8 - TEXTURES ON AVATARS

Avatars are nothing more than a special kind of Prim. They are UV Mapped, like all the other prims, and the maps consist of points, or vertices, where the map is "pinned" to the surface of the model, and polygons, or flat surfaces between the points, where the map is interpolated.

If you don't understand what I'm talking about, please go back to Station 6. UV Maps 101, and read the notecard there.

Unlike the simpler prims, the maps on the Avatars aren't simply unwrapped. Instead, various parts were split, placed on top of each other, resized, and arranged when Second Life first began.

You can download copies of the maps, which for some reason the Lindens are referring to as "templates," from the Second Life website, at http://secondlife.com/downloads/templates.php

You can also use the ones I have here in-world, to see where various polys fall on the AV.

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The corresponding layered Photoshop files are available on my site at http://www.robinwood.com/Catalog/Technical/SL-Tuts/SLPages/SLTexTutRingStart.html (I also have the Layered Photoshop files there, for both CS2 and previous versions of Photoshop, and larger .jpg files.)

Just click on the ones that you want, or click on the first link in the section to download all of them at once.

Chip Midnight has also made a set, in which the polys have been carefully subdivided for better matching. You can find the link to them on the SL Textures and Design forum.

I recommend that you use all of the templates as layers in your graphics program, since they all have different strengths.

Sadly, what you see on those "templates" is what we are now stuck with.

I say "sadly," because there are some things about those maps that are, shall we say, unfortunate. We'll be discussing those for each map, as we get to them.

There are six "templates." One is used for the Avatar's Head, one for the Eyes, one for the Hair, one for the Upper Body, and one for the Lower Body. There is an additional one for the Skirt, which is really just another Prim that you can add, which automatically follows the movement of

the AV itself.

To use them, open them in your graphic program of choice, and paint or draw on layers above or below the various template layers. Anything that is on a poly or point, or slightly outside the lines (since, after all, it's really looking from point to point, and interpolating between them,) is placed at the corresponding point on the model. So it's necessary to color slightly beyond the outside lines of each shape; but anything that's drawn outside of that will never be seen on the Avatar.

Unlike the simpler prims, these maps cannot be adjusted in any way when they are used. (No resizing, rotation, or anything else, mostly because it wouldn't work on these maps; they are too complex. All the others are just simple squares.) So bear this in mind when you are designing the texture. If you want a repeating texture, you need to repeat it on the "template" before you upload it, because you won't be able to do so later.

As always, you'll be designing the textures off line, in your graphics program of choice. When you get ready to upload it, TEST it FIRST in the PREVIEW window. This will save you a small fortune in wasted downloads.

To do this, save your image, and choose Upload as normal. But, when the window opens, notice that there is a Preview As line. This is easy to miss, but it's a drop down menu. You'll find choices there that will allow you to preview your image applied to all of the maps listed above, except the Eyeball, on both Male and Female "standard" avatars. Use this to make sure that the seams match, the collar is where you want it to be, the buttons aren't being distorted and so on.

The Preview window, showing the texture on the Female Upper Body

The window there responds to the normal "camera" tools exactly the same way the rest of the SL interface does, so it's a simple matter to zoom in and out, and view the model from all sides as if it were at the center of a virtual trackball.

When you like what you see, upload.

To use your images as textures on an AV, as a Body Part or as Clothing, open your Inventory, and right click on the folder where you want the article to be. That will open a menu that allows you to choose to create "New" things.

Chose the thing you want from the menus, using the fly-out submenus in either category, (Clothes or Body Parts) to pick the specific article you are going to create.

For instance, to make a new skin, choose "New Body Parts" > "New Skin." A new skin, with the default values, will appear in that folder.

It's important that you start from a New piece, unless you are modifying something that you created from New, because if you don't, your name will not be listed as the Creator. It will be the

person who made the clothing. (And the Permissions will also be whatever they were for that piece.) In the case of Linden clothing, skin, or eyes, that will be Nobody.

Wear the new article, and enter Appearances to edit it. You will notice that there are thumbnails (small images) on the left side of the appearance window to choose textures. Drag the texture you have made from your inventory onto that thumbnail, or click that thumbnail and choose the texture from your Inventory.

To remove a texture, click on it, and choose "Default" from the Texture picker.

Of course, once you have made a "New" garment with your name as creator, you can simply Wear that one, modify it, and go from there. It's not necessary to seclude yourself and start from scratch every time; just the first time.

For detailed instructions about each "template," please see that template.

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8B - THE FACE TEMPLATE

The map for the Head is called the Face Template, although it's the whole thing. If you look at the UV Map, you will be able to make out features; eyes, nose and mouth, hidden in the polygons. Those are the actual features of the AV. Around them is the rest of the face, with the two sides of the head below that, the ears at the lower corners, and the mouth in the lower center.

