



Big Head



Big Head – Tutorial

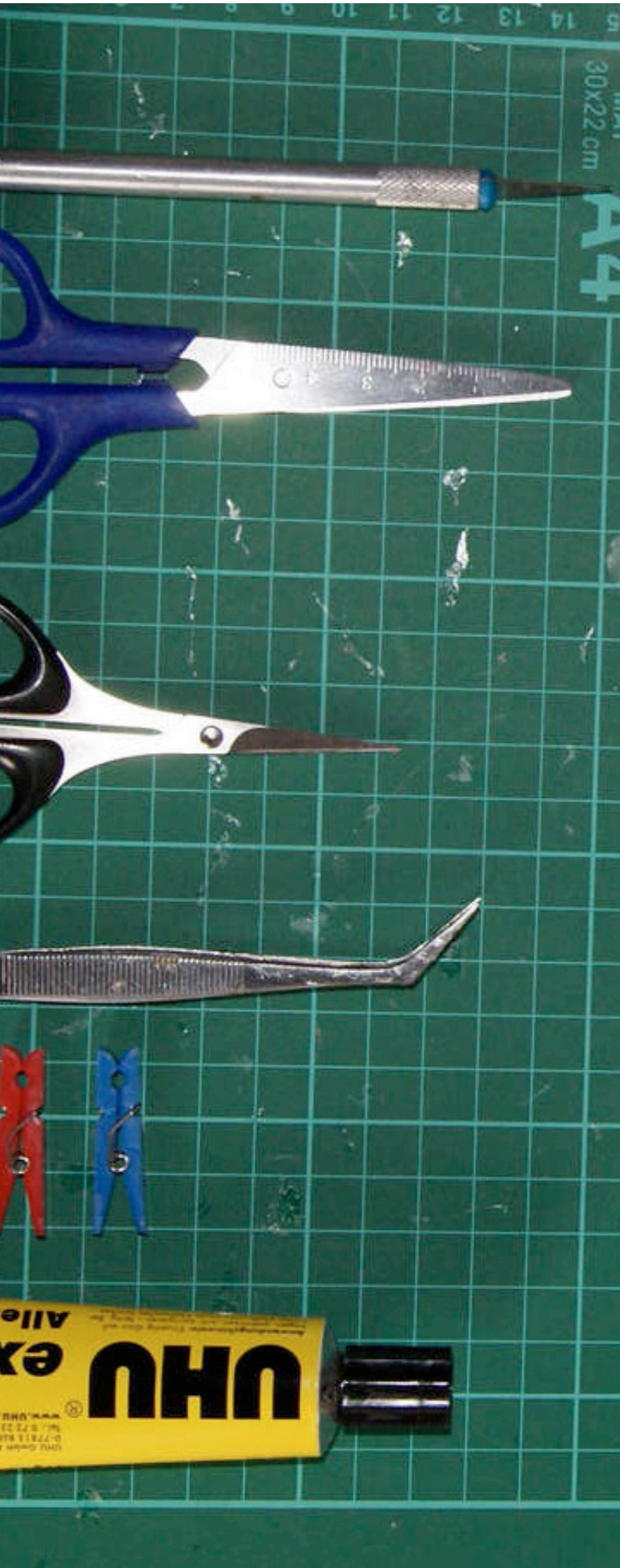
Here's the story: Eric Testroete, 3D artist, had the idea of a very unique Halloween costume last year. He presented it in the web and a few people, including a music video producer, copied the idea. Nevertheless, no one had the ambition to write instructions, especially for the folks that have ordinary computing and crafting skills.

So let me introduce the *big papercraft head*, which I modified only a bit, because the basic idea is undeniably genius.

I can additionally advertise 2 little additional modifications to make it look more realistic or more creepy; glossy eyes or dynamic eyes.



Step One – This is what you need



The 3 phases of the project require the following stuff:

I) Photographing

Camera: The better, the better. DSLRs are perfect, compact cameras also work, and a Tripod can never be wrong.

II) Modeling

A modeling program: I use Anim8or, which I will introduce later.

An image editing program: I use Paint Shop Pro X, but any other one will work, too.

An unfolding program: You have no choice. There's nothing but Pepakura.

III) Crafting

Paper: The best paper for crafting weighs between 160g/m^2 (40 pound) and 250g/m^2 (66 pound) and is matte. Glossy paper is conducive to physical aggressions.

Glue: Please don't use a glue stick or double-sided tape. On the long run, your head will bow itself off. I use UHU (liquid, because you need to fill gaps).

A printer

A zip lock or Velcro (optional)

Regular crafting stuff: Scissors - Cutter - Tweezers - Those little clothes-pins - Ruler

As you may have noticed, the costs are really assessable. It won't probably be more expensive than 15\$.

Step Two – Photo Session

You will need at least 3 photos.

