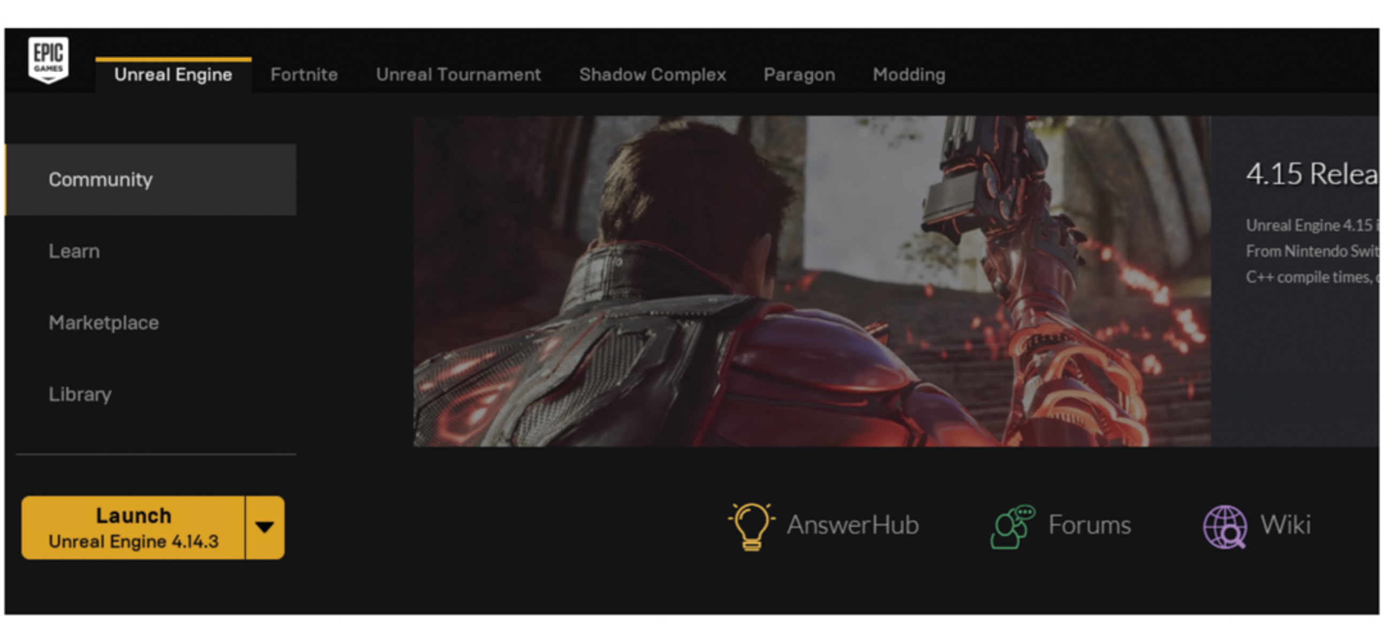
GETTING STARTED IN UNREAL 4
FROM A
SCAD VFX BACKGROUND

PREFACE

In this brief introduction, you will become familiar with the process of starting a project in Unreal Engine 4, drawing parallels to skills obtained through the SCAD visual effects curriculum. UE4 uses many of the same concepts present in programs like Maya, however, there are discrepancies - tools and interface elements may go by different names, familiar workflows may have extra steps, and many new ideas are introduced altogether. Hopefully through this short tutorial you will gain a basic understanding faster than through a string of confused Google searches.

