4. Click on the **11th** scene layer button to show only the sculpted **Gidiosaurus** mesh and parts such as the **teeth**, **eyes**, and so on.
5. Go to the **Outliner** and click on the icons showing an eye image placed to the right side of the **Eyeballs**, **Fangs**, and **Talons** items to hide them.
6. Press the *N* key to make the **Properties** 3D view sidepanel appear to the right of the 3D window and scroll it to find the **Grease Pencil** subpanel (already enabled by default); go to the **Tool Shelf** panel to the left of the 3D window and click on the **Grease Pencil** tab:

The Grease Pencil panels and the screen layout in current state

7. Check to enable the **Continuous Drawing** item just below the four buttons at the top of the **Grease Pencil** tab on the **Tool Shelf**.
8. Go to the **Grease Pencil** subpanel under the **Properties** 3D view sidepanel to the right and click on the **New** button; then, click on the + icon button to the left side to add a new **Grease Pencil** layer, which is by default labeled **GP_Layer**; set the **Stroke** color to **RGB 1.000**, **0.000**, **0.350** and **Thickness** of the strokes to **4** pixels.
9. Double-click on the **GP_Layer** name to rename it as **Head**.
10. Go to the **Tool Shelf** and, under **Stroke Placement**, click on the **Surface** button:

Starting to use the Grease Pencil tool

11. Save the file as `Gidiosaurus_retopology.blend`.

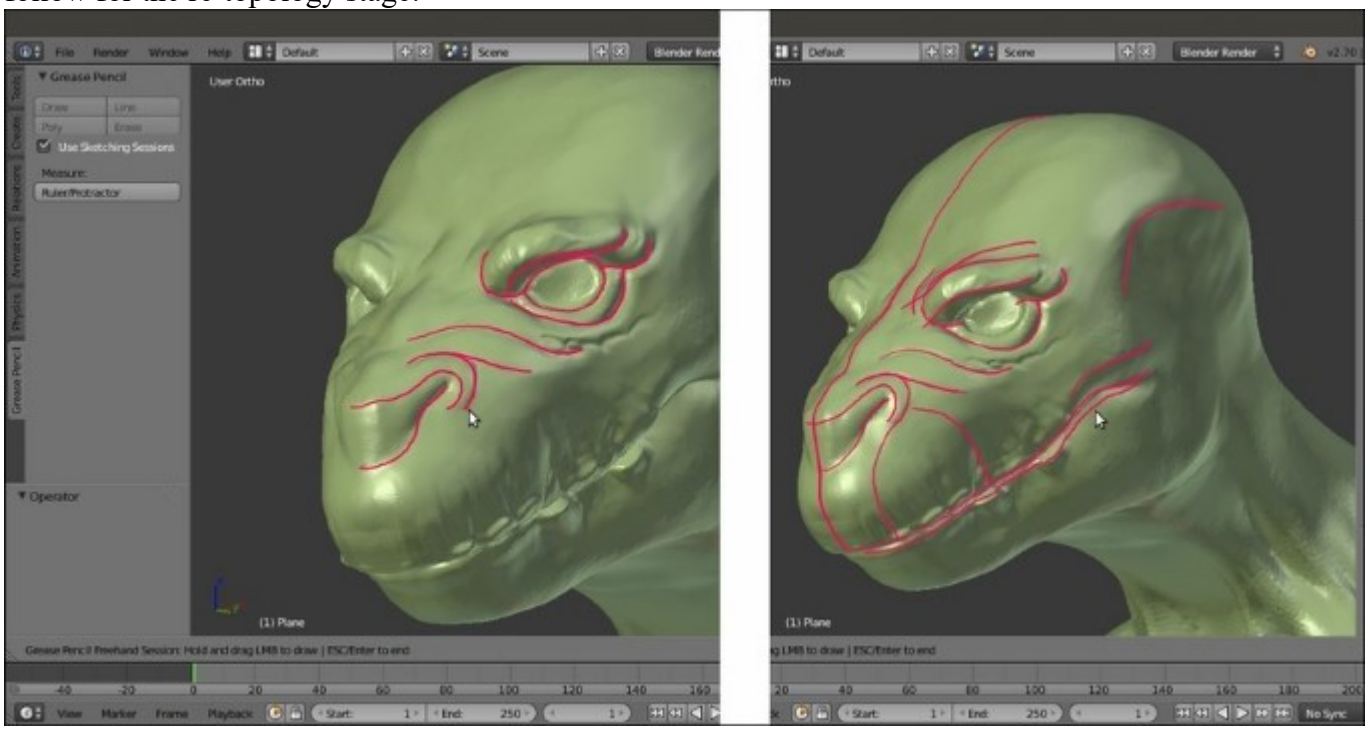
How to do it…

We are now going to start to draw on the character's **head**:

1. Press *Shift* + *B* and draw a box around the head of the **Gidiosaurus** to zoom to it; then, press the *5* key on the numpad to go into **Ortho** view.
2. Click on the **Draw**, **Line** or **Poly** buttons at the top of the **Grease Pencil** tab in the **Tool Shelf**; alternatively, keep the **D** key pressed (along with left-click) to start to draw the first stroke on the mesh (*Ctrl* + *D* + left-click and *Ctrl* + *D* + right-click, respectively for **Line** and **Poly**).

   Because we enabled the **Continuous Drawing** item in the **Tool Shelf**, we can continue to draw without the need to reactivate the drawing mode at each stroke. To quit the sketching session (for example, to change the brush), we can press the *Esc* or the *Enter* keys, so *confirming* the sketching session itself at the same time; otherwise, without the **Continuous Drawing** item enabled, the sketching is confirmed right after each stroke.
3. Start to draw (one half side of the mesh is enough) the strokes; try to make the strokes follow the main, basic, and more remarkable features of the sculpted mesh such as the main **skin folders** going from the **snout** to the **eye sockets** and the bags under the **eyes**, **nostril**, **mouth rim**, and so on.
4. Don't worry too much about the quality or the precision of the strokes; also, don't be afraid to erase (*D* + right-click or the **Erase** button) and/or correct the strokes, if necessary. The **Grease**

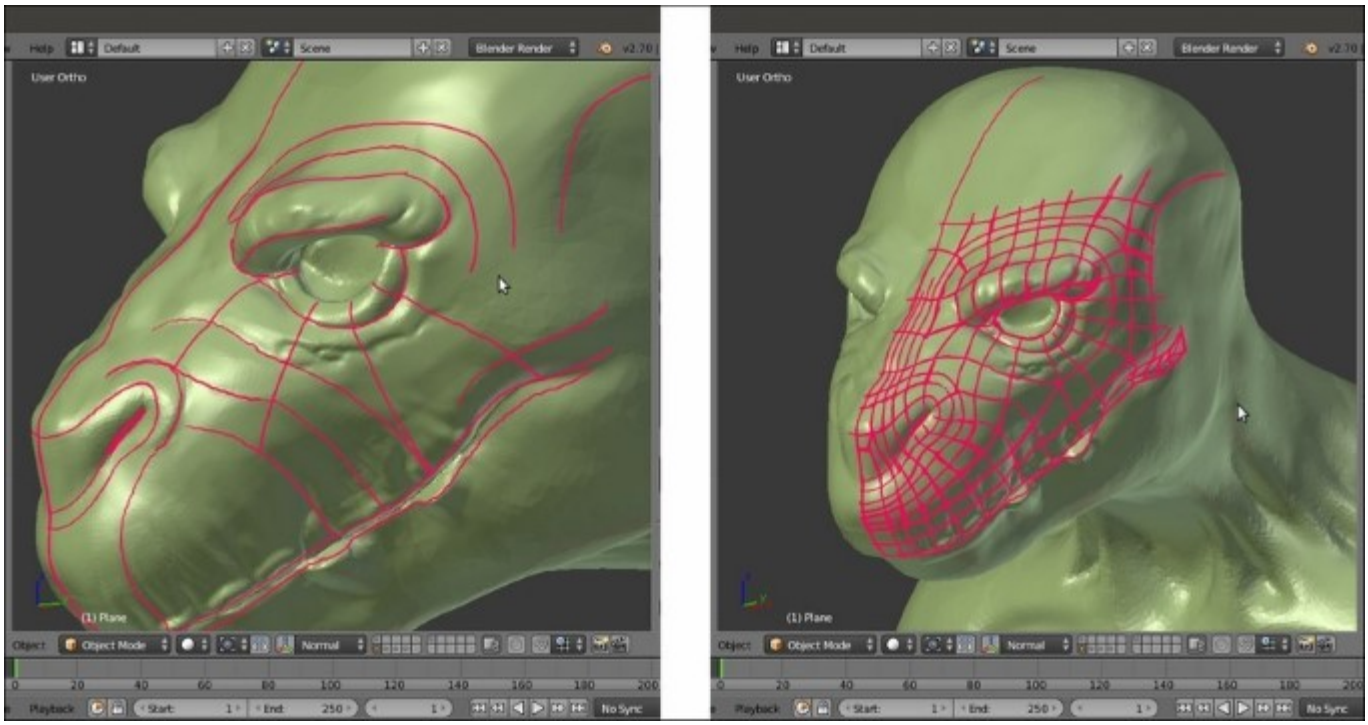
Pencil, in this case, is just a tool to sketch directly on the mesh the guidelines we will later follow for the re-topology stage:



Drawing the head's main features topology

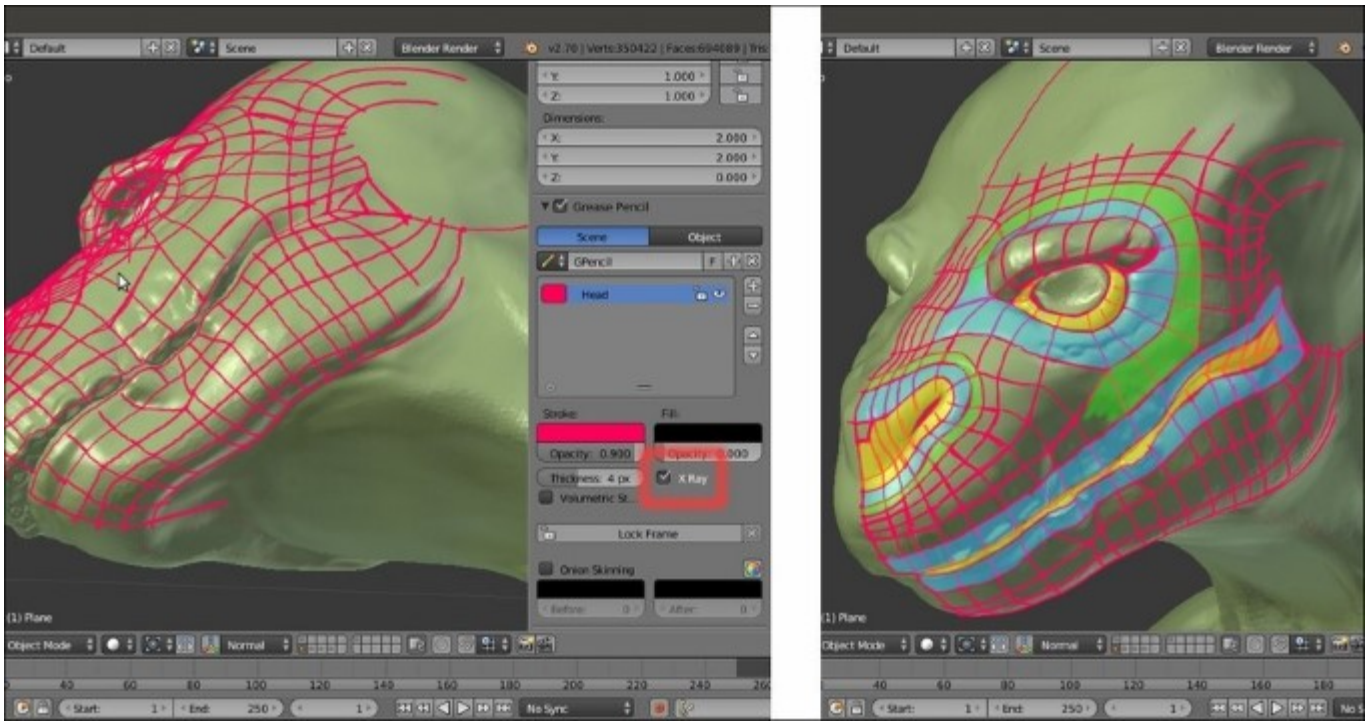
In the case of our **Gidiosaurus**, the topology for a correct deformation is similar to the topology we would use for a human face, but a lot simpler: we just need edge-loops around the **eyes** and in the **eyebrows** area, to give them mobility for expressiveness; a few edge-loops around the **mouth** that, however, in our case, remains quite rigid; and edge-loops following the folders on the top of the **snout**, which can also be important for the *growl* expression.

5. Once the strokes for the main features have been posed, try to join them into a web of edges, as balanced and efficient as possible:



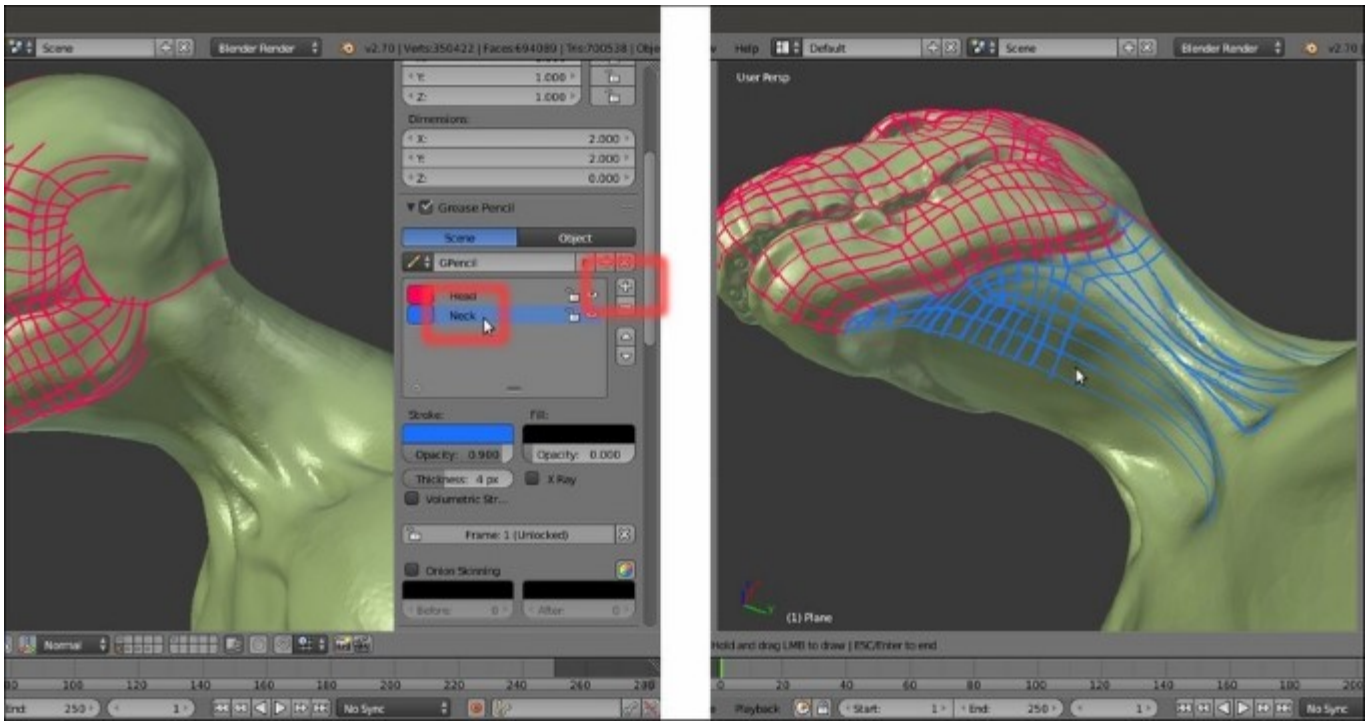
Connecting the strokes

6. At a certain point, when and if the overlapping of the strokes starts to become confusing, you can uncheck the **X Ray** item, which is located to the right side of the **Thickness** slot in the **Grease Pencil** layer subpanel, to disable the visibility of the strokes behind the mesh surface.
7. Forget about the edge-loops of stiff parts such as the cranium; it's enough to plan the position and the flow of the deforming ones. In the screenshot at the bottom right, I have highlighted (in **Gimp**) the main facial edge-loops for the **Gidiosaurus** with different colors:



