

'Stop Motion' –A Study on the Most Useful Technique of Experimental Animation



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Abstract

Animation is very popular nowadays in the field of education, business, advertising, communication, amusement & many more other fields of modern society. Experiment is must in the field of animation.

"Animation." With 2nd traditional animation, clay, sand and paper or any object in free style by clicking frame by frame from camera/digitally camera, webcam is called experimental animation. A 5,000 year old earthen bowl found in Iran in Shahr-i Sokhta has five images of a goat painted along the sides. This has been claimed to be an example of early animation. After this the experiments in animation is going on continuously. The earliest surviving stop-motion advertising film was an English short by Arthur Melbourne-Cooper called Matches: An Appeal (1899). Developed for the Bryant and May Matchsticks company, Stop motion is the best technique for experimental animation

A craze on the internet is animating with clay figures on public video sites such as YouTube and Google Video. Many younger people begin their experiments in movie making with stop motion, thanks to the ease of modern stop-motion software and online video publishing. Nowadays, experiments are going on rapidly.

Keyword: Stop motion is the best technique for experimental animation.

Introduction

Animation is very popular nowadays in the field of education, business, advertising, communication, amusement & many more other fields of modern society. Presentations of different projects became very easy with the help of animation techniques. Experiment is must in the field of animation. Indeed, without creativity, animation is not possible.

"Animation" derivate from the Latin anima, the "animating principle", the vital force inside every living creature. It is often used as a translation for the Greek word psyche, and related to the Christian concept of soul. "Animation" would be the technique of giving "soul" to inanimate objects, drawings, etc. Nowadays, experiments are going on rapidly.

In the broad sense, Animation is simply the display of a sequence of images in rapid succession so as to create the illusion of movement. Traditionally, it is called "live action" film or video. This word is used for zoetrope and flip-book also. Try to do something different of movement and rapid display of sequence of images in any medium is called experimental. "Animation." With 2d traditional animation, clay, sand and paper or any object in free style by clicking frame by frame from camera/digitally camera, webcam is called experimental animation. There are no set rules and the artist can take any liberties. Moving diagrams or cartoons that are made up of a sequence of images displayed one after the other. Animations are created for entertainment, ad banners as well as instructional sequences. The two most popular animation formats on the Web are animated GIFs and Flash.

A simulation of movement created by displaying a series of pictures, or frames. Cartoons on television are one example of animation. Animation on computers is one of the chief ingredients of multimedia presentations. There are many software applications that enable you to create animations that you can display on a computer monitor.

Note the difference between animation and video. Whereas video takes continuous motion and breaks it up into discrete frames, animation starts with independent pictures and puts them together to form the illusion of continuous motion. In PowerPoint, Open Office Impress and other presentation software, animations are visual effects applied to individual items on the slide such as graphics, titles or bullet

points. Animations are different than transitions, which are the movements of the whole slide. Animations are different than transitions, which are the movements of the whole slide.

It is important in animation process; there is no single person that can be considered the "creator" of the art of animation, as there were several people doing several projects which could be considered various types of animation all around the same time.

Aim of Study

Today, with the simplicity of using computers, now, various animation studios are replacing hand drawn and/or painted cels with computer generated cels. This saves time and money. So study about experiments in animation & its various fields is useful.

Stop motion is the best technique for experimental animation. Main objectives of the study are –

1. To collect of all the materials about Stop Motion animation in one place for the future study.
2. To study the present techniques and processes of Stop Motion Techniques in animation, practically.
3. To present the making of short animation videos made by self with the help of different materials and in various mediums. It makes popular and easy to understand the animation work. This PAPER shows also hardwork of an animator.

Methodology

The Paper is based upon the both primary as well as secondary sources. Primary sources will be based on both direct observation and by self-experiments. I discuss with animators, researchers & artists broadly on the contents, objectives & materials of the study on experimental animation. Then I observed, collected and analyze the concerning materials from books, TV, internet and films. After that I did small experiments without any rules & regulations or concept. With clay, sand and many more items. Digital camera is not useful in every condition. So I used a webcam with high megapixel and hang properly it in the front of the object.

Discussion

History of Experimental Animation

The oldest examples of attempts to capture the phenomenon of motion drawing In Paleolithic cave paintings, where animals are depicted with multiple legs in superimposed positions. A 5,000 year old earthen bowl found in Iran in Shahr-i Sokhta has five images of a goat painted along the sides. This has been claimed to be an example of early animation. A Chinese zoetrope-type device had been invented in 180 AD. The phenakistoscope, praxinoscope, and the common flip book were early popular animation devices invented during the 19th century. These devices produced the appearance of movement from sequential drawings, but animation did not really develop much further until the advent of cinematography. Georges Melees discovered the technique by accident which was to stop the camera rolling to change something in the scene, and then continue rolling the film. This idea was later known as stop-motion animation. His camera broke down while shooting a bus. When he had fixed the camera, a hearse happened to be passing by just as Melees restarted rolling the film, his end result was that he had managed to make a bus transform into a hearse. This was just one of the great contributors to animation in the

early years.

