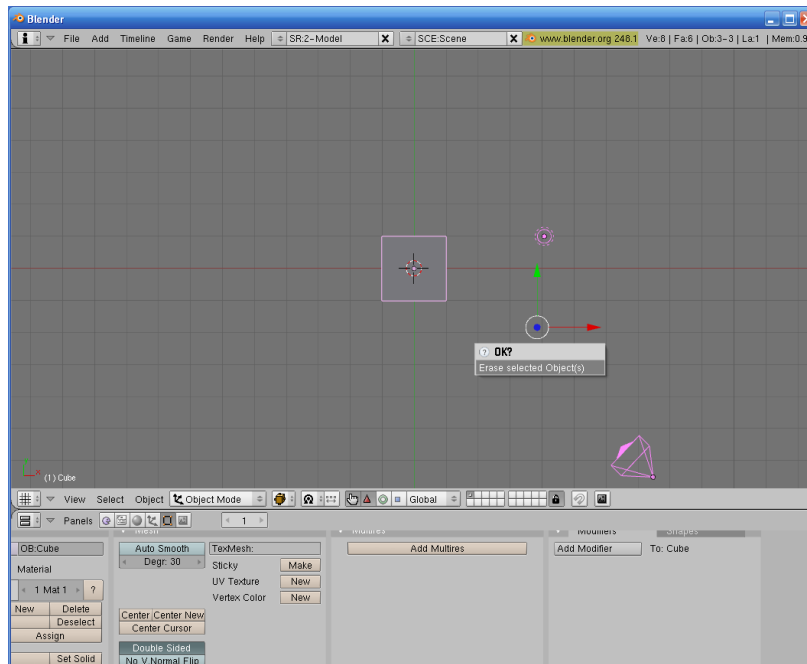




Mega Blender Tutorial – Volume I

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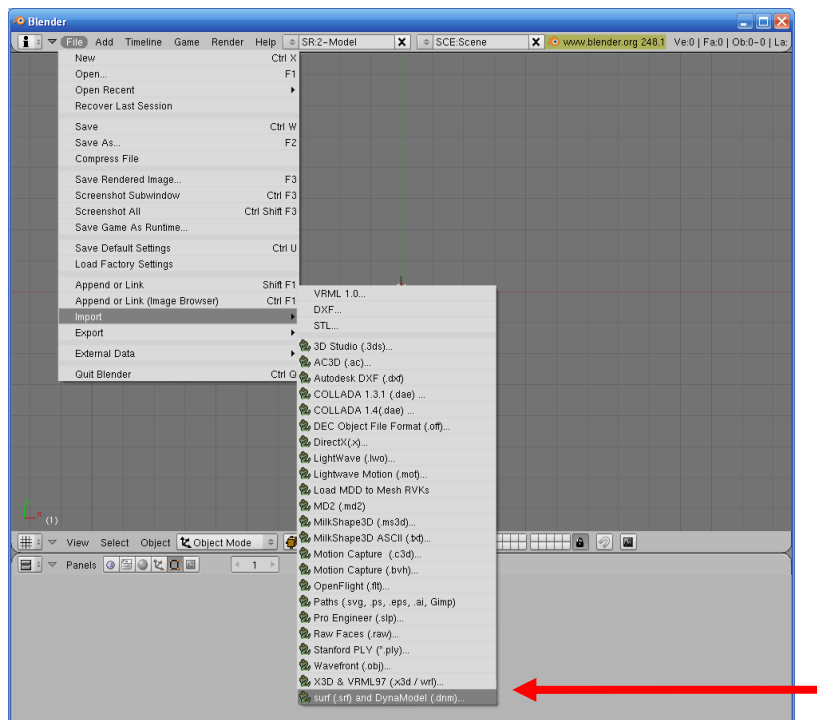
Open blender. You'll notice some default objects here.

- Press "A" >> "X" and click on the "Erase Selected Objects"

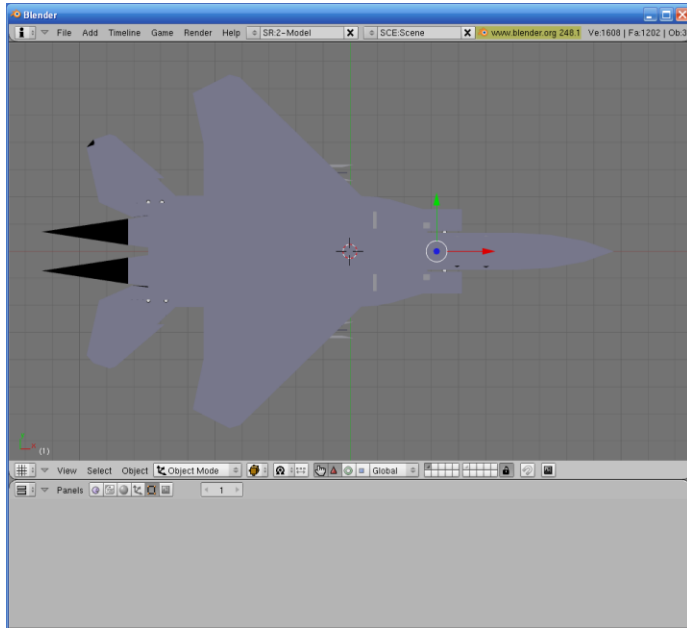
Now you have a clean slate to work from and import an aircraft in that wont have a cube in the middle of it.

Begin the import process!

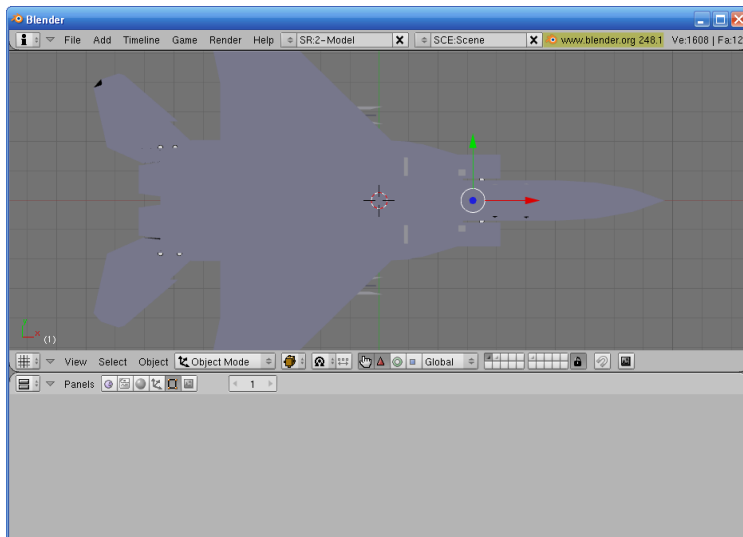
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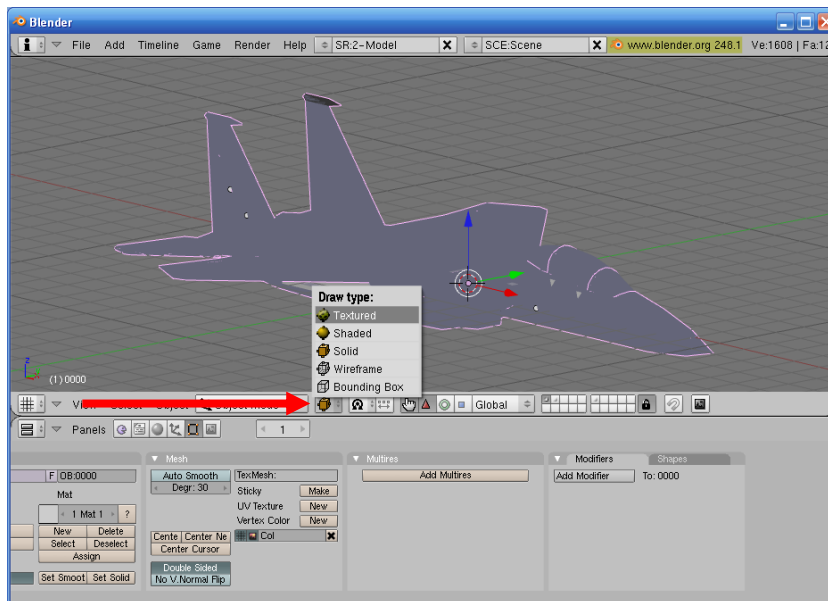
I've imported a GAC level aircraft to help cut down on detail level and make things simple. You'll notice that the aircraft is grey, and the after burners are lit. We will now go through some steps to get the aircraft in a paintable state.



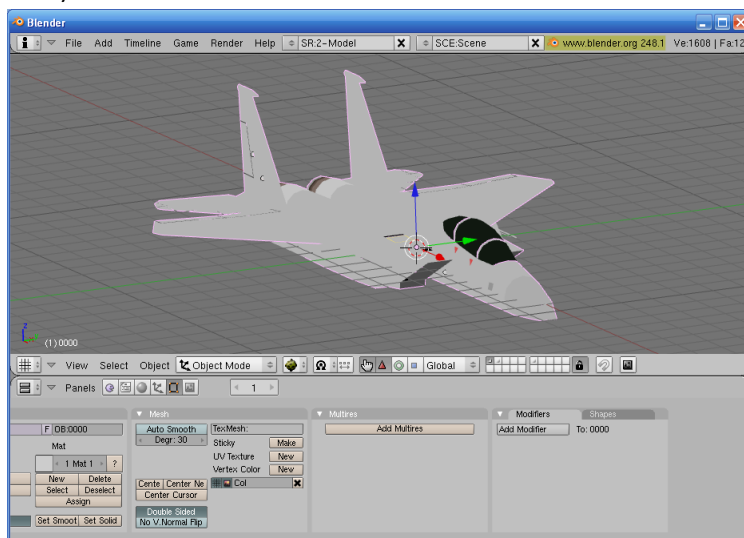
- Press the right arrow button once and then the left. This will cycle one keyframe forward then back and put the plane in a native or “base” state (my own terminology). The afterburners should then be off now.