This is the first "unfortunate thing," which you need to be aware of. The polygons on this map don't have enough "bleed" room left around them. So, unless you are very careful when painting on this template, you will find that there is a dark streak on the middle back of the head, caused by the colors from the inside of the mouth leaking over. Interpolated, remember? So colors from adjacent places on the map are used on the model.

I recommend making the head texture with the Mouth Color as the bottom layer in your graphics program. Since the AV doesn't open its mouth often, some head color leaking onto the side of the mouth will be far less obvious than mouth color leaking onto the head.

The other thing that you need to watch with this template is the Eyelashes. The reason that you need to be careful is that, for whatever reason, the person making the map didn't include a representation of those polys. Nevertheless, they are there; in the upper right hand corner. If you make that corner white or flesh colored, your AV will have white or flesh colored eyelashes!

To see exactly where they are, you can look in the Resources folder in the Second Life program package, at the head_alpha.tga file. See that thing in the upper right, that looks like hash marks? (It's the only thing in the image, so it's hard to miss.) That's the Transparency for the eyelashes. Or you can just look at the templates on my site. The download URL is given later in this note.

Speaking of Alphas; DO NOT use the "Suggested Alpha" in the Linden downloads. If you do, your face will look like it's got a chalk painting on the front of it, or something. You are much better off, if you want to redo the face, redoing the entire body to get the colors to match.

On the other hand, if you are just doing lipstick, or a tattoo, or face painting, or something, then put that where you want it, and make the rest of the texture transparent. That way, your image will be superimposed on the Basic Skin, and you will still be able to change your skin coloring with the sliders. (You can also do that, to a greater or lesser extent, by making the entire skin semi-transparent; but that is more advanced.)

If you are using the Linden templates, I suggest that you change the image size to 1024x1024 pixels first. Then, before you upload, flatten the image, change the size back to 512x512, and Sharpen it. (Use the Sharpen or Unsharp Mask filters in Photoshop, or the equivalent in whatever graphics program you are using.)

In my opinion, you get better results if you work at a larger size; but you don't need to have that large a map inside SL. It will just cause rezzing problems for people trying to look at you.

Also, I suggest that you Invert the colors on the UV Map layer (which, for some reason, shows white polys on a black ground,) use Multiply as the layer mode, and move it to the top of the Layer stack. That will allow you to see what you are painting with the polys on top of it, when you need to check poly placement.

When you are using the default skin, as you probably know, there are sliders that allow you to choose how much makeup you are applying, how thick your eyebrows are, how much facial hair, and so on. All of these things are controlled by using Alpha maps, which are stored on your hard drive in the same folder as the Alpha map where you find the eyelashes.

In order to make it a little easier to find your way around the face, I've prepared a Photoshop file in which I've used a number of those maps as Layers. You can download it from my site, at http://www.robinwood.com/Catalog/Technical/SL-Tuts/SLPages/SLTexTutRingStart.html

Just click on the "Face Features" link to download the zipped file, and the instructions on how to use it in Photoshop. (I'm really sorry, but Photoshop is the only such program I have; so if you are using a different application then you are on your own.)

The final thing to remember when you are working with the Face Template is that some of these polygons are not normally visible, since they are hidden by other polys. This is, obviously, true of the inside of the mouth, the teeth, and the tongue. But it is also true of the first ring of polys in the

center of the lips, which form the inside of the lips, and are normally touching each other, the center of the eyes, which form the inside of the eyelids, and the polys that form the back sides of the ears. You can see which ones I mean by looking at this image, where I've colored them red.

Keep this in mind when you are painting the face. Don't put an image of an open eye in the middle of the "eye" polys. That's the edge of the eyelid, and for humans, it should be some shade of pink, like the edge of yours. Don't start the lips from the middle of the lips polys; that part won't be seen. The perfect lips that you are drawing need to begin as if the mouth was slightly open. And don't put that photograph of an ear on the whole "ear" piece, or part of it will wrap around to the back.

When you have what you want, you can apply it to your AV by clicking on Appearance in the Pie menu, and choosing Skin. Then either drag your new image into the Texture thumbnails, or click on one and choose the image from the Texture picker.

To return to the default skin, click on the texture thumbnail, and then choose Default from the Texture Picker. That will eliminate the image, and give you a grey box with an X through it instead.

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8C - THE EYE TEMPLATE

The map for the eye is fairly straightforward. It's not unwrapped at all; instead, the UV Map is a simple front projection looking right into the pupil.

The "Overlay" layer on the Linden template will show you where the normal pupil and iris are, which is nearly all you need to know.

There are two "unfortunate things" about this map, though. First, there is only one; so the eyes In your avatar will always be exactly the same. Not mirrored; identical.

Not only is this not even slightly realistic, it also means that you can't do things like make the side near the nose pinker than the outside corner, since the inside of one is the outside of the other. Nor can you make one eye blue and one brown, or replace one with a cross-hair, unless you use prims that cover the AV eyeball.