I) Face, front (The whole head should be on the photo) - texture

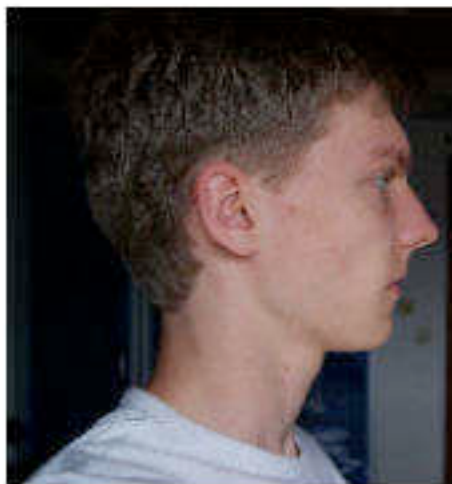
II) Head, side (If you have a remarkable characteristic only on one side, you need pictures of both sides) - texture

III) Whole body, front (This is important for the right size later) - reference

How to take the pictures:

Put your camera on a tripod and make sure that your face is fully and evenly lighted. Avoid dark areas, the best way to get the right result is to put the camera in front of a window, camera facing you, you facing the window.

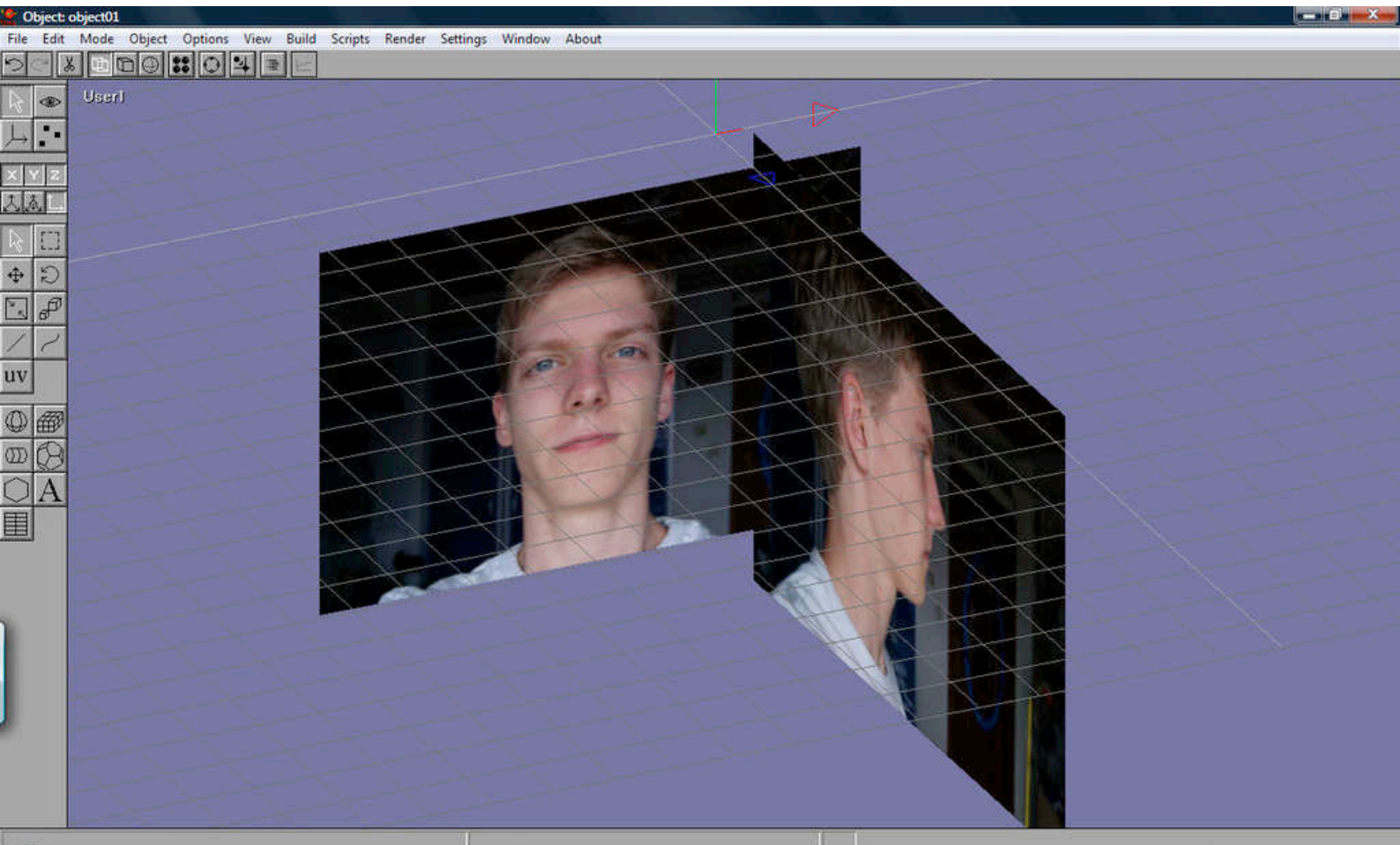
Consider that the camera will probably set a wrong focus when you trigger the self-timer.



