



3D & MOTION GRAPHICS > BLENDER

# Creating a Low Poly Aeroplane Set for Games: Part 2

by Karan Shah 31 Aug 2016

Difficulty: Beginner Length: Long Languages: English ▾

Blender

Game Art

3D Models

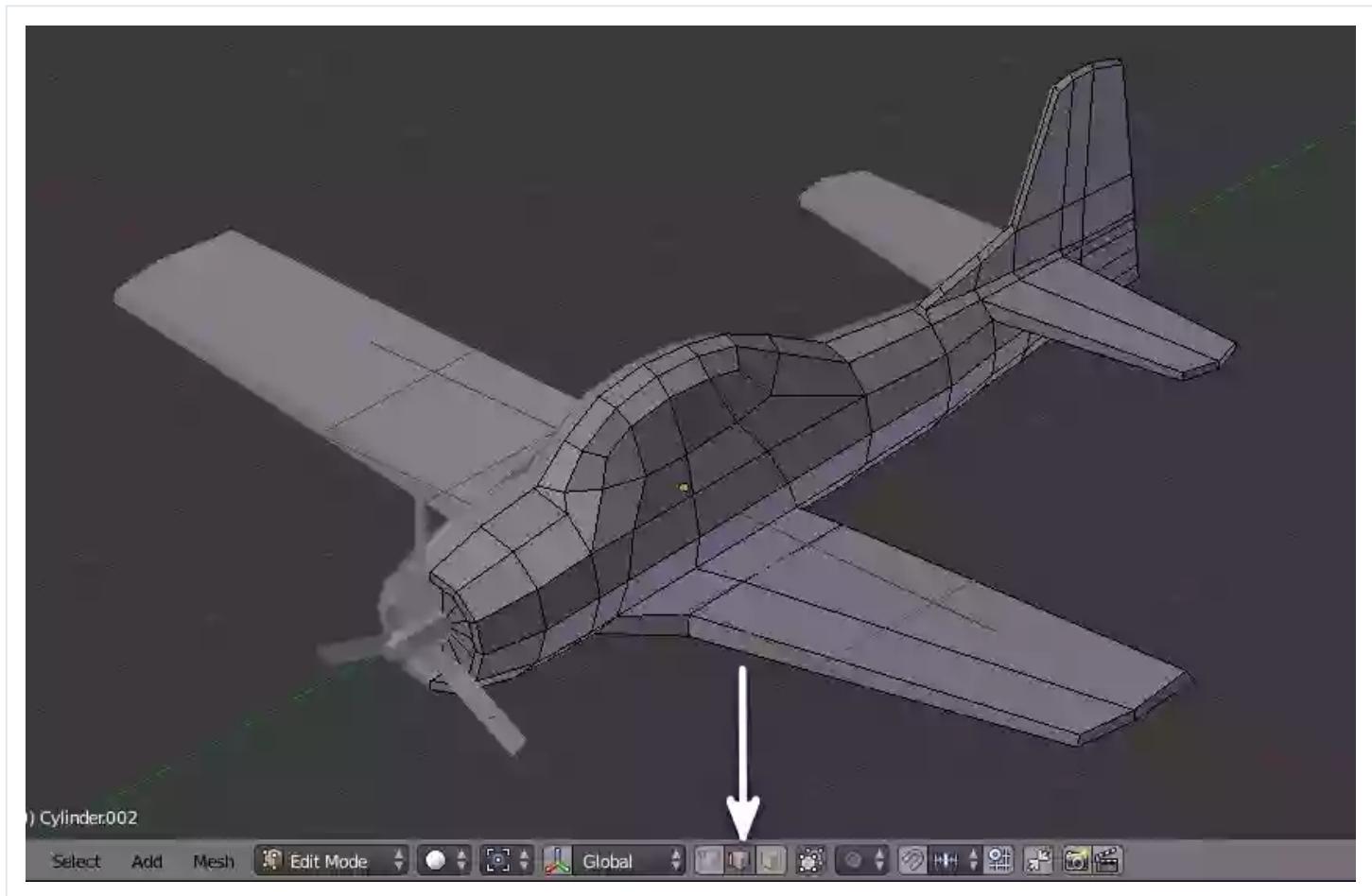


# Marking the Seams

## Step 1

Secondary-click on the plane and press **Tab** to enter edit mode.

Click on the **Edge select mode** button.



Edge select mode

Advertisement

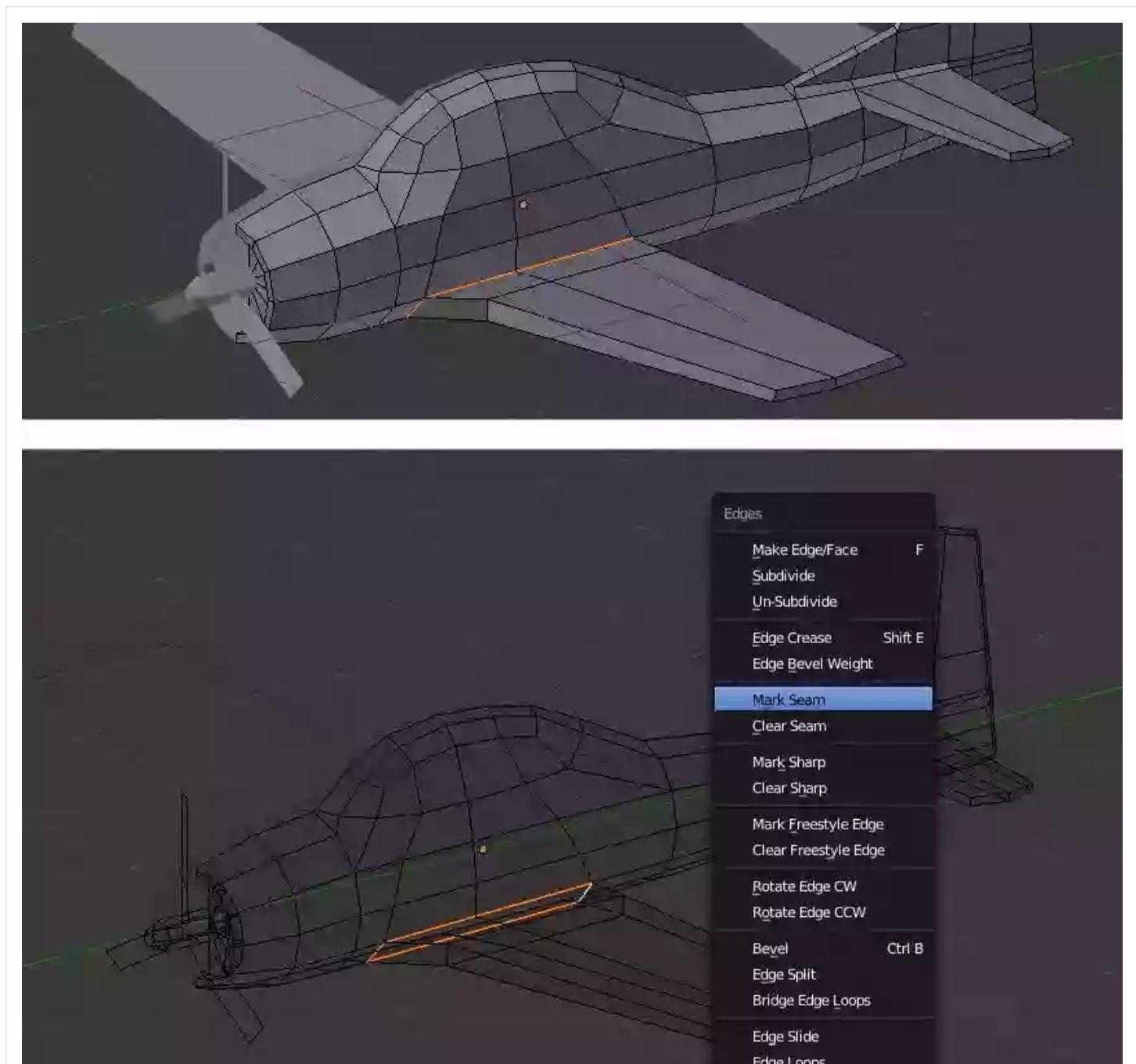
## Step 2

Press **A** on the keyboard to deselect any selected edges.

Hold **Shift** and then secondary-click on the edges where the wing starts, one by one, to select them all.

Press **Ctrl-E** to bring out the Edges menu and click on **Mark Seams**.

You'll notice that the selected edges turns red. The seams are from where the mesh will get *unstitched* onto a flat UV map.

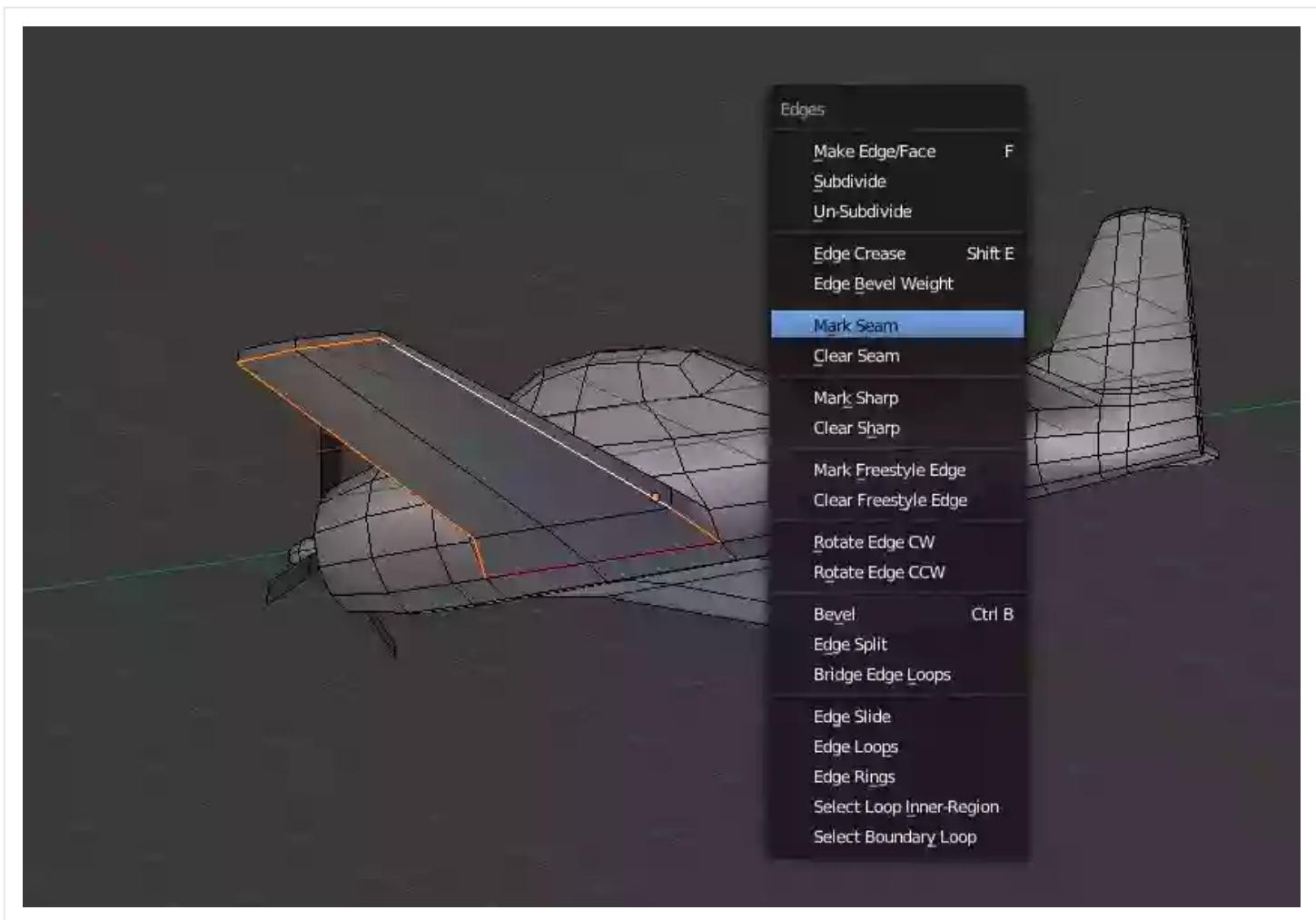


Edge Rings  
Select Loop Inner-Region  
Select Boundary Loop

Select edges and mark them as seams

## Step 3

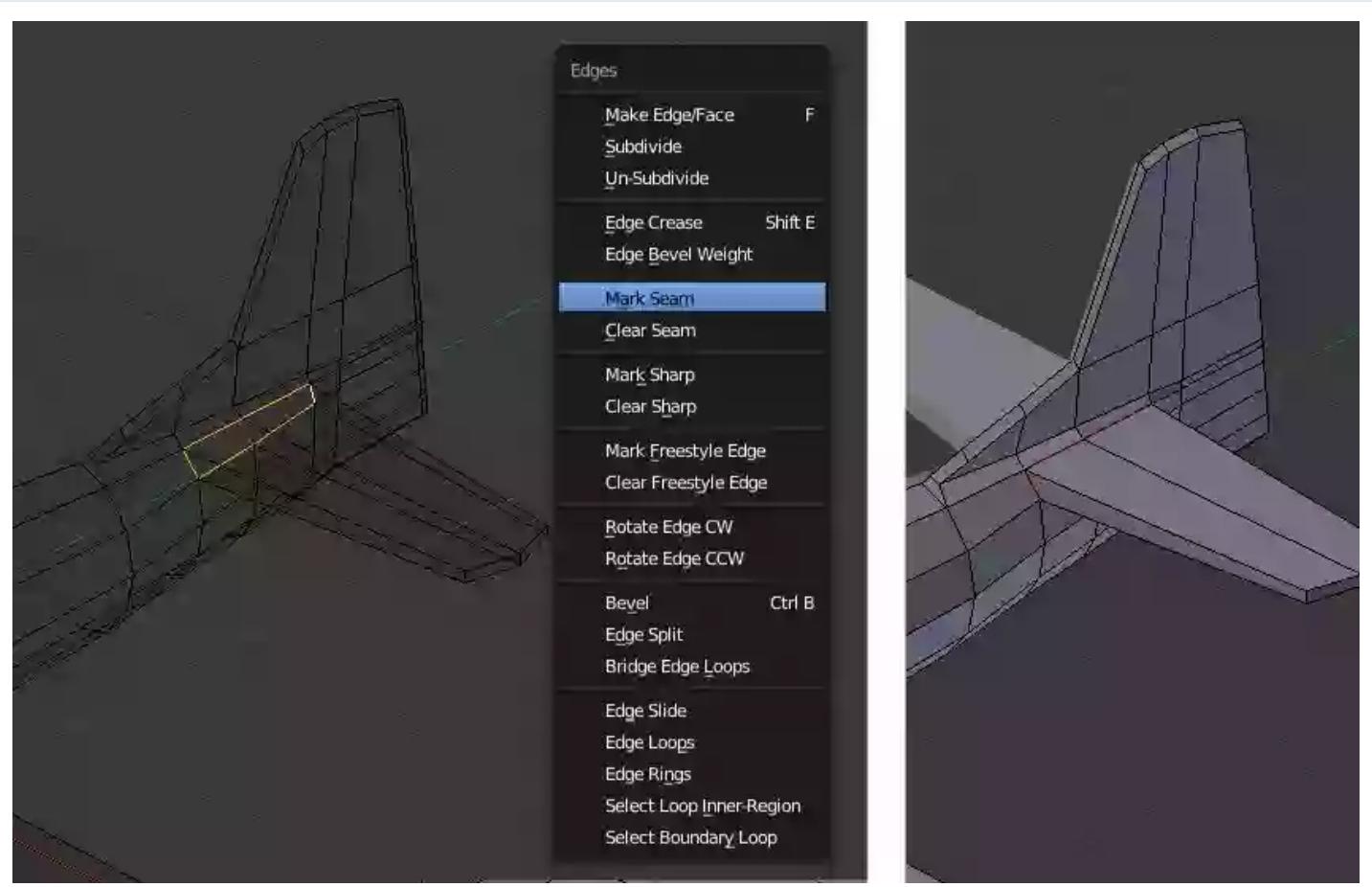
Select the bottom edges of the wing as shown in the image. Press **Ctrl-E** and click on **Mark Seam**.



Mark bottom edges as seams

## Step 4

Select the edge loop form where the tail wing starts. Hold **Shift** and then right click on the edges to select them. Press **Ctrl-E** and select **Mark Seam**.

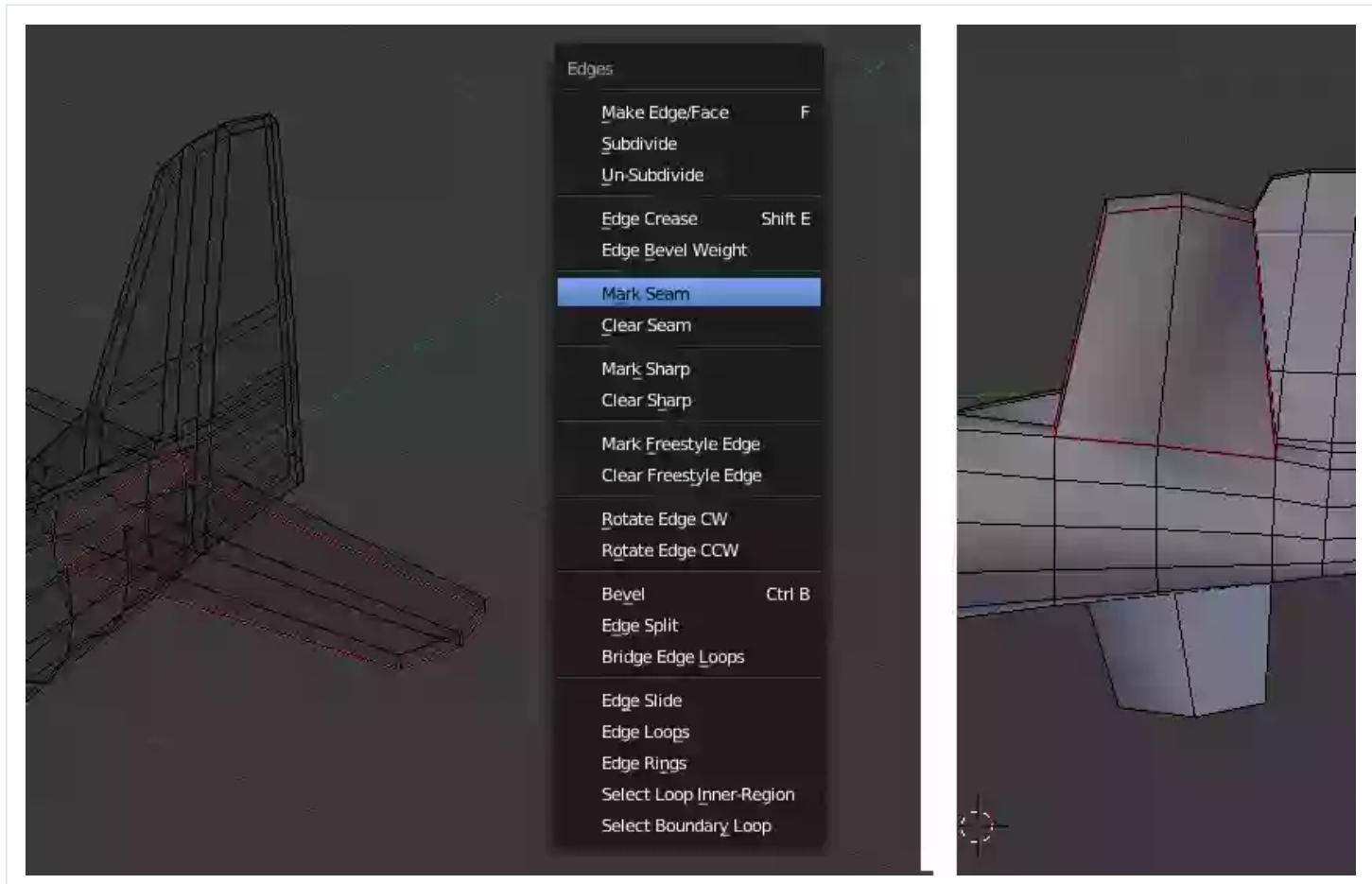


Select edges and mark them as seams

Advertisement

## Step 5

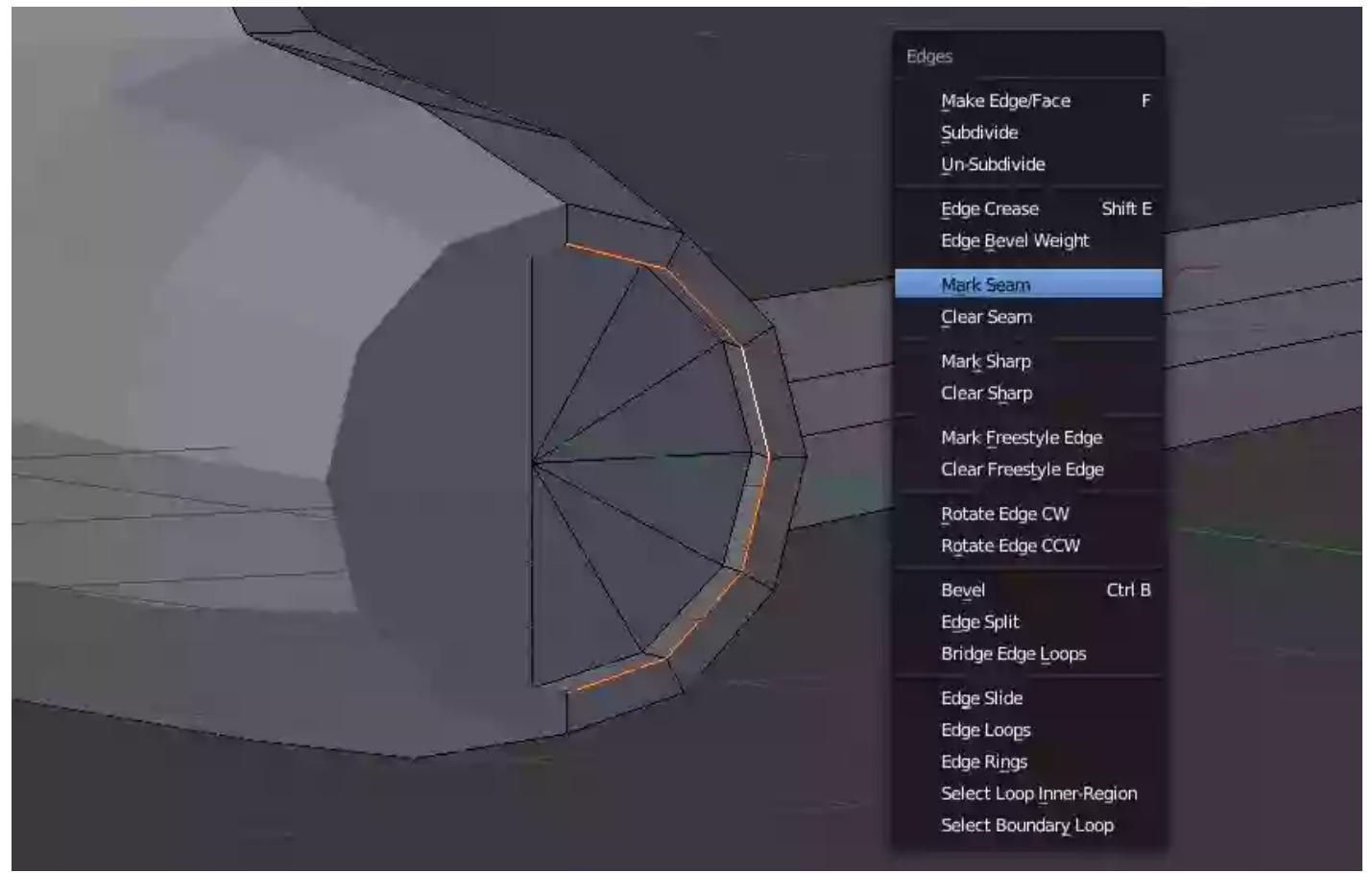
Select the bottom edge of the wing from all sides. Hold **Shift** and then right click on the edges. Press **Ctrl-E** and click on **Mark Seams**.



Mark bottom edges as seams

## Step 6

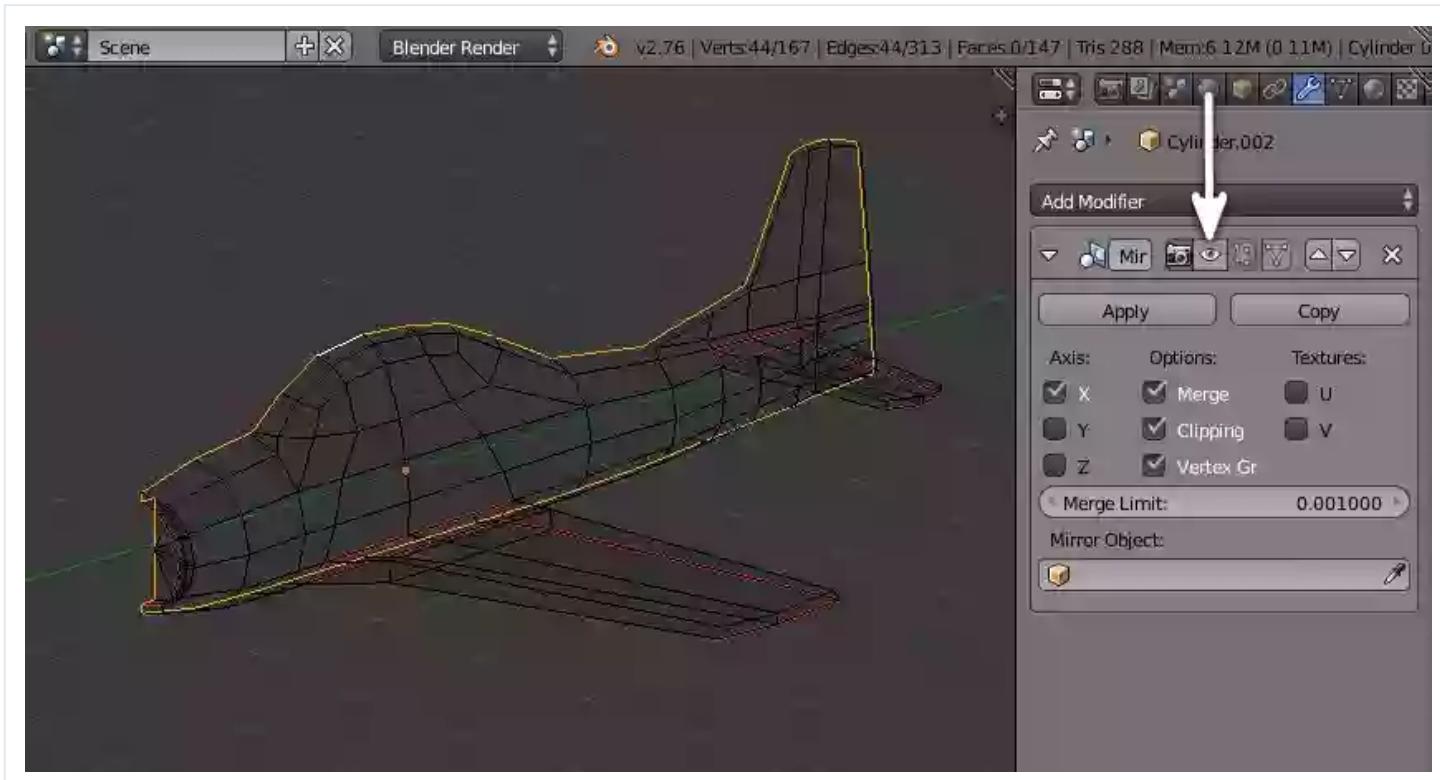
Press **A** to deselect the edges. Select the front edge loop at the engine. You can hold **Alt** and secondary-click on any of the edge to select the edge loop. Press **Ctrl-E** and select **Mark Seam**.