LAUNCHING UNREAL ENGINE

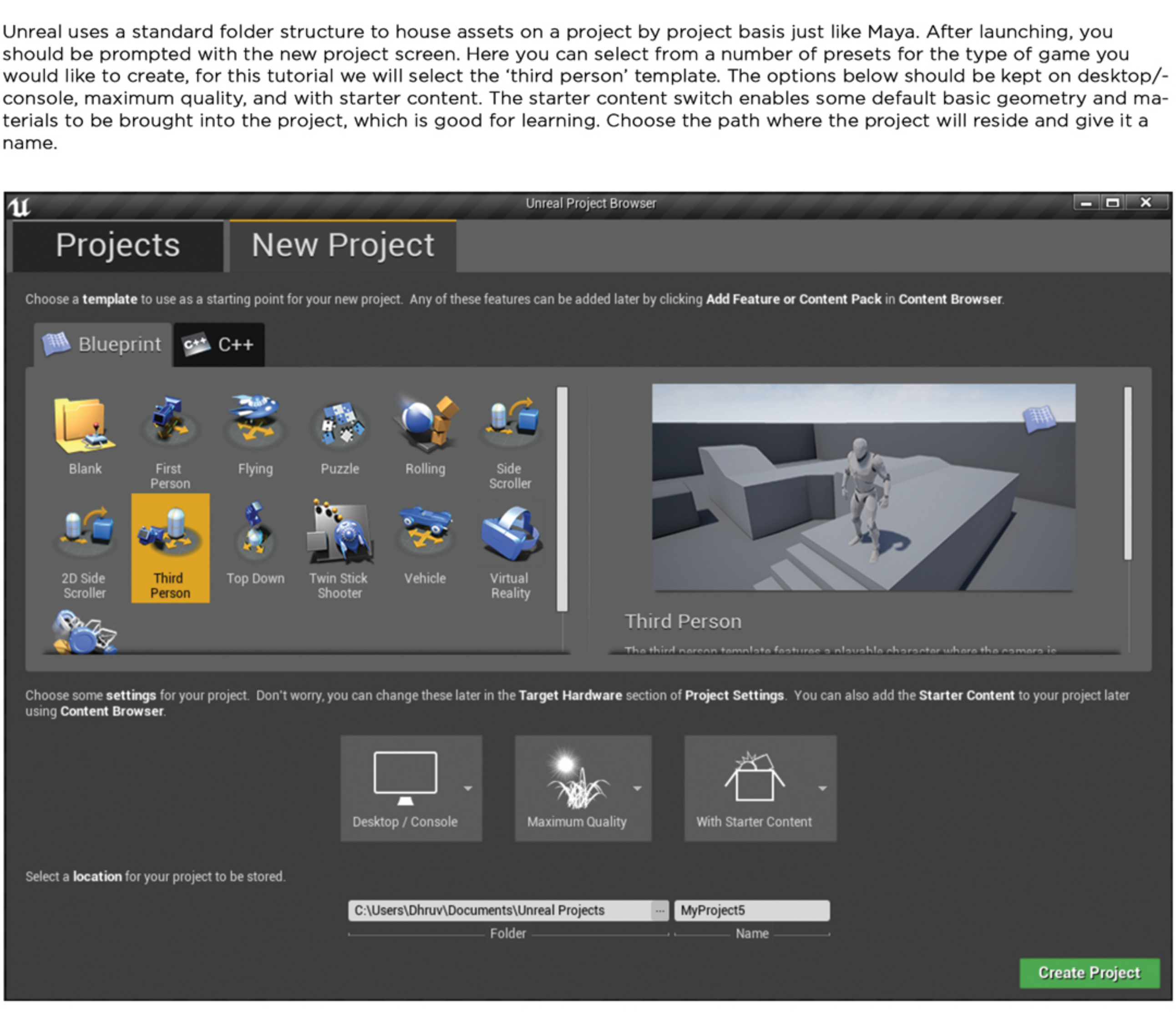
The process of getting UE4 up and running is slightly different than programs you may have used before. Unreal requires an account to use. To create this account, go to unrealengine.com. Here you can also download the installer if at home. At Montgomery hall, to check if the engine is installed, search the start menu (At the time of writing, Unreal is Windows only) for the **Epic Games Launcher.** The launcher will prompt you for your login information before continuing to its main interface.



Assuming you are working with a successful instalation, you should see the interface on the 'Unreal Engine' tab with a launch button. Hit this button to enter the engine.

CREATING A PROJECT

Unreal uses a standard folder structure to house assets on a project by project basis just like Maya. After launching, you should be prompted with the new project screen. Here you can select from a number of presets for the type of game you would like to create, for this tutorial we will select the 'third person' template. The options below should be kept on desktop/-console, maximum quality, and with starter content. The starter content switch enables some default basic geometry and materials to be brought into the project, which is good for learning. Choose the path where the project will reside and give it a name.