Step Three – Modeling The Head

If you don't have any experience with modeling, I recommend you to use **Anim8or**, which you can download for free. There are a few functions which make you able to model your head.

When you are absolutely not familiar with the program, please make at least the modeling a hand-tutorial on <http://anim8or.com/main/index.html> first, so that you get into the program.



At first load 2 head-pictures (front and side) into the scene. Go to front view and load the first one with Build - Reference Image. Go to a side view and load the other one. Put the images a bit away from the middle, but first make sure that your head has the same size on both of the images. Scale the images with the scale-tool if necessary. It should look like on the image now.

In my eyes, Eric's head is a little too angular, which is caused by the low poly-count. So I made the UV-faces a bit smaller (see below), the size of coins in the face and the size of credit cards on the rest of the head.

I recommend to do the head with line-modeling instead of box-modeling. That means that you draw a grid of lines along the „edges“ of your face, fill them and move the points to the right place. The picture below shows the process, a whole head-model-tutorial can be found here: http://members.multimania.nl/jonim8or/head_tut.html

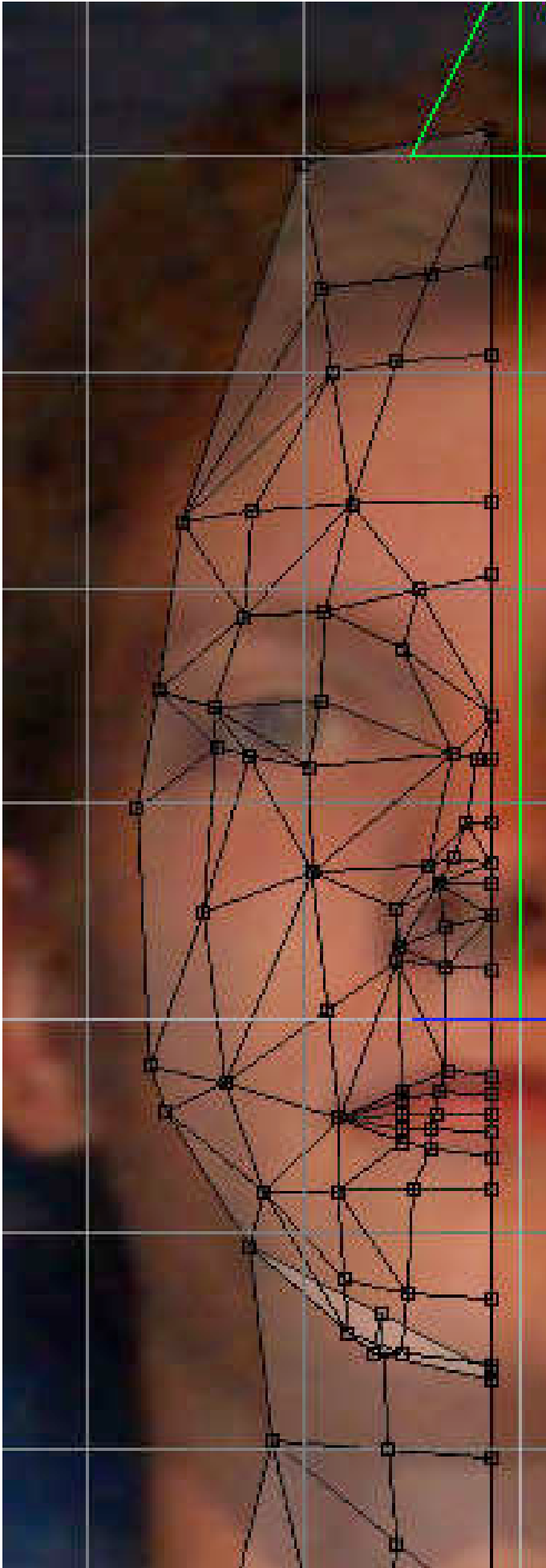
This head-model is a bit too undetailed. These are the tools you need for modeling a detailed head:

The Arc-Rotate-tool (Ctrl R): Move the camera around the model.

Hide (h): if an object is in the way, click on it and hide it. Shift H lets it reappear.



Step Three – Modeling The Head



The Add-Edge-tool (left side, middle): Draw the contours of your face first with this tool

The Drag-Select-tool (d): Select a few points in the front view mode, switch to the side view and move (Move-Tool; m) the points where they belong. Using more than one perspective at a time (view - All) is very helpful.

The Cut-Faces-tool (Shift C): This is for adding details. When you cut a face, points are added. When you cut a line, The line is divided into 2 lines. You often have to turn the camera in order to prevent wrong cuts, f.e. on the backside of the object.

- The Fill-Holes-tool (Shift J): Select your wire-frame in edge-select-mode (e) and fill the holes to add faces between the lines.