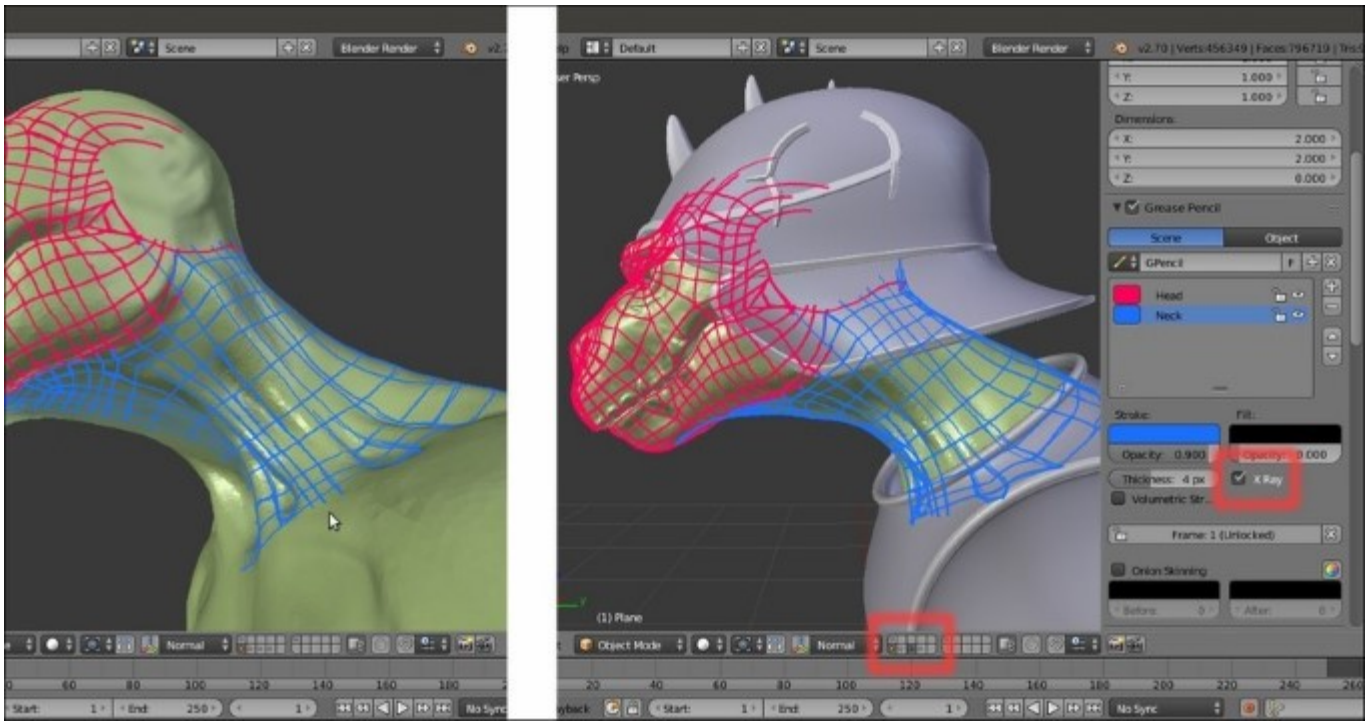
The X Ray button and the highlighted main edge-loops

8. When you think you are done with the **head**, click on the + icon button to add a new layer and rename it as **Neck**. Set the values the same you did for the **Head** layer, just change the color of the strokes; I set mine to **RGB 0.106**, **0.435**, **0.993**, but whatever color you choose, be sure that it stands out in the viewport against the mesh color.
9. In the case of the **neck**, the important thing is to find the correct joining with the **head's** edge-loops under the lower **jaw**, as you can see in the bottom-right screenshot:



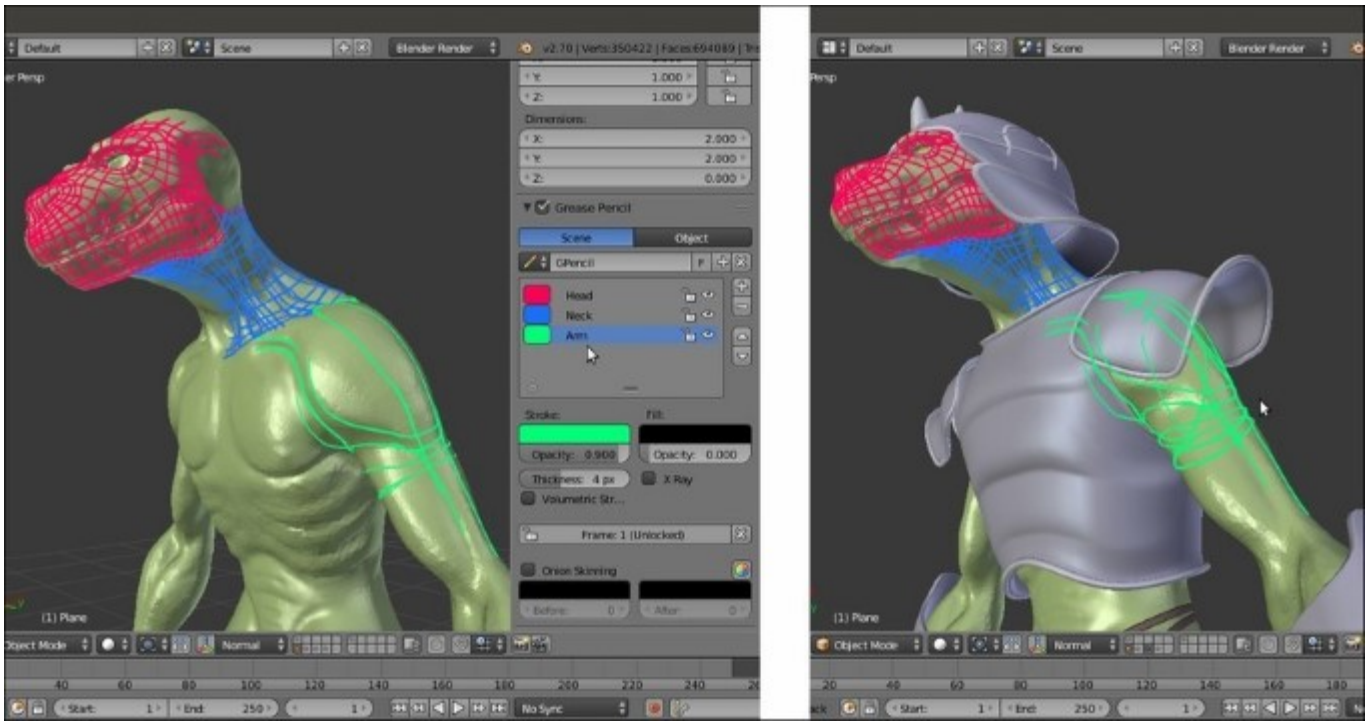
The Neck layer

10. Continue to stroke on the **neck** by drawing parallel horizontal loops along its length and use the vertical strokes to outline the **neck's** muscles (don't look for a **sternocleidomastoid** muscle here; the **Gidiosaurus**, anatomy, although similar in some ways, is not human at all!).
11. Remember that because our character is wearing an **armor**, it is not necessary to re-topologize the whole body, but only the exposed parts; so we can stop the planning just a little beyond the plates outside edges. To verify the correct extension of the strokes, just be sure to have the **X Ray** item enabled in the **Grease Pencil** layers and also the **13th** scene layer enabled to show the **armor**:



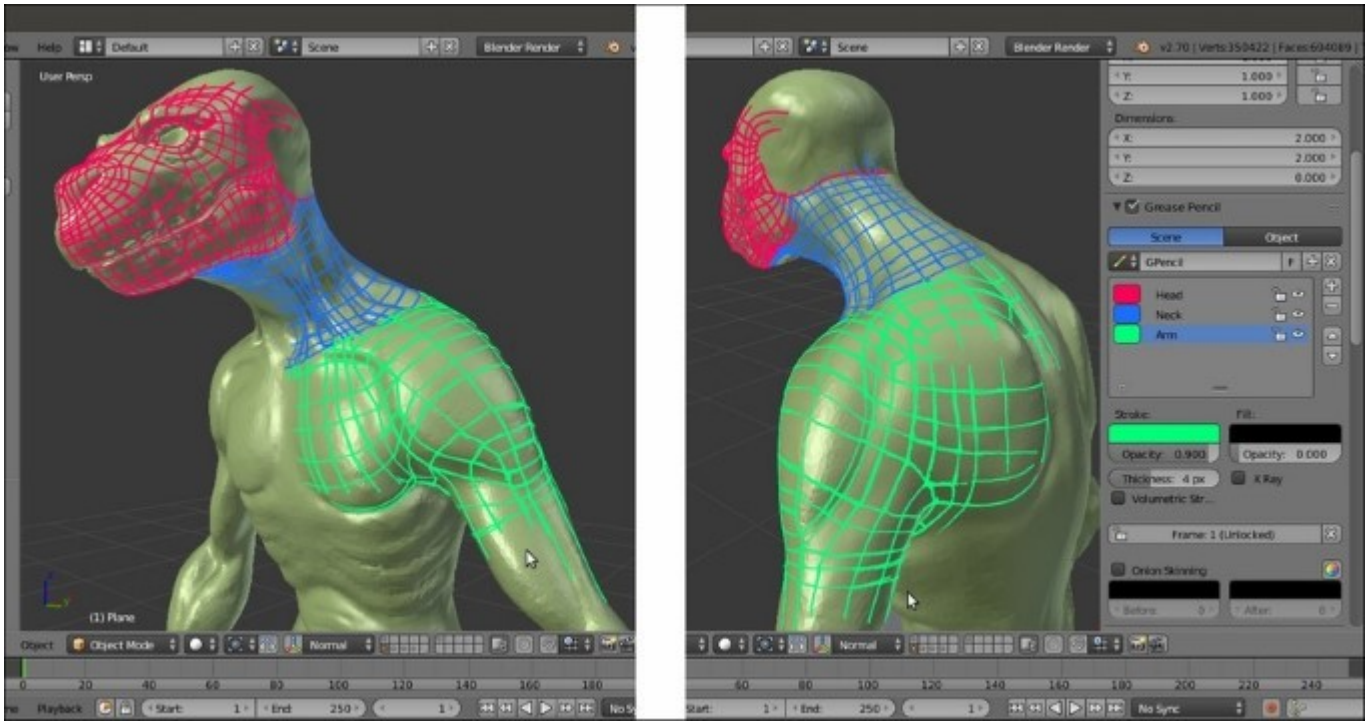
Verifying the extension of the strokes under the armor

12. Click again on the + icon button in the **Grease Pencil** subpanel under the **Properties** 3D view sidepanel and rename the new layer as **Arm**. Set the values the same as you did for the **Head** and **Neck** layers, but change the color once more (**R 0.000**, **G 1.000**, **B 0.476**); this time, we have to plan the joining of the cylindrical shape of the **arm** with the **shoulder** and the **collar bones** areas:



Sketching the guidelines on the arm

13. As before, also in this case, it is not necessary to go beyond the boundaries of the **armor chest** plate, but including also the muscles of the **chest** and **back** in the topology planning can give a more natural result:



The completed guidelines for the shoulder and the arm joining

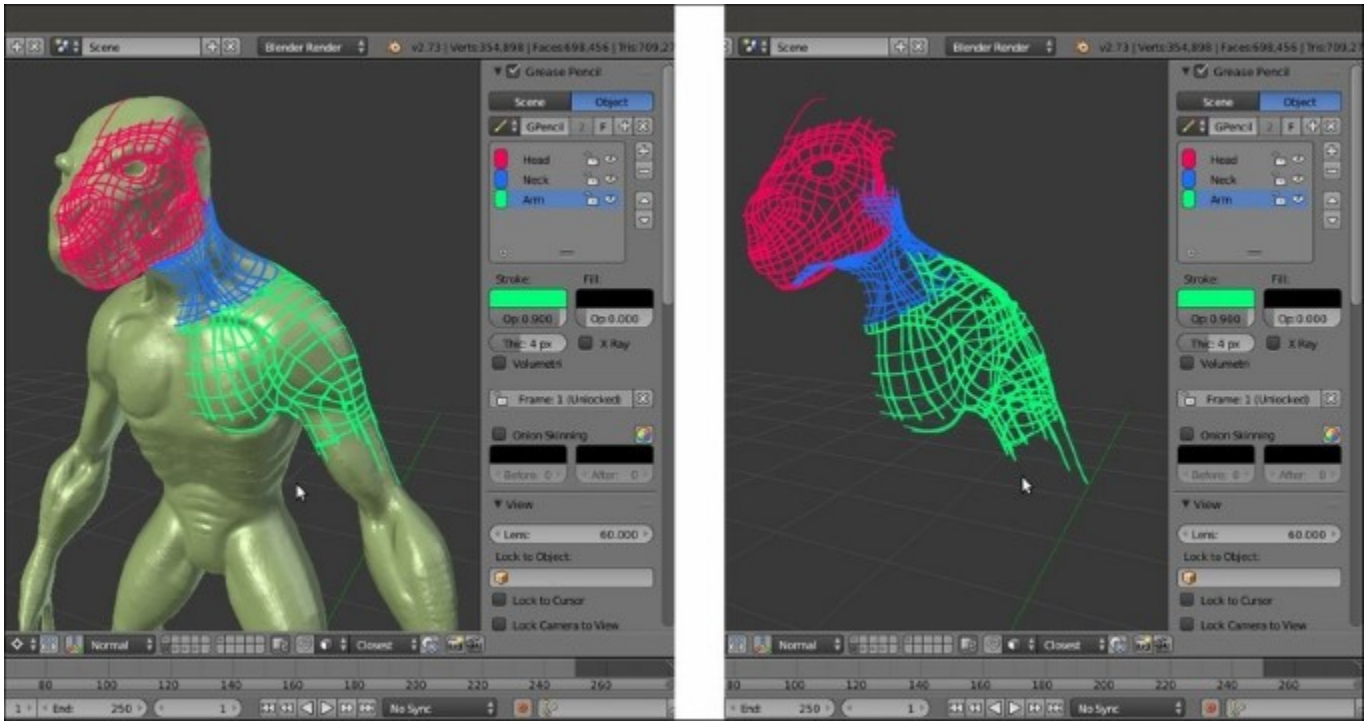
14. When you are done, save the file.

At this point, we can stop with the **Grease Pencil** sketching of the topology; the remaining parts of the exposed body are a lot simpler and will be quickly resolved in the successive recipe of this chapter.

There's more…

We can load any already existing **Grease Pencil** layer data blocks even into an empty scene, by clicking on the little arrows on the left-hand side of the **Gpencil** slot (*Freehand annotation sketchbook*) at the top of the **Grease Pencil** subpanel on the **Properties** 3D view sidepanel, and indifferently for **Scene** or **Object**. Actually, the **Grease Pencil** tool can be used as a sketchbook tool, to write quick notes and/or corrections inside the **Node Editor** window or the **UV/Image Editor** window, and even as an animation tool, by drawing inside an empty scene or on the surface of other objects to be used as *templates*.