INTERFACE OVERVIEW

The UE4 interface initially is not a crowded and threatening place like may 3D applications. Each area is listed below.

Before continuing, consider this important note: Unreal 4 is a very well documented and (usually) user friendly program. In the top right of the interface, you should see a graduation hat icon which may be flashing at you. This icon is the tutorials button. The engine itself actually includes a guided introduction to many of its features. It is highly advised that you follow these tutorials.

Another important note: Hover over tools or panels for information about them. **You can also hold ctrl+alt while hovering to view a more in depth explanation.**

1 - The Viewport - This is self explanitory. The viewport is where you can view and edit the world. We will discuss the viewport tools shortly.

2 - Details - This area is your attribute editor. When you select an object, relevant information and parameters will be displayed, such as coordinates, materials, physics attributes, and more.

3 - Outliner - This is the outliner, displaying a hierarchy of all objects in the world. You can create folders to organize objects here, sort by different attributes, and enable/disable the visibility of objects here.

4 - Modes - This area acts as a tabbed version of some of your shelf tools in Maya or Houdini including basic meshes, lights, volumes, and cameras, as well as tabs for other things like foliage.

5 - Content Browser - This area is just like the project pane in Premiere or After Effects. Here you will find all of the assets of your current project including things like geometry, textures, animations, and more. You can create your own folders to organize various assets.

6 - Tools - These tools will be relevant throughout your use of Unreal. Highlights include the Play button, allowing you to drop in and test your scene as a playable game, and the build button, which will be elaborated on later.

There are many, many more windows and options throughout the engine, but for now we will focus on each of these initial windows.

THE VIEWPORT

The viewport should be the most familar part of the engine. We will first go over the basic navigation which is both different and the same from other VFX programs. One important thing to note is that UE4 is a Z-up package. This will likely cause confusion eventually, but just remember that Z is There are 3 main ways to navigate:

1 - Alt+Mouse - This is the same as Maya, however quite painfully, alt+MMB translation moves in the direction of the mouse rather than inverted like in Maya. This can be changed in the preferences. Access the preferenes by going to Edit>Preferences>Editor Preferences. Once there, navigate in the left bar down to Level Editor>Viewports. Here there is an option called "Invert Middle Mouse Pan", which you can enable to have identical alt+mouse navigation controls to Maya.

2 - Mouse Alone - Hold LMB and drag to translate on a horizontal plane, hold RMB to rotate the camera on its pivot, and hold both buttons OR the MMB to translate up/down and side to side. Additionally, scrolling the wheel will zoom in and out

3 - WASD Keys - Fly around in the viewport with the WASD key configuration standard for movement in games. This will also control your character after hitting the Play button in the tool bar.

In time, you will find yourself using all 3 of these methods when they are most appropriate for what you are trying to do. There is simply a different dynamic when working in Unreal, where you may be moving across a mile of land to edit another part of the scene, rather than the use of Maya, which is often working close to the center of the grid.

Additional Viewport Information

F - Center camera on selected object

VIEWPORT TOOLS

1 - Move, rotate, and scale buttons. Each tool can be accessed by clicking, or more traditionally by using the W E and R keys. You can also cycle through them with the spacebar.

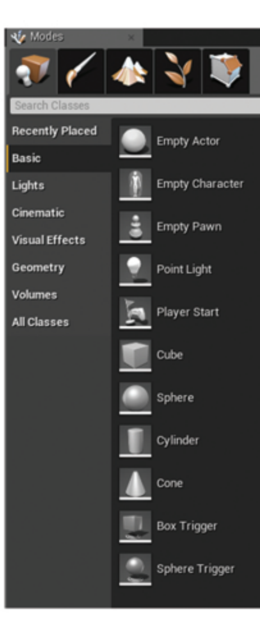
2 - World space/Object Space Toggle - Changes the manipulator between world and object space transformations.