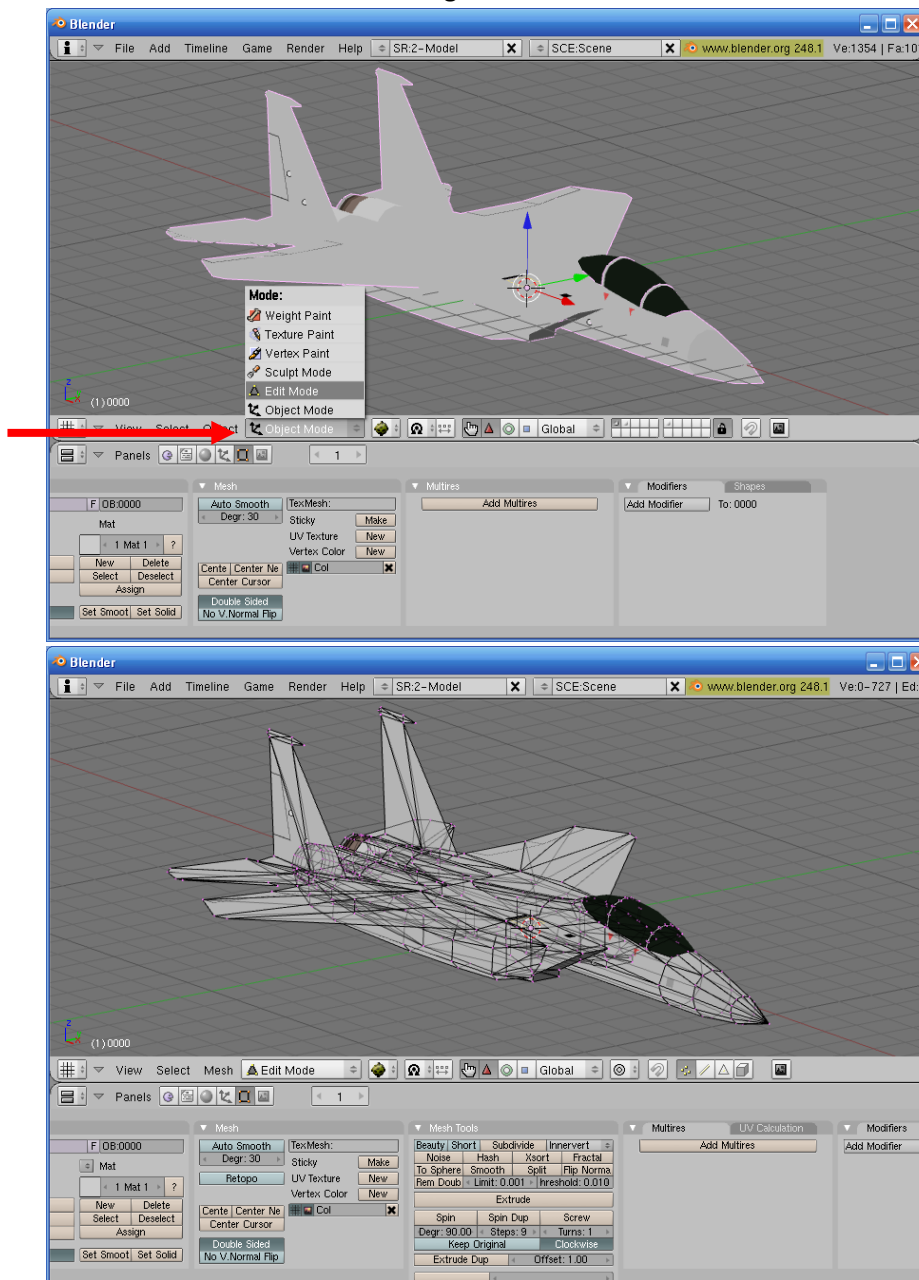
- Some of the controls you will want to know are outlined as followed
 - 1) **Hold middle mouse button** and move mouse in a single axis – this will rotate your view around the target
 - 2) **Hold Middle mouse, hold (Left) shift, move mouse** – the view will skew or strafe with no rotation
 - 3) **Left mouse button** – will place the target in space wherever you click/select
 - 4) **“C”** – centers the view on the target placement
 - 5) **Num pad arrows** – will move in set increments about the center (very useful for getting re-oriented if you’re lost)
- Lets begin to set up the aircraft view to a state where we can see some important things...



- Press the viewpoint shading button and select the “textured” section (picture above)...now the aircraft is in a textured view state (below). (toy around with the others: wireframe, shaded etc...)



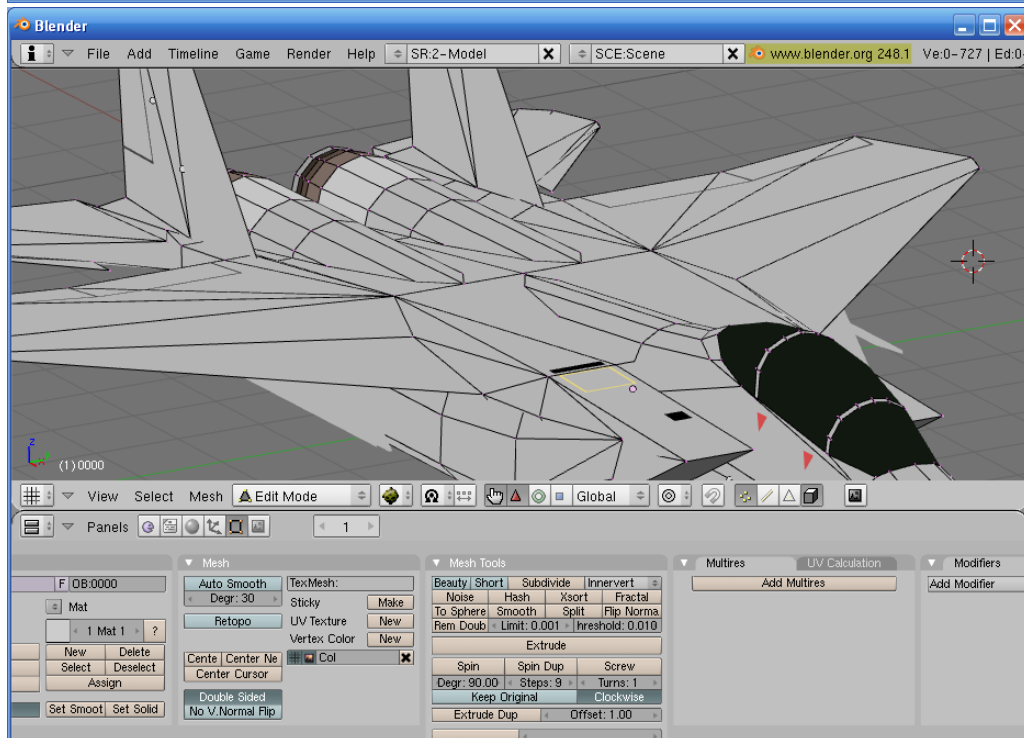
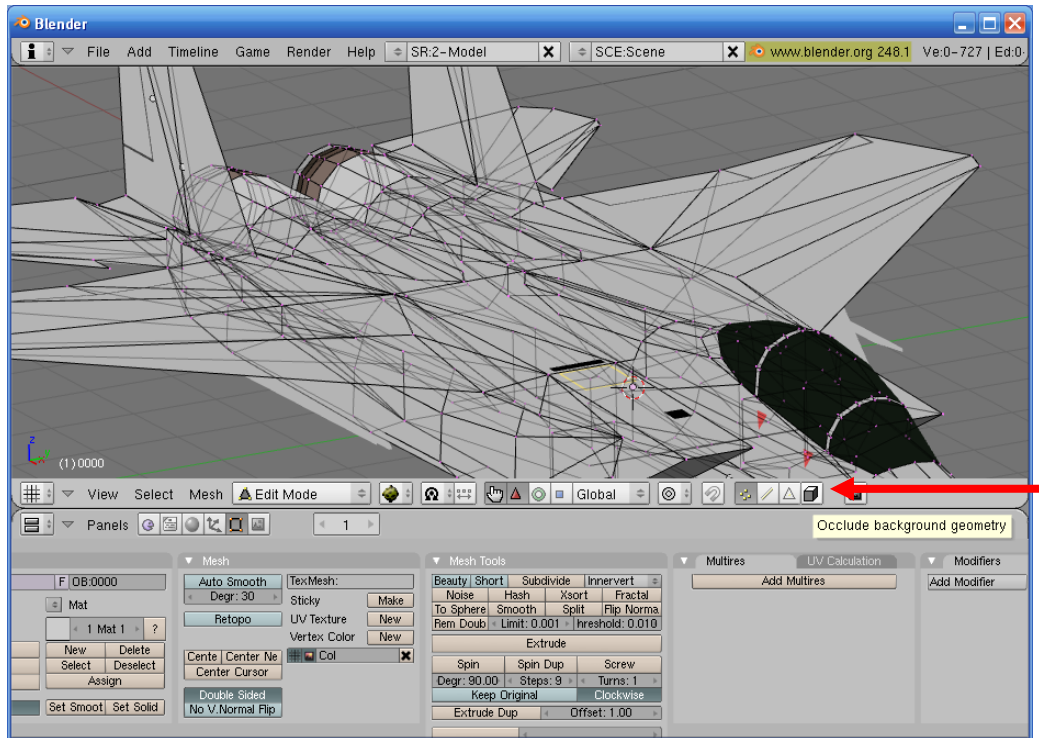
The aircraft or work state is currently set to “Object mode”. This mode basically will let you select, move and resize individual SRF’s. This is useful but the finer details of editing are available in “edit mode”. See image below...which shows how edit mode is selected/activated.



Now the main part that was selected (body) is in edit mode. (Use TAB to select/toggle between object and edit mode.) Experiment by returning to object mode, and right click on the canopy <or some other part> and go to object mode. **(Tab >> Right click on object [canopy for example] >> Tab [to enter edit mode of that object])**

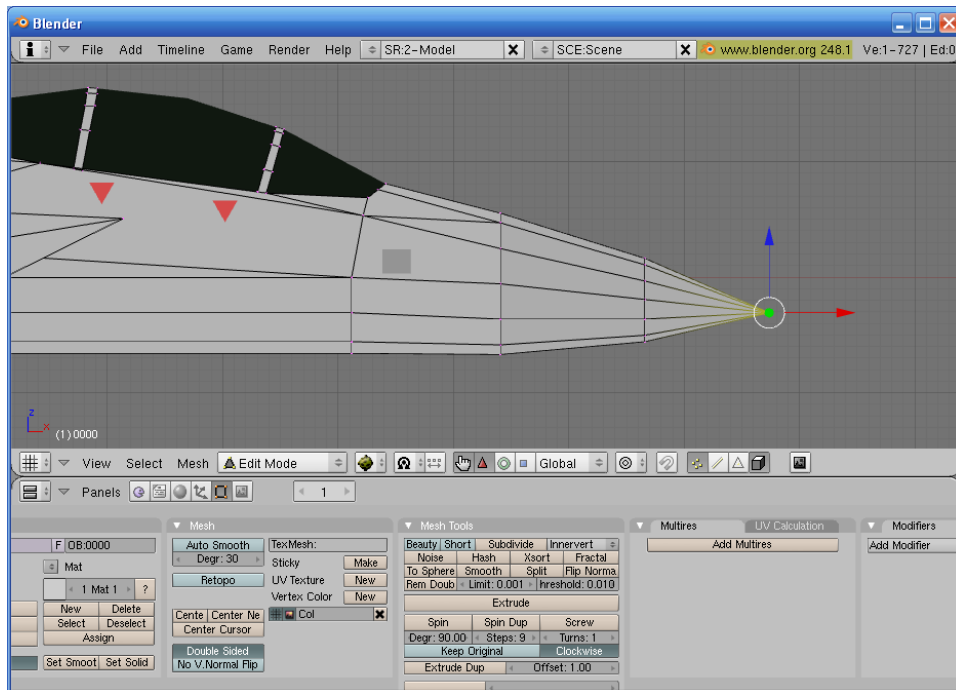
Returning to the main body in edit mode, lets change some things about the way the data is displayed.

