

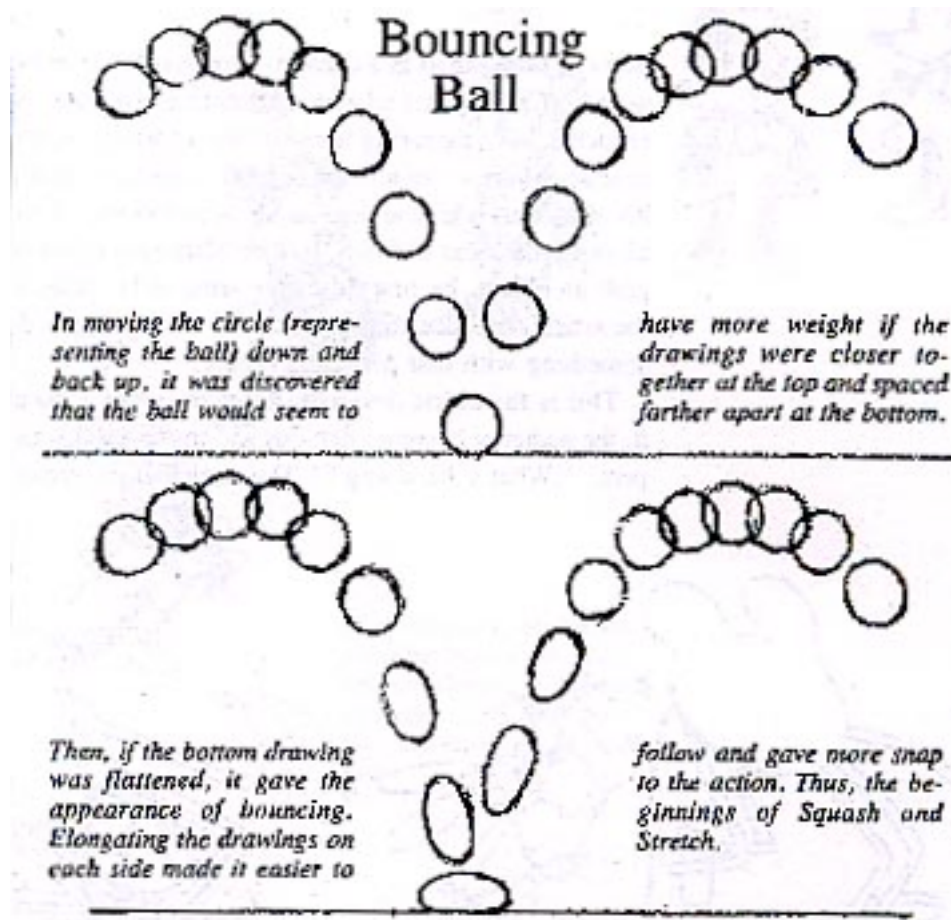
Principles of Animation

Squash and Stretch



before Disney, character animation was rigid (remember old-time Mickey Mouse?)
fleshy organisms use squash and stretch; solid objects like bowling balls do not

- *example: arm flexing*
- *example: bouncing rubber ball (standard animation test)*



squash: flatten out with great pressure; bunched up or pushed together

stretch: same form but extended

the point is never to change the volume of the object (*think of a water balloon*)

volume changes: be careful not to let your stretch look stringy or your squash look bloated; this occurs if the volume of the object is removed or added... volume should be 'squashed' or 'stretched'

Anticipation



Early animation was abrupt and had ineffective and unexpected motion

Anticipation precedes action...

a preliminary action that sets up the primary action is anticipatory...
preceding each action is a specific move that anticipates for the audience what is about to happen

planned sequence of actions that lead from one activity to the next

the viewer must be prepared for the next movement and expect it before it actually occurs

