

# Maya 2014 - Introduction to Maya

Maya is an incredibly powerful animation software that can be used to create almost anything you can imagine. The purpose of this document is to help you become familiar with the basic user interface and features of Maya so you can start creating beautiful works of 3D artwork.

For more specific in-depth on individual workflows, be sure to check out the other documents and videos related to Maya and 3D training.

When you first open Maya, you will see the 1-Minute Startup Movies. Please watch these to get some introductory training on using Maya. To disable this window in the future, click on the checkbox at the bottom.

**1-Minute Startup Movies**  
Tips & tricks to get you started

**1** Create and view objects

**2** Zoom, pan and roll:  
Navigation essentials

**3** Move, rotate  
and scale objects

**4** Select objects  
and parts of objects

**5** Reshape and edit objects

**6** Uncover more features

English 日本語 简体中文

Beginner to Expert: More Maya Resources

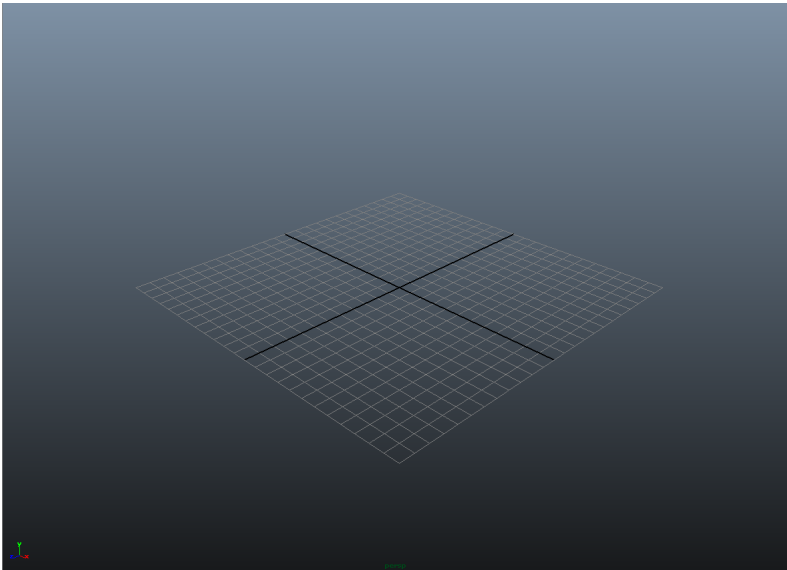
Show this at startup

QuickTime 7.7 or greater recommended

## Navigating the Viewport

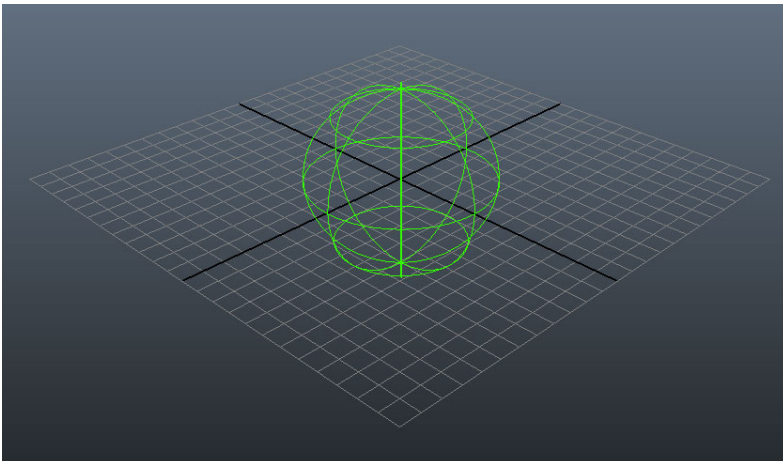
- When Maya opens, you'll see a 3D view with a blue and grey gradient background. This is called a **Viewport**, and it's where all of our 3D objects, cameras, lights, backgrounds and anything else we add to our scene will live.

- **Alt+B**: Cycle through different background colors, or go to **Window/Settings & Preferences/Display/Background gradient** to change other display settings such as the grid and axes (X, Y, Z).



- Let's create a basic 3D object in our viewport so we have something to look at. Go to **Create/NURBS Primitives/Sphere** under the top menu and click and drag to create a sphere.

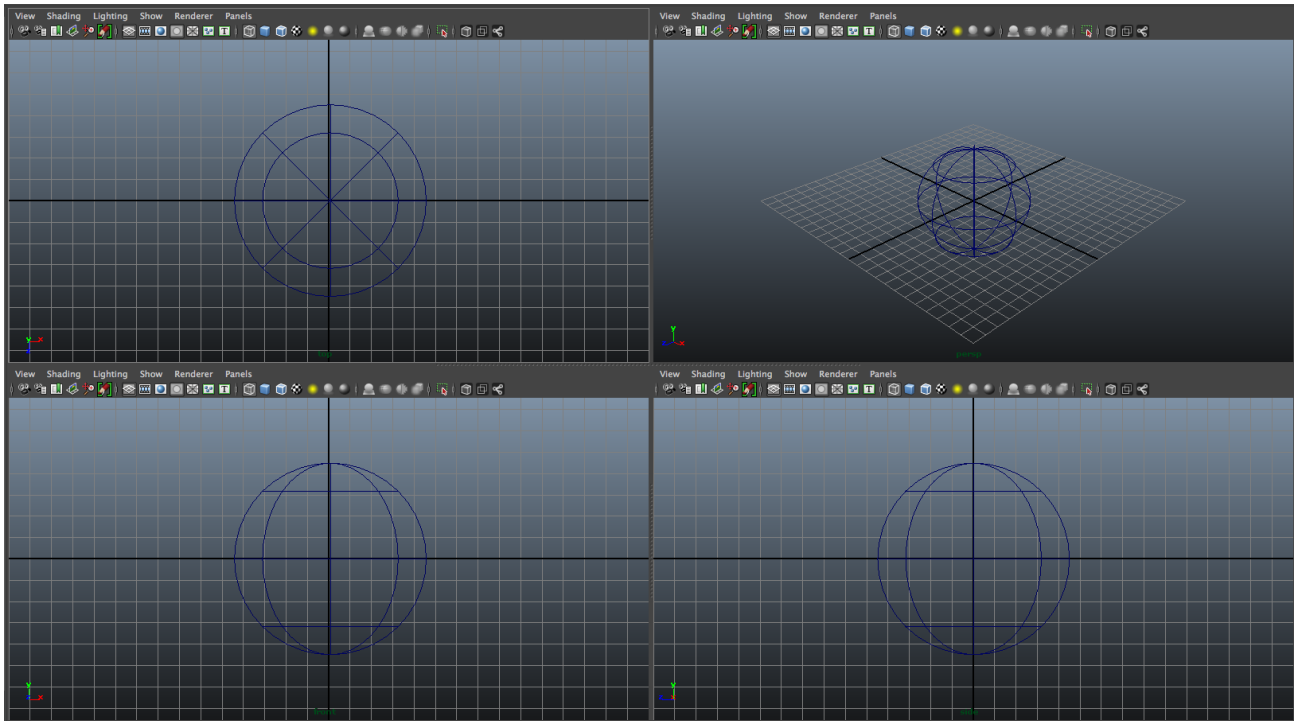
- Make sure that **Interactive Creation** is checked on in the **NURBS Primitives** menu. We will talk about this more in a later document.



