



So you've finished your model and you want to create some amazing textures for it. You set up your UV maps, edit them to perfection, prepare to export the template to Photoshop and suddenly, it hits you... what the hell size do you export at? What size must the texture be?

## **Exporting the UV Map to a Painting Application**

Let's start off by clarifying that it doesn't necessarily matter what size you export at, since you can always scale the UV map up in Photoshop, or whatever painting package you're using, before you actually start painting your maps. Of course, exporting at the highest resolution possible is advantageous in that it means you won't lose any clarity of the UV map lines by scaling up, but if your 3D package only allows a maximum export of, say, 2048, then don't panic. Simply export at that resolution and do some scaling up in your painting program to your desired texture size.

## **Determining Actual Texture Size**

But now to the point: what is your desired texture size?

Let me begin answering that question by posing an additional two questions. In order to decide on an appropriate texture resolution, you need to ask yourself:

1. What size is this texture going to appear on-screen?
2. What level of detail do I need to include in this texture?

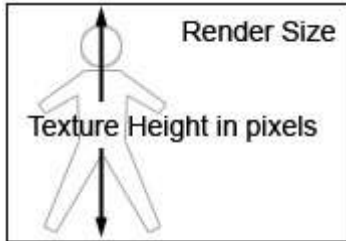
Both of these are important considerations, and will determine the size that you create your textures at.

Let's use a common example to examine this conundrum - a full CG character. Imagine you've just finished modelling your fabulous CG character and now you want to texture him.

The first thing you need to consider when deciding on your texture resolution is how large is he going to appear in the final render? If, for example, the camera is never going to zoom in on him,

and the largest he'll be appearing within the frame will be a shot of his entire body that will be rendered at 720x576 (PAL television resolution), his body texture should be, at the very least, 576 pixels high to match the render size at a ratio of 1:1 (see image below).

Of course, if you're working on textures for feature films, texture sizes are considerably larger

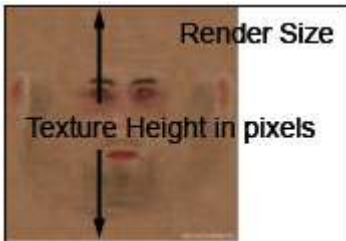


since the final render resolution is usually around 2k (approximately 2000 pixels wide).

Now, what happens if the camera is going to get really close to parts of this character during the show? This presents a new challenge since creating the *entire* texture to match the render

resolution is not going to work because the texture will become blurred once the camera moves beyond the point where the texture resolution and the render resolution are 1:1.

For example, perhaps there will be a closeup of the characters head, at film resolution. If the



characters entire head is going to fill the screen at some point, this means that the texture for the head alone is going to have to be at least 2k resolution to hold up without blurring (pixellating).

So what about the texture for the rest of the character? Do we scale up the *entire* texture so that the head part of the image is at

least 2k? Not necessarily. If the rest of the character is not going to be shown this close up, you might consider doing the head as a separate texture image altogether. If you were to map the entire body with a single image to match this resolution, you'd end up with a gigantic image that could be a bit of a memory hog while painting it. Also, many renderers work more efficiently with a couple of separate images as opposed to one massive one.

This approach would also be best if the rest of the character was going to be shown close up - rather map the body with a bunch of different images for each part, as opposed to one large one, for example, create separate textures for the head, torso, arms and hands, and legs and feet, making sure that the size of *each* texture will never be shown on-screen at a size that is larger than the size each image itself.

Now I know I've said that the image should at least be at a 1:1 ratio to the size at which it will be displayed on screen, but having said that, there really is no reason why you cannot create the texture even larger than that. Which brings us to the second question I asked earlier: what level of detail do you need to include in this texture?

This question has a simple approach: the larger the image, the finer details it will allow. In other words, larger images allow you to create finer, more complex details, while smaller canvases are more limited. This is simply because a larger canvas has more pixels to work with. So if your texture requires a lot of fine, intricate details, using a larger canvas allows you create these details more smoothly - a 1 pixel brush in a 5000x5000 pixel image creates a far finer line than it would in a 500x500 pixel image because it appears so much smaller in the larger canvas.

The drawback to this is that larger images are not only more memory-intensive to work with in your painting application, but they also take longer to load up at render time due to their larger file sizes, whereas smaller images load faster and are not as slow to work with while painting them.

So always try to use the smallest canvas you can while ensuring that you've given yourself adequate space to create the details you need. There is no need to create a 10k texture image if it's a wood texture with bold details, whereas a 10k image may be necessary for a film resolution skin texture that requires incredibly detailed pores, hairs and wrinkles.

### What about DPI?

The dots per inch value for images is only relevant for print and can be ignored entirely when creating textures for CG models. Therefore simply leave this value at the default of 72dpi.



Please note: This particular article is of relevance to CG work being done for broadcast and film, as well as hobby users. Game textures use a different system based on the limits and requirements of the game engine being used.



**About me:** I am a CG artist, working in the feature film visual effects industry. I specialise in texturing, although I also do a lot of lighting and occasional modelling. I currently work for CafeFX ([www.cafefx.com](http://www.cafefx.com)) in Santa Maria, California, USA.

I've been using computer graphics software since the mid 1980's, and have been working in CG professionally since the end of 1999, specialising in texturing since 2001. I have had various articles on texturing published in numerous magazines, and also wrote *LightWave 3D 8: Texturing* for Wordware Publishing, and contributed to *LightWave 3D 8: 1001 Tips and Tricks*, both bestselling 3D titles on Amazon. Please visit my site at [www.onona3d.com](http://www.onona3d.com) for more information.

I am currently writing a texturing book for Photoshop and Softimage|XSI (my main 3D application these days). I hope that you found this article informative and useful. .

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