Subject: Developing fractal curves
Posted by henryseg on Wed, 04 Jul 2012 13:05:30 GMT
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Here are two designs on the same theme, based on an idea originally due to Geoffrey Irving (who is involved in 3D printing, but isn't on Shapeways as far as I know). The idea is to show how the fractal curve is generated, by illustrating the iterative process as the curve gets more and more crinkly as a surface.

Shapeways pages:
Developing dragon curve
Developing Hilbert curve

Videos:
Developing dragon curve
Developing Hilbert curve

File Attachments
1) developing_dragon_curve3_small.jpg, downloaded 435 times
2) developing_dragon_curve_front_and_back_small.jpg, downloaded 435 times
3) developing_hilbert_curve7_small.jpg, downloaded 431 times
4) developing_hilbert_curve6_small.jpg, downloaded 428 times
5) developing_hilbert_curve_front_and_back_small.jpg, downloaded 425 times

Subject: Re: Developing fractal curves
Posted by Wahtah on Wed, 04 Jul 2012 14:17:45 GMT
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I love them! Brilliant... That's it really, just saying...

Subject: Re: Developing fractal curves

Posted by ttoinou on Sat, 05 Jan 2013 15:12:45 GMT
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I like theses fractals so I made myself one :
www.shapeways.com/model/857223/developing-koch-snowflake-fra ctal-with-holes.html

.
Thank you for the idea I stole anyway .

Subject: Re: Developing fractal curves
Posted by henryseg on Sun, 06 Jan 2013 00:11:40 GMT
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Very cool ttoinou!

As I said in the original post, I also stole the idea from Geoffrey Irving

We wrote a paper together on these things: Developing Fractal Curves. Geoffrey has a different way to generate the surfaces, which looks like it might be similar to yours. He also did the Koch snowflake, there are some renders of it in the paper.

Subject: Re: Developing fractal curves
Posted by ttoinou on Sun, 06 Jan 2013 10:58:59 GMT
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Thank you for the paper.
We both use polynomial curves but I don't know if it is the same algorithm..
And you manage to create thickness (I have to use Blender) AND it gets thinner as the iteration (or z space parameter) increase.
Doing that would be my next step .

New version :
<a href=" http://www.shapeways.com/model/857320/developing-koch-square
-fractal-with-holes.html" target="_blank">

How many triangles do you have ?

Subject: Re: Developing fractal curves
Posted by henryseg on Sun, 06 Jan 2013 21:46:21 GMT
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Hi ttoinou,

The details about how we thicken things up are in the paper, but there are lots of ways you can do it.

I made my version with NURBS surfaces, so it can be however many polygons you like. I tend to get near to Shapeways' million polygon limit if I've got a complicated model like this. Geoffrey's version of these uses meshes the whole time, and gets finer detail meshes using something called Loop subdivision, and so he can get arbitrarily detailed meshes as well.

Subject: Re: Developing fractal curves
Posted by CristobalGordo on Mon, 07 Jan 2013 16:37:16 GMT
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Really cool looking things. Seems like they would maybe make good heatsinks (made out of aluminum or copper.)