- To move around in our viewport:

- **Alt+left mouse button**: Tumble the view
- **Alt+middle mouse button**: Track the view
- **Alt+right mouse button**: Zoom/Dolly the view in or out
  - You can also use the **scroll wheel** or hold the **left+middle mouse button**

- These tools are also available in the menu at the top of our viewport under **View/Camera Tools**.

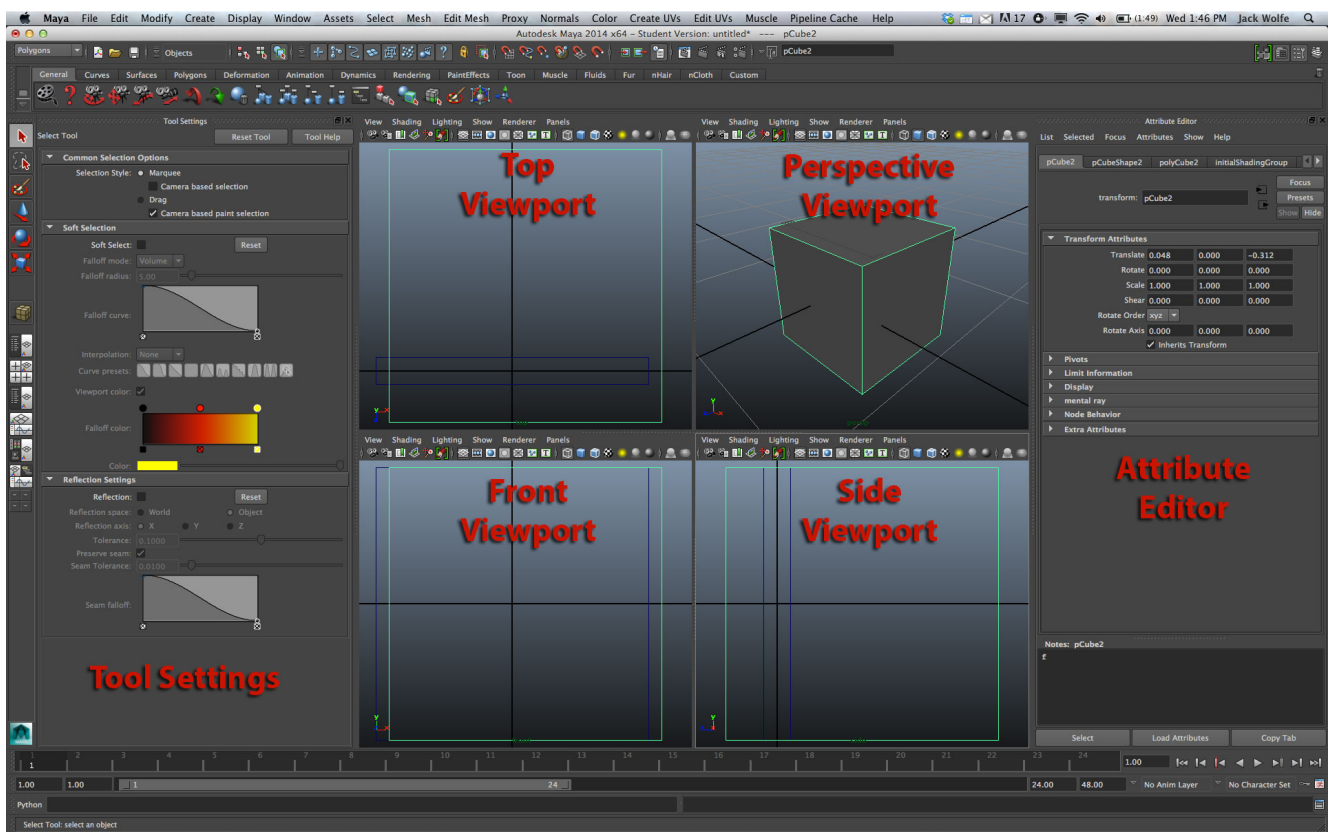
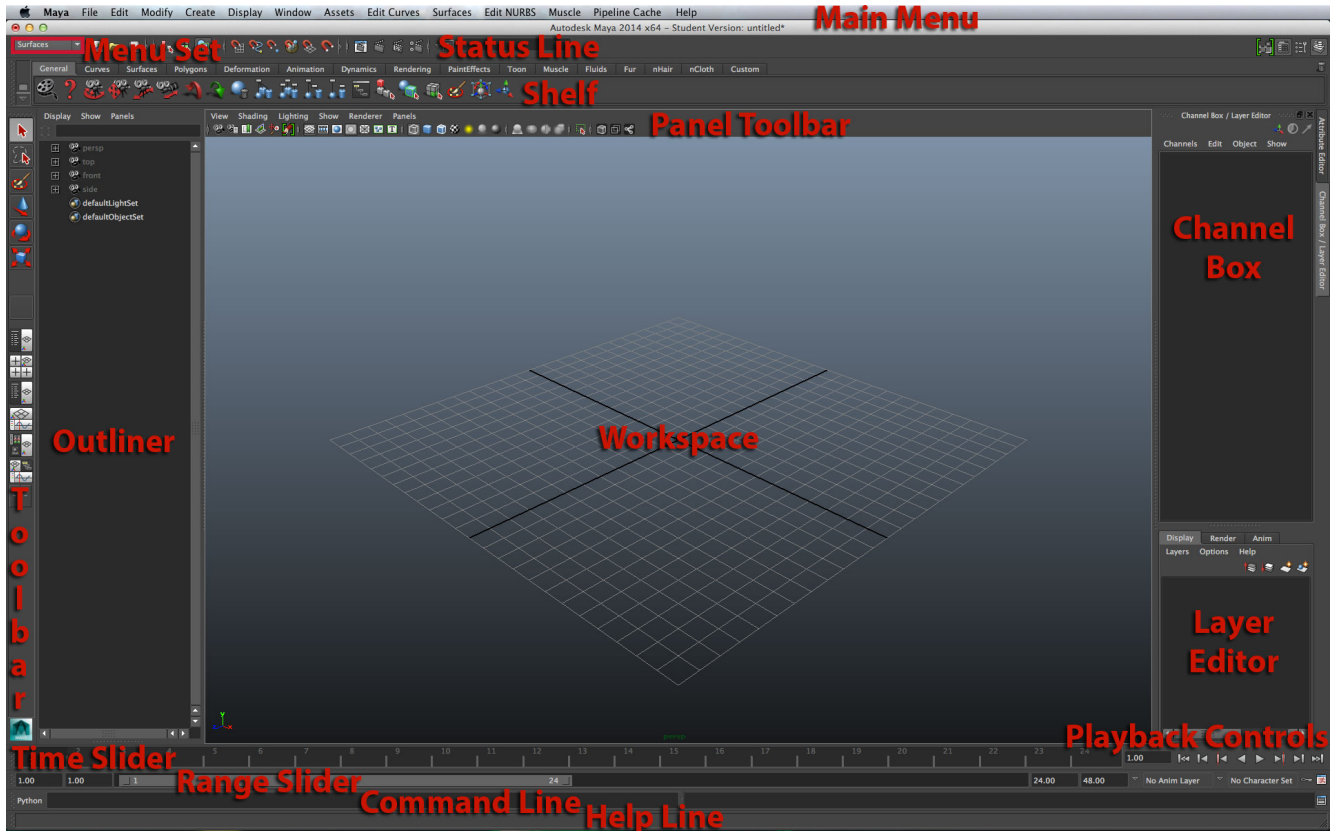


