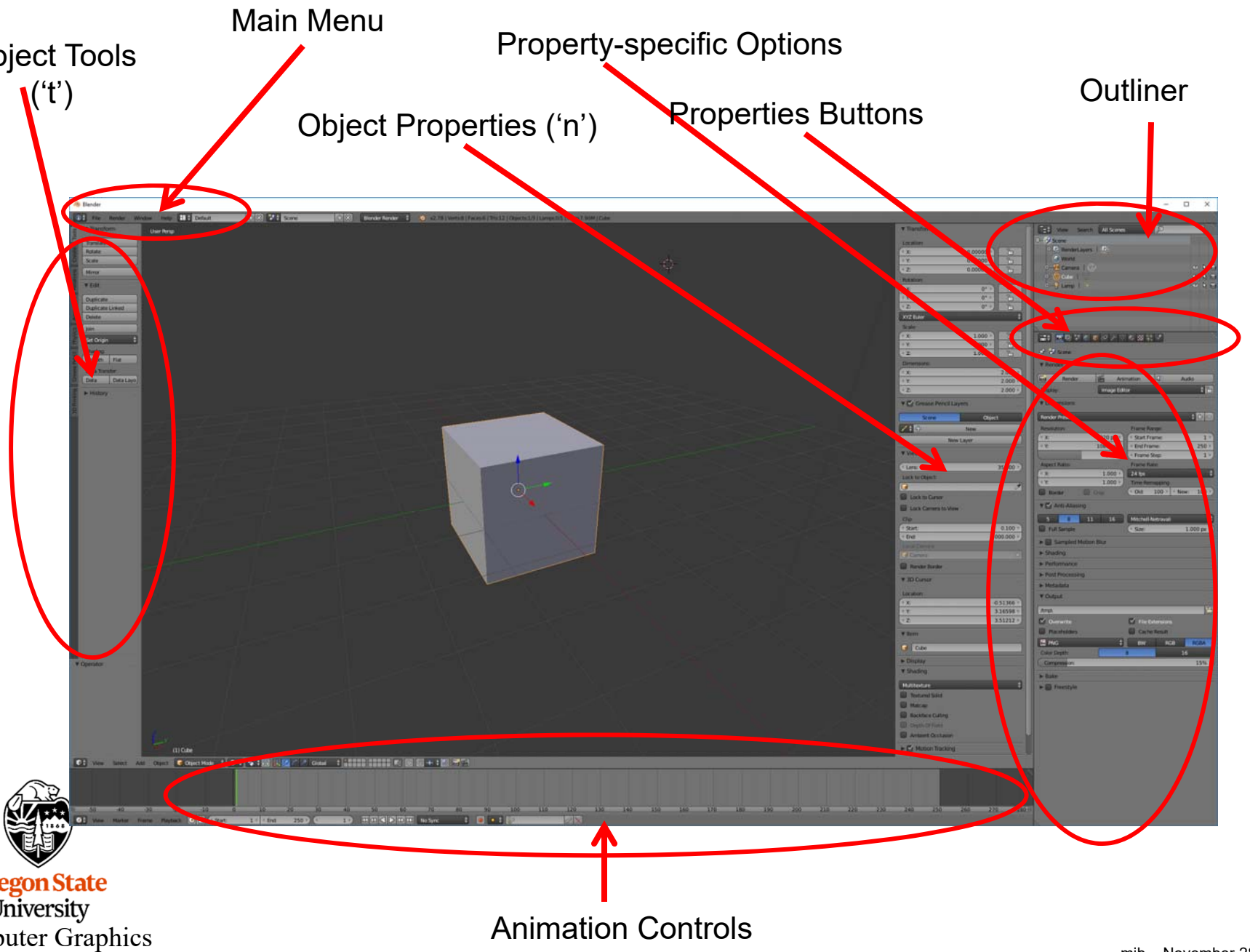
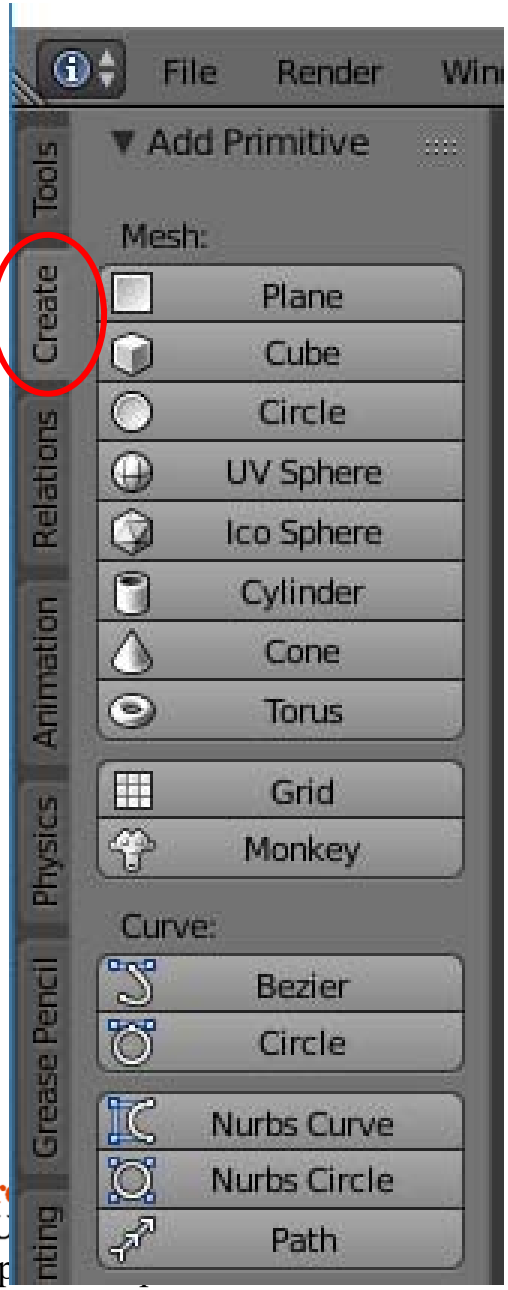
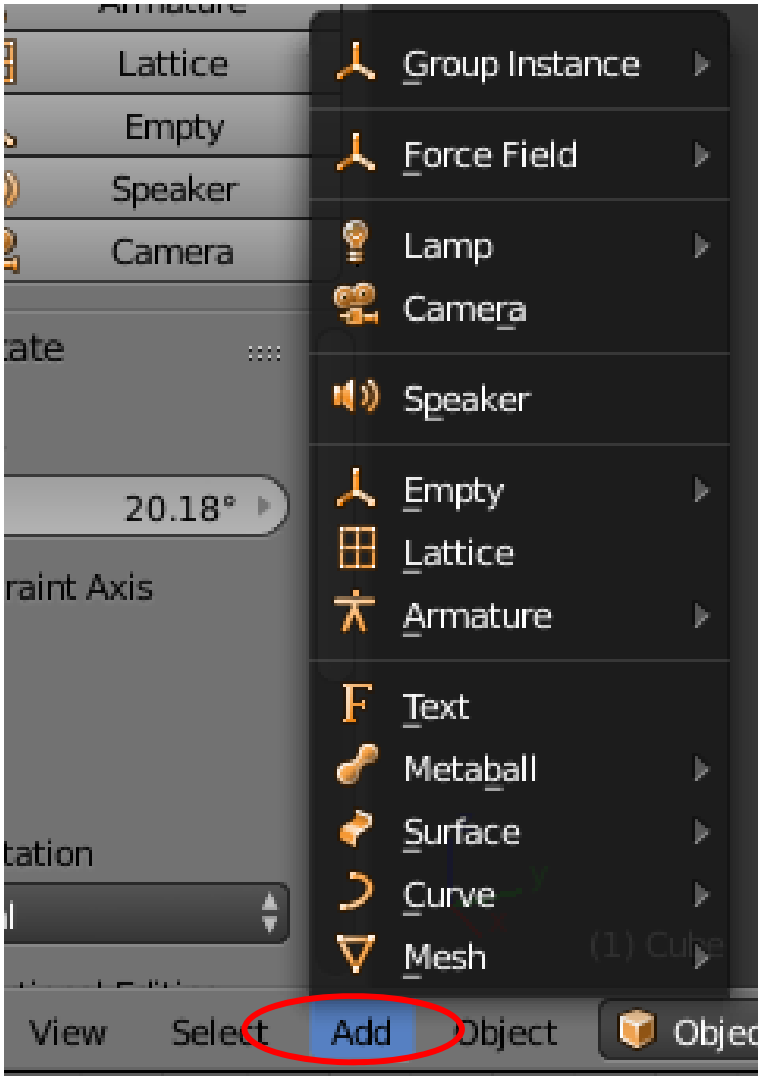
Full Screen Layout

