Module 6 - Visible Surface Detection and Animation

Computer Animation

Computer Animation

What is Animation?

Make objects change over time according to scripted actions

What is Simulation?

Predict how objects change over time according to physical laws

Introduction

•**Computer animation** is the process used for generating animated images (moving images) using computer graphics.

• **Animators** are artists who specialize in the creation of animation.

•From Latin **animātiō**, "the act of bringing to life"; from *animō* ("to animate" or "give life to") and *-ātiō* ("the act of").

2D ANIMATION

3D ANIMATION

APPLICATIONS

Video games

cartoon

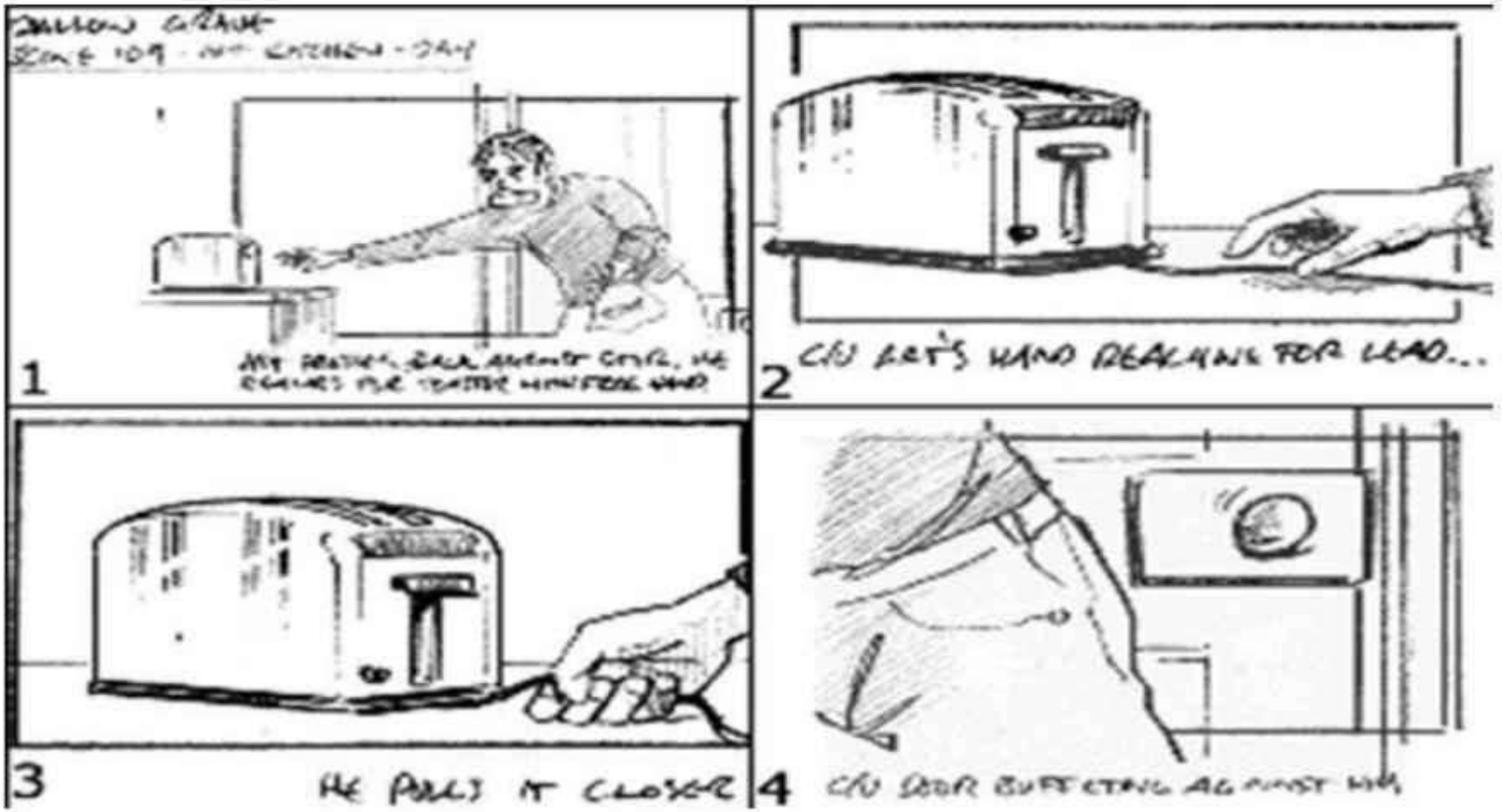
Mobile phones

Design Of Animation Sequences

•Steps for designing animation sequences.

