**A History of Editing**

Auguste Marie Louis Nicolas and Louis Jean Lumière were born in 1862 and 1864 respectively. The two are considered the earliest filmmakers. The Lumière Brothers were the sons of a famous Lyons based painter Antoine Lumiere. Both brothers excelled in scientific subjects and were subsequently sent to technical school.

Antoine abandoned set up a business supplying and manufacturing photographic equipment. Both brothers began helping him. Auguste was a manager and Louis started to experiment with the photographic equipment being manufactured. Louis, through experimentation, discovered the process that assisted the development of photography.  In 1981, at the age of 17, Louis developed the 'Dry Plate' process, which then became known as the 'Etiquette Bleue' process. These new plates improved the plates preceding it, created by Dr. Richard L. Maddox ten years before. The new plates eliminated the process of having the plates being stored in a darkroom before and after they were exposed; making the photographic dry plates gelatinous did this. A factory was soon built to manufacture the plates.

By 1984, the Lumières were producing roughly 15,000,000 plates a year. Now a successful businessman, Antoine was invited to a demonstration of Edison's Peephole Kinetoscope in Paris. Antoine returned and gave Louis a piece of Kinetoscope film. His father was given the piece of film by one of Edison's concessionaires who told him what to make because Edison was selling the equipment at a high price.

In the winter of 1894, Auguste began making the first experiments. They aimed to overcome the limitations and problems of the Kinetoscope. The two significant problems with the device, was firstly, the camera was a large bulky piece of machinery that resigned it to the studio. The second problem was that the Kinetoscope only allowed one person to view the footage at a time.

By early 1895 the brothers had invented their own device combining the camera with the projector and printer. This was called the cinématographe. The cinématographe was smaller and lighter than Edison’s Kinetograph and it was also hand cranked. The Lumières filmed at a speed of 16fps (frames per second), which was considerably slower than Edison’s, which filmed at a speed of 48fps. However, the slower speed meant that less film was used and the clatter and grinding that had been associated with Eidsons camera was reduced. The first footage to be recorded was on March 19th 1895 and it was that of a group of workers leaving the Lumiere factory. This would later become known as ‘La Sortie de l’Usine Lumiere á Lyon’ which translates to ‘The exit from the Lumiere Factory in Lyon’. The footage was 46 seconds long and became known as the first motion picture to ever be made.

On December 28th 1895 at the Salon Indien du Grand Café, the first public screening of the films were shown. The presentation featured ten short films including their first ever recording. The brothers went on tour with the cinématographe in 1986 and visited Bombay, London, New York, Montreal and Buenos Aries. The tour and short films had an immediate effect and in early 1896; the first cinemas began to open, showing the brothers short films, in London, Brussels, Belgium and New York.

Another pioneer in the film industry was Iwan Serrurier. He was responsible for the creation of the Moviola device, which became essential to the editing process. Originally, the device was invented to be a home video projector. But due to the $600 cost, which was high in 1920, not many were sold. It wasn’t until an editor at ‘Douglas Fairbanks Studios’ suggested he sell his device to film editors. It was in 1924 that Moviola became a device for film editing and the first device was sold to Douglas Fairbank himself.

Warner Brothers and Universal were just a few of the studios to use the Moviola and the high demand for editing devices that were portable during World War 2, expanded the market for the device. The Moviola, despite the various inventions of modern technology, is still used today. Editor Michael Kahn used the device to edit the 2005 Steven Spielberg movie ‘Munich’, winning him the Academy Award for Best Editing.

In 1899, Edwin Stanton Porter became the first filmmaker to experiment with editing, when he was hired by Edison and made the head of his New York Studio. Edwin experiment with editing footage before making ‘Life of an American Fireman’ in 1903. The film was revolutionary in terms of it having a plot, action and featured flowing narrative over 7 scenes rendered in 9 shots. This was the first time that audiences had seen a motion picture that cut between scenes and had a structured plot. Porter further amazed audiences with his 1903 film ‘The Great Train Robbery’. The film featured the first use of visual effects that included, double exposures, split screen and miniatures, making it a milestone in filmmaking.

Film Editing is a post-production process that involves cutting together scenes, shots and footage together to make sequences that will become the final film. Before computers were used to digitally edit film footage, films were originally cut together by physically cutting the film using a splicer and then threading the film on a machine called a Moviola. The Moviola device is a tool that allowed the editor to view each individual shot, making the cuts more precise. The problem with the original method of editing was that the original footage was destructive which would be destroyed during the editing process. Computers and digital software has allowed for footage to be cut and edited without destroying the original film allowing the editor to experiment with scenes and shots.

During the Post-Production process, there are stages editing goes through. The first stage is the Editors Cut. This cut is the first cut produced and the first overall look of the film before it reaches picture lock. The director and editor meet and either view or discuss ‘Dailies’ (Dailies is the raw footage shot that day). This meeting will give the person editing an overall and idea of what the directors envisions about the sequence or scene. This cut of the film maybe longer, shorter or contains scenes that won’t appear in the final motion picture. Editing can last several months to a year, depending on what type of film it is. The 2011 film ‘Red State’ was presented at the cast wrap party because director and Editor Kevin Smith cut it together on the same day of shooting, whereas ‘Apocalypse Now’ took two years to edit because of numerous delays in post-production.