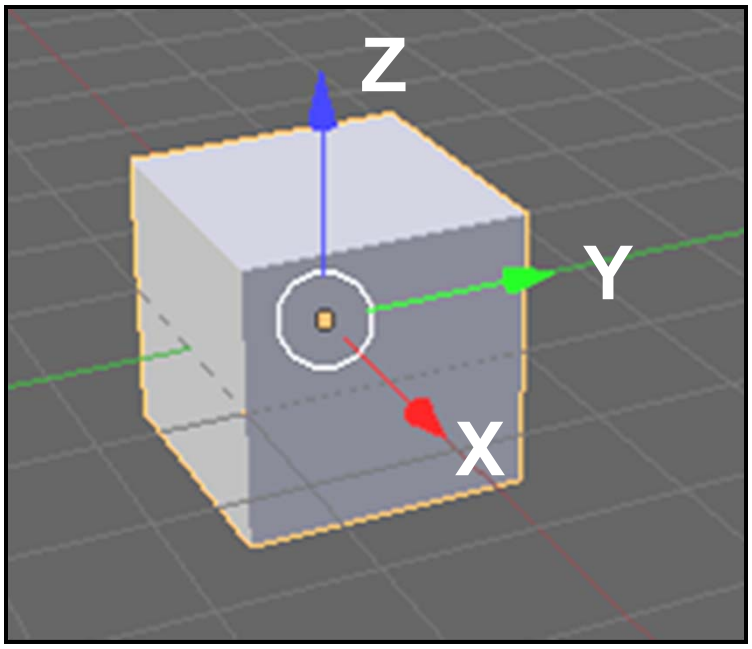


The Create and Add Menus



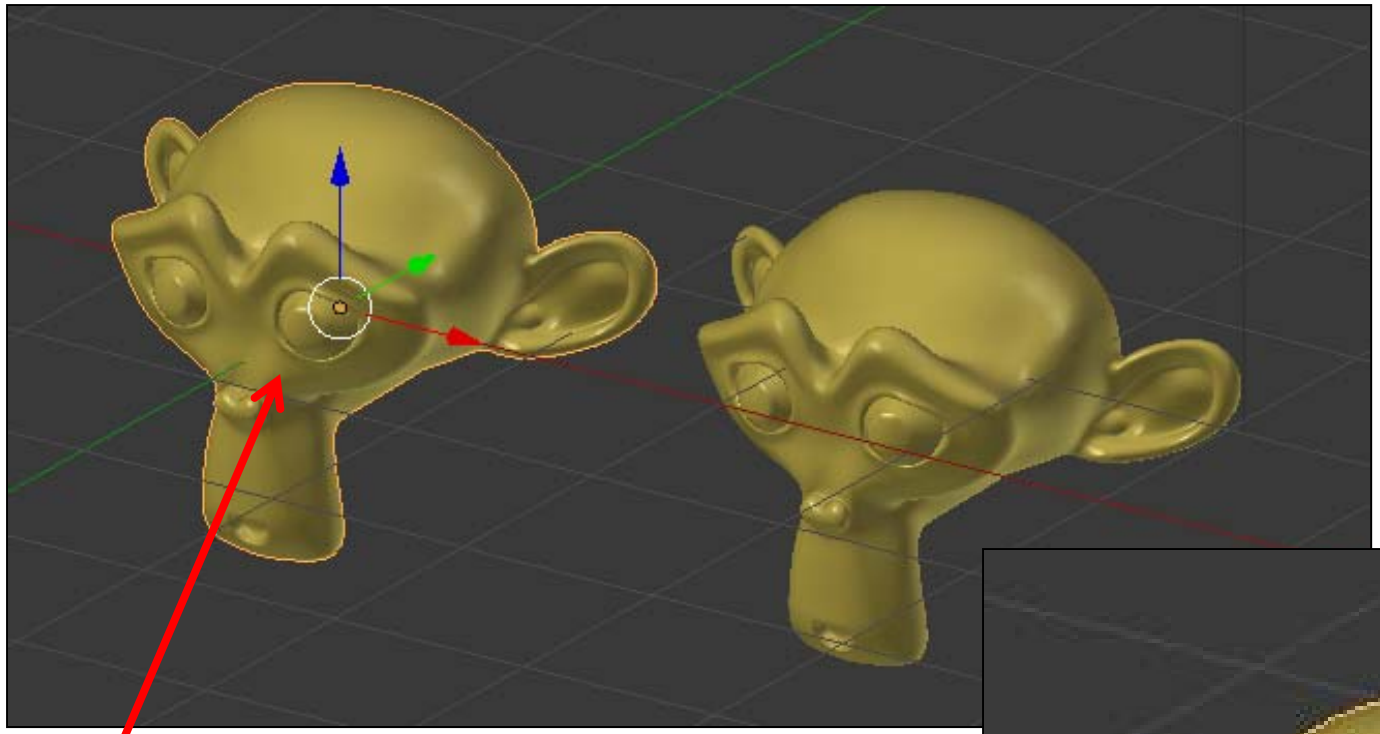


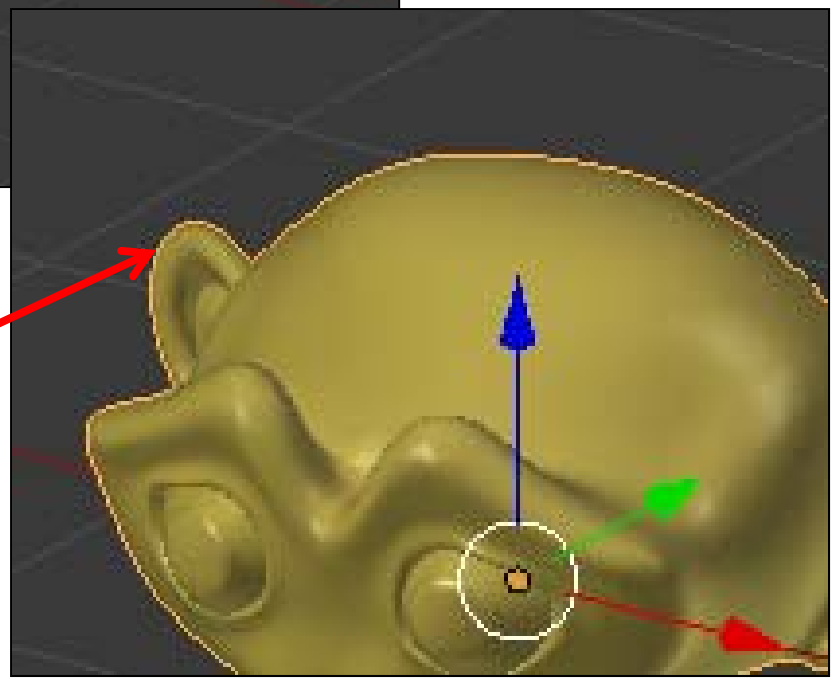
The Coordinate and Viewing System



- Right-handed coordinate system
- X = Red
- Y = Green
- Z = Blue
- Middle mouse button (MMB) – orbit
- Shift MMB – pan
- Scroll wheel – zoom
- View → Left, Right, …
- View → Toggle Quad View
- View → View Persp/Ortho

Selecting an Object to Work On





RMB-click on the object you want to select. It will then be highlighted with an orange outline.

Moving Things By Clicking and Dragging

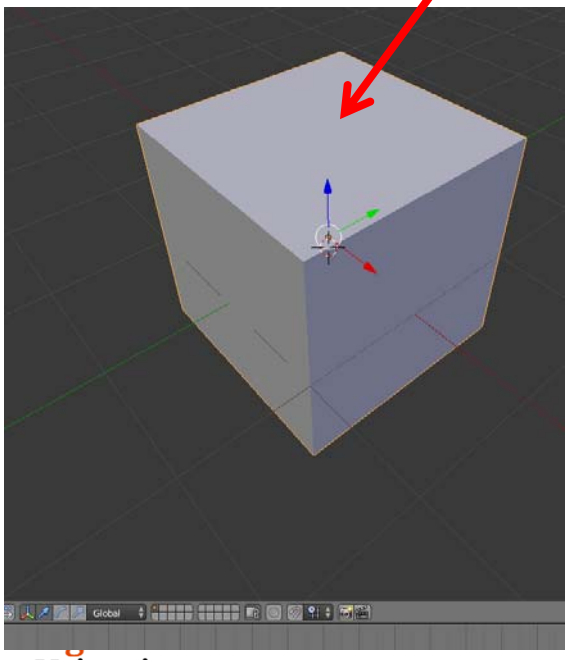
Use the click-and-drag icons

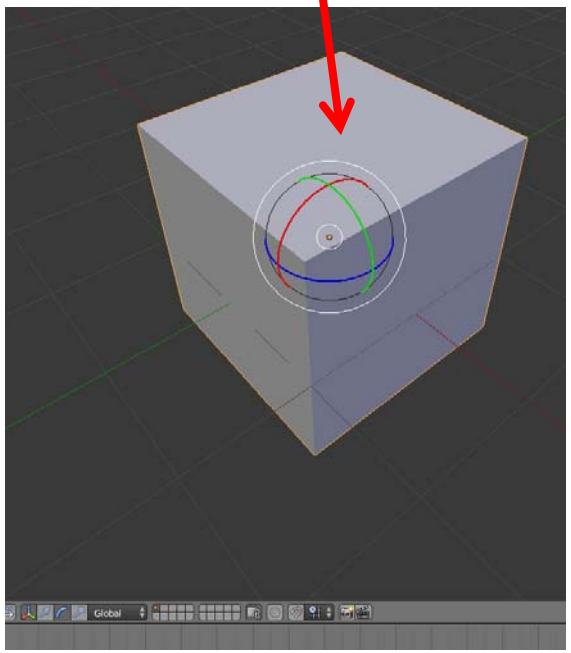
Translate (“grab”)

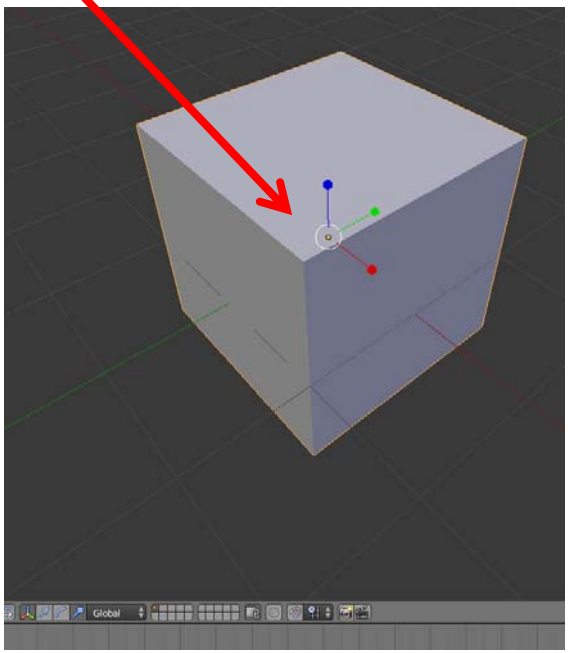
Rotate

Scale

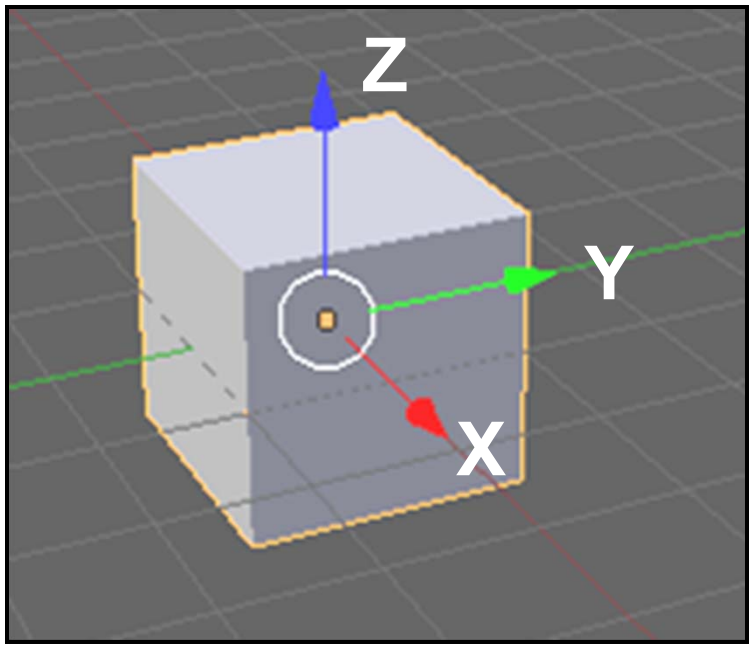
Use Global or Local Coordinate System







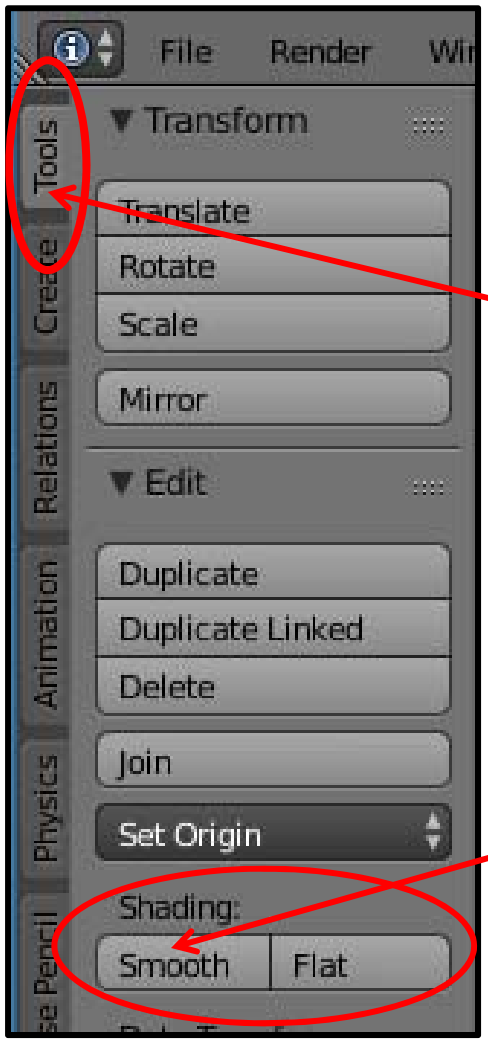
Saying How to Move Things by Using the Keyboard



- **RMB click to select an object**
- **Grab ‘g’**
- **Rotate ‘r’**
- **Scale ‘s’**
- **Pick global axis ‘g’ → ‘x’, etc.**
- **Show global vs. local coordinates**
- **Pick local axis: ‘g’ → ‘x’ → ‘x’**
- **Pick all *but* a particular axis ‘g’ → ‘X’, ‘g’ → ‘X’ → ‘X, etc.**
- **Transform a specific distance, angle, or scale ‘r’ → ‘x’ → 45 <return>**

This is important – you will use this a lot!

