

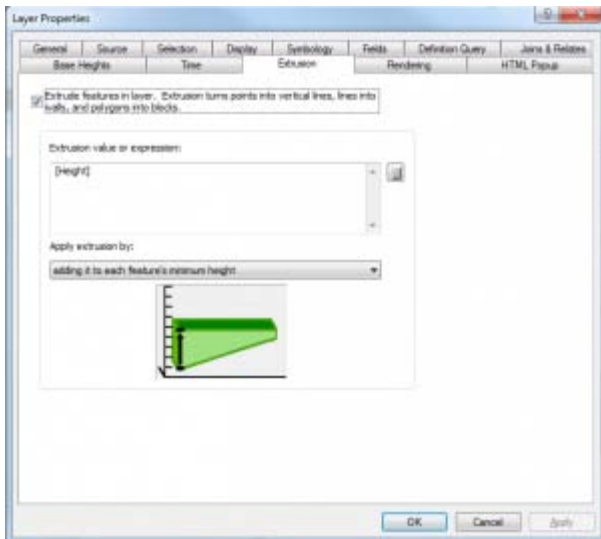
<http://gmv.cast.uark.edu> A Method Store for Advanced Survey and Modeling Technologies Mon, 01 Apr 2013 03:29:18 +0000 en-US hourly 1 <http://wordpress.org/?v=3.5.1>
<http://gmv.cast.uark.edu/modeling/software-visualization/sketchup/workflow-sketchup/arcscene-to-sketchup-to-arcscene/> <http://gmv.cast.uark.edu/modeling/software-visualization/sketchup/workflow-sketchup/arcscene-to-sketchup-to-arcscene/#comments> Wed, 09 May 2012 17:01:40 +0000 Matt T
<http://gmv.cast.uark.edu/?p=9534>

Getting Started

- Open ArcScene
- Add your polygon data from shapefile, geodatabase, or SDE connection
- "Right Click" on the layer in the Table of Contents ->
"Select" = 'Properties...' (very last option)

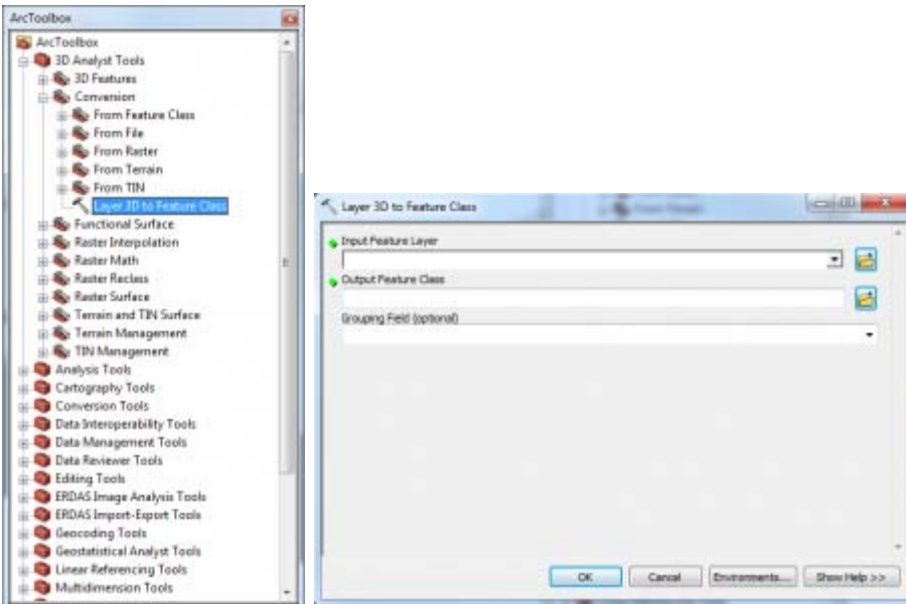
Extruding Features

- "Select" 'Extrusion' tab on the Layer Properties Menu
- Check the box and then either extrude feature by a set value or pre-determined expression. (You can also select and/or construct attribute expressions using the 'Expression Builder' button)
- Visually inspect extruded features in the Dataframe and ensure they look to be correct.



