**Module 9: Special Visual Effects**

**SPECIAL EFFECTS** play a huge role in films today. When we use this term, most of you immediately think of CGI and the kinds of virtual effects that can be blended with “normal” location footage to make it seem like there really are dinosaurs running around free on an island off the coast. But the technology has also enabled the producers and directors of many other films to return to being shot mostly in studios, because they can still create the feel of being on location by seamlessly combining a studio foreground shot with a location background. This video link helps explain how studio shots are today being composited with location shots:

<https://www.youtube.com/watch?v=lK1p3sRSmH0>

Set Extension and Virtual Planes Demo

The ability to combine these studio shots with location footage has been one of the key reasons so many film studios have been built in Georgia in the past 10 years, and why this industry has become so important to our state. Another major reason is the tax incentives offered by the State of Georgia, but the advantages of being able to shoot so many more scenes in a studio setting are tremendous. You don’t have the cost of transporting, housing, and feeding the cast and crew in remote locations. You don’t have to worry about the weather, or the availability of enough electricity for the lighting and other needs, and you have total control over almost all other variables in the studio, including the ability to record better sound.



Above: Pinewood Studios in Fayetteville, GA

To write about Special Effects in your papers, it’s important that you understand something about the history of how these effects have evolved over the years, and also the tremendous planning and expense that goes into creating them. All of this is so that these scenes have some kind of emotional impact on the audience. Your job ultimately is to articulate why these effects worked or didn’t work.

One of the first Special Effects was an accident. One of the cinematographers for the Lumiere Brothers in the 1890’s accidentally discovered what happened when a piece of film was reproduced in reverse order, and showed a wall that had been destroyed magically rebuilding itself:

<https://www.youtube.com/watch?v=W_bB0TVTwg8>

George Melies discovered how to stop the camera, and then put people into a scene as he added a puff of smoke to make them magically appear or disappear. He also pioneered the use of the multiple exposure of a piece of film to create other comical/magical effects

<https://www.youtube.com/watch?v=1jxQMX00dcI>

*The Father of Special Effects*

In *Metropolis*, Director Fritz Lang and his team of technical experts used models, mirrors, and miniature insets to make the director’s vision of 2027 come to life:

<https://www.youtube.com/watch?v=84BcdT8senc>

*Metropolis Special Effects*

Most of you have seen *The Wizard of Oz,* the first film to ever feature any color scenes that came out in 1939. Some of the more challenging effects they had to create are explained in this short video.

<https://www.youtube.com/watch?v=-JRhCs-F-9I>

*Wizard of Oz Special Effects*

In Alfred Hitchcock’s 1939 film *Foreign Correspondent,* war breaks out between England and France on one side, and Germany on the other side as a plane with the main characters is flying back to the United States. A German Navy vessel fires on the plane, and it crashes into the ocean. To create this scene, film was used from a stunt plane flying over the water. This footage was then projected on a sheet of rice paper in front of the plane on a studio set. Thousands of gallons of water then crash through the rice paper and into the plane, to simulate the crash at sea.

<https://www.youtube.com/watch?v=HfebgvBWUtQ> Plane Crash Scene from *Foreign Correspondent*

STOP MOTION ANIMATION was another technique that developed to add special effects, particularly to the fantasy films that involved creatures like King Kong and Godzilla. The undisputed master of these techniques was Ray Harryhausen; here is a wonderful compilation of the best of his work. These scenes look ridiculous today, but they provided thrills to audiences who had not seen films with the advanced special effects that all of you are used to seeing today.