In the following screenshot, you can see the sketching sessions previously made on the **Gidiosaurus** object's surface, showing *a solo* and keeping the volumes of the character in the 3D space:



The Grease Pencil layers in the 3D space

See also

- http://www.blender.org/manual/grease_pencil/introduction.html

Using the Snap tool to re-topologize the mesh

In this recipe, we'll use the **Snap** tool to start to re-topologize the sculpted high resolution mesh.

Getting ready

First, let's prepare both, the mesh to be *traced*, which is the high resolution mesh, and the tool itself:

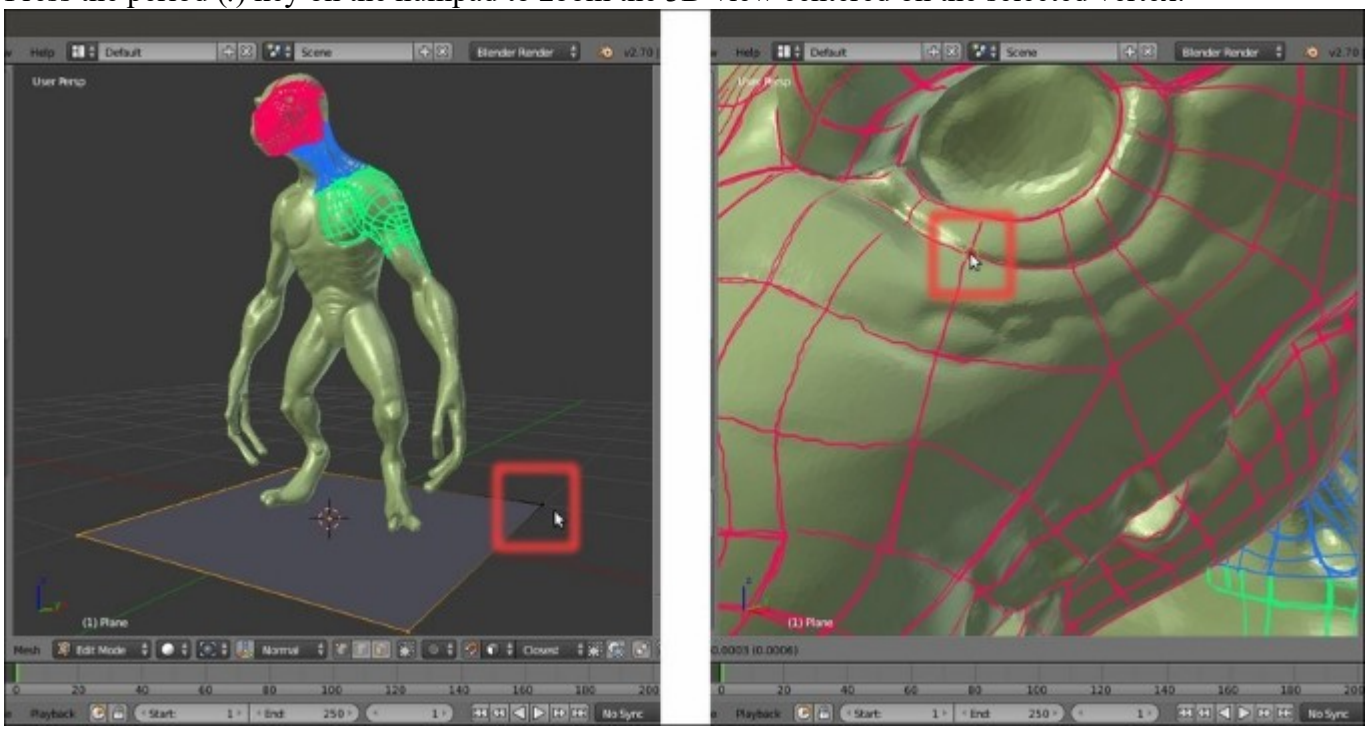
1. Go to the **Outliner** and click on the *Restrict viewport selection* icon, which is the arrow one, to the side of the **Gidiosaurus** item to make it not selectable.
2. Be sure that the **3D Cursor** is at the center of the scene (*Shift* + *C*) and add a **Plane** primitive.
3. Click on the *Snap during transform* button, the little icon with the magnet, on the 3D view toolbar, or else press *Shift* + *Tab* to activate the tool.
4. Click on the **Snap Element** button (*Type of element to snap to*) on the close right to select the **Face** item, or else press **Shift** + **Ctrl** + **Tab** to make the **Snap Element** pop-up menu appear in order to select the item from:

The Snap Element menu

How to do it…

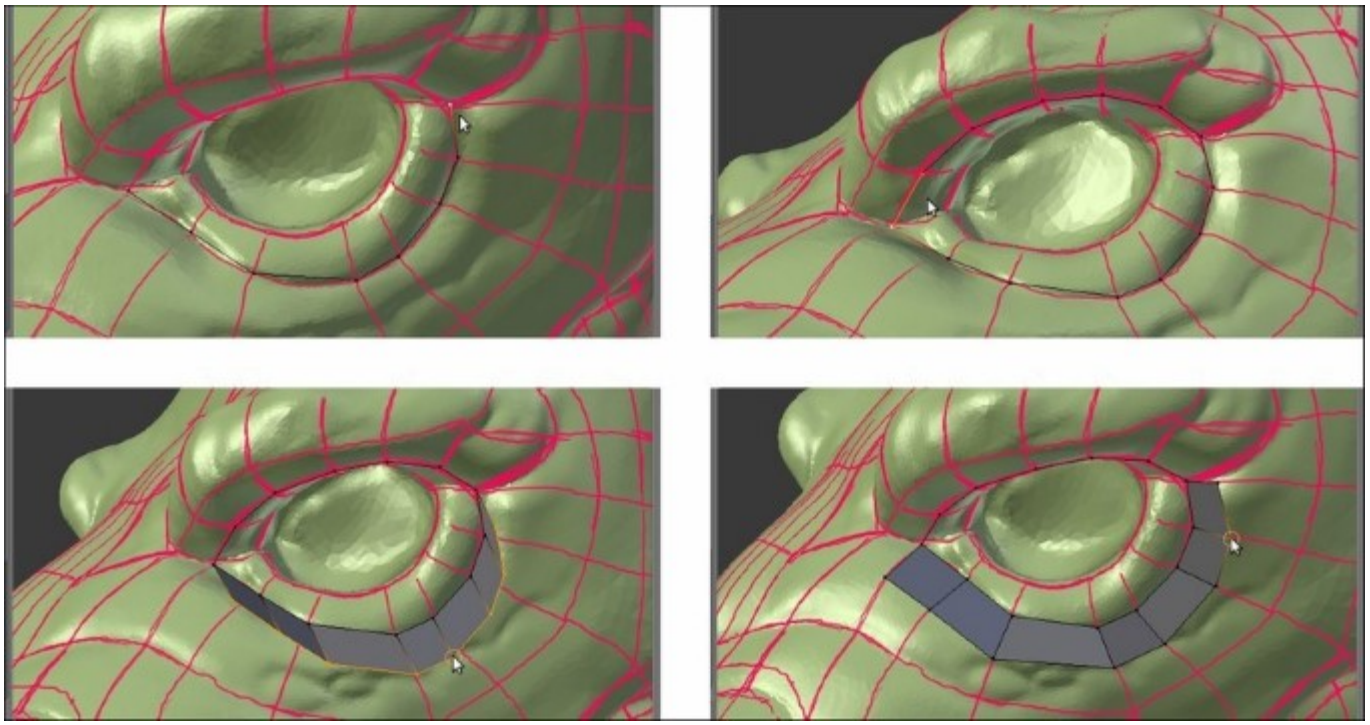
Now, we are going to start the re-topology:

1. With the **Plane** object selected, press *Tab* to go into **Edit Mode**; with all the vertices already selected by default, by pressing *Shift* + right-click, deselect just **one** vertex (anyone of them, it doesn't matter which one).
2. Press *X* to delete the other **three** vertices that are still selected.
3. Select the single remaining vertex and move it onto the **head** of the sculpted mesh, close to the **left eye socket**; as the **Snap** tool is enabled, the vertex stays on the mesh surface.
4. Press the period (.) key on the numpad to zoom the 3D view centered on the selected vertex:



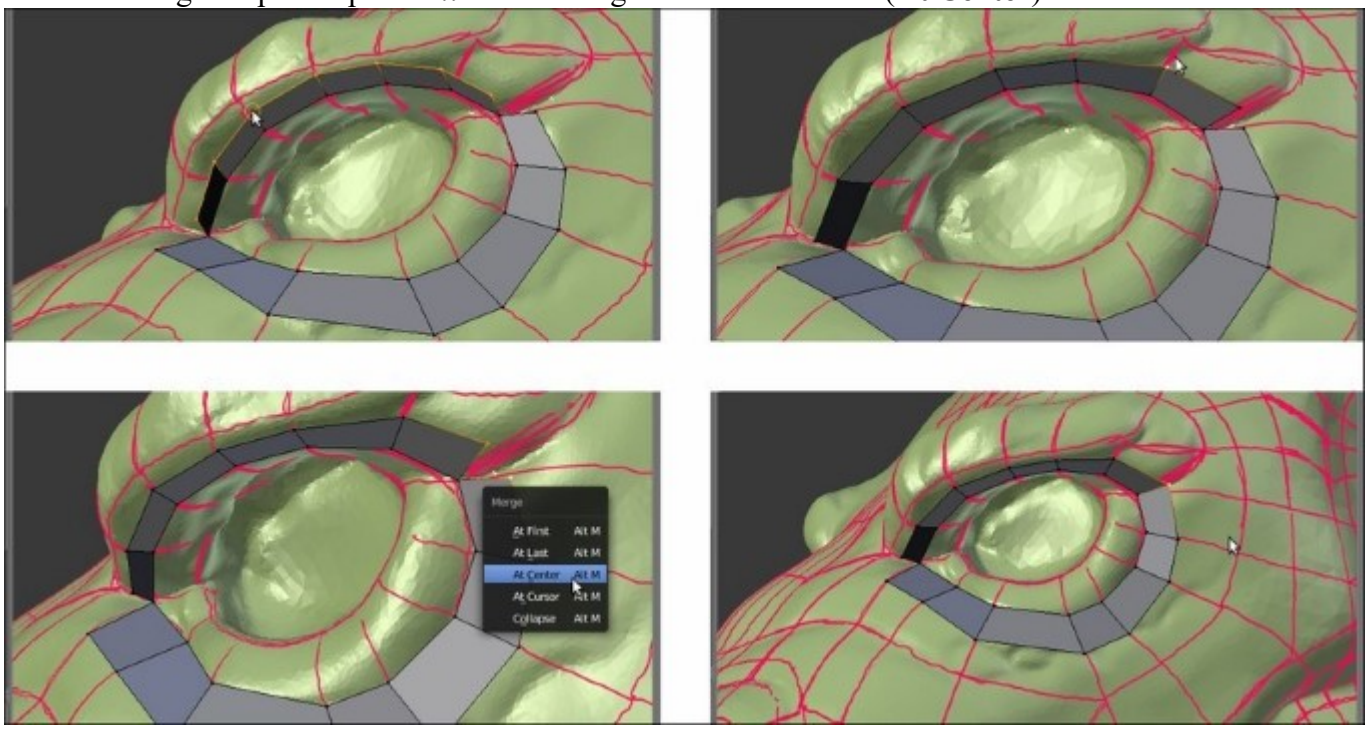
Starting the re-topology process

5. Go to the **Object Data** window and check the **X-Ray** item under the **Display** subpanel in the main **Properties** panel to the right of the screen.
6. Start to extrude the vertex, building an edge-loop around the **eye socket** and following the **Grease Pencil** guideline, both by pressing the *E* key or *Ctrl* + left-click to add vertices; if needed, press *G* to move them at the right location (that is, at the intersections of the guidelines).
7. When you have almost completed the edge-loop around the **eye socket**, select the last and the first vertices and press the *F* key to close it.
8. Select the bottom row of vertices of the edge-loop and extrude them; adjust the position of each vertex on the ground of the strokes guideline:



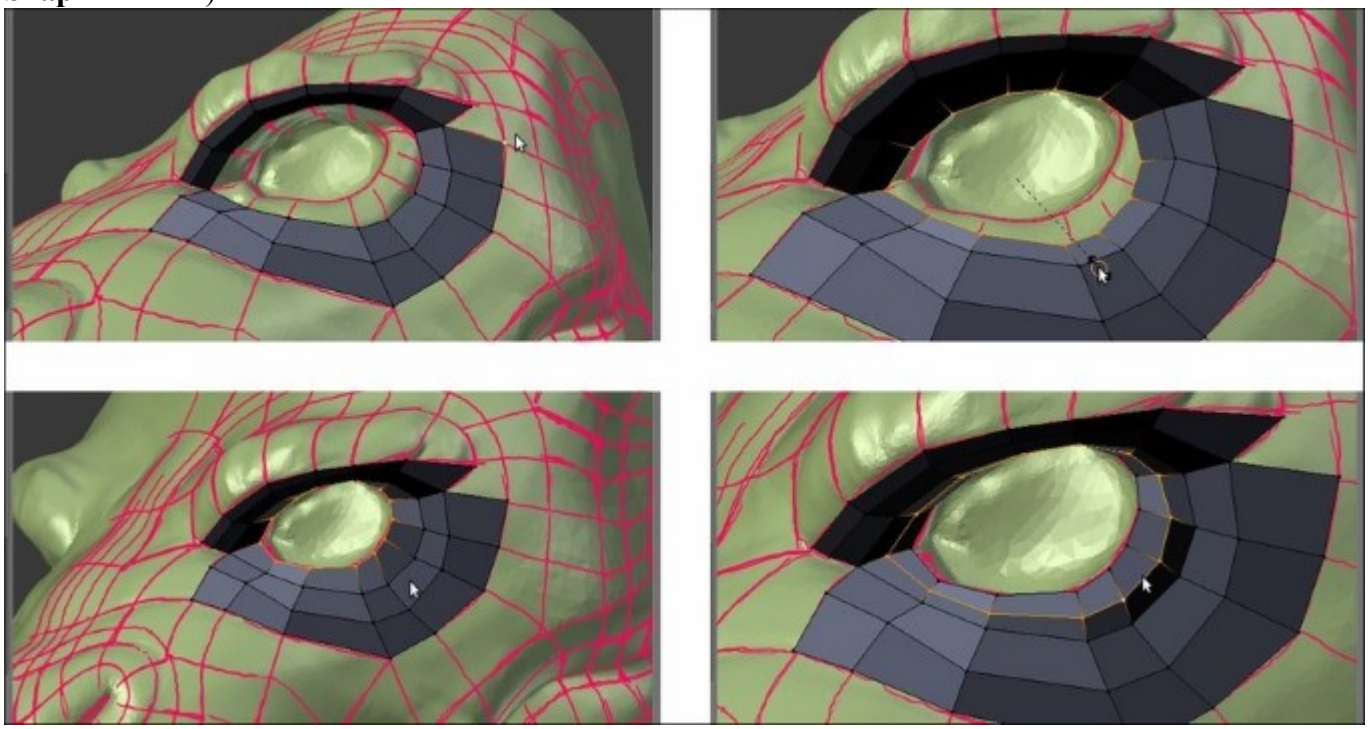
The first re-topology around the eye socket

9. Do the same with the upper row of vertices and then select the free vertices on the right-hand side of the edge-loops and press *Alt* + *M* to merge them at the center (**At Center**):