Select front edges and mark them as seam

## Step 7

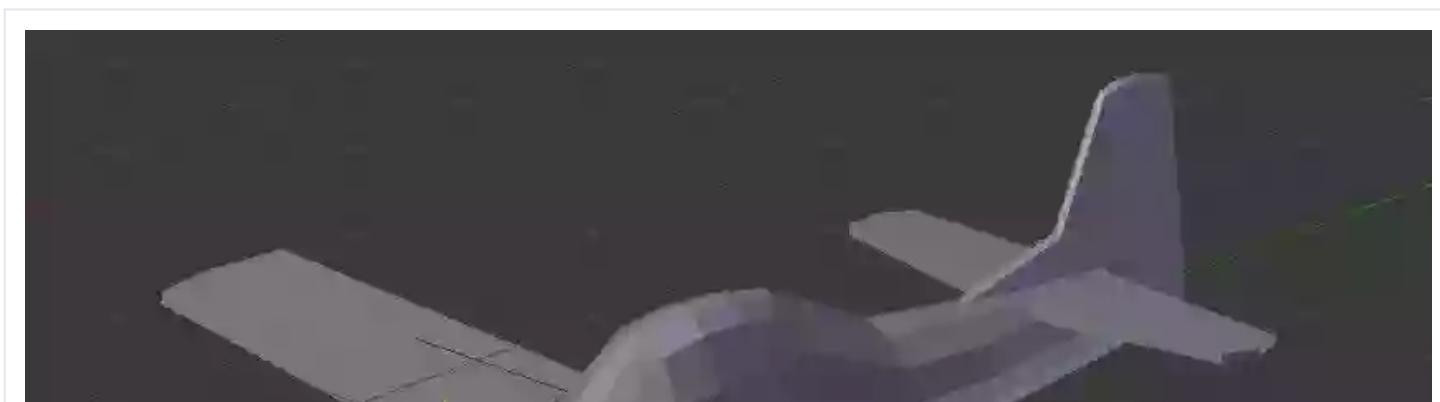
Since the model actually half there is no need to mark the center loop as seam. You can preview the half model by clicking on the eye button to toggle on/off modifier preview in 3D view port.



Preview mirror modifier

## Step 8

Press **Tab** to exit edit mode. Secondary-click on the propeller object to select it.

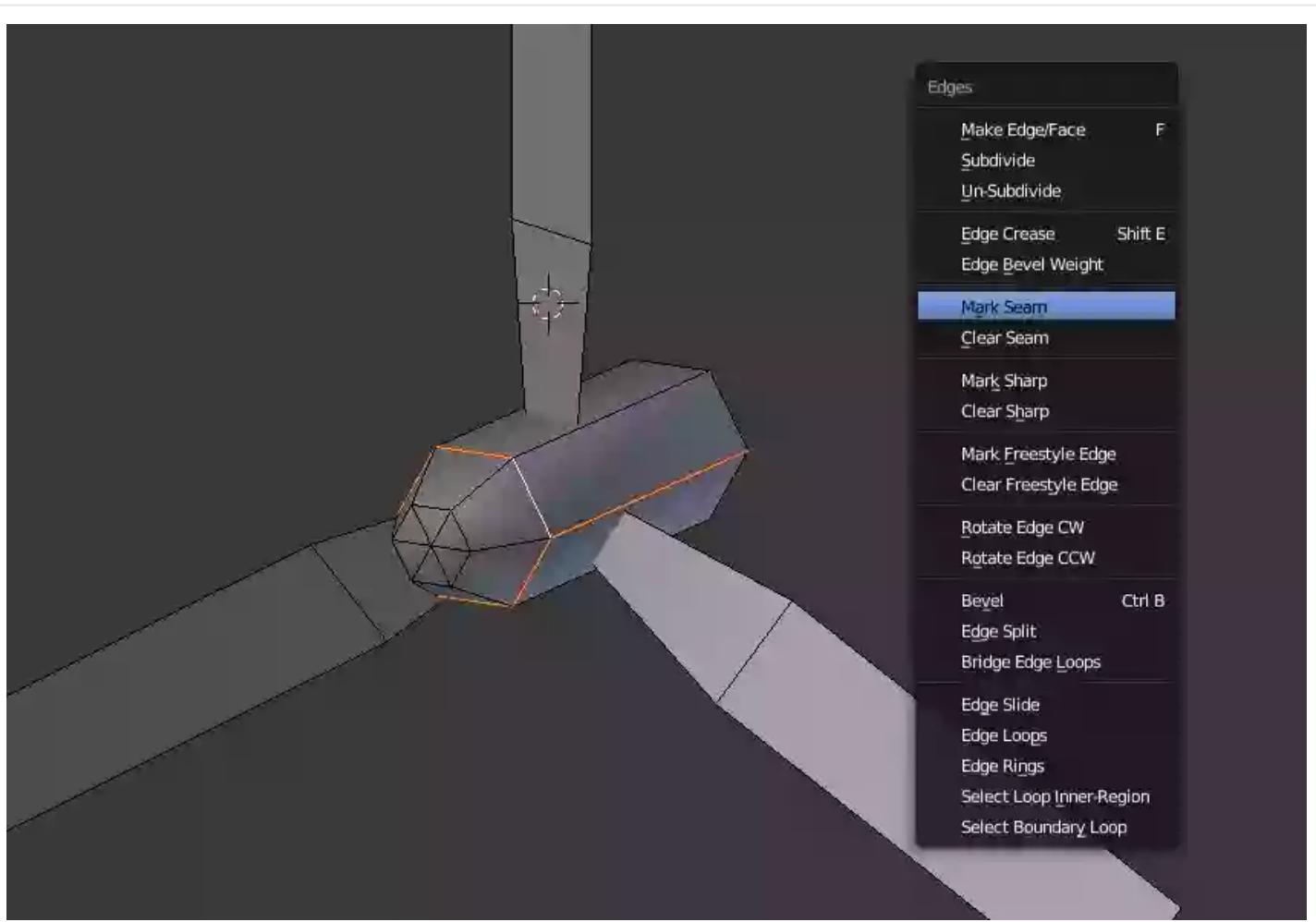




Select propeller

## Step 9

Press **Tab** to enter edit mode. Secondary-click on the side edge and mark it seam. Select the front edge loop (full circle) and mark it as seam. Secondary-click to select and **Ctrl-E** to **Mark seam**.



Select edges and mark seams

Press **Tab** to exit edit mode. Secondary-click on the plane to select it.

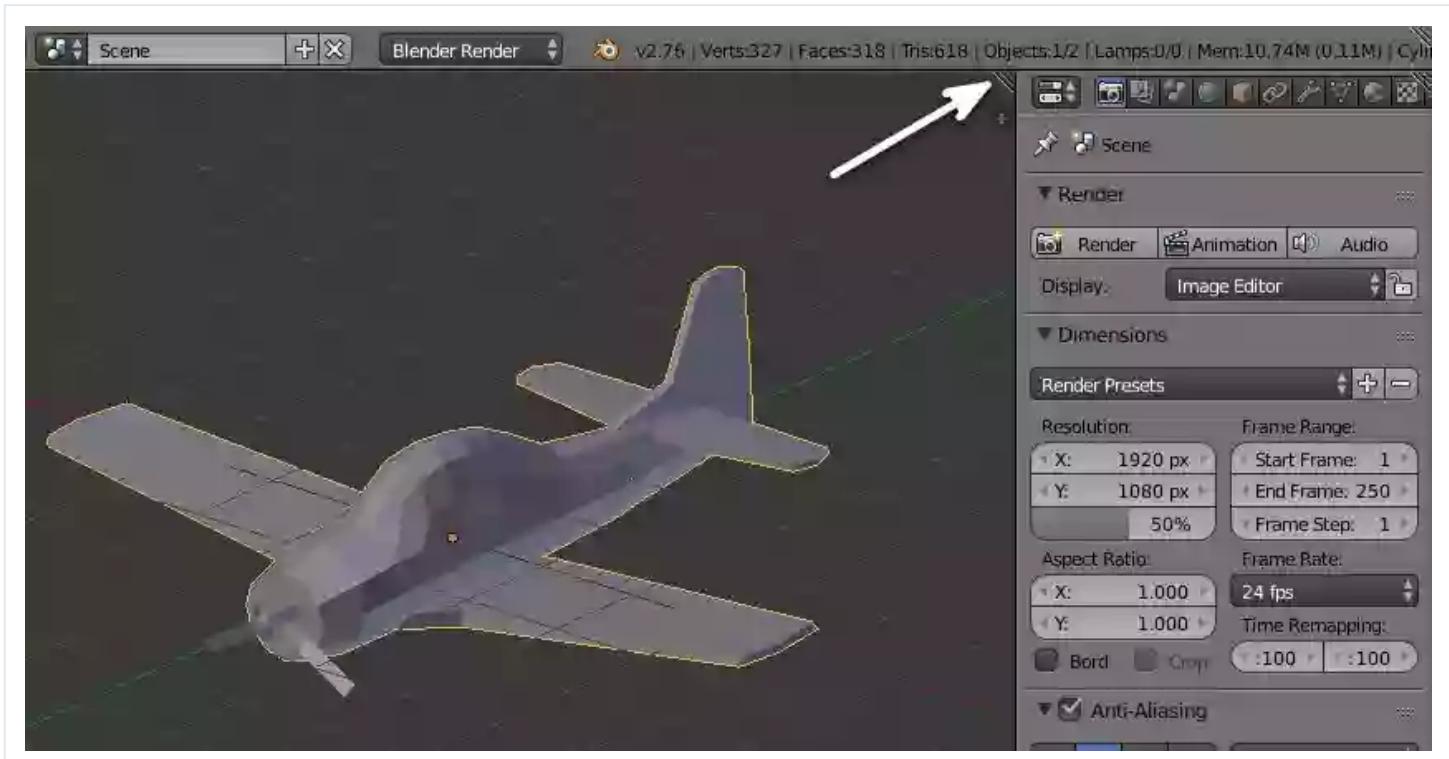


Exit edit mode

## UV Mapping the Model

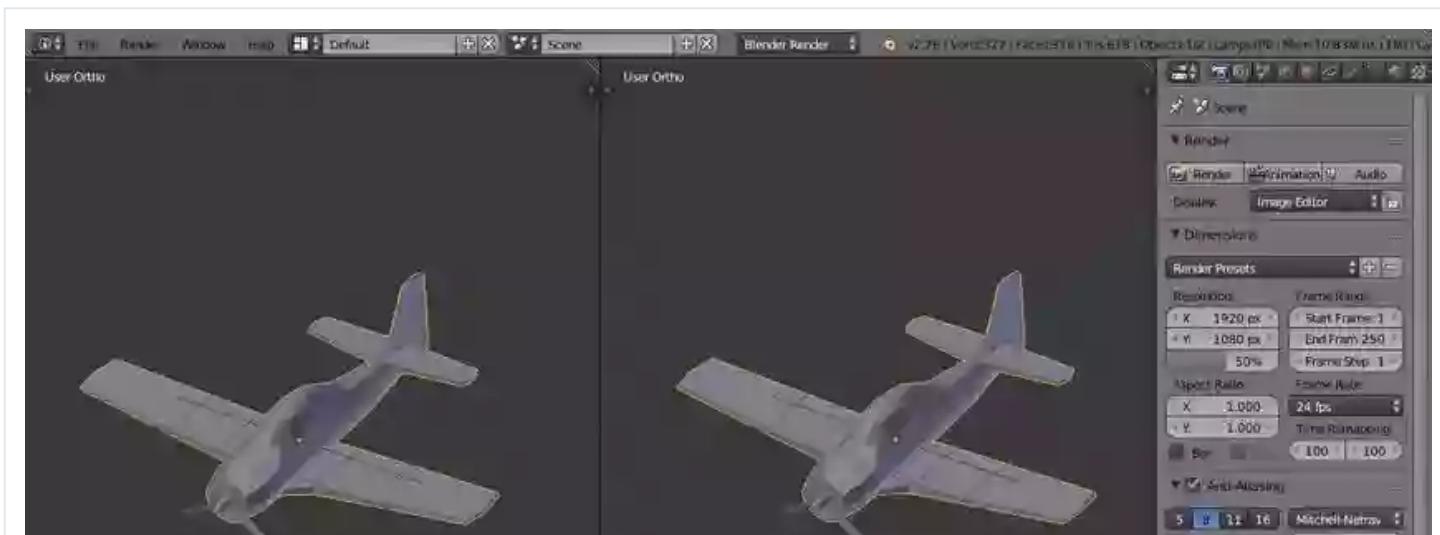
### Step 1

Split the 3D viewport by dragging the corner with primary mouse button.



Split 3D viewport into two

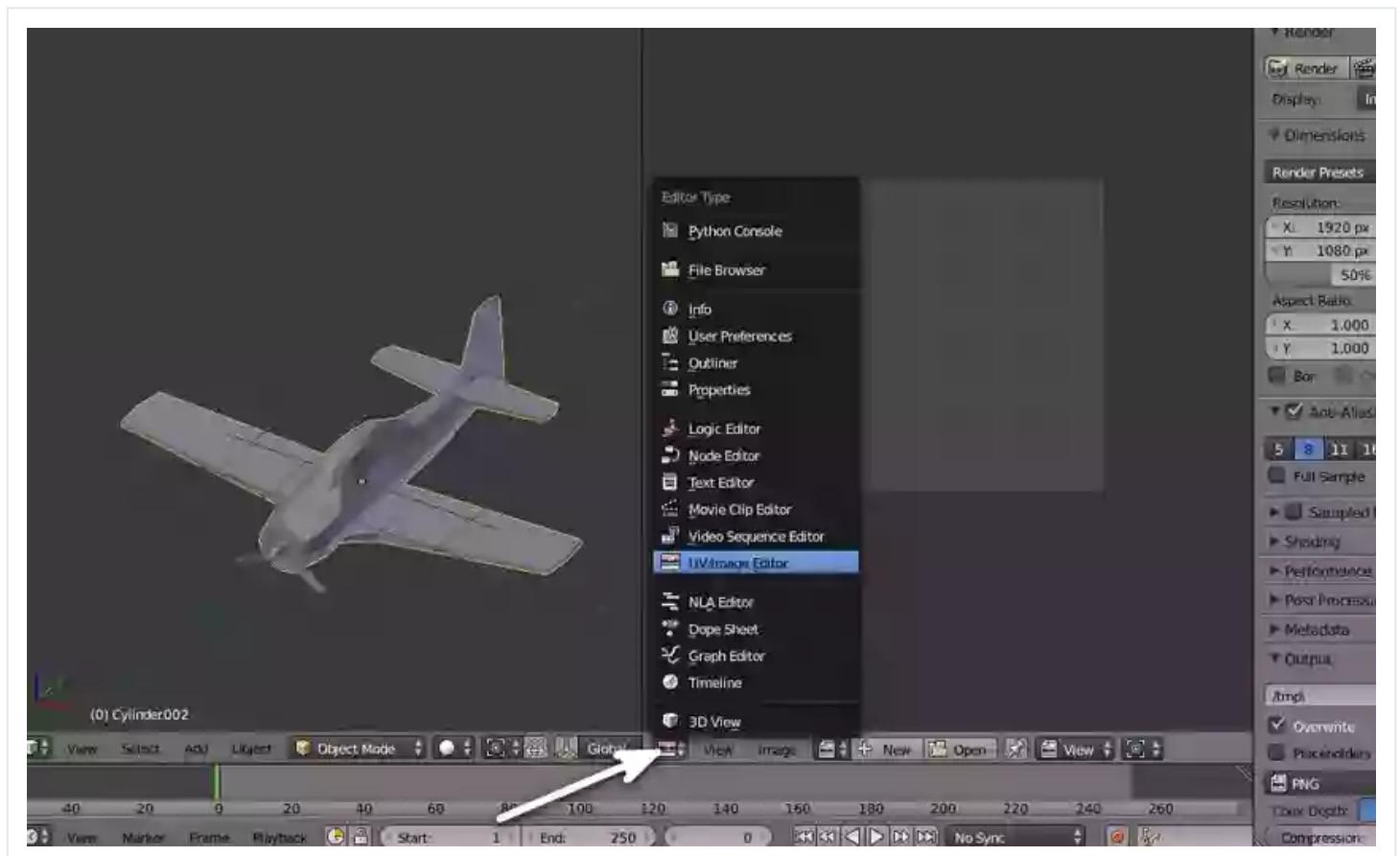
You'll now have two 3D viewports.





Split 3D viewport into two

In one of the 3D viewport, click on the **Editor** type button and select **UV/Image editor**. The 3D viewport will change to **UV editor**.



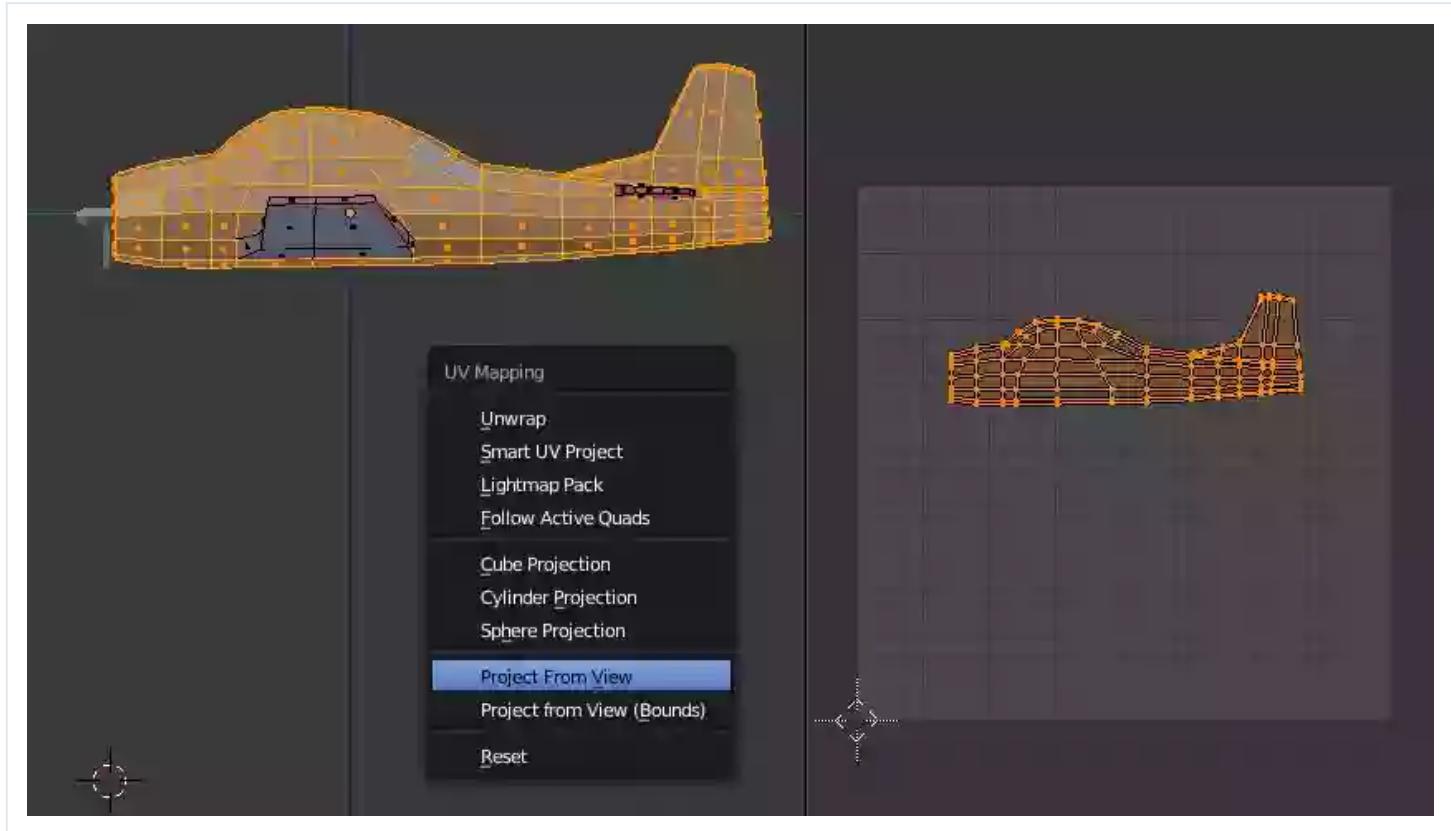
Change editor type to UV/Image Editor

## Step 2

- In 3D viewport, press **3** in the number pad to get into side view.
- With the plane selected, press **Tab** to enter edit mode.
- Press **Ctrl-Tab** and select **Face** select mode.
- Move the mouse over the main body of the plane and press **L**. This will select the main body mesh which is separated by the

seams.

- Press **U** on the keyboard to bring **UV Mapping** options.
- Select **Project From View**. This will unwrap the selected mesh as seen in the , onto the UV Editor.



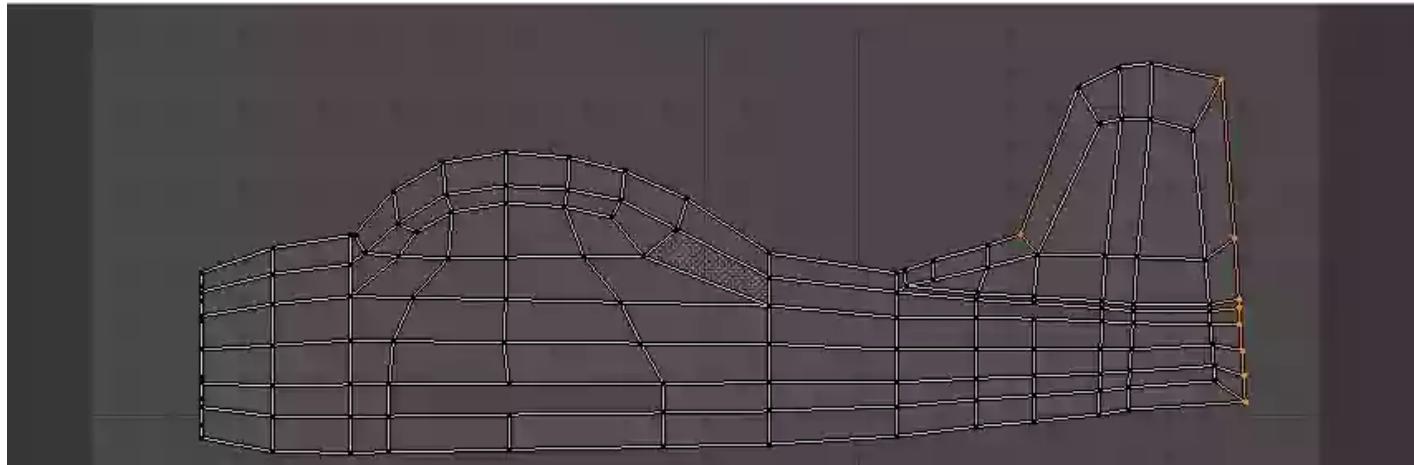
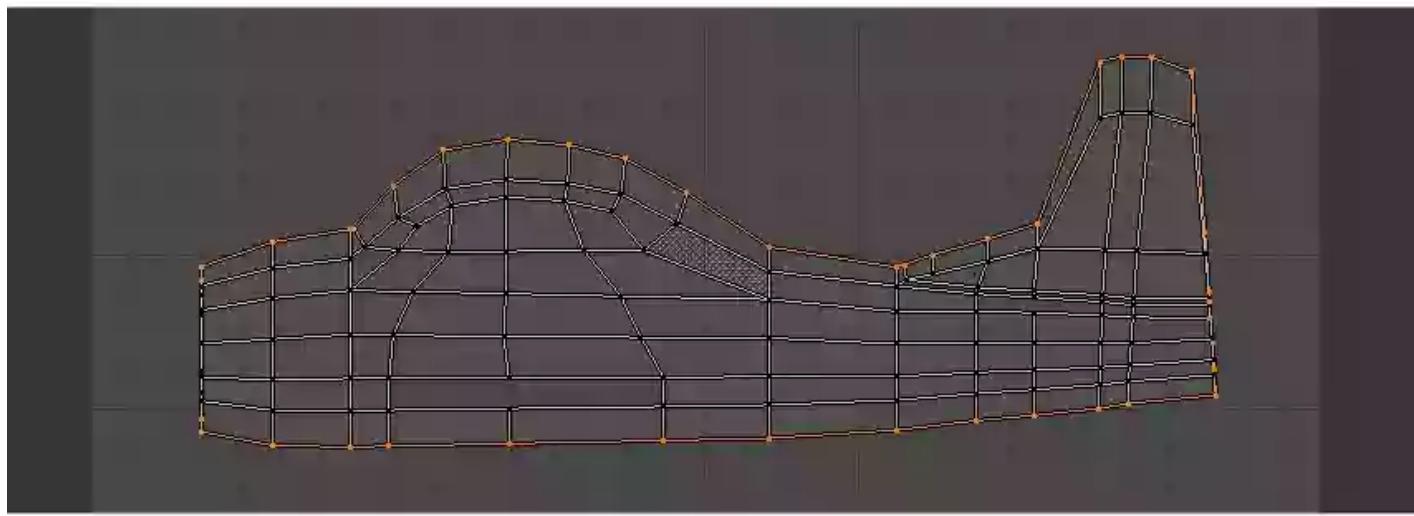
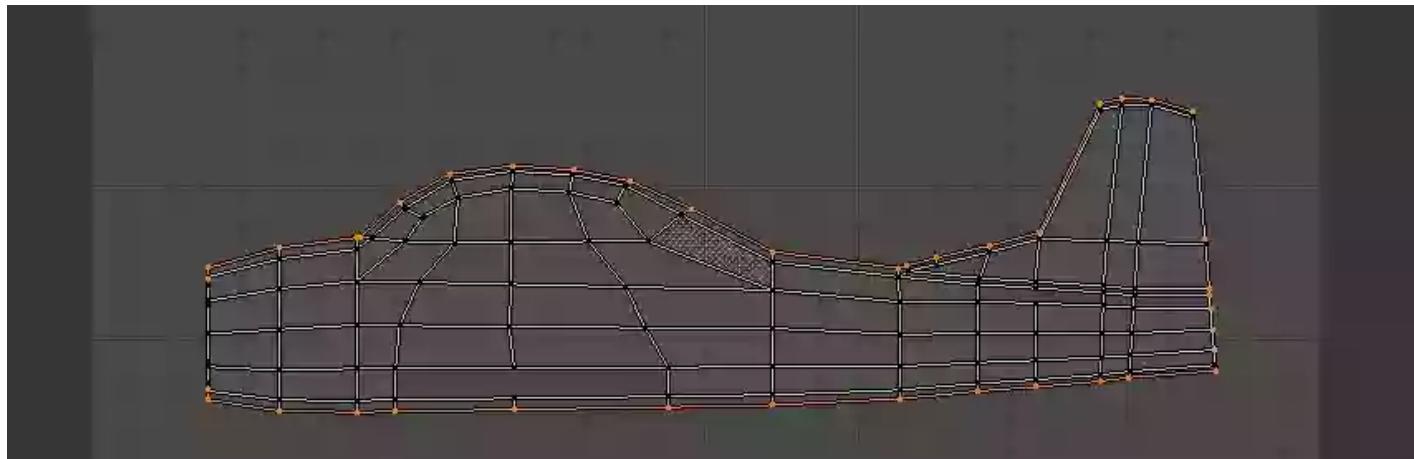
Select mesh and unwrap

### Step 3

In the **UV Editor**, hold **Alt** and then right click on the out edge of the mesh to select the edge loop.

