The Principles of Animation
*The Illusion of Life: Disney Animation.*
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Then, if the bottom drawing was flattened, it gave the appearance of bouncing. Elongating the drawings on each side made it easier to follow and gave more snap to the action. Thus, the beginnings of Squash and Stretch.

1. Squash & Stretch
Adding exaggeration to an object in motion gives it a greater sense of weight and volume. This principle is often demonstrated with a bouncing ball: the ball appears stretched when it is falling and squashed when it hits the ground. By squashing and stretching the ball, an animator gives a more realistic feel.
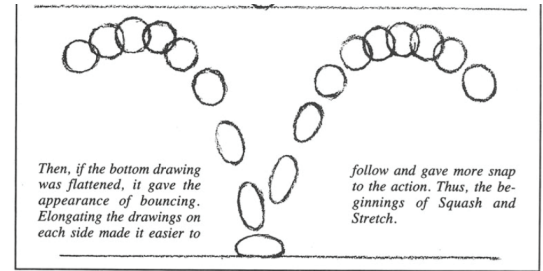
2. Anticipation
Almost nothing happens suddenly. Anticipation helps to prepare the viewer for what's about to happen. When applied, it has the effect of making the object's action more realistic.

3. Staging
Influenced by theatrical principles, staging helps establish mood, create focus and clarify what is happening in the scene.

4. Straight Ahead Action & Pose to Pose
Straight ahead action refers to the technique of drawing each pose, one right after another, which can yield a fluid animation style. Pose to pose refers to the animation technique in which key frames are planned ahead of each other and then connected to afterward. Pose to pose usually leads to a more proportional animation that is convincing to the eye.

pose to pose

straight ahead action

5. Follow Through and Overlapping Action
Follow through relates to parts of the subject that continue to move with inertia after a completed action. To achieve more realism the same parts move at different speed with overlapping action.

6. Slow In & Slow Out
In the physical world, objects and humans need to pick up momentum before they can reach full speed. Similarly, it takes time to decrease speed before something can come to a complete stop.

7. Arcs

When someone shoots an arrow, it rarely flies completely straight. Gravity causes objects in motion to arc between the start and end points. Even many of the natural movements in the human body move on arcs, such as the arm, hand, fingers, etc.

8. Secondary Action

In the physical world, we can observe primary movement in the motion of a person walking or a bird flying. Secondary actions, such as a person swinging their arms as they walk or a birds' feathers rippling in the wind, help support primary movements.

9. Timing

If you move an object more quickly or slowly than it would naturally move in the real world, the effect won't be believable. Using the correct timing allows you to control the mood and the reaction of your characters and objects.

10. Exaggeration

The classical definition of exaggeration, employed by Disney, was to remain true to reality, just presenting it in a wilder, more extreme form. As a perfect imitation of reality can look static and dull in cartoons, exaggeration is especially useful and livening for animation.

11. Solid Drawing

Solid drawing considers an object following the rules of perspective in three-dimensional space. For an animator this means understanding the basics of academic drawing, anatomy, weight, balance, light, and shadow, etc.

12. Appeal

Your characters, objects, and the world in which they live need to appeal to the viewer. This includes having an easy-to-read design, solid drawing, and a personality. While a live actor has charisma, the animated drawing has appeal.