Subject: Re: texture mapping: arbitrary orientation impossible?
Posted by Rick Towler on Fri, 03 May 2002 23:16:23 GMT
View Forum Message <> Reply to Message

"Harald von der Osten-Woldenburg" <hvdosten@lb.netic.de> wrote

> it seems that it is only possible to combine pictures with 3-D-surfaces
> if they are orientated parallel to the coordinate axes. Is this correct?
> Or does perphaps anyone know a tricky method combining pictures of
> arbitrary orientation with surfaces? For example a picture rotated by 30
> degrees...?

You can map a texture onto a surface pretty much any way you want. The key is getting the correct texture coordinates (and understanding what OpenGL will do with them.) The texcoords map a normalized texel value to a vertex on your polygon (in your case the 3d surface). If you want to rotate the texture on the surface you change the texture coords accordingly.

I would personally work with the image data and rotate that. But if you need to dynamically rotate your texture then you could transform the texture coords. I haven't played with this a lot but I did take David Fanning's Texture Surface example (www.dfanning.com) and arbitrarily rotated the texture around. Assume you have a 2xN array of texture coordinates that map your image onto your surface. Call the array "texcoords".

```
;first we need to translate our texcoords so they
;are centered about our local origin.  This ensures
;the texture is rotated about the center.

texcoords = texcoords - 0.5


;get the transform matrix - use IDLgrModel because
;it does the math for us.  You could easily build this
;by hand.  We'll rotate the model 30 degs about the z
;axis.

model = obj_new('idlgrmodel')
model -> rotate, [0,0,1], 30.
ctm = model -> getctm()


;since we're dealing with a 2d transform, get rid of
;the extra dimensions on our 4x4 transform matrix

ctm = ctm[0:1,0:1]
```

```
;transform the texcoords so they are rotated 30 degs
;about 0,0
for n=0, (size(texcoords, /dimensions))[1] do $
    texcoords[*,n] = texcoords[*,n] # ctm


;now we translate our texcoords back

texcoords = texcoords + 0.5
```

Now texcoords will map your image onto your surface rotated 30 degs.

Good Luck!

-Rick Towler
