

EECS 487

March 12, 2007

- Mark Seager presentation
- Homework 3 assigned today
- Project 4 out yesterday
 - jot updated
 - due 2 weeks from tomorrow
 - video widget needs to be fixed
- Animation intro (slides / DVD)

Animation principles

11 “principles” developed by animators, e.g. at Disney during 1920's – 1940's

- Principles of 3D traditional animation applied to 3D computer animation, John Lasseter (Pixar), ACM Computer Graphics, Volume 21, No. 4, July 1987

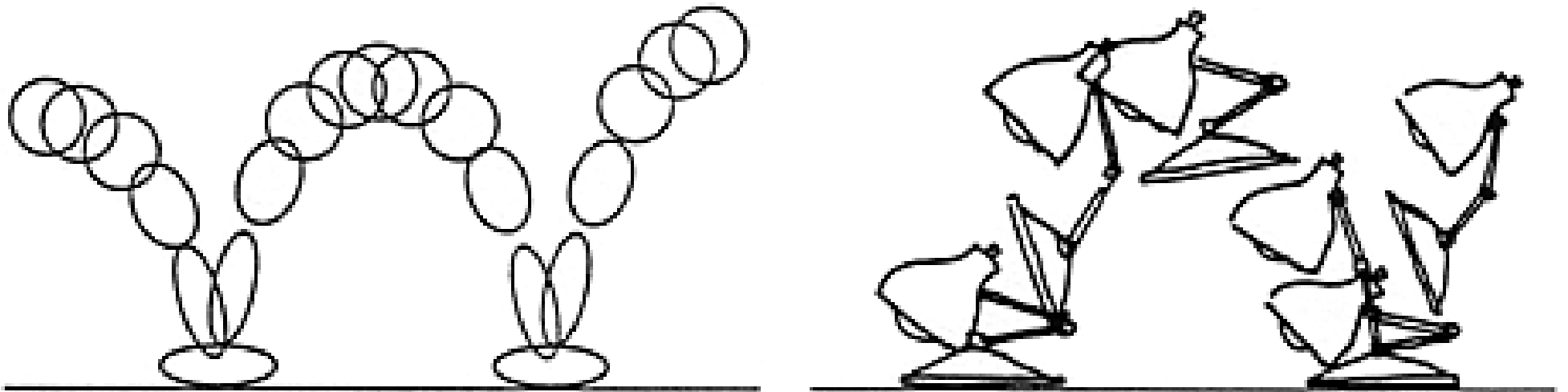
<http://home.comcast.net/~harrymott/principles.html>

(The following text/images are partly from the above link)

- The Illusion of Life: Disney Animation, by Ollie Johnston and Frank Thomas

1. Squash and Stretch

Defining the rigidity & mass of an object by distorting its shape during an action.



2. Importance of timing

Timing actions to define the weight & size of objects & the personality of characters.

Too fast: audience misses it

Too slow: attention wanders

Timing matters for believability

lift heavy object vs. light one

T-rex gait vs. rabbit

3. Anticipation

Exaggerated preparation for an action.

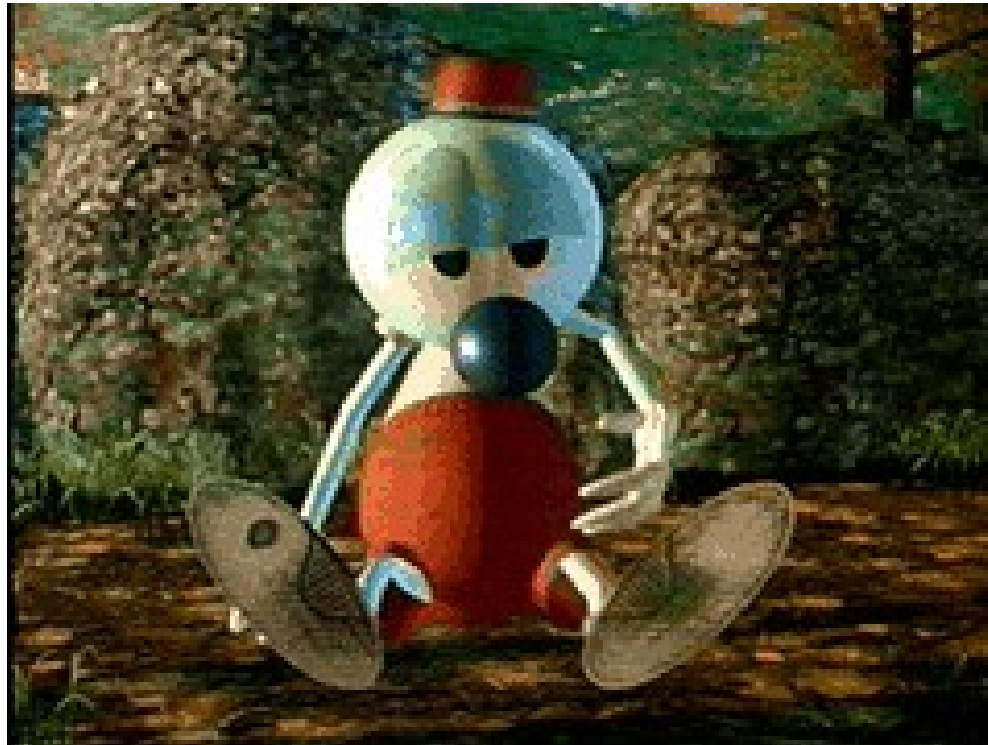
Helps ensure the audience can see what is happening.