After this the experiments in animation is going on continuously. The earliest surviving stop-motion advertising film was an English short by Arthur Melbourne-Cooper called Matches: An Appeal (1899). Developed for the Bryant and May Matchsticks company, it involved stop-motion animation of wired-together matches writing a patriotic call to action on a blackboard. J. Stuart Blackton was possibly the first American film-maker to use the techniques of stop-motion and hand-drawn animation. Introduced to film-making by Edison, he pioneered these concepts at the turn of the 20th century, with his first copyrighted work dated 1900. Several of his films, among them The Enchanted Drawing (1900) and Humorous Phases of Funny Faces (1906) were film versions of Blackton's "lightning artist" routine, and utilized modified versions of Melees' early stop-motion techniques to make a series of blackboard drawings appear to move and reshape themselves. 'Humorous Phases of Funny Faces' is regularly cited as the first true animated film, and Blackton is considered the first true animator.

Emilee Cohl (French) began drawing cartoon strips and created a film Fantasmagorie (1908). The film largely consisted of a stick figure moving about and encountering all manner of morphing objects, such as a wine bottle that transforms into a flower.

There were also sections of live action where the animator's hands would enter the scene. The film was created by drawing each frame on paper and then shooting each frame onto negative film, which gave the picture a blackboard look. Fantasmagorie is the first animated film created using what came to be known as traditional (hand-drawn) animation. Following the successes of Blackton and Cohl, many other artists began experimenting with animation.

One such artist was Winsor McCay, a successful newspaper cartoonist, who created detailed animations that required a team of artists and painstaking attention for detail. Each frame was drawn on paper; which invariably required backgrounds and characters to be redrawn and animated. Among McCay's most noted films are Little Nemo (1911), Gertie the Dinosaur (1914) and The Sinking of the Lusitania (1918). The production of animated short films, typically referred to as "cartoons", became an industry of its own during the 1910s, and cartoon shorts were produced to be shown in movie theaters. The most successful early animation producer was John Randolph Bray, who, along with animator Earl Hurd, patented the cel animation process which dominated the animation industry for the rest of the decade. The use of budget-cutting animation measures in animation dates at least to the 1930s; a handful of the Bosko cartoons in the early years of the Looney Tunes series used several visible tricks (such as mirror images and repeated scenes) to give the shorts the comparable appearance of the Disney shorts of the same era, even though they were produced on a budget of just over half of their Disney counterparts. The 1942 Merrie Melodies short "The Dover Boys" was a particular early prototype of the use of limited animation, though pressure from Warner Bros. curtailed much further use of the technique. Limited animation was originally founded as an artistic device, though it was soon used widely as a cost-cutting

measure rather than an aesthetic method. The UPA studio made the first serious effort to abandon the key frame heavy approach perfected by Disney. Their first effort at limited animation, Gerald McBoing-Boing, won an Oscar, and it provided the impetus for this animation method to be accepted at the major Hollywood cartoon studios, including Warner Brothers and MGM. However, the real attraction of limited animation was the reduction in costs: because limited animation does not require as many drawings as fully key framed animations, it is much less expensive to produce. The 1950s saw the entire major cartoon studios change their style to limited animation, to the point where painstaking detail in animation occurred only rarely. In America, key framed animations were used during the 1960s and 1970s to produce a great number of inexpensive Saturday morning cartoons. Such TV series as Clutch Cargo are known for being produced on extremely low budgets, with camera tricks.

It is now also possible for animators to draw directly into a computer using a graphics tablet, Cintiq or a similar device, where the outline drawings are done in a similar manner as they would be on paper. The Goofy short how to Hook up Your Home Theater (2007) represented Disney's first project based on the paperless technology available today. Some of the advantages are the possibility and potential of controlling the size of the drawings while working on them, drawing directly on a multilane background and eliminating the need of photographing line tests and scanning.

Techniques of Experimental Animation

Traditional Animation

It is called 'Cel', 'Classical' or 'Hand drawn' animation, also. It is the oldest technique in which drawings are copied onto transparent acetate sheets ('CEL'). Today scanner and computer are more useful to make drawings. They give the opportunity to see a "preview" of the scenes and how they will look when finished. Most studios use software packages such as Toon Boom Harmony, Toonz, Animo, and Adobe Flash. Some examples are

a) Traditional Ink & Paint

Studio Ghibli's Princess Mononoke (1997) - The last major feature film • Cartoon Network's series Ed Edd n Eddy (1999–2009) - the last major animation production (it was forced to switch to digital paint in 2004.)

b) Digital Ink & Paint

Walt Disney Animation since 1989 (rainbow shot in The Little Mermaid.) & The Rescuers Down (the 1st major feature film)

Some Types of Traditional Animation are

- i. Limited Animation
- ii. Rotoscoping
- iii. Live Action/Live Animation
- iv. Others

Computer Animation

1. Analog Computer Animation
2. Flash Animation
3. Power Point Animation

Other Animation Techniques

- i. Drawn On Film Animation
- ii. Multi Sketching Animation
- iii. Special Effect Animation

- iv. Flip Book
- v. Erasure Animation
- vi. Pinscreen Animation
- vii. Others

Stop Motion Animation

Introduction

Stop motion is the best technique for experimental animation and known as stop action, also. A physically manipulated object is moved in small increments between individually photographed frames. Clay figures are often used in it so it is called clay animation or clay-mation.