The Extrude-Faces-tool (Shift Y): Select a face in face-select-mode (g) and extrude it, so that you can add an ear for example. You could also do that with adding edges, but this is much faster and more accurate.

The Merge-Points-tool (Shift J): Merge 2 points that are close together.

Summing up, the process is: Draw a few lines, move the points where they belong, fill the holes. Add lines, move points, fill holes, etc.

Try to use a structure with many triangles, because then nothing can go wrong with bad folds in rectangles (Because you can fold a rectangle along 2 different diagonals).

[Variety 1]

For the variety of eyes that will follow the observer (see step 8), draw the edges of the eyes clearly and make the eyes a bit more popping out.

Tip: Do only one half of the face. Then mirror it, select both sides and „join solids“, select the points in the middle and merge them.

Step Four – Texturing The Head



Now you need both of your head-pics as textures.

Color the head with the following material:

Ambient: 1

Diffuse: 0.5

The rest: 0

and a color of your choice.

This creates a material without shades, what makes it easier for you to compare the textures and prevent clipping mistakes.

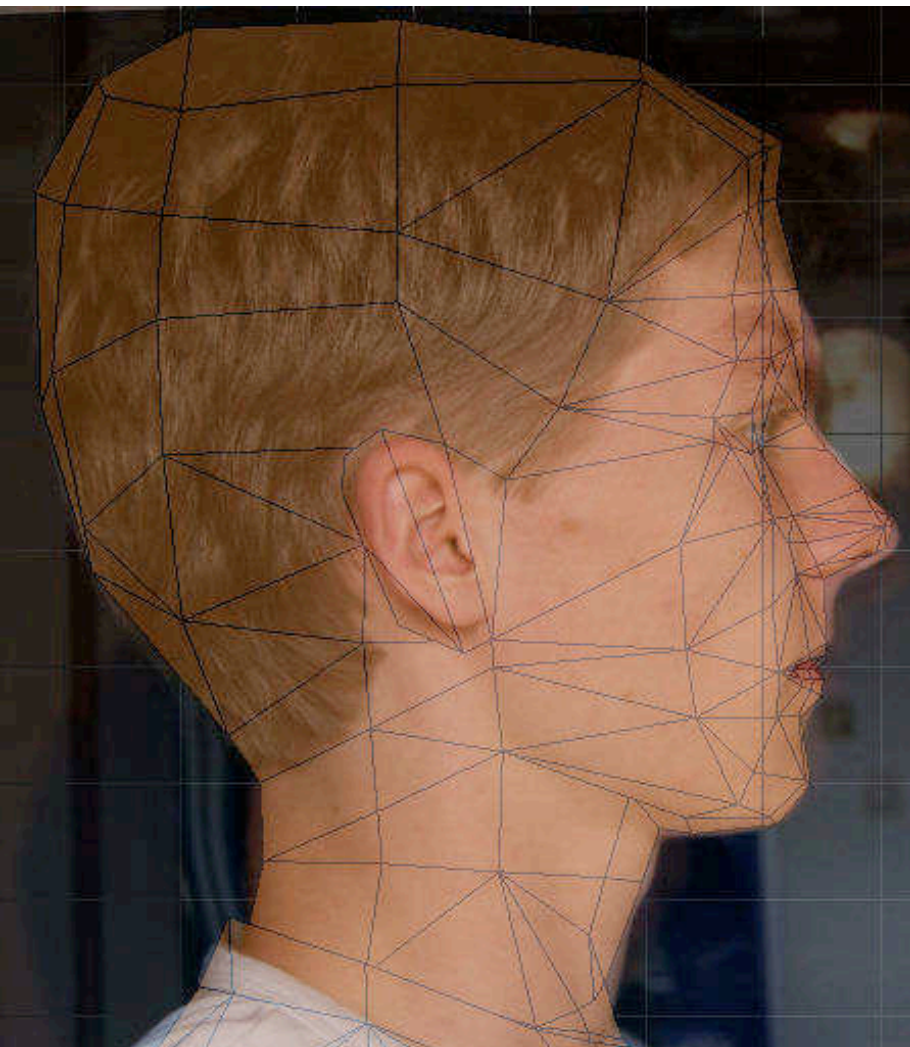
Now you can prove your Photo Shop skills. Go into the Flat-Shaded-view (Ctrl F) and make a screenshot. Crop the image, so that you only see the head. Then make the image 300 - 400% bigger, copy your head-photo over it and make the 3D-image a bit more transparent, so that you have it as a reference. Use the warp-brush to adjust your photo to the model (without making it look ridiculous).

Very important: The head must everywhere be

bigger than the original model, or you see the background on the model. You can see that I made the ears smaller; I will refer to that later.

Save the photo, which is now a texture, but don't forget to make the reference image transparent. You can't use a png or tiff, so just save as the best jpeg possible.

Go back to Anim8or and open the material you colored the head with. Click on texture, load the texture and save the material. It should look weird now, so choose Texture UV (v) in side view and adjust the texture to the head.