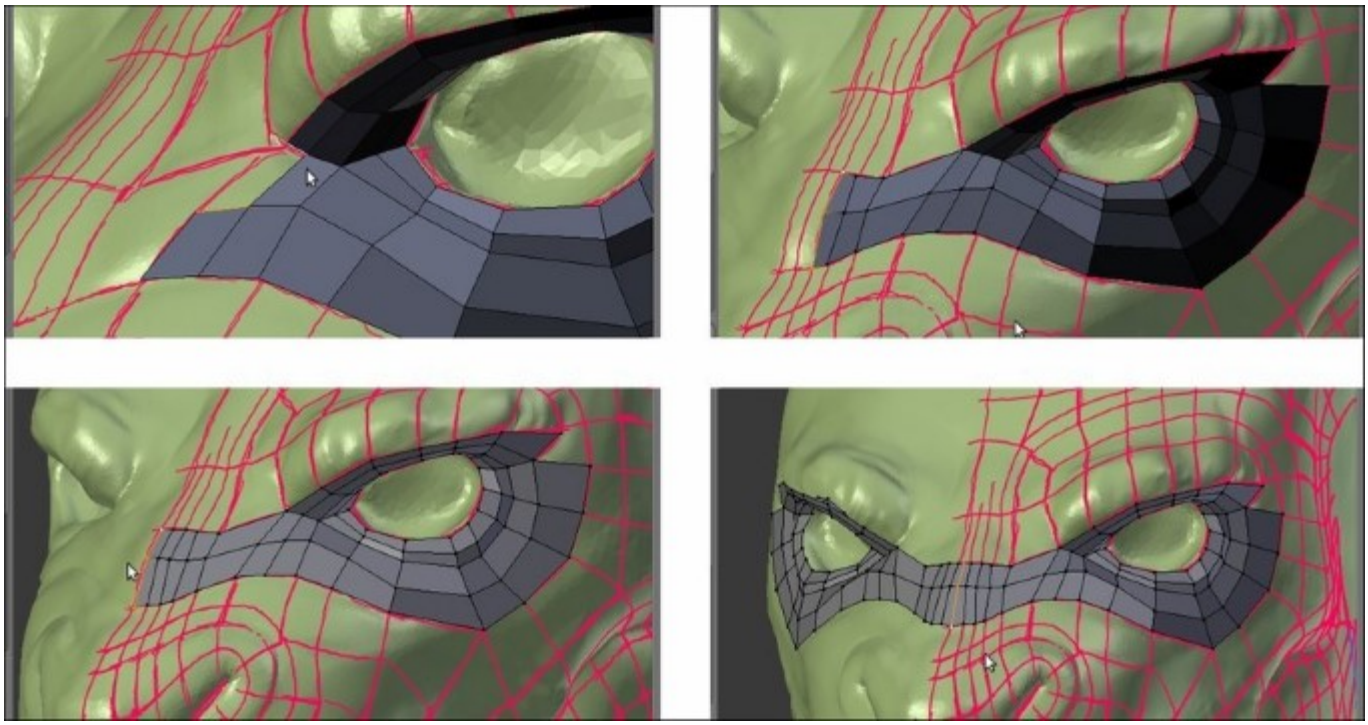
Building the eye edge-loop

10. While still in **Edit Mode**, select all the vertices and press *Ctrl* + *N* to recalculate the normals.
11. Keep on extruding the edge-loops to build the faces around the **eye socket**. Select the inner edge-loop and extrude it; then, scale it inside and adjust the vertices position as usual.
12. Cut a new edge-loop in the middle of the **eye socket** by pressing *Ctrl* + *R* and then select each vertex; press *G* and, immediately after, click with the left button of the mouse. This way the newly added vertex stays in place, but is snapped to the underlying surface (sadly, it doesn't work automatically as you cut or add vertices; they must be moved in some way to make the **Snap** tool work).



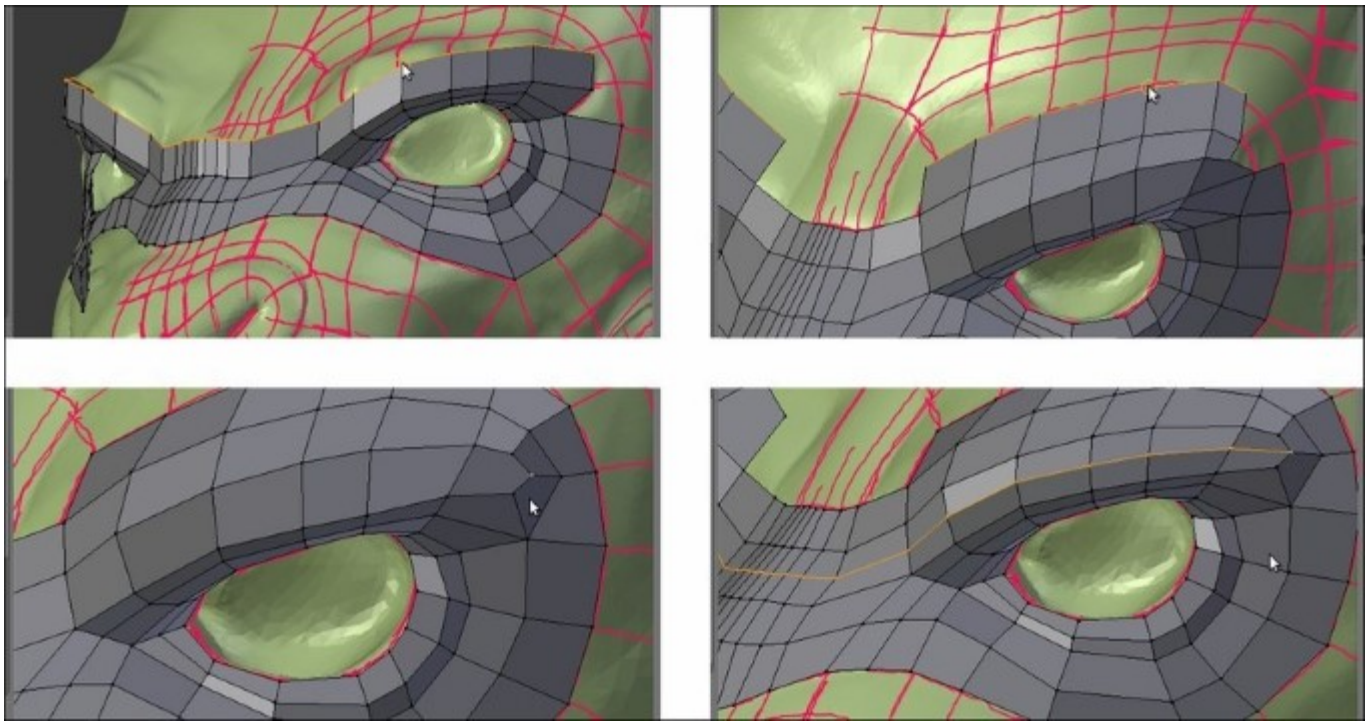
Adding geometry and snapping the vertices to the surface

13. Keep on adding geometry to the mesh, extruding or *Ctrl* + left-clicking, and switch between edges and vertices selection mode to make the workflow faster. Press *5* on the numpad to go into **Ortho** view when necessary. Following the strokes guideline, build faces going towards the median line of the object.
14. As you are arrived to the median line of the object, go to the **Object Modifiers** window under the **Properties** panel and assign a **Mirror** modifier.
15. Click on the *Adjust edit cage to modifier result* icon (the last one in the row to the side of the modifier's name), to activate the modifier during the editing, and check the **Clipping** item.
16. Adjust the vertices you just added to the median line of the mesh to stay on the *y* axis and recalculate the normals.
17. Go to the **Outliner** and rename the **Plane** item as **Gidiosaurus_lowres**.



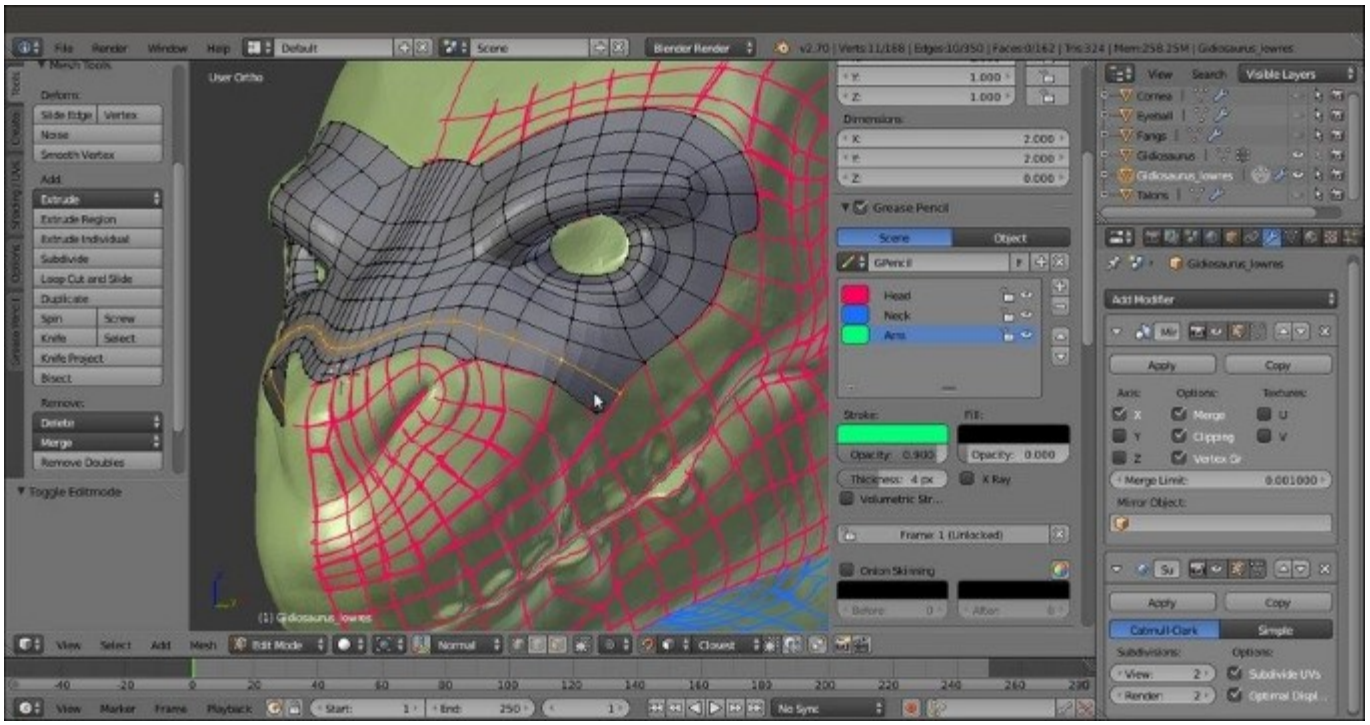
Going towards the median line

18. Build the remainder of the faces the same way, extruding edges or vertices, moving them to react to the **Snap** tool, and adding cuts and edge-loops where needed to keep all quads. **N-gons** faces can be split into quads by dividing an edge to add a vertex in the middle, selecting the new vertex and its opposite one and pressing the *J* key to connect them (see the two screenshots at the bottom row):



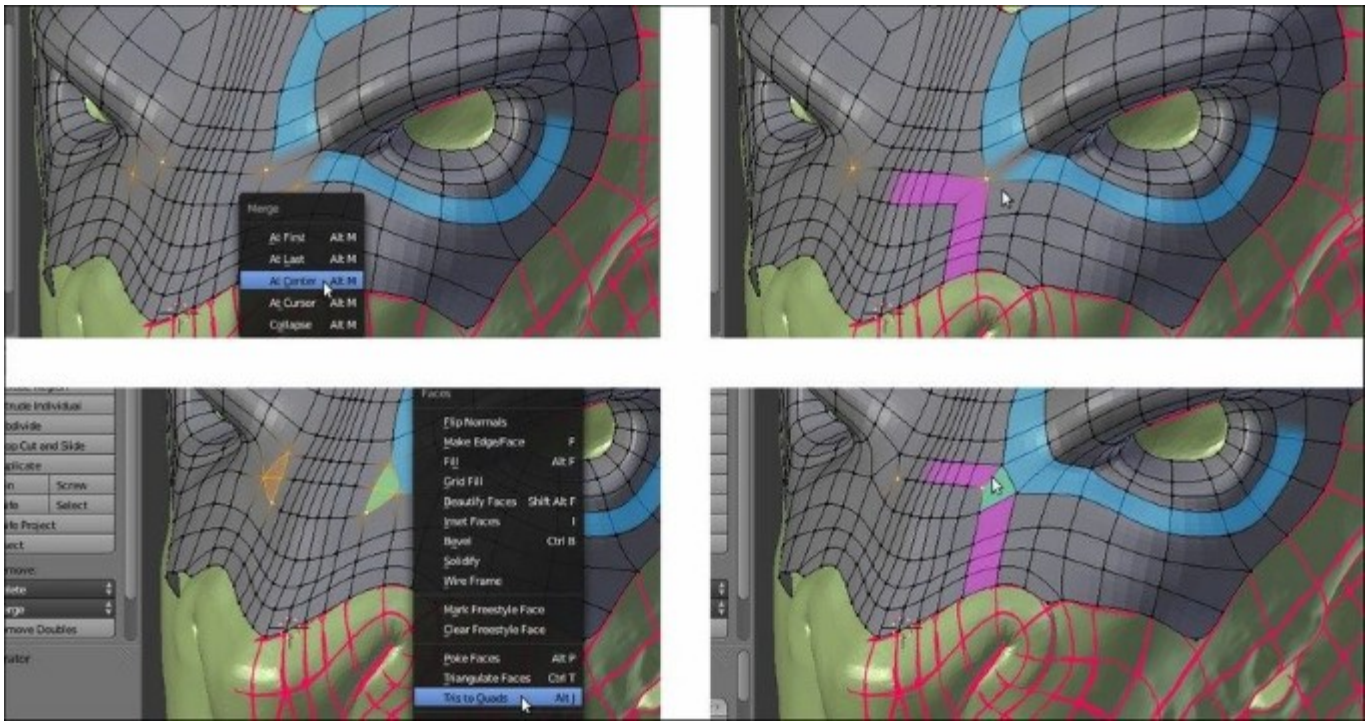
Building the eyebrows and dividing N-gons into two quad faces

19. Assign a **Subdivision Surface** modifier to the low resolution mesh and set **Subdivisions** to **2**. Check the **Optimal Display** item; if you want, click on the *Adjust edit cage to modifier result* icon, which is the last one in the row to the side of the modifier's name. To work with an already smoothed mesh (in the end, the mesh will be subdivided in any case) is a usual workflow; by the way, it depends on your preferences. If you prefer to work without the modifier, occasionally go out of **Edit Mode** to verify how the geometry behaves under the **Subdivision Surface** modifier.