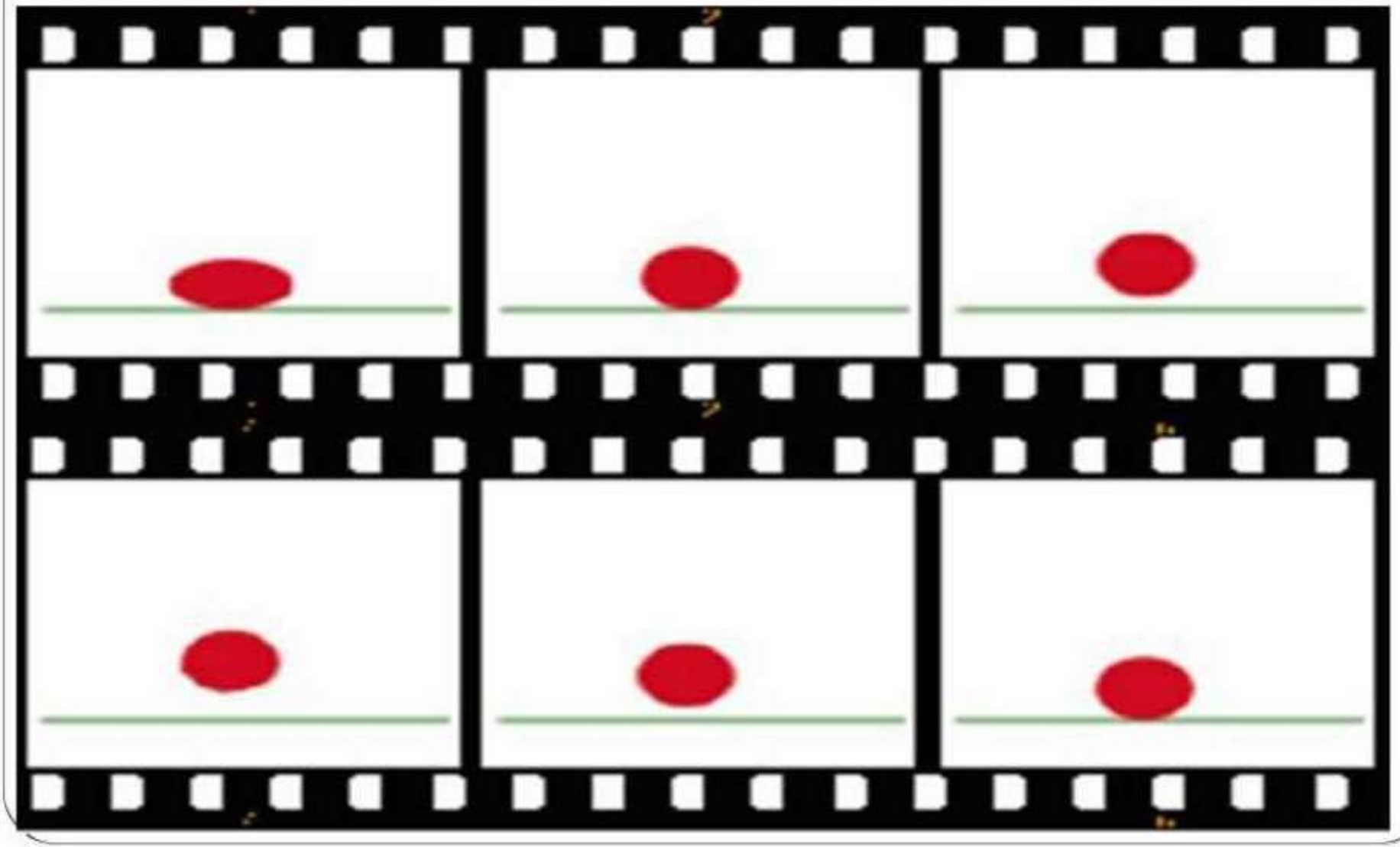
1. Storyboard Layout
2. Object definitions
3. Key frame specifications
4. Generation of in-between frames