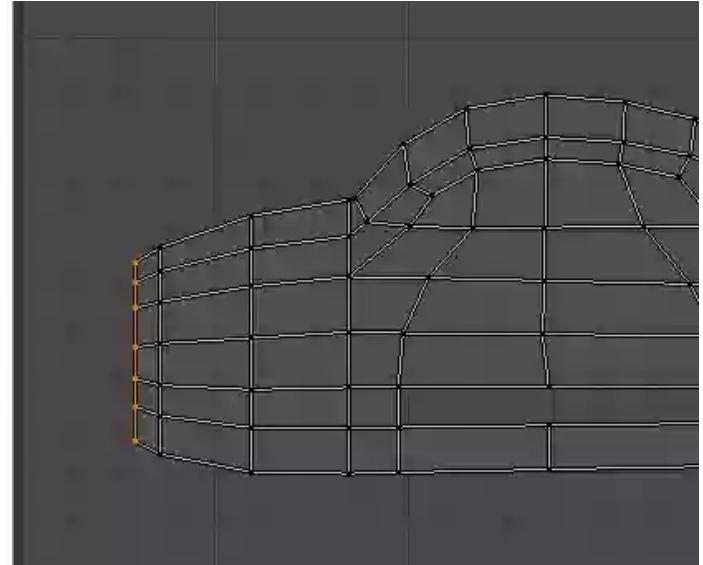
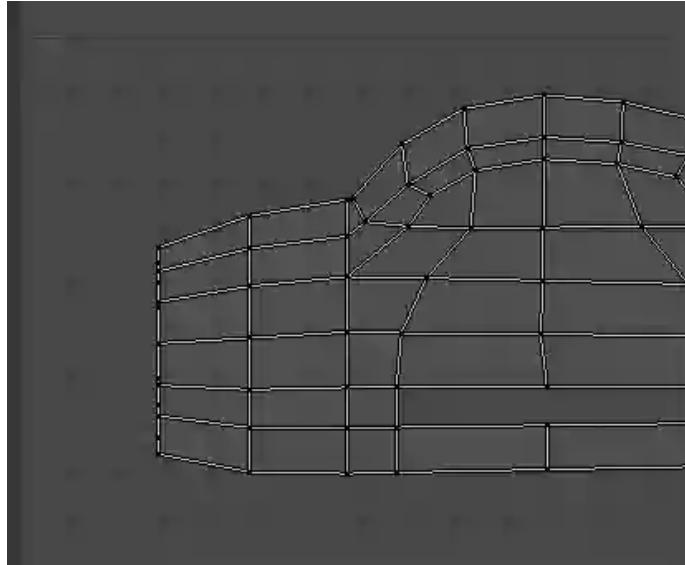
Press **S** and then **Y** to scale it along the Y-axis to loosen it a bit from the rest of the mesh.

Select the individual vertices on the tail and move them away so that they don't overlap on any other vertices or edge. Do not move the inner vertices or edges. Only spread out the outer edge loop.



Tweak the vertices in UV Editor

Similarly secondary-click on the vertices on the front part and then press **G** to move them away one by one.



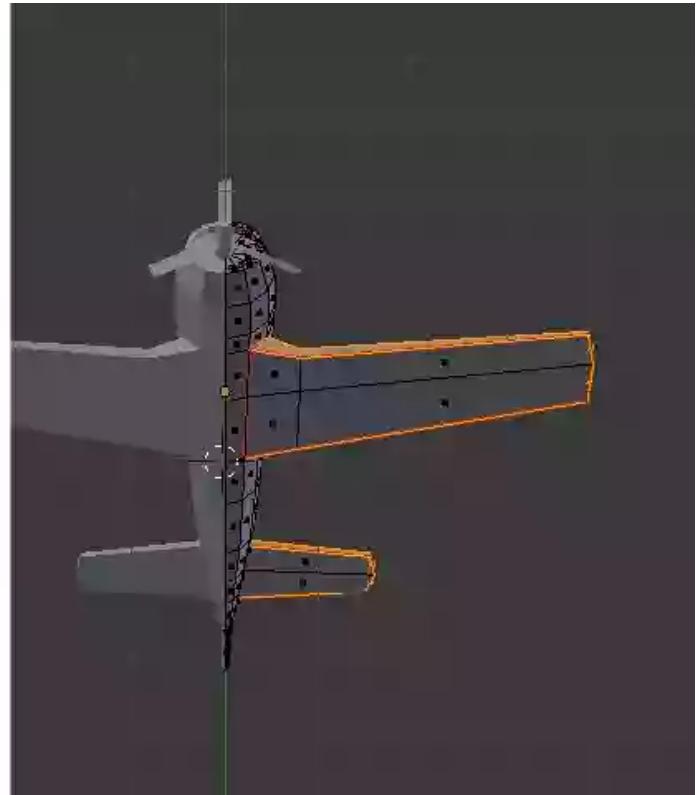
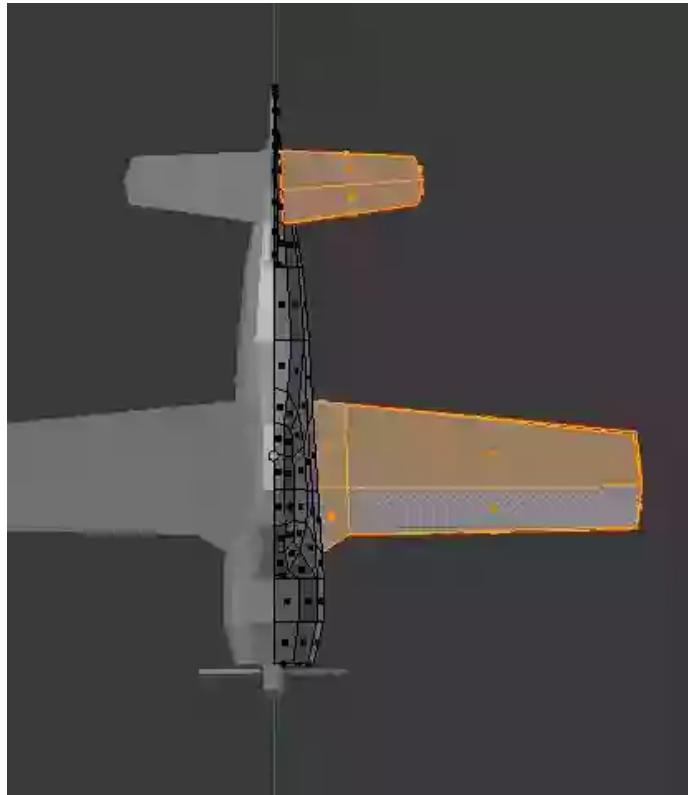
Tweak the front vertices in UV Editor

## Step 4

In the 3D view port, press **7** on the number pad to get into top view.

Select **Face** Select mode.

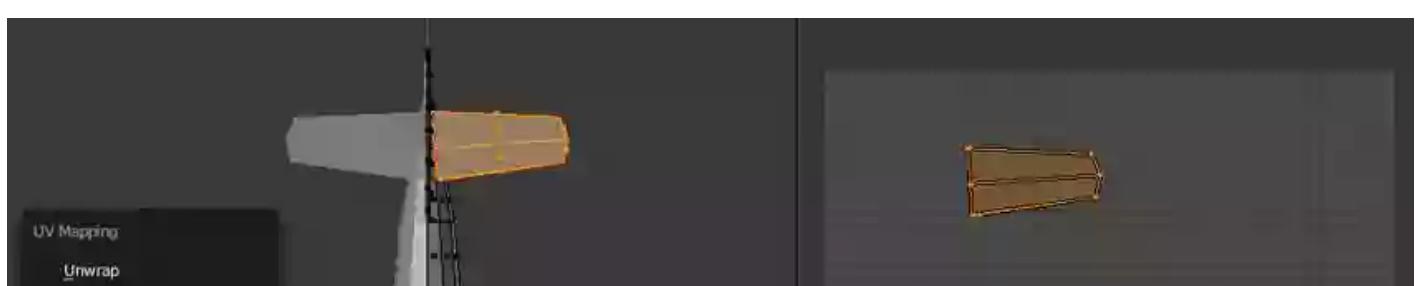
Move the mouse over the wings top part and press **L** to select the mesh separated by the seam. Check from bottom. Nothing else is should be selected, only the top part of the wings.

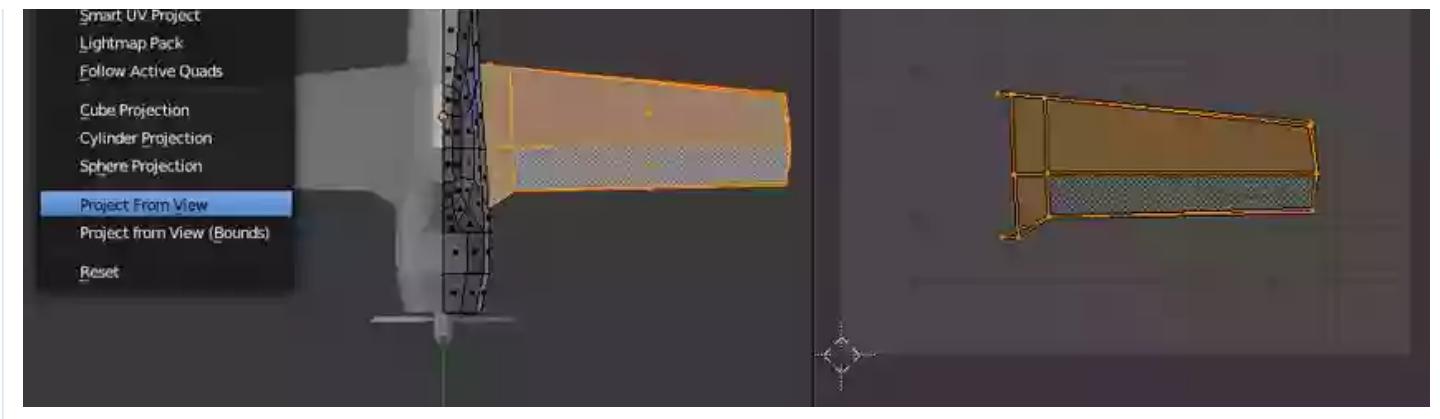


Select top faces of wings

## Step 5

In top view, with the wings selected, press **U** to bring out **UV Mapping** menu and select **Project from View**. The wings are now project on to the **UV Editor**.

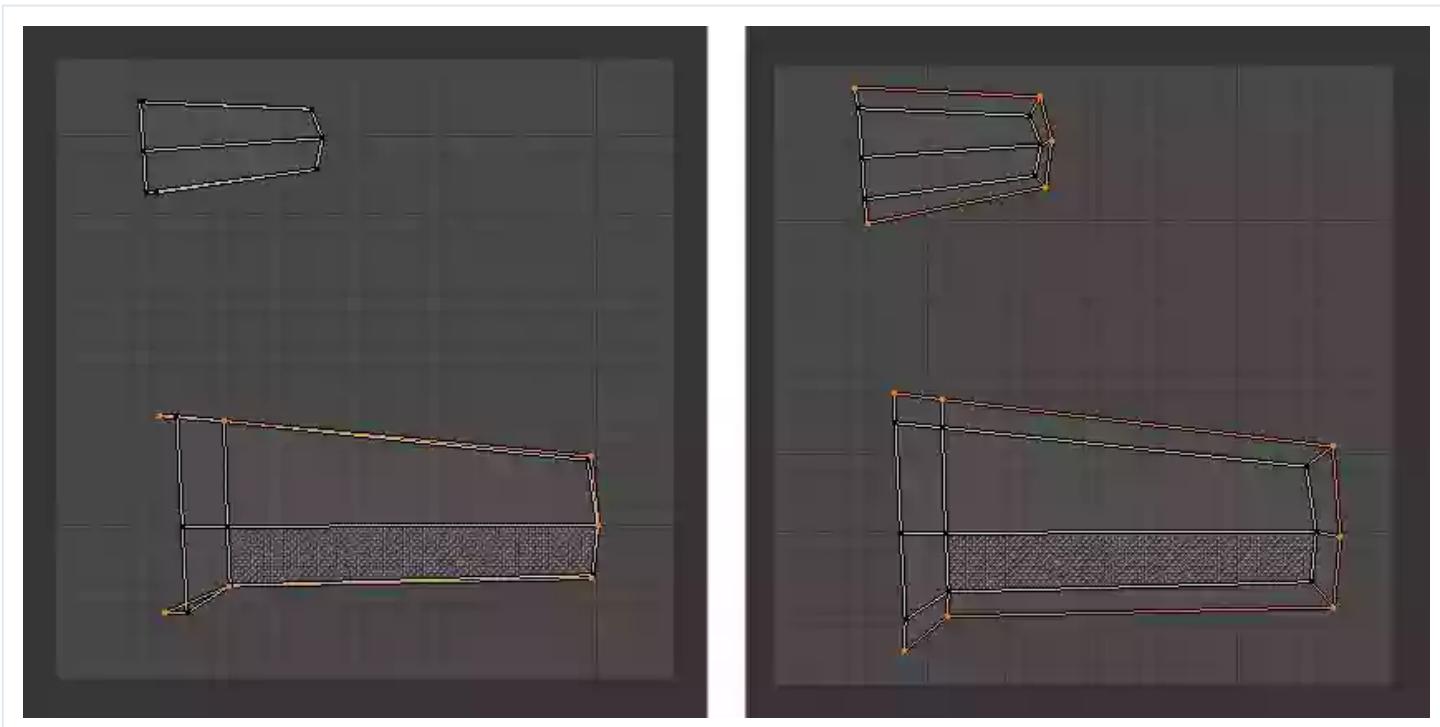




Unwrap selected faces

## Step 6

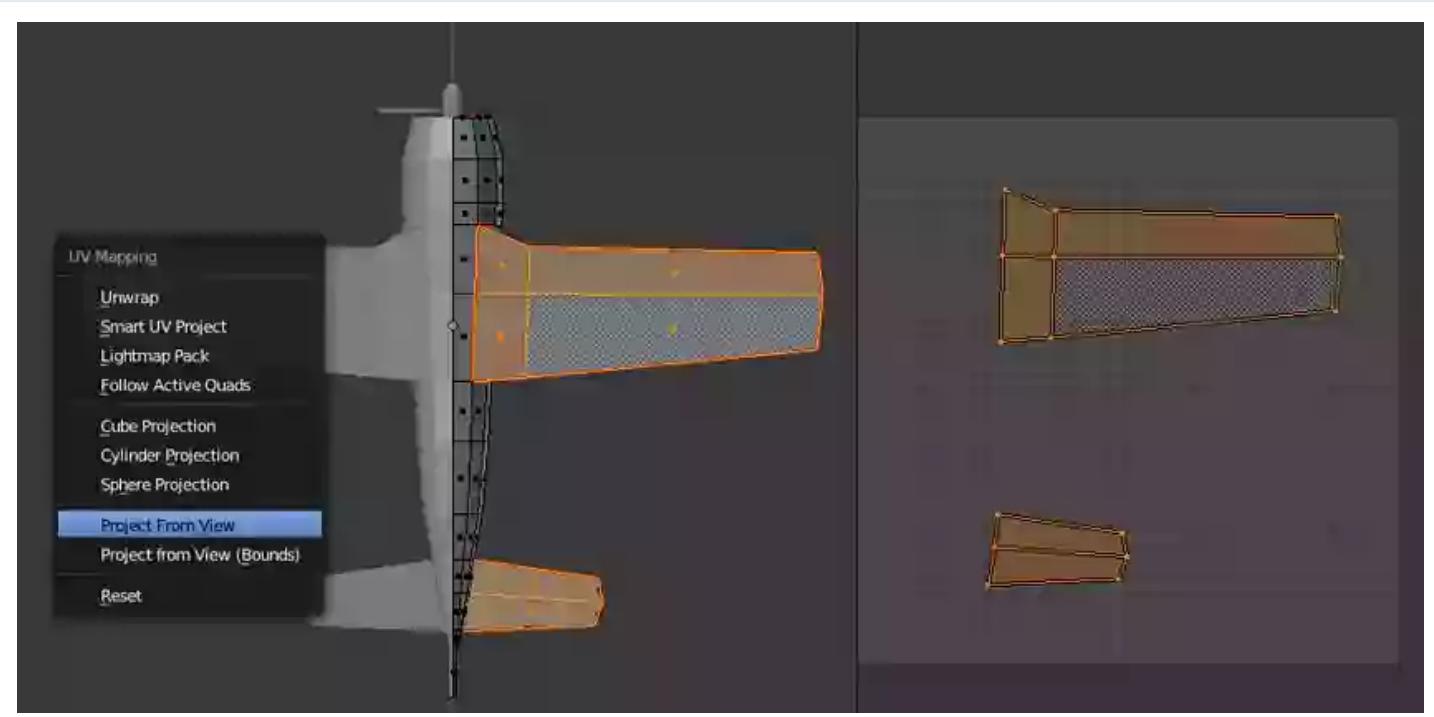
Select the outer vertices and edges. Scale and move them away just a little bit so that they are not getting overlapped by other edges..



Tweak vertices in UV Editor

## Step 7

In the 3D viewport, press **Ctrl-7** to get into bottom view. Move the mouse over the wings and press **L** to select them one by one. Press **U** and select **Project From View** to unwrap them in the UV Editor.

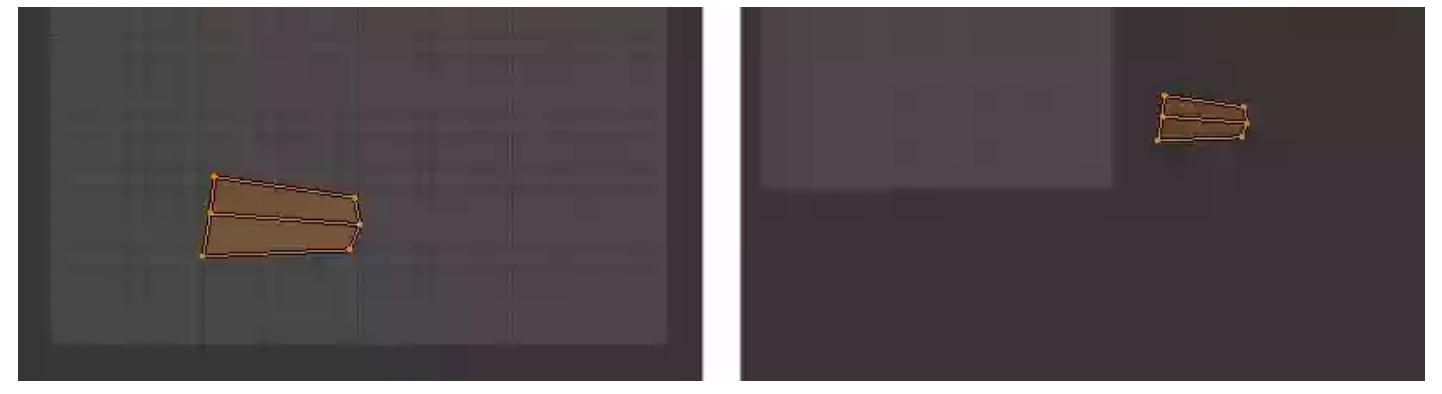


UV Map bottom faces of wings

## Step 8

In the **UV Editor**, press **A** to select all vertices of the wings and press **G** to move them away from the grid. I did this because the UV mesh of all mesh will land here and would overlap each other. So to avoid this move them from the default position.

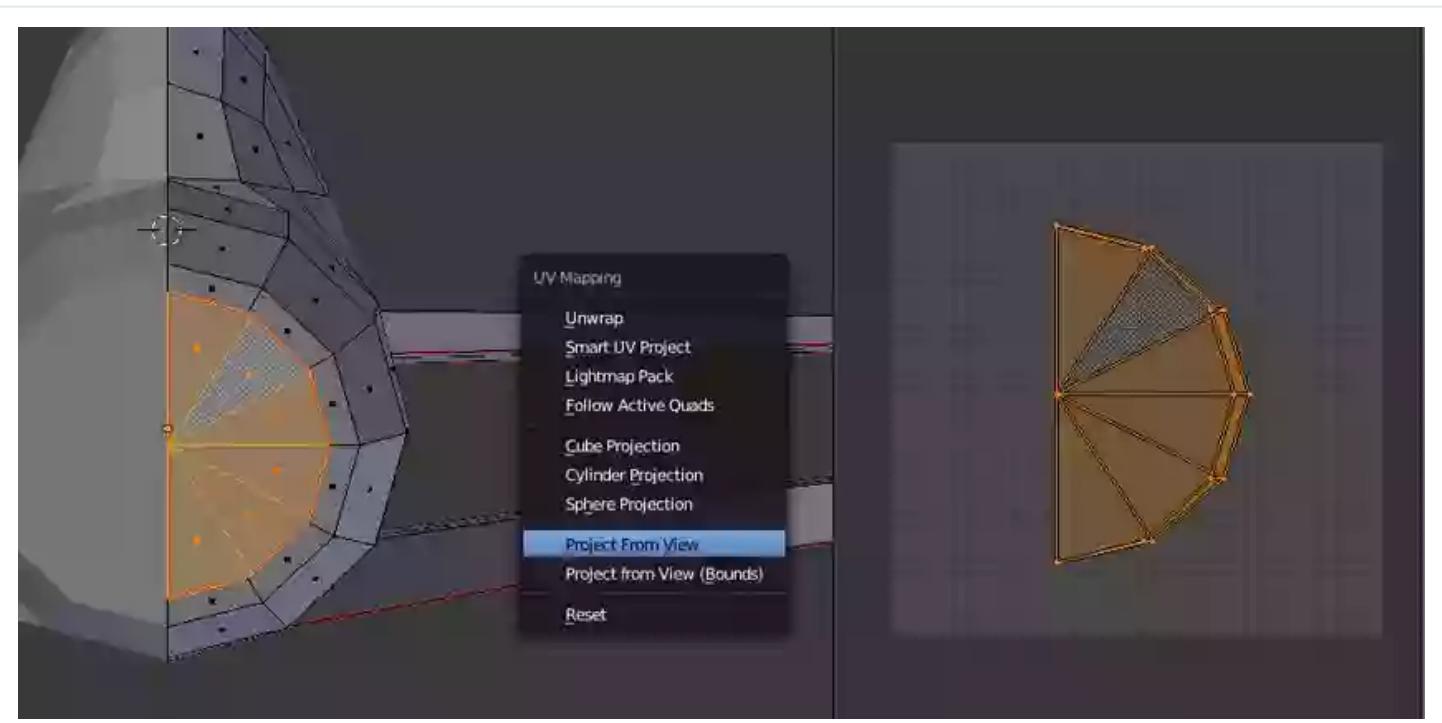




Move the vertices away from the grid

## Step 9

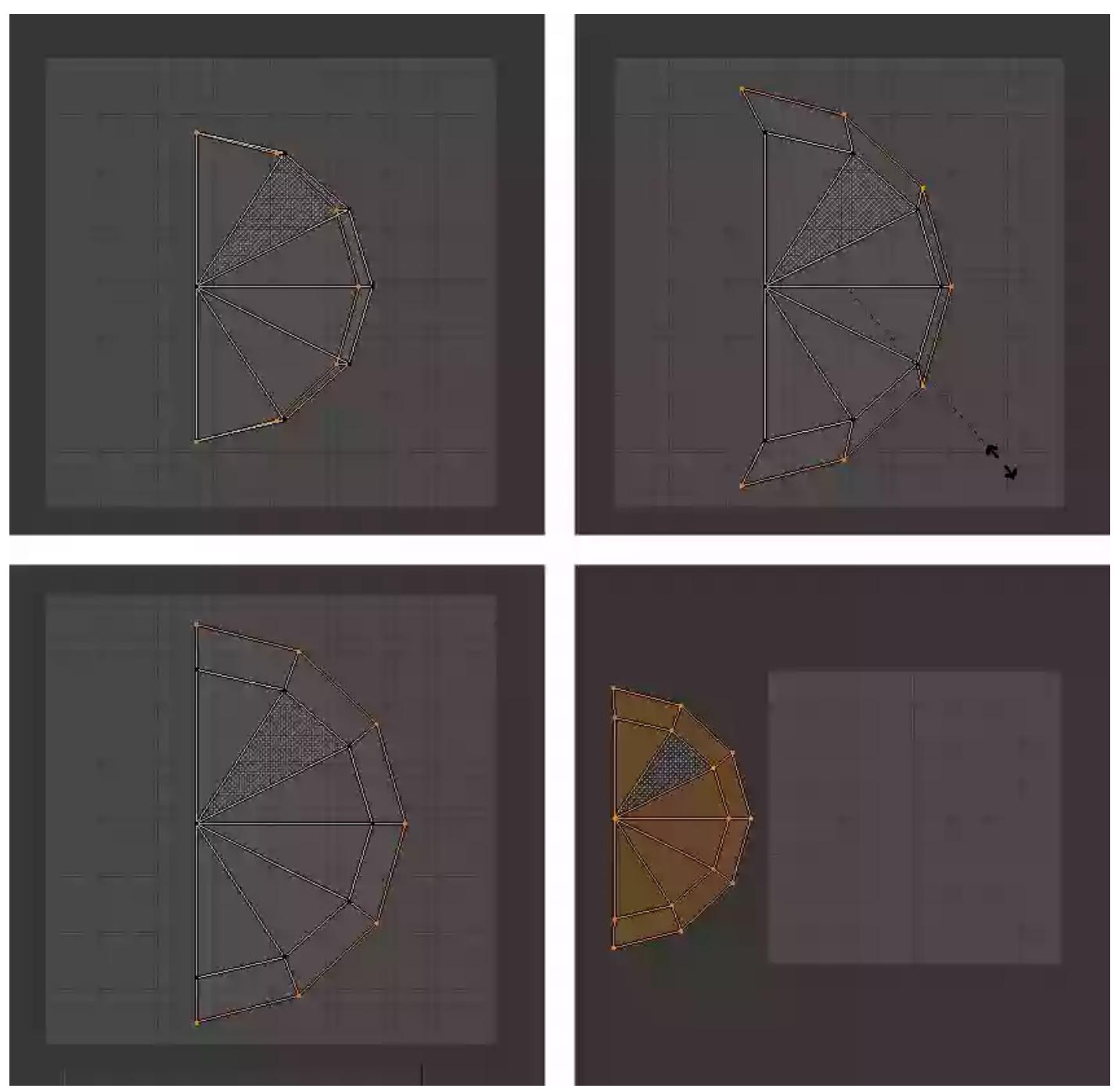
In the 3D viewport, press **A** to deselect any selected face. Move the mouse over the front part and press **L** to select it. Press **U** and select **Project From View** to unwrap the selection onto the **UV Editor**.



UV map the front part

## Step 10

Select the outer edge and scale it. Move the selected loop to the side so that it becomes parallel to the inner loop. Press **A** to select all vertices and the **G** to move it away from the main grid.



Tweaking the vertices

## Step 11

Press **Tab** to exit edit mode. Right click on the plane to select it and then press **Tab** to enter edit mode. Press **A** to select all edges. You will see the UVs in the **UV Editor** might be jumbled up or overlapping each other.