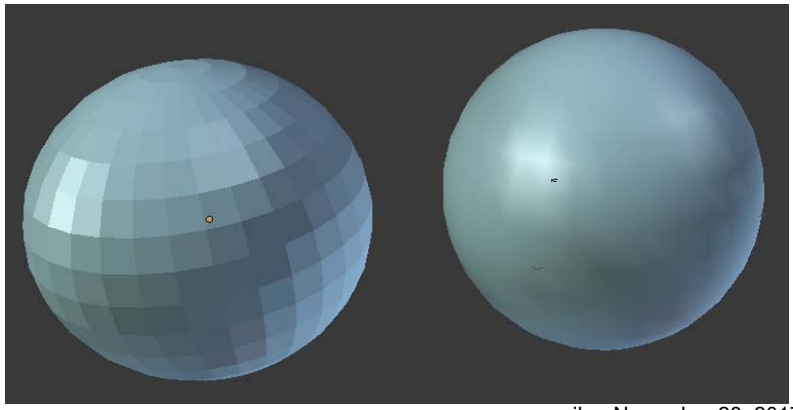
Making the Mesh Objects Look Nicer



Blender is able to play a graphics trick to make your curved geometry look better. Go to the Object Tools tabs and select **Tools**.

Scroll down, and click on **Smooth**.

Flat **Smooth**



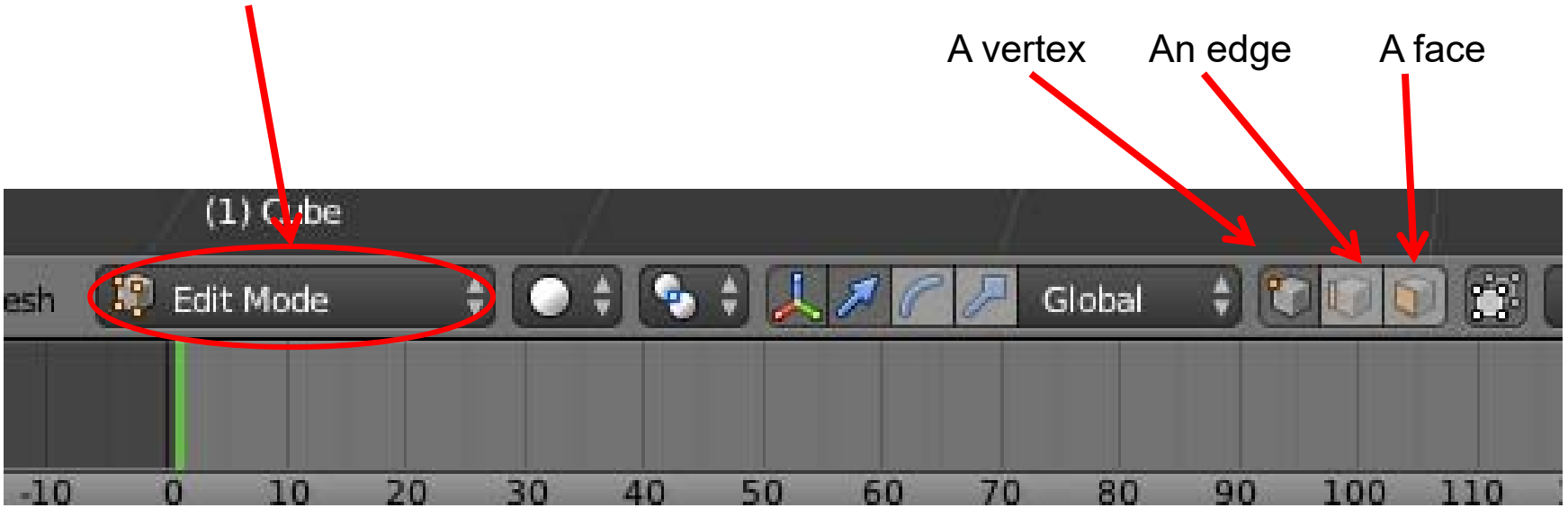
This doesn't actually change any geometry – it's just a really good computer graphics display trick.

Editing a Vertex, Edge, or Face on a Mesh

Click here, or hit the **Tab** key, to get into Edit Mode

Select and edit:

A vertex An edge A face



This is so common, that "tab" has become a verb in the Blender community.

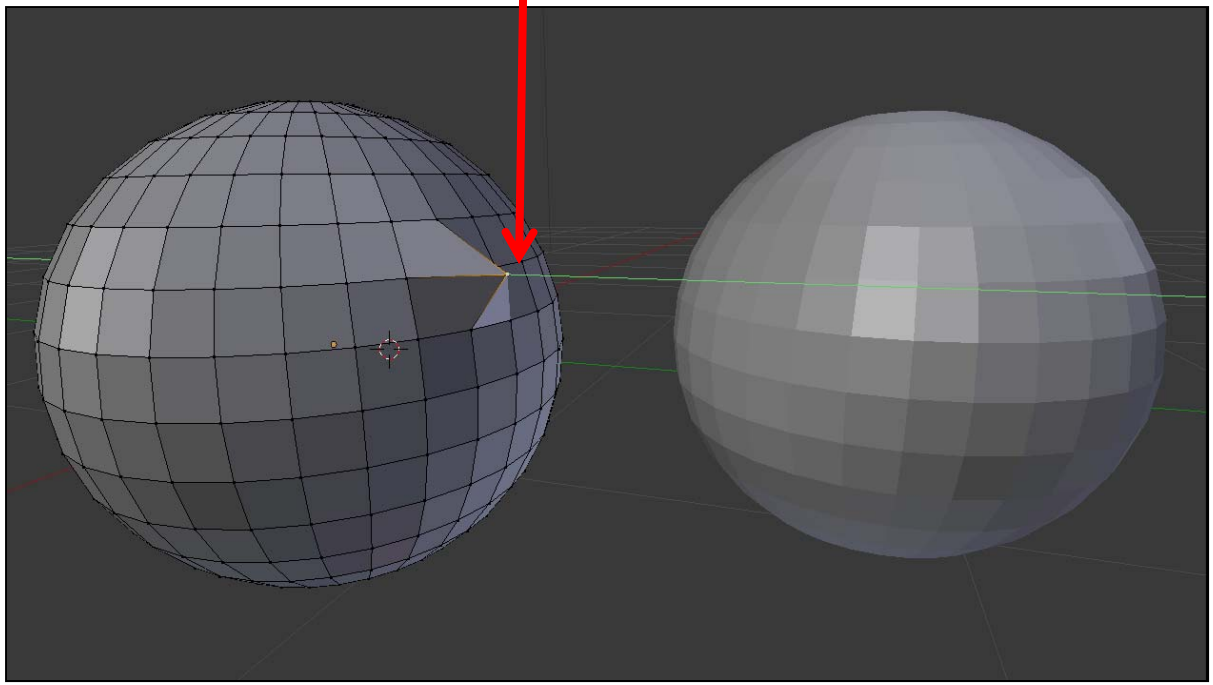
Editing a Vertex

Be sure you are in vertex-editing mode

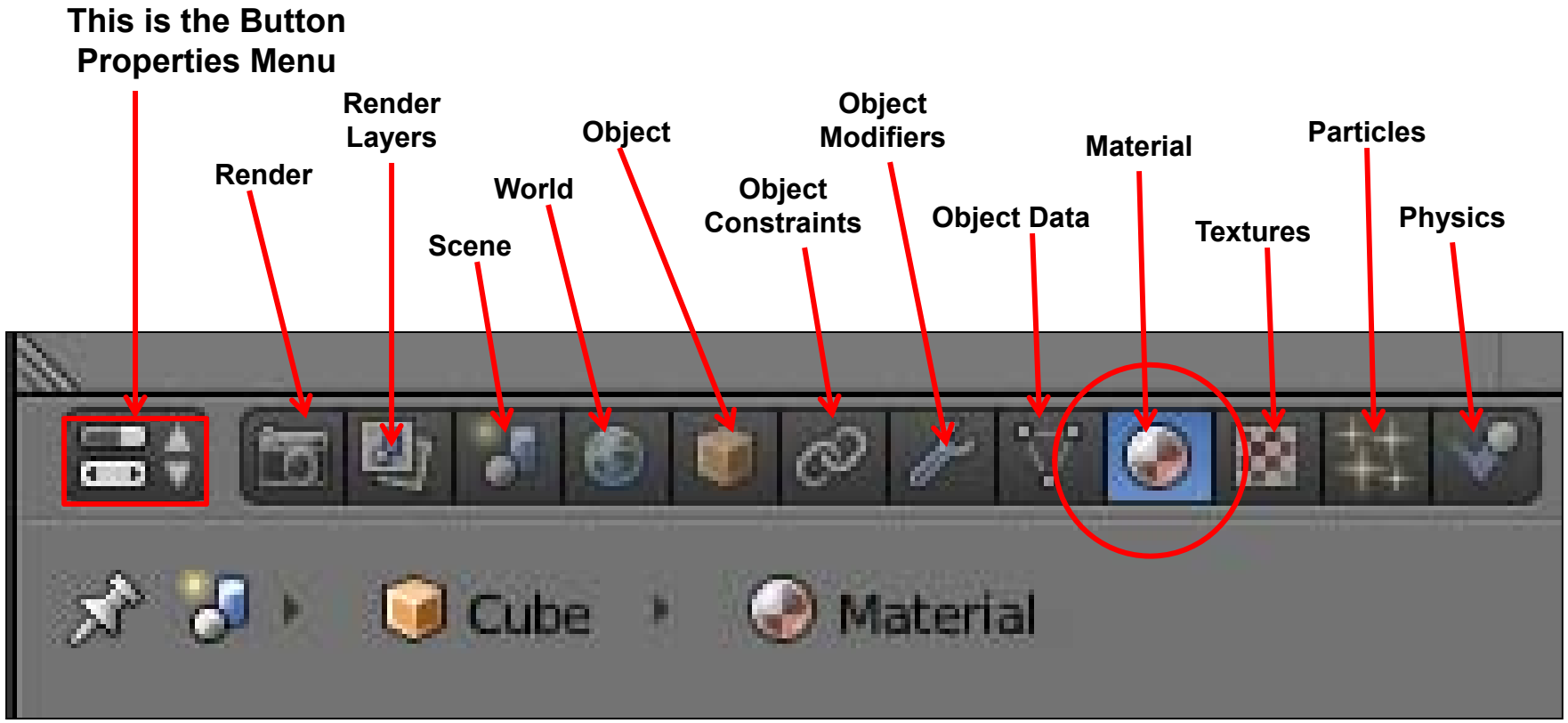
Right click on a vertex

Hit ‘g’ (grab) and move the mouse

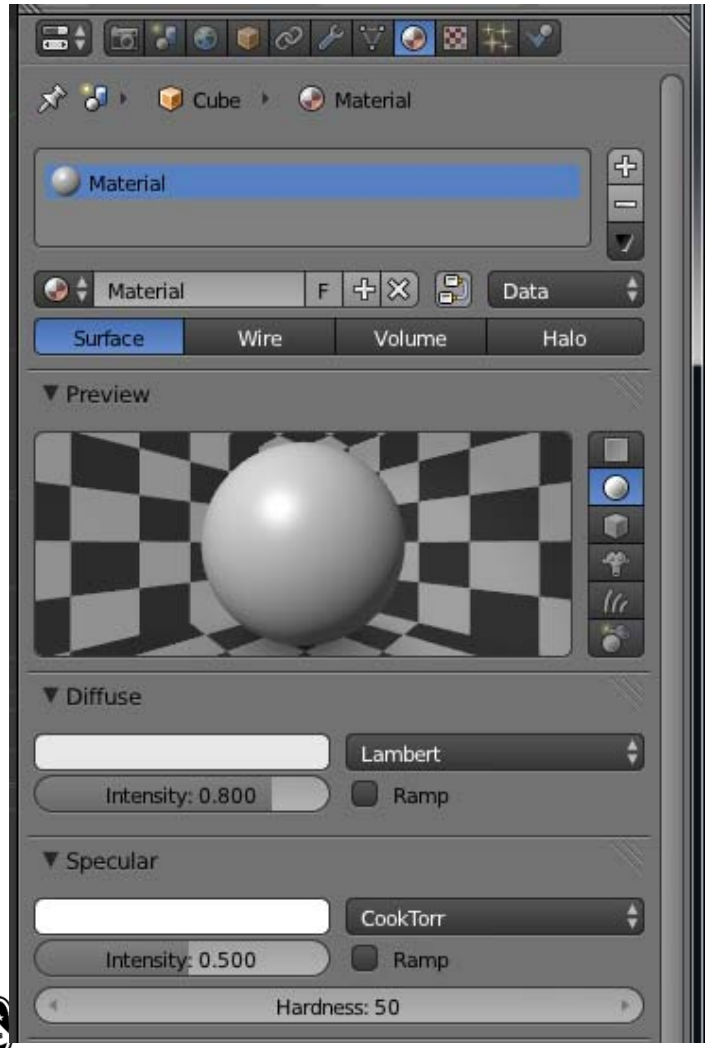
You can also hit ‘x’, ‘y’, or ‘z’ to restrict motion

