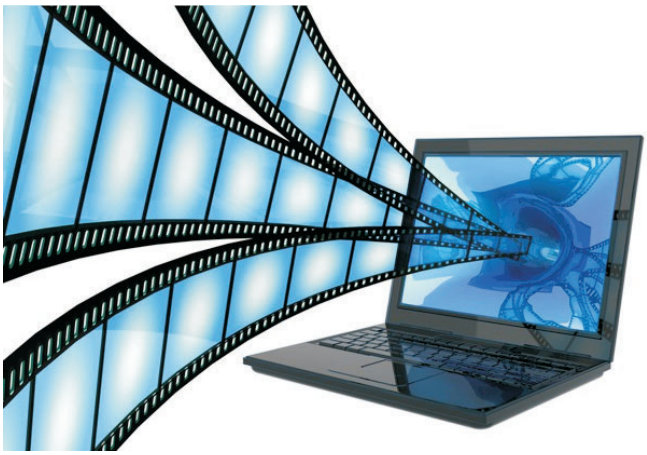
Industry-Standard Animated Works

VISUAL PRESENTATIONS used to have hand-drawn characters and simple movements, but such images are now rendered on high-end computers that create almost realistic scenes. The elements of movement, character development, and scene are all based on the same principles early animators used and developed.



Objective:

Describe how animation has evolved, and create a simple flip book that demonstrates a simple animation.

Key Terms:

animation	computer animation	puppet animation
anime	cutout animation	stop-motion animation
cell animation	flip book	"Walt" Disney
CGI	Max Fleischer	Walter Lantz
claymation	PIXAR	zoetrope

Animated Works

Many modern games offer a high level of visual entertainment and realistic images, but it is important to understand that early techniques developed by the Walt Disney Studios and others in the 1930s served as the groundwork for animations in moviemaking, television, advertising, and gaming. Classic animation has evolved into advanced visual presentations.

EVOLUTION OF ANIMATION

An **animation** is the rapid display of a sequence of images of 2D or 3D artwork or model positions to create an illusion of movement. To animate is "to give life to." Through anima-

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tion, you specify directly or indirectly how a "thing" moves in time and space. Three main categories of animation are traditional or cell animation, stop-motion animation, and computer-generated images.

Traditional Animation

Traditional animation is called cell or hand-drawn animation. It was used for most films in the 20th century. **Cell animation** is a process in which individual frames are drawn by hand. Each frame differs slightly to create an illusion of movement. The animators' drawings are traced or photocopied onto transparent acetate sheets (cells) filled in with paints in assigned colors or tones on the side opposite of the line drawings. The completed character cells are photographed one by one onto motion picture film against a painted background. Cells are photographed at 24 frames per second to mimic realistic motion. The traditional cell animation process became obsolete by the beginning of the 21st century. Now animators' drawings and the backgrounds are scanned into or are drawn directly into a computer system.

Stop-Motion Animation

Stop-motion animation is a process used to describe animation created by physically manipulating real-world objects and photographing them one frame of film at a time to create the illusion of movement. Many types of stop-motion animation exist. Typically, they are named after the type of media used to create the animation.

Puppet Animation

Puppet animation is a process that usually involves stop-motion puppet figures interacting with each other in a constructed environment. Popular examples are *The Nightmare Before Christmas*, *Corpse Bride*, and *Coraline*.

Claymation

Clay animation or **claymation** is a process that uses figures made of clay or a similar malleable material to create stop-motion animation. Examples of clay-animated works are *The Gumby Show* and films such as *Wallace & Gromit*: *The Curse of the Were-Rabbit*, *Chicken Run*, and *The Adventures of Mark Twain*.

Cutout Animation

Cutout animation is a type of stop-motion animation produced by moving two-dimensional pieces of material (e.g., paper or cloth). Recent examples are Terry Gilliam's animated sequences from *Monty Python's Flying Circus* and the pilot episode of *South Park*.

