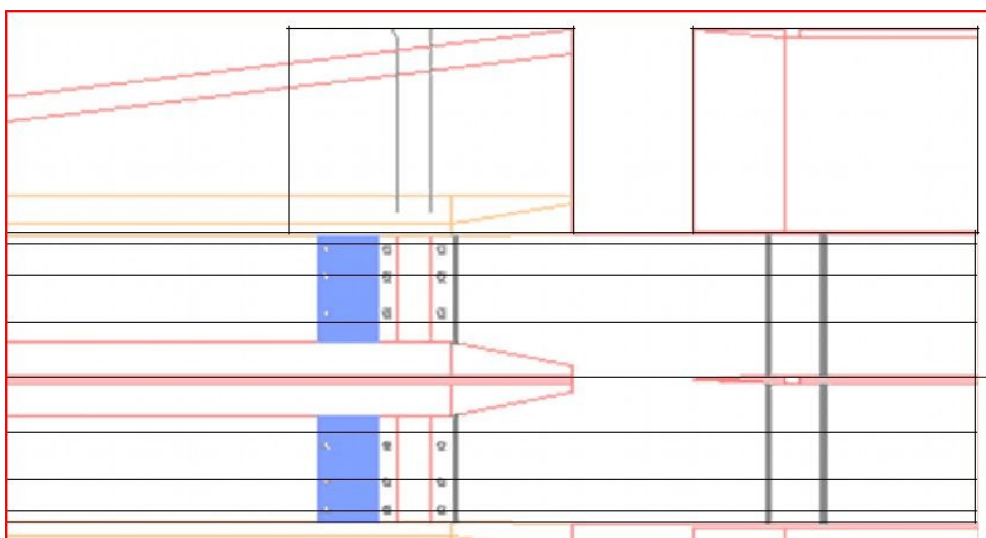
As you see, i've already moved the box to the place of the rear winglets. Now press V (select points) again and let us adjust size. Select the points on the left and adjust size by drag & drop the selected points. Repeat these steps for the upper points. When done change view (Menu -> View -> Top) to top view. Probably the winglet is too thick. By selecting and dragging points you can adjust this until it fits your needs.



If you're curious you may look at your missile in projected view which gives you a 3D preview of your work. Go to Menu -> View -> Projected. By holding ALT key and right mouse button you can rotate the view.

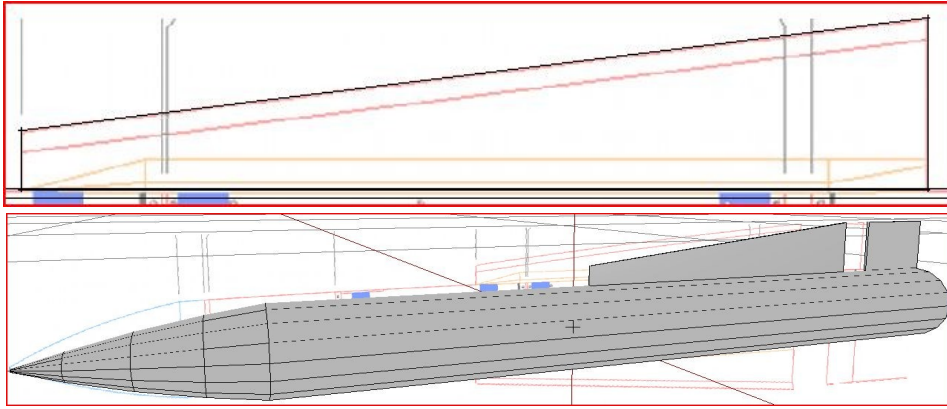


But now back to work. The front winglet we make quite easy by copy pasting the rear winglet and just adjusting size and shape. Press O on your keyboard to get Object selection and select the rear winglet (oops, forgot to say, switch back to left view). Now press CTRL + C and then CTRL + V, this will copy and paste the selected object. Press and hold right mouse button to move the copied rear winglet to it's new place at the front winglet.



Go back to points selection mode (press V on keyboard), select needed points and move them to the correct place so they'll fit with the blueprint.



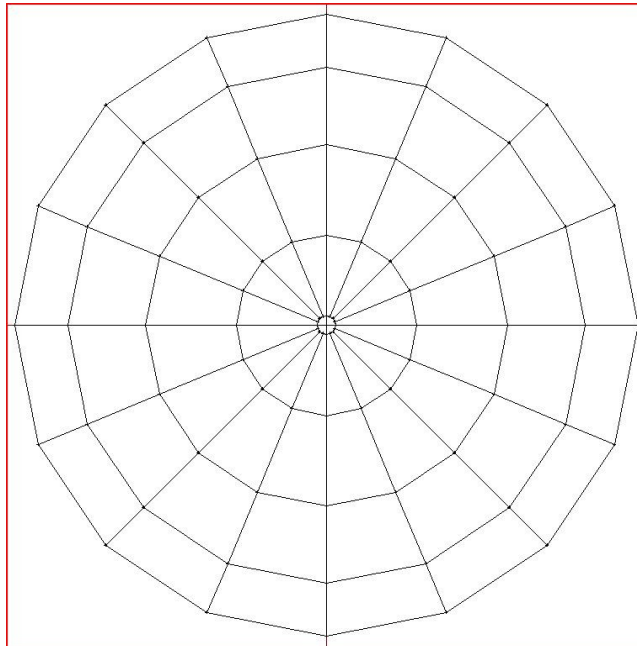


Hooray, we're done with modelling! What? You don't think so? You mean there are missing winglets? Right...i mean...wrong. They will be added on a later stage, after texturing. Trust me, it's easier this way around unless you insist to apply custom texture for each winglet. You don't? Thought so. Then let's go to the next step....

## STEP 5 : PREPARING FOR TEXTURING

Ok, at first, the blueprint has done it's job and is no longer needed. Press A on your keyboard, click with right mouse button into the blueprint picture and select „Unload Texture“. Then press A again.

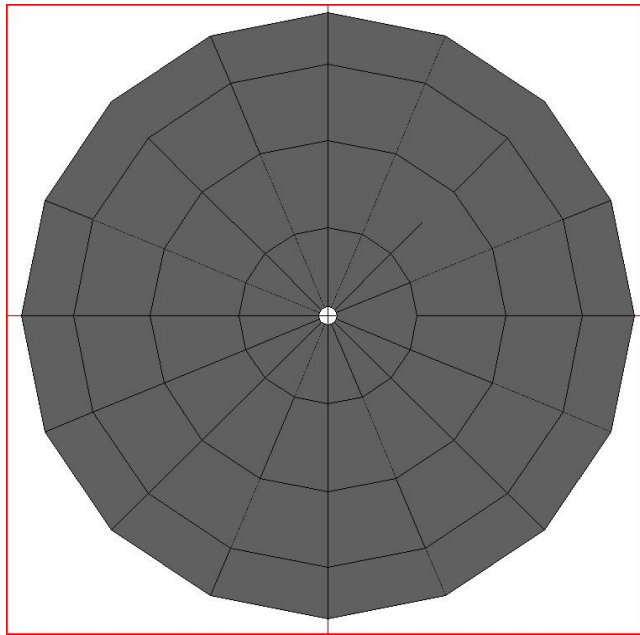
For the start we don't need to see the winglets, press O to get Object selection mode and select the winglets. Then press CTRL + H, this will hide (not delete) the selected objects. Right now we also don't need the plane faces at both ends. Press V for points select mode, select the points (and therefor also the faces) on both ends and press CTRL + H to hide those faces also. Now switch your view to Front View.