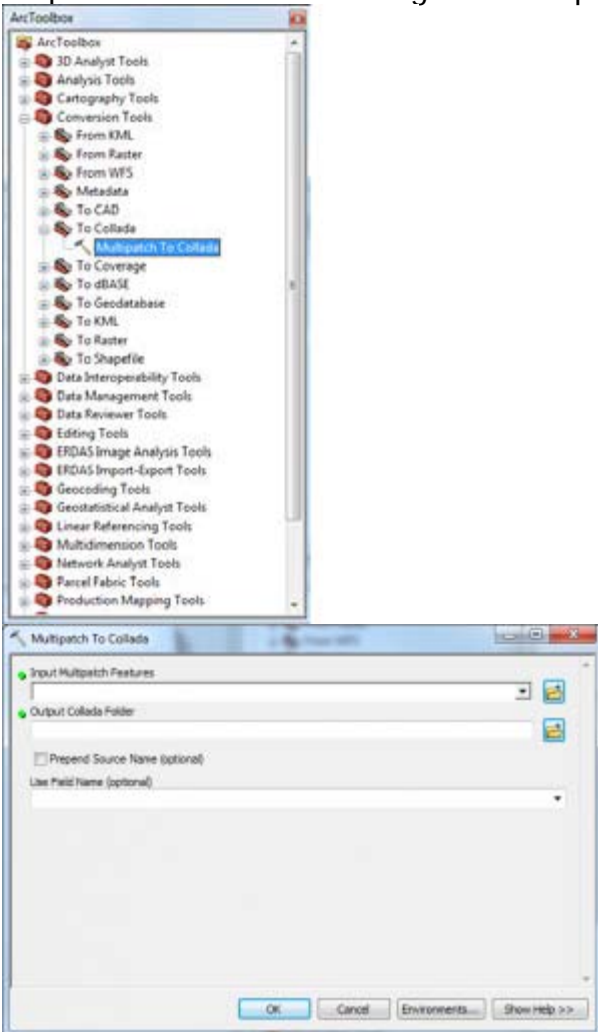
Convert to feature class

- In ArcToolbox > 3D Analyst Tools > Conversion > "Layer 3D to Feature Class" is the tool we will use to convert the extruded features to a 'Multipatch' feature class.
- Input the corresponding Feature layer to be converted into a Multipatch, put it in a familiar directory for output.



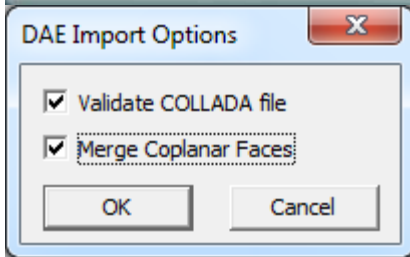
Convert to Collada

Again in the ArcToolbox > Conversion > To Collada > 'Multipatch to Collada' tool is what we will use to output a file in a format Google Sketchup® will recognize.



Import to Sketchup

- Open Google Sketchup® and choose a template that is in the same units as your projection in ArcScene (i.e. meters, Feet and Inches, etc.)
- In Sketchup > File > Import...
- Navigate to where you just exported the Collada file from ArcScene and make sure your file type is COLLADA in the drop down menu
- "Select" > Options...
- Here you will want to decide if you want to merge coplanar faces – typically for texturing the outsides of builds you do want to merge



Rendering tasks

Perform all necessary rendering tasks. Be sure to group all elements before saving.