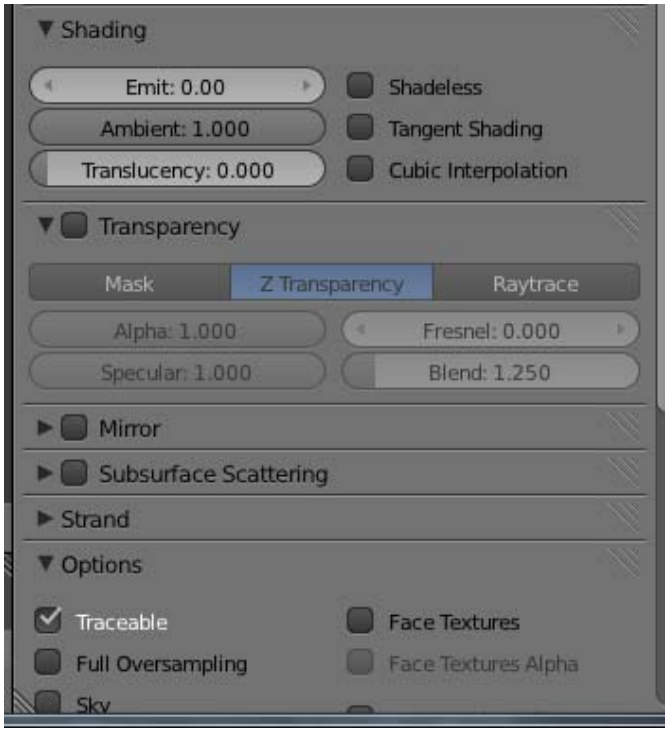


The Button Properties Menu

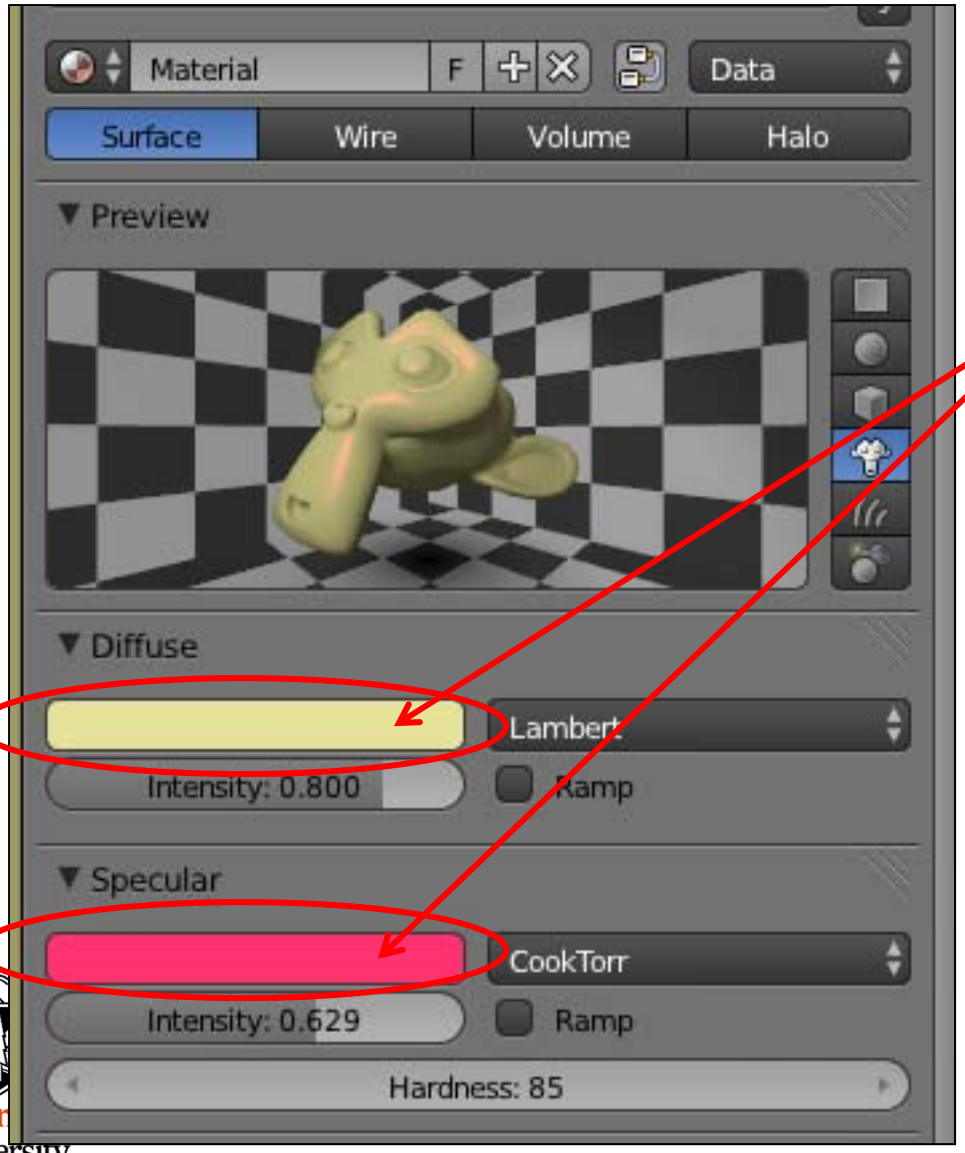


The Material Menu



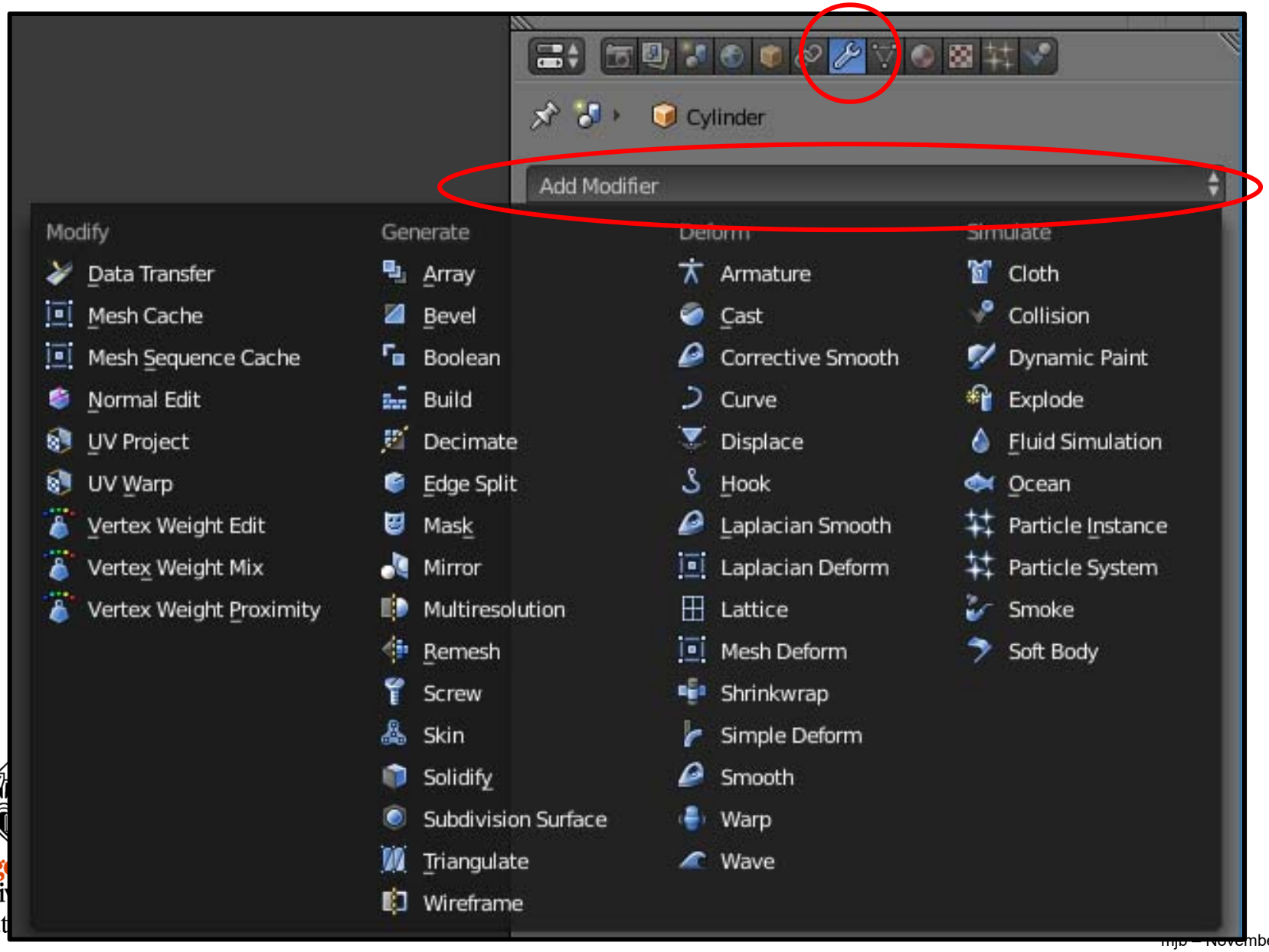


Setting Diffuse and Specular Colors

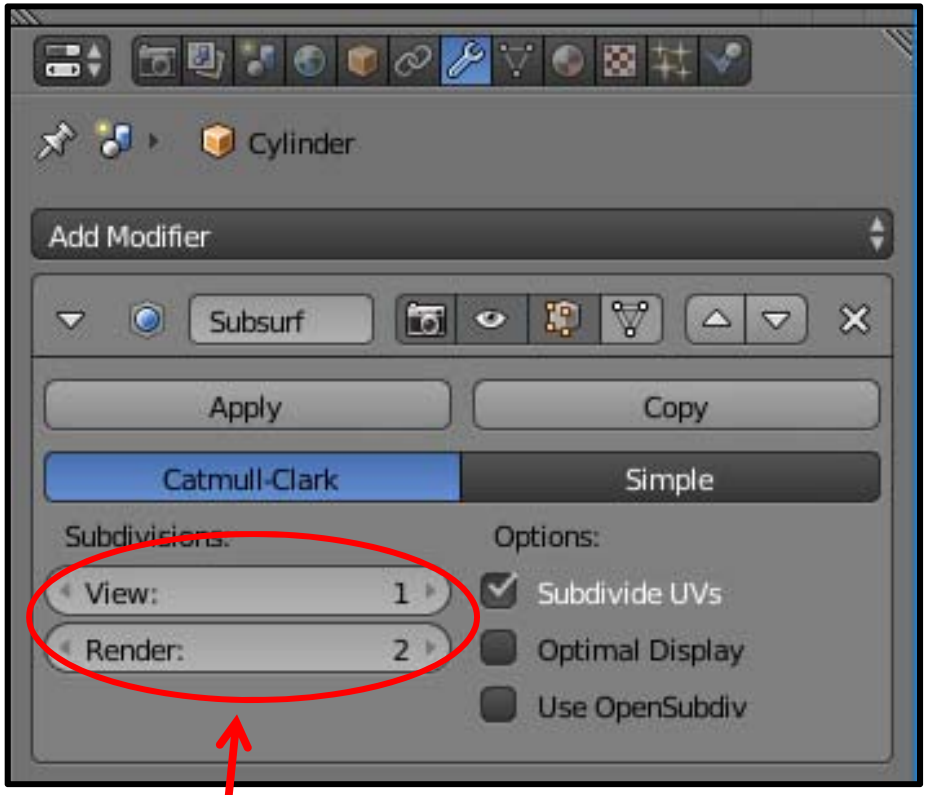


Clicking one of these brings up a color-selection dialog box

The Modifiers Menu

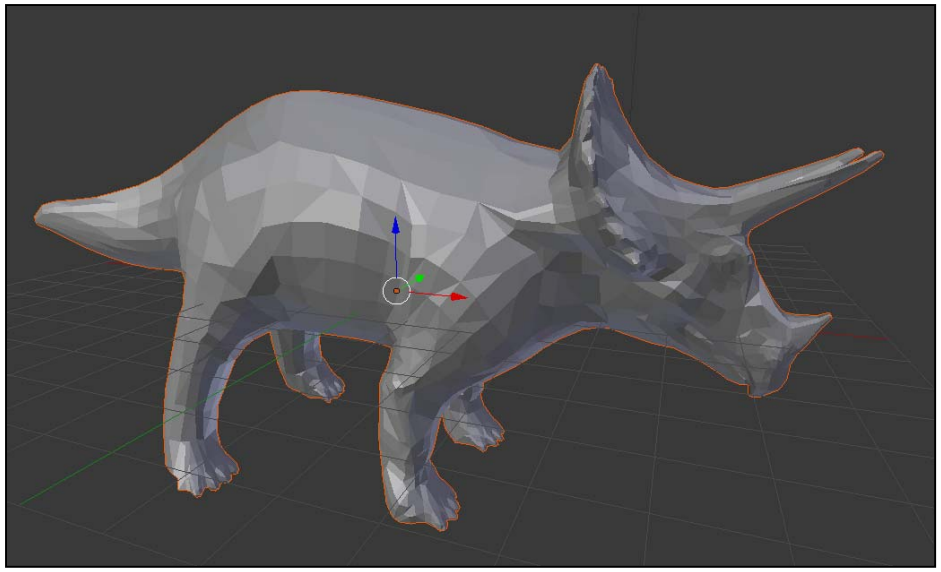