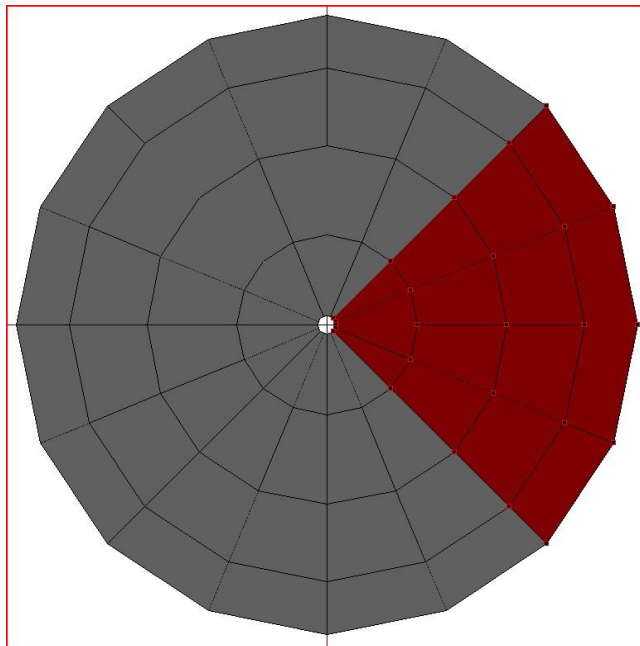
To see if we have selected the correct faces in the next steps, we will switch on solid draw mode.



Click on the the two buttons on the left. Your front view should now look like this:



Ok, let's prepare this tube for the UV Editor. We will create selections for 4 sides: left, top, right and bottom. We will start with the left side. Switch to points selection mode (press V) and start selecting points on the right side. What? I said left side before and now right? You're confused? Don't be, as we're looking from the front to the missile, our right is missiles left side. Ok now, start selecting.



Your model should look similar now. Remark that the selected parts are  $\frac{1}{4}$  of the model and now you see why the cylinder sections had to be of the power of 4.

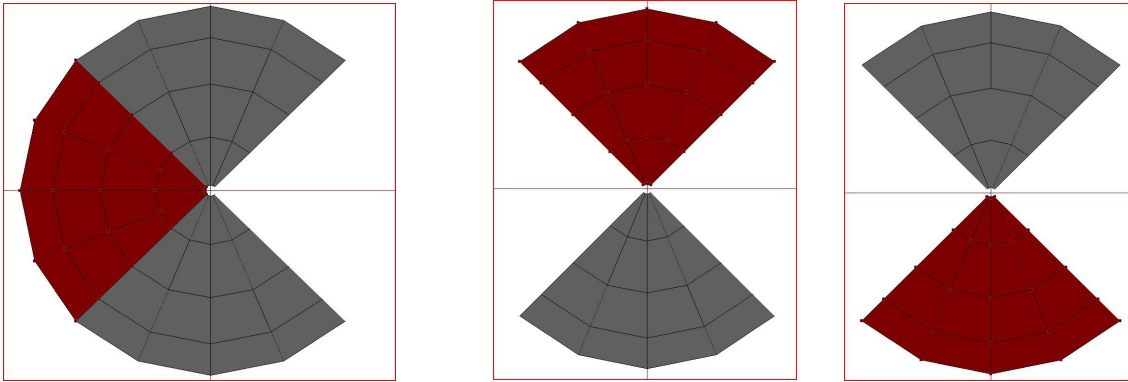
Let's continue. If you don't have already a selection window open, press CTRL + L to open it. Right click into the selections window and select „new“. It proposes „New Selection“ as name which we replace with „-left“ and then press enter. So you've created your first named selection. If you now deselect the actual selected points (left click somewhere inside the view window) and then click on „-left“ in the Selections window, the relevant part should be selected again. You might have to click on empty space in the selections window first if it doesn't select it immediately.

If this doesn't work, something is wrong. Don't ask me what, i can't see what you're doing there. Repeat the selecting and selection naming part again.

If it works, well then, hide the left selection (CTRL + H, remember?). Oh, almost forgot: for selecting multiple points press and hold CTRL key.



Repeat those steps for the right side and also for top and bottom.

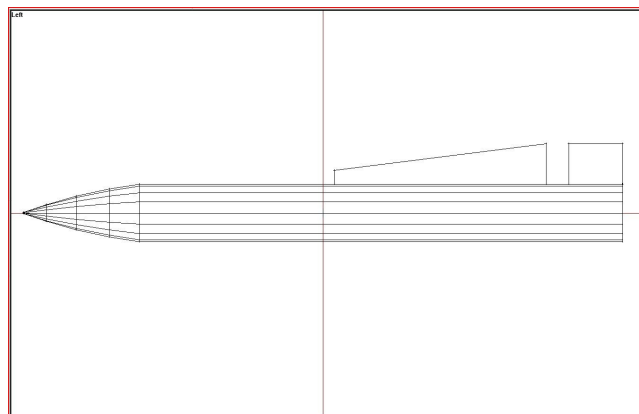


So far, so good. Let's make us all visible again. Press CTRL + A and then CTRL + SHIFT + H, after that, everything should be visible again, including winglets.

Thats it, we're ready for the next step, for

## STEP 6 : CREATING TEXTURE TEMPLATE

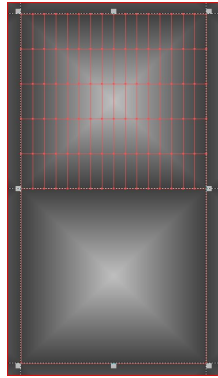
Switch to left side view again, this is where we start from. Make the missile body fit to the window (zoom in/out if needed).



In the selections window click on „-left“ to select the left side of the missiles body. Now we open the UV Editor by clicking on the UV button in the menu bar.



Probably you already have some objects in the UV Editor. Select them and hit „DELETE“ as we don't need this pre-selection.