Returning to ArcScene

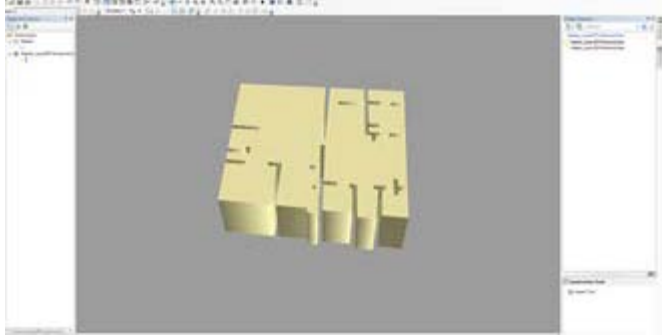
Getting the model back into ArcScene is almost the exact opposite first we want to export our finished model in Sketchup by "Selecting" File > Export > 3D Model

- Name the File something relevant and save it in a familiar directory as a COLLADA .dae file
- Add an empty or populated multipatch feature class into ArcScene or ArcGlobe.
- Begin a 3D edit session by clicking the 3D Editor drop-down and click "Start Editing".
- Click the Edit Placement tool on the 3D Editor toolbar.
- Click the multipatch feature in the Create Features window.
- The Insert tool will appear in the Construction Tools window.
- Select the Insert tool under Construction Tools.
- Click the desired location of the multipatch model in the 3D view.
- When prompted, navigate to the location of the supported 3D model file on disk.
- Select the model and click Open.

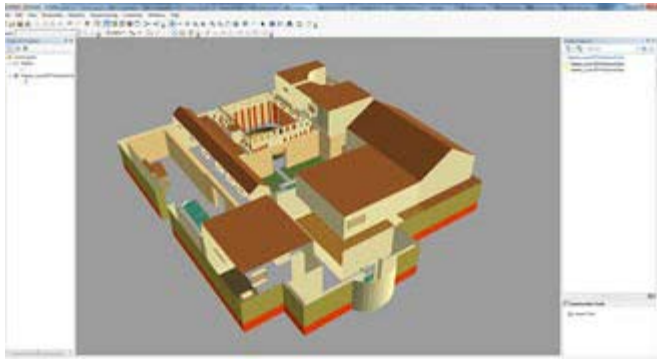
***Note you will add the same model over and over again with ever click until you deselect the "Insert Tool"

The Result

By following these steps you can bring your model back and forth between the two programs.



Original model in ArcGIS



Post-Sketchup Model

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Match Photo Photography

Things to remember:

- Photos need to be taken at 45 degree angles of the corners of the structure to be modeled.
- Measure a section of the object to help with scaling.
- Do not crop photos, resize or warp.
- Barrel distortion can be used to correct straight lines that are bent away from the center of the image.
- Avoid images that have been stitched, such as panoramas.
- If possible try to avoid photos with excessive foreground features. These will make the modeling

process difficult.

- Telephoto lens photos or images with only one vanishing point viewable are not recommended either.



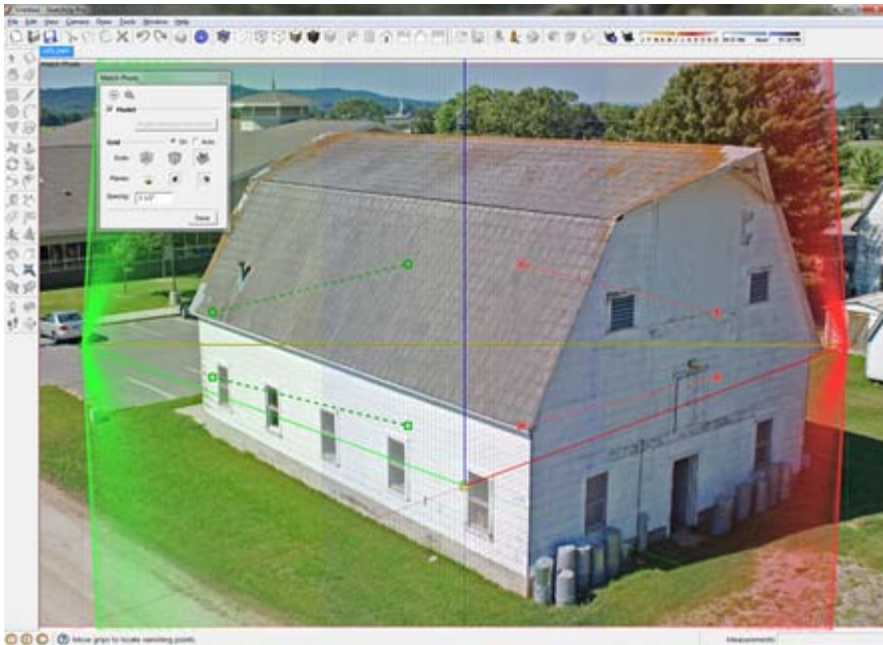
This image is taken from a boom lift, but conveys the 45 degree corner photo shot.