Stop motion animation is very easy but it is time-consuming, repetitive and requires patience. After some days, this makes a fantastic hobby and career for an animator.

History of Stop Motion

Before 1960 The first instance of the stop motion technique can be credited to Albert E. Smith and J. Stuart Blackton for The Humpty Dumpty Circus (1898). In 1902 French trick film maestro Georges Melees used true stop-motion to produce moving title-card letters for one of his short films. Some other examples of stop motion films are - The Haunted Hotel (1907) by J. Stuart Blackton, The Sculptor's Nightmare by Billy Bitzer, The Beautiful Lukanida (1910), The Battle of the Stag Beetles (1910), The Ant and the Grasshopper (1911), clay animation films Modeling Extraordinary (1912), the first of Willie Hopkins' 54 episodes of "Miracles in Mud" (December 1916).

The first woman animator, Helena Smith Dayton, began experimenting with clay stop motion in December 1916. Her first film based on drama Romeo and Juliet came in 1917. Animator Willis O' Brien worked on The Lost World from 1925, but King Kong was a milestone of his films.

From 1960 To 1980 Eliot Noyes Jr. refined the technique of "free-form" clay animation with his Oscar-nominated 1965 film Clay or the Origin of Species. Noyes used stop motion to animate sand lying on glass for his musical animated film Sandman (1975). Sand-coated puppet animation was used in the Oscar-winning 1977 film The Sand Castle, produced by Dutch-Canadian animator Co Hoedeman. Canadian government film arts agency had supported animators for decades. Italian stop motion films include Quaq Quao (1978), by Francesco Misseri, which was stop motion with origami, The Red and the Blue and the clay animation kittens Mio and Mao. Other European productions included a stop motion-animated series of Tove Jansson's Marc Paul Chinoy directed a puppet animation feature-length film based on the famous Pogo comic strip in 1980. John Hardwick and Bob Bura, of British Animation teams were the main animators in many early British TV shows, and are famous for their work on the Trumptonshire trilogy. Disney experimented with several stop motion techniques. Animator-director Mike Jittlov did the first stop motion animation of Mickey Mouse and some impressive multi-technique stop motion animation in 1978 & 1979. Titled Major Effects, Jittlov's work stood out as the best part of the special. Jittlov released his footage the following year to 16mm film collectors as a short film titled. The Wizard of Speed and Time, along with four of his other short multi-technique animated films, effectively demonstrating

almost all animation techniques, as well as how he produced them; the film was released to theaters in 1987 and to video in 1989.

1980 To Present

At the end of the 1980s and the beginning of the 1990s, there have been an increasing number of stop motion feature films, despite advancements with computer animation.

Industrial Light & Magic often used stop motion model animation for films such as the original Star Wars trilogy. Stop motion was also used for some shots of the final sequence of Terminator movie. Allen's stop motion work can also be seen in such feature films as The Crater Lake Monster (1977), Q - The Winged Serpent (1982), The Gate (1986) and Freaked (1993). The Czech school is also illustrated by the series Pat & Mat (1979–2004). Created by Lubomír Benes and Vladimír Jerne, and it were wildly popular in a number of countries. The Nightmare before Christmas, directed by Henry Selick and produced by Tim Burton was one of the more widely-released stop motion features. Another famous clay animator Nick Park created the characters Wallace and Gromit. He won the Academy Award for Best Animated Feature for the feature-length outing Wallace & Gromit: The Curse of the Were-Rabbit. Chicken Run, his first feature-length production, grossed over \$100 million at the North American box-office, and garnered critical praise.

Other notable stop motion feature films released since 1990 include Fantastic Mr. Fox and \$9.99, both released in 2009, and The Secret Adventures of Tom Thumb (1993). In December 2010, the NBC show Community had an entire episode in Stop-motion when character Abed wakes up to discover that everything is in stop motion animation.

Variations of Stop Motion Stereoscopic Stop Motion

The first three, 3D stop motion shorts were - In Tune with Tomorrow (also known as Motor Rhythm) in 1939 by John Norling, The Adventures of Sam Space in 1955 by Paul Sprunck and The third and latest in stereo 3D The Incredible Invasion of the 20,000 Giant Robots from Outer Space in 2000 by Elmer Kaan and Alexander Lentjes. The 3rd one is also the first ever 3D stereoscopic stop motion and CGI short in the history of film. The first all stop motion 3D feature is Coraline (2009), based on Neil Gaiman's best-selling novel and directed by Henry Selick. The film is produced by Nike shoe founder Phil Knight's Laika animation studio in Portland, Oregon, formerly Will Vinton's claymation studio.

