Subject: Mini City
Posted by aeron203 on Wed, 12 Jan 2011 16:50:33 GMT
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I have been making more 3D scenery and I thought I'd share my latest. This Mini City was made in Wings3D. I made the print shown here but this is also for sale on Shapeways: http://www.shapeways.com/model/199442/mini_city.html?gid=ug3 237 . It should print since I put a lot of effort into thickening everything up. Even the trees are several millimeters thick to stop them from breaking off. All of the ones in this print came through just fine. The proportions are a little odd, since it is more like a map or game level than a literal representation. The model is super efficient, using only 37,000 triangles yet it has tons of details like bushes, fountains, and lines on the streets. The model is 8 inches square.

An image of the back, showing how the streets and edges are 5mm thick to provide a sturdy frame, yet the buildings are hollowed to save material.

at 50% scale you have yourself a pocket city!

So much fun to make these!

Subject: Re: Mini City
Posted by tedparsec on Thu, 13 Jan 2011 17:06:27 GMT
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Soooo cute !

I just love it ! Very nice work of optimization...

Is there a project behind this or it is just for the sake of art ?

Subject: Re: Mini City
Posted by virtox on Thu, 13 Jan 2011 17:19:50 GMT
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Fantastic!! Wish I could afford one!
I find it very stimulating for the imagination.

Any chance of a converter script to use old Sim City maps or something?
Draw your own city

Cheers,

Stijn

Subject: Re: Mini City
Posted by Youknowwho4eva on Thu, 13 Jan 2011 17:55:19 GMT
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virtox wrote on Thu, 13 January 2011 17:19Fantastic!! Wish I could afford one!
I find it very stimulating for the imagination.

Any chance of a converter script to use old Sim City maps or something?
Draw your own city

Cheers,

Stijn
First thing I thought of was Sim City

Subject: Re: Mini City
Posted by dizingof on Thu, 13 Jan 2011 18:37:10 GMT
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You have got to share more of your Epoxy dipping/coating experience with us & hopefully shapeways production guys read this.

That tough coating and glossy look surely will boost full color sandstone orders

Subject: Re: Mini City
Posted by aeron203 on Thu, 13 Jan 2011 20:22:12 GMT
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Thanks for the positive feedback, guys.

Tedparsec, that is a very prescient question because this model is tied in with some very specific goals and ideas, but they don't have anything to do with a miniature city, so for now I will just describe it as a design exercise and a boatload of fun.

It is like Sim City. I liked that game. Nothing would stop me, or anyone who has the urge from modeling their most successful megalopolis. We don't have to stop there, though. Why not envision the future of your favorite city or your vision of what your hometown could become? Why not recreate a place you loved as a child, or a small town you saw in a distant land while traveling on vacation? Dream home. Alien fortress. Ancient civilization. Anything you can imagine. Places are very powerful things to people.

These things don't have to be literal transcriptions of information. In fact, I think it's better if we let ourselves ignore the subject of accuracy and explore those things in terms of their symbolism and overall relationships. The catch is that the expression has to be self consistent and has to follow some physical rules if it is to exist. It's a delicate balance, but every time I make one of these it gets easier.

I misspoke when I said it's 37,00 triangles. It's 37,000 polygons, but most have more than three sides, so it's actually more like 72,000 triangles.

It might seem a little weird to focus on efficiency of the model at this stage since I'm nowhere near the polygon limit, but since my design specialization is in the visualization of ideas and information, I'm interested in finding out where the limits are. How many structures can I personally design without relying on automation and in a reasonable amount of time? Where is the line between making a design decision that carries a meaningful expression, and what is simply redundant labor that could be automated without sacrificing the accuracy of that expression? How much information, how many ideas can be encoded into a single model? What is the limit of visual and tactile information density? How does that relate to our ability to comprehend it? What form of visual language would be the most effective? Which aspects of that language would be cultural, which aspects would be innate? What systems of thought require the

least information to be learned before the system becomes functional?

Right now I don't see a limit. I just keep bounding forward and each answer raises a hundred more questions. I am overwhelmed with work as a result of these explorations.

I wasn't going to get onto this subject because I'll end up writing a book on design in a response to my own forum post, which is kind of lame.

If anyone is interested I'd be happy to put some time into making a tutorial about 3D environment models. Thank you all for taking the time to respond to my design.

