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RESEARCH IN PRACTICE

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Research in Practice

Keywords

Animation, character design, stop motion

Artists & Thinkers

Heinrich Kley, Eadweard Muybridge, Disney Studios,

Introduction

The chosen keywords are three areas of art that I am interested in exploring further. The artists and thinkers I have chosen reflect these keywords. I would like to go into the animation industry, and I want to focus on character design in animation. I am interested in the animation industry because it blends all my interest, including movies, art and illustration.

To begin this keyword research, I will investigate the history of animation to get a better grasp of animation techniques today. I will then look into character design and what this entails. This includes drawing techniques and characteristics artists need to consider when creating a character for a film. The reason I have included character design as a keyword is because I believe that the characters are the story, and the art of designing characters that fit the story is underrated. I want to explore the work and detail that goes into character design to show that it is an important part of animation.

Within animation, I am particularly interested in stop motion animation so I will investigate how animation techniques have developed over time to incorporate software for a smooth finish when using this type of animation. I have selected stop motion as a specific branch of animation because when watching this type of animation, it is clear how much work has been put into it and I like the aesthetic. Not only does it look more pleasing, but I feel that more emotion can be put into stop motion. I also feel that it is an underrated form in animation, and is becoming a lost art now that more companies are choosing 3D computer animation.

Keyword 1: Animation

My first keyword is animation. This will explore some of the early practices that inspired modern animation, before looking at how the first cartoon animations were created. I will start by analysing the techniques used within the first animation films such as films by English photographer Eadweard Muybridge who is credited as the pioneer of animation film. Although Muybridge was not an animator, his studies in animal locomotion are early examples of experiments in moving images. This laid the foundation for later forms of animation (Popova, 2011).

In 1877, Muybridge experimented with different camera systems to make a series of photographs of a horse named Sallie Gardner at Stanford's Palo Alto track. He set up twelve cameras to capture Sallie Gardner as she ran past each one. Her movement past each camera triggered each one automatically by tripping a thread to release the shutter for 1/1,000th of a second (Belden-Adams, 2022). Muybridge created a 'zoopraxiscope' which projected each image in rapid sequence to make the horse appear to be running (San Francisco of Modern Art, 2017). He later put his images onto a phenakistiscope, which is a device that makes images appear to be moving by spinning the series of images (Popova, 2011). This work laid the foundation for animation, and his innovations in photographic technology paved the way for cinema technology (San Francisco of Modern Art, 2017).