- Sometimes, we want to see our models from different views to get a different perspective on things and to lay our geometry appropriately.
- **Tap Spacebar**: Quickly switch from a single Perspective view to four views that include **Top**, **Front**, **Side** and **Perspective** viewports.
- **Tap Spacebar while hovering within any viewport**: Maximize/minimize that viewport
  - Note that if you hold Spacebar, the Hotbox pops up. This special menu will come into play later.
- The three basic dimensions in three-dimensional space are **X**, **Y** and **Z**.
- The **Top**, **Front**, and **Side** viewports allow us to see our scene without any geometry distortion, as is seen in the **Perspective** viewport by default to simulate a virtual camera.
- **F**: Frame the selected object (or objects) in the current viewport
- **A**: Frame all objects in the current viewport

## The Maya User Interface

- Go to **Maya/Preferences** to see various settings and preferences, including:
  - **Interface/UI Elements**: Change to Disable/enable various UI elements
  - **Display/Kinematics/Manipulators/Polygons**: change display size of different UI elements
  - **Settings/Camera**: Change near/far clip distance if objects seem to disappear as they approach the virtual camera
  - **Settings/Rendering**: Change default renderer

- Settings/Undo: Set number of undo levels, but at the cost of using more memory

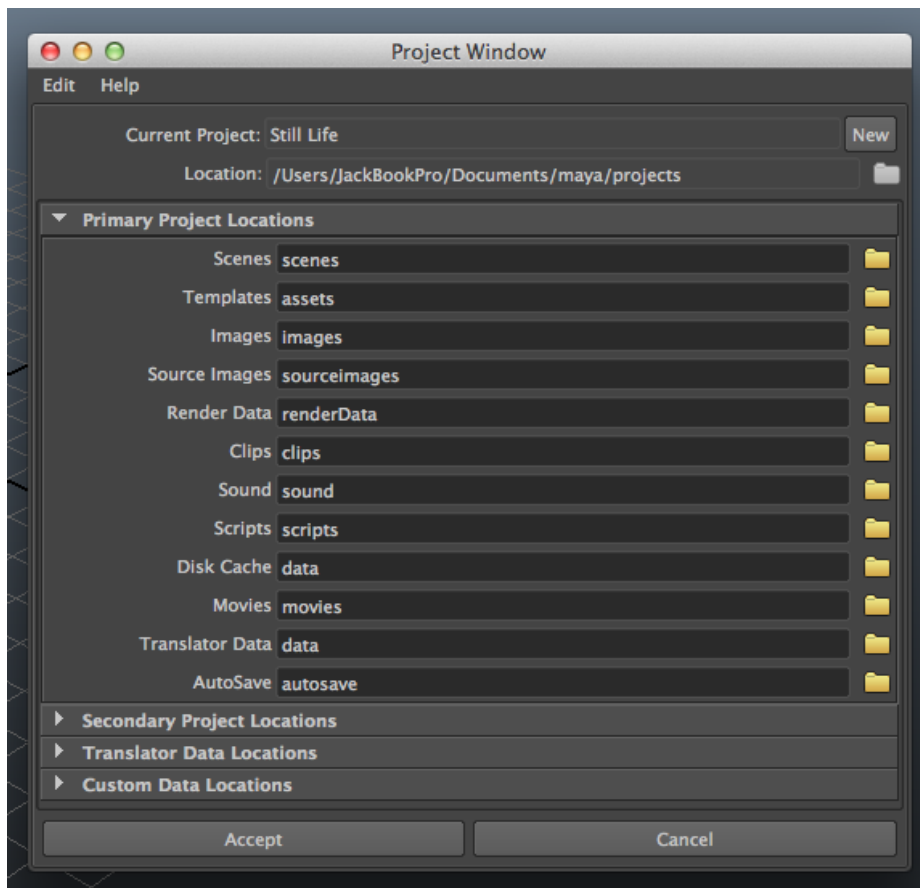


- Now let's go over Maya's **UI Elements** (on the previous page) one by one:
  - **Main Menu:** File, Edit, Modify, Create, Display, Window, Assets...
    - Changes depending on what menu set you have selected (Animation, Polygons, Surfaces, Dynamics, Rendering, nDynamics and Customize...)
  - Click on vertical divider lines to expand/contract menu item sections
  - Click and drag the series of vertical dots at the top of a menu to drag it around and rearrange your Maya interface
  - Click on the double lines at the top of a Main Menu dropdown to tear it off into a standalone panel
  - Press the **Spacebar** to bring up the Hotbox at the cursor
    - The **Hotbox** gives you access to some or all of Mayas tools and menus with a single keyboard stroke.
    - With the Hotbox open, Go to the **Hotbox Controls:**
      - **Show or Hide All:** Enable viewing all menu items in the Hotbox
      - Set Transparency
  - A **Green Menu item** indicates a feature new to Maya 2014

**-Important Main Menu items:**

- New/Save/Open Scene
- Selection Mode Menu
- Hierarchy/Object/Component Mode
- Selection Filter
- Snap to Modes
- Node Based Options
- History
- Rendering Options
- Rename/Transform Objects Text Field
- Show/Hide Different UI Elements
- **Tool Box:** Basic selection and transformation tools, panel layouts
  - Select,
- **Quick Layout buttons:** different window layout presets