Subject: Re: Mini City
Posted by LakerFan on Wed, 19 Jan 2011 11:11:29 GMT
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Ok, I love this one.

I think making a mini city is definitely on my list of future projects. I would like to make a little skyscraper city in mine

I like the little trees too, very cute.

Subject: Re: Mini City
Posted by lensman on Fri, 21 Jan 2011 18:28:12 GMT
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An excellent model. I have used Wings3D when I started here and don't think I found anyone else who did! Well done. My feeling is if you can do this in Wings have you tried SketchUp? Even the free version should let you do this quicker (in theory!)

And I second the request to get more info on the coating you used on the model.

Glenn

Subject: Re: Mini City

Posted by aeron203 on Tue, 25 Jan 2011 16:39:21 GMT
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Wings3D is great! It does not get as much attention because it falls into an odd space between a basic modeler and full-featured package. I think Wings is the best package for someone just getting started in 3D, and after well over a decade of experience using just about everything on the market, the fact that I'm still using it for select modeling tasks says something about it's level of development.

It is only a little harder to learn than Sketchup, but actually has a lot of great features so it will keep up with you as your skills progress.

As far as speed, I am making these deceptively complex models more quickly than you'd guess by looking at them. After re-mapping the keyboard shortcuts to enable quick access to the most used commands, Wings can really fly.

I will be going into more detail on finishing when I get a chance to take some more photos.

Subject: Re: Mini City
Posted by Maethius on Wed, 26 Jan 2011 19:43:36 GMT
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Very cool stuff... I'm curious how things turn out with this kind of work. I am actually working on a perfect venue for it; a game where 3D city pieces could greatly benefit both aesthetics and strategy.

Subject: Re: Mini City
Posted by bitstoatoms on Sun, 30 Jan 2011 03:04:30 GMT
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I can so imagine housing developers and speculators using ths as a sales tool..

Subject: Re: Mini City
Posted by ana_xyz on Sun, 30 Jan 2011 03:51:16 GMT
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@Duann I can definitely see that too.

The other thing I thought of when I first saw this was of the tilt-shift effect in photography, for obvious reasons. Really fun stuff.

Subject: Re: Mini City
Posted by Youknowwho4eva on Mon, 31 Jan 2011 16:36:11 GMT
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Shhhh that's my plan when I start flipping houses. Why drive around looking at the houses. Here's a 3D model right here in my office.

Subject: Re: Mini City
Posted by aeron203 on Mon, 31 Jan 2011 17:30:16 GMT
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I had some more time to document this project over the weekend. Hopefully some of you will find it informative or at least amusing.

First off, after the success of my pocket city I decided to take it a step further and printed a Micro City. I expanded the walls 0.25mm at the original scale before scaling it down again, to 1/8th scale. These were very hard to depowder, and I could only infuse them with epoxy by placing them upside down and coating the bottom. As they warm in the oven, the epoxy thins out and soaks into the model.

Though it was hard to depowder and finish, I was happy with the results and decided to keep going with it. Ladies and gentlemen of Shapeways, I present to you the Nano City:

At this scale the cities are very hard to remove from the bed without breaking, so I lift them from underneath with a spatula. They must be depowdered one at a time because the airbrush will cause nearby cities to flutter around like leaves, damaging them in the process. These could not be placed upside-down without breaking, so I finished them by placing them into a tiny pool of epoxy that would then wick through the whole model.

Suprisingly few were damaged at this tiny scale, so of course I kept going and printed a Pico City:

These are nearly impossible to work with. You cannot pick them up without crushing them. They are so light that they usually don't break if you drop them. They sort of float to the ground and you have to pick them up by sliding a piece of paper underneath. The same applies in finishing, where the model can only be transferred by sliding. I would place two drops of epoxy on a sheet, then slide the city off another sheet onto the drops.

There is no Femto City. That would just be silly.

Subject: Re: Mini City
Posted by virtox on Mon, 31 Jan 2011 17:41:18 GMT
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lol, Nice!

Subject: Re: Mini City
Posted by ana_xyz on Mon, 31 Jan 2011 17:43:24 GMT
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'Scuse me, I have to pick my jaw up off the floor....

Subject: Re: Mini City
Posted by Charmed_Life_Designs on Mon, 31 Jan 2011 17:54:29 GMT
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Please don't mix it up with my equally dropped jaw, and there may be pieces of my blown mind laying around as well. That pico city... That is insane. Insanely cool, but still insane.

