Kyle Lin, February 16, 2022
Houdini Version 19.0.383 – Python 3

Project 2 – Complex Scene Breakdown

Reference: **Catan Boardgame**

Important statistics

Renderer	: Mantra
Resolution	: 1280 * 720
Average Render Time	: 26 min 12 secs
Number of Lights	: 2 (Sunlight, Skylight)
Complexity of Geometry	: Packed Geo – 30,014 primitives
	Poly Counts – 3,564,723 polygons

Sample

Global Quality	: 2
Diffuse Quality	: 4

(Other samples are set as default.)

About the Project

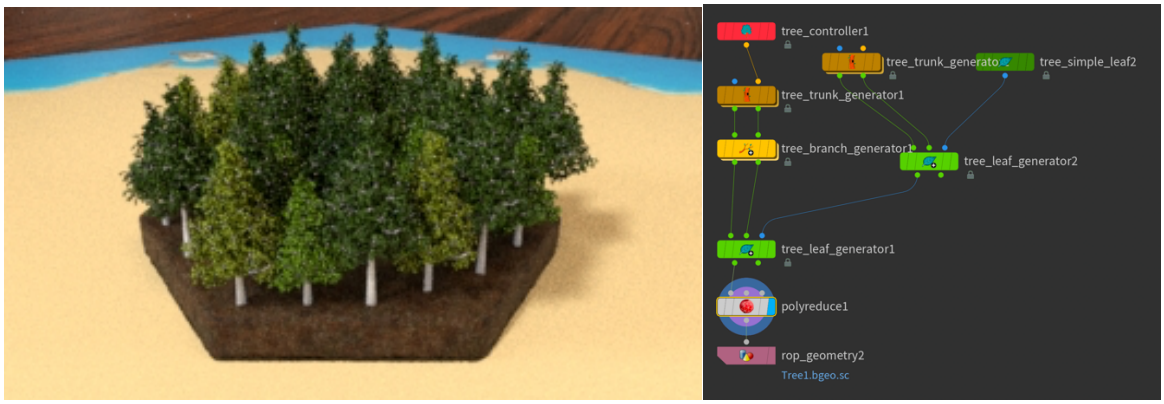
This project is about copying a lot of different variations of the same thing. Therefore, I decided to make a 3D version of the boardgame “Catan” I played with my friends recently. Catan is a strategy game that players have to trade and fight for resources on the map to build house and roads, and whoever got 10 points first wins the game.

Technical Guide

There are 5 different resources in the games including wood, sheep, wheat, bricks, and rocks. There are total of 19 different blocks on the map and each one is representing one of the resources. For this project, I separate all the asset into different geo nodes, and I used object merge and file node to bring the objects into the Catan geo node to assemble them together.

Forest – Wood

Forest is representing woods, so I used the tree generator in the SideFX Labs to create 5 different color and looking trees to scatter on the block. I learned this by following this YouTube tutorial: https://youtu.be/voDHeh_Zq5s

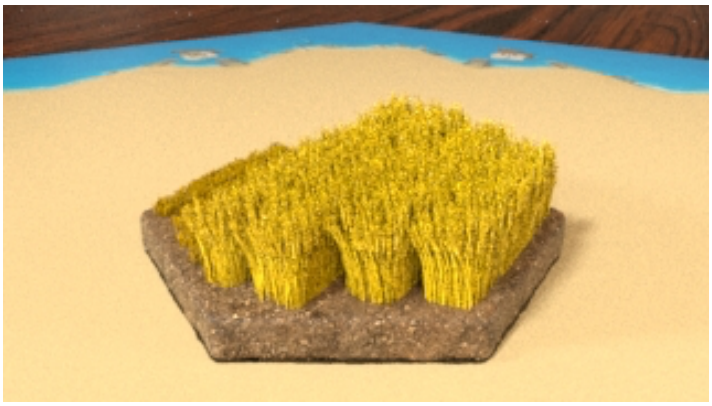


Grassland - Sheep

The grassland with sheep represented sheep resource. I used fur to create the grass, and spheres, tubes, and box to create the sheep. For the grass, I used fur to create the grass, and Guide Process to deform the grass to make it looks more natural. I learn how to make grass with fur from professor's example file and this video: https://youtu.be/2dPPvxwTRtU

