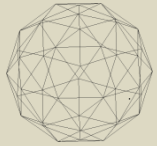


Principles of animation

Kaumudi Sahasrabudhe,
Project Manager, IIT Bombay

Outline

IIT BOMBAY

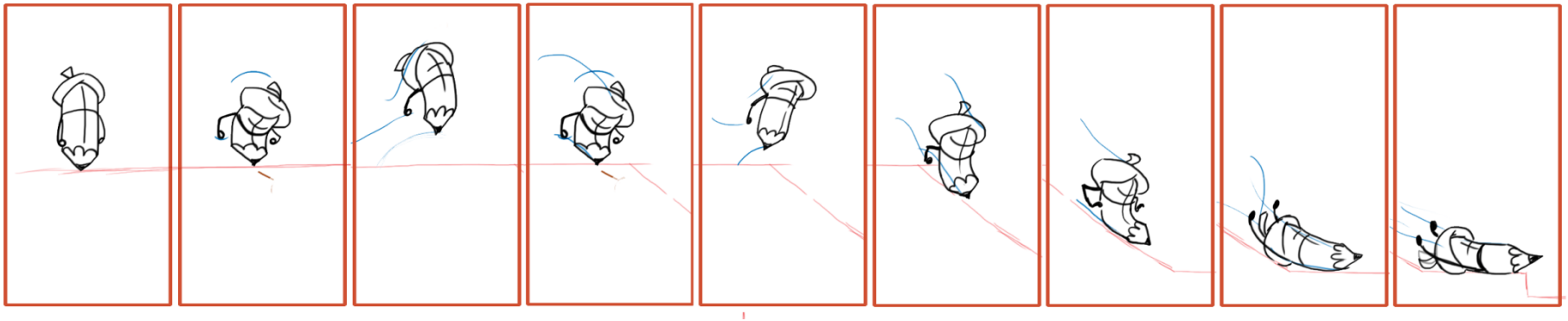
- What is animation
- Basic principles of animation
  - Listed by Disney animators (Illusion of Life)
  - Our focus: Squash and stretch
- Why, Where and How this principle is used

What is Animation?

IIT BOMBAY

Animation is derived from the Latin word **anima - ‘to give life to’…**

To show a movement with a series of drawings that are slightly different from one another and when viewed quickly one after another, create the appearance (illusion) of movement.



Animation principles (Disney)

IIT BOMBAY

Disney's twelve animation principles are introduced by Disney animators in the book Illusion of Life*.

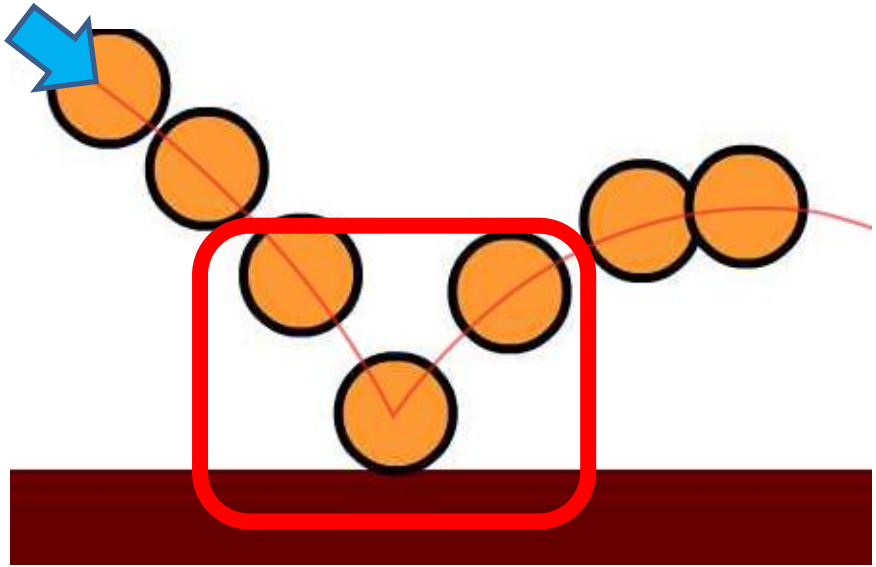
1. Squash & stretch
2. Anticipation
3. Staging
4. Straight ahead action & Pose to Pose
5. Follow through & overlapping action
6. Slow in & slow out
7. Arc
8. Secondary action
9. Timing
10. Exaggeration
11. Solid drawing
12. Appeal

* Ollie Johnston and Frank Thomas

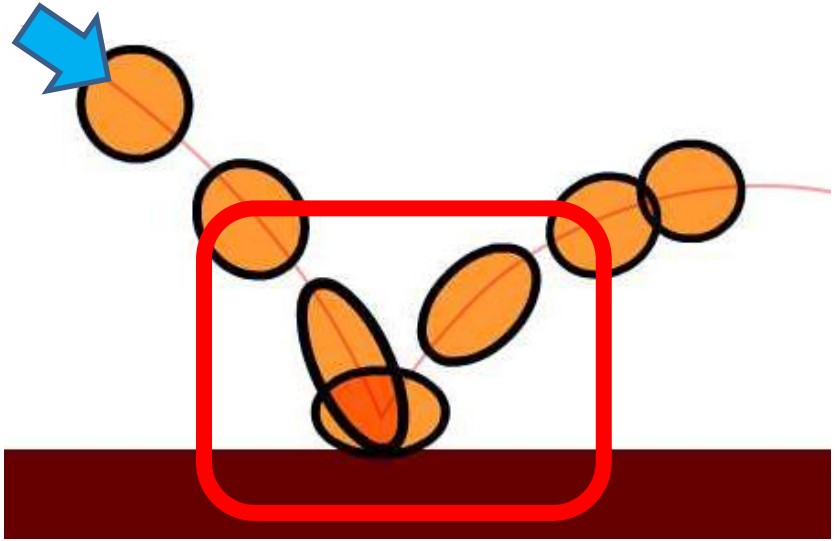
What is the difference?