4. Staging

Presenting the action clearly.

Works with anticipation and timing.



5. Follow Through & Overlapping Action

- The termination of an action & establishing its relationship to the next action.
- Follow-through is like anticipation, except at the *end* of the action
- Overlapping action: next action starts before previous one is finished
 - e.g.: walk to door, reach for door.

6. Straight Ahead Action & Pose-To-Pose Action

- Two contrasting approaches to the creation of movement.
- Straight ahead: animator draws one frame after another
 - fresh, zany, wild
- Pose-to-pose: animator draws key poses, then fills in intermediate frames
 - used for animation that requires good acting, where poses and timing are all important.

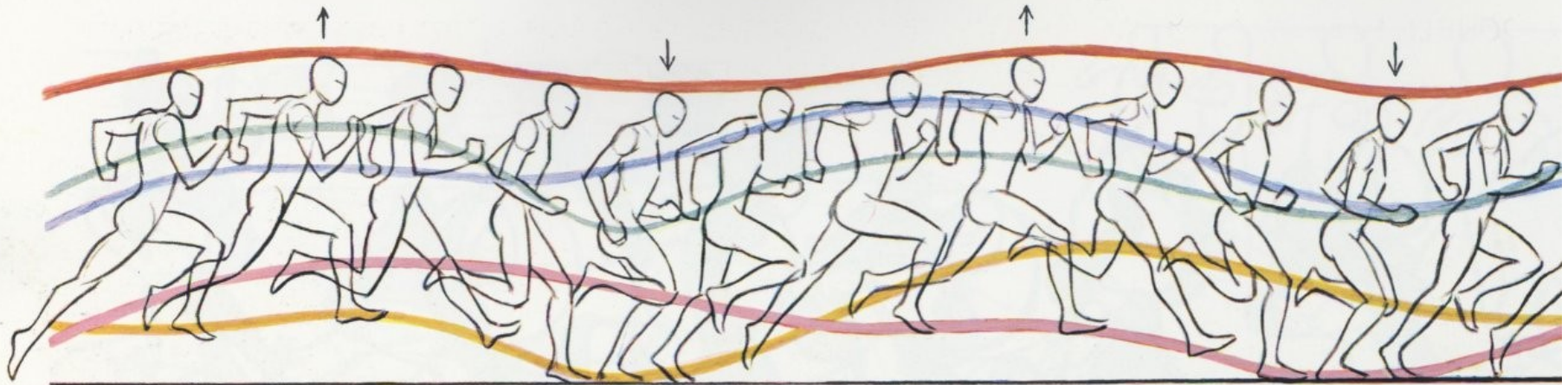
7. Slow In and Out

- The spacing of in-between frames to achieve subtlety of timing & movements.
- avoid constant speed
 - start slow
 - end slow
 - faster in the middle
- easier for the audience to follow, more “realistic”