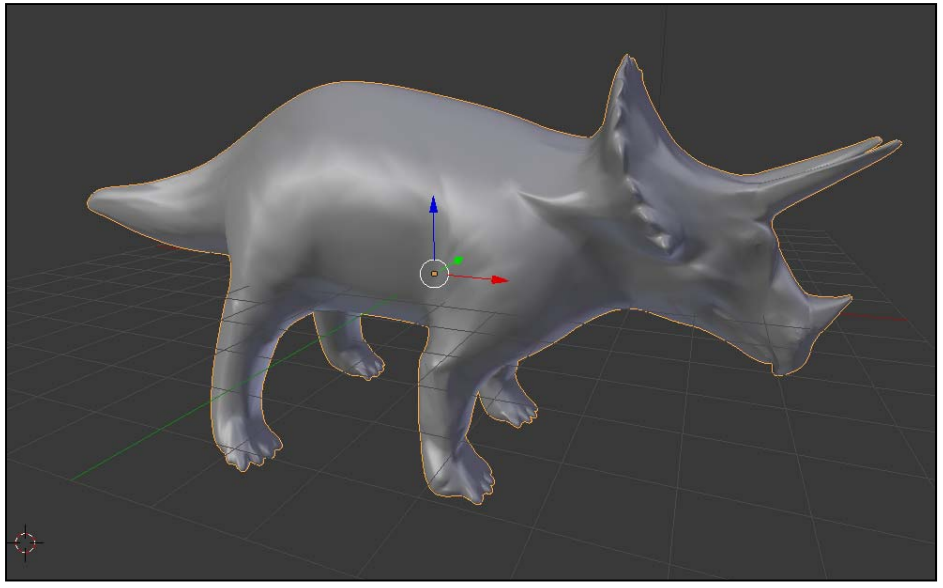
Subdivision Surface Modifier



This controls how much to subdivide

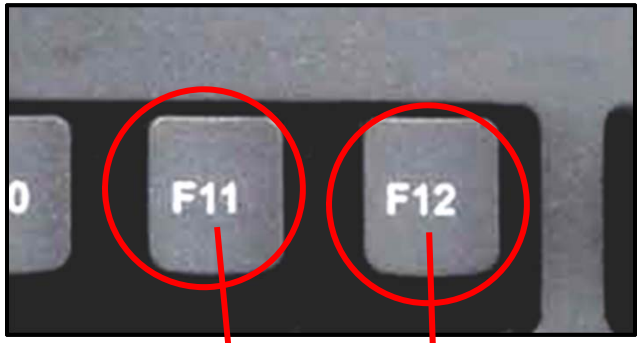
Fun: try it on a cube!



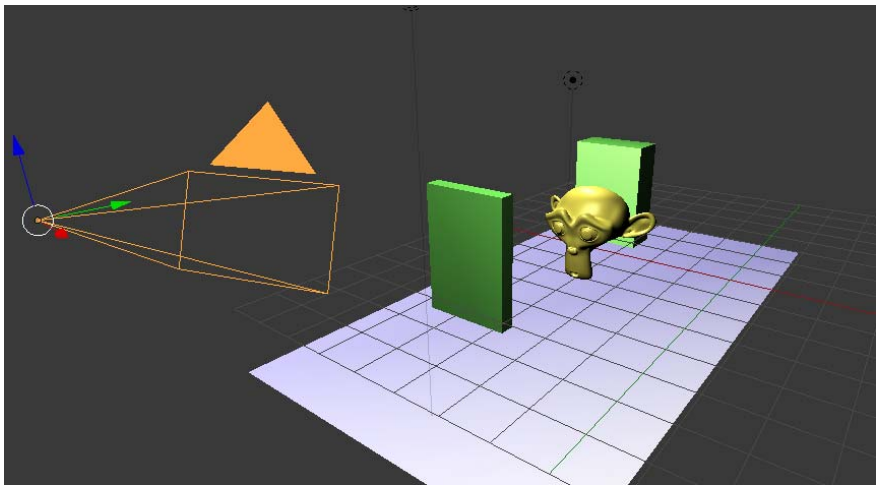


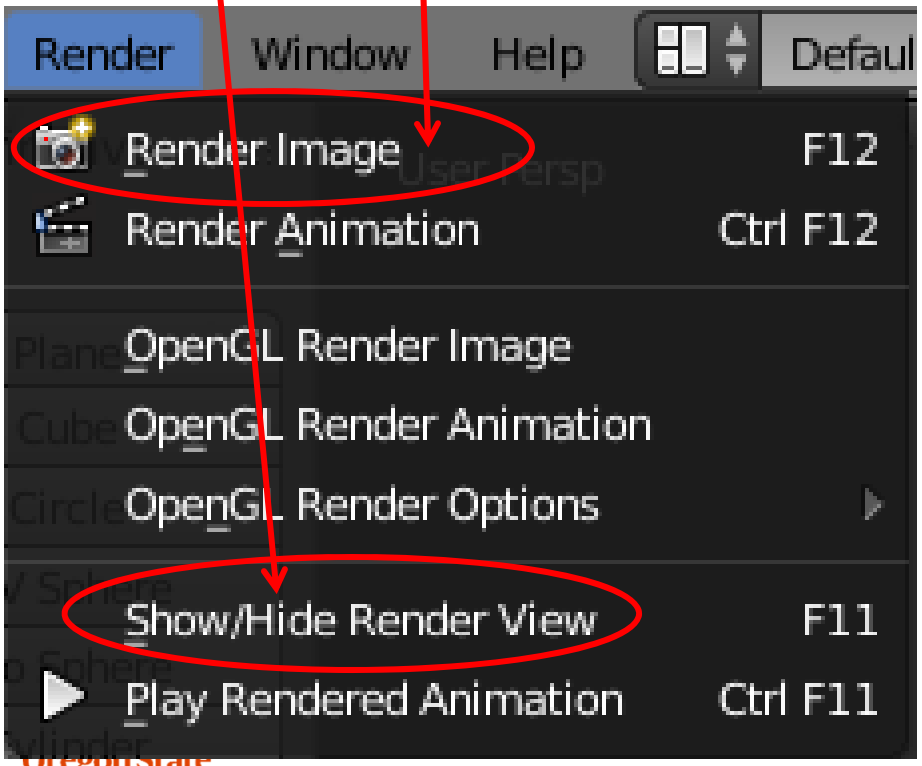
Rendering

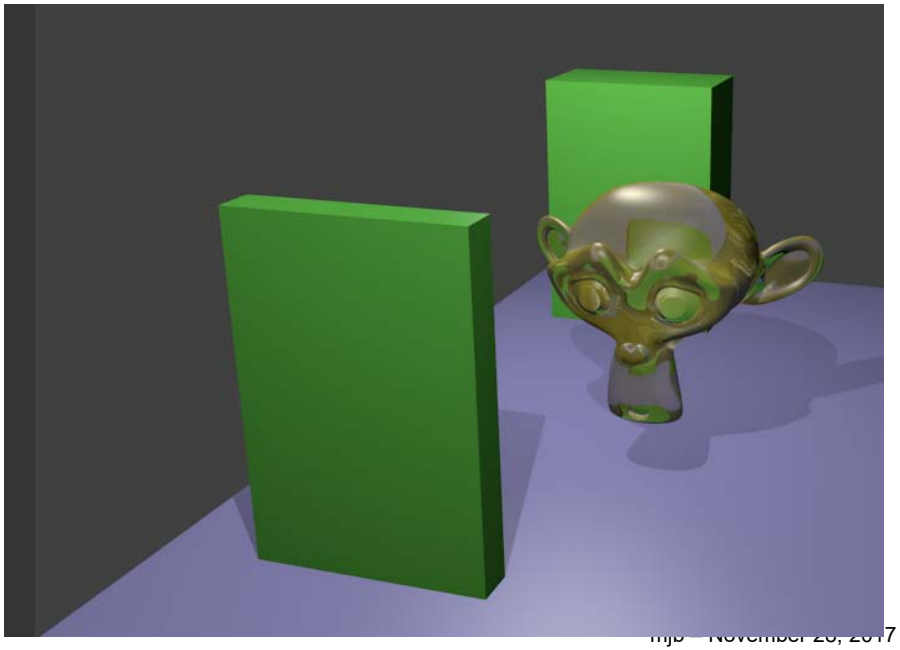
"Rendering" is Blender's process for creating *really* high-quality images