Step Four – Texturing The Head

Quick UV-guide:

- Right click within the circle moves the image
- Left click outside the circle turns the image
- Middle mouse button zooms the image (inside circle: x/y not constant)

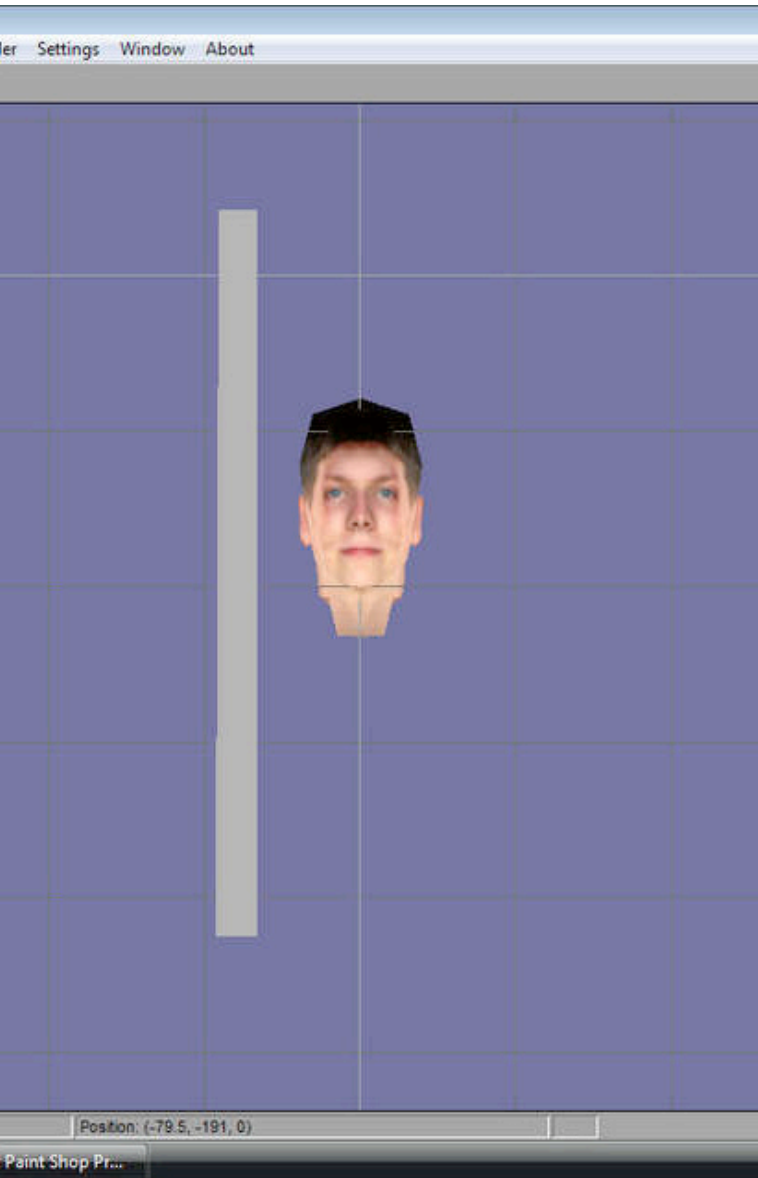


Select only the ear in Face-Select-mode (g) and press UV again. Then zoom in a bit and make it look real. This prevents that the texture of the ear is also behind the ear, which would be wrong.

If you want a face like a pixel-zombie, you can go to the next step. If not, make a screenshot of the front and paste it into your image program. In Anim8or, select your face's faces and color them with a new (here: green) material that has the same values as above. Make the same screenshot as before and paste the images on one image. It should look like below now. Make them again 300 - 400% bigger and copy your face-front-photo in. Now adjust the

image in the green area to the model, using the warp brush. When the form is right, use brushes like darken/lighten, tone or saturation to make the edge of the texture fit to the other and create a non-visible transition. Save the cropped image and put it on the face instead of the green material like before. After you have checked your head for mistakes (you can still change the textures), you are done with it.