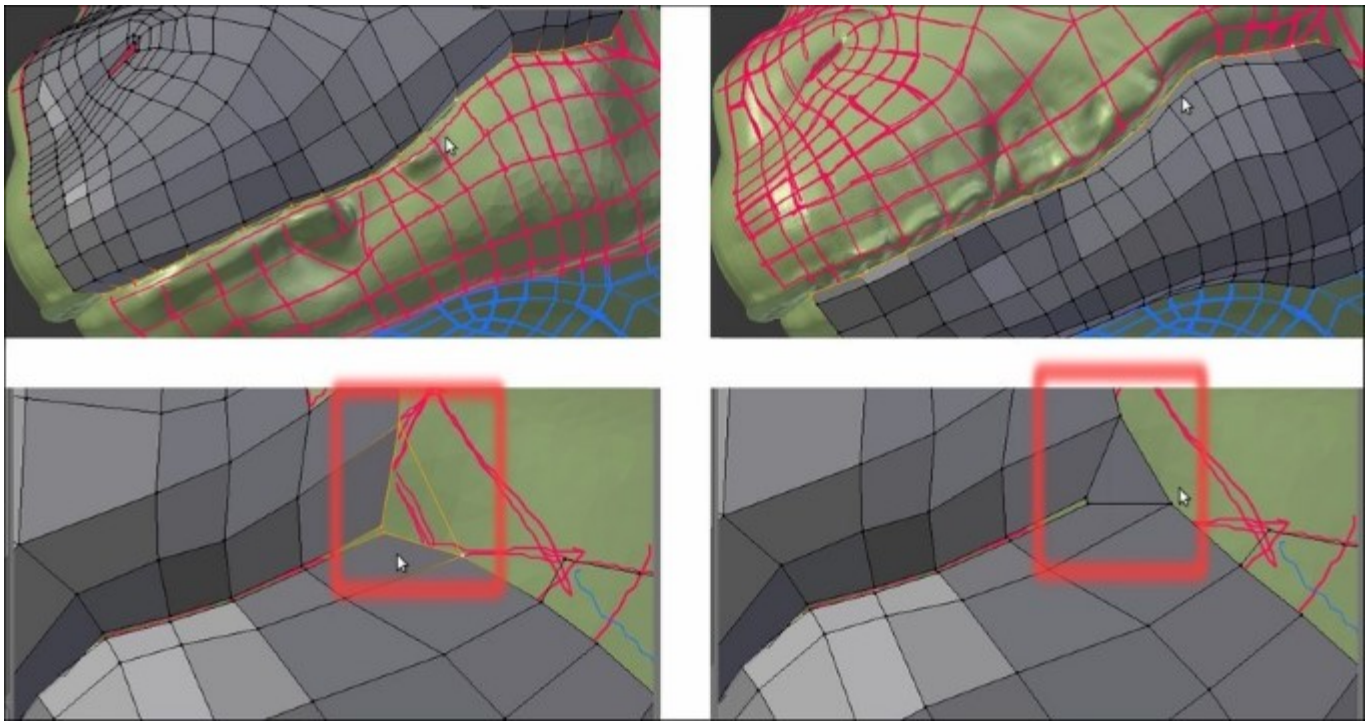
The created geometry in the Subdivision Surface visualization mode

20. Around the eyebrows, it is important to have continuous edge-loops to allow for better mesh deformation; often, it is enough to merge (*Alt* + *M*) two vertices to obtain the right flow. Note that this creates a pole (check out the screenshot at the top right) that can later be eliminated by a cut and then merges the two tris faces into a quad (*Alt* + *J*; the two screenshots at the bottom):



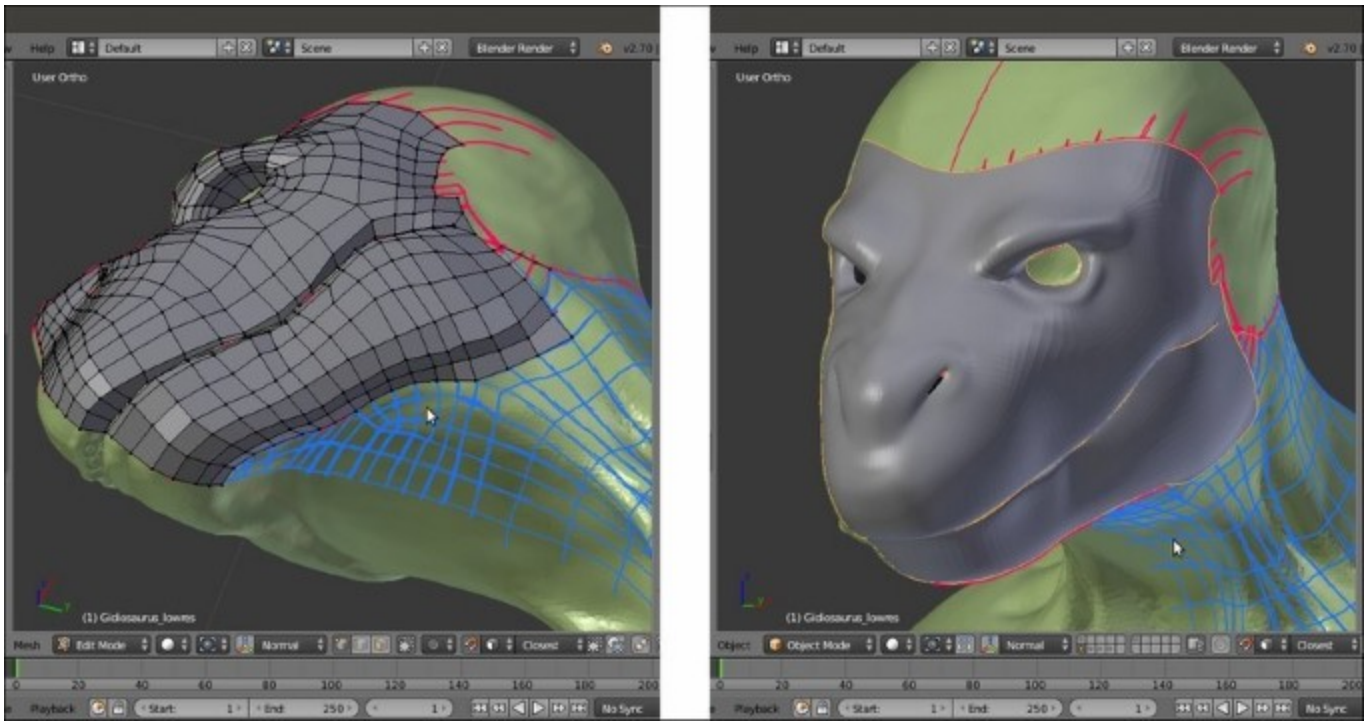
Closing two edge-loops

21. We have almost completed the **Gidiosaurus'** face. Select the vertices of the lower **jaw** and press the *H* key to hide them; select the **upper mouth rim** and extrude it and then adjust the vertices' position.
22. Deselect the vertices, press *Alt* + *H* to unhide the **mandible**, and press *Shift* + *H* to hide the unselected vertices (in this case, the **upper face**). Select the **mouth rim** of the **mandible** and extrude and then tweak the position of the vertices.
23. Connect the upper and the lower **jaws** by connecting the last vertices, as shown in the bottom-left of screenshot and then build a face. Tweak the vertices' position:



Connecting the jaw to the upper mouth

We can stop using the **Snap** tool at this point and continue with the re-topologizing by using different tools; we'll see this in the upcoming recipes.



The re-topologized face of the character

How it works…

The main requirement for a re-topology tool is the ability to trace the shape and volume of the high resolution mesh as easily as possible. In this recipe, we used the Blender **Snap** tool that, once set to **Face**, guarantees that every added vertex lies on the faces of any directly underlying object; this way, it is quite simple to concentrate on the flow of the polygons, while their vertices stay anchored to the mesh's surface.

To remark that the strokes are there only as a generic indication, note that in certain areas we are doubling the number of faces sketched with the **Grease Pencil** tool as well as to try to keep the density of the mesh as even as possible.

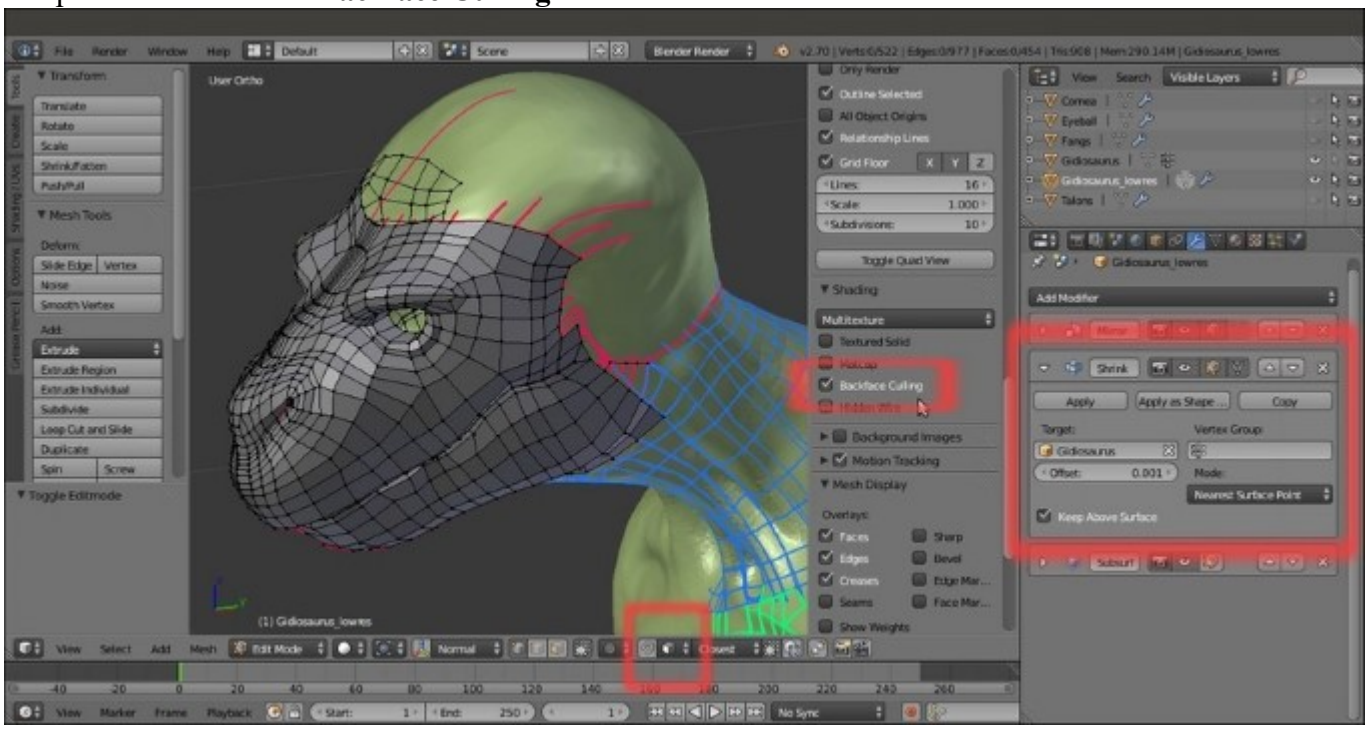
Using the Shrinkwrap modifier to re-topologize the mesh

Sometimes, the **Snap** tool is not enough or can be quite difficult to use because of a particular shape of the high resolution mesh; in these cases, the **Shrinkwrap** modifier can be very handy.

Getting ready

Basically, the usage of this method is all in the preparation of the modifier:

1. Assign the **Shrinkwrap** modifier to the **Gidiosaurus_lowres** mesh and, in the modifier stack, move it *before* the **Subdivision Surface** modifier.
2. Click on the **Target** field to select the **Gidiosaurus** mesh item and leave the **Mode** option to **Nearest Surface Point** (this seems to be the more efficient mode for this task; by the way, you can experiment with the other two modes that can reveal themselves useful in other situations).
3. Enable the *Display modifier in Edit mode* and *Adjust edit cage to modifier result* buttons (the penultimate one and the last one to the right, with the cube and four selected vertices image and with the upside-down triangle and three vertices image, respectively) and the **Keep Above Surface** item.
4. In **Edit Mode**, if it's necessary to make the low resolution mesh more easily visible against the high resolution one, change the **Offset** value to **0.001**.
5. Having the **X-Ray** item still active, go to the **Shading** subpanel under the **Properties** 3D view sidepanel and check the **Backface Culling** item:

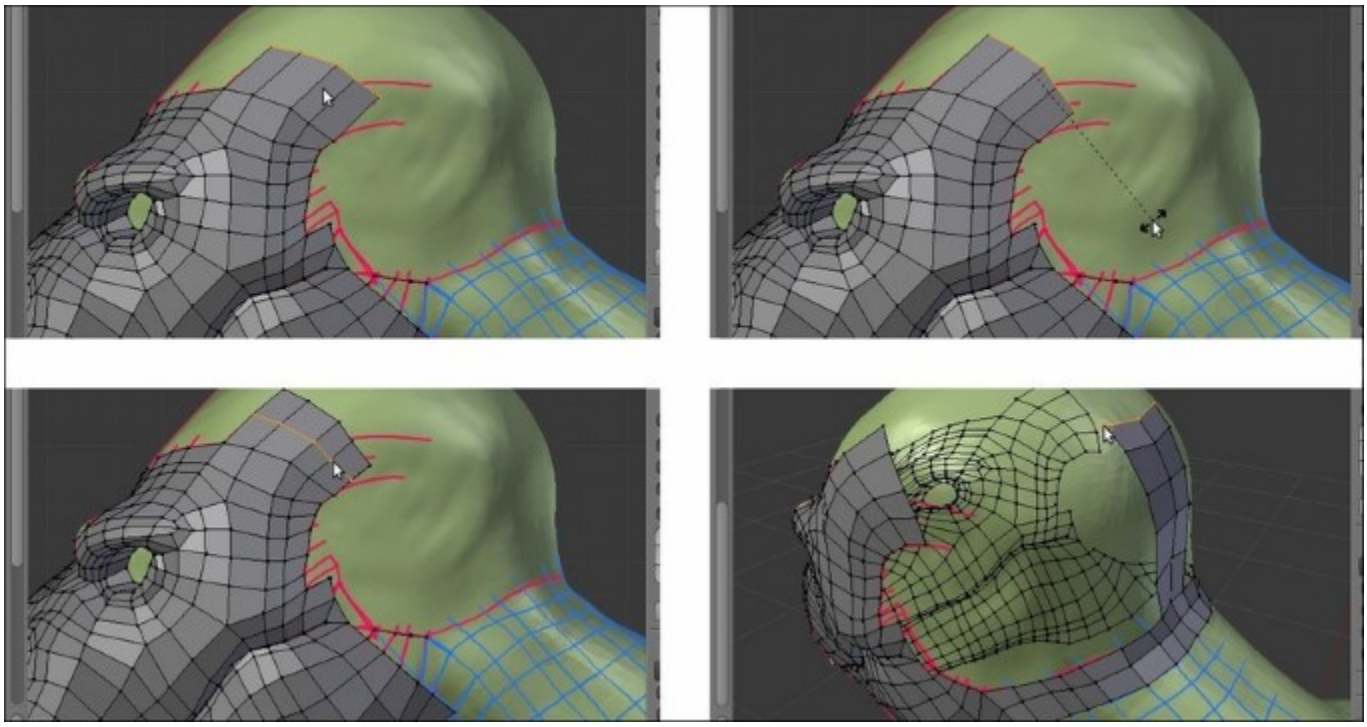


The Shrinkwrap modifier panel

How to do it…

In **Edit Mode**, select, extrude, and move the vertices as required! The **Shrinkwrap** modifier will take care of keeping the vertices adhering to the target mesh surface.

If you are having issues, such as vertices jumping everywhere as you try to move them, try to disable the **Snap** tool. This is not always the case, but sometimes the combination of both the tool and the modifier can give unexpected results; other times, it can be the opposite.



Extruding and cutting an edge-loop under the Shrinkwrap modifier

Remember that if you are using this method to re-topologize, at the end of the process, you *must apply the Shrinkwrap modifier*.

Also, save the file.