IIT BOMBAY

It’s a deformation of the ball



A



B

Force

IIT BOMBAY

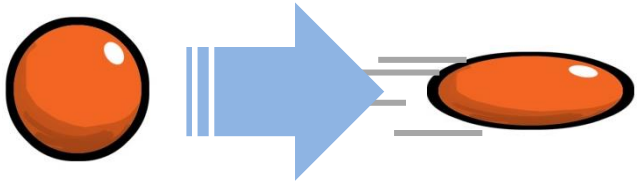
What is the effect of **force** on these objects?

- Flexible objects deform
- Stiff objects don’t

Squash and Stretch

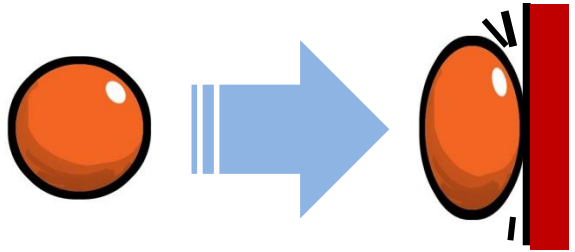
IIT BOMBAY

Principle which enables the animator to apply these deformations is:
Squash and stretch



Normal Stretch

Stretch: deformation as a result of speed



Normal Squash

Squash: deformation as a result of impact

Advantages

IIT BOMBAY

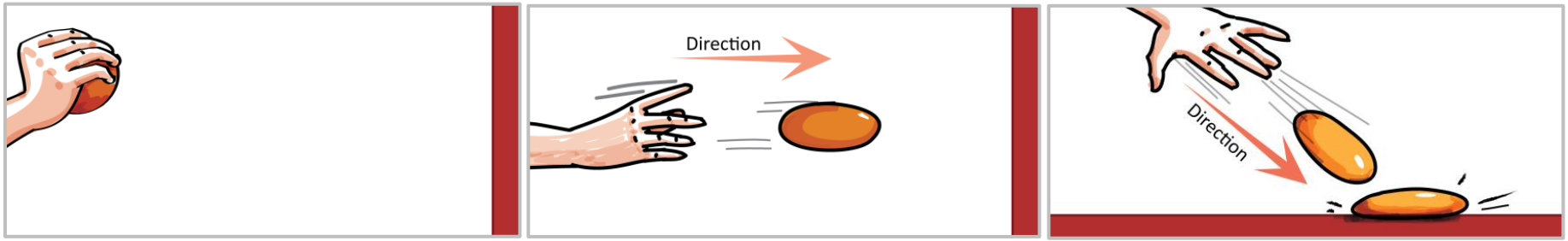
Applying the squash and stretch principle helps to create:

- Realistic motion
- Gags

Adding Stretch

IIT BOMBAY

To apply Stretch: deform the object, **parallel** to the direction of the force



Adding Squash

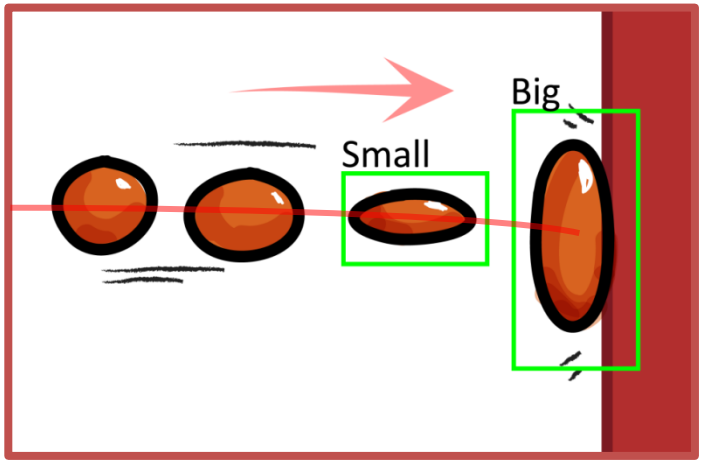
IIT BOMBAY

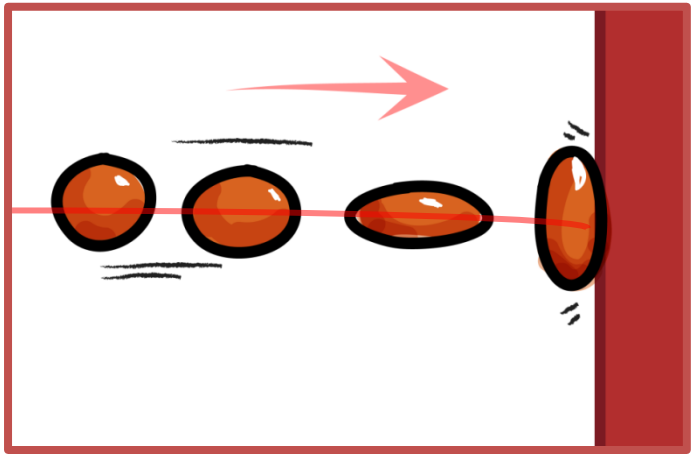
To apply squash: deform the object, as per the colliding object

Tip

IIT BOMBAY

While using this principle, always keep in mind to maintain the **volume** of the object.





Not using animation principles can:

IIT BOMBAY

- Lead to misinformation
- Make it non realistic

IIT BOMBAY

Use the Principles, add life to Animation

IIT BOMBAY

Next session

Ball animation using animation principle