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BA COMPUTER GAMES DESIGN

ENVIRONMENT DESIGN

Autodesk Maya Introduction



Autodesk Maya Introduction

- Creating primitive polygon objects
- Setting the correct Axis for Modelling ('Z-Up' OR 'Y-Up')
- Changing viewports
- Switching between **Object** and **Component** modes
- Translation, Rotation and Scale tools
- 3D Camera View Movement
- The Maya Outliner / Focusing on Objects
- Renaming your Objects



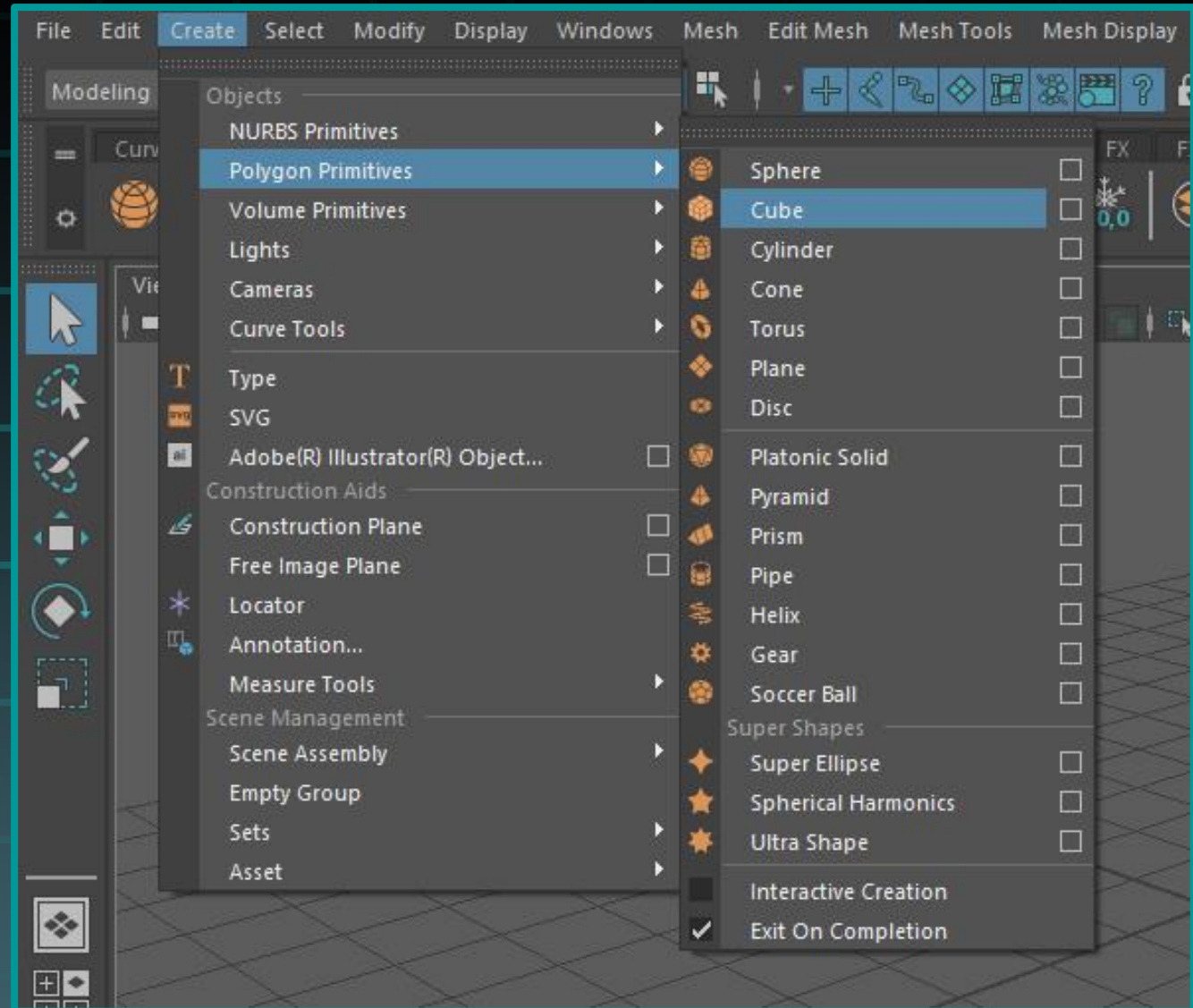
ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction: **Creating Primitive Polygon Objects**



Create > Polygon Primitives >

When creating 3D models for games in Maya, you will **ALWAYS** use **Polygons**.





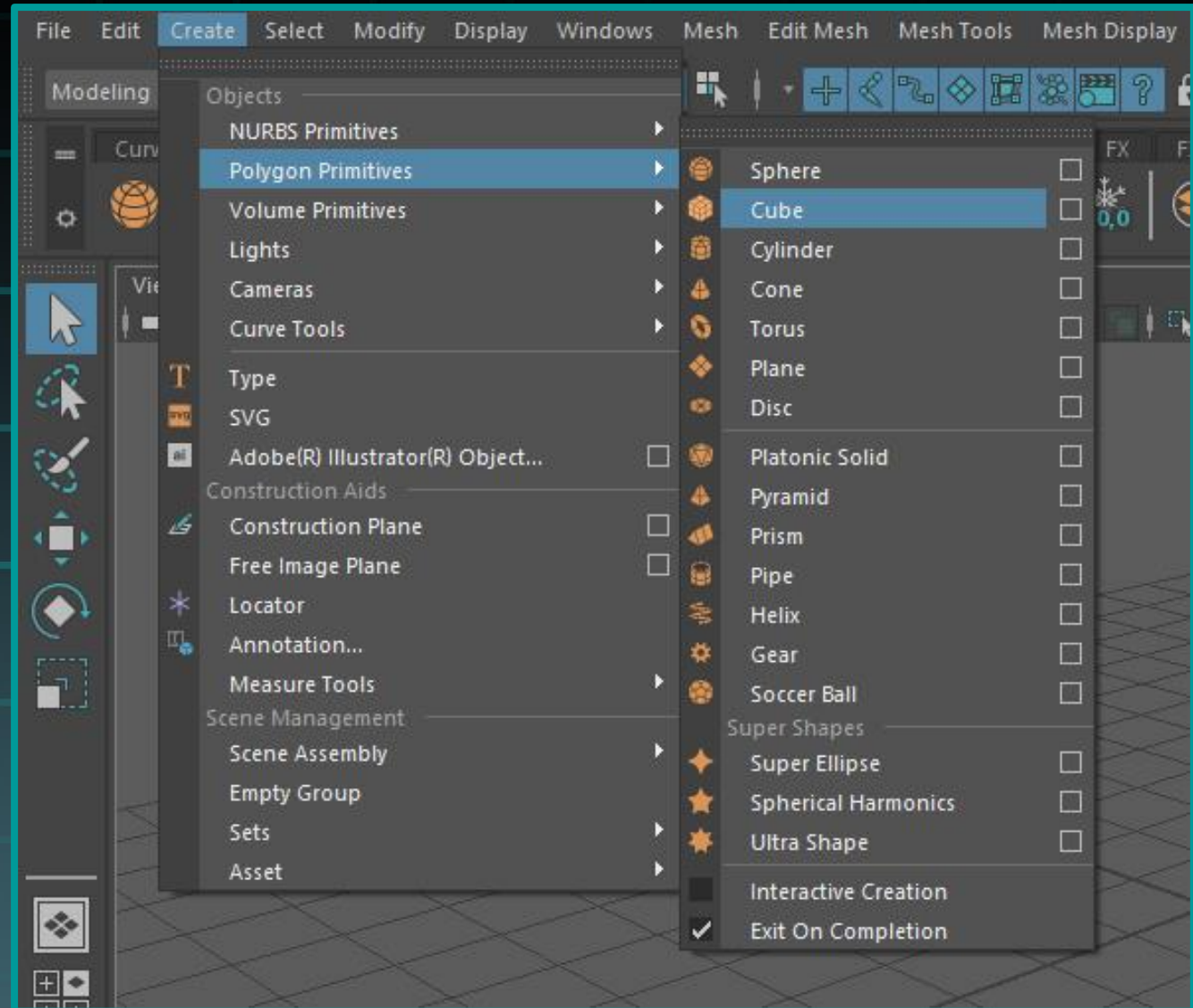
ENVIRONMENT DESIGN

Autodesk Maya Introduction

Create > Polygon Primitives >

You will start with a basic (primitive) shape and modify it using the tools covered in these early tutorials.

The shape depends entirely on what you plan to make and how you want to do it.





Autodesk Maya Introduction:

Setting the Correct Axis for Modelling (‘Z-Up’ or ‘Y-Up’)



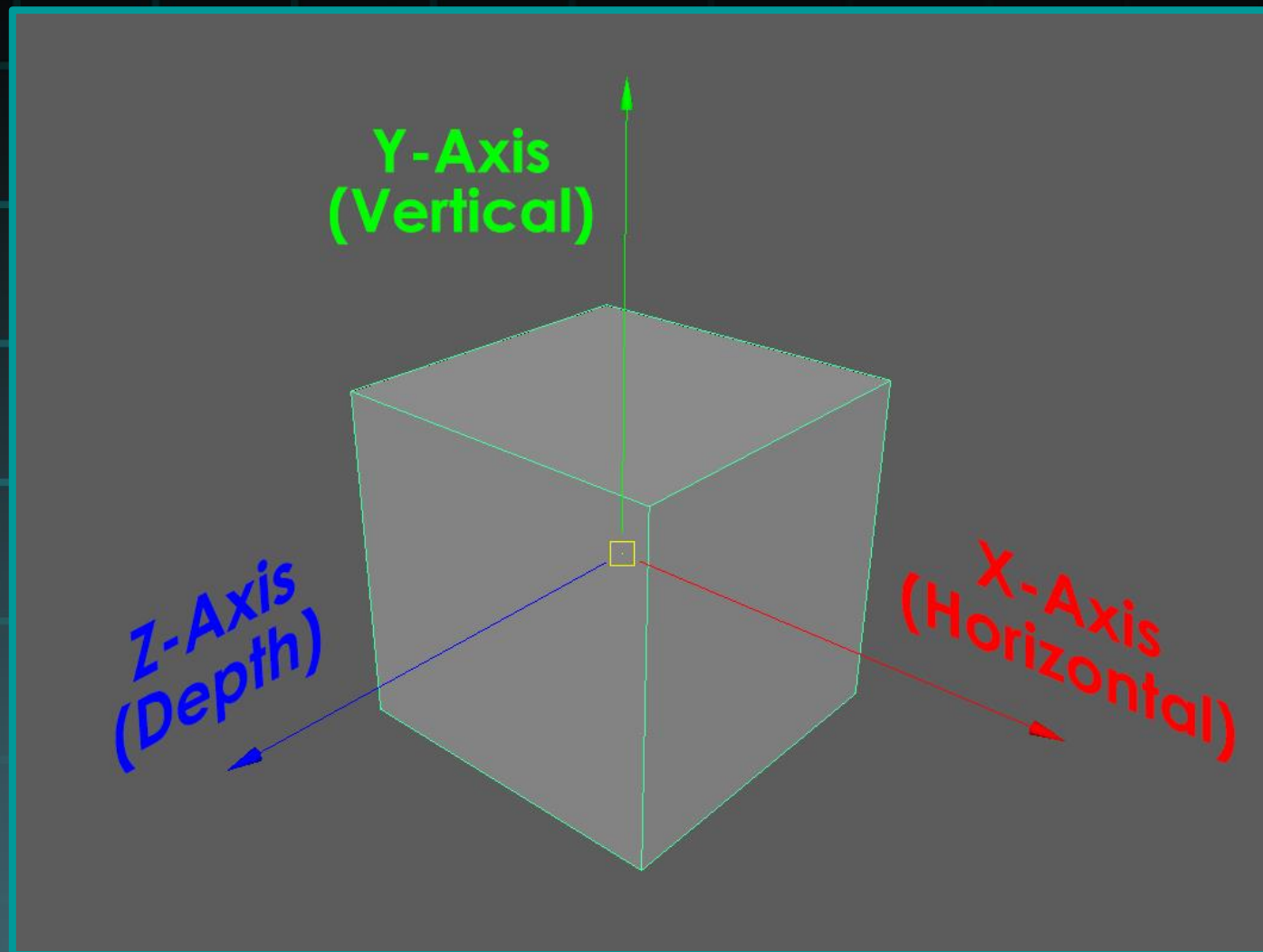
X Y Z Axis: Typical 3D Orientation ('Y-Up') / For **ANIMATION** Students

This is the **typical** orientation (Y-up) of the three-dimensional axis in Maya (and most other 3D programs/engines).

Y axis = Vertical

X axis = Horizontal

Z axis = Depth





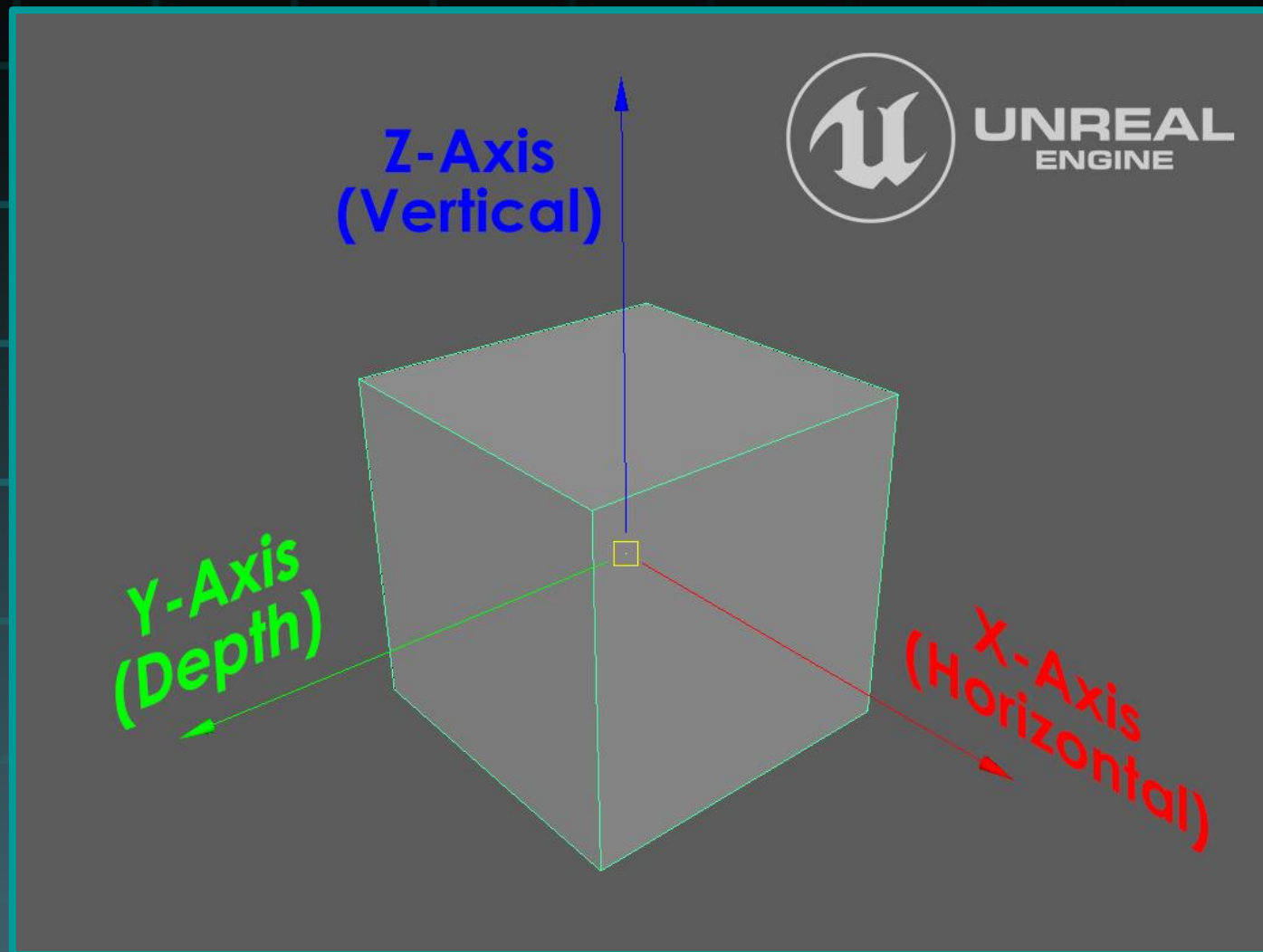
X Y Z Axis: Switched for use with Unreal Engine / **GAMES** Students

We need to **change** this when preparing to make models for the **Unreal Game Engine**.

