



Texture painted By

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Tutorial By :

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from an original character by SEONG-WHA JEONG



THE SWORDMASTER



Is our new precise, step-by-step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3D applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3D applications. Over the next 8 Chapters we will outline, in detail, the process for creating the 'Swordmaster' you see on the left.

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TEXTURING THE ARMOUR &
CLOTHING

ENJOY ...



PART 1

MODELLING THE HEAD

INTRODUCTION

Welcome to the first of an ongoing tutorial which will run over the next eight issues and provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Over the next six months we will be covering how to build, map/unwrap and texture the character based upon the original. As the original model is low poly and tailored towards a game environment the mesh is not made entirely of quads and so we shall also be making use of a few "tri's" in places to minimize the mesh density. In this first section we will start by creating a simple cube and then moulding it into the final head shape using the editable poly tools.

1. The first step is to create a cube with 4 length, width and height segments as shown on the right in Fig 01. Make it Editable, so right click on the cube and select "Make Editable". You will notice that the UVW Tag will appear nearby to Phong Tag in the Object Browser, these are default co-ordinates that cinema assigns to the object. We will assign our coordinates to the object later, so you may delete the tag.

2. With our editable cube we can now begin shaping it at the sub-object level, points, edges, polygons. Select the "Point Tool" and start moving vertices in the right / left viewport first to get the rough profile shape. Use the Rectangle Selection, be sure to disable "Only Select Visible Elements" in the rectangle selection's options so that you select all the vertexes across the mesh. In this way we can keep our mesh symmetrical on both sides. (Fig 02). Work in a profile view and move verts into reasonable shape then switch to the front view and do the same.

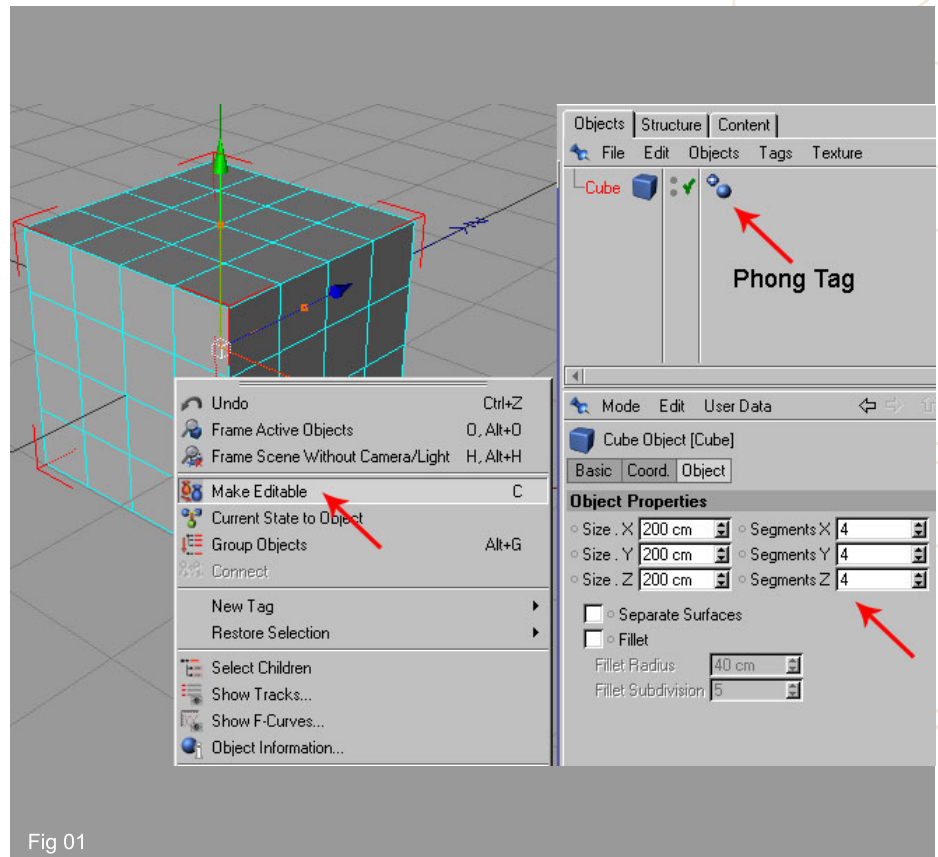


Fig 01

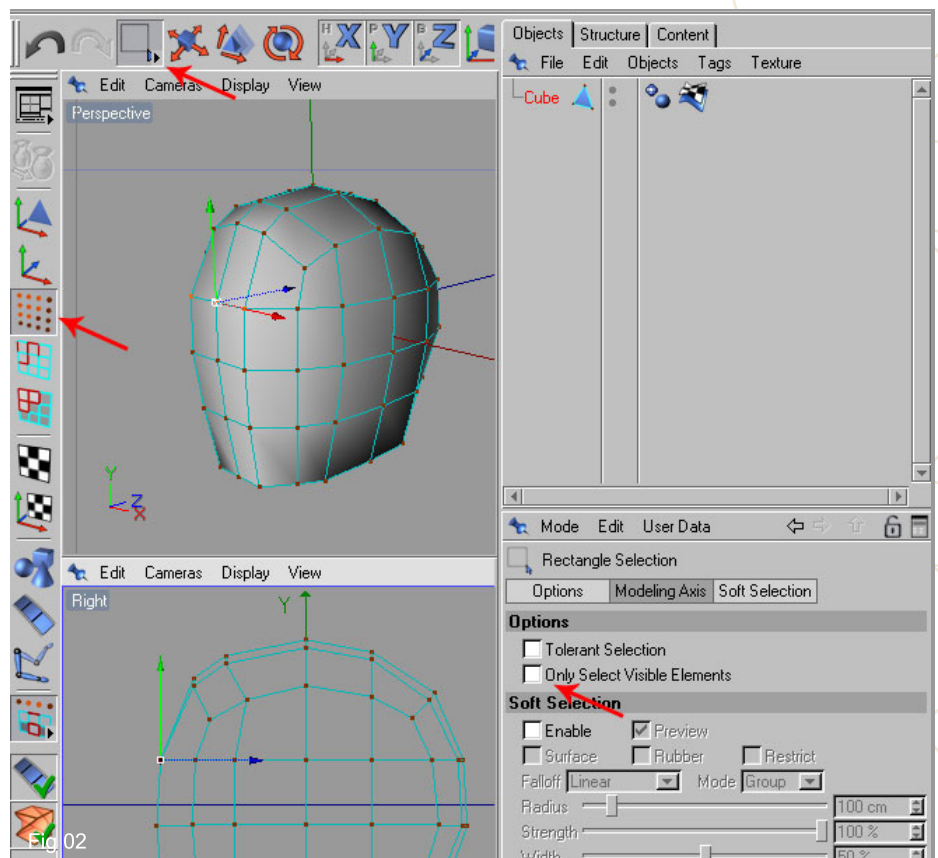
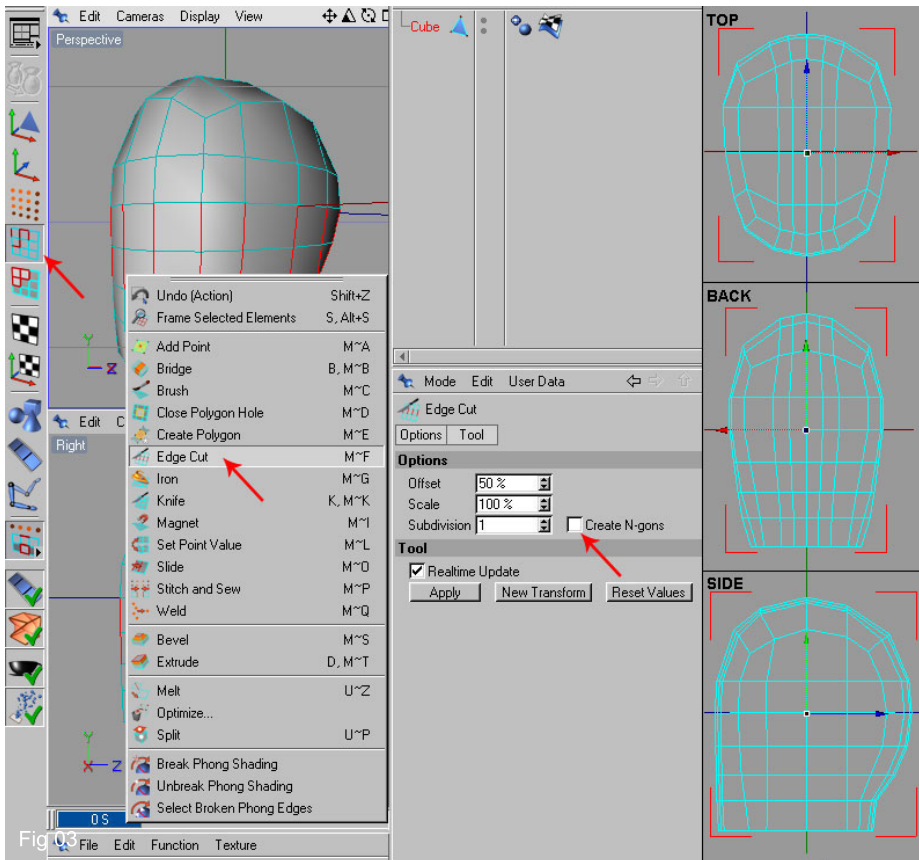
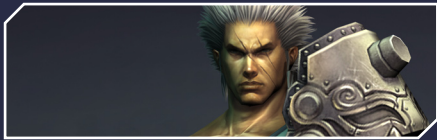
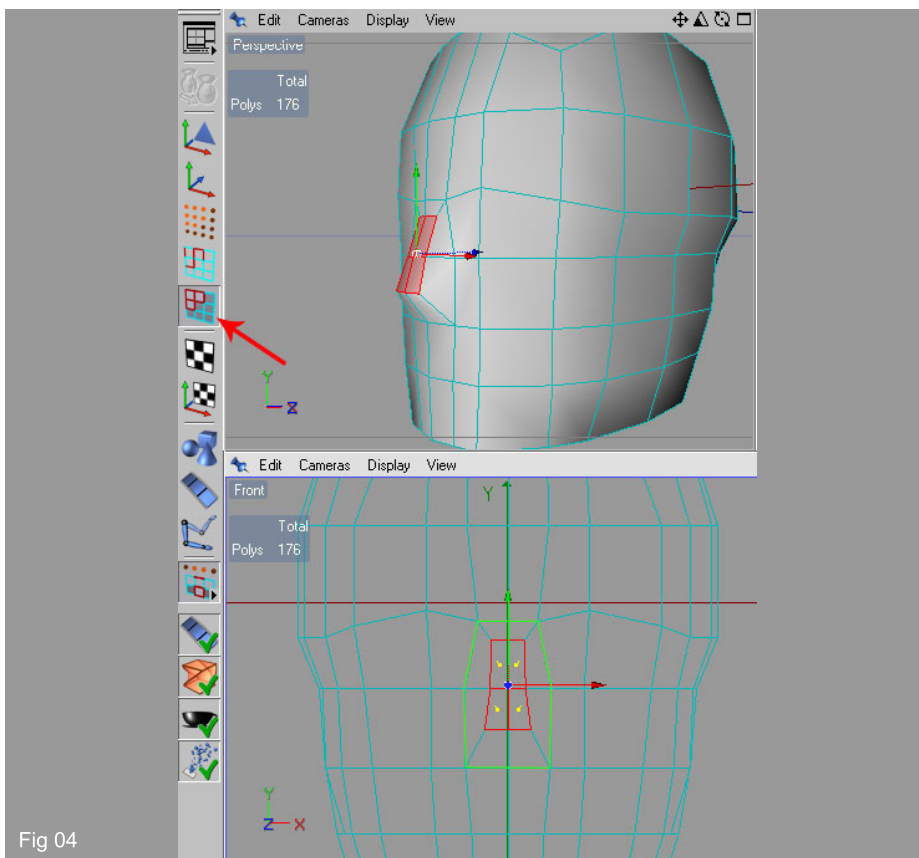


Fig 02



3. Once you have shaped the existing geometry add more subdivisions. Switch in Edge Tool and From Main menu > Selection > Ring Selection. Select the edges like shown, right click and select Edge Cut from dialogue box. In its options disable "Create N-gons".

Fig 03. Here you can modify the parameters of the cut (offset, scale, subdivision), in this case choose just one subdivision. Much of the modelling process will involve this procedure after which the new verts are then manipulated into better positions. You can see the various views of the mesh at this stage on the right.



4. It's now time to add some of the features. Select the two central polygons (marked in green), right click and select "Bevel" from the menu. Adjust the points as shown in Fig 04.



5. For the eyes select the polygons marked in green, then right click and select "Extrude Inner" from menu. Be sure to keep "Preserve Groups" enabled otherwise each polygon will be extruded individually, something we wish to avoid. Fig. 05

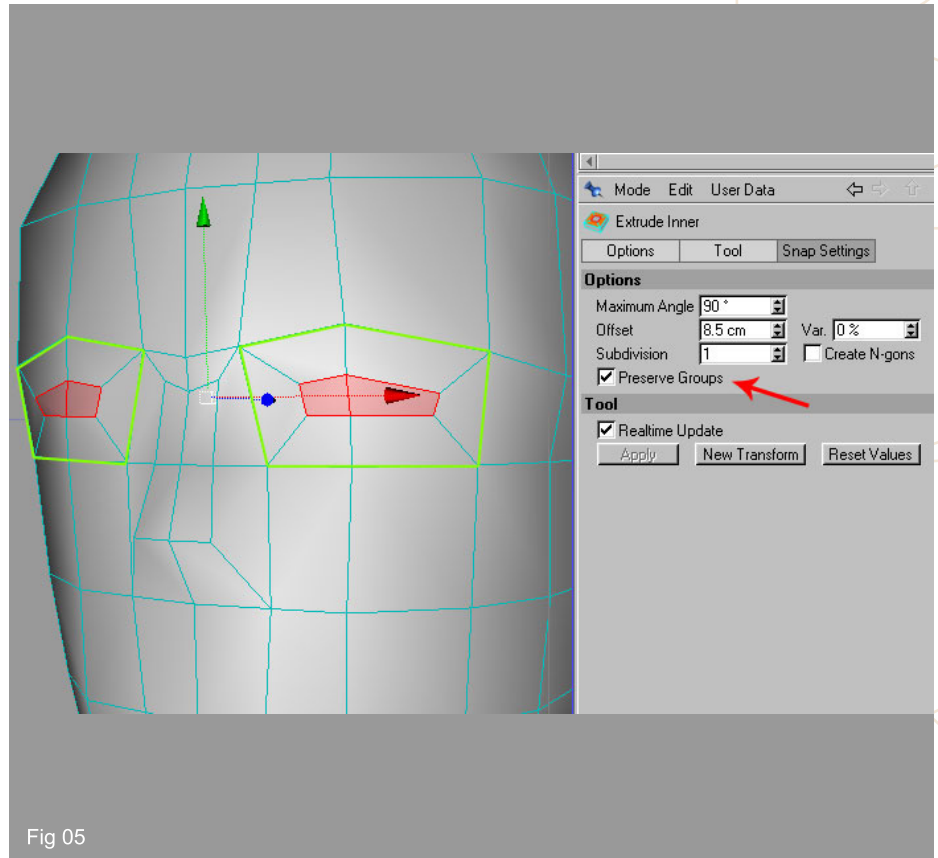


Fig 05

6. The next step is to make the mouth. Select the edges like shown and cut them with "Edge Cut" setting the subdivision = 1 for the upper edges and subdivision = 2 for the lower edges. The cut at the bottom is not like we wished to, so right click, select "Knife" tool from menu and connect the vertices. Then select the polygons like shown on the bottom left and eliminate the triangulation, so right click and select "Untriangulate". In the dialogue box disable the "Evaluate Angle" option. Move the points into positions to form a mouth shape like shown on the bottom right.

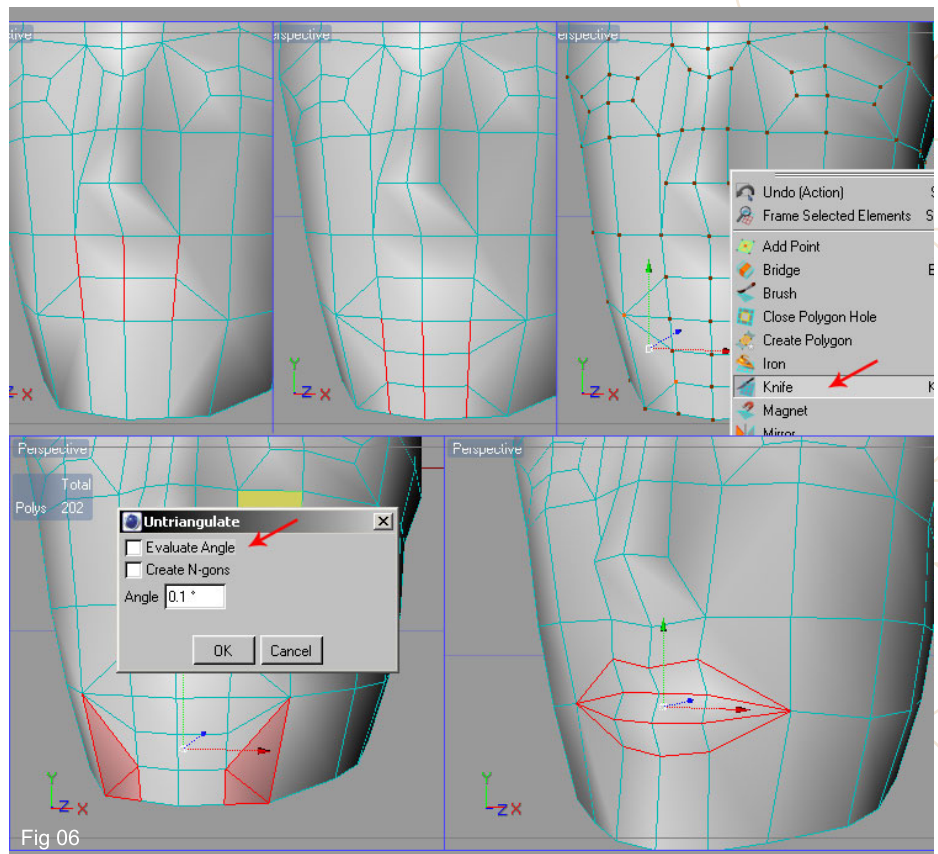


Fig 06



7. The features are now beginning to form, albeit in a rather crude way but there is still no evidence of a chin so pull up some of the lower verts to alleviate this (Fig 07).

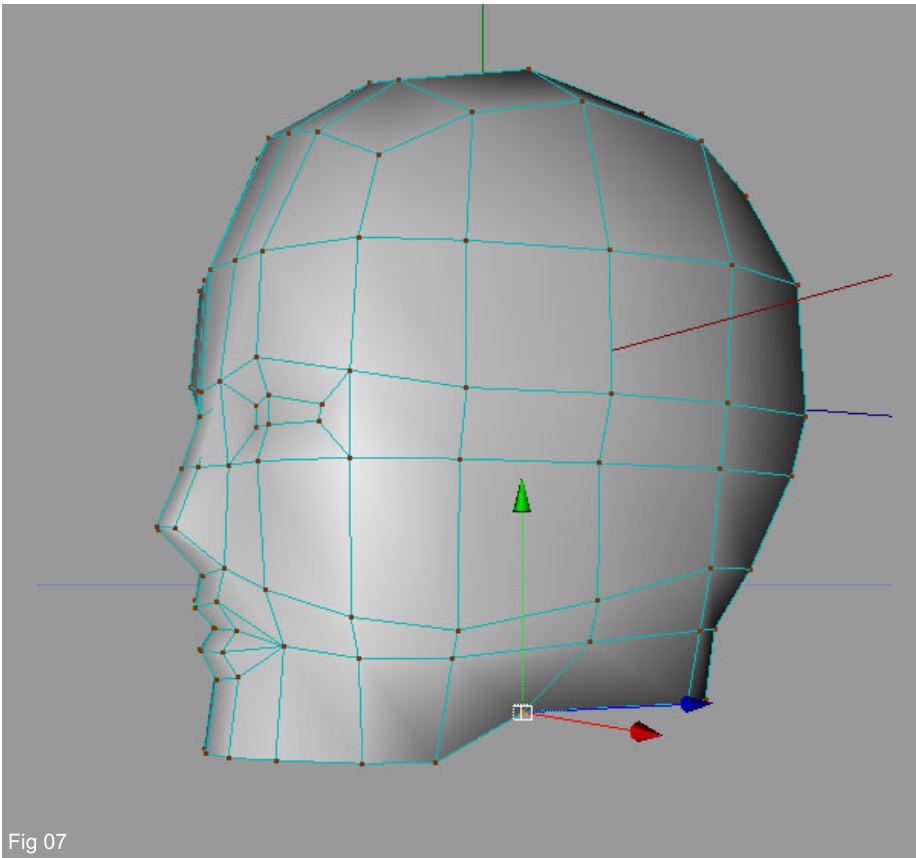


Fig 07

8. Add now a cut as shown in Fig 08 using the "Ring Selection" tool. This will refine the cheek bone and the nose shape.

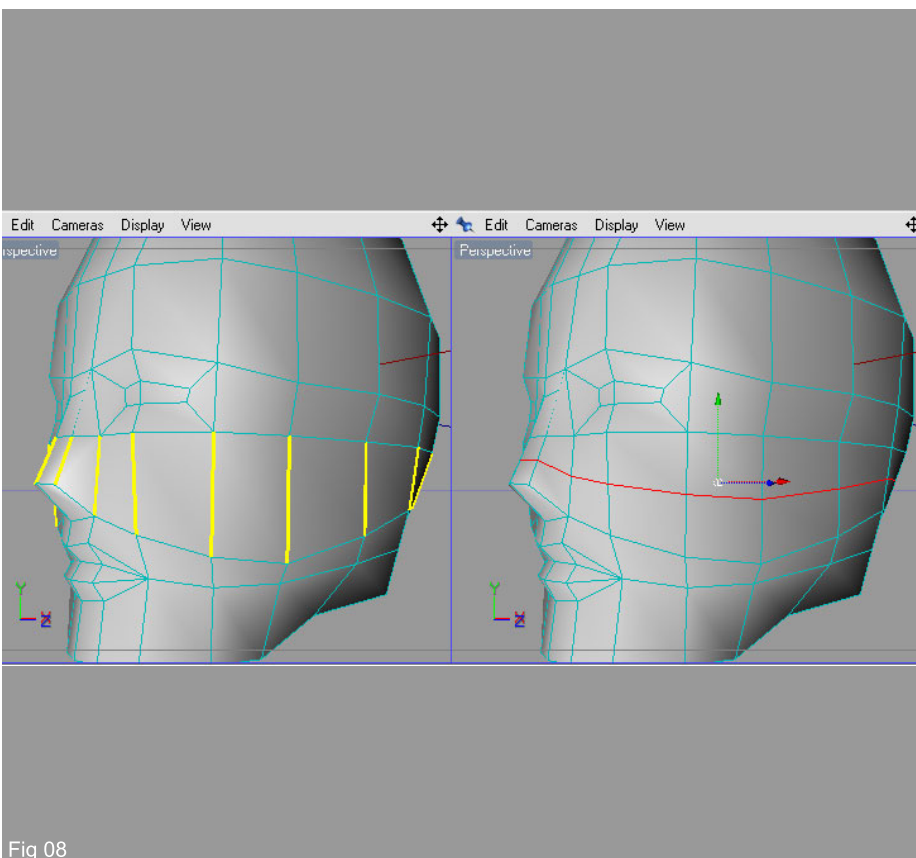


Fig 08



9. Now that we have a reasonable amount of detail it is time to delete half of our mesh and apply the Symmetry object so that we can work on just one half of the model and see the results mirrored in a duplicate. In this way we can ensure that the head is the same either side of the central line but reduce the number of polygons that need manipulating. Use the Rectangle selection to select the right half of the head, making sure 'Only Select Visible Elements' is unchecked. Delete these selected points and apply the Symmetry. Drag the head into Symmetry object. (Fig 09)

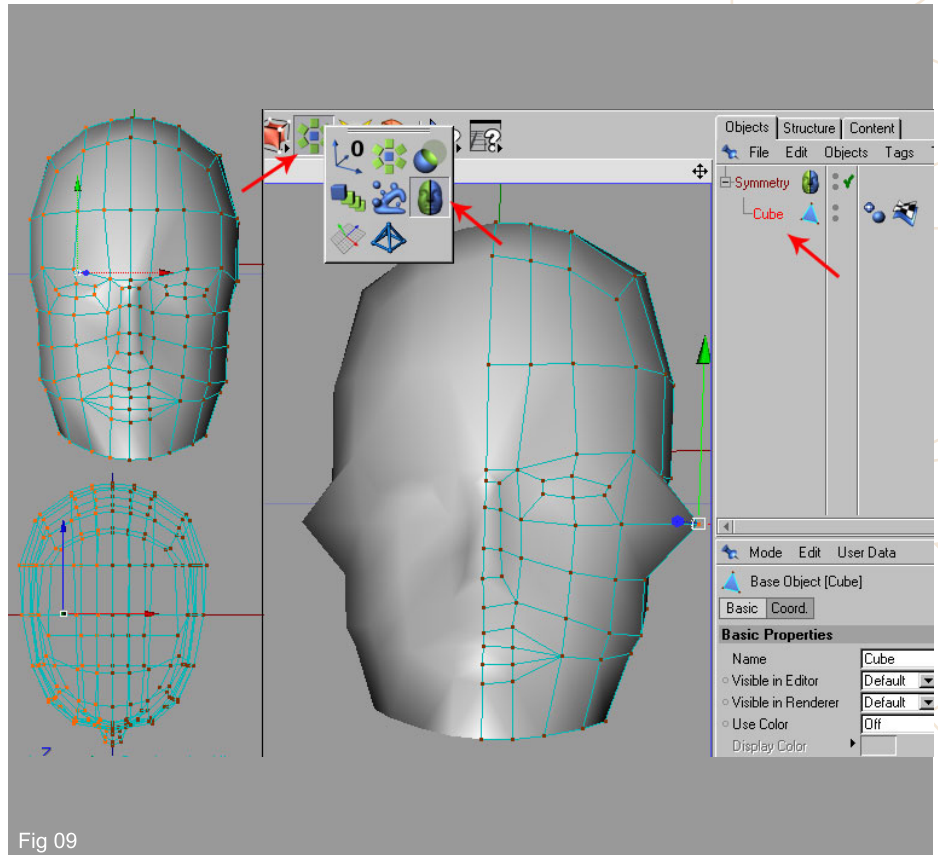


Fig 09

10. Now we are going to define the eye area. Add the edges as shown in fig 10 and use the Knife Tool to connect the vertexes. This will help create a more convincing socket shape for the eye.

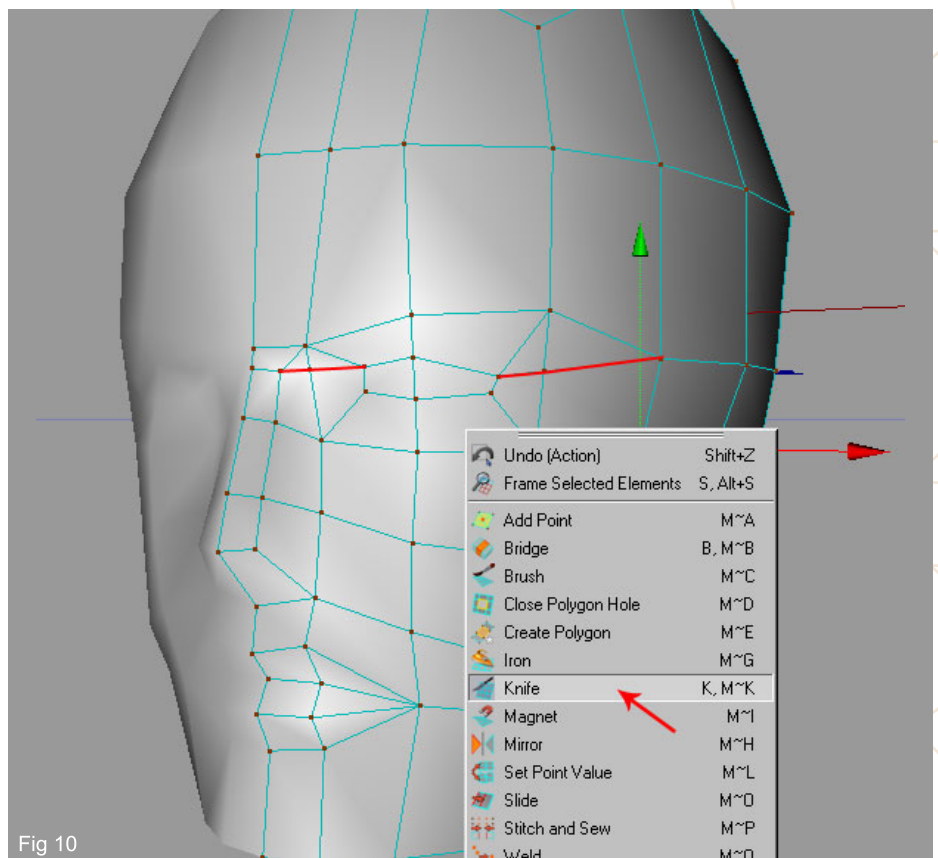


Fig 10



11. Add more detail above the brow. First move the marked points up, then add a cut like shown in fig 11 which will help form a better forehead shape.

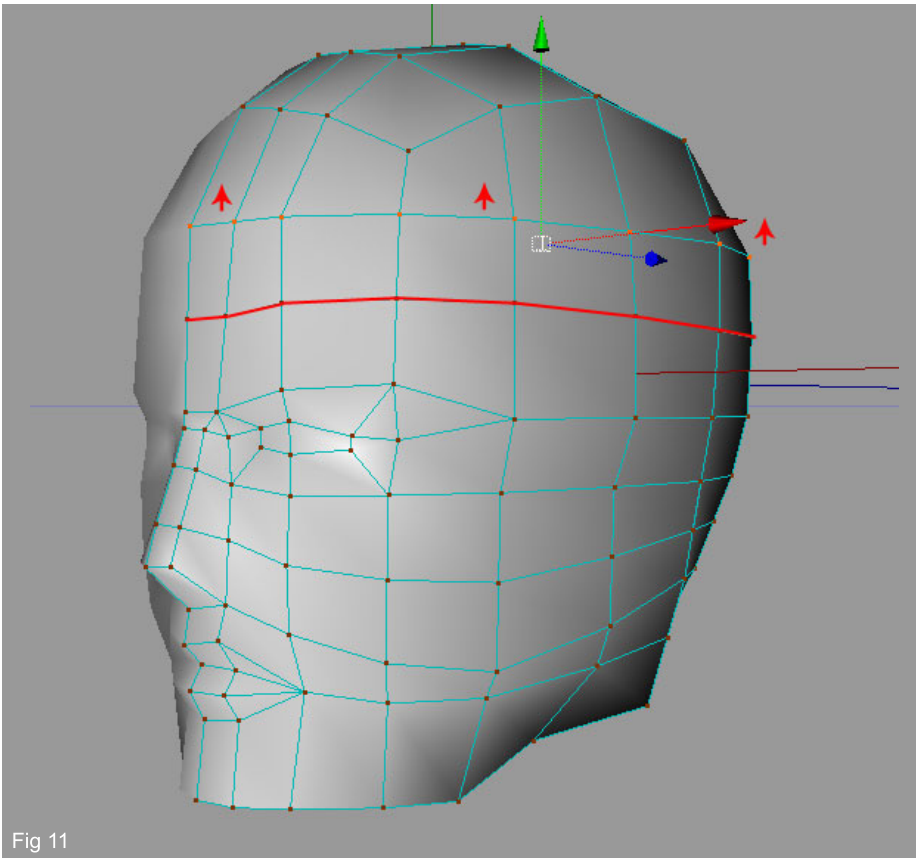


Fig 11

12. As we gradually refine our model we inevitably add more detail but sometimes it is useful in low poly characters to actually remove unnecessary detail that can be supplemented by a texture. At the moment we have six rows of polygons running over the top of the head – more than we really need. We will now weld the marked vertices in fig 12. Select two points each time, right click and choose Weld from menu. Repeat this operation until you get the mesh as shown.

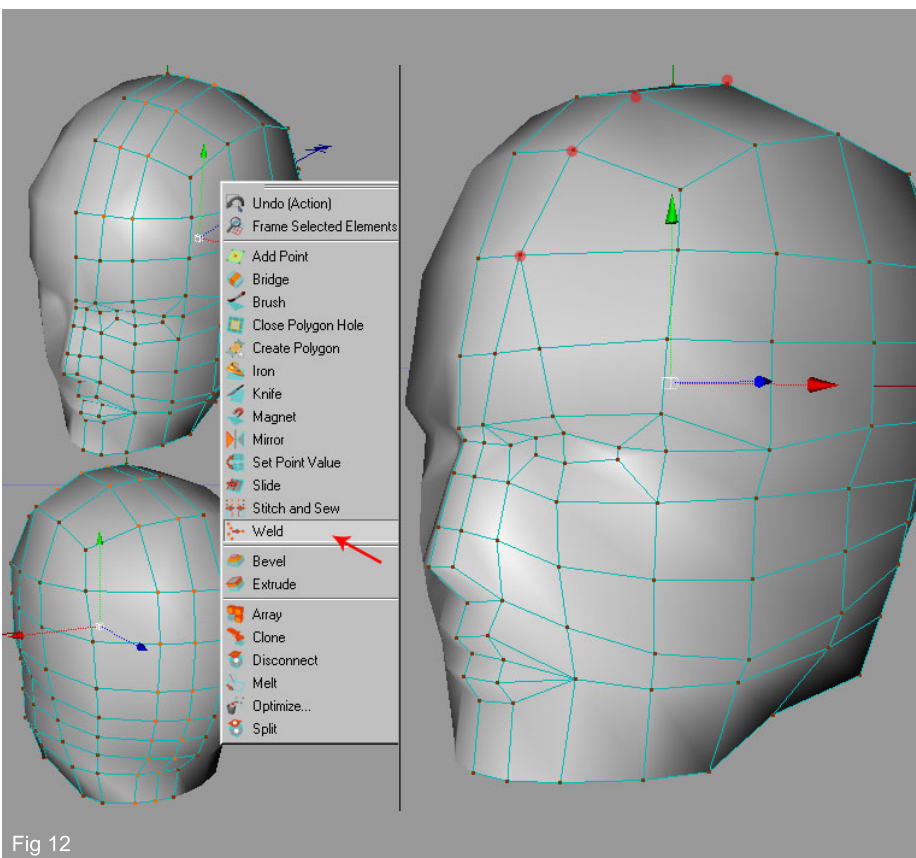


Fig 12



13. We have partially improved the eyes and so should refine the other features. Add the cut as shown in Fig 13 using the Knife Tool to create a better shape to the chin. For the nose select the polygon as shown and bevel it.

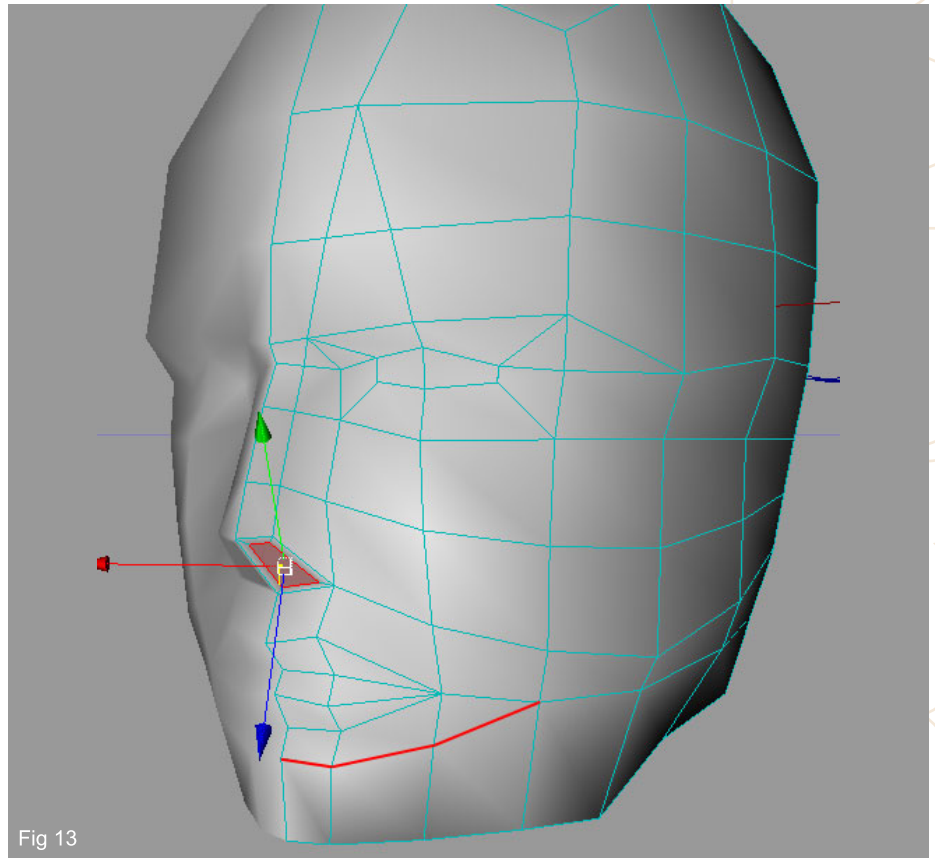


Fig 13

14. Still working on the nose, select the polygon as shown in fig 14 and delete it. Move the points at the coordinates 0 (bottom left) and finally weld the bottom vertices of the nose and adjust the mesh as shown on the right.

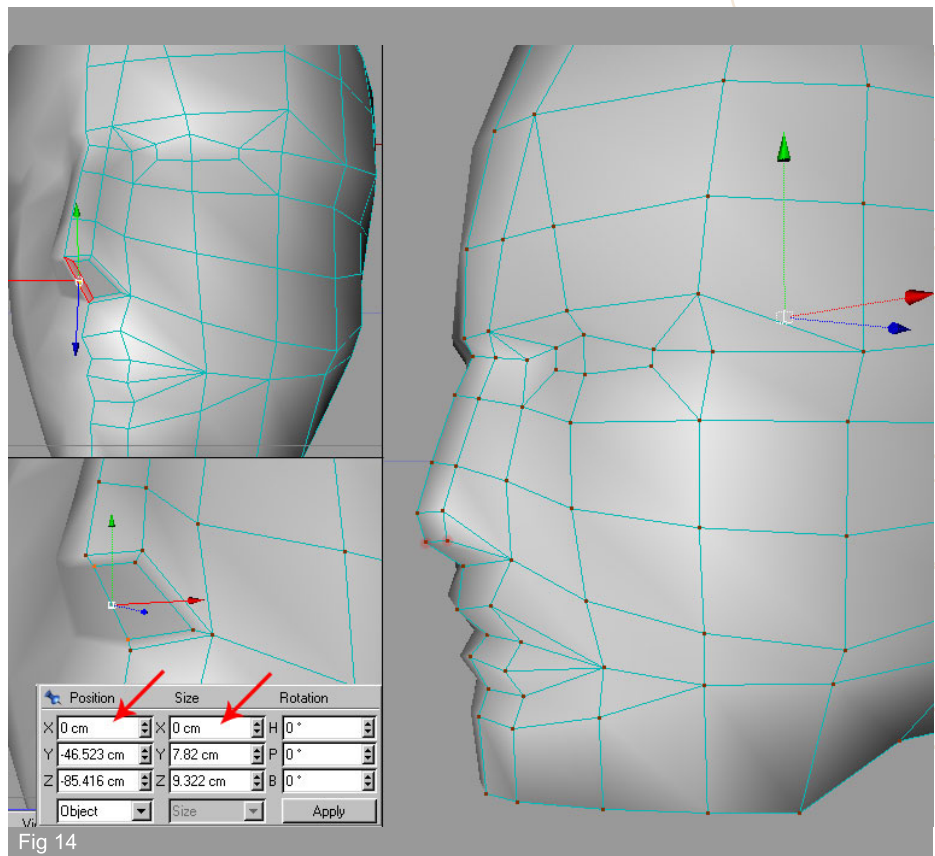


Fig 14



15. Add a new subdivision using "Edge Cut" once more. Fig 15

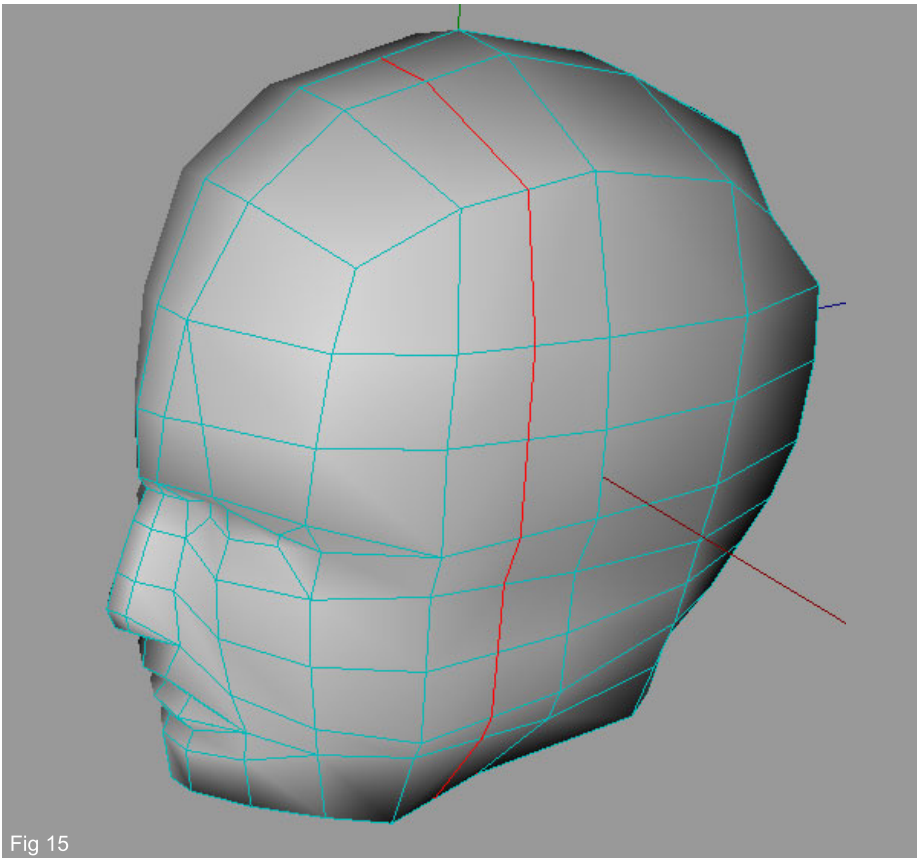


Fig 15

16. To improve the chin a bit more we shall make a further cut to help form the jaw line as shown by the red line in Fig 16. You will also notice that the selected poly (the one we originally cut) is made up of two triangles. We can delete this and create a quad in its place, so right click and choose "Untriangulate" from menu.

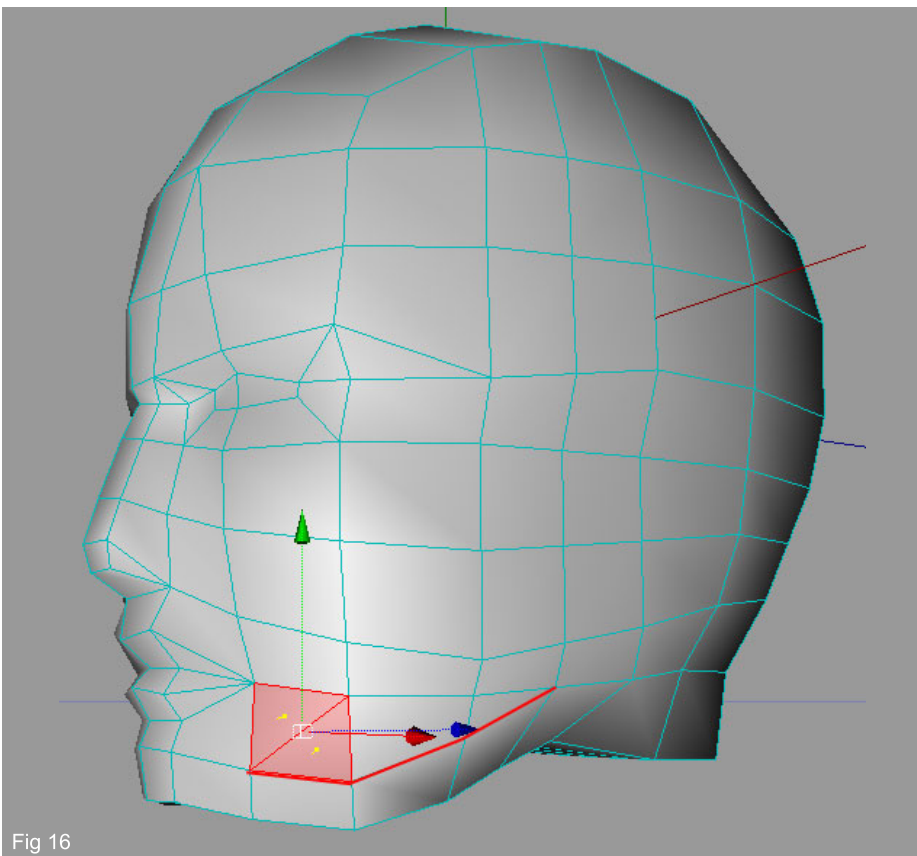


Fig 16



17. To remedy the very flat underside of the chin we shall now make a further cut as seen in Fig 17. The extra verts can now be pulled downward to form a more rounded profile and the points on the right can be welded to the central points to reduce the poly count.

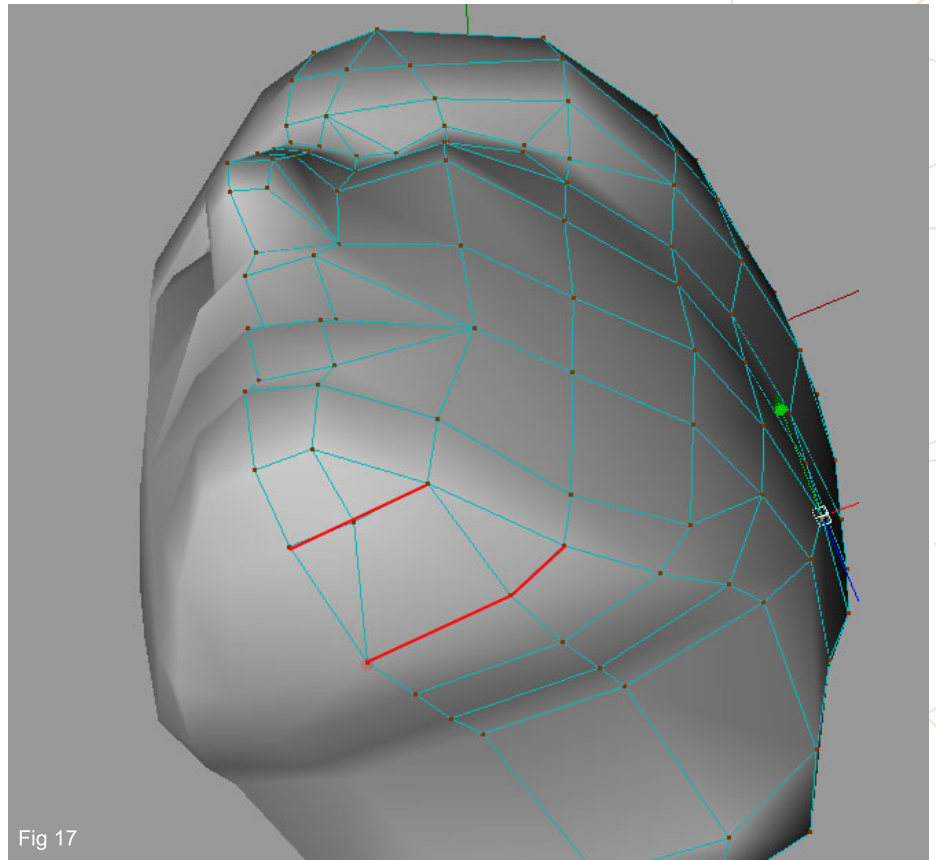


Fig 17

18. To economise further weld two more verts to the outside edge as shown by the red dots in Fig 18 (left). With this complete it is now time to create the ears so start by moving the verts into positions that resemble a rough shape as seen by the red outline.

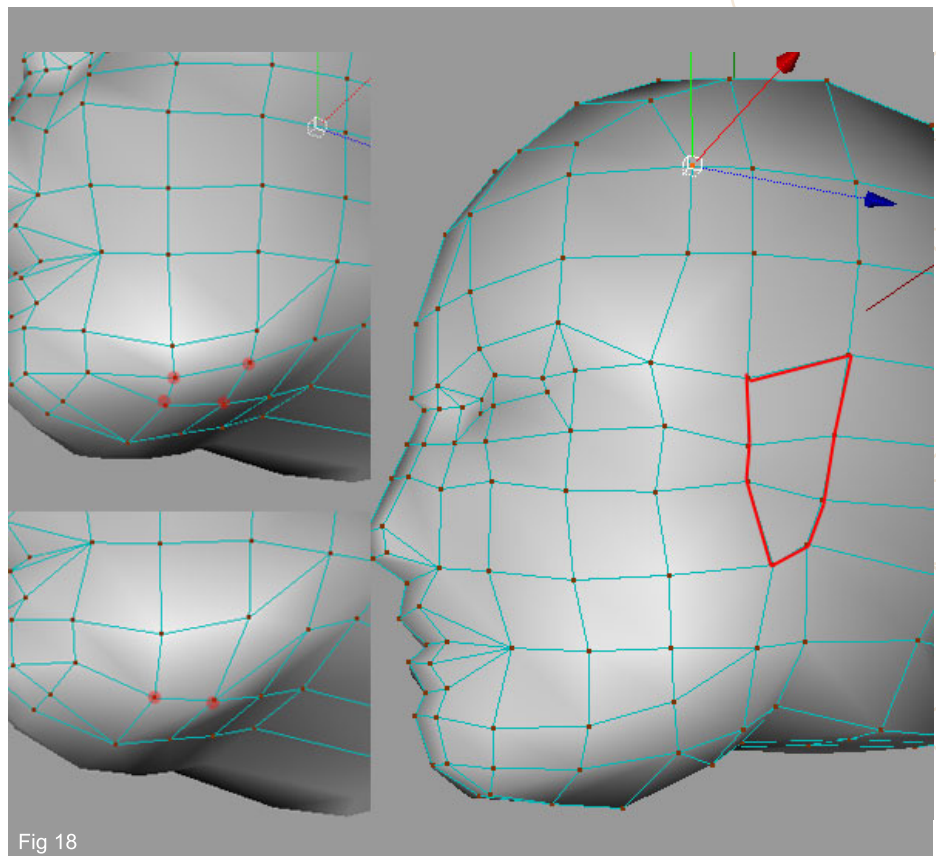
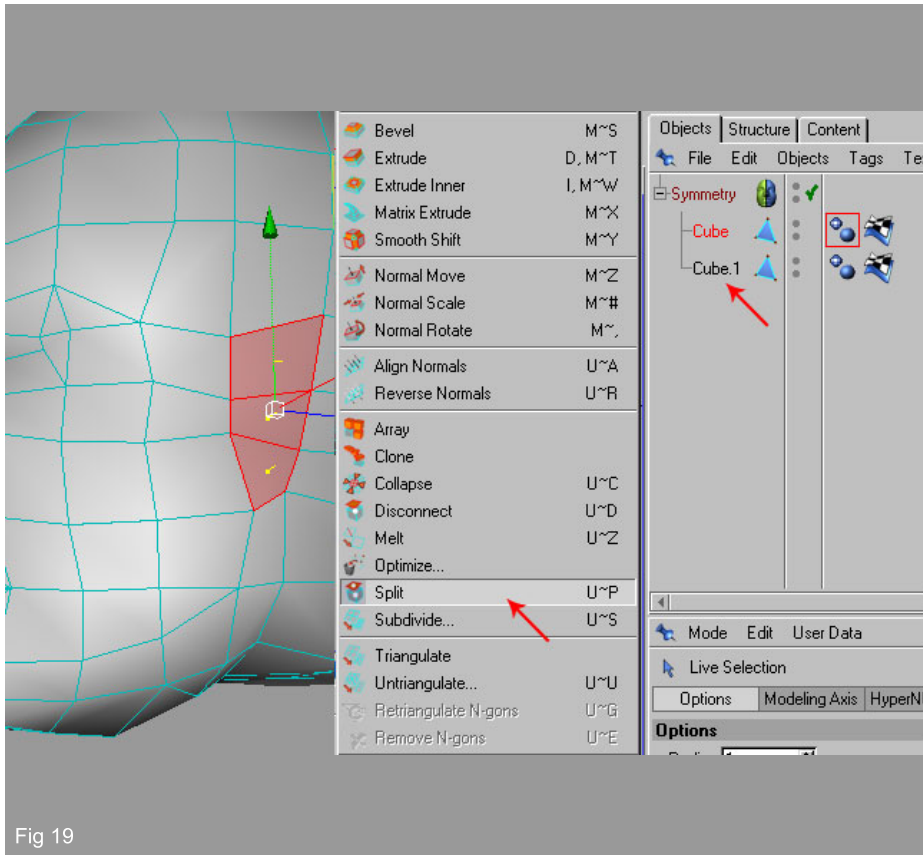


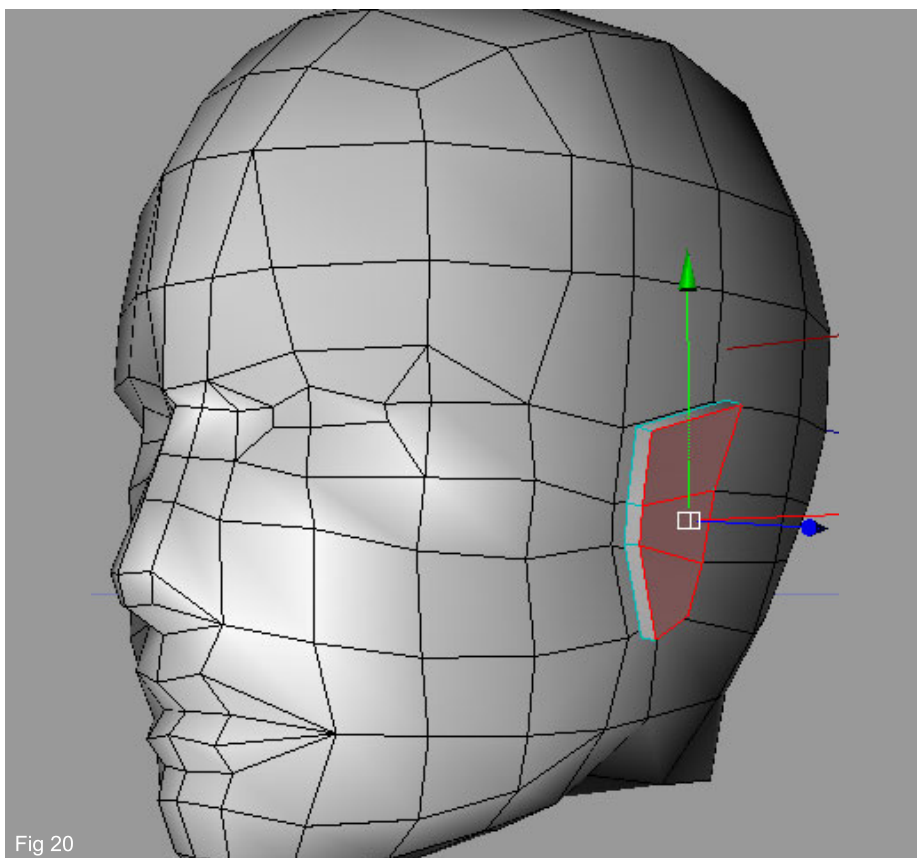
Fig 18

19. Select the three poly's that make up the



ear shape, right click and choose "Split" from menu. This will create a new object, a copy of the selected polygons. (Fig 19)

20. Extrude the face of the new object as shown in (Fig 20).





21. Now you will notice, on the other side of the ear there is a hole. To fix this go into vertex mode, right click and choose "Close Polygon Hole" from menu. Then connect the vertices with the Knife tool. (Fig 21).

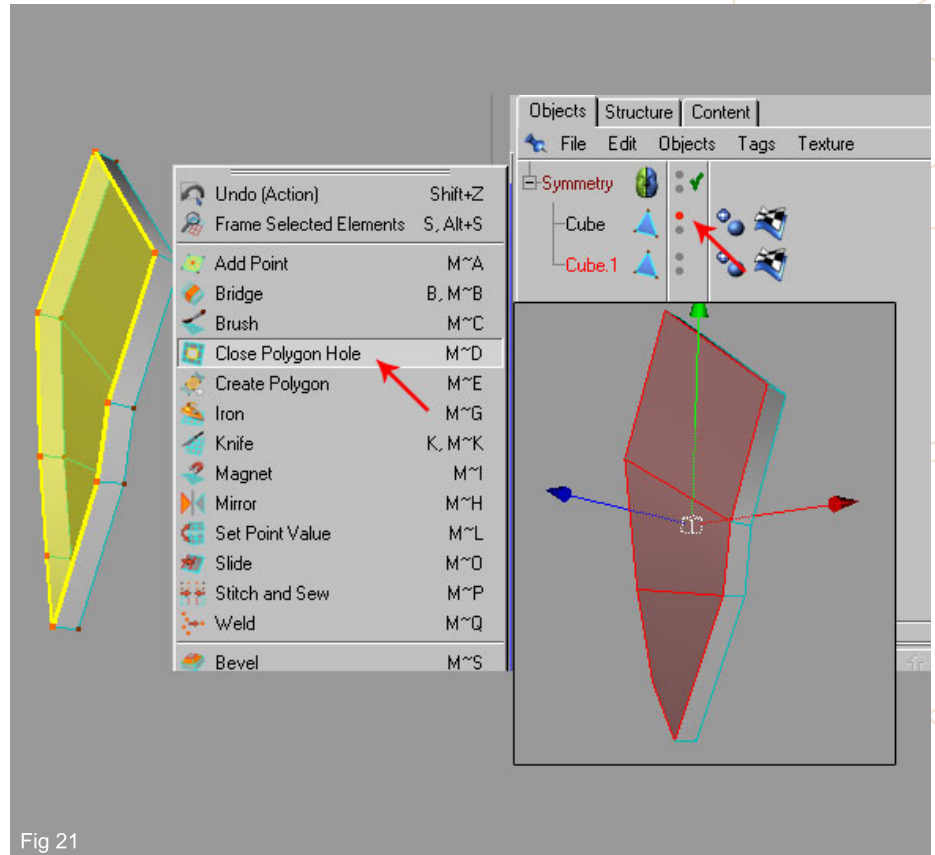


Fig 21

22. To connect the ear to the head, move it into position as shown in Fig 22. Now connect the two objects by selecting them in the Object Manager, right clicking and choosing "Connect" from menu. This will create a new object so delete the previous objects and drag the new one in the Symmetry. Now weld the vertexes as shown on the bottom of the image. To give the ear a better shape scale the outward faces down a little and then add in a vertical subdivision using the "Ring Selection" tools and move the extra verts to form more of a curve to the outside.