Go Motion

A lo-tech, manual version of this blurring technique was originally pioneered by Wladyslaw Starewicz and was used in film The Tale of the Fox (1931). Nowadays it involved programming a computer to move parts of a model combined with traditional hand manipulation of the model in between frames, to produce a more realistic motion blurring effect. There is more-complicated variation co-developed by Phil Tippett and first used on the films The Empire Strikes Back (1980). He used the process extensively in his 1983 short film Prehistoric Beast, a 12 minute long sequence depicting an herbivorous dinosaur. With new footage Prehistoric Beast became Dinosaur! In 1985, a full

length dinosaurs documentary hosted by Christopher Reeve. Those Phil Tippett's go motion tests acted as motion models for his first photo-realistic use of computers to depict dinosaurs in Jurassic Park in 1993.

Computer Generated Imagery

The almost universal use of CGI (computer generated imagery) has effectively rendered stop motion obsolete as a serious special effects tool in feature film. However, its low entry price, and still unique "look" and "feel" on film means stop motion is still used on some projects such as in children's programming, as well as in commercials and comic shows such as Robot Chicken. The argument that the textures achieved with CGI cannot match the way real textures are captured by stop motion also makes it valuable for a handful of movie makers, notably Tim Burton, whose puppet-animated film Corpse Bride was released in 2005.

Stop Motion In Television

Art Clokey's Gumby series was the dominating children's TV stop motion programming for three decades in America. He started in clay for a short film Gumbasia (1953). Rankin/Bass is a very famous stop-motion company. Since the 1960s it has been making many stop-motion Christmas specials such as Rudolph the Red-Nosed Reindeer, The Year Without a Santa Claus, Santa Claus is Coming to Town, and many others.

On East German television, a children's show (Sand männ chen), started In November 1959, still being produced, making it one of the longest running animated series in the world. Serge Danot (French animator) created The Magic Roundabout (1965) which played for many years on the BBC.

In the 60S - French stop motion animated series was Colargol (Barnaby the Bear in the UK, Jeremy in Canada), by Olga Pouchineand Tadeusz Wilkosz. British TV-series Clangers (1969) also became popular on television. A multi-season TV series (1983) The Wind in the Willows based on Kenneth Grahame's classic children's book of the same title. They also produced a documentary of their production techniques, Making Frog and Toad. In the 1990s Trey Parker and Matt Stone made two original shorts and the pilot of South Park almost entirely out of construction paper. Morel Orel is another stop motion based show, along with the upcoming Mary Shelley's Frankenhole, both created by Dino Stamatopoulos. Robot Chicken continues to primarily utilize stop motion animation, using custom made action figures and other toys as principal characters. Other action figures, called Stikfas, are very popular stop motion figures and are not extremely expensive.

Stop Motion in Other Media

A craze on the internet is animating with clay figures on public video sites such as YouTube and Google Video. They are often extremely simple, but effective. The comedy helps the viewer enjoy the animation without noticing the simpleness of the clay puppet. Some barely have a face, but the comedic or violence proportions exceeding those of conventional clay puppets, with grisly crime scenes riddled by clay gunfire and hapless victims falling in a sniper's cross hairs. Many younger people begin their experiments in movie making with stop motion, thanks to the ease of modern stop-motion software and online video

publishing.

Nowadays, experiments are going on rapidly. Many new stop motion shorts use clay animation into a new form, also. Singer and songwriter Oren Lavie's music video 'Her Morning Elegance' that was posted on YouTube on 19 January 2009 and directed by Lavie and Yuval and Merav Nathan, stop motion was used in the making of this video. It has achieved great success with over 15 million views, also earning a 2010 Grammy Award nomination for "Best Short Form Music Video".

Stop motion has occasionally been used to create the characters for computer games, as an alternative to CGI. In 1998, The Virgin Interactive Entertainment Mythos game - Magic and Mayhem featured creatures built by stop motion specialist Alan Friswell, who made the miniature figures from modeling clay and latex rubber, over armatures of wire and ball-and-socket joints. The models were then animated one frame at a time, and incorporated into the CGI elements of the game through digital photography. "Clay Fighter" for the Super Nintendo and The Never hood for the PC is other examples.

Stop Motion in Astronomy

A specific example is photographing the solar analemma, which requires a camera to remain stationary for an entire year, with exposures taken at the same time every few days. Stop motion photography is used to observe diurnal motion. Circumpolar stars close to the celestial pole move only slowly. Conversely, following the diurnal motion with the camera, to eliminate it on the photograph, can best be done with an equatorial mount, which requires adjusting the right ascension only; a telescope may have a motor to do that automatically.