Model Creation using Match Photo

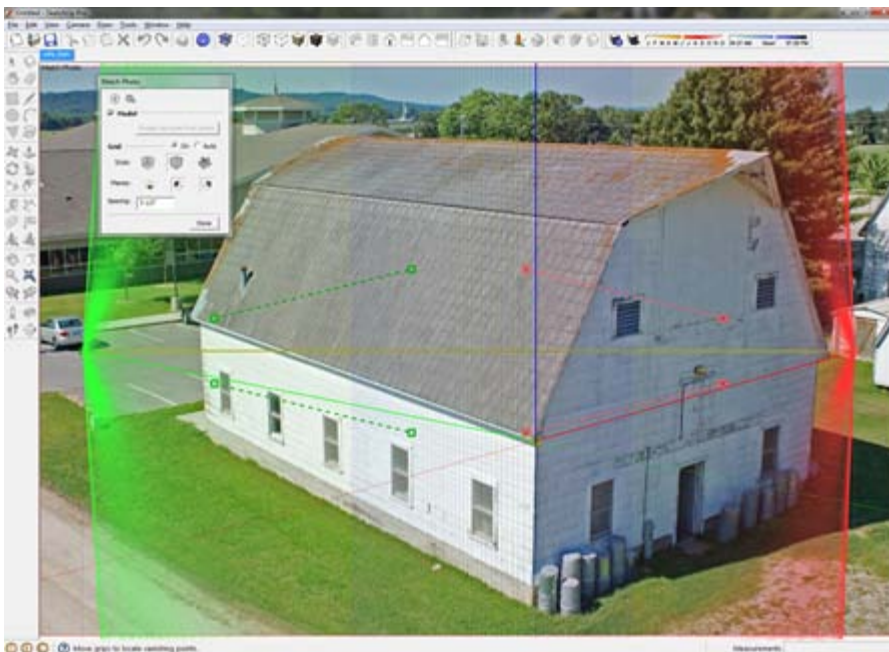
1. Take pictures of each corner and side of the object, making sure to have overlap between images. If necessary, multiple images might need to be taken of a side to capture the whole area.




- Go to **Camera > Match New Photo**. In the Select background image file dialog box navigate to the first photo (this can be any corner shot) in your series of photos of your object and select it.
- Click **Open**, and the photo will be placed in the main drawing area in a scene specific to Match Photo. This is where you will calibrate the scene to match the photo.