In the button bar, hit on „Fit UV map“ (second button from right). The most used buttons here will be

Planar Mapping



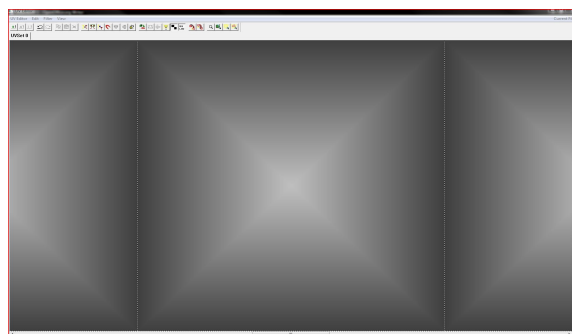
Rotate Selection



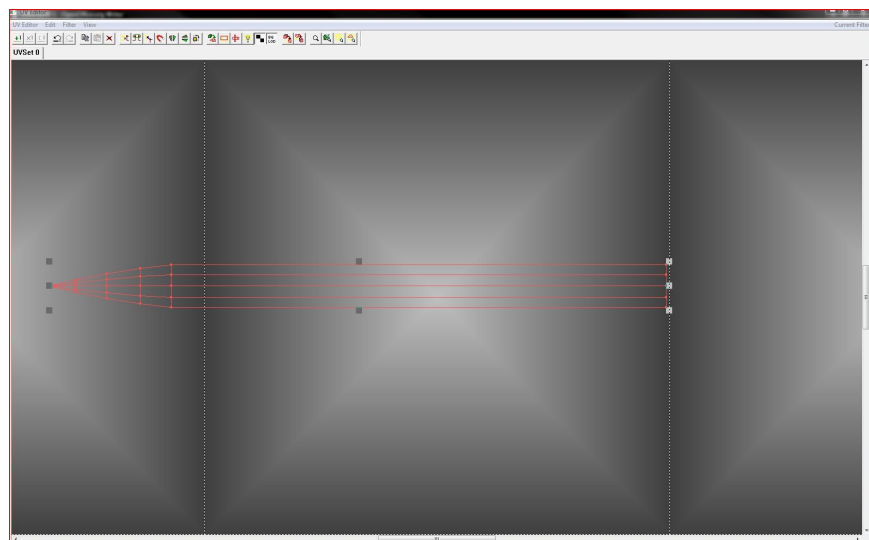
and Fit UV map



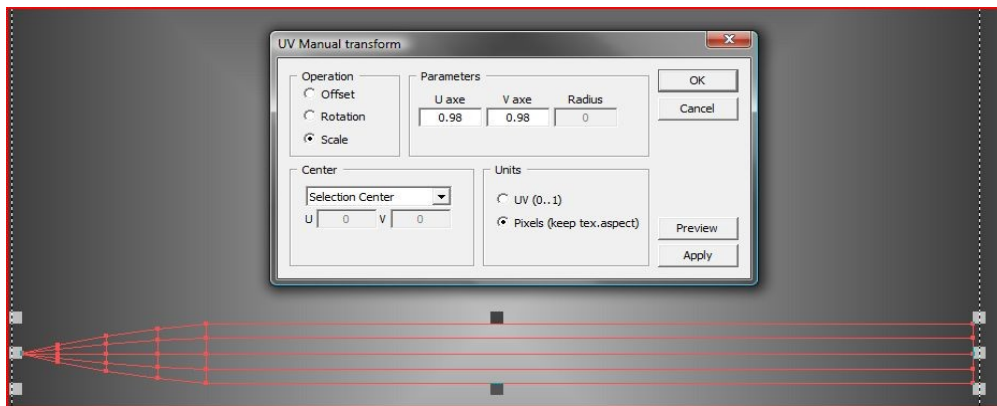
So this is how your UV Editor should look like.



Let's now try a first attempt to import our selection from O2 to the UV Editor. Click on the „Planar mapping“ button.



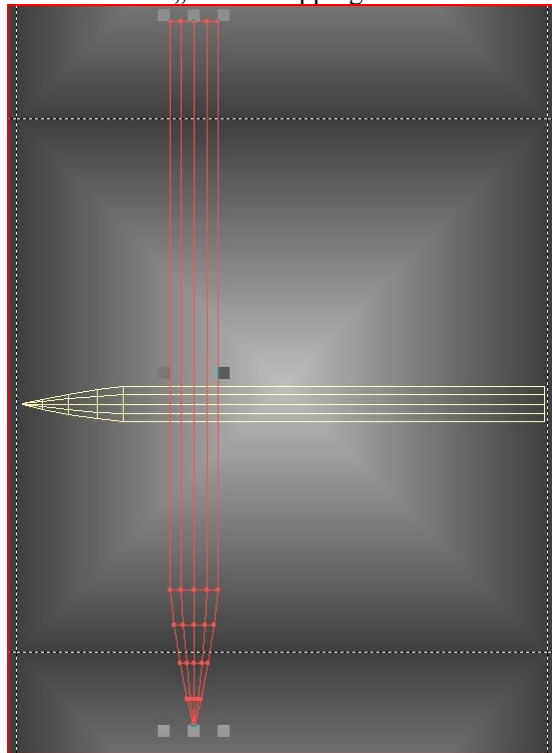
As you see, on the left it overlaps the dotted line. We don't want this. Click on the „Rotate Selection“ button, we can also resize with it.



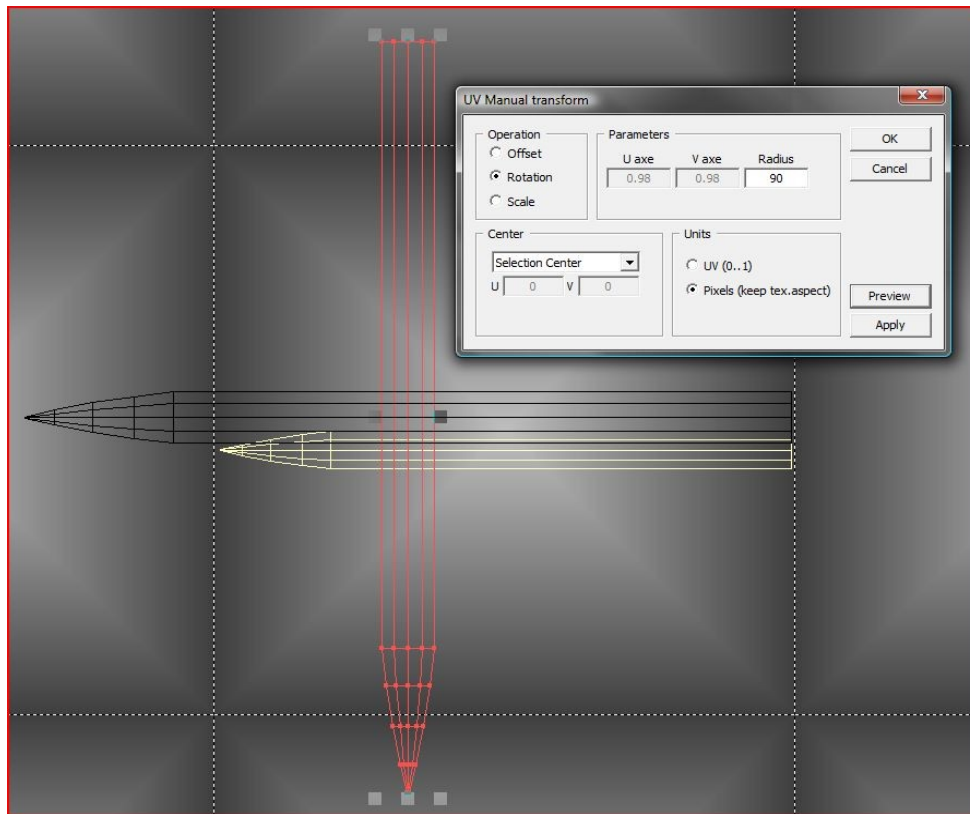
You might experiment with different U axe and V axe values until it fits inside the dotted square. Make sure you selected „Operation -> Scale“ and „Units -> Pixels“.