Z axis = Vertical

X axis = Horizontal

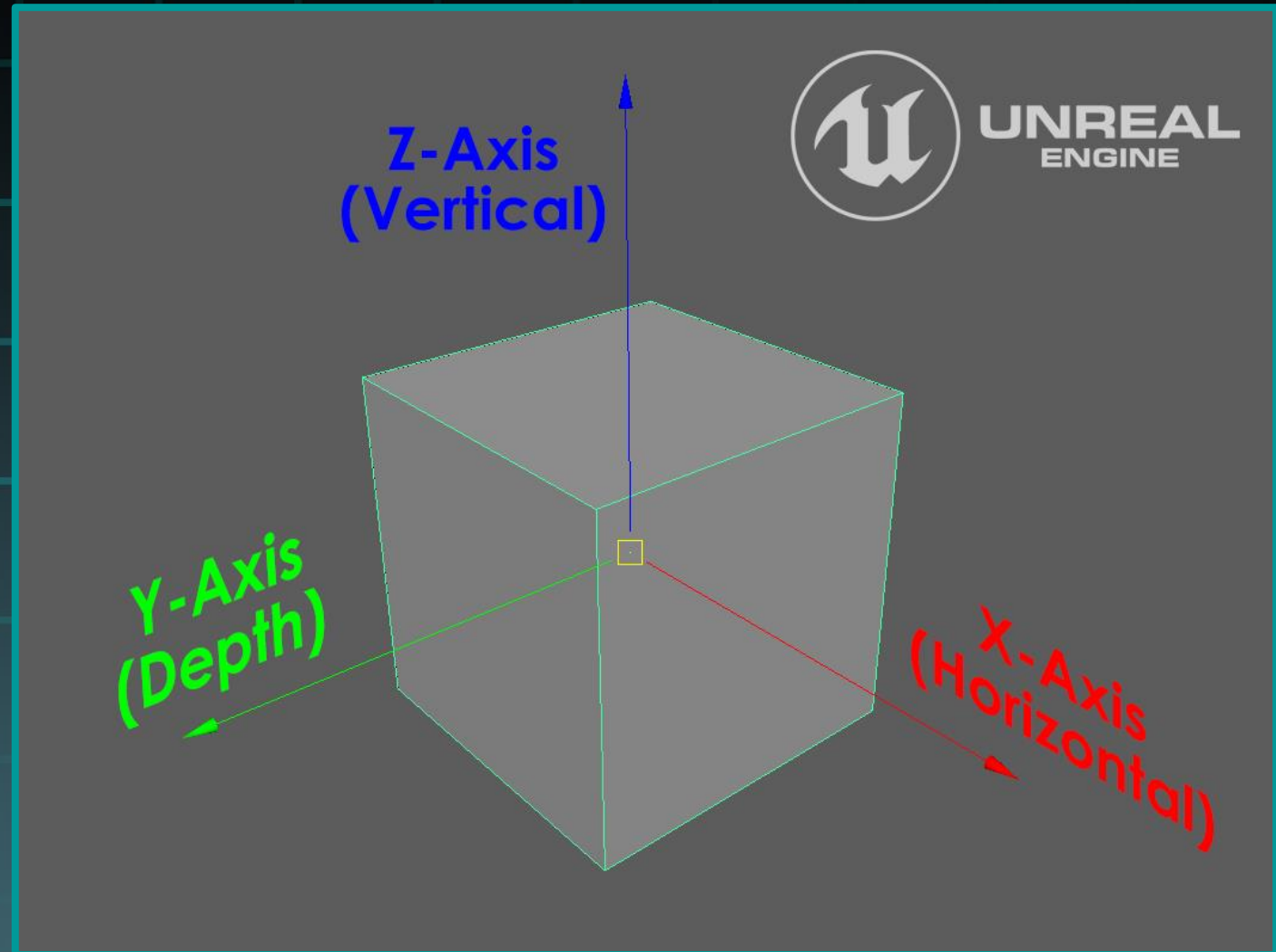
Y axis = Depth





X Y Z Axis: Switched for use with Unreal Engine

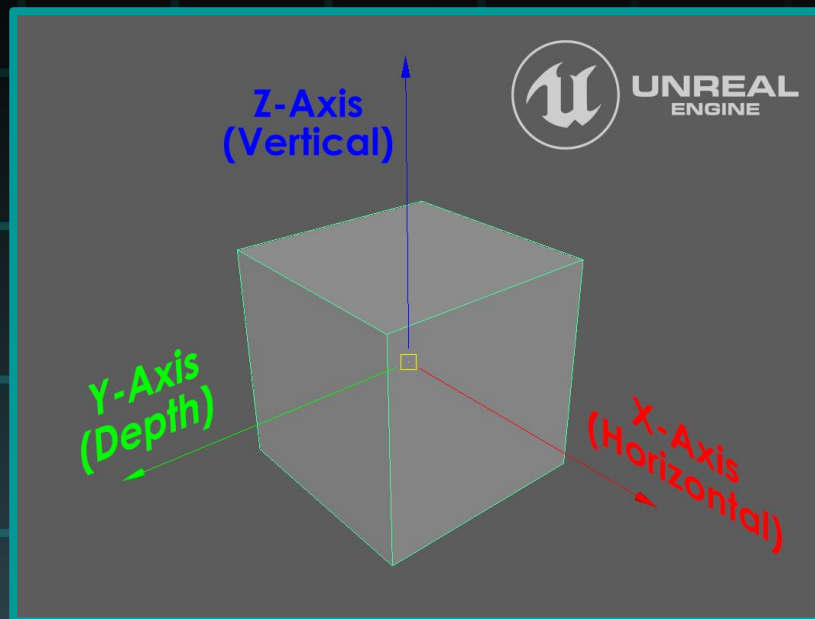
The Unreal Game Engine recognises the Z axis as the Vertical axis (due to age-old legacy controls) – so this is used in games.





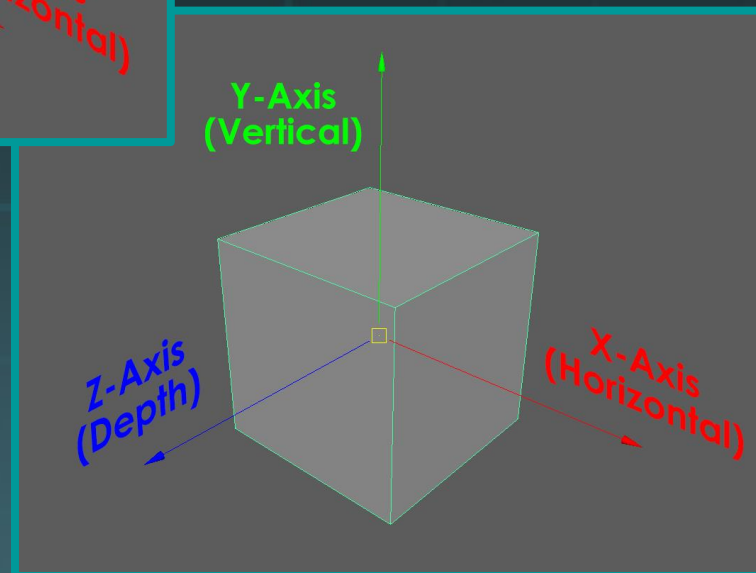
X Y Z Axis: Check your Orientation!

It is **VERY** important you check / change this **before** you start your work – particularly when it comes to characters and rigged or animated models.



GAMES
(For UNREAL)
Z-Up

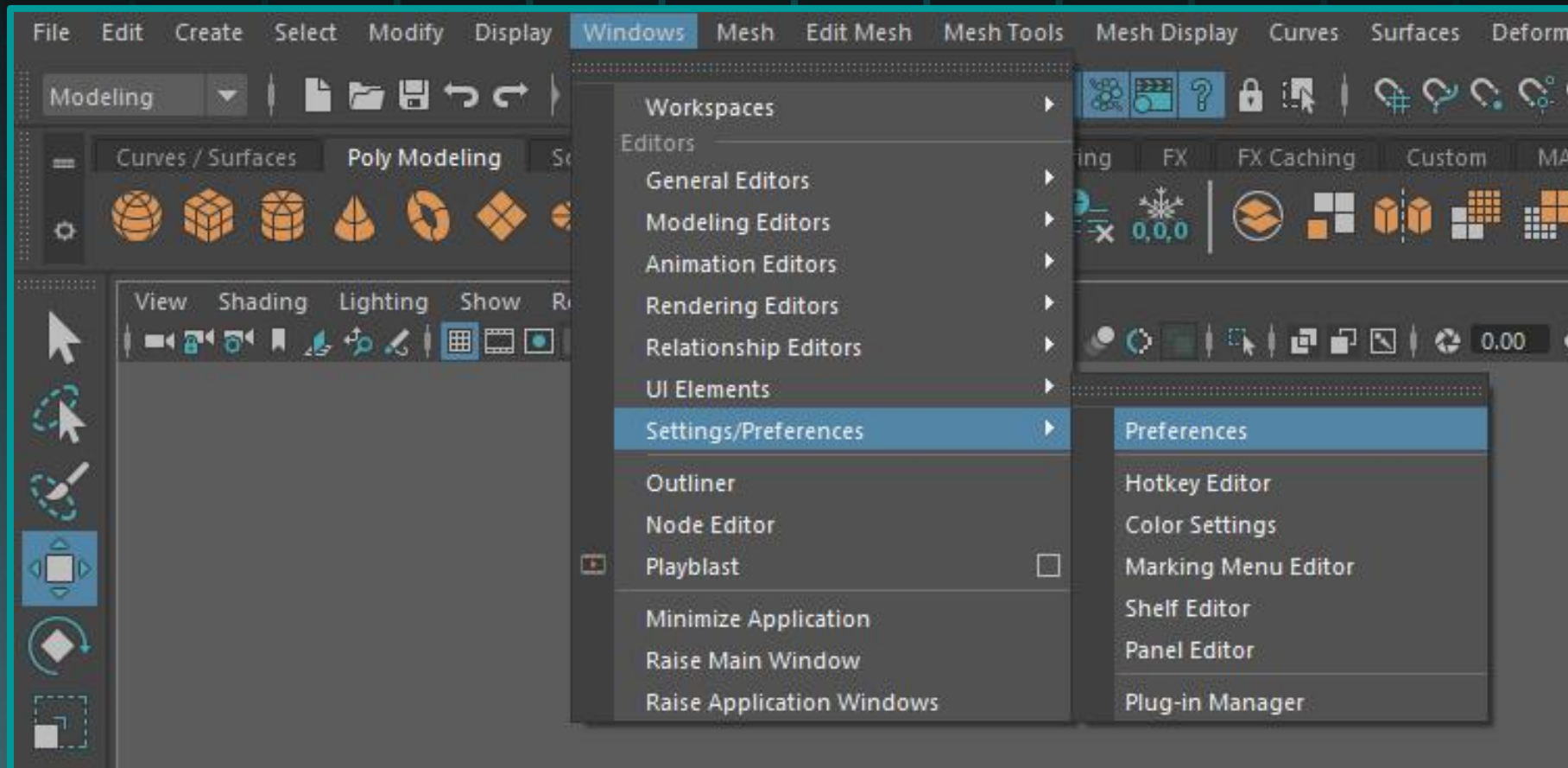
ANIMATION
(For MAYA)
Y-Up





X Y Z Axis: Switched for use with Unreal Engine

To change the Axis, go to **Windows > Settings/Preferences > Preferences**





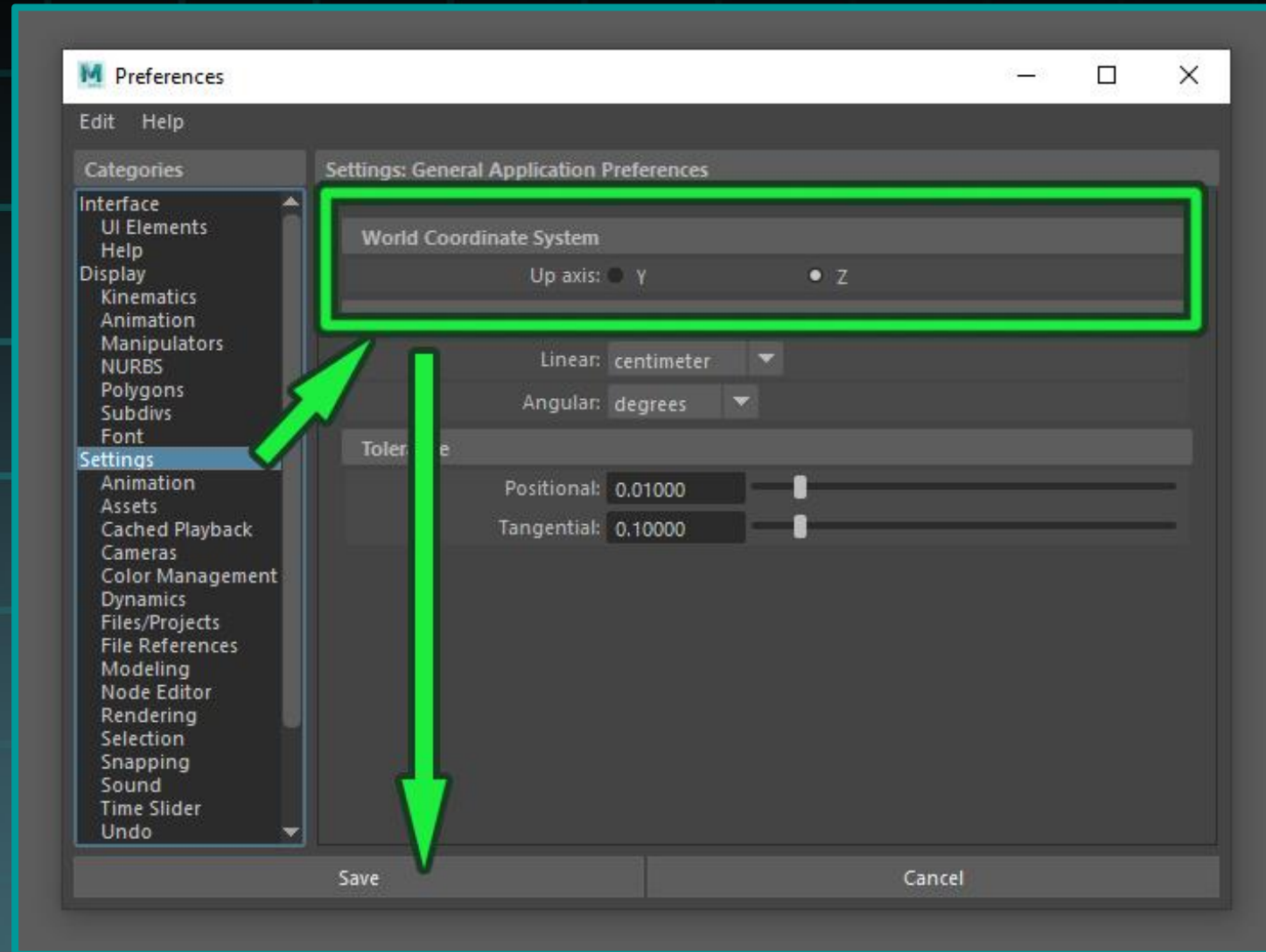
ENVIRONMENT DESIGN

Autodesk Maya Introduction

X Y Z Axis: Check your Orientation!

In the **Preferences** window that pops up, select '**Settings**' from the Categories list, and then change the **World Coordinate System** from 'Y' to 'Z'.

Don't forget to **save** once you've done this!