Computer Animation

Computer animation is a process that involves a variety of techniques, with the unifying factor being that the animation is created digitally on a computer. It is sometimes referred to as

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computer-generated imagery (**CGI**). 2D animation figures are created and/or edited on the computer using 2D bitmap graphics, or they may be created and edited using 2D vector graphics. 2D animation has many applications, including analog computer animation, Flash animation, and PowerPoint animation. In contrast, 3D animation is digitally modeled and manipulated by an animator. To manipulate a mesh, a digital skeletal structure is used. Well-made 3D animation can be difficult to distinguish from live action and is commonly used as visual effects for recent movies. *Toy Story* was the first feature-length film to be created and rendered entirely using 3D graphics. Computer-animated humans or CGI have characters based on animals, monsters, machines, and cartoon-like humans. Animation studios are now trying to develop ways of creating realistic-looking humans. Films that have attempted this are *Final Fantasy: The Spirits Within*, *Final Fantasy: Advent Children*, *The Polar Express*, *Beowulf*, and *Avatar*.

EARLY ANIMATION

Early animation was created through various toys that gave the impression of movement through the rapid display of still pictures.

Zoetrope

The **zoetrope** is a device that creates the image of a moving picture. It was produced in 1834 by William George Horner. The device is essentially a cylinder with vertical slits around the sides. Around the inside edge of the cylinder, there are a series of pictures on the opposite side of the slits.

Magic Lantern

The Magic Lantern is the predecessor of the modern day projector. It consisted of a translucent oil painting and a simple lamp. When put together in a darkened room, the image would appear larger on a flat surface.

Thaumatrope

The thaumatrope was a simple toy used in the Victorian era. It consisted of a small circular disk or card with two different pictures on each side that was attached to a piece of string or a pair of strings running through the center. When the string was twirled quickly between the fingers, the two pictures appeared to combine into a single image.

Flip Book

A **flip book** or flick book is a series of pictures that vary gradually from one page to the next, so when the pages are turned rapidly, the pictures appear to animate by simulating motion. The first flip book was patented in 1868 by John Barnes Linnet. Like the zoetrope, the

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flip book creates the illusion of motion. A set of sequential pictures flipped at a high speed creates the effect of motion.

HISTORY OF ANIMATION IN THE UNITED STATES

Many steps throughout history have resulted in the advances we now utilize in animation. Much has changed in the industry from the 1900s to the present time as a result of technology.

1900s Through 1920s

During the silent era (1900s through 1920s), the earliest animated cartoons in the era of silent film included the early cartoons (e.g., *Koko the Clown* and *Felix the Cat*). Bray Studios was the first and foremost cartoon studio and was housed in New York City. Early Bray cartoonists included Paul Terry who was most famous for Mighty Mouse. In addition, **Max Fleischer**, an American animator and pioneer in the development of the animated cartoon was the head of Fleisher Studios and brought characters to the movie screen (e.g., Betty Boop, Koko the Clown, Popeye, and Superman). Also, he was responsible for a number of technological innovations. Another valuable contributor was **Walter Lantz**, an American cartoonist, animator, film producer, and director who was best known for founding Walter Lantz Productions and creating Woody Woodpecker. The cartoon studio operated from 1915 until 1928.

1920s Through 1960s

During the Golden Age (1920s through 1960s), animation began with the advent of sound cartoons in 1928 and continued into the early 1960s when theatrical animated shorts slowly began losing to the new medium of television animation. Many memorable characters emerged during this period, including Mickey Mouse, Bugs Bunny, Donald Duck, Daffy Duck, Popeye, Betty Boop, Woody Woodpecker, Mighty Mouse, Mr. Magoo, and Tom & Jerry.