You said they are quite fragile in their freshly printed state... How strong are they after the epoxy infusion?

Subject: Re: Mini City
Posted by aeron203 on Mon, 31 Jan 2011 18:01:36 GMT

I'm not done.

I noticed how easily I could make natural looking variation by varying the orientation of the tiles when grouping them together, and it does successfully prevent you from seeing that it is the same city model being repeated. I then did the same thing in software by creating a 4x4 array of sixteen Micro Cities that were placed on a 2mm substrate.

Sixteen Micro Cities:

A closer look:

Here is the same model side-lit with sunlight. A very interesting effect the way the light diffuses withing and passes through the tiny features. Who knew Sandstone was translucent at this scale?

I found this very interesting! I couldn't help wondering what an array of Nano cities would look like.

Sixty-four Nano Cities:

At this point it's getting a little tough to make out the details, and the prints are a little fuzzy, so I think reducing beyond this size would not lead to a very useful visualization.

As long as we're here though, we might as well try an array of Pico Cities.

One-hundred and ninety-two Pico Cities:

Wow that's just nuts. So many details in such a tiny area. It really doesn't even resemble a city any longer, but I have never seen anything like it so it's fascinating to look at!

What to do with these things? They have such a neat texture, I'm thinking of attaching them to a stick and selling Pico City back-scratchers on Etsy.

And yes they are quite durable after infusion. Enough that if you leave some lying around they are a surprise to step on with bare feet!

Subject: Re: Mini City
Posted by Youknowwho4eva on Mon, 31 Jan 2011 18:46:34 GMT
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I know what I would do with them. Pico city mosaic kitchen or bathroom wall tiles

Subject: Re: Mini City
Posted by Spongeinside on Mon, 31 Jan 2011 19:05:13 GMT
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That's just too awesome..

I wonder how cool it would be to have one of those glass tables with a bunch of micro cities under it A table with a micro city in it!

Subject: Re: Mini City
Posted by lensman on Mon, 31 Jan 2011 19:17:09 GMT
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Spongeinside wrote on Mon, 31 January 2011 19:05That's just too awesome..

I wonder how cool it would be to have one of those glass tables with a bunch of micro cities under it A table with a micro city in it!

Yes, you could call it Whoville!

Glenn

Subject: Re: Mini City
Posted by Maethius on Tue, 01 Feb 2011 16:49:51 GMT
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Gotta know... how do you have access to 3D printing on what appears to be a casual/hobby level? I'm assuming you don't have one at home or a thousand dollars to just drop on making cities for the fun of it! Though I could be wrong about that.

Anyway, on the modeling; this really shows a great deal of potential for me. I do wish the finish

were cleaner (probably the #1 comment about 3D prints from what I've seen) but it's really impressive. Very interesting stuff, with some great visuals! Now print a little Godzilla to stop around your Nano city!

Subject: Re: Mini City
Posted by aeron203 on Thu, 03 Feb 2011 19:30:37 GMT
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Maethius, I use a lot of interesting equipment in my work, and the line between what is work and what is not is pretty blurry. No one asked me to do this, but what I'm doing is undeniably contributing to my professional development and knowledge base. The materials are not cheap and I put a lot of labor into my creations. I charge enough when I sell my services that what you see could have a significant dollar figure attached to it, even if I didn't pay someone to do it and didn't get paid myself.

To me, separating all of my activities into work or hobby would be like separating all food into either things that taste good and are unhealthy, versus things that are satisfyingly healthy but don't taste great. Reality has very few sharp distinctions like that, and thinking that way would inhibit my ability to enjoy either of those unnecessarily artificial categories. My philosophy is to work as if I'm playing, but always play hard. I'm not sure if that answers your question.

I have to correct one of my photo captions above. The sunlit image I labeled as a Micro City array is actually of Nano cities. This is right were the detail really starts to break down.

Here's another one of those:

In case you didn't get enough of an eyeful, here's a close up:

And for reference, the same area on the original mesh

The area in the photo is less than an inch wide.

Subject: Re: Mini City

Posted by pete on Thu, 03 Feb 2011 21:56:48 GMT
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Aeron,

wow! Amazing stuff! Very cool.

Pete