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Autodesk Maya Introduction

Autodesk Maya Introduction: Changing Viewports

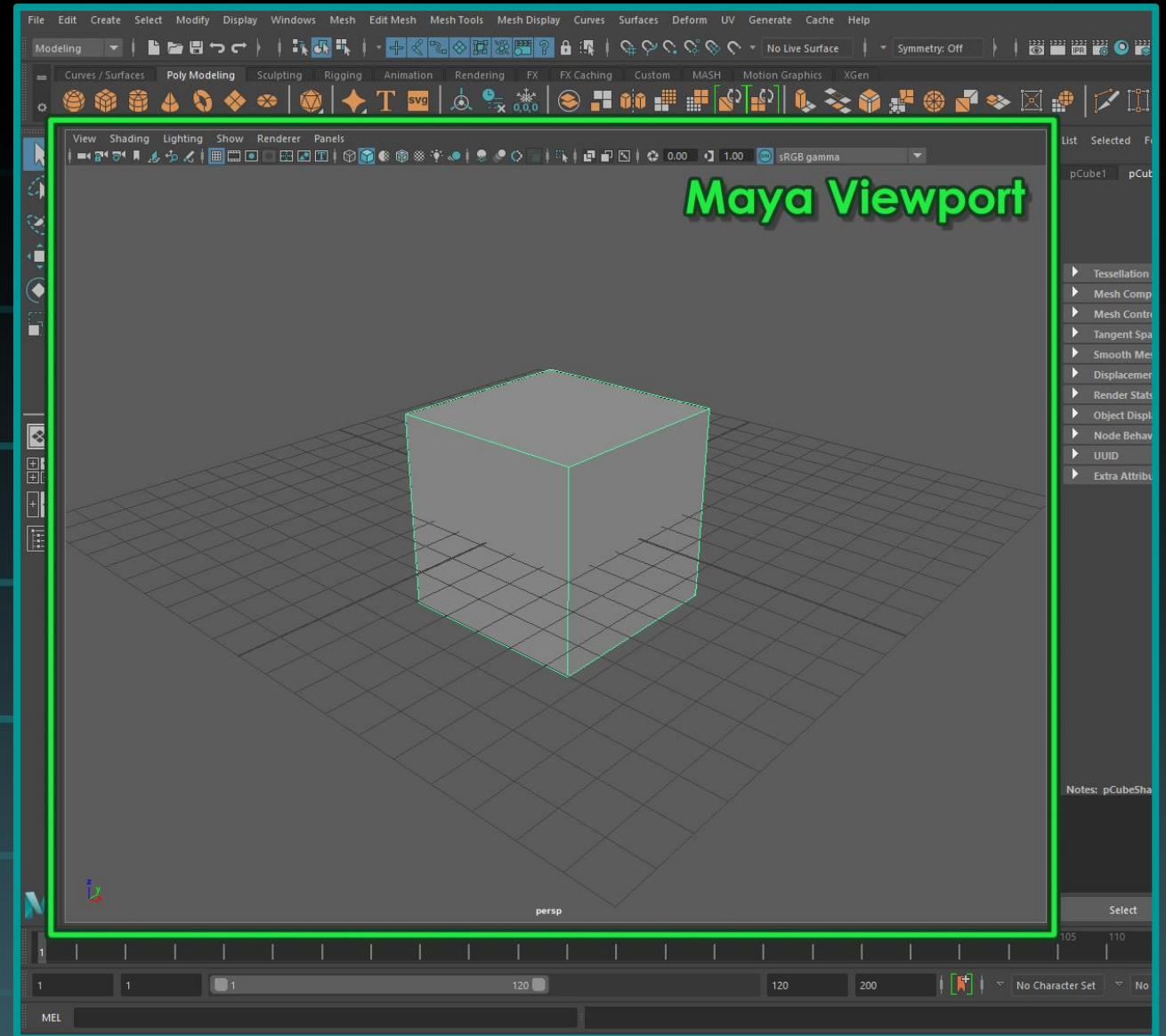


Changing Viewports

To switch views of your object, click on a **viewport**, and press the **space bar**.

SPACE

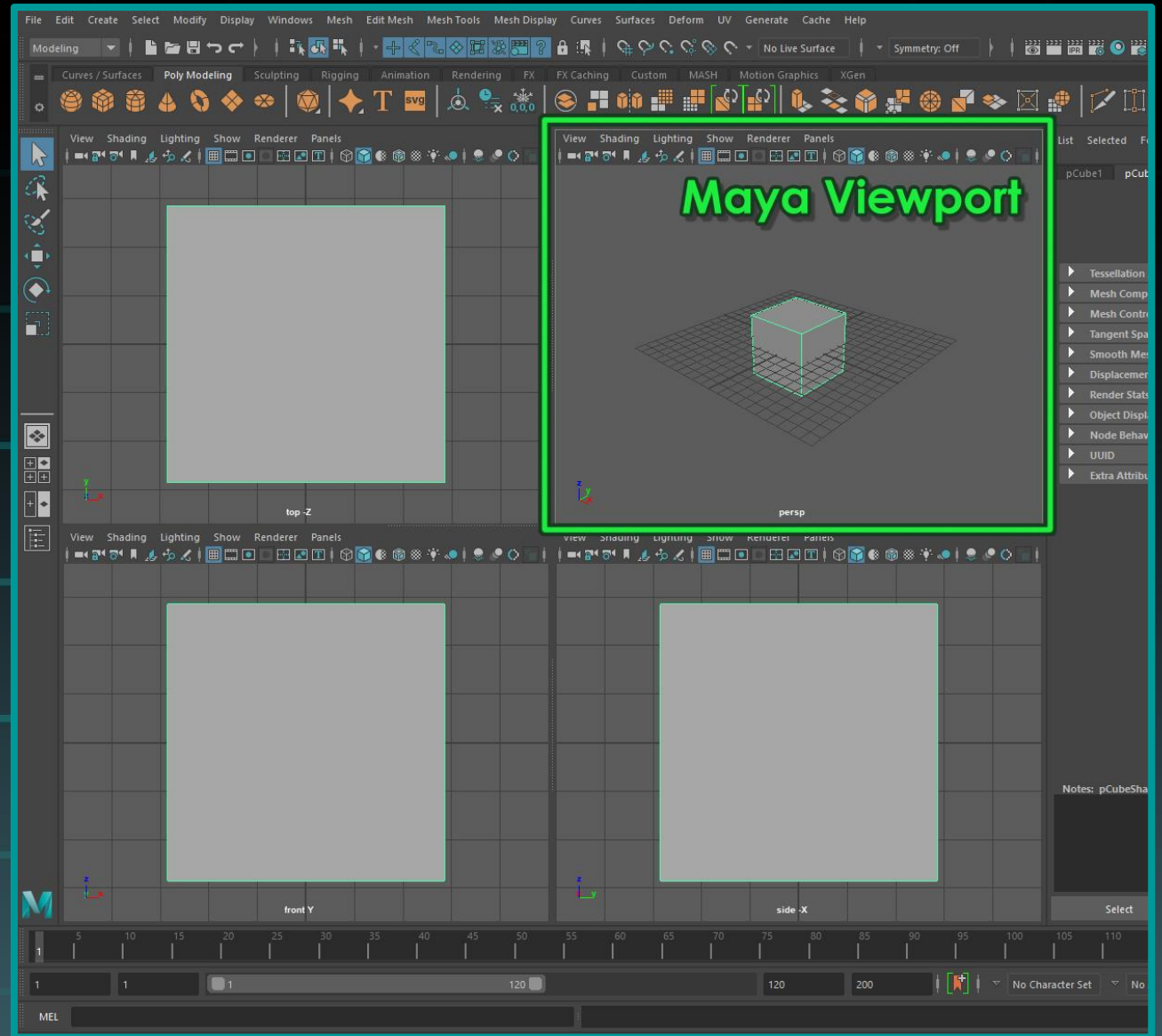
= Toggle viewport view





Changing Viewports

This will toggle between the current and last used window arrangement.

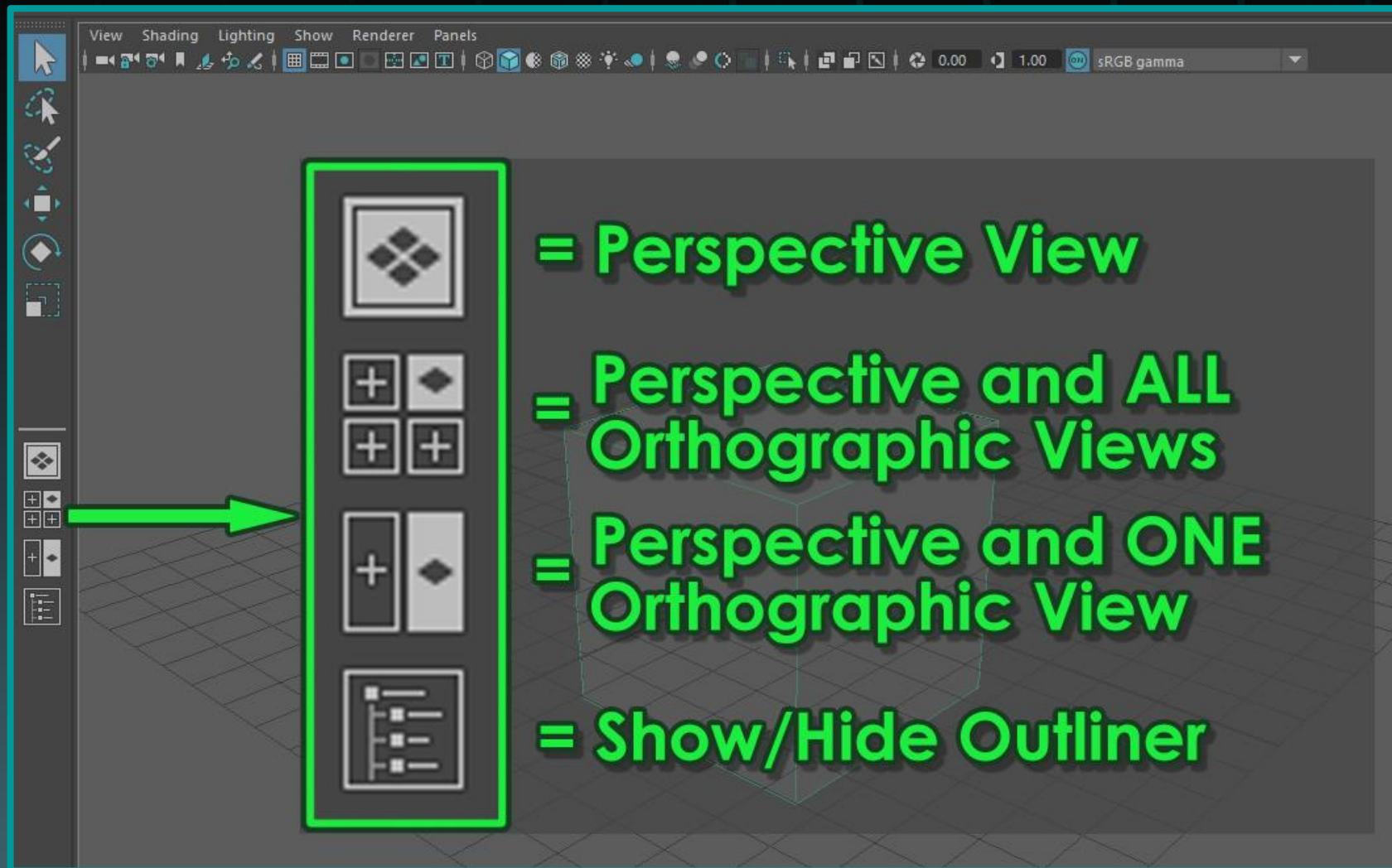


SPACE

= Toggle viewport view



Changing Viewports



Preset window configurations can be found at the **left hand side** of the Maya interface.



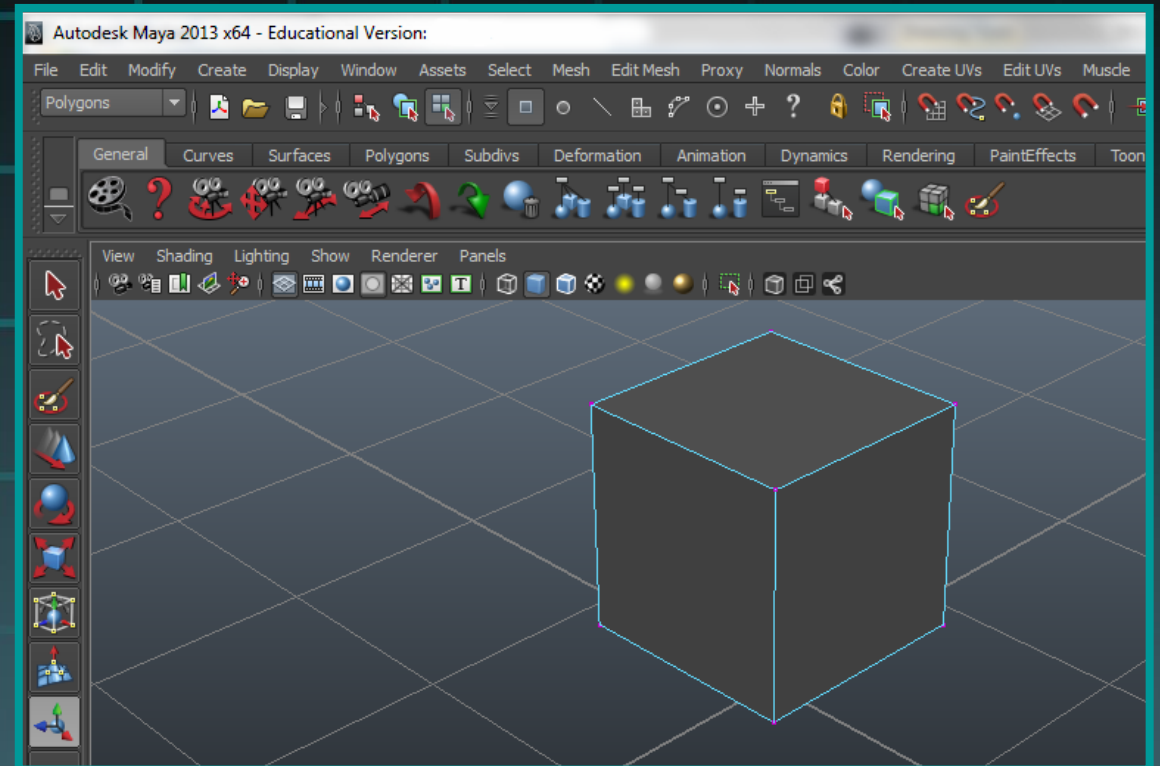
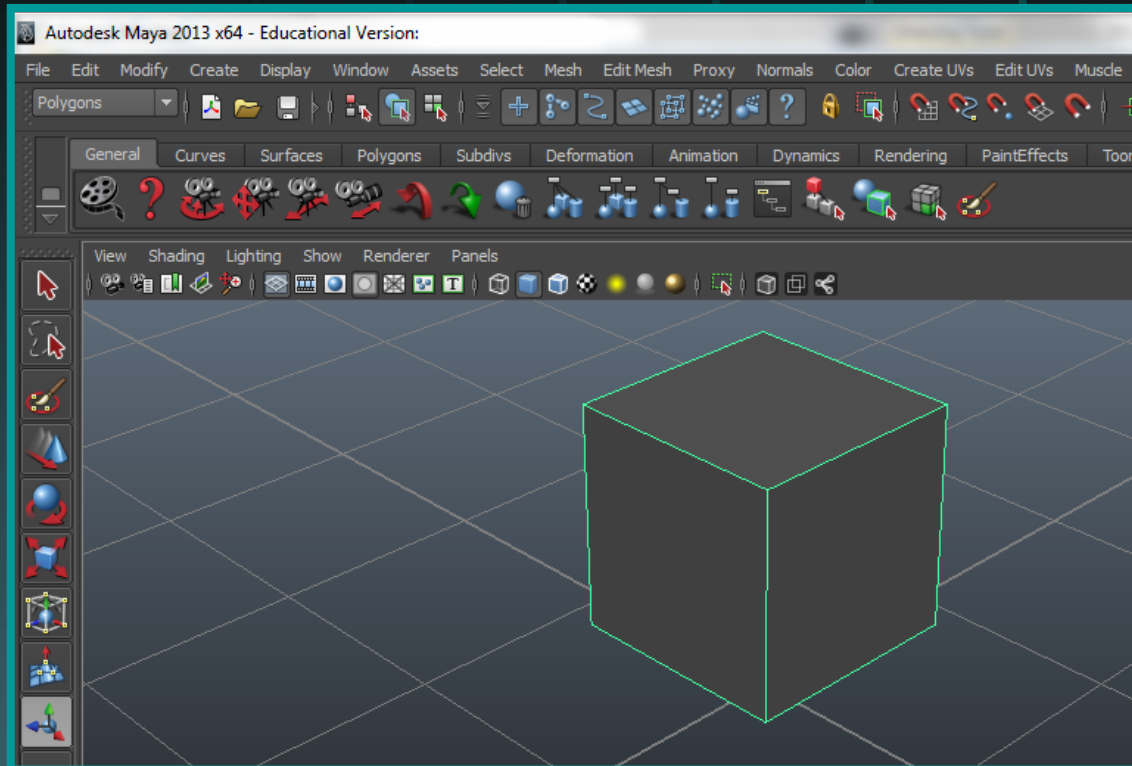
ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction: **Object and Component Modes**



Object and Component Modes

When selecting an object in your scene it should have either a **GREEN** or **BLUE** wireframe.