- example: jumper (see below)

anticipation is a theater device

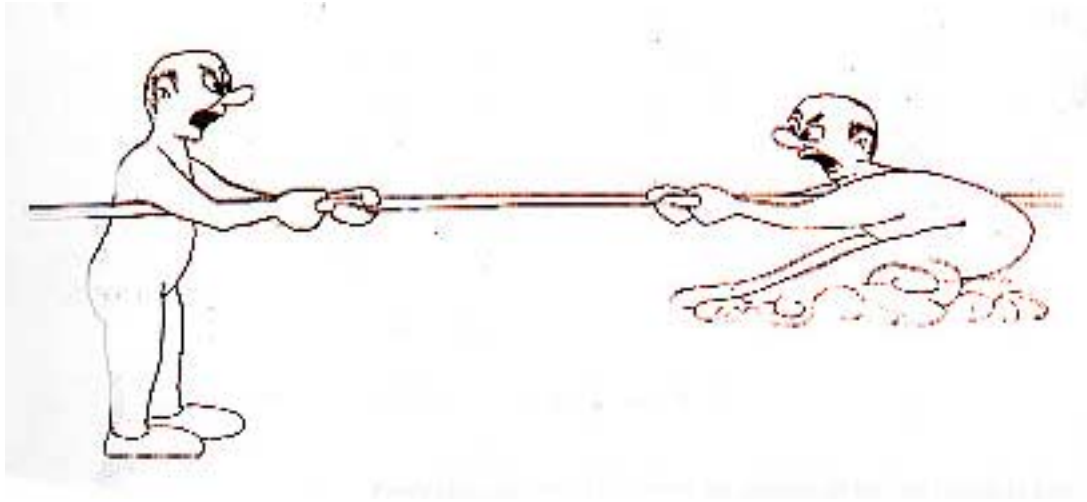
- *example: golfer on back swing*

- *example: two people pulling rope and it stretching before it breaks*

use a **surprise gag**... audience expects one event but another event happens...
the anticipation for one consequence manifests surprise if an alternative consequence occurs

aiming: (Disney term) the whole animation must relate to the action (focus on it...)

- *example: character looks at pocket before and while the hand draws out an object... focus is always on pocket...*



Staging

object in motion positioned in such a way that motion is quickly detected and easily understood...

visualize complex scenes in b/w silhouettes

present ideas in clear way

every frame of the animation helps to make a point in the story

- aesthetic
- look and feel

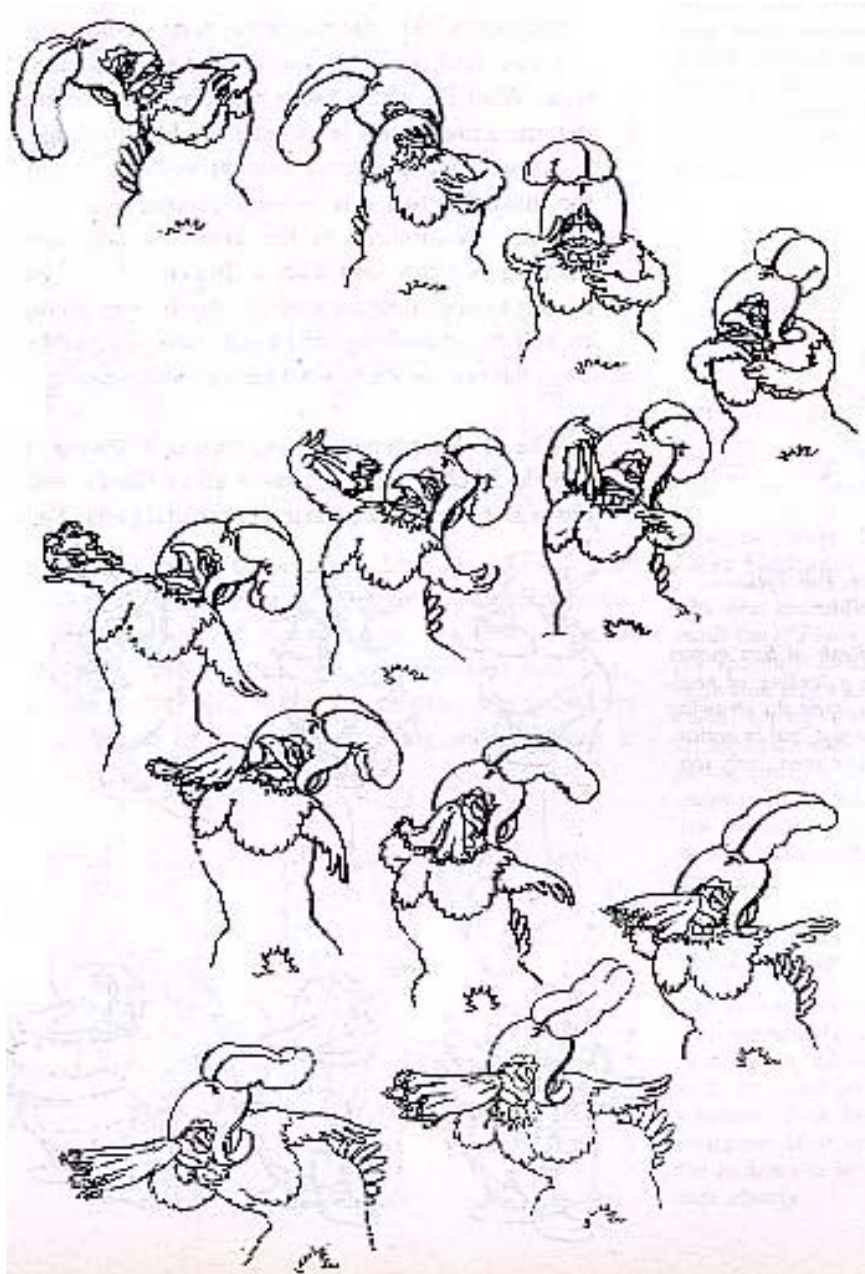
if staging action make sure that only one action is seen and not confused by a prior angle;
do not let your main action be upstaged by something else