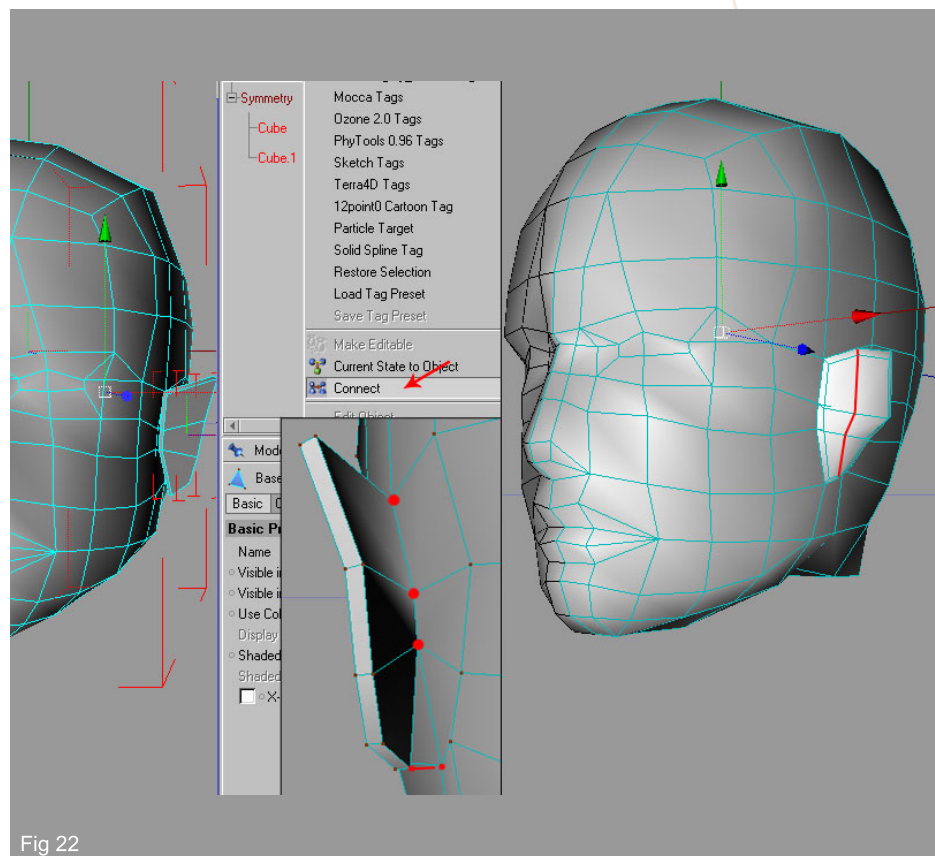


Fig 22

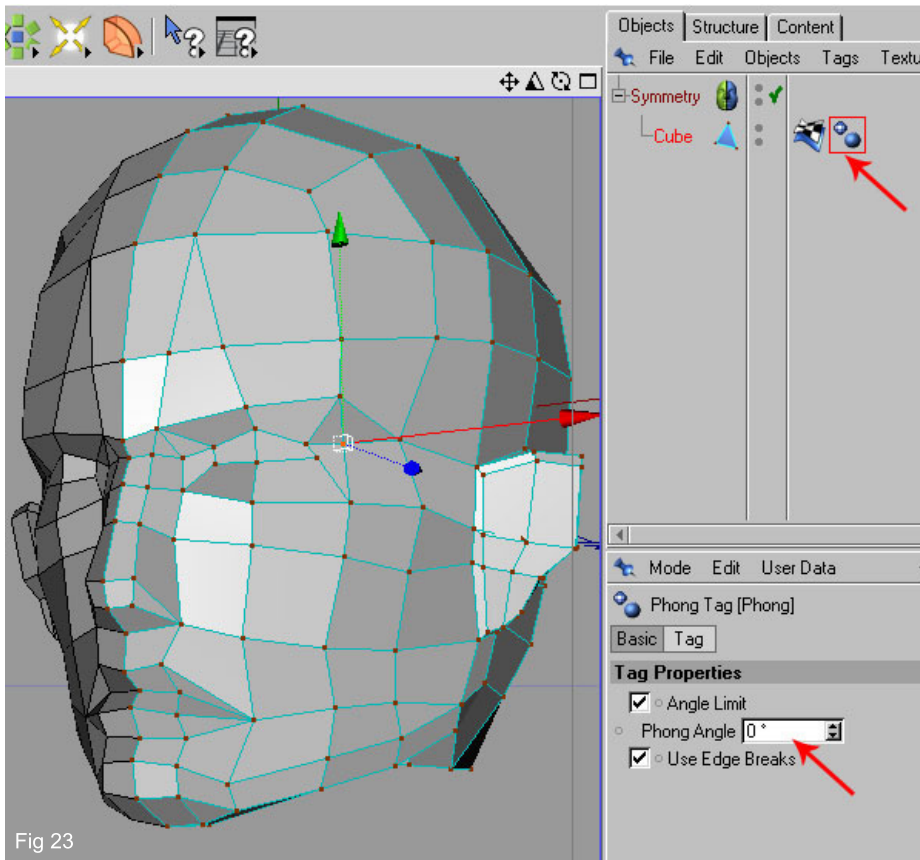


Fig 23

23. Check out the mesh and make any adjustments it needs to obtain a nice shaped head. You also may change the "Phong Angle", select so the Phong Tag and change the Angle Limit in its properties. Fig 23

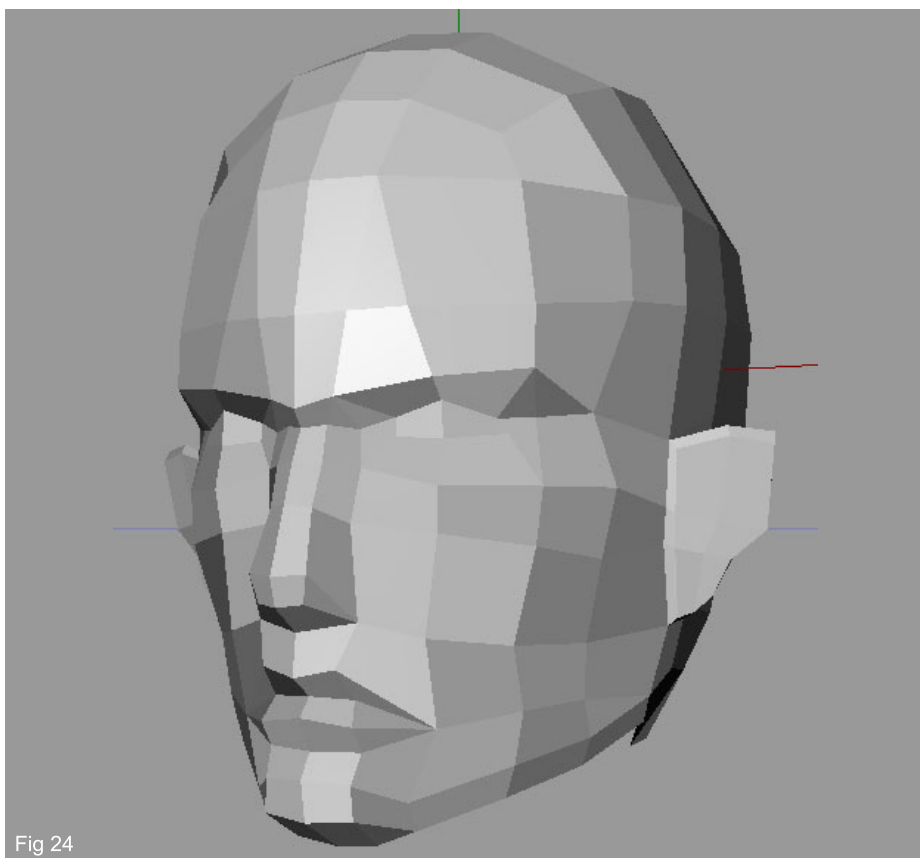
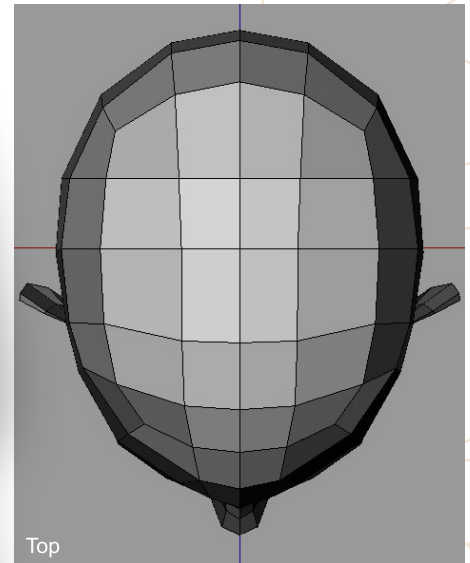
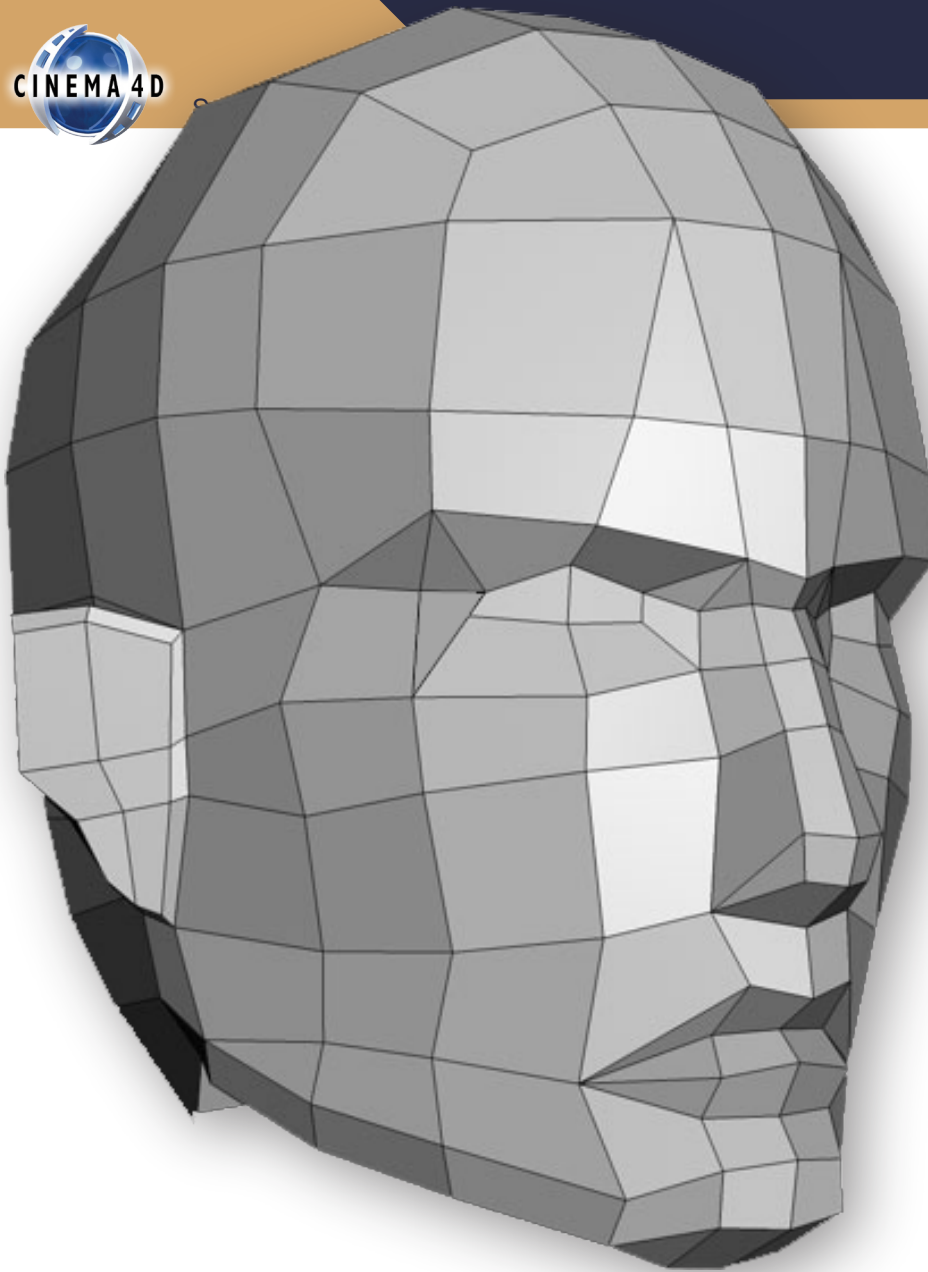
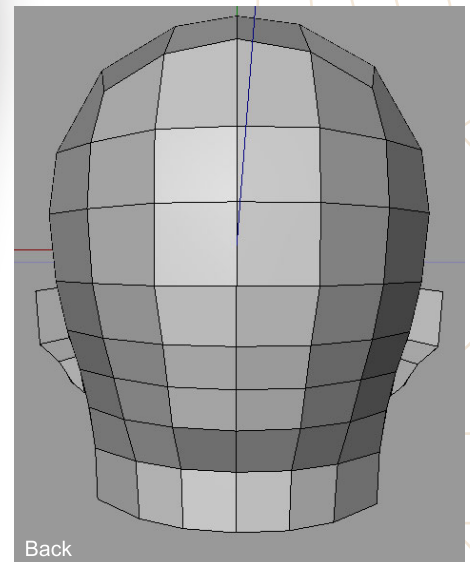


Fig 24

24. In Fig 24 we can see the final version of the head.



Top



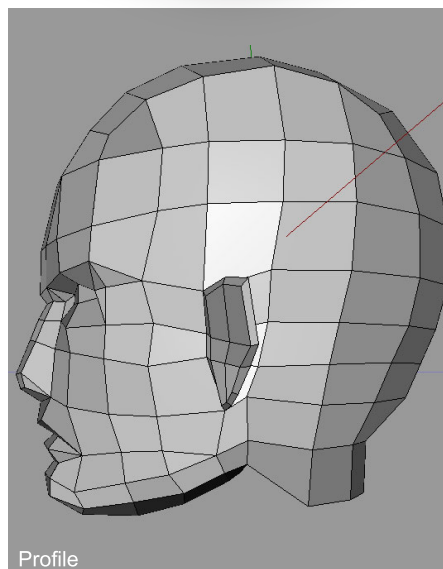
Back

Next month we will continue by building the torso.

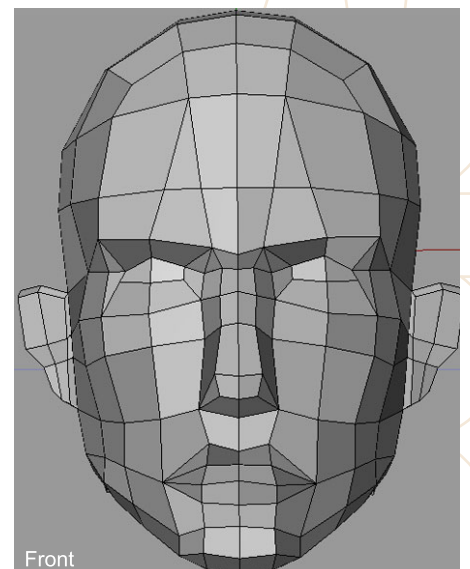
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The 'Swordmaster'
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Profile



Front



PART 02

MODELLING THE TORSO

INTRODUCTION:

Welcome to the second part of ongoing tutorial which will run over several months and provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. In this installment we shall start with the head model covered in last month's edition and build upon the mesh to create a torso.

1. Open the file of the head and begin by selecting the bottom row of edges as shown in Fig01. Extrude the edges, then right click and choose Extrude from the menu. Remember that we still have the Symmetry on the object so check that all middle points are on the coordinate $X = 0:00$.

2. When you have done, adjust the points to obtain a nice neck shape. Make another extrusion of the edges to form the top of the shoulders (Fig02). You can see in the illustration that the small picture shows the positions that the new verts have taken up.

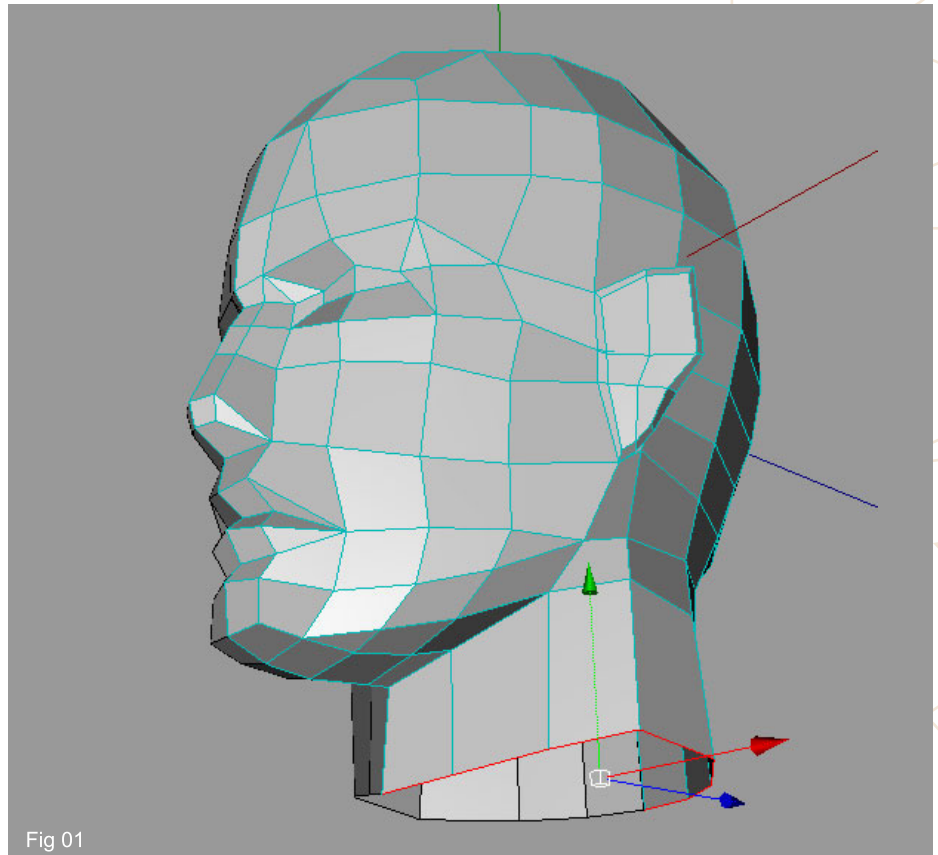


Fig 01

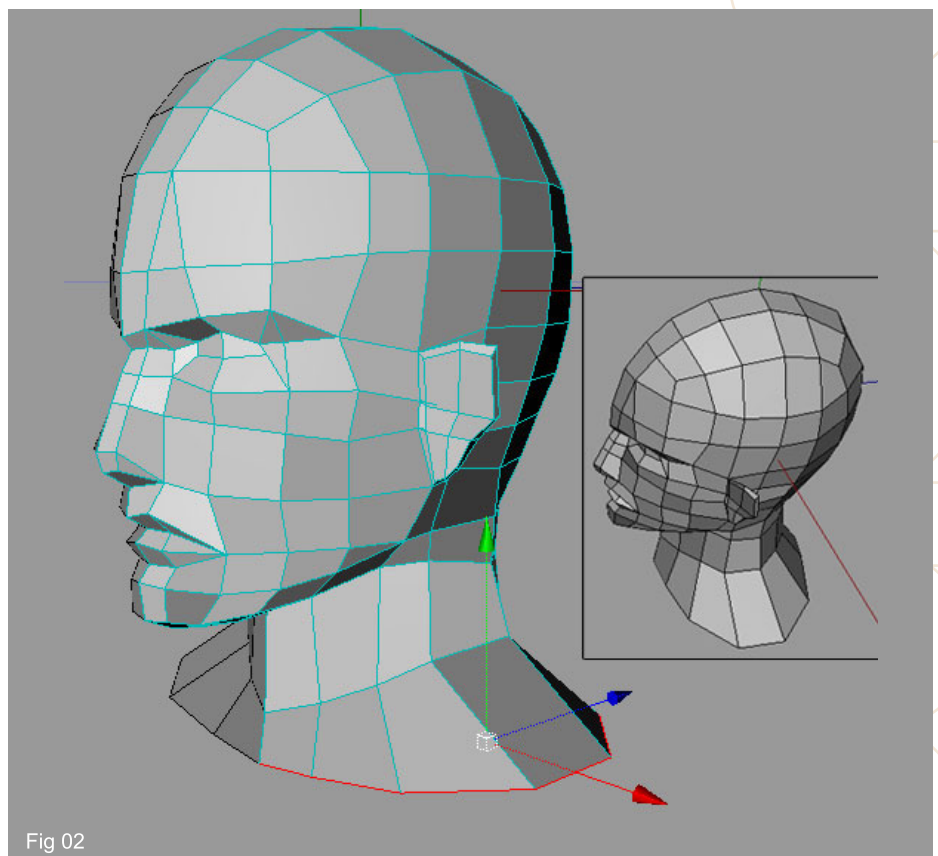


Fig 02

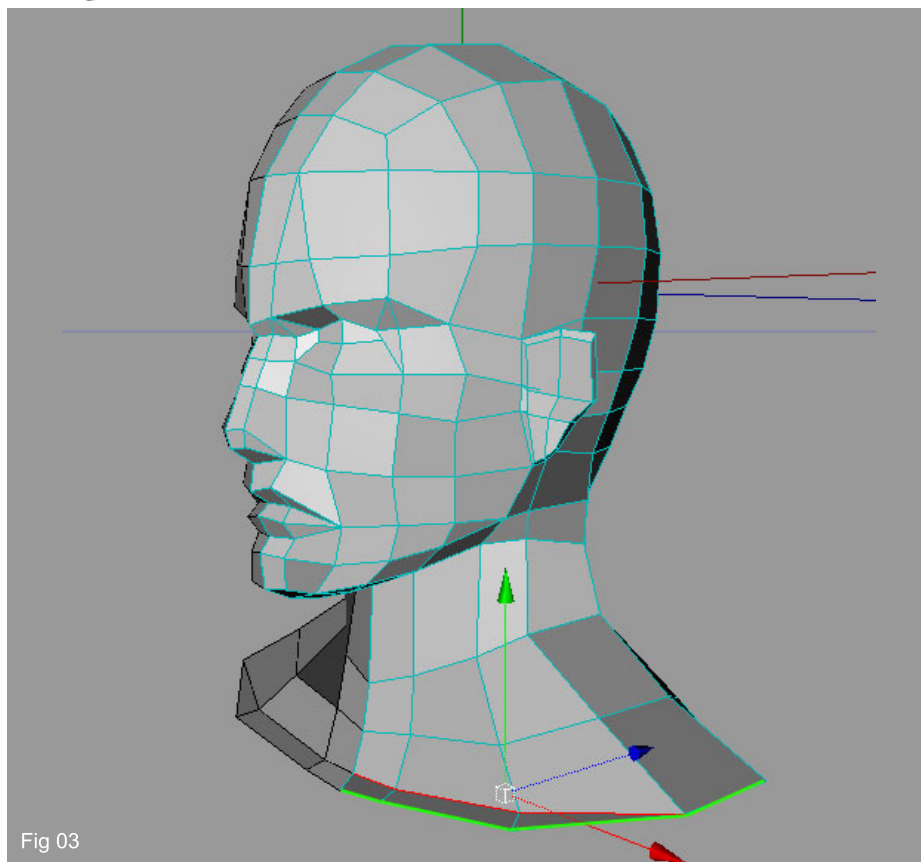


Fig 03

3. Now make a cut across the front three poly's to form the clavicle as seen by the red line in Fig03 using the same technique as before - selecting the edges and apply the "Edge Cut" tool or connecting the edges by "Knife" tool.

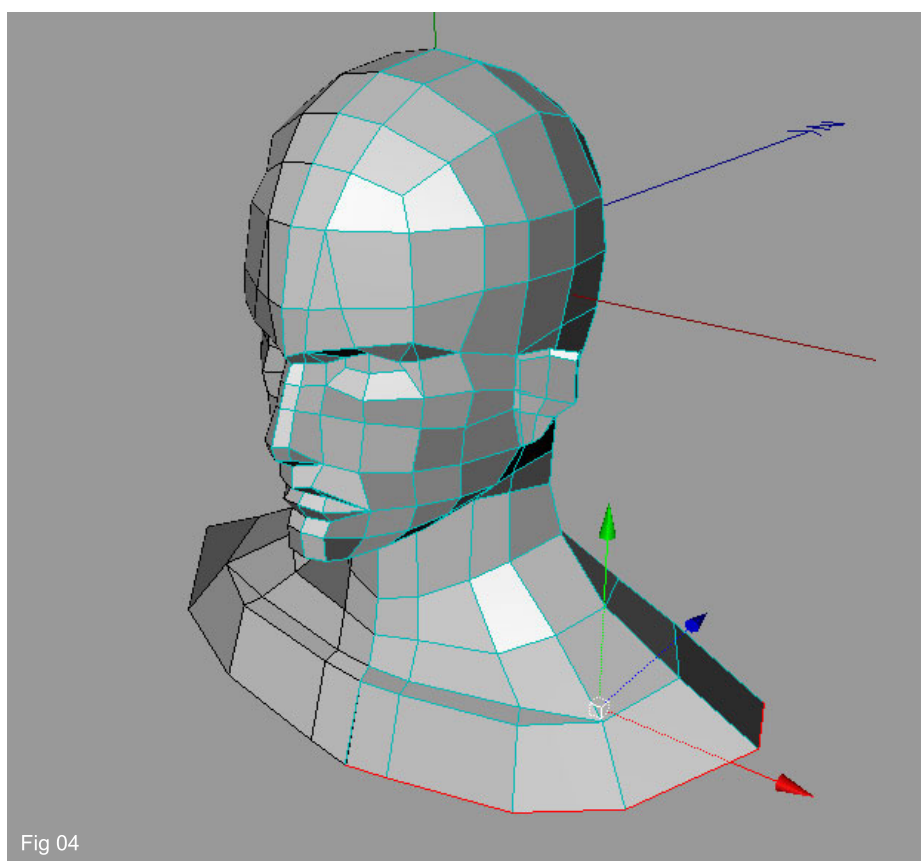


Fig 04

4. Now once again select this bottom row of edges and extrude them and re-arrange the new vertexes to form a better shape. (Fig04). Remember that whenever you add more detail you should move the new verts into suitable positions before adding any new edges.



5. The shoulder area is mostly done by simply extruding the edges and adjusting the new verts. Now it's time to start to form the top of the arm area. We need to make two new cuts on the front and back poly's that form the outer edge like shown (Fig05). You will notice that these new edges are represented by the first cut in green and the second in red, the new verts are then moved.

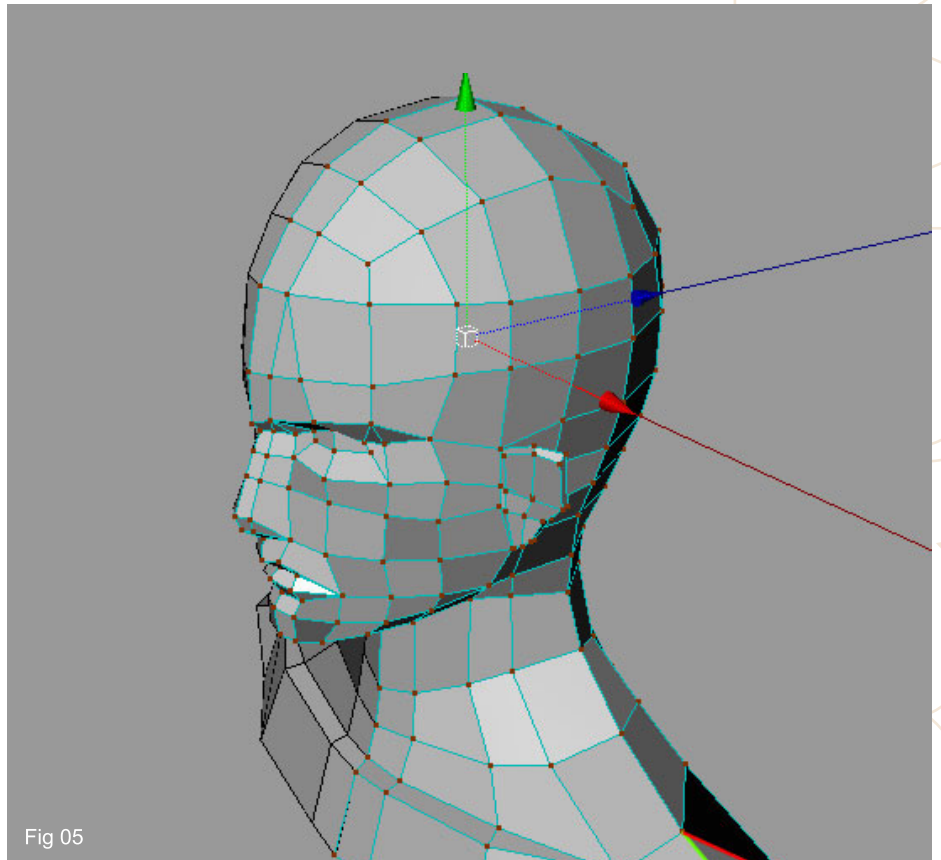


Fig 05

6. Now select the bottom row of edges on the front of the torso and make two extrusions like shown (Fig06). Adjust the new verts each time you make an extrusion.

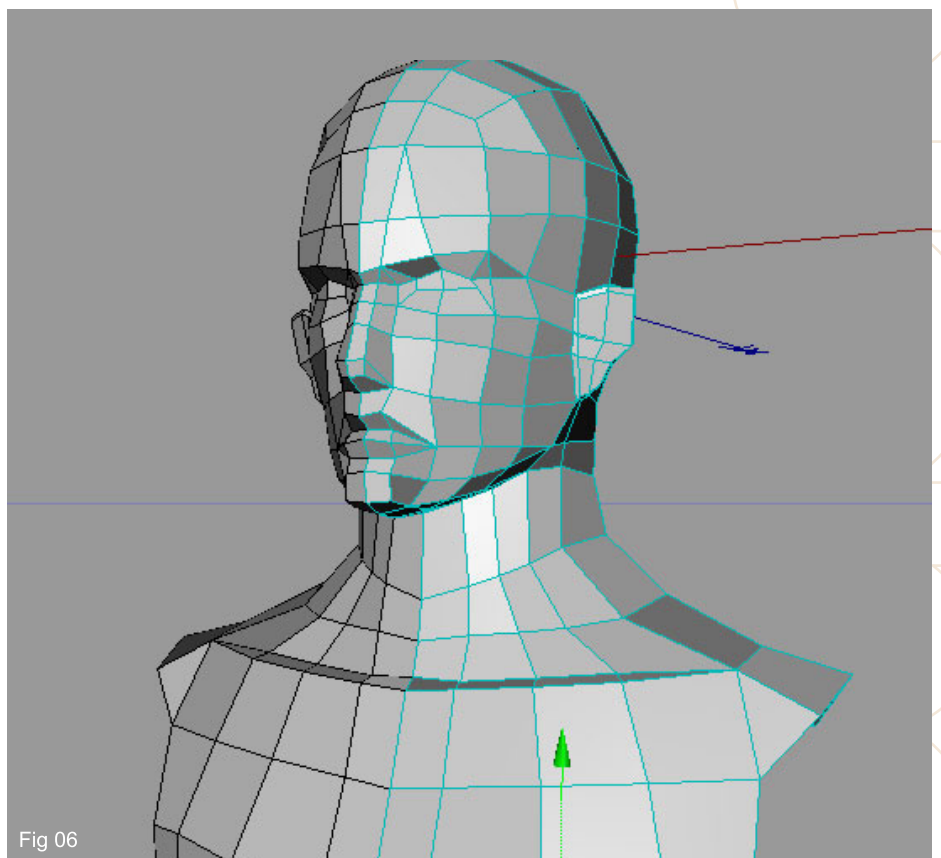


Fig 06

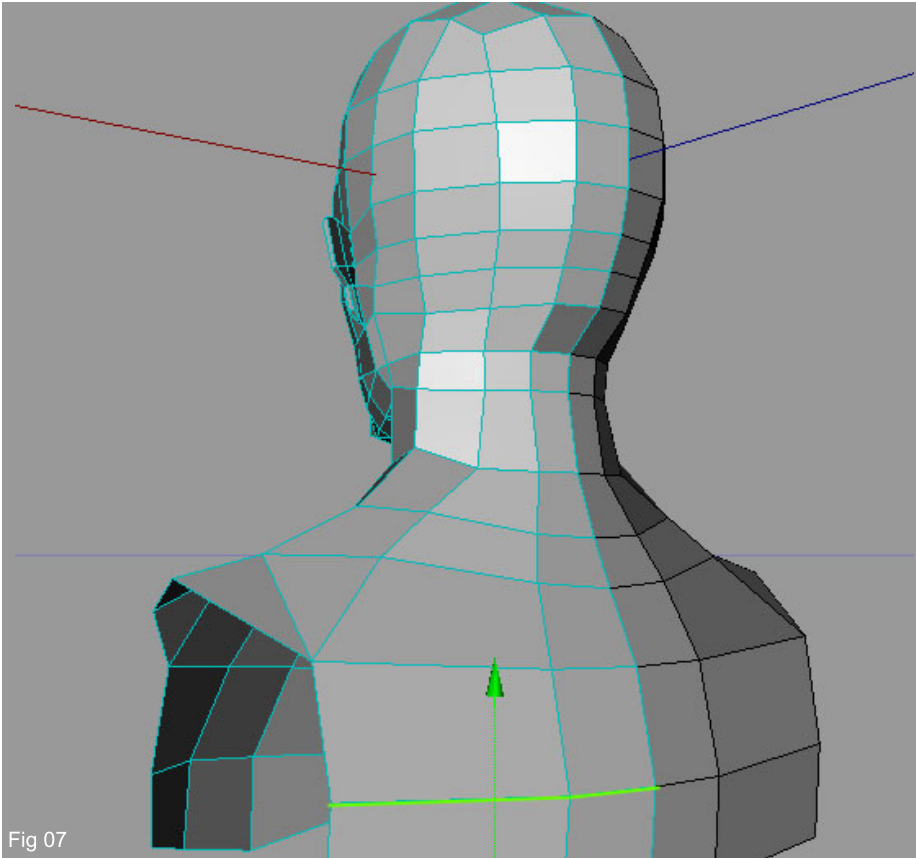


Fig 07

7. Do the same thing to also form upper back (Fig07).

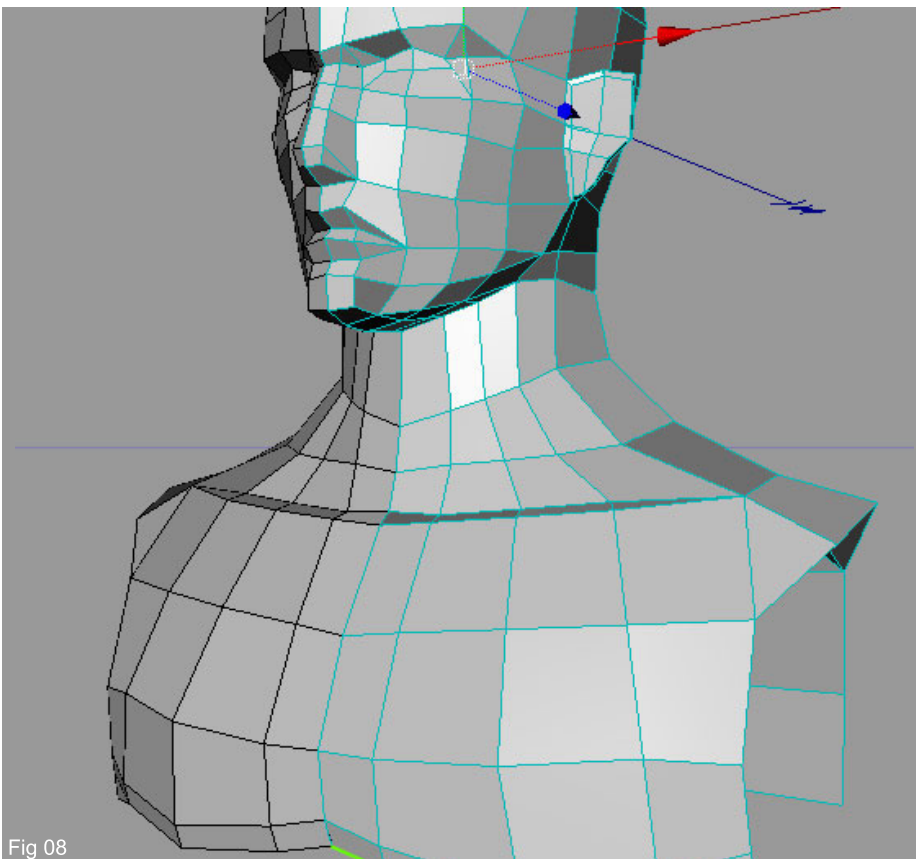


Fig 08

8. On the front, extrude the edges like shown (Fig08) and pull them inwards to form the lower part of the chest. Also add in a small cut indicated by the red line.



9. Another extrusion to start off the abdomen and lower back areas. (Fig09)

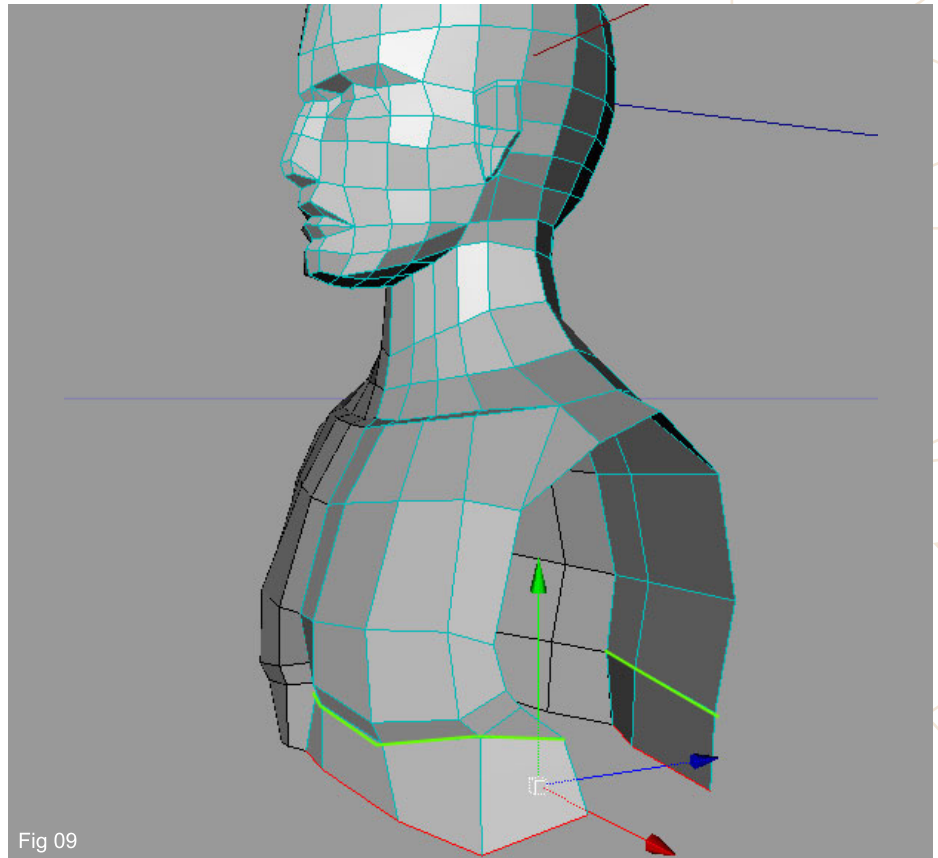


Fig 09

10. In points mode, create the polygon indicated by green lines (Fig10). Then add a cut like shown.

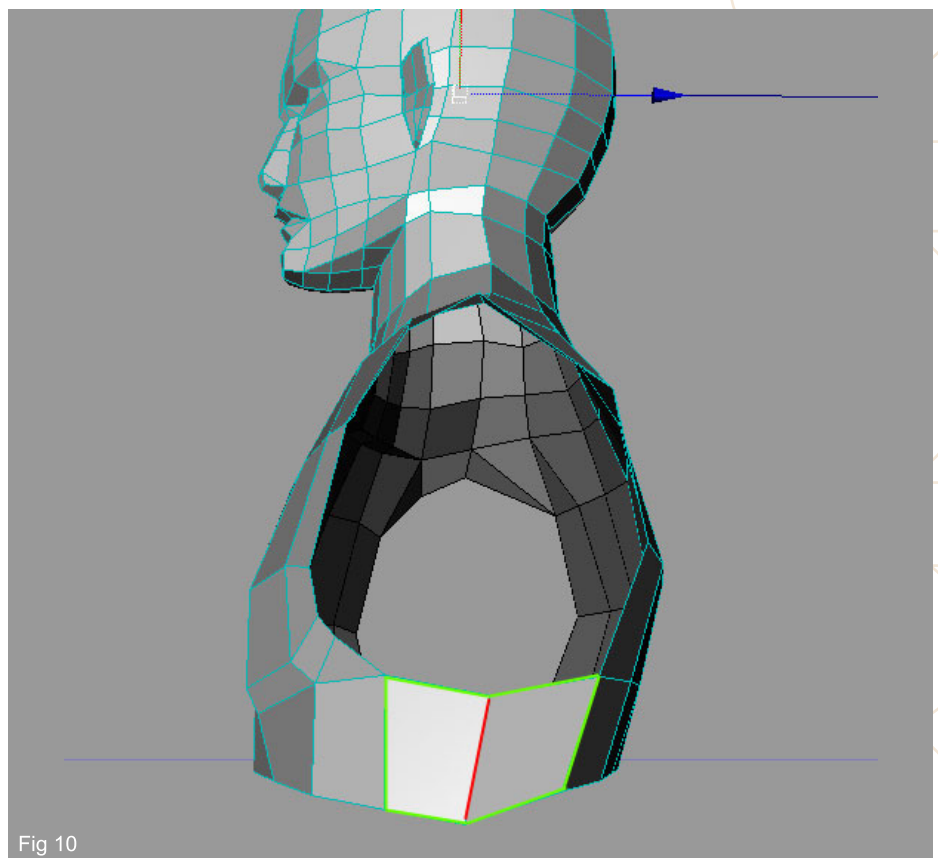
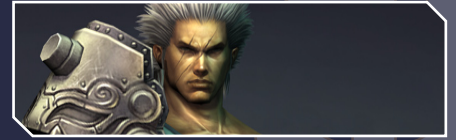


Fig 10



11. The upper torso is now completed and we have also a hole ready to build our arm. Make an extrusion, like shown like shown in the image to form the lower back, abdomen and pelvic area (Fig11).

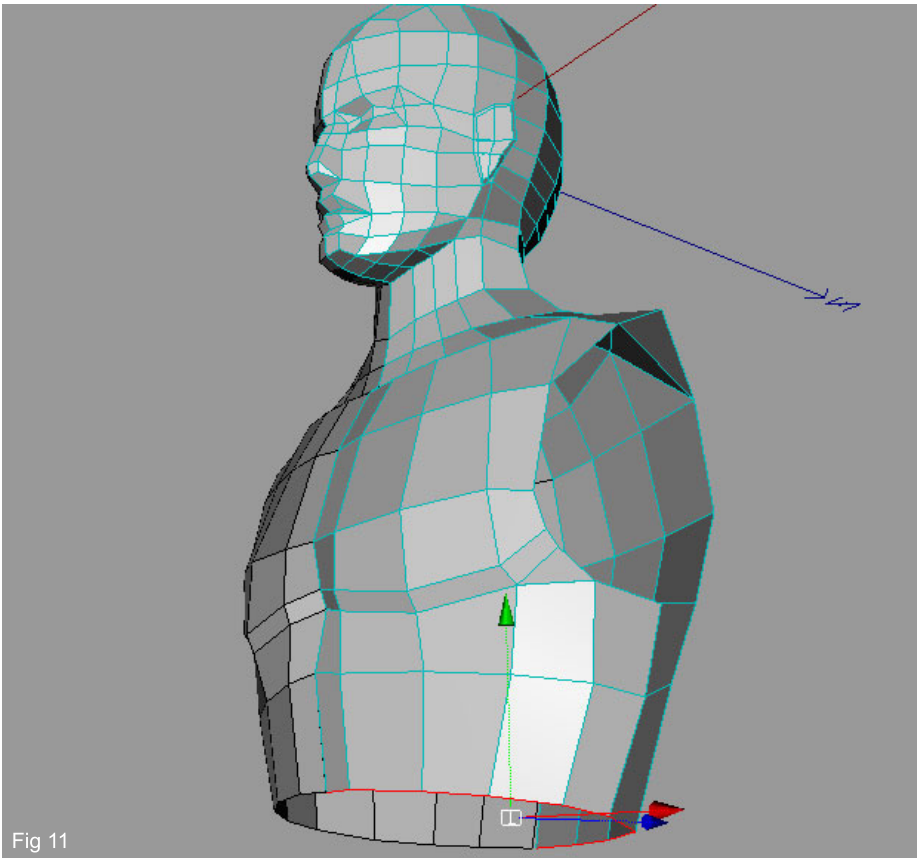


Fig 11

12. To help shape the muscle form on the back, you need to weld the vertex shown in red (Fig12) to the one to its left. This will form a triangle and follow the shape of the muscles running downwards from the shoulder blades.

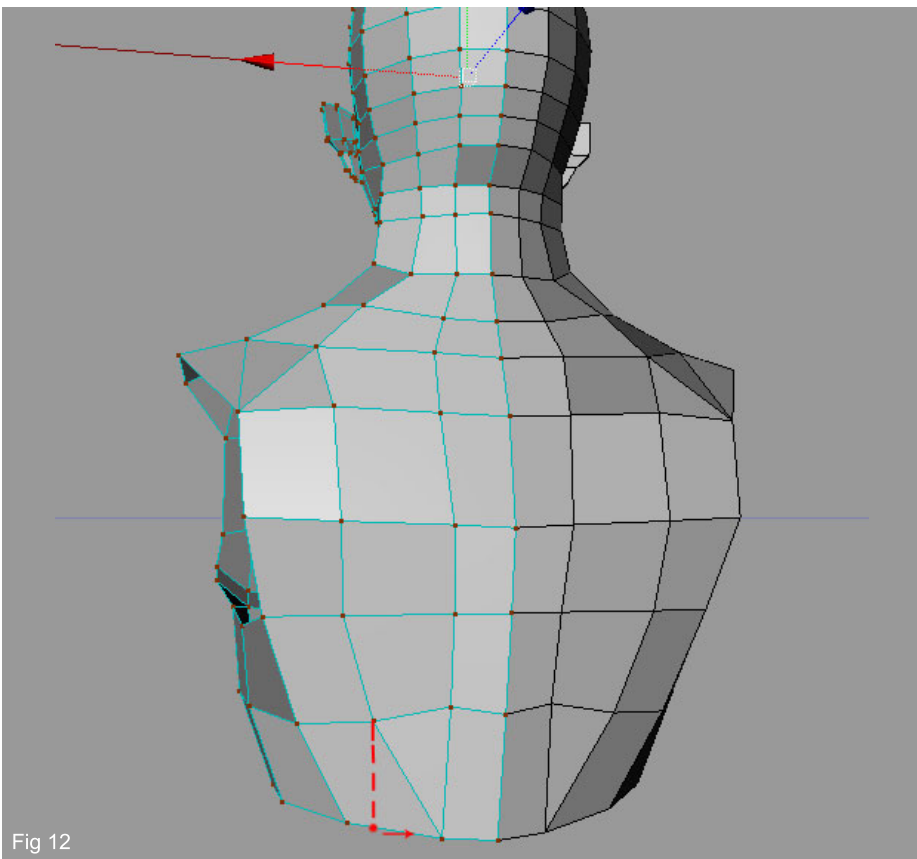
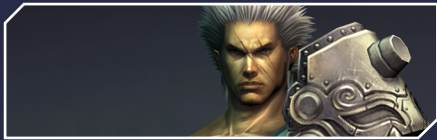


Fig 12



13. Select now the bottom row edges and extrude them once more (Fig13).

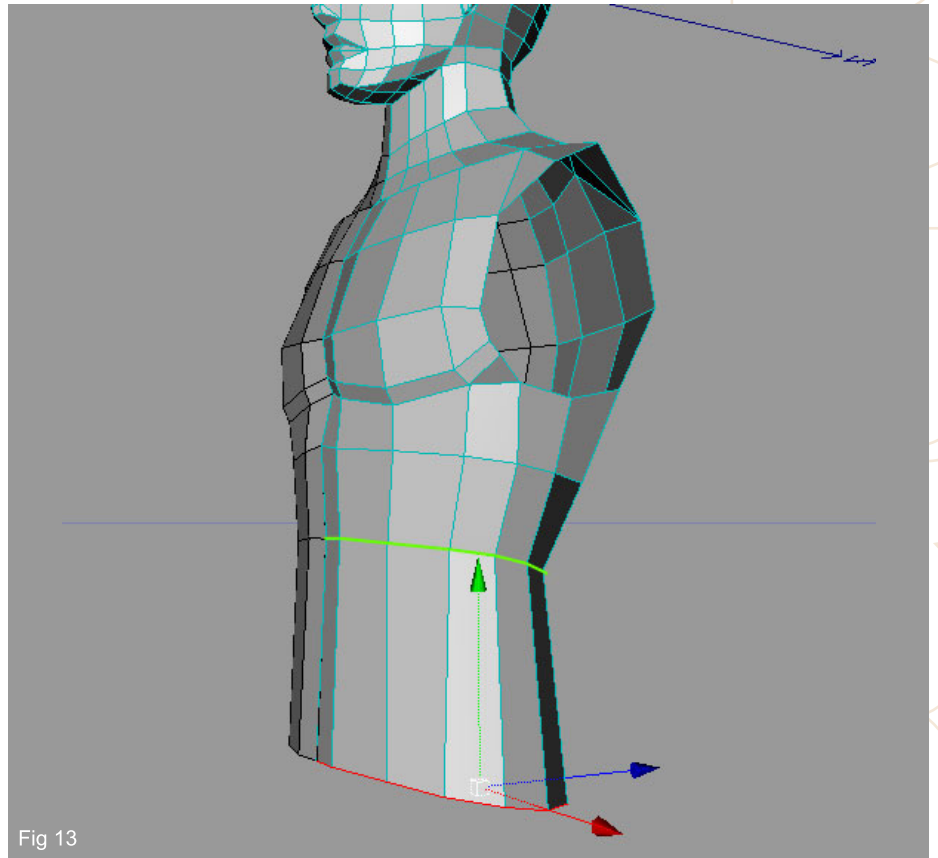


Fig 13

14. Add three cuts to the new section of poly's we have just made. Use the Ring Selection tool to select the edges then use Edge Cut tool to add three segments like shown (Fig14).

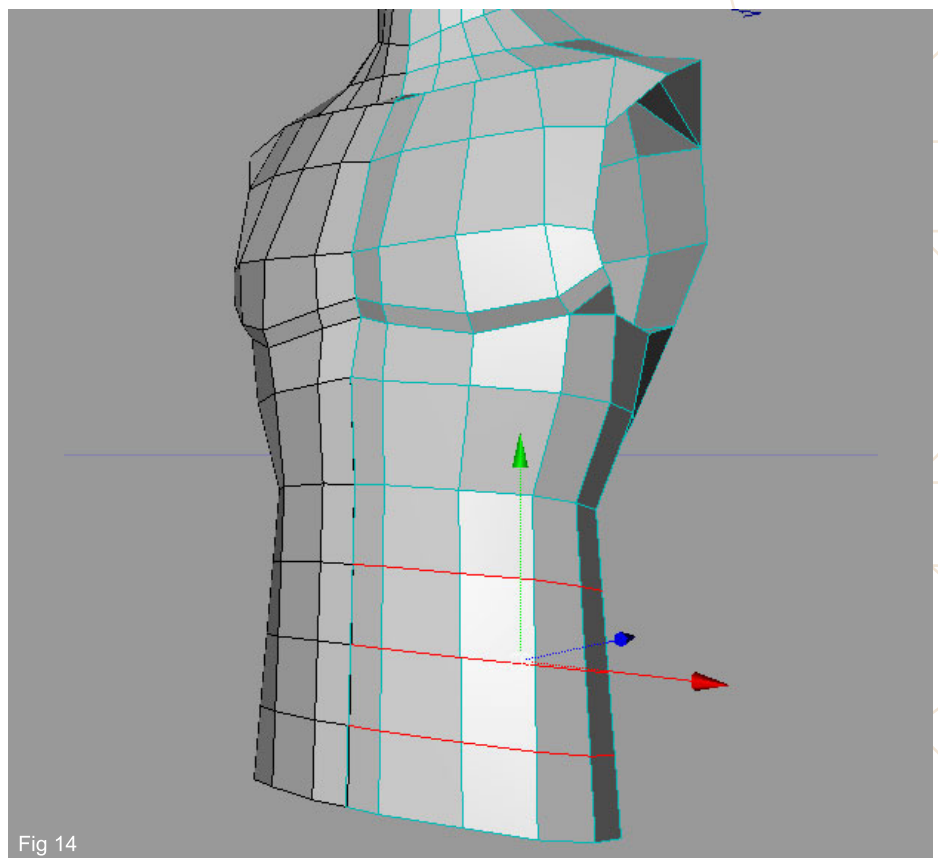


Fig 14

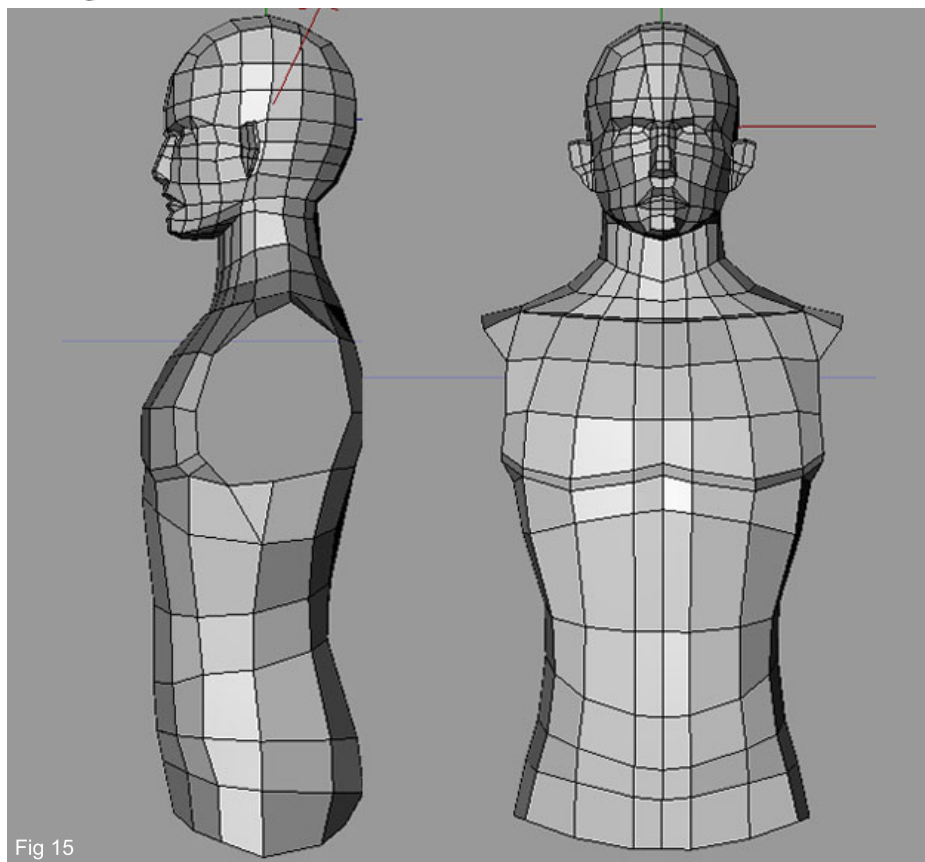


Fig 15

15. Now manipulate the new vertexes into positions that form the shape of the lower torso and top of the buttocks (Fig 15). Move the verts first in the front view and then in the profile view, etc... The illustration shows the profile and front view.

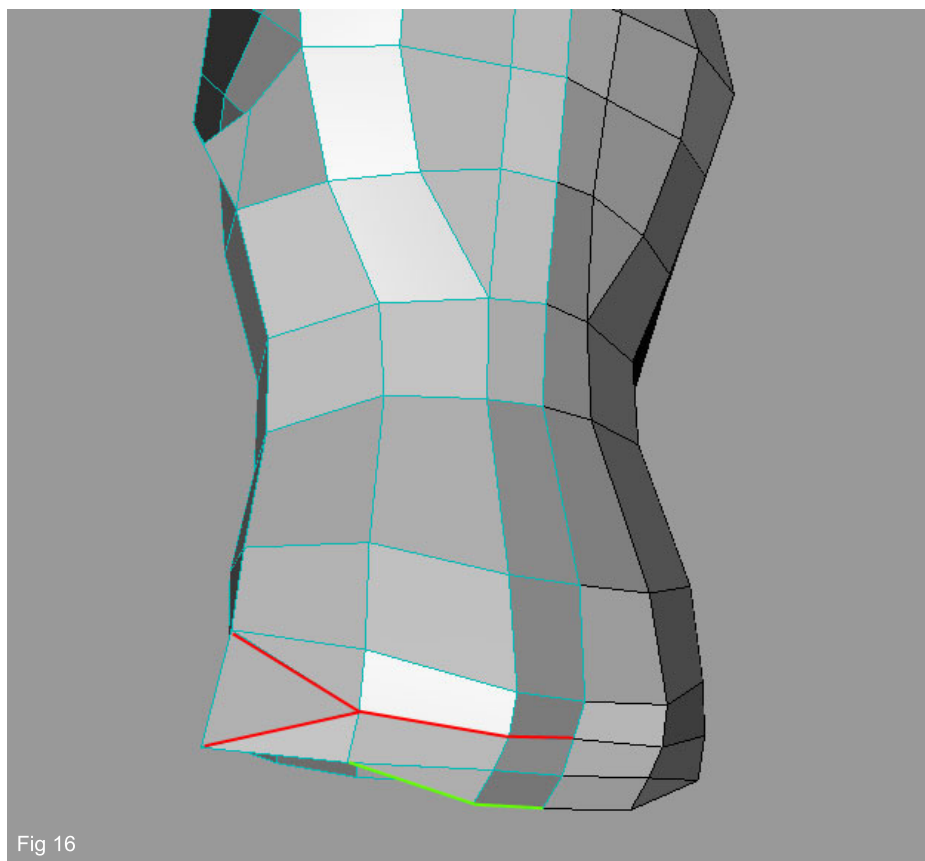
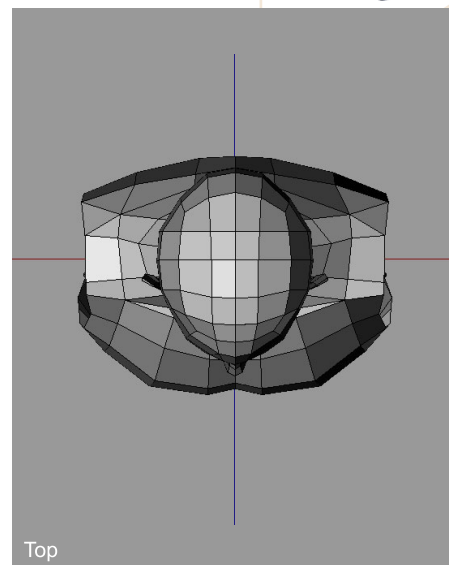
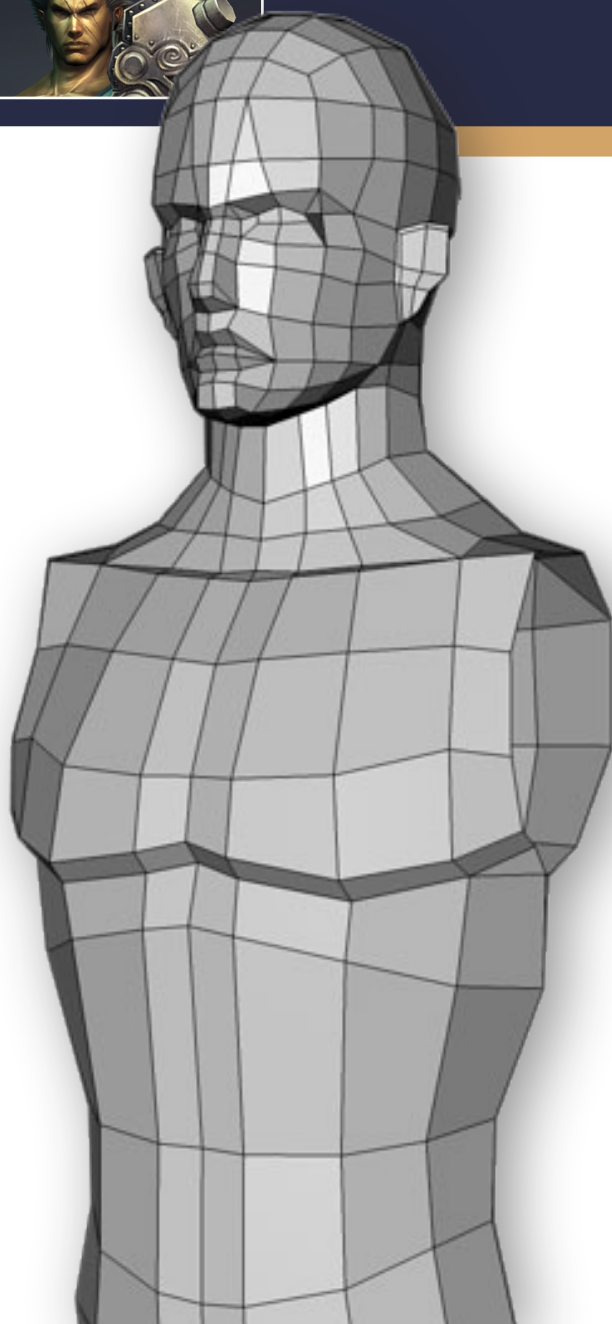


Fig 16

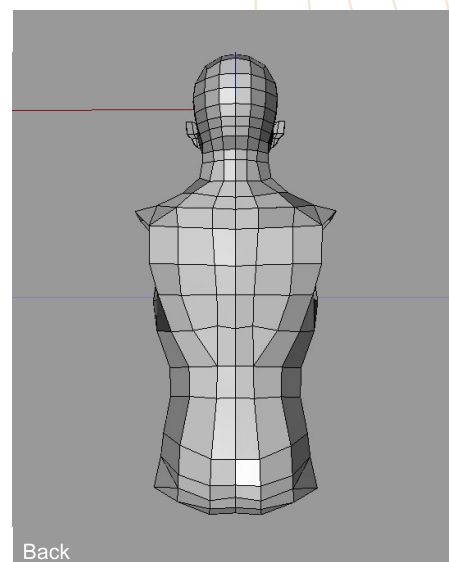
16. The last thing to do before we start to make the arms and legs is add a cut across the base of the buttocks so we will have a little more geometry to deform when the character is eventually animated. After the cut, extrude the two edges like shown (Fig 16).



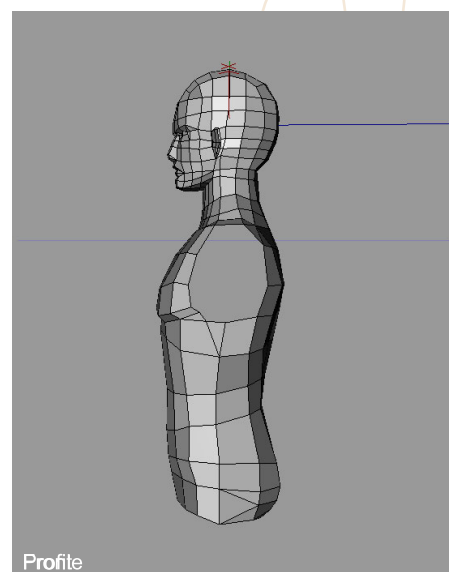
SwordMaster



Top



Back



Profile

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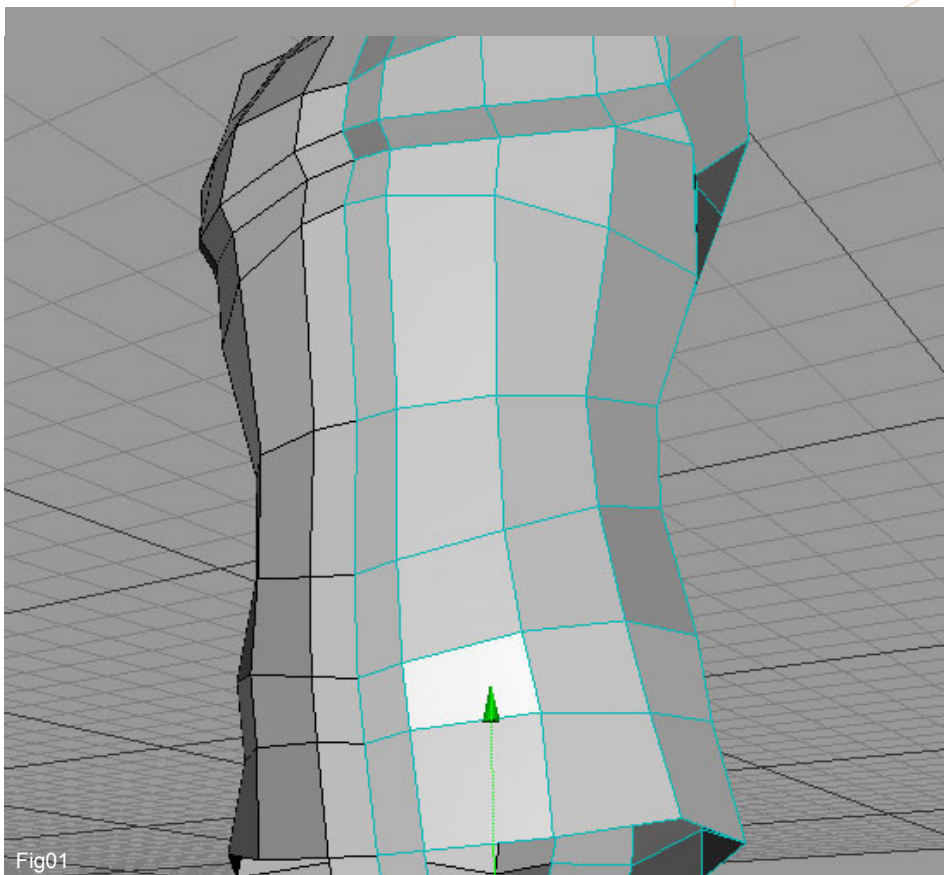
PART THREE

MODELING THE ARMS & LEGS

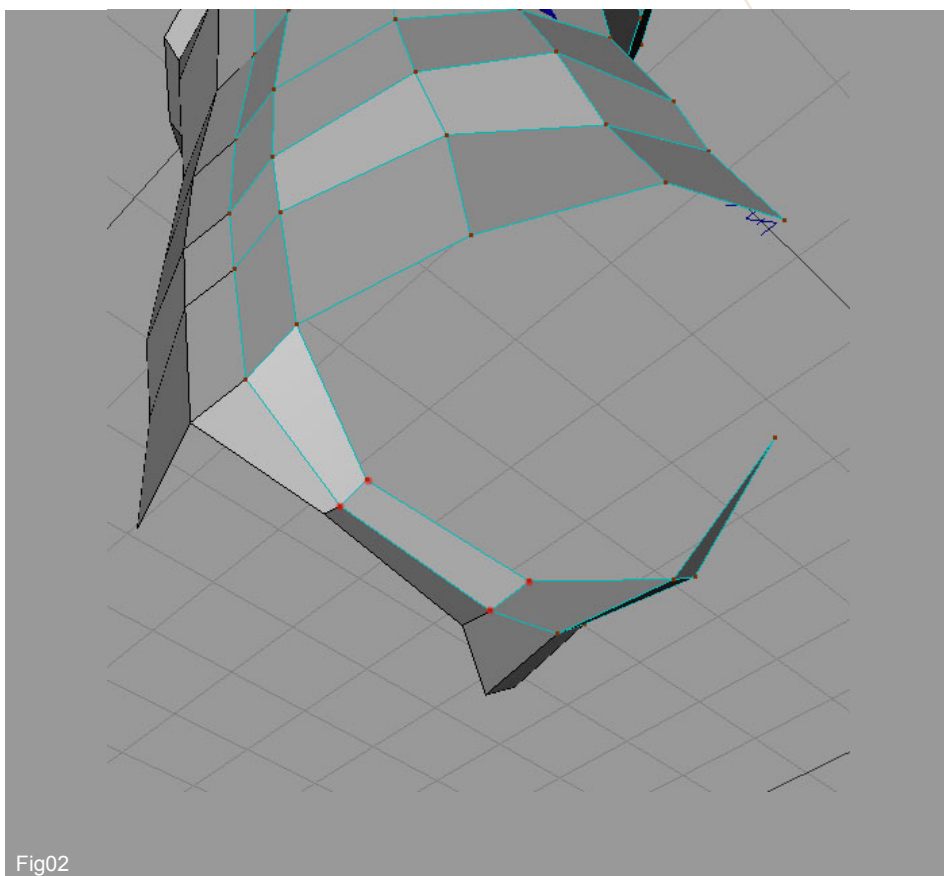
INTRODUCTION:

Welcome to the third part of an ongoing tutorial which will provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. In this installment, we shall start with the torso covered in last month's edition and build upon the mesh to create the arms and legs.

1. Open the file for part 2 of the tutorial and begin by selecting the edges as shown in Fig 01. Now use the Extrude tool (right click mouse > extrude) to make a copy of these two edges. Adjust the position of the new verts.



2. The next step is to join the new edges together with another poly in between, so use the Create Polygon tool, Fig02. This will now form two holes from which we will extend the legs.