Types of Stop Motion

Stop motion is related to object, that is used as a medium, to express the story, feelings or event. An animator may use any technique and make experiments with this object. Therefore stop motion film is called a name as the type of object or technique used. With any object or technique, the process of making the Stop motion film is the same as describe earlier -

A physically manipulated object is moved in small increments between individually photographed frames. Some popular types of stop motion are following -



Puppet Animation

The first Indian ventriloquist, Professor Y.K. Padhye, introduced this form of puppetry to India in the 1920s. **Examples** - Rankin/Bass holiday specials such as Rudolph The Red-Nosed Reindeer, Ray Harryhausen's The 7th Voyage of Sinbad & 1933 RKO Film, King Kong.

Sand Animation

A sand animation performer will often use the aid of an overhead projector or light board. In the latter,



animators move around sand on a back lighted or front lighted piece of glass to create each frame for their animated films. **Examples.** 1. Caroline Leaf - The Owl Who Married a Goose: An Eskimo Legend (1974) 2. Marcos Magadha's - Animando (1987) 3. Ben Zilkowicz - The Erlking, a 2002 animated short.

Paint On Glass Animation

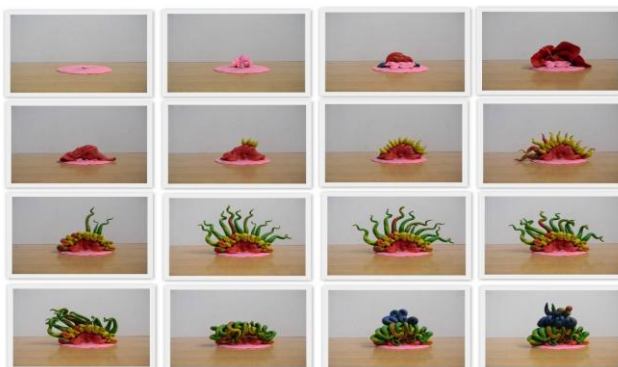
For making this animated films by manipulating slow-drying oil paints on sheets of glass. Gouache mixed with glycerin is sometimes used instead.

Examples 1. The most well-known practitioner of the technique is Russian animator Aleksandr Petrov who used it in seven films, all of which have won numerous awards. Others Animators & films are blow-2. Agamurad Amanov -Tuzik (2001), Childhood's Autumn, (2005)

Clay Animation

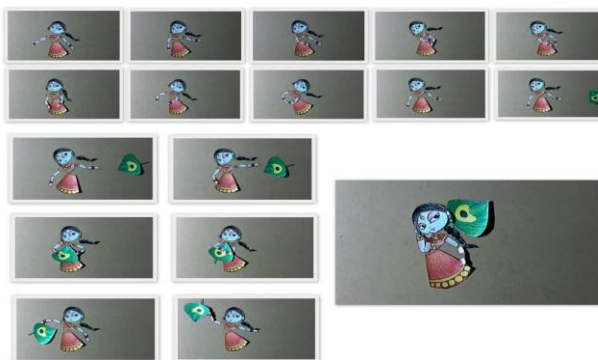
Clay figures are often used in stop motion. So it is called clay animation or clay-mation and its process is described earlier in the whole stop motion pages.

Examples - 1. Modeling Extraordinary (1912), the first of Willie Hopkins' 54 episodes of "Miracles in Mud" (December 1916). **2.** The first woman animator, Helena Smith Dayton, began experimenting with clay stop motion in December 1916. Her first film based on drama Romeo and Juliet came in 1917. **3.** Eliot Noyes Jr. refined the technique of "free-form" clay animation with his Oscar-nominated 1965 film Clay or the Origin of Species. There is a wonderful clay display created by Dhimant Vyas (kaka animation studio, Mumbai) in Indian film **Tare Zameen Par**



Cutout Animation

In this animation, a film is created to move the dimensional pieces individually Frame by frame. The good examples of animated sequences of monty python's flying circus, the animated sequences of the Mighty Boosh, trie of trles.



Character Animation

Winsor McCay's *Gertie the Dinosaur* (1914) is often considered the very first example of true character animation. Walt Disney made character animation a particular focus of his animation studio, best showcased in productions such as *Three Little Pigs*, *Snow White and the Seven Dwarfs*, *Pinocchio*, and *Dumbo*. Disney animation artists became masters of the technique. Some of the finest examples of character animation can be found in the work of Nick Park of Aardman Animations and Russian independent animator Yuri Norstein. Other notable figures in character animation include the Schlesinger/Warner Bros. directors (Tex Avery, Chuck Jones, Bob Clampett, Bill Melendez, Frank Tashlin, Robert McKimson, and Friz Freleng), cartoon animators Max Fleischer and Walter Lantz, pioneering animators Hanna-Barbera, former Disney animator Don Bluth, independent animator Richard Williams, John Lasseter at Pixar, and latter-day Disney animators Andreas Deja and Glen Keane.