3 - Snapping Options - The 3 highlighted buttons here, the grid, angle, and dot with arrow, are toggle switches for transformation snapping. By default they are all enabled. The units for each can be changed with the options to the right, and for the translate, there is an additional option to the left. This enables surface snapping for the selected object. When you turn this on, dragging an object by its middle transform manipulator will snap the object to the surface normal of other objects. This can be useful for tasks like sliding meshes across the ground or across a wall.

4 - Camera Speed - The perspective viewport camera in Unreal is often controlled with WASD game-style controls, so for user convenience, you are able to quickly change the speed at which the camera travels in this mode. Useful for flying over large areas quickly or moving extremely slowly for small detail work.

5 - 4 Pane Viewport View - Toggles a traditional 4 panel viewport with perspective and orthographic views all on screen at once. Once in 4 panel mode, the same button can be pressed to maximize any one viewport window.

THE MODES PANEL



As previously stated, the modes panel is like a number of shelf tools tucked into clean tabbed lists. We are going to stay within the 'Place' tab, which is the one that appears by default. This is where you can create various items like geometry, lights, volumes, and more.

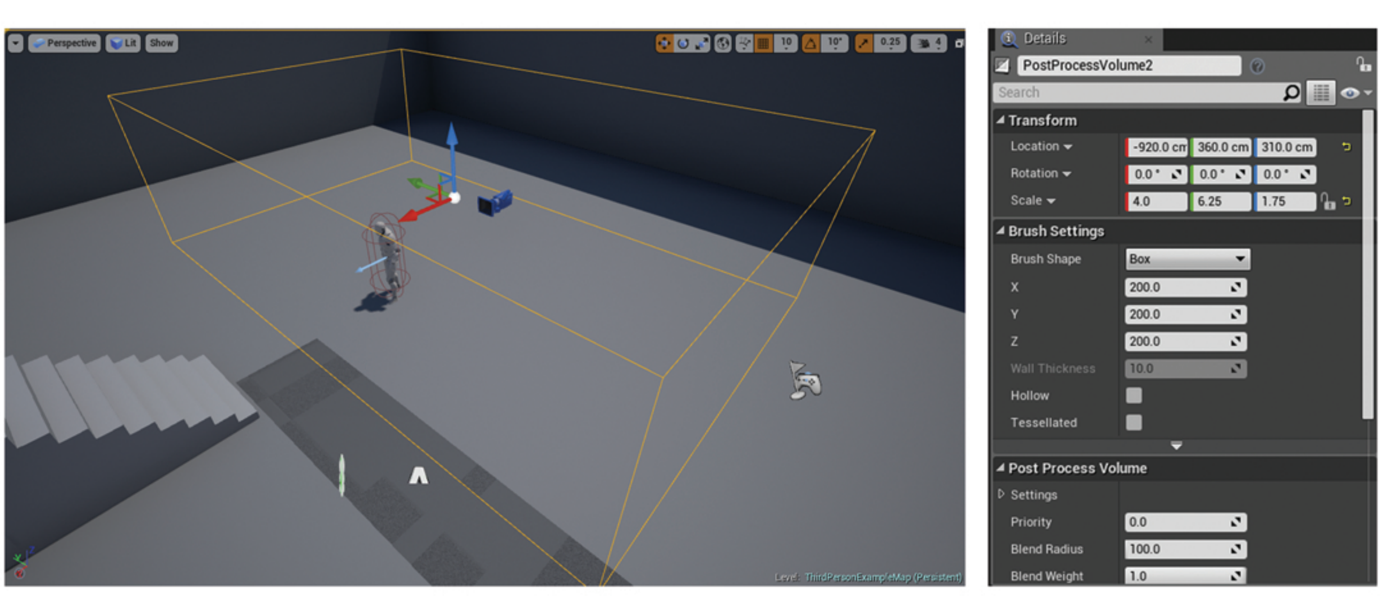
Beginning in the Basic tab, we have a list of assorted common objects. To add objects to the scene, simply drag them from the panel into the viewport. In addition to the familliar geometry and lights, we have some game engine specific items. A box or sphere trigger is a volume that can have code (a 'Blueprint') attached to it, to trigger other events, like a cinematic triggered by a player walking into a certain room. The empty character, actor, and pawn objects are blank templates for different uses in creating playable characters, AI characters, and interactive game objects. We will not cover the use of these game centric objects in this tutorial, but it is useful to know what they are.