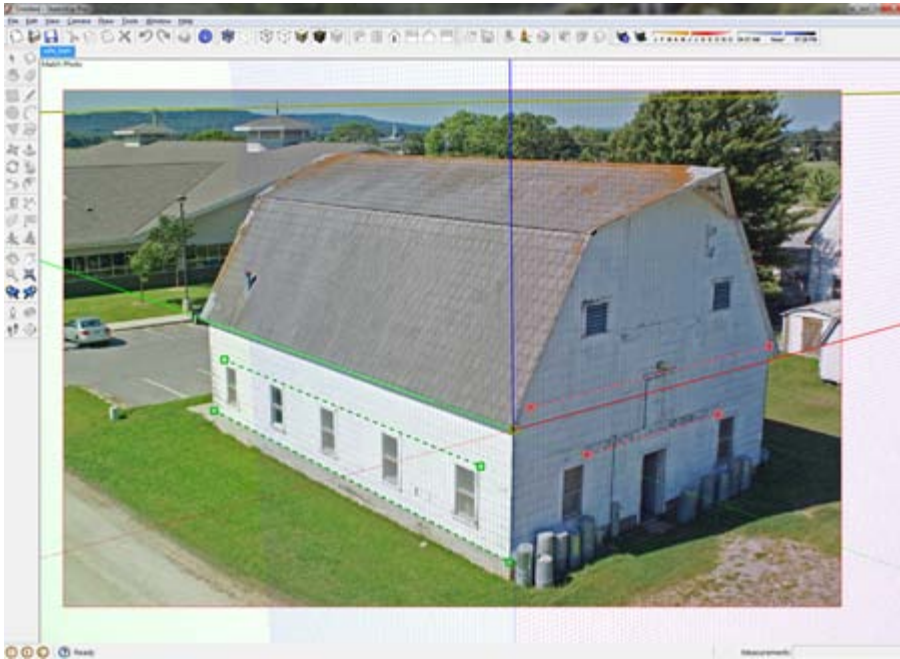


- Select the origin axes and place it at a location where three axes might intersect. The origin will depend on the type of photo that you take. Photos can be taken indoors and corners of walls/ceilings/floors meet can be used for the origin. Of if you are looking down at the object, then using a top corner axes is more beneficial. The type of origin used will affect the grid style in the Match Photo tool, in the Match Photo dialog box select the grid style that matches the photo you are using. For the image below I have selected the middle grid style, denoting the origin axes at the top corner of the barn.

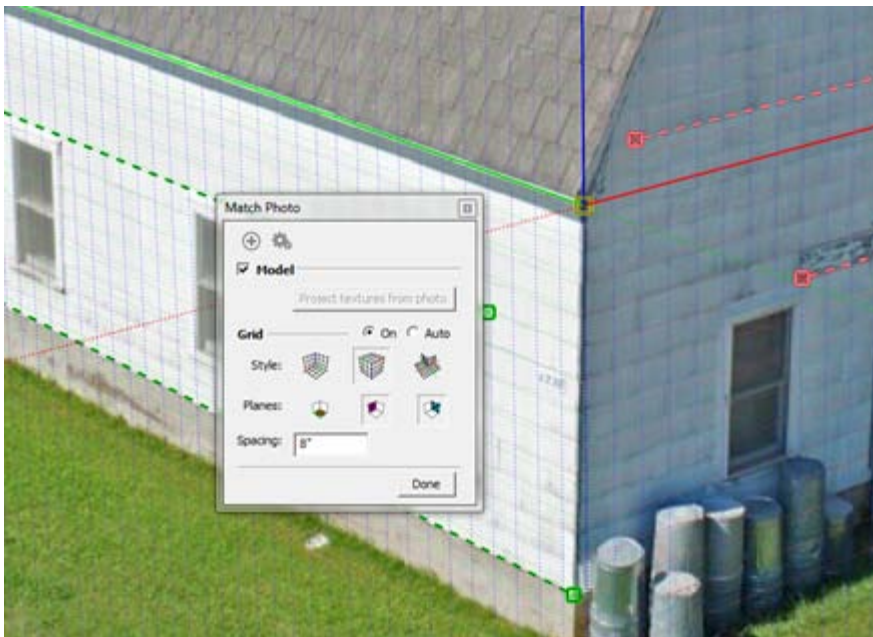


- Now the vanishing bars (the red and green dashed bars) need to be placed to determine the vanishing point of the image. Select the end bar grips () on each bar and place the bar on a line that represents a parallel line to each red and green axis line. Axis bars should be placed along the

longest feature available in the photo. Zoom in to place each bar as accurately as possible.