You'll notice that the body is slightly transparent and showing points or the vertices of the polygons which constitute the object. Lets tell the polygons of the object to be solid



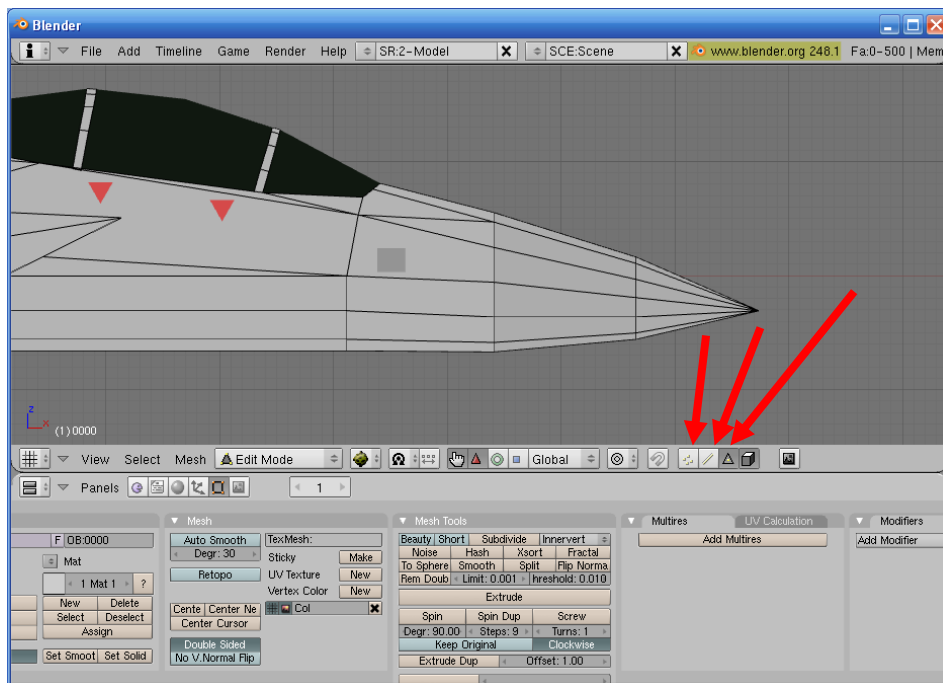
Now the polygons are not transparent and we are viewing the main hull of the aircraft in edit mode. The polygons are bounded by the dark lines (edges) and cornered by small vertices (pink dots). Currently and by default we are viewing it in edit mode, and with vertices.

(Optional) experiment with vertices. Select one by right clicking on it.



You'll notice that the vertex is selected, with the edges around it highlighted slightly and control handles on it. You may grab onto any of the handles and move the point **(or points by holding shift while right clicking will select more or add to the original selection)**

Select the small triangle button next to the "occlude background geometry", called **"Face select mode"**

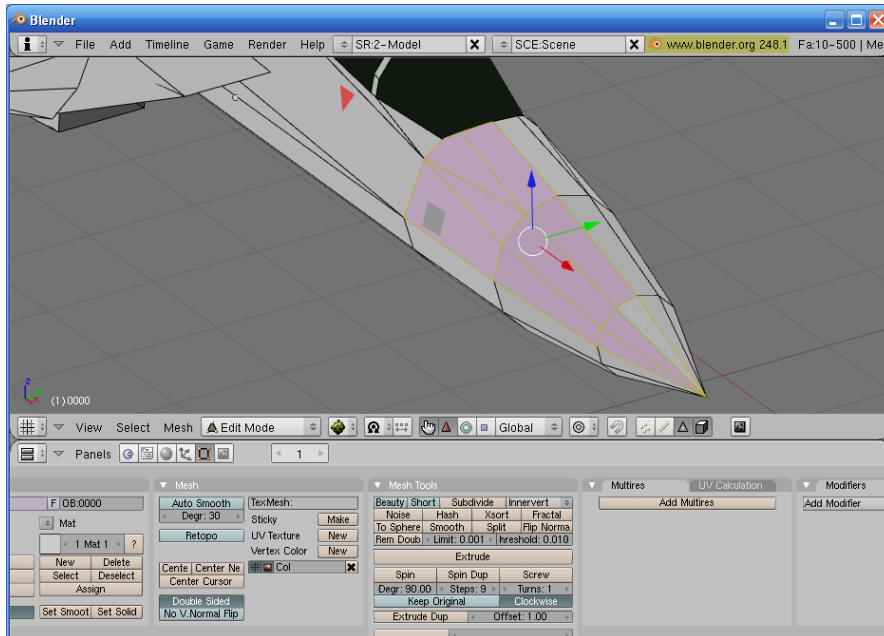


To the left of this button are the options to go to vertex and edge select mode (useful!!!)

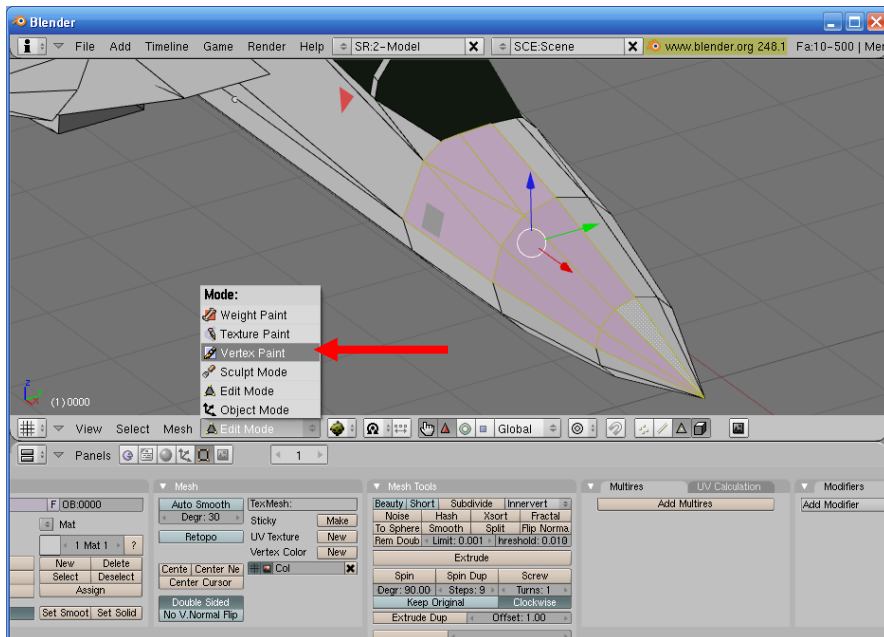
Selection of faces or polygons can be accomplished in a number of ways. The next segment will outline how to paint or color polygons.

By now you should be familiar with how to view, select, and toggle between different modes of Blender.

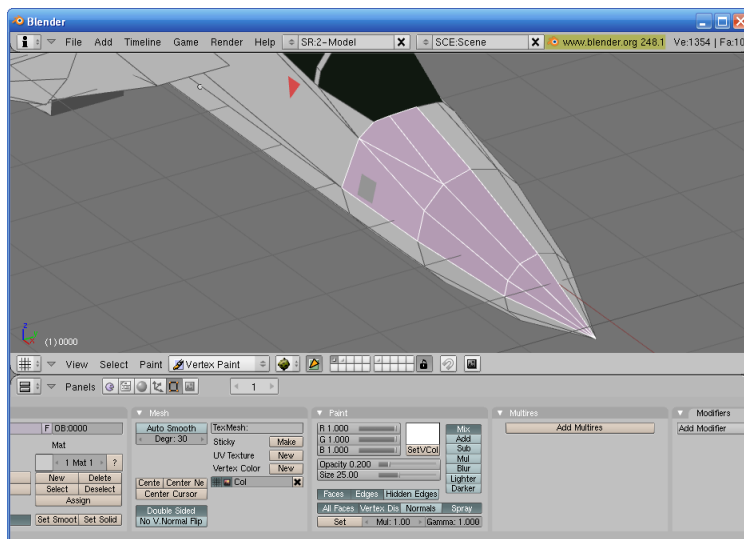
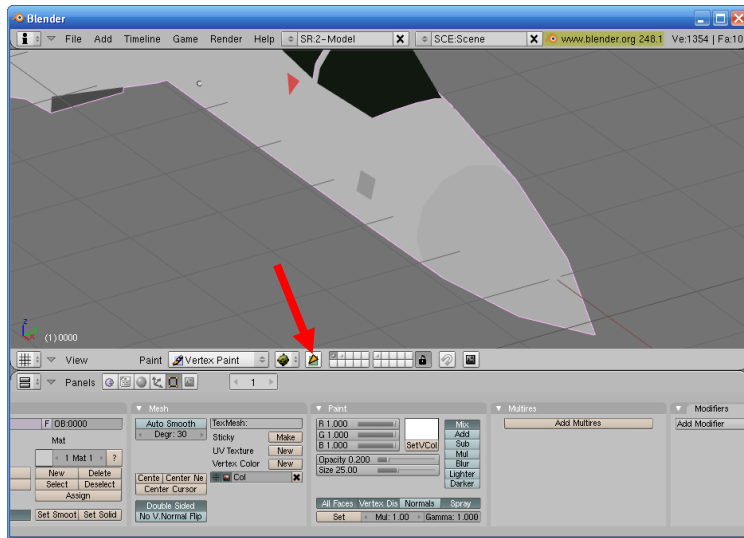
- Faces for painting can be selected by right clicking on them and holding shift at the same time to select more or add to the current selection.
- Select a number of polygons (they will turn pink/purple in color when selected)



- Now instead of object or edit mode, we need to switch to vertex paint mode

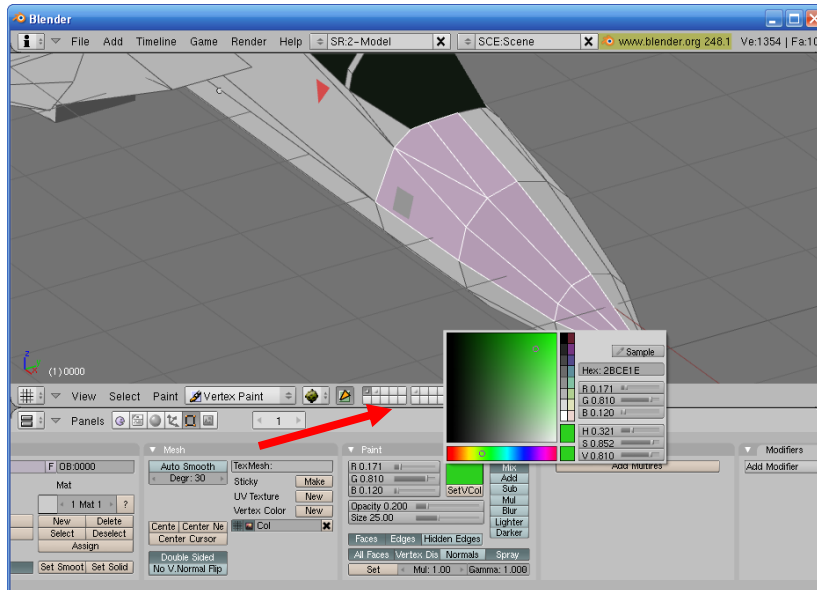


Once in vertex paint mode, we now have to tell Blender to paint just selected faces instead of whole objects. Press the F key, or the painting mask button indicated below