Storyboard Layout



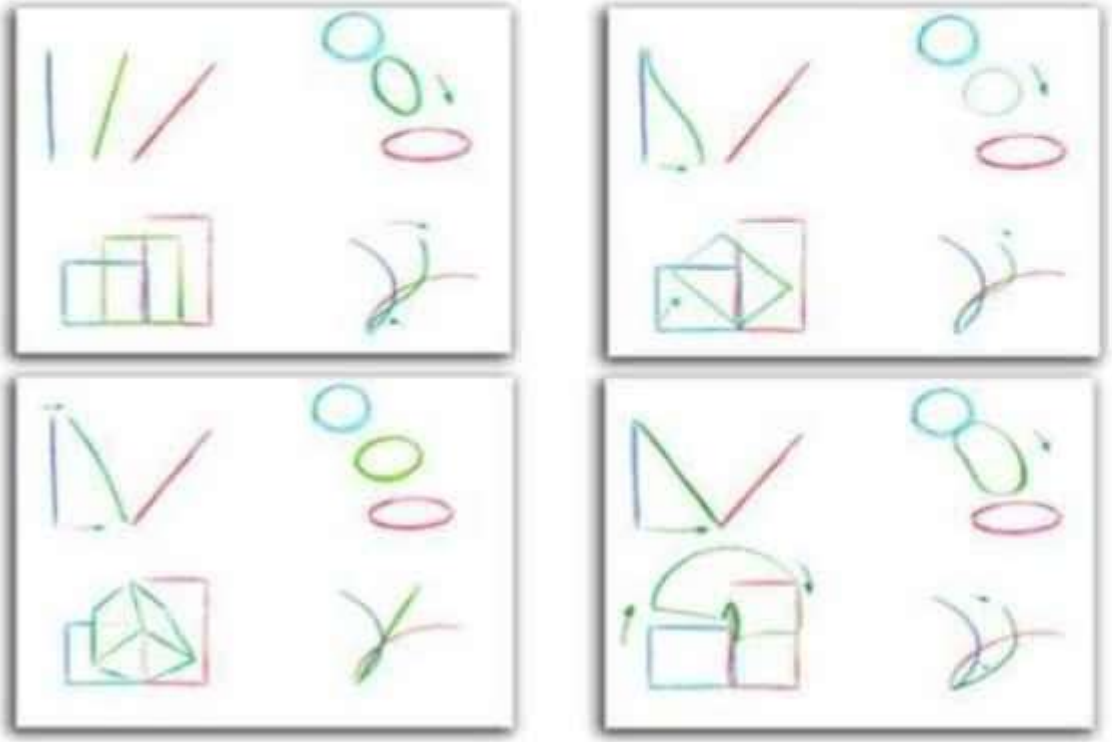
Object Definitions

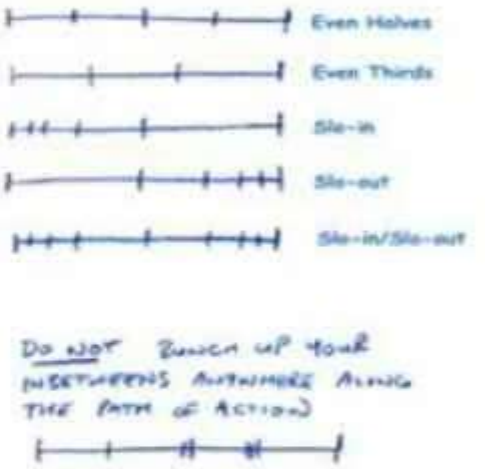
Key frame Specifications



In-between frames

Inbetweening



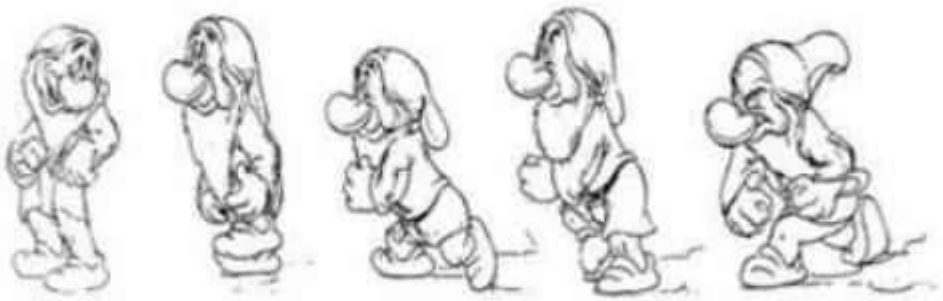


Inbetweening is the fine art of knowing how and where to draw the line so that the action intended is clearly understood by the viewer. A good inbetween is not just half way between two lines.