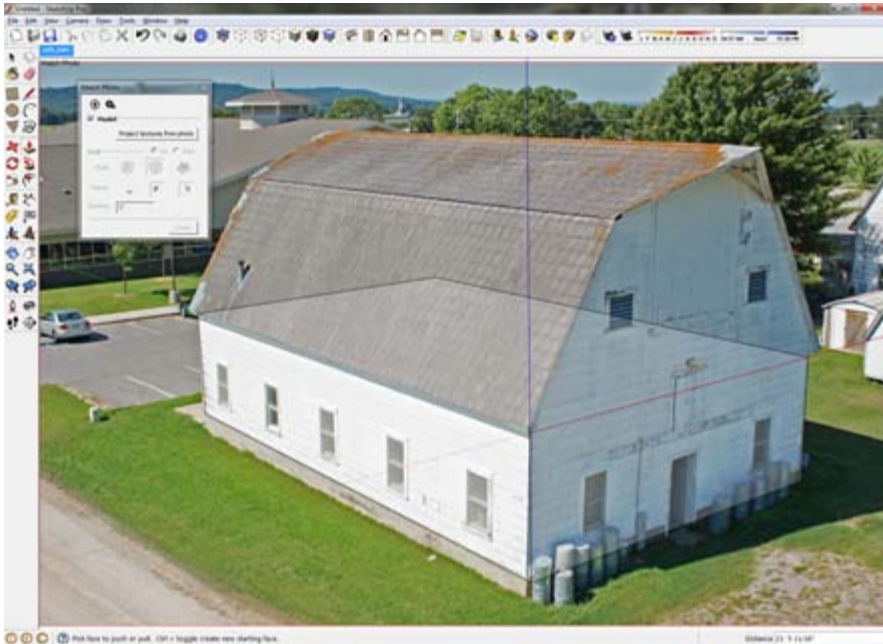
- The work area needs to be scaled, so adjust the grid spacing to a number that can be matched to a feature with a known size in the photo. Select the blue axis and adjust up or down to match the grid to the feature with the known size. In the image below the grid spacing is set to 8 inches and the grid is scaled to match the barn siding which is 8 inches wide.