- **Shelves:** Contains tools and options dependent on current menu set
- **Status Line/Toolbar:** various scene settings
- **Viewports:** How you view the objects in your scene
  - **Orthographic (Top, Front, Side):** Flat, cannot tumble
  - **Perspective:** shows camera distortion, can tumble, zoom & pan
- **Panel Toolbar:** Viewport display options
- **Channel Box/Layer Editor:** object properties and nodes, scene layers
  - **Basic Object Properties:**
    - Name

- Translate, Rotate, Scale (all with X, Y and Z values)
- Visibility
- **Inputs:** Contains Creation Node and any transformations/adjustments
- **Layer Editor:**
  - Objects can be placed on individual layers to allow you to organize and better manage your scene
  - Layer editor buttons include **Move Layer Up**, **Move Layer Down**, **Create New Layer** and **Add Selected Object to New Layer**
    - Layers can be set to **Visible/Hidden**, **Template** (non-selectable and outlined) **or Reference** (non-selectable)
- **Attribute Editor:** Object and node properties based on selection
  - **⌘+A:** Open Attribute Editor
  - Displays **Input Nodes**, **Material Nodes**, **Transformation Nodes**, etc...
- **Tool Settings:** Selected tool settings (double click on tool to open)
  - Turn on **Reflection** to perform object transformations across a given axis (for example, modeling two sides of a character at once across the vertical Y axis)
- **Time Slider:** Position in animation sequence; drag slider to change current frame
  - Each tick represents a frame of animation
- **Playback Controls:**
  - Go To Start of Range , Step Back One Frame, Step Back One Key, Play Backwards, Play Forwards, Step Forward One Key, Step Forward One Frame, Go To End Of Range
  - Press **Esc** to cancel playback
- **Range Slider:** Animation sequence range in frames
  - Use the text fields to
- **Command Line:** enter MEL or Python commands
  - Text display shows result of action or command performed
  - Script Editor allows for manual editing and input of scripts
- **Help Line:** Info about menu underneath cursor
- **Outliner:** Displays all of your scene assets

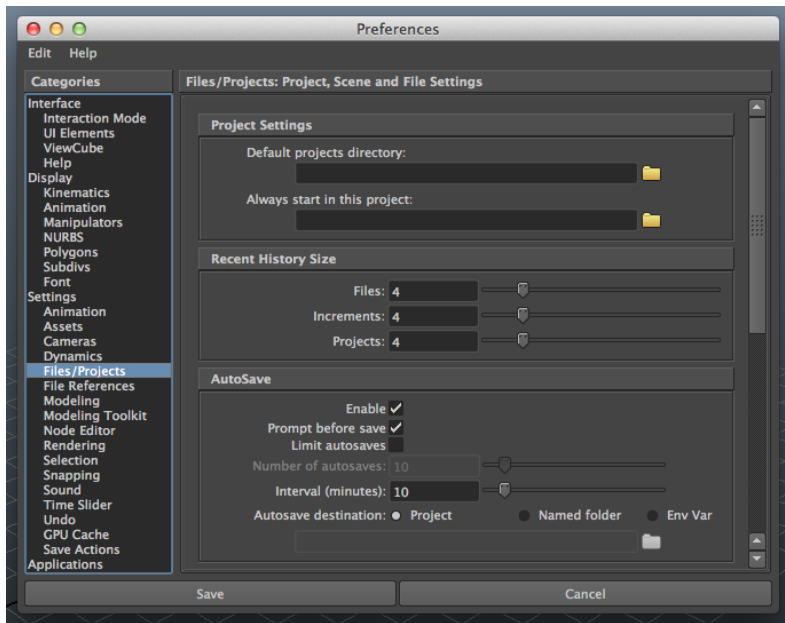


### Creating Maya Projects

- Go to **File/Project Window** to create a new project. Here, you can set the location and name of your project. Maya will automatically create all of the necessary subfolders within that project folder (scenes, templates, images, etc...), so you do not have to change their names from the defaults.
- The name of the subfolders correspond to what you should save in them
- **File/Set Project** allows you to switch between different project folders that have already been created. Navigate to the project folder name, select it and press **“Set”**
  - Make sure when you are saving/rendering/etc.. that you have set the correct project!