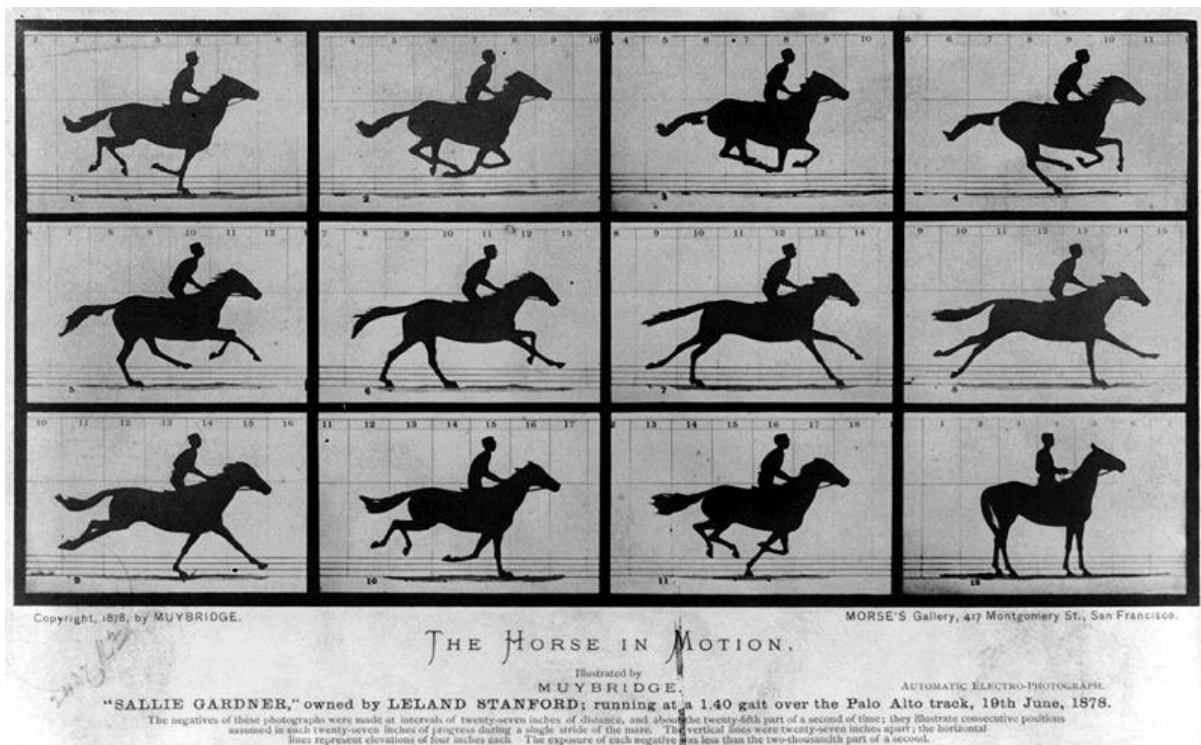


Figure 1: *The Horse in Motion* (Eadweard Muybridge, 1878)

Another key figure in the history of animation is Heinrich Kley. Kley was a German illustrator who began his career as a professional illustrator in 1908. His style was humanised animals. Although he was not an animator, his illustration style showing movement paved the way for animators, particularly Disney.

Kley's characters and illustration style portrayed a lot of movement within still images. "He so managed to capture as animation in single image form the spirit and movement and gesture of each of his drawings" (Ruth, 2015). Kley's illustrations were so influential that Walt Disney credited him as the man who created the Disney animation aesthetic, as his style of drawing was used as inspiration. "Without the wonderful drawings of Heinrich Kley, I could not conduct my art school classes for my animators" (Walt Disney cited Flores, 2022). Kley was also thought of as someone who told stories through his illustrations and was able to capture humour and seriousness at the same time. Kley's work not only influenced animation but also the idea of character design. Kley became known for being able to create characters that were active and expressive with lots of movement (Cedric Hohnstadt, 2007). "He was a master at creating anthropomorphic animals and creatures (i.e. frogs or

elephants that walk upright on two legs, wear clothes, etc.) and made them feel both fully animal and fully human at the same time” (Cedric Hohnstadt, 2007).



Figure 2: Heinrich Kley illustration

One of the first artist to use animation techniques for cartoons was French cartoonist Émile Cohl, who is known as "the father of the animated cartoon" (Popova, 2011). To animate his cartoons, Cohl put his drawings onto a glass plate that was lit up so he could trace the next drawing with variations to show movement. He traced over his drawings in this manner until he had over 700 drawings. When filmed, the characters ‘moved’ in a similar way to how we see cartoons today. His style was chalkboard animation, because chalk caricaturists were popular at the time, but he created this aesthetic by filming black lines on paper, then printing them in negative (Popova, 2011). This method was the main technique for cartoon

animation until late 1980s when computer animation became more widespread (New York Film Academy, 2015).

Keyword 2: Character Design

Character design is an important aspect of animation as without this, there are no characters to develop, render or animate and therefore no story. To audiences outside the industry, the role of the character designers may seem simple and be under appreciated. This is because when looking at a character, audiences cannot see how much effort was put into the design and the decisions behind each characteristic.

The original nine artists working for Disney were character designers. They were dubbed 'The Nine Old Men' by Walt Disney himself and were the most prolific animators at his studio (Canemaker, 2001). It was their character designs that helped to make Disney the company it is today. Film historian John Canemaker claimed that Disney animations were brought to life by the "combined individual genius [that] defined the art of character animation" (2001). Most of the Disney characters designed from the 1930s to 1970s were designed by one of these 'nine old men'. This shows that character design is one of the most integral aspects of animation as it has to consider various aspects of the character such as shape, height, size, face, features, hair, dress, positioning etc.

In traditional animation, a technique used by Disney and later Pixar is to use the shape of the pear as the groundwork for creating a character shape. Variations of the pear shape show the language of the character. For example, superheroes and the male protagonist usually take the form of an upside-down pear with a bigger chest and tapered waist. Elderly characters are usually formed using the shape of a drooped pear where the bulbous part of the pear is brought down, and the emphasis is on the back. Females like Minnie Mouse are usually formed using a standard pear shape to represent a typical female form, altering the length and width to change the height and weight. Similarly, a fat character and a slim character will both use the pear, but it will be altered to be short and wide or tall and slim. John K. (2006) notes that the pear is not the only shape to start to draw a body from, but it is the simplest and can help with understanding the basic concepts of proportion and construction, as well as adding details that wrap around the shape.

