

Asset creation & Import

Target audience L4 Games Students
Pivotal concepts of a 3-hour lecture/workshop
compressed into 10 minutes

Key learning objectives

- Consider in-game actions to optimise asset design workflow
 - Plan an asset creation approach
 - Rapidly prototype key concepts & iterate if needed
 - Construct and test pipeline
 - Test for functionality, if needed rework
 - Plan & execute a final “quality” approach
- *Why not just start with making “beautiful things”?*
- Games art is more of production line than an art gallery
Rapid & consistent workflow is critical for ensuring assets are created to work consistently and be mass produceable

Principles of Modelling

In games **function** trumps form
Always start with

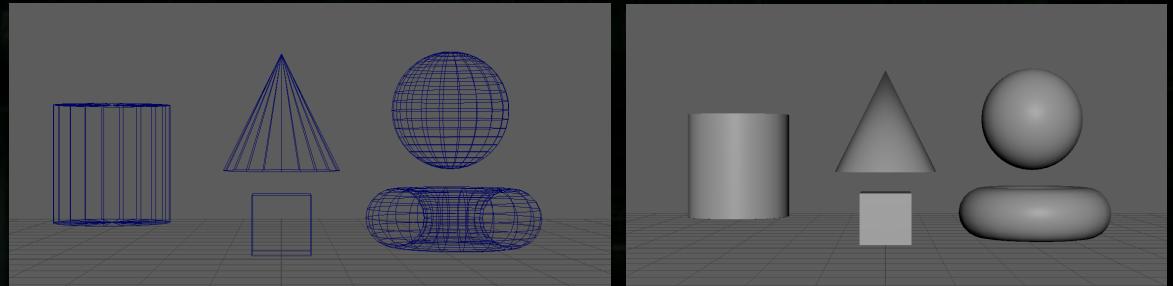
“What will this object do?”



Before considering what it looks like

Recap of last week's session

- Maya UI
 - Creating primitive objects
 - Moving the viewport & why “which way is up” matters
 - Understanding 3D basics
 - Vectors
 - Polygons
 - Surfaces
 - Using transformations
 - Move/Rotate/Scale
- All catch-up materials on your **My Studies** module page
 - This includes the keyboard crib sheet for driving Maya



Today we will build a “loot box”

- What are the critical components?
 1. A hollow box
 2. The hinged lid
 3. Source material to inspire overall look
 4. A construction plan



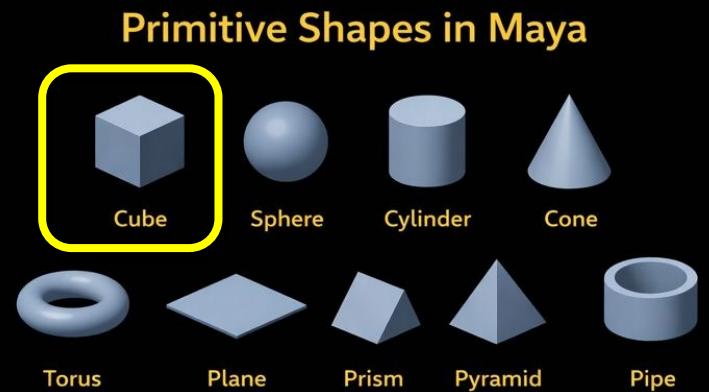
Design options

1. Basic 2-part static mesh model fully animated using UE5 BP
 - Perfect for rapid prototypes, however more reliance on code vs Art
2. Skeletal mesh with single Maya animation
 - Easy to preview in Maya, animation changes need some code
3. Skeletal mesh with multiple Maya animations
 - Fully animation in Maya, changes don't need new code so closer to what you'd find in industry. However; typically needs import pipeline tools.