<https://www.youtube.com/watch?v=U9kmjW73-v4>

The Best of Ray Harryhausen: the Ray Harryhausen Creature List

In many films prior to 1960 (like Hitchcock’s films), REAR PROJECTION was used to combine a studio shot with an on-location background. The background scene would be shot, and then projected onto a screen behind the actors on the set – many “driving” scenes were done this way, with actors sitting in a stationary car while the background made it seem like the car was moving, or unseen stagehands might physically jostle the car to create the bumps

<https://www.youtube.com/watch?v=d5SegbKqsyY>

Scene from North by Northwest with Cary Grant

After Rear Projection shots started to seem more fake, some producers started using PROCESS TRAILERS to make these shots look more realistic. This is a platform for the car that is towed behind a truck.



Also, CHROMA KEYING was used to create effects; this is best explained by asking you to think of a weather person on TV in front of the forecast map. In reality, the weatherman/woman is in front of a green or blue screen; the chroma-keying process removes the colored background and replaces it with the map. This kind of technique was also used in films like *E.T.:The Extra-Terrestrial* to create the scenes where the kids ride the bicycles across the sky. Here is that scene, and a still of a bike against a green screen

[https://www.youtube.com/watch?v=oR1-UFrcZ0k***S***](https://www.youtube.com/watch?v=oR1-UFrcZ0kS)

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The reason they use this day glow green color is because extremely few items of clothing or anything else use this particular color; that was the problem with the blue color they originally used. I once saw this create a terrible situation when the local news anchor wore a tie with some of this color in the tie; the chroma key changed it so that his tie looked like it was made up of Nazi swastikas.

***STAR WARS*** revolutionized modern filmmaking in 1977, both in terms of **visual effects and sound**. The artists on this film invented the **optical printer,** which was able to composite two completely different images together in a way that was seamless to the audience. This group of artists went on to form INDUSTRIAL LIGHT AND MAGIC, and this company is still a pioneering force in the world of special effects today.

<https://www.youtube.com/watch?v=qwMLOjqPmbQ>

Star Wars and the use of the Optical Printer

Today films harness the power of computers to create these effects; and acting in these kinds of films is more challenging than you may think – picture the actors and actresses in “Jurassic Park” having to act afraid that a T-Rex was about to devour them – all they saw on the studio set was a Production Assistant with a T-Rex poster head on a stick.



But the Optical Printer was just too limiting for the filmmakers who really wanted to do more advanced effects, in part because it was film based. Emerging digital technologies were developing, and would end up giving the filmmakers the freedom and flexibility they were seeking.

COMPUTER GENERATED IMAGERY (CGI)

In the last 30 years, CGI has literally taken over the creation of special effects in films. The more mechanical process of something like optical printing gave way to the far more flexible and powerful software compositing programs that also have better quality. We are often asked if these programs have reduced the cost of making films. Not really. They are faster and better, but they have also encouraged more filmmakers to really try to push the limits even further in terms of their creativity.

This video is a pretty decent compilation of significant advances in the world of CGI over the past 30 years. My one major disagreement with this would be listing the effects from *Tron* as number one, and not including anything from *Titanic.* But this otherwise is a good list

<https://www.youtube.com/watch?v=2WikszYku6A>

Top 10 Landmark Movie CGI Effects

And this one shows you that there are also quite a few examples of really bad CGI; you probably have seen other films that deserved to be in this compilation. Not everything you see in a film works the way it was intended, and bad special effects break the illusion of the world they want you to be immersed in.

<https://www.youtube.com/watch?v=5ZlOn9V_MmE>

Top 10 Worst CGI Movie Effects

But remember – there are still a lot of special effects that are not virtual creations on the computer.

In 1979, the film *Alien* from Director Ridley Scott horrified us when this vile creature “thing” exploded out of the chest of one of the crew members. This video is the story around the creation of that environment, and that effect, and shows you how they did it:

<https://www.youtube.com/watch?v=wbNRdQELnic&index=10&list=PL1AXWu-gGX6LwUGY1OJ86Jv4fUk1BZy9p>

In 1994, *Forrest Gump* included some scenes where current shots of Tom Hanks as Forrest were blended with historical footage from the early 60’s with both President Kennedy and President Johnson. New dialogue was recorded with actors who sounded like those two men, and computers did a reasonable job in very short shots of making their mouths move to simulate saying some of these words.