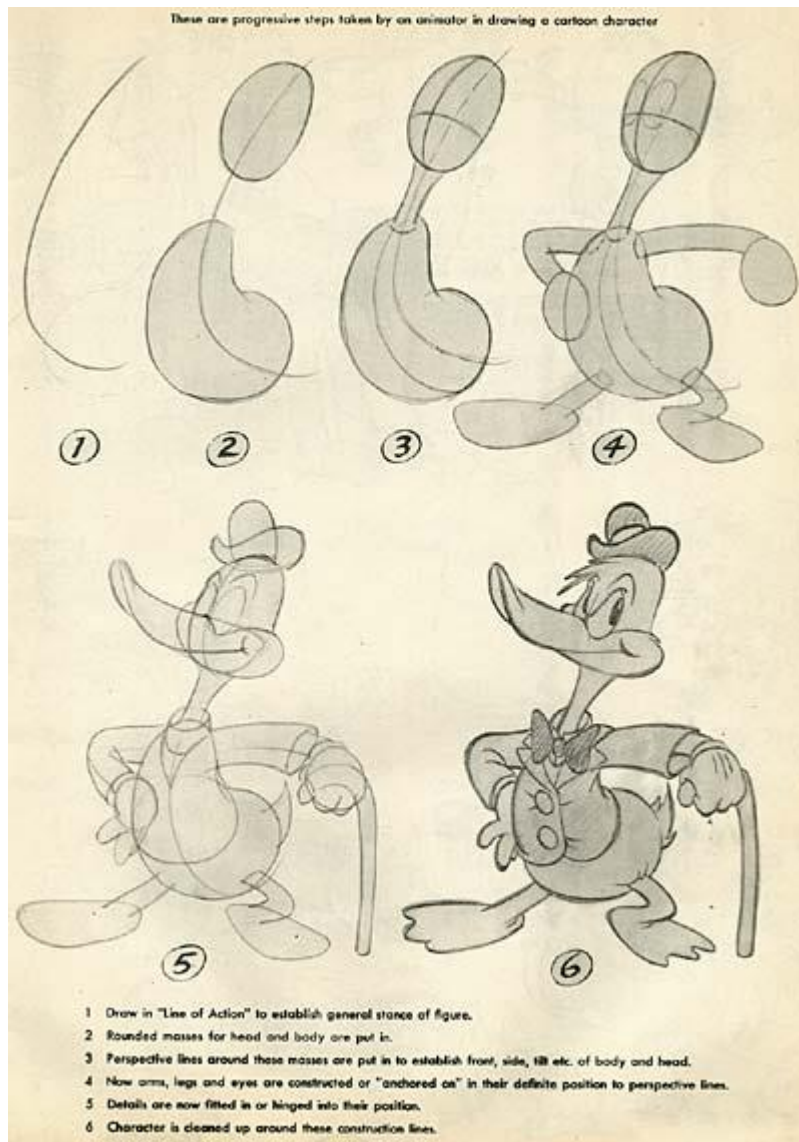


Figure 3: (John K. Stuff, 2006)

A similar basic shape used in animation is a ball. The bouncing ball is a good way to show how animation works because of the basic circle shape that can be altered to show motion whilst keeping its solid shape. For instance, when a bouncing ball hits the ground in animation, it compresses and flattens, and then stretches or pulls when going back up (Williams, 2009). This motion was often used in characters in earlier animated characters such as Steamboat Willie and Goofy when walking as they are animated with a 'bouncy' walk.

1932



Figure 4: 'Goofy' Walt Disney (1932)

Modern animation has the capability of utilising different shapes for characters rather than relying on the useful pear shape. The Pixar animation 'Monsters Inc.' (2001) shows how characters are now designed with an array of different shapes as several of the characters moved away from the pear shape. Similarly, 'Inside Out' (2015) uses different shapes to represent each character. The character Anger is based on a square, Sad is oval and Joy is a triangle (Pete Docter in Any-Mation, 2017). Other animations now have more scope and range to use different shapes. For example, the souls in the film 'Soul' (2020) are based on a teardrop shape.

This keyword research has argued that character design is essential for animation and has shown some of the techniques used by Disney and Pixar for designing and drawing the characters. The next keyword is 'stop-motion'. This will look at animations that use this technique.

Keyword 3: Stop-motion

Stop-motion is the technique of using objects such as clay figures or puppets and moving them for each frame to suggest movement. This is one of the most basic forms of animation, but it is also time consuming. Stop-motion animation is not just about moving figures for each frame but the filmmaker also has to consider design, colour, lighting, music and camera work to tell a story (Purves, 2019).

Stop-motion animation can also be used in live-action movies. An example of this is in the film 'Clash of the Titans' (1981). The film features this technique using clay figures and stop motion animation to make the figures appear to be moving. The result is a clunky, less-smooth animation. The animator for this film was Ray Harryhausen who was known as a "master of stop-motion animation and its painstaking, frame-by-frame adjustments to inanimate objects—specifically, his creation of detailed and fully articulated models of fantastic creatures (Curley, 2015, p. 208).