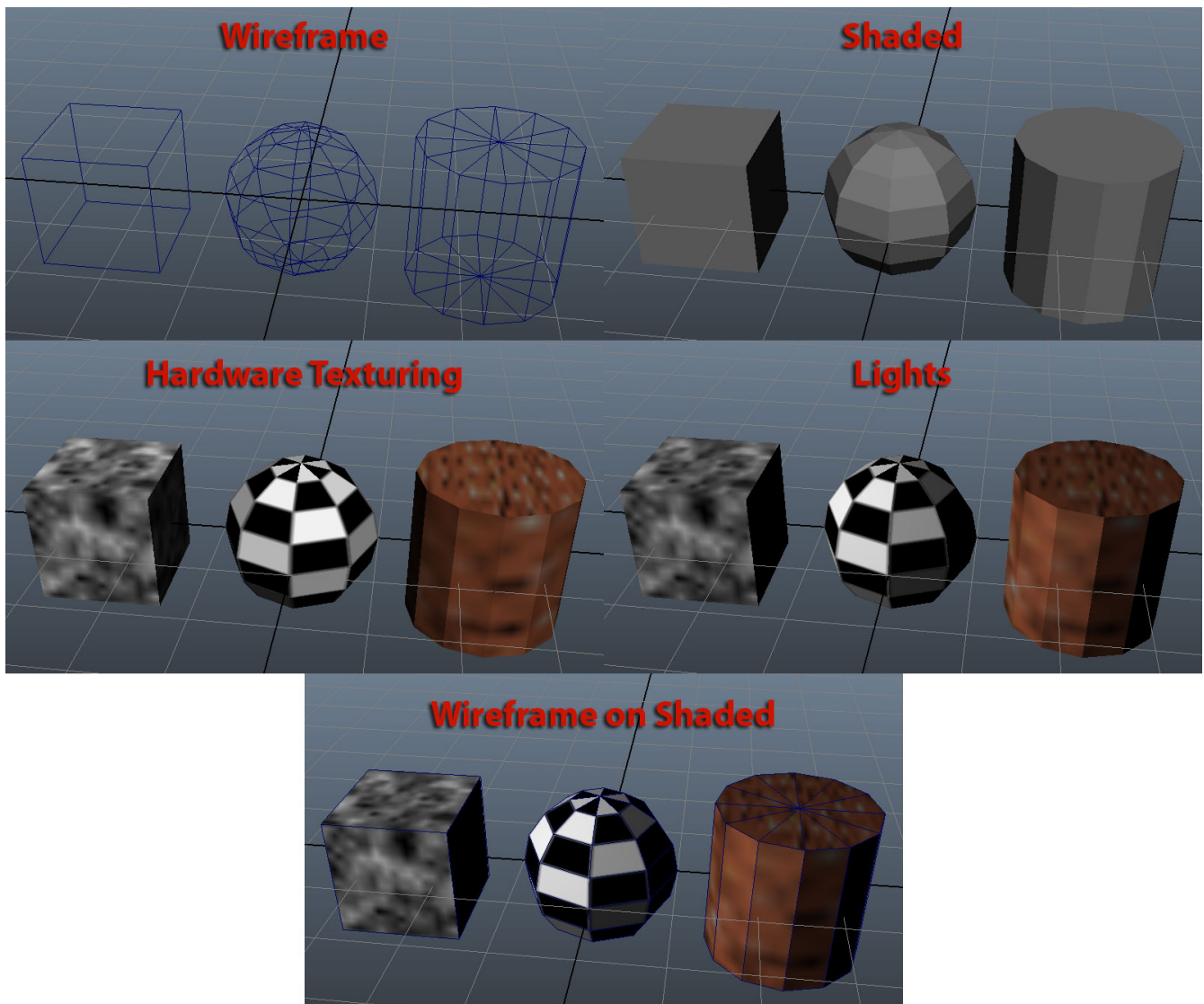
### Saving Scene Files from Maya

- **⌘+S: File/Save:** Save the scene file you are currently working on
  - Save within the **scenes** folder of your project
- **⌘+Shift+S: File/Save As** to create a new copy
  - **.MA:** Maya ASCII
    - Easier to edit than .MB files
  - **.MB:** Maya Binary
- Many times, you will want to create different versions of your scene files so that you can go back in time to previous versions. To do so, select:
  - **⌘+Alt+S: File/Increment & Save:** Changes the file suffix to create a new file iteration



- You can also enable automatic saving at preset intervals by going to **Window/Settings&Preferences/Preferences/Files/Projects/Autosave:**
  - **Interval (minutes):** How often to create a new save file
  - **Prompt before save** to display popup message
  - **Limit autosaves** will overwrite older saved files
  - Saves inside **autosave** folder of your project
  - Press **Save** to apply the changes to your preferences
- To export geometry from your scene to a more universal format, you can select geometry in your scene and go to **File/Export All** or **File/Export Selection:**
  - Use **OBJExport** to export as a **.OBJ** file, a very commonly supported 3D file format





### Viewport Shading and Selection Modes

- To change how your objects are displayed within the viewport, on the Panel Toolbar go to Shading. Some of the options we have for displaying our objects are:

- **4: Wireframe:** See through your geometry and display as outlines
- **5: Shaded:** Display geometry color and polygon/NURBS shading information
- **6: Hardware Texturing:** Display textures currently applied to our model
- **7: Lights:** Use scene lighting in viewport display
- **Wireframe On Shaded:** Display wireframe outlines and shading at the same time
- You can also access these shading options by clicking on the buttons at the top of the viewport Panel Toolbar
- If you press **8** by accident, it will switch to Paint Effects mode which we do not want. Press 8 again to go back.

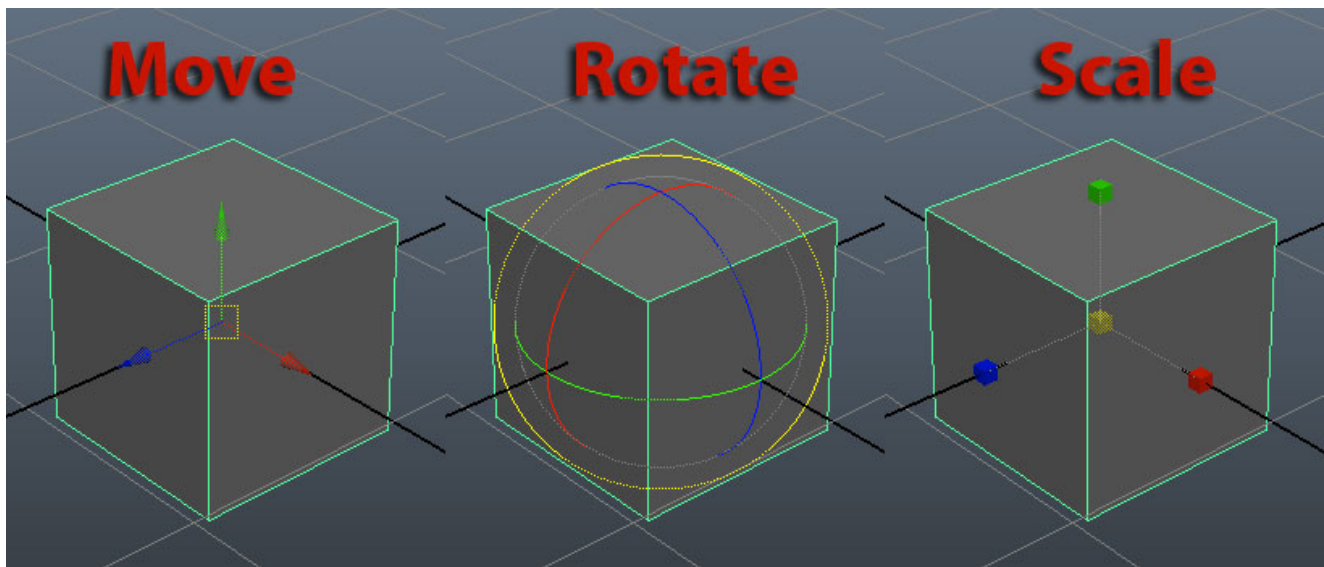
- Now let's talk about different ways that we can select the objects in our scene:

