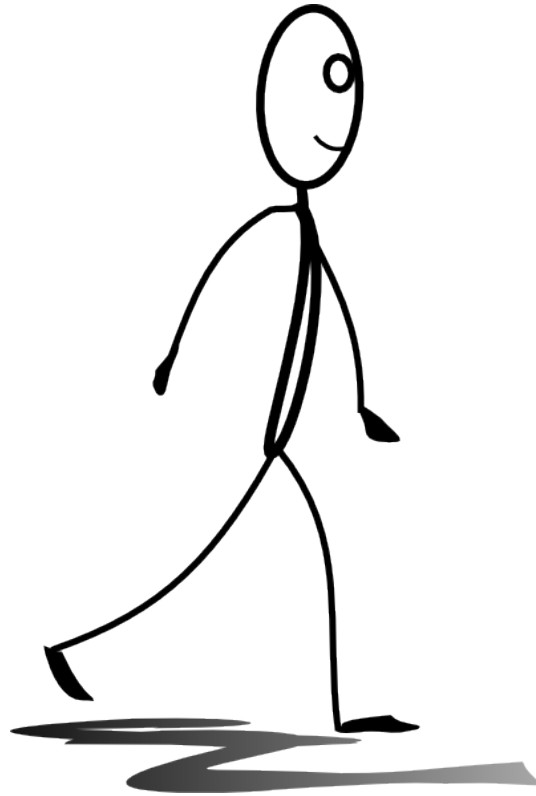# Animation

The Fundamental Principles

Fundamental Principles

- **1930's:** Walt Disney wished to improve level of animation suit certain story lines.

- Set up classes at Chouinard Art Institute for animators where analysis of nature + real action became central to the animation process.

- From this grew the **12 fundamental principles of animation**
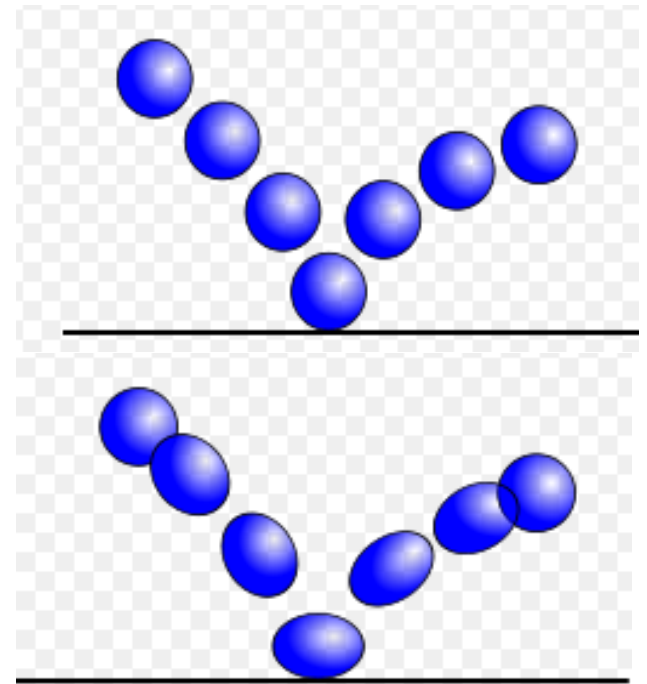
1. Squash + Stretch

