



The 12 Basic Principles of Animation

from the "Illusion Of Life" by Frank Thomas & Ollie Johnston

1. Squash and stretch

When an object moves, its movement indicates the rigidity of the object. Many real world objects have little flexibility, such as furniture, however most organic objects have some level of flexibility in their shape. Also squash and stretch is useful in animating dialogue and doing facial expressions. It is used in all forms of character animation from a bouncing ball to the body weight of a person walking.

2. Anticipation

An action occurs in three parts: the preparation for the action, the action itself, and the termination of the action. *Anticipation* is the preparation for the action. Anticipation is an effective tool for indicating what is about to happen. A dancer does not just leap off the floor. A backwards motion occurs before the forward action is executed. The backward motion is the anticipation.

3. Staging

Staging is the presentation of an idea so that it is completely and unmistakably clear. A pose or action should clearly communicate to the audience the attitude, mood, reaction or idea of the character as it relates to the story and continuity of the story line. The effective use of long, medium, or close up shots, as well as camera angles also helps in telling the story. Do not confuse the audience with too many actions at once. Staging directs the audience's attention to the story or idea being told. Care must be taken in background design so it isn't obscuring the animation or competing with it due to excess detail behind the animation. Background and animation should work together as a pictorial unit in a scene.

4. Straight ahead and pose to pose animation

Straight ahead action is so called because an animator literally works straight ahead from the first drawing in the scene. This process usually produces drawings and action that have a fresh and slightly zany look, because the whole process is kept very creative. Straight ahead action is used for wild, scrambling actions where spontaneity is important.

In *pose-to-pose* animation, the animator plans his action, figuring out just what drawings will be needed to animate the scene. Pose-to-pose is used for animation that requires good acting, where poses and timing are important. Size, volumes, and proportions are controlled better this way, as is the action.

5. 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, coat tails or a dress, floppy ears or a long tail (these follow the path of action). Nothing stops all at once. This is follow through. Overlapping action is when the character changes direction while his clothes or hair continues forward. The character is going in a new direction, to be followed, a number of frames later, by his clothes in the new direction. Overlapping maintains a continual flow between whole phrases of actions.

6. Slow-out and slow-in

Slow in and out deals with the spacing of the inbetween drawings between the extreme poses. As action starts, we have more drawings near the starting pose, one or two in the middle, and more drawings near the next pose. Fewer drawings make the action faster and more drawings make the action slower. Slow-ins and slow-outs soften the action, making it more life-like.

7. Arcs

All actions, with few exceptions (such as the animation of a mechanical device), follow an arc or slightly circular path. This is especially true of the human figure and the action of animals. Arcs give animation a more natural action and better flow. All arm movements, head turns and even eye movements are executed on an arcs. Arcs are used extensively in animation, since they create motion that is more expressive and less stiff than action along a straight path.

8. Secondary action

A *secondary action* is an action that results directly from another action. Secondary actions are important in heightening interest and adding a realistic complexity to the animation. This action adds to and enriches the main action and adds more dimension to the character animation, supplementing and/or re-enforcing the main action.

9. Timing

Timing, or the speed of an action, is an important principle because it gives meaning to movement. The speed of an action defines how well the idea will be read to the audience. Timing can also defines the weight of an object. Two similar objects can appear to be vastly different weights by manipulating timing alone. Timing can also contribute to size and scale of an object or character. Timing plays an essential role in illustrating the emotional state of an object or character. It is the varying speed of the characters movements that indicate whether a character is lethargic, excited, nervous, or relaxed. Expertise in timing comes best with experience and personal experimentation, using the trial and error method in refining technique. The basics are: more drawings between poses slow and smooth the action. Fewer drawings make the action faster and crisper. A variety of slow and fast timing within a scene adds texture and interest to the movement.

10. Exaggeration

Exaggeration is not extreme distortion of a drawing or extremely broad, violent action all the time. It's like a caricature of facial features, expressions, poses, attitudes and actions. Action traced from live action film can be accurate, but stiff and mechanical. In feature animation, a character must move more broadly to look natural. The same is true of facial expressions, but the action should not be as broad as in a short cartoon style. Exaggeration in a walk or an eye movement or even a head turn will give your film more appeal. Use good taste and common sense to keep from becoming too theatrical and excessively animated

11. Solid drawing

The basic principles of drawing form, weight, volume solidity and the illusion of 3D apply to animation as it does to academic drawing. The way you draw cartoons, you draw in the classical sense, using pencil sketches and drawings for reproduction of life. You transform these into color and movement giving the characters the illusion of three-and four-dimensional life. Three dimensional is movement in space. The fourth dimension is movement in time.

12. Appeal

Where the live action actor has charisma, the animated character has *appeal*.

Audiences like to see a quality of charm, pleasing design, simplicity, communication, or magnetism. A weak drawing or design lacks appeal. A design that is complicated or hard to read lacks appeal. Clumsy shapes and awkward moves all have low appeal.