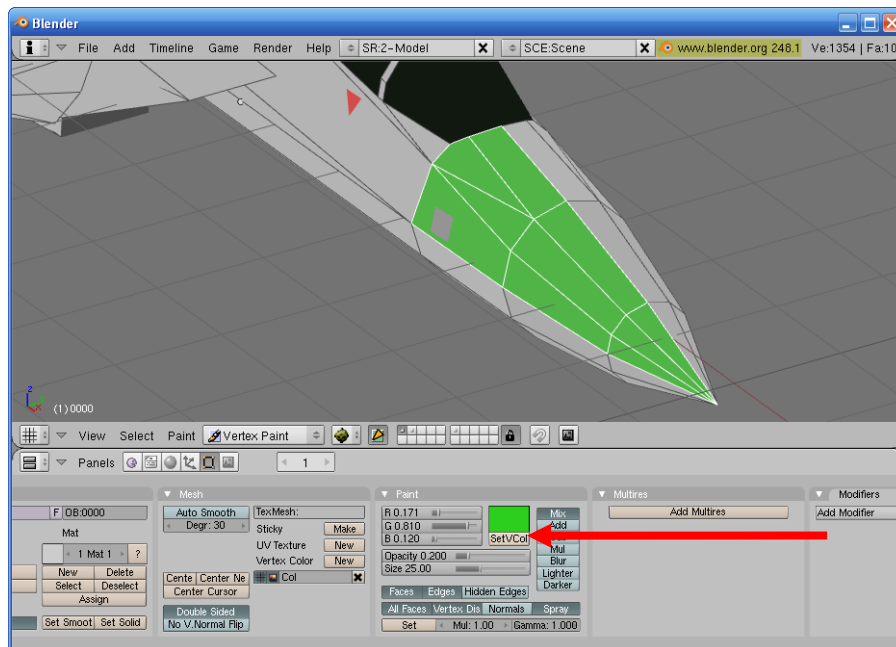


You'll now notice that the polygons have returned to view, and are still highlighted from when you selected them previously. Now we are ready to select a color and paint the polygons selected (still in purple or pink color)

- Select the color pallet box to choose what color you wish to paint with, default is white. Click on the box of white and choose a different color.



- To apply this color to the selected polygons, press the “SetVCol” button below the color pallet box.

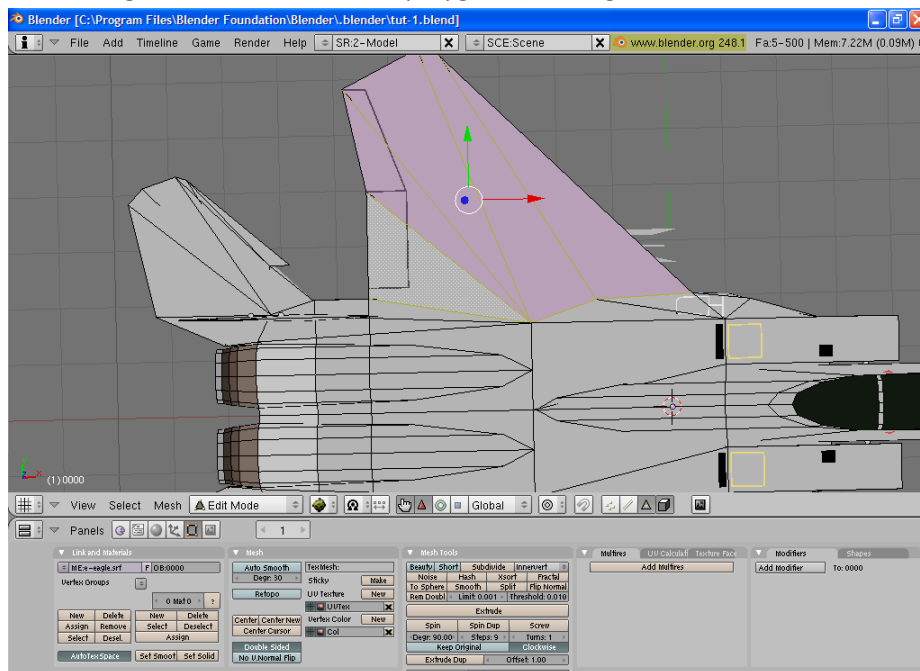


Now the polygons are colored with the selected color. Experiment now by staying in vertex paint mode, and right clicking on (selecting) other polygons and painting them. (Right click (optional hold down shift to select more or add to the selection >> Vertex paint color >> SetVCol to color. **You will also notice in the color pallet option or box that opens when you select it, there is a sample button that enables you to sample or select a color directly from the model or an image you choose to set in the background.**

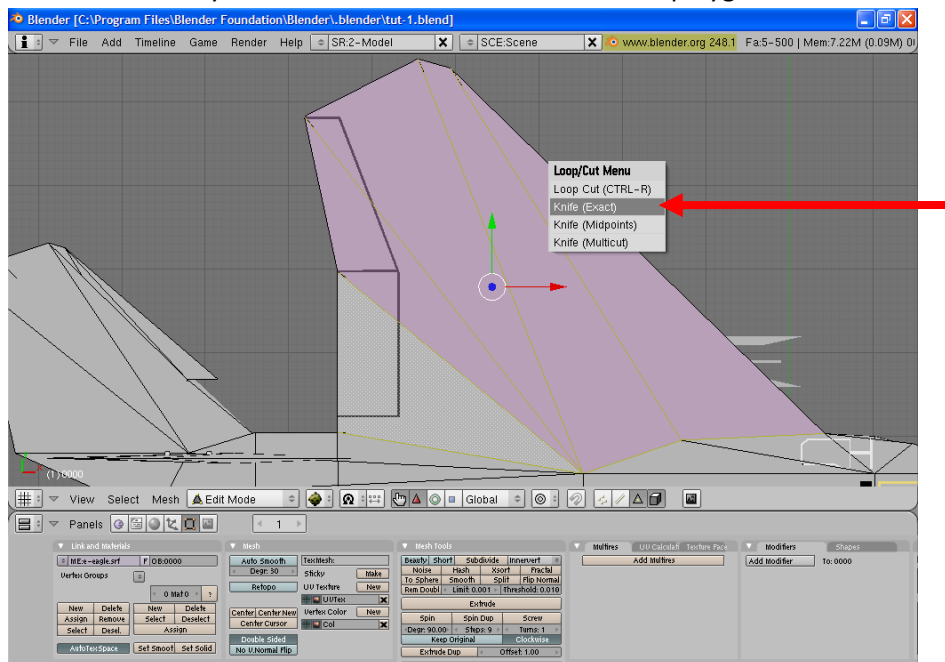
How to cut and paint polygons

Begin in a top down view in edit mode of the main body.

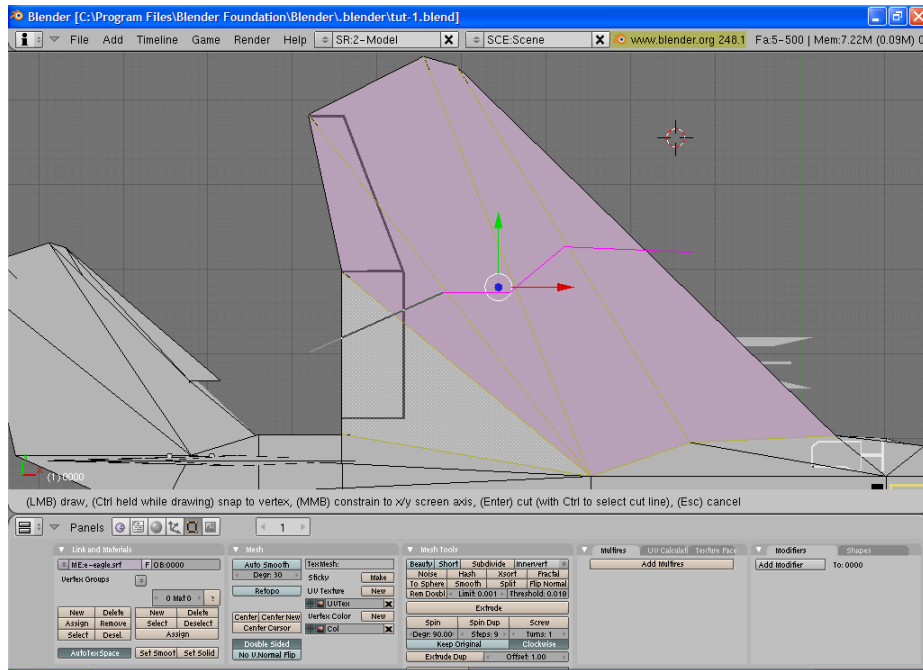
- Right click on the desired polygons (holding down shift to add to selection)



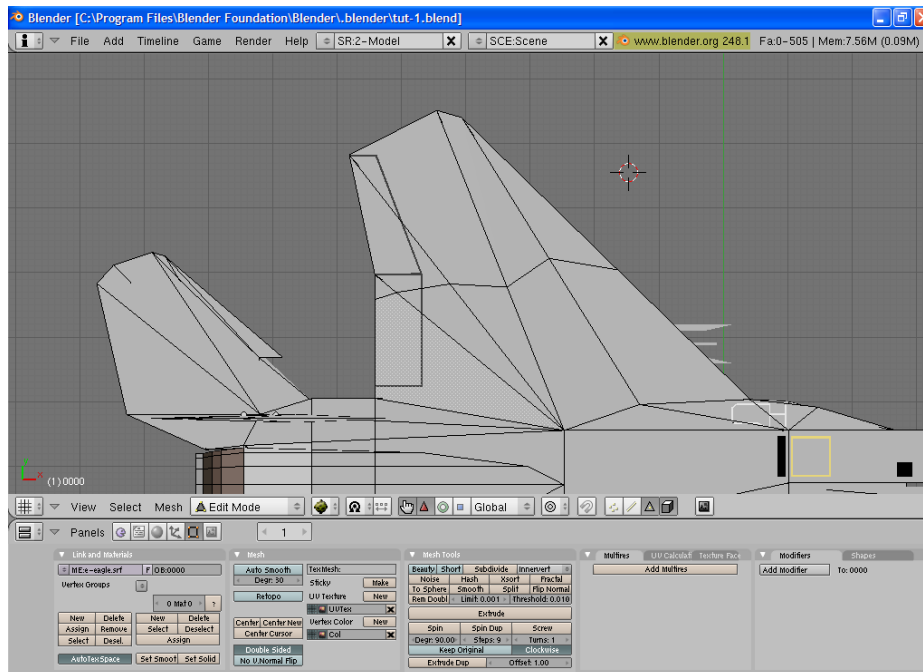
We are now ready to edit or cut the desired or selected polygons. Press “K” and select “exact”



The cursor is now a cutting tool and will make incisions from edge to edge. Begin on the outside of a selected area (in the grey background) and click through or in points (about 4 or 5), across the selected region.