- This helps to define the rigidity and mass of an object by distorting its shape during an action + adding realism.
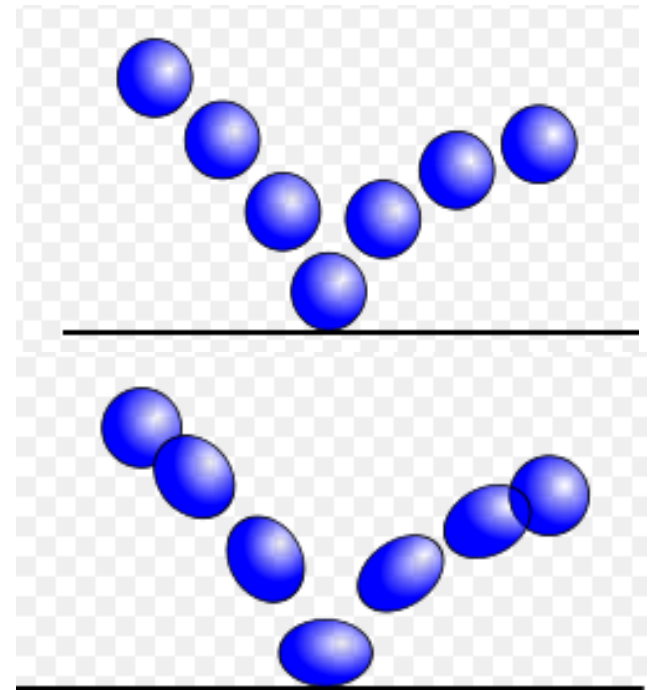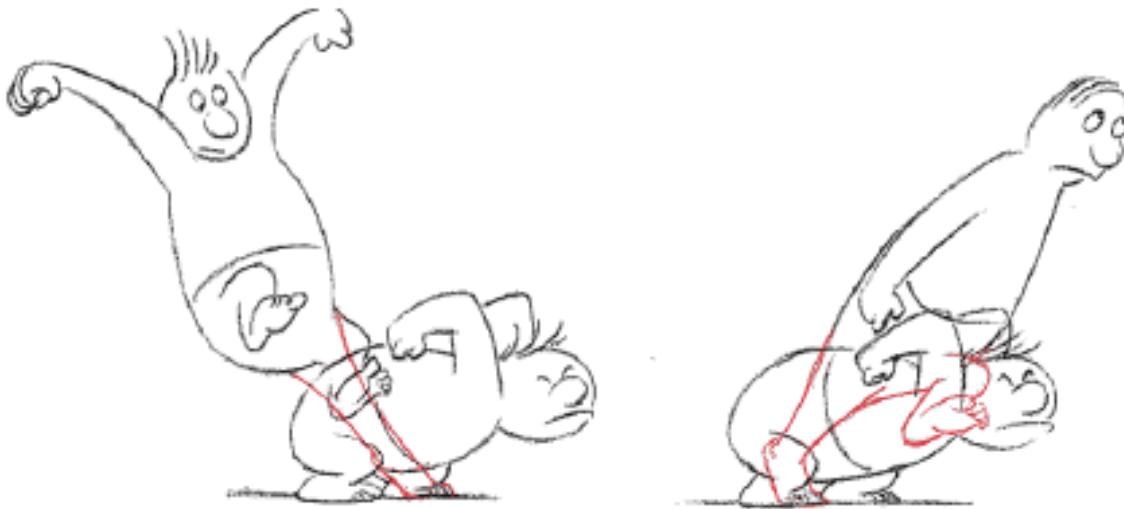
1. Squash + Stretch

- Note: When an object is being deformed it must still appear to retain its volume.

2. Anticipation

- Anticipation of movement prepares the audience for a major action the character is about to perform. (For example- starting to run, jump or change expression)

- A backwards motion occurs before the forward action is executed.

- Anticipation is used to lead the viewers eye and prepare them for what will happen.

- The formula for most animations is anticipation, action, and reaction.

2. Aniticpation

3. Staging

- This is presenting an action or idea so that it is easily understood.

- Objective of staging is to lead the viewers eye to where the action will occur so that they do not miss anything.

- This can be achieve by the framing of the camera, the positioning of the character, the flow lines of the character's line of actions, and also movements.

- Present only one idea so as not to upstage.

4. Straight Ahead Action and Pose-to-Pose Action

2 basic methods of creating animation SAA + PPA

Straight Ahead Action(SAA): Animator draws or sets up objects one frame at a time until the sequence is complete.

- Can yield a fresh look but can be difficult to time correctly & tweak.

Pose to Pose Action (PPA): Setting up key poses & then drawing or generating in-between images – key frame approach

- Excellent for tweaking or timing.
- Generally a hybrid approach is applied to contemporary animation.

5. Follow Through + Overlapping

- Follow through is like anticipation but at the end of an action. When the main body of the character stops all other parts continue to catch up to the main mass of the character (example- long hair, floppy ears or a long tail).

- Overlapping action is an action caused by another.

- If a character changes direction, a number of frames later, his clothes & hair will follow in the new direction. Timing becomes critical to the effectiveness of overlapping action.