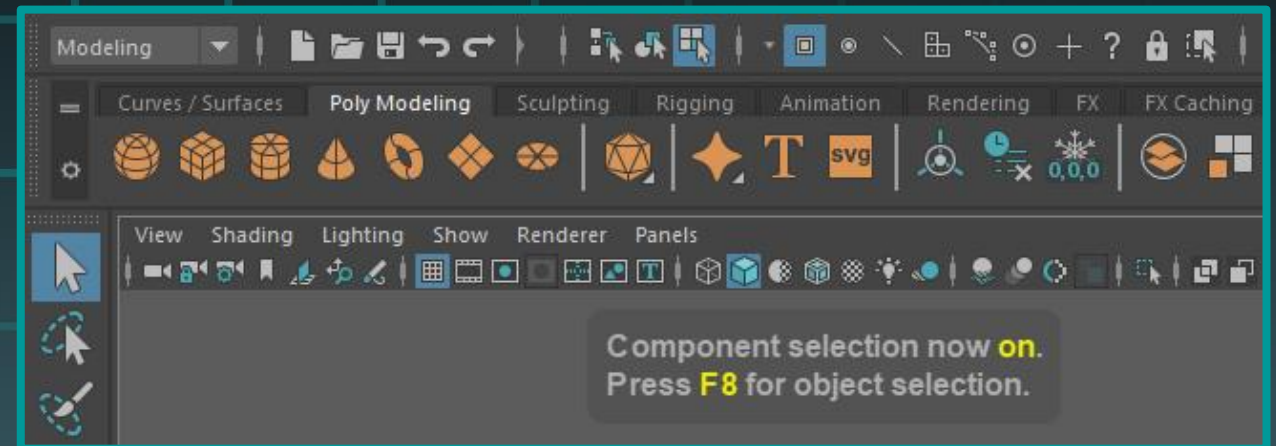
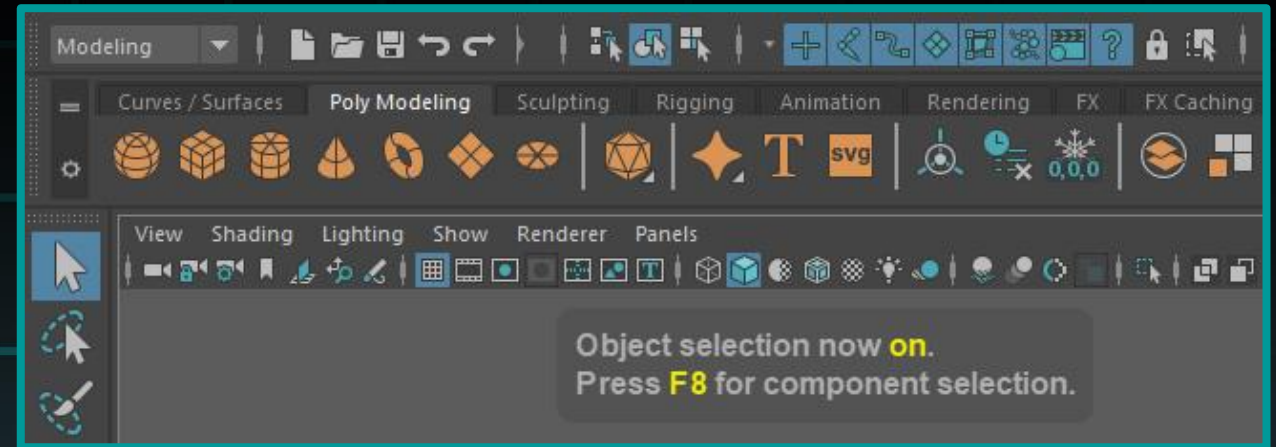




Object and Component Modes

To switch between **OBJECT** and **COMPONENT** modes, press the **F8** key on your keyboard.

Note how this also **changes the tool options** in the 'Modelling' menu.



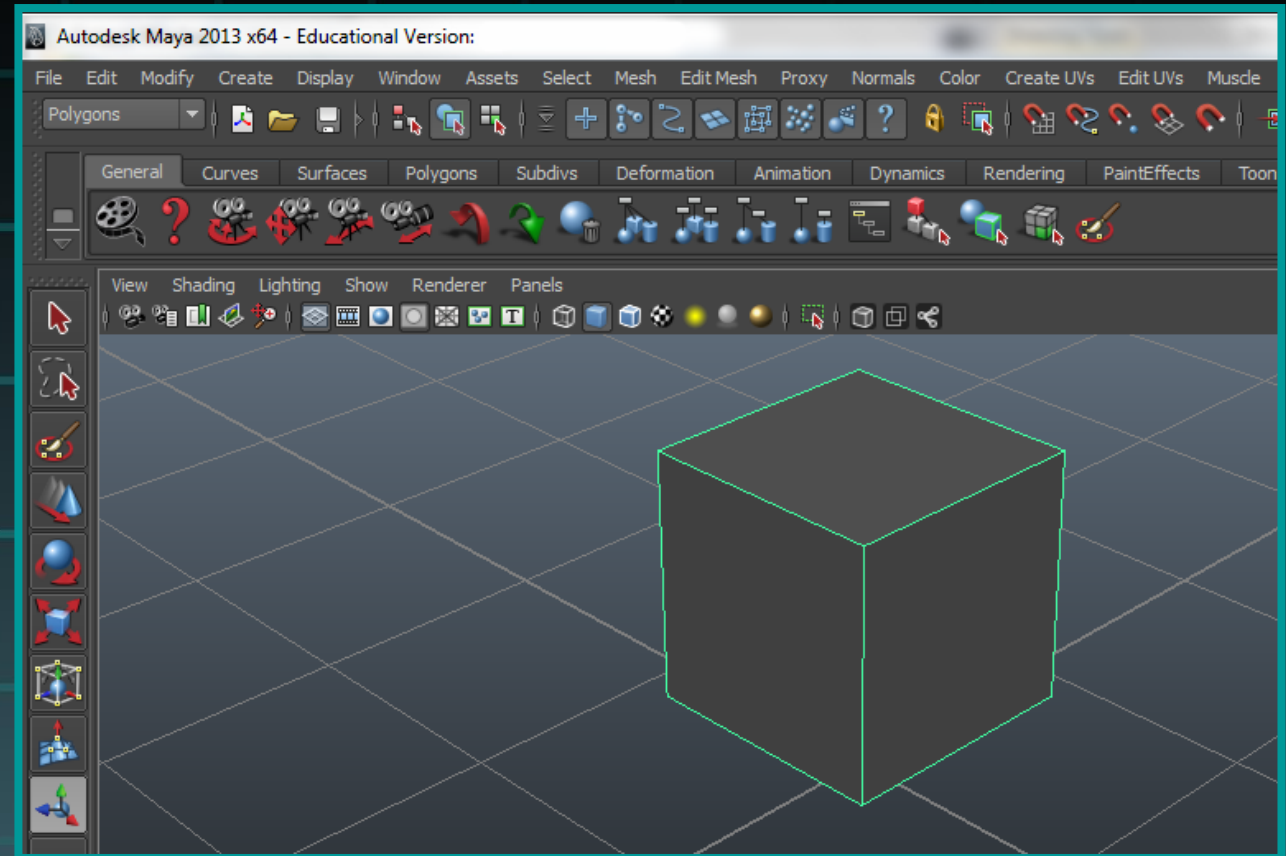
= Switch between **Object Mode** and **Component Mode**



Object Mode (GREEN Wireframe)

If your wireframe is **GREEN**,
you are in **OBJECT** mode.

This allows you to move,
rotate, scale or duplicate the
entire object.



= Switch between
and

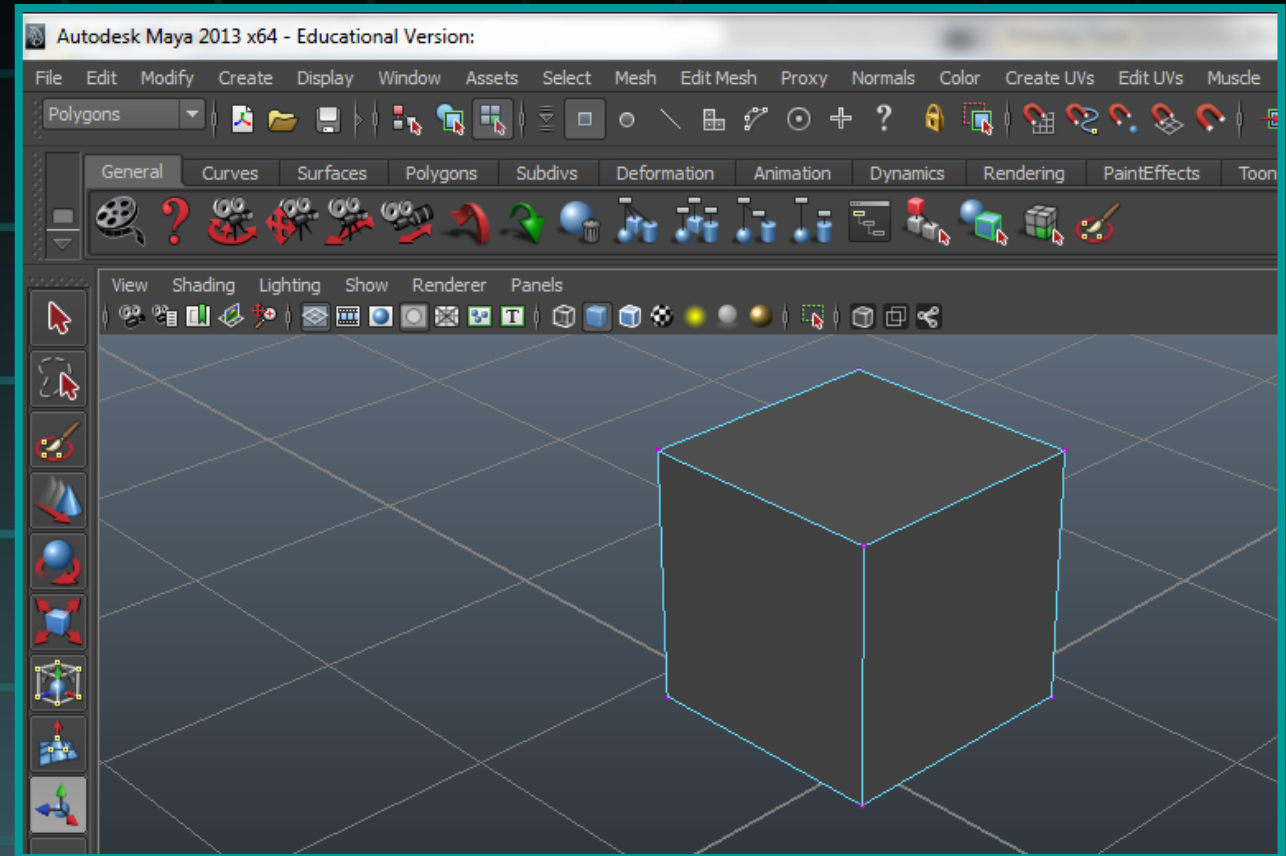
Object Mode
Component Mode



Component Mode (BLUE Wireframe)

If your wireframe is **BLUE**, you are in **COMPONENT** mode.

This allows you to move, rotate, scale or duplicate **single elements of your object**.