- At the end press “enter” to complete cutting.



We have now created new polygons on the wing which can be treated or painted like the others. When in cutting mode you cannot rotate or move the view so be sure you’re in a comfortable position for cutting

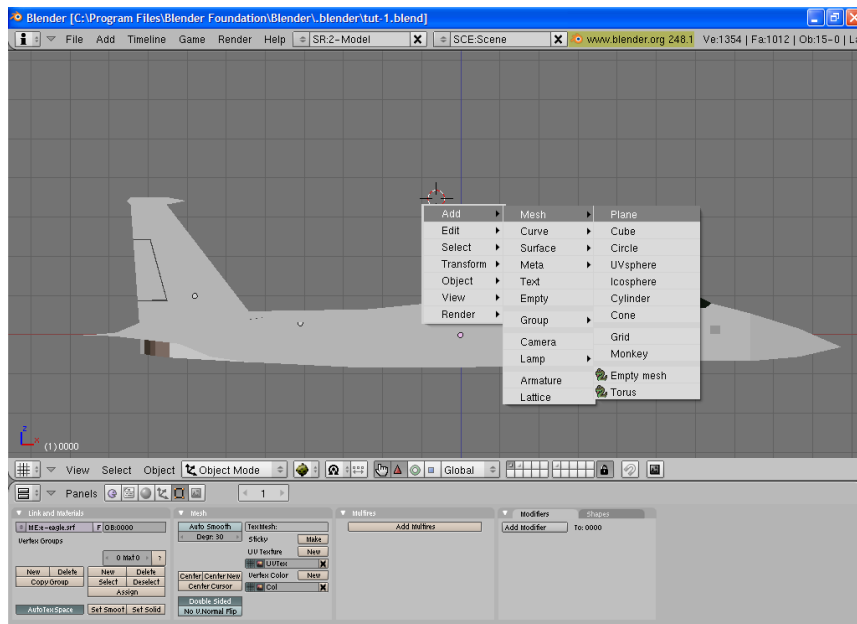
Another important aspect of the cutting tool, it will cut through the polygon if you were to select the one behind it. Meaning you can make cuts all the way through the polygon if you were to have selected the other side of the wing. Be sure to experiment with this as it’s the only way to become proficient in polygon cutting polygons.

Creating objects or “SRF’s” blender style

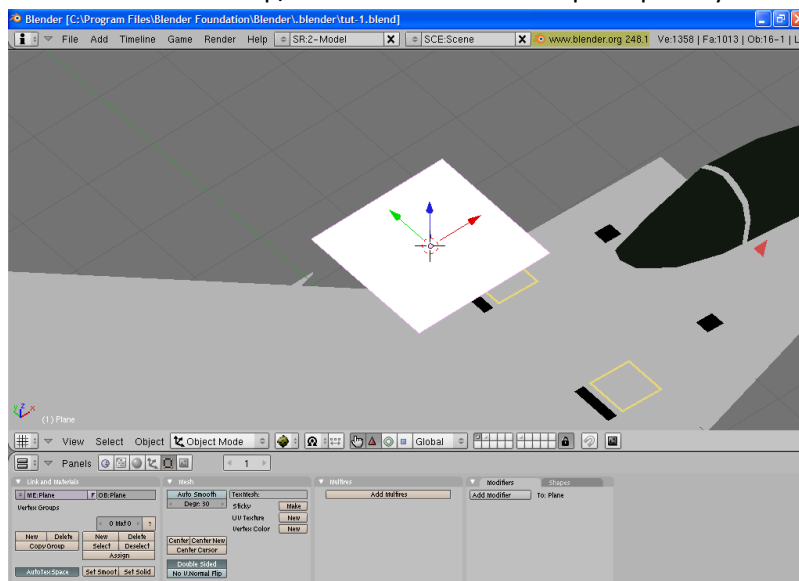
Blender does not allow one to randomly place points as does the conventional YS editing or creation software. BUT, we can create an object, manipulate points and basically do the same thing. It seems a bit tedious at first, but once one has the method down for how its done, you can make some amazing things.

Begin with a view of the side of the aircraft in **OBJECT MODE**

- Left click on an area above the aircraft to set where the target will be.
- This will indicate where the object we will create will be placed
- Press “space bar” >> add >> Mesh >> Plane

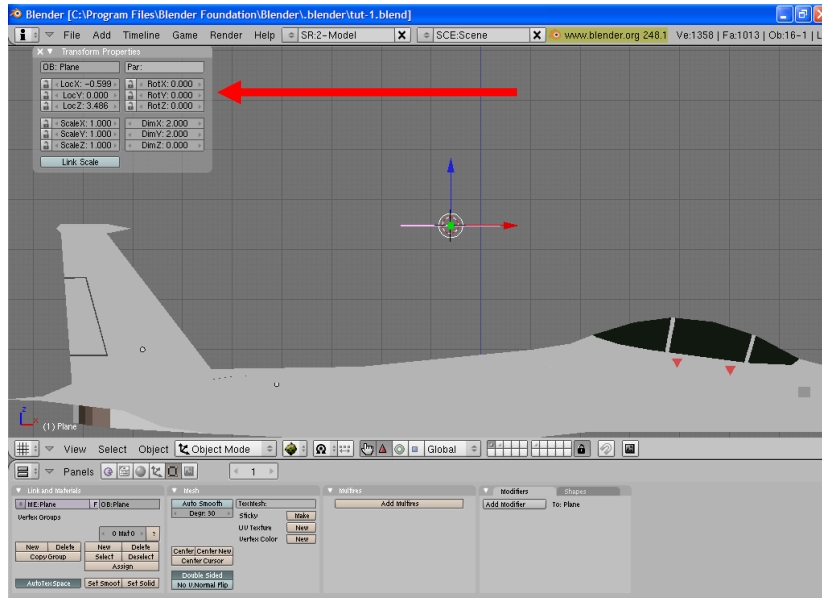


- Rotate to a top/down view to see the square plane you’ve created.

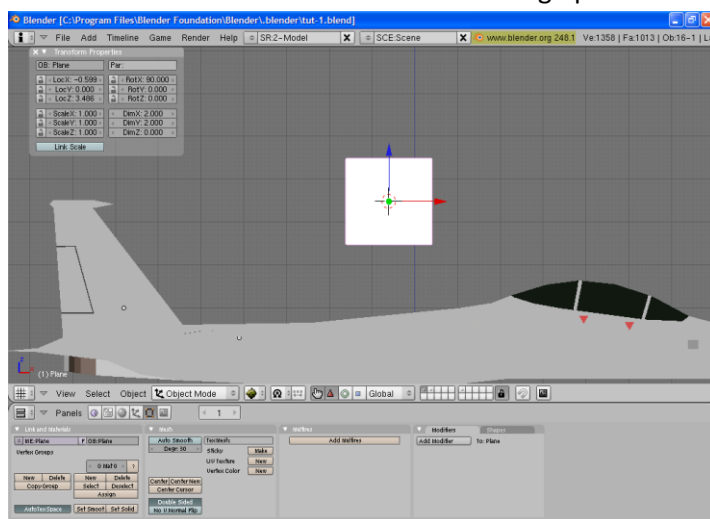


This square or flat plane we've created will supply us with vertices we will use to create some other shapes. Lets make a star to place on the aircraft.

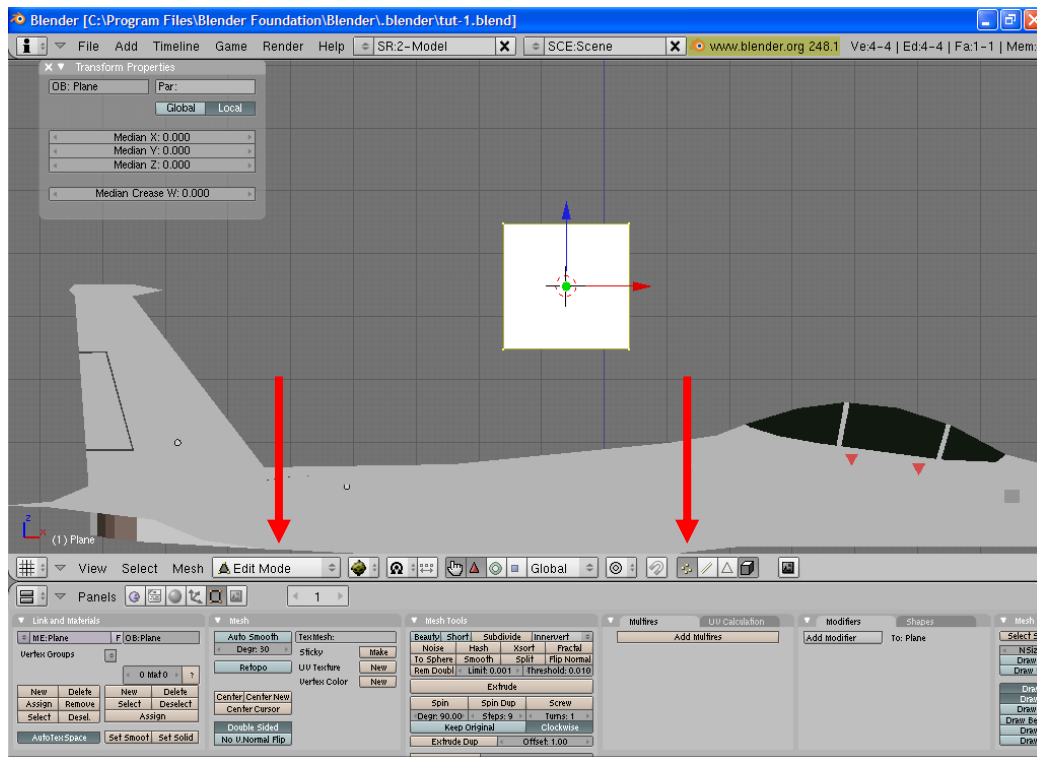
- Begin by right clicking on the square. You'll notice it is acting like its own SRF or separate part of the DNM of the aircraft we're editing. This is important since we are trying to edit something independent and place it on the aircraft.
- Switch back to a side view, and press "n". This activates a pane of controls to manipulate that object