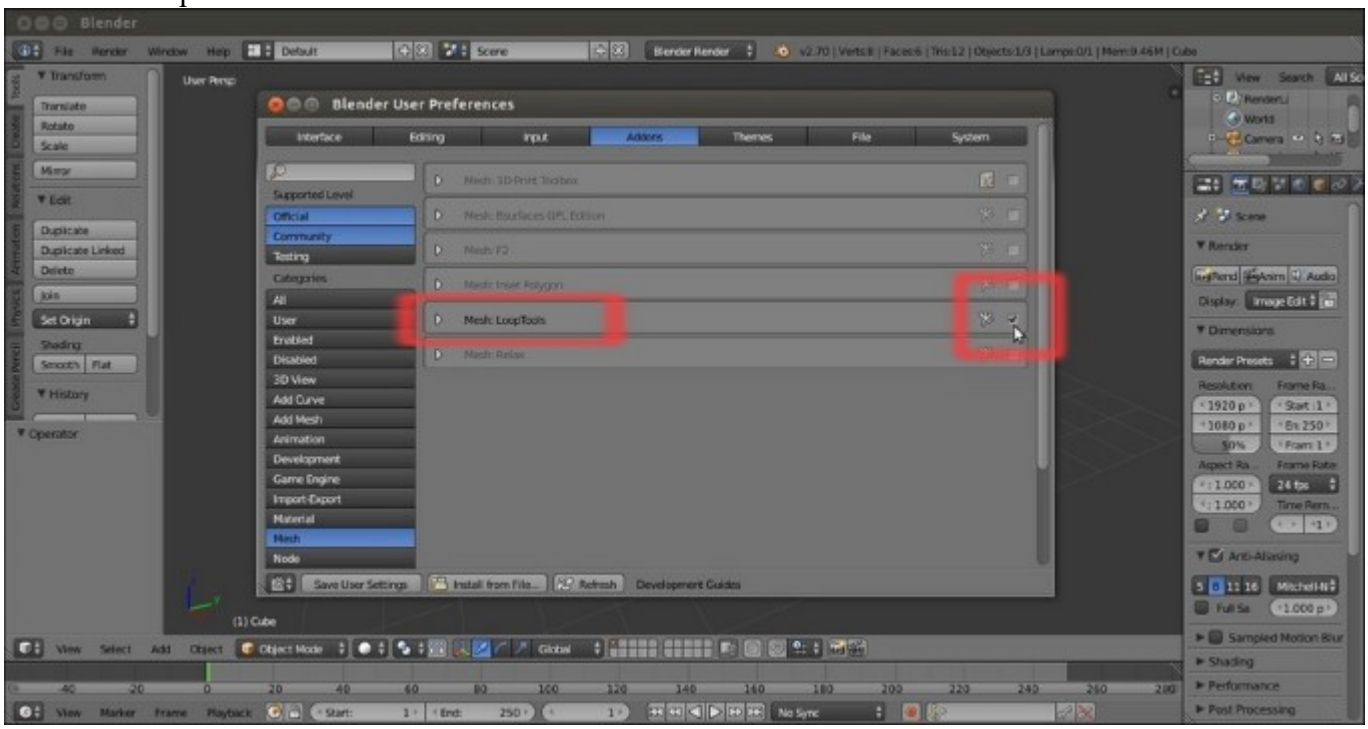
Using the LoopTools add-on to re-topologize the mesh

We have already seen the **LoopTools** add-on in Chapter 3, *Polygonal Modeling of the Character's Accessories*. This incredibly useful Python script can even be used for the re-topology!

Getting ready

If the **LoopTools** add-on isn't enabled yet, perform the following steps:

1. Start Blender and call the **Blender User Preferences** panel (*Ctrl* + *Alt* + *U*); go to the **Addons** tab.
2. Under the **Categories** item on the left-hand side of the panel, click on **Mesh**.
3. Check the empty little box to the right of the **Mesh: LoopTools** add-on to enable it.
4. Click on the **Save User Settings** button at the bottom-left of the panel to save your preferences and close the panel:



The User Preferences panel and the LoopTools add-on enabled

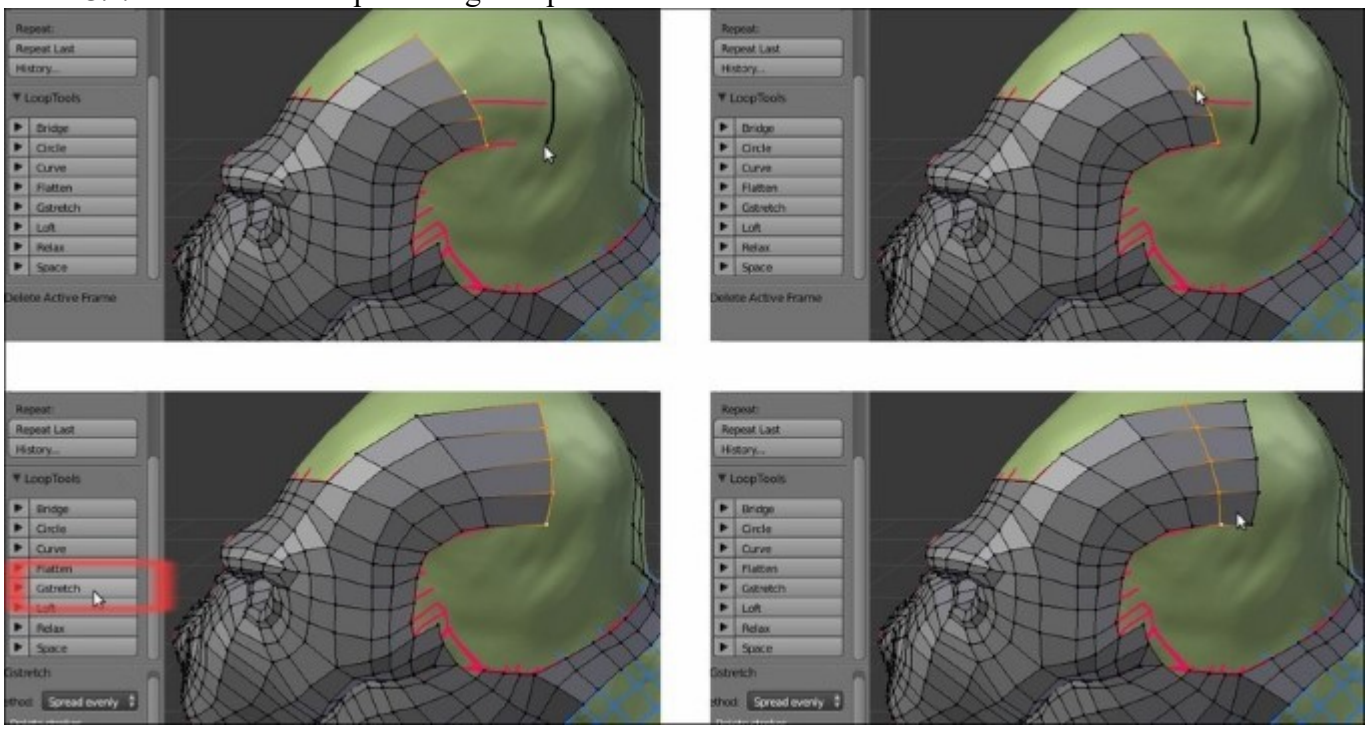
5. Load the `Gidiosaurus_retopology.blend` file.
6. Click on the *Snap during transform* button on the 3D view toolbar (or else, press *Shift* + *Tab*) to enable the **Snap** tool again.

How to do it…

In the **LoopTools** add-on, there are at least three tools that can be used for the re-topology: **Gstretch**, **Bridge**, and **Loft** (the last two seem to have almost the same effect so, at least for our present goal, we can consider them to be interchangeable).

Let's first see the **Gstretch** tool:

1. Go to the **Grease Pencil** subpanel under the **Properties** 3D view sidepanel to the right. Be sure that the **Grease Pencil** checkbox is checked and click on the + icon button to add a fourth layer after the **Arm** layer (actually, you can also delete the preexisting **GPencil** data block and start with a brand new one, or in any case disable the visibility of the other layers); leave the strokes color as it is by default—that is, pure black.
2. In **Edit Mode**, press *D* and sketch one edge-loop stroke.
3. Select the edges of the low resolution mesh and press *E* to extrude them and then right-click; click on the **Gstretch** button (or press *W* | **Specials** | **LoopTools** | **Gstretch**).
4. In the last operator panel at the bottom of the **Tool Shelf** (or else, press *F6* to make the pop-up window appear at the mouse cursor location), check the **Delete** strokes item.
5. Press *Ctrl* + *R* to cut the required edge-loops in the new faces:

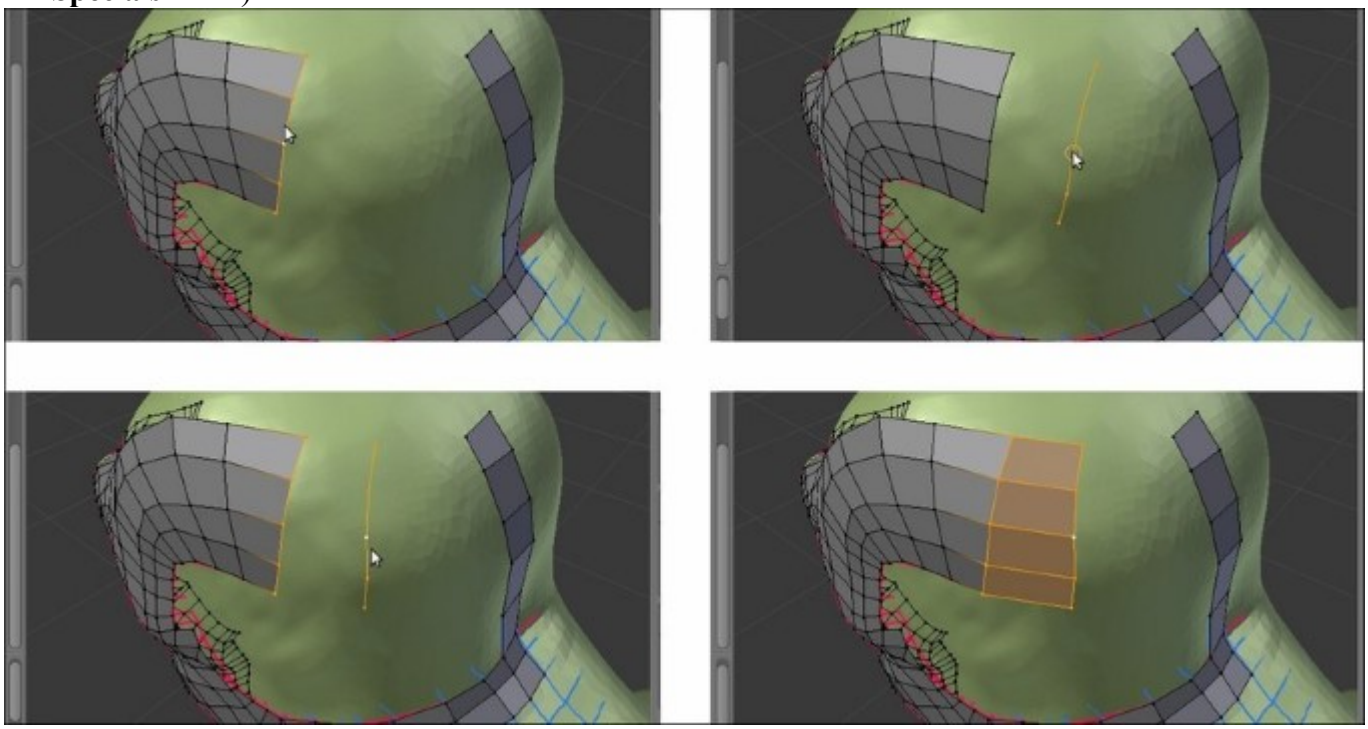


Using the Gstretch tool in conjunction with the Grease Pencil tool

Yes, it's that simple; it's enough to stroke the target position line and the new extruded vertices will be moved to that target position.

Also, now let's see the **Bridge** and the **Loft** tools:

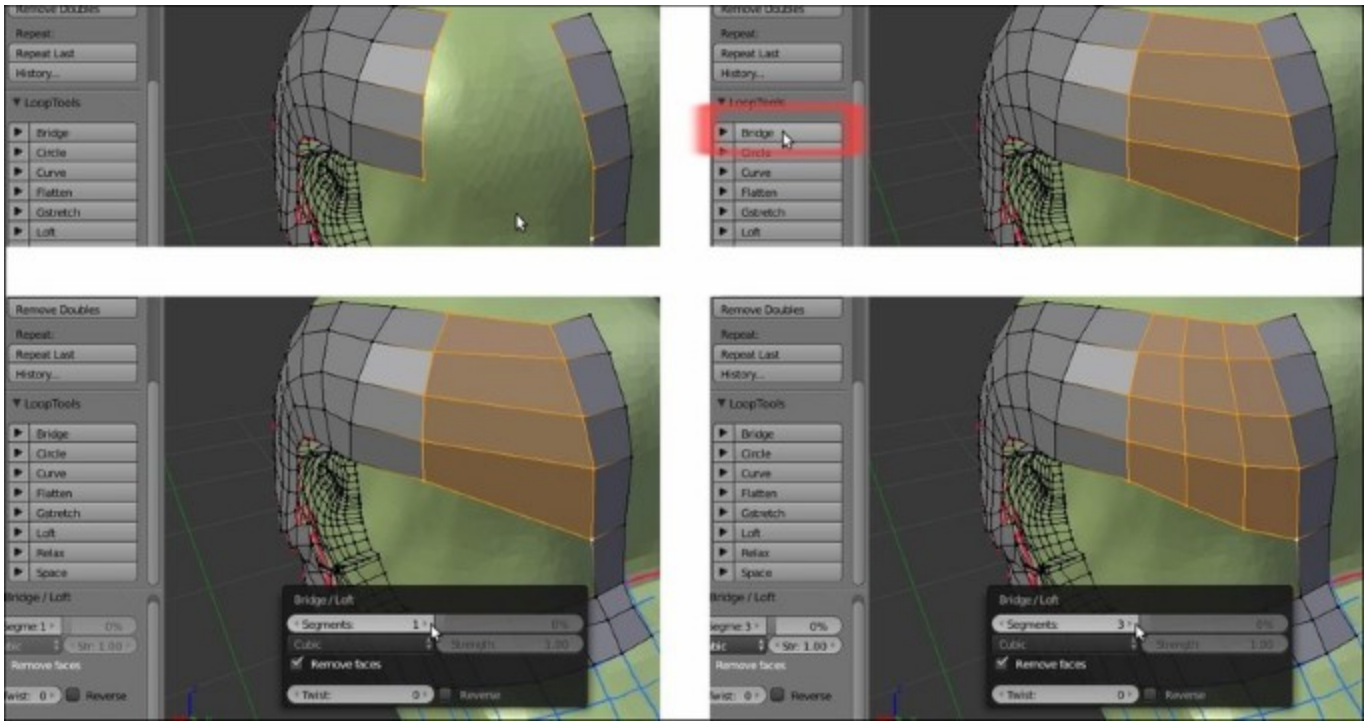
1. Select a group of edges and press *Shift* + *D* to duplicate them.
2. Move them into a new position and adjust the vertices as required.
3. Select both the new edges as the previous group.
4. Go to the **LoopTools** panel and click on the **Bridge** button (or again, through the *W* key to call the **Specials** menu).



Using the Bridge tool

5. If you need to add cuts, instead of the usual *Ctrl* + *R* shortcut, go to the last operator panel (*F6*) and change the value of the **Segments** slot to the number required.

