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If you're having any problems or questions, ask on the UnityForums.

Thread: Assets and Asset Store → Directional Ambient Tools
PM - Username: Chickenlord

Package Contents.

DirectionalAmbient\Scripts
Directional ambient components.

DirectionalAmbient\Scripts\Editor
Editor scripts for the directional ambient components and setup scripts.

DirectionalAmbient\Manual.pdf
This file.

DirectionalAmbient\Example Setups\
Contains example ambient setups. (.amb)

DirectionalAmbient\DA_Setup_Package.shp
Setup package contatining the following files.

Folders which are present, after you've sucessfully setup everything:

DirectionalAmbient\Built-In-Shaders
Std. Built in shaders. Necessary, if you import the package into an existing project.

DirectionalAmbient\Modified-Shaders
Modified built in shaders to support additional features.

DirectionalAmbient\Example
Example scene file.

Scripts

AmbientVolume.cs
- Script for Ambient Volumes.

DirectionalAmbient.cs
- Ambient setup component. Automatically created when adding an Ambient Manager or Ambient volume.

DynamicDirectionalAmbient.cs
- Helper script. Don't add yourself.

AmbientManager.cs
- Ambient Manager script for the main camera.

StaticDirectionalAmbient.cs
- Helper script. Don't add yourself.

TLight.cs

- Helper class for the light setup component.

DAVolumeSelector

- Can be added to a gameobject, to make it using a specific volume.

Setup

After importing the package you can find a setup script under Window/Directional Ambient Setup, which will install the necessary files for this package to work.

Setup package
The package containing all files. If it is none, drag the DA_Setup_Package onto this field.

Unity Executable
Path to the Unity executable this package is installed for (usually the one your running).

Unity version
The Version this package is installed for.

Extract UnityCG.cginc
Whether or not the UnityCg.cginc file in the Unity folder should be replaced. If the include file from this package already is in your Unity folder, this step will be skipped anyway.

Install files
Starts installing the files.

Plain extract
If for some reason the stup fails, you can extract the files to some folder and set everything up manually.

 Shaders which have been in your project folder before installing this package need to be reimported.

 For built-in shaders to work properly you have to reassign the shaders to your materials. This can easily be done with the Directional Ambient Helper (Window/Directional Ambient Helper).

Manual setup

Extract the files using the setup script (Window/Directional Ambient Setup), selecting Plain extract instead of Install files.
After extracing everything you can find a UnityCG.cginc file under DirectionalAmbient. Copy this file to Editor\Data\CGIncludes in your Unity3D installation folder.

Make sure you create a backup of the original UnityCG.cginc.

1. If you haven't replaced the UnityCG.cginc file, do so.
2. Reimport the shaders in your project folder. The wizard under Window/Directional Ambient Helper can do this for you.
3. Copy the Built-In Shaders, Modified-Shaders and Example folders into your project folder.

Please note that directional ambient lighting currently interferes with lightprobes so you can't use both at the same time. If you want to use lightprobes again there are two ways to do so:

1. Go to your Unity3D installation folder and open the UnityCG.cginc file located at Editor\Data\CGIncludes. Comment out the second line (#define DA_INCLUDE) by adding // at the beginning. Then reimport all shaders in your project.
2. Replace the UnityCG.cginc with your backup copy. Remove the modified-shaders folder. Then reimport all shaders in your project.

If you have shader compilation errors, make sure you have either replaced the UnityCG.cginc or remove the modified shaders from your project folder, as they rely on the modified file. Also make sure you have only imported either the 3.5 built in shaders or the 4.0 ones.

When importing into Unity 3.5 you'll get a bunch of shader warnings. These can be ignored.

Adding an Ambient Setup to your scene

1. Add an Ambient Manager script to your main camera.
   When created this will add a child object to your camera with a Directional Ambient.
   This represents the global ambient setup.
2. Make sure you enter an unused Layer as Second Layer (default Layer is 31).
3. Add Ambient Volumes (GameObject/Create Other/Ambient Volume) to your scene for all areas where you want to have different ambient lighting.
   Ambient Volumes also have a child object with a Directional Ambient component.
   This represents the ambient setup for the given volume.