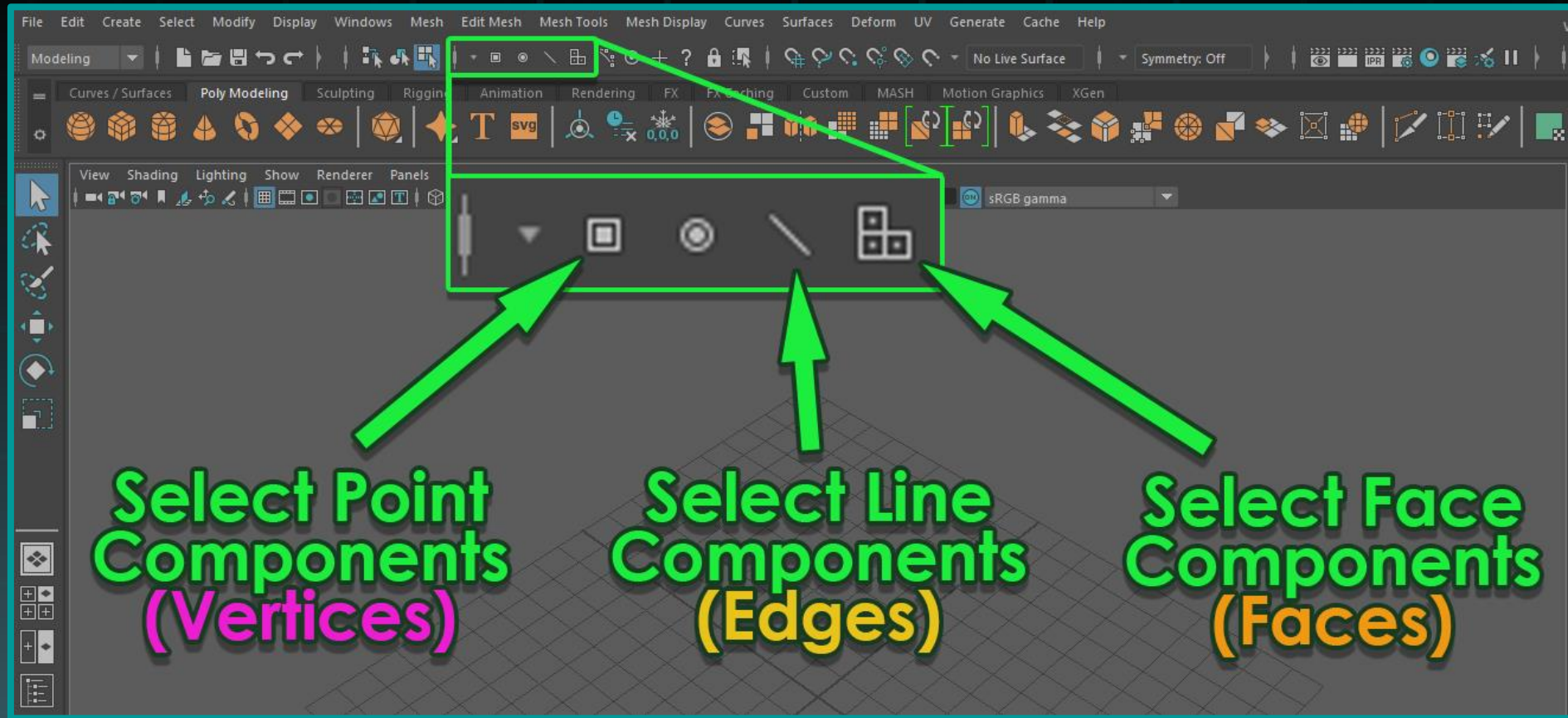


= Switch between
and

Object Mode
Component Mode



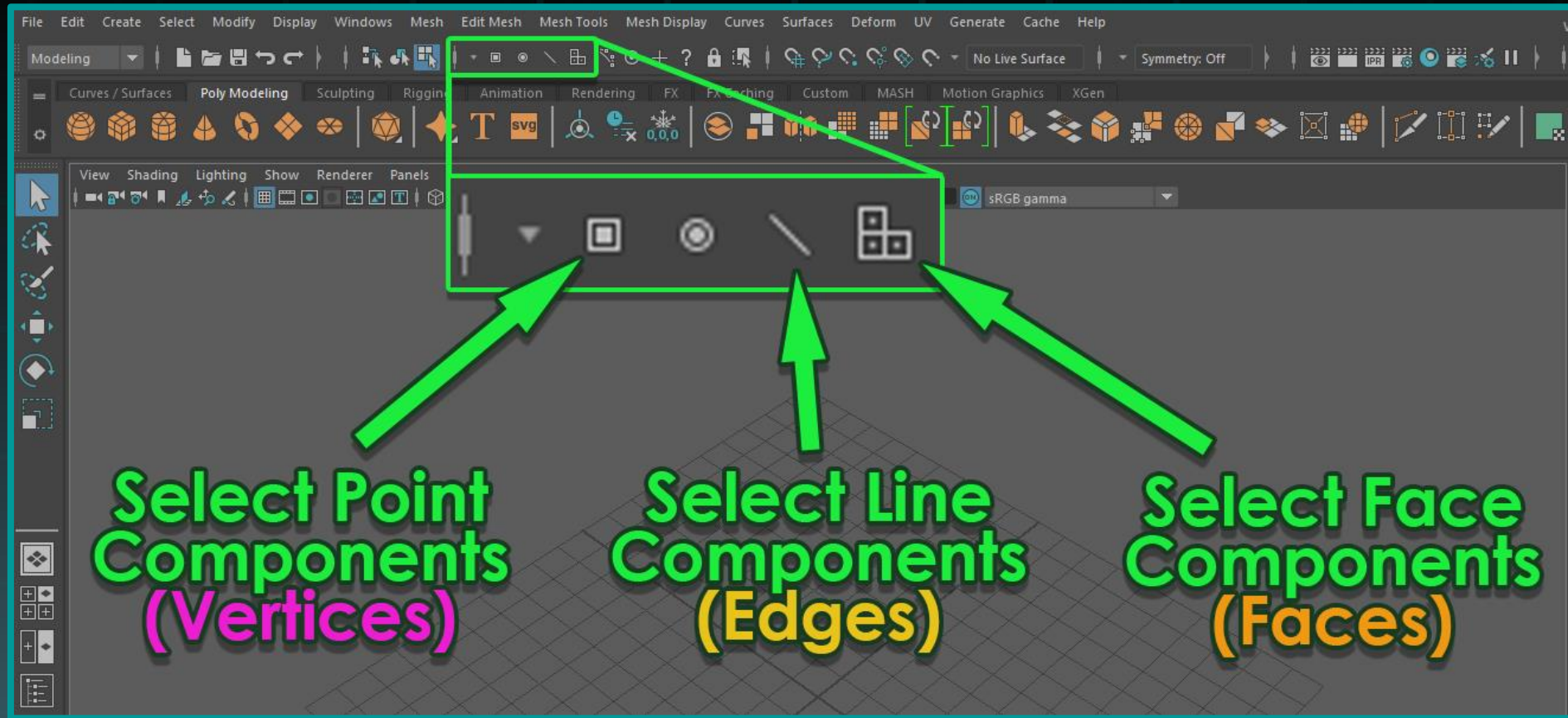
Component Mode Options



Component Mode allows you to select certain elements on your 3D objects that can be manipulated.



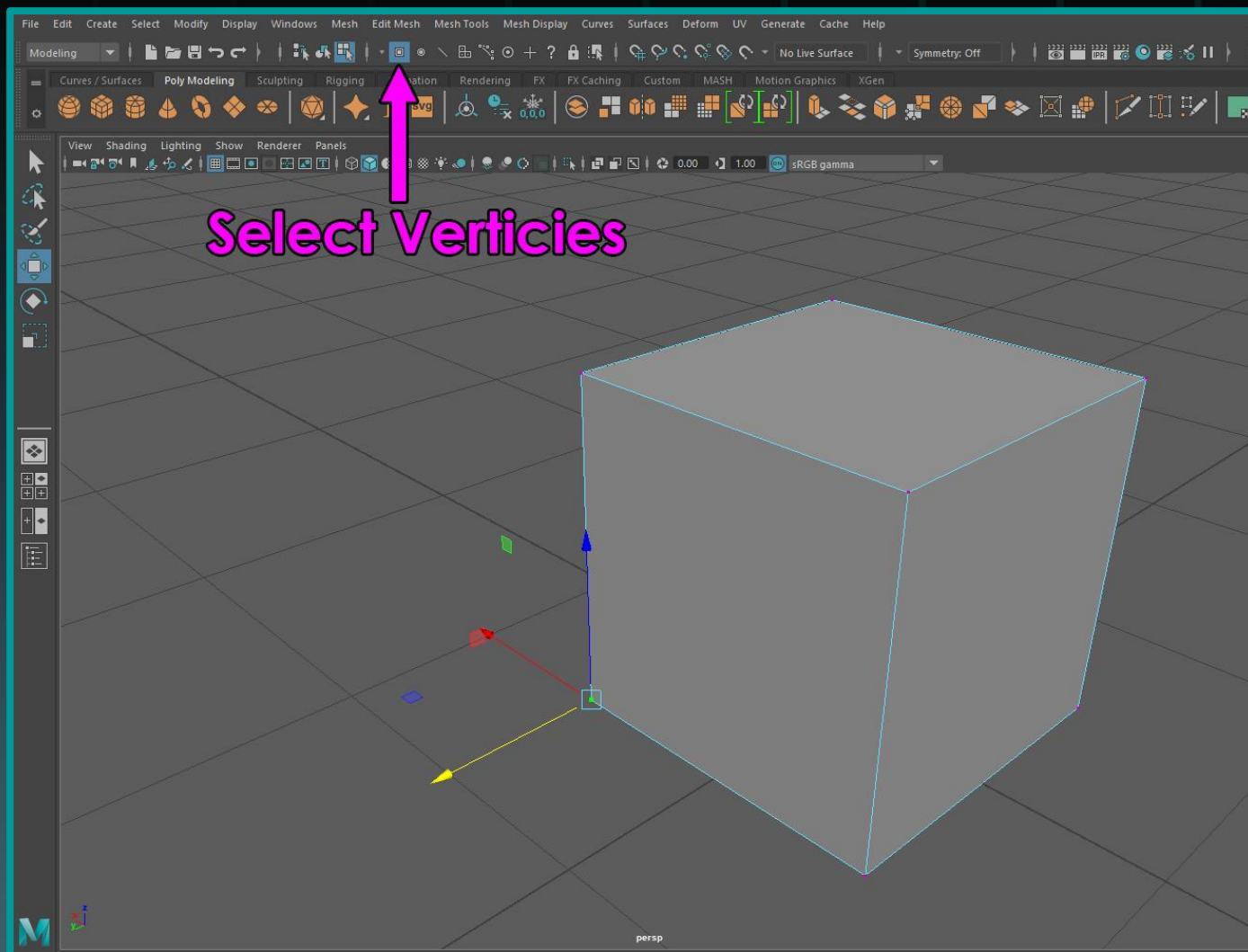
Component Mode Options



These are **Vertices**, **Edges** and **Faces**. Each one can be used to obtain different selection types, each giving different manipulation results.



Editing Vertices (Use COMPONENT Mode!)



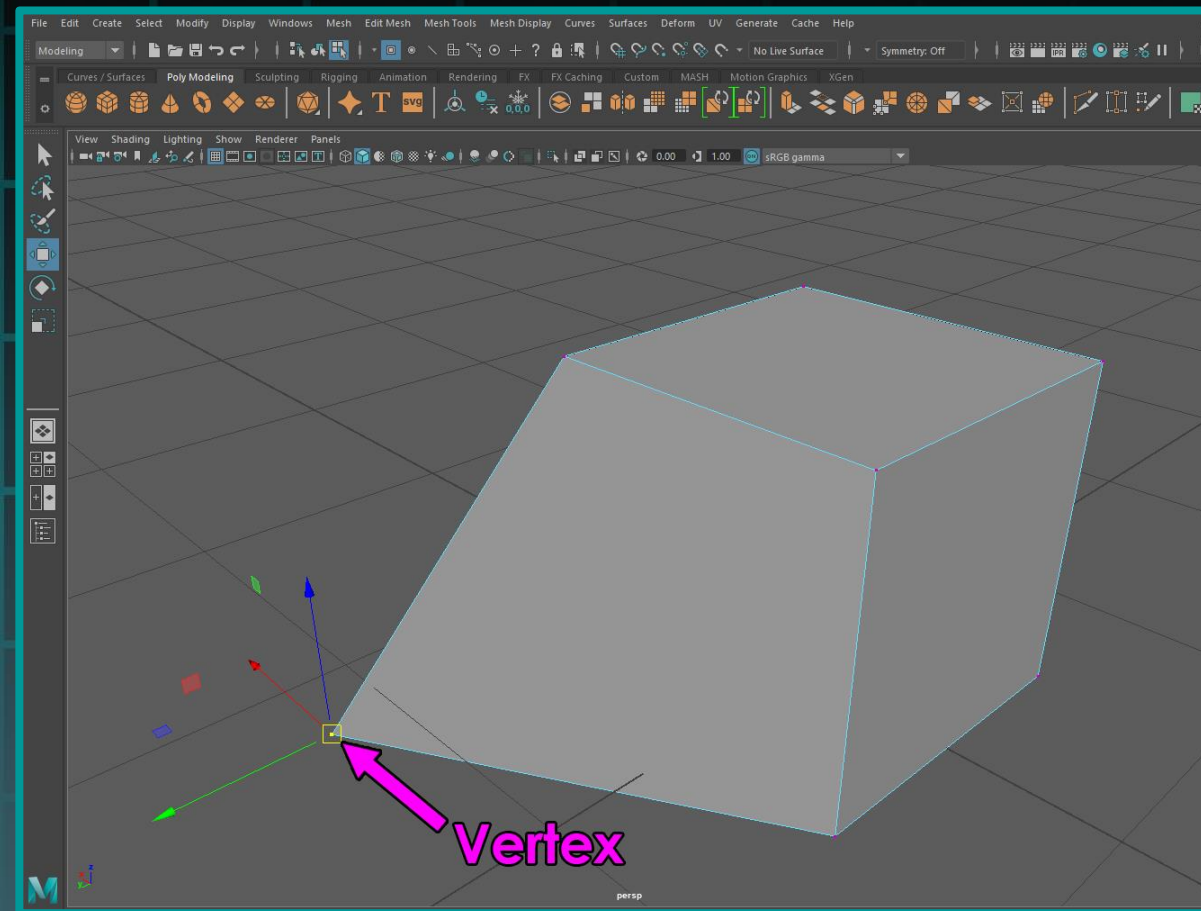
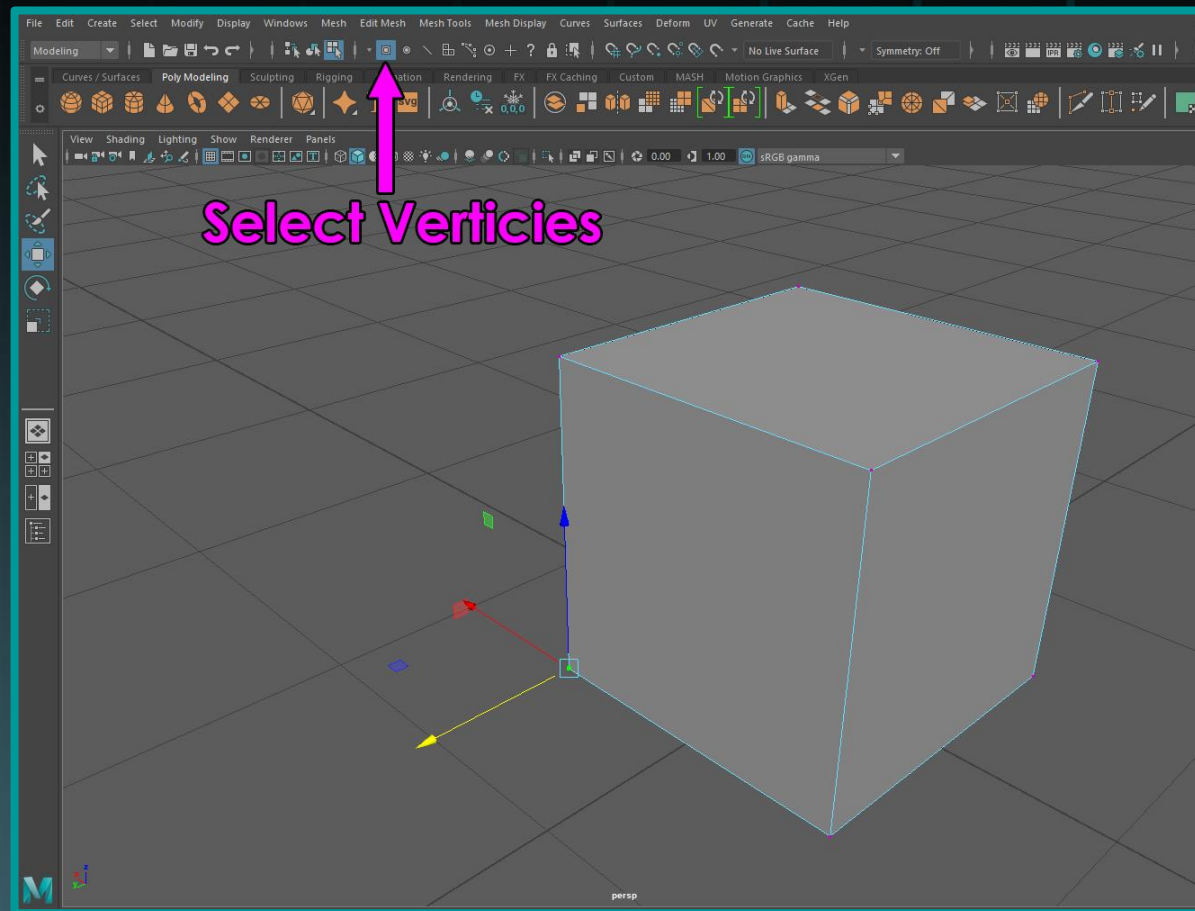
Vertices are represented by pink dots on your model that turn yellow when selected.

Manipulating a single vertex will change the shape of your model from that point only.

Shift+click to select multiple vertices.

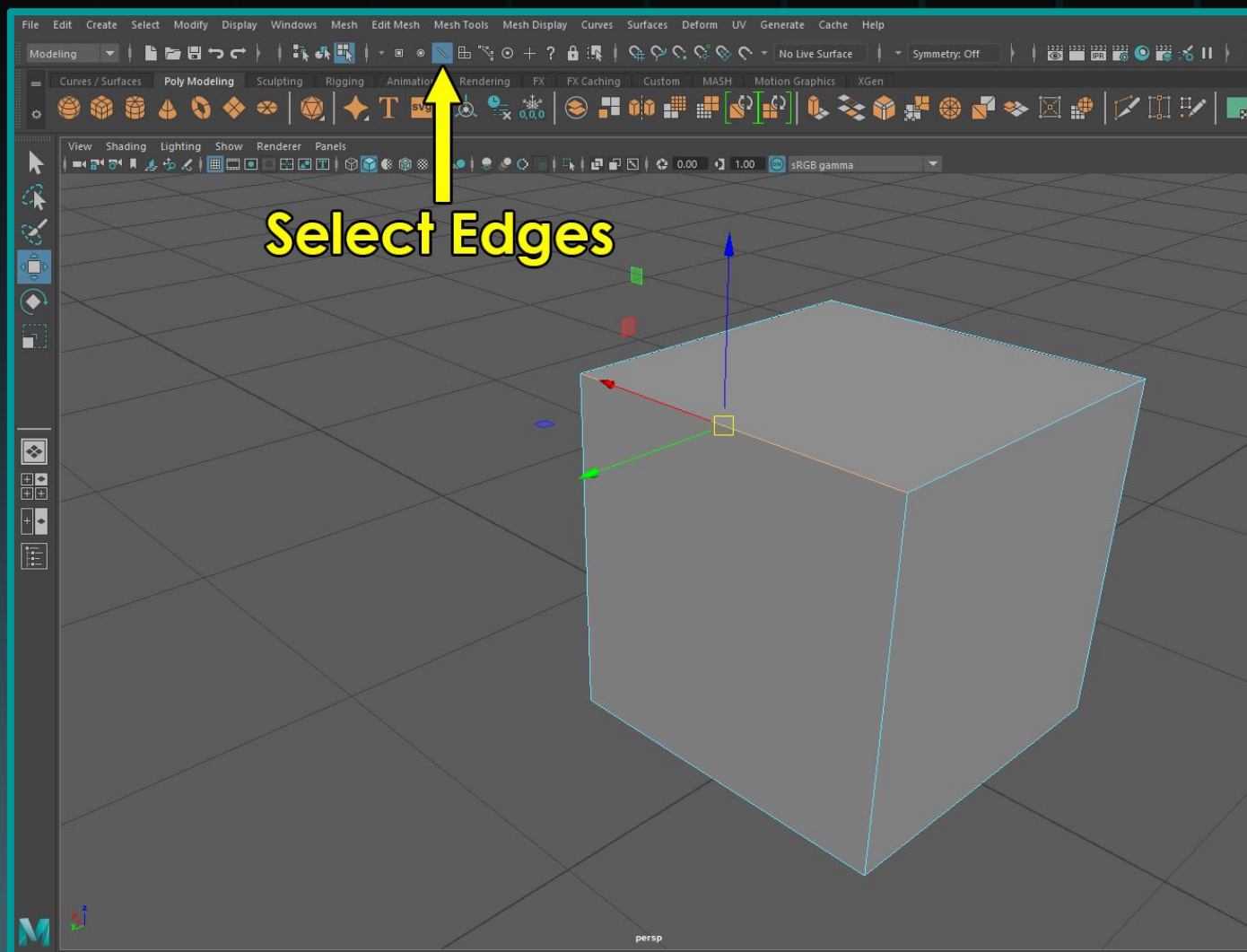


Editing Vertices (Use COMPONENT Mode!)