The second is that, for some reason that defies all logic, the map is rotated. So, once you have your eyeball, you will need to rotate it 90 degrees counter clockwise before you upload it to SL, or it will appear sideways on your AV's eye.

Beyond that, don't forget that, if you're going for realism, the "white" part of they eye isn't really white at all; it's covered with tiny blood vessels, and is redder the farther it is from the iris. Also, the iris itself isn't a clearly delineated circle; it blurs very slightly into the white.

Of course, if you are going for not-quite-human eyes, then anything goes! Have fun with 'em.

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8D - THE HAIR

Most people find this map the hardest of the bunch to understand; but it's not impossible.

Take a look at the UVs. (Once again, I recommend Inverting the layer, bringing it to the top of the stack, and setting the blending mode to Multiply.)

On the left, you see some polys that are kind of splayed out. That's the back fringe of the hair.

In the middle, you see a mass of polys that seem to have no pattern to them. That's the main body of the hair, and it looks like that because the polys are overlapped. In other words, that part wasn't unwrapped at all, so you are looking down through two layers of polys. Which, of course, is the "unfortunate thing" about this map.

It doesn't matter much for short hair styles, since the polys on the underside of the hair will be against the scalp, and not seen.

But with longer hair styles those polys are visible behind the neck; and this mapping means that they will always be identical to the polys behind them, on the top of the head. It also means that the hair texture will be mirrored at the sides, where the edge of the hair map is. So you might want to make any texture there non-directional, and half the width that you really want.

To the right of center, there are two pointed bits that project out. That's the part that comes down in front of your ears on the model, if you have extended the sides of the hair.

The splayed polys at the far right make the front fringe, or bangs.

This means that the top of the map is the left side of the AV, of course, and the bottom is on the left.

If you look at the Guides layer, you'll also see a green square with a cross through it. That's the crown of the AV's head.

Now, looking at all of this, you might think that it will be impossible to get things where you want them on the head. But that's not true at all! There's an old Texture Artist's trick that will serve perfectly.

Remember the Test Pattern texture that I provided at the very first station? The one with all the squares and numbers on it? Well, the beauty of that thing is that there are no duplicates among the squares. Each one is unique in its combination of color and number.

 (Here it is again, just in case.)

So, to get features on the hair texture exactly where you want them, all you have to do is make the hair style in the Appearances dialog, and apply that image as the Texture.

It's going to look extremely funky and odd; but it will also show you exactly which point in that particular style corresponds to each place on the map.

Take a several screen shots and save them to your hard disk, so you don't have to run SL while you're painting.

Then, in your graphics program, place the .jpg of the test texture (available on my site) on a layer above the working layer, and reduce the opacity until you can barely see it.

Look at your screen shots, and paint the features on the matching part of the map, and they'll be exactly where you expect them to be.

- Screen Shot of Hair with Test Texture
- Lines from the Screen Shot, transferred to the Map
- Painted Map, showing Texture Matching
- Finished Hair

Be aware, as you work, that depending on style, the texture will be distorted, exactly like that on the cubes and cylinders. You can work around this a little by paying attention to where the Test Texture is distorted, and drawing your texture to distort in the opposite direction to cancel it out.

Now, when you have done this, and you put your finished texture on the AV, you will probably want to change the hair color to White, so you will have the texture as you painted it.

When you do so, you'll notice another Unfortunate Thing. The colors of the hair and eyebrows are linked; the hair color slider controls the eyebrow color as well. Which means, of course, that you'll have white eyebrows, unless you are using a painted Skin that has them already in place.

The solution for that is fairly simple, too. Just eliminate the eyebrows in the Appearance dialog, using the sliders, and replace them by using an Eyebrow Texture as a face tattoo.

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(To make it, of course, use the Face template to paint eyebrows on their own layer. Then save them as a 32 bit .tga file with the necessary alpha channel, however your graphics program does that, and drag the texture into the Head Tattoo thumbnail in the Appearance dialog.)

Yes, the hair map looks very odd; but using it isn't an impossible task. In fact, you might find it easier than you ever imagined!

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8E - UPPER BODY

The Upper Body "template" holds the UV map for the torso and arms, and is used for the skin on those areas, as well as Undershirts, Shirts, the upper portion of Jackets, and Gloves.

Once again, there are a few "unfortunate things" about it.

To start with, you'll notice that there is only one arm; the right one, in fact. For some reason it's split into two portions along an imaginary horizontal line created when the AV holds its arms out straight from the shoulders. This means that the palm is on one section, and the back of the hand on the other, which is fine. But it also puts awkward seams on the front and back of the arms, which you will have to match when you are making textures.

This arrangement means, of course, that the sleeves will always be identical, and that one will be the mirror image of the other. So much for having writing on the sleeves. You can't even work around it by using only a single sleeve, and putting reverse writing on an undershirt. They are both there, or both gone, locked forever in tandem.