direct attention to the object of interest (aiming)

Here are some principles when considering layout / setup of scene

- one quick look is all the audience gets - keep it simple, direct, like a poster; it must sell an idea
- fancy rendering at a later date cannot save a poor original conception
- always keep the screen directions clear. this will be the biggest headache- don't overlook it
- keep informed on: art history-architecture, costumes, textures (my note: for more realistic productions)
- keep informed on: styles, mediums, textures, surfaces, composition, drawing
- keep informed on: technical information- effects given by different lenses, ground glass, filters, gels.
- mood can be established by timing and movement...

Follow Through and Overlapping Action



animations for the most part do not come to unnatural and sudden stops

1 part of the animated object stops ... then the other part comes to a stop... more realistic

- *example: first the eyes look at the object then the head turns to come in track with what the eyes are looking at...*

Slow In and Slow Out

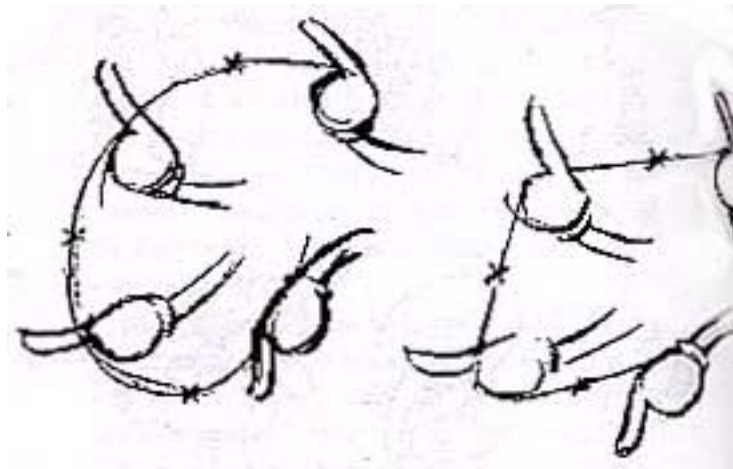
get away from constant motion continually which is boring and predictable

relationship to anticipation

slow in = at first keyframe moves slower and accelerates to a constant speed before the end keyframe

slow out = the first frames are at a constant speed but the motion accelerates as the object moves toward the out keyframe

