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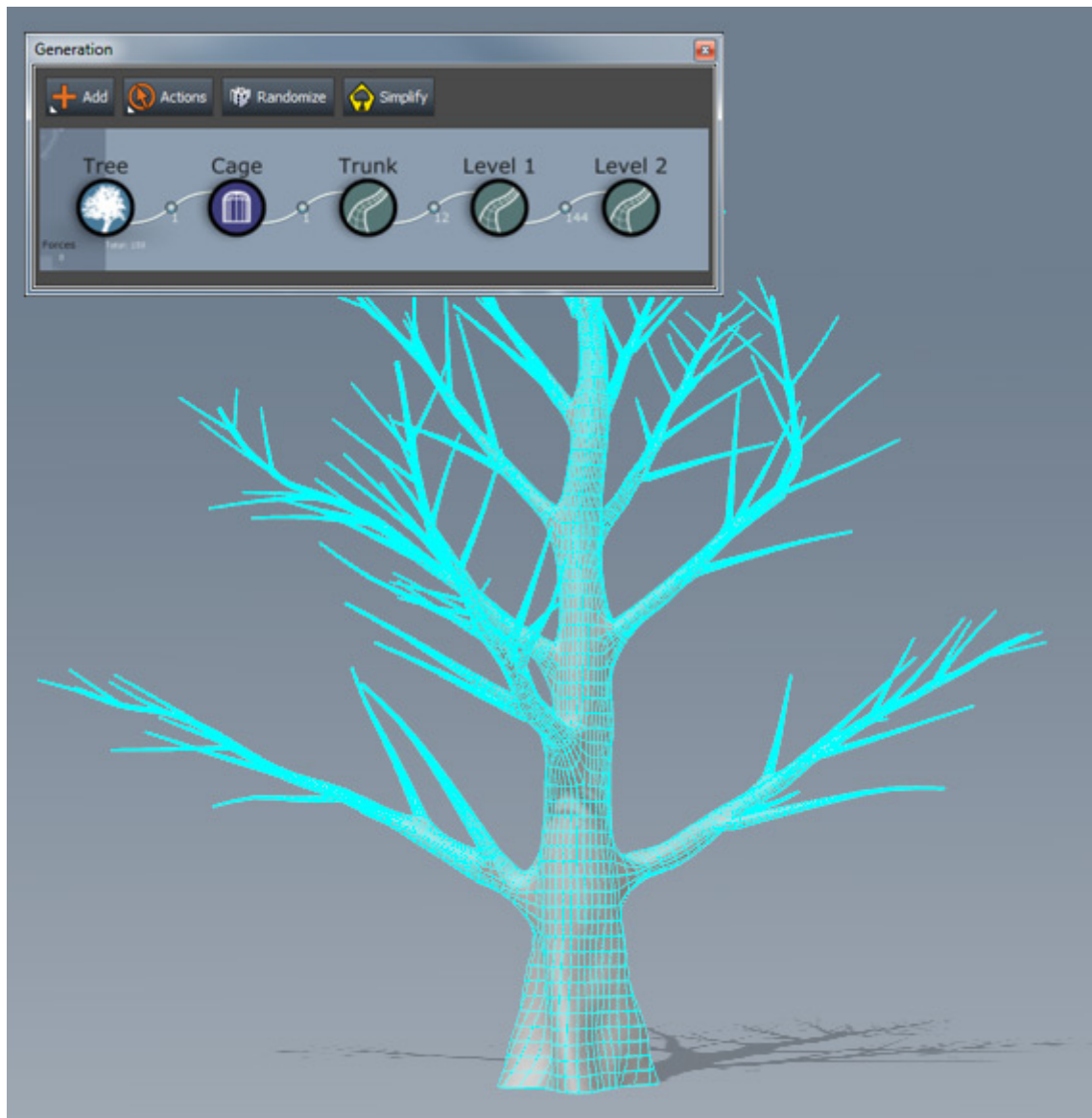
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Subdivision Surfaces

This section describes how to build both procedural and hand drawn subdivision surface models.

