Motion Graphics Techniques - Lesson 1 Notes

Classic Animation Principles vs Motion Design Principles

Welcome to Motion Graphics Techniques!

Thanks for signing up for this class. You're going to learn a TON this semester, and hopefully have some fun too.

The Twelve Principles of Animation

These principles were developed in the 1940s by the animators working for Walt Disney. Their goal was to use animation to create the illusion of lifelike motion on screen, something which was lacking from previous animation work. Many of these are principles are still important for current-day motion design, while others are not.

1. STRETCH AND SQUASH: The purpose of this is to bring weight and flexibility to objects on screen. The faster an object is moving, the more it will stretch in motion, and squash (compress) when it stops moving. Too much stretching and squashing will make objects appear cartoony, and not realistic.

2. ANTICIPATION: This important principle is useful for making clear action on screen. It alerts the viewers that something is about to happen, so that the action is more easily seen when it occurs.

3. STAGING: Staging is more about design than animation, as it deals with composition. For clear storytelling, it's useful to place objects so that the most important items are seen most clearly.

4. STRAIGHT AHEAD ACTION vs POSE-TO-POSE: This is more important in traditional (cel) animation than in motion design, in particular with charater animation. Straight Ahead scenes are animated frame by frame from start to end, whereas Pose-To-Pose scenes are built first through key poses, and then the "in between" frames are drawn second.

5. FOLLOW THROUGH AND OVERLAPPING ACTION: These are both about portraying physics correctly on screen. An example of Follow Through is when a person with long hair stops walking, and their hair keeps moving for a moment after they stop. Overlapping Action occurs, for example, when you wave your hand because the parts of your arm and your hand all move at different rates and with different timings.

6. SLOW IN AND SLOW OUT: Almost all motion has slow ins and slow outs. For example, a car doesn't start driving immediately at 50 miles per hour. It has to gain speed first. Similarly when an object stops moving it rarely just stops completely on a dime without slowing down first.

7. ARCS: Almost all human action moves along arced trajectories, and not along perfecly straight lines. For example if you throw a ball you arm moves along an arc, as does the ball.

8. SECONDARY ACTION: This is about giving more life to an action by having a small, supporting actions that accompany them. A classic example is when a horse runs, it looks more life-like if the tail moves as well.

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The Twelve Principles, continued

9. TIMING: Timing refers to the amount of frames that an action takes on screen. Correct timing is important to convey a sense of physics on screen.

10. EXAGGERATION: To make things clearer on screen it is often necessary to exaggerate something about the motion. This is also an important principle for creating comedy.

11. SOLID DRAWING: This is about bringing volume and weight to drawn objects, as well as perspective.

12. APPEAL: The quality of "charm" in the way characters look and/or move on screen.

Six Motion Design Animation Principles

Not all of the famous Twelve Principles are relevant to motion graphics. Some of them are more geared to character animation or design. Here are eight principles adapted from the original twelve that apply directly to motion design.

1. STRETCH AND SQUASH: This has gained prominence in motion graphics over the last few years. In my opinion it does the same job as "motion blur" in After Effects, but looks crisper and feels more fun.

2. ANTICIPATION, ACTION, REACTION: I call this "Three Part Action", and it's highly effective on screen. Anticipation calls attention to an action before it happens, so the viewer notices it. Reaction is about follow-though, and is useful for completing actions and giving the illusion of weight and bounce to objects. Essentially this boils down to telling the audience what's going to happen, showing them what happens, and then explaining that it just happened.

3. EYE TRACE: Good animators are aware of where the viewer's eye should be looking on screen at all times. This is called Eye Trace, and takes the place of "staging" for motion graphics.

4. OVERLAPPING ACTION: Different objects on screen move at different rates, even when connected.

5. EASING: This is the same as Slow In and Slow Out, and it essential for bringing life-like motion to objects on screen.

6. TIMING AND SPACING: In After Effects, timing boils down to where you put your keyframes. This is obviously very important for creating moton graphics. Spacing refers to the interpolation between the keyframes, which in AE we adjust in the Graph Editor. Timing and Spacing are related, but different.