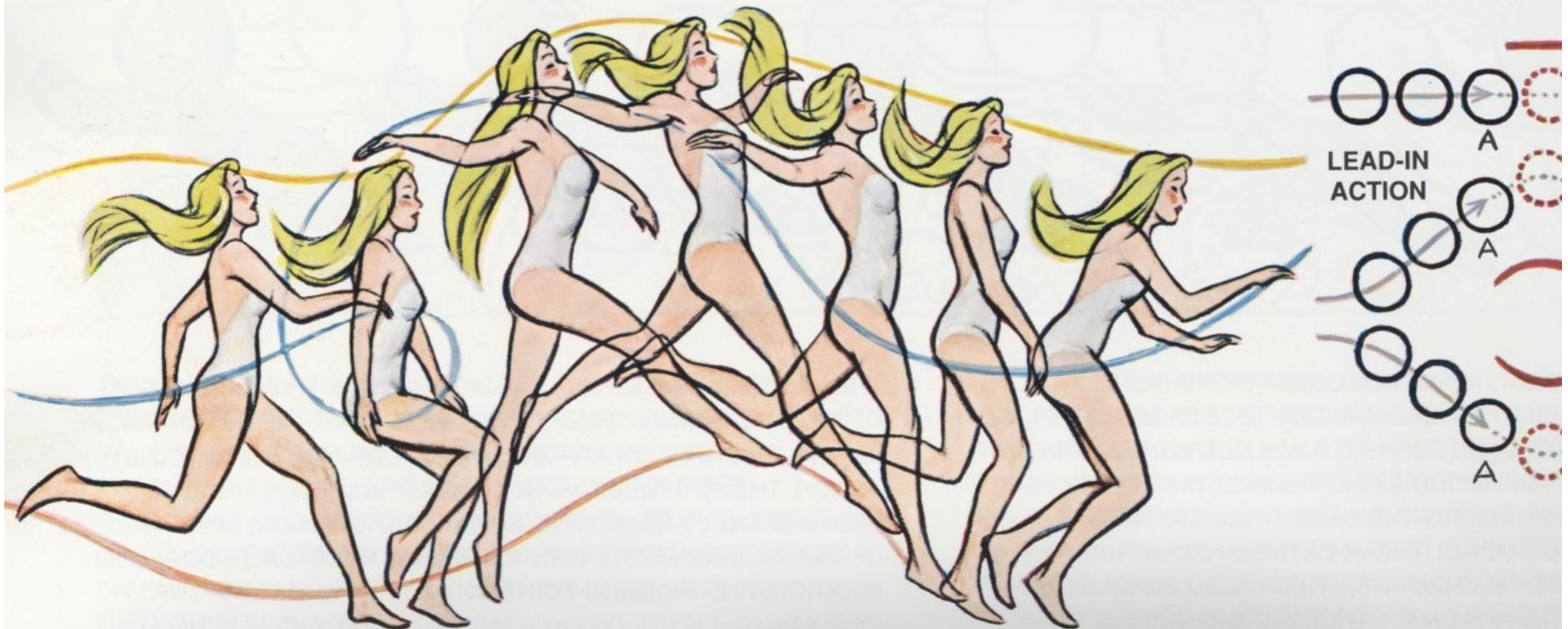
8. Arcs

- The visual path of action
- use flowing arc, not straight lines
- movement looks more natural, less robotic
- image on next slide from:
Cartoon Animation, by Preston Blair

ARCS · CURVES · PATHS OF ACTION



A CHARACTER MOVES IN PATHS OF ACTION THAT EITHER CURVE OR GO STRAIGHT. IF A DRAWING IN AN ACTION THAT DOES NOT FIT THE PATH OR SPACING PLAN, A JITTER, A JERK, OR AN UNR... ACTION WILL OCCUR. YOU DON'T NEED TO CHART ALL THE PATHS; YOU CAN SEE THEM WHEN Y... THE DRAWINGS. THE DEGREE OF ARC IN AN IN-BETWEEN CAN EITHER IMPROVE OR STUNT AN



9. Exaggeration

Accentuating the essence of an idea via the design & the action.

Understand the essence and exaggerate it.

E.g.:

Sad → devastated

happy → ecstatic

excited → frantic

10. Secondary Action

- The Action of an object resulting from another action.
- E.g.:
 - turn head suddenly: ponytail bobs
 - fat guy walks: belly jiggles
- adds realism, believability
- also clarifies the action
- but should not conflict with main action

11. Appeal

- Creating a design or an action that the audience enjoys watching.
- not the same as cute/cuddly
- anything that a person likes to see:
 - a quality of charm, pleasing design
- not:
 - complicated, hard to read, clumsy, awkward