The polys on the sides haven't been pulled out enough, either. So if you don't squish the material in to compensate, you'll have obvious stretching on the sides of the chest and back. This is most noticeable on the chest of the female AV, and the back of the male; but it occurs in both places with both models.

You might want to compress your texture on the top of the arms, too, as those polys are normally stretched quite a bit when the AV has it's arms down (which, of course, is most of the time.)

You will hear people complain that the back and the front aren't the same size. Although this is true, if you measure them on the map, they are in scale with each other. You can test this by making a shirt with the "test pattern" texture provided. Just place it in the texture well (thumbnail) when you are making a new shirt using Appearances. You'll see that the squares line up fairly well,

and all appear to be the same relative size.

Of course, you will also see where and how much the texture is stretched, and how much you might want to compensate for that by compressing the texture when you paint it.

Everything except the single arm can be worked around, using the tools in your graphics program and the enhanced templates provided by some generous Residents. (We'll get into that in a moment.)

However, no matter what you do, or how carefully you match the seams on the skins and garments you are making, you need to understand that there will still be stretching and distortion on some Avatars. This occurs because Residents can change their dimensions, which, as we've seen, can easily distort the image between the points on the model. (Remember, the texture image is only "fixed" at the vertices; everywhere else it's extrapolated.)

You can see this as an AV moves, and the textures flow and change on their bodies. Shirt collars warp and then straighten out again, fabric patterns compress and expand as they breathe, and parts of the texture appear to jig up and down as they move their arms. It's just a fact of SL life, and most people have learned not to see it. So don't let it discourage you.

Take care with the seams and the sizes, so everything matches, and don't waste sleep over what extreme AVs or animations will do.

The template is laid out with the front of the AV in the top left corner. You can see the breasts, and the nipples (where all the polys come to a "point,") when you look at the UVs. The back is next to it, to the right. Since both sides are "facing" you, the RIGHT side of the front is on the LEFT as you look at it. (Just like the right of a real person is on your left, as you face them.) The RIGHT side of the back is on your RIGHT, (just like the right side of a real person is on your right if you are behind them, looking at their back.)

This means that, looking at the map, the edges of those two pieces that are in the middle of the map are also touching each other on the AV, while the edges at the outsides of the map (on the extreme right and left) are butted up, as well. If you visualize it as wrapping around, you might be able to get the hang of it more easily. Because, in fact, that's exactly what it does.

The arm is below the torso, and split into Top and Bottom, as previously mentioned. The one on the top is the top of the arm, and the back of the hand. The one on the bottom is the part of the arm that is against your body when you stand with your arms at your sides, and the palm of the hand.

Once again, the two pieces wrap around the arm, with the little fingers of the two maps touching, and the thumbs touching on the other side. So, once again, the edges that are nest to each other on the map are adjacent on the AV.

In the Background layer of the Linden template (or mine, for that matter,) you will see lilac on the

hands and part of the arms. That's the limit of the Gloves. If you are making gloves, and you paint beyond those areas, it won't be seen. Gloves are only so large.

You'll also see that there are lines on the arms that end at the wrist. BE CAREFUL HERE. The ones on the inside are just shy of the point where the sleeves end at 100% length. (The real sleeves are a little longer.)

But the ones on the Outer arms DO NOT MATCH the lines on the inner arms. The sleeves of the Undershirts and Shirts extend just past the "r" on the phrase "glove range." Jacket sleeves are longer, and extend almost to the stem of the "g." They are longer on the inside, too, or course. Check the limits by applying the template to test clothing, and don't get caught by this!

- The Upper Body Limits, for you to test things with.

Stuff you draw on the hands, though, won't be seen on Undershirts, Shirts, or Jackets.

If you want to make a garment that extends from the top of the neck to the fingertips, such as a spacesuit, you will need to make two separate garments. Paint the entire map as a single piece, but when you are making the actual clothing, in Appearance, make one Shirt or Undershirt, and one pair of Gloves. Use the same texture for both of them, and when the Avatar wears them, they will blend seamlessly into each other, and appear to be a single garment.

That being said, don't settle for the templates provided by the Lindens, or even mine. Both of these are nice for some things; but I recommend that you combine them with the templates made by Chip Midnight. Those have each poly divided into four sections, so you have four times the match points when you are creating textures, which makes it much easier to match things on the first try.

You can find them by doing a Search on the "Texture and Design" forum at the Second Life Forums (http://forums.secondlife.com/). The forums are an extremely valuable resource anyway, if you are going to be making clothing or other textures, since a lot of very friendly and helpful people are there, who are delighted to answer your questions and talk you through any places where you get stuck.

On my templates I have colored in some of the polys so that you can see the lines that flow into each other more easily. Chip has done the same thing, but only on the edges. If you are having problems connecting the polys, I suggest that you combine the two sets. That should get you there with a minimum of fuss.