- **Q:** Select tool:

- Click on objects to select them
- **Drag a marquee** around or on top of objects to select anything that touches the marquee box. Bear in mind that any object that is behind your selection box will also be selected.
- **Hold Shift** to select multiple objects; with Shift held, click on selected objects to deselect them.
- You can also **Control+click** to only deselect objects

## Transforming Objects In Maya

- Now let's go over how we can transform the shape and position of our objects:
  - Depending on which tool is selected, the **Manipulator** will change its appearance. That manipulator indicates the **pivot point** from which the object will be moved, rotated or scaled.
- **W: Move**
  - Drag on one of the arrows for the **X** (red), **Y** (blue) or **Z** (green) axis to move along that axis. Click the center of the manipulator to move along all axes at once.
- **E: Rotate**
  - Drag on one of the rings for the **X**, **Y** and **Z** axis to rotate around that axis. Dragging on the **yellow ring** rotates in **screen space** around the current view.
- **R: Scale**
  - Drag on one of the cubes to scale across that axis, or the center yellow cube to scale uniformly across all axes.

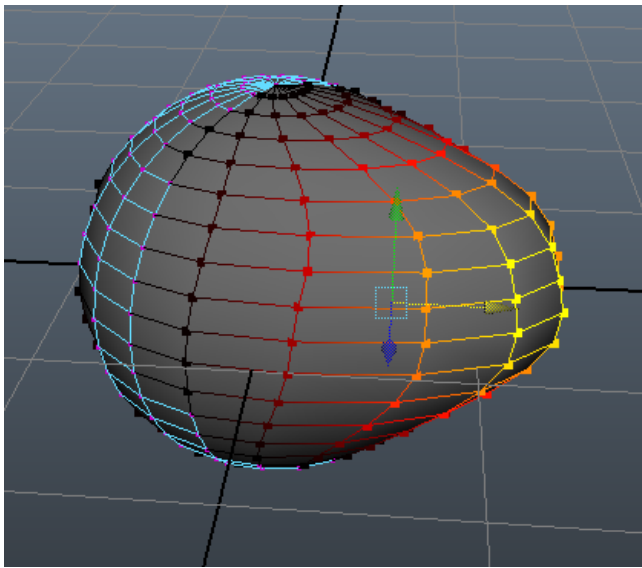
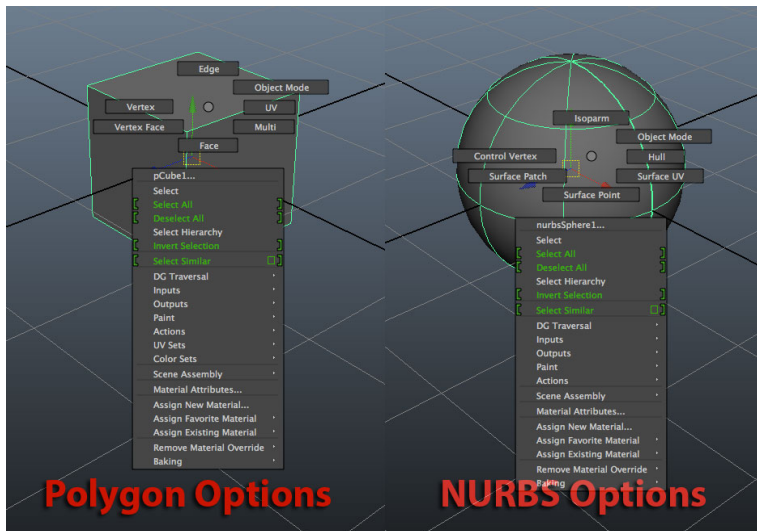


- To move or scale along two axes at once, **hold Control** and drag on the axis you **DON'T** want to adjust to move/scale across the other two axes
- If we rotate our object around, and then switch to the move tool you may notice that the pivot point axes point normally despite our object being rotated. This is because we are moving our object in **World space** and rotating in **Object space**.
  - **World:** Transforms based on global scene axes, which do not change.