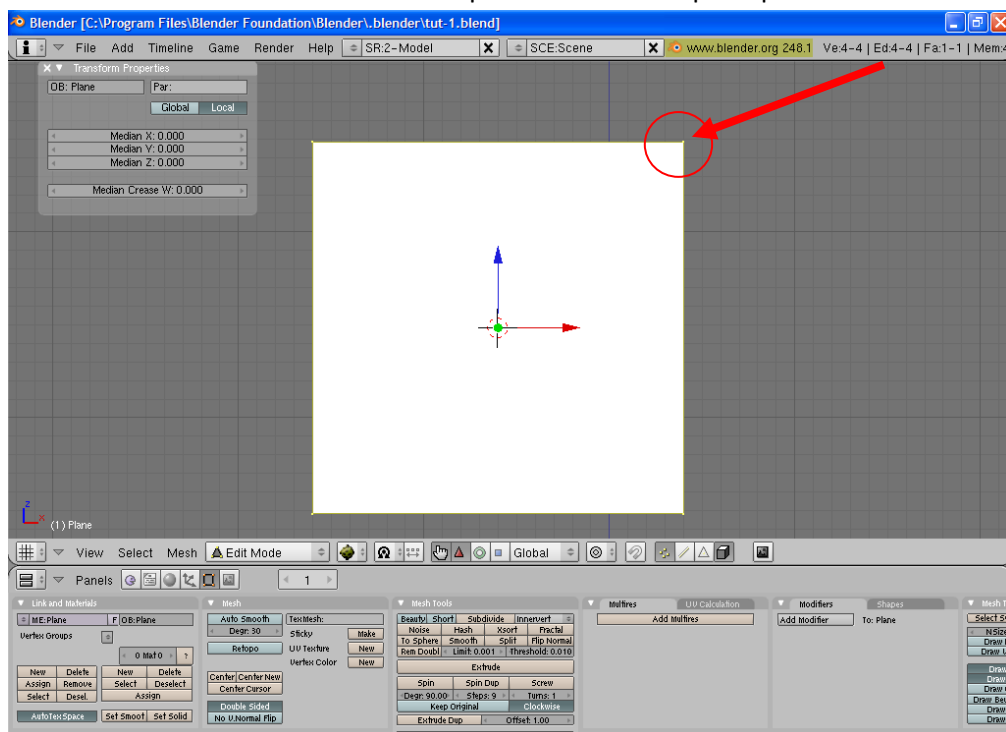
- Since you are currently selected on the square you created, the pane of controls ("Transform Properties") is going to manipulate it. We will begin by orienting it so its in the right side up position for placement on the aircraft.
- Use the "RotX" area to make it 90 deg up or flat in our view.



- Switch to edit mode, and toggle vertex edit mode.

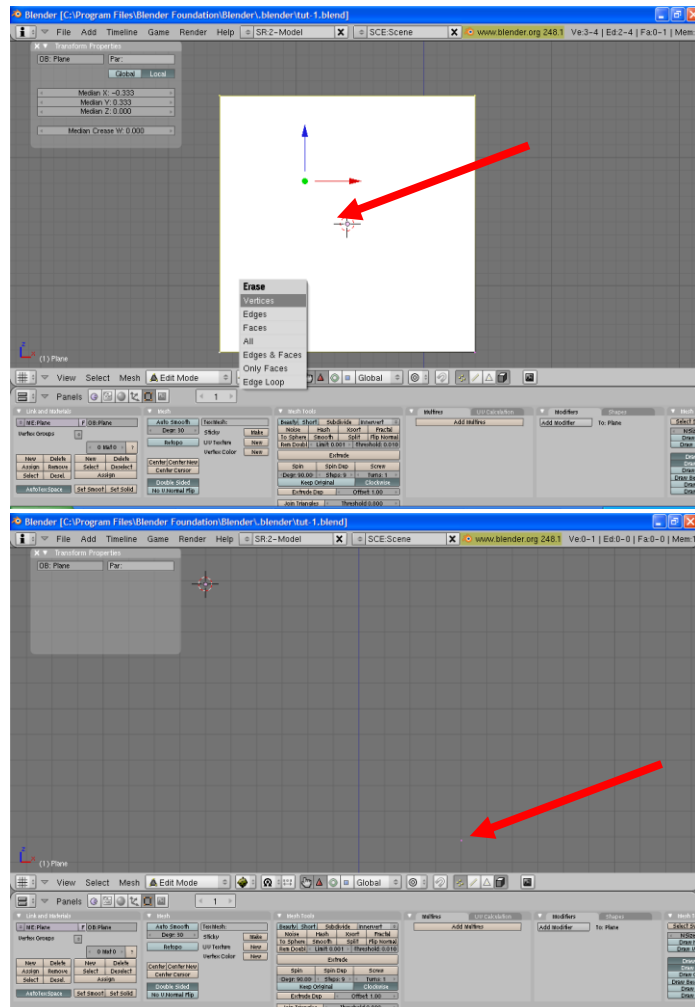


- Now we can see the individual points that make up the plane on all 4 corners. (zoom in)



With these points we will now begin to make our own shape or SRF to use.

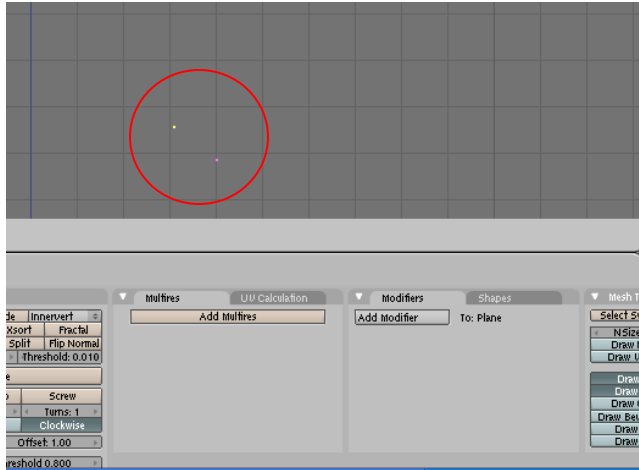
- Right click on 3 (holding down shift) of the vertices, and erase them by pressing “x” >> Erase vertices



Now just one point or vertex of the original plane exists (zoom in).

We will now duplicate that point and begin making an outline of a star. Follow these steps to duplicate and place the vertex.

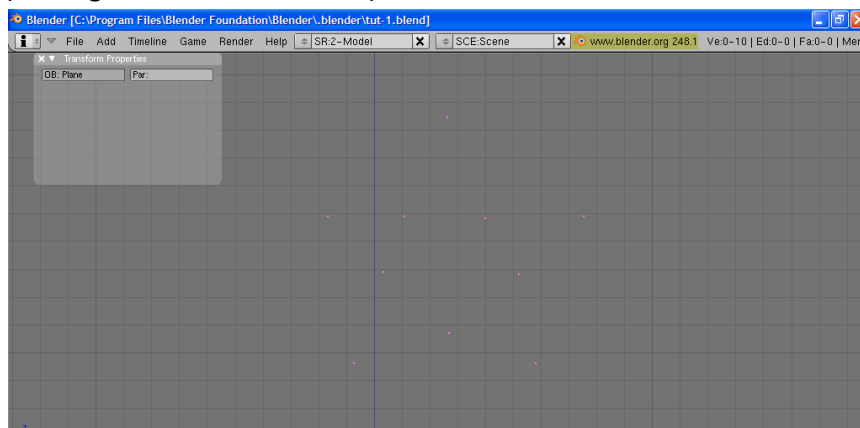
- 1) Right Click on the vertex (you'll notice the controls will cover it)
- 2) Press "shift+D" to duplicate the vertex, then move the mouse slightly to the right or left to see it



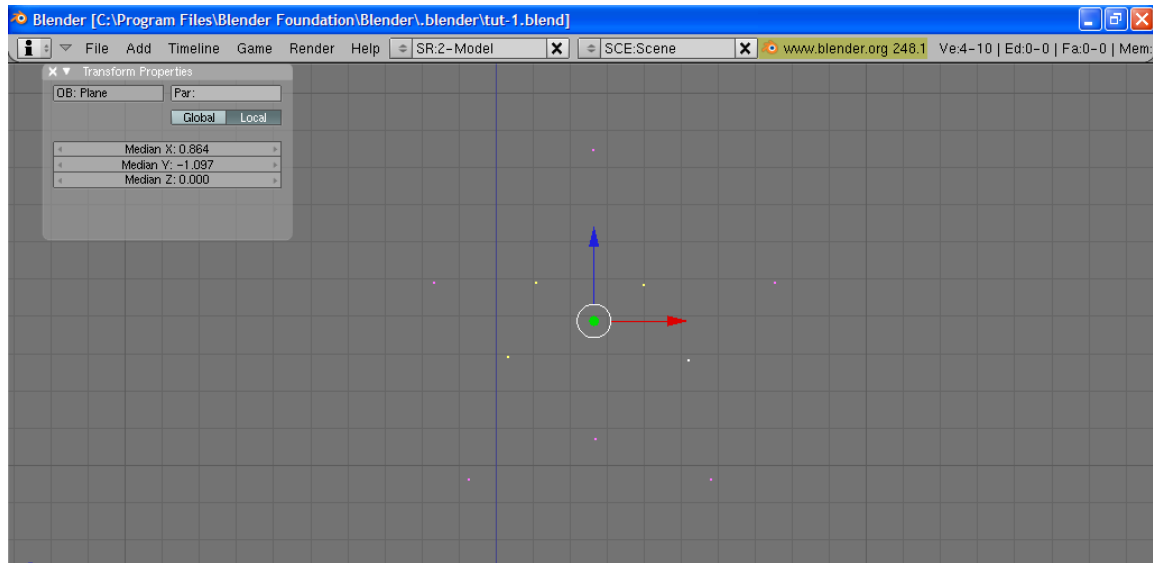
- 3) To drop it, LEFT click in the location you would like it in (Since it's the last one created, its selected and will be covered by the direction/handles)
- 4) Repeat this process to create points of the shape you desire (star for this example)

CREATING A SHAPE

Once you have all the points placed you will need, begin by clicking on one and selecting 3 others (holding down the shift button) for a total of 4 vertices.

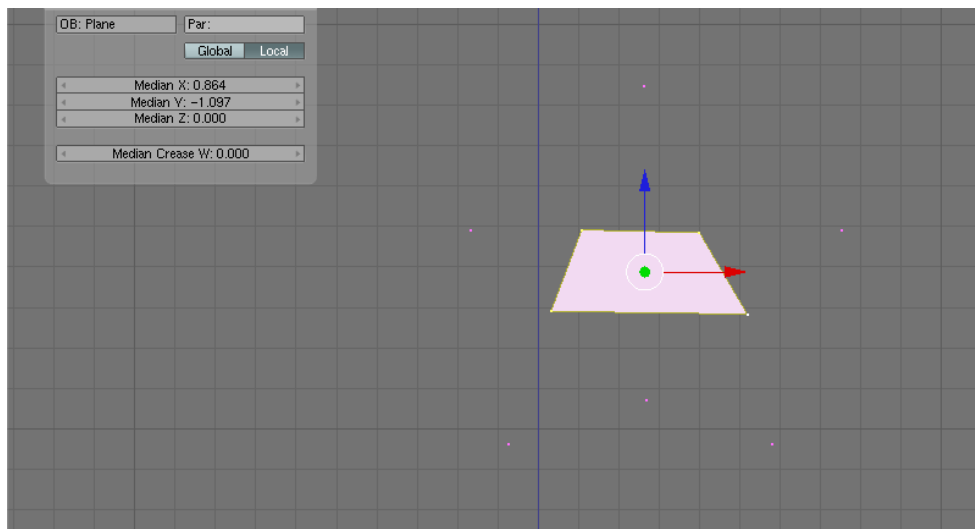


(above, note the arrangement of points to be used in making a star shape)



Above, note the selected points in the center area have turned white/gold colored.