The other tabs contain more specific elements, but a useful highlight would be a post process volume, found in the Visual Effects tab. A Post Process Volume is an area in game where you can control aspects like color balance, bloom, lens flare, grain, and many other film type attributes of the player's view.

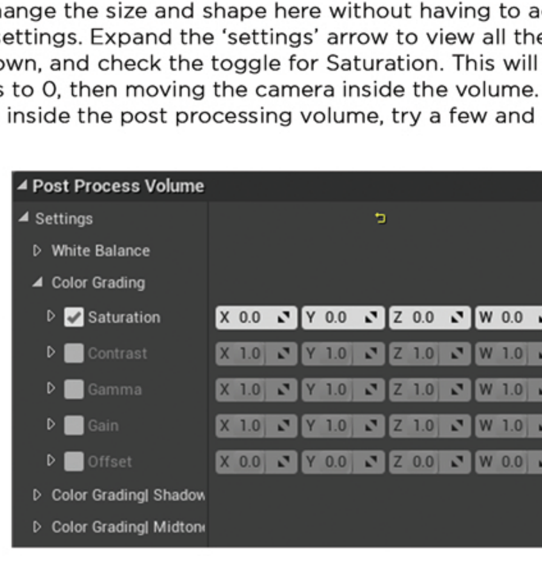
Create a post processing volume by dragging it into the scene and scaling it up to take up a large area. This will bring us to the next engine panel, the Details panel.

THE DETAILS PANEL

We will now take a look at the details panel, or the UE4 equivilent to the Maya attribute editor. Here, parameters and information will be displayed about the selected object. Right now, your scene should have a large post processing volume placed and selected as follows:



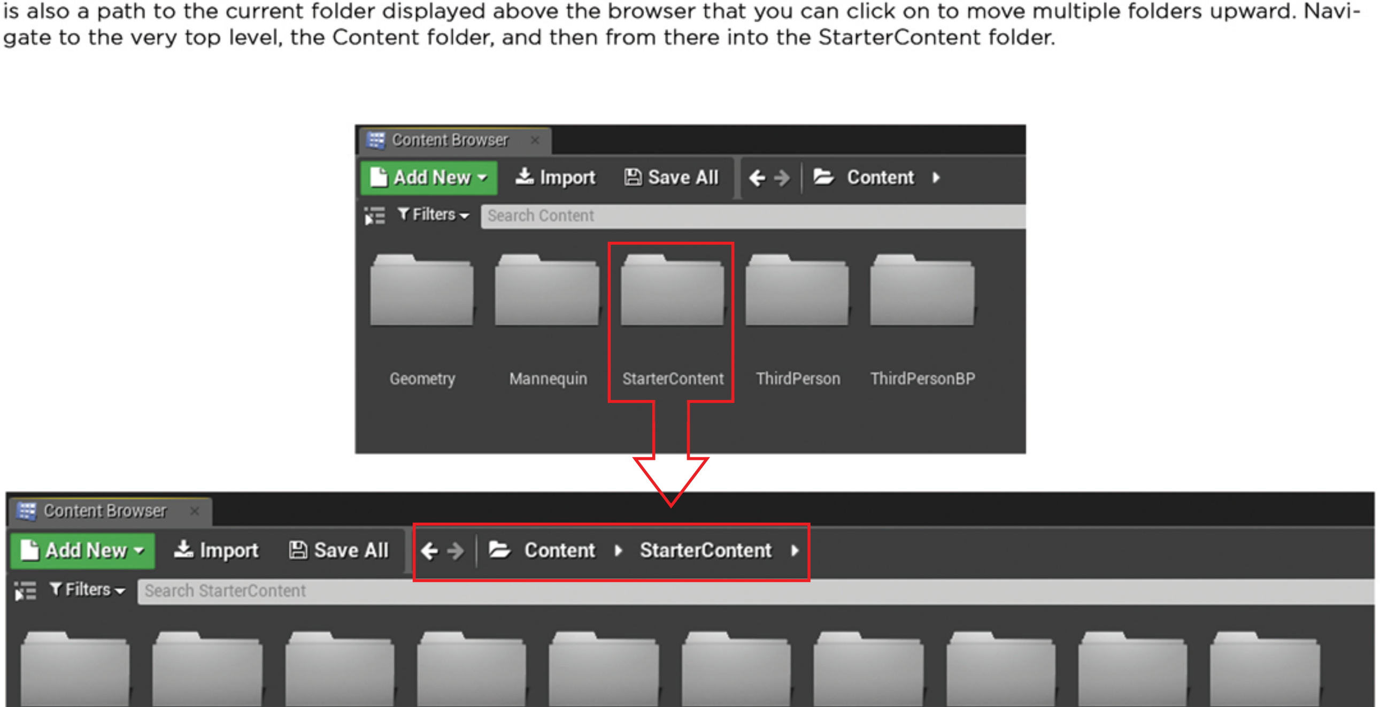
Coordinates for the translation, rotation, and scale can be found here, followed the the Brush Settings dropdown. These settings in this case are controlling the size and shape of the volume, much like you would see in the Maya channel box when creating new geometry. You can change the size and shape here without having to actually scale the volume. Below that, we arrive at the post process volume settings. Expand the 'settings' arrow to view all the options of the volume. Now open for example the Color Grading drop down, and check the toggle for Saturation. This will enable saturation control within the volume. Try setting all of the values to 0, then moving the camera inside the volume. The scene should look black and white. There are many interesting options inside the post processing volume, try a few and observe their effects.