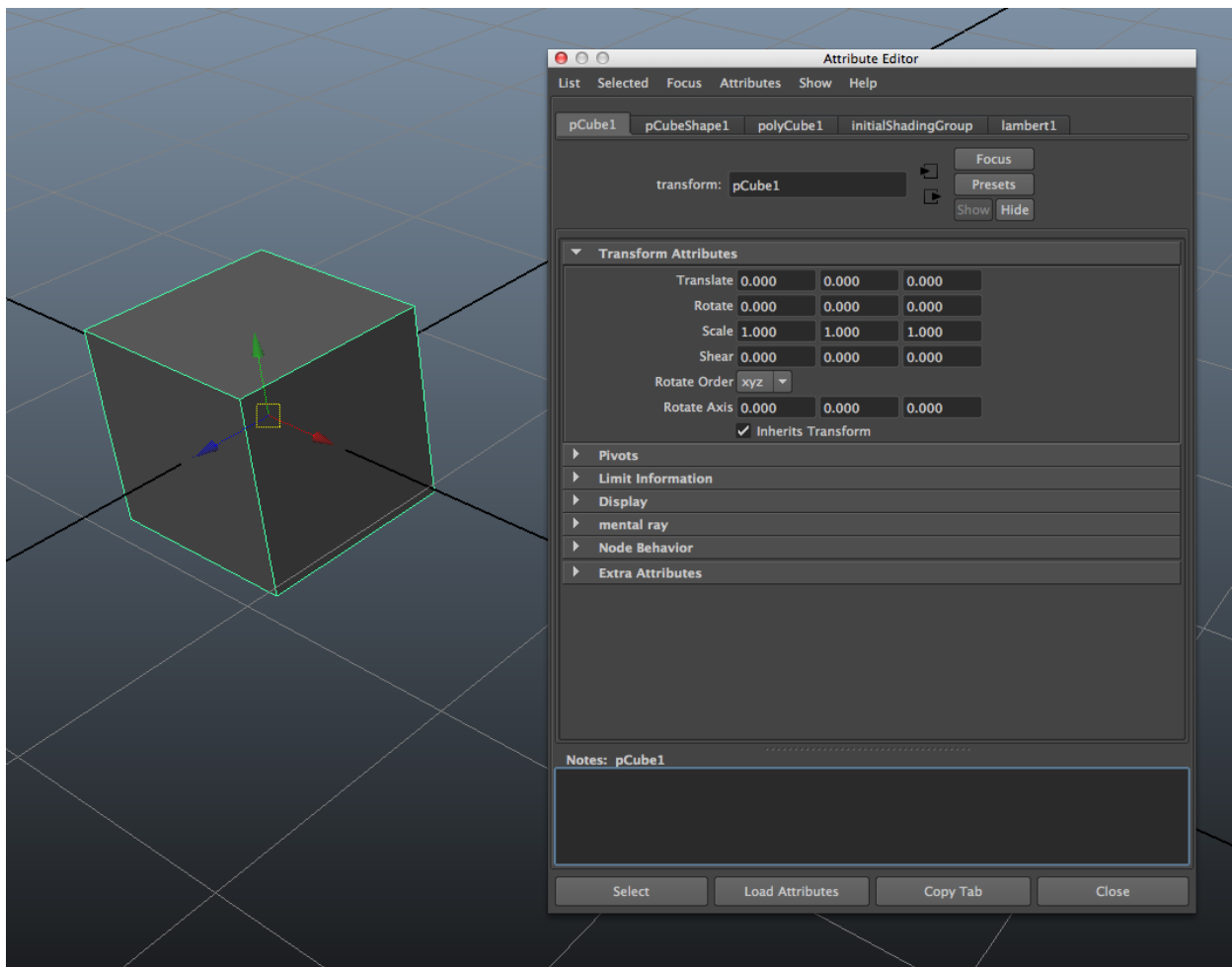
- **Object:** Transforms based on local object axes, which do change.
- Go to the **Tool Settings** for the **Move/Rotate/Scale tool** to switch between **World** and **Object** axis adjustment
- The **Channel Box** displays transformations and allows us to input specific values for transformations.
  - Select any value in the **Channel Box** and type in a new value to change it
  - With a name of a valued selected, **Middle Mouse Drag** in the viewport to adjust that value
- Sometimes, we want to reset all of the settings in the **Channel Box** to 0 without changing our objects position, rotation and scale values. To do so:
  - Go to **Modify/Freeze Transformations** to reset all of the **Channel Box** values and make its current values the default.
  - Go to **Modify/Reset Transformations** to reset all the **Channel Box** values and change the object back to its original state. You can also reset all of the **Channel Box** values manually.

### Modifying Object Components

- There are two basic modes for which you can manipulate geometry: **Object** and **Component Mode**:
  - **Object Mode** is for object-wide transformations of one or more objects
  - **Component Mode** is for component transformations within parts of an object
  - There are buttons on the top left side of the **Status Line** for both modes
  - In **Component Mode**, you can work with Polygons, NURBS and Subdivision surfaces.
  - **Right click** on a Polygon object to switch between selecting:
    - **Vertices, Faces, Edges, UVs, Vertex Face** (rarely used), **Multi** (rarely used) or switch back to **Object Mode**
    - All of the selection and transformation options for **Object Mode** can be applied to individual vertices, faces and edges in **Component Mode** to reshape your object
  - **Right click** on a NURBS object to switch between selecting
    - **Isoparms, Control Vertices, Hulls, Surface Patches, Surface Points, Surface UVs** or switch back to **Object Mode**



- Under the **Move Tool Settings**, scroll down and turn on **Soft Selection mode**:
  - **Soft Selection** allows you to have a smooth falloff from your selection. This can be very useful for reshaping objects with smooth and curved surfaces.
  - Yellow indicates full selection, black indicates weak selection
  - Adjust the **Falloff mode, radius and curve** to change how the **Soft Selection tool** works