- Now we will make a polygon from these 4 points by pressing “f” (for face)

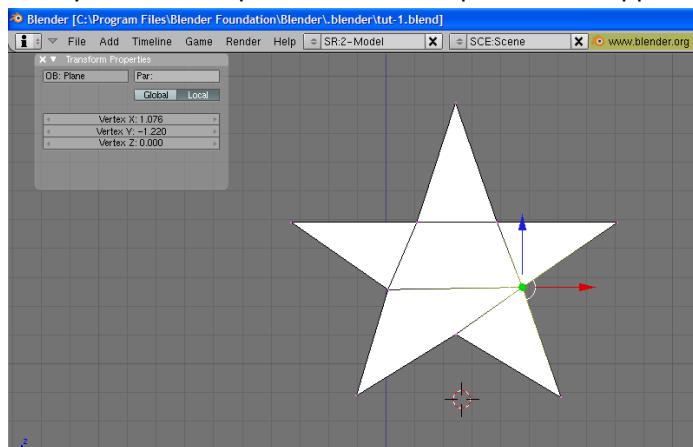


- **When clicking the next group of four, start without the shift button as to deselect the last 4 used in making a polygon...otherwise blender will not make a polygon with more.**

*****IMPORTANT – if the face does not turn white, not a big deal...this just means that the normal or projected color or colored side is on the other side away from your view. Simply press “w” to access “specials menu” and go to “flip normals”...it should reverse or flip the side projecting color**

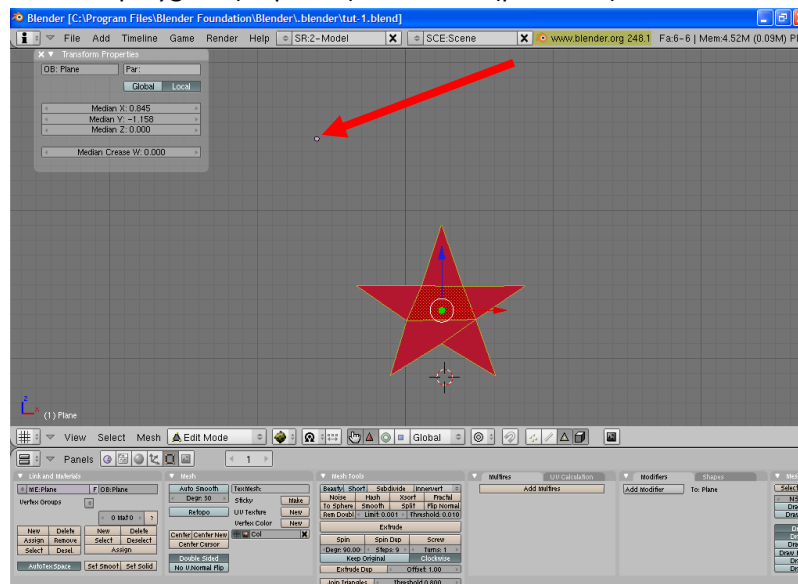
- Repeat this process and play “connect-the-dots” of the star, making sure not to overlap as much as you can (you shouldn’t overlap at all to conserve polygon counts...we will discuss later how to get rid of duplicates when doing text for an aircraft).

Once you have completed the star shape it should appear as this:



I've taken a moment to move my points of the different locations as to shape the star correctly. Now take a moment to paint it a color you wish (remember, to switch to "face selection mode" then choose all the polygons ["a"] and go through the vertex paint steps)

- Zoom back out to see its general position and size with regards to the aircraft below it.
 - You will notice that the star is not at the "centroid" of the object it pertains to. Lets center it to the object it was originally created from (the square).
- 1) Go to edit mode (of the star)
 - 2) Select all polygons (or points) of the star (press "a")



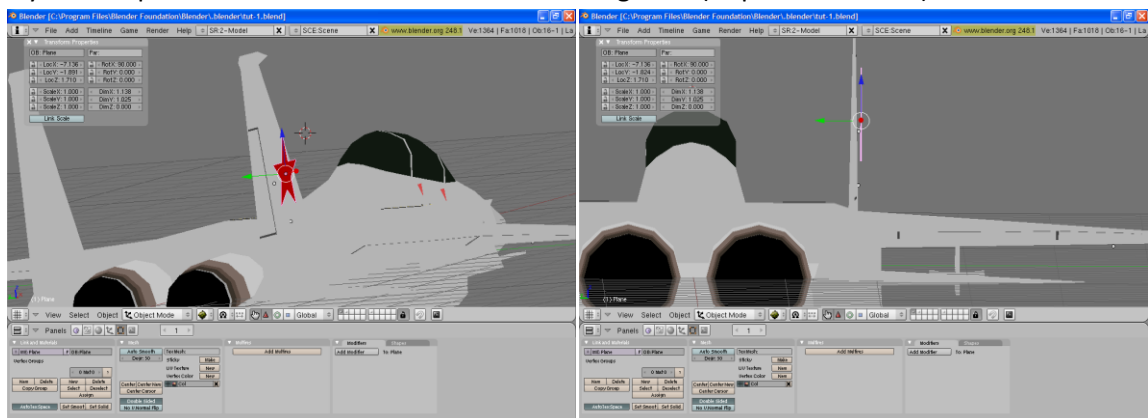
Note: the polygons are all selected, and the center point is the small purple dot to the upper left. Also, the general appearance or layout of the "Transform Properties" box now only has 3 main dimensions. These are telling you the centroid of the star relative to the purple dot.

To center the star over the dot, make all coordinate values zero. (this is important for other things and keeps the system of polygons more neat)

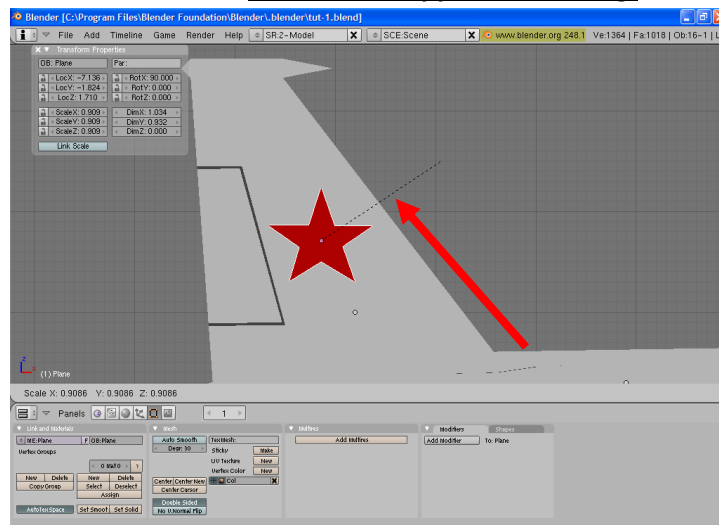
CONGRATULATIONS, YOU HAVE SUCCESSFULLY CREATED A STAR SHAPE OR A PSUDO SRF IN BLENDER.
Be creative in your point generation...if things are symmetrical, duplicate halves of a shape and mirror them across an axis (look up in blender how this is done)....anything that makes the process faster is usually better.

Use of shrink wrap and placement of an srf (Decal) onto the surface of the aircraft

- Now return to object mode of the star ([tab]) and use the handles to move it over a tail segment of the aircraft ...**using LEFT mouse button to grab the handles you desire**
- Don't be afraid to tilt your view in different directions to see where the object really is
- Try now to place it close but not inside of the tail segment (as pictured below)

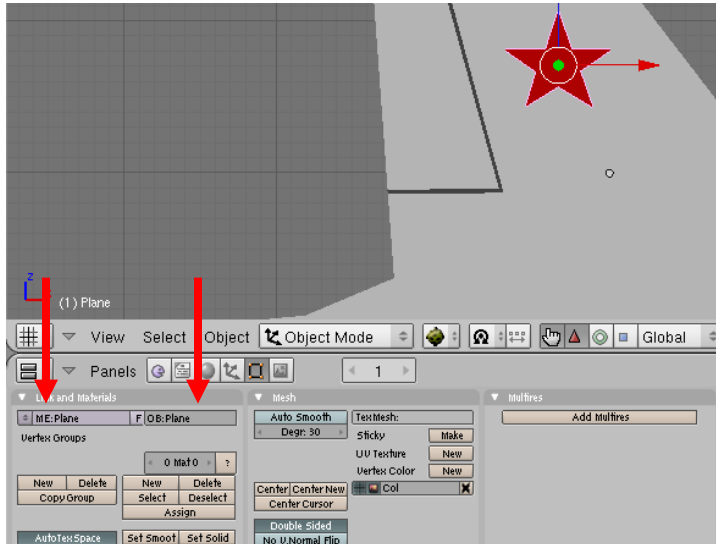


- Lets assume now that the SRF or star we've created is too large, or not the right size...go to a head on view of the object (press 1 to view it from the side)
- Still in object mode of the star, move the cursor about an inch away from the center of the star
- Press "s" for scale or size...a handle or control line will appear...move in and out to adjust the size of the star...**lock the size by just left clicking.**



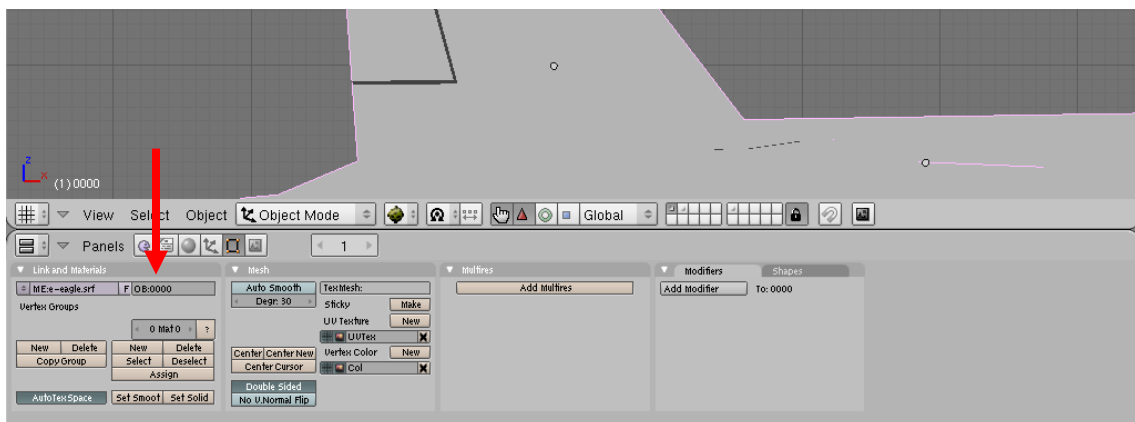
- If your shape needs to be rotated, the same process can be done by just pressing “r” and the same type of handle will appear

Still in object mode of the star...lets give it a name. Below the arrows are indicating first (left under ME) the actual SRF or file name it will have, and second (under “OB”) what its designation will be if you were to look at it in a DNM viewer. For good practice and to keep things organized, name the polygons (SRFs) you create so to keep things organized when and if you use DNM exploder or view it elsewhere.