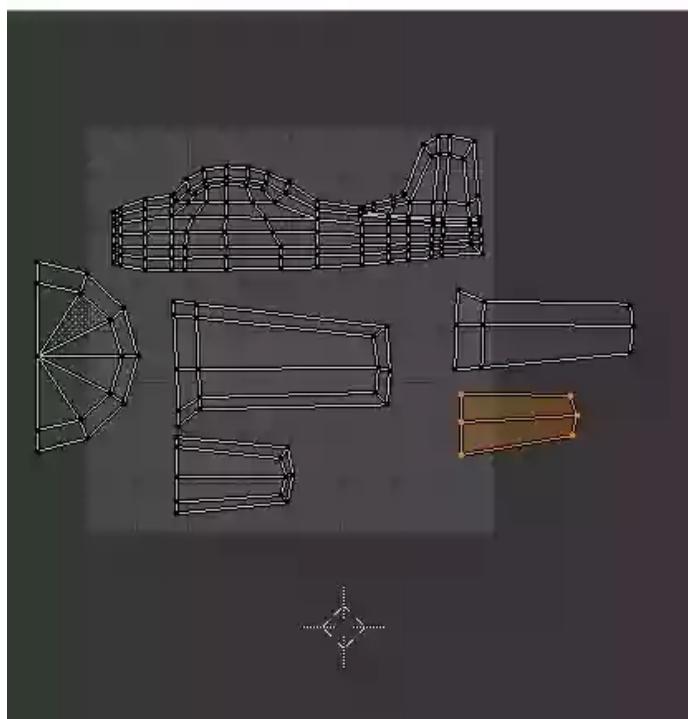
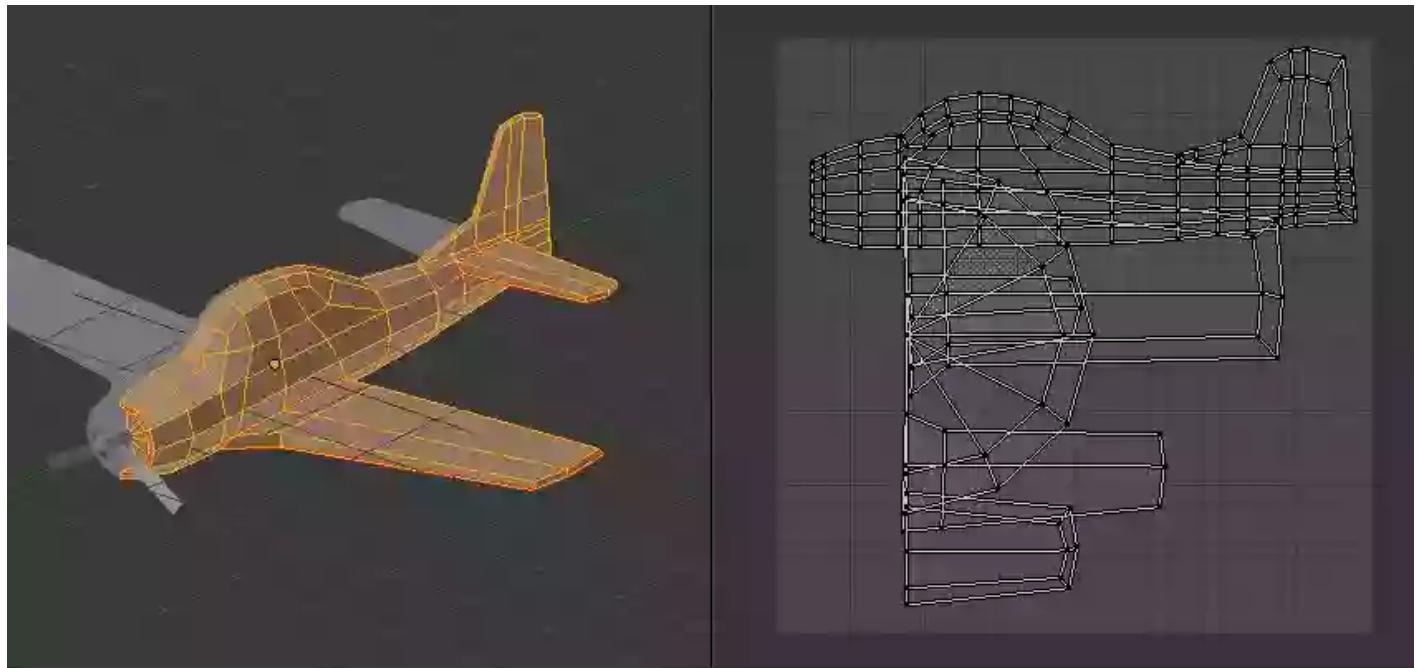
Arrange all the *island* groups such that it fits neatly inside the grid. Keep some space for the propeller UVs. The commands in the **UV Editor** are same as in 3D viewport:

- Hover over any group and press **L** to select the group
- Select any vertex or vertices of the group and press **Ctrl+L** to select the whole group with connecting vertices.
- Hold **Shift** for multiple select.
- **A** to deselect / Select all.
- **W** to bring out the weld/Align menu
- Right click to select any edge / vertices

Here are other editing commands for the UV editor, though they are same as in 3D view.

- **G** to move
- **R** to Rotate
- **S** to scale
- Zoom in/Zoom out - **Mouse wheel**.
- Pan = **Shift-Middle mouse button and drag**.

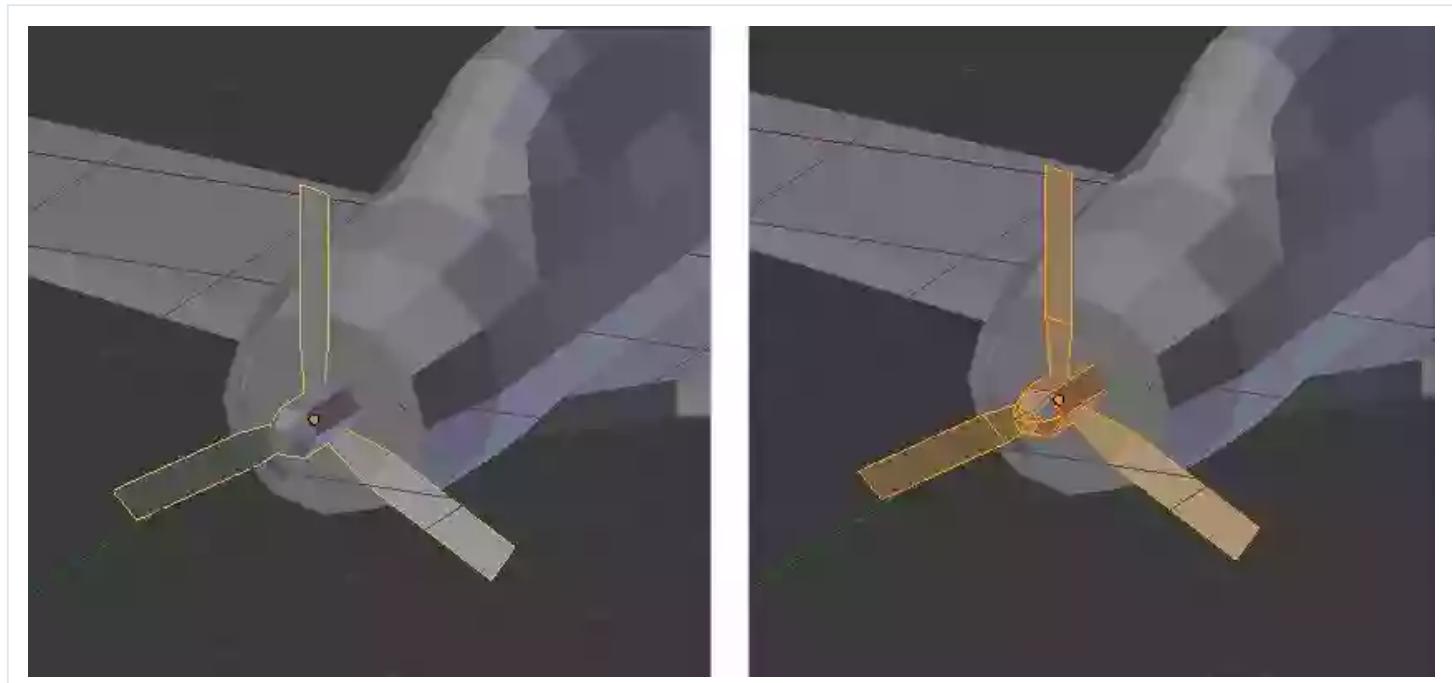
To maximize the **UV Editor**, move the mouse over the **UV Editor** and press **Ctrl-Up Arrow**. Press **Ctrl-Up arrow** to toggle back.



Rearranging the UV groups

## Step 12

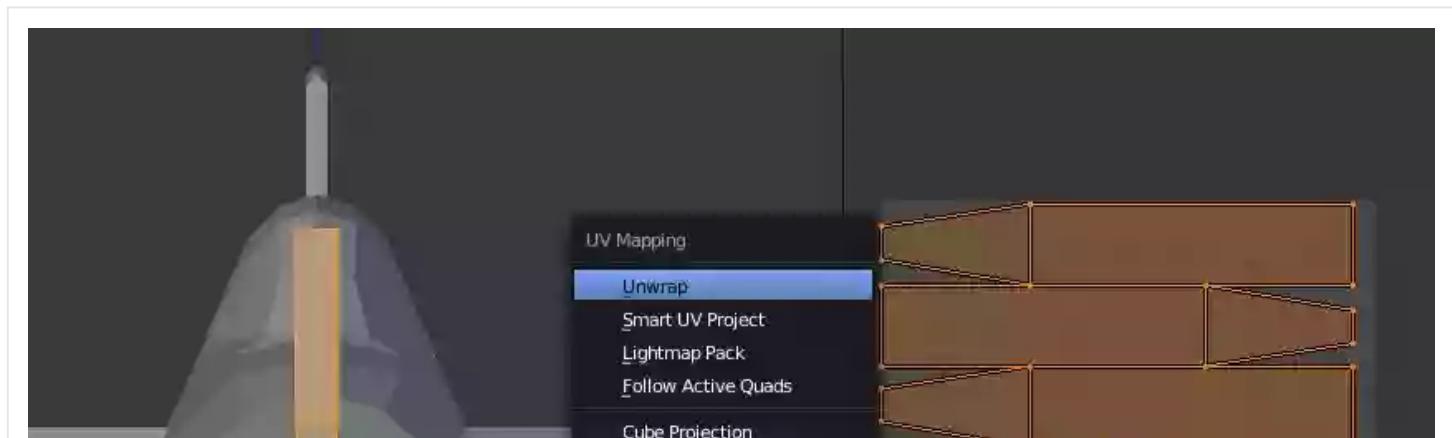
Press **Tab** to exit edit mode. Secondary-click on the propeller to select it and press **Tab** to enter edit mode.

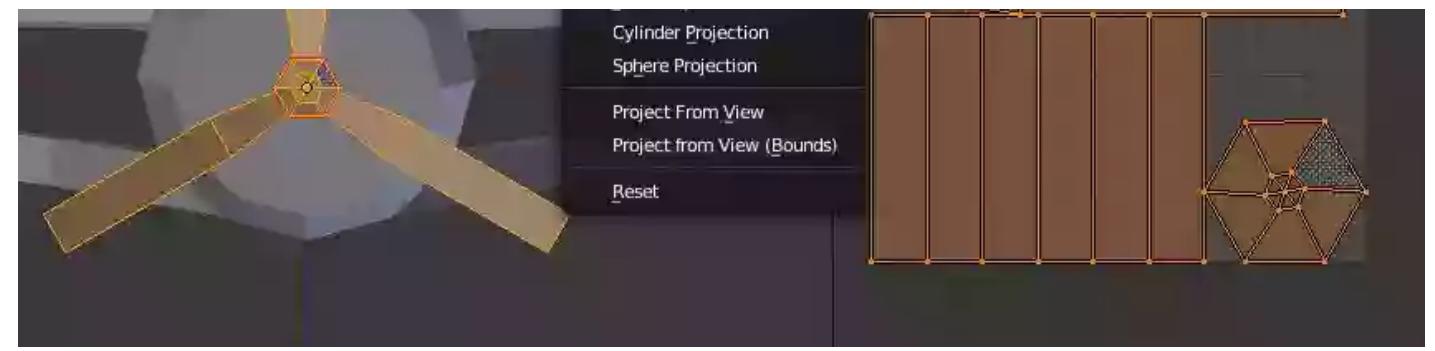


Select propeller and enter edit mode

## Step 13

Press **A** to select all vertices. Press **U** to bring the **UV Mapping** menu and select **Unwrap** this time. You don't need it to get projected from view.



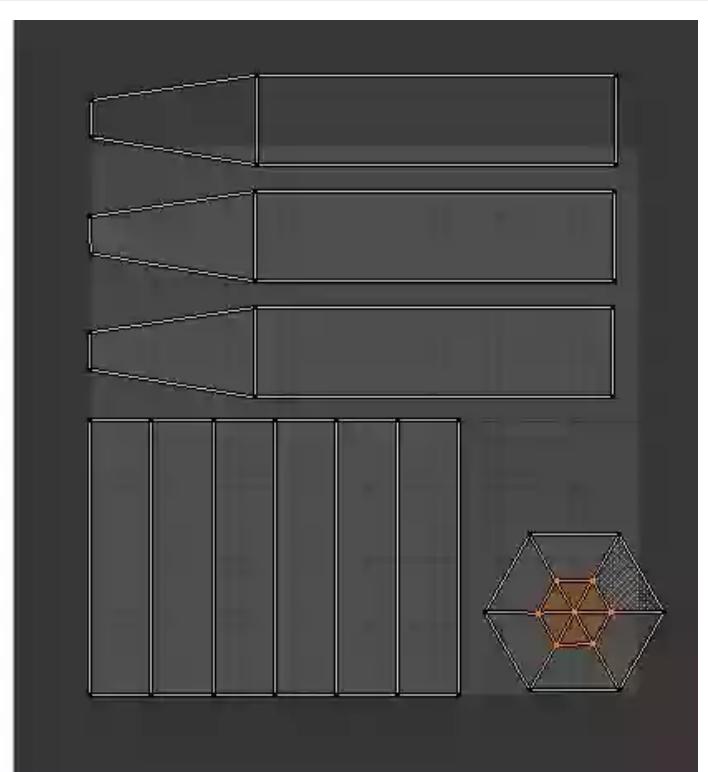


Unwrap the propeller mesh

## Step 14

Move the UVs so that they have some space in between. Select the blade which is facing the opposite direction and rotate it 180 degrees.

Press **R** and then type 180 to rotate the selection 180 degrees. Adjust the edge loop of the front part as well as shown in the image.

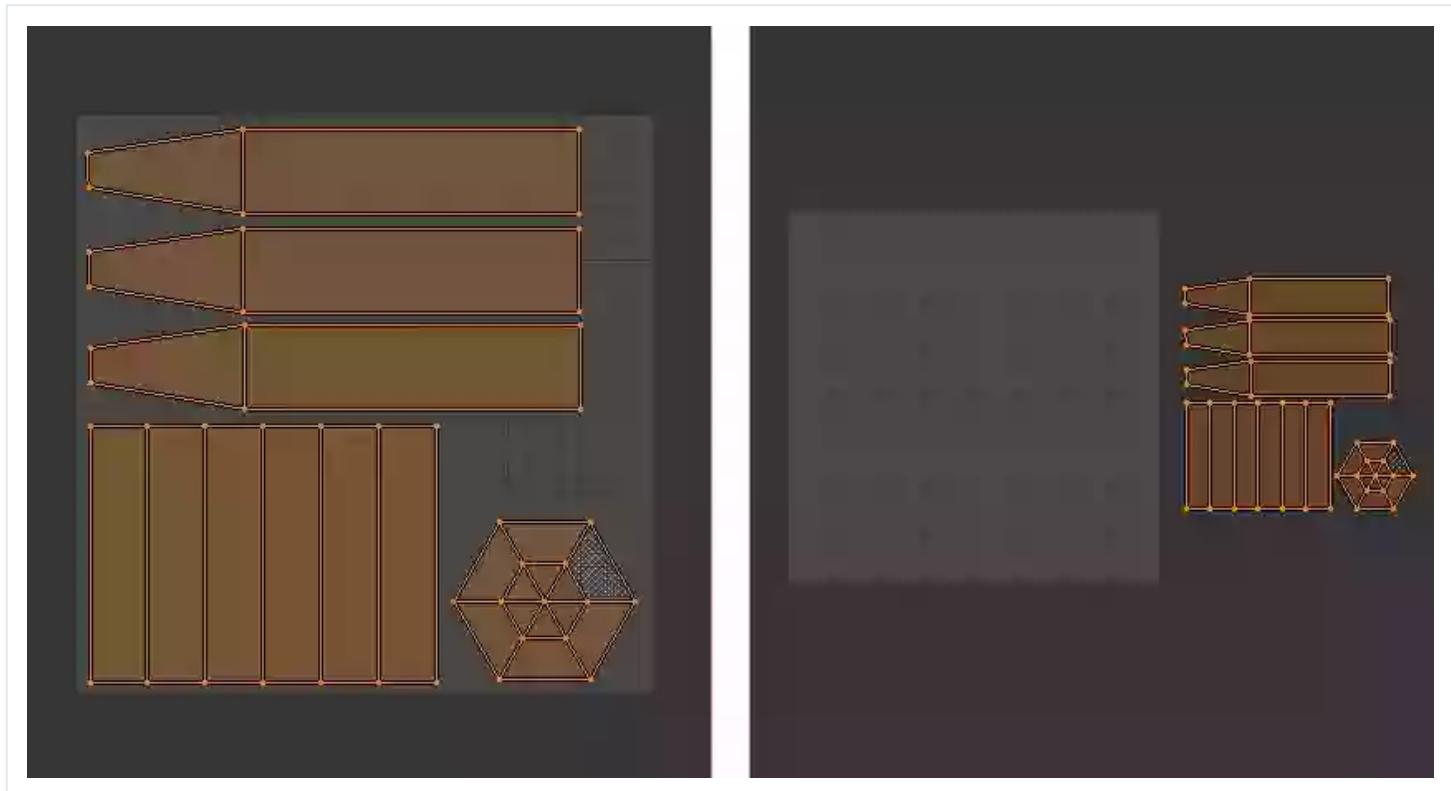


Move and tweak the UV map

## Step 15

Press **A** to select all vertices and then press **S** to scale it down.

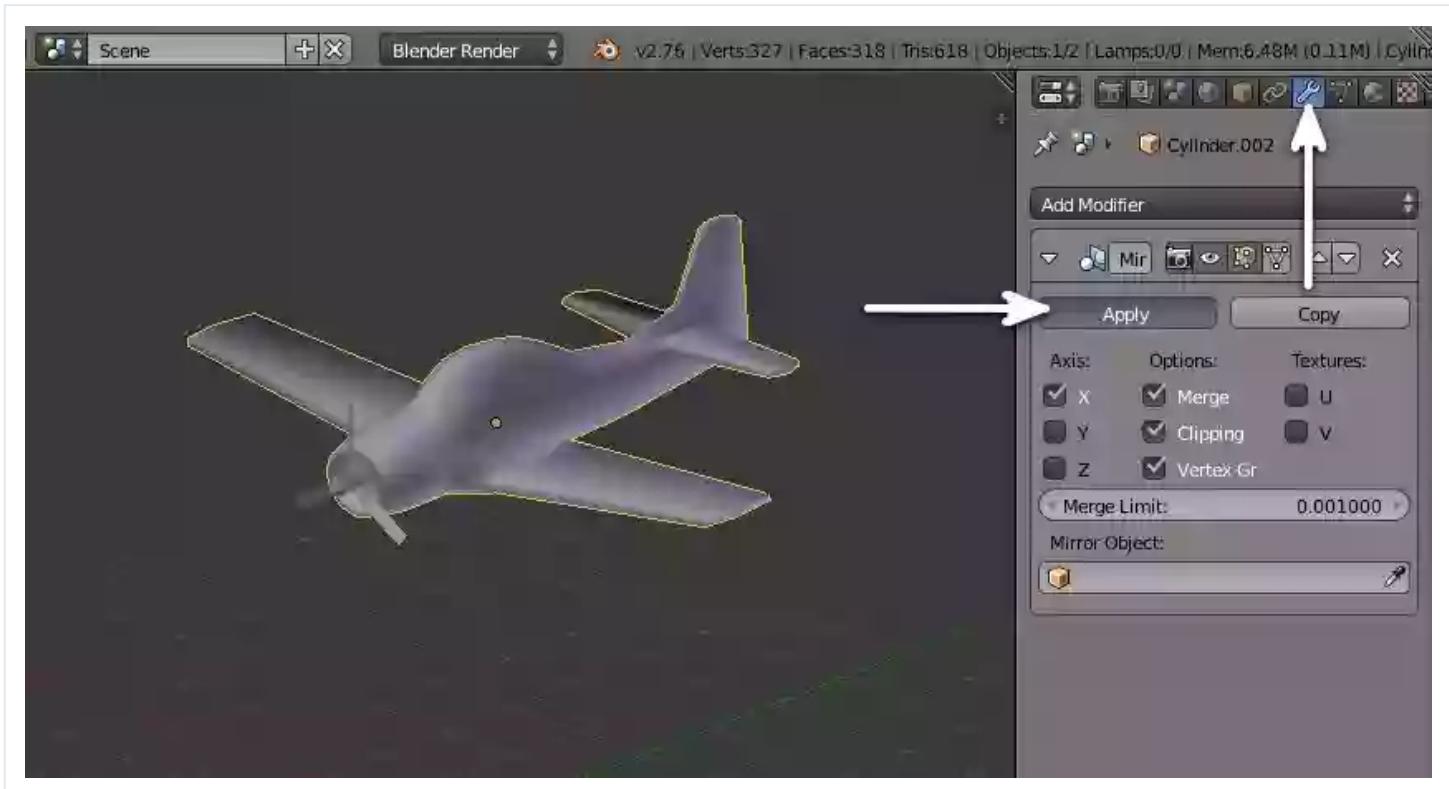
Press **G** to move them away from the grid.



Move and tweak the UV map

## Step 16

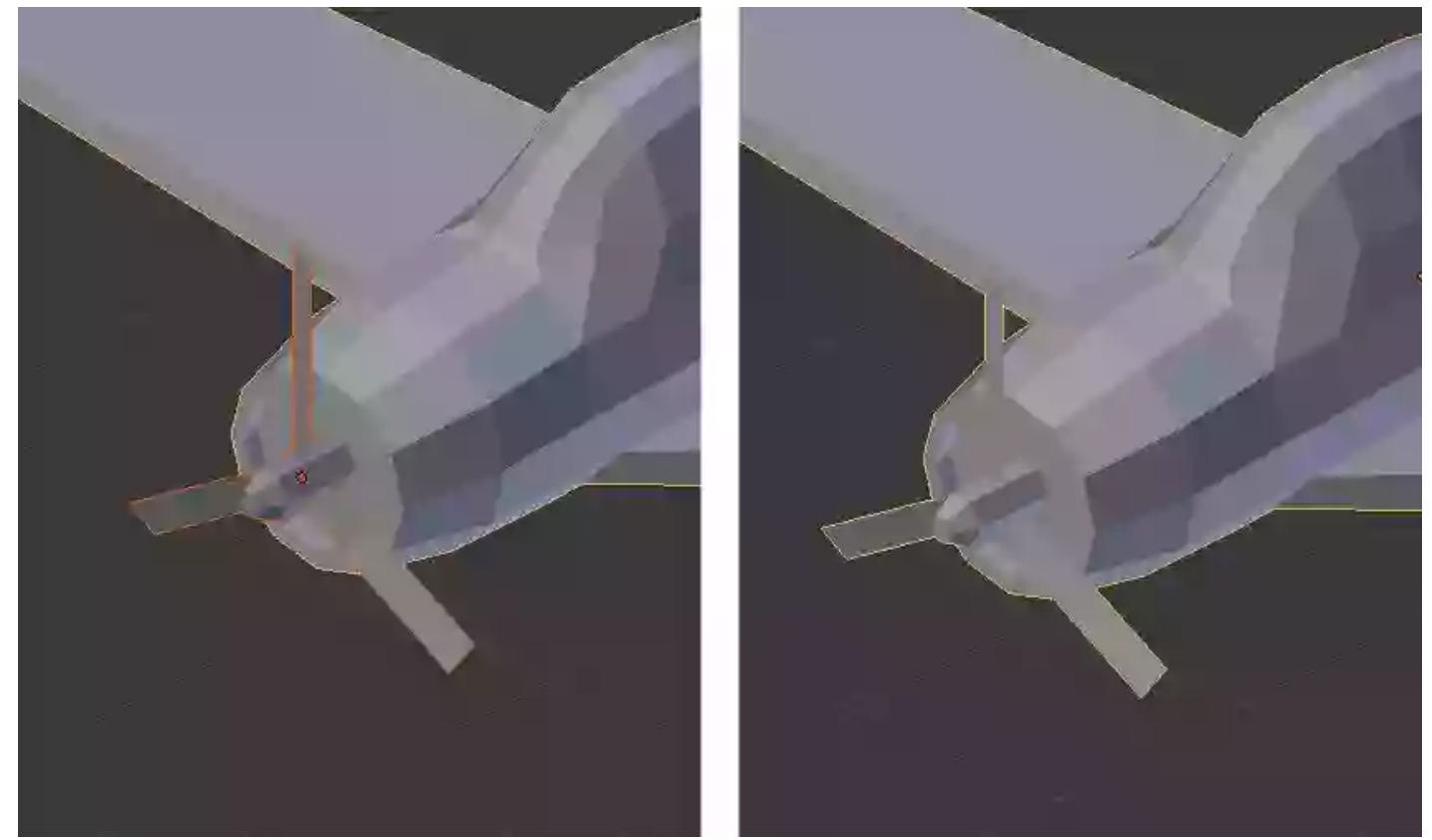
Press **Tab** to exit edit mode. Secondary-click on the plane to select it. Click on the modifiers button in the properties window. Press the **Apply** button in the Mirror modifier. This will generate the opposite side of the mesh.



Apply the mirror modifier

## Step 17

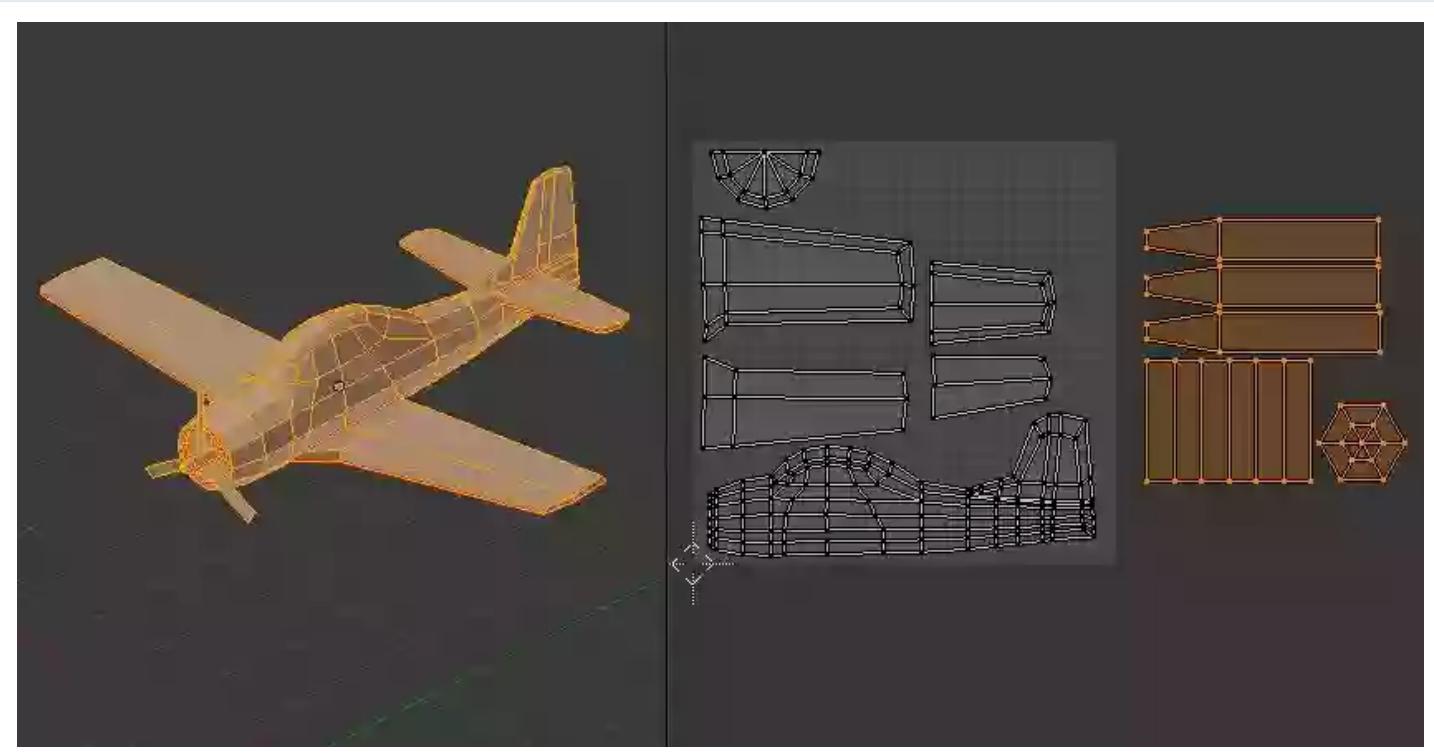
Hold **Shift** and secondary-click on the propeller and then the plane. Press **Ctrl-J** to join them.