Editing Edges (Use COMPONENT Mode!)



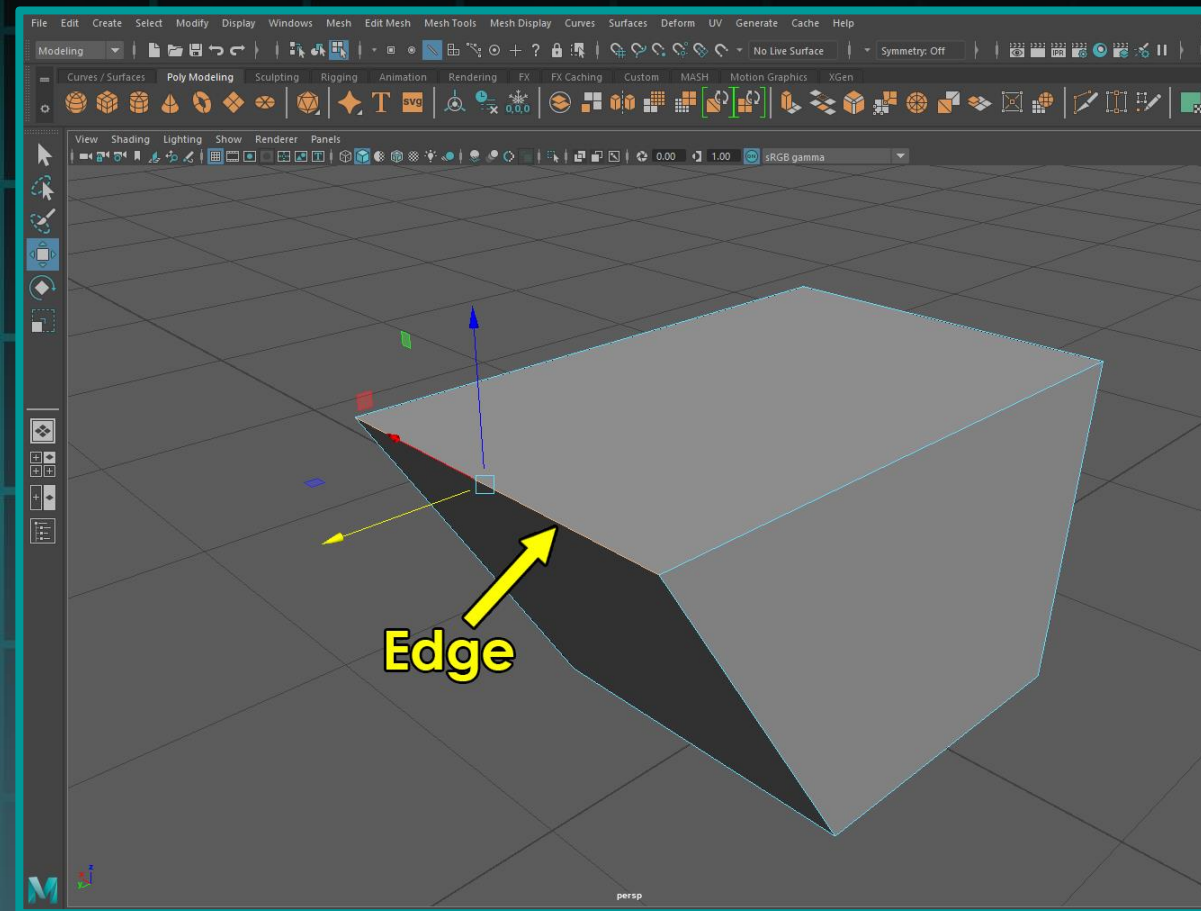
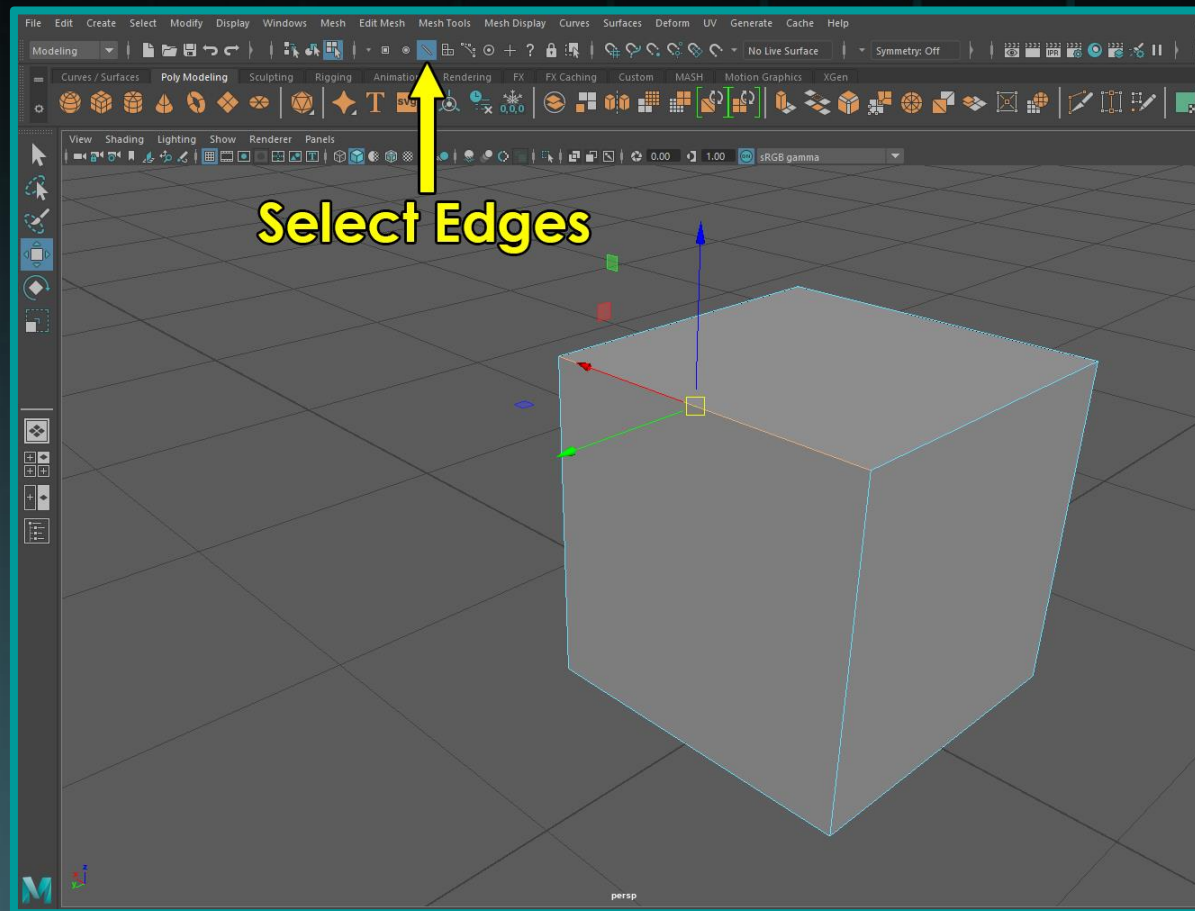
Edges are represented by highlighted edges on your model that turn orange when selected.

Manipulating a single edge will change the shape of your model from that point only.

Shift+click to select multiple edges.

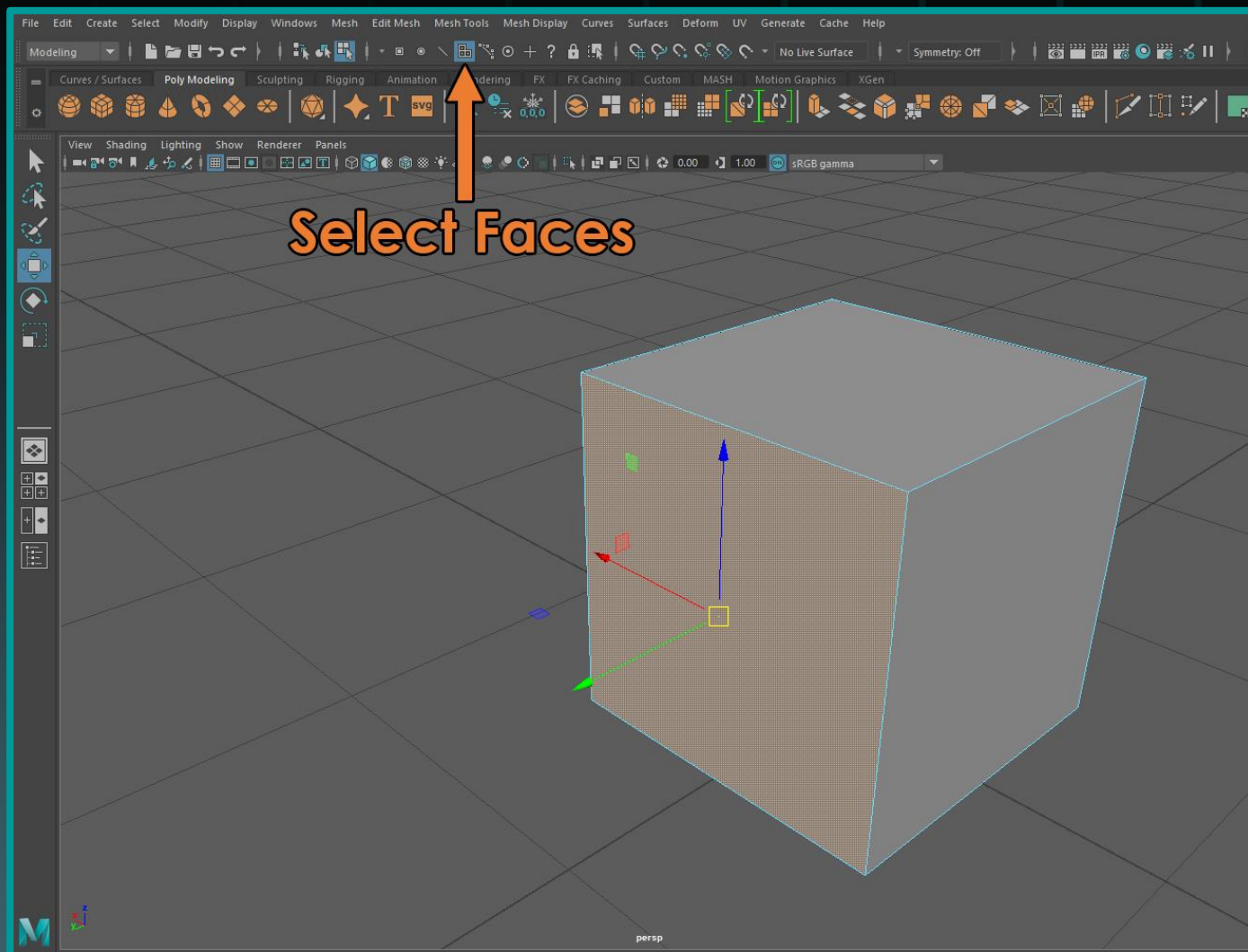


Editing Edges (Use COMPONENT Mode!)





Editing Faces (Use COMPONENT Mode!)



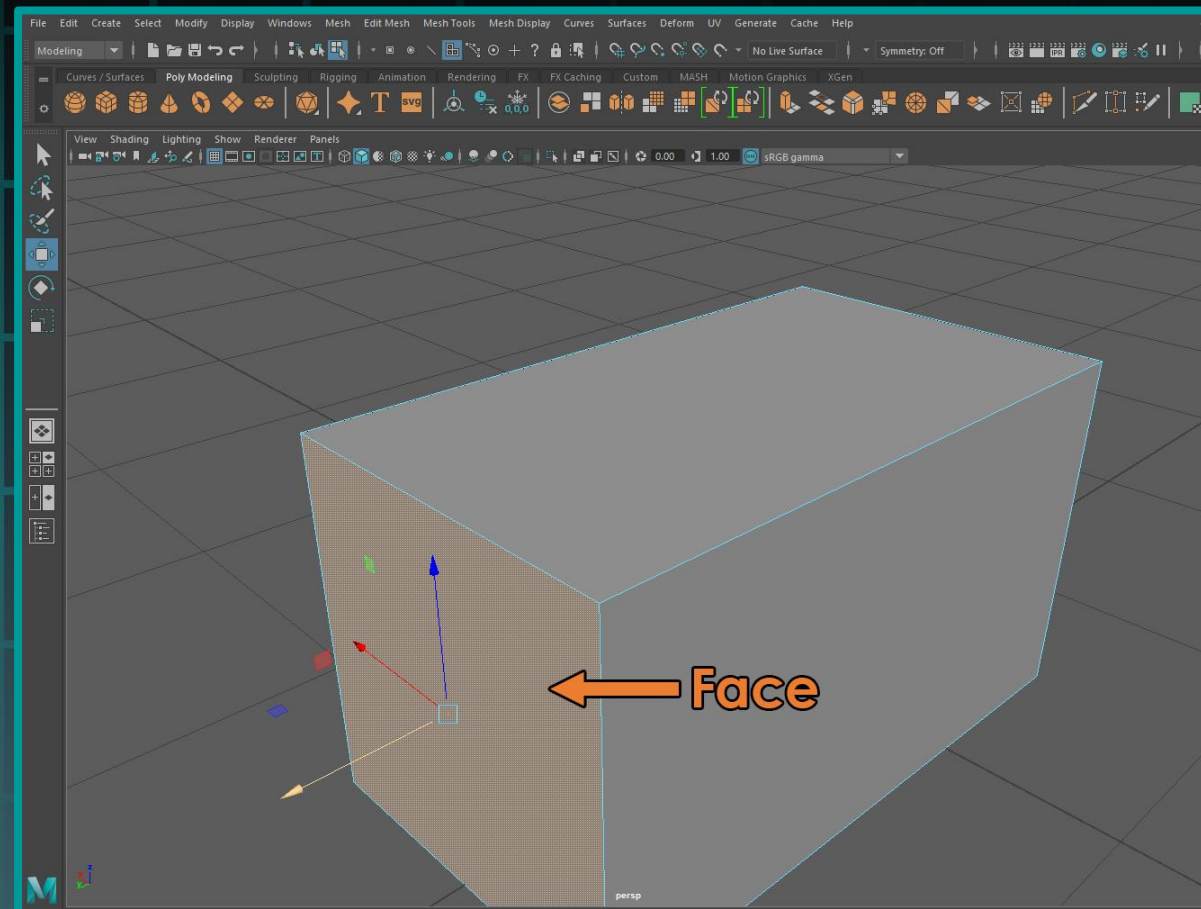
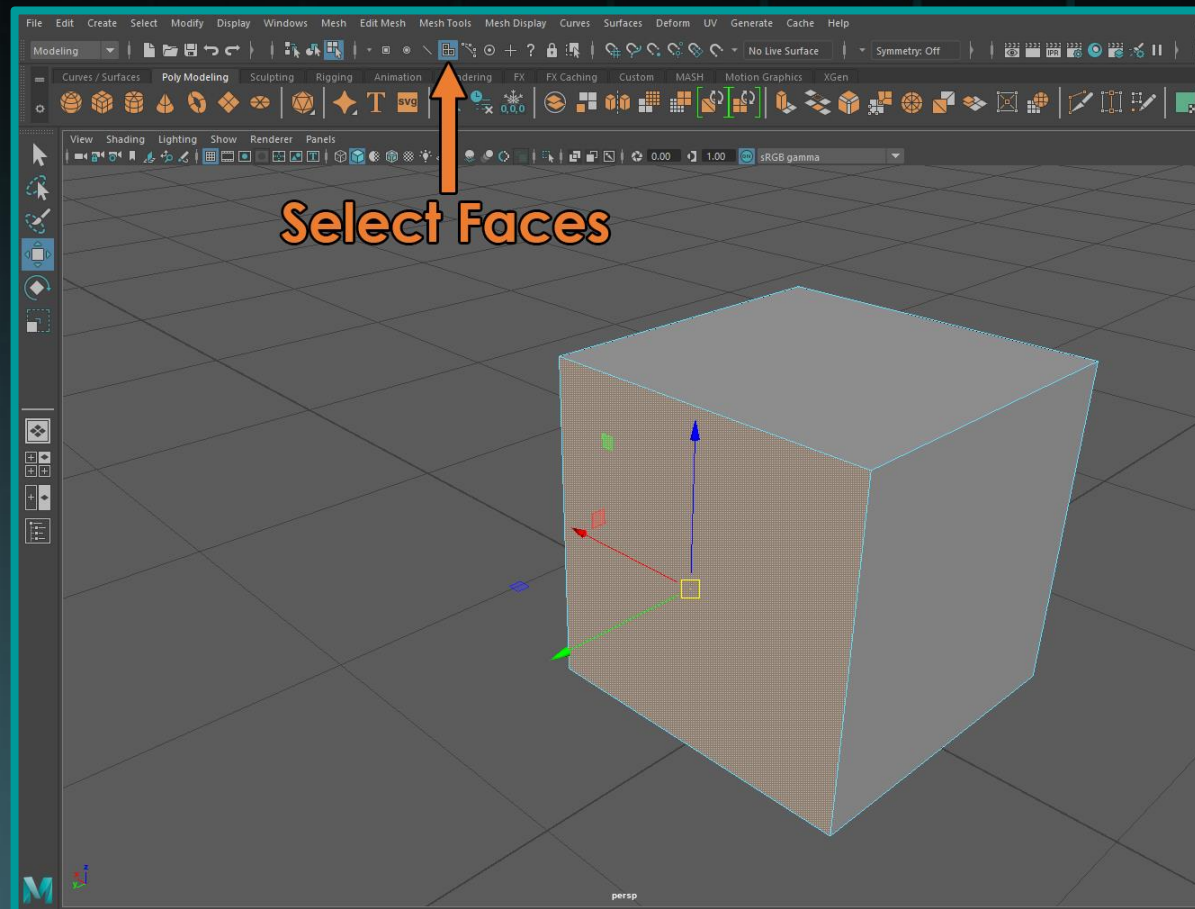
Faces are represented by highlighted polygons on your model that turn orange when selected.