Directional Ambient Inspector

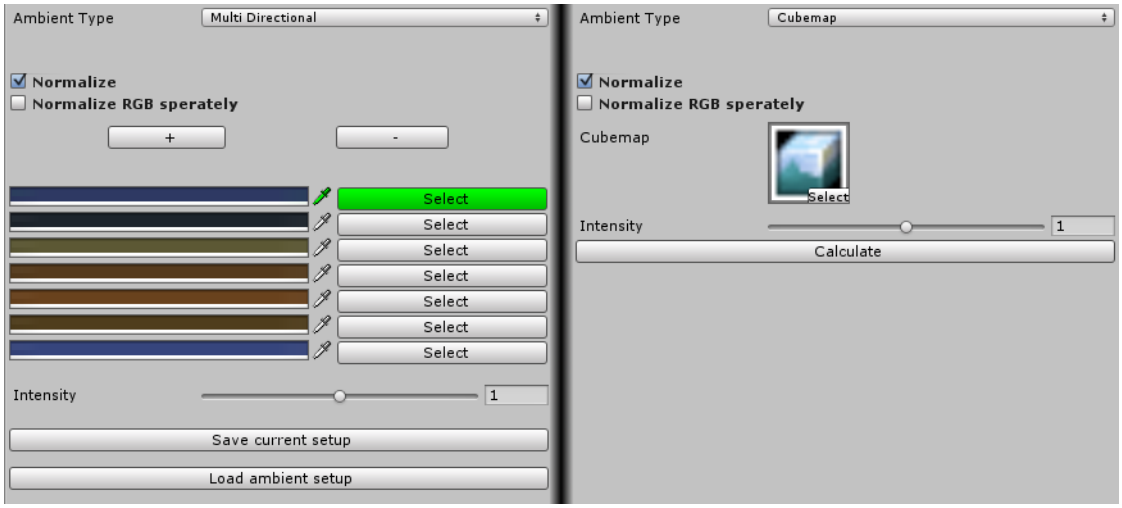

Figure 1: Directional and Cubemap Inspector
Directional and Cubemap Inspector

Ambient Type

Flat
: The usual single color ambient model.

Multi Directional
: Customizable, multi directional ambient lighting.

Cubemap
: Create ambient lighting from a cubemap

Normalize (Multi Directional and Cubemap)
: Will change the overall intensity to make sure, there are no bright spots.

NormalizeRGB seperately (Multi Directional and Cubemap)

Splits the color channels before normalizing. This usually changes the colors of your ambient lighting.

+/- (Multi Directional)

Add a light to your setup or remove one. New lights have a pink color by default.

Lights (Multi Directional)

By clicking on the color you can change the lights color. Select makes the light the active one in the scene view.
The currently active light has a green Select button.

Intensity

Changes the overall ambient light intensity.

Calculate (Cubemap)

Other than flat and multi directional, ambient lighting from cubemaps doesn't get automatically applied. In order to do so click calculate. This might take a few seconds.

Save/Load

Save or load a setup. Cubemap setups can not be saved.

Scene View

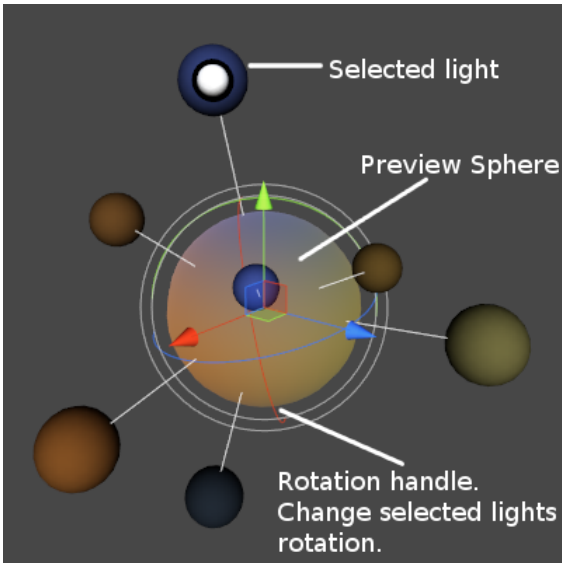

Figure 2: Example ambient setup in the scene view

Example ambient setup in the scene view

Ambient ligting is represented in the scene view by a preview sphere. When using multi directional ambient, the lights, their colors and directions are represented by the smaller spheres around it. The currently active light has a white sphere with a black circle inside. You can change the active lights rotation using the rotation handle on the main sphere. Using the default editor rotation tool you can also change the overall orientation of your ambient setup.

