

**Week 3**

**Lecture Outline**

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I. Conceptualization

- A. Structure - a model of, pattern for, or conceptual scheme of, a screenplay.
  - 1. Act I - The Beginning (*the setup*)
    - a. WHO are your main characters.
    - b. WHAT is the premise of the story.
    - c. WHAT is the situation.
  - 2. Plot Point #1 - at the end of Act I occurs an incident, or event that hooks into the story and spins it around into another direction.
  - 3. Act II - The Confrontation (*the conflict*)
    - a. The basis of all drama is conflict.
    - b. Develop the conflict in Act II.
    - c. Act II contains obstacles to your characters goals.
  - 4. Plot Point #2 - at the end of Act II occurs an incident, or event that leads toward the resolution of the story.
  - 5. Act III - The Resolution
    - a. HOW does it end?
    - b. WHAT happens to the main character.
- B. Scriptwriting
  - 1. Screenplay - a story told with pictures.
    - a. Your script is like a noun.
    - b. It's about a person, or persons, in a place or places, doing his or her "thing".
  - 2. Subject of a screenplay
    - a. Action is WHAT happens.
      - i. Physical - the exterior actions of your character. (running)
      - ii. Emotional - what happens inside your character during the story.
    - b. Character is WHO it happens to.
      - i. WHAT is the need of your character.
      - ii. The characters actions determine his/her character.

II. Keyframe Animation

- A. Historically Speaking - Traditional Production Process.
  - 1. Senior/Lead Animator - Created "Key" poses for every sequence, concentrating on the overall action in a scene.
  - 2. In-Betweeners - Took the "Key" drawings from the Senior/Lead and would draw the in-between frames.
  - 3. You are the Senior/Lead animator creating the "key" poses for your objects and characters and then you let your in-betweener(Alias) finish off the work.
  - 4. Actions were graphed out using a field chart, stylus and pantograph.
    - a. Pantograph was a calibrated field chart aligned with the tabletop where animation guides could be placed.
    - b. All in-between camera moves were plotted using mathematics and graphed on a sheet of paper indicating value against time.
- B. Keyframing animation in 3-dimensions
  - 1. Recall that all 3-dimensional models generated digitally have an associated transformation matrix.
    - a. Transformation Matrix - a set of 3 triplet values representing the Translation, Rotation and Scale values on an object along each axis.
    - b. Keyframes in a digital animation system - saves the values for every parameter in the transformation matrix at each keyframe position.
    - c. The computer animation program automatically interpolates the parameter values between keyframes.
  - 2. In-Between Interpolation - methods of calculating 'tween values.

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- a. Linear interpolation - simplest kind of interpolating.
  - i. Evenly divides parameter calculations across all in-between frames. (Action graph is a straight line)
  - ii. Problematic for objects with more than one keyframe.
  - iii. Transitions across several keyframes are abrupt and unnatural.
- 2. In-Between Interpolation cont.
  - b. Spline Interpolation - a solution with its own unique problems.
    - i. Keyframes become control vertices on a spline. (Actions are graphed as curves)
    - ii. Provides smooth curvature across multiple keyframes.
    - iii. Problematic - Overshooting
      - 1. Splines are required to remain smooth and continuous.
      - 2. Multiple keyframes placed too close to each other may cause a parameter value to go beyond a keyframe value.
    - 4. Problematic - Flatness
      - 1. Splines across multiple keyframes can't resolve a flat change in parameter value.
      - 2. Same obligatory continuity issue requires smoothness for the length of the action curve.
  - c. Eases - Solution for the splines obligatory state of smoothness.
    - i. Eases change values of parameters on an action curve, thereby changing their graphed shape in the Action Window.
    - ii. Slow in / Fast out - Deceleration - Values change more slowly as it comes to the second keyframe.
    - iii. Fast in / Slow out - Acceleration - Values change more quickly as it comes to the second keyframe.
    - iv. Eases are applied to keyframes using Tangent types in the Action Window.
  - d. Tangent Types - Control how a curve behaves as it leaves one keyframe and enters the next.
    - i. Smooth - A smooth transition between the keyframes before and after the new keyframe. (Objects appear to float)
    - ii. Linear - A straight line between two keyframes. (Neutral)
    - iii. In-Out - Eases out of one keyframe and into another.
    - iv. Flat - Causes in/out tangents to have no slope at each keyframe.
    - v. Step - Instantaneous change in value.
  - e. Editing Action Curves
    - i. DispTools -> TglTangents - displays action curve tangency handles.
    - ii. Pick -> Any tangents/In tangents/Out tangents - sets selection tool to pick tangents on each keyframe.
    - iii. Xform -> Move - allows you to move/rotate the tangency of the keyframe.
    - iv. Delete -> Static Actions - Removes keyframes in which parameter values do not change over time. (Flat actions)
    - v. Copying action curves - Action curves can be selected and copied across objects and parameters.