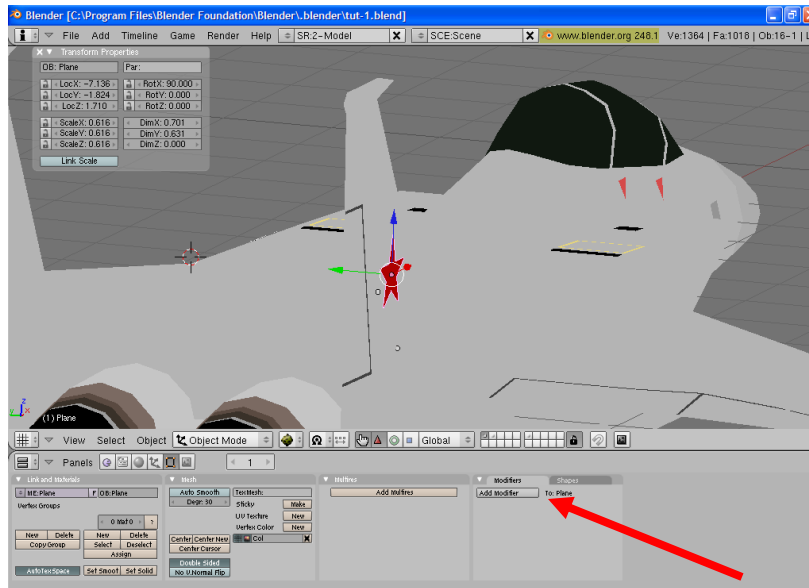


Use the name “Star_r.srf” for ME box, and “Star_r” OB box.

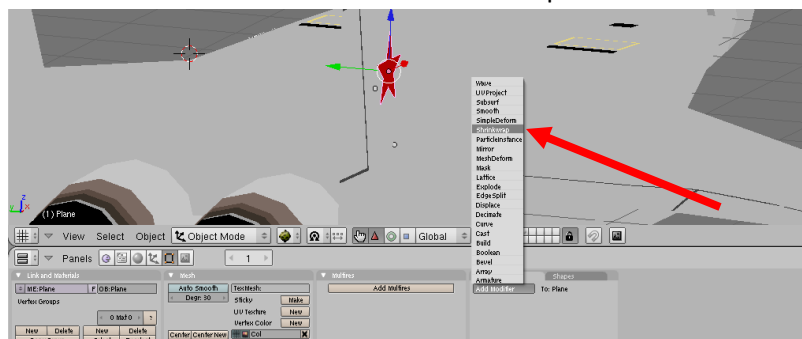
- Since we are going to be “shrink wrapping” conforming it to the tail, lets check to see what the object (OB) name is of the tail. It varies on different aircraft (if the tail is part of the main body or not)
- Right click on the tail or body part you wish to shrink wrap the object to...and look at the OB designation. In this example it is ... “0000” ...or the body part is designated “0000”.



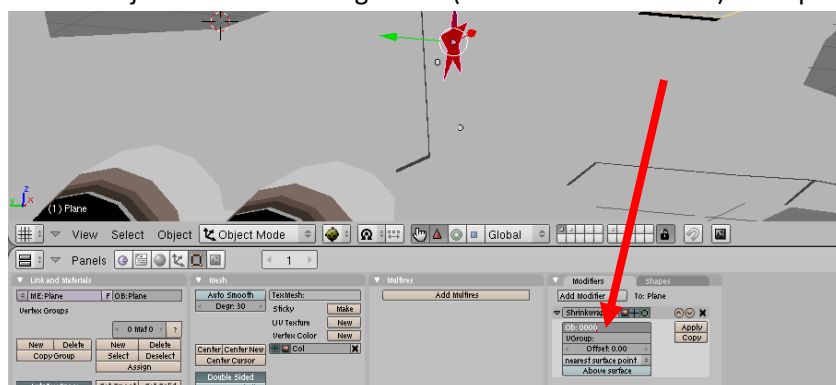
Right click on the star or shape you've created again to selected it. Position your view at an angle up above the star/shape as we proceed to the "shrink wrap process"



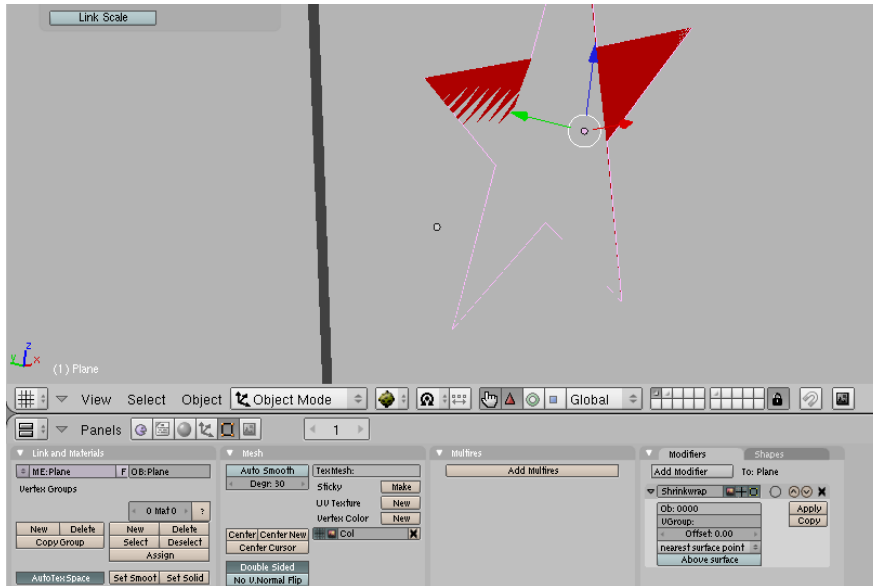
- In the bottom tool bar area, look for the small tab marked "Modifiers" and click modifiers (see above image)
- Select the modifier called "shrink wrap"



- Now we need to tell the star object to shrink wrap itself to the correct object. In the small box that now appears with controls/details of shrink wrapping, in the box marked "OB" type in the object's name or designation (in this case its "0000")...and press enter

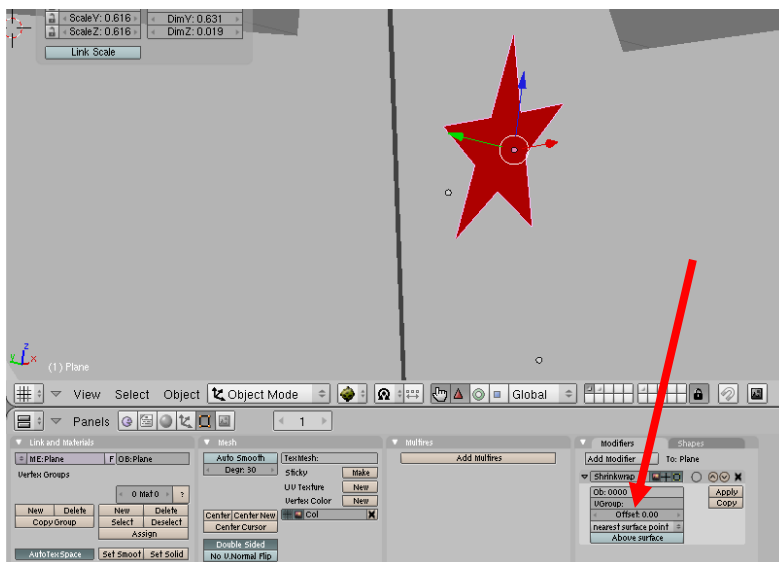


- The object might become slightly transparent and is basically set at zero or no offset by default



(note in above image, the polygons of the star are meshed or blending into the surface of the tail section)

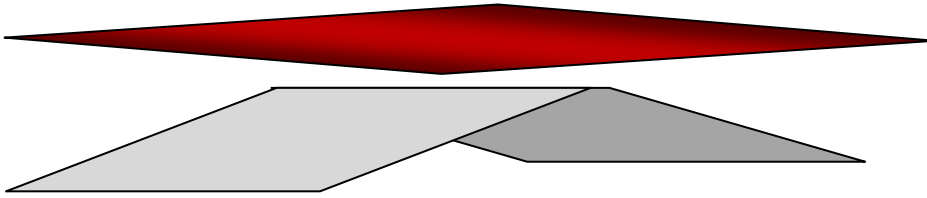
- To move the object over or outside we will now adjust the offset of the object that is shrink wrapped
- In the small box marked “offset”, click in the middle of it and enter the value of 0.003 or 0.004 and press enter.



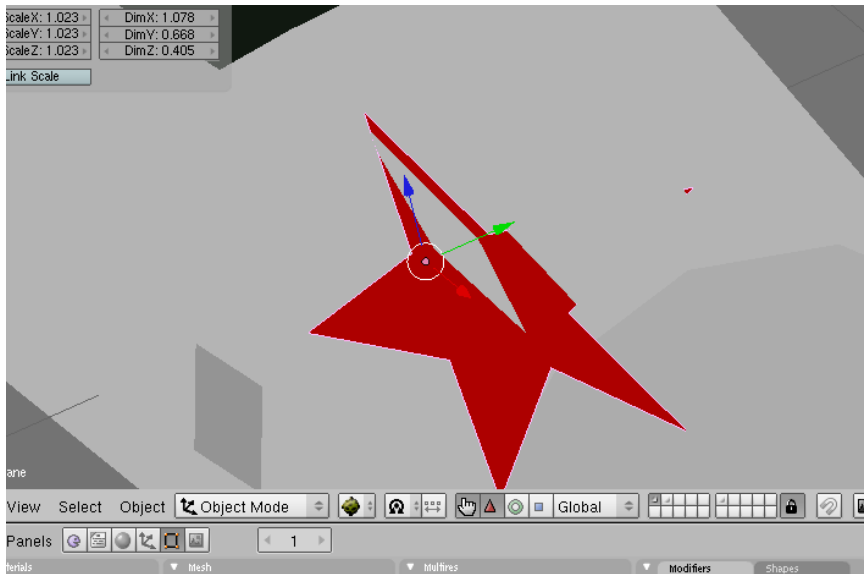
- Now the star is hovering over the surface of the tail segment. Experiment by moving the star around over the surface and place it in the desired position
- When finished click “apply” on the modifier pane.

Some problems that you may encounter when using this method...

- At times a flat portion of the star or shape you're shrinkwrapping will attempt to flatten a polygon over a corner or edge (diagram below)



- What takes place here is the polygon (red) is forced to be pushed through the corner of the main object (grey). See image below for a real result of this problem.



The polygons of the star are forced through the polygons of the main object.

Methods to attempt to remedy this:

- 1) Cut the polygons of the shape to contour or parallel the corners that it is attempting to fit over
- 2) Select the polygons of the object (in edit mode) and press "w" to access special options >> "subdivide" ...this will break the polygon of the star you've selected into about 3 or 4 segments that provides more edges that the star can bend at to be shrink wrapped
- 3) Rotate, (from different angles) or move the object until it has a good projection onto the surface at which it is shrinkwrapped best.
- 4) Resize the object slightly to be smaller and dodge an edge with it struggles to bend or wrap over.

As there are countless possibilities for shrinkwrapping, its up to you to practice and use these methods and experiment yourself.