Ambient Volumes

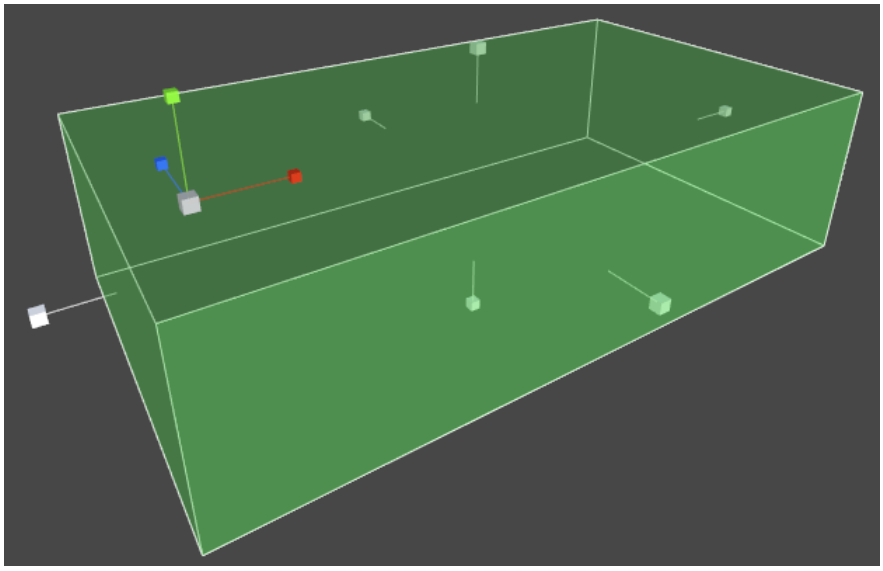

Figure 3: Example Ambient Volume
Example Ambient Volume

Ambient volumes are used to assign different ambient setups to specific areas of your scene.
For each ambient volume you have a directional ambient component as a child, wich is used to define the ambient lighting for this specific region.
If an objects intersects with an ambient volume, it will use the specified ambient lighting. Otherwise it will use the global ambient setup.

Note that dynamic objects have to check which ambient volume they are in every frame. So make sure to set as many objects to as possible static and use as little volumes as possible for good performance.
The performance hit usually shouldn't be too high though.

If multiple volumes are overlapping, use the Level setting to specify which one should be used. When an object intersects multiple volumes, the one with the highest level is used.

Ambient Volumes can not be rotated.

When youre not using any ambient volumes, select „No Volumes“ in The Ambient Manager script.

Scene View

Ambient Volumes are represented in the scene view as a green box with white edges. You can scale them using the default scaling tool and move all faces seperately using the white cubes. The offsets for each face can also be changed in the inspector.
Ambient Volumes can not be rotated for performance reasons.

If you want to show/hide all ambient volumes in the scene view, use GameObject/Show all ambient volumes in the menu. This makes it easier to check for intersections and adjust the scale.

DAAmbientSelector

If you want to make sure that an object uses a specific volume instead of automatically assigning one, add this script to it. You can then drag the a volume's GameObject object into the the Volume field.

Lightmaps and directional ambient

When baking lightmaps, directional ambient is not included in the lightmap but is added at runtime. To use baked ambient occlusion from lightmaps on directional ambient lighting do the following:

1. Bake lightmaps for your scene with a flat ambient color (Render Settings → Ambient Light) Recommended color is grey, value 51. The higher your value, the more precision you get for ambient occlusion and the lower precision you get for your actual lighting.
2. Make sure all lightmapped objects use a modified Lightmap shader from Directional Ambient/Lightmapped/.


Also make sure, you don't change the Ambient Light value in Render Settings after baking lightmaps, as it is used for gathering the ambient occlusion values on runtime.

Shader types

By default, all built-in and most custom shaders should support per-vertex ambient lighting.
To use additional features like normal mapped ambient lighting or faked specular highlights, you have to switch the shader in your materials.
The wizard under Window/Directional Ambient Helper can help you to quickly change your materials to a specific shader type.

When assigning the shader yourself, they can be found under DirectionalAmbient/.

Per Vertex
Per default, all shaders use per vertex ambient lighting. This is much cheaper than using per Pixel ambient lighting, but doesn't support normal mapped ambient lighting and only supports faked specular highlights with less precision. Sometimes per vertex can look better than per pixel lighting, because it is smoother.