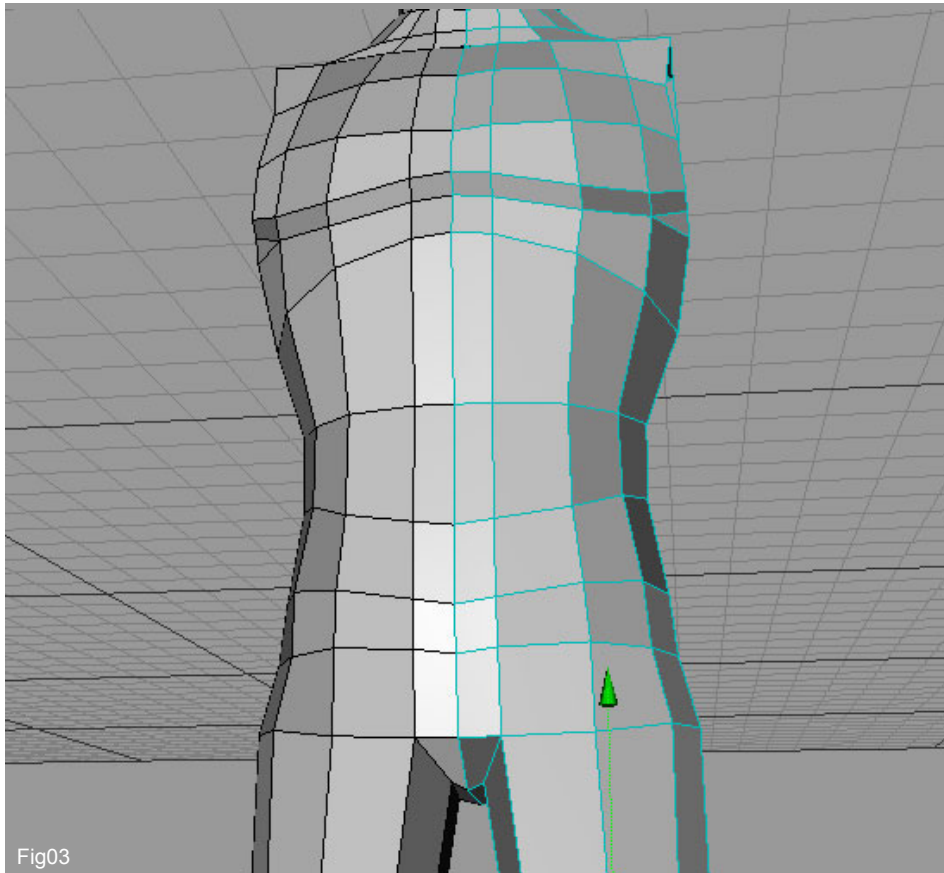
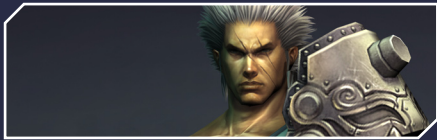


Fig03

3. Adjust the position of the points to form a decent shape and then extrude the edges, as shown in Fig03.

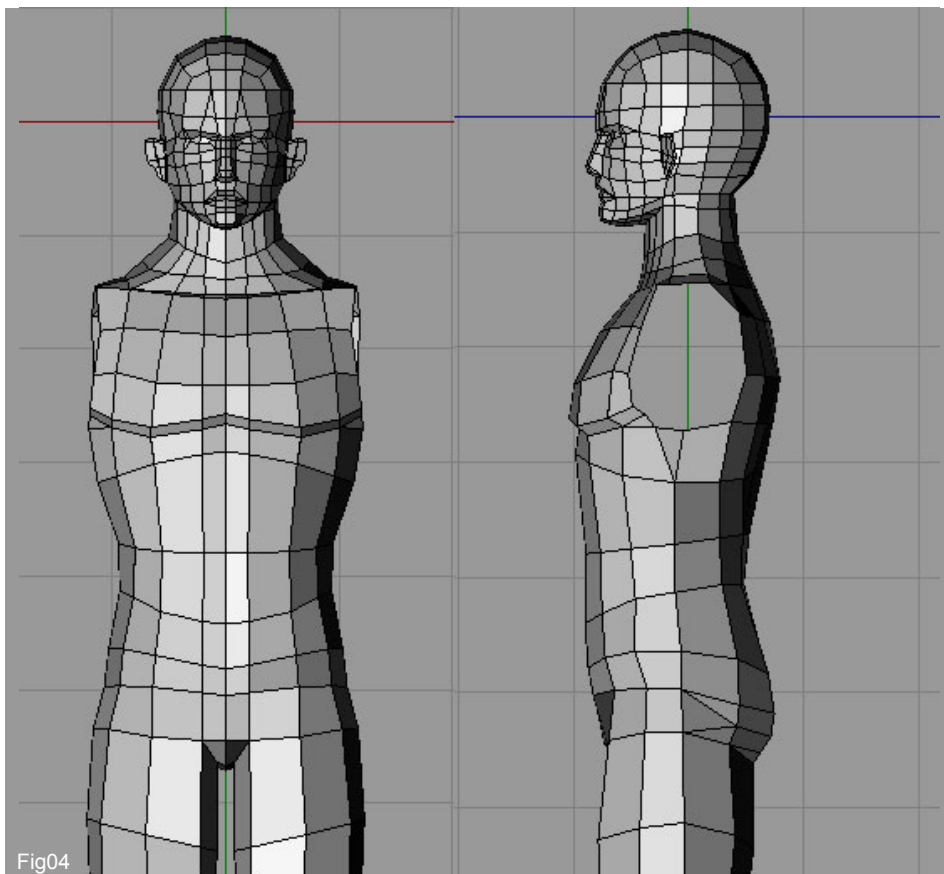


Fig04

4. Using this same technique extend the leg downwards to create the upper part of the leg, as shown in Fig04. Remember to tweak the positions of the verts each time you extrude the edges.



5. With the same procedure extend the leg downwards to form the knee, calves and ankle. Now you will notice by Fig05, that the leg comprises of six new edges, all of which were shaped differently in accordance with the different parts of the leg.

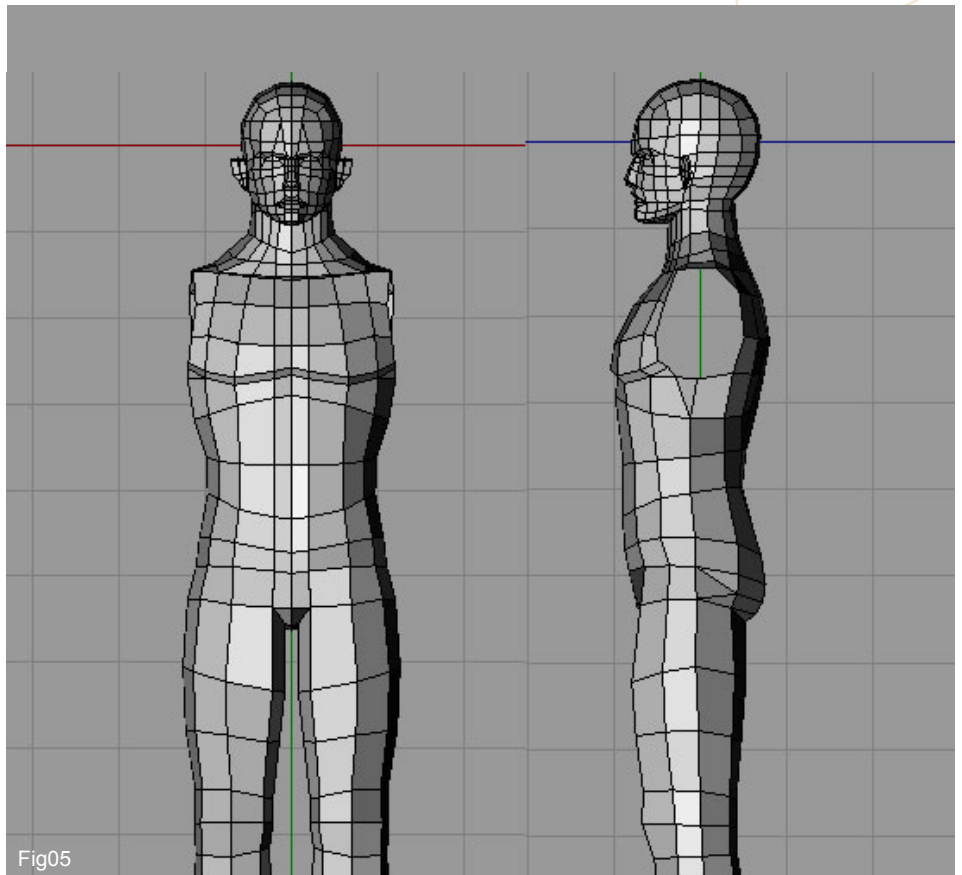


Fig05

6. The next step is to create the foot. Now you may notice that the polys that make up the leg are open-ended and now we need to create a cap to form the sole of the foot. We can do this in two different ways: you may use the “Close Polygon Hole” tool (Fig06) and then use the “Knife” tool to connect the verts, as shown on the left of the figure, or you can use the “Create Polygon” tool to obtain the polygons, as shown on the right of the figure.

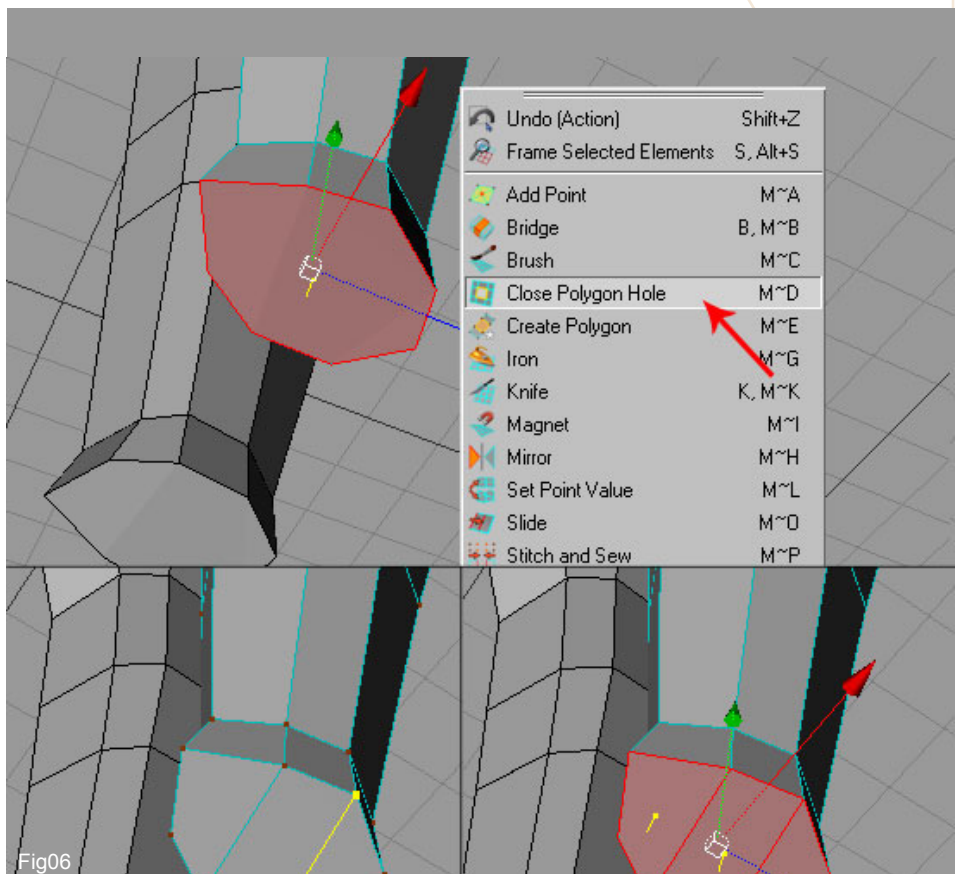
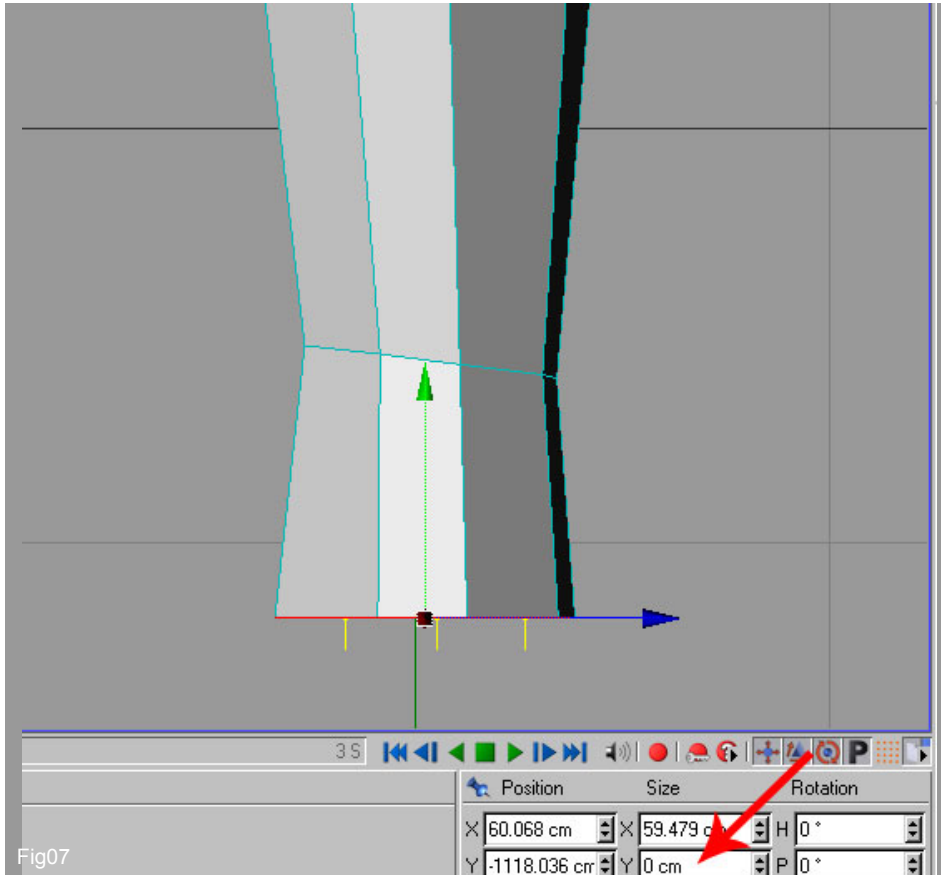
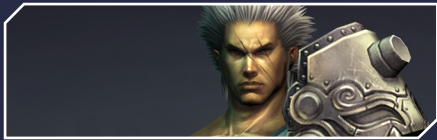
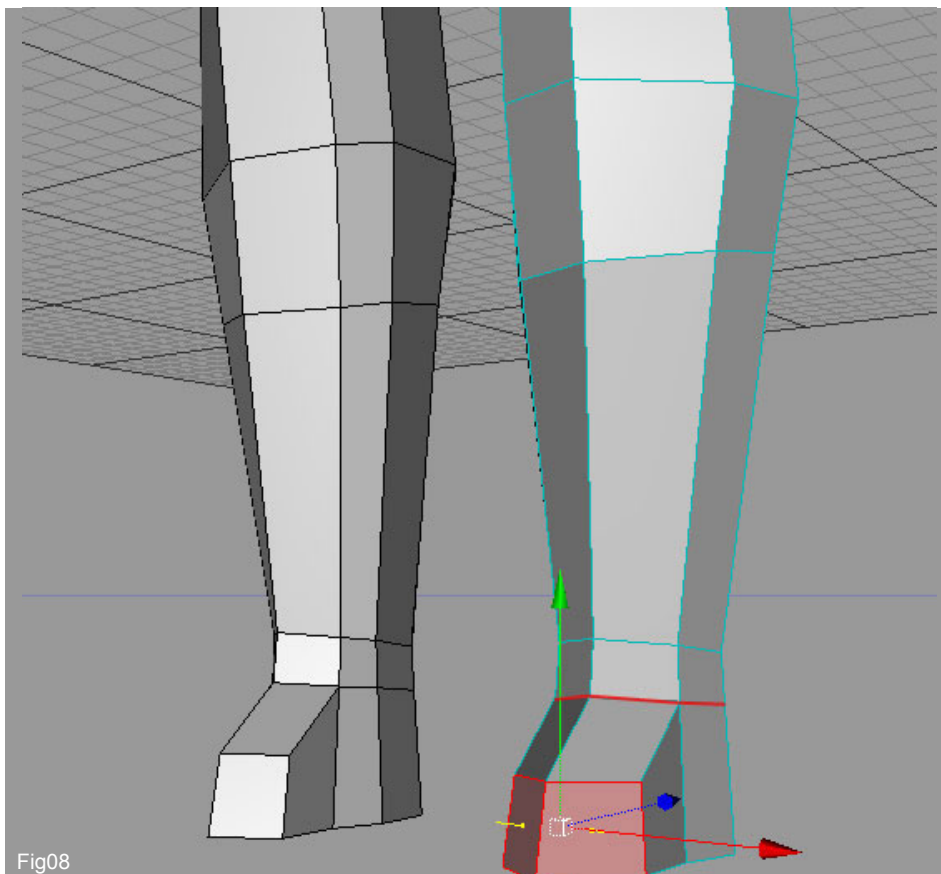


Fig06



After this we need to level the new polygons so select them and change the Y size (highlighted by the red arrow) in the Coordinates Manager, as like shown in Fig07.



7. Before starting the feet, add a cut as shown in Fig08, then select the two front polys and Extrude them forwards, scaling them as you do so (Fig08).



Make another extrusion to add the toes, and in order to add a little more curvature add a further cut, as seen in green in Fig09.

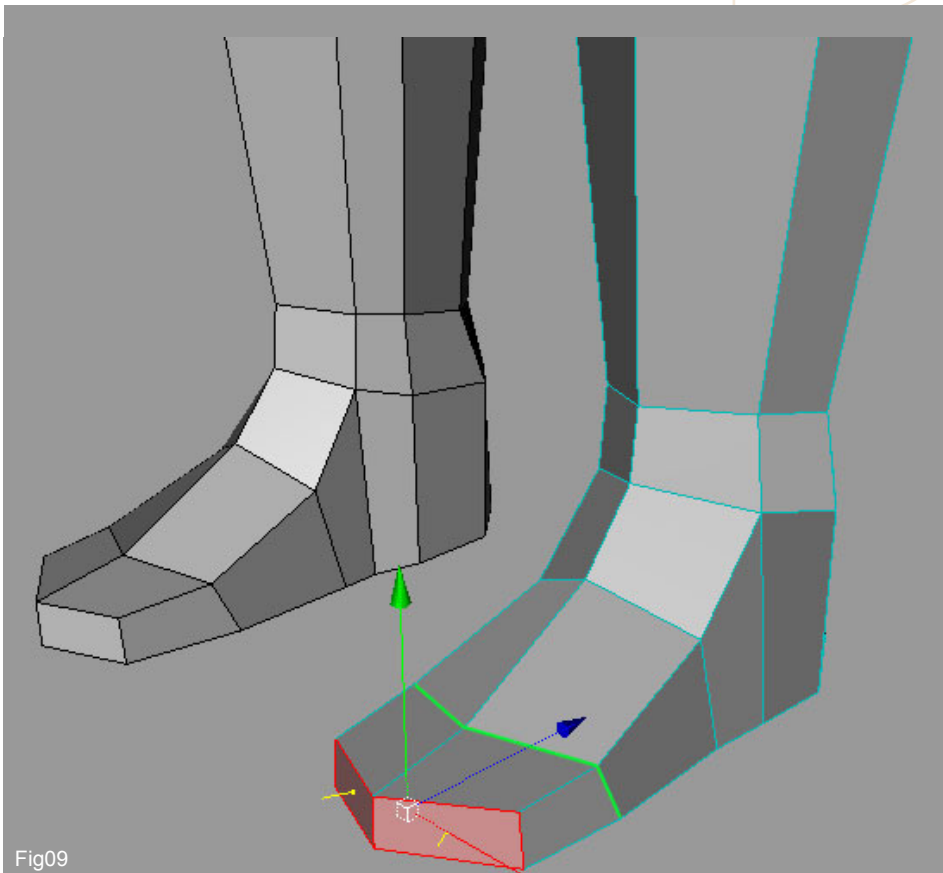


Fig09

8. The legs are now completed. Before we move on to the arms we need to add new cuts in the back of knee area. That will allow us to get a better deformation of the legs when we bend the knees (assuming of course that we are going to attach a skeleton). Then, with the Knife tool, add the diagonal cuts, as shown on the left of Fig10.

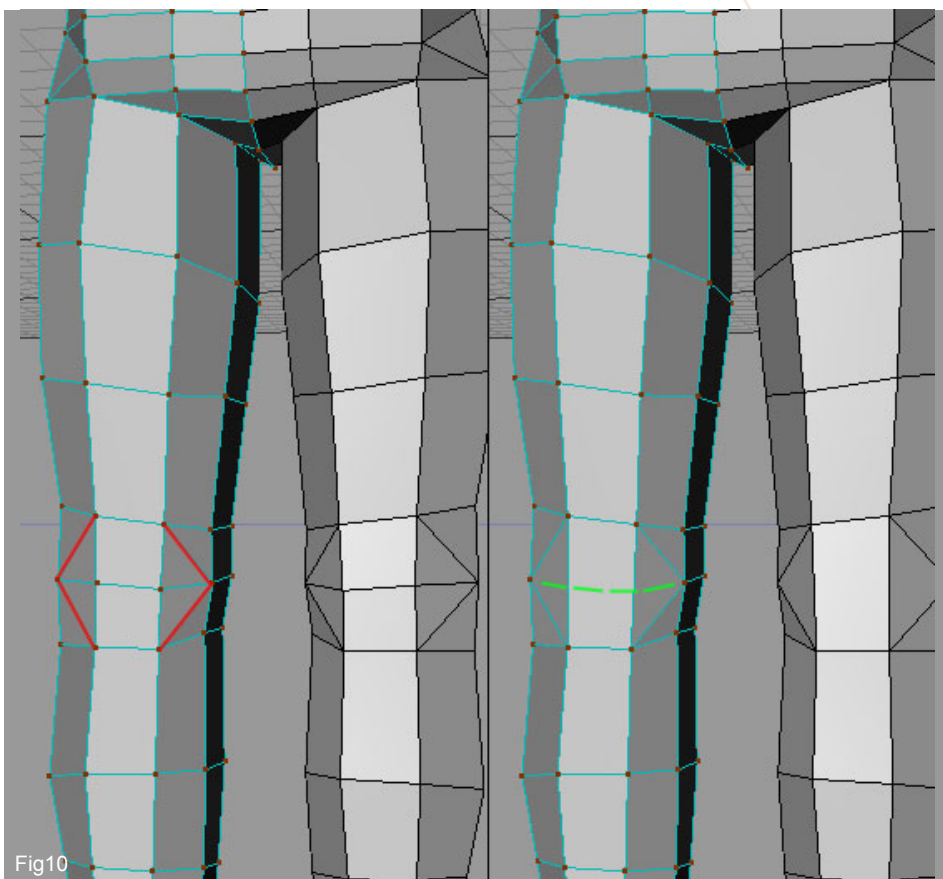
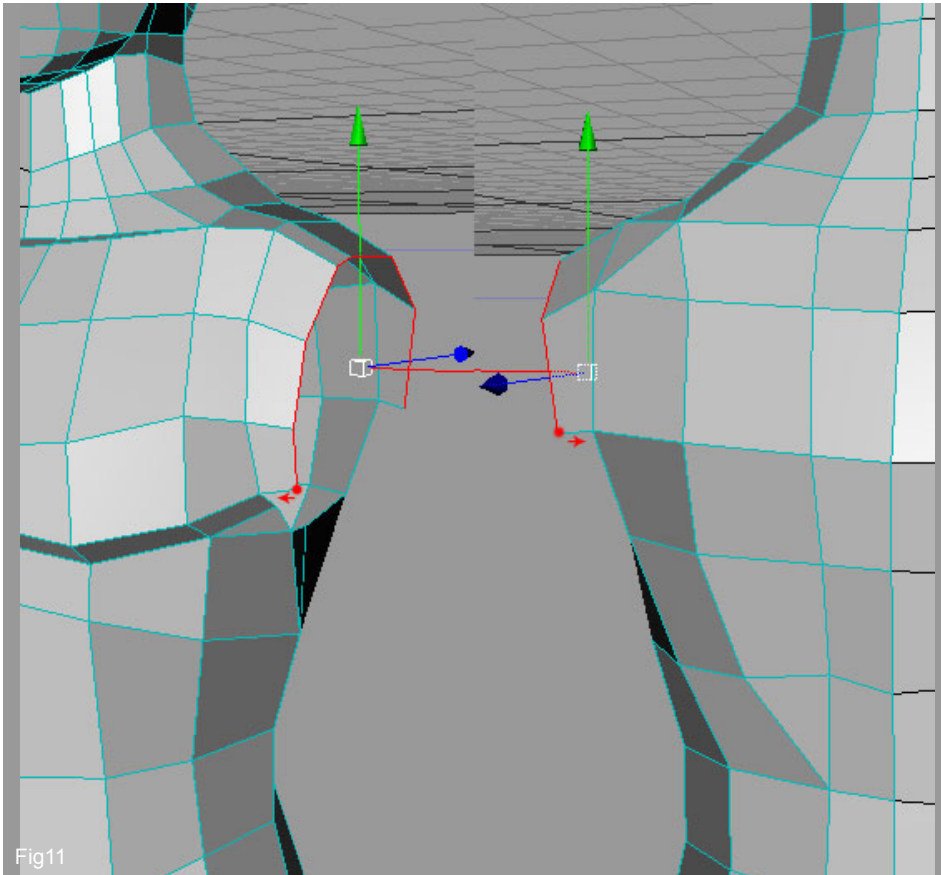
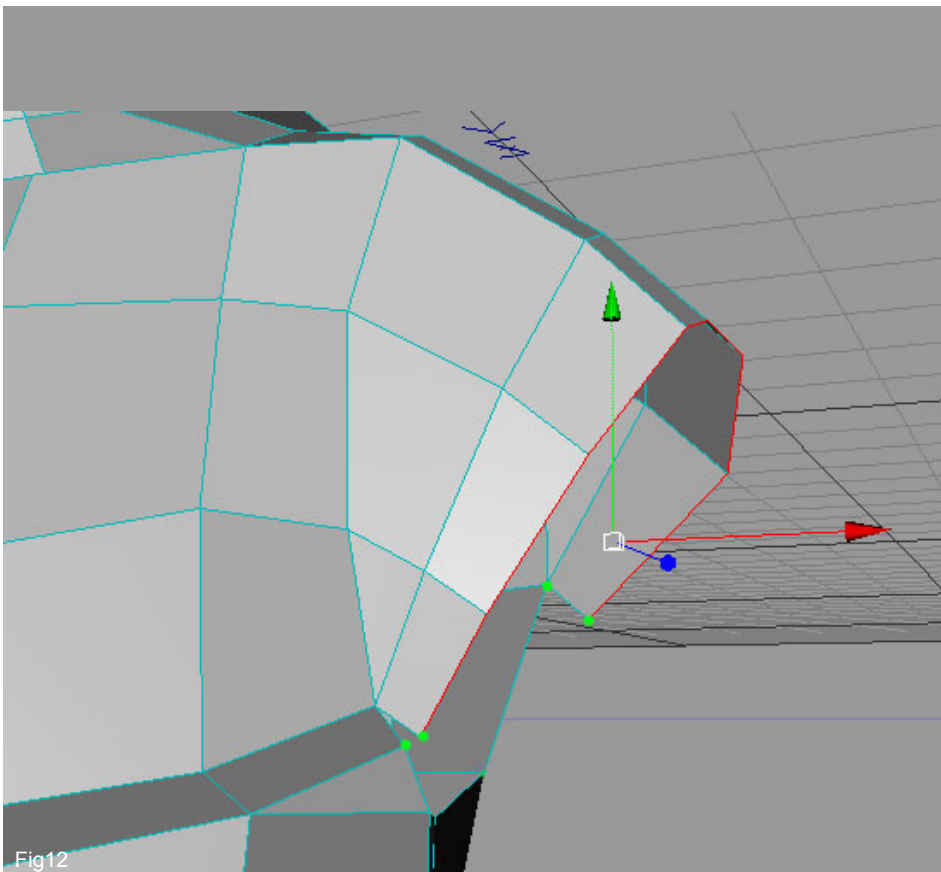


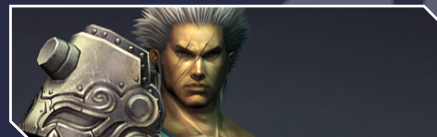
Fig10



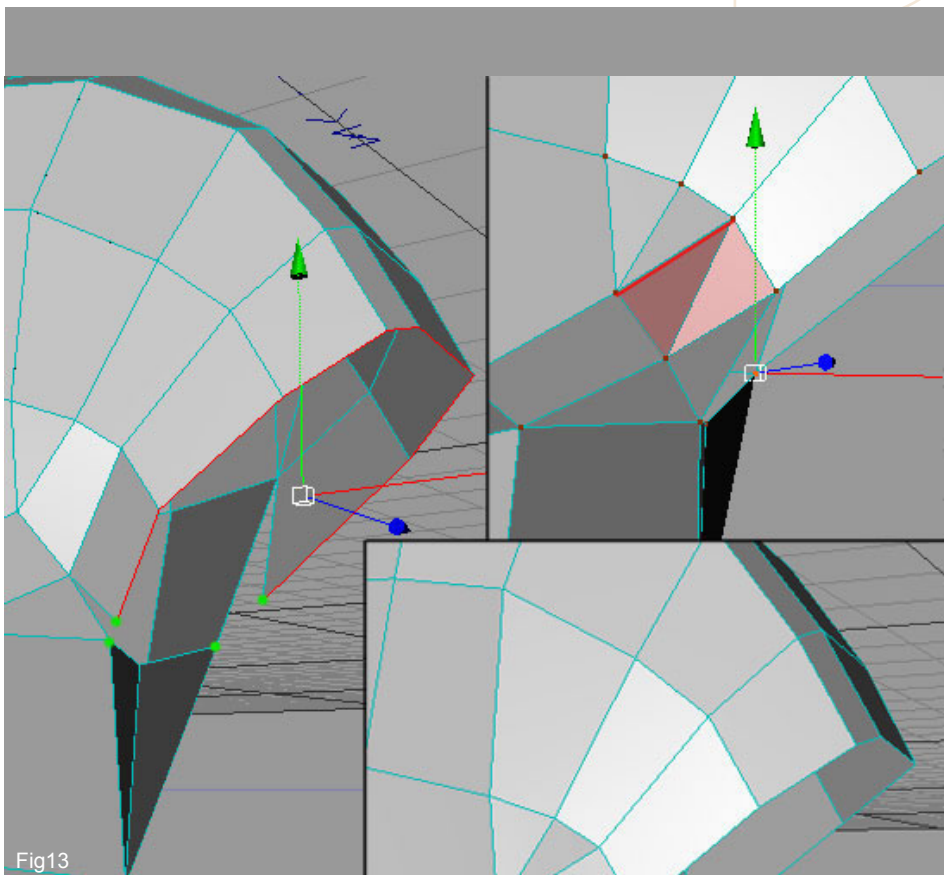
Finally, weld the vertexes to eliminate the edges, marked in green on the right of Fig10.



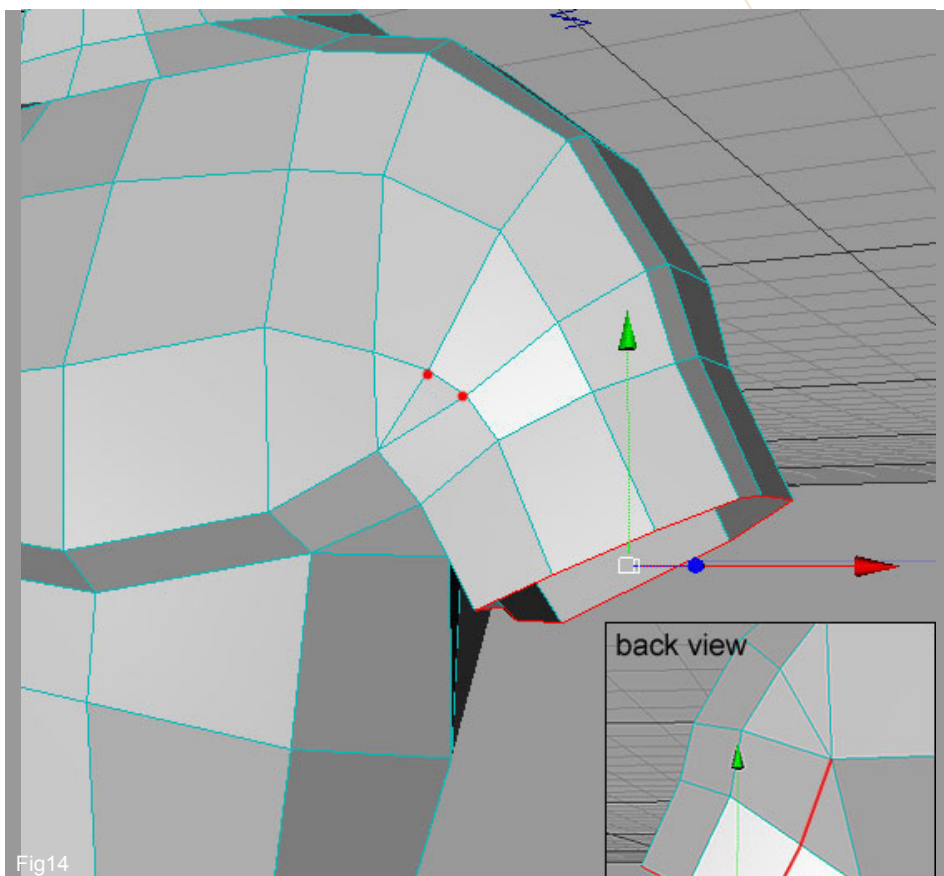
9. It's time to extend the arms. Continuing from our torso in the previous tutorial, select the top edges and extrude them, as shown in Fig11. Now weld the two verts in red to the corner indicated by the arrows.



10. Extrude the edges once again and weld the vertexes like shown on the left of Fig13. With the Knife tool, make a cut, as shown on the top right of figure, then "un-triangulate" the two selected polygons. Delete the polygon, as shown on the bottom right of the figure.



11. Adjust the mesh to obtain a good shape. Select the edges, as shown in Fig14, and extrude them. Weld the two vertexes marked in red in figure. Add a cut on the back, as shown on the bottom right of figure.



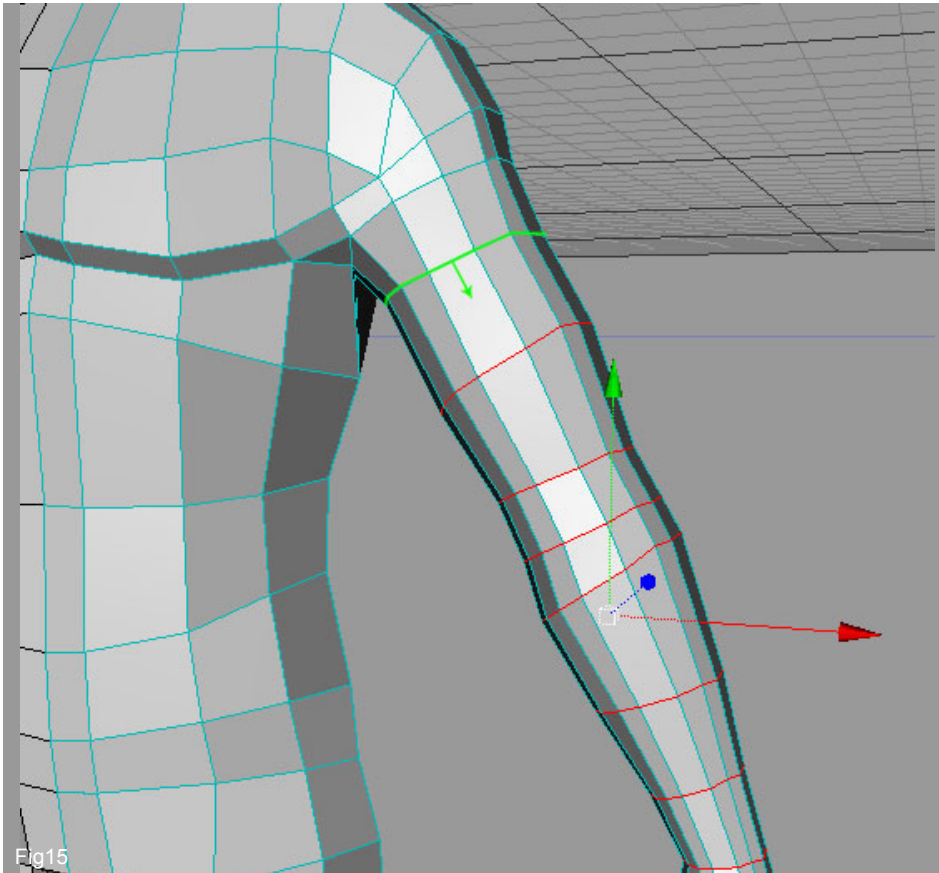


Fig15

12. Reposition the new verts to get a spherical shape and then keep extruding the edges.

Remember to adjust the mesh each time you make an extrusion until you get the wrist, as shown in Fig15.

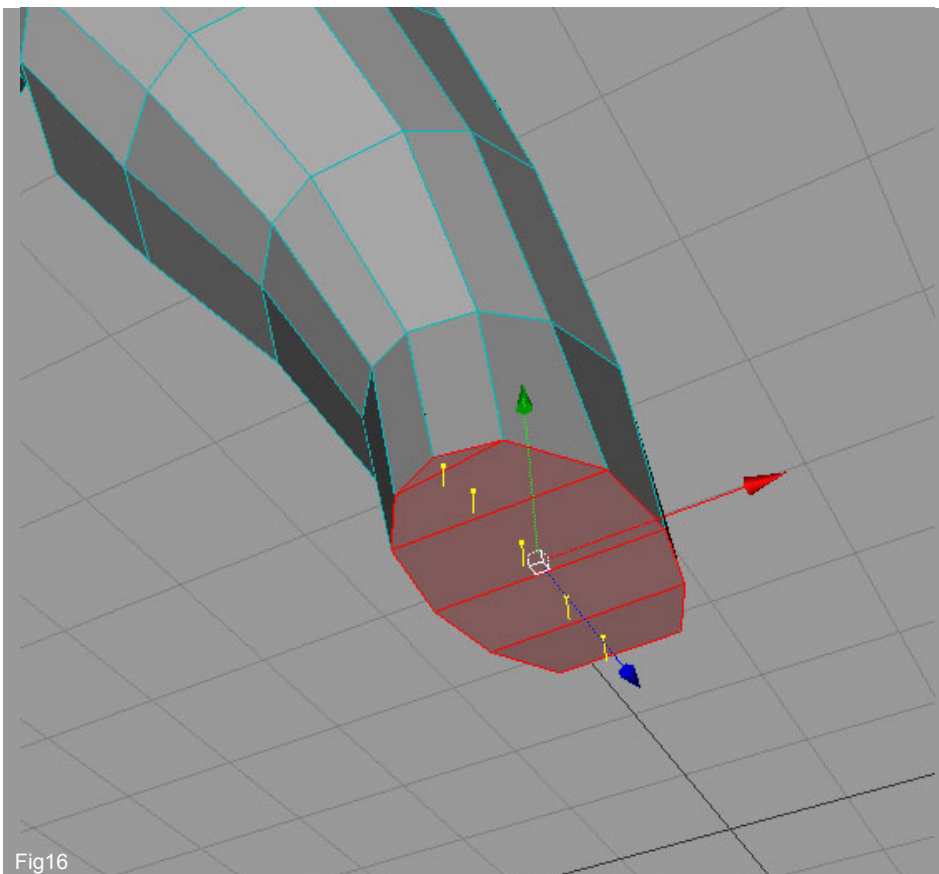
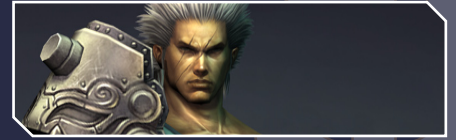


Fig16

13. As we did for the foot, we are going to cap the end of the arm with five polygons as shown in Fig16.



14. In order to prepare for the thumb, move the two vertexes, as shown in Fig17.

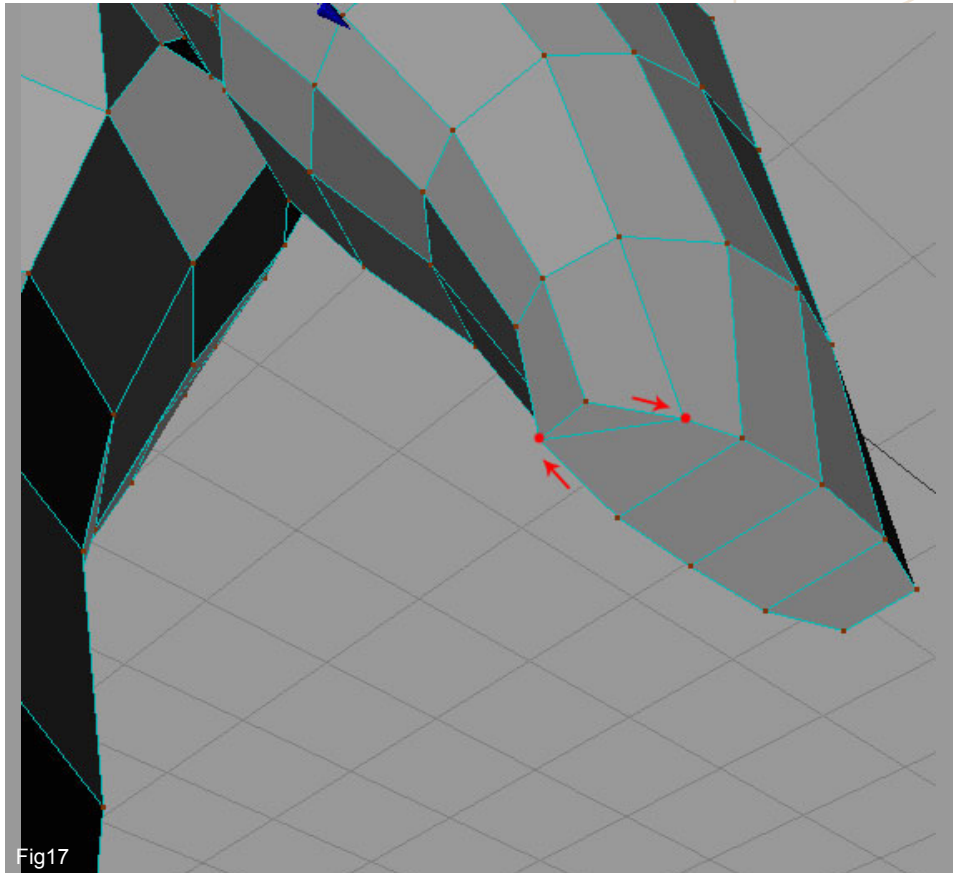


Fig17

After this, add a cut on the underside (Fig18) in the position numbered 1. This will leave a five-sided poly on the palm side of the hand and so to alleviate this continue the cut upwards in the position numbered 2. Now to give the thumb area more shape, add a further cut in the position numbered 3.

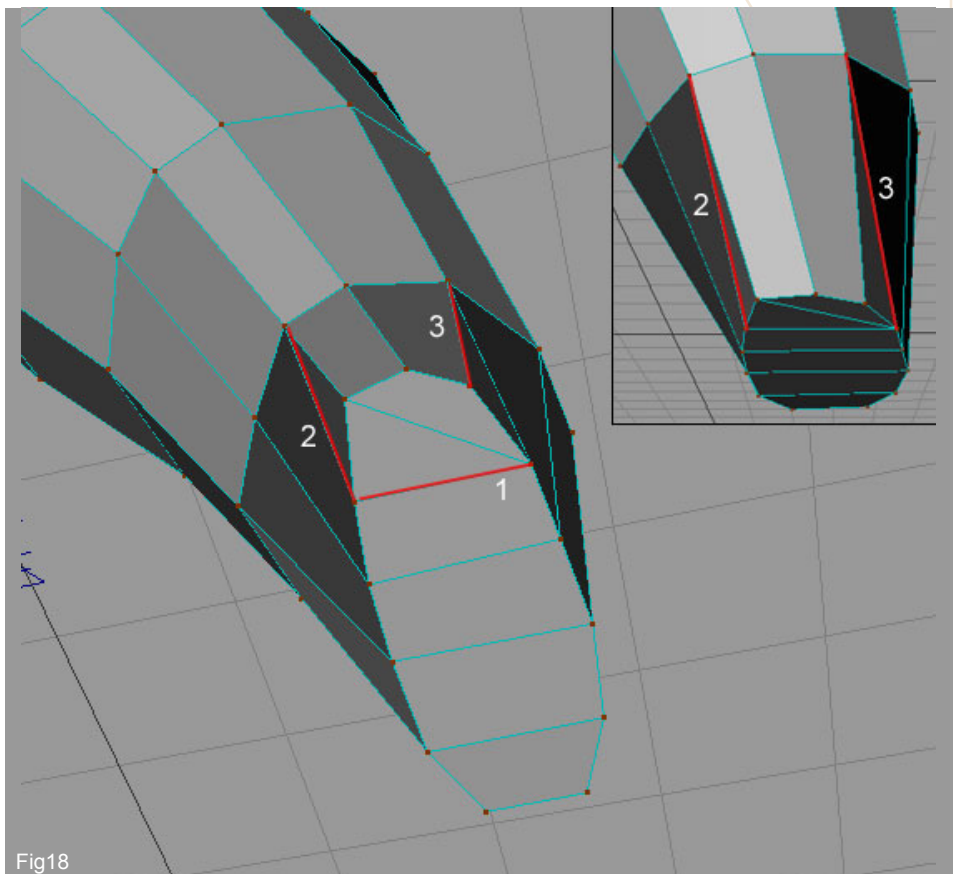


Fig18

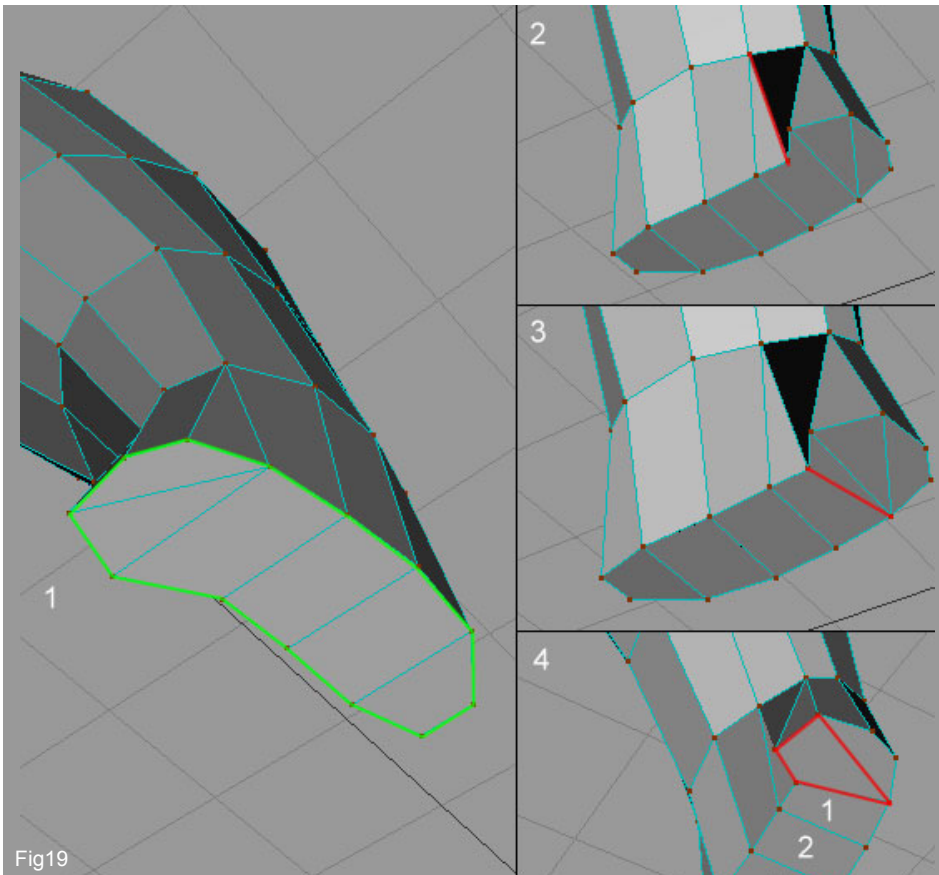
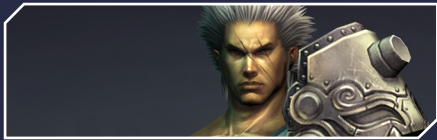


Fig19

15. On the left of Fig19 we can see the underside of the hand and you'll notice that we have four polygons that can be used to extrude the fingers. What we need to do, before the extrusion of fingers, is to re-shape the mesh (step 1). First, make a cut as indicated by the red line in the top right of the figure (step 2) and then move the new vert down slightly. Follow with a cut from this new vert to the outside of the hand (step 3). Now "un-triangulate" the two triangles to obtain the quadrangles, as shown on the bottom right of figure (step 4).

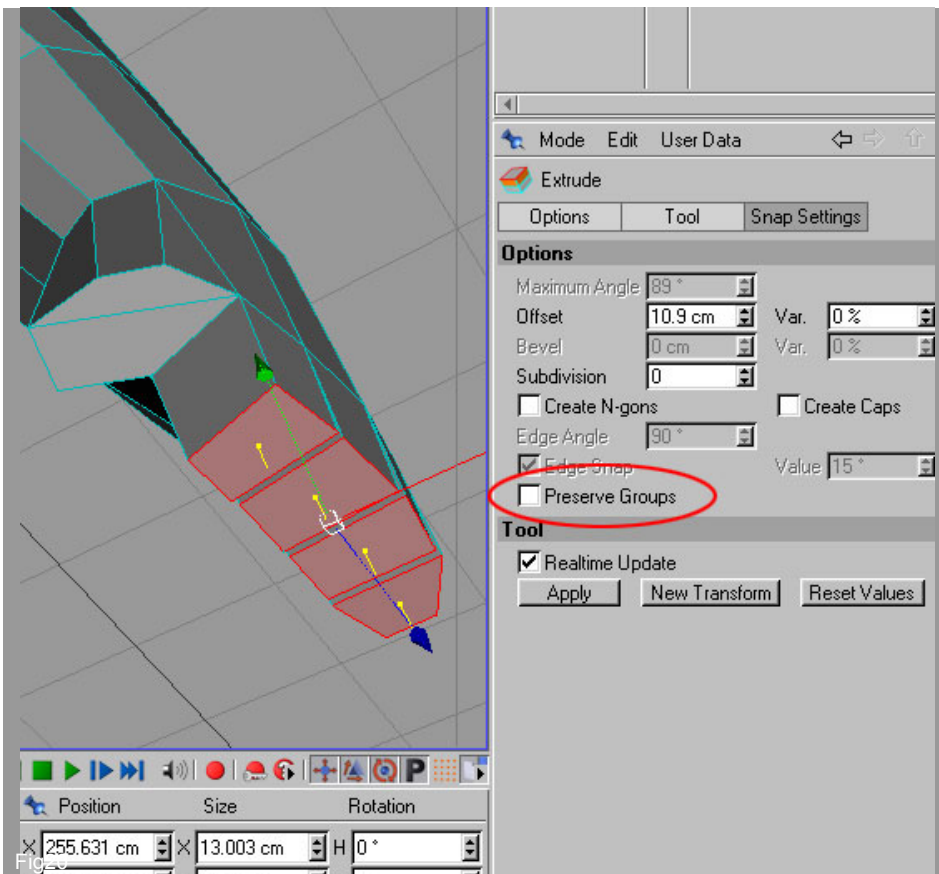
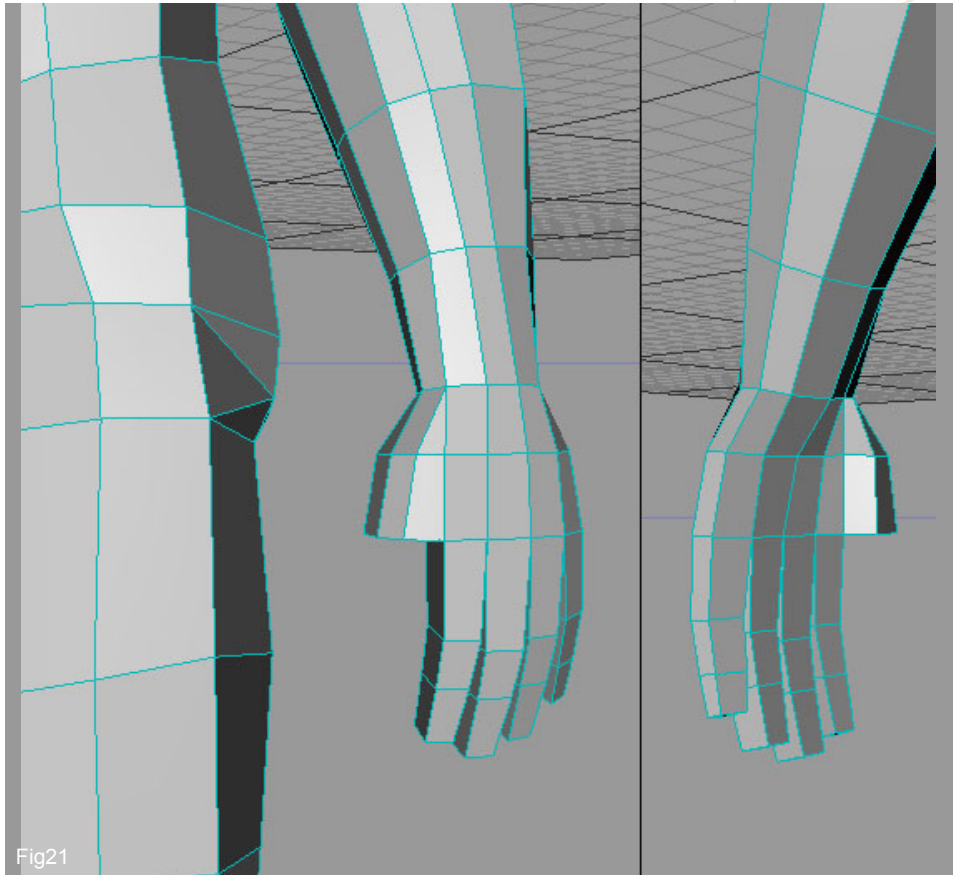


Fig20

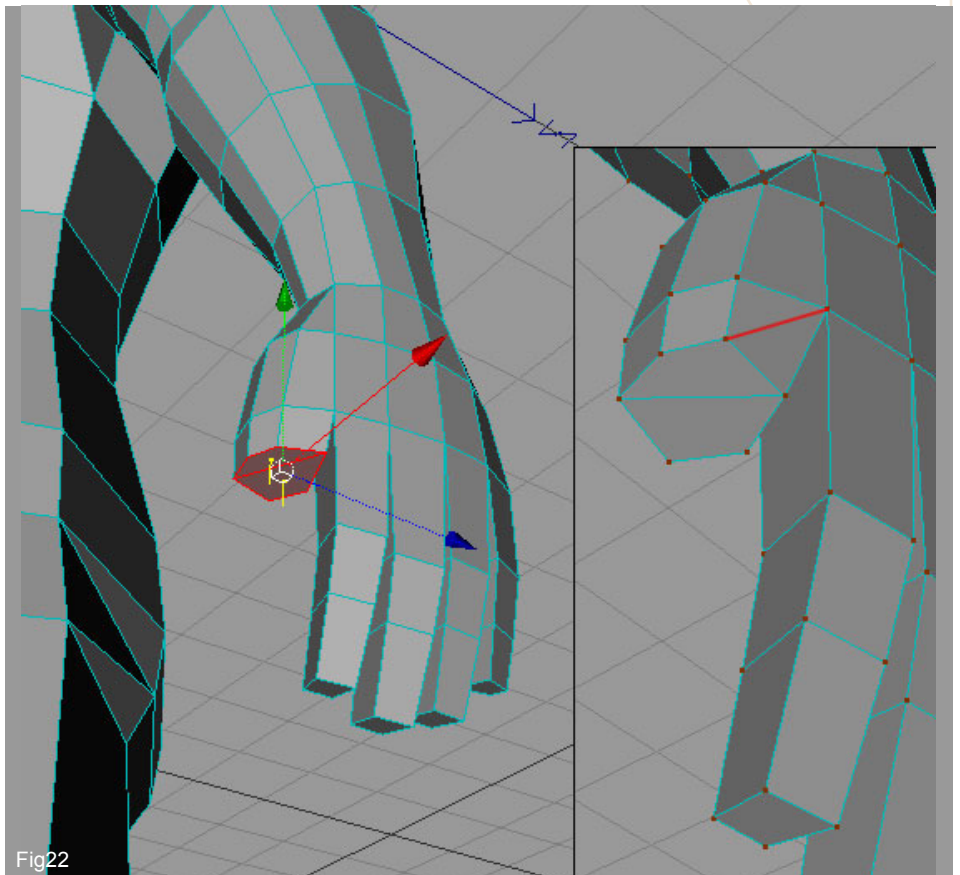
16. Select these four polygons and extrude them downwards, making sure to disable the "Preserve Groups" label in the options of Extrude (Fig20).



Rotate the new polygons a little and then do a further two extrusions, scaling them down somewhat to shape the fingers (Fig21). To scale the polygons, use the "Normal Scale" tool (right-click mouse > normal scale).



17. This is the same procedure for the last finger, so select the two polygons and extrude them, but this time enable "Preserve Groups" option. (Fig22). In order to create a better flow from the palm, add a cut, as shown on the right of the figure.



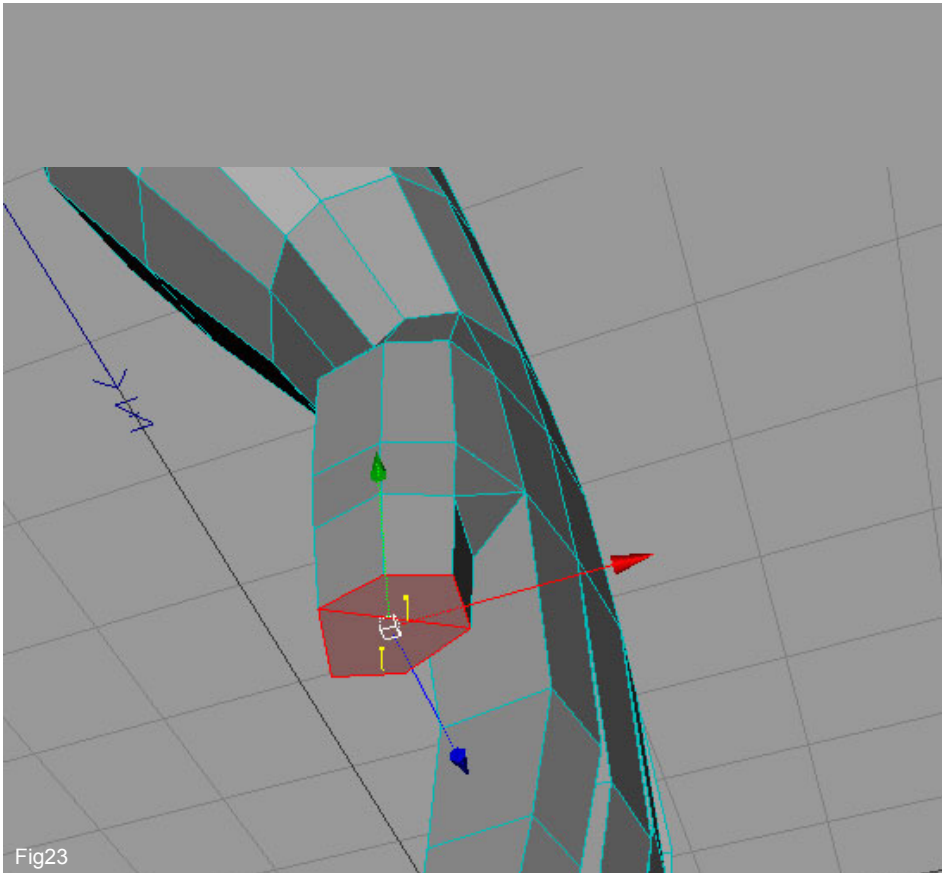


Fig23

18. Extrude the polygons once again, as shown in Fig23.

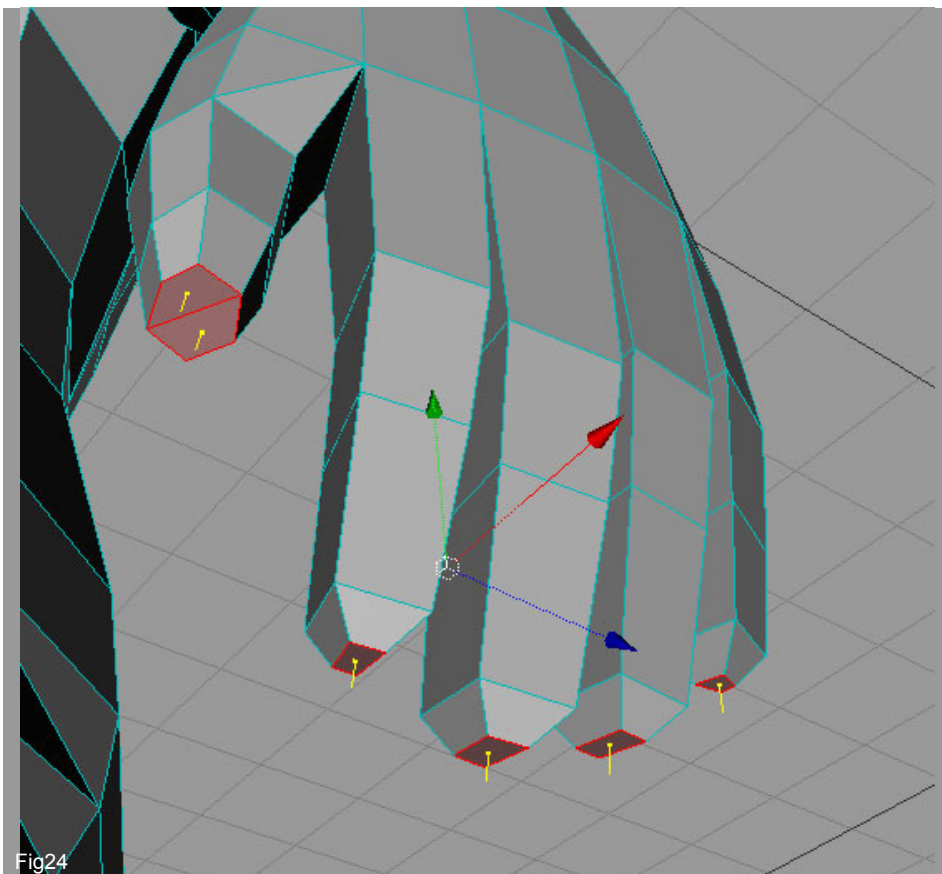
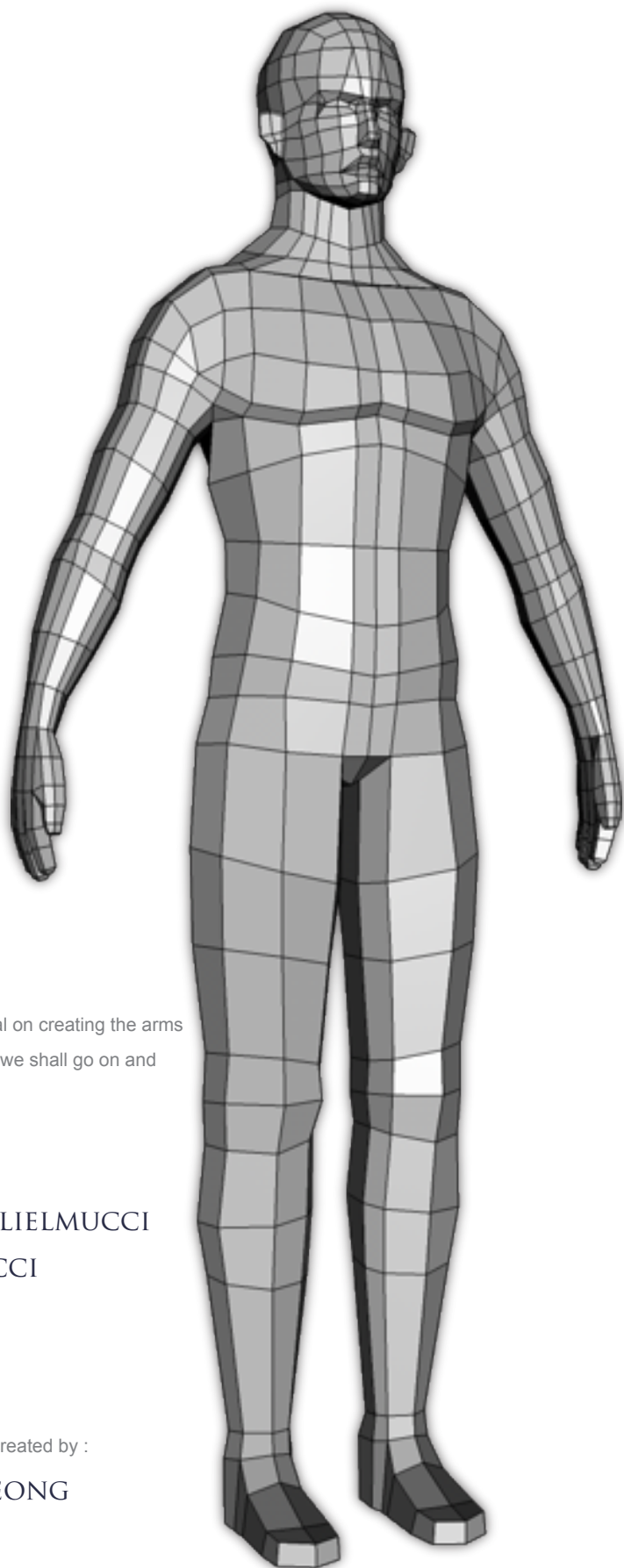


Fig24

19. The final stage is to select the six polygons that make up the tips of the fingers, and add a "Bevel" (right-click mouse > bevel) as shown in Fig24.



SwordMaster



This concludes the tutorial on creating the arms and legs and next month we shall go on and add clothing and hair.