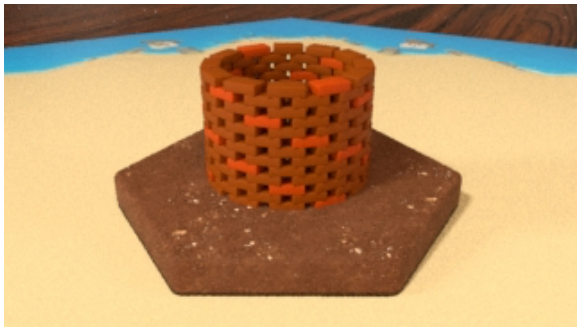
Farm - Wheat

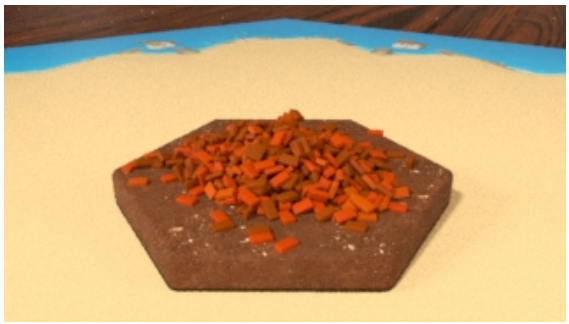
The wheat farm represented the wheat resource. I modeled very basic wheat and then change the tube height, copy counts and bend to makes 5 variations. For the cut wheat I just Boolean two of the variations with a box.

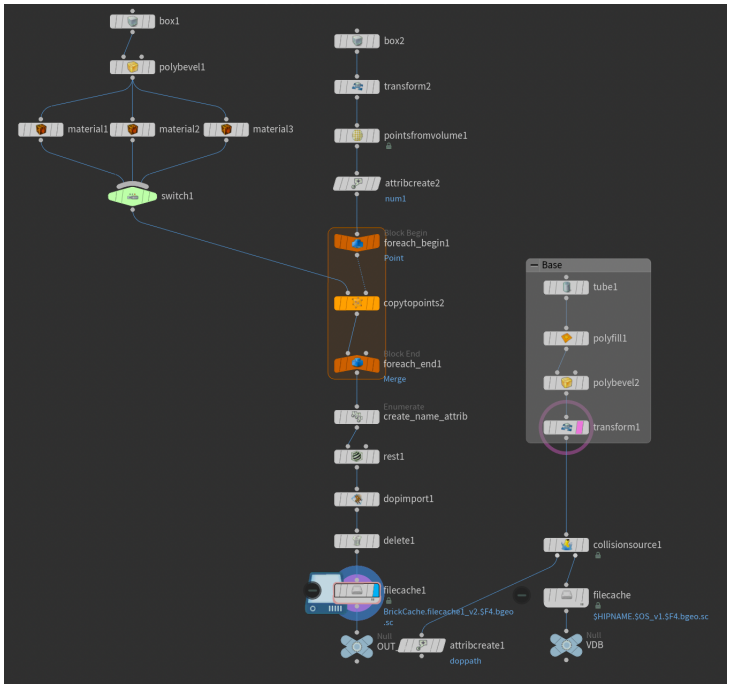


Bricks

For the bricks, I didn't make the terrain like the original because I do not think I can make that. Therefore, I used RBD to make the pile of bricks, and copy node to make the circular brick tower.