Arcs



almost all natural movement is arc-like and does not occur in straight paths

Secondary Action

happens as a result of another action (side effect) or (domino effect)

- *example: basketball (primary action) and rim (secondary action)*

separated but unified parts offset in time; animate important move then have and relate to primary actions

Exaggeration

forgo the use of exact realism in motion and subject - regard theater and its use of exaggeration in gesture, costume and speech for expression

used in tandem with squash and stretch and anticipation...

it is noted that the main difference between live action and animation is that all details do not need to be included to create lively animation; on the other hand, if too much realism is included then the animation is boring or unrealistic... exaggeration of facial features, gestures etc. is the result of Disney's exploration of this expression...

Timing (to be continued...)

the number of drawings used in any move determines the amount of time that action will take on the screen...

if the drawings are simple, clear, and expressive, the story point can be put over quickly, and this was all that concerned the animators during the early period. Timing in those cartoons was limited mainly to fast moves and slow moves, with accents and thrusts calling for special handling. But the personalities that were developing were defined more by their movements than their appearance, and the varying speed of those movements determined whether the character was lethargic, excited, nervous, relaxed. Neither acting nor attitude could be portrayed without paying very close attention to Timing.

(The Illusion of Life, p. 64)

even two drawings (one of head leaning toward the right shoulder - one of the head over to the left with its chin slightly raised) can communicate a multitude of ideas depending entirely on the timing used for the shot

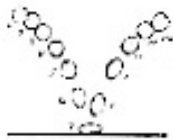
each inbetween drawing added between these two extremes (keyframes) gives a new meaning to the action

No inbetweens	THE CHARACTER has been hit by a tremendous force. His head is nearly snapped off.
One inbetween	. . . has been hit by a brick, rolling pin, frying pan.
Two inbetweens	. . . has a nervous tic, a muscle spasm, an uncontrollable twitch.
Three inbetweens	. . . is dodging the brick, rolling pin, frying pan.
Four inbetweens	. . . is giving a crisp order, "Get going!" "Move it!"
Five inbetweens	. . . is more friendly, "Over here." "Come on—hurry!"
Six inbetweens	. . . sees a good-looking girl, or the sports car he has always wanted.
Seven inbetweens	. . . tries to get a better look at something.
Eight inbetweens	. . . searches for the peanut butter on the kitchen shelf.
Nine inbetweens	. . . appraises, considering thoughtfully.
Ten inbetweens	. . . stretches a sore muscle.

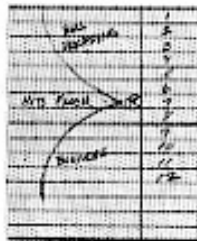
from the Illusion of Life - Disney timing cheat sheet

methods for designating timing: metronome or soundtrack exposure sheets

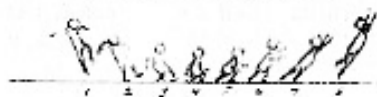
The bouncing ball has only one frame of contact with the ground.



These twelve frames can be written on the exposure sheet in the form of a chart, like this:



A man landing and jumping contacts the ground for six to eight frames.



Charted on the exposure sheet, it looks like this:



exposure sheet for a bouncing rubber ball

a setting of 12s (twice a second) was usually used, which meant that a beat came every 12 frames (based on a 24 frame score) note this usually was the tempo of all marches (Disney style timing of walk cycles)

therefore when using Flash in a 12 frame movie use a setting of 6s...

consider

how long the action occurs

when does the action stop

how long does the subject hold after the stop (or before the stop)

is there a pattern in the timing

find a way to the quickest way to do the most
(exaggeration verses live action motion)

consider the personality of the subject matter and POV

use rhythm within the action (timing on a beat)

mood

sad or quiet... long scenes with slow moves on pans and subject matter

happy or excited... short scenes, fast cuts, quicker moves on camera and characters...

remember

you create the timing, you control whether time and space are compressed or expanded or frozen whatever method you use, however, it must be easily comprehended by the viewer