Computer Animation Languages

- **GENERAL PURPOSE LANGUAGES**

  - C,C++,Pascal, or Lisp(control animation sequences).

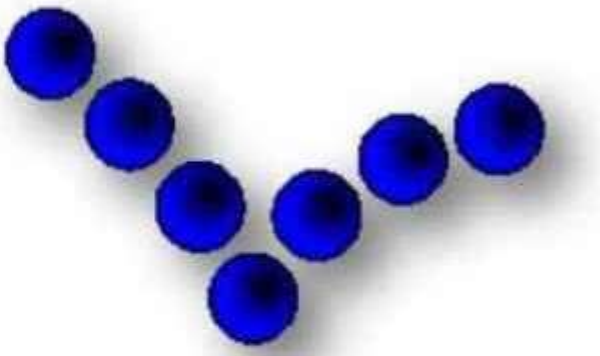


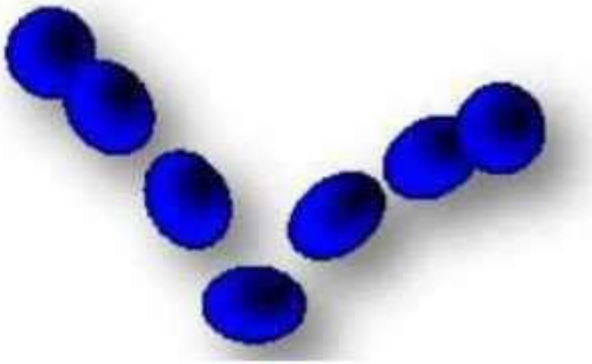
Principles of Animation

1. Squash and Stretch
2. Anticipation
3. Staging
4. Straight Ahead v. Pose to Pose
5. Follow Through and Overlapping Action
6. Slow In and Slow Out
7. Arcs
8. Secondary Action
9. Timing
10. Exaggeration
11. Solid Drawing
12. Appeal

Squash and Stretch

- Gives the illusion of weight to an object as it moves
- An object's volume must not be changed when squashed or stretched.