5. Follow Through + Overlapping

6. Ease In and Out

- Also known as slow in and slow out.
- Most motion starts slowly, accelerates, and then slows again before stopping
- Object(s) may slow down (Ease In) or speed up (Ease Out) as it approaches a pose
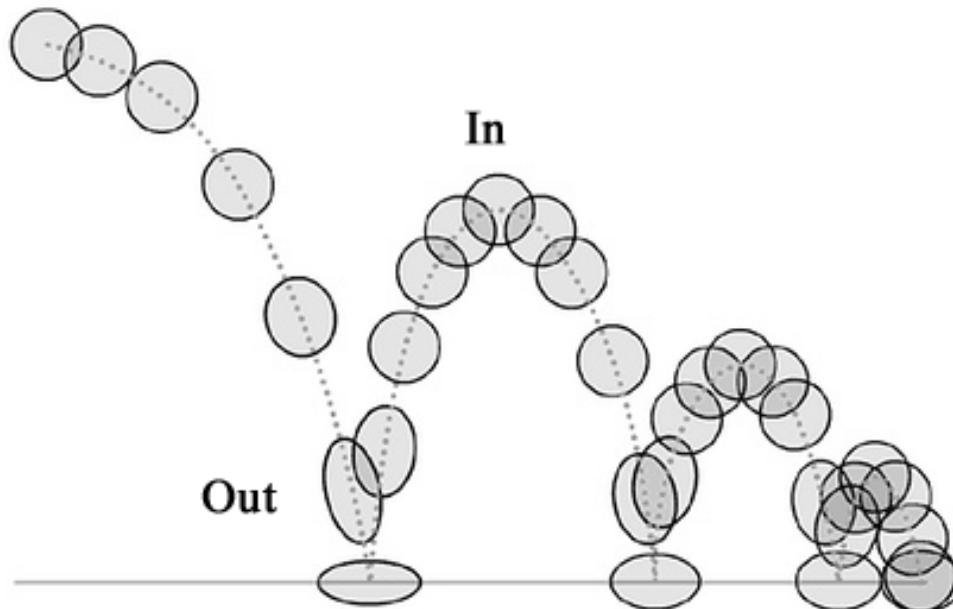
7. Arcs

- Almost all natural motion is in some form of an arc.
- An arc is the visual path of action for natural movement.
- All actions, with few exceptions follow an arc or slightly circular path.
- This is especially true of the human figure and the action of animals. Arcs give animation a more natural action and better flow.