When it fits, we're done with this side. Switch back to O2 and select „-top“ in the Selections window to highlight the top of the missile. And finally switch your view also to „Top“.

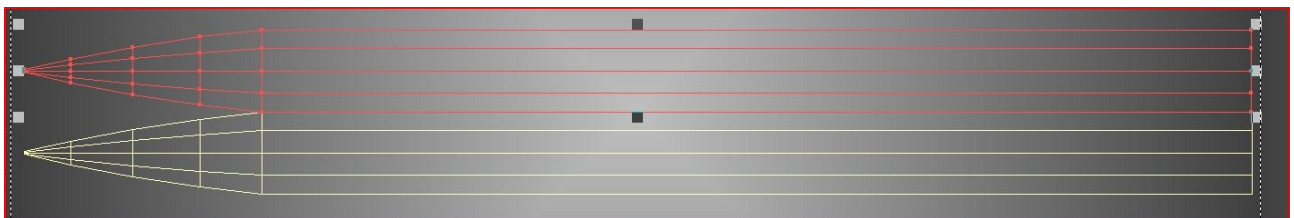
Switch to the UV Editor again and click on the „Planar mapping“ button.



Here you see one special thing about O2 and the UV Editor: selections are taken as shown in the view window in O2, that's why this selection is pointing down. No biggie, click on „Rotate Selection“ button. Instead of „Operation -> Scale“ select...well, it's obvious: „Operation -> Rotation“.



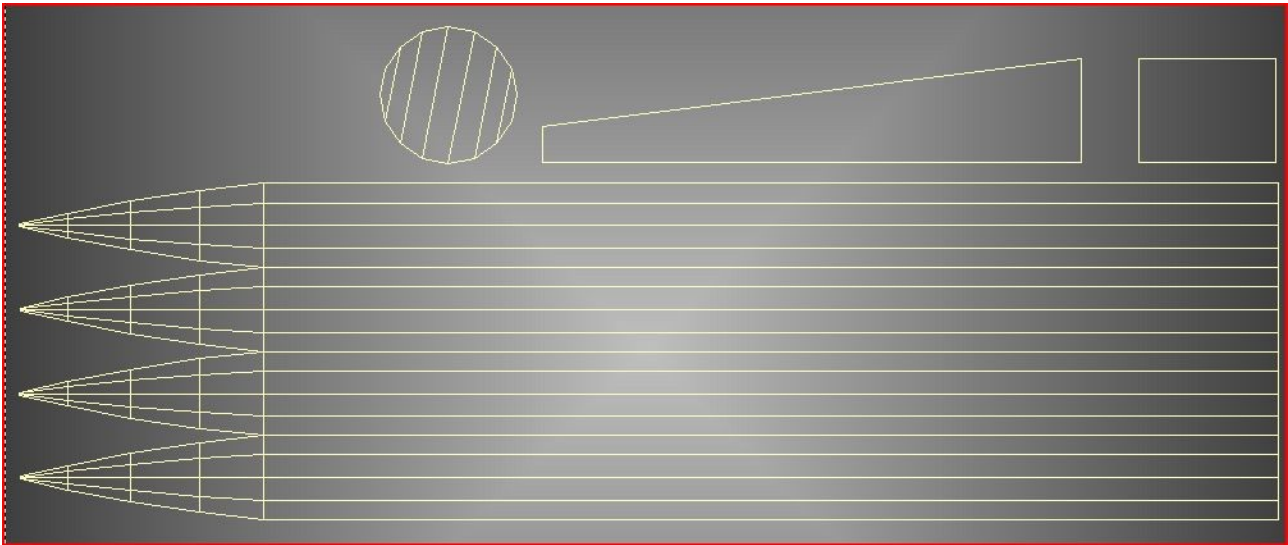
Before you get confused: yellow is the previous imported left side, red is the actual top selection and black is the preview of our actual selection. See that U axis and V axis are greyed out but in Radius i've entered 90 degrees. After that, scale the top selection the same way as you did with the left side selection. **IMPORTANT:** At this point you already decide how good the texture will fit. Be as precise as ever possible. After scaling, place the top selection above the left selection.



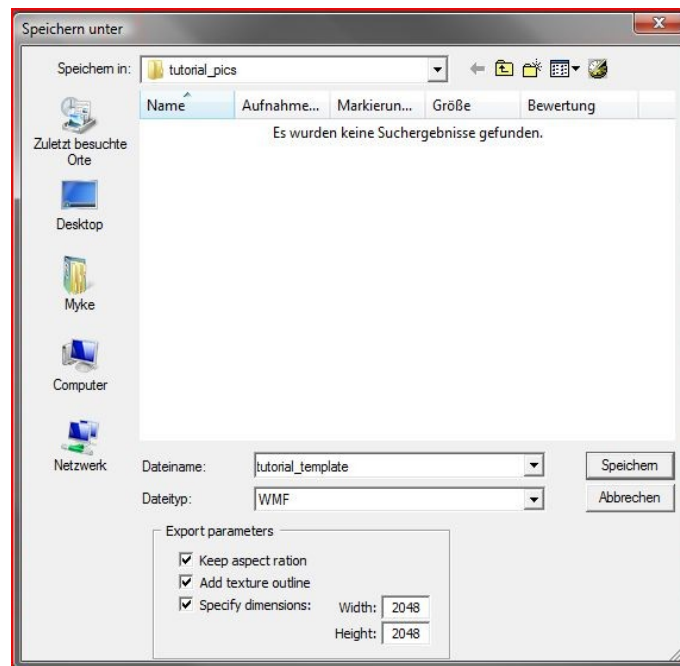
Now you have to do the same steps with the right and the bottom selection: click on it in the selection window, change the view accordingly, import it in the UV editor, rotate and scale it and finally place it alongside the other parts. Personally i use the following order: right, top, left, bottom.



Here we're done with the missiles hull, now to the winglets. Those are pretty easy. In O2, go to left view and select the winglets. In the UV Editor click on „Planar mapping“ Button to import the winglets and place them above the missile body parts. Do the same with the back part of the missile, where the engine is.



