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Degradation

Degradation is used to temporarily reduce polygonal resolution and lower compute times during the modeling of high detail trees.

Overview



In the Modeler, “degradation” refers to the temporary lowering of detail in order to reduce compute times. All degradation parameters are accessed by first selecting the Tree Generator. Degradation is most useful when making highly detailed trees that compute slowly.

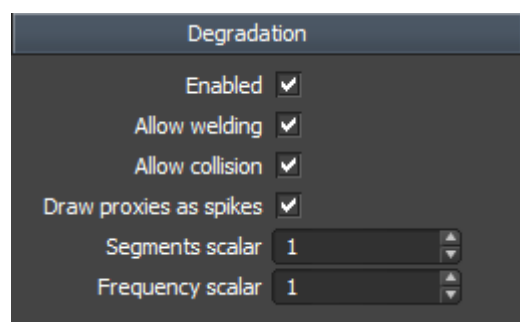
There are three types of degradation - “degradation”, “interactive degradation”, and “low detail navigation”. They can be used independently or all together.

Toggling Degradation

While all three types of degradation can be toggled independently from the Property Editor, a toolbar button in the Tree Window can be used to toggle them on or off as well. The toolbar button can be used to toggle either one, two, or all three types at the same time, depending on which types are checked in the pull down menu next to the toolbar button.

Degradation is rarely necessary for tree models intended for use in real-time applications.

Degradation



Use the properties in the main degradation group to lower the quality of the tree model both in terms of polygonal resolution and techniques applied. When degradation is enabled, the tree window will render the degraded tree, the exporters will export a degraded tree, and any embedded geometry used by the SpeedTree Compiler will be the same as the degraded tree.

This type of degradation is used primarily when working with high resolution tree models. The basic idea is to leave the tree degraded while you're working with it so that the modeling process is still interactive and then export the full resolution version for use with third party 3D packages.

Enabling Degradation

To enable degradation, press the degradation button in the main Tree Window toolbar or change the Degradation→Enabled property on the Tree Generator. When enabled, the statistics overlay in the upper left-hand corner of the Tree Window will be drawn in pale yellow and will include the words “DEGRADATION ENABLED” in the overlay label.

Options

Within the Degradation group, you'll find the following different ways to degrade the tree:

Spine Options

Welding can be turned off, and the number of branch segments can be scaled to speed up spine computation.

Proxy Options

The Draw proxies as spikes option overrides the mesh asset assigned to proxy generators. This is useful when doing world-building with many proxy nodes. The proxy generator can be assigned specific mesh assets for export reasons, but only show simple spikes in the Tree Window. The spikes will take the diffuse color of the color set associated with the material assigned to the proxy type.

Leaf Options

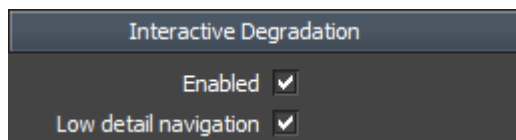
The Allow collision property affects both leaf and proxy collision, which are some of the slowest parts of the tree compute. Disabling it will speed up compute times. Lower the “Frequency scalar” property to approximate the node count that results with degradation disabled (more info below).

Frequency Scalar and Degradation Style

The Frequency scalar is applied to generators based on their Degradation style setting (located in the “Generation” property group). Any generator can be forced to always use the frequency scalar, or forced to never use the frequency scalar, based on the generator's “Degradation style” property.

If set to “Default”, the frequency will only get scaled if it is the topological end of a generator chain (i.e. leaves in most cases). The last generators in the chain are usually responsible for the bulk of the nodes being created, and thus limiting their frequencies will introduce the greatest speed boost. However there are examples, such as knotholes and roots, do not work well with the default property setting, since they have so few nodes even at full frequency. These examples would be better suited using the “Never” option.

Interactive Degradation



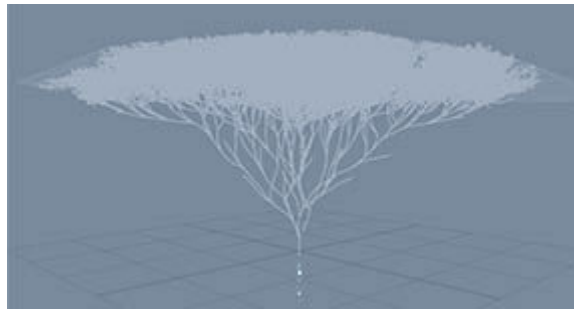
When enabled, this property degrades the tree only when it is actively being computed. As soon as the tree is no longer being edited, it is computed fully. The purpose of interactive degradation is to lower the detail of the tree during interactive editing so that edits can be viewed in real-time. Interactive degradation is active while the left mouse button is being held down, for instance, when scrolling the spinner on a numeric property, or moving a point around in the curve editor.

Disabling Propagation

Arguably the most important feature in interactive degradation is the ability to not Allow propagation; that is to delay computing all children of the selected generator/node while interactively editing. For instance, a trunk itself may compute very quickly, but when you take into account all of the branches, sub-level branches, twigs and leaves attached to it, the tree as a whole computes slowly. With interactive degradation, anything past the current generator (the trunk in this example) will not be rendered until the mouse is released.

Low Detail Navigation

Use the Low detail navigation option to greatly accelerate panning, rotating, and zooming in the Tree Window when working with high polygon tree models. When low detail navigation is active, the nodes are drawn as frames instead of as full 3D geometry. Zones and mesh forces are drawn as point clouds.



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