scene.blend

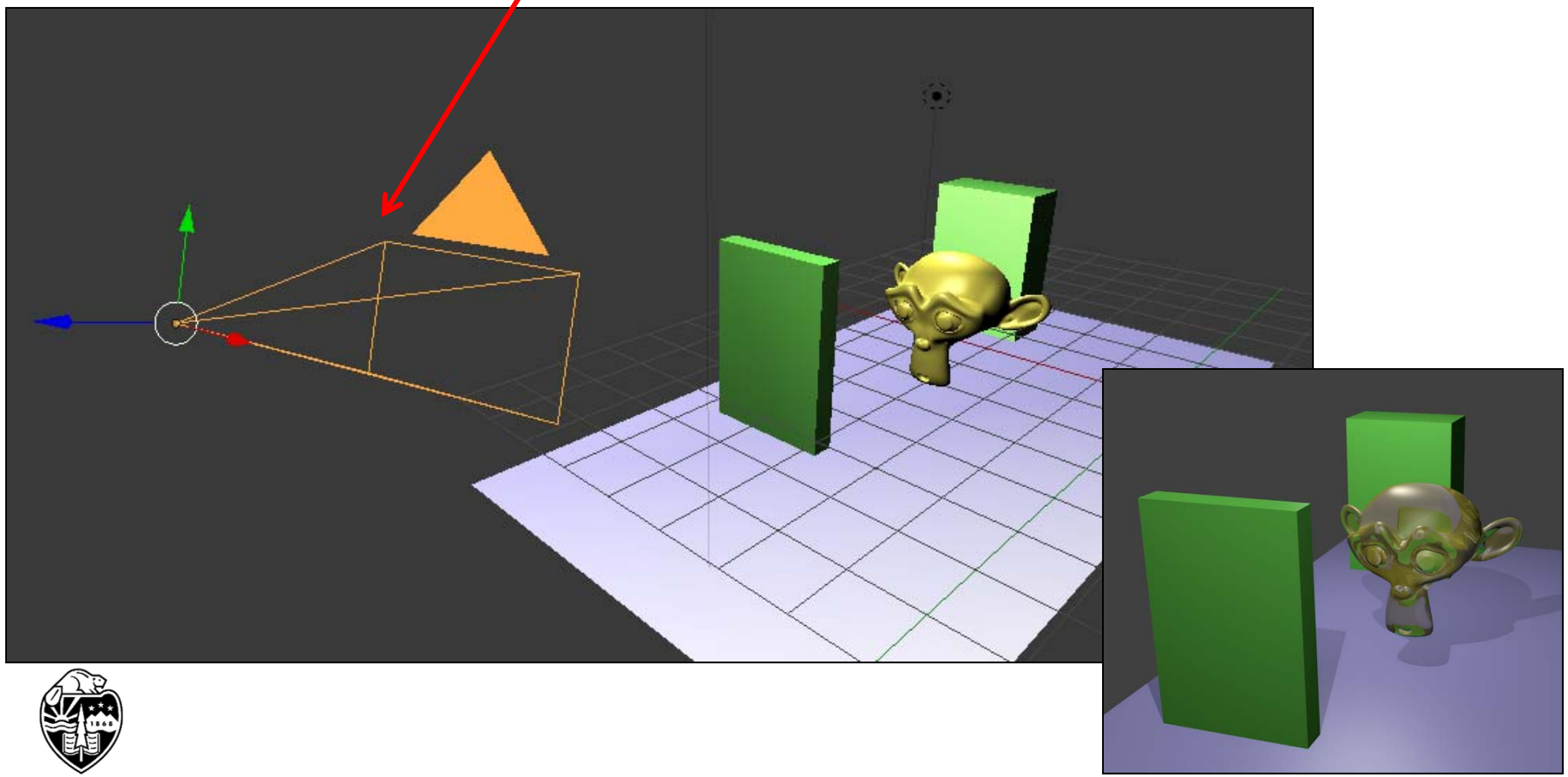






Rendering

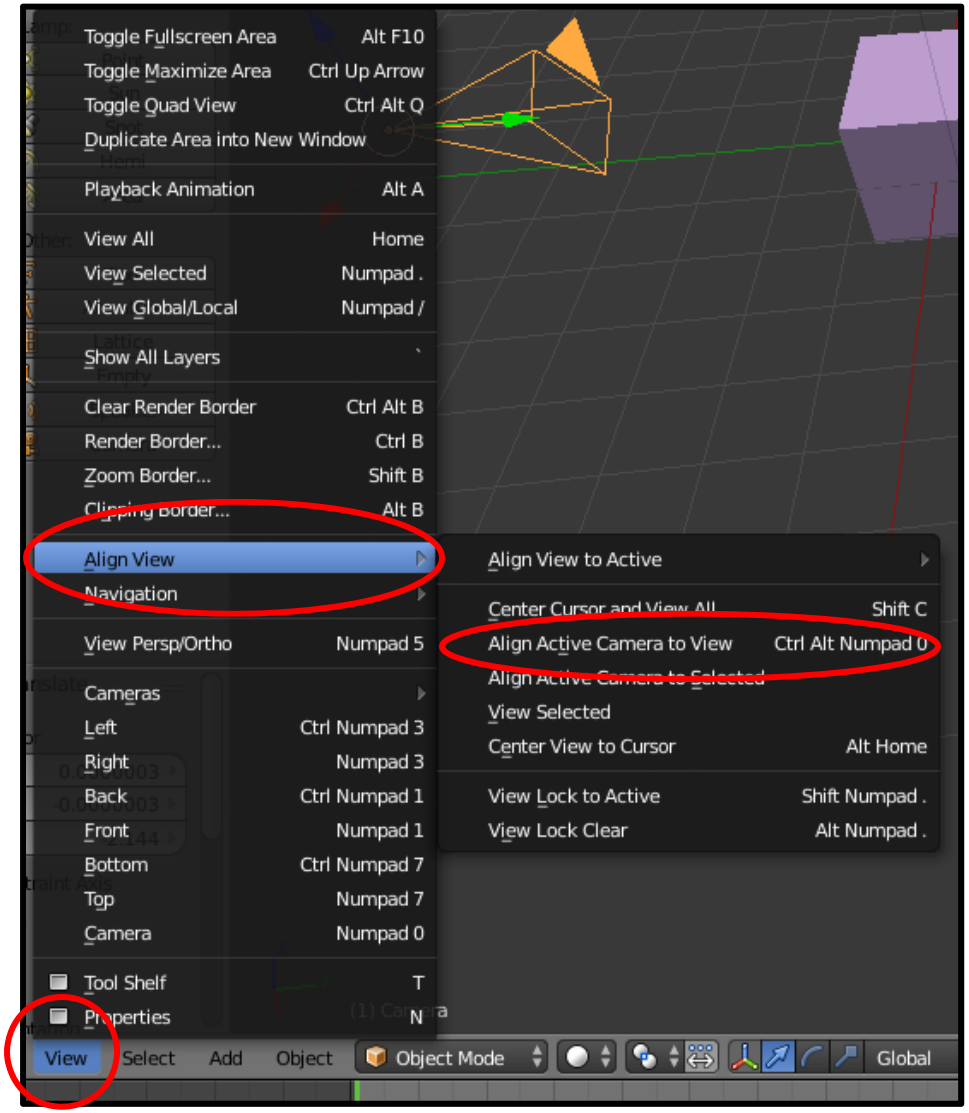
The view that is rendered is not the same orientation that you see on the screen. It is from the ***Camera position***, which needs to be set separately.

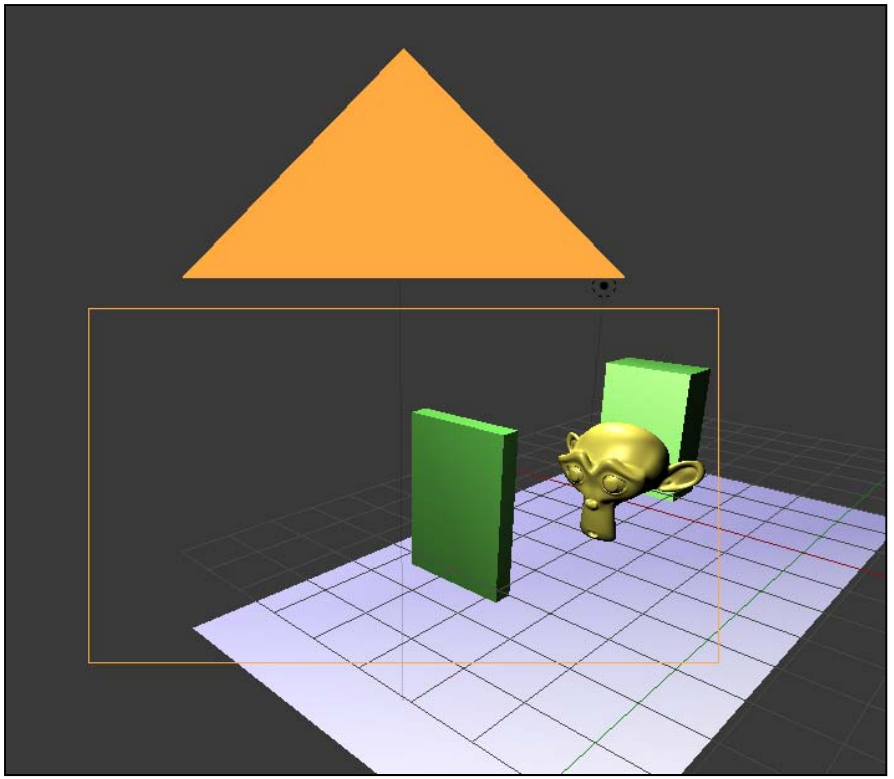


Aligning The Camera to Your Current Screen View

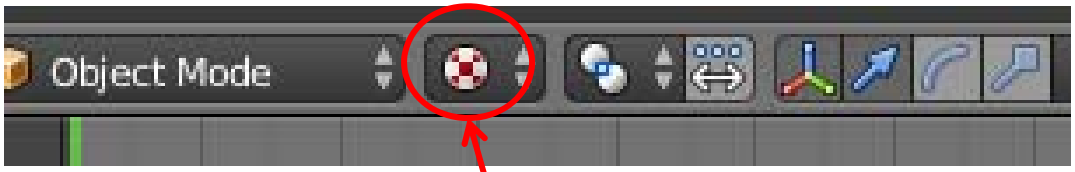
But, if you like your current screen view and want to move the camera there, just do this:

View → Align View → Align Active Camera to View

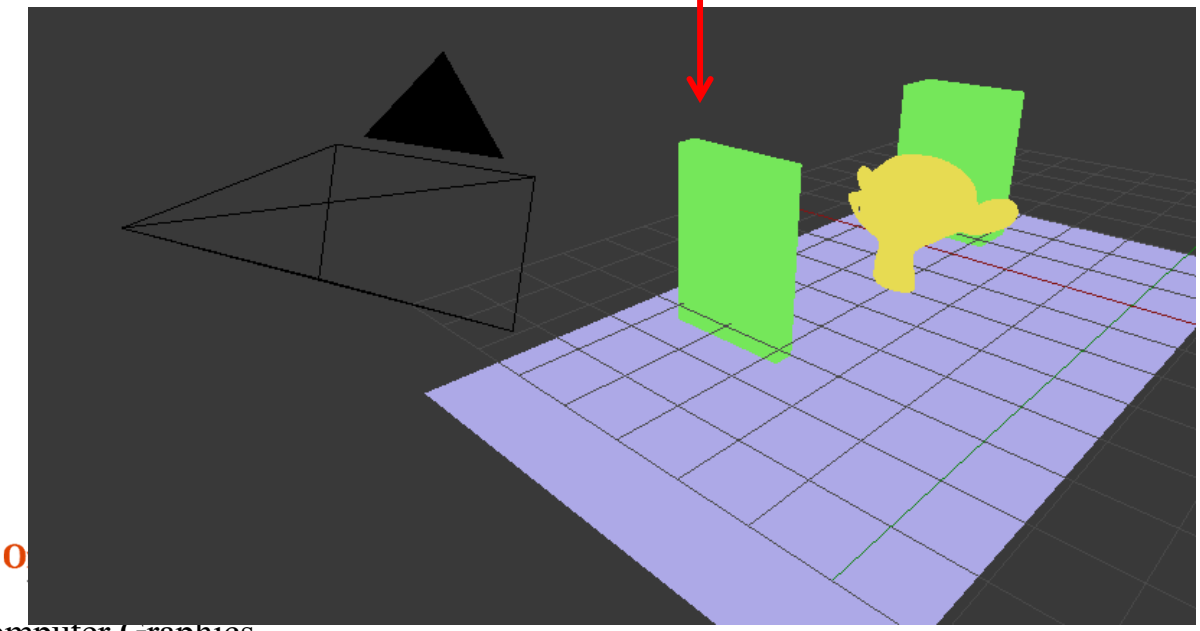




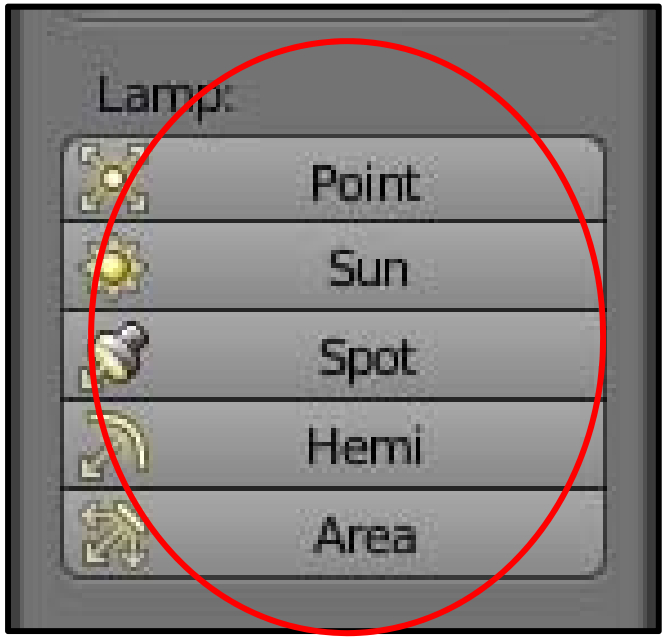
Lighting



The answer is that Solid Shading Mode doesn't require your scene to be lit, but Rendering does. **Texture Shading mode** *does* want your scene to be lit, but if it isn't, even that won't let you know how bad your rendering is going to turn out:



Lighting



There are five types of Lamps that you can Add

1. A **Point** Lamp shines light in all directions. The light is local to the scene. This is usually the best type of light to start out with.