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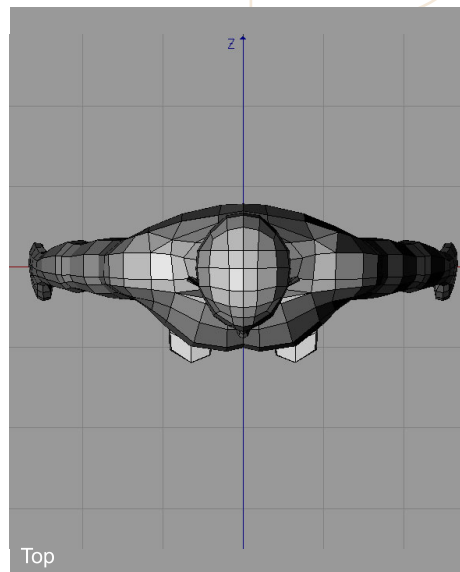
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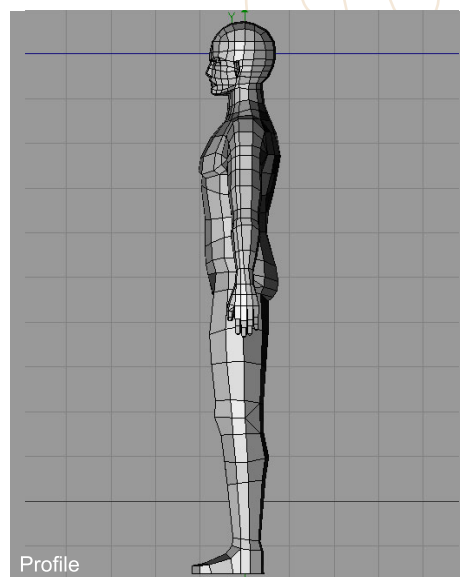
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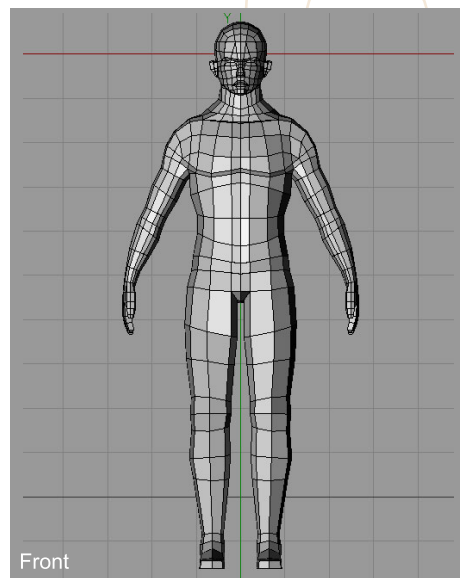
sephiloss@naver.com



Top



Profile



Front



PART 4 MODELLING THE HAIR AND CLOTHING

INTRODUCTION:

Welcome to the fourth installment in the series which will provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Now that we have fully built the character it is time to add in the hair and clothing which we shall do this month.

1. If you have followed the previous tutorials on building the character then open the last file and begin by adding new polygons above the head as shown on Fig01, then select the poly's highlighted in it. Now click right mouse button and choose the "Split" tool from menu to make a copy of those polygons. You will notice from the image (bottom left) that a new object has appeared and it is inside the Symmetry. So, drag it out and rotate it on the X axis as shown on the bottom right of Fig01. What we will do for the hair is model the various elements separately and then group them together at the end and mirror them over to the other half.

2. The next stage involves copying these new poly's over the the side and "Snapping" the bottom row of verts to the top of the forehead in the positions marked in green in Fig02. Copy this group once more and then again snap the bottom verts (in red this time) to the edge of the face. Now group these new objects into a Null Object (select all objects > right mouse > Group Objects) and then drag it inside the Symmetry like shown in Fig02 (bottom right).

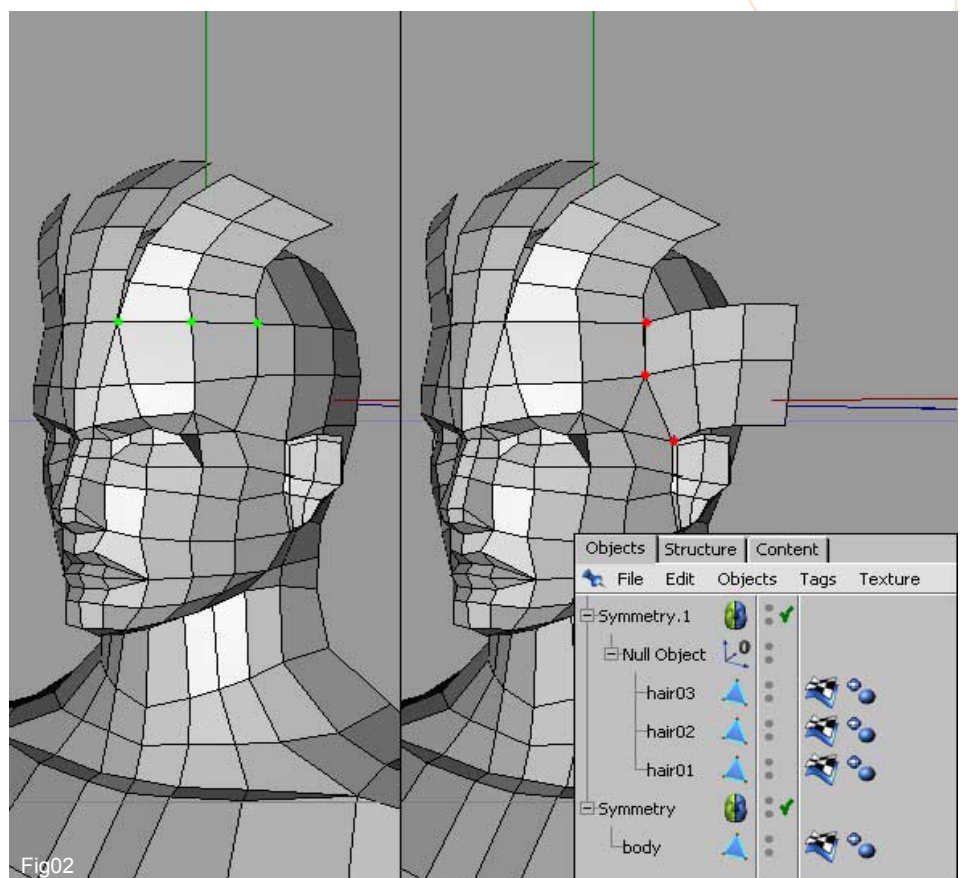
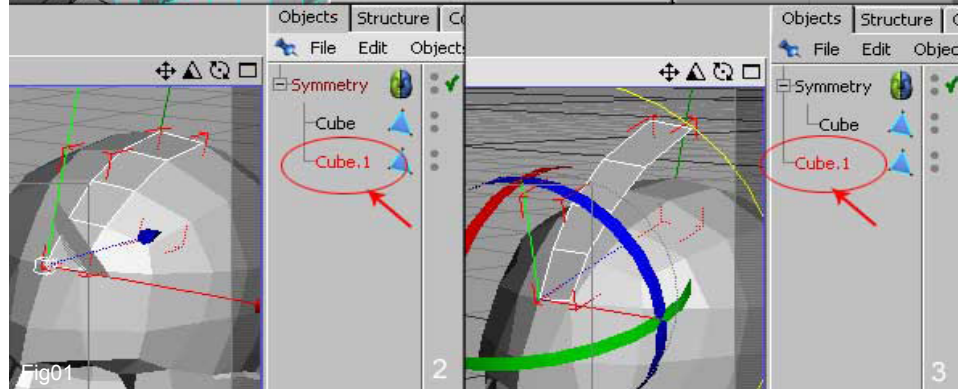
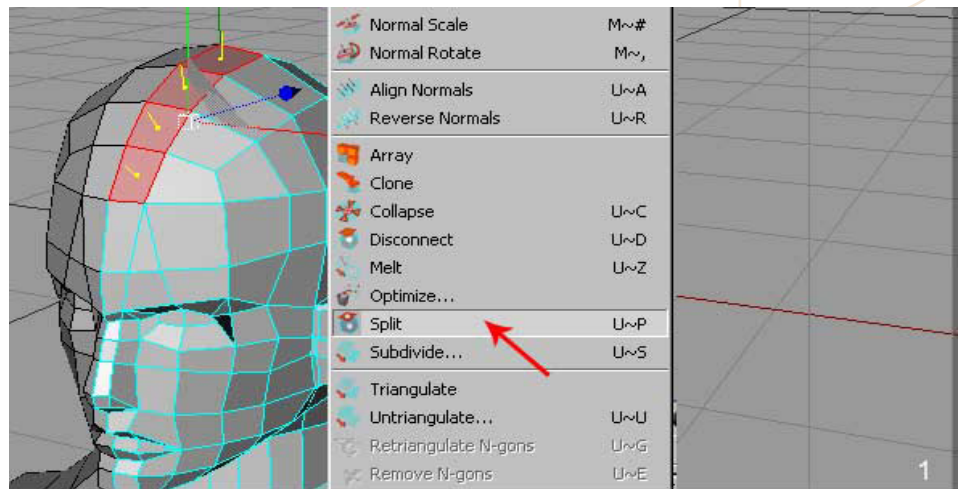
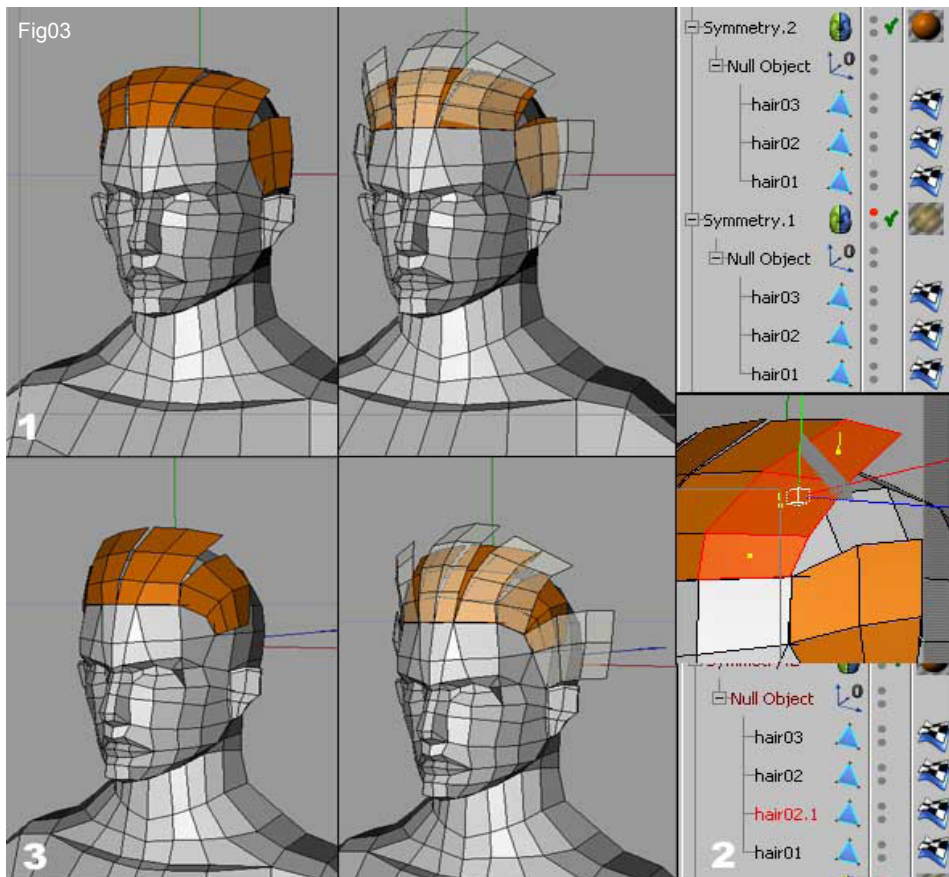




Fig03



3. We can duplicate these extra two sets over to the other side of the face once they are done, and begin on the second row of hair which falls directly behind the front row but offset slightly to intersect with the front set (Fig03 - top). Then make a copy of the Symmetry object like shown on the top right of Fig03. Adjust the shape by deleting so that only one row of poly's remains as seen in the picture (top-left). Then it is just a case of snapping the verts to the line across the forehead and re-shaping them. Select the "hair02" object and split the poly's like shown on bottom right of figure (step 2), do the same for the "hair03", weld so the vertexes in order to obtain the mesh as shown the step 3 (bottom-left of figure). Name the objects with incremental numbers and group them in a Null Object.

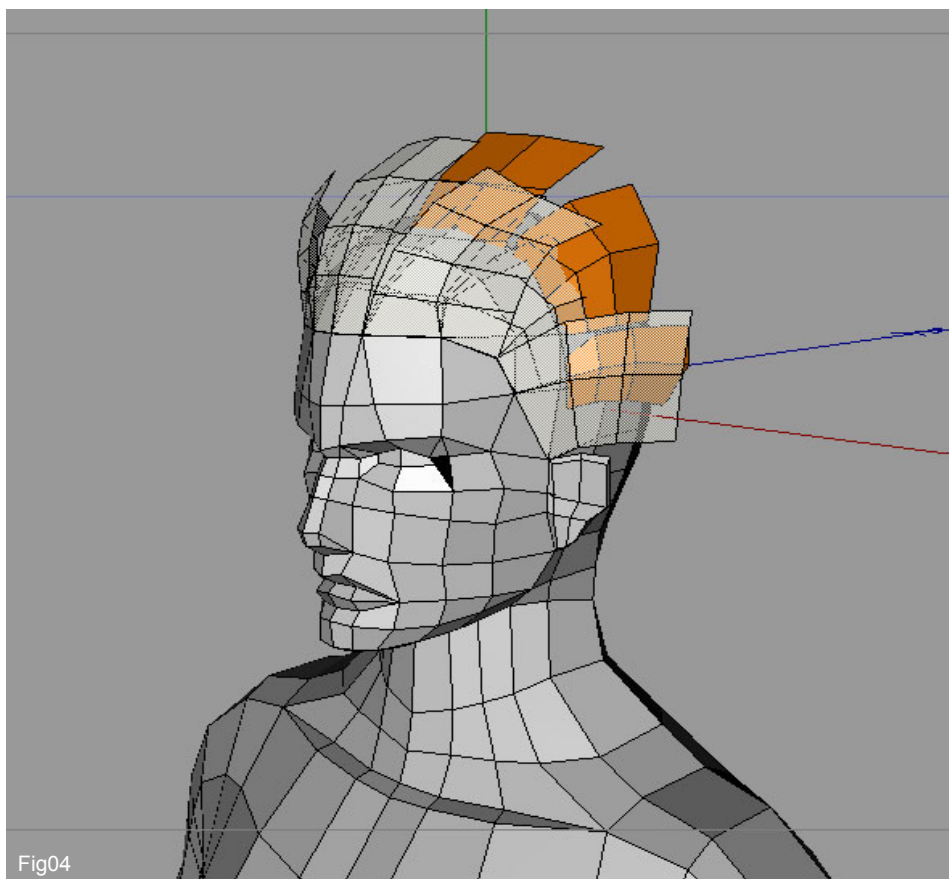
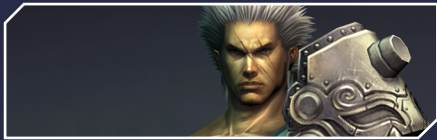


Fig04

4. For the next step we are going to duplicate this new set of poly's and move them behind the second row except this time we shall ignore snapping the verts to any on the scalp (Fig04).



5. Now we have to build the back section of the hair. In Fig05 you can see a large orange piece of geometry that has been positioned. To obtain these polygons split from the body the selected poly's like shown in the top left of figure. Then extrude the bottom edges three times and add a vertical cut to define the shape better.

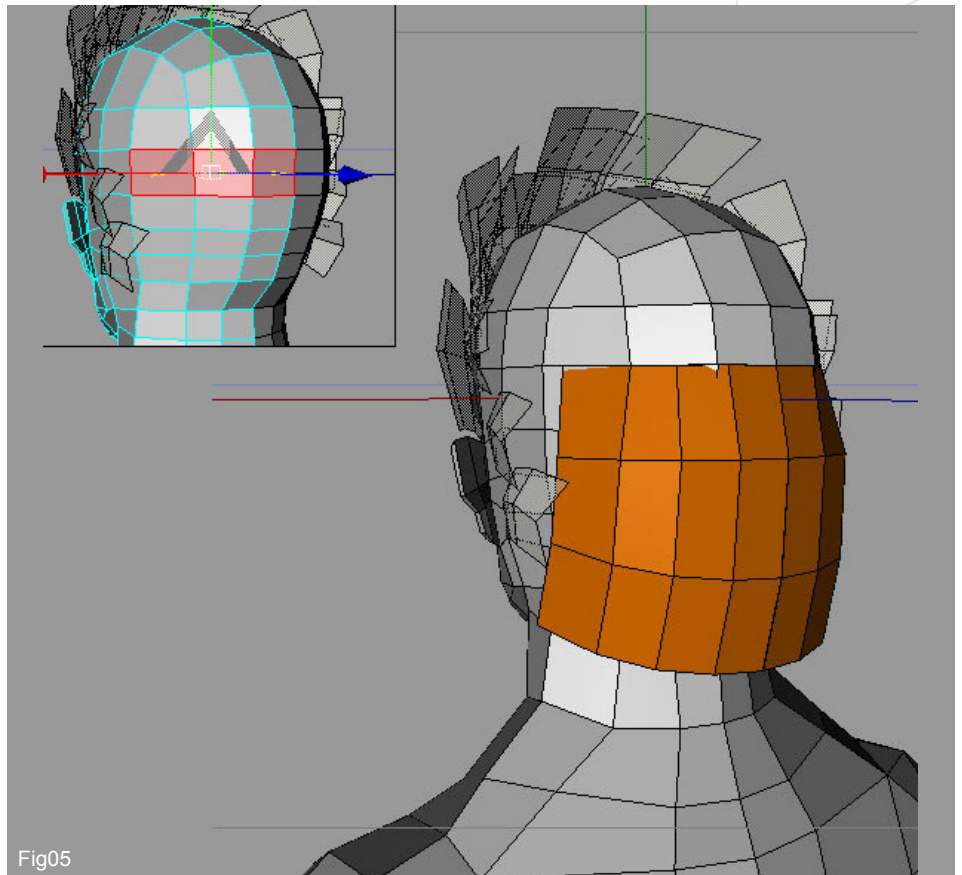


Fig05

6. The central sections are done by three rows of green polygons as seen in Fig06. Once again do not worry about the verts aligning, just concentrate on shaping the mesh to follow the shape of the head in the same way as we have done before.

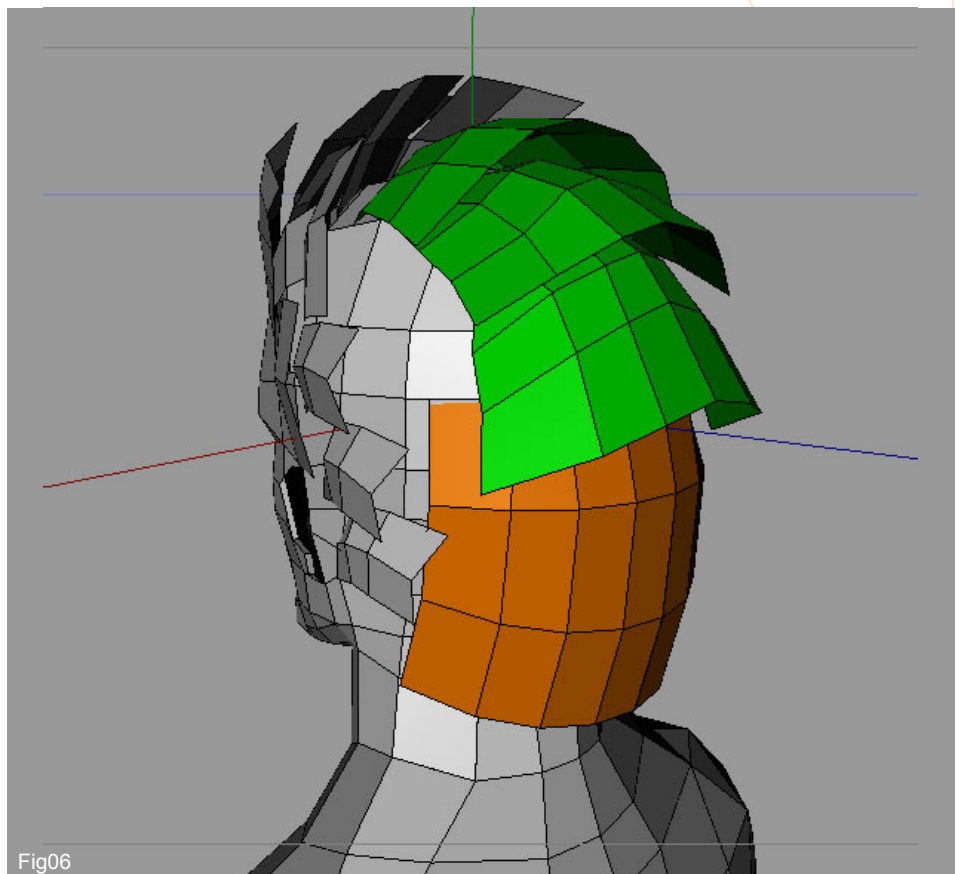


Fig06

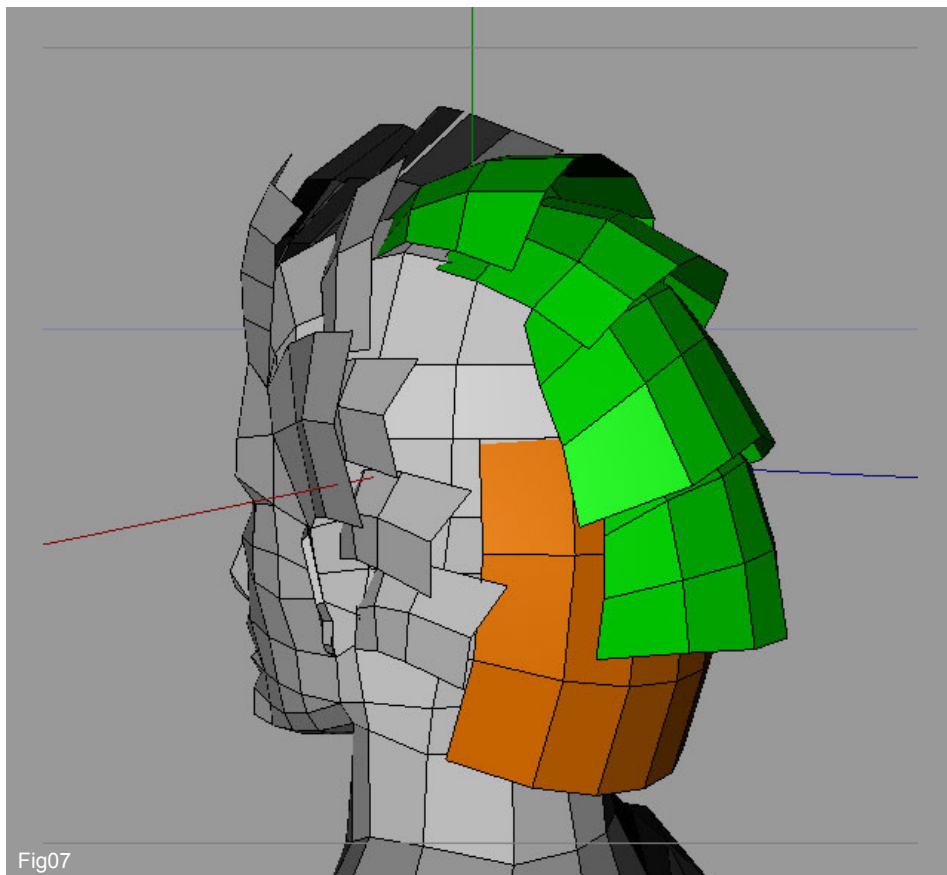


Fig07

7. To finish this section add one more row as shown in Fig07.

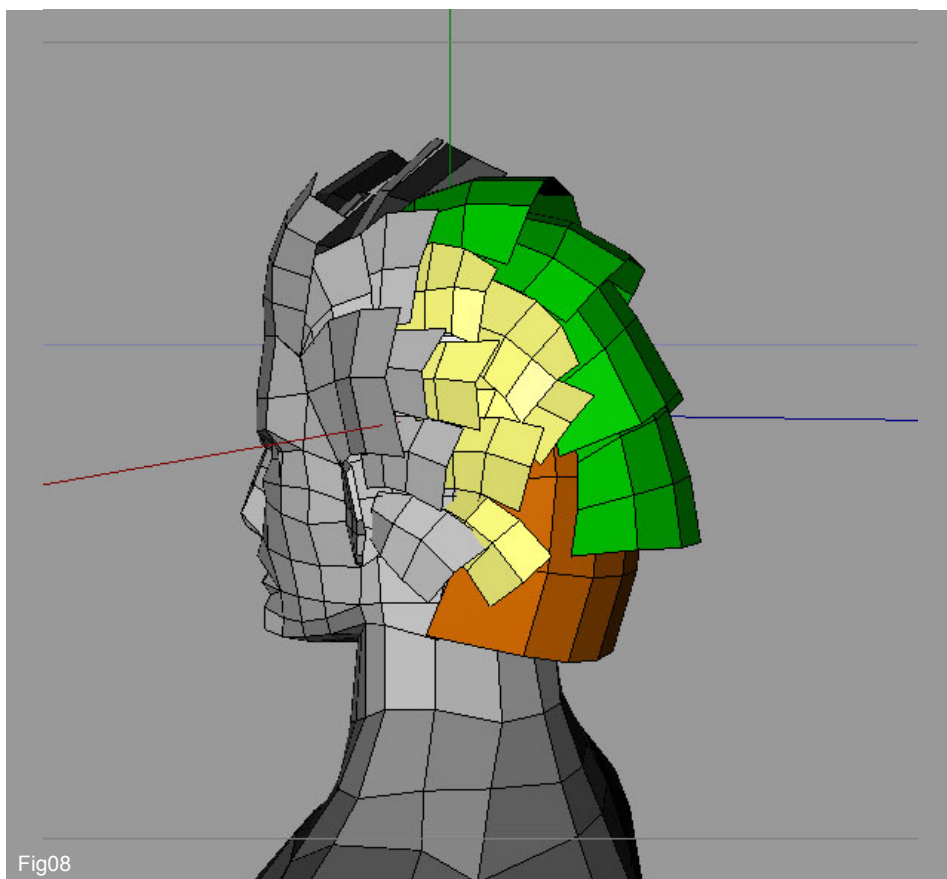


Fig08

8. The front, back and central section of the hair is now complete and all that remains to do is add in a group of planes that will form the sides as shown in Fig08 by the yellow polygons.



9. Adjust the mesh and finally the hair is done
Fig09.

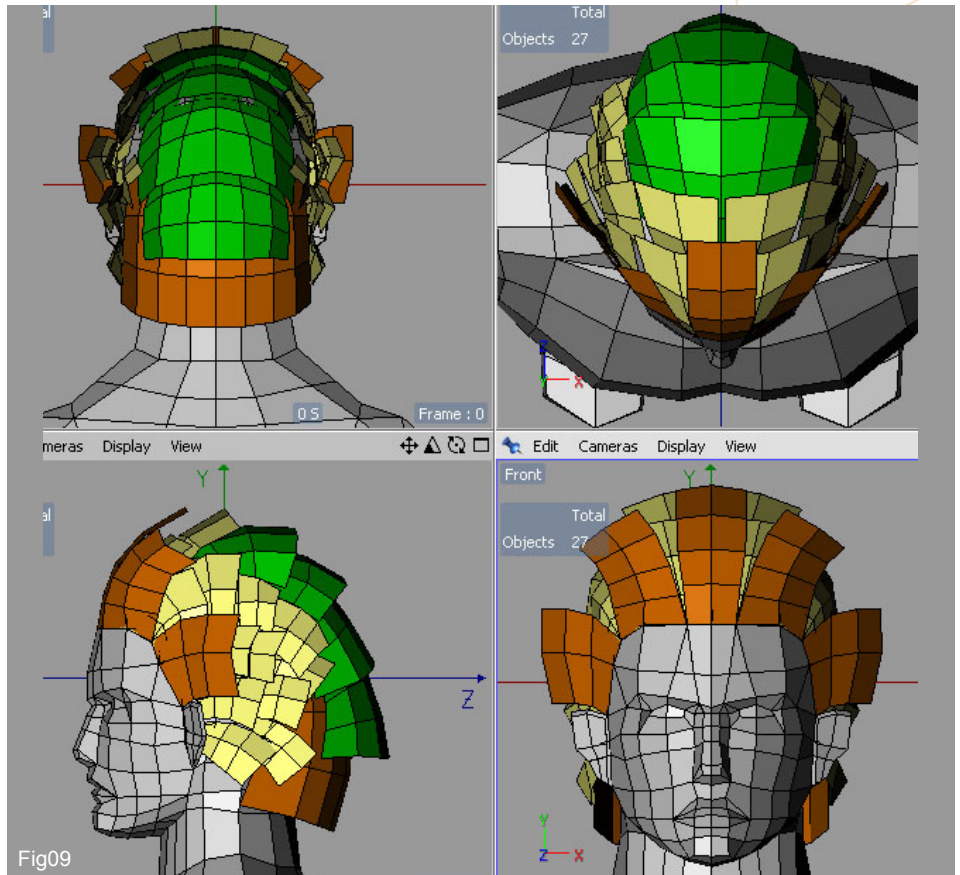


Fig09

10. Now we are going to add the clothing, the first part shall be the trousers. Select the polygons like shown in Fig10. Split them and scale them up slightly.

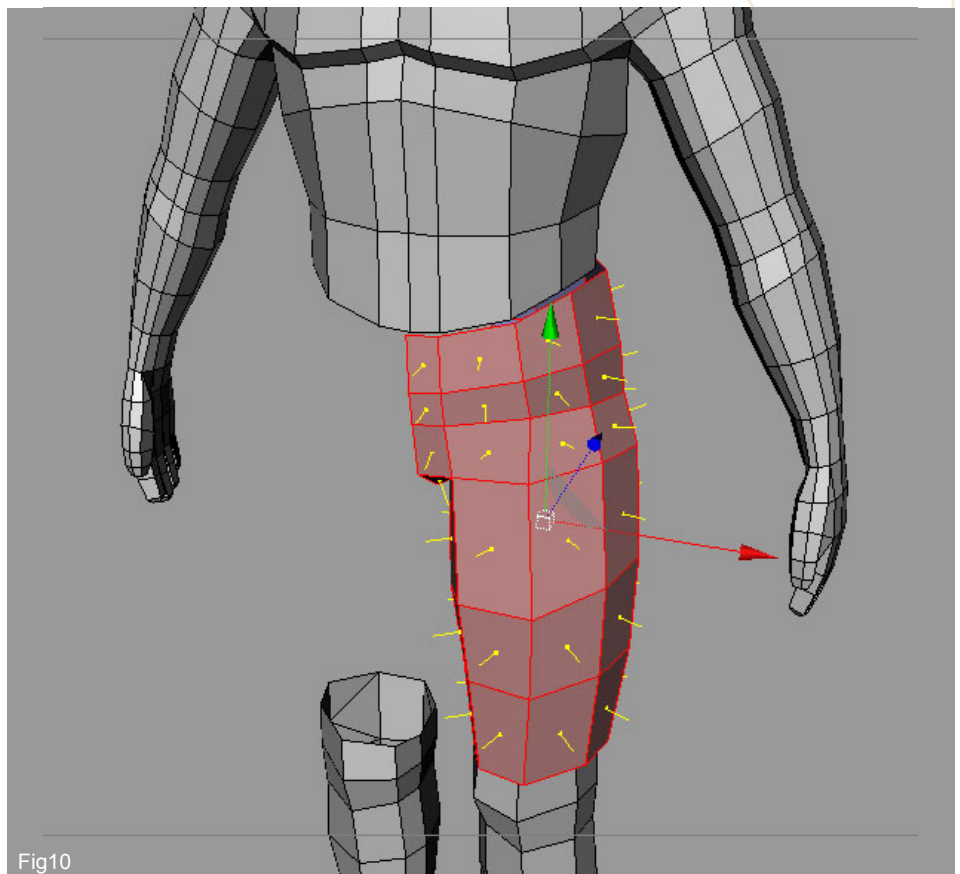


Fig10

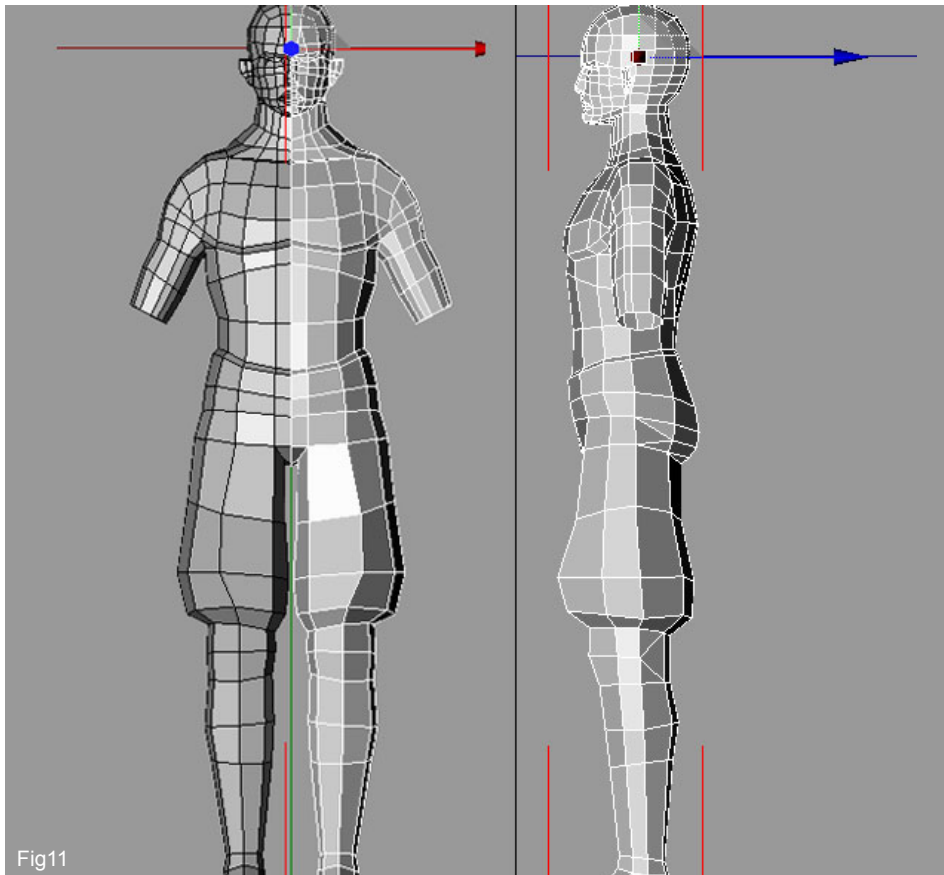


Fig11

11. With this done connect the two objects (body and trousers) and join them by using the "Bridge" tool. Then proceed to transform the verts into positions that resemble Fig11.

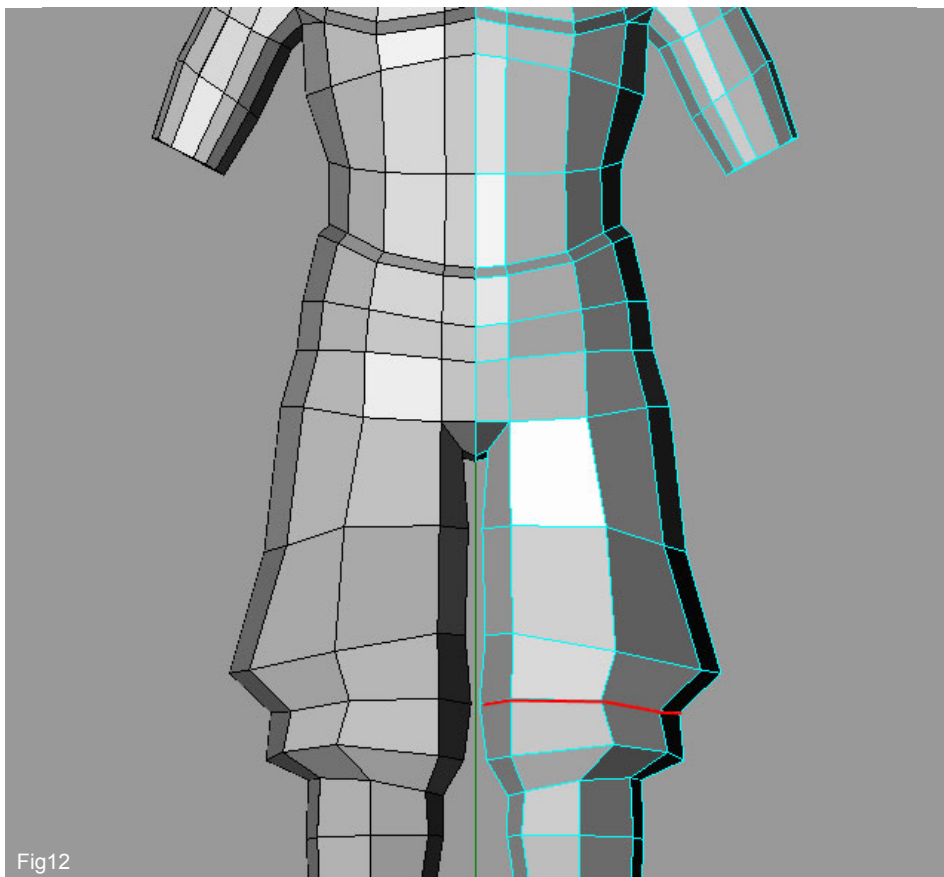


Fig12

12. Add now a cut like shown in Fig12.



13. Add a further cut from the front of the mesh and around to the back as shown in Fig13.

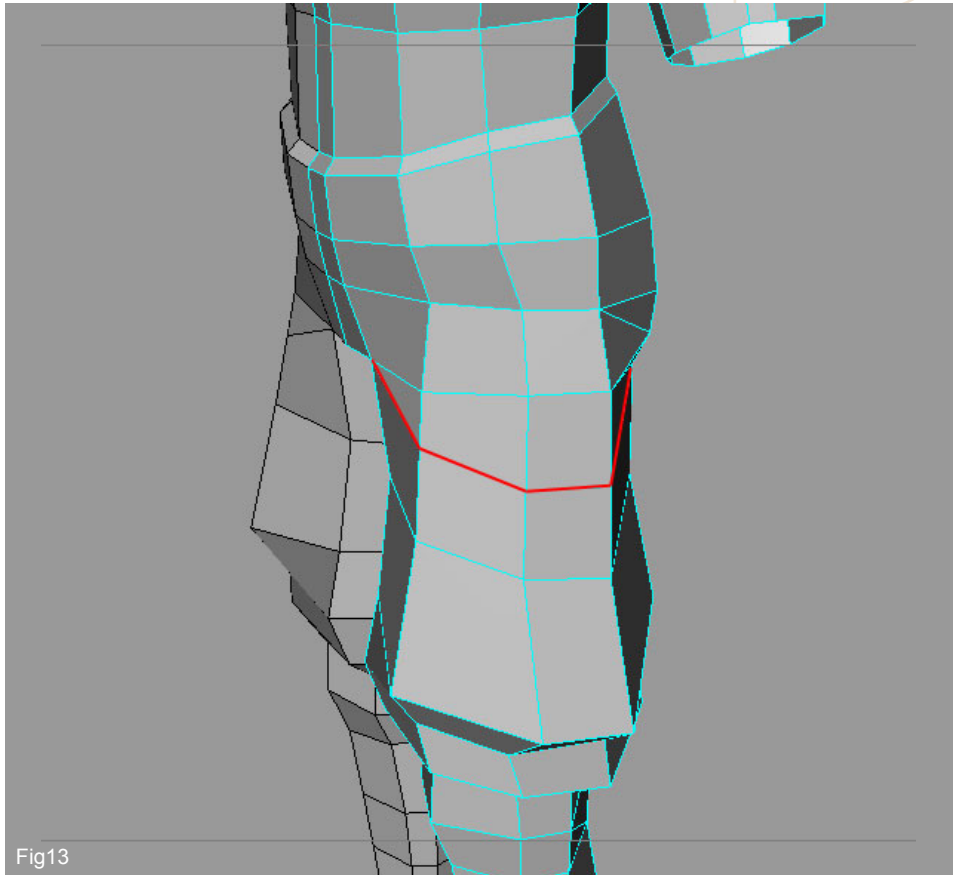


Fig13

14. The next stage involves making further cuts in along the lines shown in red in Fig14 (left) at the back of the trousers. This is to provide the correct creasing in the right areas and once done you can create quads like shown on the right of figure.

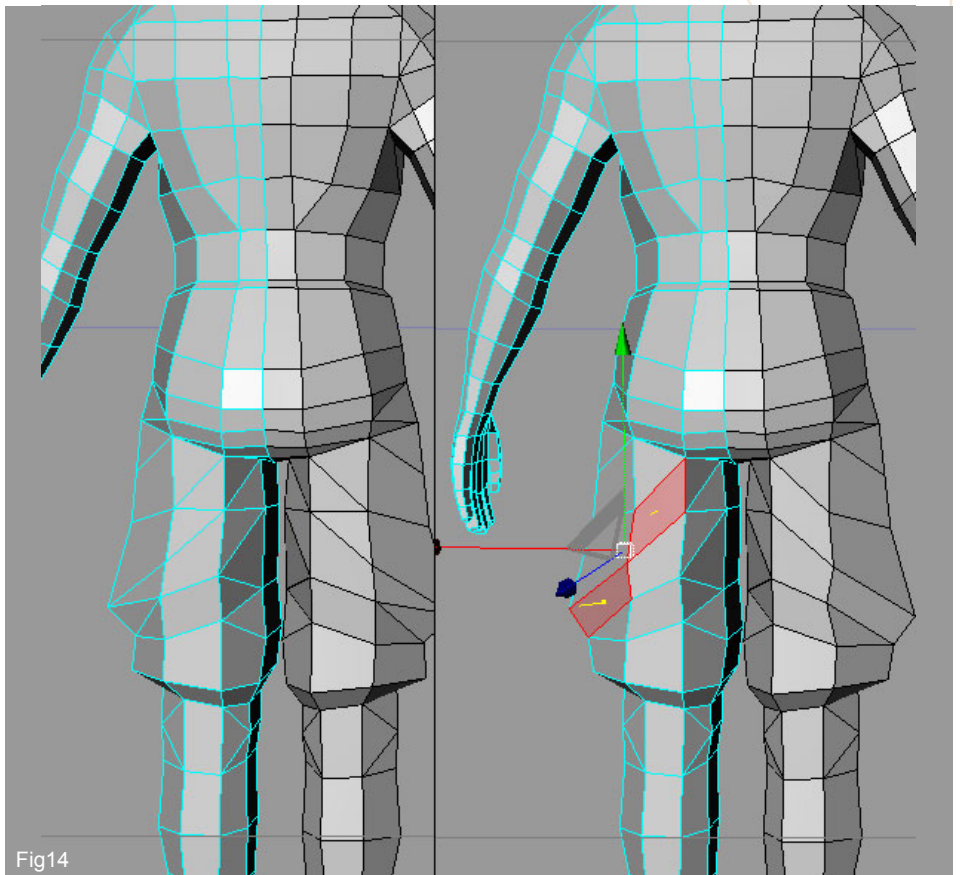


Fig14

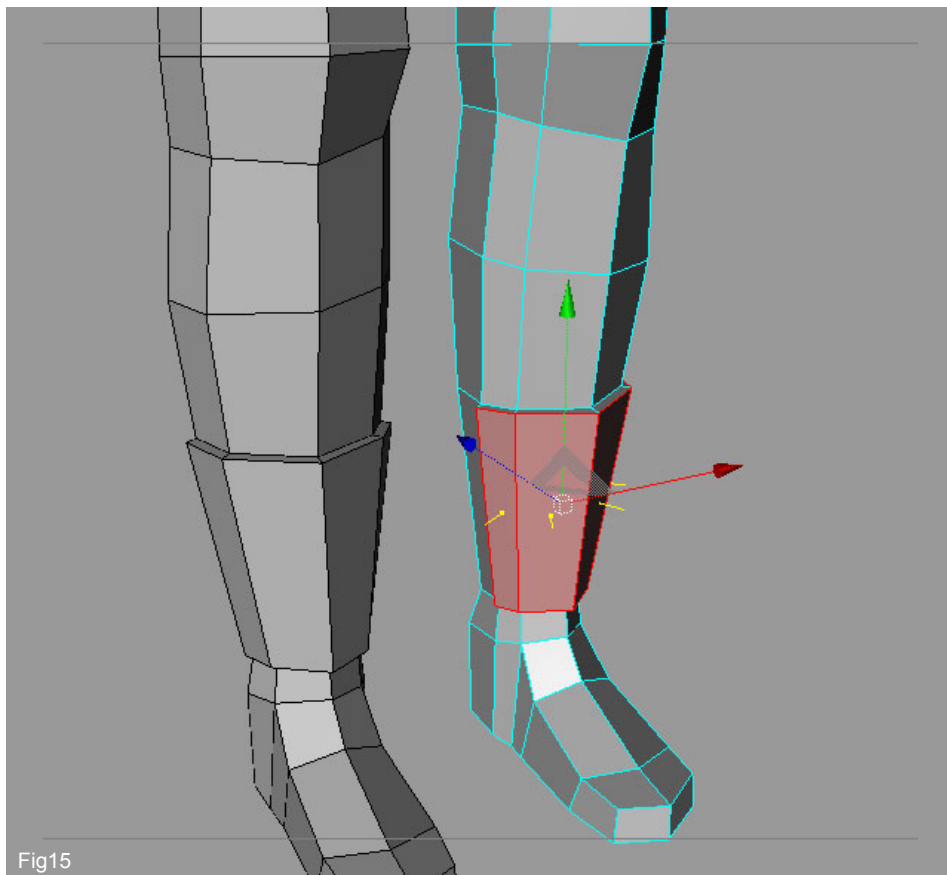


Fig15

15. Next item we will create are the shin guards. Select the group of poly's as seen in Fig15 and extrude them.

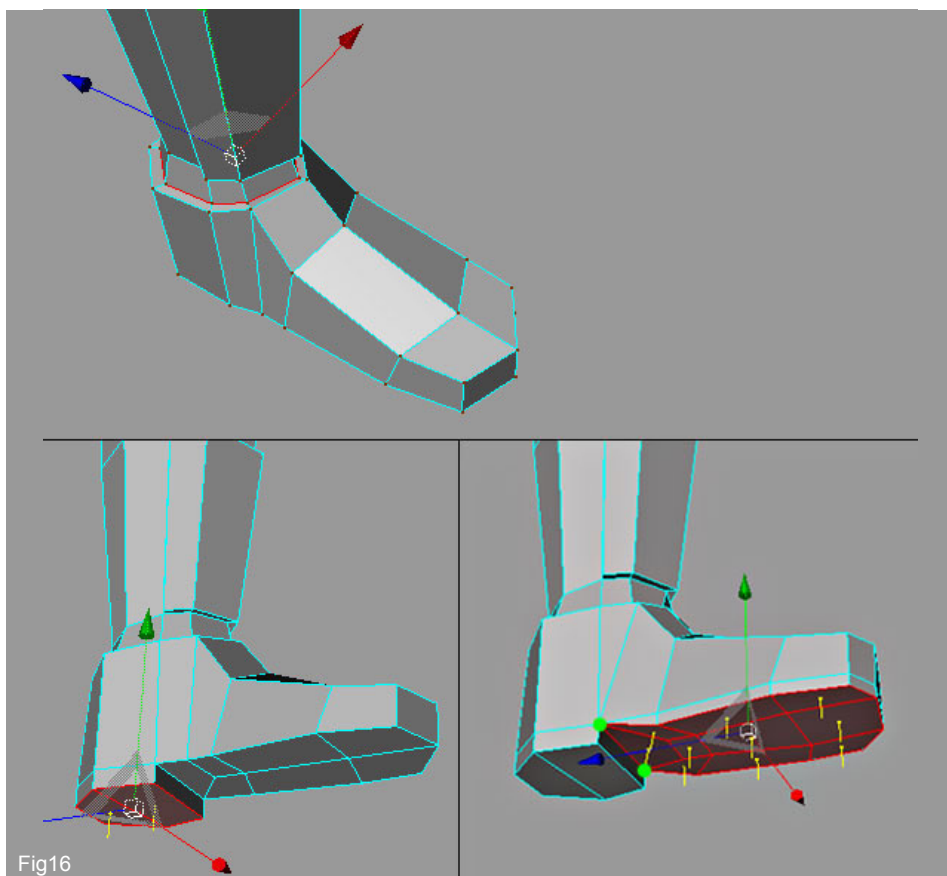
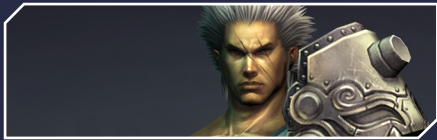


Fig16

16. Now onto footwear. Select the foot and scale it then add a cut like shown in Fig16. Now we need to add a heel and sole to them so first select the two quads at the back and extrude them down as seen on the left of figure. Repeat this for the rest of polygons as shown in the right of figure. Weld now the two verts furthest back on the second extrusion to the ones at the upper front of the heel (green dots on the right).



17. For the Kneepad select the faces shown in red in Fig17 and split them from the body. This, as you already know, will create a new object which we can scale according to the one shown on the right.

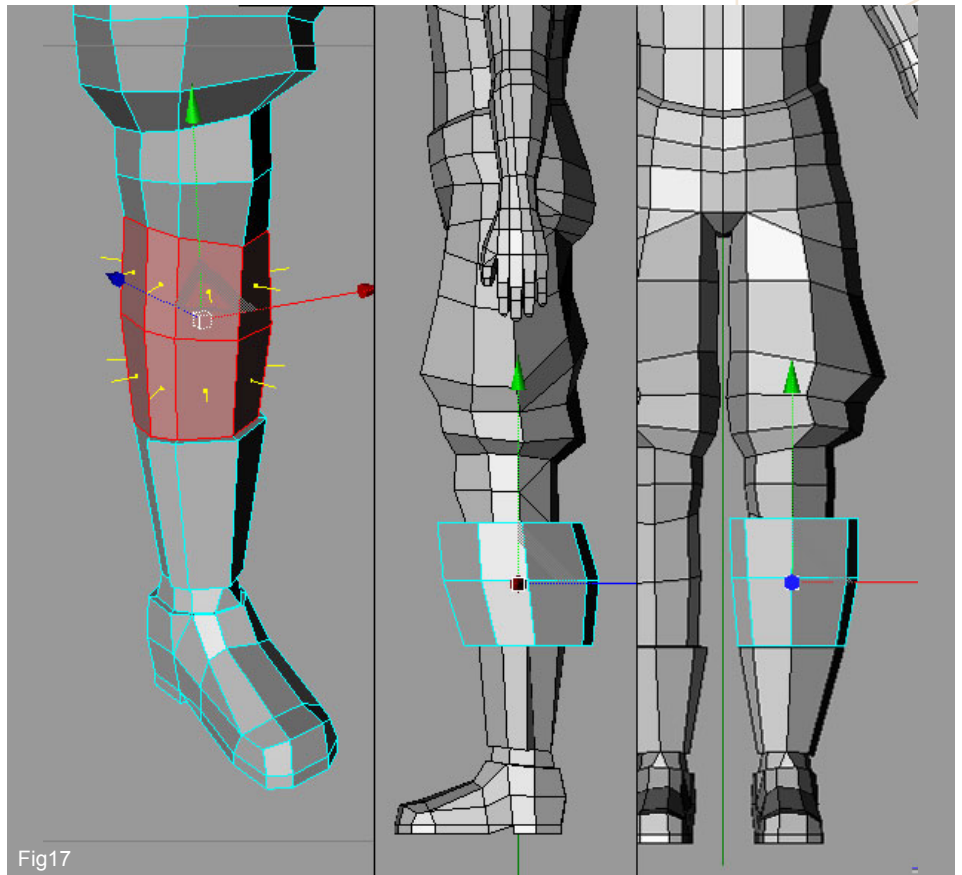


Fig17

18. You will notice that at the moment it has no depth (left of Fig17) so select all poly's and extrude them. Then build the inside using the "Bridge" tool. All that remains is to select the front two top poly's and do two extrusions scaling inwards slightly to form the upper part shown on the right.

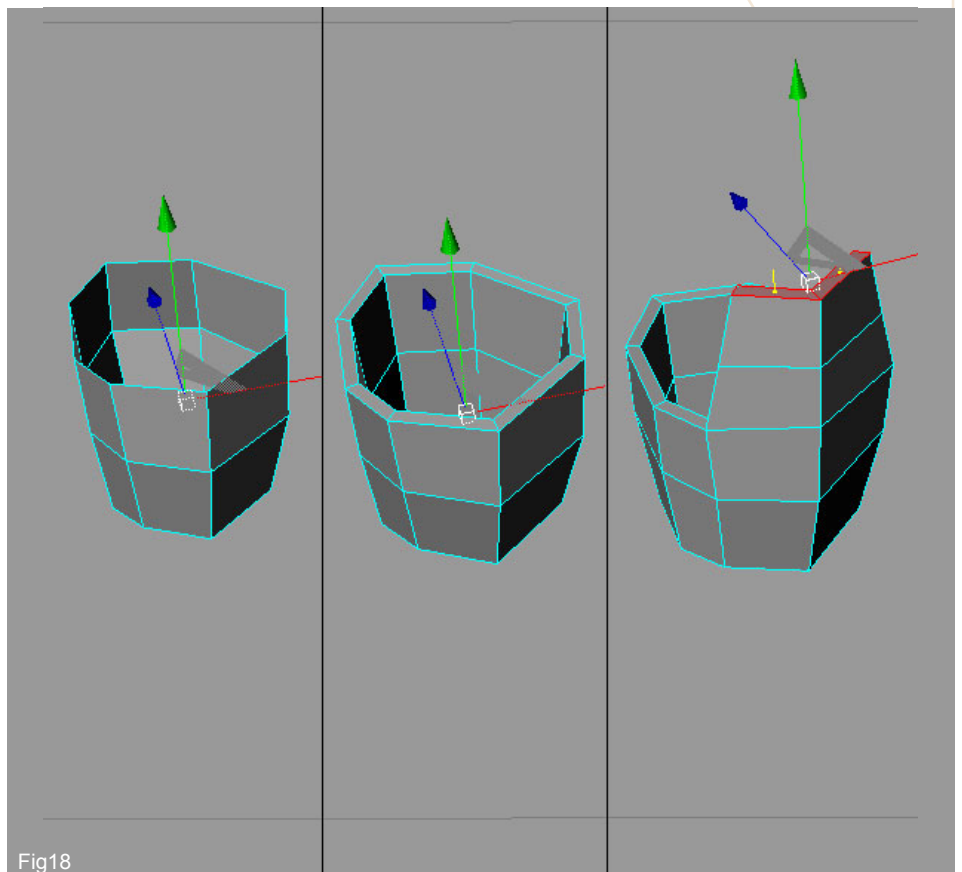
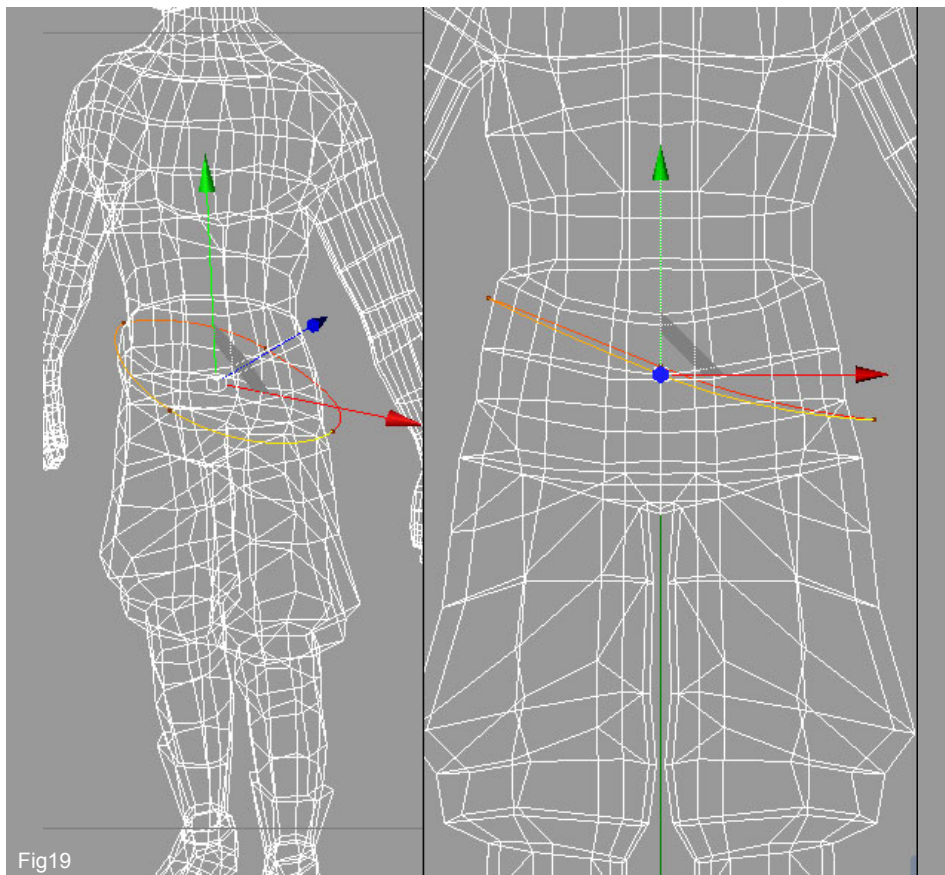
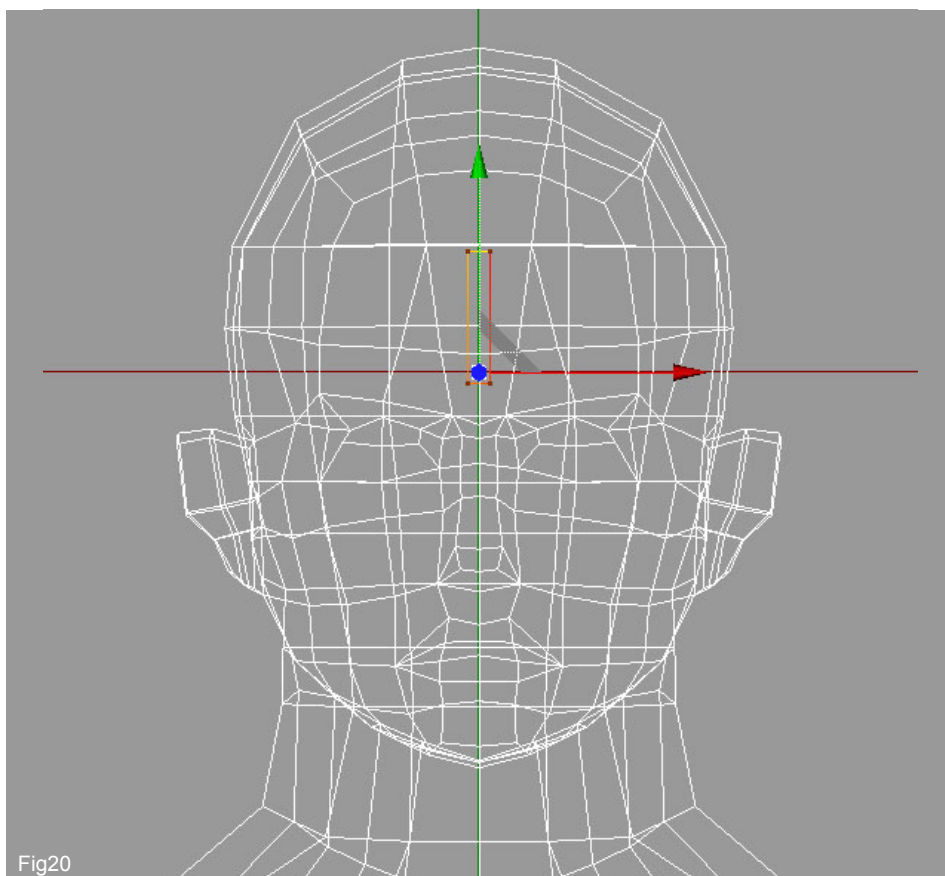


Fig18



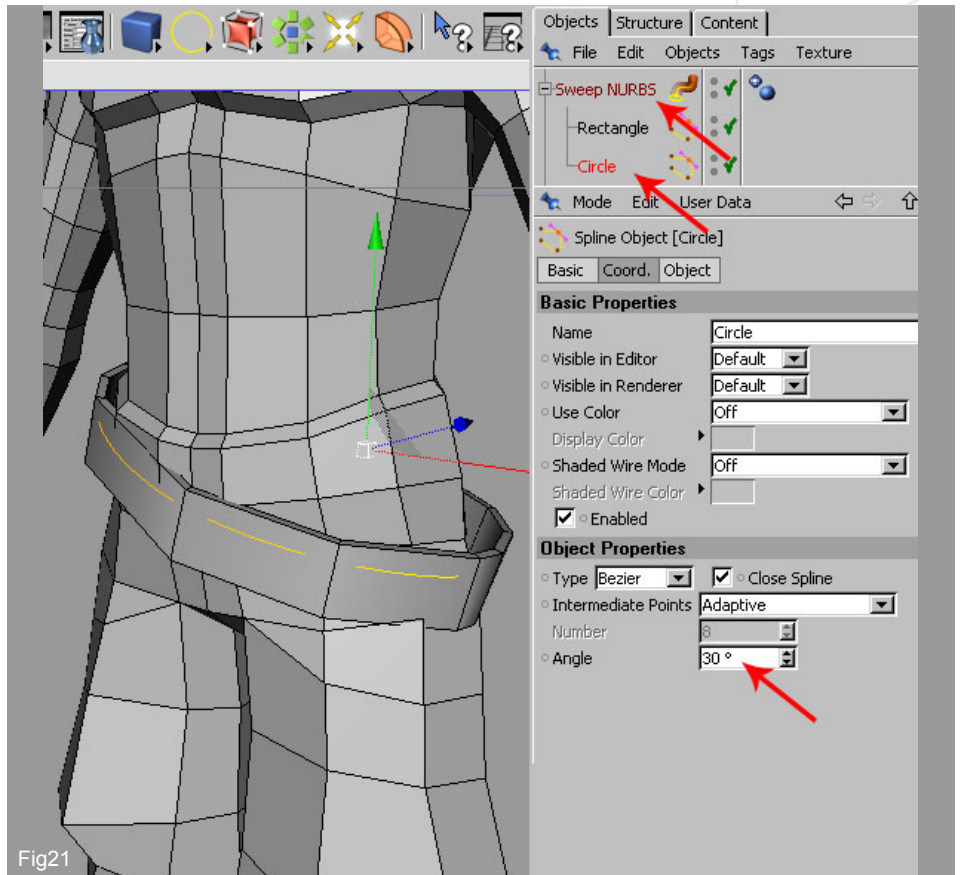
19. This brings us to the final piece of clothing that we shall add in this tutorial; the belt. We will start by creating a Spline. So, from the main menu choose Objects > Spline Primitive > Circle. Make it editable and adjust the shape and its position like shown on Fig19.



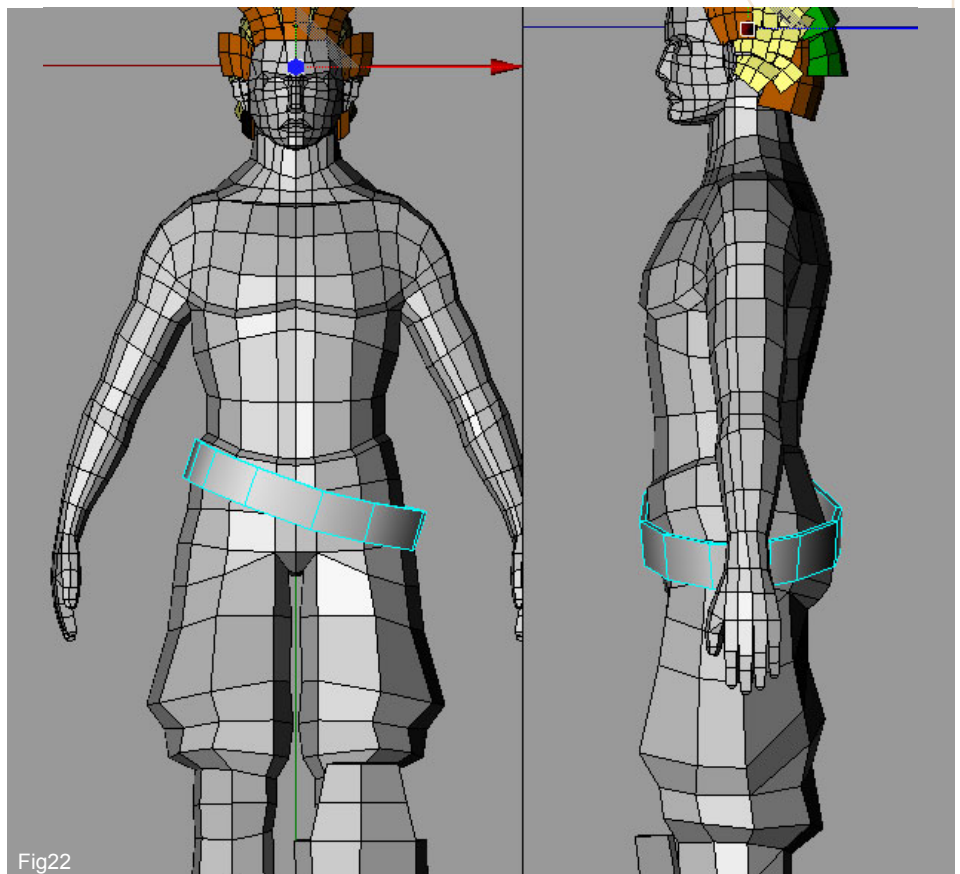
20. Now create a Rectangle Spline and modify it as seen in Fig20.



