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 where 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.
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.
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 object's name.
   b. Then expand the object's 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
Week 3  Lecture Outline

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.