Matching straps, patterns, keyholes, and so on is a simple matter of making sure that the ends are at the corresponding lines on both pieces. NOT the lines at the edge of the bleed, of course, but at the real edge of the template. (The bleed is necessary, and don't skip it. But it's essential to match the lines EXACTLY AT THE EDGE of the shapes.)

It's just like matching things on grid paper, really. It might take some practice to get used to it, and

some things will always be easier to manage than others; but that's the basic technique that all of us use.

Just keep practicing, and don't forget to preview your creations on the shape in question before you hit the Download button, to save $L.

This covers the things that you need to know to about this specific template. How to make good clothing or skins, however, is much more complex than I can cover in a notecard.

The most important thing is to really understand your graphics program. This cannot be over-emphasized. The only one I use is Photoshop, so if you have specific Photoshop questions, I can help you. IM me in game with a specific question.

Don't forget that you can also post your question on the Forum; the people there love answering question. And they have the added advantage of using many more graphics applications! Whatever you are using, someone there will probably be able to help. (But do Search first, to see if your question has already been asked, and answered.)

Making clothing can be lots of fun, and rewarding in several different ways. Enjoy!

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8F - LOWER BODY TEMPLATE

The lower body "template" has the UVs for the legs and feet. It's the one you use to make the lower half of Jackets, Underpants, Pants, Stockings or Socks, Boots and Shoes.

Once more, there are a number of "unfortunate things."

The first one is not so much a real problem with the map as a "gotcha." For some reason known only to the Lindens, the BACK of the legs is on the LEFT side of this map. This is the OPPOSITE PLACEMENT of the Upper Body. So, if you are doing a jacket, the upper back goes on the right, but the lower back is on the left. The same, of course, is true of the fronts. The front is on the left in the Upper Body template, but on the right in the Lower Body. Don't let it catch you!

The next "unfortunate thing" is that there is only one foot (the right one.) Like the arm in the Upper Body, this severely limits realism as well as making it impossible to have any kind of writing or design on one foot that's not directly mirrored on the other.

The "foot" also contains the ankle polys; but they are seriously reduced in size, to fit into the middle of the foot polys. In fact, the whole foot is laid out in such a way that it's very difficult to paint. As always, your best bet is to use the "test pattern" texture, and see where things really are.

Also "unfortunate" about the foot - the shape of the polys for the sole, at the upper right corner of the map, appear to be of a left foot. However, it's not. It's the right foot, and the big toe is to the right, in defiance of all logic and reason.

The final "unfortunate thing" about this template is that, once again, there's not really enough room left between the foot top and the front legs. So when you are coloring the foot, be very careful, or you'll wind up with a foot-colored streak on the outside of the left leg. (If you get one, and you don't know where it came from, check the map in this area.)

Except for the foot, which we'll get into in a moment, the polys on this map are spread enough that you shouldn't have to compensate much. The front and the back line up well, and any patterns that you put on the fabric will be consistent in size for the whole pair of Underpants or Pants, and right down to the ankle in boots or socks.

You can make things like plaid or striped pants with a fraction of the effort required to make a plaid shirt, or one with vertical stripes. (Horizontal stripes are much easier.)

However, like all the textures in Second Life, the Lower Body textures will warp and fold as the AV moves. As you know from understanding the nature of UV Maps, there isn't really any way around that; especially when the Residents have so much ability to customize the avatars, thereby changing the relationship of the vertices to one another. So don't fret if they look odd on certain AVs, or warp when the AV moves.

The template is laid out, as mentioned before, with the back of both of the AV's legs on the left side, and the front of both to the right. Like the other templates, this means that the seams that are adjacent to each other between the two sections are touching on the AV, and the ones to the "outside" of the set are also touching. Just think of it as wrapping, (which it does of course,) and you shouldn't have any problems with that.

The foot is laid out to the right of the legs, with the bottom of the foot at the top of the map, and the top of the foot and ankle below that. It's the right foot, remember, so the big toe is to the right on both foot parts. (The two parts are turned 180 degrees from each other, which is why it works out that way.) As mentioned before, this is at odds with the appearance of the polys in the sole on the map; but it's none the less true. (To prove it to yourself, take a look at the bottom of your AV's bare feet in the Default skin, and then at the "lowerbody_color.tga" file in the "character" folder inside the "resources" folder in the Second Life installation. You'll see what is really going on, and why your bare AV feet look the way they do.)

Because of the shape of those polys, you might have to do some adjustment to get the sole of the foot to look the way you would like it to. (Simply drawing the reverse, so it fits the foot poly shape, won't work by the way. Second Life mirrors the foot when drawing the left foot, so putting the big toe on the left, which looks correct, will result in having the big toe on the outside of both feet. Not the way that human feet are constructed, in my experience. :D)

The real problem with this template is the Foot Top, however. In the Background and Overlay layers of the Linden template, you will see a green and black circle in the middle of the Foot Top, which looks like it should match the bottoms of the legs. (Green in the front, and black in the back.) BE WARNED: THE ANKLE MATERIAL EXTENDS INSIDE THAT CIRCLE. You can see where it actually ends by looking at the polys on the UV map. (Which seems to no longer be in the Linden download, but it's there in mine and in Chip's.)