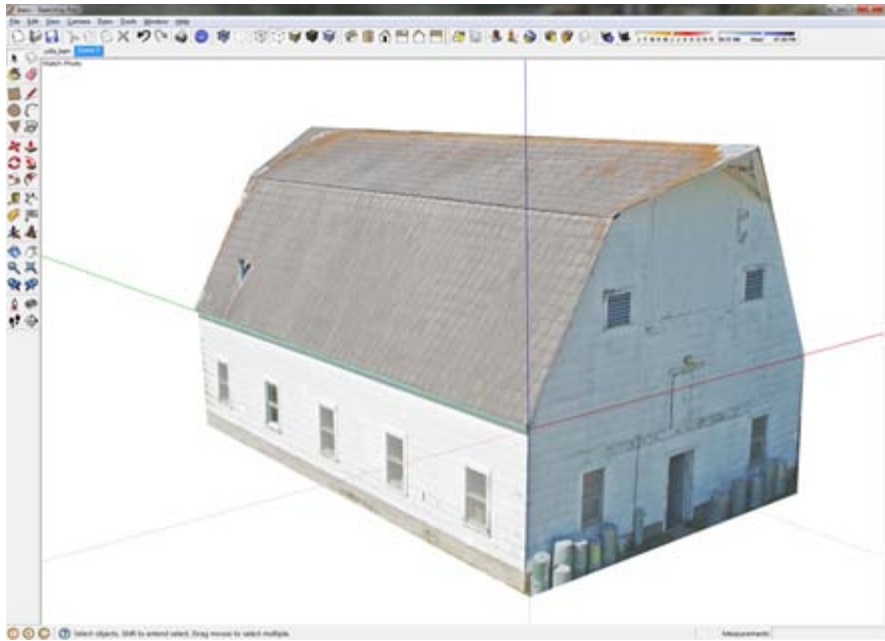
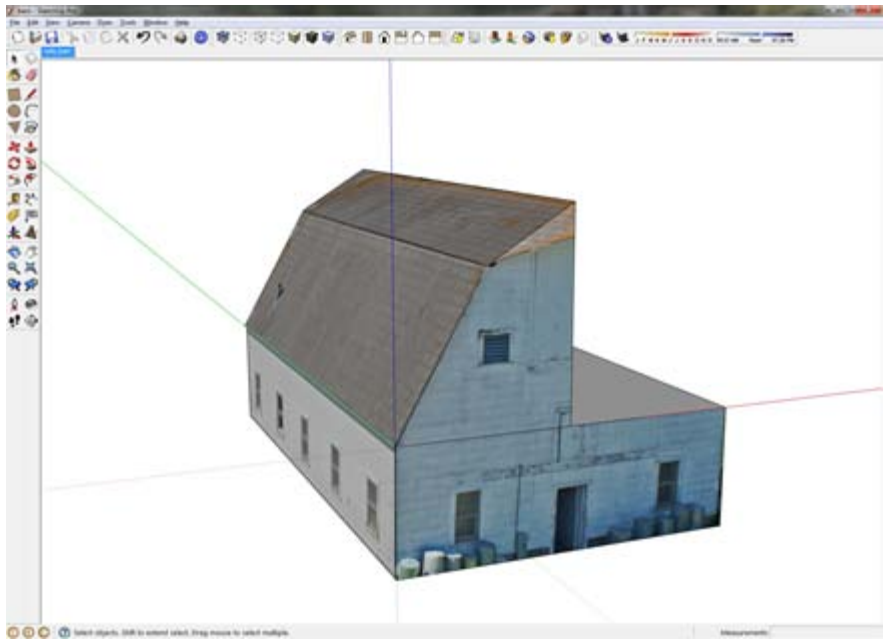


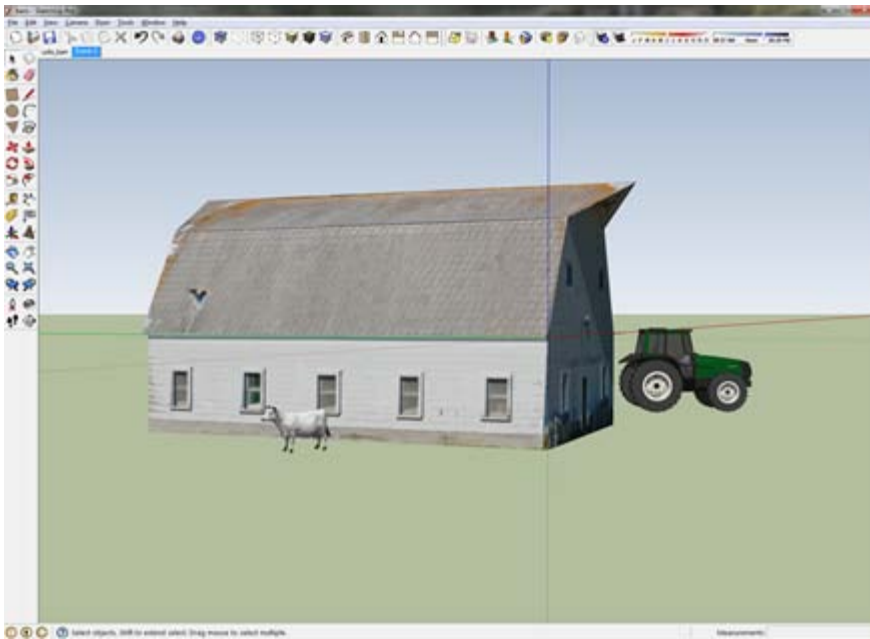
- Select **Done** in the **Match Photo** dialog box and begin drawing with the pencil tool. Always start at the origin and trace one side of the object. Do not rotate the scene, if you do, then returning to the **Match Photo** scene is done by simply clicking the **Scene Tab** at the top of the drawing window. Below is a traced side with the image projected. To project the image on to a surface, simply right click on a surface and select **Project Photo**.