It's not mandatory to duplicate new edges, it's enough to select the same number of vertices in the two edge-loops to be connected; here, after the **Bridge** tool operation, we have set the **Segments** value to **3**:

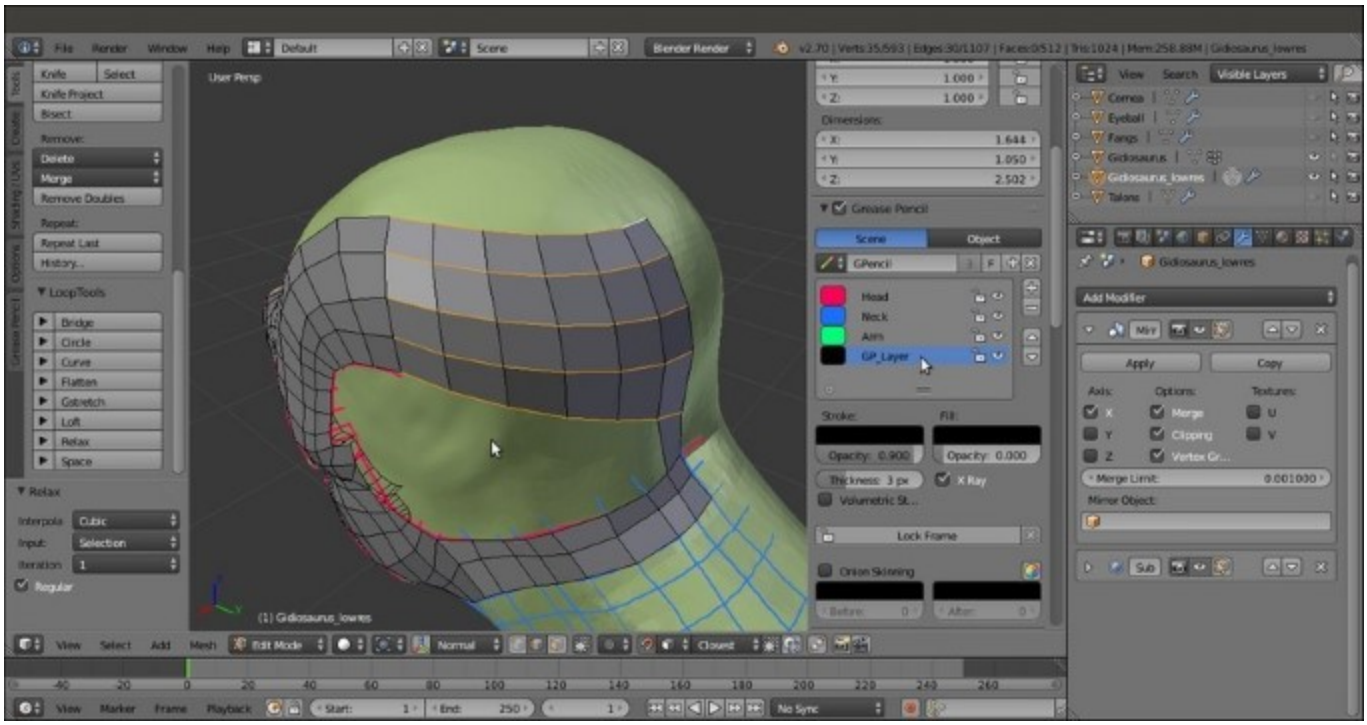


Adding cuts to the bridge operation

You can repeat the operation and the add-on will keep the last values you entered.

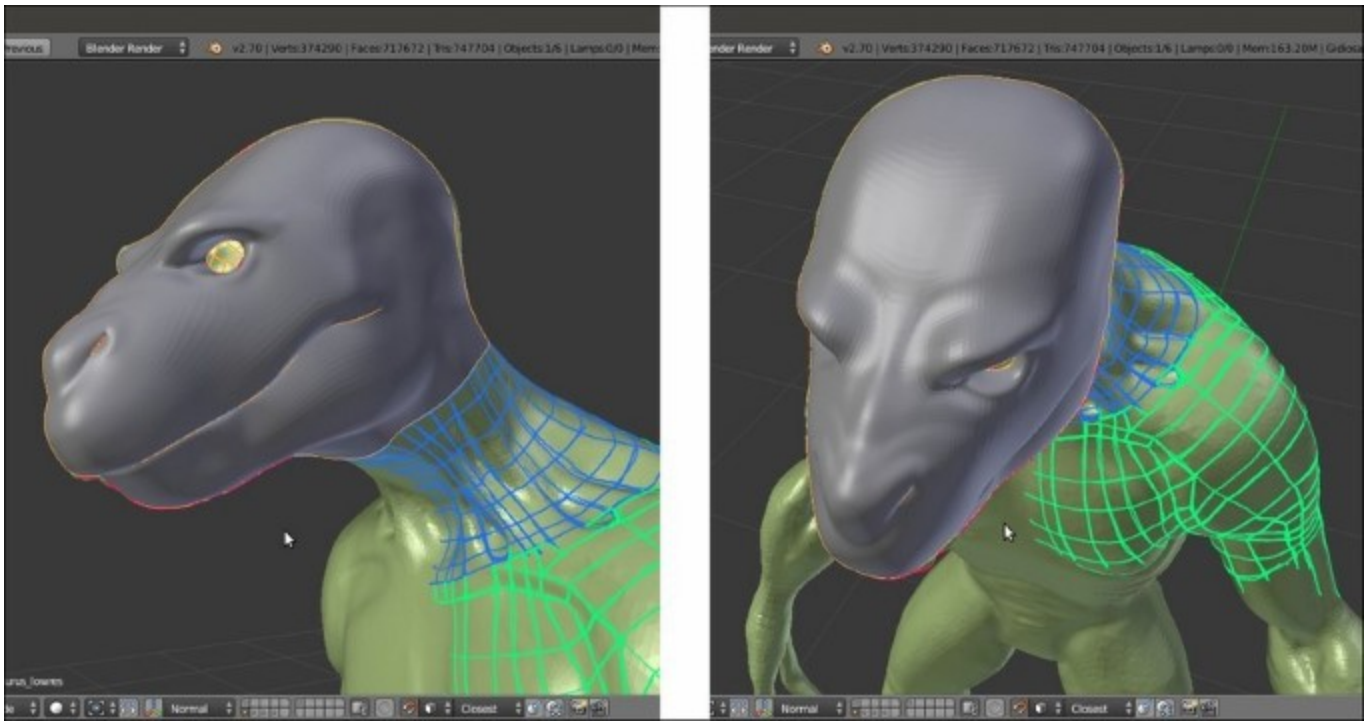
Repeat the steps, and this time click on the **Loft** button. The effect is almost the same, but if the new faces come out really messy, just click twice on the **Reverse** checkbox in the last operator panel; this should fix the issue.

You can then use all the other buttons to refine the added geometry; in the following screenshots, I tweaked the new geometry a little bit by selecting the horizontal edges and clicking on the **Space**, **Flatten**, and **Relax** buttons:



Completing the Gidiosaurus head

Using a mix of all the previous methods, in a short time, we have completed the head and the joining of the neck of our **Gidiosaurus_lowres** mesh; as you can see, particularly in the second screenshot at the bottom, the technique of following the main features and folders of the sculpted surface with the edge-loops can highlight the organic shapes even with a low resolution mesh:



The completed head

Don't forget to save the file and quit Blender.

Concluding the re-topologized mesh

The **Shrinkwrap** modifier method can be the way to quickly finish the rest of the re-topology of the **Gidiosaurus** sculpted mesh, by quickly re-topologizing the simpler cylindrical shapes and then completing the more difficult parts by hand.

Getting ready

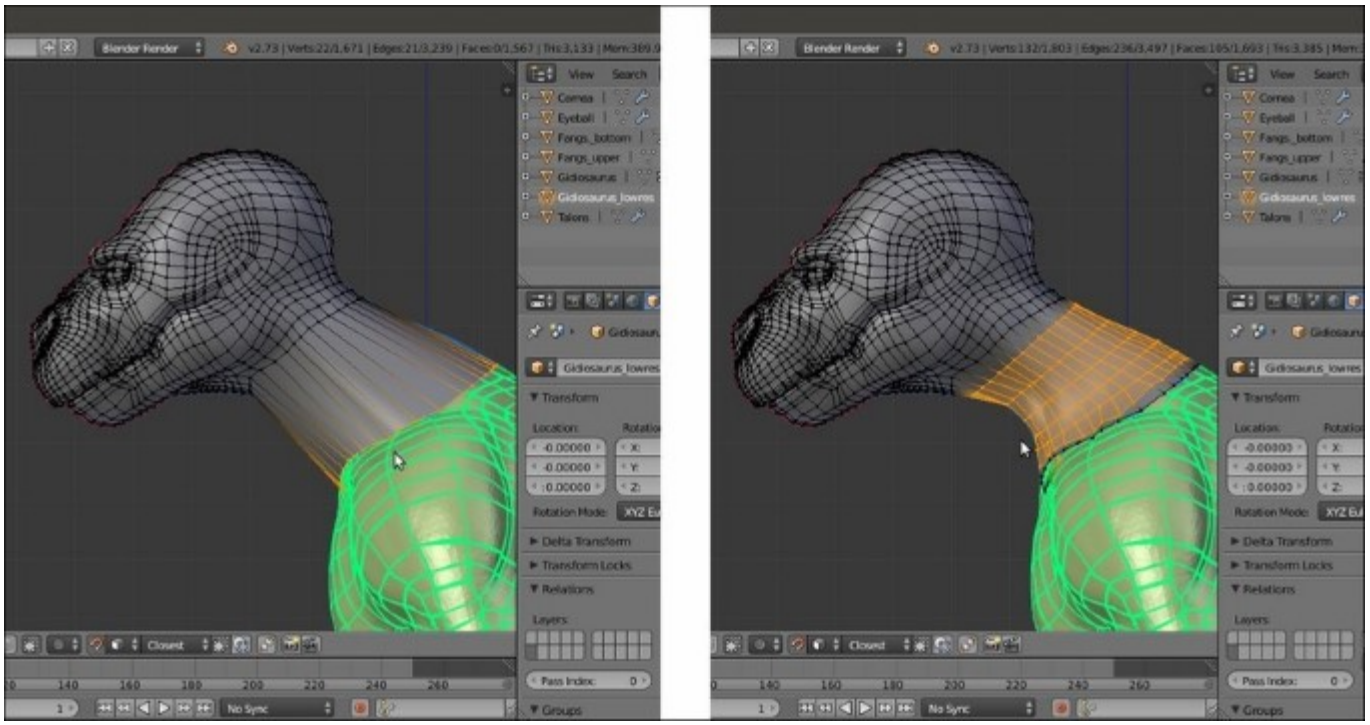
If necessary, repeat the steps to set up the **Shrinkwrap** modifier technique:

1. Assign the **Shrinkwrap** modifier to the **Gidiosaurus_lowres** mesh and in the modifier stack, move it *before* the **Subdivision Surface** modifier.
2. Click on the **Target** field to select the **Gidiosaurus** mesh item and leave **Mode** to **Nearest Surface Point**.
3. Enable the *Display modifier in Edit mode* and *Adjust edit cage to modifier result* buttons and the **Keep Above Surface** item.
4. In **Edit Mode**, to make the low resolution mesh more easily visible against the high resolution one, change the **Offset** value to **0.001**.
5. Having the **X-Ray** item still active, go to the **Shading** subpanel under the **Properties** 3D view sidepanel and check the **Backface Culling** item.
6. Then, to conclude the re-topology, we also need to enable the **Copy Attributes Menu** add-on; go to **Blender User Preferences** | **Addons** | **3D View** | **3D View: Copy Attributes Menu**.

How to do it…

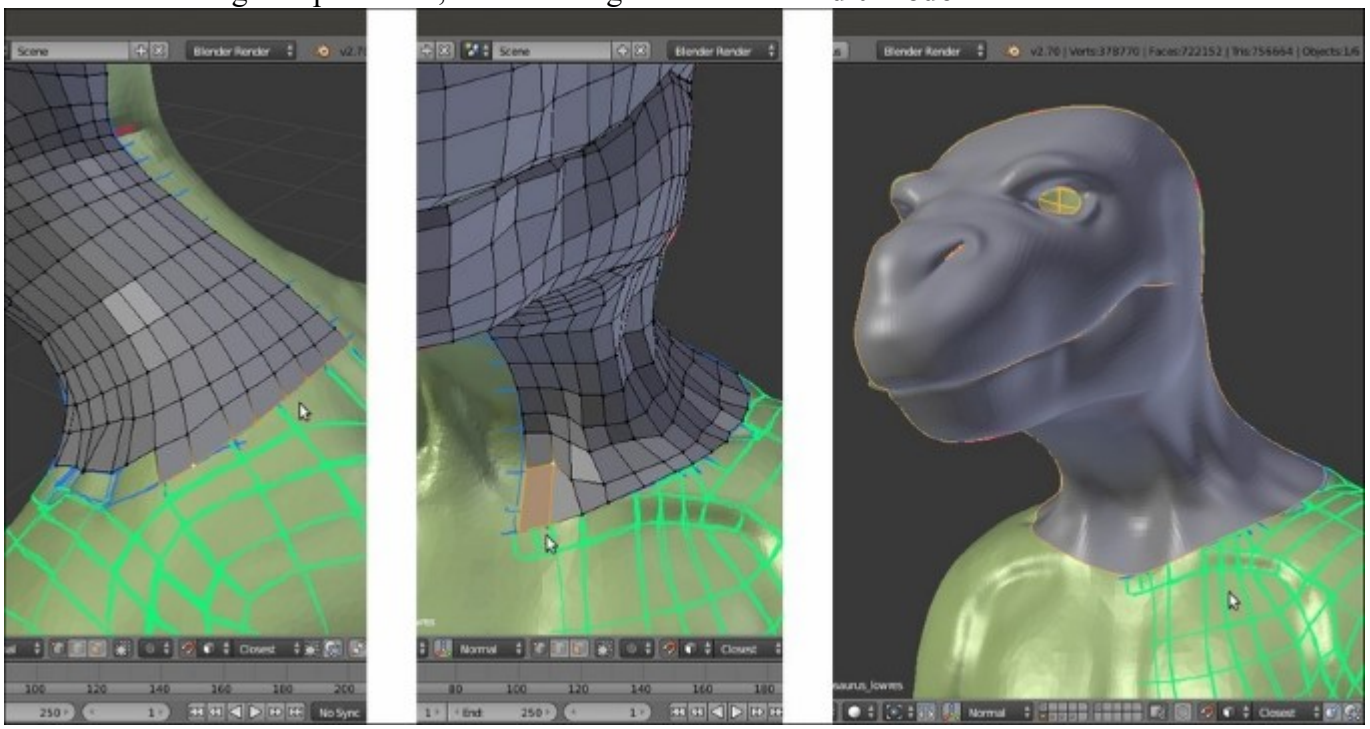
Let's go on by building the geometry of the **neck**:

1. While still in **Edit Mode**, just select the **head's** last edge loop on the **neck** and extrude it (*E* key) towards the **shoulders**.
2. Press the *Ctrl* + *R* keys and add at least **7** or **8** widthwise edge-loops:



Extruding the neck

3. Also, with the aid of the **Snap** tool, tweak the position of the bottom row of vertices, extrude them to add an edge-loop of faces, and tweak again. Go out of **Edit Mode**.



The re-topology of the neck

We can use the same technique as in steps 1, 2, and 3 to quickly re-topologize the left **arm** and **leg** of the character. Instead of extruding the new geometry from the **Gidiosaurus_lowres** mesh, in this case, it's better to add a new simple primitive: a **Circle** or also a **Plane**; whatever the primitive, when you add it, be sure that the **3D Cursor** is at the character's origin pivot point.

As you can see in the following screenshot, at first we just created the geometry only for the *main* cylindrical sections of the **limbs**:

Arms and legs re-topologized

Do the same for the **body**: just a couple of edge-loops placed at the **waist** to extrude the geometry from; remember that the **chest** is covered with the **armor breastplate**, so only the **exposed area** needs to be re-topologized.

One **Mirror** and one **Subdivision Surface** modifier has been assigned to the **three** objects (**head/neck**, **arm**, and **hips/leg**). Also, because of the **Mirror** modifier, the vertices of the half side of the **abdomen's** edge-loops have been deleted.

There's more…

After the main parts have been re-topologized, we can start to tweak the position of the vertices on the **arm** and **leg**, to better fit the flow and shapes of the muscles and tendons in the sculpted mesh.

Thanks to the aid of the **Shrinkwrap** modifier, we can do it quite freely; however, before we start with the tweaking, we require a little bit of preparation for a better visibility of the working objects, to affect and modify the new geometry (visible as a wireframe) and have the underlying sculpted mesh visible at the same time.