Silhouette Animation

In this animation the characters are only visible as black silhouettes. Silhouette films are traditionally monochrome, with the foreground solid black and the background being various shades of grey. Full-color cutout animation in which the characters are mainly seen in profile is sometimes described as color silhouette film, though this is dependent on one's definition of a silhouette. Traditional silhouette animation as invented by Reiniger is subdivision of cutout animation. Most recently, several CGI silhouette films have been made, which demonstrate different approaches to the technique. **Examples** (films) *Die Geschichte des Prinzen Achmed* (*The Adventures of Prince Achmed*, 1926) by Lotte Reiniger, *Pinocchio* (1930) by Ugo Amadoro, *Shaka no Shōgai* (1961) by Noburō Ōfuji *Princes et princesses* (*Princes and Princesses*, (2000) by Michel Ocelot.

Pixilation

Pixilation (from pixilated) is a stop motion technique where live actors are used as a frame-by-frame subject in an animated film, by repeatedly posing while one or more frame is taken and changing pose slightly before the next frame or frames. The actor becomes a kind of living stop motion puppet. This technique is often used as a way to blend live actors with animated ones in a film, such as in *The Secret Adventures of Tom Thumb* by the Bolex Brothers, which used the technique to compelling and eerie effect. The term is widely credited to Grant Munro. He made an experimental film named "Pixilation", available in his DVD collection "Cut Up - The Films of Grant Munro". Early examples of Pixilation are *El hotel electric* from 1908 and Emilee Cohl's 1911 film *Jobard ne peut pas voir les femmes travailler*. Mike Jittlov's short *The Wizard of Speed and Time*. Jittlov made a feature film with many pixilation sequences, also titled *The Wizard of Speed and Time*, based on the making of the original short.

Graphic Animation

In its simplest form, Graphic "animation" can take the form of the animation camera merely panning up and down and/or across individual photographs, one at a time, (filmed frame-by-frame, and hence, "animated") without changing the photographs from

frame to frame, as on Ken Burns various historical documentary films for PBS. But once the photos (or "graphics") are also moved from frame to frame, more exciting montages of movement can be produced, such as on Los Angeles animator Mike Jittlov's 1977 short film, *Animato*, also seen his feature film, *The Wizard of Speed and Time*, released to theaters in 1987 and to video in 1989. **Examples.** 1. Frank Morris' 1973 Oscar-winning short film *Frank Film*, and Charles Braverman's *Condensed Cream of the Beatles* (1973) 2. Originally produced for Geraldo Rivera's late night TV show of the time, *Goodbye America*.

Production Of A Stop Motion Films

Tools

Windows 2000 or later with Windows Movie Maker, a Mac with movie, or a Linux or BSD operating system with Gimp. (Logitech webcams also come with stop motion animation software.) Virtual Dub is also a good free, easy to use program suitable for stop motion. If you have other similar movie making software, these will also be suitable, provided that you know how to use them.

Objects

Get objects and figures to use in a stop motion movie. Some good choices include clay, wire, Lego or similar building block figures, Play mobile figures, small dolls with a lot of flexibility, or string and wooden bead characters. Some people can be imaginative in the types of objects and figures that might work for your movie. For amateurs, it's best to use a toy rather than making a figure, as it is easier to animate.

Setup

Link title will be doing - walking, raising an arm, nodding yes, moving something, or whatever. Note that if you are using Legos that they cannot nod and are not as movable as regular action figures. Set up the figures (characters) in a particular position and within their set. This photo shows a Lego set. Place your camera in front of the "set" that you are going to take photos of. Check that it can view the entire frame. Set up a good source of lighting. It might be a lamp or a flashlight.

Process with Any Objects

1. Align and shoot - Take a single photo of the figure in the selected position. This photo shows the Lego set being readied for photographing.
2. Begin the movement sequence
 - i. Move the figure bit by bit. Very small movements each time.
 - ii. If the figure is walking and an animator is moving only one body part then the figure is tilting or threatening to fall over.
 - iii. Repeat the movement sequence carefully, until your action step is completed.
3. Save the pictures - pictures of movement sequence save onto computer.
4. Use software & finalization - Use any movie-making software. To make a stop motion film follow the basics common steps –
 - i. Import the saved pictures into the desired program.
 - ii. If the speed at which program can animate is not satisfactory, try exporting the project as a video file and use a speed effect on it, such as double speed (these effects only work on video clips). Then, if the resulting

speed is sufficient, Add audio, effects or transitions, or whatever else.

5. Save the video & share –
 - i. Having multiple stop motion segments, save each segment as a separate movie. Once the entire group of segments is completed, import all the segments into the final movie.
 - ii. Share the final movie by burning it into a CD or place it into an iPod. Continue making other ones.

Methods of Computer Processes For Stop Motion Animation

Virtual Dub Method

Virtual Dub will be used for saving the multiple image files as a movie, ready for editing with another program such as Windows Movie maker, Sony Vegas or Adobe Premiere.