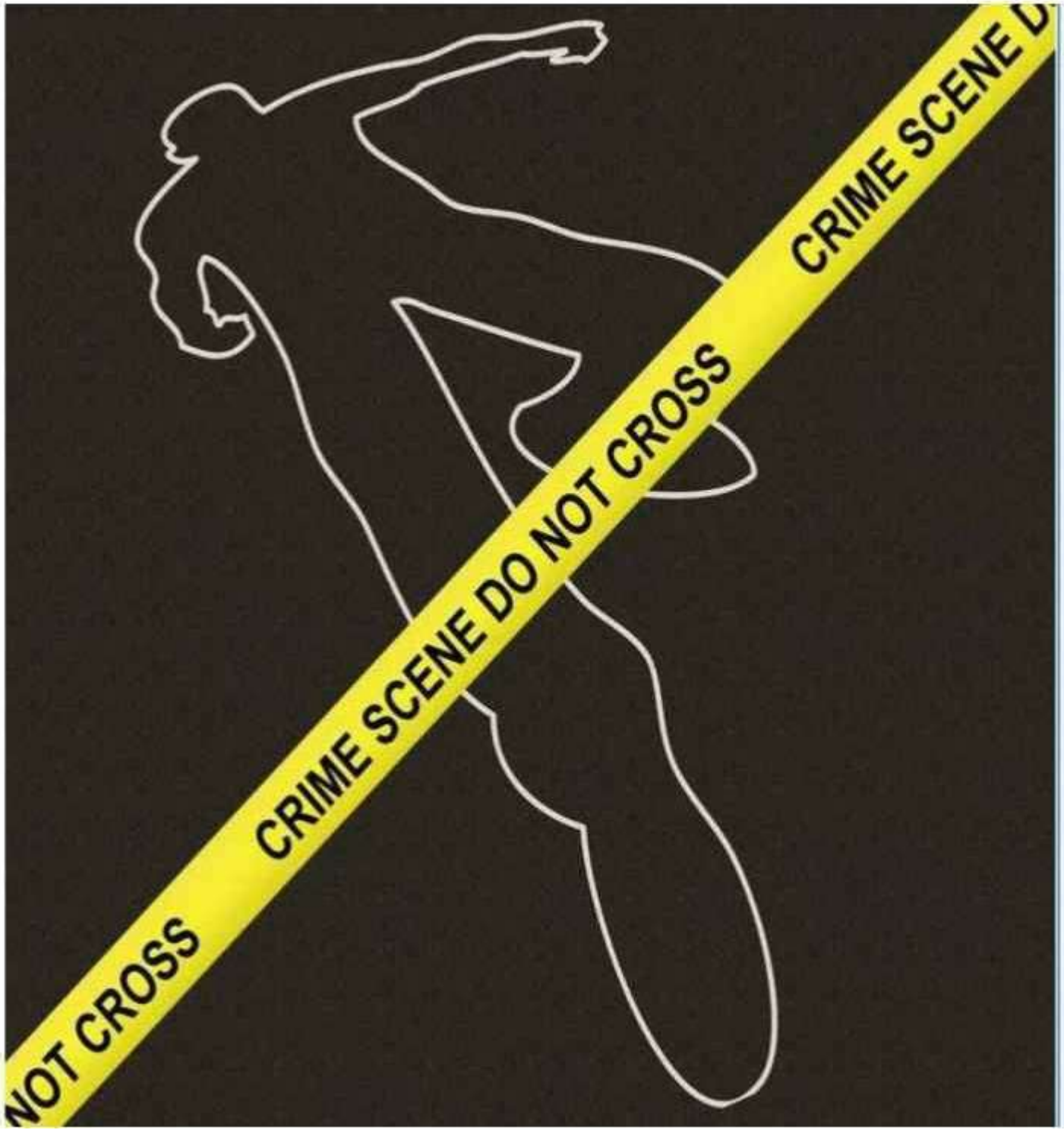




Another Example

ANTICIPATION

Prepares the audience for the action and makes the action appear more realistic



STAGING

- A scene should reveal the attitude, mood, reaction or idea of the character or story.
- Camera angles help frame this for the audience.

Straight Ahead v. Pose to Pose

Straight Ahead Animation

- Begins with the first drawing and works drawing toward the end of a scene.

Pose to Pose Animation

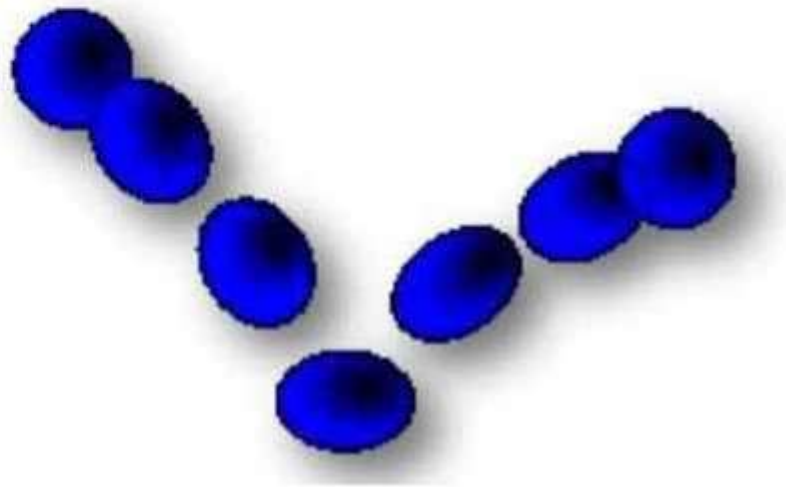
- Planned out and charted
- Key drawings done at intervals throughout the scene