Join propeller and plane model

## Step 18

Press **Tab** to enter edit mode. In the 3D view, press **A** to select all vertices, so that UV maps of the whole mesh appear in the **UV Editor**.



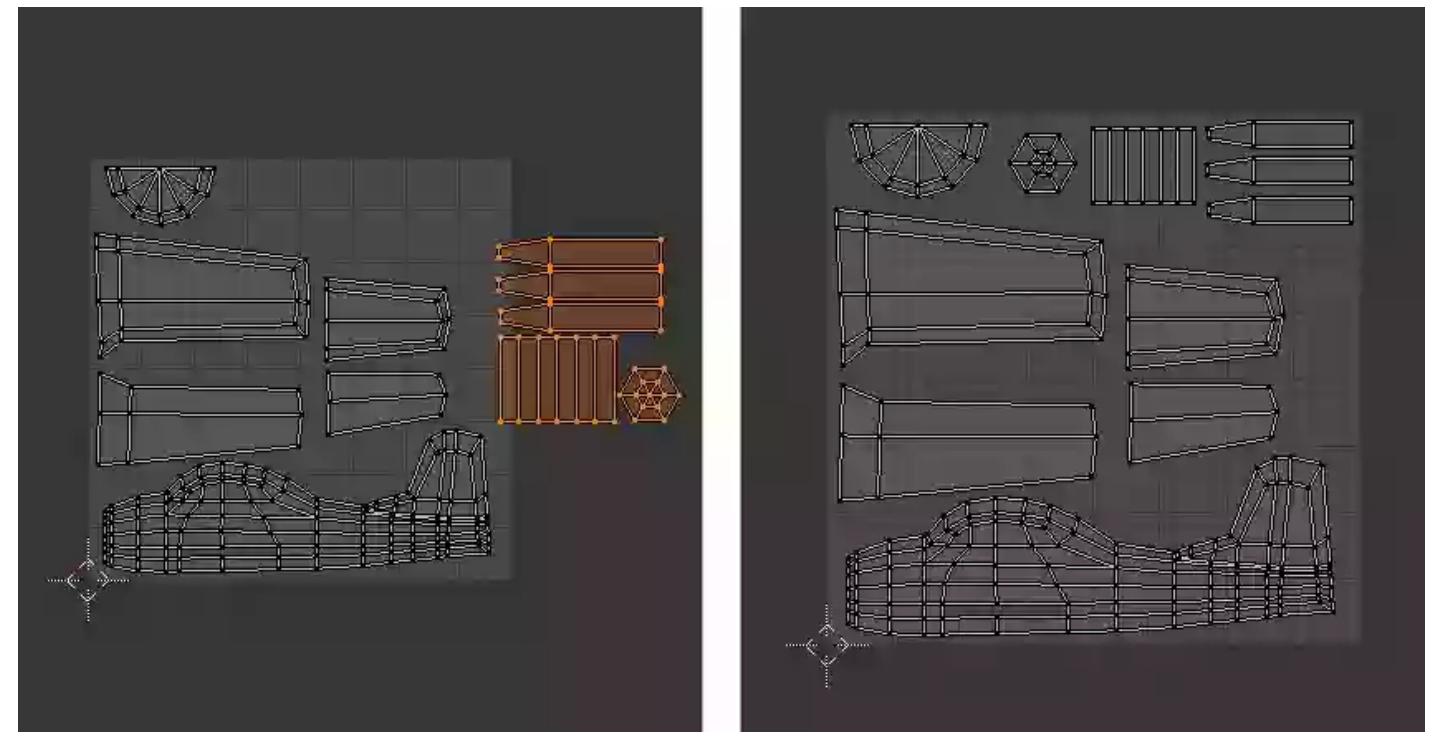
Rearrange UV maps

## Step 19

Move and adjust the propeller UVs inside the grid.

Press **A** to deselect the vertices, move the mouse over any of the UV island and press **L** to select it and **G** to move.

To see more commands and shortcuts, go to step 11.

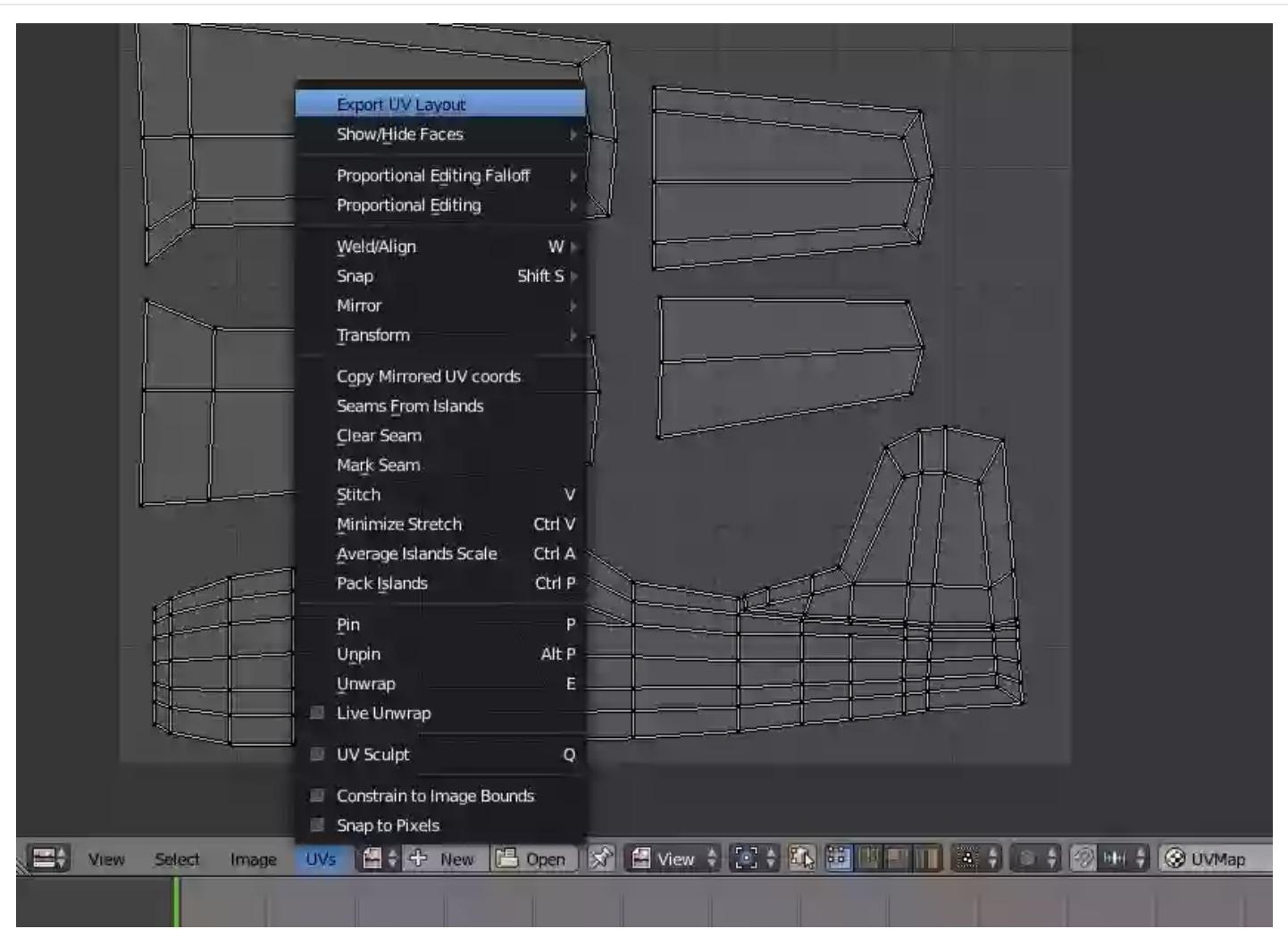


Rearrange the vertices

## Step 20

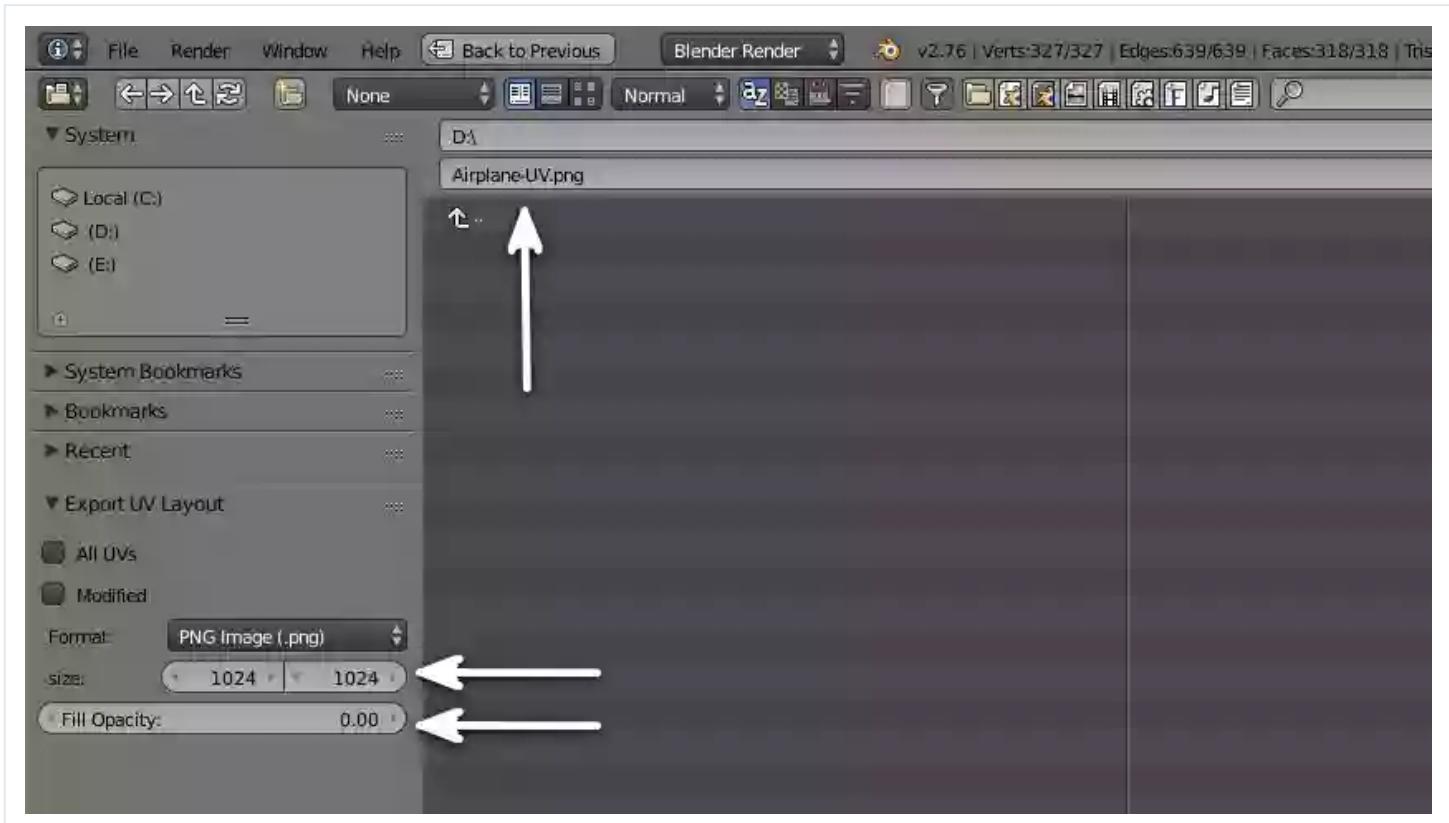
When done, Click on the **UVs** menu and select **Export UV Layout**.

This will be the guidelines to paint textures in the painting program.



Export UV Layout

Select the **PNG** Format and decrease the **Fill Opacity** to **0.00**. I kept the default size of 1024x1024 pixels.

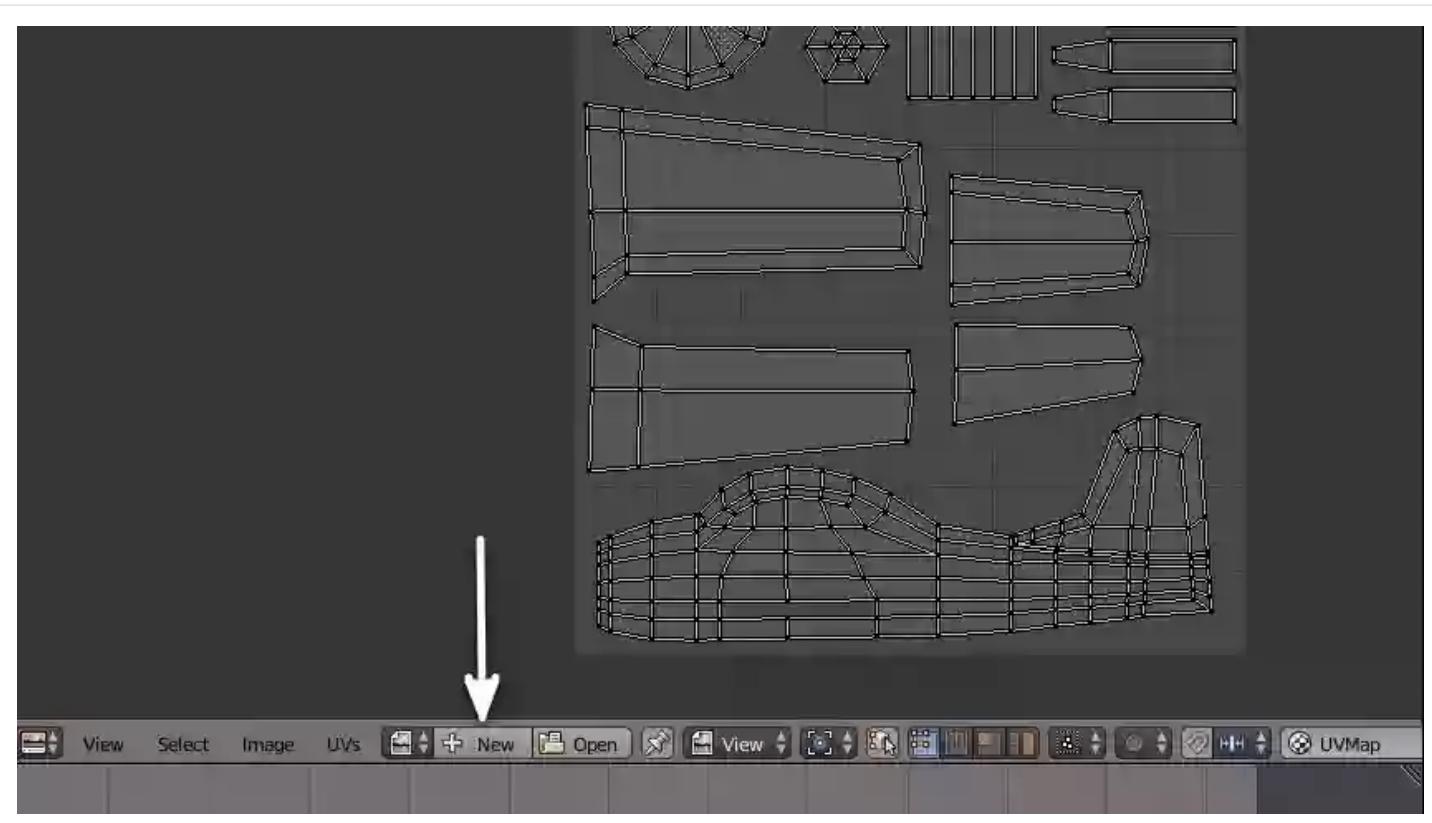


Export settings

## Step 21

Now we will bake the *Ambient Occlusion* data onto the image. This will add shadow information to a new image, which will be helpful while painting texture in paint program.

In the UV Editor, press **New** button to create a new image onto which you will bake the AO data.



Create new image

I changed the size to 1024x1024 pixels. Press **OK**.

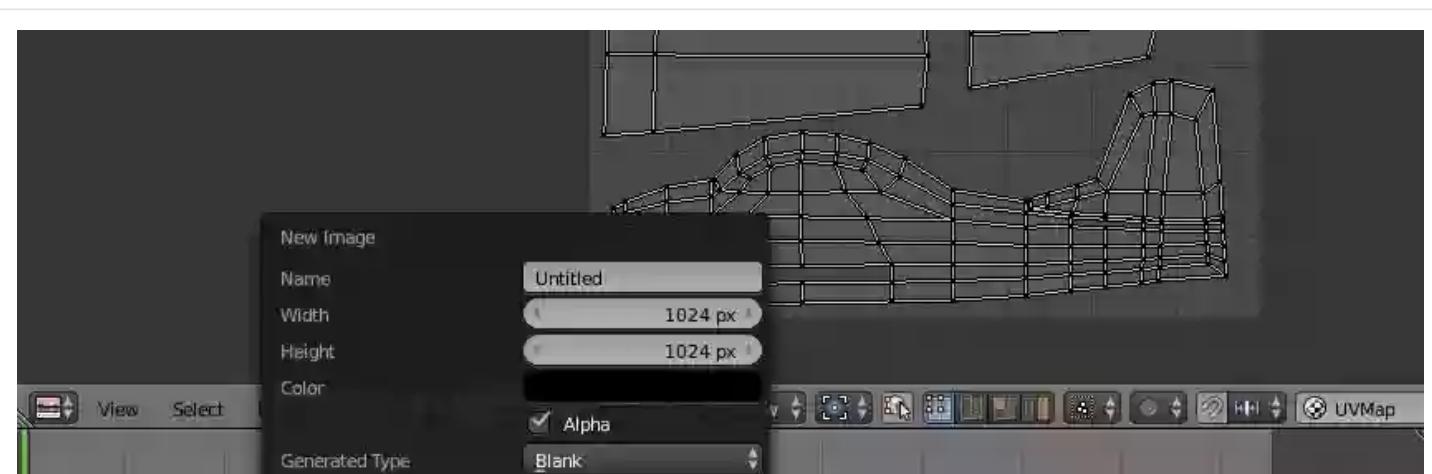
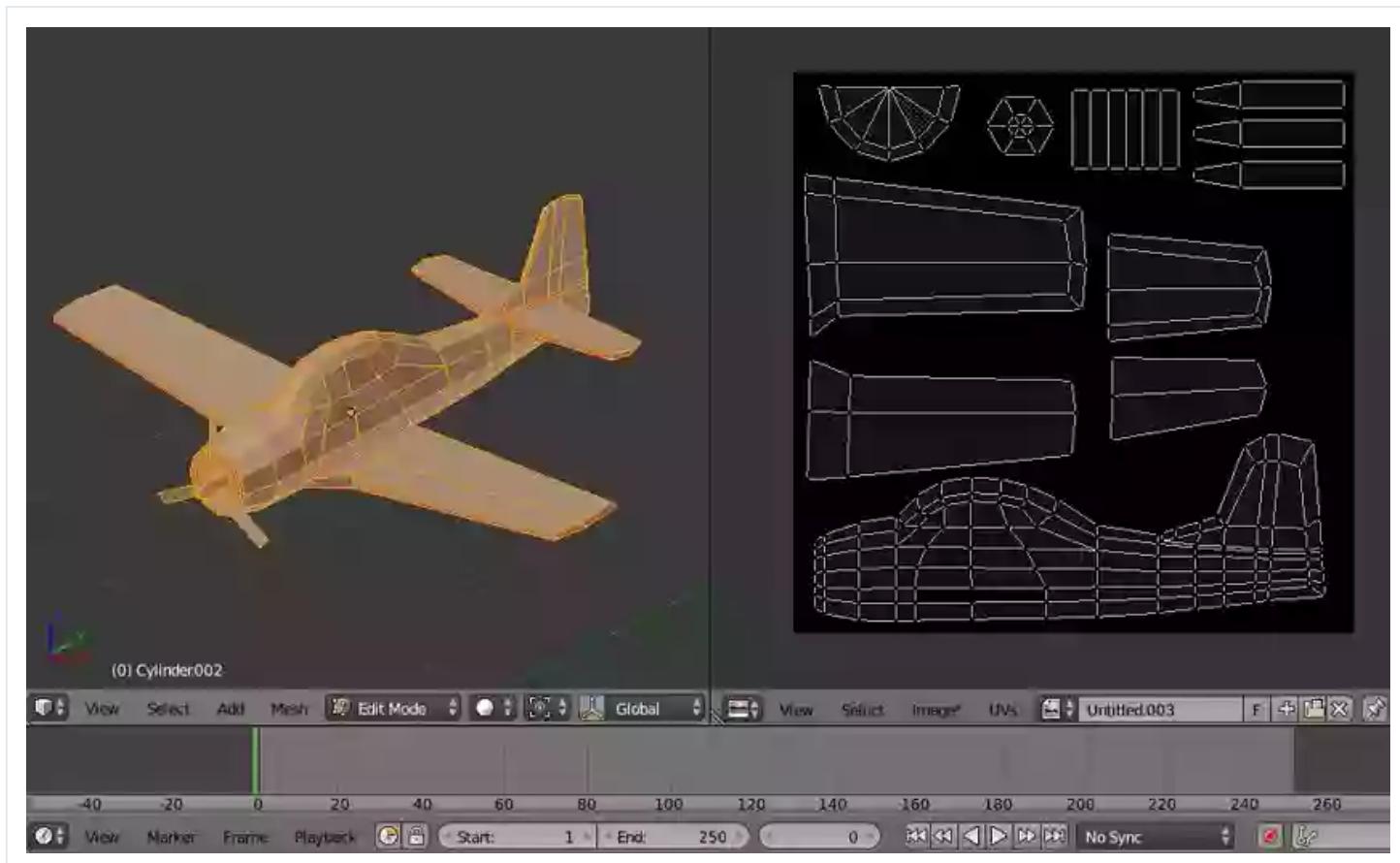




Image settings

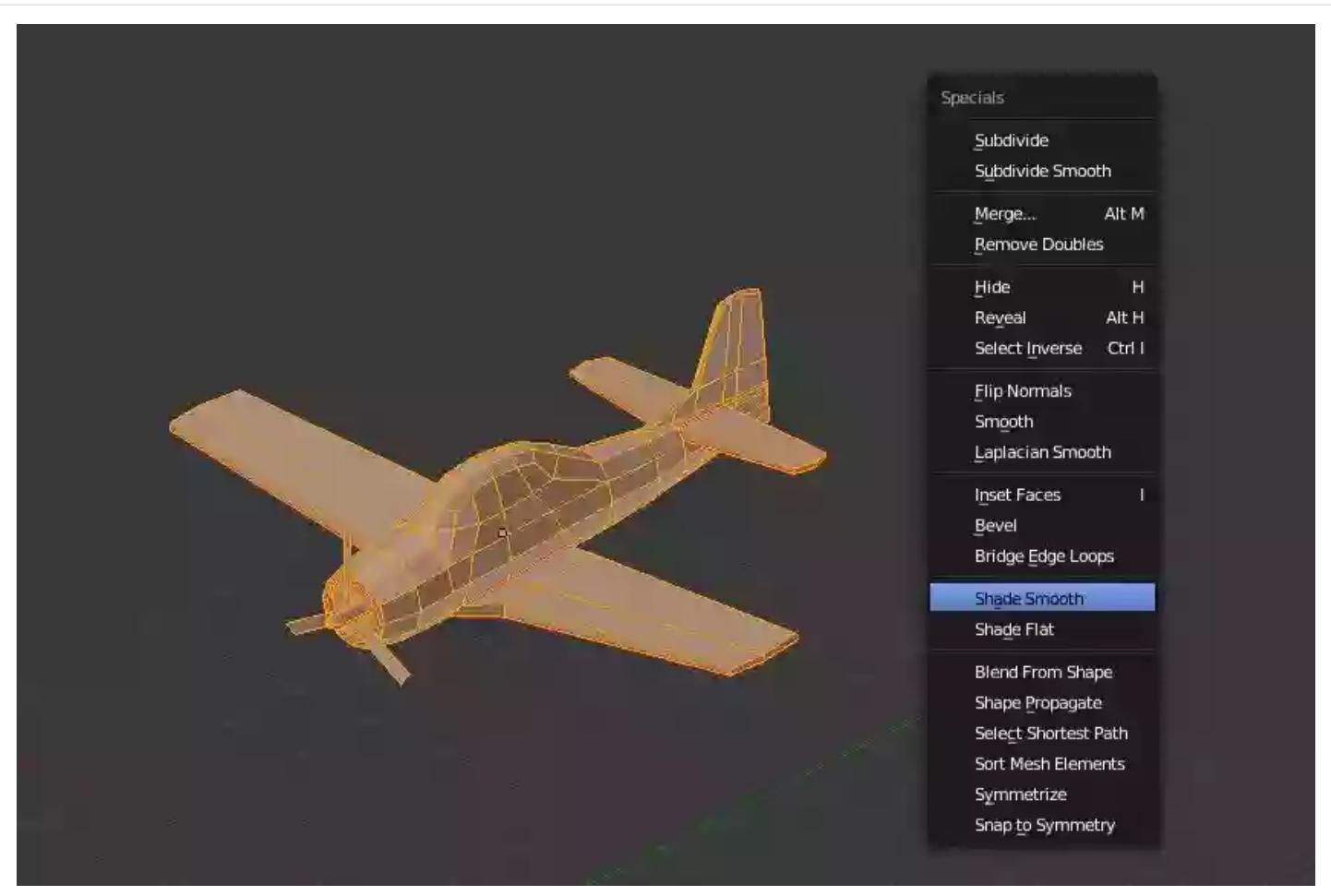
A new image is added in the **UV Editor**.



