Animation Techniques ----------→ Lesson 2

There are many different animation techniques that an animator can use to bring his ideas to life. Animation can be created using very simple tools such as a pencil and paper, advanced computer systems, or with many options in between.

Here is an introduction to the various techniques available when it comes to creating an animated movie.

Traditional Animation

Traditional animation usually refers to animation hand-drawn on paper. It was the process used for most of the productions throughout the 20th Century.

An animator would first draw characters, layout and backgrounds on paper. Each drawing in the animation would be slightly different from the one before it and the one following it, creating the illusion of movement when everything is put onto film.

Once all the animation has been drawn on paper, it would then be photocopied or retraced onto transparent acetate sheets, called cels. After the line art is transferred onto the cels, paint would be applied to the images, using a color chart that was pre-determined for each character or element of the movie. Cels were essential to drawn animation since it freed up the animator from having to draw every element in the film on one single layer of paper. Instead, by using cels, each element had its own layer and could be animated separately.

With today's technology, this traditional animation technique of using cels to color animation drawings is outdated. It is now possible to hand-draw animation, then scan the drawings to color them digitally using popular computer software such as Anime Studio, Toon Boom and more products on the same category. So, contemporary animation has become a mix of traditional and digital techniques.

Traditional animation can be divided into three groups:

- Full Animation
- Limited Animation
- Rotoscoping

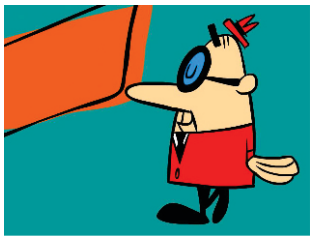
Full Animation

Animators will refer to full animation when they are working on a high-quality animated film. Often they will work with a high level of detail in the design and will try to animate characters and elements so that they are believable and life-like. This type of animation often requires a huge number of drawings to make it appear fluid and realistic. An example is the movie Madagascar, picture shown right is a snapshot from the movie.

Limited Animation

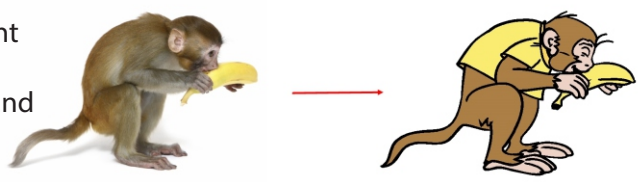
Limited animation applies to animated films that require fewer details. It is typically a very stylized and expressive type of animation and rarely realistic. Limited animation was introduced by studio artists at United Productions of America (UPA).

The method was primarily invented as a cost-effective way to create animated series for television, but it soon became a style of its own with its funky characters and background designs and its original use of color. The example(right) is a limited type of animation.



Rotoscoping

This particular technique is used by animators when they want to trace live action sequence movements and turn them into drawings. They will often use the action sequence as a basis and as an inspiration for character animation.

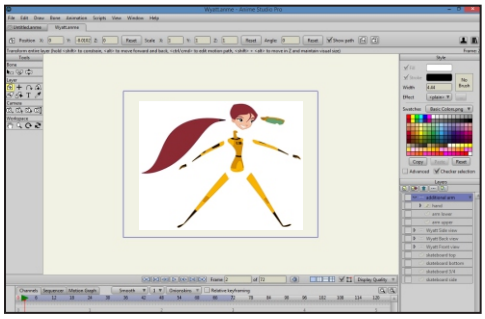


Digital Animation

Digital animation encompasses all the animation techniques that are done exclusively with the use of computers. With digital animation, it is possible to do both 2D (two-dimensional) and 3D (three dimensional) animation.

Following are some of the digital animation techniques:

- Digital Cut-out Animation
- Paperless Animation
- 3D Animation
- Motion Capture Animation
- Stop Motion Animation



Digital Cut-out Animation

Digital cut-out animation is done using cut-out puppets for character animation. In this type of animation, characters are created by using a separate drawing for each part of its body (head, neck, torso, arms, legs, etc) which are then rigged together, via the computer software, like a traditional puppet. Once the puppet is created, it can be added to the scene to be animated frame-by-frame.

Paperless Animation

With paperless animation, the animator will often need to hand-draw characters, frames, background and layout directly on the computer using an electronic pressure-sensitive drawing tablet. This technique is very similar to traditional animation in its process, the main difference being that it is all done on the computer.