21. Add a Sweep NURBS object (main menu > objects > NURBS > sweep NURBS) and drag in the two Splines like shown on Fig21 (top right). Now select the Circle Spline and in its properties modify the "Angle" as shown in figure.



22. Adjust now the shape of belt adding some cuts where the belt is intersected with the body and fit the verts around the mesh. Fig22





23. With this done all that remains is to extrude five of the lower faces that make up the left underside and create the cloth that will eventually hang by his side (Fig23).

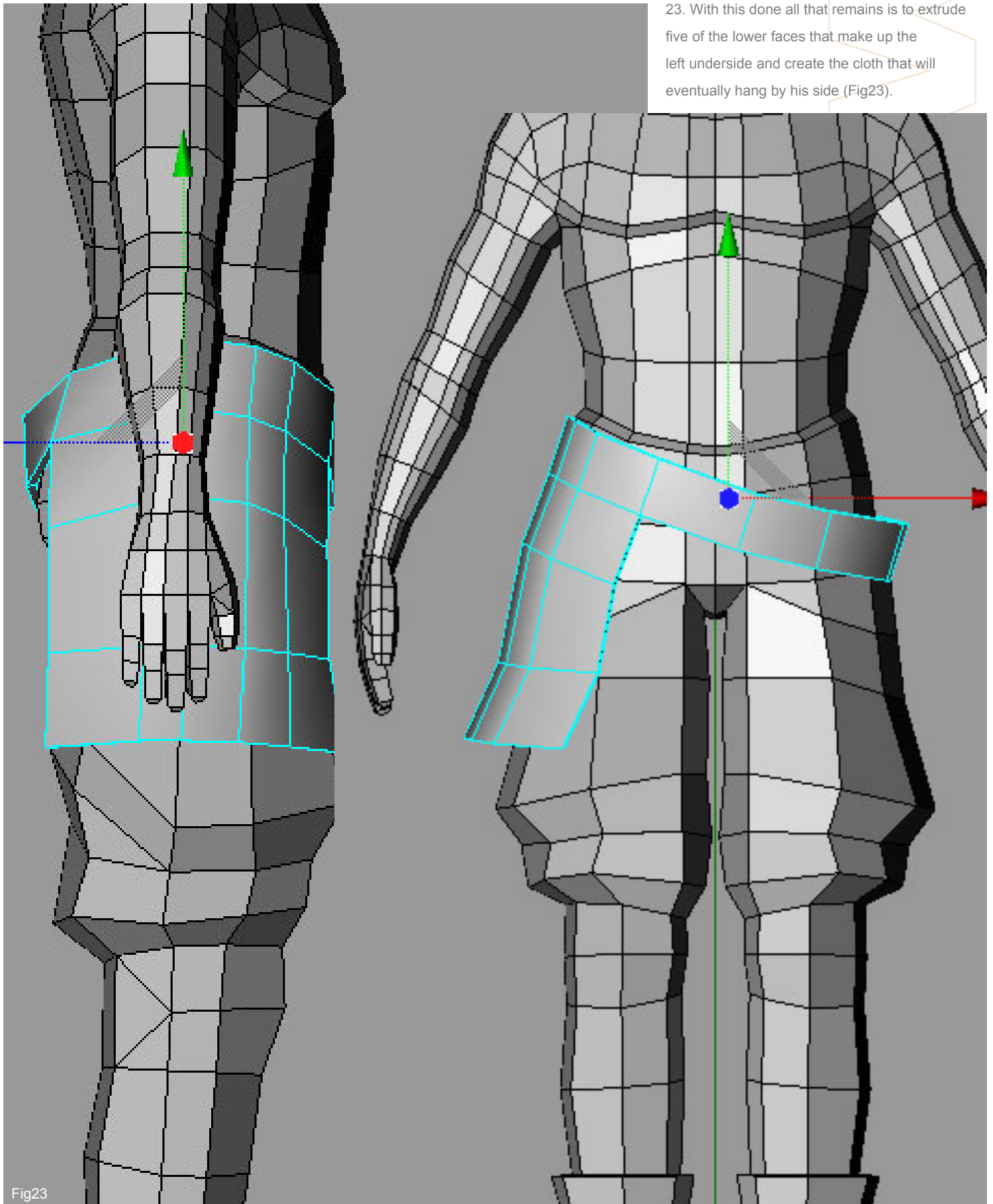
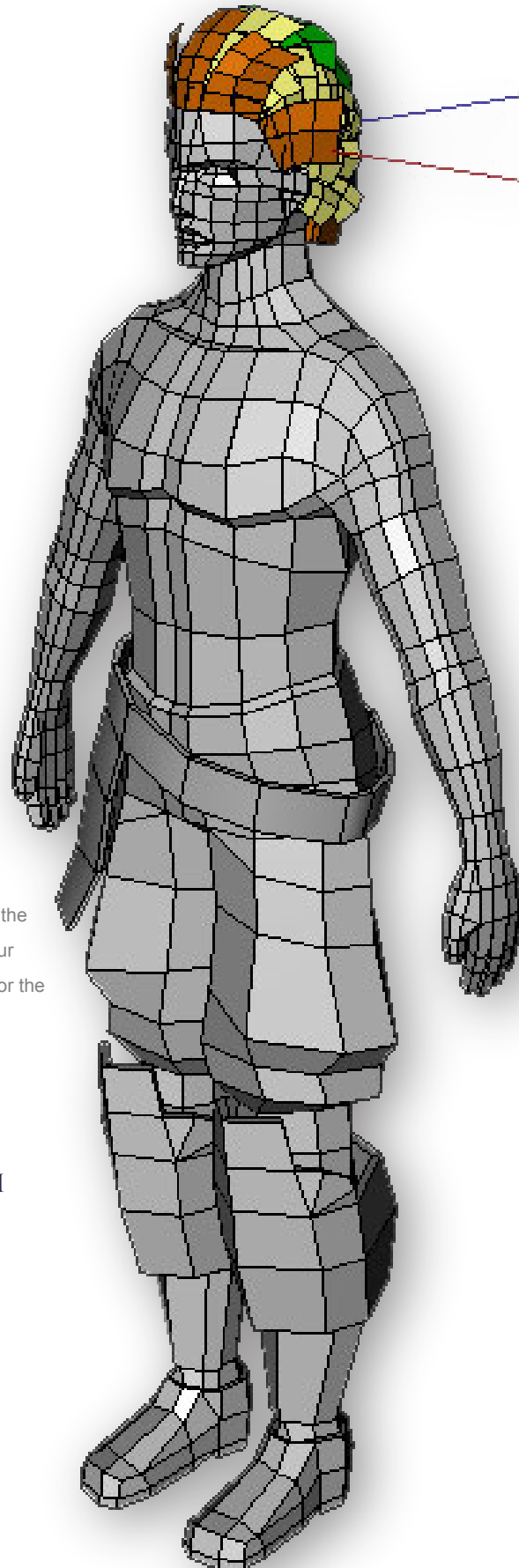


Fig23



SwordMaster



Next month we shall go on and finish the modelling stages by adding the Armour elements before readying ourselves for the texturing phase.

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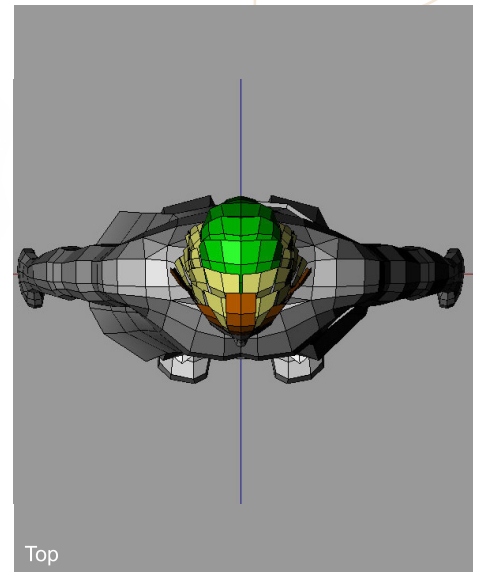
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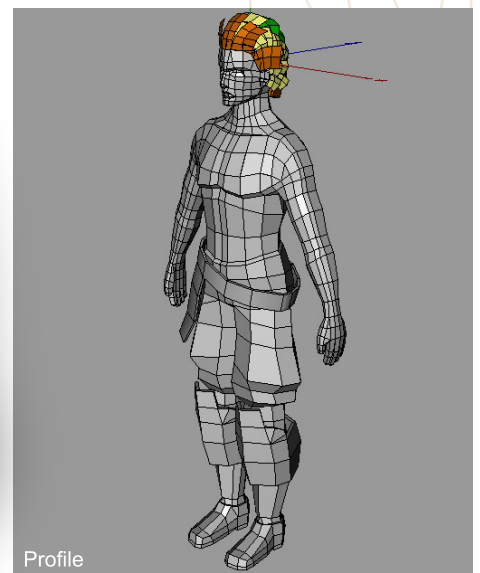
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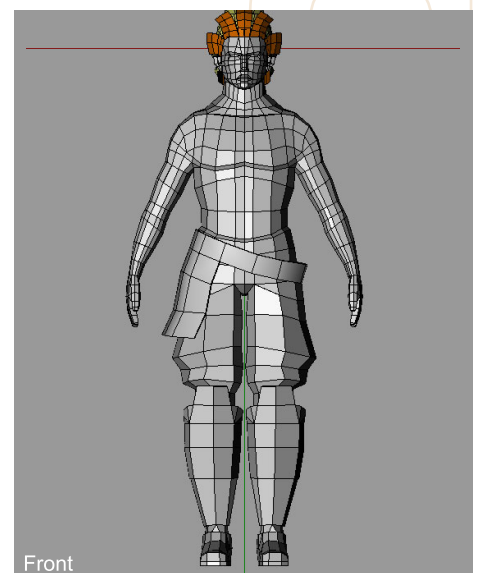
sephiloss@naver.com



Top



Profile



Front



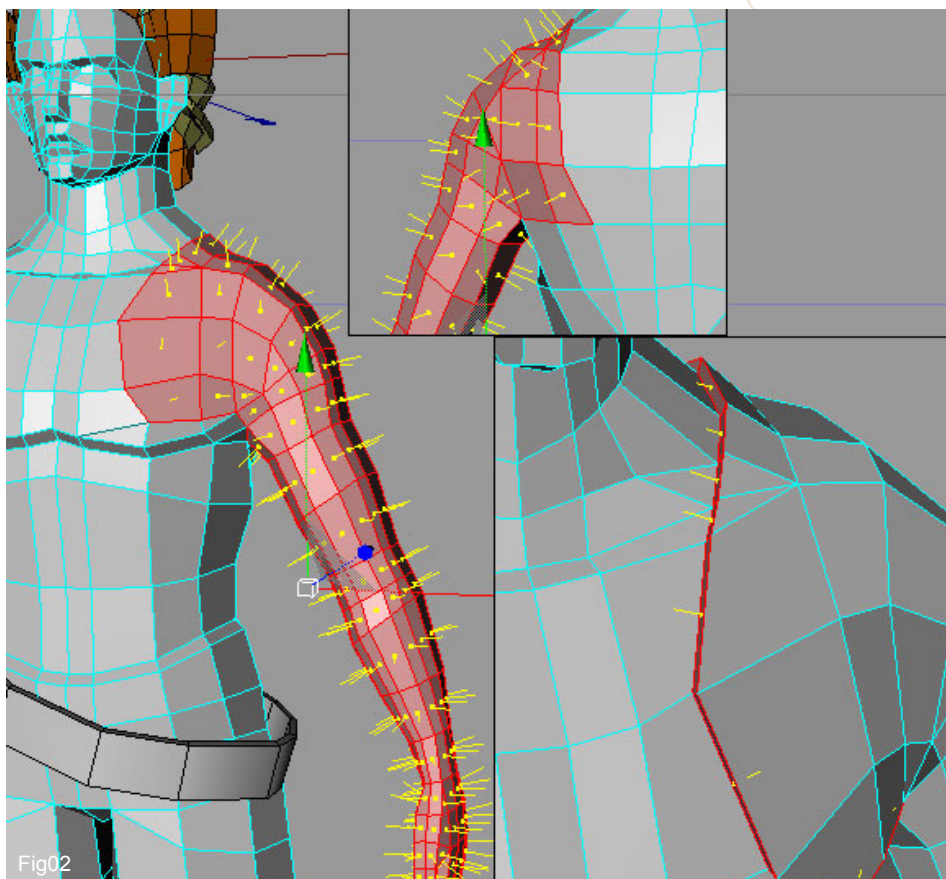
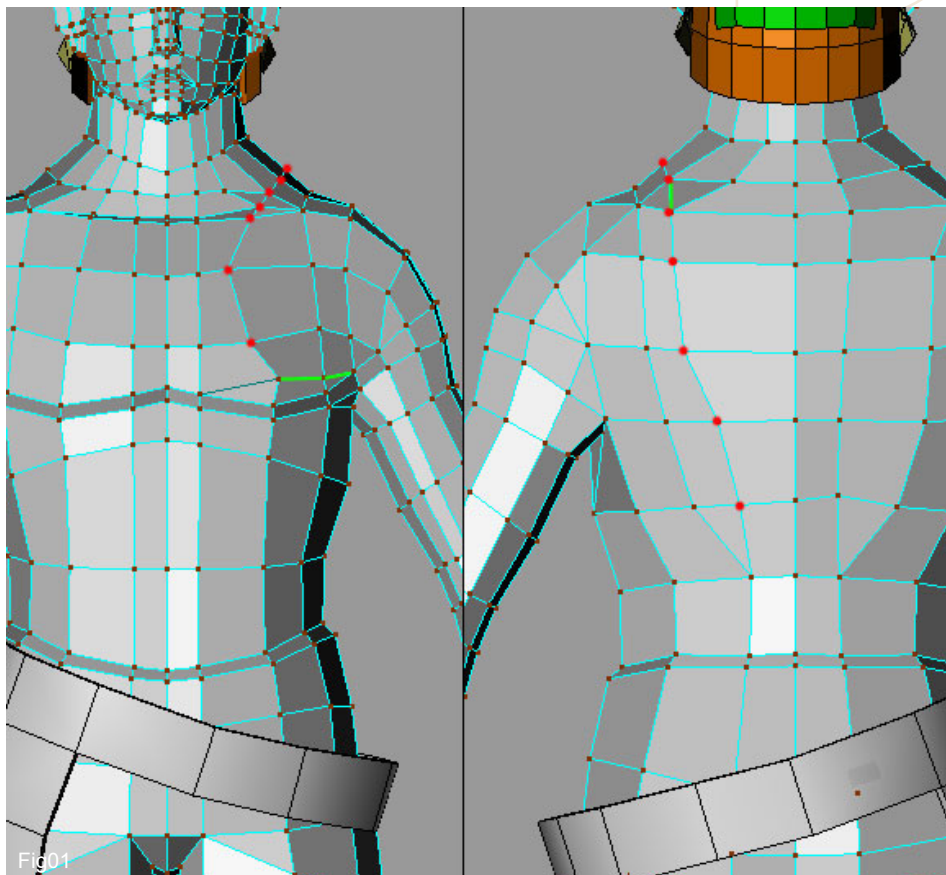
PART 5 MODELLING THE ARMOUR

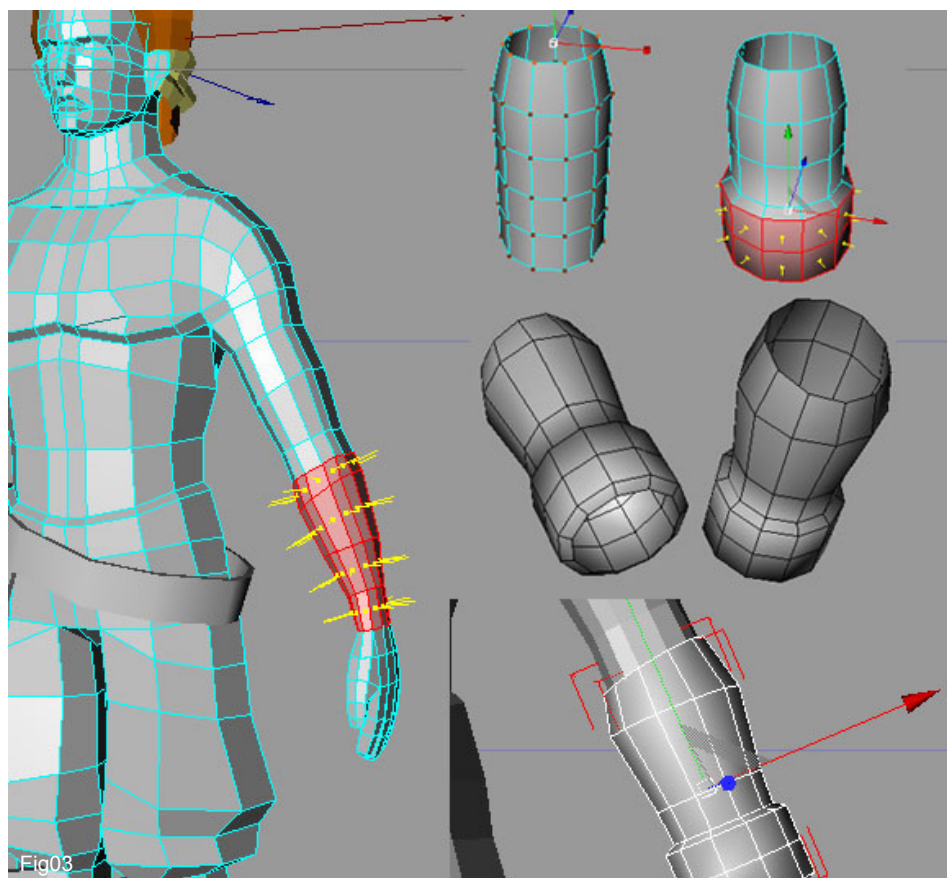
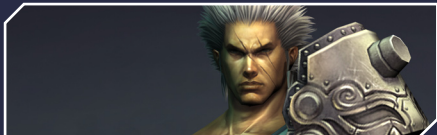
INTRODUCTION:

Welcome to the fifth instalment in the series which will provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Last month saw us adding clothing and hair and now we reach the last phase in the modelling section which will cover giving our warrior some armour to wear.

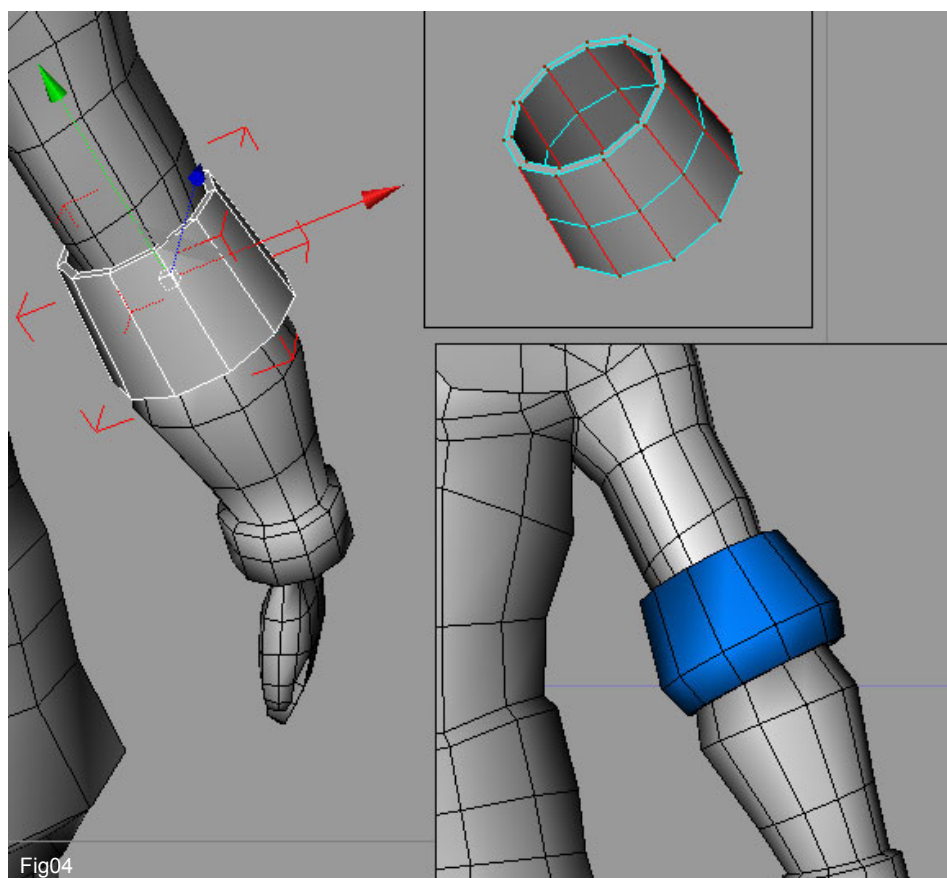
1. If you have followed the previous tutorials then open the last file which saw us make the Belt for his waist. The first thing we are going to do now is re-position some of the verts on his left arm. Before this you need to remove the Symmetry so select the Symmetry object and make it Editable. Move now the verts like shown in Fig01 (highlighted in red) and add two cuts (green line). When you have reached this stage it is time to create the actual armour for the arm.

2. The next step is to select the poly's that make up the whole of the armour section (Fig02). Then disconnect these poly's (right mouse > disconnect, preserve group), scale them slightly and re-position them central to the shoulder edge and then join them using the Bridge tool. (Bottom right of figure).





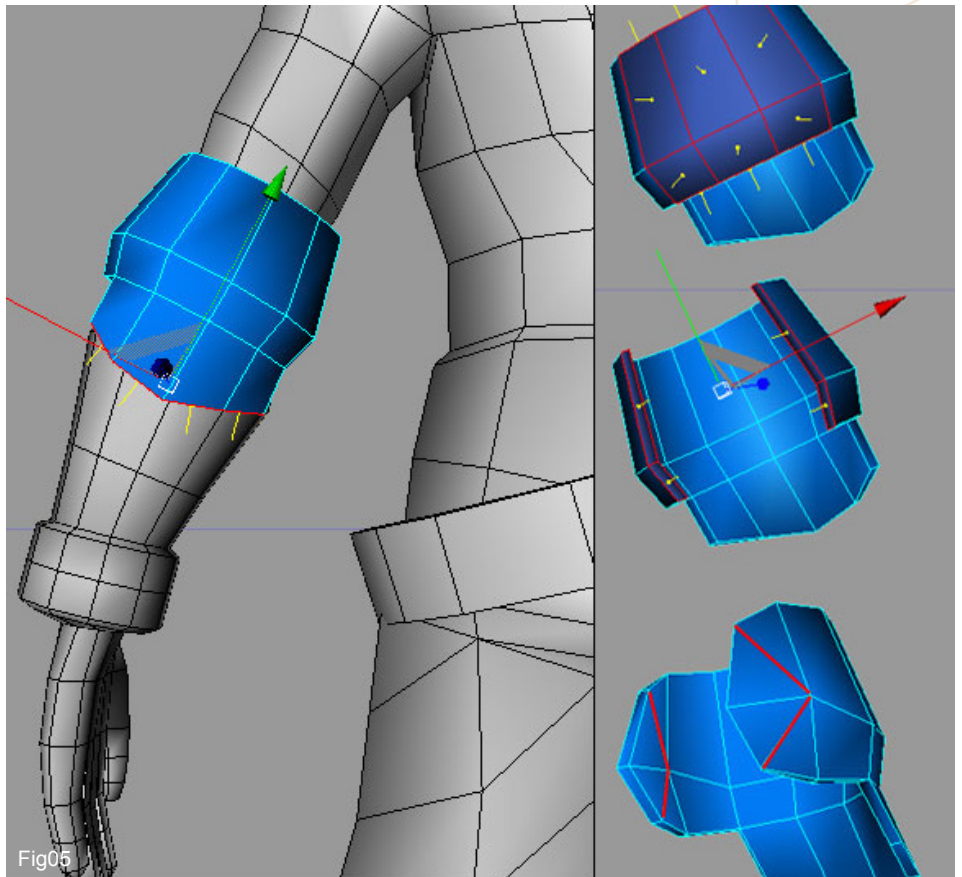
3. Select now the poly's like shown in Fig03 and delete them. Create then a Cylinder with 11 sides and no caps. Scale the top row of verts then bevel the two bottom rows of poly's to form the shape seen on the right. Now place the cylinder between the elbow and wrist and scale it to fit as closely as possible to the elbow. Connect the cylinder to the body and then create a set of poly's around the wrist.



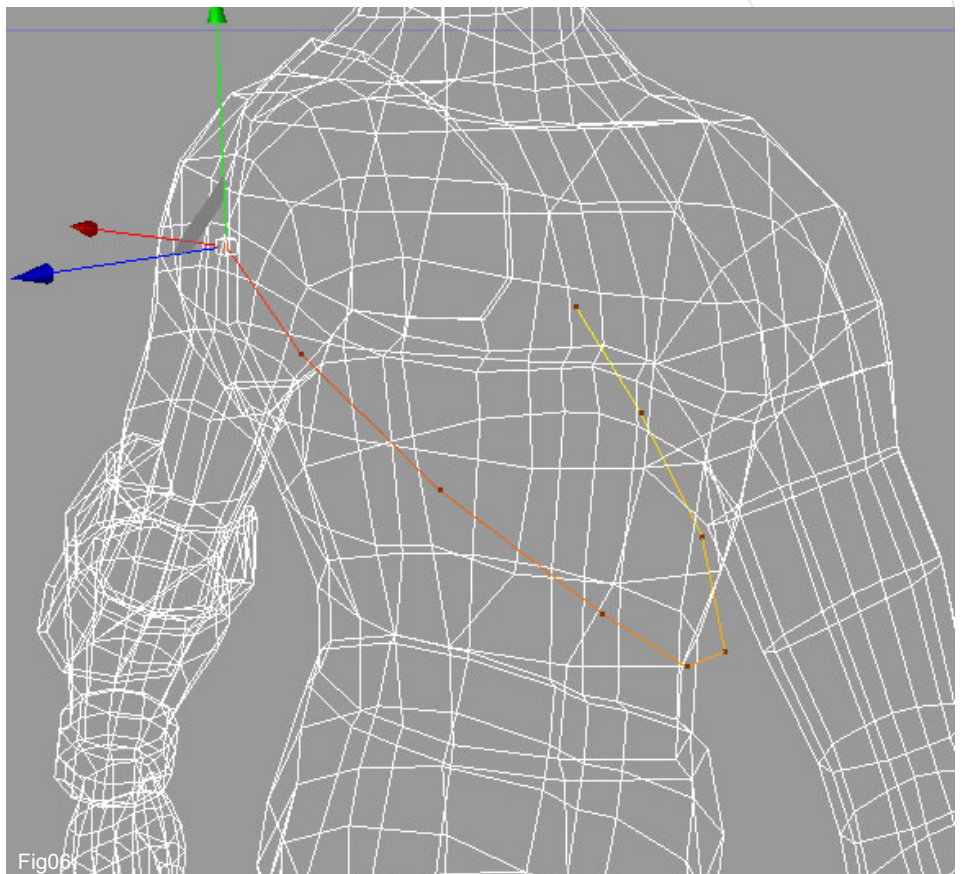
4. Next piece to be made is the elbow guard. Start by creating a tube with 11 sides. Position it like shown in Fig04 and then scale a bit the bottom row of verts. Add a cut as seen on the top right of figure and then re-position the verts like shown on the bottom right of figure.



5. To finish off the piece extrude the middle faces as shown on the left of Fig05. Delete the poly's selected on the top right of figure and then built the poly's as seen on the middle - right of figure. Finally add the cuts like shown and move the verts in the position as seen on the bottom right of figure.



6. Well we have the armour across his left arm but now we need to create a strap that wraps around his body that holds it in place. So we will proceed like we done for the belt. Then create a Spline like shown in Fig06. So from main menu choose Objects > Create Spline > Freehand (in its properties choose the linear type). Draw the shape on the front view the re-position the vertexes around the body like shown.



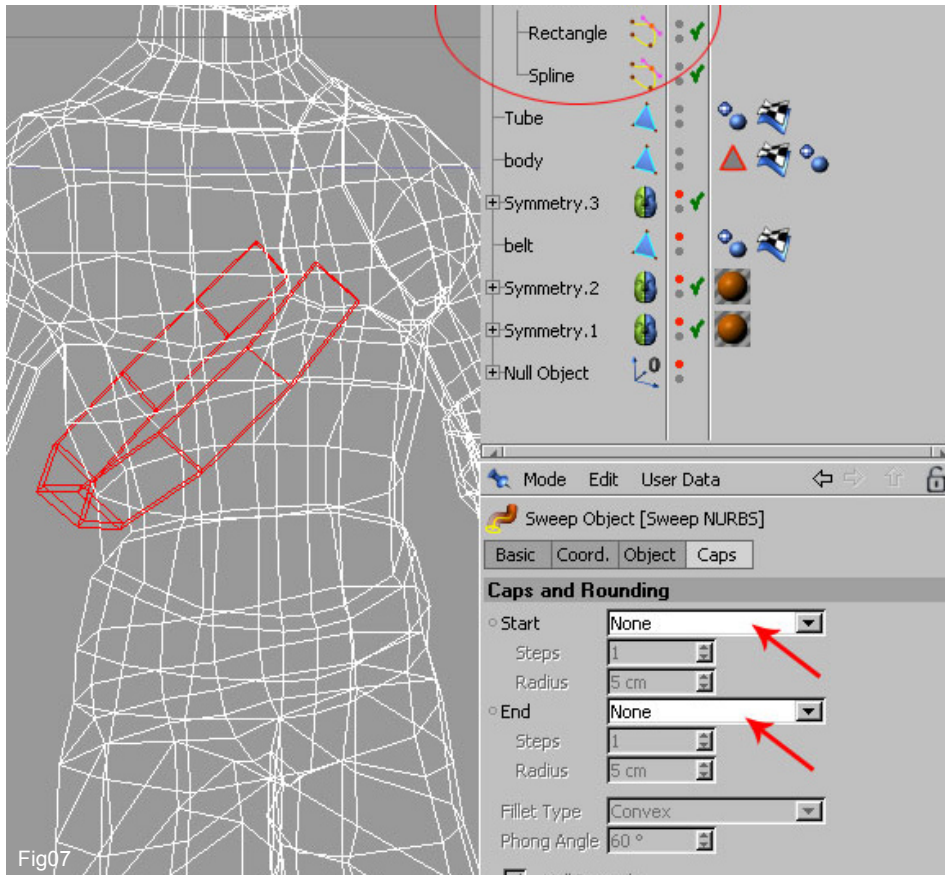


Fig07

7. Create now another Spline. This time choose a simple Rectangle then Add a Sweep NURBS object and drag the two Spline in it. Scale the Rectangle Spline in order to obtain the shape like shown in Fig07. In the Sweep NURBS properties uncheck both capping boxes.

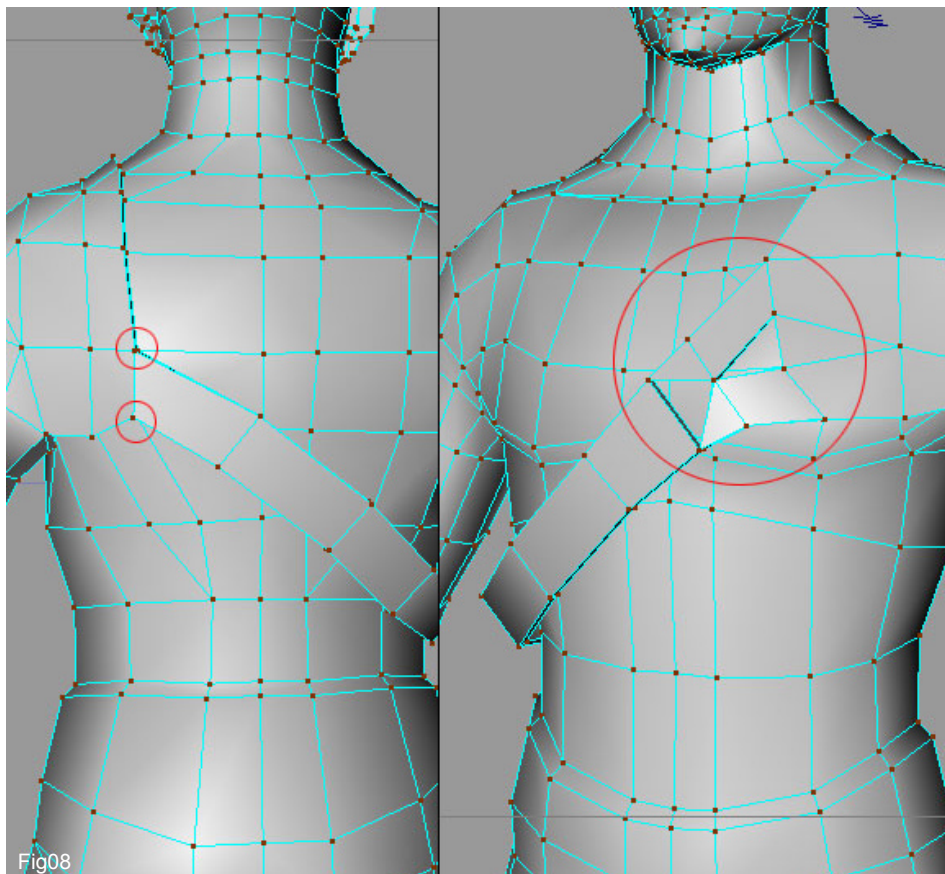


Fig08

8. Once you finished to adjust the position of verts make the Sweep NURBS object editable. Then connect the strap to the body and then weld the verts like shown in Fig08. For the front do the same shape as seen on the right of figure.



9. Next step is to create the final piece of the armour. So create a shape similar to the one on the right of Fig09 which you can do either by creating a Polygon object. Then Extrude all faces of the object and then re-build the back by using "Close Polygon Hole " tool and then "Knife" tool to obtain the same cuts as the front of the object.

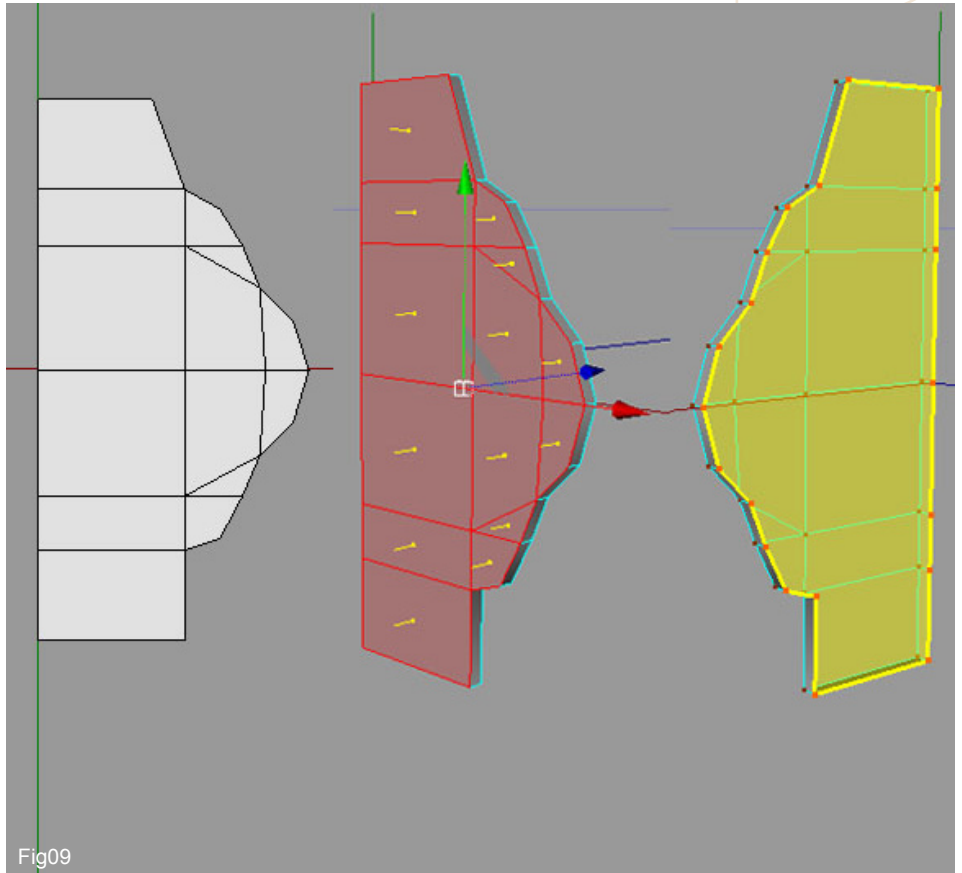


Fig09

10. Duplicate this object by using the Symmetry object. Then make the Symmetry editable. Select all the front poly's and make a Bevel, keeping the height to zero by holding the Ctrl key. (Fig10)

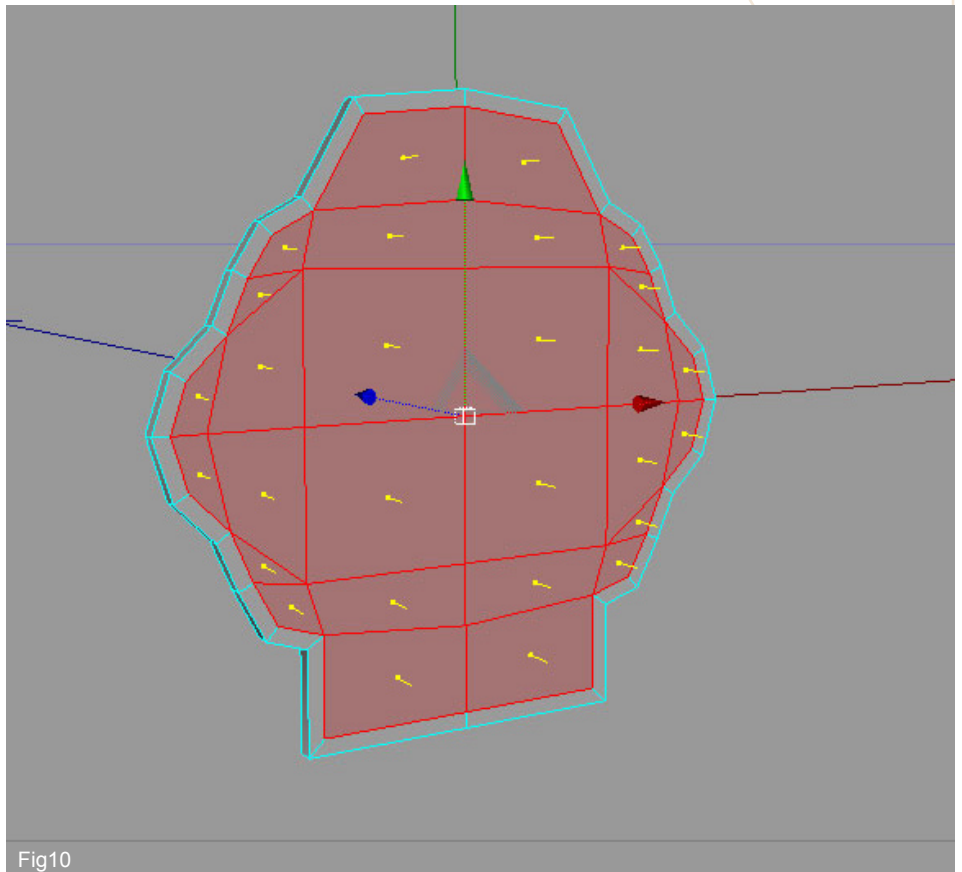
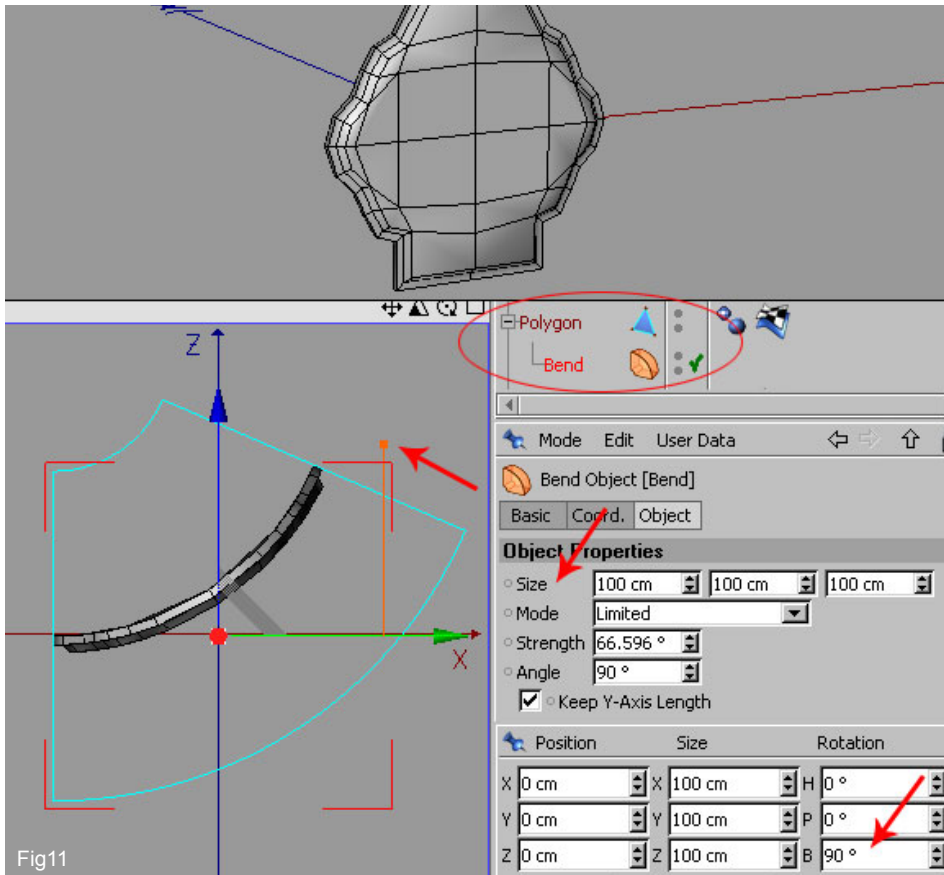
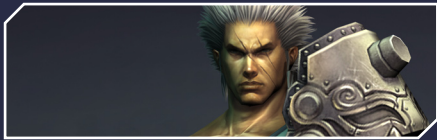
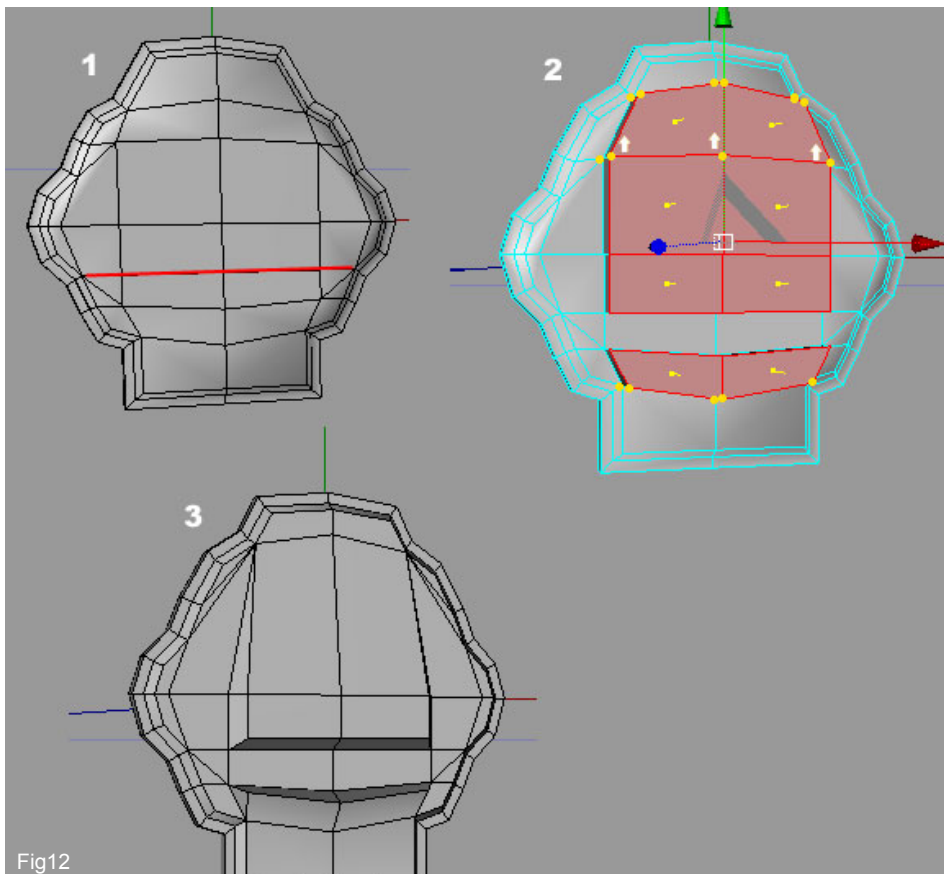


Fig10



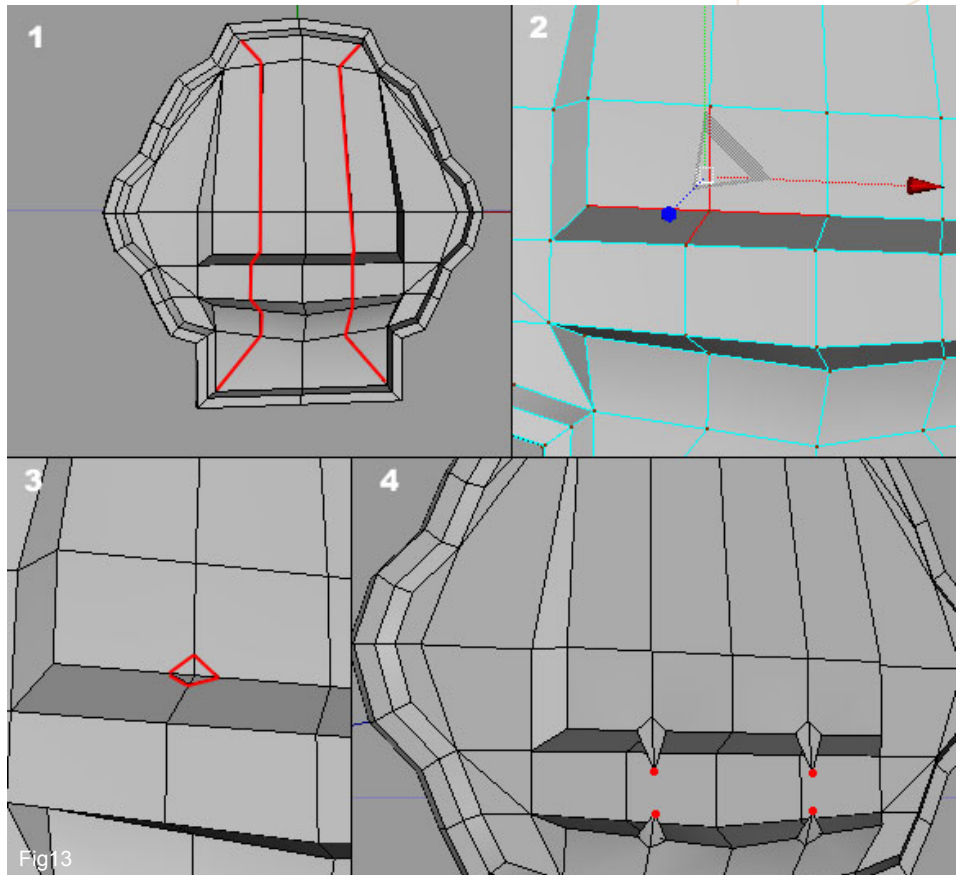
11. With the same group of faces selected add another Bevel by an amount similar to that shown on the top of Fig11. To enable the model to fit around the shoulder it will need to be curved which we can do by adding a Bend modifier. So from main menu choose Objects > Deformation > Bend. Drag it inside the Polygon and reduce its size then rotate it of 90 degrees along the Z axis. Curve it now the object by moving the orange point like shown on the left of figure. It is perhaps better to apply this when the model is complete to form a better shape as we will add some more subdivisions first.



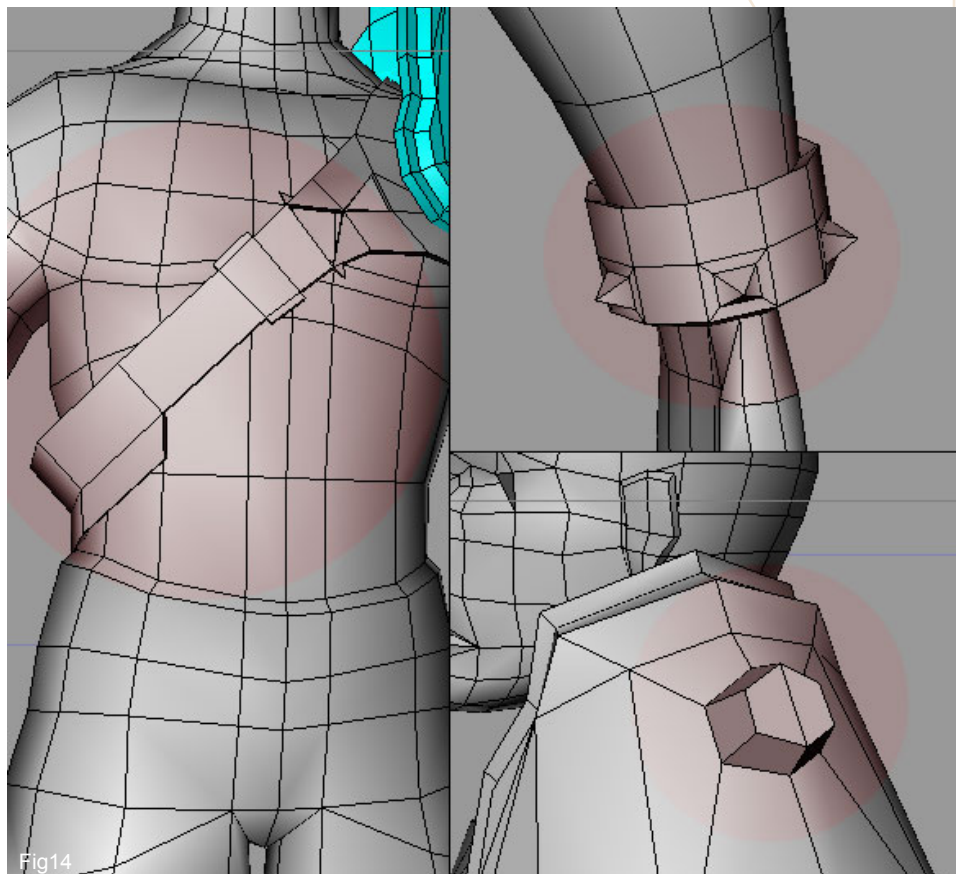
12. Make now a cut across the front as seen in red on stage 1 in Fig12. Select the poly's in red on stage 2 and Extrude them outwards by a similar amount. Now weld up the verts highlighted in yellow to form the version on stage 3. The second row down from the top can be welded to the row above as indicated by the white arrows.

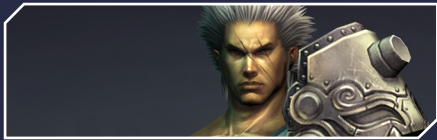


13. Add two cuts along the front marked by the red lines on stage 1 in Fig13. Select the edges like shown on the stage 2 and apply a cut, holding the Ctrl key to define the distance as seen on the stage 3. Do the same for the other edges in order to obtain the same subdivision then select the four verts and move them like shown on the stage 4. If you did not add a Bend modification beforehand then do so now and fit it around the shoulder area.

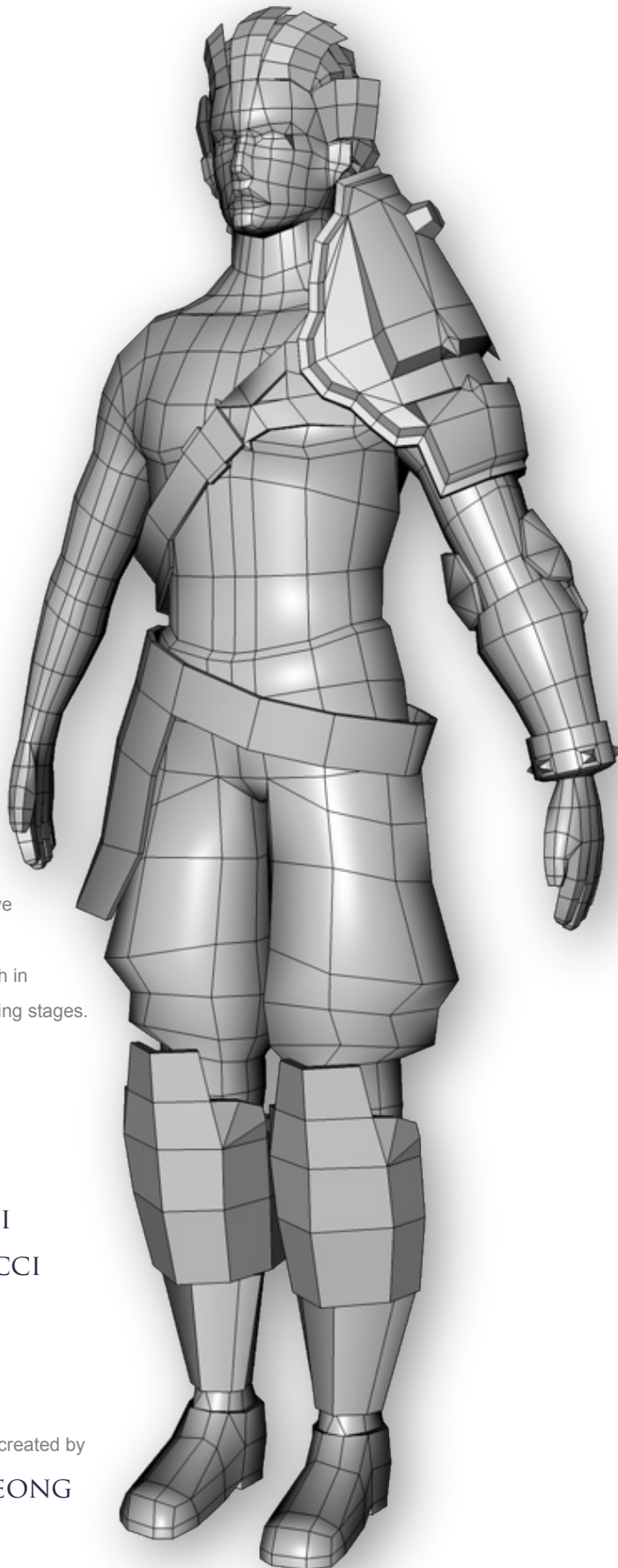


14. All that is left to do now is add a few small details and we will have completed the modelling phase. How you can see from picture (left) I added a few extra poly's around the shoulder strap. On the top-right of figure you can see some studs around the wrist area and finally a small extrusion on the center of shoulder (bottom - right). To make editable the upper shoulder piece of armour you need to select the object and from the right mouse menu choose "Current state to Object", this will make an editable copy of the object which you can modify.





SwordMaster



This concludes the modelling phase of the tutorial and next month we shall begin mapping and unwrapping the mesh in preparation for the texturing stages.

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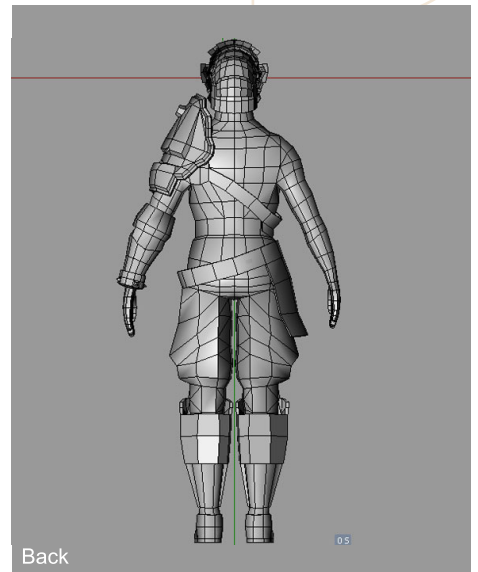
The 'Swordmaster'

Character was originally created by

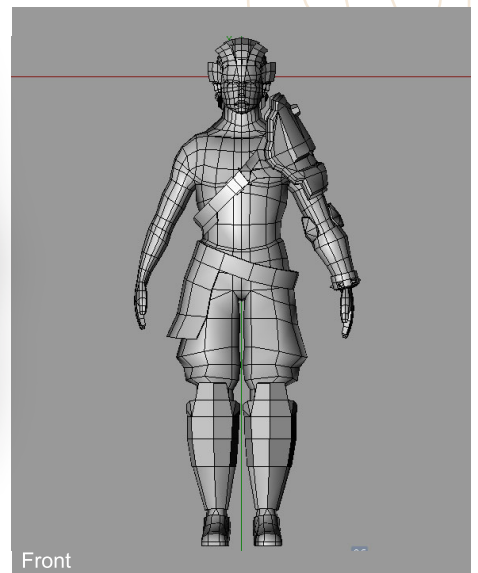
SEONG-WHA JEONG

www.xcloud.net

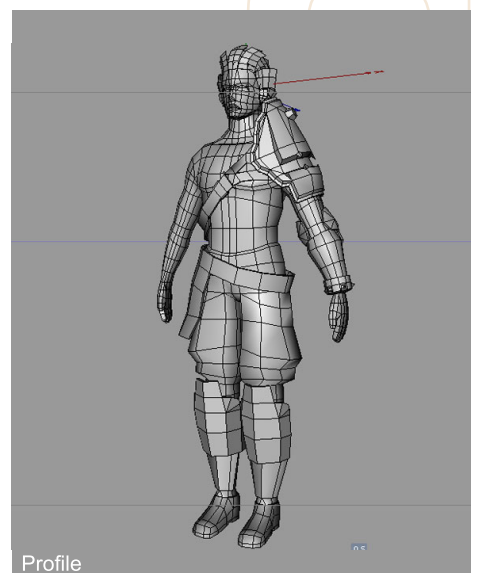
sephiloss@naver.com



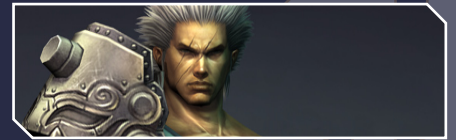
Back



Front



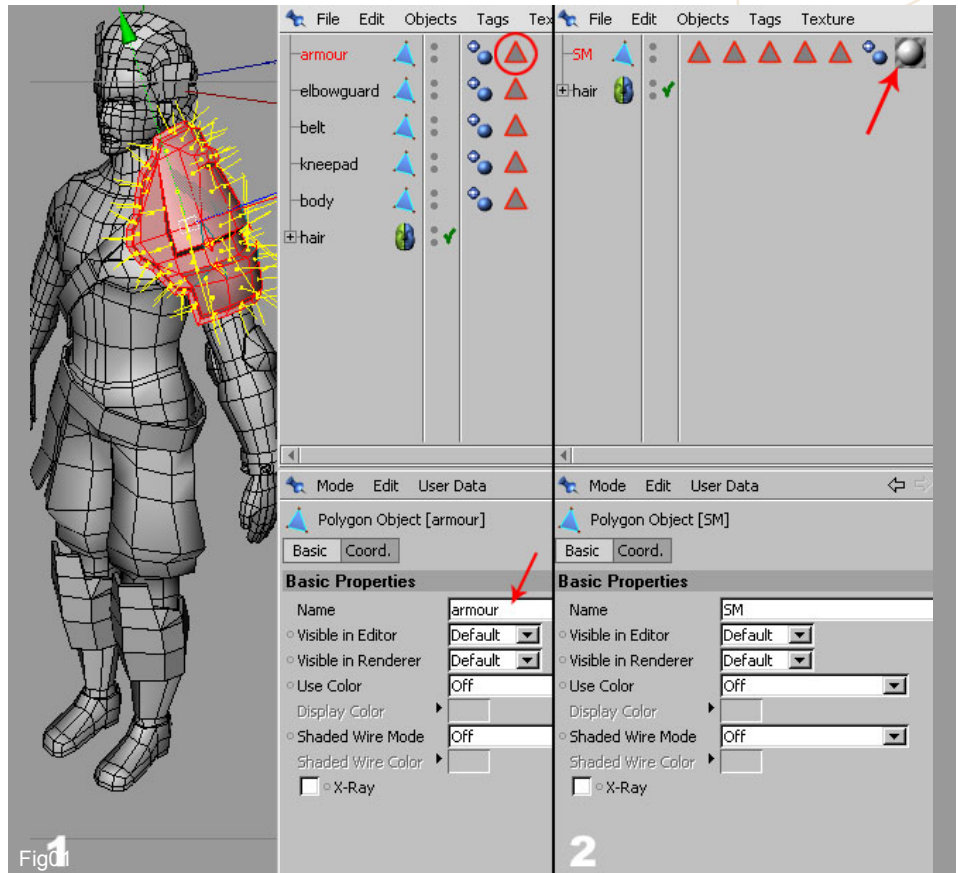
Profile



PART 6 MAPPING AND UNWRAPPING.

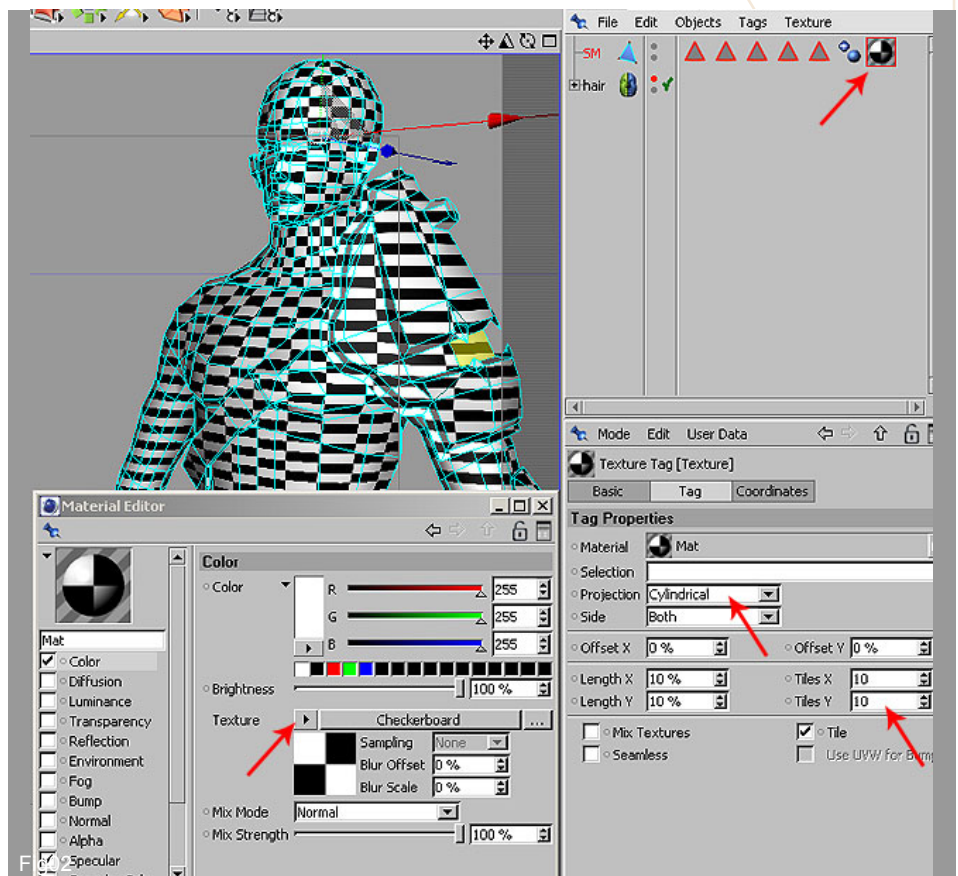
INTRODUCTION:

Welcome to the sixth instalment in the series which will provide a look at mapping and Unwrapping our finished mesh. This is quite an involved process and will be covered in only one tutorial. In order to keep this from becoming too long I have not detailed every step along the way but rather opted to provide an overview of the principal techniques used. This should hopefully equip any beginners with enough information to tackle the entire model and complete it on their own. The crucial methods necessary will be covered and then can be repeated to map sections that have been omitted. The important thing to remember is that the tutorial has been filtered to contain only the key procedures.



1. First step is to connect the various objects that compose our model. Before doing it we need to save the selections of those objects in order to facilitate the work in the unwrapping section. Select the armour on the shoulders, select all poly's and then from main menu choose Selection > Set Selection. A tag will appear near the object, give it a name. Same procedure for the others objects but exclude for the moment the hair by leaving it as a separate object (Fig01 - step 1). Connect now the objects. Go now in the Material Manager and create a new material (File > New Material). Select the object then select the material > right mouse > Apply (Fig01 - step 2).