Step Five – The Right Size

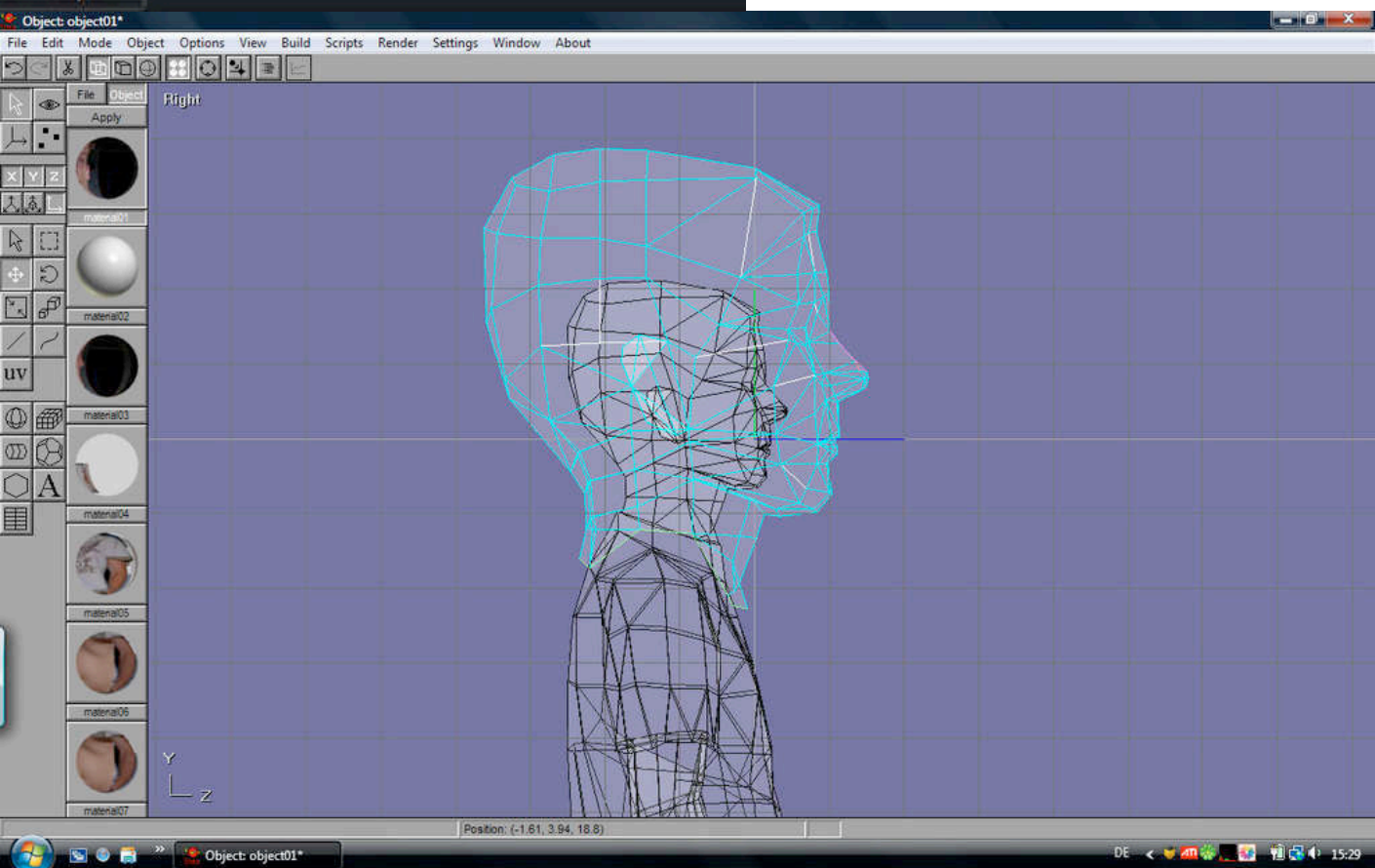


Insert the full-body-image with Build - Reference Image and change the size until the model-head and the head on the picture have the same size. Copy and paste the head with Ctrl+C, Ctrl+V, select one and make it as big as you want. I suggest about double size, this has the disadvantage that you possibly can't pull it over your head when you have a slim neck, so you will have to attach a zip lock later.