<https://www.youtube.com/watch?v=JSEdBNslGOk> JFK

<https://www.youtube.com/watch?v=mIWd3T1xjec> LBJ

In 1996, Tom Cruise appeared in his first *Mission: Impossible* film. Becoming an action hero has given his career a much longer life than many of the critics expected. This video link helps explain how they did the special effects for one of the most famous scenes in that film.

<https://www.youtube.com/watch?v=uR9NsufQUdo&index=4&list=PL1AXWu-gGX6LwUGY1OJ86Jv4fUk1BZy9p>

In 2002, Ang Lee’s *Crouching Tiger Hidden Dragon* became one of the first films to effectively use new computer technologies that enable post production artists to remove the harnesses worn by actors and actresses and replace them with what “should” have been in the background had these harnesses not been worn in the first place. The effects were magical in this very mythical film, and we thus believed that they could run up walls, fly across the rooftops, and even fight a battle balanced on the branches of bamboo trees.

<https://www.youtube.com/watch?v=rxJiE5EKnD0> The Sword Thief

<https://www.youtube.com/watch?v=KXIJv1NoXmo> Bamboo Forest Fight

*2012’s Life of Pi* contained many stunning visual effects. The film is about a young man heading from India to Canada with his family and all of their circus animals when their ship sinks. Only he and a tiger named “Richard Parker” survive, and they have to figure out how to share a rowboat and survive. The tiger is mostly CGI. Oscar nominee Bill Westenhofer said “The digital character took about a year to build, and featured 10 million computerized hairs. We used complicated simulations to mimic the look and movements of the four real tigers that were used in the film. Of the 170 tiger shots in the movie, only 23 were real.” (parade.com)

The first video explains how they did some of these effects, followed by several finished scenes from the film.

<https://www.youtube.com/watch?v=9BrD_v5Vt70> Life of Pi Special Effects

<https://www.youtube.com/watch?v=zrL1kfxawuI> The Lit up Sea and the Whale

<https://www.youtube.com/watch?v=6w_F7PYaWT4> The Carniverous Island

In Module 13, you will be learning about the films of Christopher Nolan, one of which is *Inception.* Nolan uses some CGI, but likes to use actual special effects when he can, like for the famous Hallway scene:

<https://www.youtube.com/watch?v=junBvKGZCDc>

This is a fun video on the kinds of visual effects that were created for last year’s *Rogue One: A Star Wars Story:*

<https://www.youtube.com/watch?v=yLoP7moOG-M> Visual Effects in Rogue 1

When writing about these kinds of scenes from films for your papers, there are several things you need to decide in terms of whether or not they “worked”. Did you believe it? Did the illusion stay intact? And then, what did the effects add to the scene, and what did the scene add to the film?

An example I will give is from the 1997 film *Titanic.*  You will read more about this film in Module 11, which is about the films of James Cameron. I have been fascinated with the story of the Titanic for much of my life; it certainly is the most famous ship wreck of all time. The reason for that is because the story represents the hubris of humankind – thinking that we could build an unsinkable ship – and then testing out that theory by going full speed ahead on a moonless night through open seas where icebergs had been spotted, all in the interest of setting a speed record for an ocean liner going from England to New York.

The film was shot with a full scale replica of the ship, in a large tank constructed near the shore in Mexico. CGI technology is used to blend shots of the ship in the tank, with actual shots of the ocean, to give you the true feel of what it must have been like to have been a passenger on this ship. That was something none of the many films about the Titanic had ever been able to do before, and that – that was truly a magical moment to see this up on the big screen.

<https://www.youtube.com/watch?v=0vlRxlL1Po4> Take her to sea, Mr. Murdoch

Sources:

<https://parade.com/125689/parade/life-of-pi-tiger-digital-real/>