2. In order to check the integrity of our mapping co-ordinates and enable us to successfully unwrap our mesh we will need to apply as texture to our geometry to act as a guide – in this case a checker map. The idea here is that



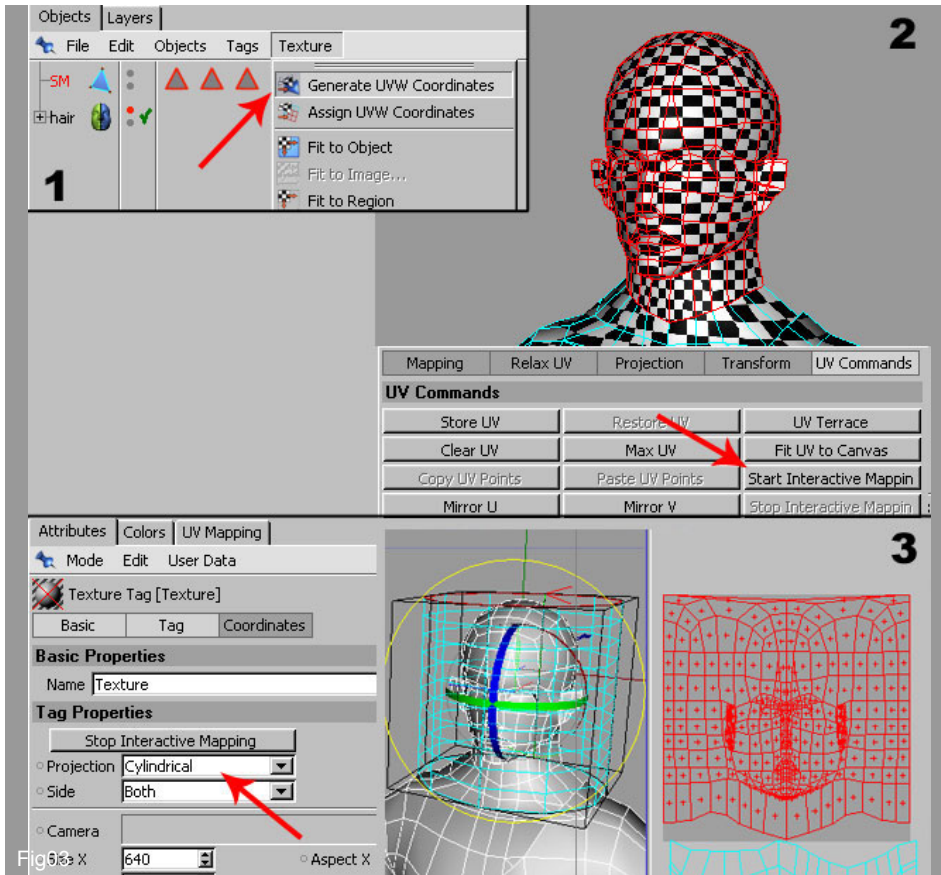


Fig03

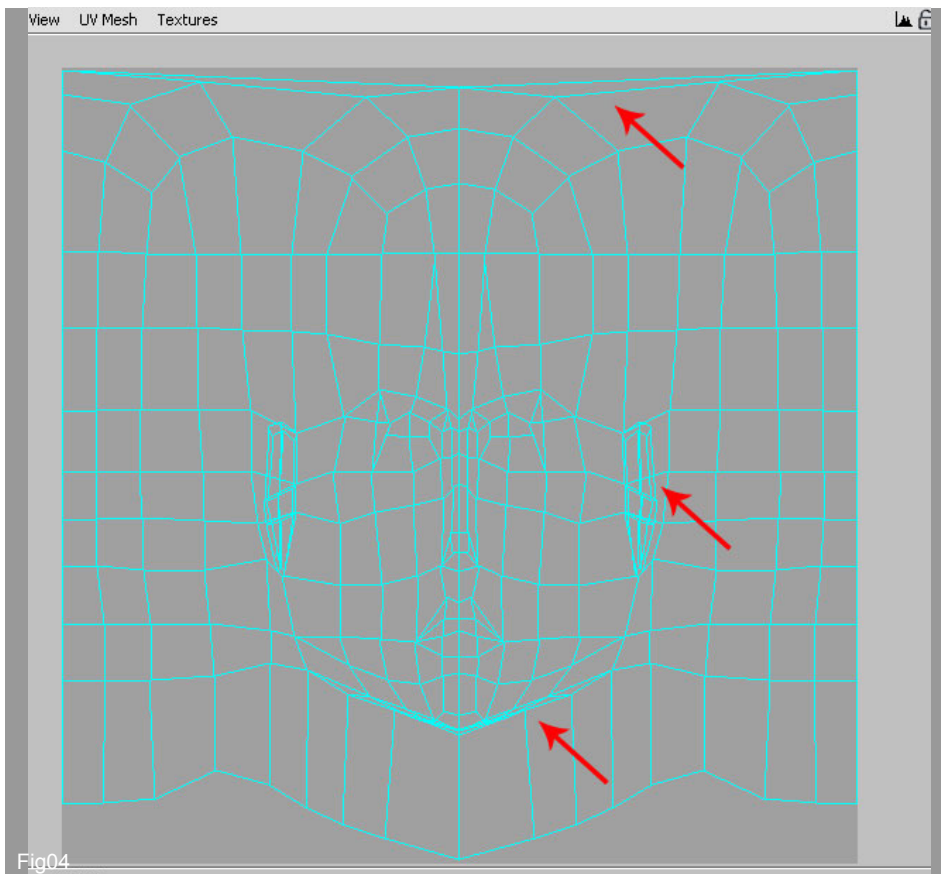


Fig04

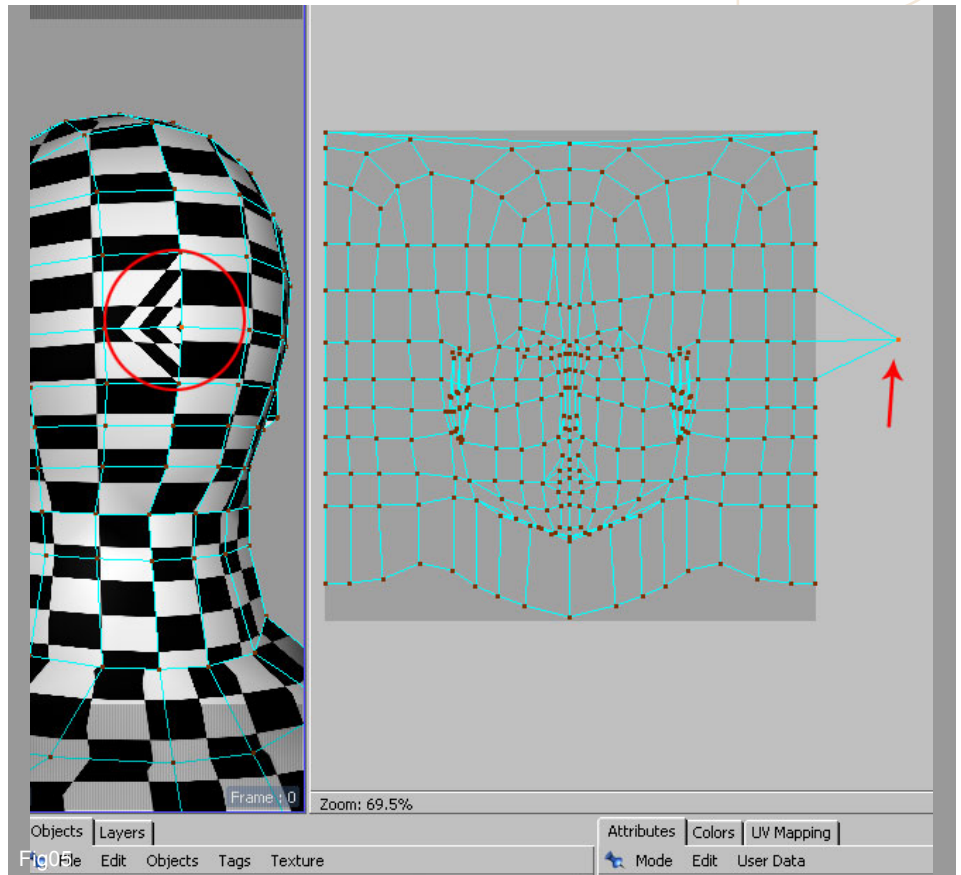
the squares are a consistent size and so will easily show any stretching and badly mapped polygons. To load the map open the Material Editor (by double click on the material) and then click on the small button next to the Texture text (highlighted by red arrow in Fig02 - left). This will bring up the menu where you need to select Surface > Checkerboard. The map should appear on the model. Select now the texture tag into Object Manager and choose the Cylindrical projection in its Properties as seen on the bottom right of figure. Change also the Tiles repetition so bring it to 10. You will now see a very messy checker map across your character which will require mapping. The checkermap will eventually be substituted by our painted template and the idea is that if the squares appear correctly so then will the finished texture.

3. To correct this we will use the Interactive Mapping that is a procedure to unwrap the mesh by applying different projections on any parts of the object. Switch your interface from Standard to the BP UV Edit and here start the procedure from the head. First select the texture tag and from the object manager menu choose Texture > Generate UVW Coordinates (step 1 - Fig03). The mesh now is editable. Select all the poly's that make up the head and neck area as seen in step 2 - Fig 03. Then in UV Commands click on Start Interactive Mapping button. Choose the Cylindrical projection like shown in the step 3 of figure then click on Stop Interactive Mapping to stop the procedure.

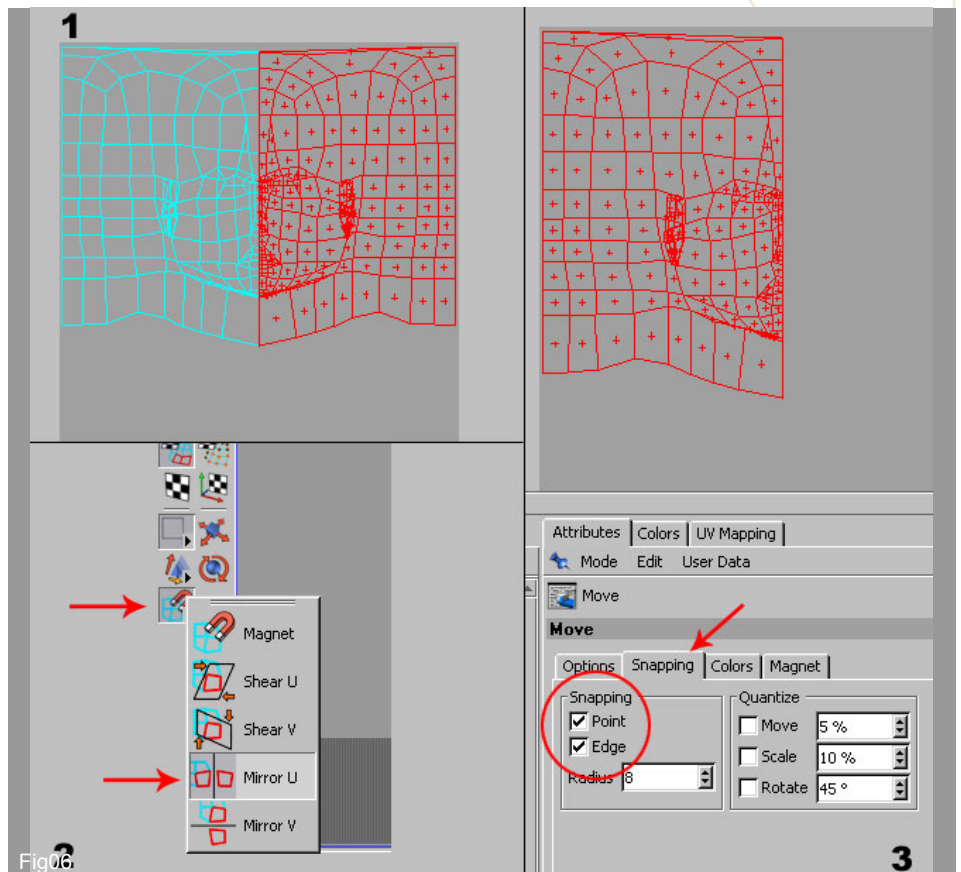
4. Next step involves in modifying the mesh of the head to make it more regular avoiding so the stretching. How you can see from Fig04 we need to adjust some parts of the head (indicated by red arrow) where the checkerboard is distorted.



5. Using the transform tools we can alter the mapping co-ordinates in this window which will directly affect the texture. On the right of Fig05 you will notice a vert highlighted in red which has been moved out of alignment with its edge and as a consequence the checker map has been stretched in the corresponding position on the mesh, encircled in red (left of figure). The basic premise of this part of the process is to use the tools available to accurately mirror the checker map across the surface of our geometry. Start by using the scale tool (UV Non-uniform Scale Tool) to make the checkers appear square and then concentrate on details where stretching occurs.



6. Next step is to divide the mesh to half and then overlap the two parts. So select the mesh like shown in Fig06 at the stage 1 then use the Mirror U tool to flip the selected faces (stage 2). Now use the Move tool to overlap the two parts as seen in stage 3 of figure. How you can see in the bottom right of figure I have enabled the snapping to the point and to the edge in order to obtain a perfect overlap. The procedure we just made will facilitate the adjustment of the various parts that we are going to adjust.



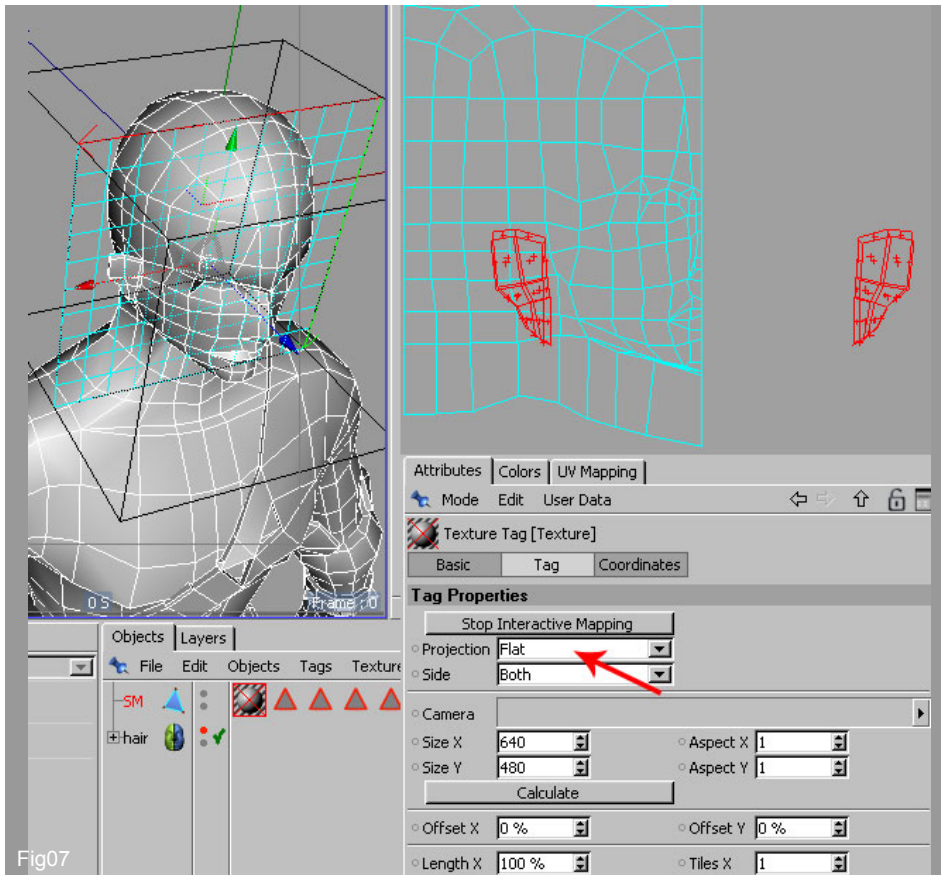


Fig07

7. Now we can map the ears. Select so the ears (from 3d view) and apply the Interactive Mapping. Choose the Flat projection and use the Texture Axis tool to rotate the gizmo and position it as seen in Fig07 (left). Stop the interactive map.

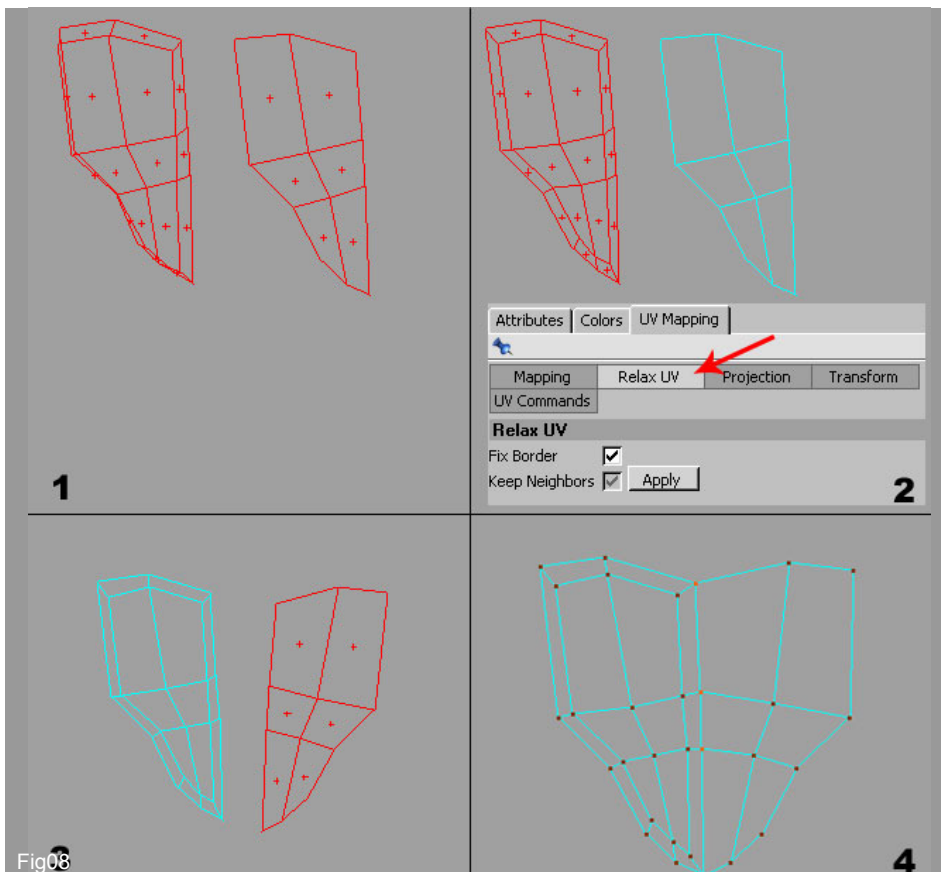


Fig08

8. Overlap now the ears as we did for the head. Still working on the ears, select now the back faces and detach them by using move tool as seen on the stage 1 of Fig08. Select the frontal faces of the ears and apply Relax UV (or move manually the points in order to avoid the overlaps of the mesh) like shown at the stage 2. Select now the back faces and use the Mirror U tool (stage 3). Attach the two parts by moving and snapping the central points as seen at stage 4 of figure. If it's necessary scale the mesh of the ears to keep the squares a similar size to those of the head.



9. We shall now go on fix the neck area, in fact part of mesh is overlapped as seen in Fig09.

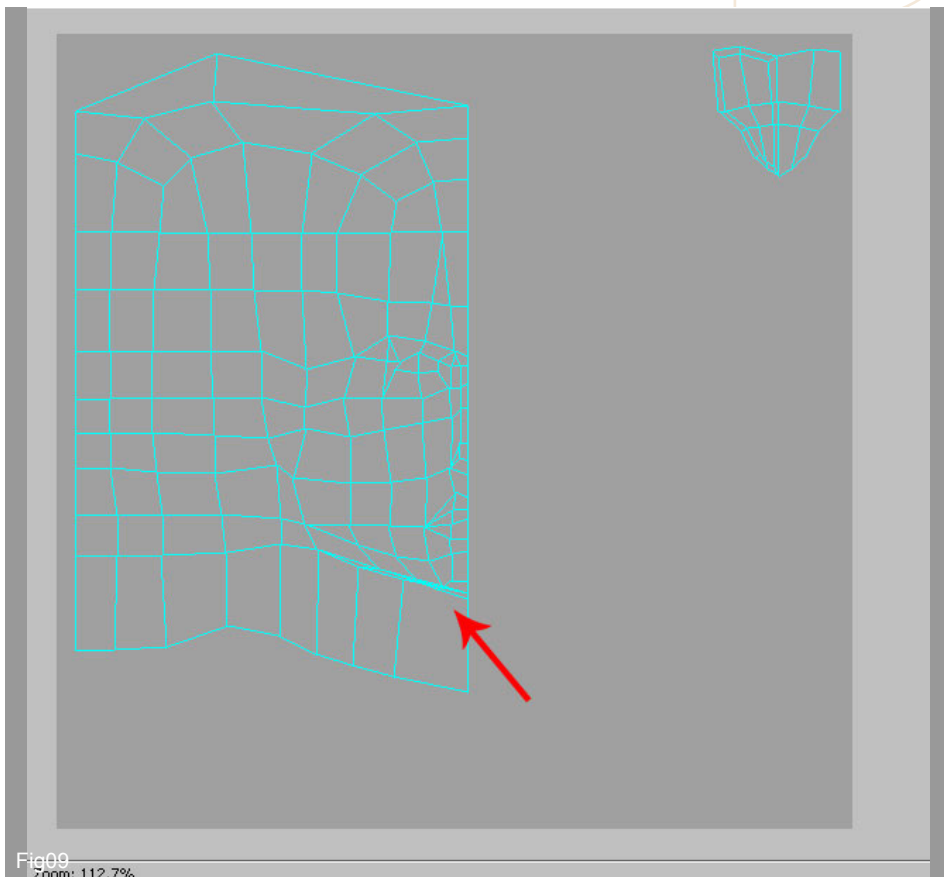


Fig09
Zoom: 112.7%

10. Select the points from 3d view like shown in Fig10 and move them down, make sure that the size of the squares is similar to the others.

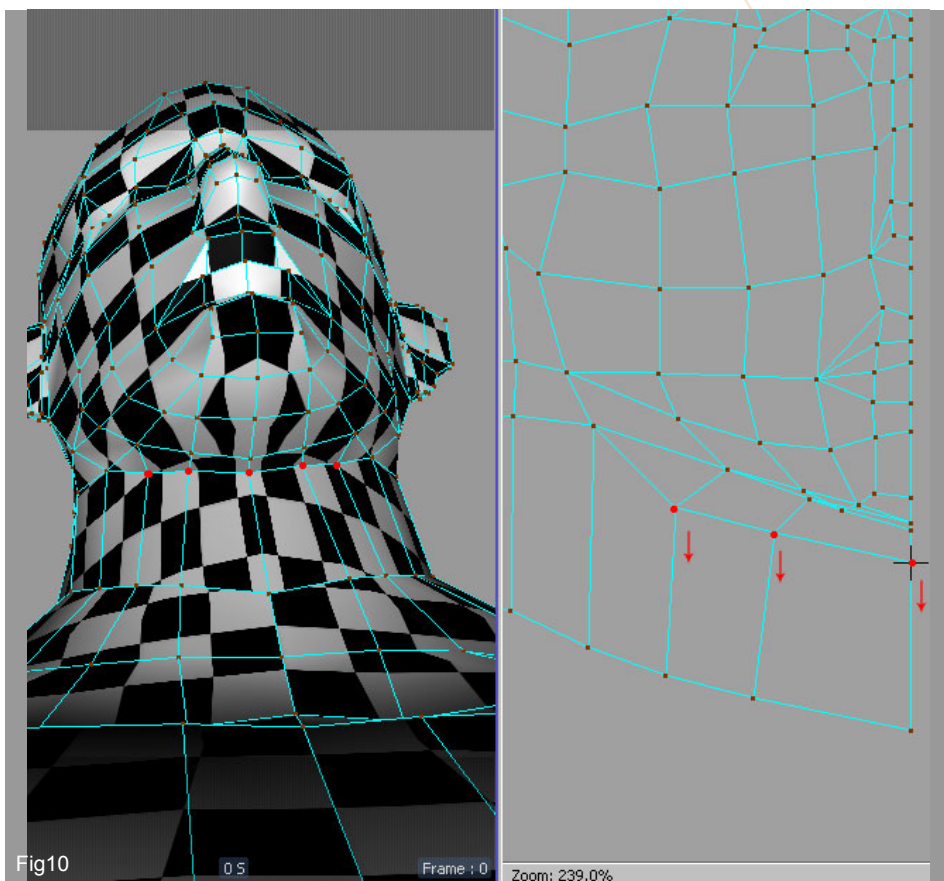
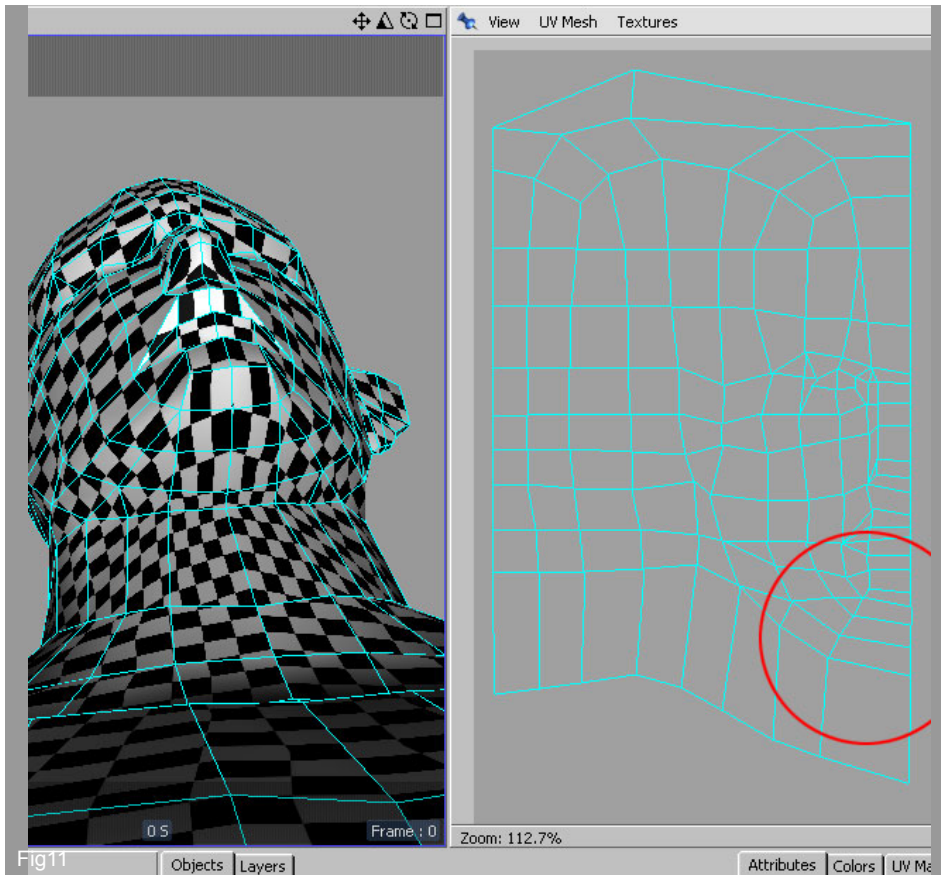
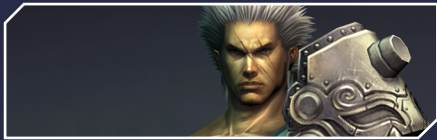


Fig10

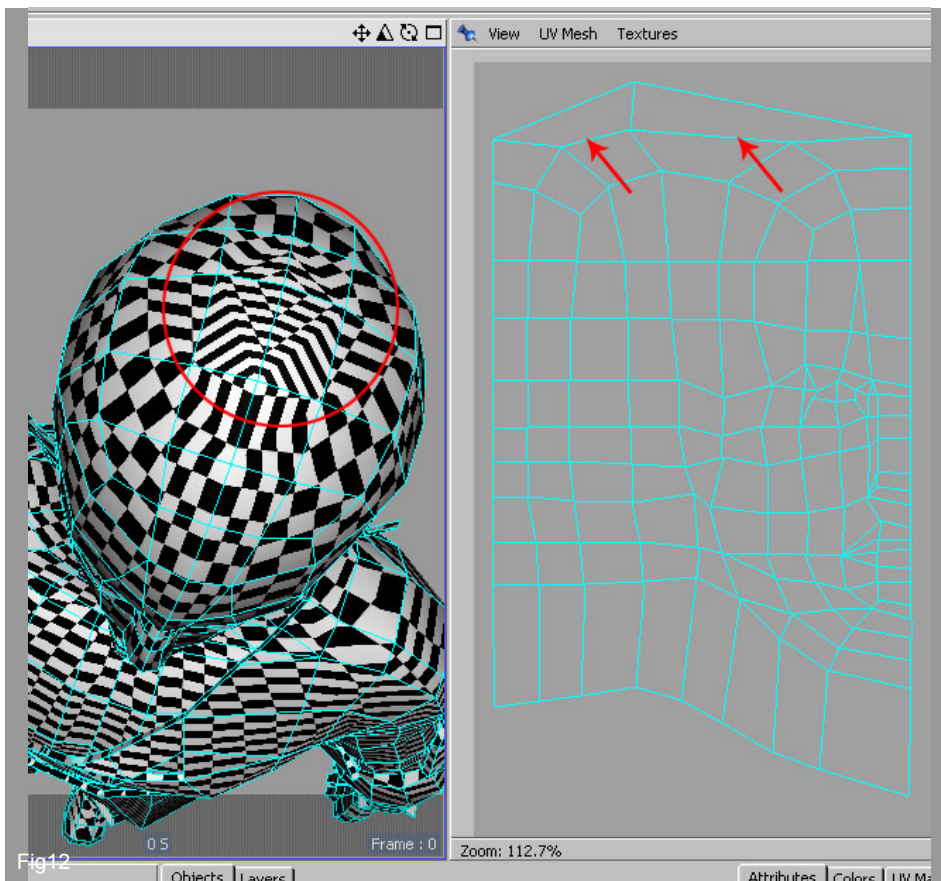
0.5

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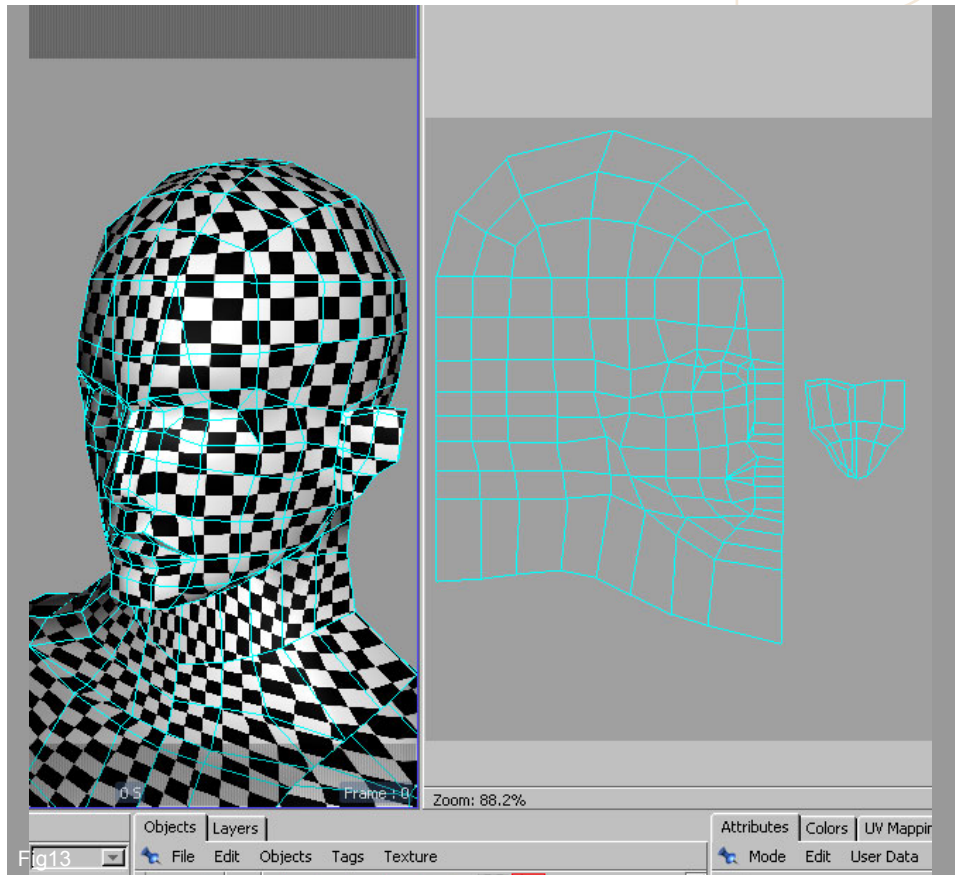
11. Repeat this for the other points until you get the mesh like shown in Fig11.



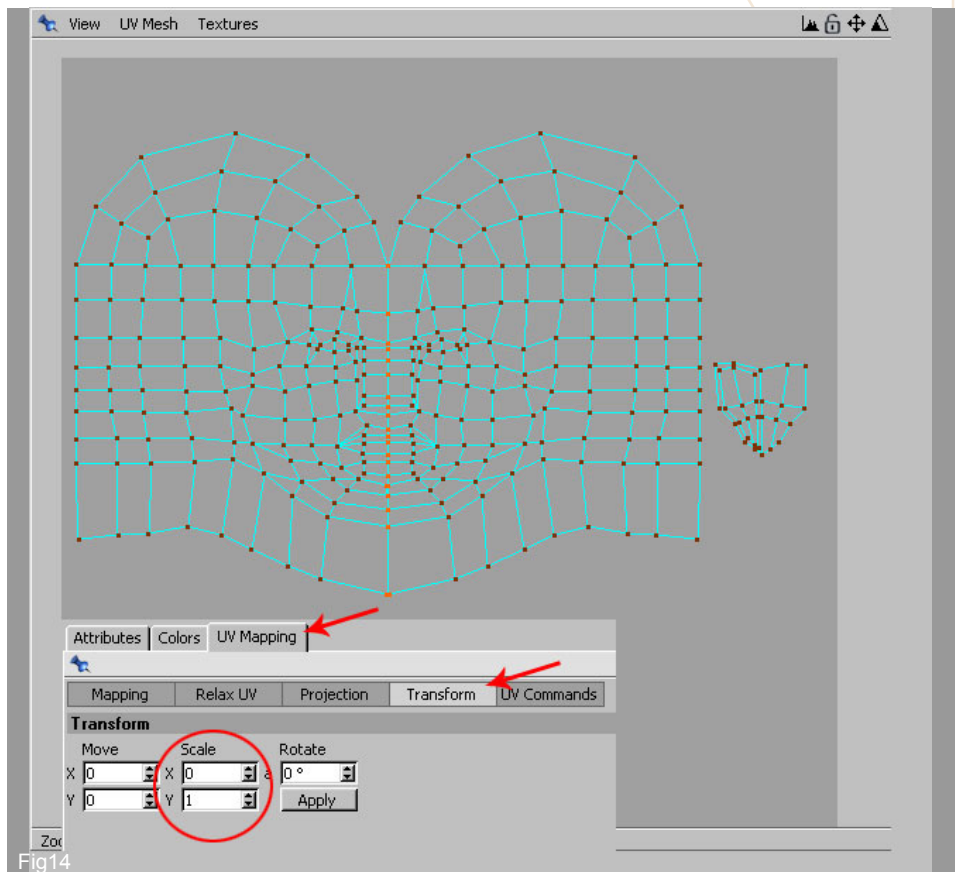
12. Last thing to do for the head is to adjust the two poly's on the top. Fig12. Move the verts around along the top edge using the checker map as a guide to improve the distortion across the scalp. Do not worry about it being perfect as there will be some degree of stretching but it will eventually be concealed by the hair anyway.



13. You should aim for something similar to the shape in Fig13.



14. Still working on the head, select half head (except the ears) and flip it horizontally. Then move it next to one another so the central line of verts overlap down the middle of the face as seen in Fig 14. Select the central verts and weld them by using the Transform tool like shown on the bottom of figure. You should now have a completely mapped head with a seam around the base of the neck and from the top of the forehead to the top of the shoulders.



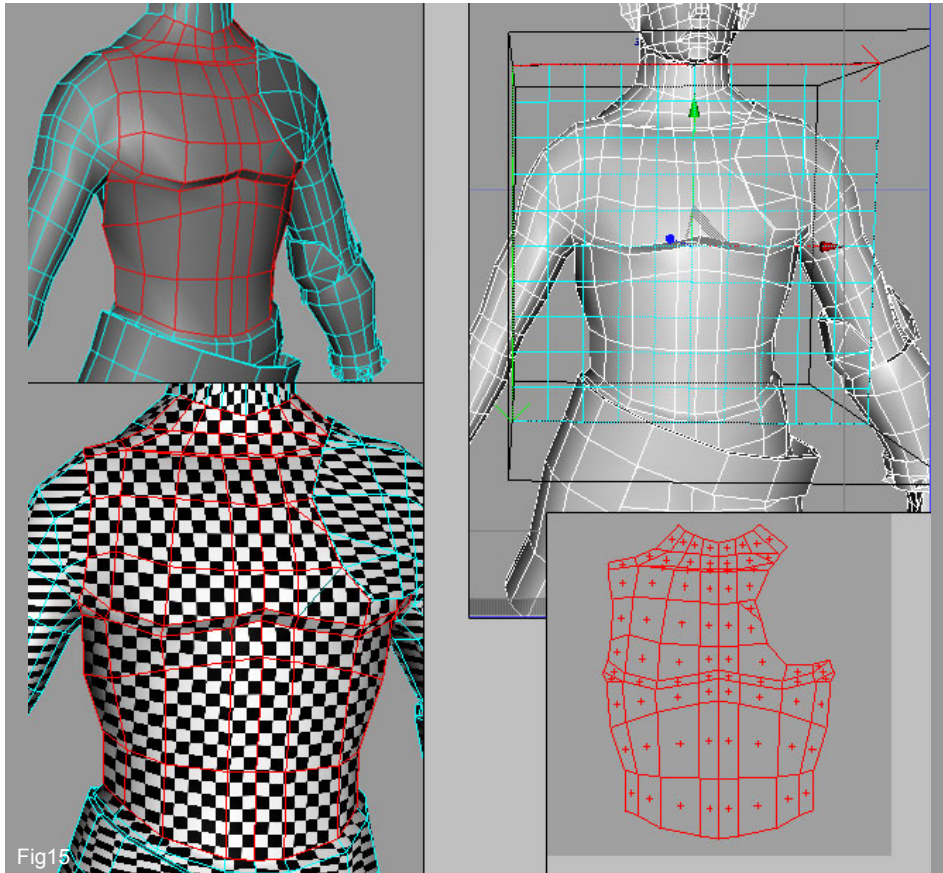


Fig15

15. Now it is time to move onto the torso. First hide the poly's tat make up the belt around the torso then select the front half of the body from the neck line down to the trousers and half way around the side as seen in Fig 15. Apply a Flat map by using Interactive Mapping.

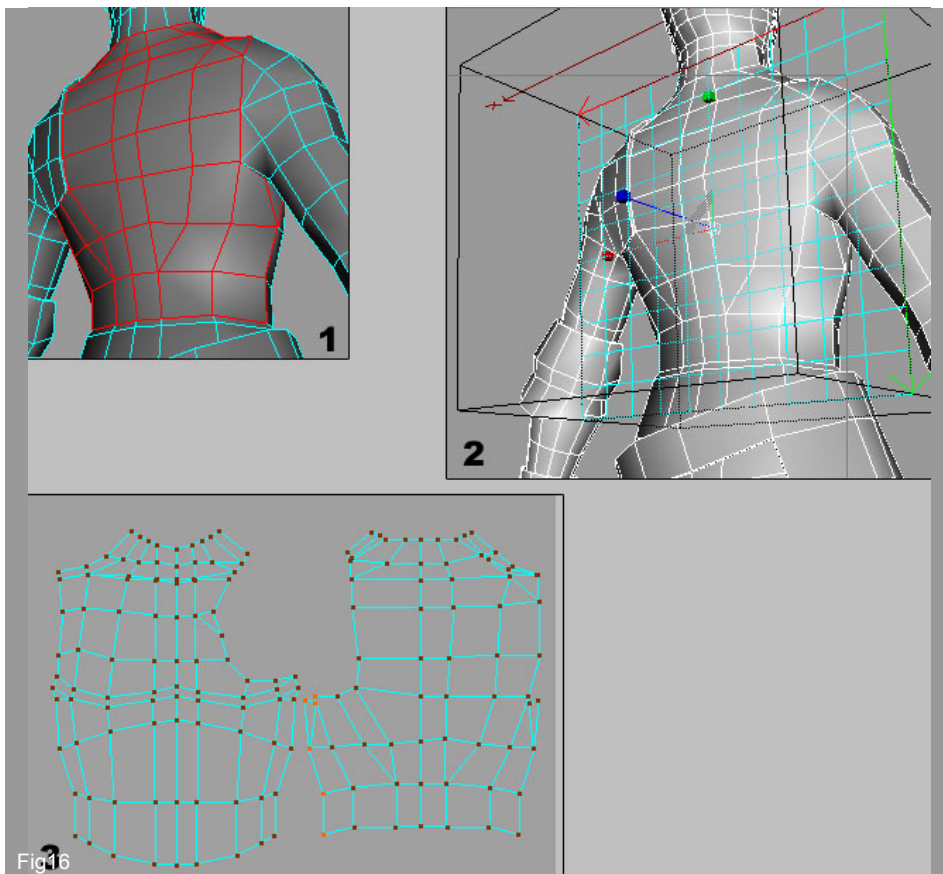


Fig16

16. Follow the same procedure for the back to complete the torso area. Select so the poly's like shown on the stage 1 of Fig16 then apply a Flat map by using the Interactive Mapping command (stage2). Flip the newly mapped poly's (Mirror U tool) horizontally and scale them in order to obtain the similar size to the front of the body (stage 3). Next step is to weld the verts highlighted in red as seen in the stage 3 of figure.



17. In Fig17 you can see that the verts have now been welded and the section scaled to make it more consistent with the head. You will have to re adjust the verts in the Edit window once welded in order to reduce some of the distortion.

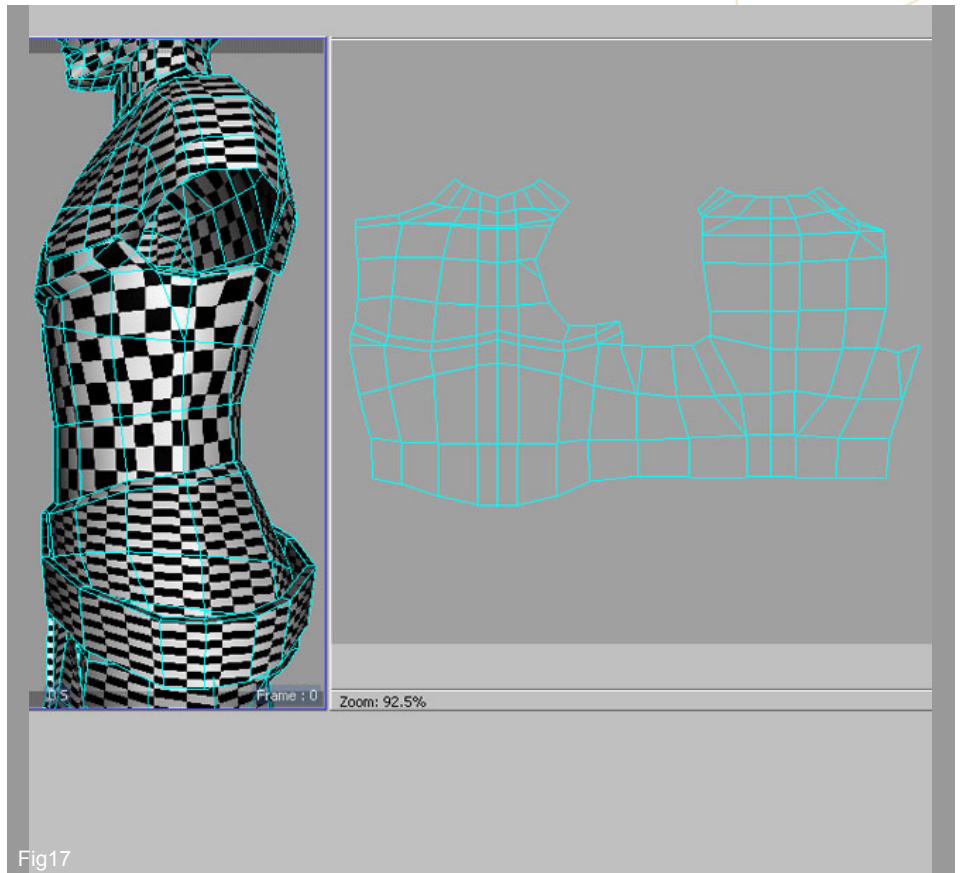


Fig17

18. Now it is time to deal with the limbs. Before starting the procedure of Interactive Mapping we can delete one leg from the waist down (stage 1- Fig18). Any mapped geometry that is duplicated retains its mapping co-ordinates and so to save time we will map just one leg and then we will duplicate it. Hide the kneepad object by double click on Polygon Selection Tag. (Stage 2). Select the all the poly's that make up the trousers and apply a Cylindrical map by using the Interactive Mapping command. (Stage 3). How you can see from figure the mesh has some overlaps that will need to be fixed by moving manually the verts.

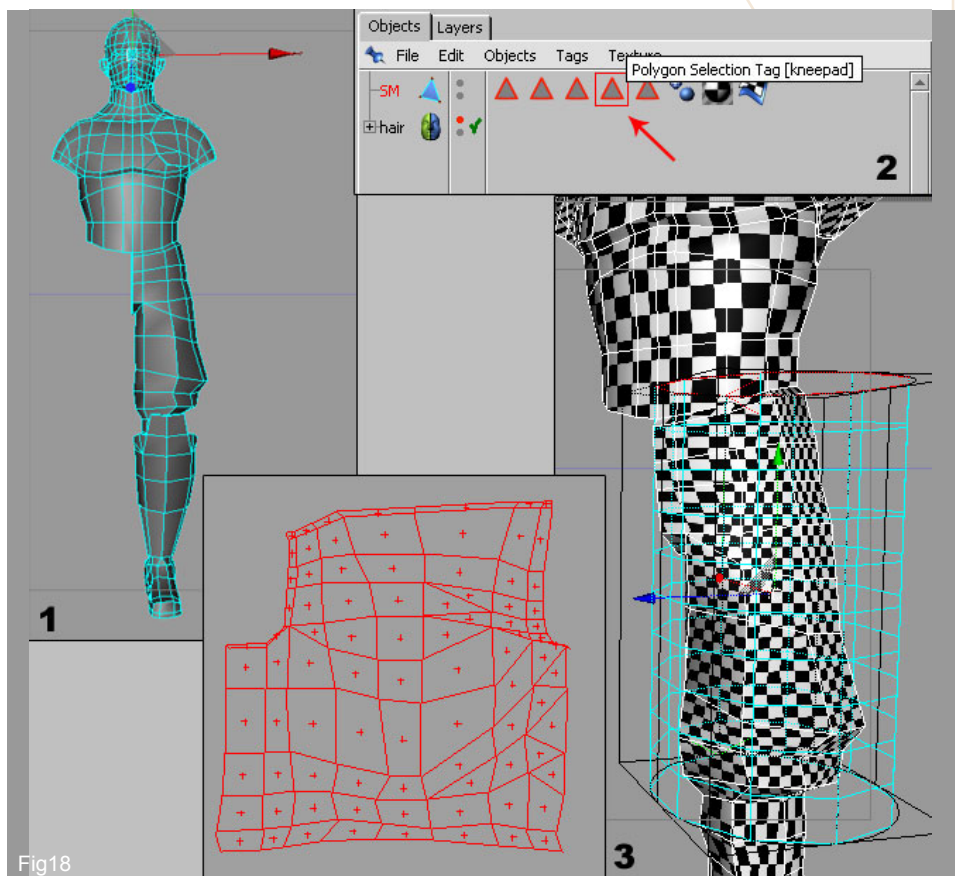


Fig18

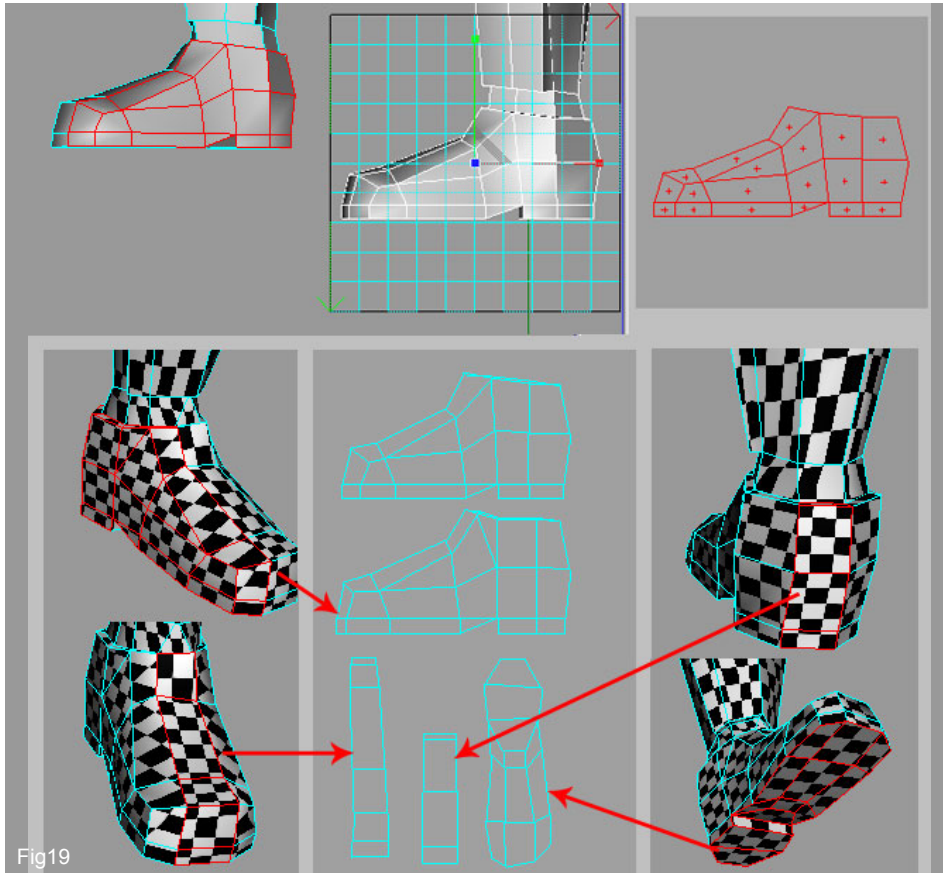


Fig19

19. Same procedure for the lower leg apply so a cylindrical map then adjust the overlaps by using the move tool or the relax UV tool. With regard to the feet simply apply a Flat map from the left and right sides as seen in the top Fig 19. Same projection for the other parts of the shoe rotating the gizmo each time.

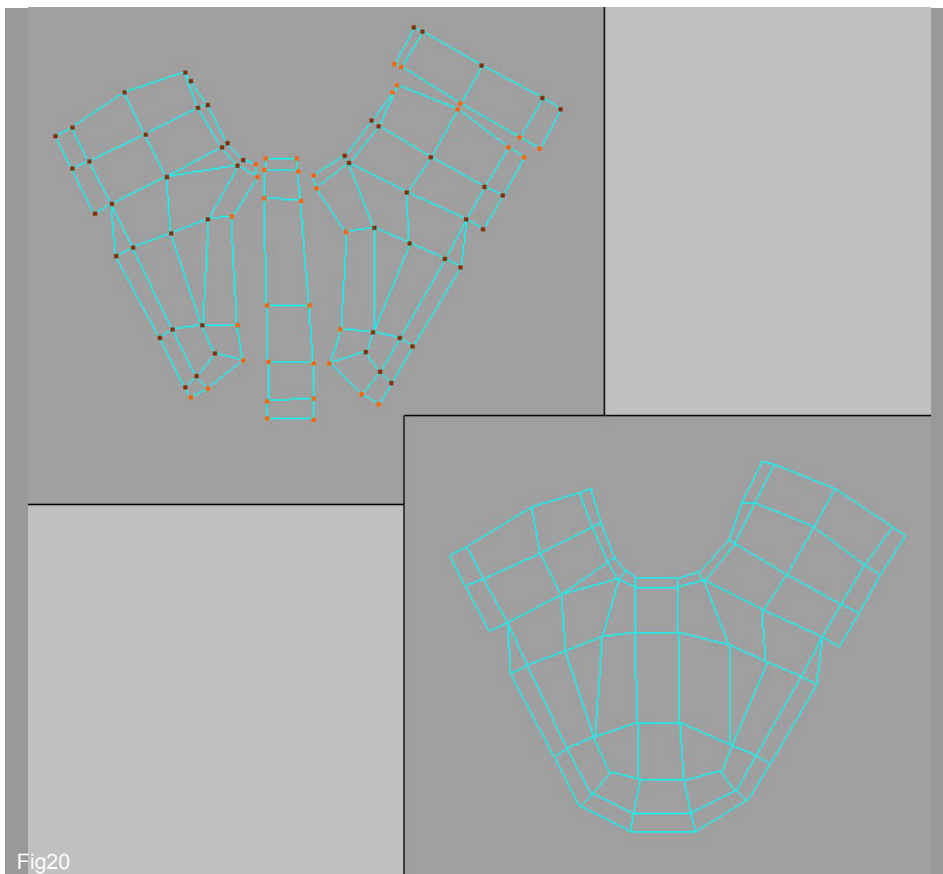
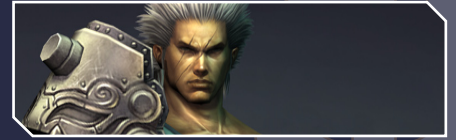


Fig20

20. When the whole foot have been mapped rotate and move the two sides and the back as seen in Fig 20. Weld the verts highlighted in red and make any adjustment to minimize any obvious distortion.



21. For the arms use the same procedure. In Fig 21 you can see a cylindrical map being applied to the right arm. It runs from a line at the top of the shoulder down to the wrist. You can see that I have rotated the gizmo to follow the orientation of the arm using its local coordinates.

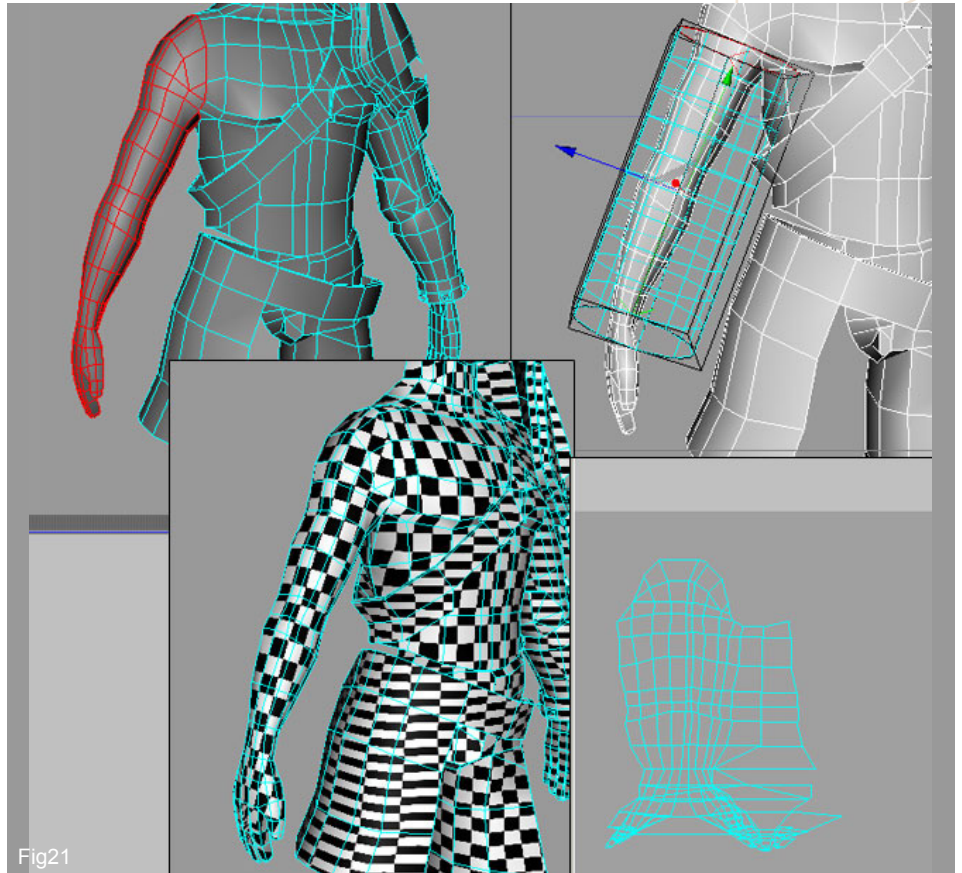


Fig21

22. The hand will be mapped with a Flat map as you see in Fig22. In the stage 1 I have selected the palm of the hand and then I applied a Flat projection by using the Interactive Mapping. (2). I also used the Relax UV tool in order to avoid the overlaps and then I have refined the mesh moving the inside vertexes of the fingers (stage 3). Same procedure for the rest of the hand. Select the poly's as seen in the stage 4, apply a Flat map and adjust the mesh (stage 5). Scale the hand in order to obtain the similar size of the squares to the rest of body (stage 6).

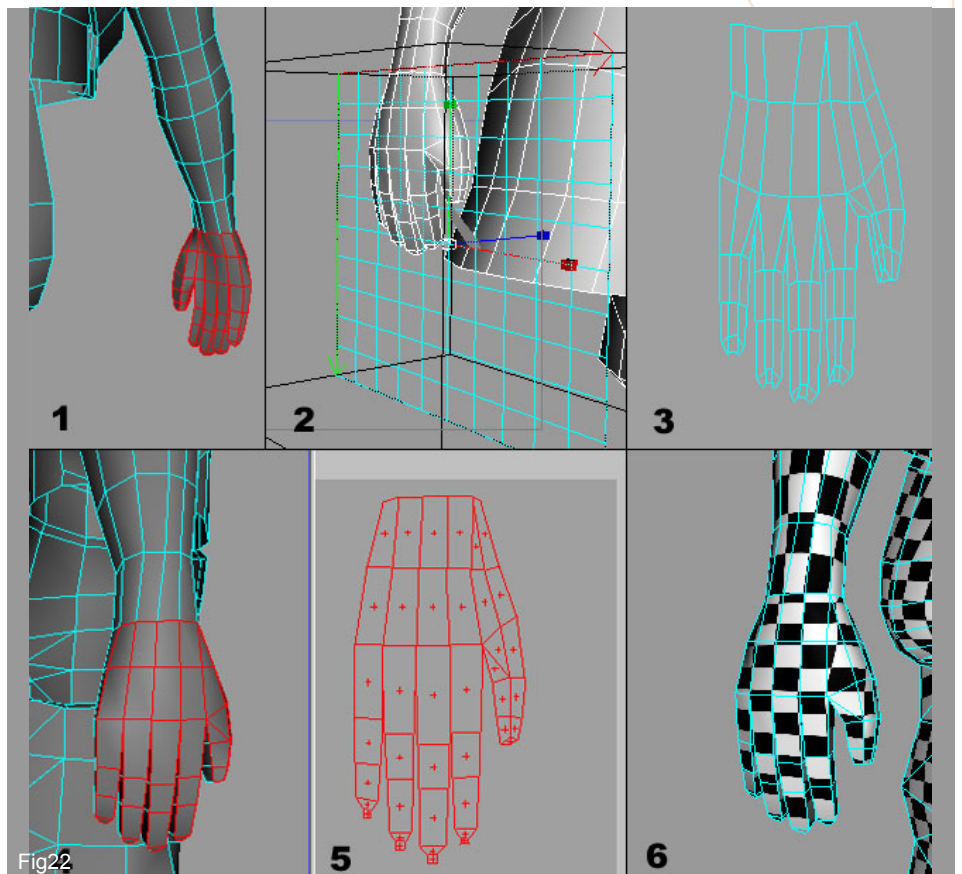


Fig22

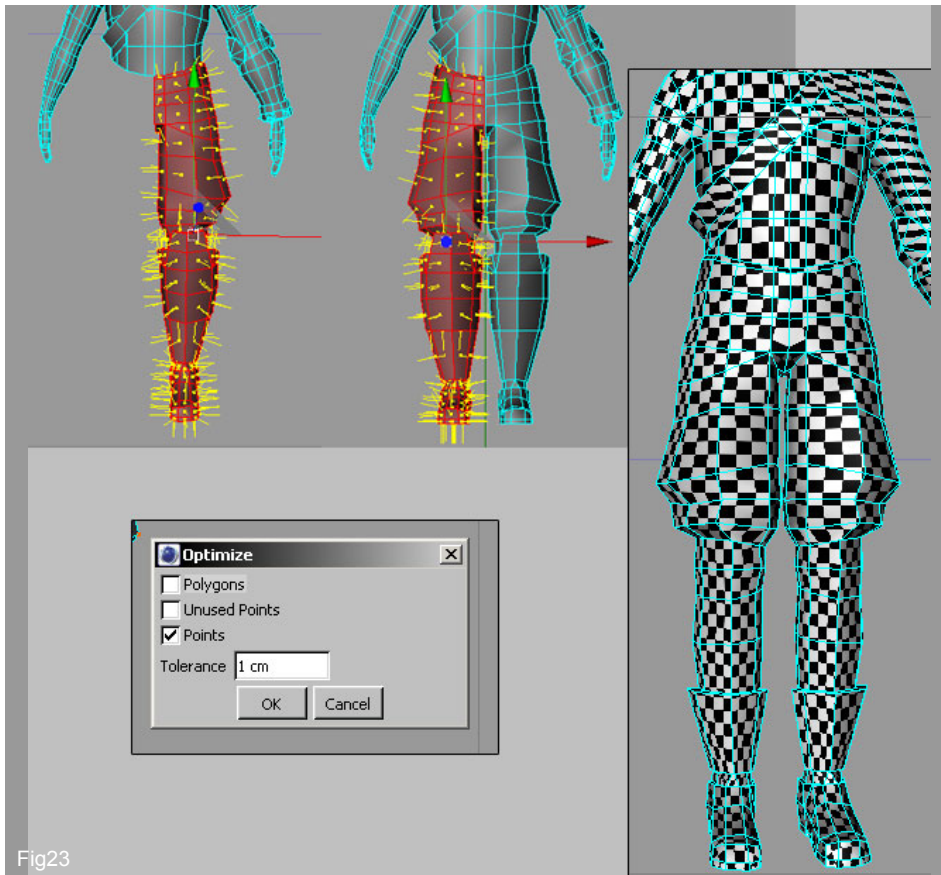


Fig23

23. When the leg is fully unwrapped it is time to copy it over and weld it to the main body. Select so the leg like shown on the top of Fig23 and choose from right mouse menu the Mirror tool. When you choose this tool a line will appear into your view, drag this line over the Y axis. Select then all verts and use the Optimize tool to weld the leg to the body. The hand can also be copied but you may want to map the two arms separately as they are slightly different.