Manipulating a single face will change the shape of your model from that point only.

Shift+click to select multiple faces.



Editing Faces (Use COMPONENT Mode!)





Autodesk Maya Introduction:

Translation, Rotation and Scale



Translation, Rotation and Scale

Using **Component Mode** selections, you can edit and adapt simple polygon primitives using **Translation, Rotation and Scaling** tools.

You can also use these tools in **Object Mode**.

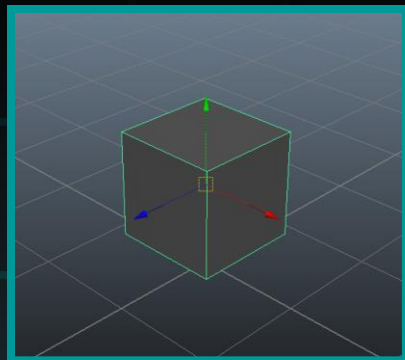
These, alongside a **few other tools** we will cover later, form the majority of your actions when making simple 3D models.



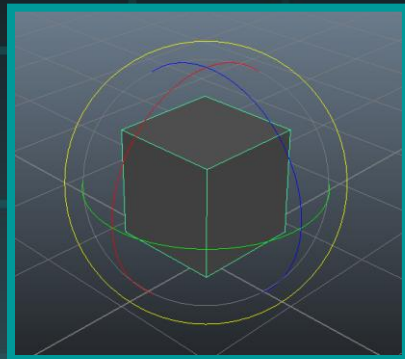
Translation, Rotation and Scale



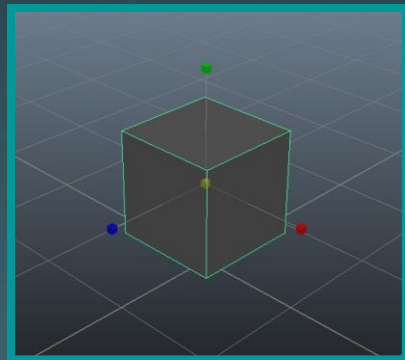
= Translate selected object



= Rotate selected object



= Scale selected object





ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction:

3D Camera View Movement



3D Camera Movement

Alongside various manipulation tools, you will also have to use **camera movement tools** to move the view of your object in virtual space.

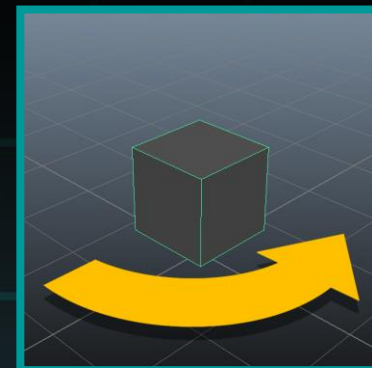
Learning to move around is as important as modelling techniques.

Camera movement is **mouse controlled**.



3D Camera View Movement

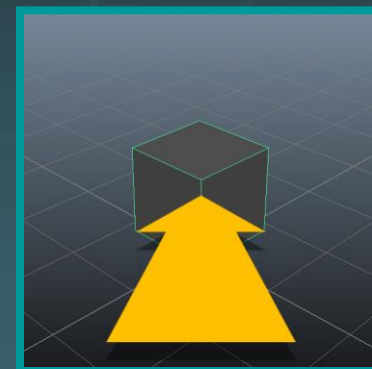
ALT +  **Rotate camera**



ALT +  **Translate camera**

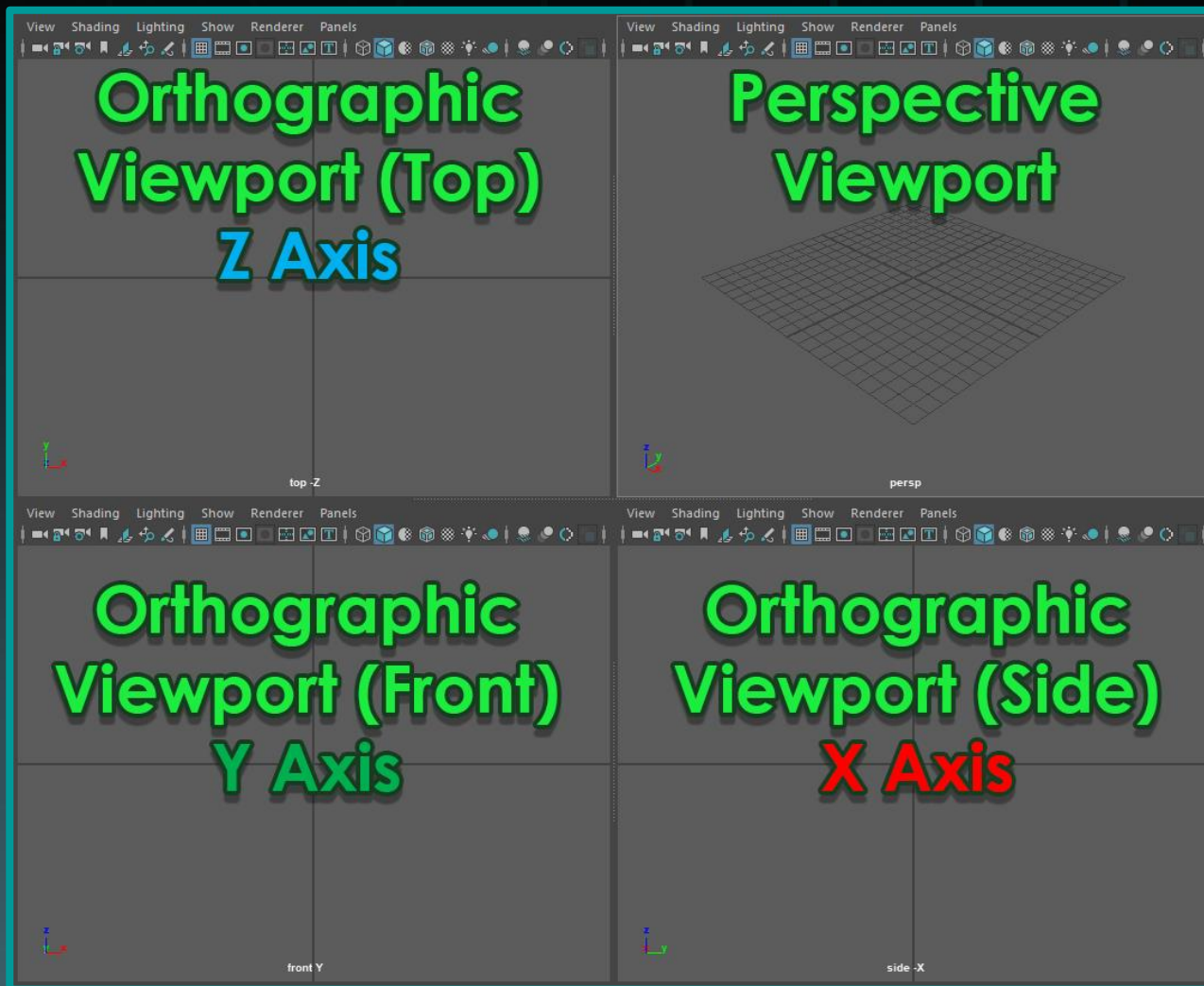


ALT +  **Zoom camera**





3D Camera View Movement



Note that the viewport you are using determines how the camera can be moved.

Perspective viewport cameras can rotate, translate and zoom.

Orthographic viewport cameras can only translate and zoom.



ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction: **The Maya Outliner / Focusing on Objects**



The Maya Outliner / Focusing On Objects

Sometimes you may 'lose' an object in your viewport, or want to focus on a different object in your scene.

You can snap the camera to a selected object by pressing the 'F' key on your keyboard.



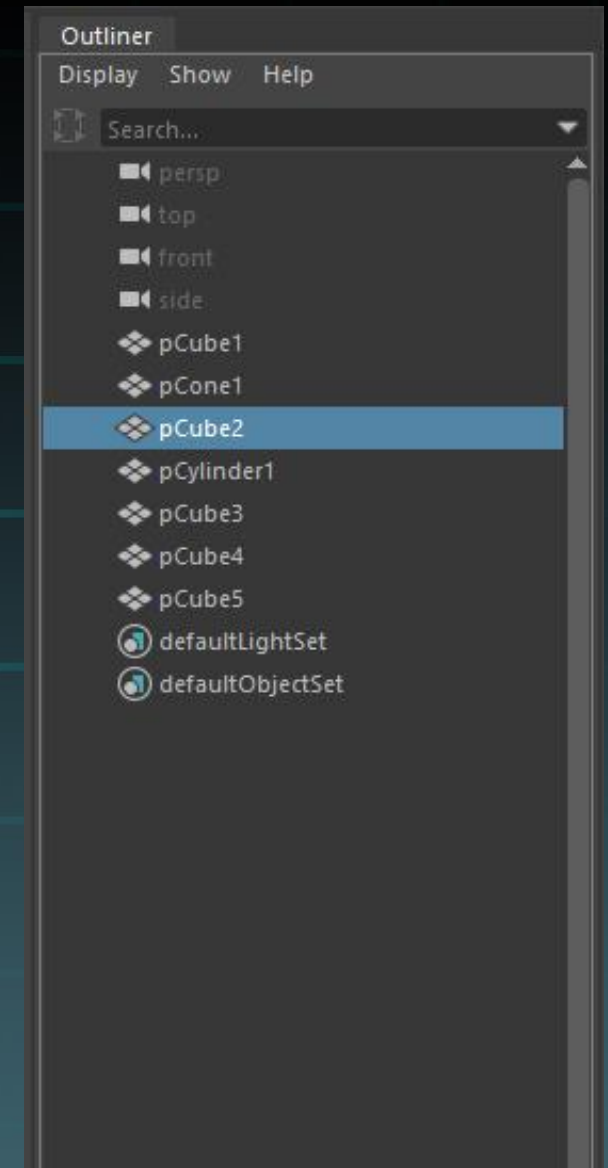
= Focus on selected object



The Maya Outliner / Focusing On Objects

If you have multiple objects in your scene, or have accidentally de-selected your object and can't find it, you can use Maya's **Outliner**.

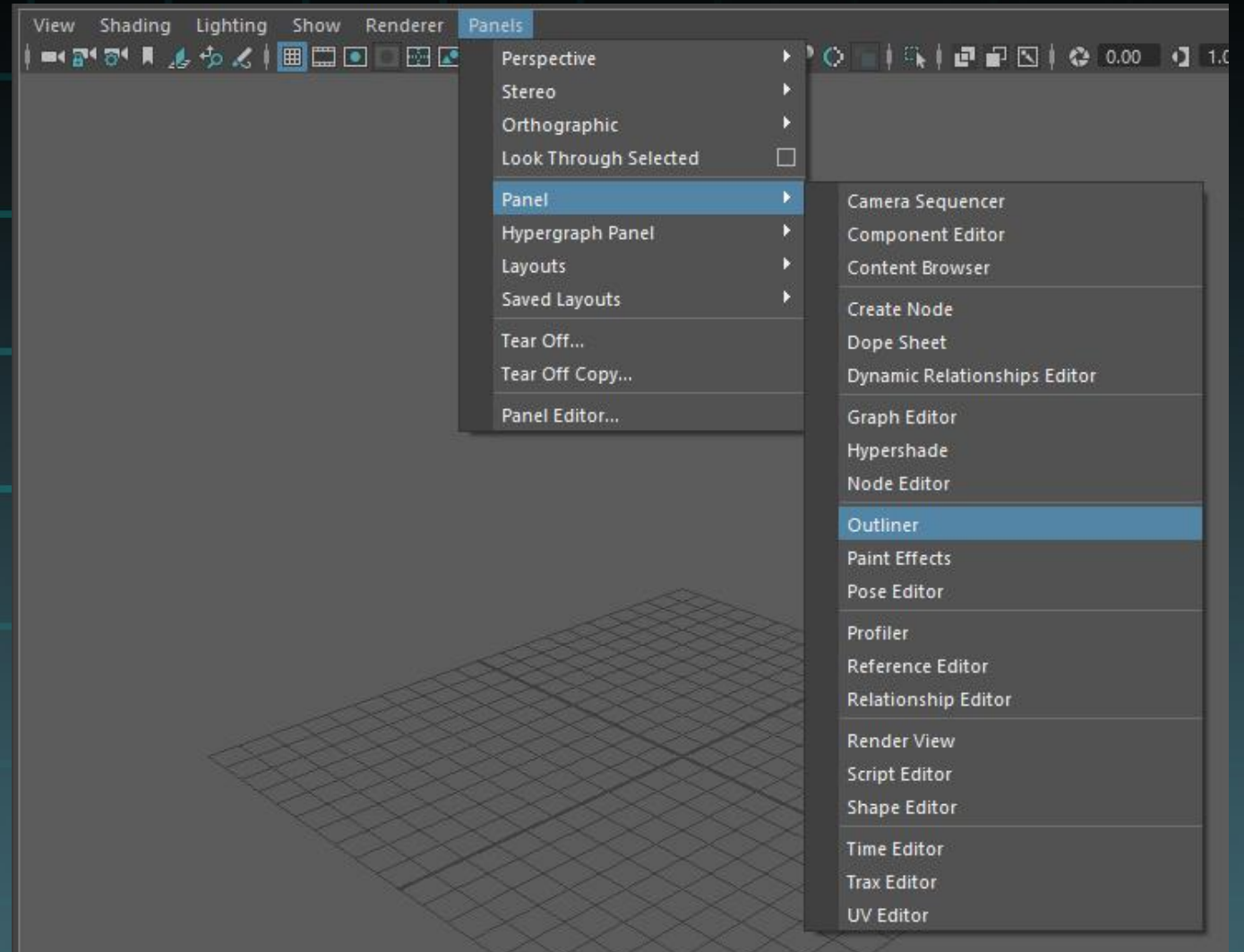
This is a list of all elements in a scene, including **cameras** and **lights**.