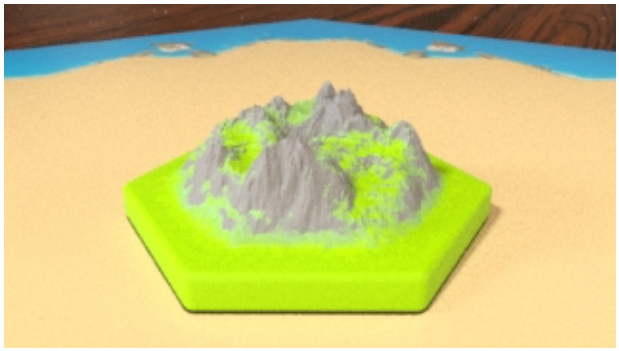


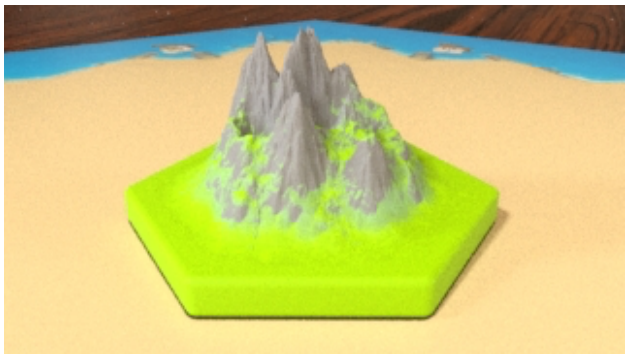


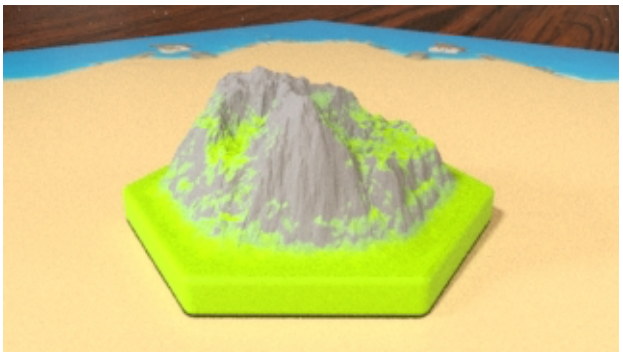
Mountains - Rock

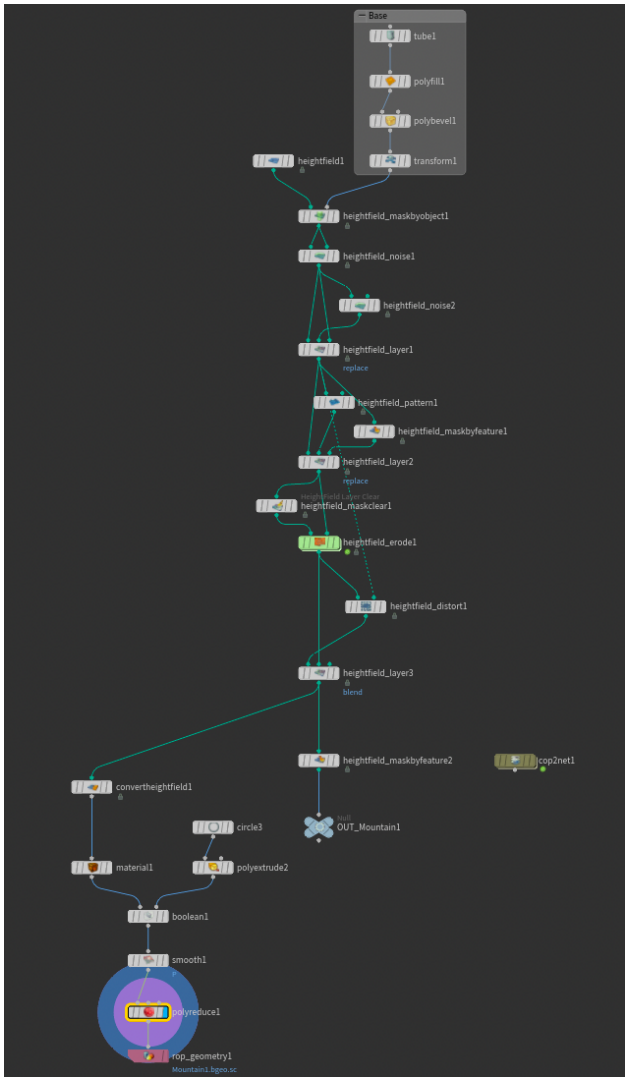
The resource the mountains representing are rocks. I used height field node to create the mountains, and a COP network to make the shader. I followed these tutorials to learn the height field and using COP to shade the mountains.