Follow Through and Overlapping Action

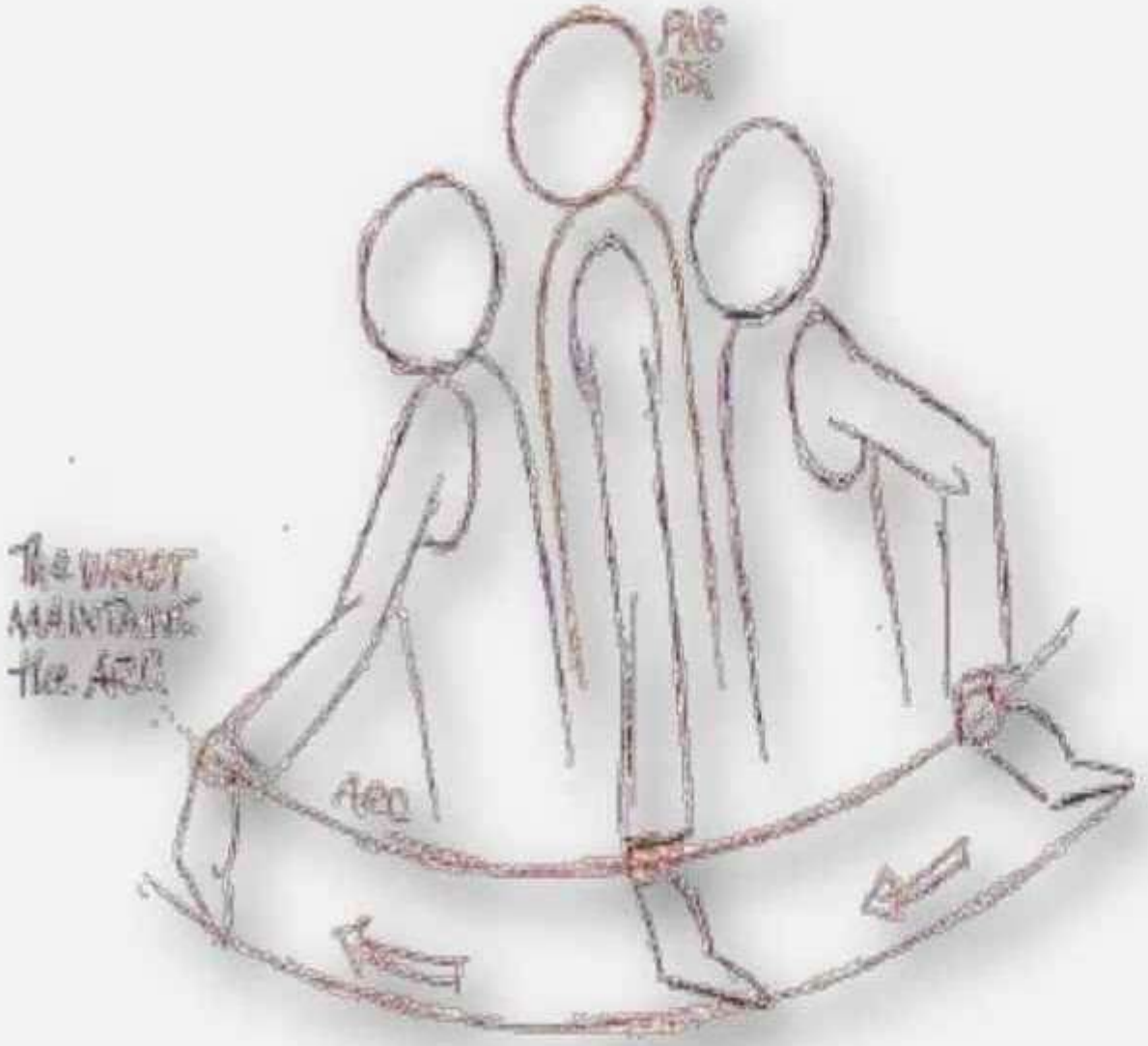
- When the main body of the character stops all other parts continue to catch up to the main mass of the character, such as arms, long hair, clothing, or a long tail.

Slow In and Slow Out

- More drawings near start and end pose.
- Softens the action



ARCS



All actions, with few exceptions follow an arc or slightly circular path.

Secondary Action

- Action adds to the main action and adds dimension to the character

TIMING

- Timing refers to the number of drawings or frames for a given action
- On a purely physical level, correct timing makes objects appear to abide to the laws of physics
- Timing is critical for establishing a character's mood, emotion, and reaction.

EXAGGERATION

Exaggeration is an effect especially useful for animation, as perfect imitation of reality can look static and dull in cartoons.

SOLID DRAWING

The basic principles of drawing apply to animation as it does to academic drawing.

APPEAL

Appeal includes an easy to read design, clear drawing, and personality development to capture the audience's interest