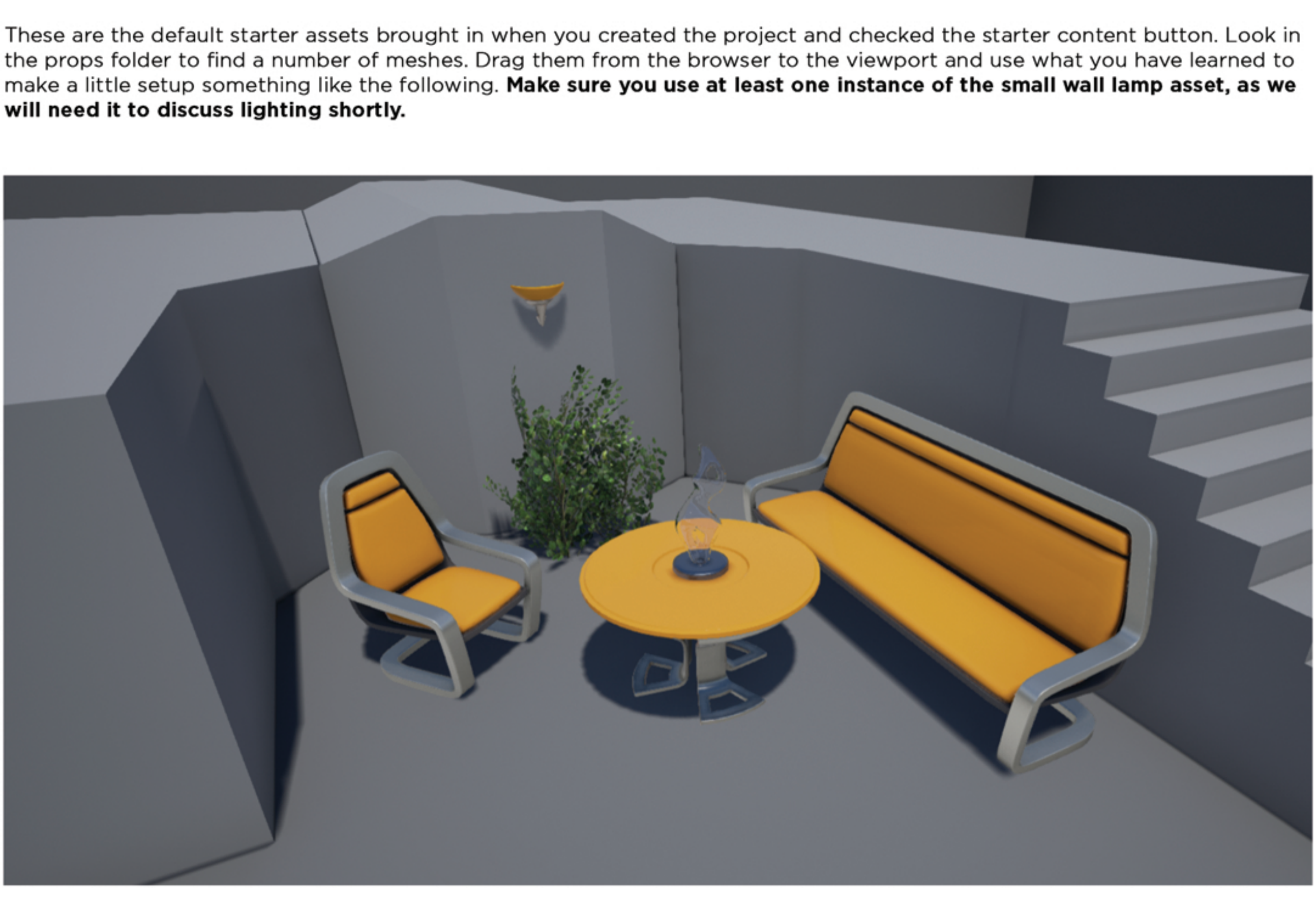
The details panel is a hierarchy of nested dropdowns with increasingly specific options. This will be the case for any selected object. Meshes like the stair geometry will also display information like the mesh itself and the materials applied to it, as well as various other things that we will not be discussing in this tutorial.