Feature-length animation began during this period, most notably with Walt Disney's first films: *Snow White and the Seven Dwarfs*, *Pinocchio*, *Fantasia*, *Dumbo*, and *Bambi*. Walter Elias **"Walt" Disney** was an American film producer, director, screenwriter, voice actor, animator, entrepreneur, entertainer, international icon, and philanthropist who was well-known for his influence in the field of entertainment during the 20th century.

1960s Through 1980

The United States (1960s through 1980) experienced the emergence of TV-animated series from Hanna-Barbera Productions during this period. *The Flintstones* and *The Jetsons* were prime-time cartoons. At this time, cartoons had adult themes. Yet this period experienced a rise of Saturday morning cartoons. As a result, there was a decline of feature animations from Disney Studios.

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1980 Through Present

Modern animation in the United States (1980s through present) has seen a rise of computer animation for 2D and 3D (CGI) animation. *Star Wars* from Industrial Light & Magic set the standard for CGI in films. During this period, Disney released the original *TRON*, which was the first movie with a CGI premise. In *The Last Starfighter*, CGI was used in place of models.

This period experienced a flood of newer, bolder animation studios (e.g., PIXAR and Dreamworks). For instance, **PIXAR** is a U.S. computer animation film studio based in Emeryville, California. The studio is best known for CGI animated films (e.g., *Toy Story*, *The Incredibles*, *A Bug's Life*, *Wall-E*, *Up*, and *Cars*). This period has experienced a decline in traditional (cell) animation. Disney's *Brother Bear* was the last cell-animated movie. Yet there has been a return of adult-themed cartoons (e.g., *The Simpsons*, *Family Guy*, *South Park*, and *King of the Hill*).

The anime explosion has occurred, with the mainstream popularization of Japanese animation. **Anime** is a style of animation (originating in Japan) characterized by stark, colorful graphics depicting vibrant characters in action-filled plots, often with fantastic or futuristic themes.

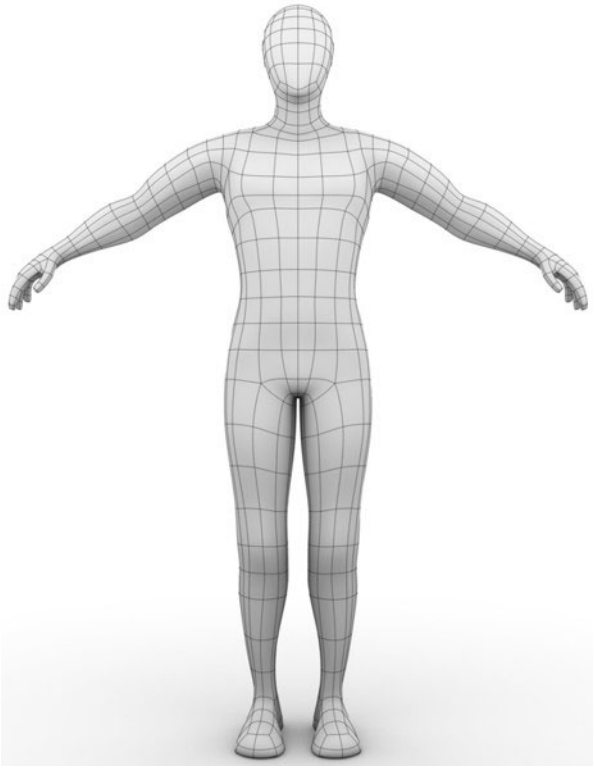


FIGURE 1. ***Toy Story*** **was the first feature-length film to be created and rendered entirely using 3D graphics.**

SIMPLE FLIP BOOK TO DEMONSTRATE SIMPLE ANIMATION

A flip book is a book with a series of pictures that vary gradually from one page to the next. When the pages are turned rapidly, the pictures appear to animate by simulating motion or some other change. To create a simple flip book, you will need a pencil and a small note pad. Do the following:

- Think of an action that can be drawn as if it were in slow motion. It should not need words to be clear.
- Draw a picture to start your action on the last page of the pad, near the bottom of the page. Go over the picture with dark lines so you can see it when you flip the page.
- Go to the next-to-last page. Using your previous drawing as a guide, make a second drawing that continues the action. (Think of the progress of a cartoon.) Be sure the drawing is not too different from the first, or the drawings will seem to skip around when you flip your book.

