Progress Report

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A Procedural, Minimal Input, Natural Terrain Plug-in for Blender

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1 Previous Objectives

- Be able to select the recursive depth of subdivision for each triangle so as to provide meandering sections of river and swiftly changing ones.

- Deepen the mountainous river terrain.

- Create a massive scene

- Create a list of "experiments" to do in Chapter 4 of the thesis.

- Continue writing thesis.

2 Progress
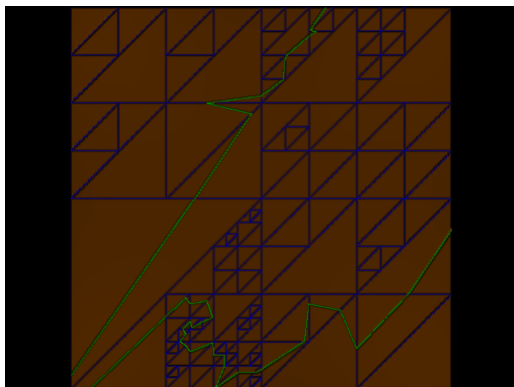
2.1 Recursive depth for squig curves

A method to randomly select the recursive depth of subdivision for each triangle was devised. During the phase of plotting the points of of the squig rivers onto the terrain, at each level of subdivision the child triangles are assigned a random recursive depth between zero and the parent's depth less one. The differing levels of recursion cause offset joins (as visible in Figure 1a,b: the first showing the squig curve and the second showing the underlying subdivision mesh too). The solution devised was to take all intersections to the highest level of recursion.This provides the functionality of having meandering sections of river and swiftly changing ones (see Figure 1c,d: the blue showing the recursive triangles and the green the resulting squig curve).
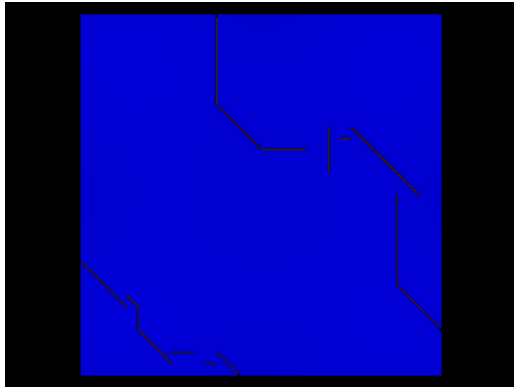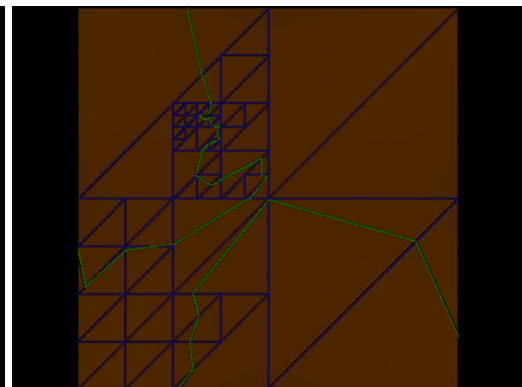
(a) Offset joins
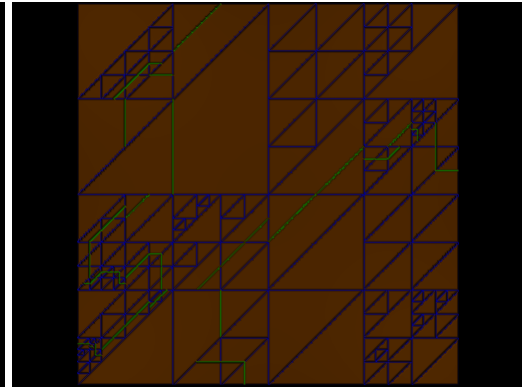
(b) Underlying subdivision for offset joins
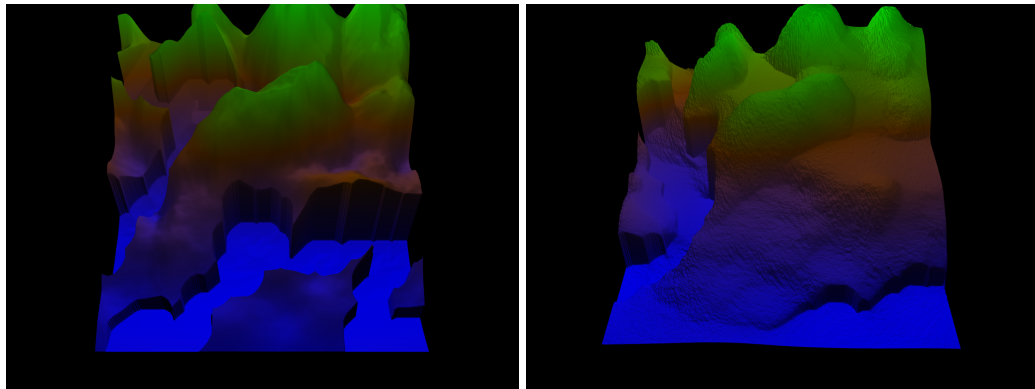
(c) Corrected image 1

(d) Corrected image 2

Figure 1: Squig curves: random recursive depth

<div align="center">(a) Before erosion   (b) After erosion</div>

<div align="center">Figure 2: Mountainous rivers</div>

2.2 Deepened mountainous rivers

The mountainous terrains were deepened slightly to make the river paths clearer as is visible in the two renders in Figure 2.

2.3 Thesis work

Writing continued on the thesis, with a fleshed out Chapter 3 and a list of possible experiments to do in Chapter 4.

3 Problems

Rendering a massive scene proved impossible on my current hardware. Blender crashes when rendering the scene (independant of which rendering engine is chosen) if the grid exceeds about 440x440 and when processing the scene if 10 levels of recursion are specified for the squig curves. The reason this occurs is because my machine does not have enough RAM to run these processes, as in each case the Blender process uses more than 1.5GB of RAM, my machine having 2GB.

4 Objectives for Next Week

- Submit a draft of the thesis.

- Render massive scenes (assuming the hardware can be requisitioned)