Maya Commands

Kristine Middlemiss, *Senior Developer Consultant*
Autodesk Developer Network (ADN)

Autodesk

Agenda

- Adding Undo and Redo Support
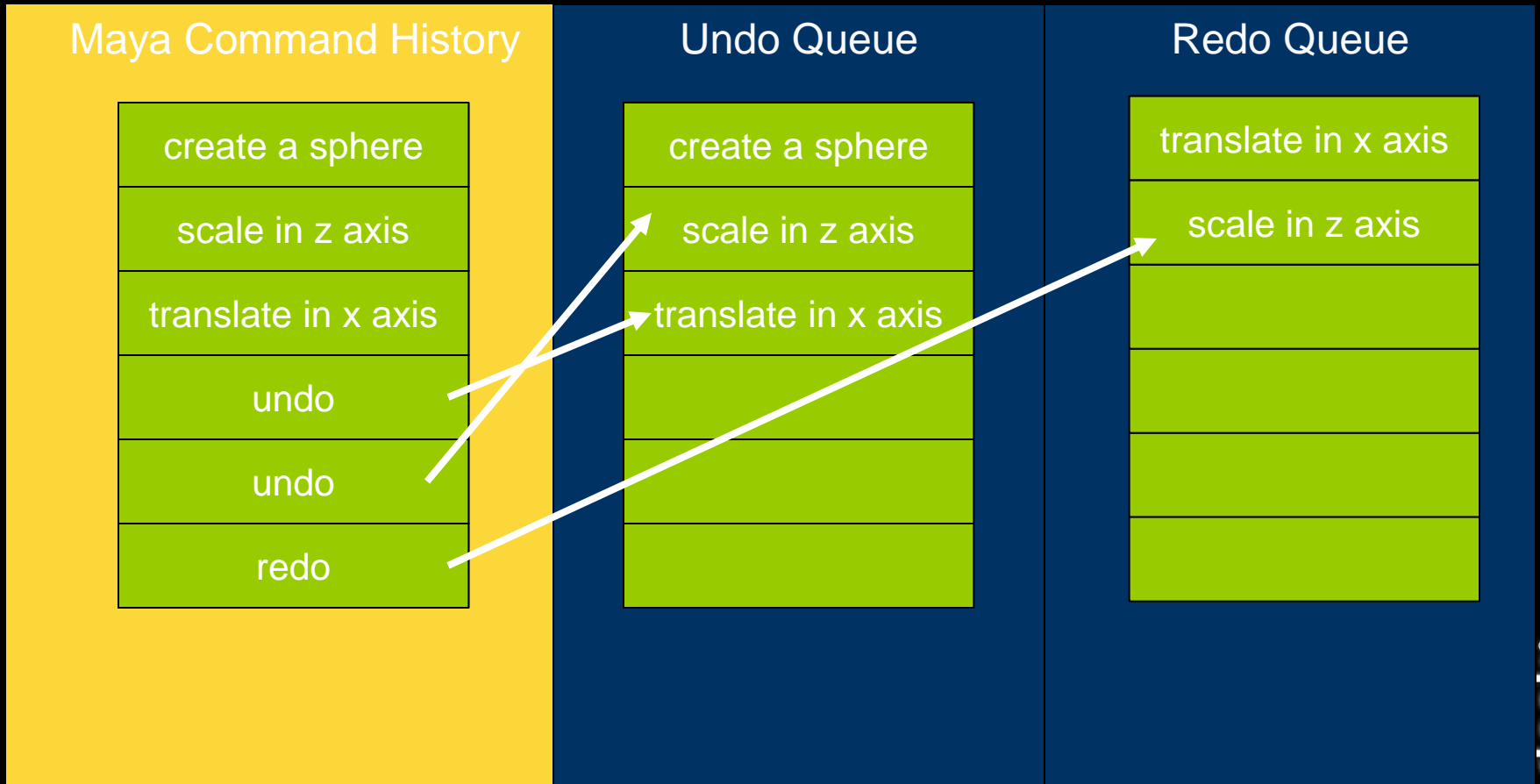
- Implementing Edit and Query Flags

Adding Undo/Redo Support

Maya Command Undo/Redo

- Maya commands support an undo/redo framework

- The undo/redo queue can be:

  - Turned off

  - Have a limited size

  - Have an infinite size

  - Defined in 'Settings and Preferences'

- While a command sits on the undo/redo queue, it retains all of its parameters, operations and data.