1. In Virtual Dub go file > open, from the File type drop down select 'Image Sequence'. Select the first image, Virtual Dub will then automatically import all other pictures in numerical order.
2. Go video > frame rate and choose a frame rate for the movie repeatedly, until you are happy with it.
3. Change video and audio compression if needed. 4. Finally go file > save as avi.

Windows Movie Maker Method

Windows Movie Maker does not 'officially' support converting images into a movie sequence, use a different program for it. Windows Movie Maker is a free program.

Capture Video Method

1. Go to "File", then "Capture Video..."
2. Go to the "Capture Screen" need a camera plugged into the computer for it, click "Start Recording". When a second goes by, click "Stop".
3. Move your object.
4. Click "Start". Do it for a second more. It doesn't have to be perfect.
5. Move the video clip(s) onto the timeline - an animator will need to go to timeline view if he is on the storyboard.
6. Right click the first video clip, and click "Video Effects."
7. Choose the "speed up, double" selection. (Do this one or two, more times (choose it multiple times with one action; animator does not have to keep right clicking). Do this for each clip. Now, have each frame without using space in the documents.)

Precautions & Suggestions

Camera

1. Make sure the battery of camera is fully charged.
2. It is very important to support the camera. If camera is not with a tripod, use alternatives, as - solid books, poster tack on the surface of the set or a piece of solid furniture at the same height.
3. Camera is compatible with movie maker program.
4. To reduce flicker and create a smoother animation, set camera's white balance and exposure settings on manual mode so they don't change with each shot.

Light

1. If your light is flickering, you need to shut off other sources of light. Close the blind, or curtains etc.
2. Stay out of the way of or position the light source so you don't create distracting shadows over your animation that change with each frame.

Shooting

1. In single frame, 24 pictures equal one second of film. It's best to take two pictures of the same shot, so require 12 pictures in stop motion animation.
2. Keep in mind that the more photos, the smoother the video results.
3. Observe the following sequence of a shoot to see how very small the changes must be (remember that this is only a few of the frames to be taken)
4. In the beginning, try shooting the sequences where characters are moving, fighting, etc. in stop motion. When they are talking, just take single shots of their faces. It speeds up the process. Make sure the end result of animation is correct. Then keep going on.
5. To make a toy fly (such as a bird), attach clear string to it. Hold it up in the air for every shot. Have two people working on this part.
6. Doing this too long will cause a case of extreme boredom and a team of animators may feel frustrated. Give it a break after a sequence is completed. But remember, if the animation team feels so, then note down on paper where the process is suspended, because when the animators come back, they know where to pick up from.
7. Make sure the pictures are at a very small duration so they flow very fast.

Computer & Processing

1. If computer is slightly slow, try to see preview of the video in the editing stage and save it.
2. Set camera resolution low enough that your individual frames are not huge files. If already capture picture file is too big, reduce file sizes in batches in Photoshop. Best to keep each frame close to half a MB, otherwise use effective compression software.
3. Save the video frequently. Note that Windows Movie Maker does have an automatic saving feature.
4. This way of making movies can take probably half an hour to may be many hours; depending on how long the movie is, so make sure to have a lot of patience when making a movie.
5. An hour's worth of work may turn into a 30 second video. It all depends on the frame per second rate. The more frames per second, the smoother, but more time must be invested.
6. If frames in Windows Movie Maker are too long/short, use the double speed or half speed effect on the video for longer or shorter frames.

Others

1. Watch other stop motion animations for inspiration. These may give you some new ideas about how to do your own animation.

Wallace and Gromit, Fantastic Mr. Fox and Knox are fresh and popular animations.

