

- I. Maya Overview - Simply put, *nodes with attributes that are connected*.
 - A. Dependency Graph - the model by which every item is represented by a node, and is related to other nodes through dependencies and relationships.
 - B. Nodes - Every element in Maya is described by either a single node or a series of connected nodes.
 - i. A *Node* is a generic object type in Maya.
 - ii. Nodes can be anything from curves, to surfaces, to lights and shaders.
 - iii. Typical nodes:
 - a. Transform node - contains positioning information.
 - b. Input node - represents options the drive the creation of an object.
 - c. Shape node - contains all the component information that represents an object.
 - C. Channel box - laundry list, window with editable value fields for everything in each node.
 - D. Attribute Editor - each node is defined by a series of attributes that relate to what the node is supposed to accomplish.
 - E. IMPORTANT - Virtually every attribute of every node can be keyframed and animated.
- II. Maya Menus - most tools and actions you will use are found in the main menus.
 - A. Main Menu
 - i. The first seven menus are always visible. (*File, Edit, Modify, etc...*)
 - ii. The next few menus change depending on the UI mode you are in.
 - B. UI Mode / Menu sets - there are four modes, which allow you to focus on tools for a particular workflow. (*shortcuts are in bold*)
 - i. Animation - **F2**
 - ii. Modeling - **F3**
 - iii. Dynamics - **F4**
 - iv. Rendering - **F5**
 - v. **h + LMB**- gives you a marking menu of UI modes.
 - C. The Shelf
 - i. A personalized collection of frequently used menu items, tools, etc...
 - ii. **Ctrl+Alt+Shift** on a menu item to add it to your shelf.
 - iii. **Options -> Customize UI -> Shelves** - to edit the shelf contents.
 - iv. Allows you to tailor the UI to your particular workflow.
 - D. Hotbox - otherwise known as "THE SHIT".
 - i. A UI tool that gives you access to as much or a little of the May UI as you want.
 - ii. It appears at where your cursor is, and offers the fastest access to tools and actions.
 - iii. **Press and hold the spacebar** - opens the hotbox.
 - iv. Hotbox layout
 - a. Topmost menu is the main menu.
 - b. Second from the top is the focused panel menu.
 - c. Bottom menu is relative to the UI mode you are in.
 - v. Quadrants - N, S, E, W (and center)
 - a. Hold customizable marking menus.
 - b. Each quadrant can hold up to three menus, one for each mouse button.
 - c. Clicking in a quadrant opens the menus.
 - vi. Hotbox controls - allows you to customize the hotbox.
 - a. use the Hotbox controls box.
 - b. use the center marking menu.
- III. Manipulators
 - A. Tool Manipulators - a menu with important tools which resides at the top left of the workspace.
 - i. Q - Select - used to select objects, components, and hierarchies based on the selection mode buttons.
 - ii. W - Move - lets you move items in the workspace.
 - iii. E - Rotate - lets you rotate items in the workspace.
 - iv. R - Scale - lets you scale items in the workspace.
 - v. T - Show Manipulator - toggles on and off transform manipulators
 - vi. Y - holds the last tool you used.
 - B. Transform Manipulators -
 - i. Transformation nodes contain position, orientation and scaling information.
 - ii. To help access and interactively edit these transforms, there are a set of transformations manips that you can access.
 - iii. Manipulators use RGB colors to respectively correspond to the XYZ axis.
 - iv. Selected handles are displayed in yellow.

- IV. The Maya Workspace
- A. Channel Box
 - B. Status bar
 - C. Tools/Shelf
 - D. Feedback line
 - E. Layers
 - F. View panels
 - G. Time line
 - H. Command line
 - I. Help line
- V. Panels and Layouts - A way of organizing view panels.
- A. The **Panels** menu in all panels lets you change the contents that view panel or it allows you to change the layout of all the panels.
 1. View panels - Perspective, and orthographic modeling views.
 2. Other panels - Panels can display other types of information, including:
 - i. Hypershade
 - ii. Graph Editor
 - iii. Dependency Graph
 - iv. Dope Sheet
 - v. Hypergraph
 - vi. Renderview
 - B. **Panels** -> **Layouts** -> **x** - lets you select various types of layouts. (e.g. Four, *one perspective, and three orthographic windows.*)
 - C. **Panels** -> **Saved Layouts** -> **x** - lets you select various preset view panel layouts. (*You can save your own presets also.*)
 - D. Window Focus - is determined by which view panel the mouse is in.
 - E. To zoom a panel to full screen, simply tap the **spacebar**. Tap the spacebar again and the panels will return to the previous layout.
- VI. View Tools - when working in perspective, orthographic, or most other panels, you can change your point of view through these ***shortcuts***.
- A. **Alt** + click-drag **LMB** - tumble in perspective view
 - B. **Alt** + click-drag **MMB** - track in any view panel
 - C. **Alt** + click-drag **LMB+MMB** - dolly into any view panel
- VII. Display options.
- A. Shading options
 1. - Use the **Shading** menu on each view panel to choose how you want to display the geometry.
 2. **4** - sets the panel to wireframe display.
 3. **5** - sets the panel to smooth shaded display.
 - B. Hardware texturing and lighting
 1. Use the **Shading** menu on the view panel to toggle on/off hardware texturing and lighting. (*Some machines don't have this option.*)
 2. **6** - toggles on/off hardware texturing.
 3. **7** - toggles on/off hardware lighting.
 - C. Smoothness
 1. By default, NURBs surfaces are displayed using a rough smoothness, in order to enhance playback and interactivity.
 2. **1** - for rough smoothness.
 3. **2** - for medium smoothness.
 4. **3** - for high smoothness.
 5. Note: geometry smoothness is relative to the modeling process, and has nothing to do with the final render. The smoother your geometry, the slower the level of interactivity.
- VIII. Show menu
- A. The **Show** menu restricts what each panel can show on a panel-by-panel basis.
 - B. Restricting what is displayed in one particular window or another is a great way to minimize RAM requirements, and to promote better interactivity.
 - C. You can hide surfaces in one window, and edit the curves of a surface, while watching your changes in an adjacent window where surfaces are showing, but everything else is off.

VII. Selecting in Maya

- A. Selection Masks
 - i. At the top of the workspace, there are several mask tools available.
 - ii. Lets you have one Select tool that is "masked" so it can select only certain types kinds of objects and components.
 - iii. Very powerful, lets you select any combination of selecting types.
- B. Selection Modes - to toggle between Object and Component modes use **F8** .
 - i. Hierarchy - lets you select different parts of the scene hierarchy.
 - ii. Object - lets you perform selections on object types.
 - a. Selection masks allow you to select items such as, surfaces, lights, IK handles, etc.
 - b. Selection Masks can be further tailored by **RMB** on the mask icon, toggle on and off individual items. (*the same for other Modes.*)
 - iii. Component
 - a. Lets you select various components in the shape nodes of objects.
 - b. Selections include CVs, isoparms, Hulls, etc.
- C. **RMB** selecting - useful tool in conjunction with Masks/Modes.
 - i. Selecting an object with the RMB brings up a marking menu that lets you choose various components available for that object.
 - ii. After selection the object, the global selection modes/masks return.