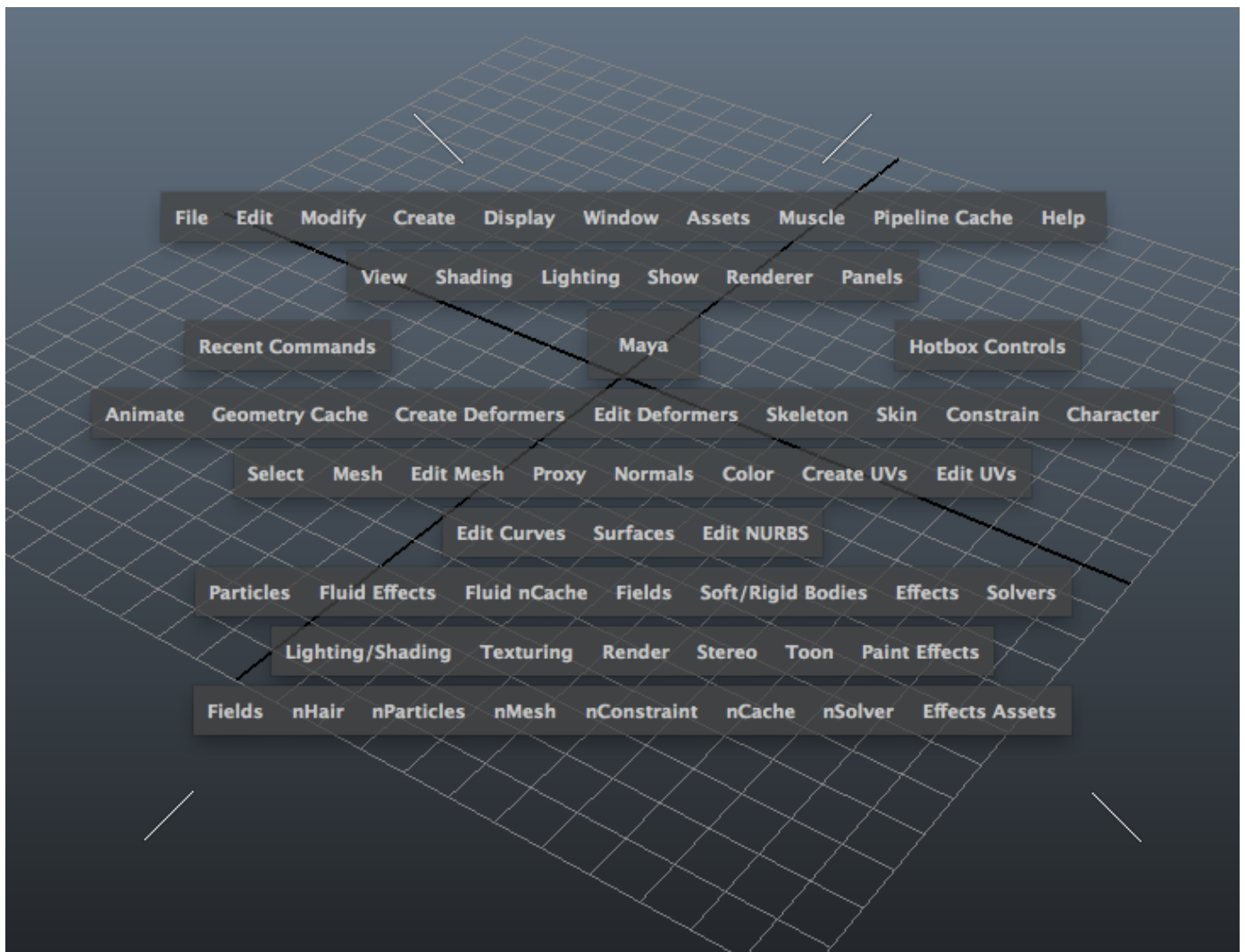
## Using the Attribute Editor

- The Attribute Editor allows us to see different bits of information about whatever we have selected. To access the attribute editor:
  - **⌘+A**
  - **Window/Attribute Editor**
  - Button in top right of the Status Line
- With an object selected, the Attribute Editor will display a lot of information:
  - **Transform Node:** Info about it's position/rotation/scale in 3D space
  - **Shape Node:** Info about what it looks like
  - **Creation Node:** Initial creation parameters
    - Also available in the **Channel Box** under **Inputs**
    - If you delete the **History (Edit/Delete by Type/History)**, this input node will disappear and you will no longer be able to edit the object's creation and transformation nodes
  - **Materials Node:** Materials applied to your object
  - The **Attribute Editor's** nodes change based on what object is selected
- Within the **Attribute Editor**, go to **List** at the top menu and disable **Auto Load Selected Attributes** to retain the attributes of a given object regardless of a new selection

- The **Copy Tab button** within the **Attribute Editor** allows us to work on the attributes of two different objects at the same time

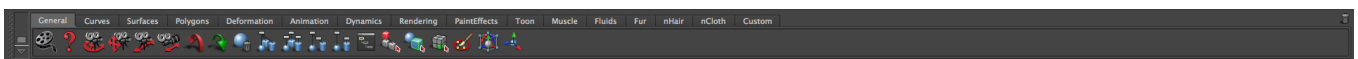
### **Grouping and Parenting**

- Go to **Window/Outliner** to view a list of everything in our scene, including objects, cameras, lights, etc:
  - Click on scene items to rename them
  - If you click on the **+ symbol** next to an object, you can see the **Shade Node** associated with that object
- There are two basic ways to connect multiple objects together: Grouping and Parenting
  - **P: Edit/Parent:** Parent two objects together by selecting the **Child** and then the **Parent**
    - A **Child** moves, rotates and scales along with its **Parent**
    - However, you can still move a Child independently of its Parent
    - **Middle Mouse Drag** an object in the **Outliner** under another object to make it a **Child** of the second object
  - **Shift+P: Edit/Unparent**
  - **⌘+G: Edit/Group:** Create a group containing multiple objects
    - Rename the group to organize your scene
    - **Up Arrow:** Select the group containing the currently selected object



## Using the Hotbox

- Hold Spacebar to open the **Hotbox**. The **Hotbox** allows us to quickly view all of the different menus available to us, regardless of the current **Menu Set**.
- With the **Hotbox** open:
  - **Hotbox Controls:**
    - **Show All** or **Hide All** to show or hide all of the Maya menus in the **Hotbox**
    - **Show or Hide** Polygon, Surfaces, Rendering, Animation and Dynamics menu sets, depending on what you're working on
  - **Click above, below, to the left and to the right** of the **Hotbox** to display different menus, layouts and editors



## Creating Custom Shelves

- The **Shelves** group together different tools related to different features contained within Maya. They include:
  - General, Curves, Surfaces, Polygons, Deformation, Animation, Rendering, PaintEffects,

Toon, Muscle, Fluids, Fur, nHair, nCloth and the Custom Shelf

- Click on a Shelf Tab to open that Shelf
- The **down arrow** on the far left side of the **Shelf** gives us access to:
  - The **Shelf Editor**, where we can edit various attributes of our **Shelf items**, including:
    - Icon, Tooltip, Label, Label Color, Background Color, etc..
  - **New Shelf**: Create a new custom shelf
  - **Delete Shelf**: DO NOT DELETE DEFAULT SHELVES
- **Ctrl+Shift and click on a menu item**: Add it to your custom shelf
- **Middle Mouse Drag** an item to the **Trash Can Icon** in the top right of the **Shelf** to delete it

This concludes my introductory overview of Maya 2014. For more in depth training on modeling, texturing, rendering and other topics, be sure to check out my other tutorials.