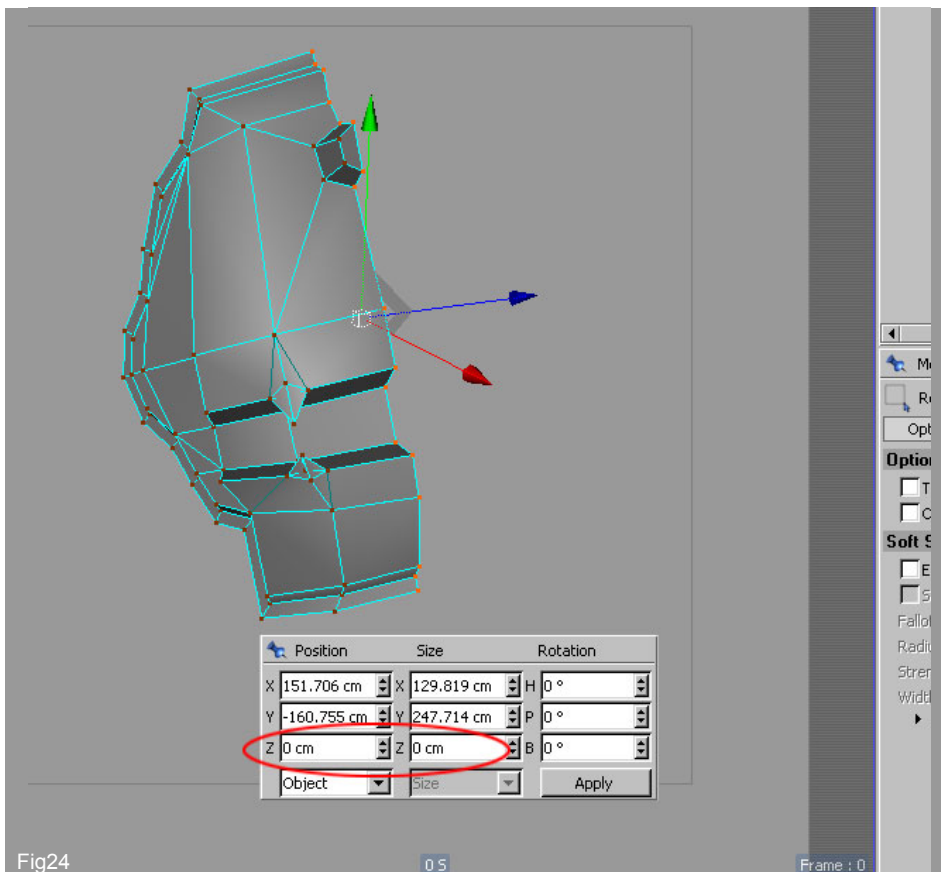
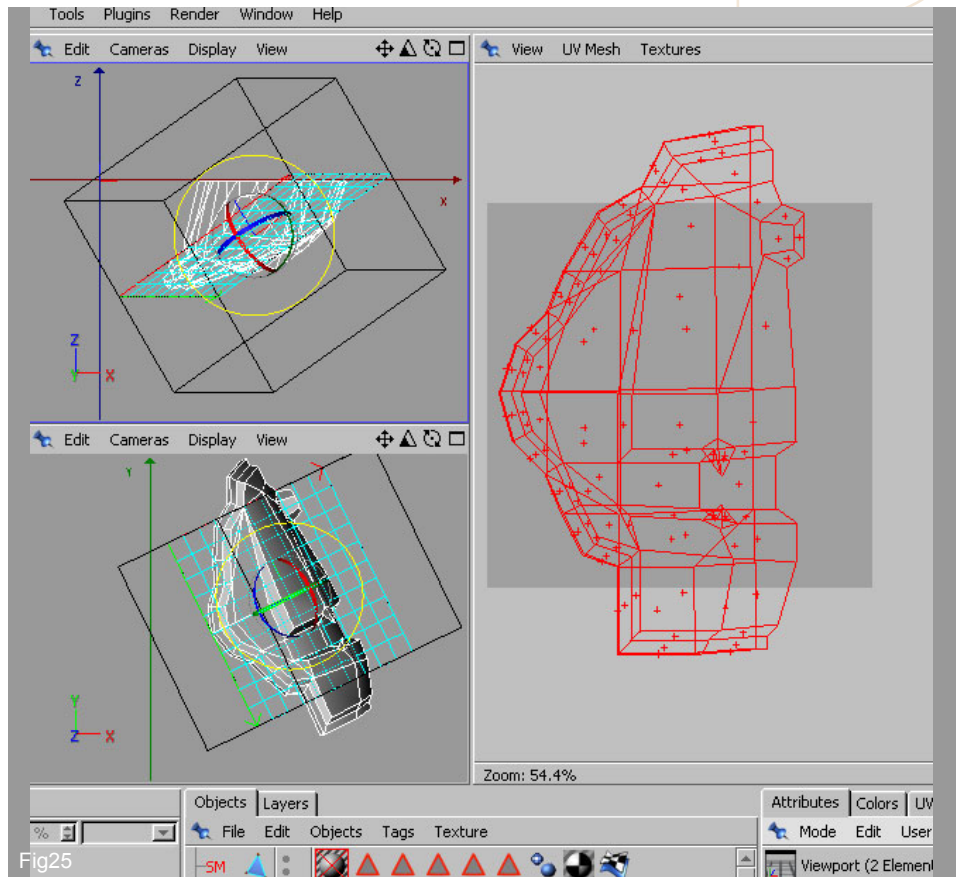


Fig24

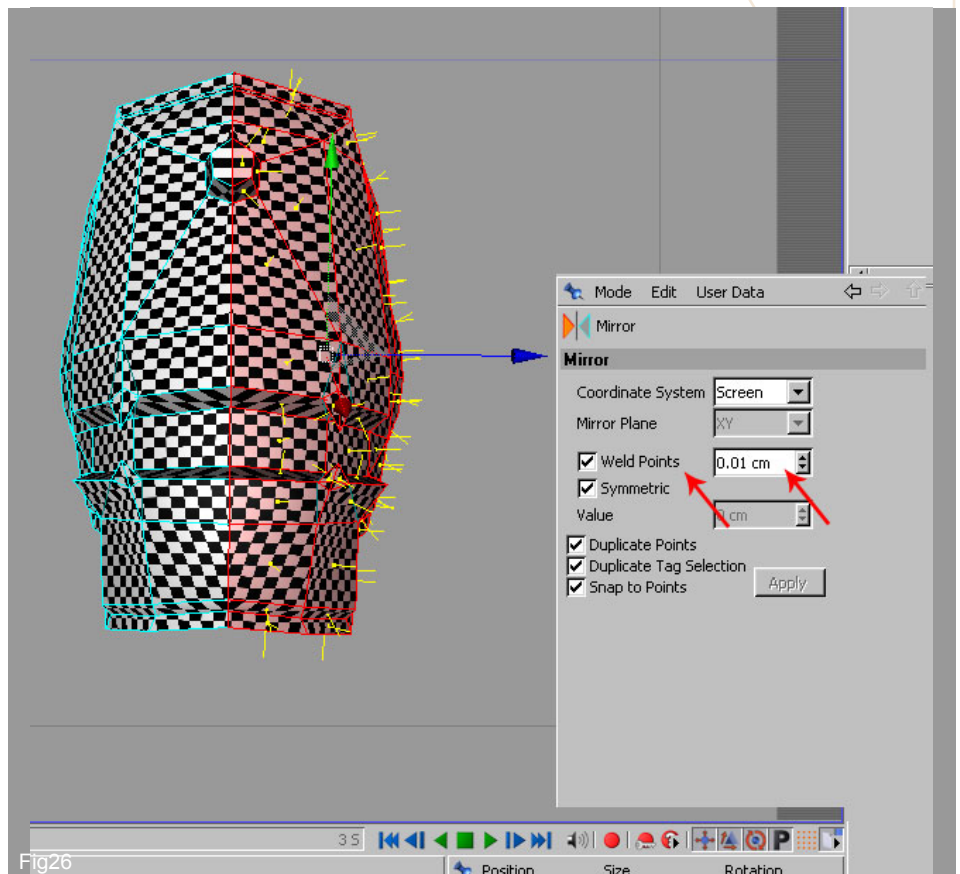
24. Now it is time for the armour pieces – the first of which is the main shoulder section. As this is symmetrical we can delete one half to start with. Position the central points at coordinates=0 on the Z axis like shown in Fig24.



25. Now map both sides separately using a planar map, rotating the gizmo to keep the checker pattern as accurate as possible (Fig 25).



26. Once done, duplicate the piece by first selecting the whole poly's and then using the Mirror tool as we did for the leg. Fig26. Make sure that in the properties of Mirror tool the "Weld Points" box is checked. You can use exactly the same methods to map all the armour pieces. In the case of the accessories you can planar map all of these and will not need to do anything different to what we have done already.



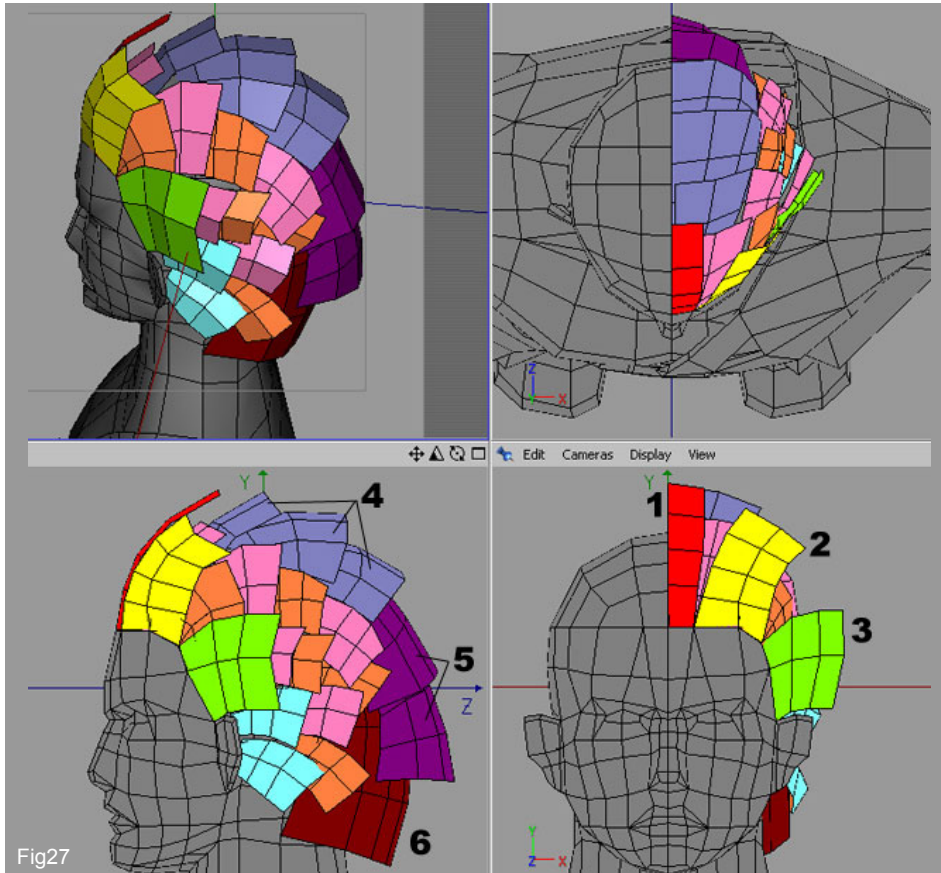


Fig27

27. Once you have finished with the armour and clothing it is time to move onto the hair. Because there are many pieces that make up this area it is unnecessary to individually map every element as it would take up far too much texture space. There will be just under fifty separate meshes that make up the hair but we will only have to map nine of these. The idea is that we map the nine sections and then duplicate them to make up the rest of the hair. These groupings are visible in Fig 27 and are colour co-ordinated to show how they have been organised. In the bottom right you can see that the front three poly's have been separately mapped (numbers 1-3). Along the top of the head there are three blue poly's so you would only map/unwrap one and then copy this twice, snapping the verts to line up exactly with the remaining groups. There will off course be a bit of stretching on the checkermap as each of the meshes varies slightly but nothing serious.

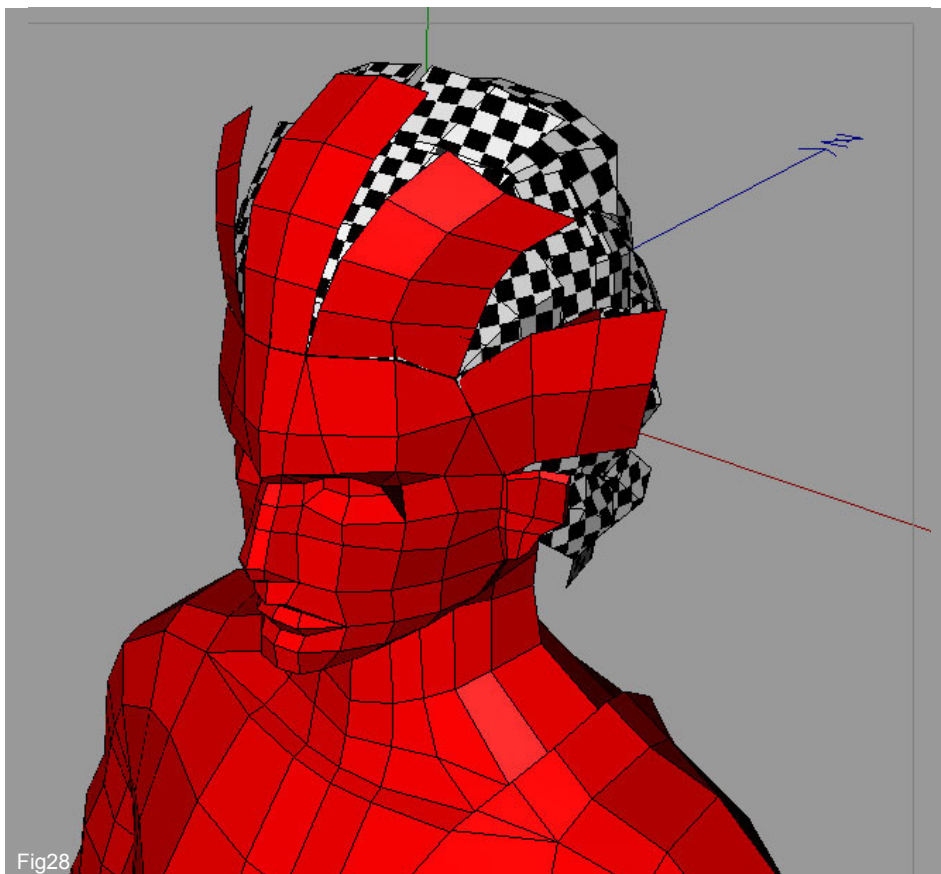


Fig28

28. When the hair section is mapped you can attach the front three sections to the main body as shown in red in Fig 28 but leave the rest of the hair pieces as separate objects; the reason for which shall be revealed next. Select the front three groups of poly's and split them from the hair. Remember to delete those poly's from the hair mesh. Once you got the new object with those three sections add the Symmetry, make it editable then connect them to the body.



29. In the BP UV Edit select the poly's like shown on the top left of Fig29 and flip them horizontally then overlay them on the left part. Move now the three front hair pieces in line with the top of the forehead, scaling them accordingly as seen on the bottom of figure.

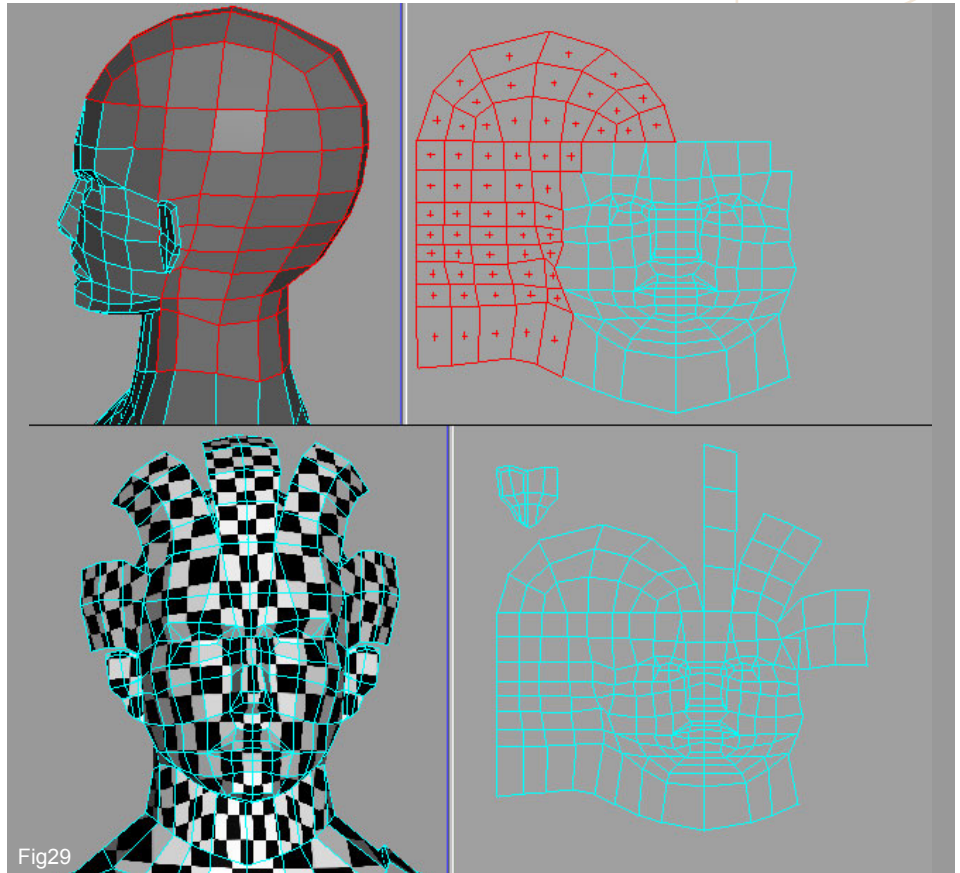


Fig29

30. This concludes the mapping section of the exercise and now we need to assign a material to our mesh in preparation for texturing by dragging the material onto each and every mesh. Go in Material Manager and create a new material. In this material create a new Texture. Fig.30. Assign a name and the size of your texture, this will create a PSD file which will be edited with Photoshop. Assign this last material to our model replacing the checkerboard texture. The model will appear white.

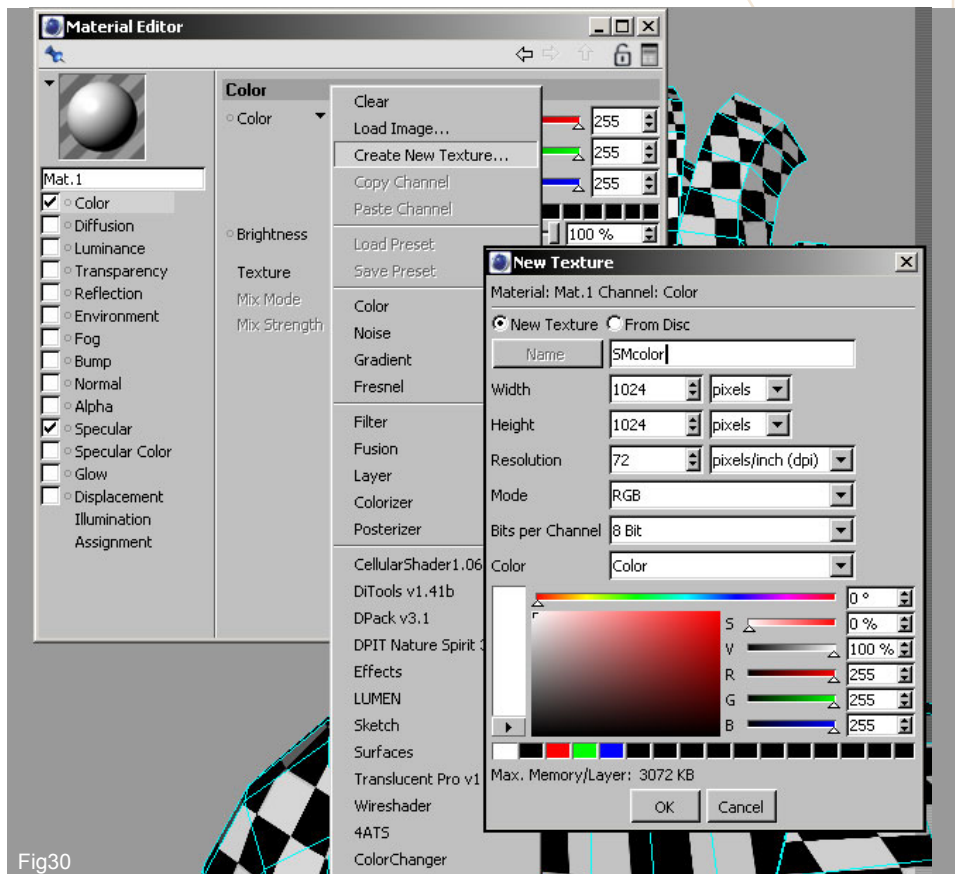


Fig30

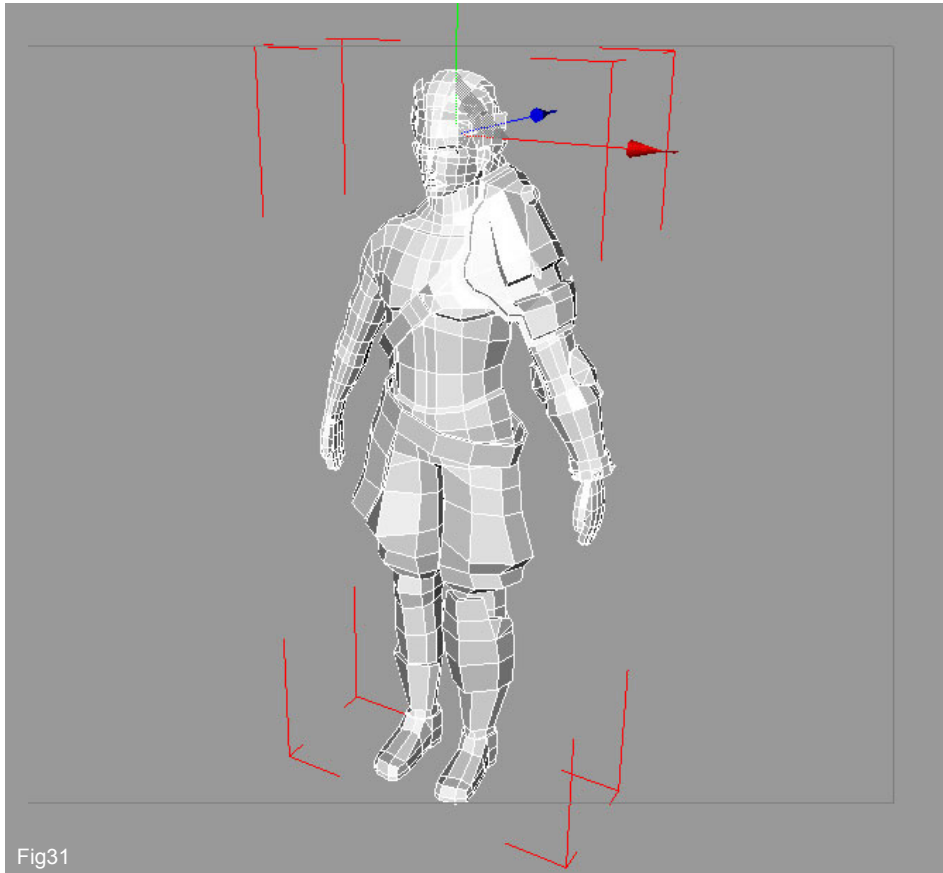


Fig31

31. Now as you remember from earlier on in the tutorial we unwrapped each of the meshes that make up our character. Before we begin the texturing phase we need to arrange all of our pieces into a template that we will export as a wireframe and will represent our final texture layout. In order to see all the unwrapped geometry together we will have to attach all the pieces of geometry into a single mesh temporarily. So connect the rest of the hair with the body as seen in Fig31.

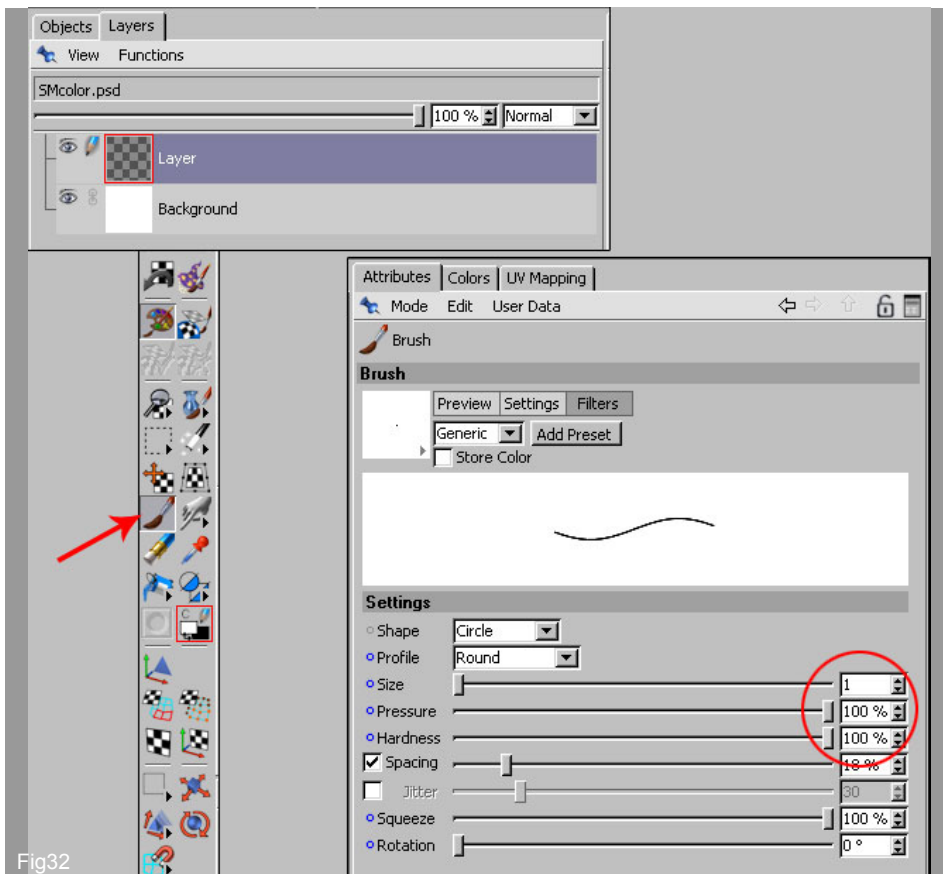


Fig32

32. Last thing that remain to do is to get the wireframe templates that will act as your guide. Fit all UV's with the canvas of your texture scaling and rotating the various meshes. Try to assign more space for the important pieces. Once you done add a new layer as seen on the top of Fig32.



33. Select the Brush tool and change its size, pressure and hardness in its properties. Select now the mesh like shown in Fig33 and from main menu go into Layer and choose Outline Polygons. This will draw onto your texture the outline of all poly's and this will be your guide to make the texture in Photoshop. Save the texture.

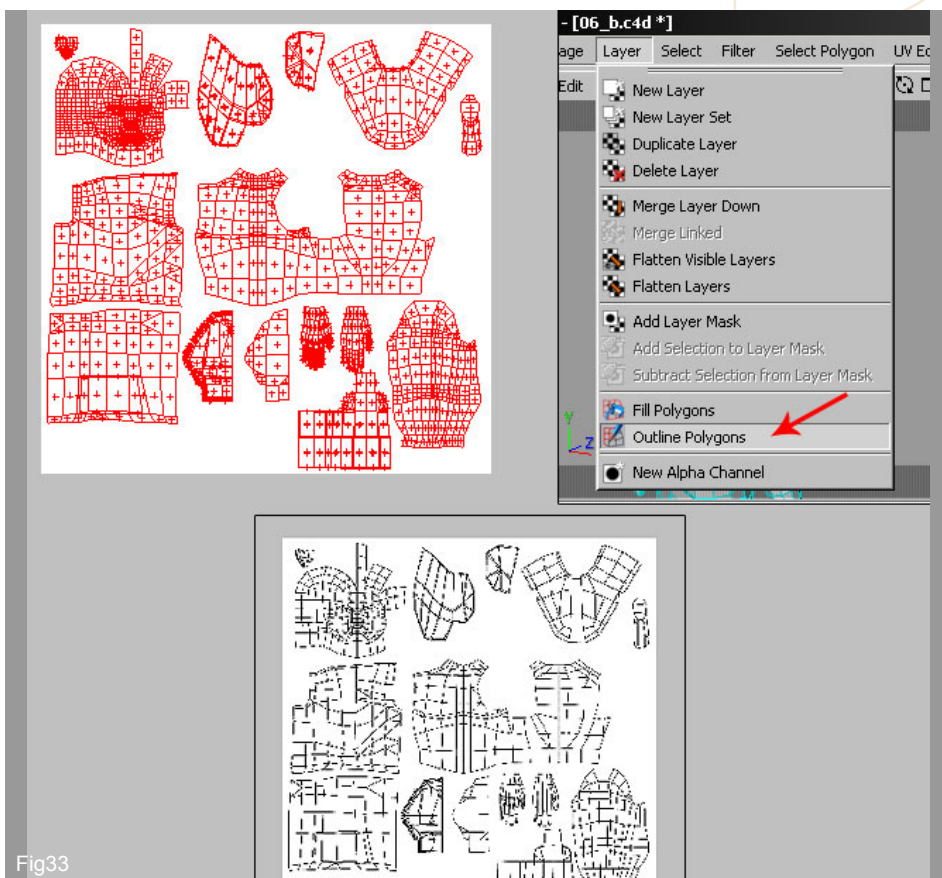


Fig33

34. You should now have two templates that between them represent the entire character. Before we begin texturing there is one final thing to do. You will have noticed throughout the tutorials so far that the geometry has looked very angular with numerous hard edges. Fig34

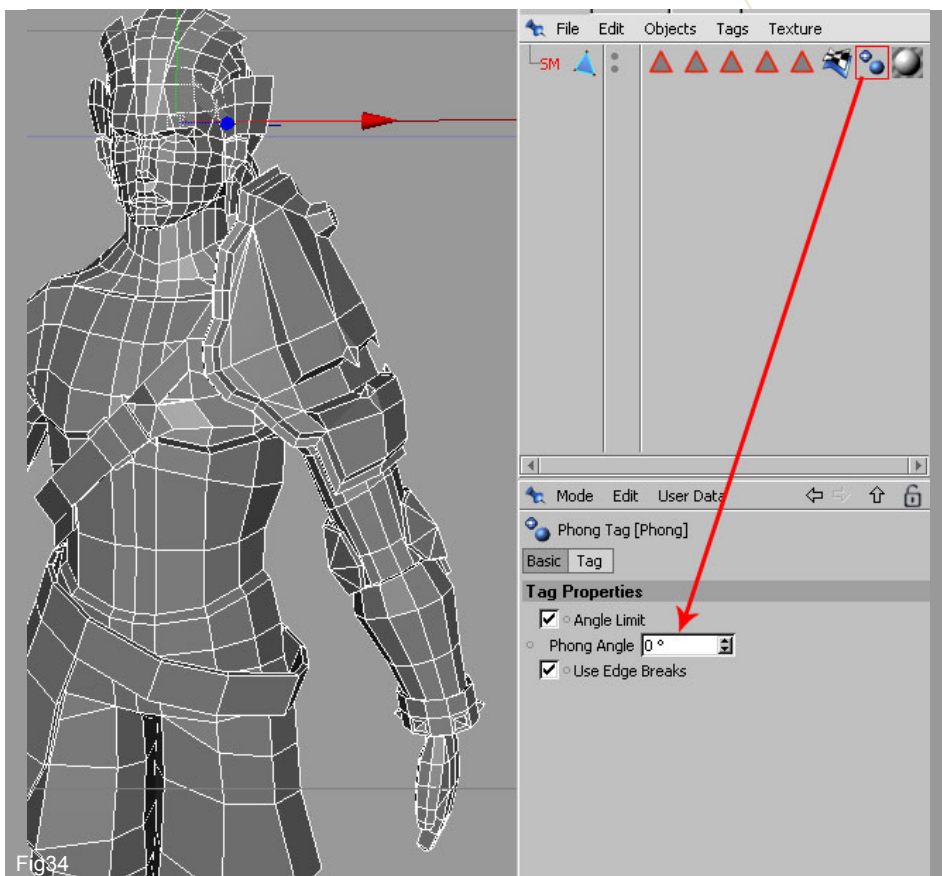


Fig34

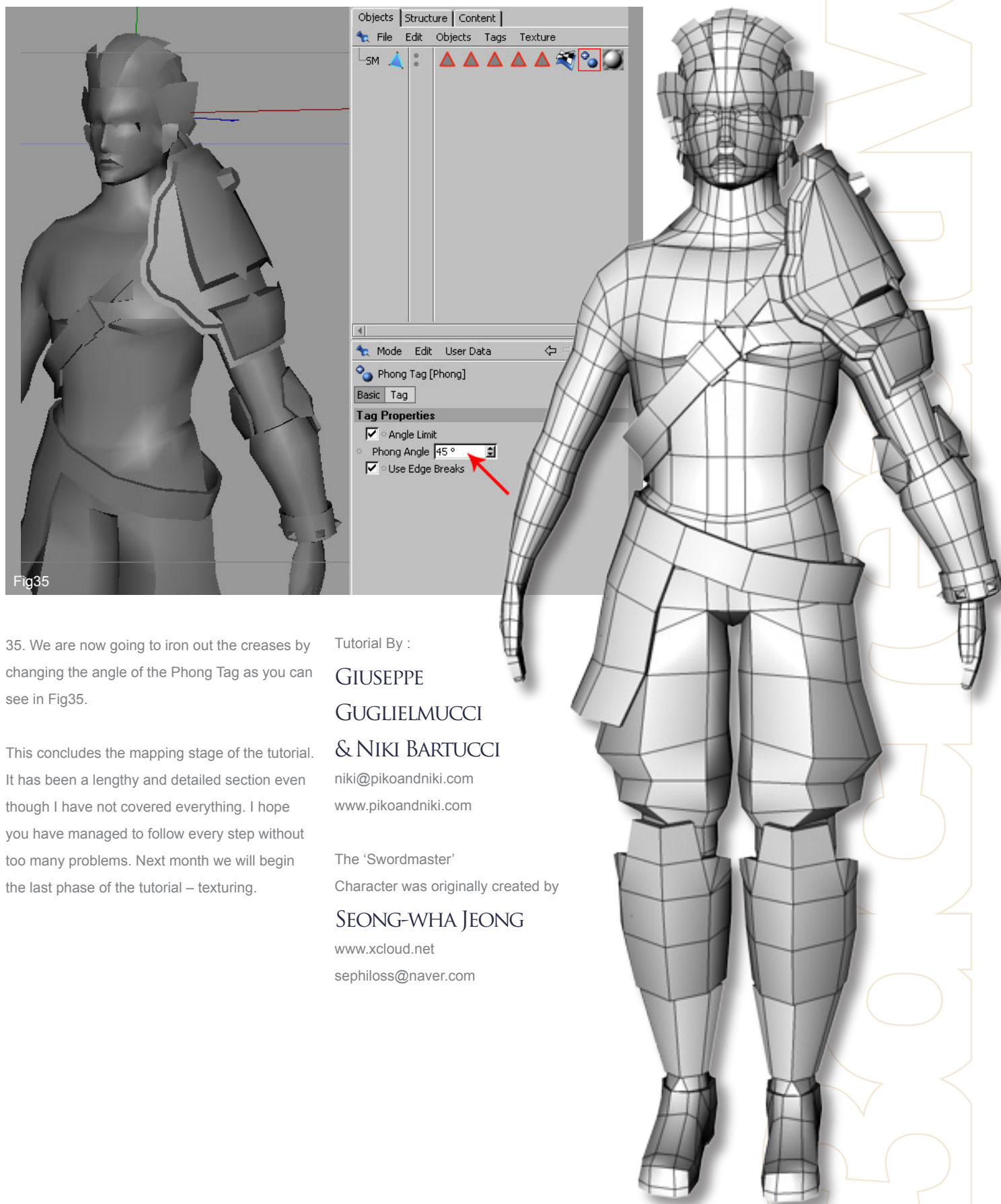
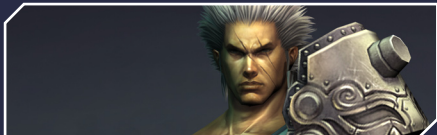


Fig35

35. We are now going to iron out the creases by changing the angle of the Phong Tag as you can see in Fig35.

This concludes the mapping stage of the tutorial. It has been a lengthy and detailed section even though I have not covered everything. I hope you have managed to follow every step without too many problems. Next month we will begin the last phase of the tutorial – texturing.

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Character was originally created by

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PART 7

TEXTURING SKIN & HAIR

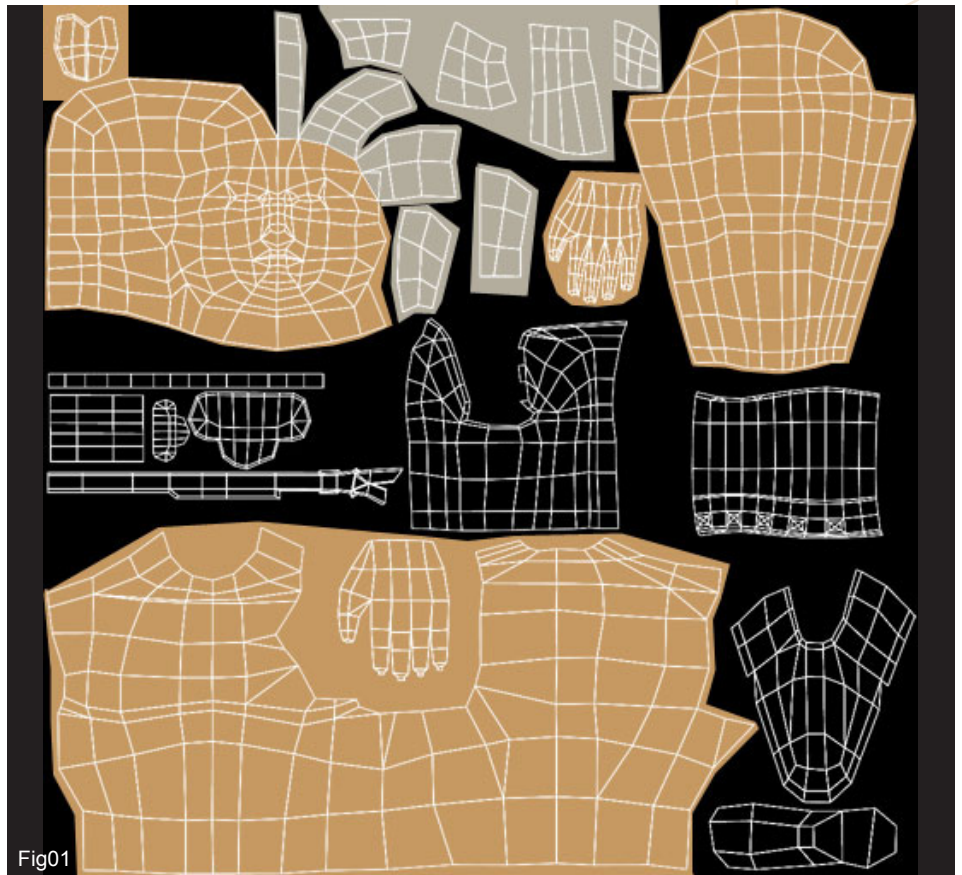
INTRODUCTION:

Well, we have at last reached the final stages of our tutorial: Texturing. This is perhaps the only part of the exercise where you will not be held by the hand throughout the process.

I can only really point you in the right direction but the final texture must be created by you as the steps involved are far too numerous to detail here. I will break the texture down into the key components and talk a little about how to structure your PSD file and organise the various levels so that changes can be made quickly and easily.

1. The first thing to establish are the colour blocks which will show the key areas of our template – in this case the skin tone which will be done using an RGB value of 198, 152, 98. This is placed over the body, arm and head, as seen in Fig.1. Create these on a separate layer and name it so that it is easily recognisable. You will also notice that I have blocked in the hair colour (R179, G173, B157). The remaining areas comprise of the armoured arm and boots which we shall ignore for now.

2. Now, create another new layer which we will use as our shadow layer and will contain all the shading for the skin. This is perhaps the most important layer of all in that it defines the muscle groups more clearly than any other. This layer is set to Multiply as a blending mode and uses various shades of a single colour (R47, G29, B5) as seen by the small square inset in the top left in Fig.2.



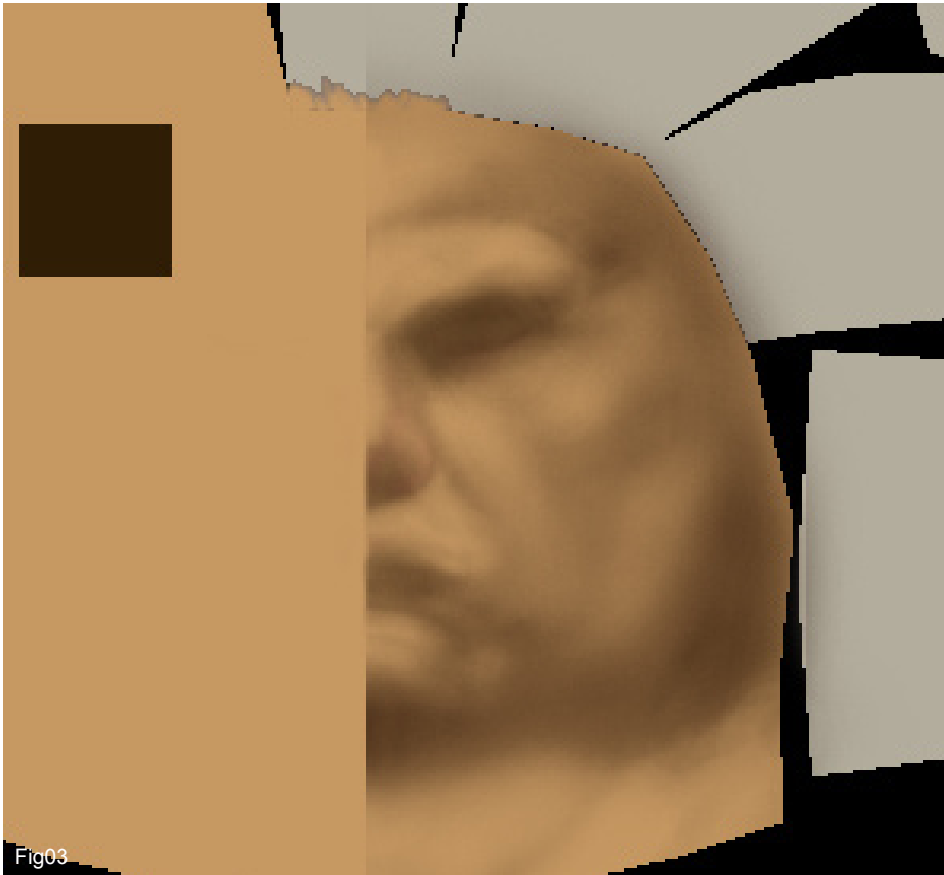
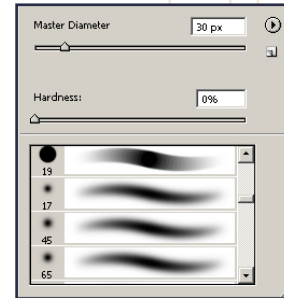


Fig03

3. First of all concentrate on only one half of the face as we can copy this over when it is finished. Choose a standard soft round airbrush with a pixel width of around 30 and carefully paint in the general areas of shadow without worrying too much about detail (Fig.3).



4. You can alter the opacity and flow values of the brush along the toolbar to help control the strokes and, when you are happy, then select a hard edged airbrush (Fig.4a) to refine the detail so that it looks similar to Fig. 2. Remember to use only one colour for all of the shading and keep it on a single layer. Now that the face has a shadow layer intact it is time to add another layer, this time dedicated to highlights. I chose an initial pale yellow, as shown by the square inset in the top left of Fig.4, and set the layer blending mode to Soft Light. I also used a near-white colour in a few areas to add the brightest highlights. On the right of the face is the final version and on the left is the layer set to Normal blending mode and without any shadows so that you can see more clearly where it is placed. When painting textures for low poly characters, try and imagine that there is a soft ambient light above the character, as if they are outside. This

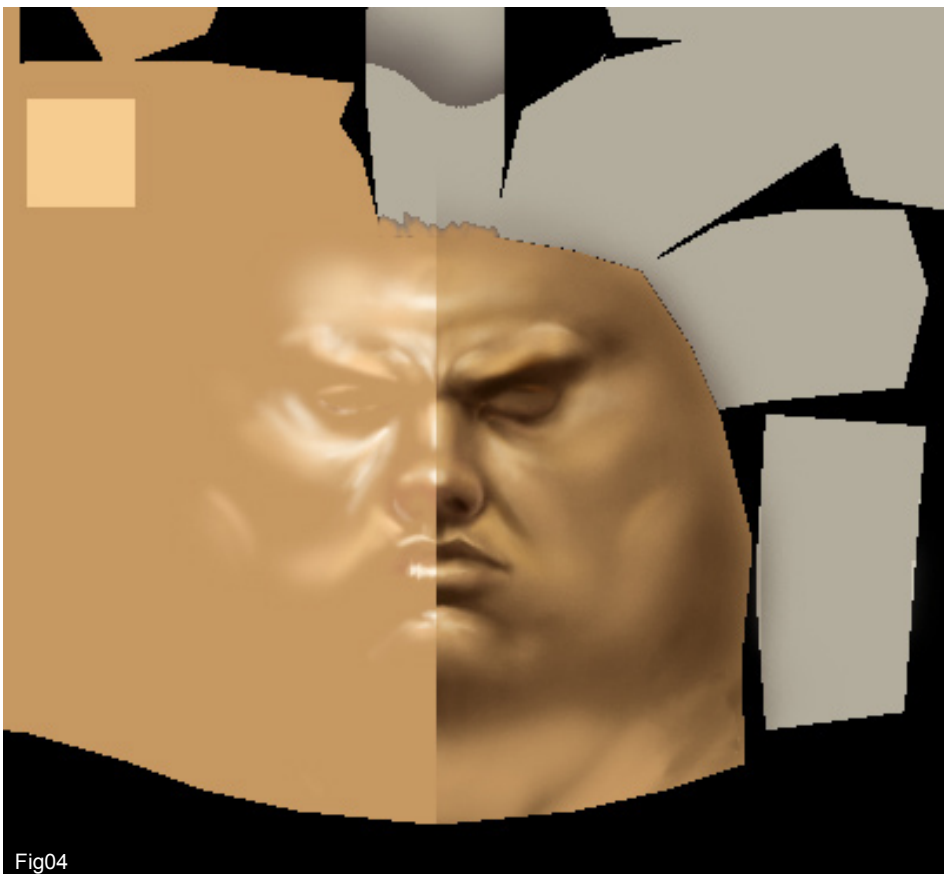
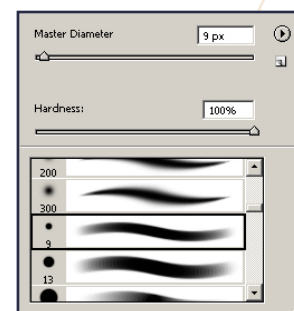


Fig04



helps the eye read the forms better and generally creates a more realistic lighting solution.



5. With the head area well underway it is a good time to start on the body section. The same principles apply for all the skin sections. Start with the shadows and then move onto the highlights layer. I also find that, to help get details in the correct areas, it is useful to create a new layer which I call "Guidelines". On this layer I draw line configurations and then save out the image and load it onto the model. This enables me to see where to paint in certain parts of the texture, as seen in Fig.5. I have used a white line to depict the area covered by the armour strap and have also drawn in the abdominal muscles before starting on any shading.

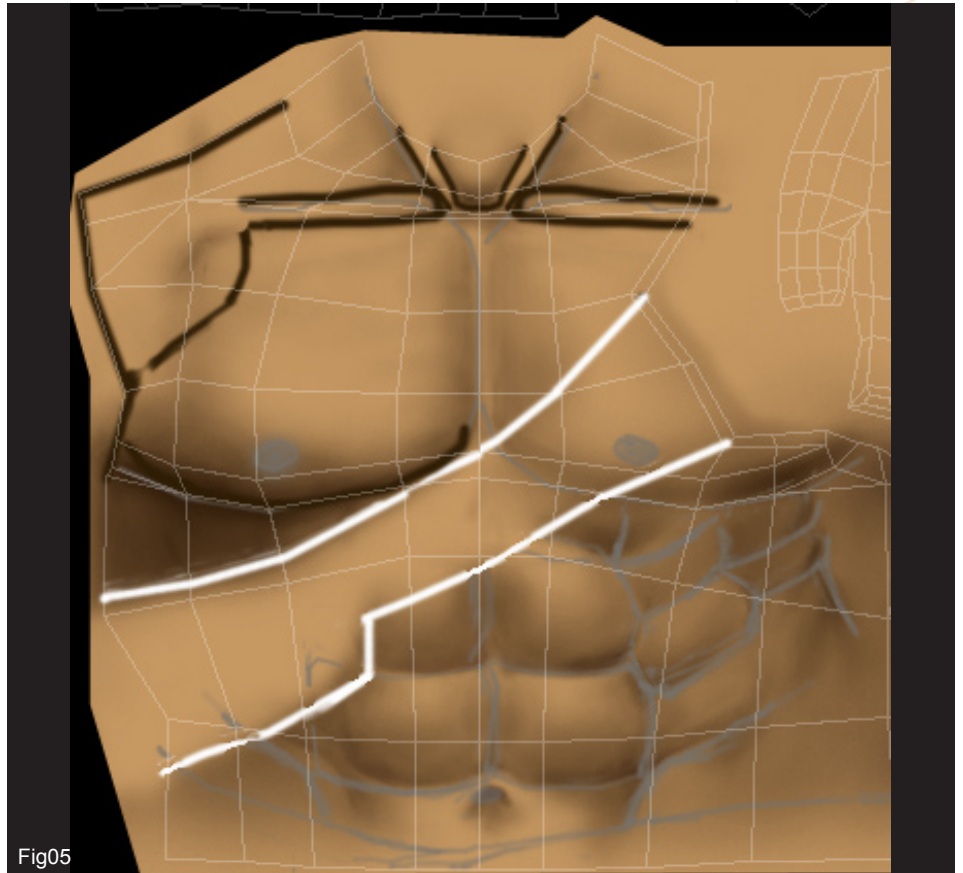


Fig05

6 To help get the armour strap in the right place, simply look at a front view of the character in your 3d program and use the wireframe as a guide (Fig.06).

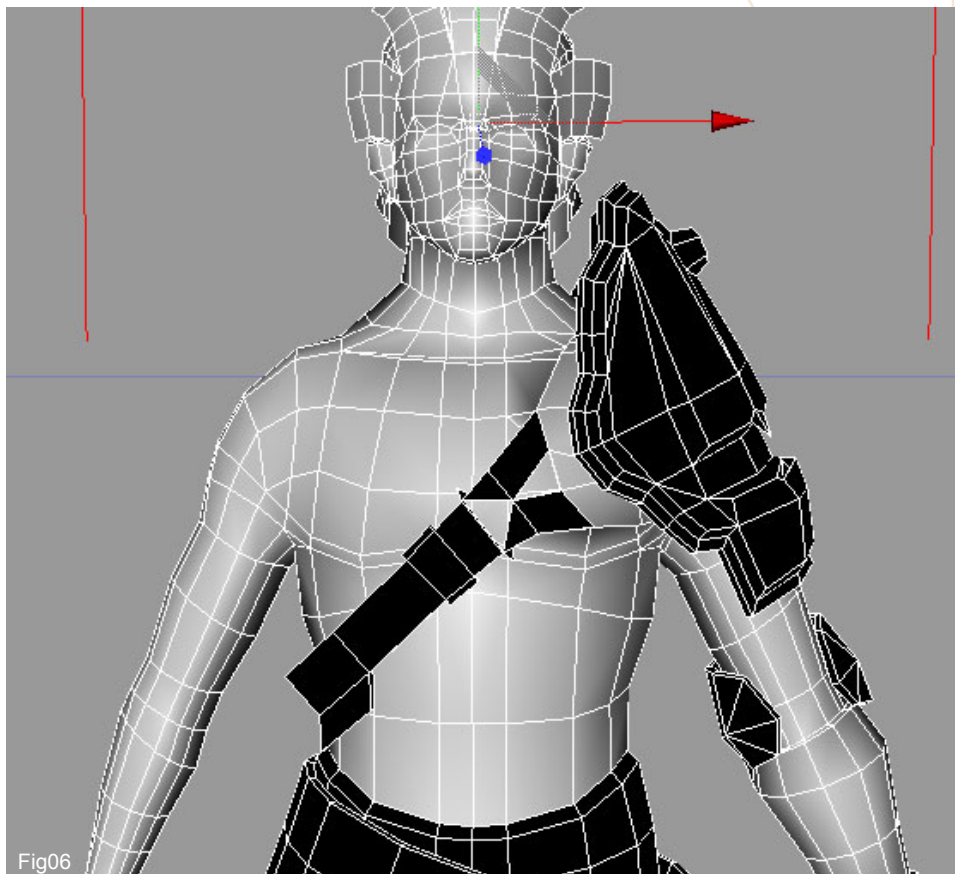


Fig06

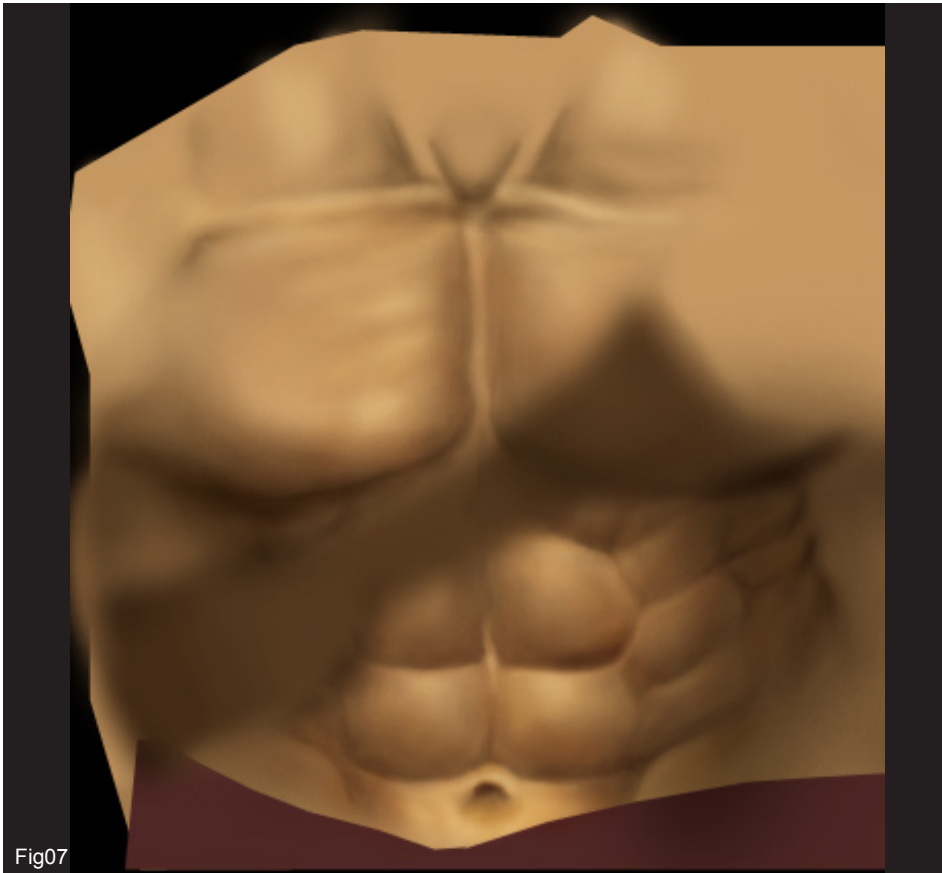


Fig07

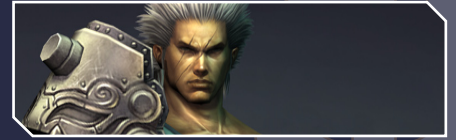
7. When you have finished the shading on the torso, use the guideline to paint in a shaded area that follows the strap on a separate layer, which will help bind it to the body (Fig.07). You will also need to repeat this for the back section of the character too. Use the same colour as the shadow layer and set the blending mode to 'Multiply' to keep things consistent.



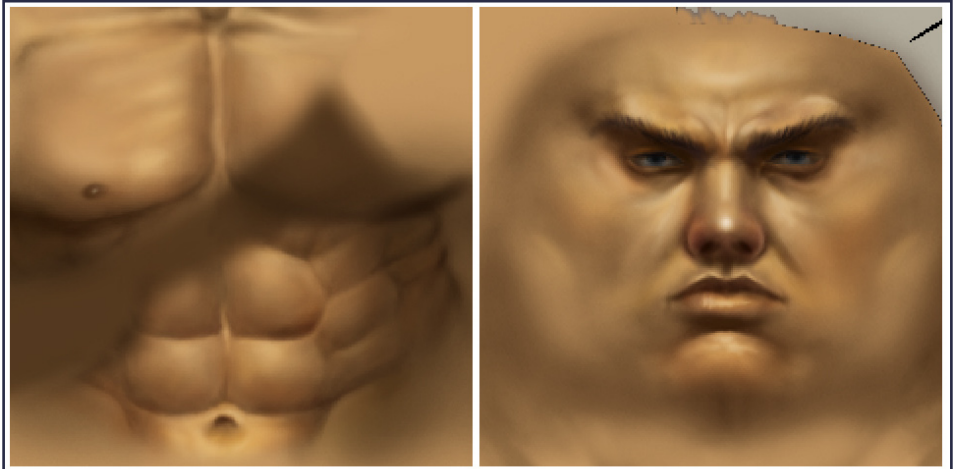
Fig08

8. We have covered the crucial stages of painting the skin but we are yet to add in the details which we shall yet again do on a new layer. In this part of the tutorial we will deal only with the eyes, eyebrows and nipples. There are no special techniques here, just careful painting using a small standard airbrush. In Fig.08, you can see a close-up of the eyes and eyebrows. I have chosen blue as a colour but the important thing to remember is that they do not appear too bright and feel very much as though they are sunk in the head and in shadow. I also added a small highlight on the tip of the nose to help distinguish it.

9. Now add a further layer and set it to Soft Light (I named mine 'colour tints'), and, using a purple colour similar to the small inset in Fig.09, begin adding some colour variation across some of the body and face. Be sure to keep away from the seams and do not overdo it – you will



notice I have concentrated around the eyes and nose on the face with small patches on the chin and cheeks too. This will help break up the monochromatic quality and create some interest across the areas of skin.



Soft Light

Fig09

10. With regard to the arm and back section of the model, I suggest you always start on the guidelines layer and draw in the shapes of the muscle groups and then save out an image to test the accuracy on your actual mesh before embarking on any significant detail and shading. This is essentially trial and error and will mean many changes and test renders before you are confident in painting in the main shadows and highlights that will define the form (Fig.10).

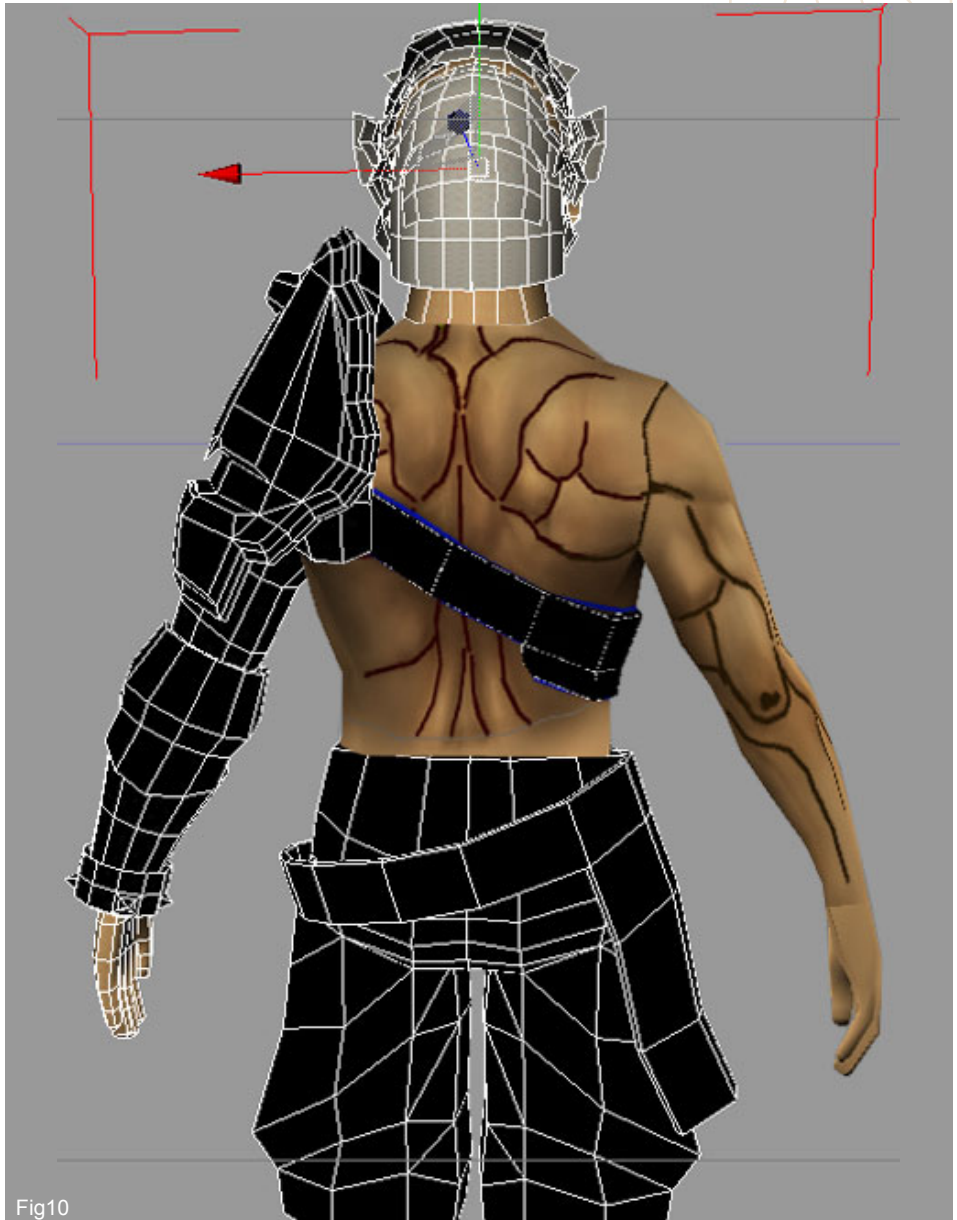


Fig10

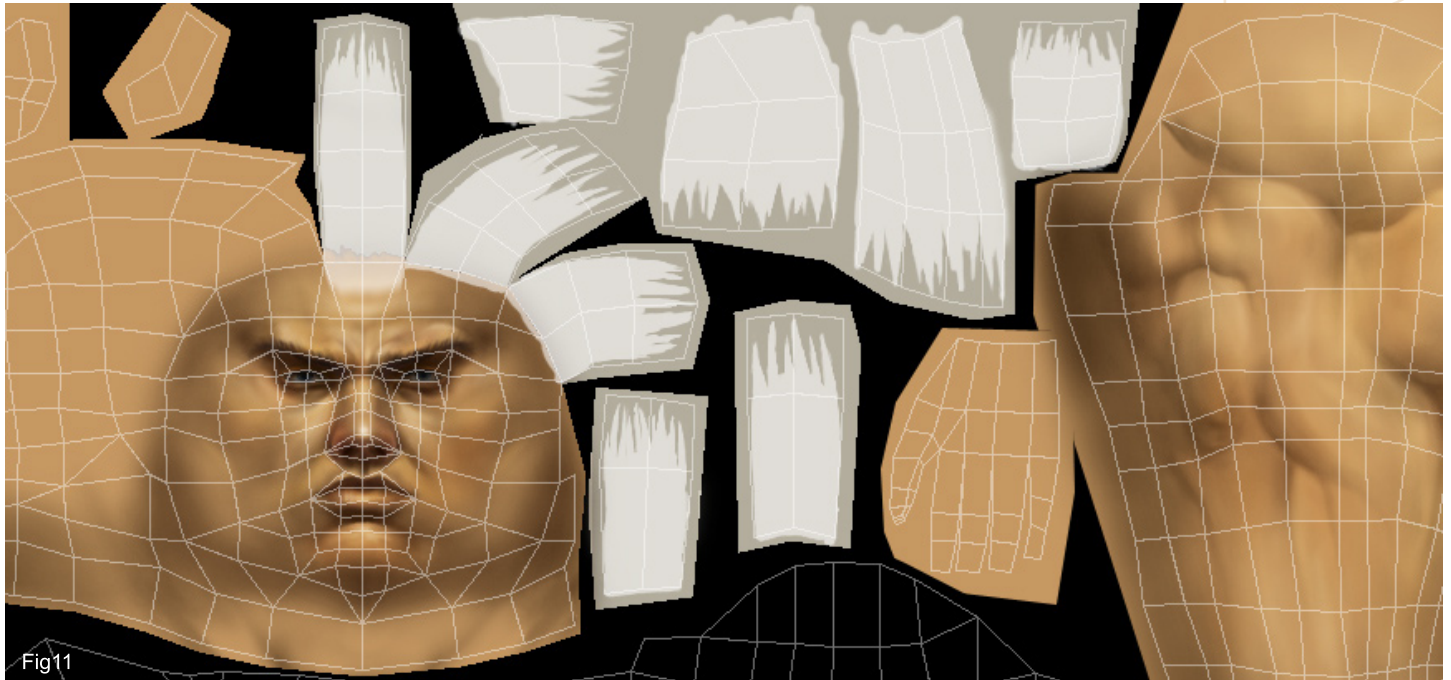
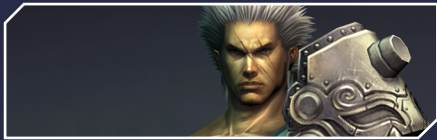


Fig11

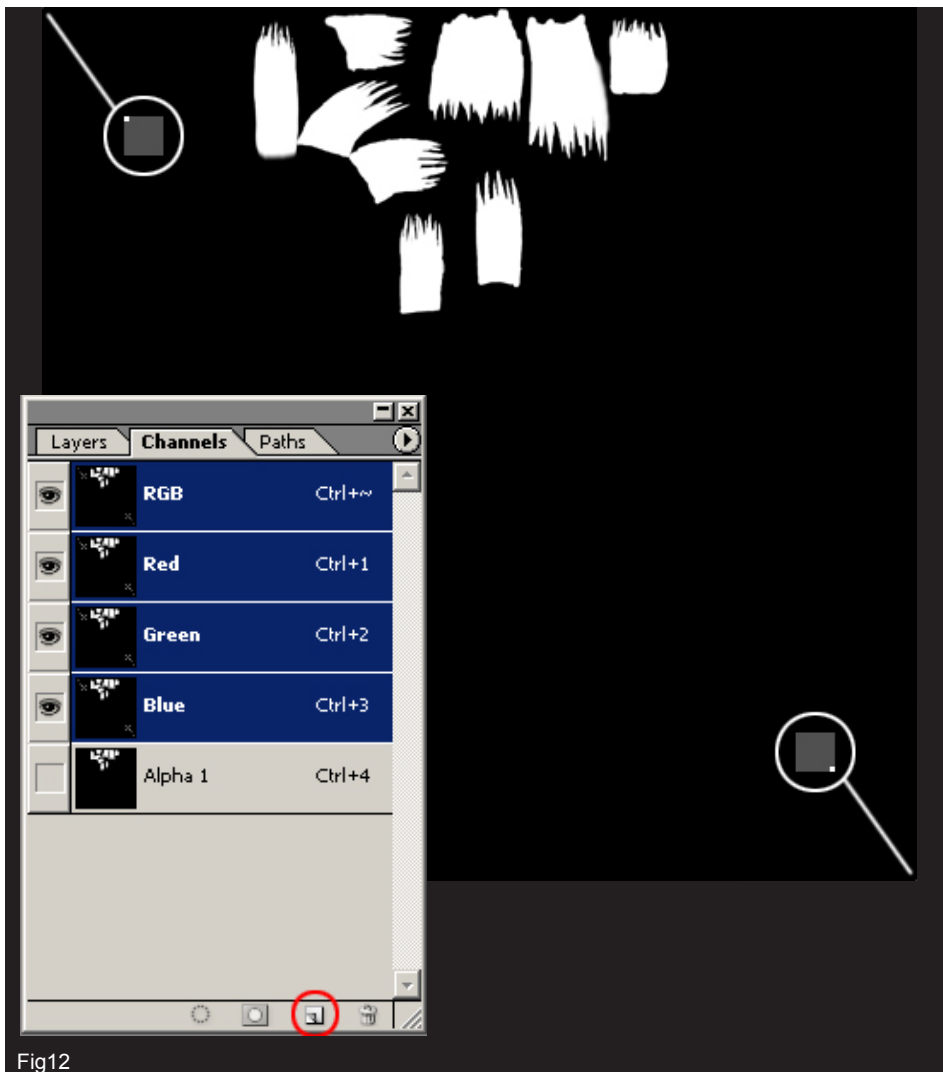


Fig12

11. With the face and body sections well underway, it is a good time to make a start on the hair. This will utilise an alpha channel which shall be used to control the opacity within Cinema4D in order that we can identify hair strands. What I do here is to create a new layer which I call 'Hair alpha' and I use a pure white colour and paint in the hair strands, as seen in Fig.11. We shall then copy this entire layer and paste it into a new Channels layer.