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FURTHER EXPLORATION...

ONLINE CONNECTION: Animation and Flip Books

Check out the flipbook information at http://howto.wired.com/wiki/Make_a_Flip_Book_AnimationGo. Then familiarize yourself with the flip book information at http://www.flipbook.info/index_en.php, and view some of the available flip books. Read more about the history of the flip book. Then try your hand again at a more sophisticated flip book. Try to increase the level you displayed in your earlier flip book by adding pages, more movement, and more dynamics. Share it with the class.

- Continue from the back forward, moving the action a little further along on each new page. Let the story unfold slowly. (It will seem fast when the book is flipped.)
- Keep the action moving for about 20 pages, or until your "story" is done.
- Flip through your book from back to front, and watch the action.

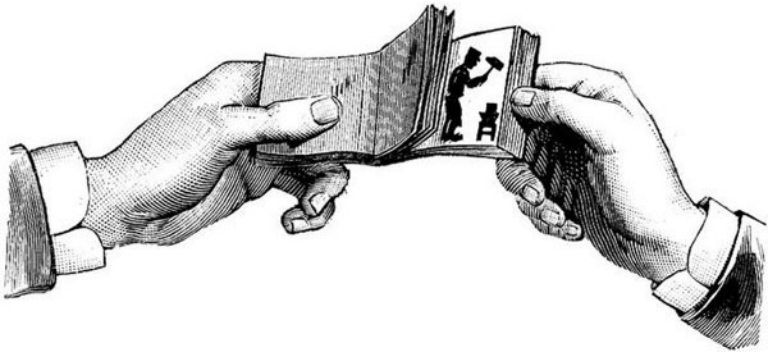


FIGURE 2. A flip book is a concept in which simple scenes are sketched onto succeeding pages of a notebook. As the pages are flipped, the idea of an animation is created, showing how scenes and movements progress.

Summary:

Early animation techniques served as the groundwork for animations in moviemaking, television, advertising, and gaming. The elements of movement, character development, and scene are all based on the same principles early animators developed and used. Three main categories of animation are traditional or cell animation, stop-motion animation, and computer-generated images.

Early animation was created through various toys (e.g., zoetrope, Magic Lantern, and thaumatrope) that gave the impression of movement through the rapid display of still pictures. The flip book or flick book is a series of pictures that vary gradually from one page to the next. When the pages are turned rapidly, the pictures appear to animate by simulating motion. The first flip book was patented in 1868 by John Barnes Linnet.

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Modern animation in the United States (1980s through present) has seen a rise of computer animation for 2D and 3D animation. *Star Wars* from Industrial Light & Magic set the standard for CGI in films. PIXAR is a U.S. computer animation film studio based in Emeryville, California and is best known for CGI animated films. Also, the anime explosion has occurred, with the mainstream popularization of Japanese animation.

Checking Your Knowledge:



1. What is stop-motion animation?
2. What is a zoetrope?
3. Who brought us Betty Boop?
4. What was the first feature-length film to be created and rendered entirely using 3D graphics?
5. Describe the history of animation in the United States.

Expanding Your Knowledge:



Select one of the main contributors to animation history. After researching, write a two- to three-page research paper summarizing his or her contributions. Present your paper in class.

Web Links:



Animation
http://www.youtube.com/watch?v=FmoMOSDtUJc

Storyboards
http://www.storyboards-east.com/storybrd.htm

Pixar Animation Studios
http://www.dailymotion.com/video/xjhdvq_the-history-of-pixaranimation-studios_shortfilms

Vintage Tooncast
http://www.videopodcasts.tv/feed/454/Vintage_ToonCast/

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