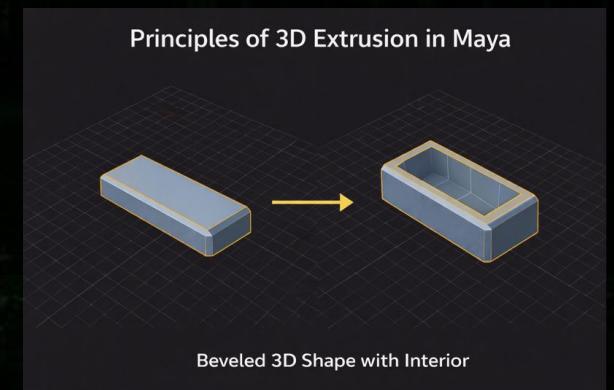
We will focus on 2 as it shows critical
Maya workflows including keyframing + UE5 BP Animation

Start simple

- Key aspects for construction
- Start with the closest primitive shape
- Think of how you would “work” the shape so it starts looking like a loot box
- To make the hollow bit we need to “Push part of the box in on itself to make a recess”
This is called “extrusion”



Primitive Shapes in Maya



Practical demo

- Try to follow along, however if you have issues, you can download the final reference object from [My Studies](#)
- Summary of actions
 1. Make the Box & fix sizes to sensible numbers
NB: both [Maya & UE5 use cm](#) as the natural scale
 2. Extrude the recess
 3. Duplicate the box, turn upside down & scale
 4. Fix the origins to ensure easy placement & rotation
 5. When correct selected objects [Freeze transforms](#) & [Delete history](#)
Consider making a [backup copy](#) first with Duplicate as once you freeze & delete you can no longer undo!!!
 6. Add keyframe animation to open lid (120 frames is good, run at 30fps so its 4 seconds)

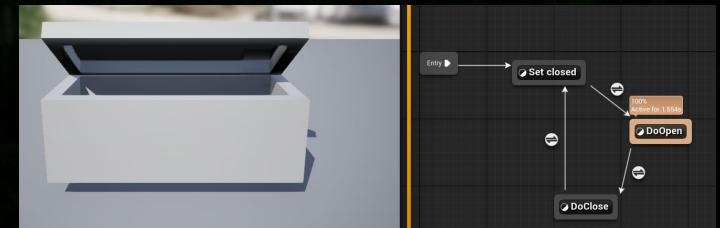
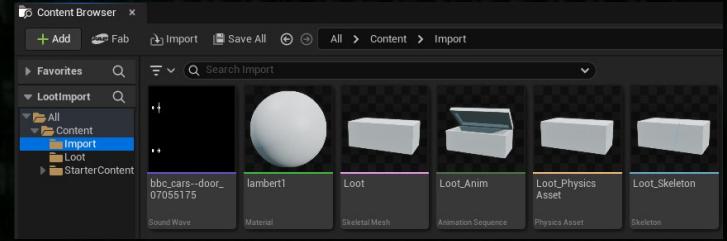
Import into UE5

- Basic import via FBX
 - Includes mesh, material references & animation
- There are many ways to get the object to open and close
 1. Pure Blueprint animation (using code rotating a child “lid”)
 2. Specific user imported keyframe animation (all done in Maya)
 3. Animation state machines with imported keyframe animation (animation done in Maya but driven via BP)

Whilst 1 would suffice for a simple lid opening I will be demonstrating 3 as whilst more complex it show off some key techniques for more realistic use cases