3D Animation

Three-dimensional animation requires that, before animating it, a character must be built and modeled in the 3D animation software. They are then rigged with a virtual skeleton. From there, a character can be integrated into a scene and animated like a digital puppet, frame-by-frame.

Motion Capture

The motion capture technique consists of recording the movement of a person, often the performance of an actor, and using the recorded information to animate a digital 2D or 3D character.

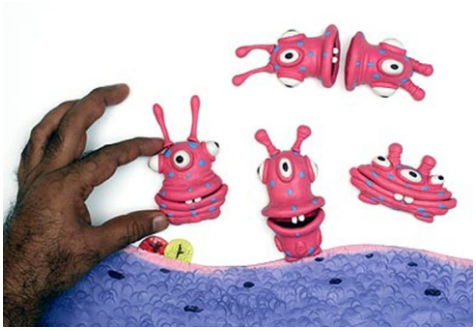
Stop-Motion Animation

Stop-motion animation is made by moving, then photographing real-world objects frame-by-frame to create the illusion of movement on the screen. We can divide stop-motion animation into four categories. They are:

A. Puppet Animation
B. Claymation
C. Cut-out and Silhouette Animation
D. Object Animation

A. Puppet Animation

Puppet animation is a type of stop-motion animation involving puppet figures that are animated frame-by-frame. Usually, the animators will create a physical three dimensional scene, similar to a small theatre, where the action will take place. The puppets will generally have an armature (flexible skeleton) inside of them to allow them to be positioned and animated smoothly. This also prevents the puppet from moving and allows it to stay steady when the animator has to photograph a frame of the scene.

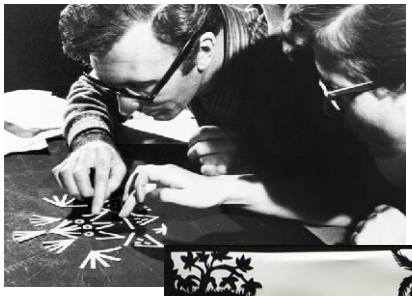


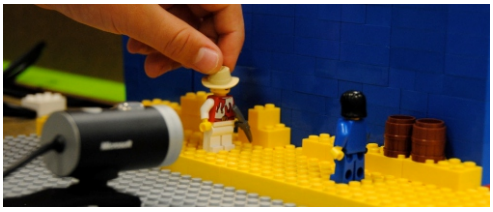
B. Claymation

Clay animation is sometimes similar to puppet animation. The figures and characters are made of clay, but they can also have an armature or a wire frame inside of them to help maintain their pose while shooting a scene. However, when animating with clay, it is also possible that the figure be made entirely of clay, without an inner armature. This allows the animator the freedom to animate the figure smoothly, manipulating it from one shape to the next, without the slightly jerky movement typically associated with puppet animation.

C. Cut-out and Silhouette Animation

Cut-out animation refers to animation made from two-dimensional pieces of material. More often than not, it is paper that is cut into different shapes, but fabric can also be used for the same purpose. The characters will usually be divided into different parts (head, neck, arm, leg, torso, etc) and moved piece by piece to create the animation. Silhouette animation uses the very same technique, except that characters and items in the scene will be completely black and only the background will contain colour, so that it looks like a scene in silhouette. The silhouette technique was invented by German animator Lotte Reiniger.





D. Object Animation

Object animation is a type of animation that utilizes regular inanimate objects as props, characters, and layout elements.

Sand Animation

Unique and intriguing, sand animation is typically done with the use of a light box. In a darkened room, the light box is turned on and sand is poured over it to completely block the light. Then, using a brush or a stick, the animator will trace a drawing in the sand, allowing the light to shine through, creating one frame of animation. A picture is taken, and then the animator will move the sand around a little bit to create the next frame, followed by another picture, and so on, creating movement.

Part 1

Fundamentals of Animation

Laboratory Manual

THAUMATROPE FUN

Lab 1.2

Task: Create your own Thaumatrope from scratch
Work File: How to make a Thaumatrope.mp4

Directions:

1. View the short video How to make a Thaumatrope.
2. Create your own drawing to animate, then create your own Thaumatrope with your drawing in it.
3. Show your work to your instructor and explain how you come up with it.