Default black image

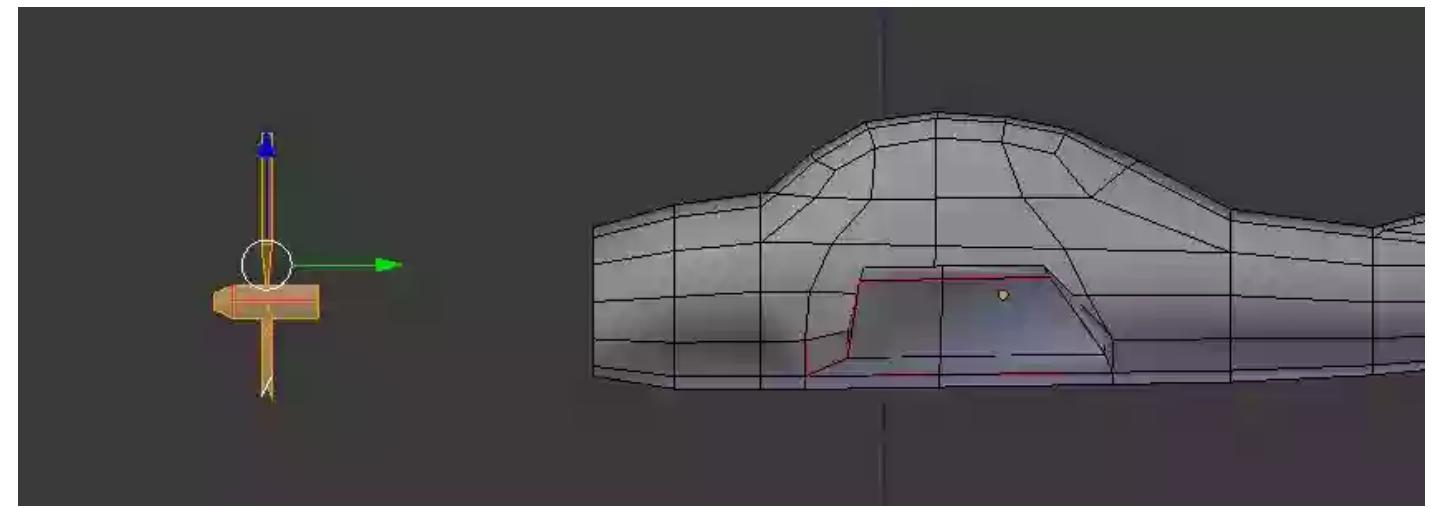
## Step 22

In the 3D view, press **A** to select all vertices and then press **W** to bring the **Specials** menu. Select **Shade smooth**. This will give smooth look to the model.



Set mesh to Shade Smooth

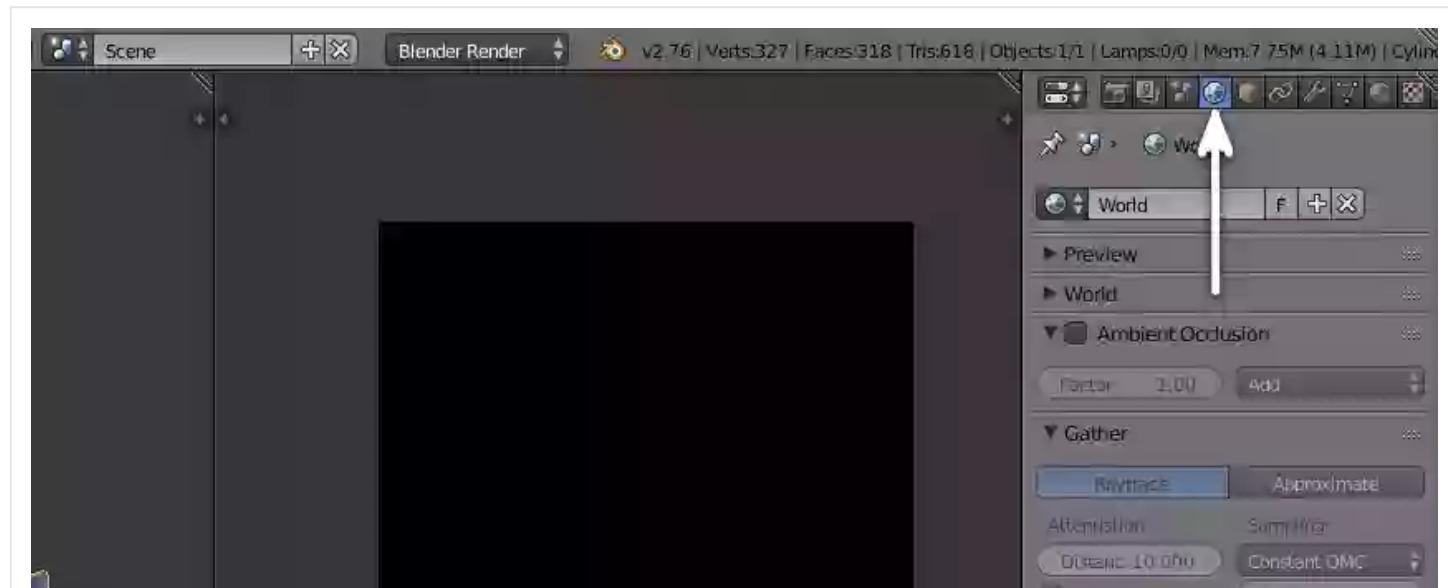
- Press **A** to deselect the vertices.
- Select only the propeller blades and center.
- Move the mouse over the mesh of the propeller and press **L** to select each blade and the center part.
- Press **3** in the number pad to get into side view.
- Move the selection away from the plane temporarily so that their shadow does not appear on the plane, while baking the AO data.
- Press **Tab** to exit edit mode.



Move the propeller away

## Step 23

Click on the **World settings** button in the properties window. In the **Gather** panel, increase the **Samples** to **15**. Higher value will give smooth and noiseless results.

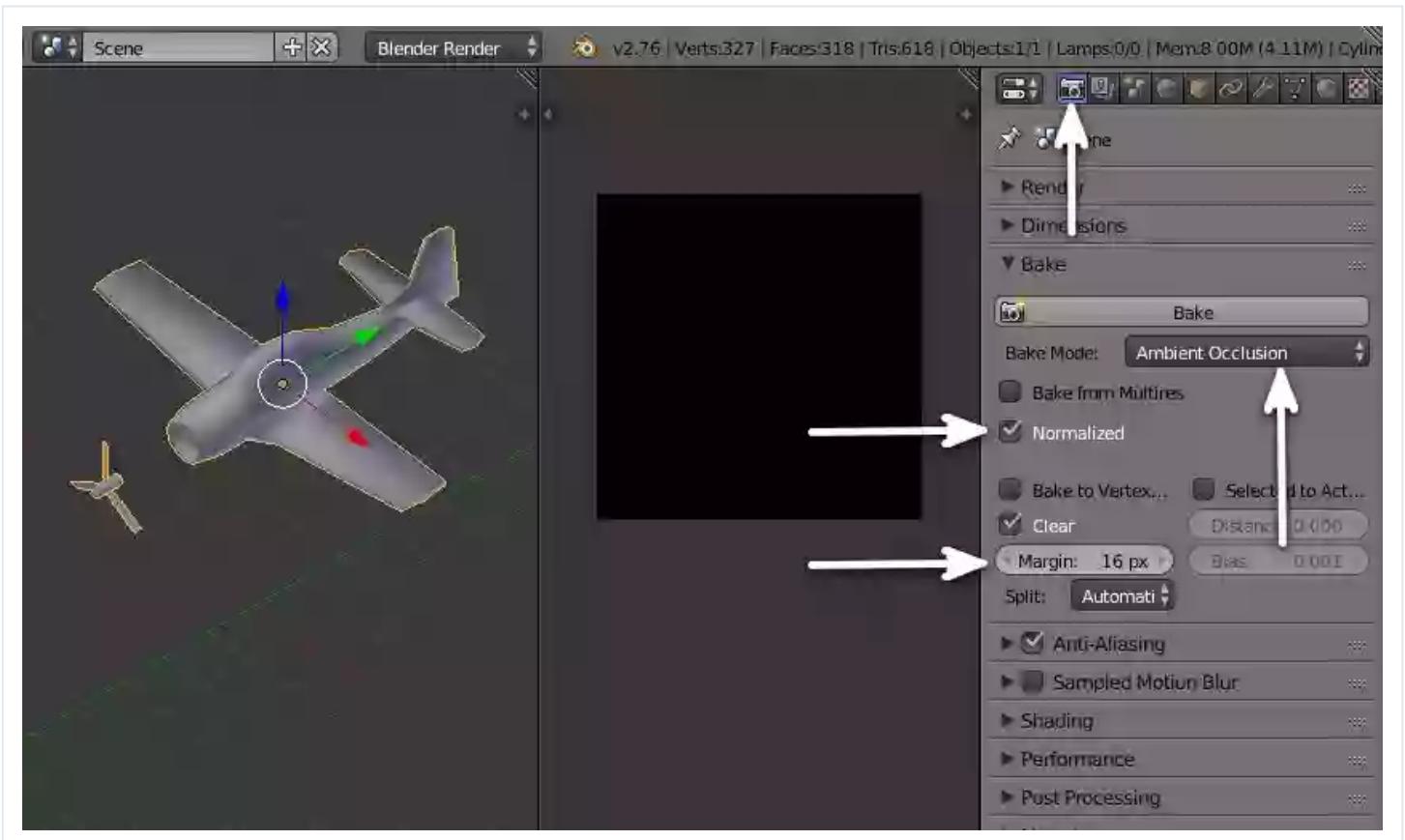




Ambient Occlusion settings

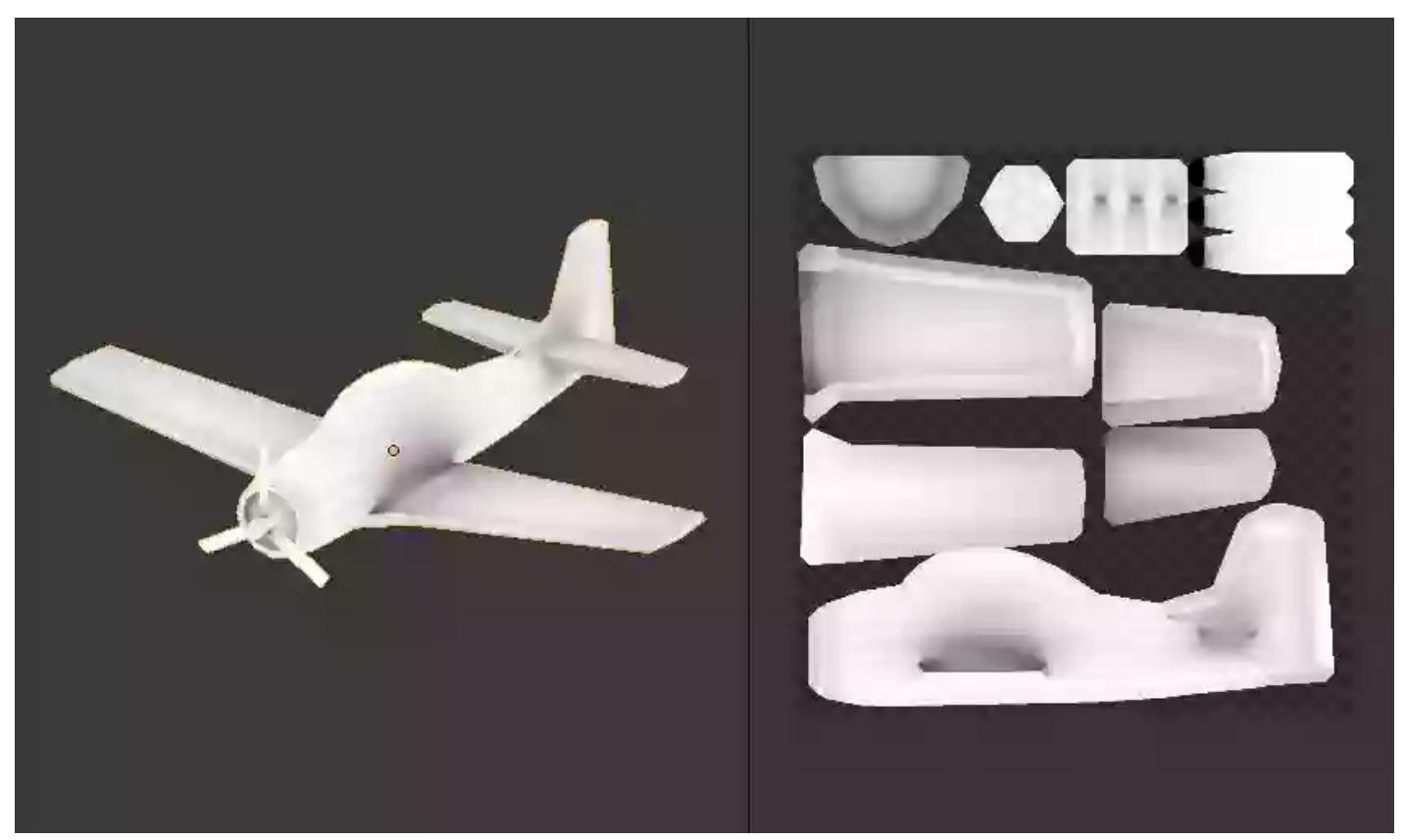
## Step 24

- Click on the **Render settings** button in the properties window.
- In the **Bake** panel, Select **Ambient Occlusion** in the **Bake Mode**.
- Tick the **Normalized** checkbox.
- Set **Margin** to **12** or **16** pixels.



Bake settings

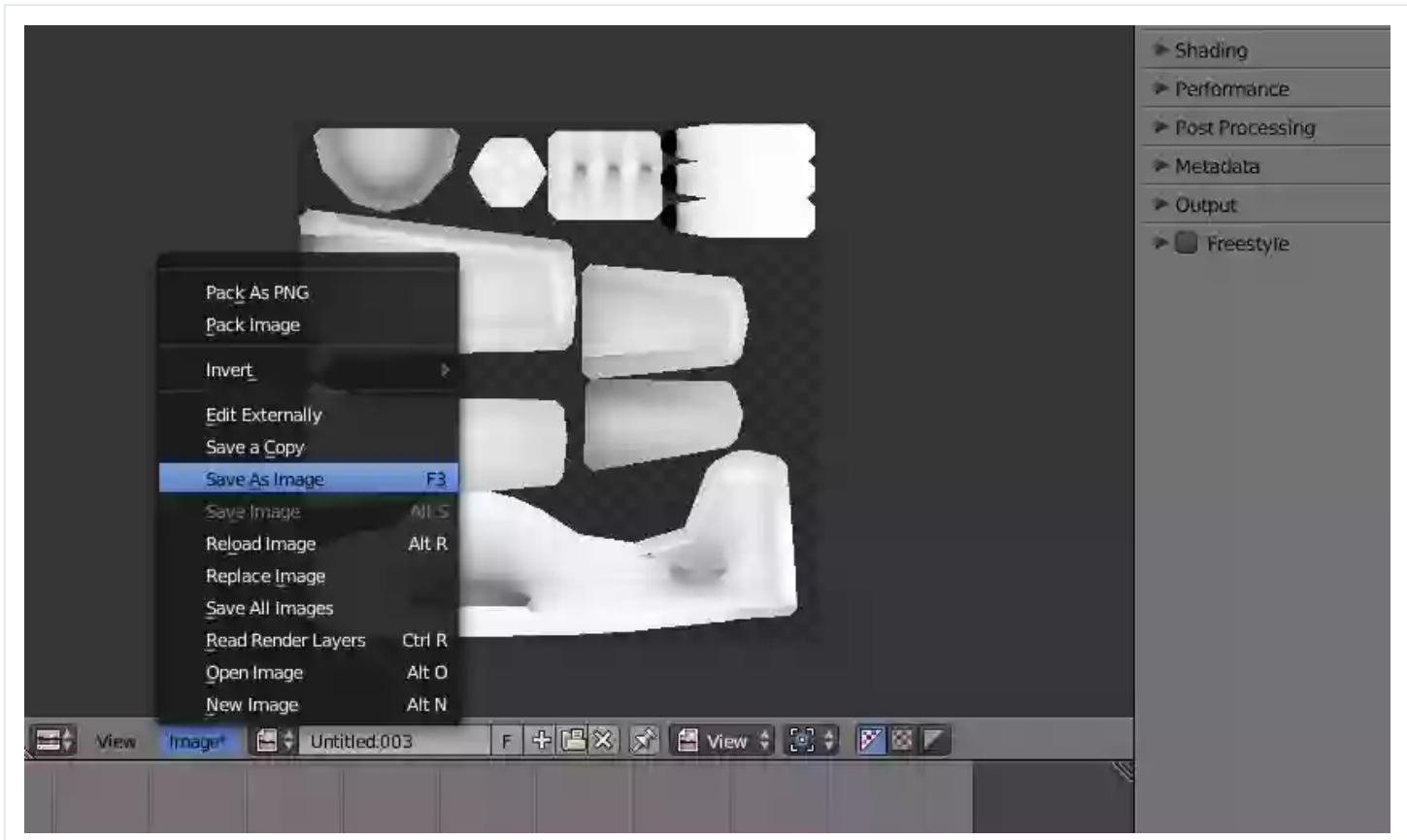
Press the **Bake** button. After few seconds the image will be updated. In the **3D View**, press **Alt-Z** to view the model with textured applied. Use **Alt-Z** again to toggle back to shaded view.



Ambient Occlusion baked on an image

## Step 25

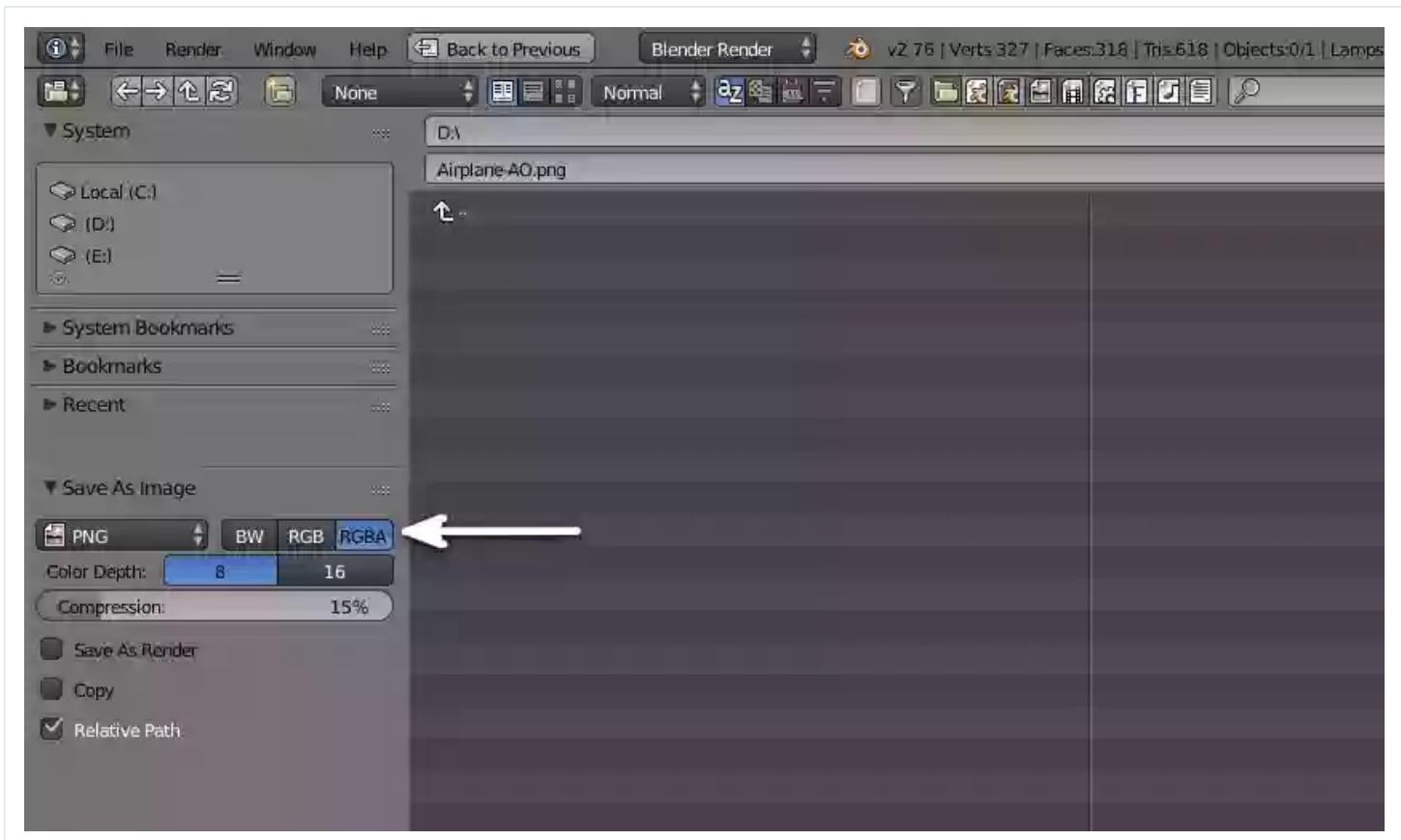
In the **UV Editor**, click on the **Image** menu and select **Save As Image** to save the image.



Save Image

In the **Save As Image** panel, select **PNG** file format. Choose **RGBA** to save transparent image without black background.

Type in the name for the file and press the **Save** button.



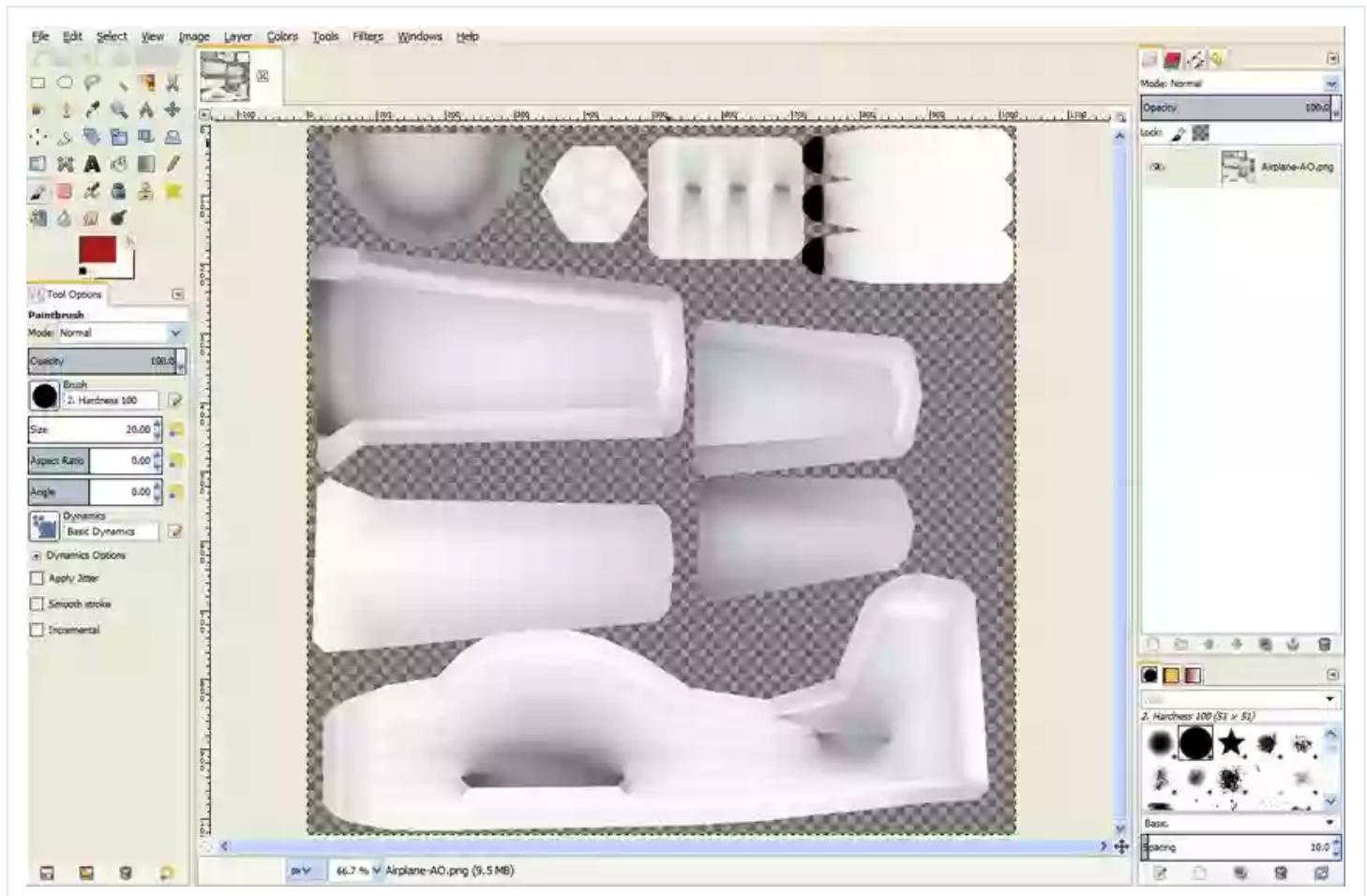
Save image as png

## Texturing and Painting

### Step 1

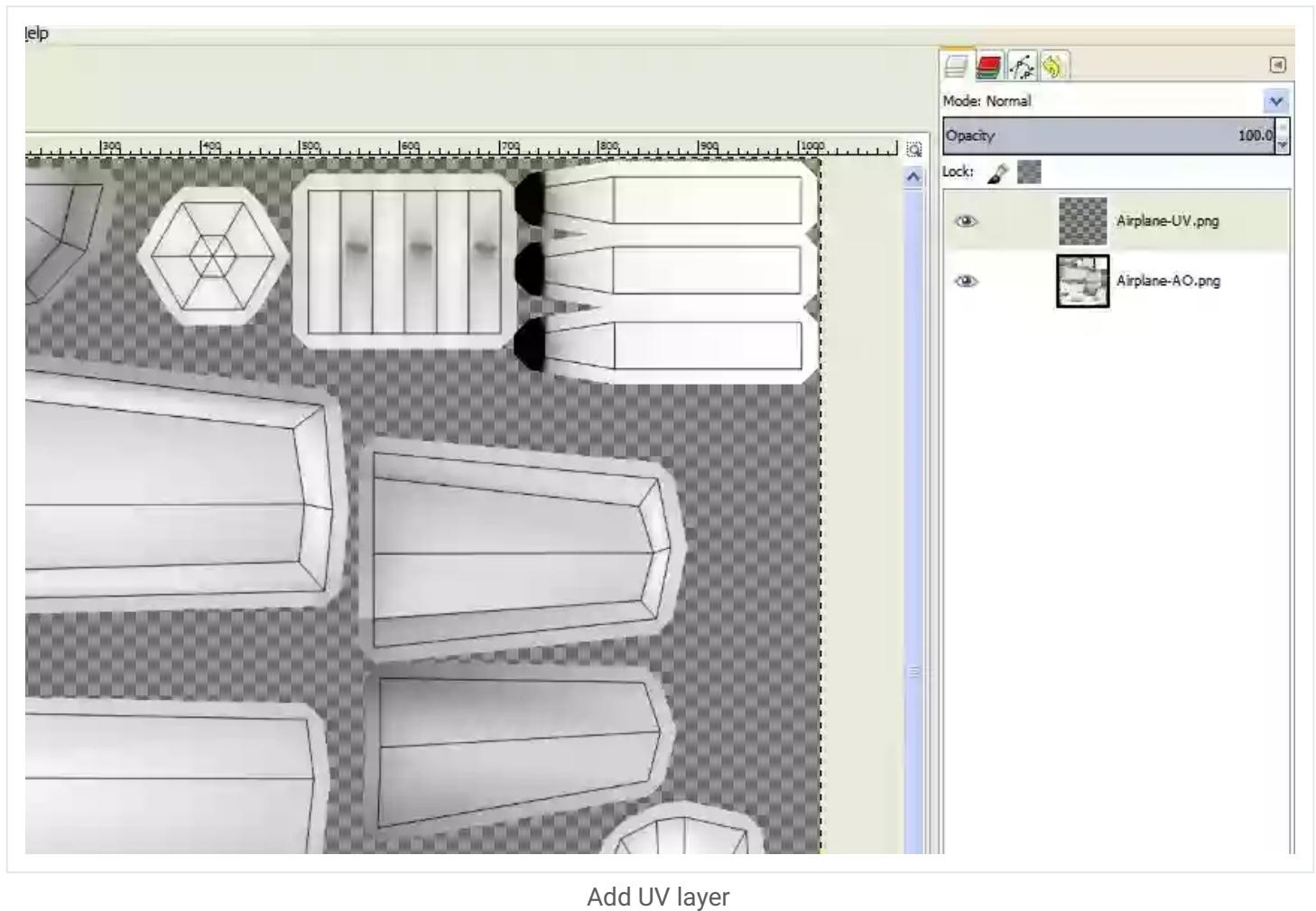
Open the image with **Baked AO data**, in your favorite image editor.