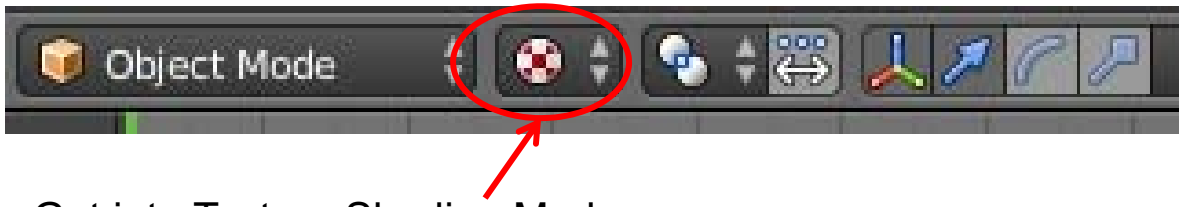
2. A **Sun** Lamp appears to come from a single direction and its rays are parallel. This acts as if the light is very far away.

3. A **Spot** Lamp is like a Point Lamp, but only shines in one particular direction.

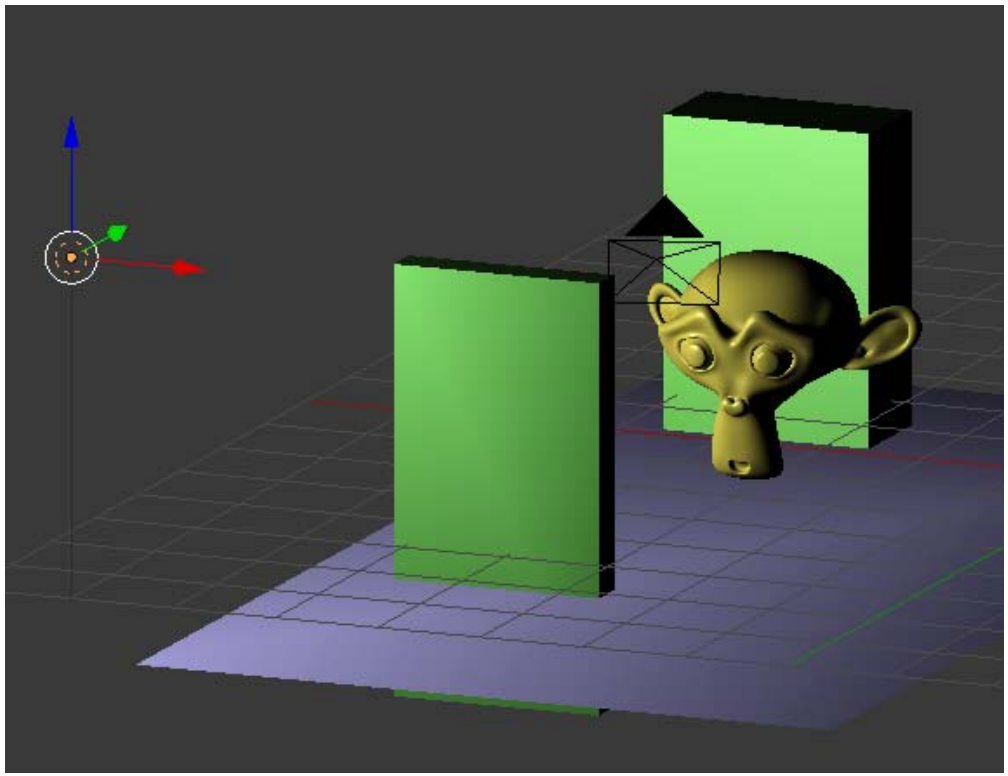
4. A **Hemi** Lamp is meant to emulate a cloudy day – light is coming from a glowing dome.

5. An **Area** Lamp is light coming from a finite surface, like most lights really are.

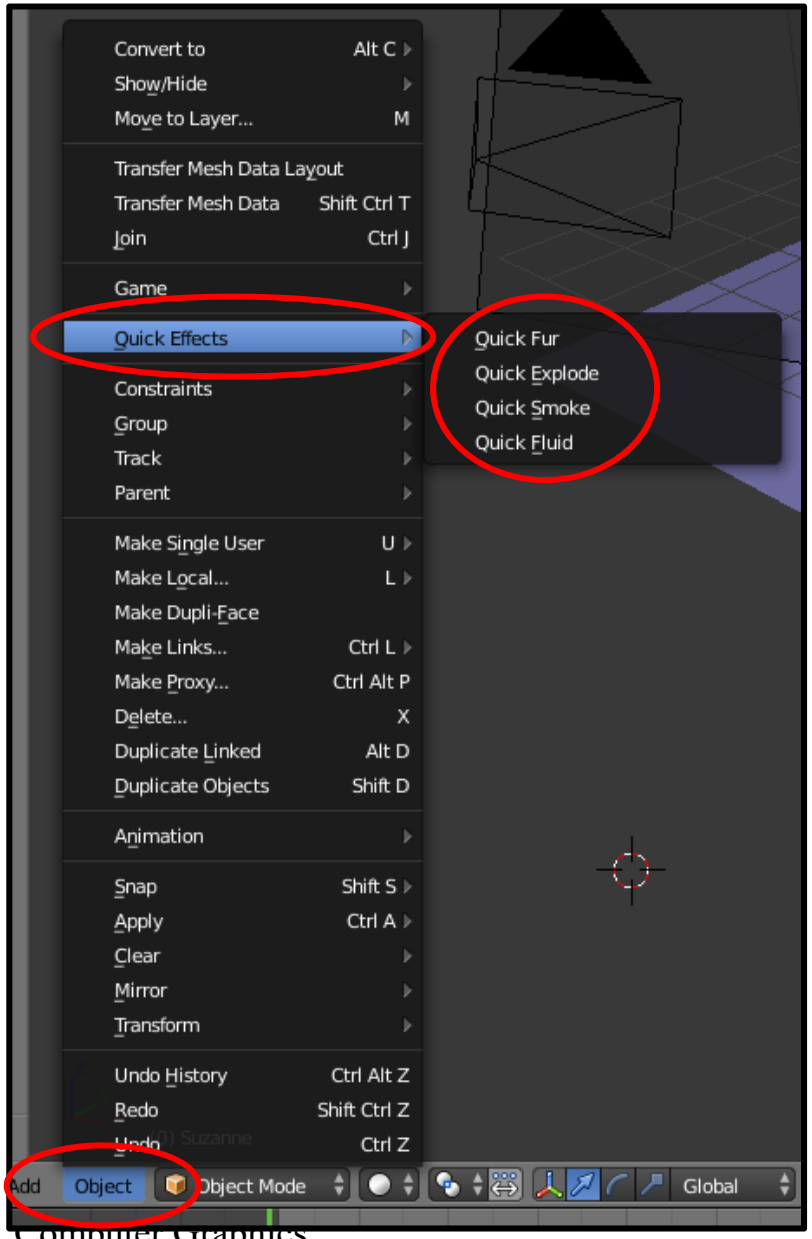
Lighting



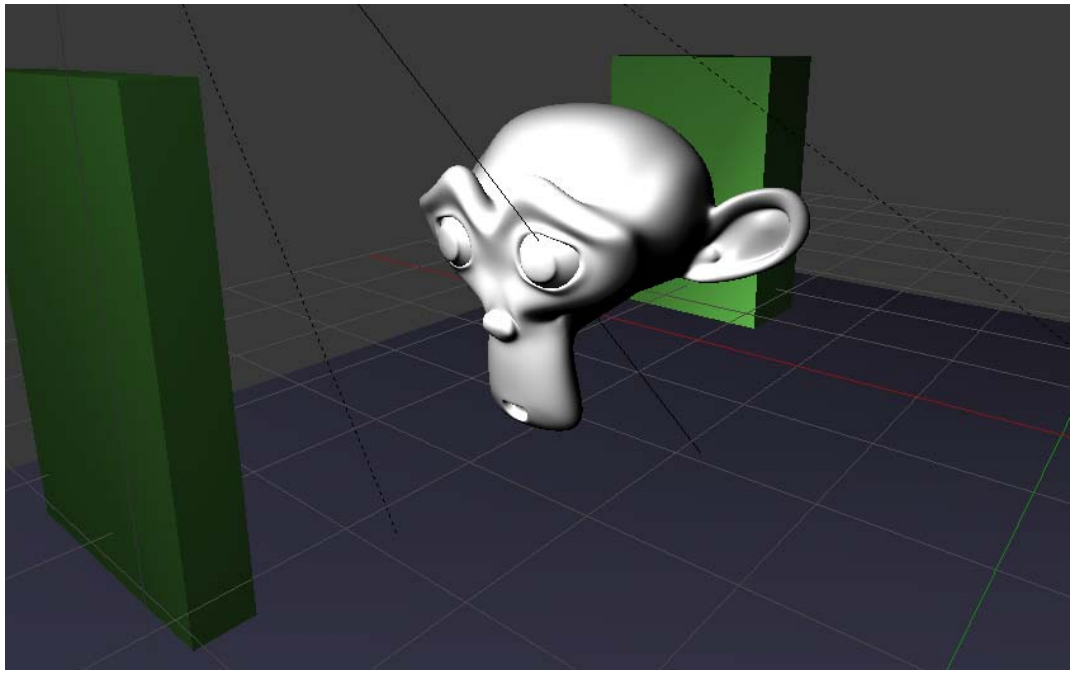
1. Get into Texture Shading Mode
2. Add a Point Lamp
3. Position the Lamp (‘g’).
4. The Point Lamp has no obvious local coordinate system, so it just uses the global coordinate system.
5. As you move the Lamp, you will see the lighting of the scene change
6. You will probably have to rotate the scene (MMB) to get the position where you think it should be. Or, you can also use the Quad View mode.