When you do, you'll see that there is only a very narrow bit, in the center of that circle, that doesn't actually have any vertices in it. And that section is so small that you need to paint it anyway. The problem, of course, is that you need to paint the right side the colors for the inside of the ankle, and the left side the colors for the outside. It's very difficult to do this, unless you zoom way in while painting (or have the same colors on both sides of the ankle, naturally.)

The other lines on that foot template are pretty much useless, unless you want to make clogs, in which case they are perfect. I suggest, once again, that you look at where things are on the test pattern image, and judge from that where to put the elements you need on the foot.

- The Lower Body Limits, for testing purposes

Like the Upper Body, the Linden templates will show you the limits of different types of clothing. Anything you draw beyond those limits will not appear on that clothing type. For instance, the entire area covering both legs will be on a pair of Pants, but no part of the Foot. The area that is available for a jacket is shown in peach and light purple on the template; if you try to extend that design into the lilac areas, it won't be visible on the jacket, which ends where the purple ends. Stockings and boots can extend for the entire lilac and purple area, but aren't high enough to get into the peach.

If you want a garment that goes from the waist to the soles of the feet, for instance a pair of footie pajamas, then you will need to combine two garments. Draw it all as one, but when you are making the garment in Appearances, make one pair of Underpants, and one pair of Socks, using the same texture for both. When the Avatar wears them, it will appear seamless. (Underpants work better than Pants for this, since Pants always have a slight flare at the ankles. If you need to use Pants, then make them short, and make the Socks high, to get the same effect.)

Once again, do make the effort to get Chip Midnight's templates; they are well worth it. You might want to combine them with the Linden Templates, or with mine, to really zero in on the areas that you need to solve.

You can find them by doing a Search on the "Texture and Design" forum at the Second Life Forums (http://forums.secondlife.com/).

On the templates that I made, I have colored some of the polys to make it easier to "find your way" around them. Mine are in the Avatar Overview, and you can save them to disk from there. Or,

if you prefer to have the whole layered files, you can download them from my site. (The address is in that notecard.)

To match things across the various body parts on the map, simply use the lines of the UV or, better yet, Chip's templates, to make sure that the elements leave and enter adjacent polys at the same spots. Once more, you do need to allow bleed around each template section, since the UVs are extrapolating over that area; but don't match there. Match exactly at the edge where the polys end. It is, as I've said before, no more difficult than matching things on two pieces of graph paper. (And no easier than that, either!)

Just keep practicing, and you'll find it becomes easier and easier to do.

This covers the things that you need to know about the hazards and good points of this particular template. The techniques and tricks to make good clothing, however, are far outside the scope of a simple notecard.

The most important thing you can do is to really learn your graphics program. The more you know about that, the more you will be able to accomplish. I use Photoshop, so if you get stuck in that program, you can IM me with specific questions. (Not general ones, like "how do I make shirt collars," specific ones only please, like, "how do I turn the transparent pixels into an alpha mask.")

You can also post any questions on the Design and Texture section of the SL Forums. This is a wonderful resource, since there are people there who really enjoy answering your questions, and there is almost certain to be someone there who is an expert with the very same graphics program that you use. (But do a search, first, to see if someone else has already asked your question, and been answered.)

Making clothing can be lots of fun, and is one sure way to get things you want to wear! Enjoy!

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8G THE SKIRT

The Skirt "template" is used for making Skirts, and also coat tails, trench coats, the bottoms of robes, and all sorts of other things of that nature.

Unlike the other Avatar templates, this one is pretty straightforward. In fact, the two halves are exactly the same shape, which is Wonderful, for a reason we'll get into in a little bit.

Unfortunately, it has the Back on the left again, and the Front on the right. Which means that it matches the Lower Body template, but, usually, designers are trying to match the skirt to the Upper Body. So, once again, the placement is reversed from that Template. Don't let it catch you.

In addition, the polys (and therefore the UVs,) don't correspond to the Upper Body Template. Which is really the model, not the UV Map, and there's no reason why they should; but it does make matching textures across the seam between the Upper Body and Skirt more challenging.

The two pieces line up perfectly, though, which makes things like horizontal stripes a snap. Just draw them straight across both parts!

Of course the shape of the skirt, and therefore the distortions and stretching, will vary considerably depending on the positions of the sliders in the Appearance dialog, where the skirts are made. And not just the ones that determine how "poofy" the skirt is, either, because the shape of tighter skirts is determined by the size of the Avatar's Butt, Saddle Bags, and Belly as well. (Which is a Good Thing, because it keeps the AV from popping out through the Skirt.)

Also, when the Avatar moves in a tight skirt, the skirt compensates for the motion by stretching in the middle, while still clinging on the sides of the legs. So skirts can be quite badly distorted in the middle front and back, depending on the motion of the Avatar.