You can use **Gimp** or **Photoshop**.



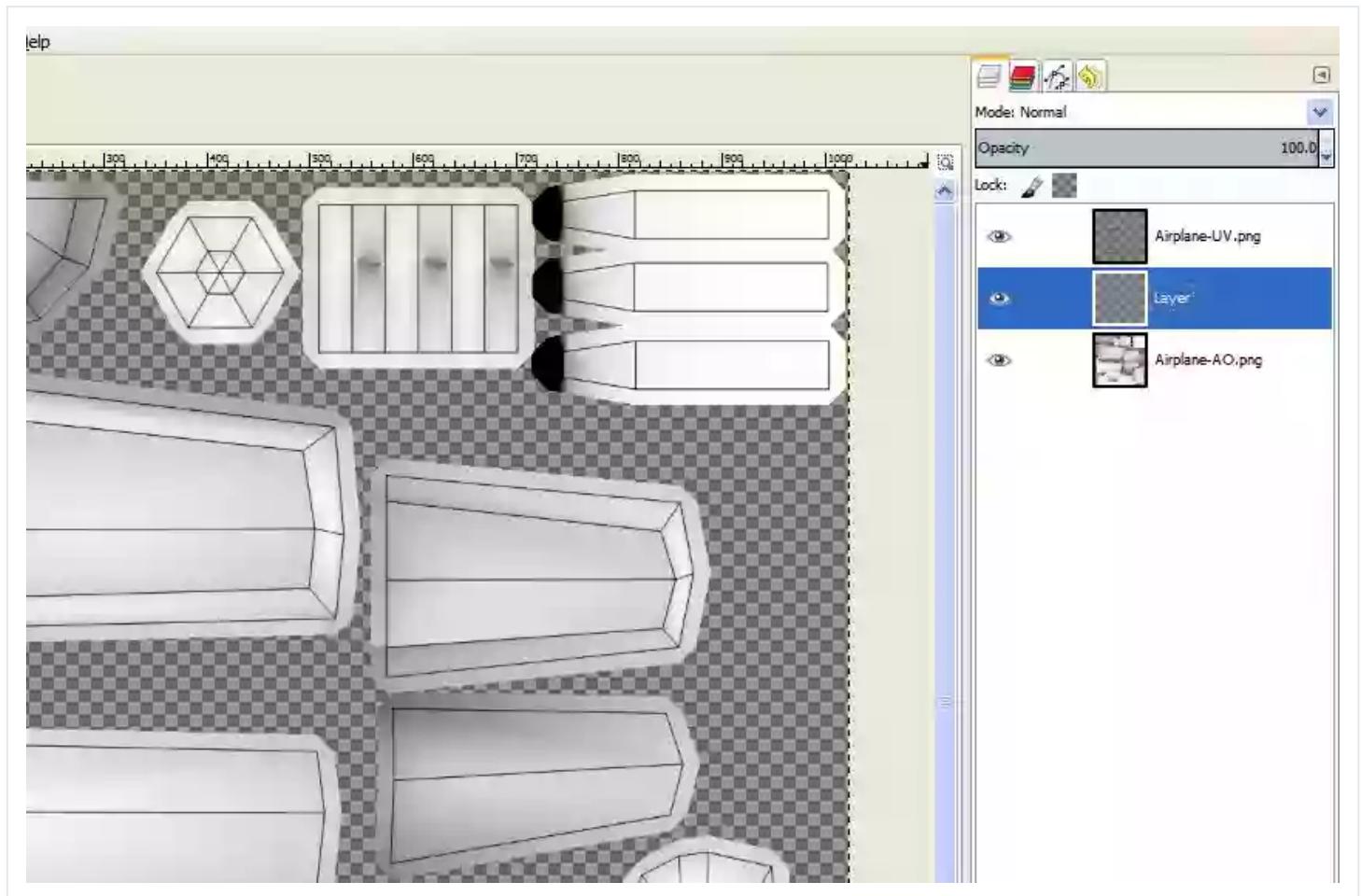
Open image in Gimp

In a new layer on top, put the **UV Layout** you exported.



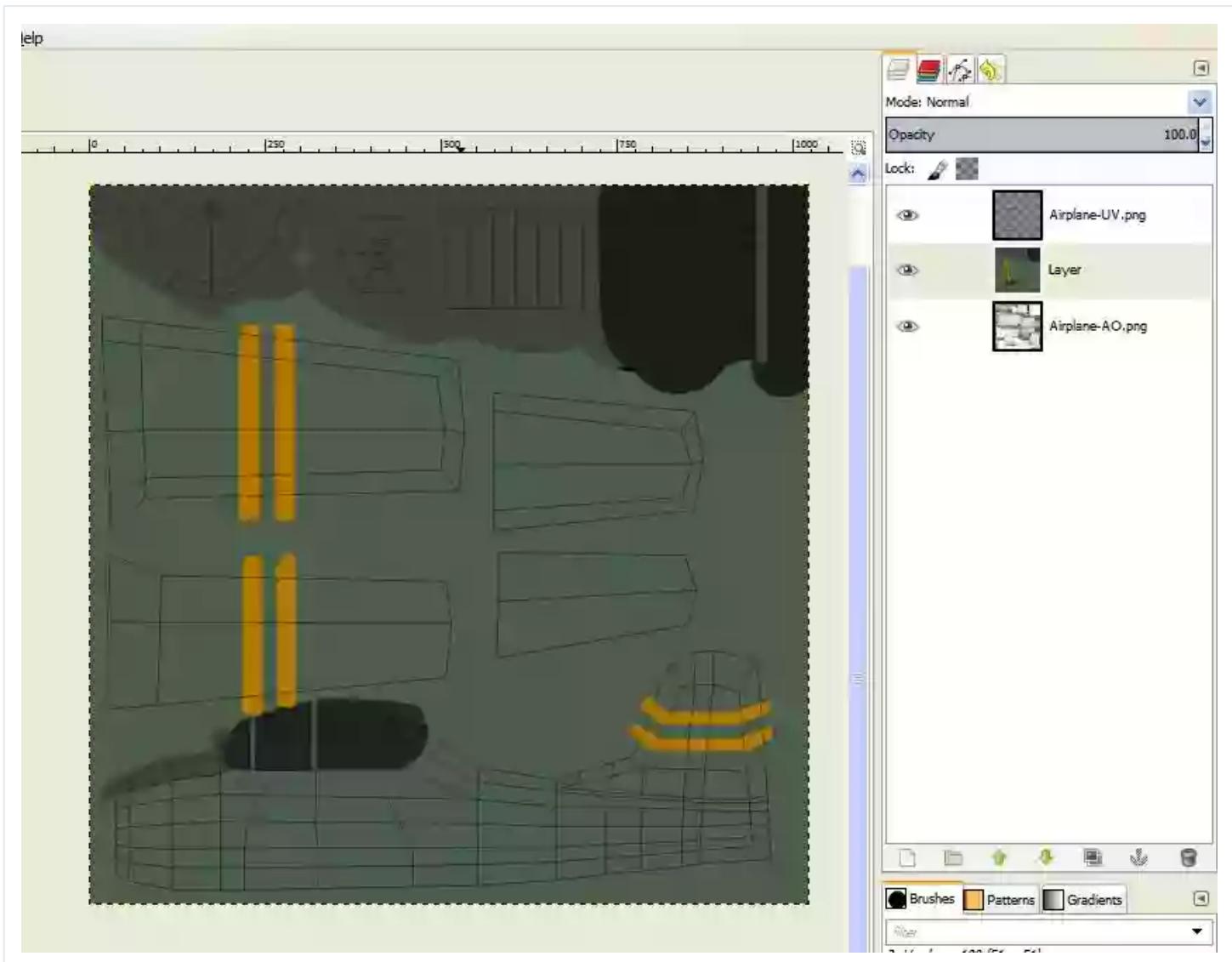
## Step 2

Create a new layer in between the **Wire** and **AO** layer. This will be the layer on which you can paint the texture. You can create more layers for painting but keep them between the **Wire** and **AO Layers**.



### Step 3

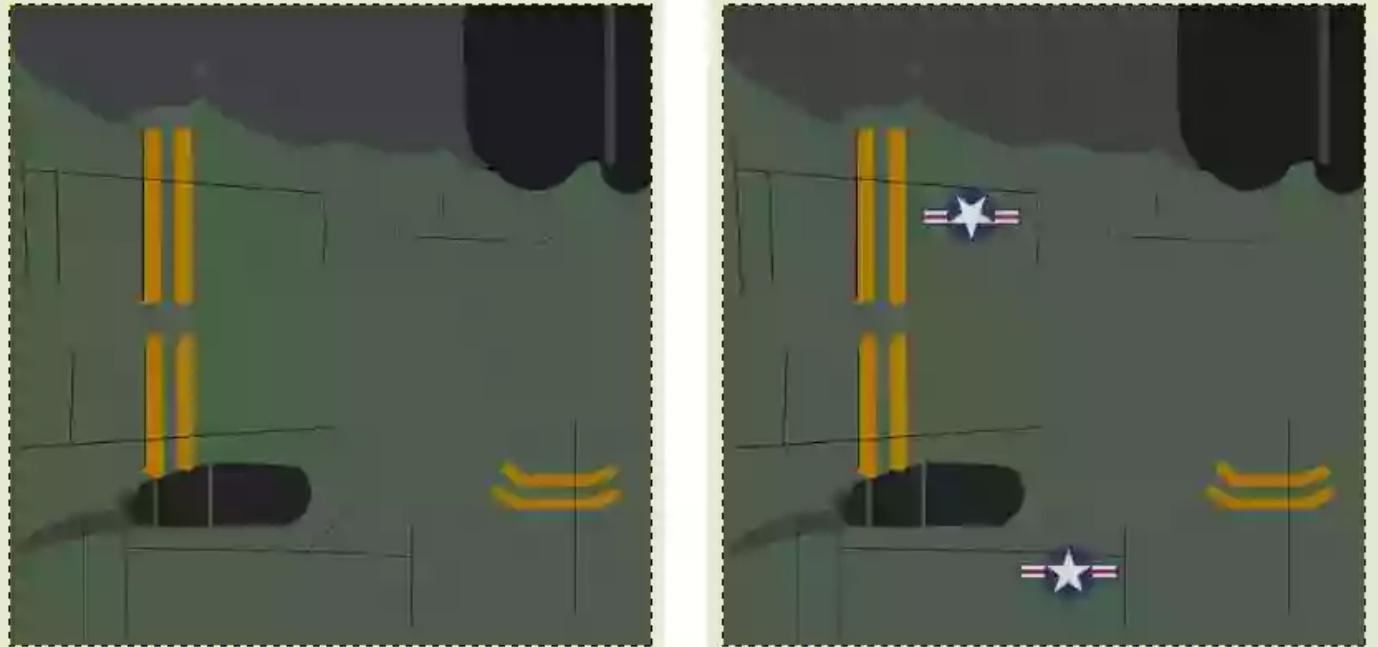
Paint the texture with the wire-frame as guidelines.



Paint colors in a separate layer

## Step4

Add another layer and draw the detail lines. Paste the logos/symbols in their own layer.

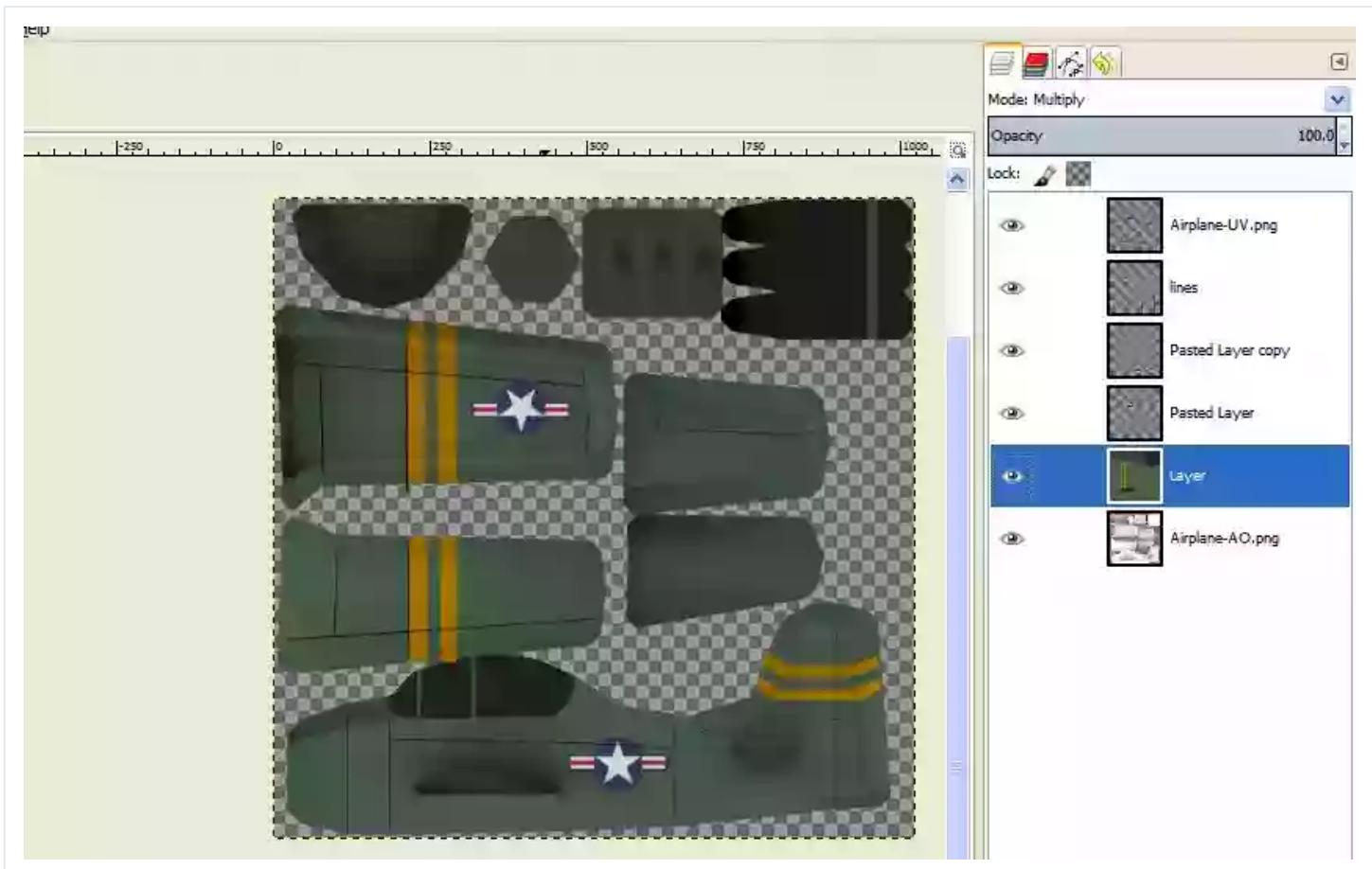


Add details and logo

## Step 5

Set the paint layer to **Multiply** or **hard light** or **overlay**. You will notice the AO layer will give a nice shadow effect. You can adjust the levels/contrast of the AO layer to decrease the intensity of shades.

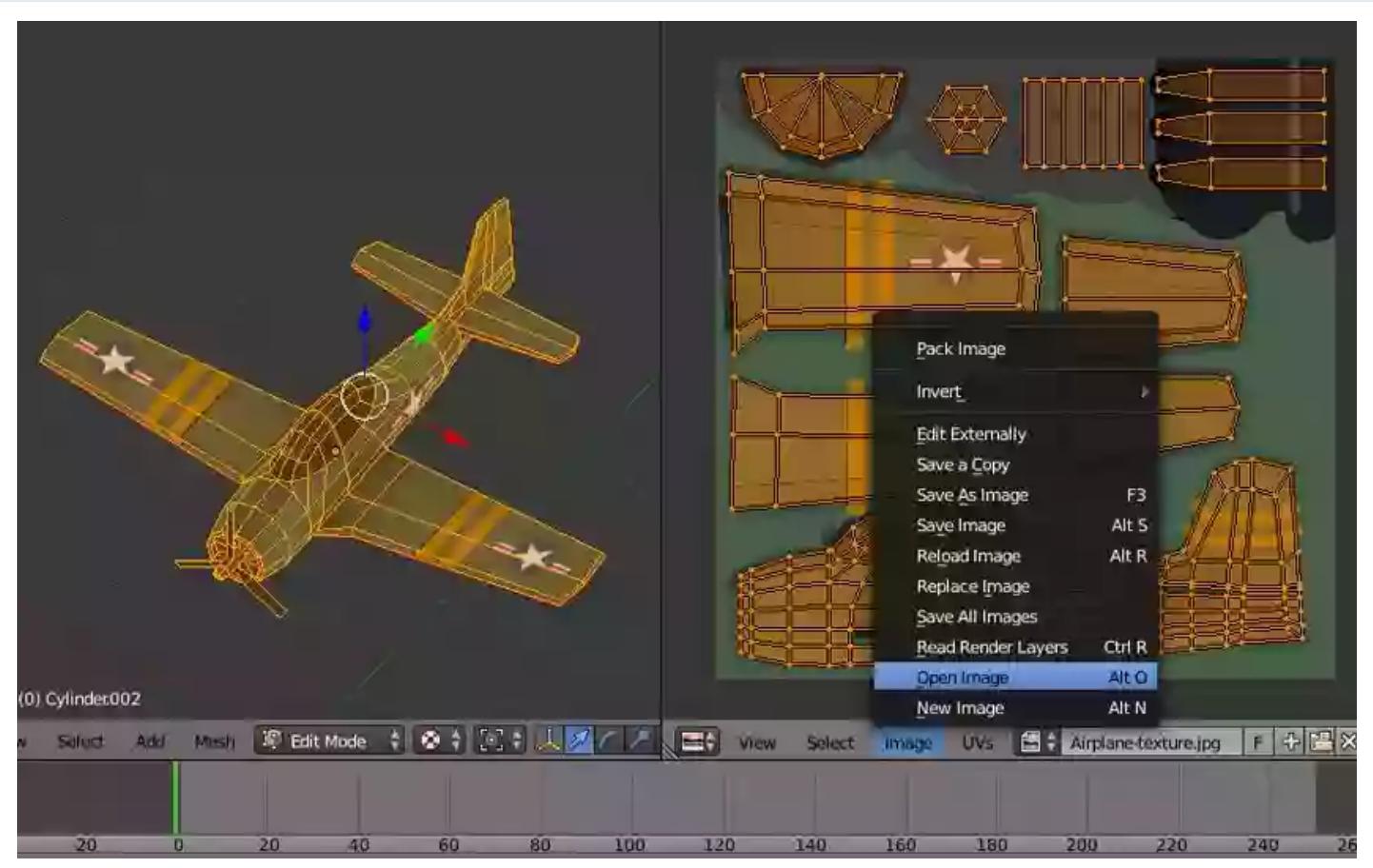
Save the image in **.psd** format. Turn off the layer visibility for the UV wire layer and export it to **.png** or **jpeg** format.



Layer settings

## Step 6

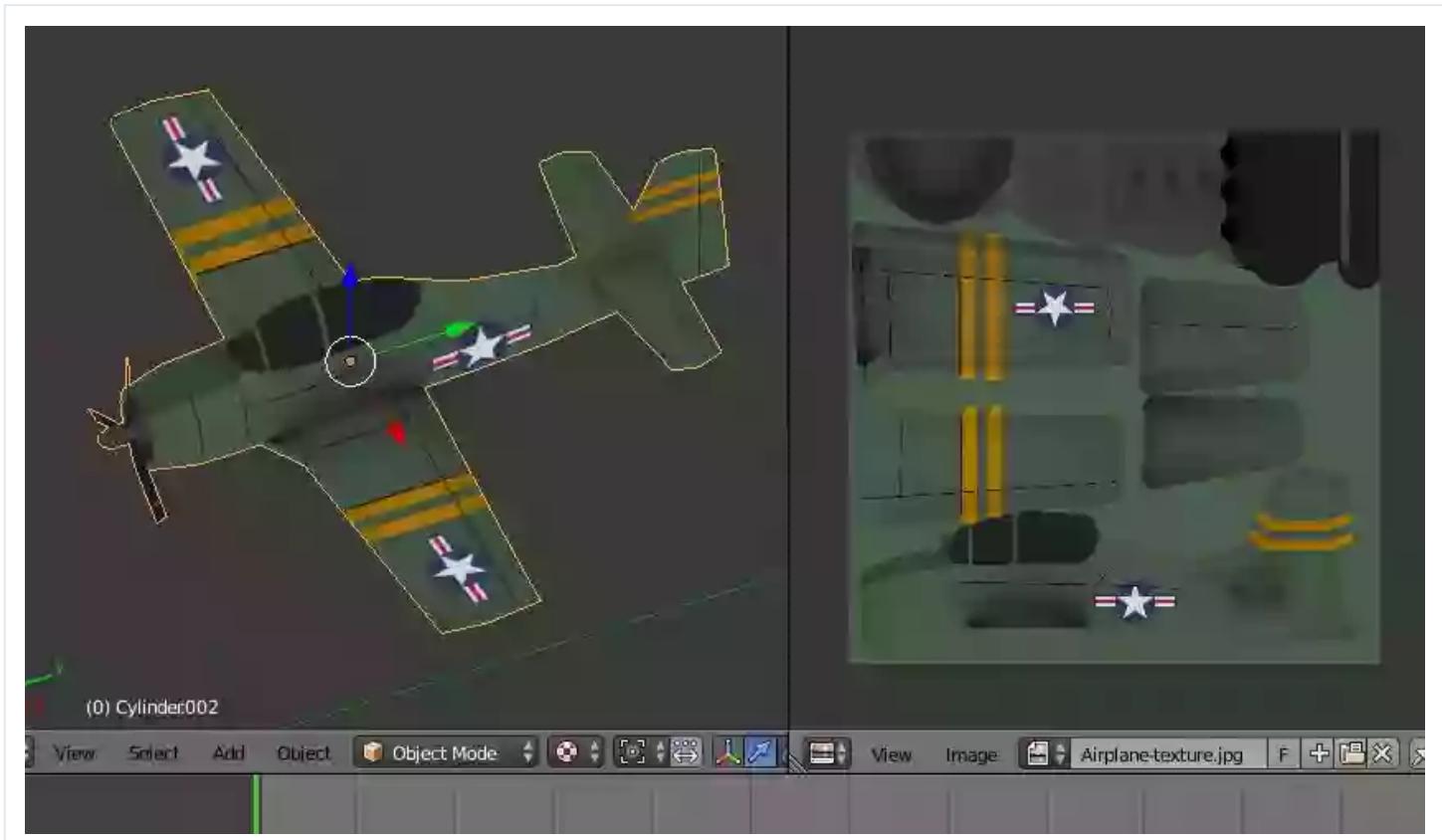
In 3D viewport (in **Blender**) and in the edit mode, select all vertices of the plane by pressing **A** key. Open your exported **PNG** image, in the **UV Editor**.



Open exported image

## Step 7

If you don't see the texture on the model in the 3D view, Press **Alt-Z** to enable **Texture View Mode**.



Texture map applied to object

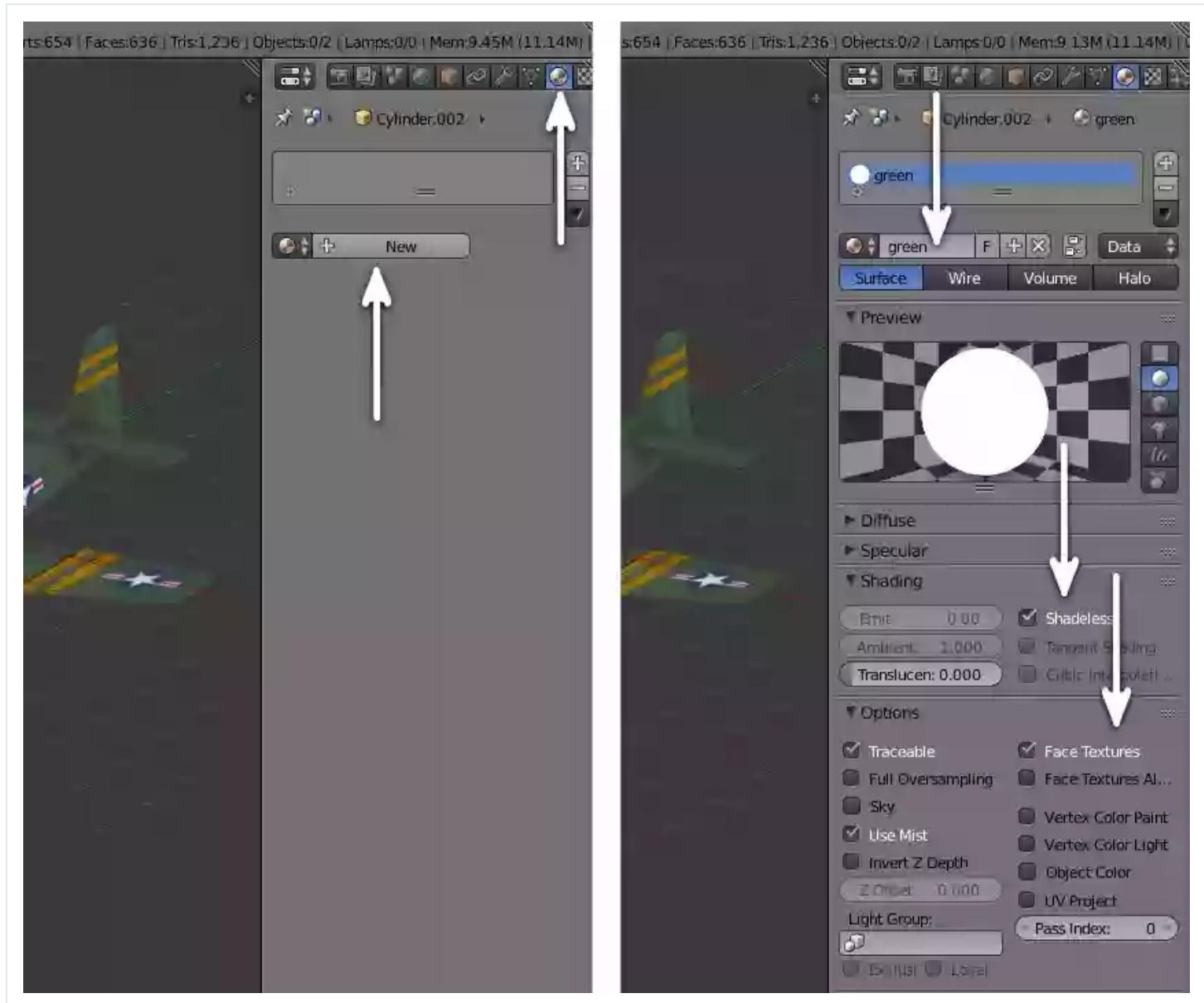
## Step 8

With the plane selected, click on the **Materials** button in the **properties** window and click on the **New** button to assign a new material.

Rename the material. In the **shading** panel, check the **Shadeless** Tickbox. Since I have baked the Ambient Occlusion data onto the texture, I can set the material to be shadeless.

Uncheck it if you want to have dynamic light and shades onto the

object. You can also turn off the AO layer while painting texture in **Photoshop** or **Gimp** and export only the colour map.