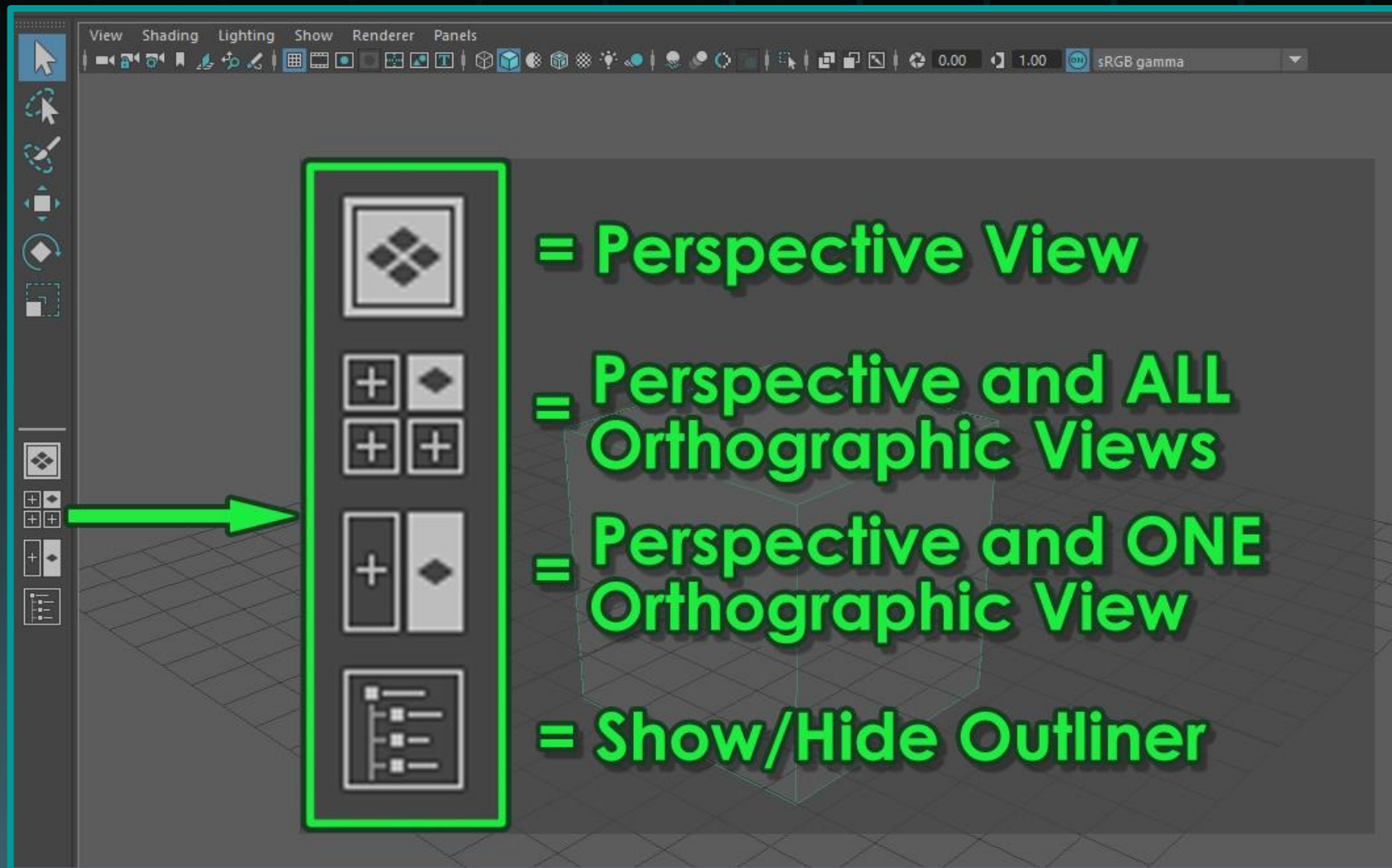
The Maya Outliner / Focusing On Objects

To open the Outliner, select
Panels > Panel > Outliner
in any of your viewports.





The Maya Outliner / Focusing On Objects



Alternatively, the **Outliner** can be found in one of the **viewport presets** on the left side of your Maya window.

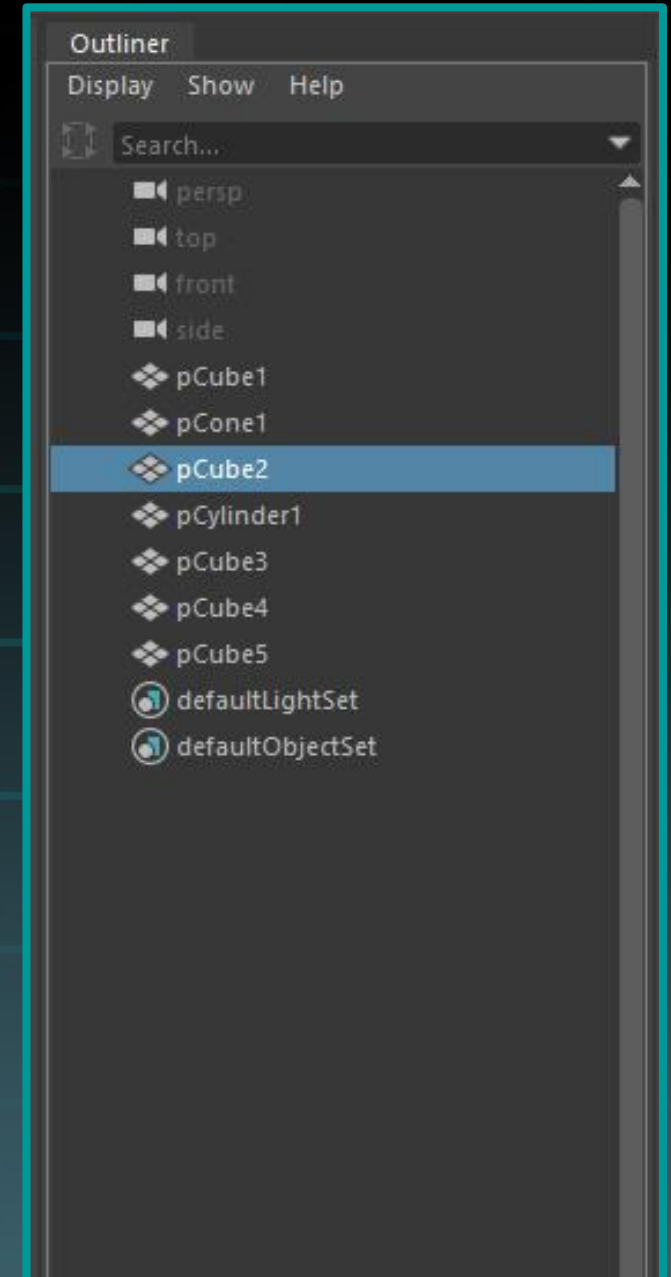


The Maya Outliner / Focusing On Objects

Clicking on any object in the Outliner's list will make it the current selection. From here you can press 'F' to focus the object in your viewports.

Please note that if you do not rename your objects they will all have similar, nondescript names such as 'pCube2'.

Try to get into the habit of renaming your objects while working in a Maya scene!





ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction: **Renaming your objects**



Renaming Your Objects

This is an often-overlooked task that can help you make sense of your scenes and models as they become more complex.

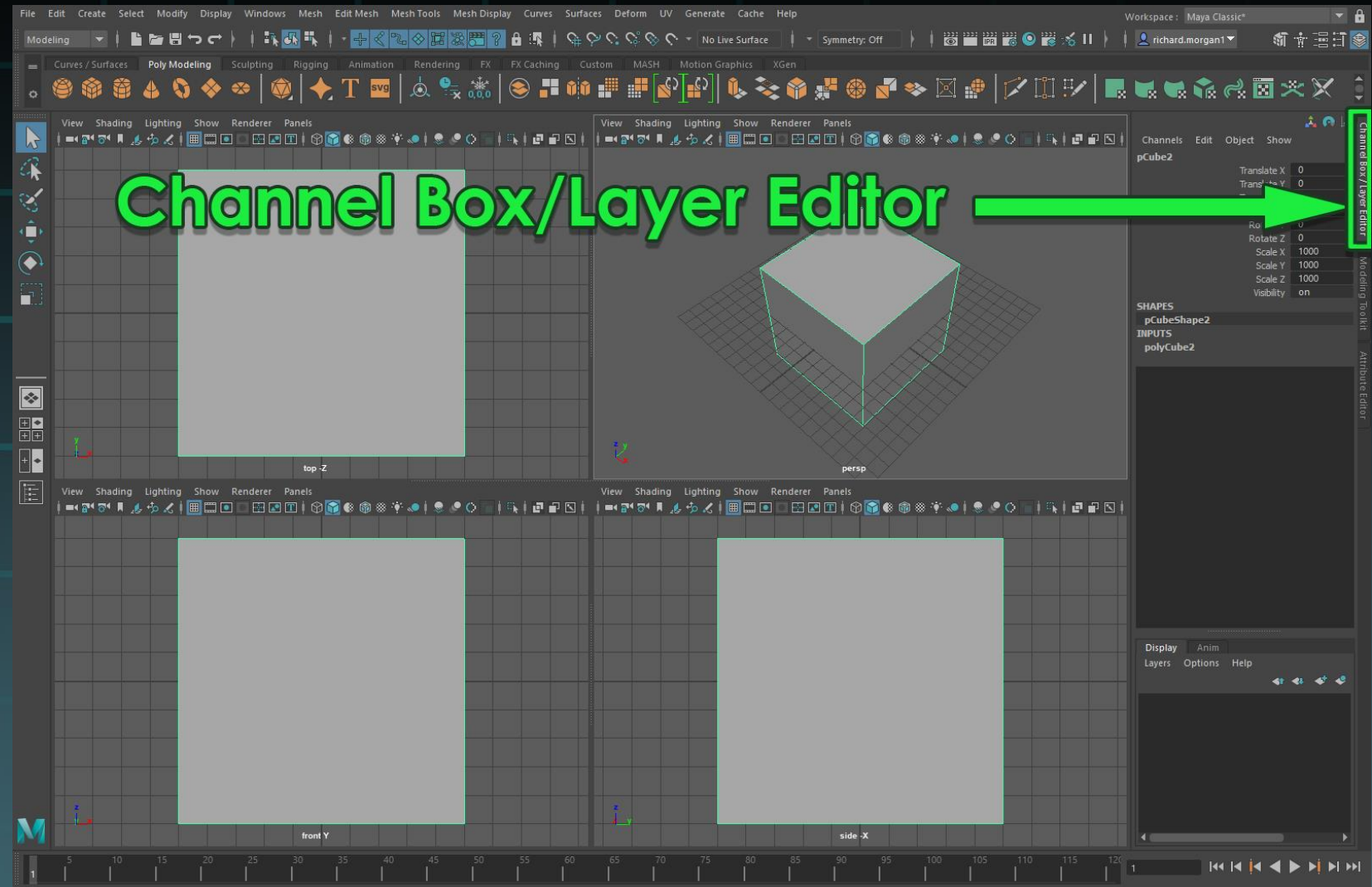
It is also **good practice in general** – colleagues will thank you for being organized if they have to work alongside you in the modelling process!



Renaming Your Objects (Channel Box / Layer Editor)

To rename your objects, you must have them **selected** in **Object Mode**.

Then click **Channel Box / Layer Editor** on the right-hand side of the Maya window.



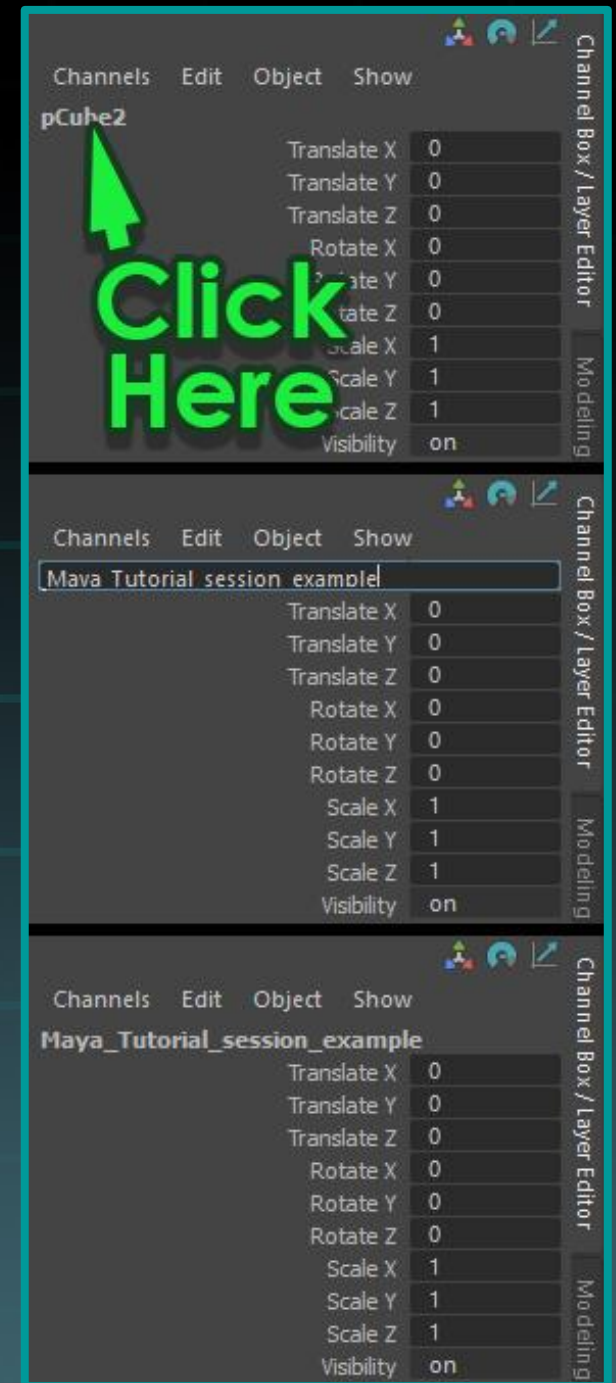


Renaming Your Objects (Channel Box / Layer Editor)

Clicking on the name of your object in the **Channel Box** will allow you to rename the objects in your scene.

Note that **Maya will not allow duplicate names** to be used – it will automatically number any objects with identical names.

By renaming your objects you will find using the **Outliner** much easier.





Renaming Your Objects

This has everything to do with good practice and nothing at all to do with the BA Games Programme Manager continuing to forget to rename their scene objects even after using Maya for a decade and a half.



Renaming Your Objects

This has everything to do with good practice and nothing at all to do with the BA Games Programme Manager continuing to forget to rename their scene objects even after using Maya for a decade and a half.

Do as I say, not as I do.



ENVIRONMENT DESIGN
Autodesk Maya Introduction

Autodesk Maya Introduction: **Summary / Cheat Sheet**



Basic Maya Summary / Cheat Sheet

W **E** **R** : W = Translation E = Rotation R = Scale

F = Focus on selected object

F8 = Switch between **Object Mode** and **Component Mode**

SPACE = Switch viewport view

ALT +  ,  or  = Move, Rotate, Zoom camera view



Remember:

**SAVE YOUR WORK
AND SAVE IT OFTEN!**



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