12. Select the Channels tab and click on the small icon ringed in red in Fig.12a. This will create a new channel that is called 'Alpha 1' by default. Now, before we paste our hair outline into this new channel, zoom in on two opposite corners and paint in a 1x1 pixel square, as seen in Fig.12. This will not effect the texture as the two squares are outside the mapping co-ordinates but will ensure that the hair shapes remain in exactly the same positions when they are pasted.



13. Copy hair alpha into the Alpha 1 and then save out the image as a 32 bit tga which will retain the alpha channel. In Cinema4D, create a new material (name it "hair") and then load the tga into Colour Channel and into Alpha Channel, as seen in Fig13. In the Alpha channel, click on the Select slot (left of figure) to choose the Layerset, as shown on the right of the figure. The last thing to do is to apply the new material to the hair, so proceed in this way. Select all the poly's that make up the body and save this selection. Go now in the texture tag of the body and, in the Selection slot, type the name of the selection of the body. In this way the texture will be applied only on the body. Now assign the hair material to the object. You'll notice that white areas should remain visible and the surrounding black areas should become invisible.

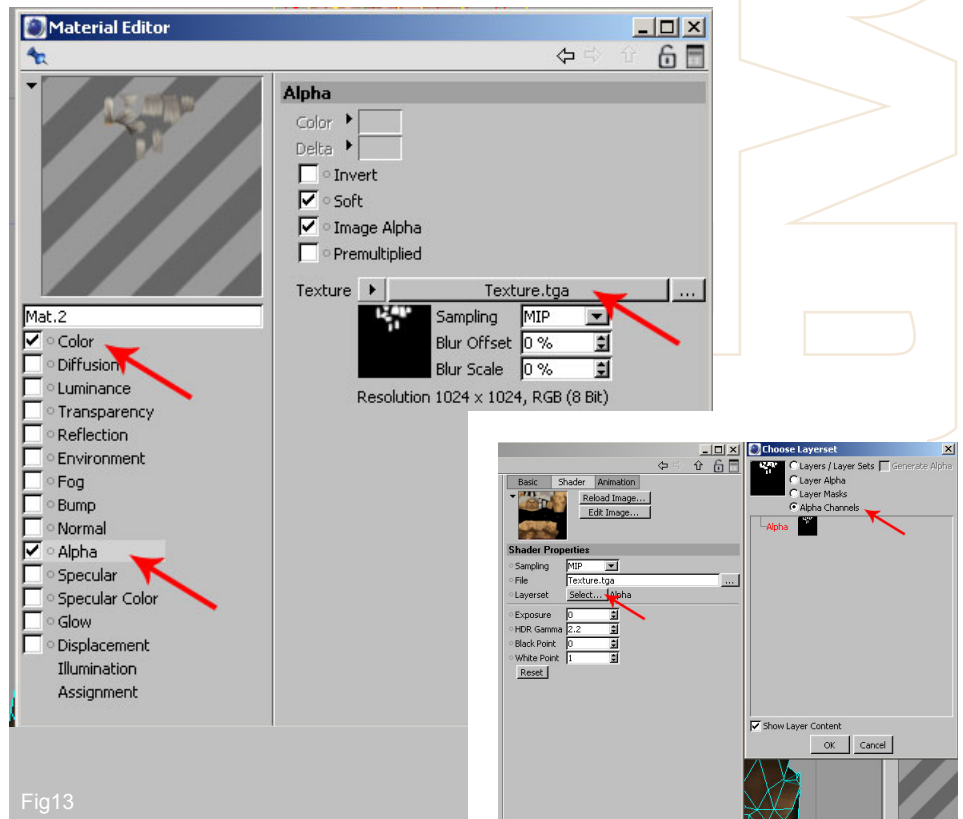


Fig13

14. In Fig.14, the white areas will be the hair which we will see but the grey boundaries of the poly's will disappear in the final render.

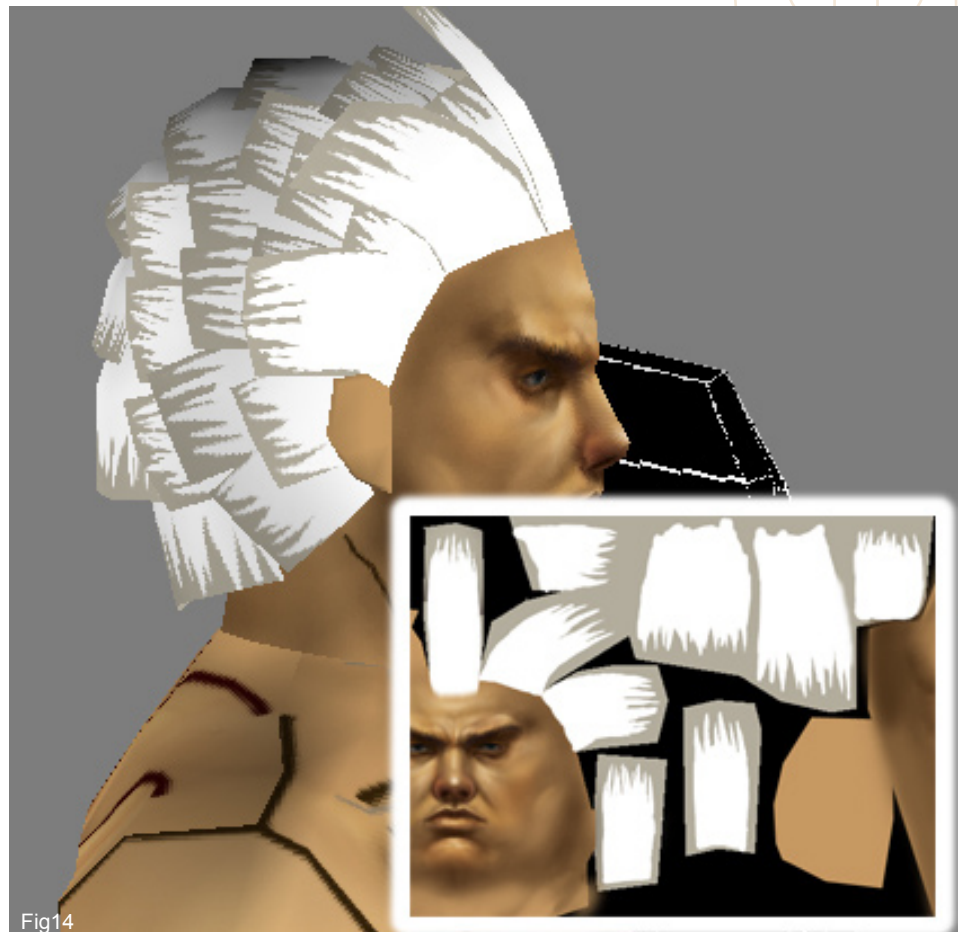


Fig14



Fig15



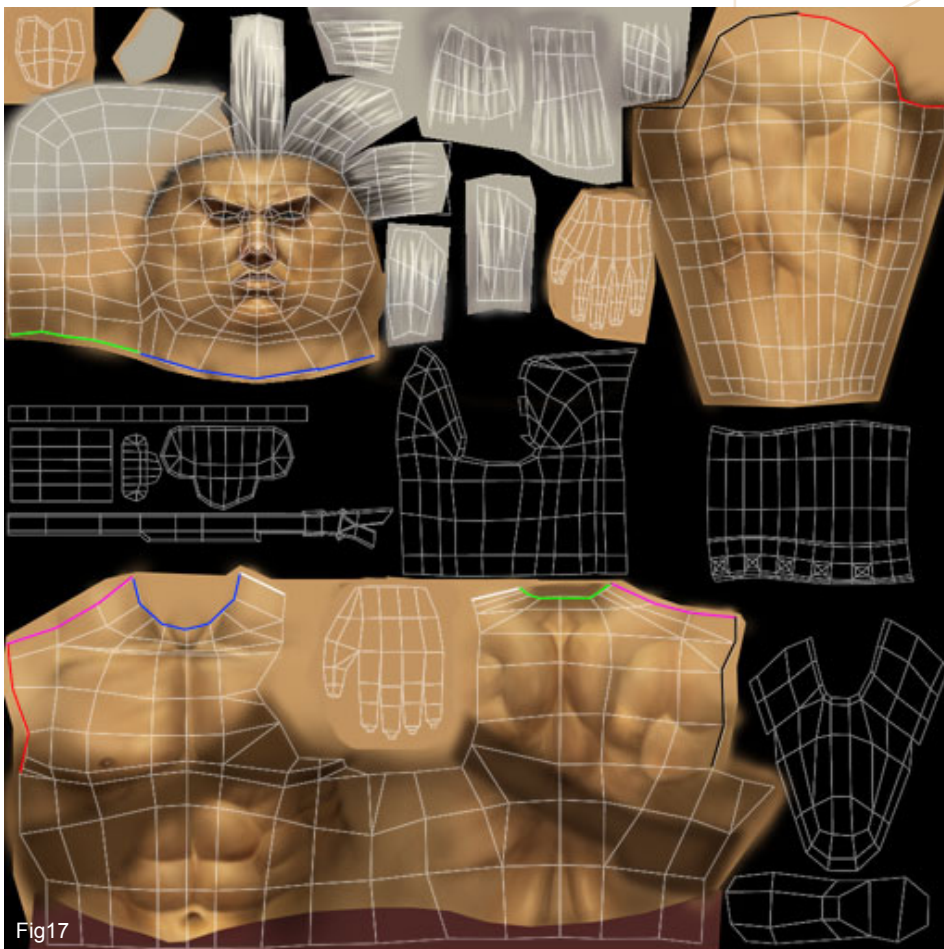
Fig16

15. Now that we have the outline of the hair, we can begin painting within the alpha areas on a new layer. Use a mid to light grey, similar to the colours seen in Fig.15, making sure to keep the roots slightly darker. To help these blend in with the scalp I have used a grey colour across the top of the head also. Do not forget to also blend the hairline in along the top of the face.

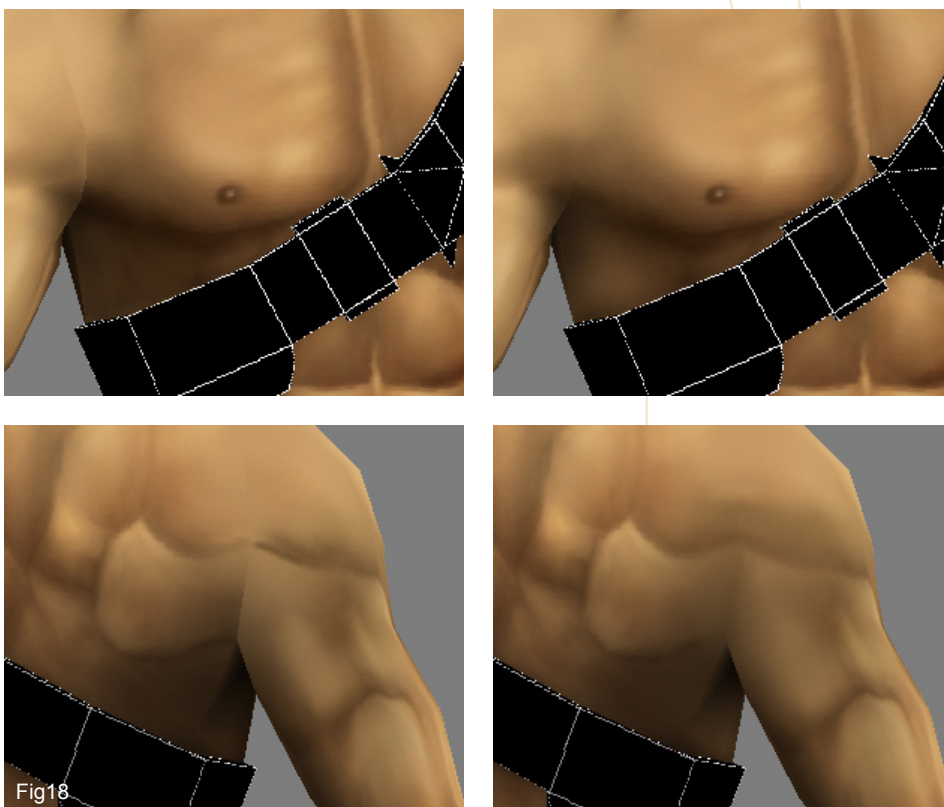
16. When all is done and applied to our model it should look something like Fig.16. There are a few areas that could be refined somewhat but you get the general idea hopefully.



17. When we apply our texture so far to the model you may notice that there are a few areas along the seam lines that do not match up very successfully. It is a good idea to create a new guideline layer to establish which edges are adjacent on the model. Try painting different coloured lines and matching them up along certain edges, as seen in Fig.17. You can see that the black and orange lines on the body are joined with the top seam of the arm in the upper right, and so on. What you need to do now is to make sure that the RGB values along the corresponding edges are similar and have a relative variation on each poly.



18. In Fig.18, you can see the seam problems around the top of the arm on the left side of the image where the edges do not match. On the right side is the revised version, which shows an improvement. This just about concludes the most crucial stages of texturing the skin areas and hopefully gives you a good picture of how to go about structuring your PSD file into key components. All that is left are the ear and hand, which are predominantly done using methods already outlined. The hair could be tweaked to a degree to improve the look, but you should be armed with enough knowledge to try your hand at painting a texture from scratch. Next month will see the conclusion of this Swordmaster tutorial when we will tackle the armour and clothing.





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Front

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PART 8

TEXTURING ARMOUR
AND CLOTHING.

INTRODUCTION

We have finally arrived at the end of this series of tutorials. Last month we covered the initial stages of texturing the character by painting in the skin and hair. This month concludes with us adding the clothing and armour. As with the mapping section this is a very detailed and lengthy process and there is simply not time to cover every aspect. Instead I shall detail some of the key stages which can be applied to numerous areas of the template and hopefully provide a practical overview.

1. The clothing itself is by far the simplest to achieve as this will comprise of only two key layers of detail in the form of shadows and highlights, much like the skin previously. As such, we will start with the armour as this is a little more involved. We will begin with the elbow pad as this is a relatively small part of the armour but one that utilises most of the techniques we shall use on the more dominant pieces. First of all, select a neutral grey and block in the area on the template and then, using the elliptical marquee tool, select a small area within the curved section. Now on the main menu bar click on Layer – Layer Style – Bevel and Emboss. Alternatively, you can click on the small “f” icon at the base of the Layers palette. This will bring up a dialogue box, similar to Fig.01. Here you can alter various settings that will determine the direction of light, along with the type and depth of bevel. You will notice that I have chosen an Emboss and the angle of light is directly above in this case. This is because the orientation of the detail on the texture map is such that the top of the ellipse will be facing upwards on the character and hence the shadow will be underneath. Experiment with the slider bars and styles and observe the effects.

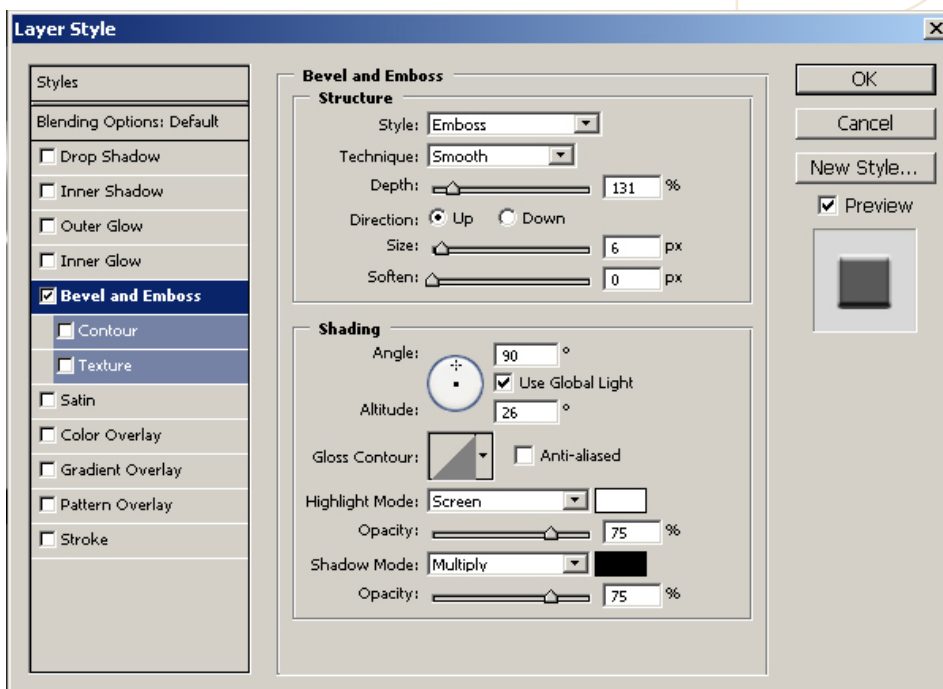


Fig01

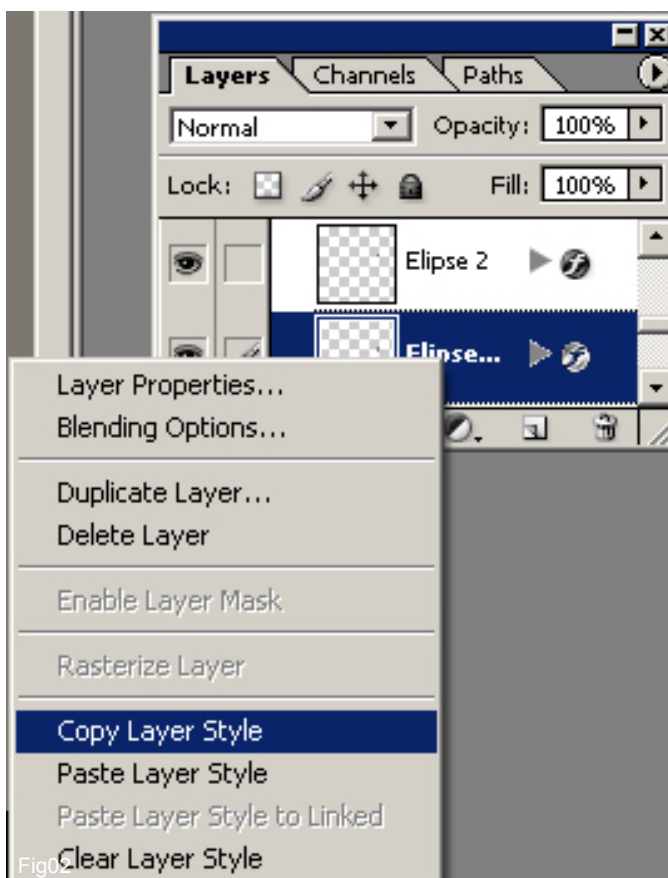


Fig02

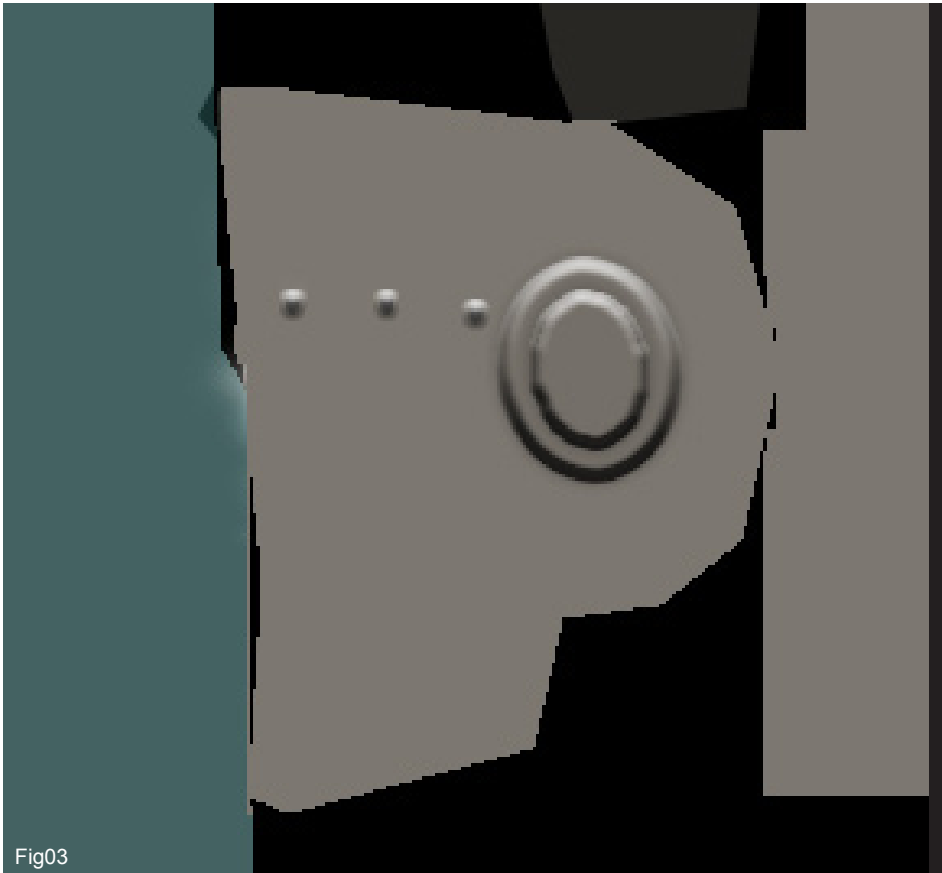
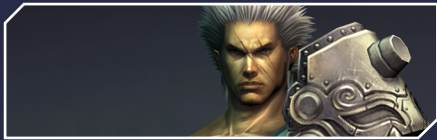


Fig03

2. One more thing which will help is to add a subtle Drop Shadow, which you can find at the top of the list. Check the tickbox and then slide the Distance arrow down to zero and increase the Size and Spread until there is a soft shadow around the ellipse. Now, on a new layer, create a smaller ellipse inside this one and fill it with the same grey colour. Right-click on the ellipse 1 layer and select Copy Layer Style and then paste this into the new layer, as shown in Fig.02. You will now have two ellipses that both incorporate an emboss and drop shadow.

3. On another new layer, add in some rivet heads using the same technique but perhaps leaving out the drop shadow (Fig.03).

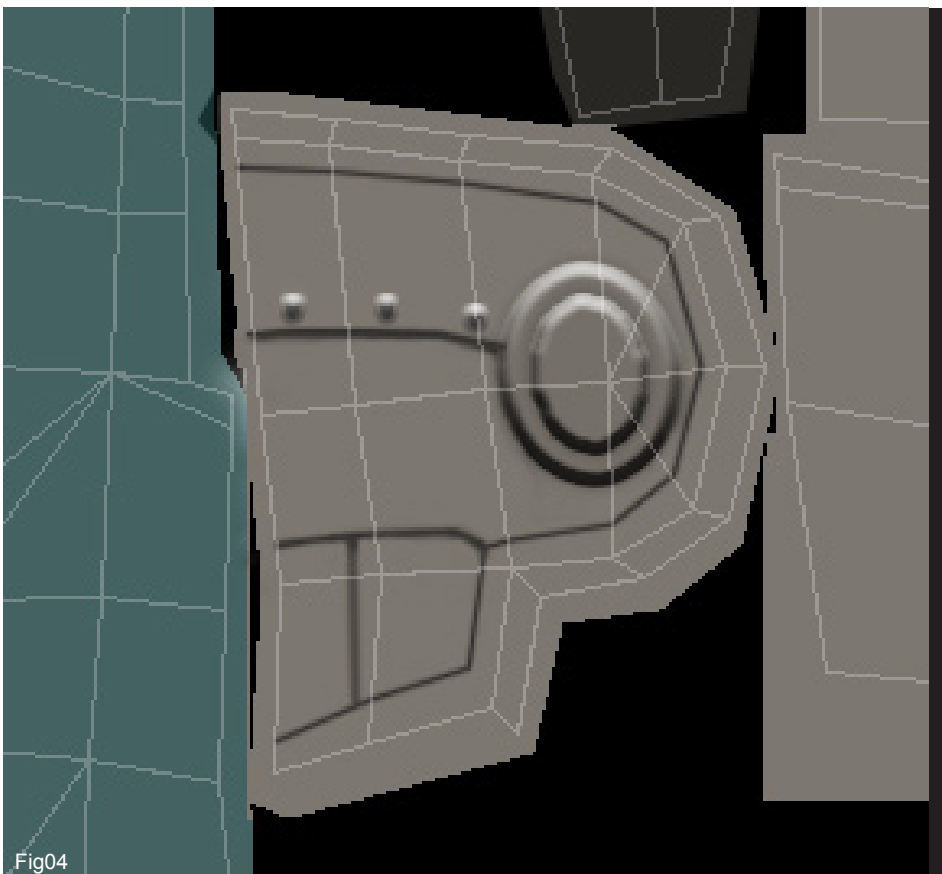


Fig04

4. Now add one more layer and start to draw in some outlines that will trace the shape of the elbow pad and create some extra detail, as seen in Fig.04.



5. Now, believe it or not, that is essentially the structure of our elbow pad. It doesn't look finished yet but with a few minor tweaks it will be. As this is a relatively small area on the template we are going to apply our final adjustments on the main colour block layer, as opposed to adding any further layers. You can either use the Colour Dodge / Burn tools or choose lighter and darker shades of grey to do this - both methods will require some painting by hand. We are aiming for something similar to Fig.05, in which you can see some modulation to help emphasize the grooves and curvature of the metal. Already we can see an improvement, but one final layer will create the finishing touch.

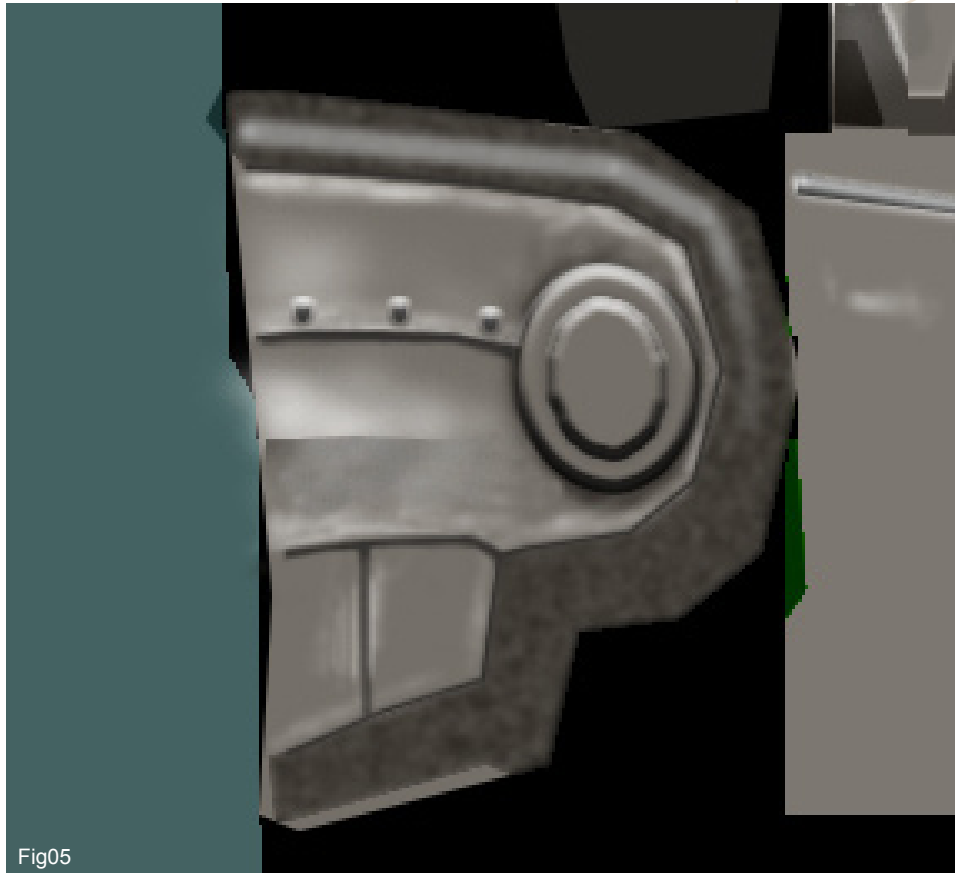


Fig05

6. This will be a metal overlay which shall eventually be used on all of the armour and so must be near the top of our layer stack. Choose any photo of metal that demonstrates the right kind of scale and then set it to 'multiply' and lay it over the top, making any colour / tonal adjustments as required (Fig.06). This then describes the general process we will apply to all of the armour sections, no matter how complex. Use the marquee / selection tools to add shapes followed by Layer Effects to add in detail and lighting. Then, either on a new layer or on the base colour, paint in the refinements, such as shading and highlighted edges etc. You can then clone parts of the metal overlay onto the designated area to complete the armour. Remember to use a guidelines layer initially, as we did with the skin section, to check the integrity of your mapping - no point in spending half an hour painting an area of detail only to find it is not correct on the model!

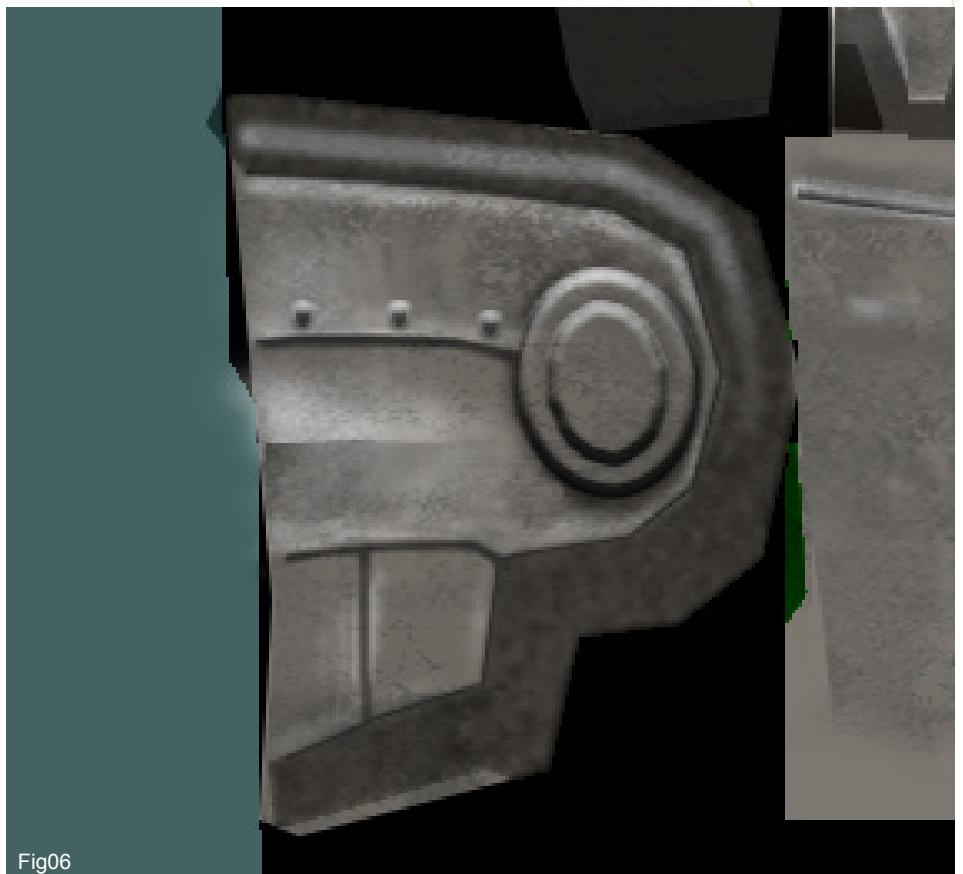


Fig06

7. Now on to the hand - a quite small but highly

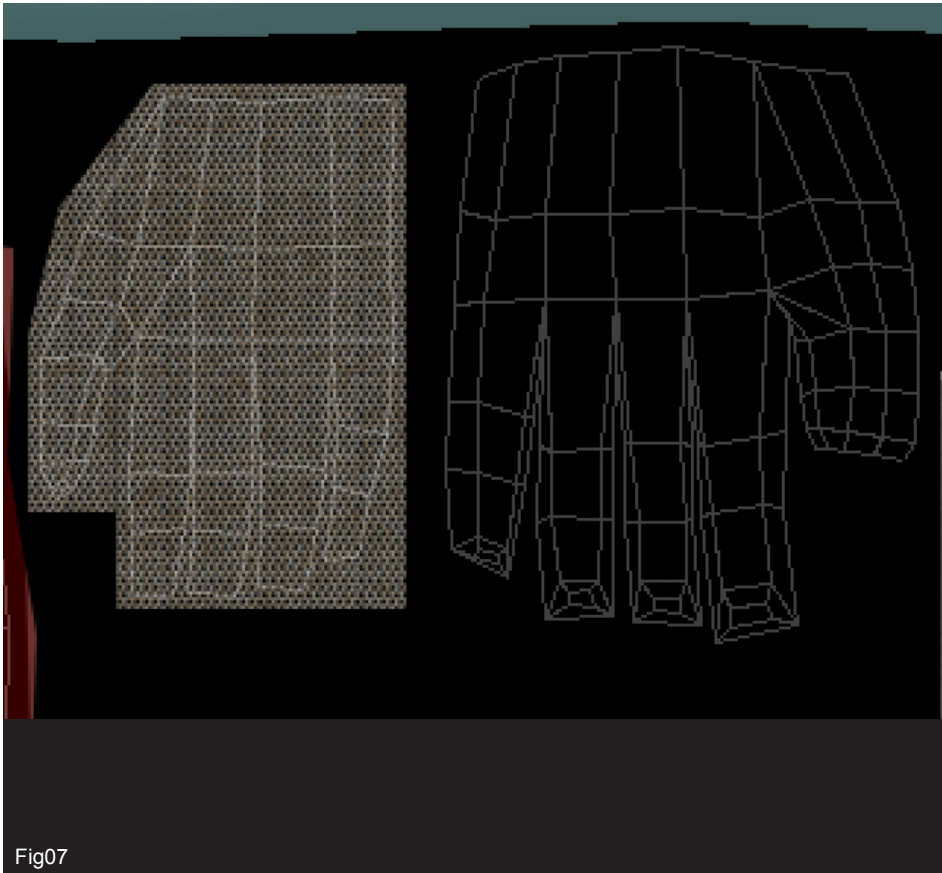


Fig07

detailed area. The first step is to find a suitable image of chainmail which can then be copied into our template and scaled to a sufficient size, as seen in Fig.07, to form the palm.

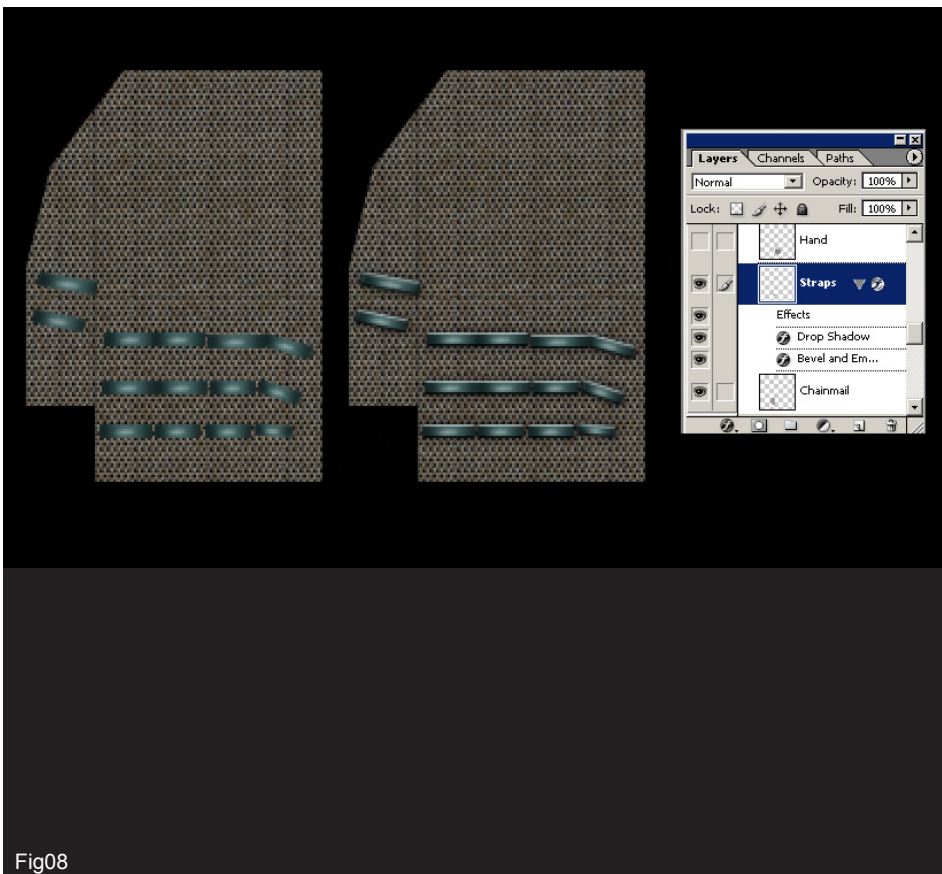


Fig08

8. Now add a series of straps across the fingers with a slight shadow at the edges and a small highlight in the centre, as seen on the left in Fig.08. Next step is to add two layer effects, seen on the right in the layers palette, which will help define them further.

9. The top of the hand, which shall be armour-



plated, will be a little more intricate. First of all, use the guidelines layer as a gauge by drawing in the outlines of the metal plates, as seen in Fig.09.

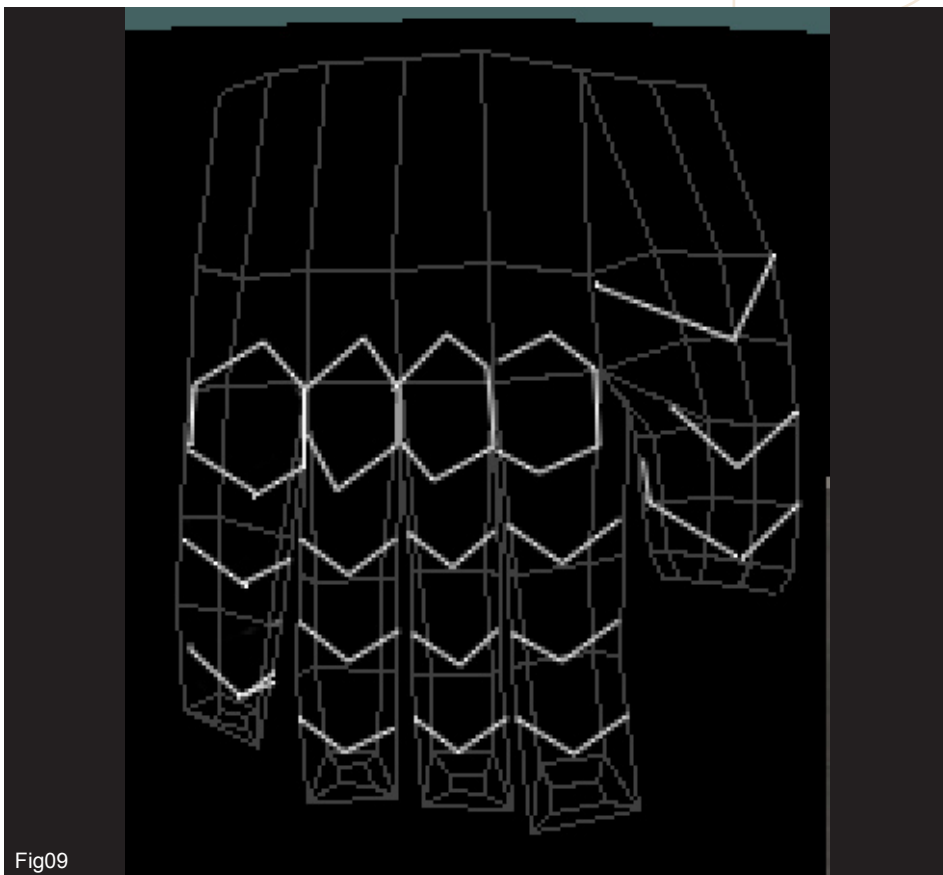


Fig09

10. Now make separate selection groups around the guidelines so you end up with a series of shapes, as seen in Fig.10. Afterwards you can fill in with a flat grey colour, consistent with the rest of the texture, and when you apply the layer effects they will occur on each piece.



Fig10

11. In Fig.11, you can see the effects of the two

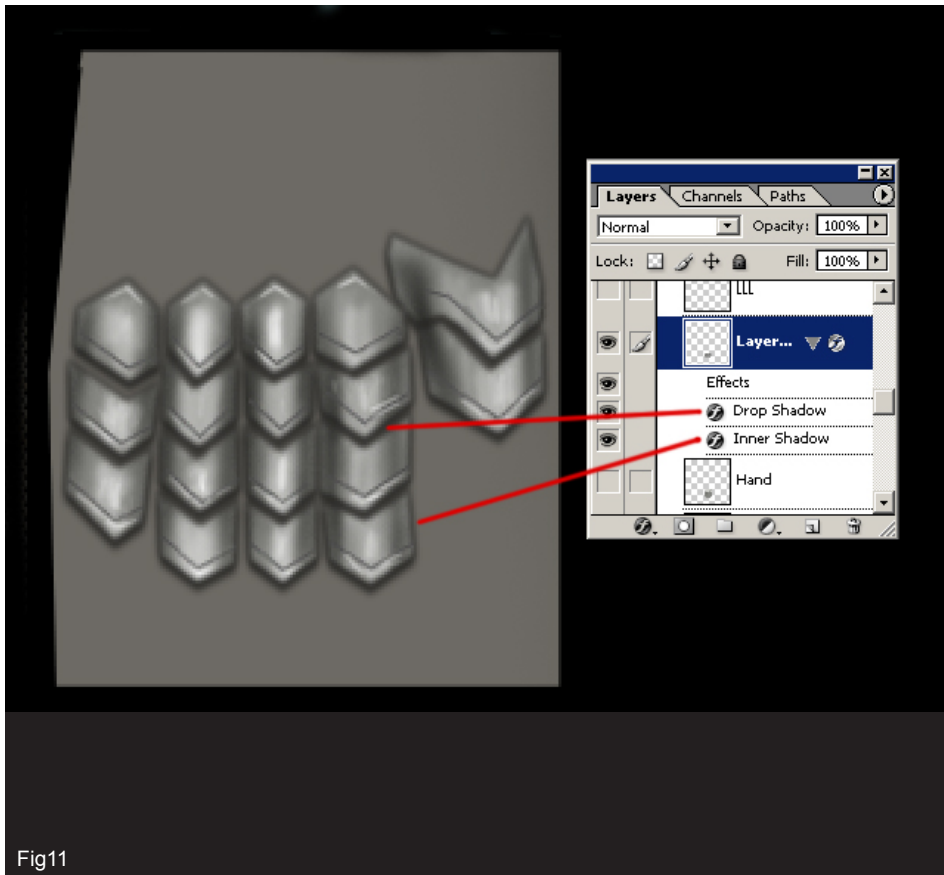
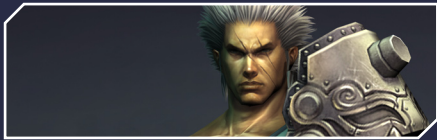


Fig11



Fig12

layer styles that have been applied; the inner shadow which provides a dark outline and the drop shadow which is below each piece.

12. Now when we overlay some more of our metal texture and some finishing touches, we end up with something like Fig.12. You can see here that I have added some shadows between each finger, together with some highlights across the tops. I have also created some rivets, as before, and painted in some lines to further embellish the hand. When tackling the rest of the armour, follow these procedures and be mindful of the fact that you want there to be an ambient light source above the character.

13. Now for something that features quite

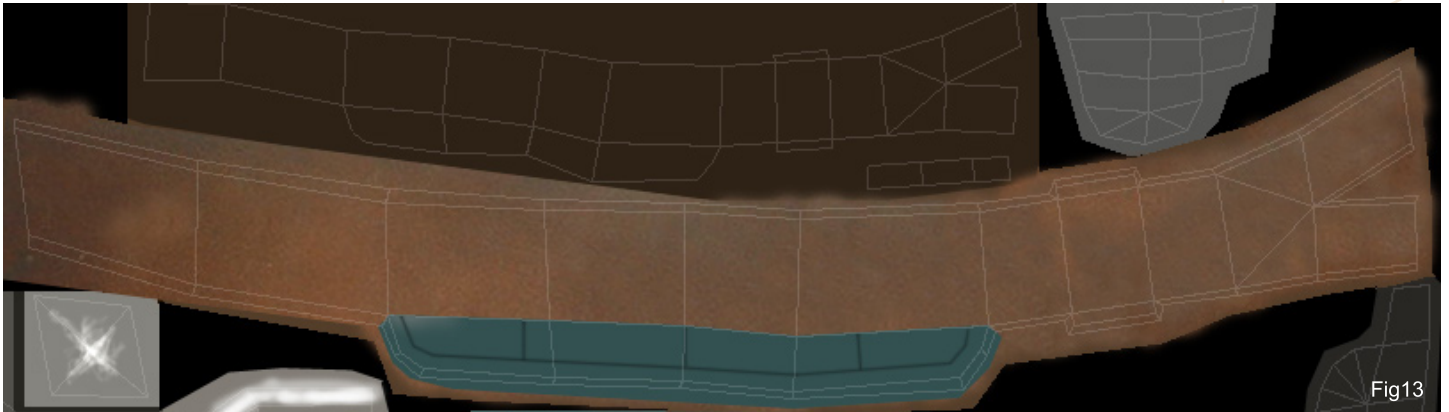


Fig13

heavily on our template – the belts. There are three altogether and all are made in a similar fashion. Block in the base colour and then find a suitable photograph of some leather and paste it over the top in a new layer. Set the blending mode to 'multiply' and alter the hue, brightness and saturation accordingly. This will give you a good starting point, similar to Fig.13.

14. We can now position the rivets which we do on a new layer by using the circular marquee tool set to a fixed aspect ratio, as seen along the menu bar in Fig.14. The way to paint these is to first fill in a circle with a grey colour. Then go to Select > Modify > Contract and choose about 3 pixels, dependant on the size of the circle of course. Then delete the inner portion until you are left with a simple ring. All you need to do now is apply a Bevel and Emboss effect and "voila"! Now simply Ctrl + Alt drag two more to finish.



Fig14

15. Next we will add two indentations where the

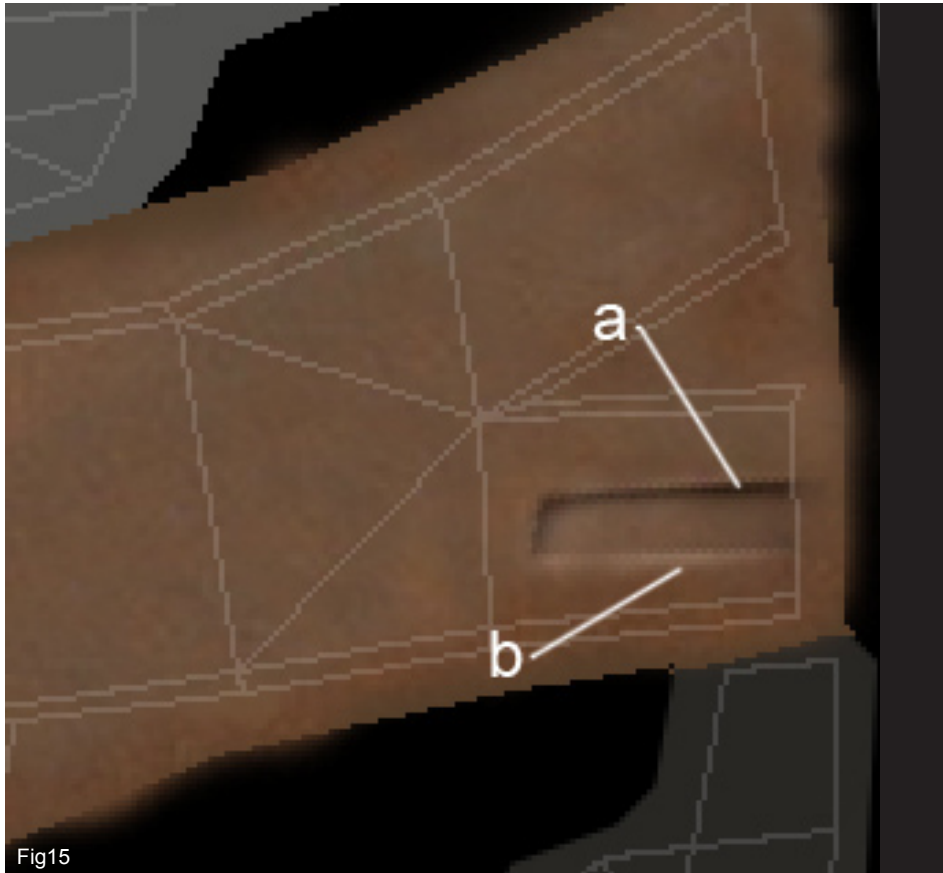
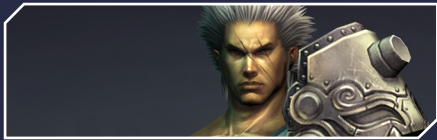


Fig15

belt forms two straps. You can do this on the main colour layer as it is relatively simple. Make a rectangular selection and paint in a dark band under the top edge (a), as shown in Fig.15. Now invert the selection (shift + Ctrl + I) and lighten the lower edge to form a highlight (b). Now do the same on the upper strap to finish off.

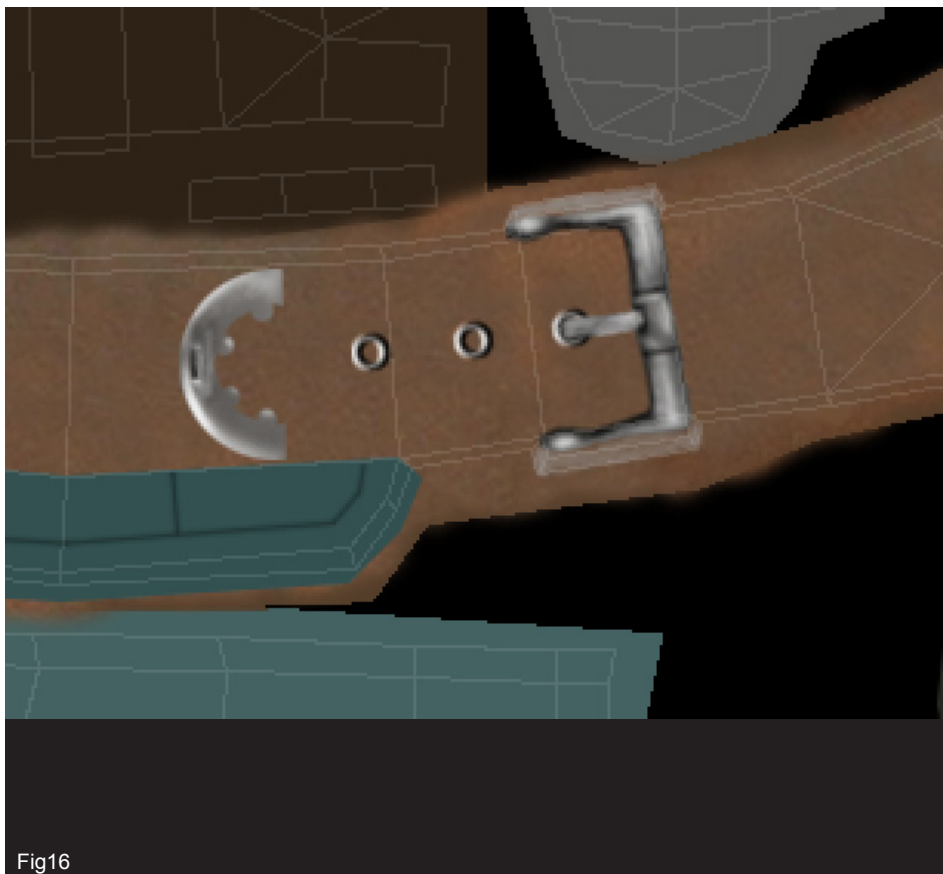


Fig16

16. The two other details that are still missing are the buckles. Again, these will be done on separate layers in order that changes can be made quickly. In Fig.16, you can see two buckles that have been painted in. To create the left one make a circular selection and fill in with a grey colour. Now contract this selection group and hit 'delete', leaving a ring, as we did with the rivets. Now delete half of the remaining shape and use the circular selection once again to add the small semi-circles around the inner-edge. Now just use a brush to add in the highlights and shadows manually. These elements are best done by hand in the end and so there are no clever tricks to speak of, just an awareness of where you want the light source.

17. The next stage involves adding in rivets and

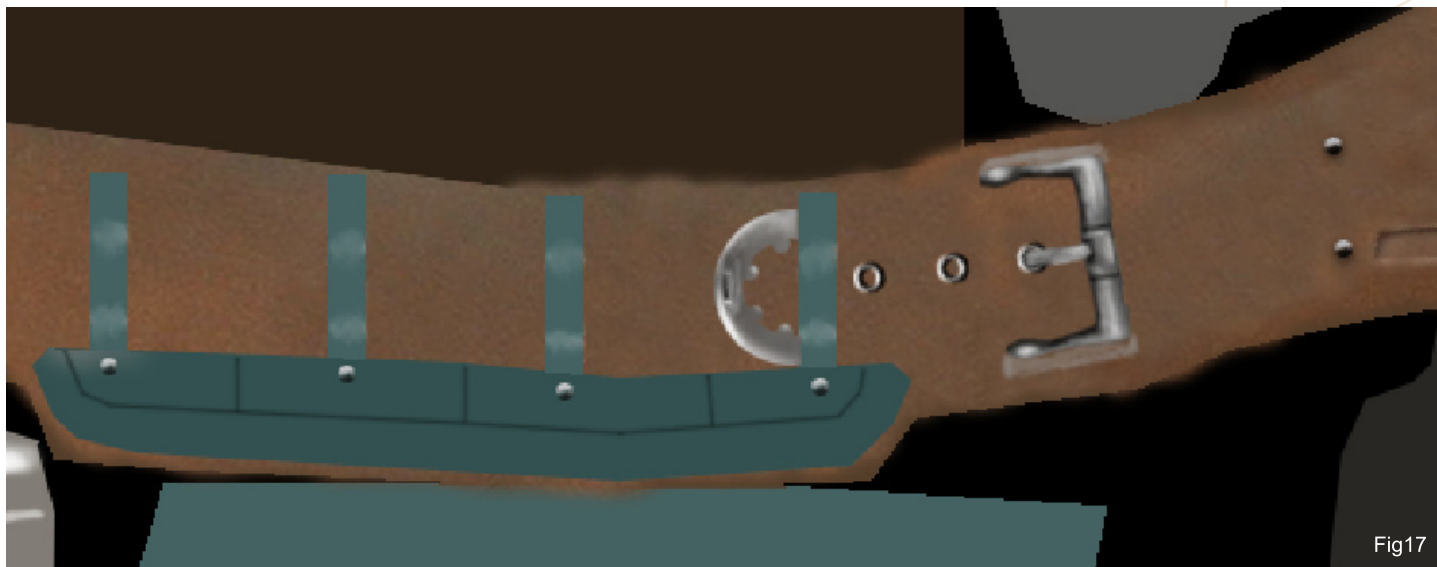


Fig17

a few vertical straps, as shown in Fig.17. You can see that I have also painted in highlights across the middle of the straps.

18. To complete the belt we now need to add in the shadows and

highlights which can be done using two new layers, as with the skin in last month's instalment. In Fig.18, you can see that I have placed some general shading around the centre of the belt, as this area falls under the arm, and also made sure there is a shadow around the buckles which helps fix them to the leather and avoid the appearance that they may be "floating", as it were. Again, I have added some thin stitched lines along the length which can be traced by a highlight.

19. In Fig.19, you can see the final version with the highlights



Fig18



Fig19



Fig20

concentrated at either end, particularly on the right where the belt is folded. The three edges surrounding the triangular hole would catch the light and so show the brightest highlights. You can follow the same procedure for the remaining two belts not forgetting to overlay the leather reference for each.

20. So far we have dealt with techniques used to paint the metal armour and leather belts, but one area yet to be covered is that of cloth. This will feature on the trousers, as well as the banner hanging from his waist. The first step is to block in the base colour, as seen in Fig.20, along with two seam lines.

21. Now using a shadows layer set to 'Multiply',



start painting in the direction of some of the folds using the same colour as the trousers. Using a standard soft round airbrush they will naturally come out darker due to the layer blending mode. Use a larger brush to begin with to get a soft-edge and then reduce the size of the brush to sharpen crease lines. In Fig.21, you can see the arrows which dictate the direction of the creasing. Try and vary it slightly as there is always variety where folds are concerned.



Fig21

22. Now, on the highlights layer (Set to Soft Light), simply trace around the shadows to emphasize them as well as placing a few strokes in between, as shown by the arrows in Fig.22. Bear in mind which areas will receive more direct light (in this case the outside of the leg) and focus the stronger highlights in this area. Use a colour that is almost white, but with a shade of the green, in the trousers, which will help. Use a small, soft brush to add crisp edges to some of the more extreme creasing down the outside of the leg. Generally, creases appear more around areas of tension such as joints - hence the detail around the groin, so keep this in mind.



Fig22

23. One final layer, to help provide some subtle

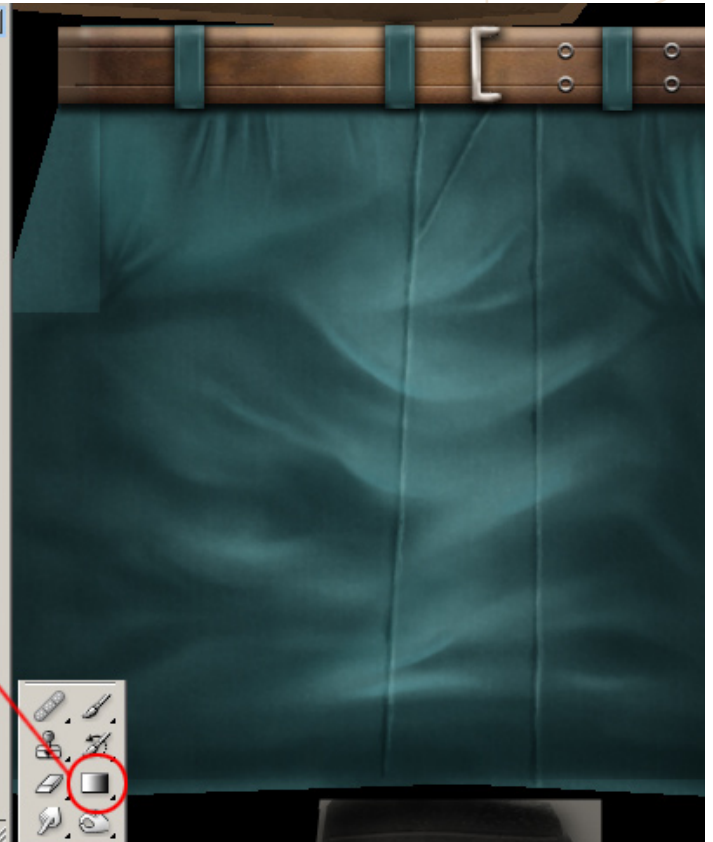
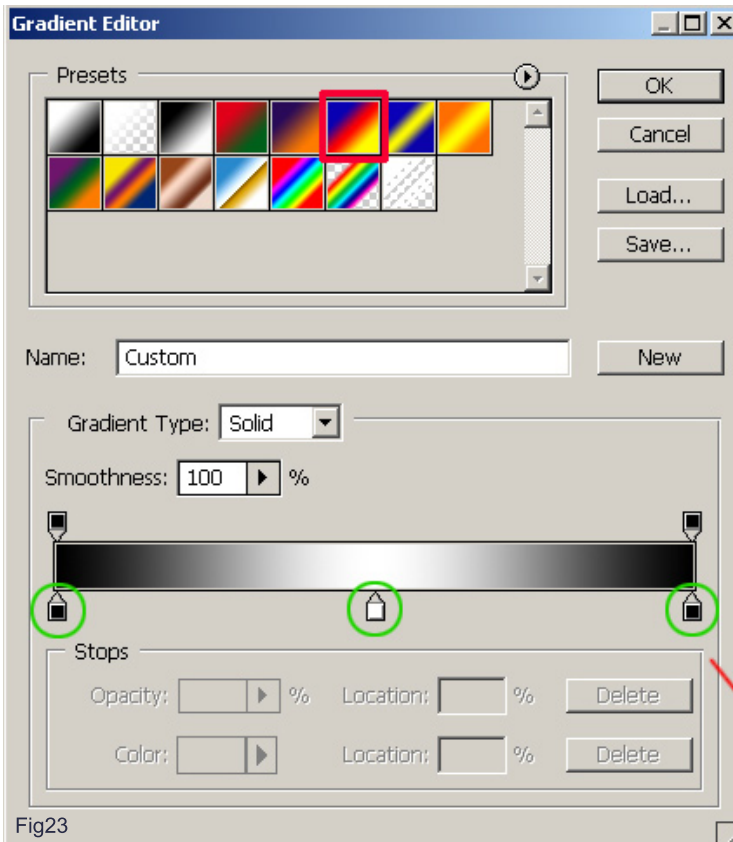


Fig23



shading, can be added on top of the previous three. This will incorporate a Gradient, which can be found on the toolbar (seen ringed in red in Fig.23). First of all, create a selection area around the wireframe containing the trousers and then click on the gradient tool. This will open up a dialogue box, similar to that on the left. Now select the preset in red along the top of the editor and proceed to click on the three tabs under the gradient bar ringed in green. Change the colours to black, white and black, as shown, and then drag a line from the left of the trousers to the right, making sure that the layer mode is set to 'Multiply'. You should now see a consistent shadow down the edges of the trousers, fading away in the middle, as seen on the right. A similar approach can be used on the waist banner, except that is for the gradient. Begin with some broadly painted shadows using a Soft Round airbrush and then tighten the creases with a smaller Hard Round brush before emphasizing them with a highlights layer.

CONCLUSION.

Once you are satisfied that you have completed each of the components on the texture you can add a couple of finishing touches if you wish. These incorporate painting in some shadows around the clothing and armour, particularly under the shoulder piece and elbow guard. This will just emphasize the geometry and add a richer and deeper contrast to the shadows when the character is placed in a scene. You will notice that the trousers have not been unwrapped in their entirety and so it will not be possible to place a shadow under the waist belt and banner, as it would be mirrored on both sides. Ideally you should unwrap both legs in order to solve this problem but, for the sake of saving time, I have neglected to do this. One remaining aspect you can add is some wear and tear to the clothing and armour through dirt maps. Finding a suitable image of rusted metal will provide a good base from which to extract some detail which can be colour adjusted and then overlayed.

You could use a multiply mode to add dirt/rust, or perhaps Soft Light / Screen to add scratches. Have a go and see what you can come up with. You could also try using Layer Effects – Bevel / Emboss to add dents and create a battle hardened look. This, I hope, covers most of the crucial aspects of the texturing phase of the tutorial.



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