With this, we're ready to create a texture template with which we can create the final texture for the missile. Select all parts by drawing a selection box around it. Then go in the Menu to „UV Editor -> Export...“

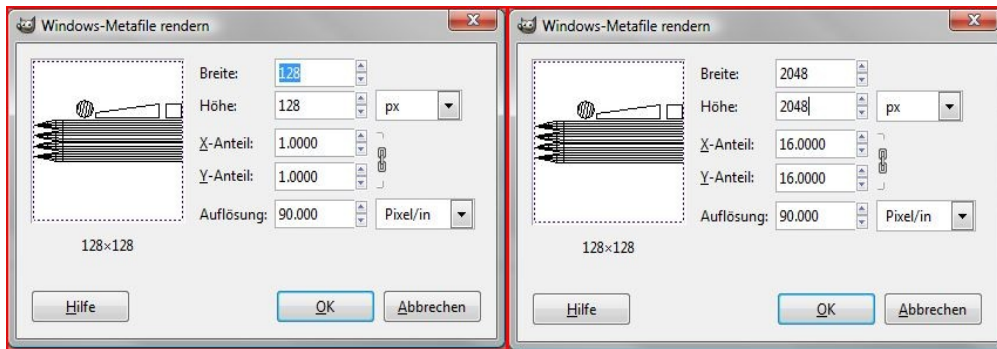


Don't get confused by the german language in this pic. Give it a filename (tutorial\_template) and choose filetype „WMF“. Set hooks on „Keep aspect ration“, „Add texture outline“ and „Specify dimension“. In width and height insert 2048. Then click on save.

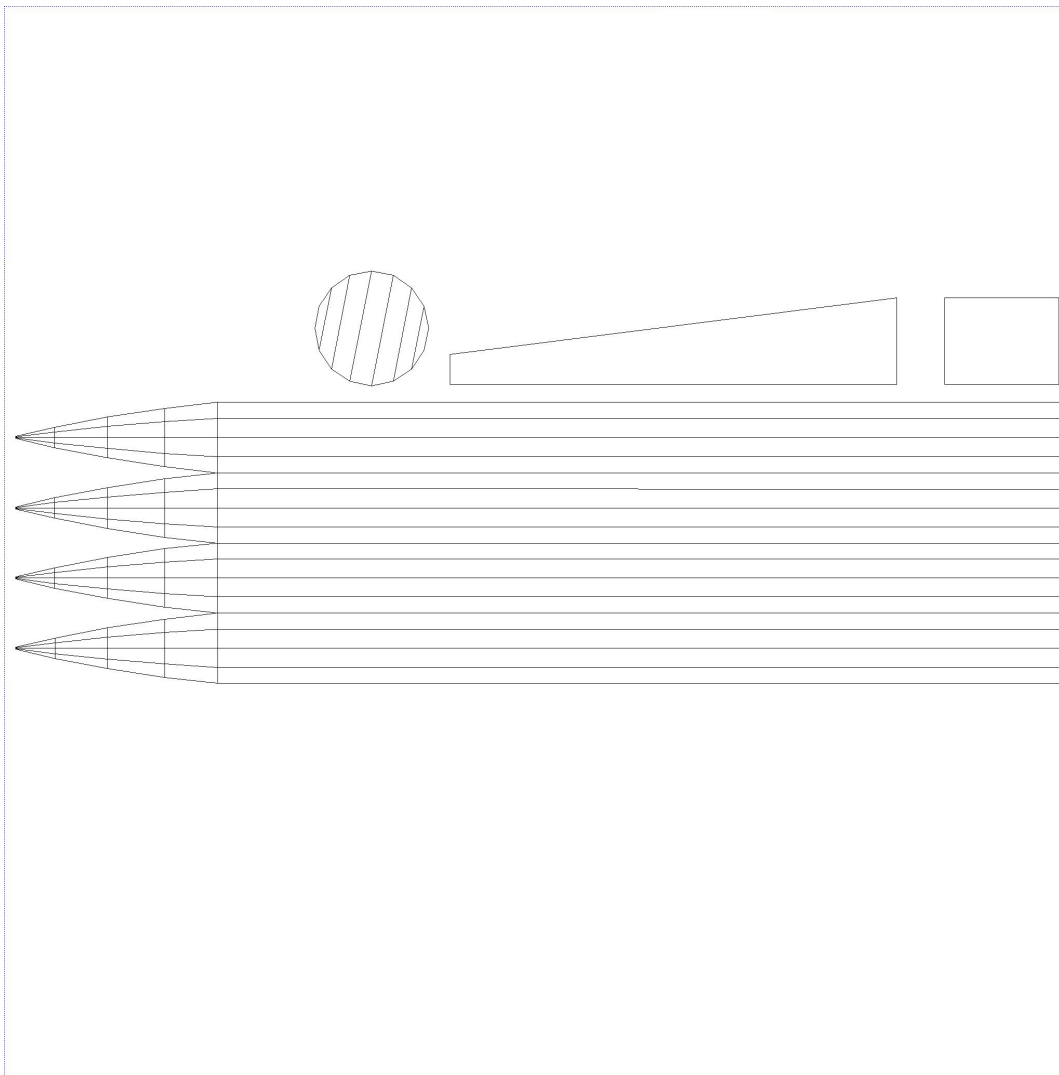
We're done. Now let's create a decent texture.

## STEP 7 : CREATING TEXTURE WITH GIMP

Start up GIMP and open the WMF file we've created with the UV Editor. GIMP will ask for the picture size to import. Use the same values as you entered when exporting.



Again, don't let confuse you by the german language. Breite = width and Höhe = height. And this is what we get in GIMP.



Well, it loses details when importing it here for this tutorial. Basically you could start here but the white space is a waste of filesize and should be reduced. So create a selection box to fit the relevant parts. You'll probably end with a selection size somewhat odd, like 2014x843. Adjust the selection box size to the next higher  $n^2$  value, in this case 2048x1024. Press CTRL + C to copy the selection to the clipboard and create a new picture based on clipboard content.