THE CONTENT BROWSER

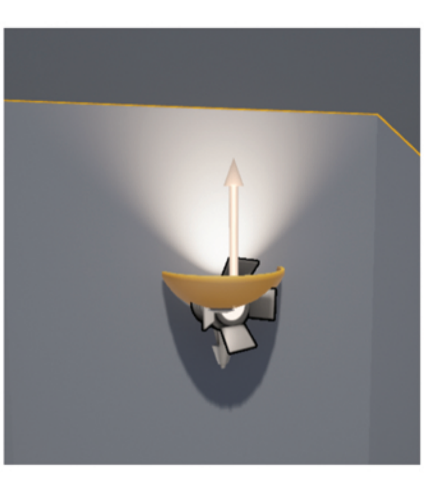
The content browser houses all assets associated with the current project. This includes meshes, animations, textures, shaders, particles, audio files, and more. They are organized in folders. When dealing with your own assets, you can create folders by right clicking an empty part of the browser background and hitting 'new folder'at the top of the menu that appears. There is also a path to the current folder displayed above the browser that you can click on to move multiple folders upward. Navigate to the very top level, the Content folder, and then from there into the StarterContent folder.



These are the default starter assets brought in when you created the project and checked the starter content button. Look in the props folder to find a number of meshes. Drag them from the browser to the viewport and use what you have learned to make a little setup something like the following. **Make sure you use at least one instance of the small wall lamp asset, as we will need it to discuss lighting shortly.**



Next, navigate back up a level in the content browser and enter the Materials folder. Here you will find a list of default shaders. Shaders can be applied again by dragging from the browser onto the desired object. Try making the table into a stone table.



Finally, back in the Modes panel, go to the lights tab and add a spotlight for your wall lamp. Position it facing upward, and change the color to a warm orange in the details panel. There, you can also find cone angle options, change it to look correct.

You're about ready to drop in and test the level as a real playable character, but first we need to hit the Build button on the toolbar. Building the scene precomputes lighting, material, and geometry information above other things. While the scene looks fine in the viewport now, when working with larger scenes, you will not be getting an accurate representation of your lighting and materials without first building the scene.

Once building is complete, test out your scene in realtime by hitting the Play button. Move around using the WASD keys and mouse, and use spacebar to jump. Walking through your post processing volume will also affect the camera view in game. To exit, press the escape key.