To do this, we have two ways:

The first way is as follows:

1. Go to the **Shrinkwrap** modifier panel and set the **Offset** value to **0.002**.
2. Go to the **Object** window and disable the **X-Ray** item; in the **Maximum Draw Type** slot, under the **Display** subpanel, select **Wire**:

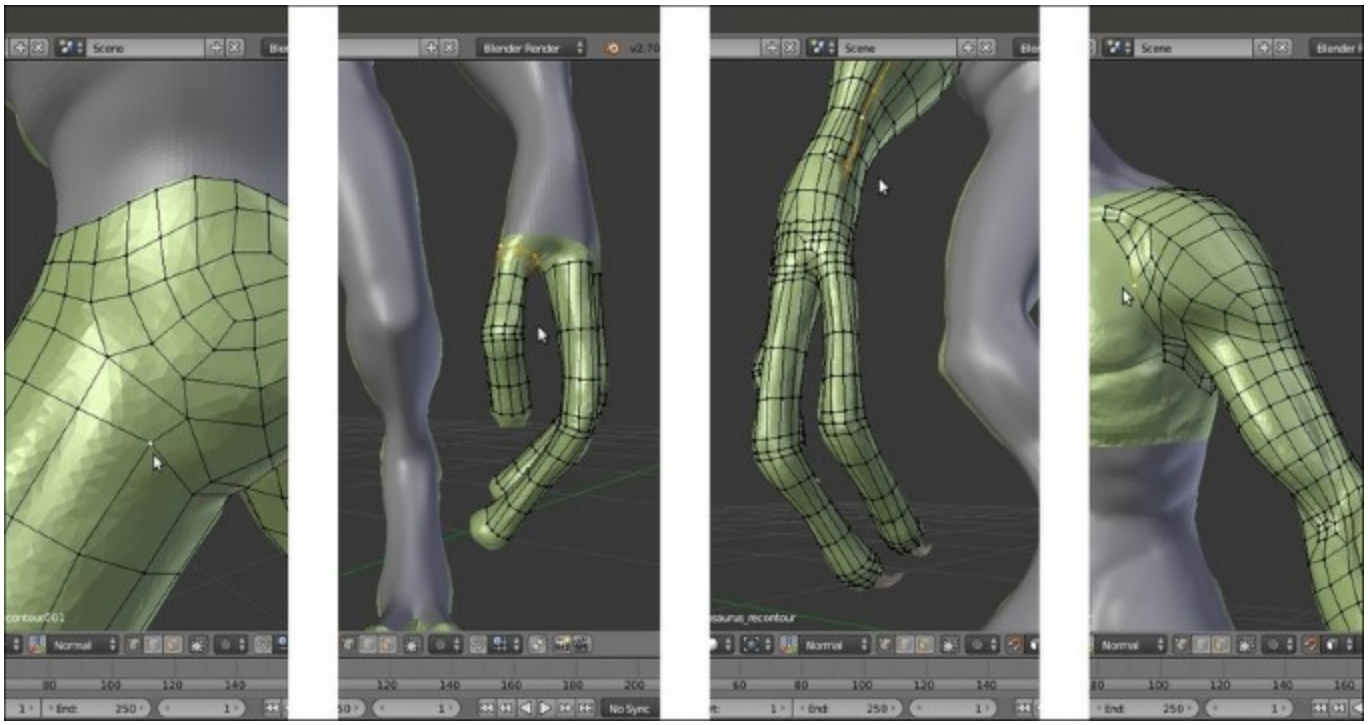
The mesh visualized in wireframe mode

The second way is as follows:

1. Go to the **Shrinkwrap** modifier and set the **Offset** value back to **0.000**.
2. If this is the case, go to the **Object** window and, under the **Display** subpanel, enable the **X-Ray** item. In the **Maximum Draw Type** slot, under the **Display** subpanel, select **Textured**.
3. Go to the **Properties** 3D view sidepanel (press *N* if not already present); if necessary, enter **Edit Mode** and under the **Shading** subpanel, check the **Hidden Wire** item.
4. In both ways (I used the second one), if you want to enable the *Display modifier in Edit mode* and *Adjust edit cage to modifier result* buttons for the **Subdivision Surface** modifier to see its effect in **Edit Mode**, it is better to move the **Shrinkwrap** modifier *after* the **Subdivision Surface** modifier in the stack, to have a better looking result.

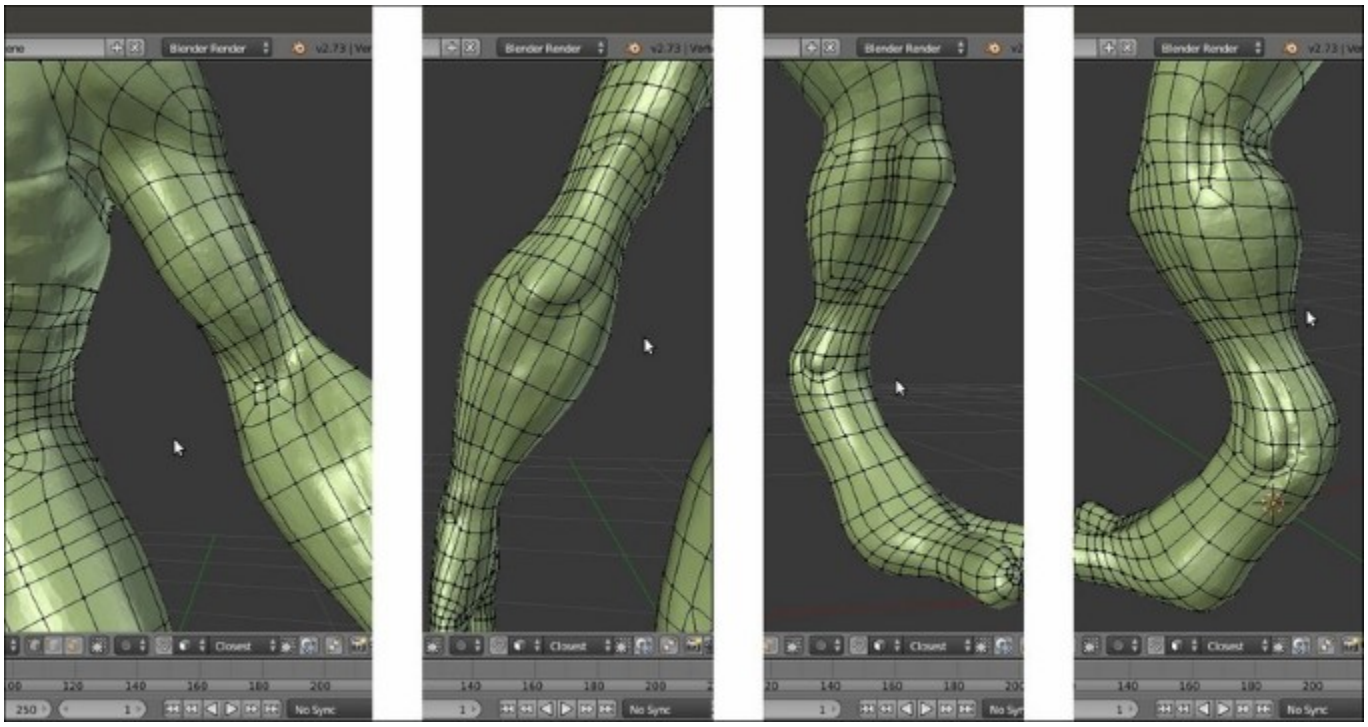
The second wireframe visualization method

We can now start to add the missing parts, by extruding and moving the vertices to better fit the sculpted features and also adding, if necessary, new edge-loops to better define these features:



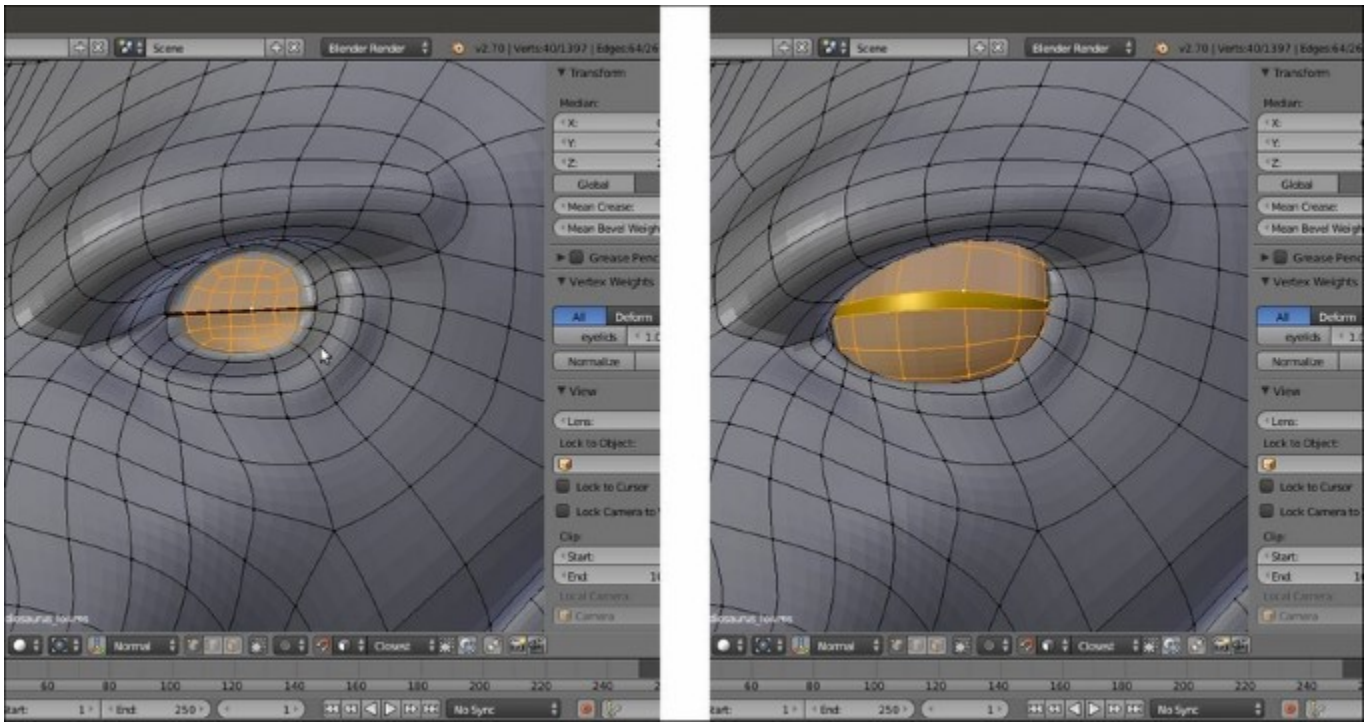
Refining and completing the remaining features

After the **wireframe** setup, it's easy to tweak the low resolution geometry to better fit the character's anatomy:



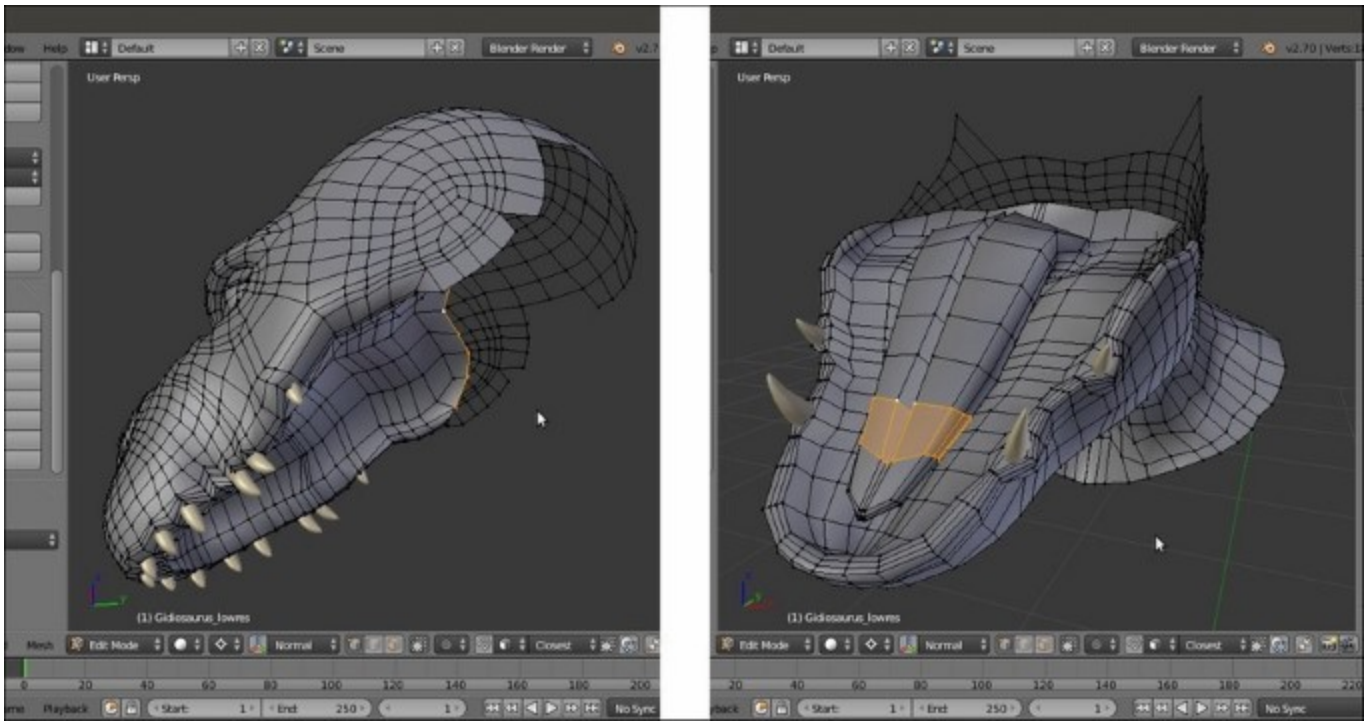
The character's anatomy

The still missing parts are modeled at this stage, such as the inside of the **nostrils** or the **eyelids**, again with the aid of the **Shrinkwrap** modifier; this time, targeted to the **Cornea** object to project the **eyelids** geometry onto it with an **Offset** value of **0.0035**:



The character's eyelids

Also, we built the **inner mouth** and the **tongue** of our character and refined the **dental alveoli**:



The character's alveoli and tongue

As in every project, we can go on with the refining, adding edge-loops, and so on, and this would seem a never-ending work; instead, at this point, we can consider the **Gidiosaurus** re-topology at the end, so it's time to apply the **Shrinkwrap** modifiers and, if this is the case, select the **Gidiosaurus** body's still separated objects and join them together to have a single mesh.

It's time to do the same with the **armor** that is still waiting on the **13th** scene layer:

The totally completed re-topologized character with the armor

How it works…

First, we have to quickly build the geometry using the **Shrinkwrap** modifier technique and then set the visibility of this geometry to wireframe (**Wire**), to make the underlying sculpted mesh visible.

The **Shrinkwrap** modifier, in the first case with the **Offset** value set high enough to allow the wireframe visibility over the sculpted surface, ensured that all the moved vertices and the new added geometry are automatically wrapped around the target mesh to preserve the volume.

At the end, we took back the **Offset** value to **0.000** anyway and we applied the **Shrinkwrap** modifier; then, we joined the re-topologized **arm** and **leg** objects together to the **Gidiosaurus_lowres** one.

As you have probably noticed, we haven't applied the **Mirror** modifiers yet. This is because it will still be useful in the next chapter.

Chapter 5. Unwrapping the Low Resolution Mesh

In this chapter, we will cover the following recipes:

- Preparing the low resolution mesh for unwrapping
- UV unwrapping the mesh
- Editing the UV islands
- Using the Smart UV Project tool
- Modifying the mesh and the UV islands
- Setting up additional UV layers
- Exporting the UV Map layout

Introduction

So, at this point, we have **sculpted** our high resolution character and through the **retopology** process, we have obtained a low resolution *copy*, which is easier to use for rigging, texturing, and animation.

There are several ways to apply textures to a mesh in Blender, as in any other 3D package. In our case, we are going to use **UV Mapping**, which is certainly one of the most commonly used and efficient methods for organic shapes.

Before the unwrapping process, the mesh must be prepared to make the task easier.