**III. Keyframe Animation in Alias**

**A. Quick Guide**

- 1. Using the Time Slider, select the first frame of your action.
  - a. You can select Anim -> View Frame, and then type in the frame number.

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- b. You can pull the Time Slider bar to the appropriate start frame.
      - c. You can type in the frame number in the Current Frame indicator.
    - 2. Select the object you wish to animate in the modeling window, multi--lister, or SBD..
    - 3. Open the Param Control window to select the parameters you wish to animate.
      - a. Select the box next to the objects name.
      - b. Then expand the objects parameter list by hitting the arrow to the left of the name.
      - c. Check off any parameters that you do not wish to animate.
        - i. Allows you to set keyframes for only the parameters you want.
        - ii. Speeds up render time, since keyframes on parameters that don't change won't be computed.
    - 4. Change that parameter of your object.
    - 5. Open the Animation -> Set Keyframe dialog box to set the keyframe.
      - a. Global will place a keyframe on all parameters at the current frame, destroying any previously created keyframes.
      - b. Local only adds keyframes for parameters that are selected in the Param Control dialog.
  - B. Keyframe Manipulations
    - 1. Set Keyframe - places a keyframe for selected objects animatable parameters on the current frame indicated by the timeslider.
    - 2. Append/Insert Keyframes - Allows you to insert keyframes on the selected animation channel.
    - 3. Pick -> Keyframes - Allows you to select keyframes on the action curve.
    - 4. Xform -> Move - allows you to move keyframes on the action graph.
    - 5. Copying Keyframes - Can copy select keyframes from one frame, or a range of frames. Follow directions in the command line prompt for best results.
    - 6. Pasting Keyframes - gives you the ability to copy keyframes to other objects.
    - 7. Edit -> Keyframe Edit - Opens a small dialog where you can change values and tangency information.
- IV. Action Window Addendum
- A. Snap Tools - provide easy snapping functionality to action window.
    - 1. Key - Snap to nearest keyframe.
    - 2. Time - Snap to nearest time (frame, X on action graph).
    - 3. Value - Snap to nearest value (Y on action graph).
- V. Animation Rendering and Output
- A. Previewing Animation
    - 1. Modeling Windows - For fastest playback, expand perspective window to full size.
    - 2. Play Blast - writes frames to RAM for smoother playback.
      - i. Show Play Blast toggled on will playback animation only in the Play Blast window.
      - ii. Quality - Slider determines preview size and quality.
      - iii. Optimization - Toggle these items on and off to decrease preview times.
  - B. Rendering Animation
    - 1. Render Globals -> Toggle Animation ON
    - 2. Animation Output Filename
      - i. Modify Extension - ON
      - ii. Start Extension - 10000
      - iii. By Extension - 1
      - iv. Extension Padding - 5
    - 3. Image File Output

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- i. Format - TIFF
- ii. Depth Format - Alias
- iii. Fields - OFF
- iv. X resolution - 320(draft) 645(full)
- v. Y resolution - 240(draft) 486(full)
- C. Animation -> Flipbook - Used to playback rendered test files.