2. You will become faster at moving the figures and judging the distances the more you practice.

References

1. Baird, Bil (1966). *The Art of the Puppet*. Plays.
2. Beaton, Mabel; Les Beaton (1948). *Marionettes: A Hobby for Everyone*. New York.
3. Bell, John (2000). *Shadows: A Modern Puppet History*. Detroit, USA: Detroit Institute of Art. ISBN 0 89558 156 6.
4. Binyon, Helen (1966). *Puppetry Today*. London: Studio Vista Limited. Second Edition. Focal Press.
5. Blair, Preston (1994). *Cartoon Animation*. Laguna Hills, CA: Walter Foster Publishing.
6. Choe, Sang-su (1961). *A Study of the Korean Puppet Play*. The Korean Books Publishing Company
7. Cohn, Neil (2006-02-15). "Burnt City animation VL" Emaki Productions.
8. Culhane, Shamus (1989). *Animation from Script to Screen*. New York: St. Martin's Griffin.
9. Dubska, Alice; Jan Novak, Nina Malikova, Marie Zdenkova (2006).
10. Dugan, E.A. (1990). *Emotions in Motion*. Montreal, Canada: Galerie Amrad.
11. Feeney, John (1999). *Puppet*. Saudi Aramco World.
12. George Griffin. "Concrete Animation." *animation: an interdisciplinary journal* Vol 2(3) [2007] Retrieved 2009-04-09.
13. Hayali, Mustafa Mutlu. *Tradition Folk The Site*. Ankara, Turkey: Theatre Department, Ankara University Faculty of Language,
14. Latshaw, George (2000). *The Complete Book of Puppetry*. London: Dover Publications
15. Lindsay, Hilaire (1976). *The First Puppet Book*. Leichardt, NSW, Australia: Ansay Pty Ltd.
16. Lord, Peter and Brian Sibley. *Creating 3-D Animation*. Harry N. Abrams, New York, 1998.
17. Masson, Terrence, CG101: *A Computer Graphics Industry Reference Unique and personal*
18. Maestri, G., Mallory, M., Mayerson, M., McCracken, H., McGuire, D., Nagel, J., Pattern, F.,
19. Malcolm LeGrice, *Abstract Film and Beyond*. [MIT Press, 1979]
20. Maltin, Leonard *Movie and Video Guide*. Signet Reference Paperbacks, Mattesi, Mike (2002). *Force: Dynamic Life Drawing for Animators*,
21. McLaren, Norman (1941). "Boogie-Doodle" NFB.ca. National Film Board of Canada.
22. McLaren, Norman (1942). "Hen Hop". NFB.ca. National Film Board of Canada.
23. McClean, Shilo T. (2007). *Digital Storytelling: The Narrative Power of Visual Effects in Film*.
24. Michael Betancourt, Mary Hallock-Greenewalt: *The Complete Patents*. [Wildside Press, 2005]
25. Osipa, Jason (2005). *Stop Staring: Facial Modeling and Animation Done Right* (2nd ed.).
26. Pilling, Jayne (2001). "The storyteller". *2D and Beyond. Animation*. Hove: RotoVision.
27. Raganelli, Katja (Director). (1999). *Lotte Reiniger: Homage to the Inventor of the Silhouette* Richmond, Victoria, Australia: Richard Lee Publishing.
28. Smith, Dave. *Disney A to Z*. Hyperion Books, New York, 1998. ISBN 0-7868-6391-9
29. Suib, Leonard; Muriel Broadman (1975). *Marionettes Onstage!*. New York: Harper & Row, Publishers. Tayler, Richard. *The Encyclopedia of Animation Techniques*.
30. Thomas, Frank and Johnston, Ollie (1981, rev. 1995). *Disney Animation: The Illusion Of Life*. Los Angeles: Disney Editions
31. Thomas, Frank and Johnston, Ollie, *Disney Animation: The Illusion of Life*, Abbeville 1981
32. Walters, Faber and Helen (Ed.), *Animation Unlimited: Innovative Short Films since 1940*,
33. Whitaker, Harold; John Halas (2002). *Timing for Animation*. Focal Press White, Tony 1998).
34. Williams, Richard (2002). *The Animator's Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators*. London: Faber & Faber.
35. 3-D Revolution Productions. "Animation". The3drevolution.com. Retrieved 2010-04-24.
36. "About ClayNation stop-motion animation". ClayNation.co.uk. Retrieved 2011-01-06.
37. "Alexander Lentjes". Moonridge5.com. Retrieved 2010-04-24.
38. "Blu-Tack - Make Our Next Advert". Bluetack.co.uk. Retrieved 2010-04-24.
39. "Elmer Kaan". Elmer Kaan. Retrieved 2010-04-24.
40. 'Handbook of Virtual Humans by Nadia Magnenat-Thalmann and Daniel Thalmann, 2004
41. *Movie Magic: The History of Special Effects in the Cinema* by John Brosnan (1974)
42. "Siggraph 2008: The Classic Disney Influence".
43. *Special Effects: Titanic and Beyond* The online companion site to the NOVA documentary (especially notable are the timeline & glossary
44. *Tehran Times Art Desk* (2008-03-04). "CHTHO produces documentary on world's oldest animation". *Tehran Times*.
45. *The Art and Science of Digital Compositing* (ISBN 0-12-133960-2) "Wayland Flowers Dies: Ventriloquist Was 48". The New York
46. *StopMotionAnimation.com*
47. <http://www.scene-stealers.com/blogs/siggraph-2008-the-classic-disney-influence>.
48. http://www.tehrantimes.com/index_View.asp?code=164429. Retrieved 2010-12-4.
49. <http://www.emaki.net/blog/2006/02/burnt-city-animation-vl.html>. Retrieved 2010-12-4.
50. <http://www.imdb.com/title/tt0471239>.
51. http://www.nfb.ca/film/Hen_Hop. Retrieved 2009-04-09.
52. <http://www.nfb.ca/film/boogie-doodle>
53. <http://en.wikipedia.org/wiki/Animation>
54. <http://www.webopedia.com/TERM/A/animation.htm>
55. <http://presentationsoft.about.com/od/a/g/animation.html>