This is less and less noticeable, as the skirt is made fuller and fuller, but it still happens to some extent. So you might want to be aware of that when designing skirt textures.

As always, though, it doesn't pay to lose sleep over the distortions within Second Life. Make sure the seams all line up as well as you can, and understand that everyone here has learned to ignore the distortions caused by motion.

The two adjacent seams, in the middle of the map, are also adjacent polygons on the model, just as they are with all the other maps, and the outside edges of the map touch each other on the model. In other words, it wraps, as always. Just think of it as a cylinder that goes around the whole skirt, with the two sides of the map taped together, and you shouldn't have any problems recognizing which edges have to match.

The lines you'll find on the Background and Overlay of the Linden templates, that show the length for various skirts, fairly reliable. The Miniskirt line, Knee Length, and Floor Length are all as advertised. The Ankle Length, however, is quite a bit above the ankle. To make a skirt that actually ends just over the top of the foot, (which is how I'd define "ankle length",) cut it just above the writing that says "Floor Length."

- Skirt Lengths, for testing.

If you are making a stand-alone skirt, then you're set. You don't have to match anything from any other map, and, because the two skirt halves are exactly the same shape, you can use mirroring to ensure perfect matching across the seams of the skirt! (That's the Wonderful bit.)

Simply draw your design on one half, select it, Copy and Paste the selection to a new layer, and

use Flip Horizontal, or whatever your specific graphics application calls it, to make a mirror image of that half. Slide it over the other half, so it matches perfectly. If the front and back of the skirt are the same, that's all you need to do!

On the other hand, if simple mirroring isn't going to work for you, just begin the new design elements where the elements from the other half will end. It will all match perfectly, and there's no need to go to the Grid, and match things there.

If, however, you need to match the skirt to a bodice, or the tails of a coat to the top, then you will have to use a template that allows matching between the two maps.

Chip Midnight has made a set that has a line on the Upper Body Template where the skirt will fall, and a series of multicolored marks, with a matching series on the top of the Skirt. I have a similar line, but I match the polygons themselves. (You can get Chip's by running a search at the SL Forums, and mine from my website, as detailed in the other Notecards from this station.)

The problem with both of these solutions is that the skirt doesn't actually fit tightly to the body; there is a gap. So no matter how carefully you match the two parts, there is going to be parallax involved when you view it. In other words, it might look perfect if you look straight at the match point, but offset if you look at the match point from an angle.

In addition, as previously noted, the shape of the skirt is dependent on the shape of the Avatar. So as the shape of the Avatar changes, the matching in the skirt will become more or less accurate.

If all this makes it sound like it's impossible to perfectly match the Upper Body to a Skirt, it's mostly because it is. You can get really close, but you'll never have a perfect match from every angle, on every Avatar.

The easy solution is not to put any textures that need to be matched just there, or to use a belt of some kind on the Upper Body. Make the bottom edge where the skirt line is on Chip's templates, allowing some slop room (because even the exact height of the skirt will vary some, depending on the shape of the Avatar wearing it.) That will hide any less than perfect matching at the interface line.

Either that, or just get used to imperfection! <g>

This covers the strengths and weaknesses of the Skirt template. Actually designing good skirts is more complex that can be explained in a simple notecard. The best advice, as I've given in all the rest of these cards, is to become well versed in the graphics application(s) of your choice. Nothing can substitute for a through knowledge of the program you are using.

Don't forget, as mentioned before, that you can post any questions you have on the Second Life Texture Tips forum, and they will usually be answered fairly quickly by friendly, knowledge people who have, many times, been in exactly the same position that you are in with your question.

(Do Search before you ask, though, in case others have already asked, and gotten answers to that problem. Not only will it give you the solution much more quickly, but it will prevent anyone being annoyed that this is the fifteenth time this week the question has come up!)

Enjoy making skirts! They are really the easiest clothing to make, in Second Life.

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9. PUTTING IT ALL TOGETHER

If you've been to all the other sections in this Texture Tutorial, then you have learned how to prepare images for uploading, how to use the Texture tools, how to deal with the various Prims, and nearly everything else you need to know about creating and applying textures for use in Second Life.

It's time to pull all that knowledge together, and give you hints and tricks so that your textures will look as beautiful, and behave as well, as they possibly can.

In many cases, you'll be building an object, and then looking for a texture for it. You already know what size the object is, and where it's going to be used. You know roughly how many other textures are going to be in the area, and whether the object will be seen from a distance, or only from fairly close quarters. You know if the intended use is "outdoors" or "indoors."

You can use all of these things, and the things you know about textures in general, to optimize the texture you make, so it rezzes as quickly, and shows as clearly, as possible.

SCALE
The first thing to consider is scale; the size of the elements, such as shingles, bricks, planks, rivets etc,. in your textures.