Introduction

Subdivision surface models are created by adding a “Cage” generator to the model and then creating a network of subdivision branch generators as descendants of the cage. Each subdivision branch node contributes quads to the cage according to its properties (which are very similar to the traditional polygon 'Spine' generator). The cage collects all of the quads of its descendants and subdivides it according to the 'Level' property on the cage. A level of '0' displays the cage directly, '1' represents one level of subdivision, and so on. The following images show the generator network and corresponding model for a simple subdivision surface model.



Creating From Scratch with Templates

To create a subdivision model from scratch begin by adding a template with a 'Cage' node in it. Use the 'Add' button in the 'Tree Window' or 'Generation Editor' to add the template "**Subdivision→Cage and Trunk**". From there, add the template '**Subdivision→Branches**' to the trunk. You should see a model similar to the image above.

Hand Drawing

In order to hand draw subdivision surface models there must be a 'Cage' generator in the model before you start. The easiest way to that is by adding the template '**Hand Drawn→SubD Setup**' to the model. Then hold down the space bar, left click, and drag from the ground to start drawing. From this point on hand drawing works exactly as it does for polygonal modeling as described [here](#).

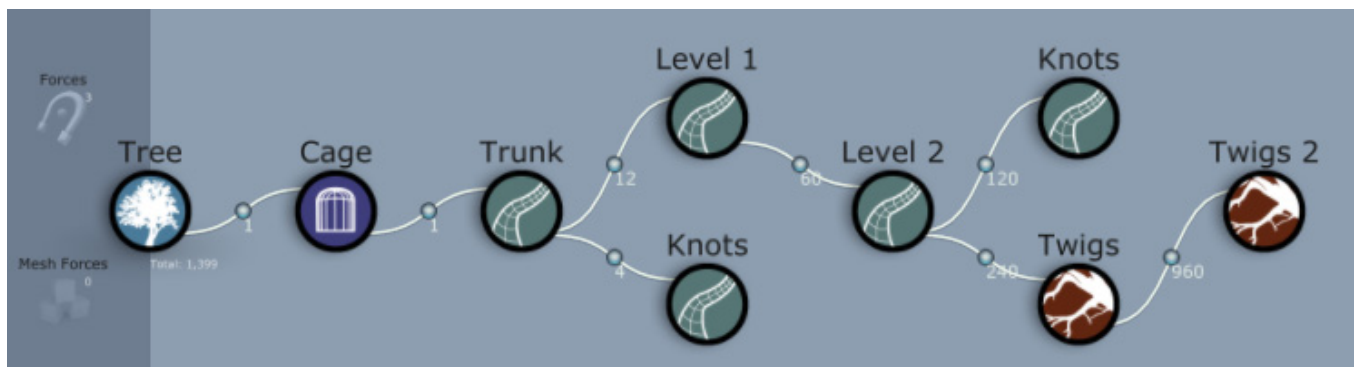
Where Did My Branches Go?

When creating subdivision surface models it is possible that multiple branches will compete for the

same location on the parent. When this happens, only one will 'win' and become part of the model. The others are shown in orange wireframe when the generator is selected or when in node editing mode. These orange 'losers' can be node edited into valid positions via [standard node editing techniques](#).

Mixing in Polygonal Models

Standard branch, frond, and leaf generators can be added as children to any subdivision node. Their geometry will not become part of the cage, but they will be part of the model and positioned/sized as they normally would. Use this capability to add leaves and small details like twigs without adding more detail to the cage.



Exporting the Cage

To export the cage for use in other tools like ZBrush and MudBox select '**File→Export cages...**'. The cages will be exported as standard '.OBJ' files for easy loading in other tools.



Exported SubD mesh from SpeedTree, that was imported into Mudbox and sculpted

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