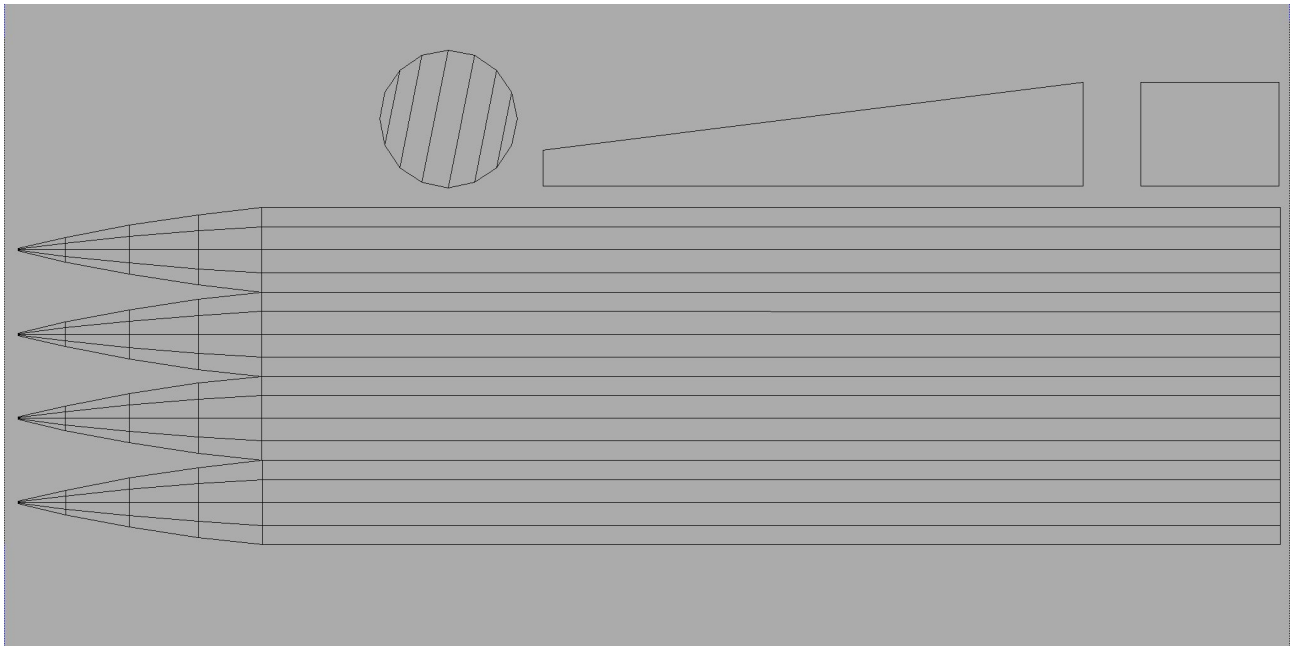


We do not draw directly onto this template, this is why layers come in handy. We can use this outline layer as positional reference to draw our texture, including details. For this, the template layer should be transparent, except the outlines of course.

NOTE: I have the german version of GIMP so my translation may differ to what it is named in english. Just use your brain and i'm sure you'll find the settings i've talking about.

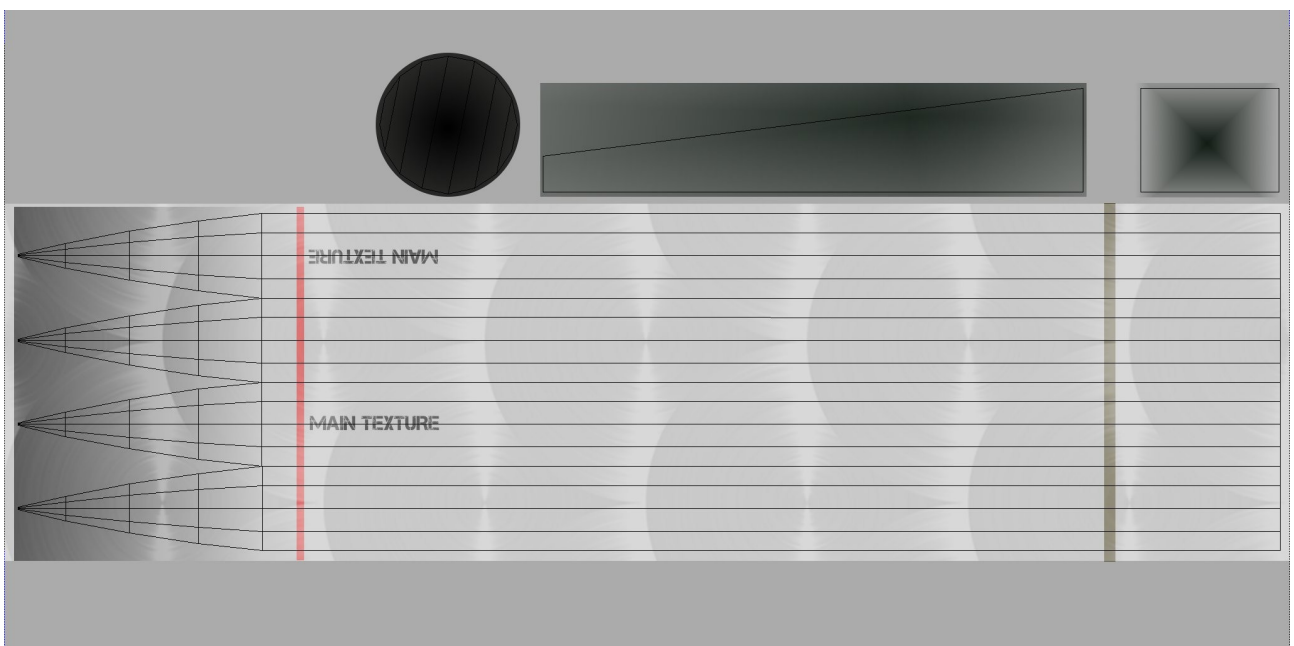
Ok, let's make it transparent. Go to „Layers -> Transparency -> Color to transparency“ and choose plain white as transparency color. At this point i'll not insert any screenshot. It's kinda pointless to show transparency on a white background.

Now create a new layer. On this we will paint our texture. You can give this layer any color you like but i would suggest to use already the main texture color. When created, move it to bottom. You have to look in Layers menu as i really don't know how to translate it. Just make sure the template layer is on top.

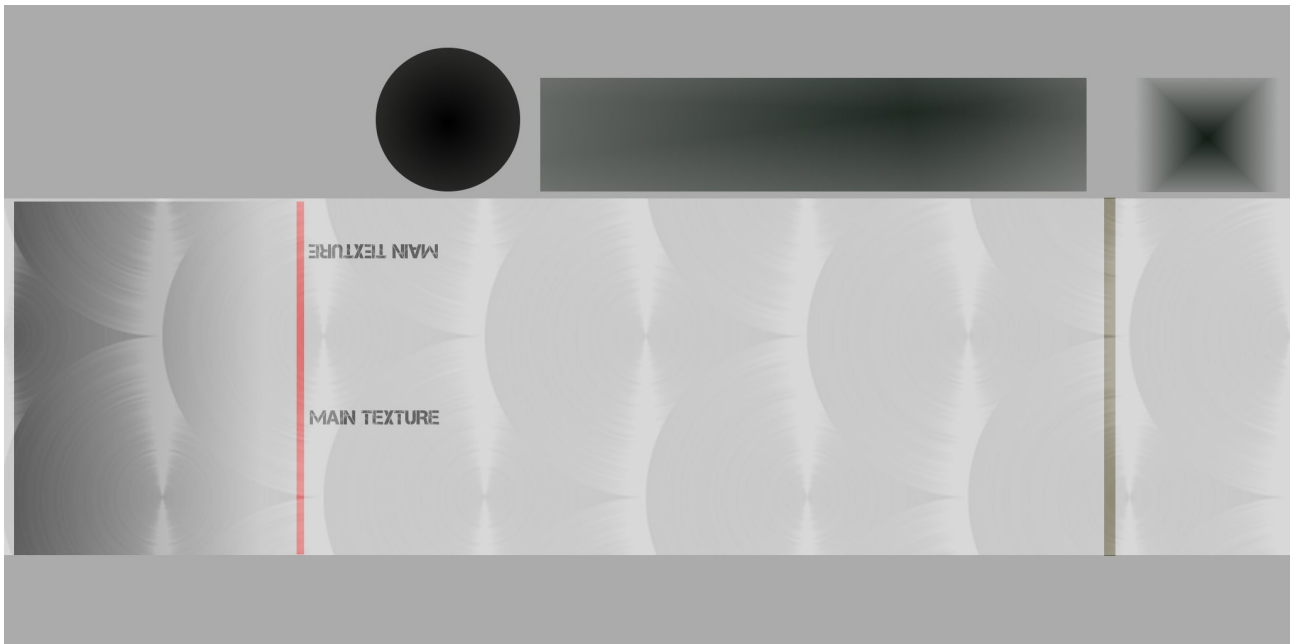


From here you may draw freely by your imagination or use some photos as drawing reference. For now we keep it „freehand...sort of. Let your fantasy flow.