From here, the film is sent to the MPAA or the BBFC, for rating approval. Either will view the film and decide whether the contents shown in the film is suitable for the films desired ratings. If the film contains scenes that were inappropriate for the age rating requested, then it will be sent back for editing of that footage. Hitchcock had a famous argument, as the MPAA wanted Hitchcock to cut out a scene of the main character flushing a toilet in ‘Psycho’. He had to explain how it was important to the story before it was finally allowed to be shown. It was controversial because it was the first time a flushing toilet had been shown on screen. Once the MPAA or BBFC has approved the film, it is then released.

There are many types of editing and they have evolved over the decades. The early motion pictures were simply ‘one shots’. The camera would remain in a single location and would capture activity going on in front of it. For example, in the Lumière Brothers first feature, the camera remains still and the 46 seconds of footage shows the workers leaving the factory.

Another form of editing is the in-camera cut. This type of edit requires extensive planning and a strict shooting order because the single take is the final take. Therefore, when the film is developed, the edit is already complete because this type of cut occurs in the film itself. Early examples of this editing process are Alfred Hitchcock’s ‘Rope’. The 100-minute film was filmed in roughly 10-minute segments and each time a cut was needed, the camera was obstructed or the camera focused on a particular object to hide the cut, giving the illusion the movie occurs in real time. Recently, the Spanish horror film ‘La Casa Muda’ and its remake ‘Silent House’ use this style of editing to give the illusion of real time but the same editing technique was used as in ‘Rope’.

Since the start of film making, technology has developed and advanced greatly. In 1900, when the amount filmmakers grew significantly, the demand for higher quality film stock also grew. It was because of Eastman’s and Luminere’s cameras that 35mm film became to most common and popularly used film stock in the industry. From 1889, film stocks were nitrate based. The problem faced with nitrate based film was that it was incredibly flammable and in 1927 at a cinema in Montreal, the projection booth overheated and caught fire, resulting in the death of 77 children; it was not until 1952 when Kodak created the acetate film base known as safe film that nitrate stopped being used. Acetate film is safer than nitrate as it is not flammable. The problem with acetate film however, was that it melted instead of caught fire. Under the extensive heat, the chemicals used to coat the films base would release acetic acid that smelt like vinegar. The most recent film base to be used is polyester. It was originally used in specialized photography but then in the 90’s it became popular in filmmaking. The polyester film is preferred because of its stability and strength. The strength of the polyester however is sometimes seen as a negative because it is resistant to breaking it was more likely to break the filming equipment if jamming occurred. Also, this type of film does not deteriorate over time.

After shooting on film but before using digital technology to make motion pictures, ‘Video’ was used for a short time. The video format was first developed for the CRT (cathode ray tube) television system. The first live images captured from TV cameras were in 1951. The recorder converted the electrical impulses and then saved them on magnetic videotape. Since the invention of DVD and Blu Ray in 1997 and 2006 respectively, videotape and video recording equipment sales fell which led to the production of VHS tapes to stop being stocked in shops, so that DVD’s and Blu Rays could be focused on.

The industry began moving from shooting on film to shooting digitally. Nearly all-mainstream movies are shot entirely on digital or at least a large portion is shot on digital. It was in the 80’s when Sony began the concept of electronic cinematography but it was met with little success. However, in 1998 ‘The Last Broadcast’ was released which is largely considered to be the first digital film. Then George Lucas blended both film and digital with ‘Star Wars Episode 1: The Phantom Menace’. The footage blended well and Lucas announced he would shoot the sequels entirely on digital.

Digital technology also helped advance the way in which worlds were created within the film. Two notable films took advantage of digital technology to help create backgrounds and sets entirely out of computer generated imagery (CGI). ‘Sky captain and the World of Tomorrow’ was the earliest film to have the actors be the only physical element within the film. Sets, locations and many props were created using CGI; this helped the film be shot only in 29 days instead of roughly a year (for this film specifically). ‘Sin City’ was another famous movie for doing this. ‘Sin City’ used the CGI to translate the visual style of Frank Millers comic series to the screen. Filming everything against green screen also allowed for more elaborate travelling shots to be done (most notable is at the start after Marley Shelton has been killed and the camera zooms out and spirals into the air, revealing the city rooftops creating the ‘Sin City’ title).

Christopher Nolan, Paul Thomas Anderson and Quinton Tarantino are famously known for criticising digital film, through nostalgia but also technical issues. Tarantino famously said that he might retire because he wouldn’t be able to have his 35mm films projected in cinemas. The issues digital film faces are technical glitches, electrical noise, possibility of a ‘Blow-out’ (losing detail in bright parts of the film image) and the possibility of the footage being lost or damaged when transferring it onto a hard drive or computer. But digital footage can be transferred onto film, as it is safer to store on film and archived. The film can then be recovered in the future, provided that the original negative isn’t damaged.

More recently, the industry has embraced 3D technology. Since James Cameron’s ‘Avatar’ commercialised the 3D technology and demonstrated what the technology could do if used in a way of telling the story and not as a gimmick or marketing ploy. Many films since then shot their films in 3D, ‘Resident Evil 4’, ‘Final Destination 5’ and ‘Texas Chainsaw 3D’ are examples of films that have used 3D in their films but also how they have helped bring an element of originality to the series. However, many films convert their films to 3D in post-production in order to capitalise on the technology and earn more money because of the increased ticket price. Films like ‘The Avengers’, ‘Prometheus’ and ‘The Cabin in the Woods’ were converted to 3D (the latter eventually being scrapped and released normally). The conversion to 3D has been criticised by critics and moviegoers as it doesn’t add anything to the film and that the film would have benefited more from shooting it in 3D and not converting it.

Technology will continue to advance and change the filmmaking industry for centuries, creating ideas, worlds and narratives that were previously not though off of thought to be unfilm able because the technology was not advance enough at the time.