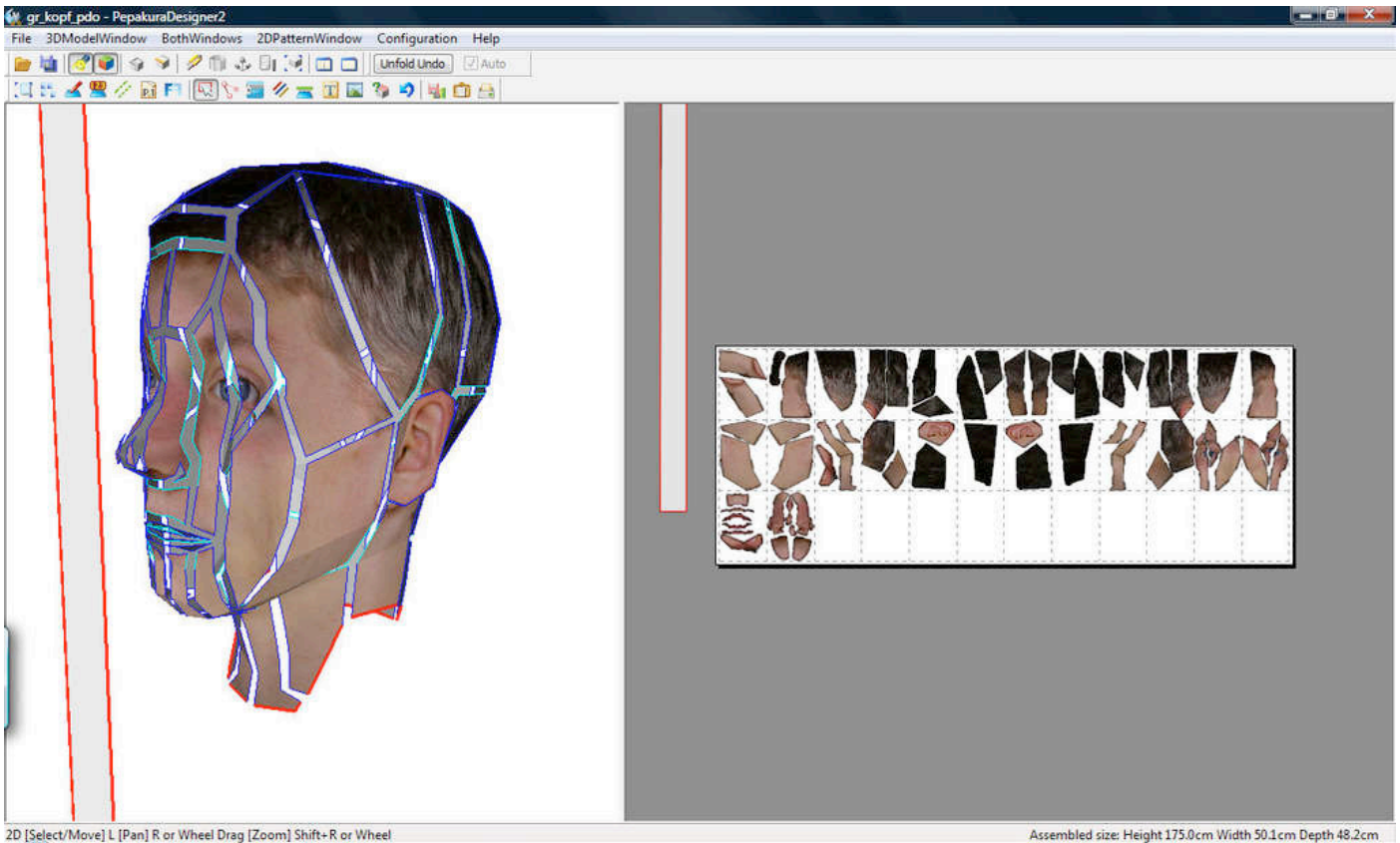
Note: I used the size you see on the picture, and I can pull it over my head without using a zip lock.

When you are satisfied with the size, draw a rectangle that has the height of your body, delete the original-sized head and put the head beside the rectangle, like in the picture.

Save the head as a 3ds-model (Object - Export).



Step Six – Unfolding The Head



For the next step you need Pepakura. Download the trial for free, but include enough time for the unfolding, because you unfortunately can't save it. Open the 3ds-file with Pepakura and deny every question except that of joining the edges. If you don't see any textures, click on 3DModelWindow - Texture Configuration and load them again. Navigate around your model with the mouse (zoom is on the middle button) and specify the open edges: Click on the cutter on the toolbar (it should be selected already) and click on all the edges of the head that you want to cut along later. You don't have to specify all open edges, only the ones that need to be open. Choose a more vertical structure, that makes you thinner ;) Edges where the textures change should always be open.

Unhook Auto and click on Unfold. Choose Specify Value. The size should be your actual size, therefore you have the rectangle beside the head. Now you see a bit of chaos in the right area that you have to get under control, using the right-click-options, especially Join/ Disjoin Face. Finding out by yourself what they all mean is the easiest way to learn to make comfortable Unfoldings. Put the big size-rectangle anywhere on the left of the screen, so it won't be printed.

What is also really important for comforting crafting is that the flaps are alternating on one and the next one on the other side of the open edges. Do this as the last step. This keeps the parts in their forms and makes everything more stable, because the parts intertwine better with a zip-lock-effect.

When you are done with organizing the parts, click Configuration - Line Style and hook „Hide Lines that are almost flat“ with a value between 0 and 180 degrees (a higher value means more folding lines, which doesn't look nice - 140 degrees is a good compromise). Don't forget to hook „Color flaps with neighboring face colors“ in the Flap Configuration, otherwise your papercraft will have white edges.

Then print your papercraft on the thick paper. You may want to change all quality values to maximum in printer setting and paper configuration. Make a few screenshots of the open model, so you see where the parts go. Printing it a second time with concept settings on normal paper can't be wrong.



Step Seven – Building The Head

Finally it is time to glue your stuff together! I suggest to begin with the nose and glue the face around it piece by piece. The middle line on the back of the head should be left open. You can try if the head fits you without opening that line after holding it together with a bit of tape, and if it does, you can glue it together. If you need to open the gap, you can cut the flaps away and glue a zip lock or Velcro strip on the inner side, so you can open and close the head.