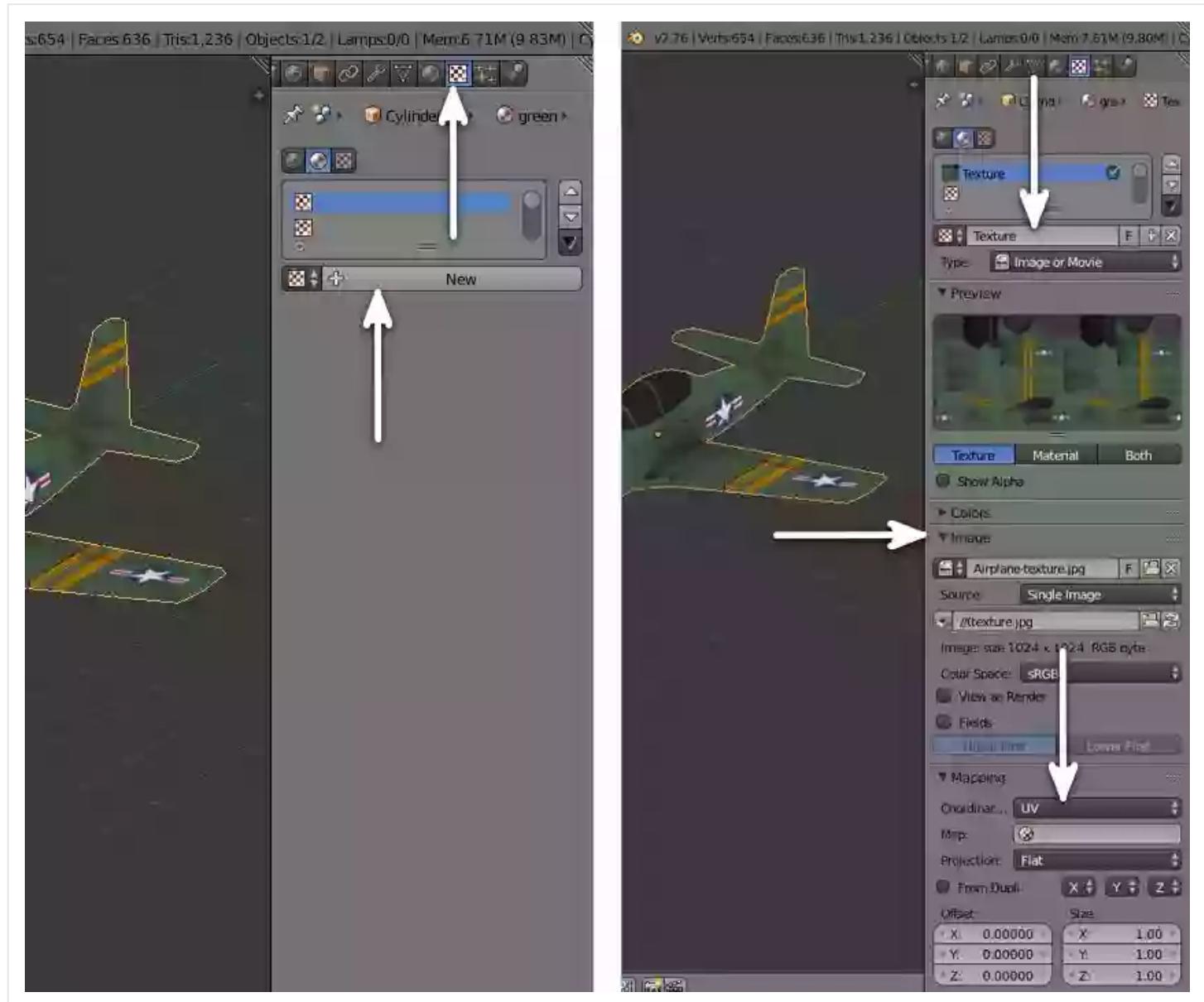
Material settings

## Step 9

Click on the **Texture** button in the **properties** window. Press the **New** button. Rename the texture to whatever you want. In the **Image** panel open and browse for the texture image

Image panel, open and browse for the texture image.

In the Mapping panel, make sure to select UV for Coordinates.

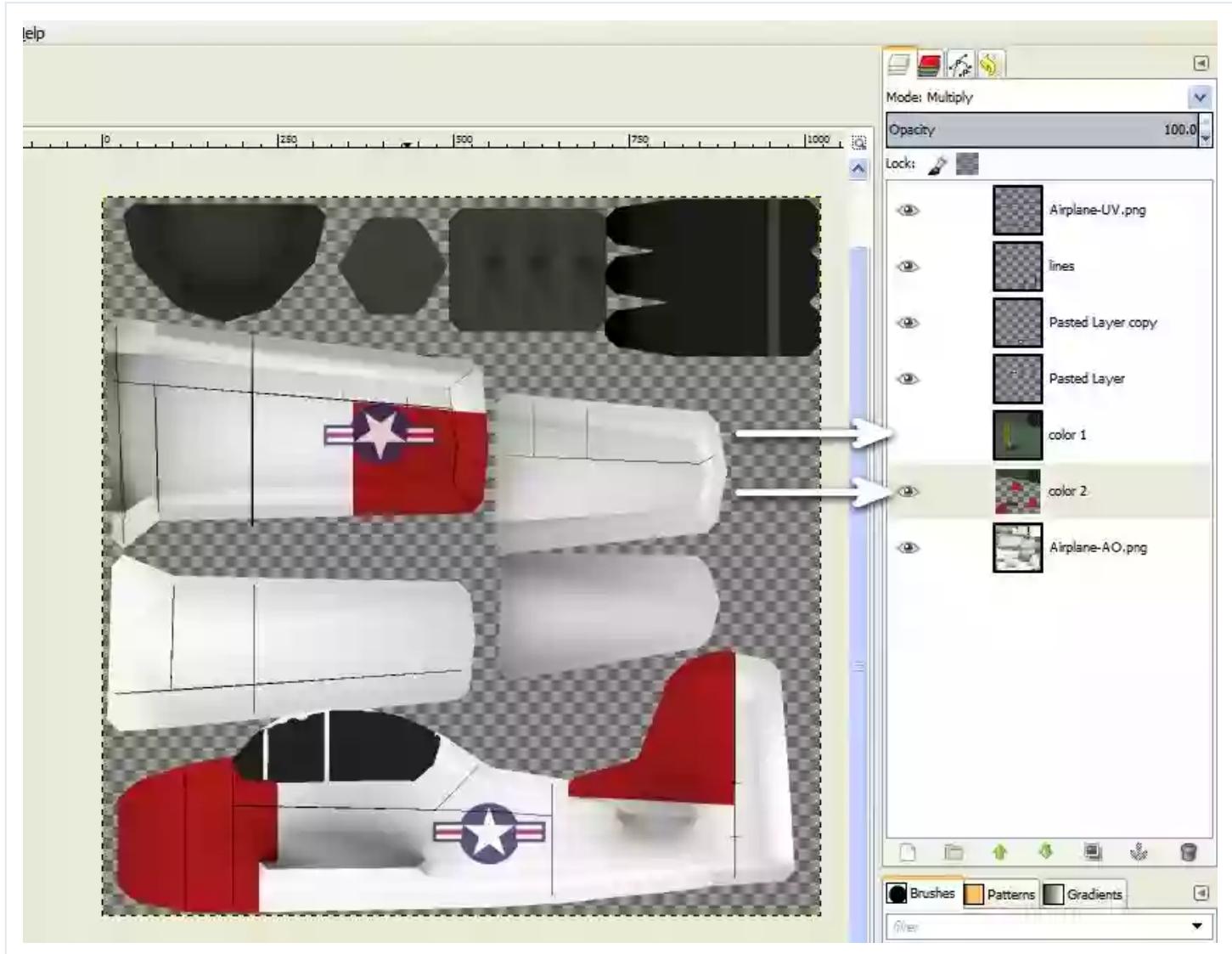


Texture settings

## Creating Variations

### Step 1

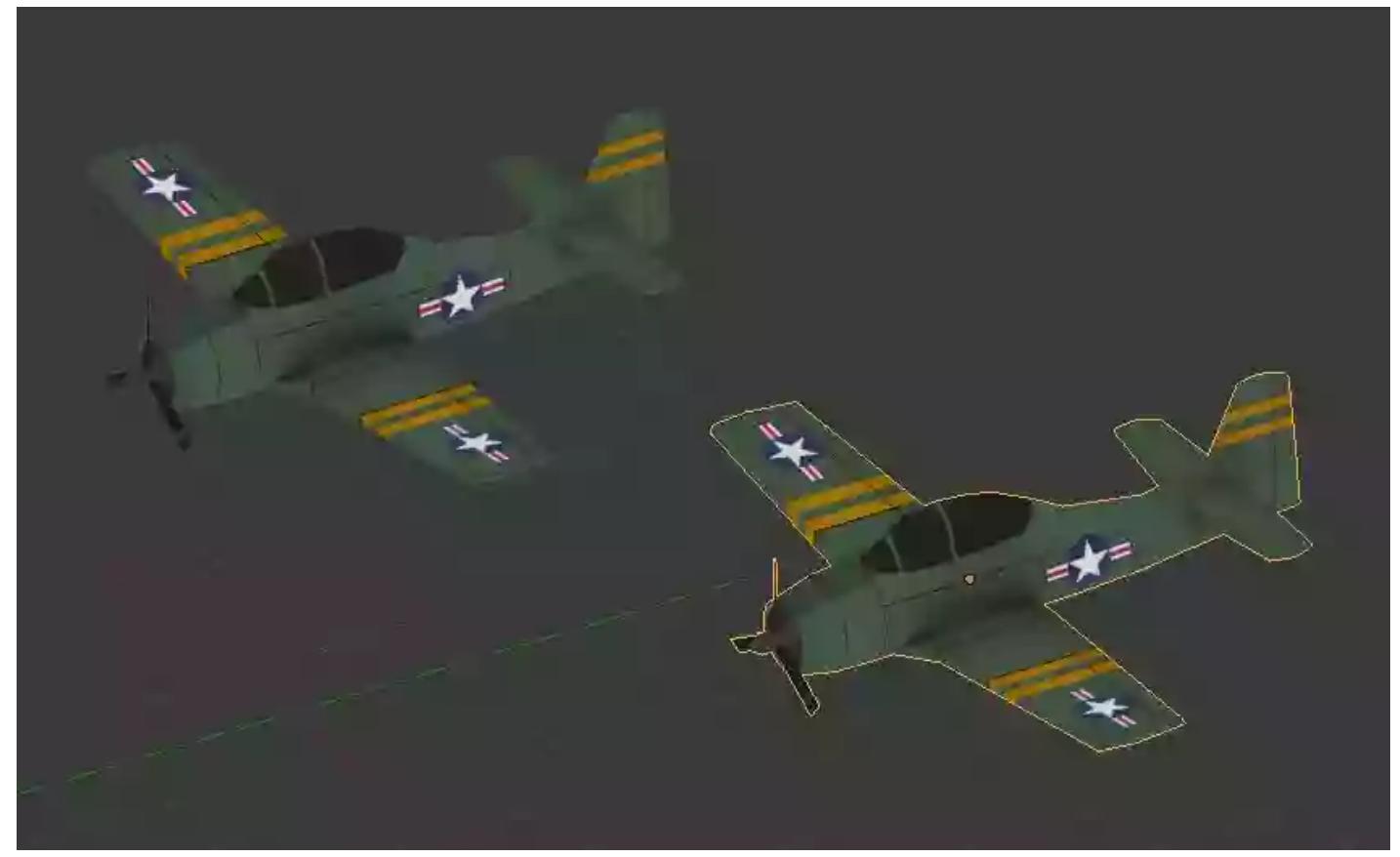
Turn off the visibility of the painted layer. Add another layer and create paint with different colour scheme. Export the image with different name in jpg or png format.



Add new layer in Gimp

## Step 2

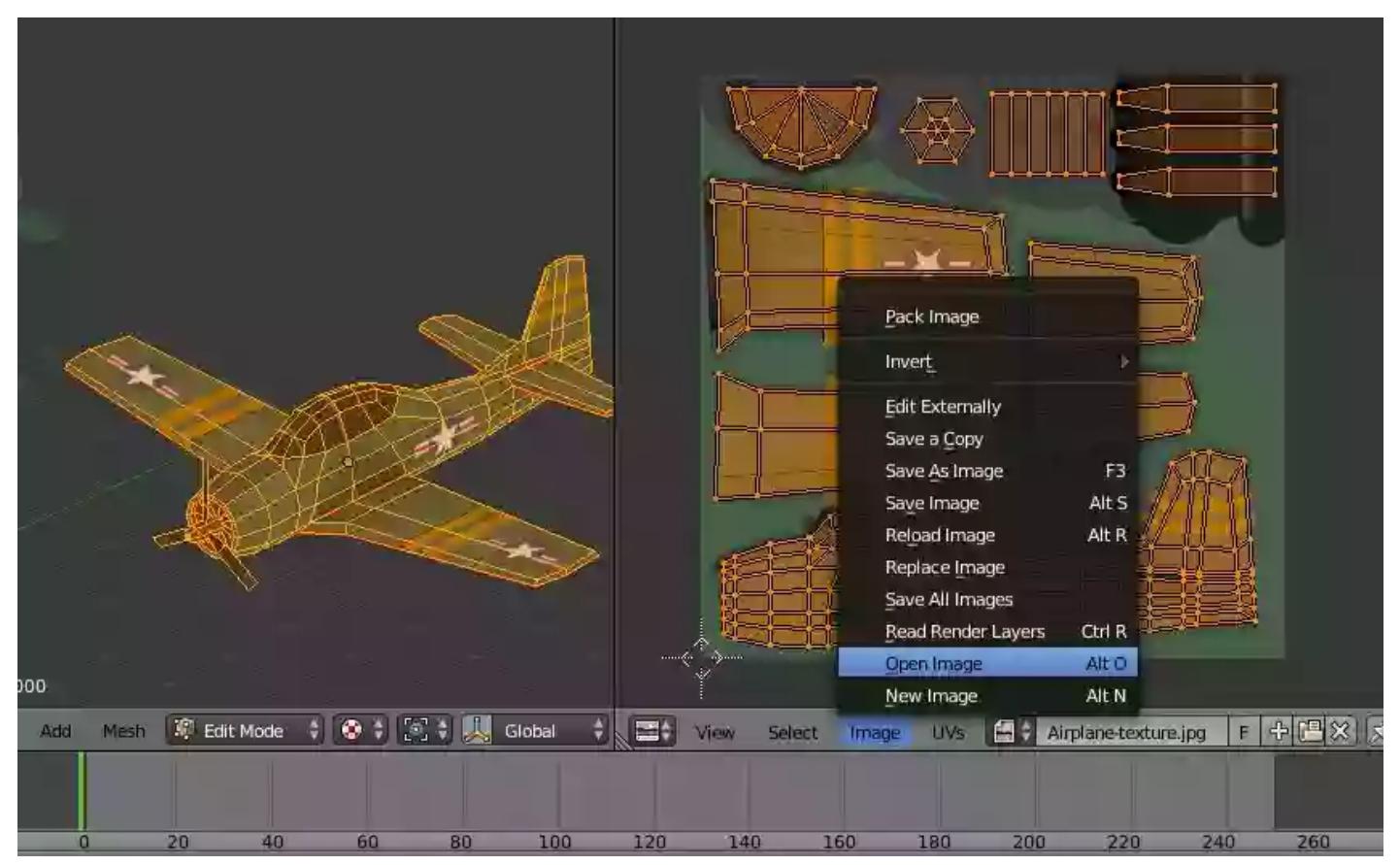
In **Blender**, ensure you are in object mode. Press **Tab** to exit edit mode. Secondary-click on the plane to select it. Press **Shift-D** to make a duplicate. Move the mouse and primary-click to confirm.



Duplicate the object

### Step 3

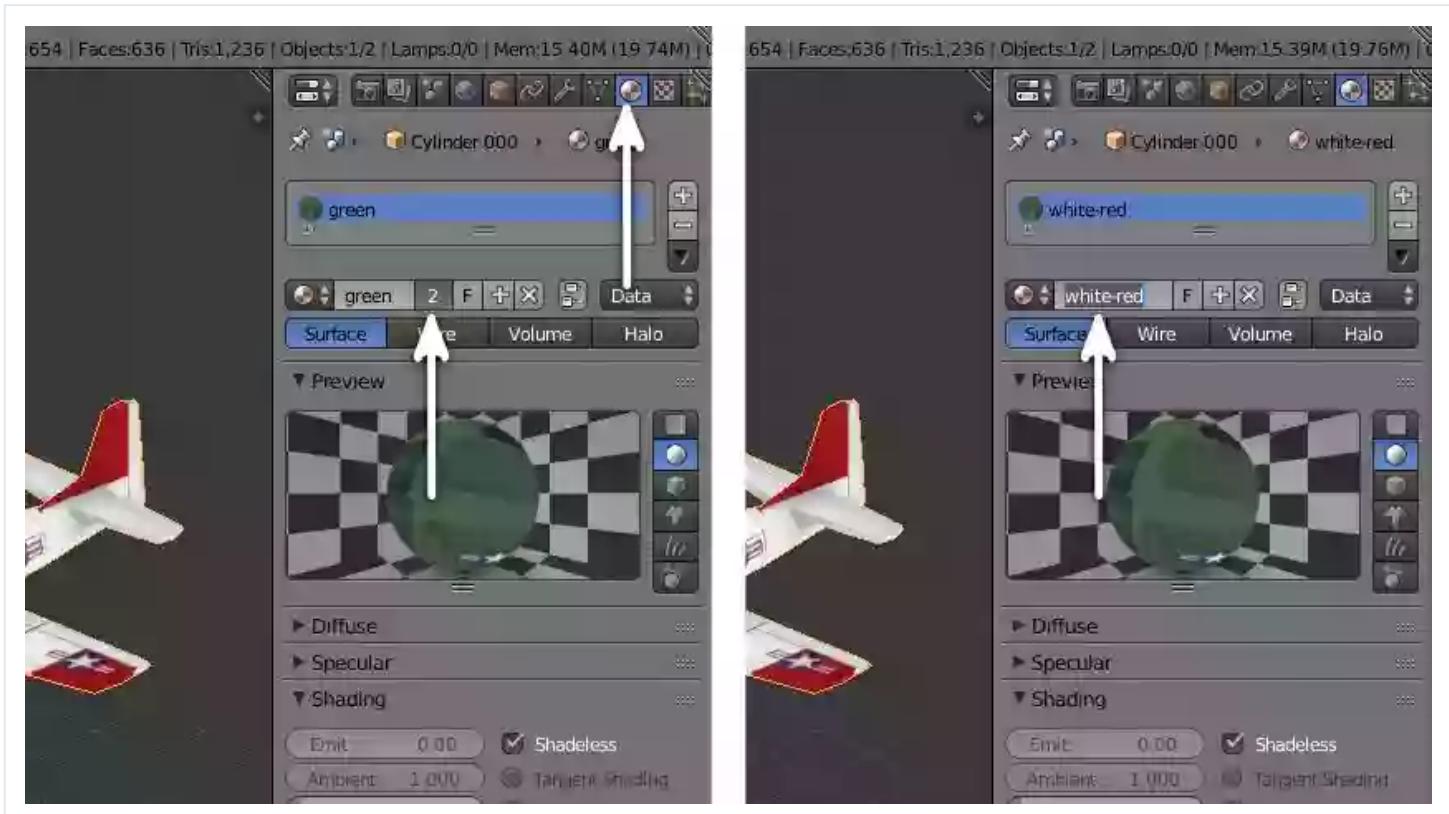
Press **Tab** to enter edit mode. In the **UV Editor**, click on the **Image** menu and **Open** the new exported image.



Open exported image

## Step 4

With the new duplicated plane selected, press the **Materials** button in the properties window. Click on the number against the name of the material to make it a duplicate for the new model. Rename the material.

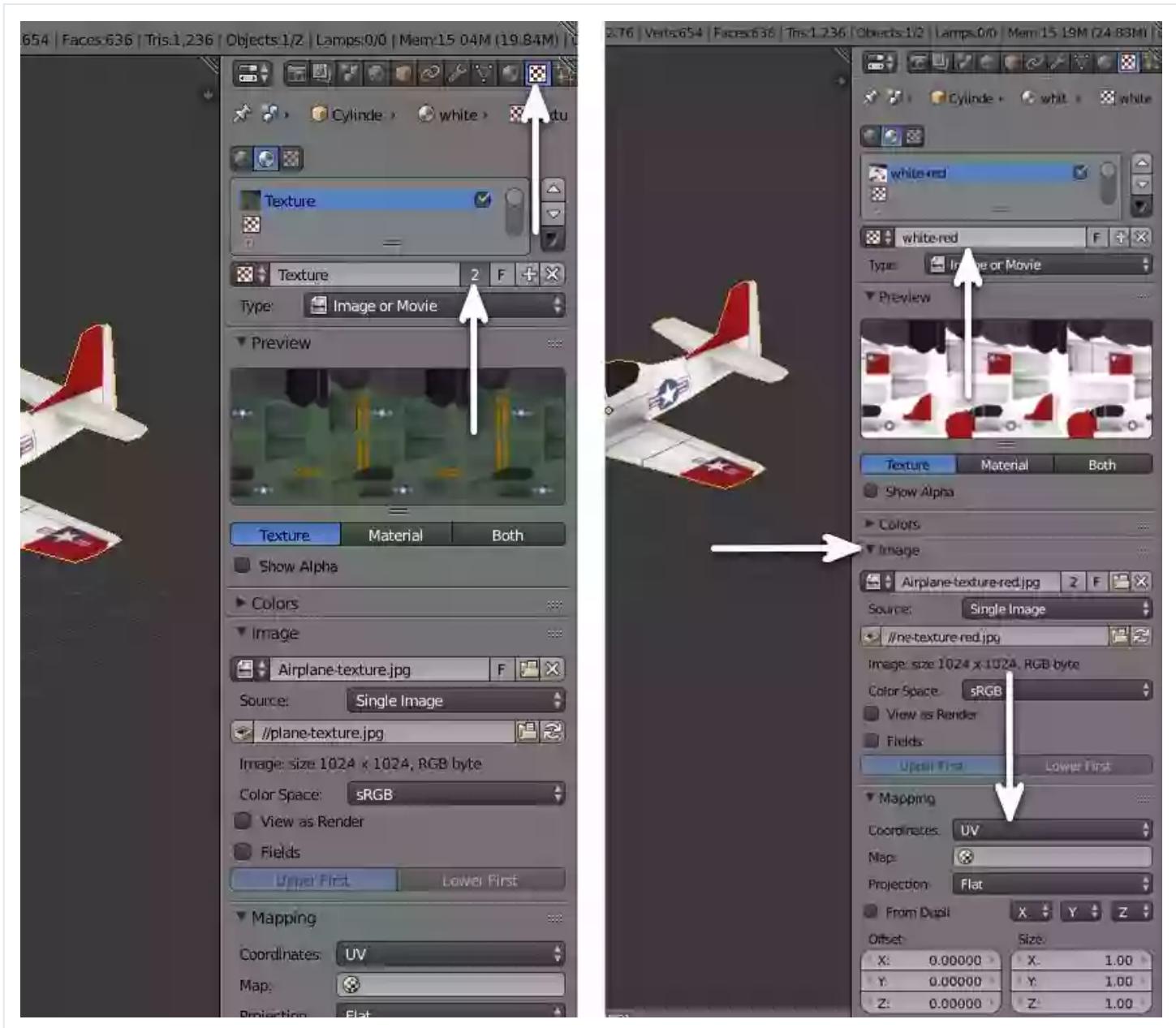


Material Settings

## Step 5

Click on the texture button in the properties window. Click on the number button to make a new copy of the texture for this new model.

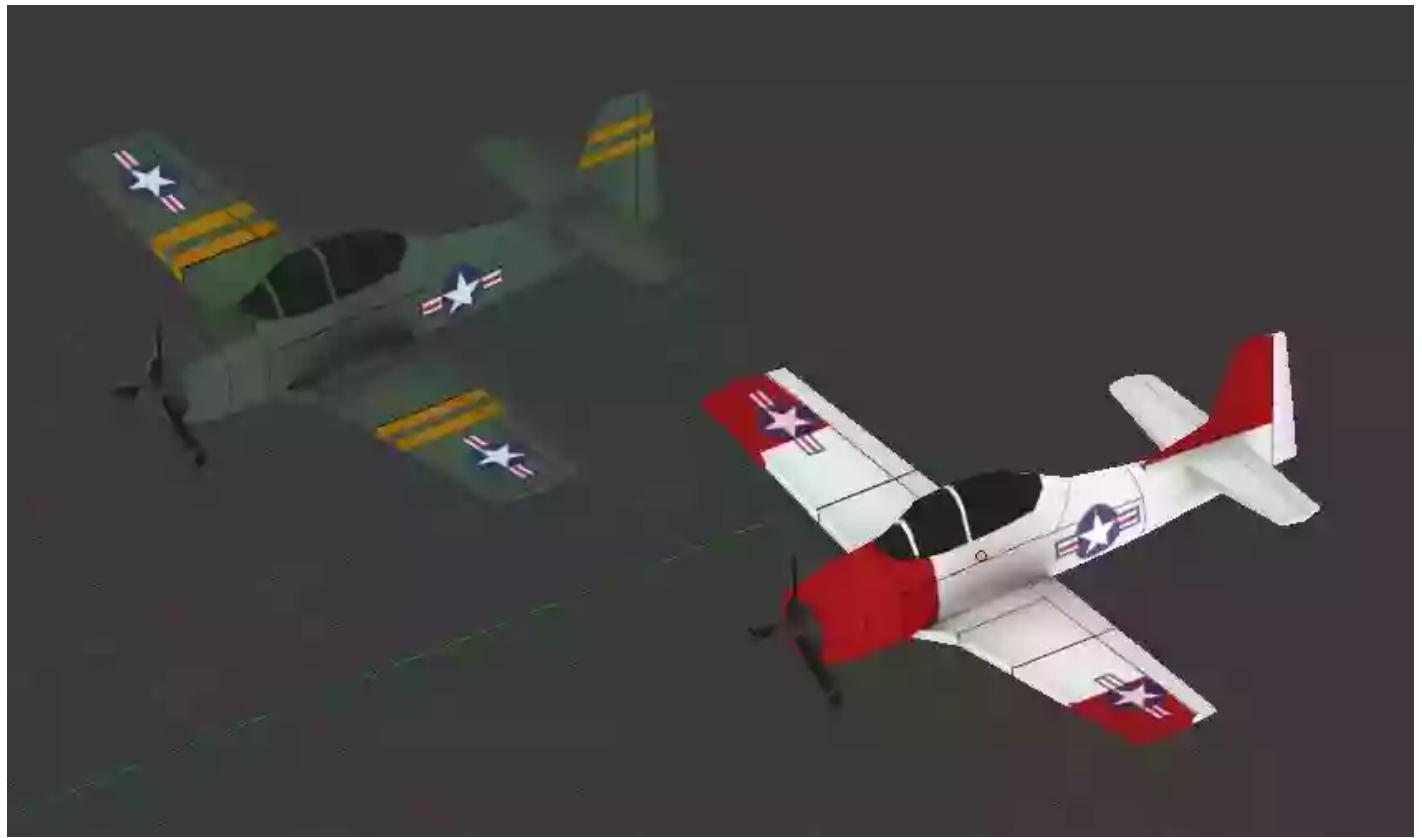
Rename the texture. In the **Image** panel, browse for the new image.



Texture Settings

## Step 6

The aeroplane set is now ready for the game.



Airplane ready for games

Advertisement



## Karan Shah

Karan Shah is a 3D Artist and Animator from India. He is a BFA Graduate with specialization in sculpture. An inclination towards the digital medium made him a self taught computer artist. He is currently freelancing..

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