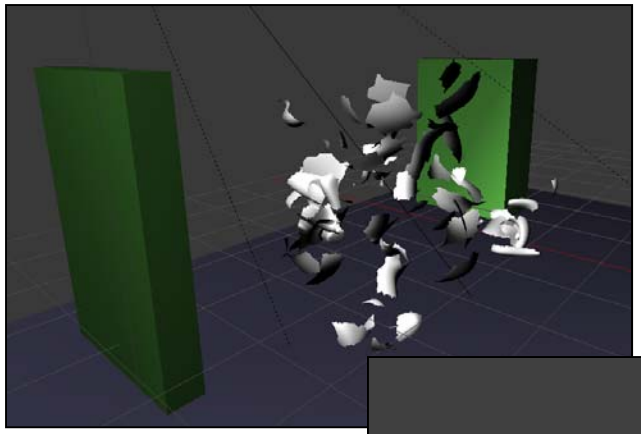
Quick Physics Cheats

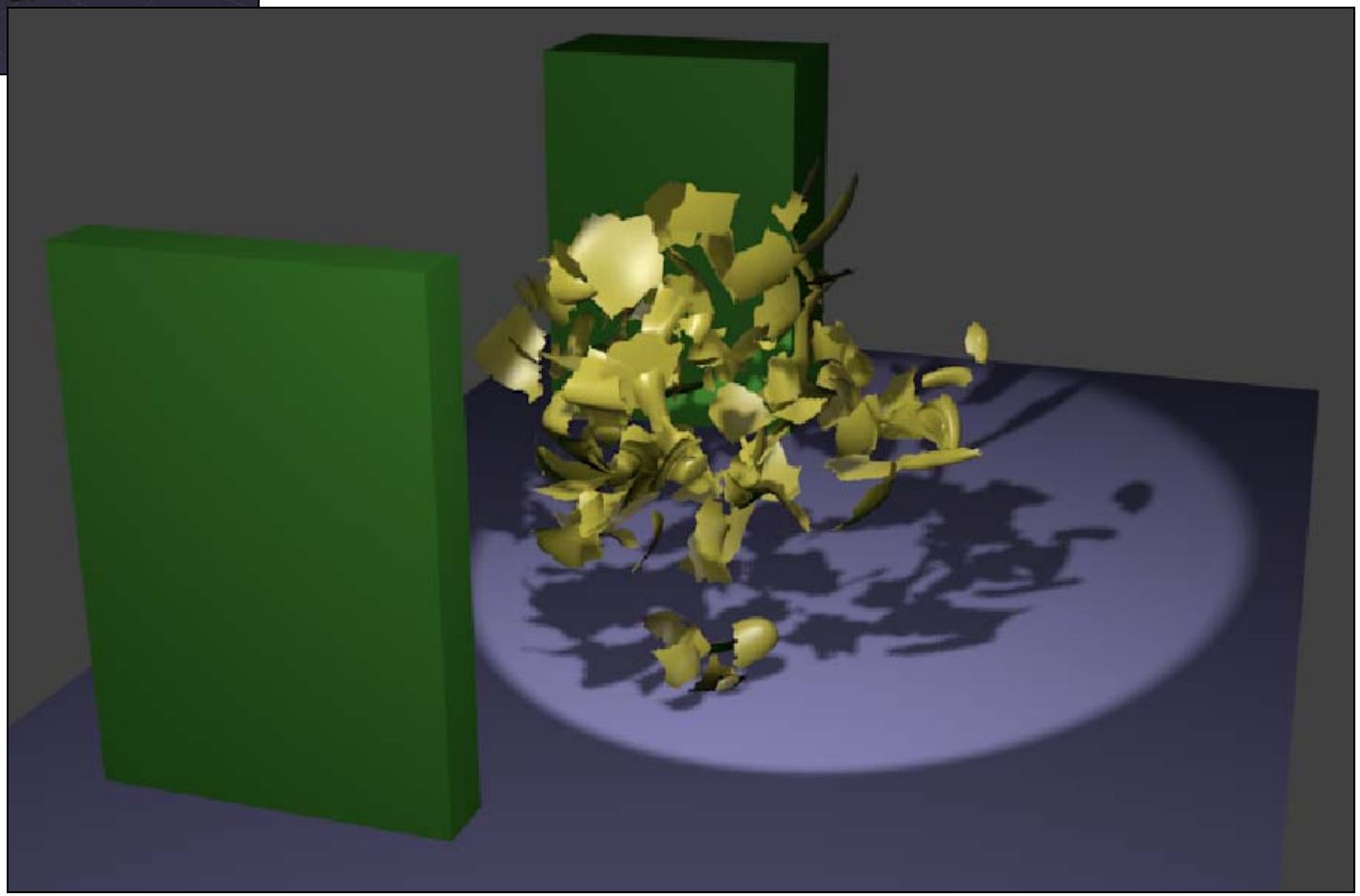


Original Scene

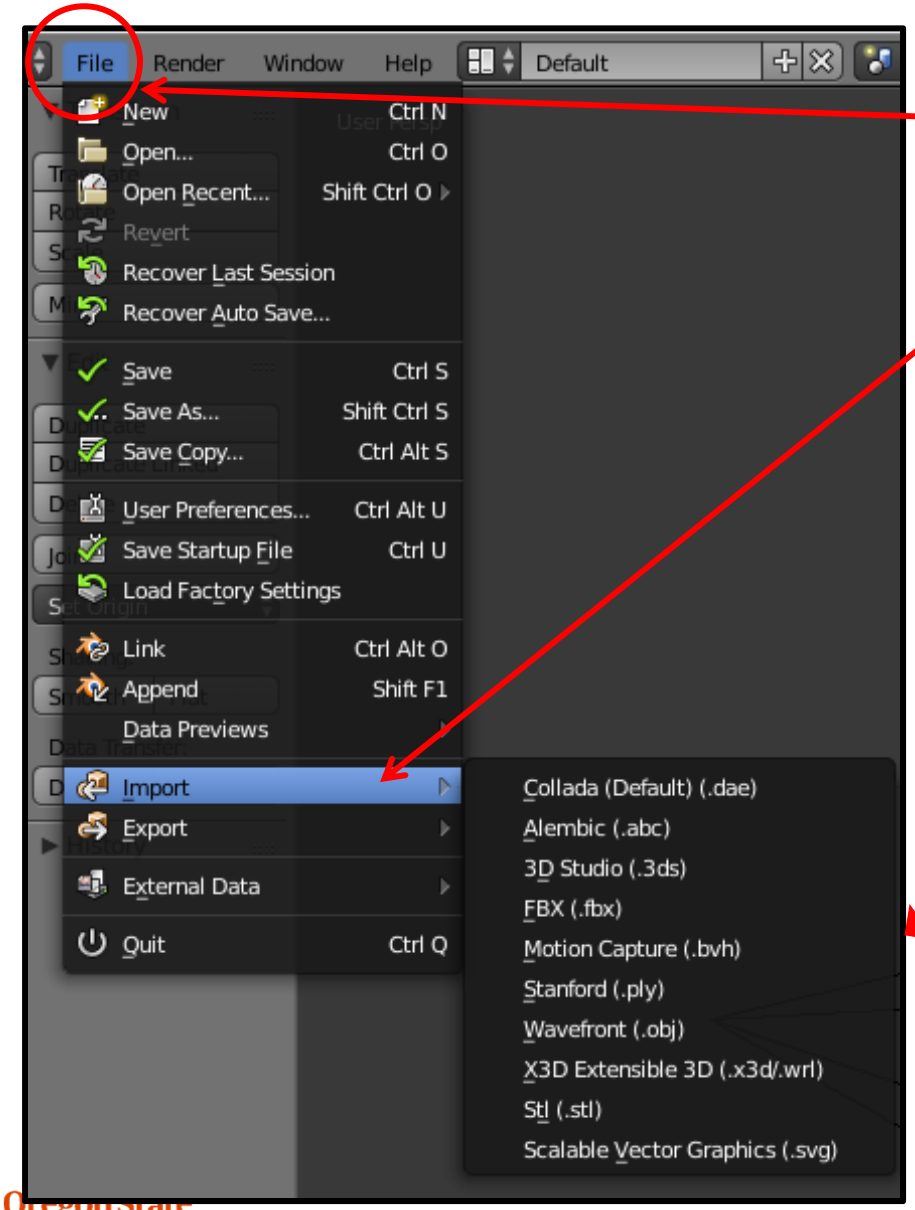


Quick Explode





Importing Objects from Other Places



Select File → Import

Collada = export format from game modeling systems

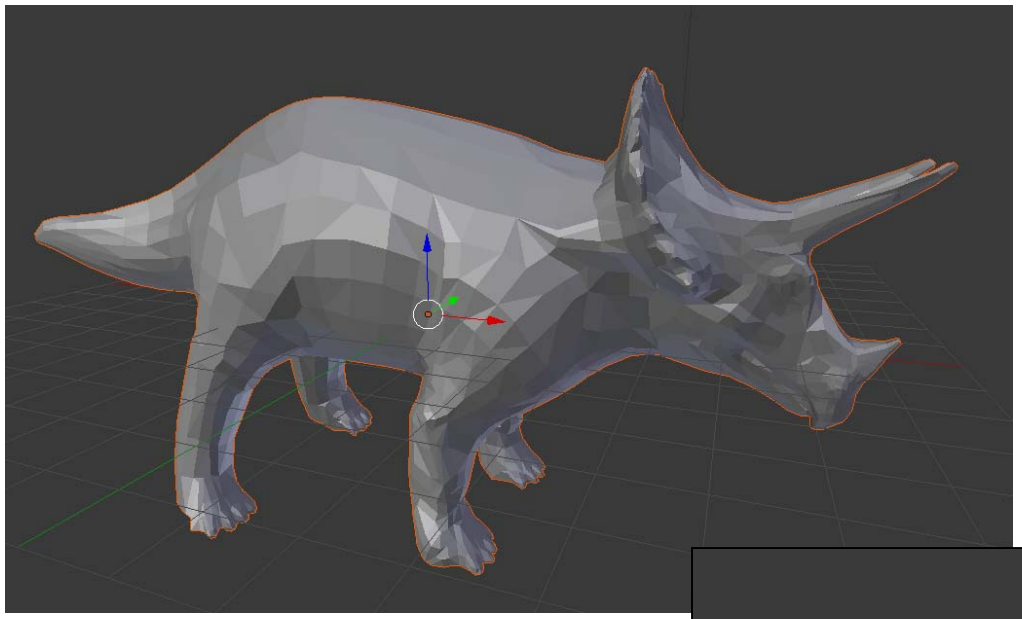
Stl = 3D printer format

3ds = format from Autodesk 3D Studio

Obj = Probably world's most common export format (there are a *ton* of .obj models for free on the Internet!)

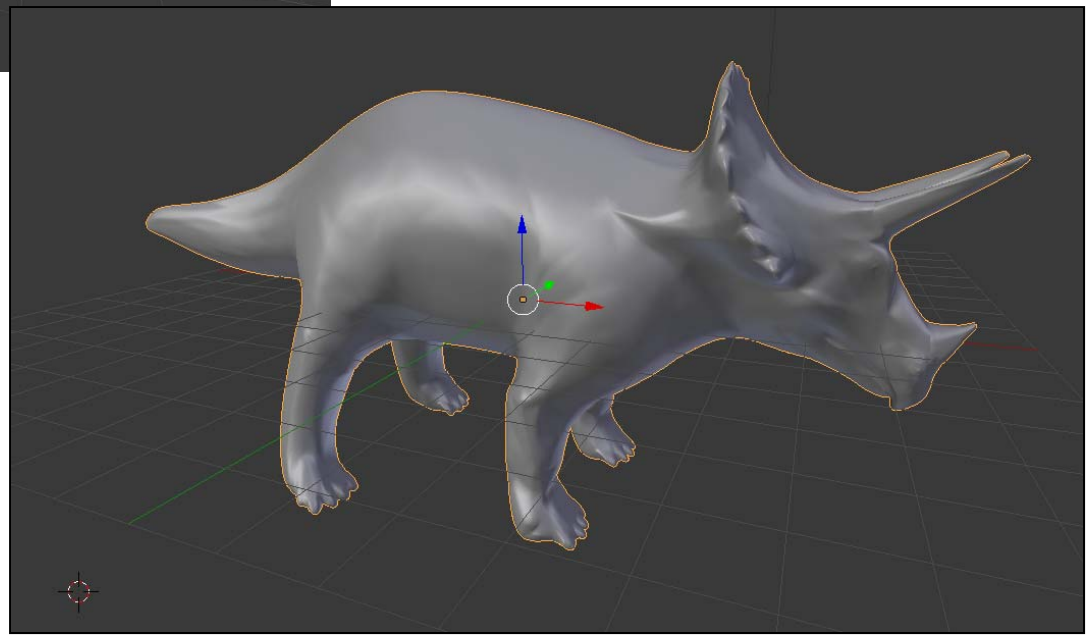
.obj files are also pretty straightforward to create. So, if you have a shape in mind and can write a computer program to generate it, you can write your own .obj file and Import it into Blender.

Importing Objects from Other Places



File = dino.obj

As-is, flat shaded



Subdivision surfaced

Smooth shaded