This is often completely overlooked in SL, but it's what makes areas look like they are real, or look like a dollhouse.

In Real Life, a lot of things have fairly standard sizes; and we all understand, at an intuitive level, about what those sizes are. Bricks are generally about a hand-span long; not the size of your entire torso. The plank in a floor is about as wide as your foot, not as wide as a VW Bus. Door knobs and latches are within the reach of the average adult, not way above head level.

When things are vastly outsized, as they are in much of Second Life, it makes it easy to view them from a distance. But it also makes the entire world look like a collection of mismatched toys, with tiny little AVs wandering through them.

If this is the look that you are going for, then do it. But do it right, and really make it look like a toy box.

If, on the other hand, you are going for realistic, nothing will spoil the illusion faster than mismatched scales.

How can you scale things properly? Measure them. Keep a ruler, or a pair of calipers, next to your computer, and measure everything.

This is one thing Second Life has right. The measurements used are meters. (Unlike some programs, which use internal units that have nothing to do with reality.) So find out how large things are, and make them that size. This counts for textures, as well as objects.

A little math will give you perfect scale, every time.

If you don't want to do the math, though, you can use a prim to guage size.

For instance, to see how may courses of bricks should be on your wall, make a cube, and give it the dimensions of a normal brick. This does vary somewhat, but the bricks on the outside of my house are 0.27 m x 0.06 m, which will get you into the right ballpark. So make a box that's 0.27 m in the X and Y axes, and 0.06 m in the Z.

Put that box up against the wall, looking at it from an angle to eliminate parallax, and change the repeat size of the texture until it matches. (I find it easier to do this one axis at a time, moving the "brick" as necessary to match it up.) There you go. Bricks to scale.

The other thing you can do, of course, is stand as close to the textured object as possible. If it looks like it's the wrong scale, it probably is. But that method is not as accurate for things that you can measure.

Another problem you might face, if you have your building done before you make the textures, is that your perfect wall texture looks all stretched and distorted when it's applied to the wall. Once again, there is a simple, no-math way to fix that.

Make a box that has the same ratio as the image, and apply the image to it as the texture. If you are following my recommendations, that will always be square, or 1 to 1. However, if you've gone off on your own, it might be any size and any ratio. Use the actual pixel dimensions as meters if you need to, to get it right. (For instance, if it's 412x658, which I DO NOT recommend, you'd use .412 m x .658 m.)

Resize it, using the white corner handles, to match the height of the wall section. Disable Stretch Both Sides, and Stretch Textures. Now line it up with one side of the wall, and use the Stretch tool to resize it until it's the same size as the wall. The texture will appear to be stretching, but when you release the mouse button, it will snap back to its former ratio.

Select just the texture from that wall, and read the Repeats per Face Horizontal from the Texture tab. Apply the same value to the texture on the "real" wall, and the distortion will be gone.

The other thing to be aware of is texture size. Not scale, this time, but the actual physical size, in pixels, of the images you are using. As you might expect, the larger they are, the longer it takes to load. The more you are using, the longer they take to load. If you are using a lot of large images, you can seriously impact the time it takes for all of it to "rez."

Also, be aware that just because the forty/ 1024x1024 images you have on the front of your house load quickly on your machine, it doesn't mean that they will on your neighbors. And, unless you own an island, your neighbor's enjoyment of the game can be seriously impacted by your texture use. (And vice versa, of course.) So small textures are friendlier in a number of different ways.

If you are using a texture that's covering a 10x10 wall, then you might need it to be large, depending on how many diagonal lines are in that wall. (Yes, diagonal. Straight vertical and horizontal lines can be at a much lower resolution, and still remain jaggie free, for obvious reasons.)

But, if you do that, consider using the same texture for several other things, as well. This is made simple by the fact that you can use offsets. So, for instance, if the image on the wall is a sculpture that has brickwork with vines on either side, you can re-use just the brickwork and vines part for the pillars around the gate. The horizontal stone that the sculpture is sitting on can be used again for the door lintels, the fireplace mantel, and the window ledges. You get the idea.

On the other hand, if you have the prims for it, you might want to consider making the central piece with the statue one prim with a 512x512 texture, and the walls that just contain brickwork out of other prims with a 128x128 texture and a higher repeat. Since all of these measurements are squared, a single 1024x1024 image is the size of four 512x512 images. So you'd save hundreds of thousands of pixels, even if you used other Prims with a 512x512 vine texture on them to make up the vines. Yeah, the pattern would repeat; but that might not be as noticeable as you might think.

If you're careful when you make the three images (bricks, sculpture, and vines,) you might find that you can texture most of your build with just those three images. That would not only save time whenever anyone looked at it, but would also save time making the textures, and $L in the upload.

Just like building a web page, efficient texture use can really pay off in Second Life.

And that ends these tutorials. I hope that you enjoyed them, and found them useful.

For more instruction, please visit the Texture Library, located to the West of the Texture Tutorials.

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