That's what my fantasy came up with. On this version, the template is still in.



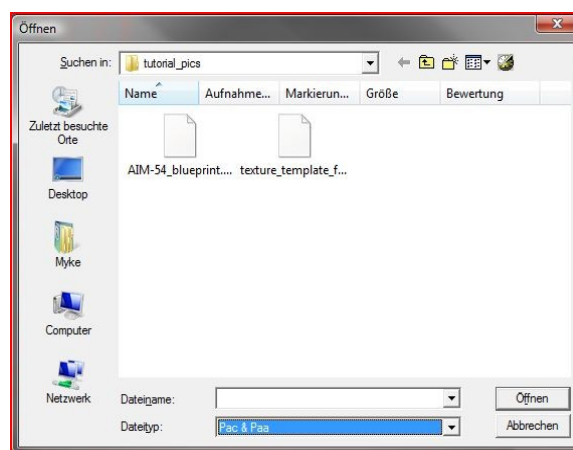
You see on the left and on the right side we have a imprint. Don't forget to place imprints on the right side upside down. Now you can delete the template with the outlines, we don't need it anymore. And thats how the final texture looks like.



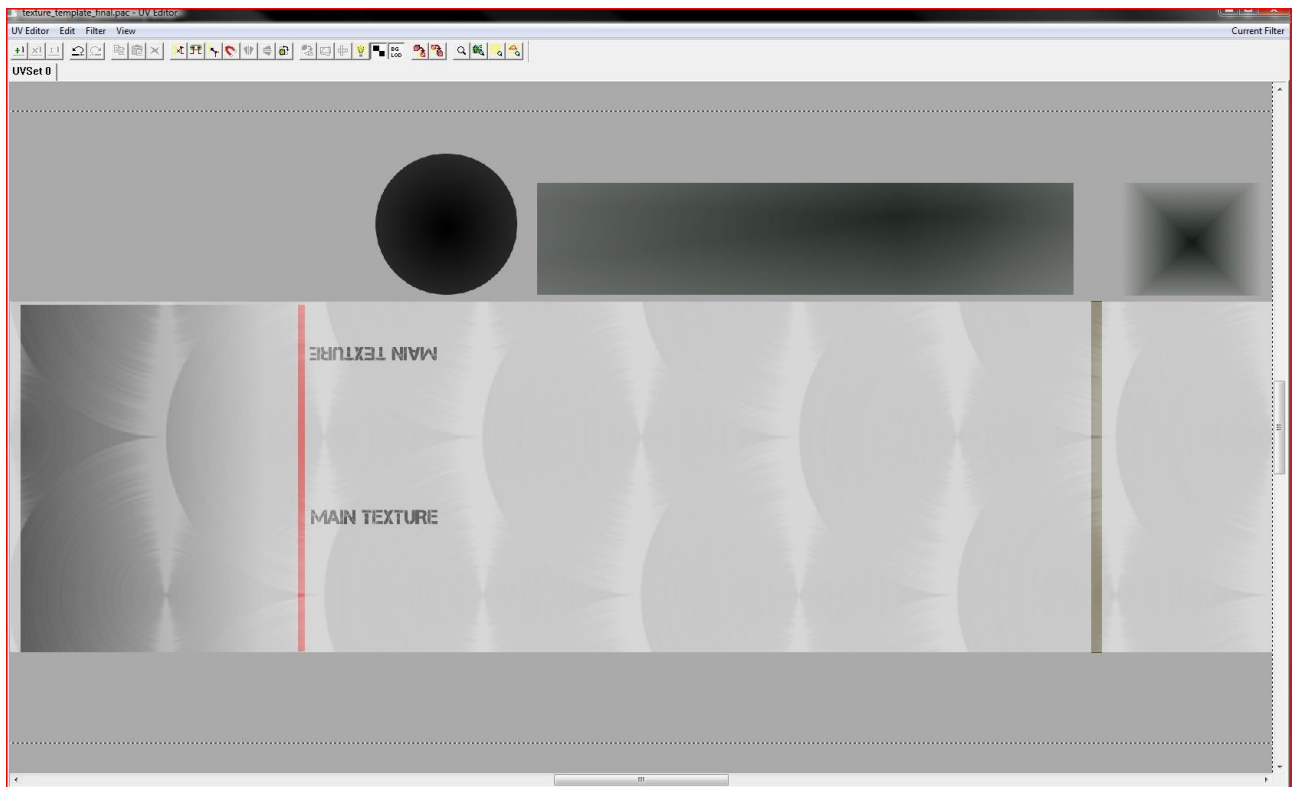
Normally O2 should be able to open .tga files but for some reason this doesn't work for me. I save textures in .png format and convert them manually with TexView2. If you also have problems with .tga, try it with .png instead. Let's apply our texture to our model.