- The lifetime of a command and associated data is dependent on the settings of the undo queue.

Autodesk®

Maya Command Undo/Redo

Maya Command History	Undo Queue	Redo Queue
create a sphere	create a sphere	translate in x axis
scale in z axis	scale in z axis	scale in z axis
translate in x axis	translate in x axis	
undo		
undo		
redo		

Undo/Redo Rules of Commands

- A command that alters the scene in any way MUST have undo and redo implemented.

- If not it causes Maya state to be in limbo.

- Undo must reverse the changes inflicted to the scene, as if the command was never executed.

- The Undo queue only exists in the current Maya session, it is not saved with the scene.

Autodesk®

Undo/Redo Custom Command

- The MPxCommand functions you need to work with when writing your undo redo are:

  - isUndoable

  - undoIt

  - redoIt

- If isUndoable returns false, which is the default, the command cannot be undone and undoIt and redoIt are never called.

Autodesk®

Undo/Redo Functions

- isUndoable()
    - Override this method to return true/false to denote if this command supports undo/redo

- undoIt()
    - Called by "undo" command

- redoIt()
    - Called by "redo" command

Autodesk®

How Maya works with Commands

1. Custom Command is called, which calls the creator function, and returns and instance of your command.

2. The commands doIt function is then called.

3. The isUndoable function is called:
   - If isUndoable() returns False
     - Not placed in undo queue, deleted.
     - Command deconstructor is called.
       - Command cannot be reversed, no point in keeping it around
   - If isUndoable() returns True
     - Placed in undo queue, not deleted.

Implementing Query and Edit Flags

Autodesk®
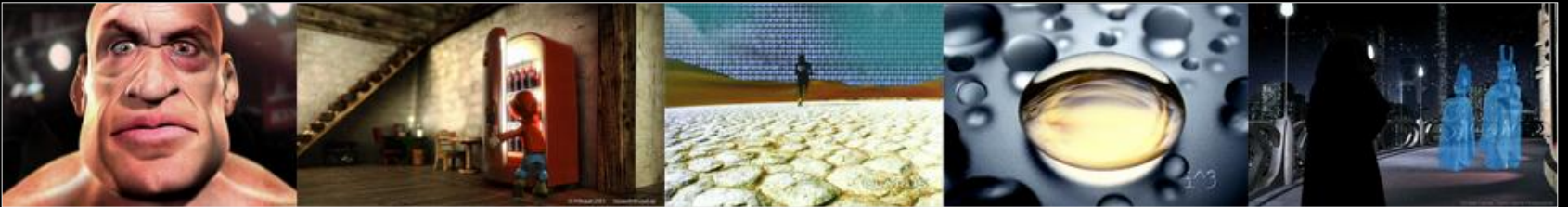
Edit and Query Flags

- Adding the built-in ability to query and edit previously set values in your commands.

- The built-in query and edit flags are:
  - -q/query
  - -e/edit

- You can edit multiple parameters at the same time.
- You cannot query multiple parameters at the same time.

- In the syntax object you need to specify that it accepts these flags, enableQuery and enableEdit.

Workshop Session

Autodesk®

Example: instanceRotate

- manipulates the instances of a selected mesh shape by rotating them with a quarter angle every time. User can specify which axis they want the objects to move around by sending arguments to this command.

- Practice note: how to handle complex plugs such as compound attribute plug

- how to work with Msyntax, MArgParser and MArgDatabase and parse arguments

Autodesk®

Autodesk

Autodesk®