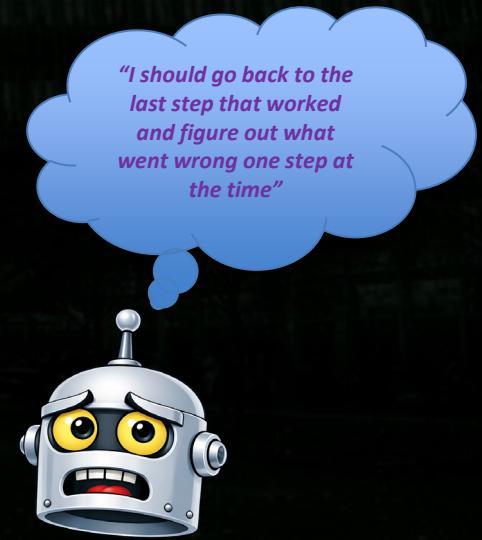
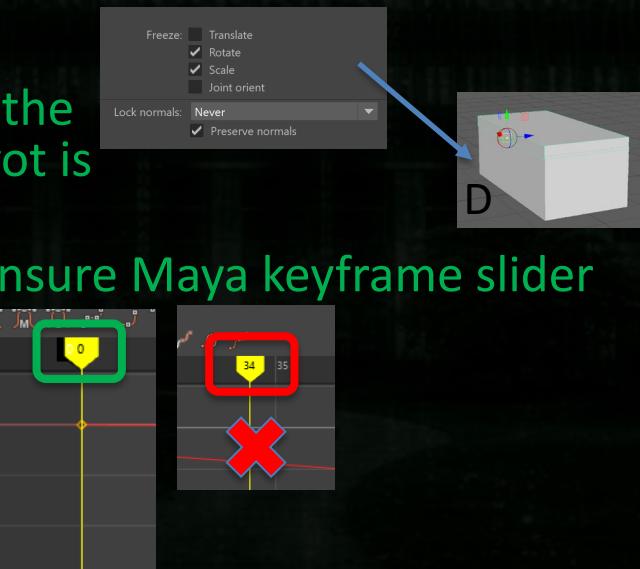
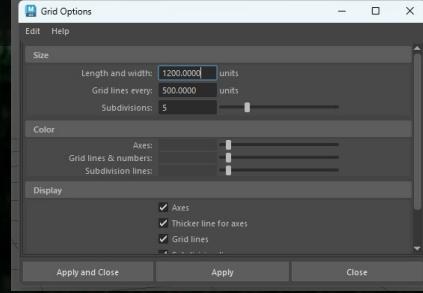
UE5 Project walk through

- Grab the Lab template from [My Studies](#)
- Note structure with folders for
 - Maya Import (likes to crash, so save all first)
 - LootBox object
 - Starter content
- Now I will explain
 - Animation preview & setting up notifications
 - BP vs Animation BP variables & events
 - The Animation state machine
 - A basic Object & Trigger model



Gotcha's

- Import wrong size or orientation
 - Check the Maya settings are in cm and objects sizes are in the 100's of units (100 cm = 1m), you may want to adjust your **grid** in Maya
 - Check +Z is up, +Y is into the screen & +X is right
- Objects in wrong place, before export
 - Make sure you freeze transformations
 - If there is a deliberately offset object, like the lid, don't freeze Translate & make sure pivot is correct using the D hotkey to align it
 - If Animation snaps to unintended frame ensure Maya keyframe slider is @ start frame (0) not were you left it
 - Delete history
- Animation wrong
 - Check & if needed compile



Lab & pre-work for next week

- Research treasure chests and find 2-3 real life examples to inspire you
 - Think about adding detail with extrude
 - **Advanced option:** consider barrels with lids or wardrobes as an alternative
- Design a modelling process to turn this into something you could build in Maya
 - Ensure it's designed to open to reveal the content based on a player action
- Discuss & critique your design with your neighbour
- **Build it, ready for next weeks Lecture/Lab**
 - Any issues put up your hand and I'll pop over
 - Catch up code https://github.com/RLTeachGit/UoB_Teaching_sample.git



NB: Consider only the mesh shape
we will cover materials & shaders in an upcoming lecture/lab

Not covered due to lack of time

- Adding additional detail to the box (lab/homework exercise)
- Colliders/Blocking
- Loot spawning
- UV unwrap & optimisation
- High-res sculpting and detail baking (Substance Painter)
- Retopologizing (Substance Painter)
- Object oriented BP design, so allow for a variety of “lock-key” models based on same base code with multiple of meshes