The following things may be helpful:

Cut the part out and fold only the vertical folds with the aid of the tweezers. Dotted lines mean mountain folds, dotted and lined lines mean valley folds. Of course you can use tape on the inside. Use the mini clothes-pins to hold something together. How to glue: You should always have some kind of a narrow piece of paper. Rip it and you have something like a glue-brush. Do a bit glue on it or the flap and arrange it with that piece. You often need less than expected. Press it together for 5 seconds and it should hold together. Don't do more than one flap simultaneously. When you have trouble with the last parts because the flaps are inside, you can cut a hole into a face, print it again on normal paper and glue it over the hole again.

When you don't know where something belongs, take your model as a reference.

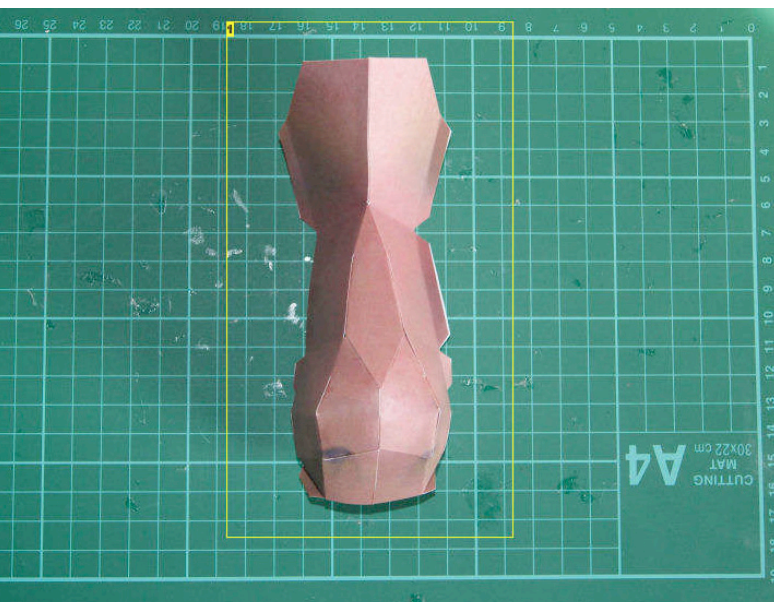
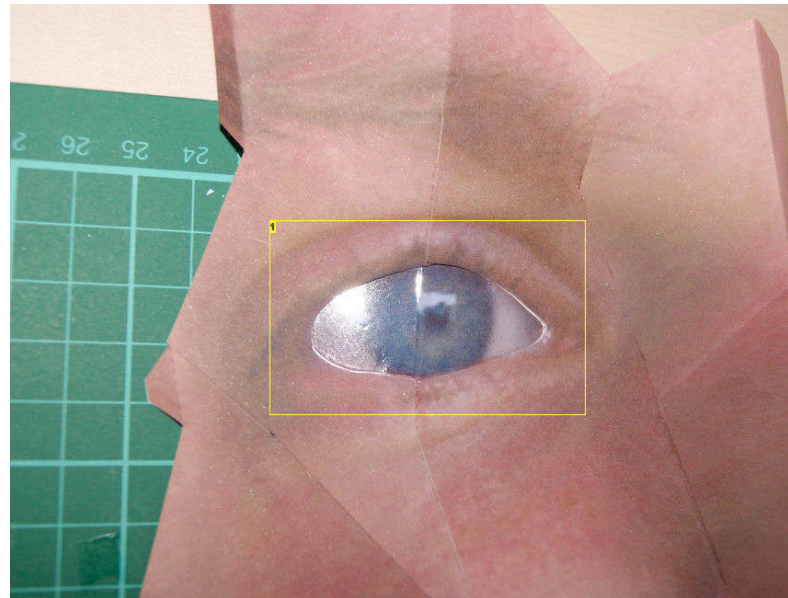
[Variety 1] - Glossy Eyes (picture)

Cut out the eyes before you glue the parts together. Cut out another pair of eyes and glue them behind the eye-holes in the head after you have put a piece of transparent sticky tape over them.

[Variety 2] - Dynamic Eyes

The dynamic eyes always look at the observer, they work like the Dragon Illusion or the Look-at-me-Boo.

Simply fold the eyes inverted, that they go inside the head. The result is that the head looks at everyone, where ever they stand (obviously not behind it).



Step Eight – Finishing

Your papercraft head is finished!

You may want to make the neck edges smoother with the scissors to adapt it to your shoulders.

The papercraft head fits best when you wear a jacket and pull the collar over the neck. When you use it open-air, please consider that the head suffers from severe aquaphobia. When you wear it, you may notice that you see.. absolutely nothing. When you grant your head a pair of real nostrils, you can not only see which daytime it is, but also huge obstacles. Another option is putting brown transparent tape on the inside of the nostrils, to make them a bit more invisible. So when you walk with the head on, please let a blind person's guide accompany you. The view is not very panorama.