Figure 5: Ray Harryhausen painting his Medusa model for Clash of the Titans

With the advancement of digital technology, stop-motion animation, like other forms of animation is moving toward a digital technique. In the modern age, this is the only way stop motion could continue. Using a digital technique is a different method from traditional stop motion animation, but it still captures the principle and feel of what stop-motion is. An example of how stop-motion animation has developed can be seen in the film 'Kubo and the two strings' (2016). This film blended the traditional technique of stop-motion puppetry, with a heavy reliance on cutting-edge technology. The film was made by posing puppets made with metal skeletons to make them durable and moveable and photographing them. They are then repositioned, and another photo is taken. These photos are used as frames of a film, making it appear that the puppets are moving. "Animators used computer-generated digital effects to fill in or extend backgrounds, add extras to crowd scenes or paint out wires used to support some models. But everything starts with puppets" (Trenholm, 2016). The film was rendered with computer generated imagery (CGI) so it moves smoother than

traditional stop motion. The film used the average 24 frames per second for animation which gave it a fast transition between frames (Nessel, 2017). Incidentally, this film featured the biggest ever puppet made for a stop-motion film. This was a 16ft tall skeleton weighing 400 pounds. This took a lot of designing, planning, building, which took six months to complete, and then an extensive amount of animation phases and visual effects (Failes, 2016).



Figure 6: Skeleton from Kubi and the Two Strings (2016)

There is a formula to keep animations smooth, which involves precise timing, and understanding the Twelve Principles (Lesley University, 2022). These are:

- 1. Squash and stretch** – This shows movement by squashing and stretching the object/character.
- 2. Anticipation** – This refers to creating a build up before the action takes place.
- 3. Staging** – This is about using the art as a visual tool for story telling and creating a visually pleasing scene.
- 4. Straight-ahead action and pose-to-pose** – This is how the animation flows, the sequencing between frames.
- 5. Follow through and overlapping action** – An example of this is when a character is running and their head is either ahead or behind their body, not in direct alignment, to show speed of movement.
- 6. Slow in and slow out** – Keeps pace and time
- 7. Arc** – The shape of movement of an object.
- 8. Secondary action** – An action to support the main action.
- 9. Timing** – Everything follows a certain pattern and sequence.

10. Exaggeration – This refers to the shape of an object getting bigger and taking different forms to portray a certain message.

11. Solid drawing – Everything follows from the perspective of a solid drawing or object.

12. Appeal – The overall look of the piece, pleasing to the viewer.

“The list has served Disney animators since the 1930s and was outlined by Ollie Johnston and Frank Thomas in the 1981 book *The Illusion of Life: Disney Animation*” (Lesley University, 2022). Although used a lot in traditional animation, the same principles apply to stop-motion, sometimes less exaggerated than when using illustrated characters and objects. This shows that there has always been a certain formula applied to animation, but this is more mathematical than artistic today when compared to when animations were hand drawn (Williams, 2009). The same is true of stop-motion animation because it uses more technology and digital formulas to create a smoother finish than earlier stop-motion animations. An example of the mathematical nature of animation can be seen in Vector-based animation, where objects and characters are digitally moved and changed instead of being re-drawn. This requires the use of mathematical values to resize images (Maio, 2020).

Proposed Research Question

I wanted to explore the above keywords because I am interested in animation and character design for animation. From exploring these keywords, I have decided that I want to write about character design in more depth for my project next year.

I have decided to research the question:

How important is character design within animation?

I already believe that character design is one of the most important aspects of animation, so I want to conduct my research to provide evidence for this theory.

I have briefly studied the history of animation from the first moving image created by Muybridge and the influential illustrations of Kley, whose characters showed movement

within a still drawing. I have looked at Cohl who is believed to be the father of cartoon animation. I feel that exploring the history of animation and its development has helped to put it in context, so I would like to write about this in more detail in chapter one of my project next year to provide context.

Chapter two of my work next year will be a detailed exploration of character design and the work that has to go into designing a character. This section will use examples from animation to emphasise the points. Examples will include scenes from 'Zootopia' (2016), 'Beauty and the Beast' (1991), the original 'Winnie the Pooh' characters, and other relevant animations.

For my practical work, I want to focus on designing characters for animation. I will do this alongside the research to inform my practice. Therefore, for my third chapter, I would like to investigate how my practical work relates to the research and how the research has influenced my own character design.

As part of this research, I will be reading several books and articles, including the ones below:

- The Animator's Survival Kit
- Force: character design from life drawing
- Animation: the mechanics of motion
- The illusion of life: Disney animation
- Before Walt Disney: 5 Pioneers of Early Animation
- CharacterDesignReferences.com

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