## STEP 8 : APPLYING TEXTURE WITH UV EDITOR

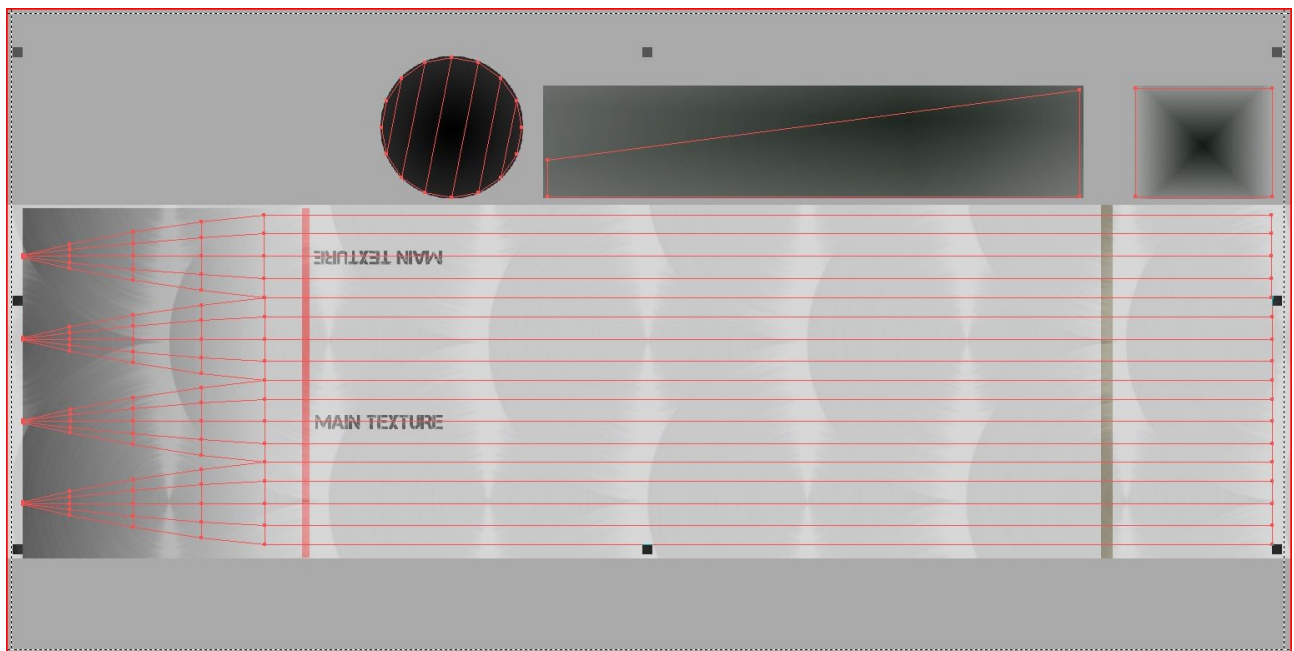
Ok, back into the UV Editor. At this point you should have either the texture in .tga format or as .pac or .paa file already pre-converted. In the UV Editor we should still have our template layout. Select all and press CTRL + C to copy it to the clipboard. Now open your new texture by pressing CTRL + F2. Browse to your texture. Be aware that filetype is pre-set to show only TGA files. If you have pre-converted your texture you have to switch it to Pac & Paa filetype.



Select your texture and click on „Open“.

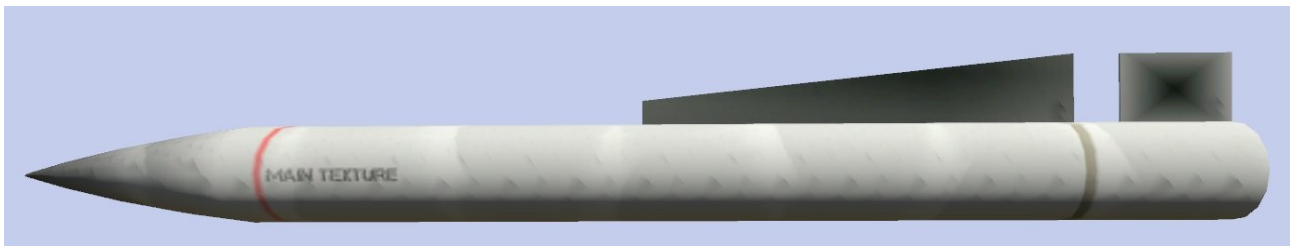


So we got our texture in the UV Editor. Now hit CTRL + V to insert the previously selection which we copied in the clipboard. You should now have something like this.

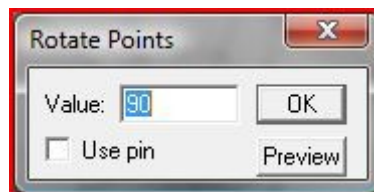


I bet you're curious....so what are you waiting for? Go to O2 and watch the bulldozer preview. Oh, i forgot: click this button:

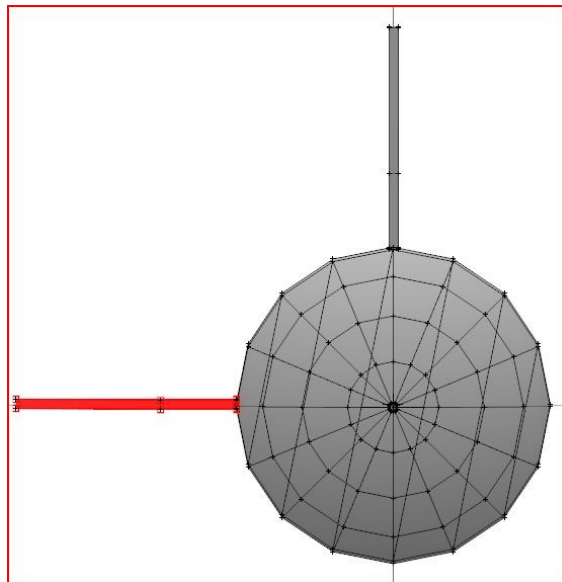




Ok, i agree. Not high quality yet but we're not finished yet. First, let us copy paste the winglets. In O2, go to front view, select the winglets (both) and press CTRL + C and CTRL + V. After that, in the menu go to „Points -> Transform 2D -> Rotate“.

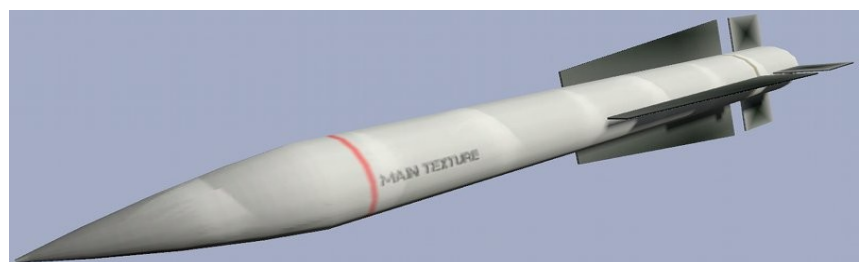
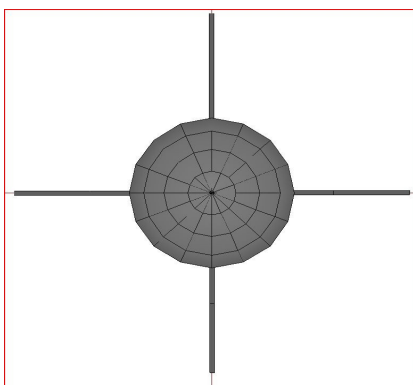


Check the „Use Pin“ box and enter the value 90. Hit OK.



I guess the missing 2 sides you'll be able to do yourself.

IMPORTANT: when done with copy&paste, select all (CTRL + A) and press F5. This will normalize all faces. Else it looks odd.



Congratulations! You have created a model from scratch and created also a texture and applied it to your model.

## STEP 9 : UPSCALING TO REAL SIZE

As you remember, our missile is just 1 meter long. Original AIM-54 is 3.96 meters. Now we can upscale it pretty simple. Select the whole model, in the menu go to „Points -> Transform 3D -> Scale“ and as value enter 3.96, hit OK.

Done.



## STEP 10 : CLOSING WORDS

I have to admit that this is not really a high quality model. It is still missing normal and specular mapping and a proper rvmat file. But for those things you'll find very good info in the BI Forums, most in sticky topics in the editing section. Also for GIMP exists a normal map plugin which let's you create normal maps just with a few clicks.

Take your time, get familiar with O2 and GIMP (or whatever software you use) and don't be shy to experiment. Finally, this AGM-65 was created exactly this way:



Good luck, hope to see you high quality addons pretty soon „in the wild“.