Ambient Occlusion

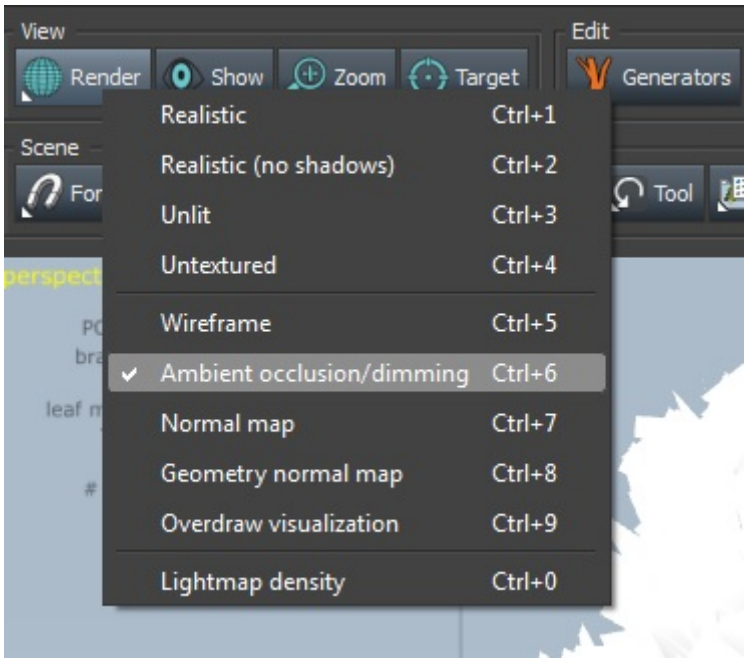
Ambient occlusion is a post-compute process that darkens heavily occluded vertices to simulate real life light scattering.

Overview

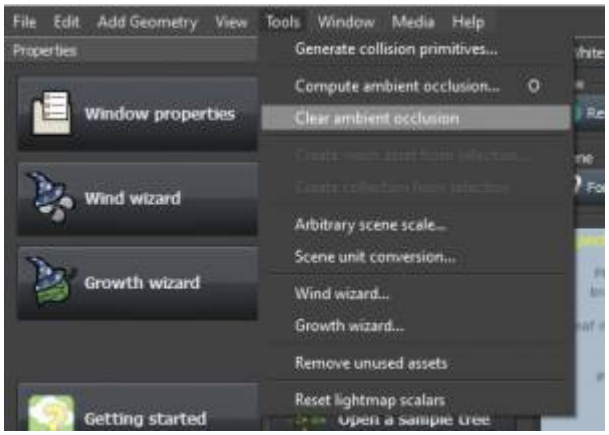
Ambient occlusion (AO) is a rendering effect in cutting-edge 3D graphics. The basic principle is to calculate an accumulation of shaded areas based on the visibility of each vertex from a series of views. The net result is a non-directional darkening of creases, intersections, and overlapping parts. Our ambient occlusion assigns an occlusion value per-vertex, which can be read by the SDK at runtime or rendered along with materials in third party 3D packages.

Ambient occlusion rendering mode

To view the results of ambient occlusion only, select one of the “Ambient occlusion/dimming” rendering modes from the 'Tree Window' toolbar (the first button) or CTRL+6.



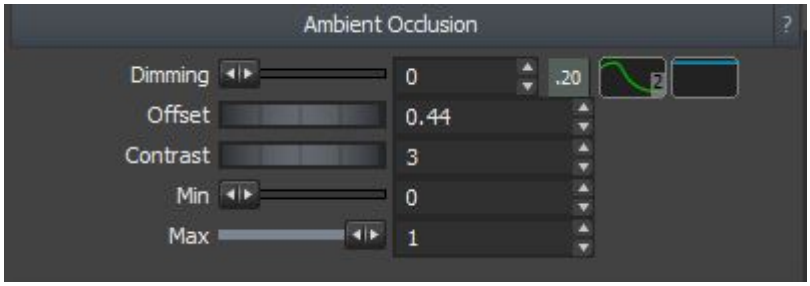
Ambient occlusion must be rendered after all tree edits



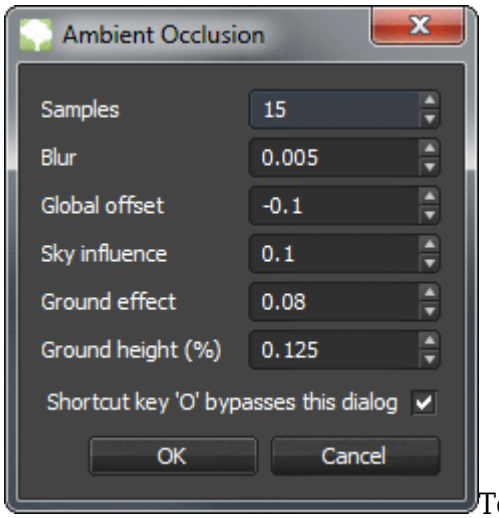
Ambient occlusion is designed to be a post-modeling process. Any time you recompute the tree by changing a property value that affects the spine, branch skin, or leaf position, the ambient occlusion solution becomes invalid. As a result, it is cleared from the tree model. Ambient occlusion can also be manually removed from a tree by selecting the menu item **Tools→Clear ambient occlusion**.

Generator and Node Ambient Occlusion Properties

After calculating ambient occlusion, it can be tuned per-generator and per-node by the properties in the “Ambient Occlusion” property group. See the context-sensitive help for descriptions of each option (Offset, Contrast, Min, and Max).



The Ambient Occlusion Tool



To calculate ambient occlusion, use the tool located under the menu item “Tools→Compute ambient occlusion”. Ambient occlusion is applied as a post-process because it may be too slow to compute on-the-fly (depending on the number of samples) while editing tree properties. These settings are saved with the tree model.

Samples
The number of light samples used to calculate ambient occlusion. Increasing the number of samples results in more accurate results, but at the expense of a longer compute.

Blur
The radius (in percentage of the tree size) to blur the ambient occlusion results. Blurring smoothes out the effect and unifies AO across multiple nodes. Higher blurring values take longer to compute.

Global offset
Offsets the net effect of AO (positive number result in less darkening). Offsets can be tuned per-generator on top of this global offset.

Sky influence
Raises the samplers upwards towards the sky, resulting in the undersides of branches darkening and lower areas of the tree being occluded by higher areas.

Ground Effect
Artificially darkens the base of the tree model to simulate ambient occlusion caused by the terrain itself. This value determines the intensity of the effect. To control how height of the effect, see the next property description for “Ground height (%)”.

Ground Height (%)

A percentage of the overall height of the tree used for the “Ground effect” portion of the ambient occlusion calculation. Lower this value if the bottom of the tree appears too dark.

Bypassing This Dialog
The 'O' hotkey will process ambient occlusion without displaying this dialog as long as “Shortcut key ('O') bypasses this dialog” is checked.