Per Pixel
Per Pixel ambient lighting supports normal mapped diffuse und specular lighting, but requires more performance than per vertex and Shader Model 3

Faked Specular
Faked Specular highlights improve the effect of glossy materials and normal maps. They can be fully per vertex, semi per pixel or fully per pixel. All modified specular shaders use them.

Lightmapped
The lightmapped shaders are designed to support baked ambient occlusion from lightmaps

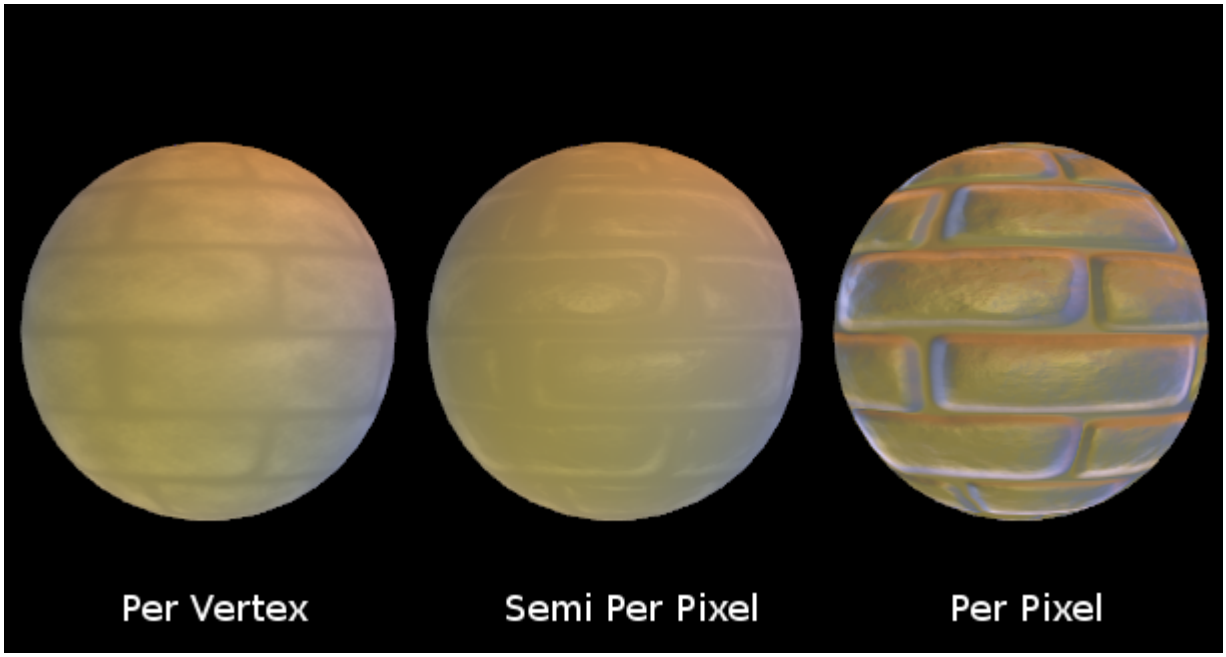

Figure 4: Specularity comparison. Left: Fully per vertex. Middle: Per vertex diffuse ambient, specularity factor per pixel. Right: Fully per pixel.

Directional Ambient Helper

DO NOT use the material switch function, if you're using any Substances in your scene, because it will break your scene! You'll have to change the shaders used on substances yourself.

The Directional Ambient Helper window can be found under Window/Directional Ambient Helper. It allows you to reimport all shaders in your project folder, so they use the replaced UnityCG.cginc and can also help you switch the shaders on your materials.

You can change the shaders for lightmapped and non lightmapped objects seperately. The script can only change materials which use the built-in shaders though. For custom shaders there won't be a matching directional ambient shader found. In this case you can either assign a specific shader or don't change anything. All objects for which no match was found will be listed at the bottom.

If you select „Create Material Copy“, lightmapped objects will be assigned a cloned material, which can be found in the same directory as the lightmaps themselves.

The Directional Ambient Helper can also reassign all shaders to the materials in your scene. This is necessary for built-in shaders to work properly.

Known Issues

- **Currently doesn't work with lightprobes.**
- **Doesn't work with built-in vertex shaders.**
- **Wrong ambient colors for modifed non bumpmapped shaders in Deferred Lighting mode.**
- **Ambient is currently applied per object, making it kind of tricky to use volumes for i.e. interiors.**
- **There are currently no modified self-illumin shaders.**
- **Material switch helper is incompatible with Substances!**