HeightField: https://youtu.be/iogVyO_nK6g COP: https://youtu.be/0YcChUjvE1o



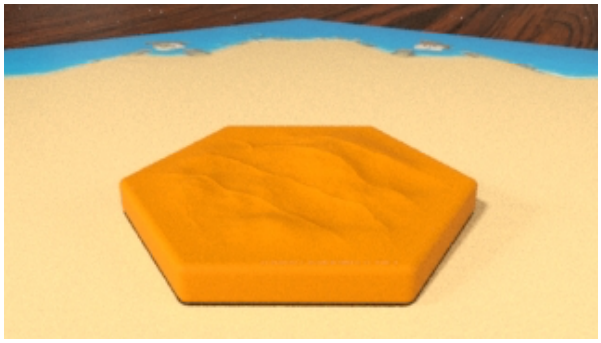


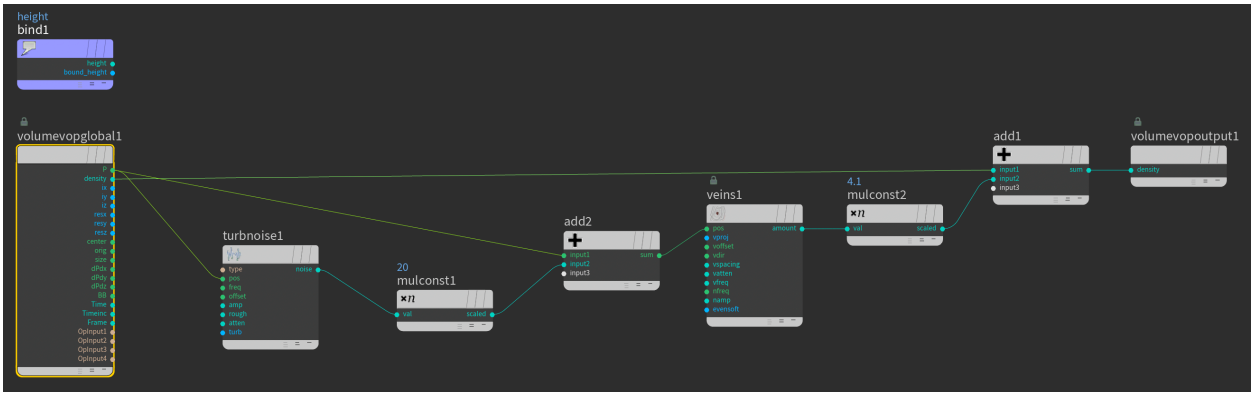




Desert

Desert is the one piece in the middle that is not representing any resource. At the beginning of the game, this is the block the thief will be at. I used height field and height field VOP to create the desert. This is the tutorial I learned from: https://youtu.be/D5uO-DbWZhc





Problems Encountered

1. L – system for base and Trees

The first problem I encountered is to figure out how to copy different blocks with variation of different resources on to designated position. This is a bit frustrating at the beginning is because everything is in hexagon shape. The solution I found is by using L system to create the points to copy to. Originally, I was trying to learn L system to make the pine tree, and it did not work out, so I used the tree generator instead.

2. 5 Difference Resources

Another problem that I had is there are five different resources, and each one is very different. So, I have look up bunch of tutorials on various new nodes like height field, COP, and VOP to figure out how to make them. This is something that did not think of when I proposed this idea. However, I am glad that I did because I learned a lot from it, and I am pretty happy with the result.

3. Copy with Variations

Another problem that I was struggling for a while is copying with variation such as copying sheep blocks with different rotation and number of sheep. I was struggling trying to figure out I should use For-each or copy stamp. The solution I found is using for-each and copy to point, and switch node for varying individual objects and copy stamp and random stamp input for the rotation of the block and scatter amount of the objects.