7. Arc
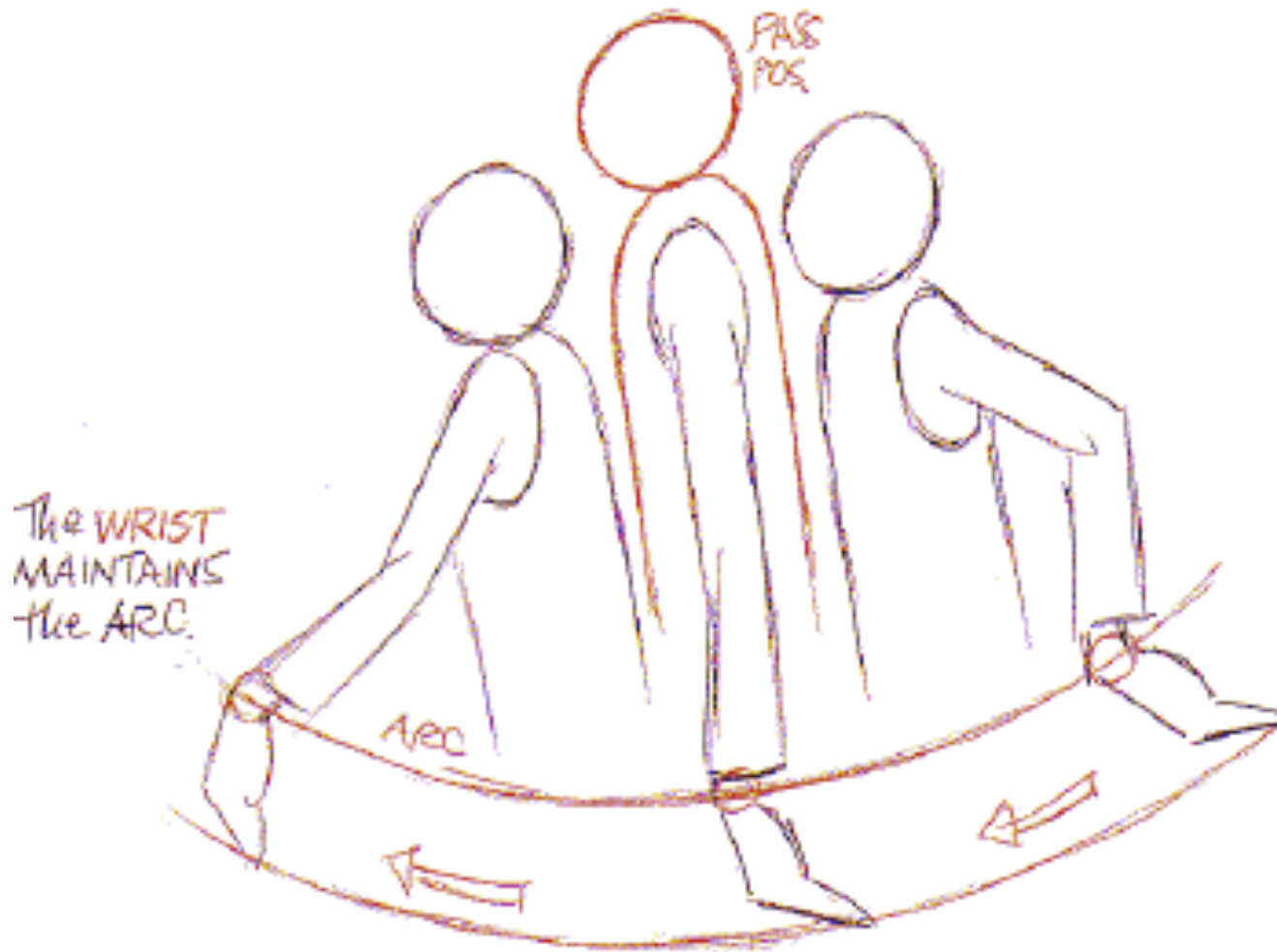
8. Secondary Action

- An action which adds to and enriches the main action and adds more dimension to the scene. (Example- Facial expressions are secondary actions.)
- Should be staged so as not to overpower the main action.

  (Example- Character sitting talking at a table and the

  secondary action may be the characters thumbs twiddling.)
- Should be more and 'felt' more than noticed immediately.

9. Timing + Spacing

- Timing is how long does it takes to get from one key pose to another.

- Spacing is the way to get from one key pose to another, whether its fast or slow (example- eye blinking).
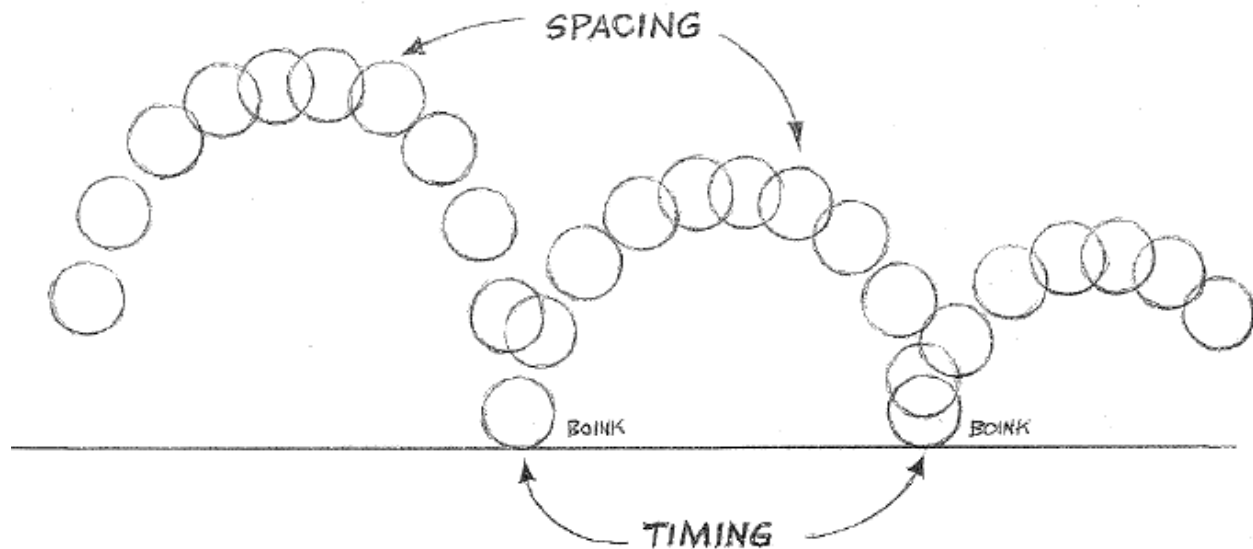
10. Exaggeration

- Exaggeration is used to increase the readability of emotions and actions.

- Animation is not a subtle medium.

- Individual exaggerated poses may look silly as stills but add dramatic impact when viewed for a split second.

- Animators should be careful to use exaggeration to increase understanding of feeling. Be careful not to over-exaggerate everything.

11. Solid Drawing

- Every frame in an animation should be able to stand out on its own as a solid drawing.

- Solid in-betweens are just as important as solid keys. Without solid drawing, animations can appear to morph or dither as they change in quality.

- Once you can pause an animation at any time and the frame can stand out on its own as an individual piece of still art – you have achieved solid drawing.

12. Appeal

- Appeal means creating something that the audience will want to see.

- Animated characters need to have a unique personality and a wide range of emotions.

- Character flaws are actually a good thing. Audiences can be sympathetic to characters that have a flaw or two.

- A scene or character should not be too simple (boring) or too complex (can't understand it).