8. Using the Push/Pull tool easily starts the modeling process.







Special Items to Note:

- Due to a natural curvature in photographs caused by lenses, it's impossible to match the perspective perfectly. To best combat the natural curvature in a photo, arrange your vanishing bars so that they are as long as possible. This arrangement creates a more accurate average of the perspective.
- Matching a cropped photo isn't supported.
- Remember to model portions of the geometry not seen in the picture.

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Taste of Unity

Navigation:

in the scene

left click: pan right click: zoom alt + left: orbit around center

in the game

uses WASD controls

W: forward

A: left

S: backwards

D: right mouse: moves your view

Importing a SketchUp model into Unity

Unity provides users a free version of the development application for personal and commercial use. Some features are not available on the free Unity package.

1. Register, double click on the Unity Icon. Select Internet activation and follow the directions.
2. Open Unity, load Islands.unity (File > Open scene, Unity should automatically locate the file)
3. Basics of Unity: Main Editor Window



Every Unity project contains an Assets folder. The contents of this folder are presented in the Project View. This is where you store all the assets that make up your game, like scenes, scripts, 3D models, textures, audio files, and Prefabs. If you right-click on any asset in the Project View, you can choose Reveal in Finder (Reveal in Explorer on Windows) to actually see the asset itself in your file system.

Important Note: You should never move project assets around using the OS since this will break any metadata associated with the asset. Always use the Project View to organize your assets.

Scene View

This is where you will build the game, create interactions and set controls. Use the mouse and alt

button to move around.

Game View

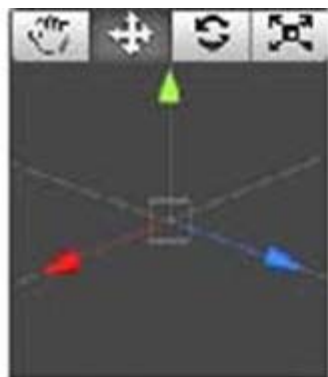
This gives you a rendered game version of your scene and lets you test the interactions and controls. To navigate around, press the play button and use the WASD keys and mouse.

1. In scene view, fly to a spot on the beach near the bridge. In the project window, select Create > Folder and create a new folder, name it SU. Now right click on the SU folder and select Show in Folder. Note where the folder is, you will save your model in SketchUp to this folder. This is the Assets folder.
2. Minimize Unity and open SketchUp.
3. Select Get Models icon, search for "beach chair" and download. Place model at the center of the scene on the axis.
4. File > Export > 3D model Change drop down list to "3DS File", select option, check that *Export two-sided faces As materials* and *Export texture maps Favor Preserving texture coordinates* are selected, click OK, name the file "beach_chair" and then Export to the SU folder created in Unity (see step #4).
5. In Unity, expand the SU folder in the Projects view. Select the beach chair and drag it to the scene, try to place it on the beach. Now translate and scale the beach chair so that it is located correctly and appropriately sized.

Transform Tool



When the hand icon is selected this will allow you to navigate around the scene. Selecting the other icons will let you translate, rotate or scale an



Translate Tool Hotkey "W"



Rotate Tool Hotkey "E"



Scale Tool Hotkey "R"

object.

1. Test the scene, select the play icon to switch to game mode. Navigate to the beach chair and have a seat.
2. Switch to SketchUp and change the chair's texture. Re-export the model to the Unity Assets folder. Now switch back to Unity, the beach chair will now show the changes made in SketchUp.

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