Subject: Baffling 3D View problem
Posted by AotrsCommander on Mon, 26 Apr 2010 13:13:12 GMT
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As a standard test when I do my models, after the usual checks in Blender and such, I do a visual inspection in Shapeways 3D view renderer, just as a final double-check. If Blender, my CADs package, the Shapeways image renderer and 3D view renderer all agree, I take it as a pretty good sign the model doesn't have any serious problems.

However, a couple of models I've uploaded recently seem to be having difficulty in the 3D view. I've attached the relevant files for the most recent of the two, as the other problematic design is hidiously complex and therefore probably harder to isolate the problem!

As you can see from the screenshot, the 3D renderer is treating what should be the outer skin as invisible, and displaying what should be the inside (as the model is hollow) as a surface.

Interestingly, a little experimentation shows it's not the inside and outside layes that's causing the problem. I don;t think it's a normal problem, as my general practise is to put a hole which the inside and outside bits into a single surface and so means I don't (usually) get any inverted normals, as the recalculate normals outside gets everything then.

The problem appears to be rather on the detail on the surface. What's odd is that I've done nothing different to the rest of the models of the Stone Portal fleet, all of which have been fine and most printed. And some of them are just as 'busy' with gun emplacements, so I'm not sure why this model should be different. I've even tried shifting the details around - I've found usually, shifting things by 0.1mm usually resolves any non-manifold errors I have normally come up against. But this time, it had no effect.

I've checked and re-checked and checked again, and Blender can't find any non-manifold errors and as you can see, the image renderer has not got any errors either. I'm therefore a bit stumped as to what the problem might be.

Could it be that the 3D renderer is merely displaying wrong and that the model itself is fine? Perhaps the quite narrow faces on the model - which still don't seem to be non-manifold to every test I've performed - are *just* on the limit of the 3D renderer; assuming, for the sake or argument, that the faces are somehow slightly narrower than on my other models? Would that be possible? (This might explain the oddities of my other, more comples model if this is the case.)

I can't think of any other possible explanations, so now I'm stumped, short of re-designing the model. (But without knowing what's actually wrong, of course, I don't know what to redesign to avoid!)

Anyone have any ideas? I'd like to try and solve the issue before I try and print what may be a subtly unprintable model.

File Attachments

1) tempbatship.JPG, downloaded 358 times
2) tempbatship2.jpg, downloaded 362 times
3) StonePortalBattleship1solid.stl, downloaded 104 times

Subject: Re: Baffling 3D View problem
Posted by WelshDesigns on Tue, 27 Apr 2010 04:47:11 GMT
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for me the normals were all flipped backwards. But I don't use STL"s much, so the import/export setting were not totally familiar to me so I could be in error there. I sent you a model by PM (I hope). BTW, check scales sometimes too. In the past I've seen situations where you can have a negative scale in some CAD or Art packages. That can actually flip normals upon export.

Subject: Re: Baffling 3D View problem
Posted by AotrsCommander on Tue, 27 Apr 2010 08:24:44 GMT
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Trouble is, I didn't do anything different with any of my other models. I import the model (made inTurboCAD) as a dxf into Blender, where I have do a manual select and pick Recalculate Normals Outside.

Until this model (barring any non-manifold errors, which I've found I can usually fix my moving the problem component 0.1mm in TurboCAD before export), that's always done the job with no problems. I did have some issues when I started by having hollow sections completely inside the model (which I had to manual select by vertex and flip), but since I started simply making sure my post-hole connected the 'outside' and 'inside' shapes, I didn't have to even do that.

That's what's so baffling; I've done the same thing in the same packages as I've done with the other 30-odd models I've uploaded, but this (and potentially one other model) are the only one who's Shapeways 3D render doesn't gel with anything else. (I have had some problems with the 3D renderer before, but it usually means there's either a non-manifold point or something I can

then locate and fix. But I can't find any problems this time, which is what's so strange.)

For the sake of comparision, here's a model that emphatically does work ('cos I've had it printed) for comparison.

File Attachments

1) StoneportalLightCruiser1solid.stl, downloaded 93 times

Subject: Re: Baffling 3D View problem
Posted by virtox on Tue, 27 Apr 2010 08:52:18 GMT
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I wouldn't worry to much about the interactive 3d-view.
It garbles sometimes. I have had some models which looked totally wrong, but printed fine.

If it looks ok in meshlab and in the preview blender render and it uploads ok. It will probably print just fine.

Did you try Eric Finley's blender script ? You could at least compare volumes and prices to see if anything is really amiss ?

Cheers !
Stijn

Subject: Re: Baffling 3D View problem
Posted by arno on Tue, 27 Apr 2010 09:29:54 GMT
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Hi,

I have checked your model. It appears to be completely inside out (based on the normals). Unfortunately our automated checks only discover mixed normals, not when all are the wrong side.

The thumbs renderer is based on blender, which ignores the normals.

The 3d viewer does try it's best to show you the model and bases it's surfaces on the normals.

Hence it looks "weird" in the 3d viewer.

Can you flip your normals? And try upload again? That should resolve it.

Kind regards, Arno

Subject: Re: Baffling 3D View problem
Posted by AotrsCommander on Tue, 27 Apr 2010 16:16:17 GMT
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Aha. Yes Arno, that seemed to do the trick. Now I know of that possiblity, I can try that if it occurs again on something else.

The unanswered question, of course, is why this particular model needed to have it's normals inverted. All my other models have come rightside out with just a recalc outside in Blender. It's clearly something that's a Blender issue (rather than the interaction with Shapeways software), but it is a definate oddity.

Subject: Re: Baffling 3D View problem
Posted by Corhellion on Thu, 29 Apr 2010 18:23:28 GMT
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Hi there,

Kinda new to the whole printing thing, but I can probably offer a bit of help in the area of checking if your model has flipped normals.

I use Cinema4D and everything I model has it's normals flipped, so whenever I model, I've got to flip the normals before exporting.

Neat and helpful program I use (also useful in checking for non-manifold areas) is Minimagics.

It's a free 3d Part assembling program. (Atleast the older version I have is free, had to register it, but it was free to do so.)

I have to use it as Cinema4D has nothing in the way of identifying bad edges/non-manifold areas.