**- 1970’s Technological Innovations in Cinema –**

The era of the 1970’s or “Last Golden Age of Film” will forever be remembered for one thing over any other, special effects. From the beginning of hyper realistic space effects that the cinema verité film ***2001: A Space Odyssey (1968)*** brought to the screen, to the even more realistic *Star Wars* and *Alien* films to come, the wizardry of the special effect technician had by then developed into what we consider today the model for a blockbuster picture. So many films from that era have used “FX” to lure the viewer into the theatre. This new generation of film goer needed to be frightened, shocked and amazed out of their seats, William Friedkin's horror classic ***The Exorcist (1973)***, Steven Spielberg's ***Jaws (1975), Close Encounters of the Third Kind (1977)***, George Luca’s ***Star Wars (1977)*** and Ridley Scott’s ***Alien (1979***) all used new breakthroughs in technology to add the special something that all these films needed to be as popular as they became. The precursor to the special effect blocker buster was the “Disaster film” beginning with ***Earthquake*** and ***The Towering Inferno (1974)*** most often backed by Irwin Allen***.*** More mayhem followed with ***The Hindenburg (1975)*** and ***The Poseidon Adventure (1972).***

The rise of this era in film effects can be attributed to two main factors. First, the recession of the main stream film industries in the late 1960’s to early 1970’s. The second was the introduction of the blockbuster film. The latter would not exist without the former. When the major film houses cut their budgets, the in-house salaried production and set designers were able to freelance their talents to other films produced by competing companies. Many stars of the field including Douglas Trumbull started their own companies. Most of these newly created groups of “wizards” began working on the films which became the first blockbusters. The directors of these productions went on to create some of the most remembered films in all of cinema history.

These new age directors came from the past era of films which made use of the best available methods of creature creation, mechanical “stop motion” and early space FX that today are almost laughable in comparison. Even television programing made use of many if not all of the visual effect enhancements made during this decade; including what was up until that time the best miniature effects to date in Gerry Anderson’s ***Thunderbirds (1965)*** series; which few know was the first production concept for the Star Wars film. The mechanical creature effects arena was also pushed forward in the film *Jaws*. Although the shark effects were problematic and Speilberg cut many scenes from the films FX sequences, the final editing and optical composition was superbly executed.

Miniature effects continued to push the envelope of possibility even further. In the film *Close Encounters of the Third Kind* over a dozen separate spaceship models were created including the “Mother ship” which was a 500 pound behemoth that incased hundreds of lights. One trick which helped prove the effects of *Close Encounters* more lifelike, was the use of stage lighting in tandem with compositing artificial lens flares and a new technology called computer motion control (stop motion tracking). This mix of “practical” FX was continued to excess in the *Star Wars* saga. Coined the {Dykstraflex} after John Dykstra, the Effects supervisor for *Star Wars*. The Dykstraflex used VistaVision cameras that photographed widescreen images horizontally alongside stock footage to create both a composite image alongside the original model miniature recorded film, Lucas and Dykstra went on to create the renowned Industrial Light and Magic. Even the first *Alien* movie made use of this motion controlled tracking. One drawback to using miniature models was the fact that the models were not miniature at all. The original production model of the Millennium Falcon was actually five feet in length with a variety of hyper detailed scaled portions in various areas needed to be shot by the cameras.

The majority of all large scale “miniature” models were constructed from a myriad of off the shelf scale model kits found at any toy store. By using a basic melal frame covered with smaller parts from the model kits created a convincing micro scale detailed model or (Greebleing) including the 24 inch, 12 and 40 foot model of the *Alien* films Nostromo space craft and mining vessel. This style of model production was used in numerous films and even some popular TV programs i.e. ***Space: 1999 (1975-1977)*** and ***UFO*** by Gerry Anderson. Martin Bower was the creator for the models of the Eagle and Moon Buggy from *Space: 1999*. He and his production team went to work in concert with Brian Johnson on Ridley Scott's *Alien*, followed by *Star Wars Episode V: The Empire Strikes Back*.

Creature creation and back plate compositing was the paramount of effects throughout the earlier decades. By the 70s’ the effects for creature creation was at its’ height. From *Alien* to *Jaws* and *Star Wars* the mastery of the monster/creature effects was awesome to say the least. The “God” of all creature effects was a man named Ray Harryhausen. The man behind almost every major monster from ***The Beast from 20,000 Fathoms (1953)*** to ***Clash of the Titans (1981)*** Ray was the king of the industry. Without going into a diatribe on the history of this “Titan”, I will simply say that every creature creator to date can base his/her existence to this man.

To forget some of the basic improvements made in the actual camera technology would be sacrilegious. In short, the portability/scale of the cameras used for miniature model shooting was tantamount to the scale of the actual models i.e. the smaller the camera the smaller the model could be. In most examples of miniature model filming, the scale of the models detail was counterpart to the actual size of the camera shooting the object. An example would be the Super Star Destroyer model in the *Star Wars* film. This is the secondary reason such large scale constructs were needed.

The *Bolex* (H-16 Series, Super 8) camera was continually becoming smaller still, allowing the director both the freedom to use it to “pre-screen” some elements of a shot i.e. ***Taxi Driver (1976)*** and to use the camera to allow the camera man to follow action more realistically i.e. ***A Clockwork Orange (1971)***. The size of these portable cameras made it possible for the novice to create their little wonder of a film as well.

 While the silver screen was blistering, the single most evasive piece of video technology entered the home. The Video Cassette Recorder or “VCR”. In 1972, the AVCO CartriVision system was the first videocassette recorder to have pre-recorded tapes of popular movies (produced by Columbia Pictures) for sale and rental. By 1976, Paramount became the first to authorize the release of its film collection onto Betamax videocassettes. In 1977, 20th Century Fox would follow suit, and begin releasing its films on videotape. RCA introduced the first VCRs in the United States based on JVC's system in the same year, capable of recording up to four hours on ½ inch videotape. By the late 1970s, Sony's market share in sales of Betamax VCRs was below that of its’ VHS counterpart; consumers chose the VHS' longer tape time and larger tape size, over Sony's smaller, shorter but higher fidelity tape of 1 hour. The tipping force in the tape wars was actually the pornographic industry which released its’ content on the VHS system.

 In concluding the 70’s decade brought to the film industry a fresh set of technological tools that allowed both the film production team and director the power needed to set fire to the industry. Today’s films will always and forever use some portion of electronic editing, camera manipulation or general post production FX to season its main entre, the big budget/blockbusting film.

Notes:

* Although the budget for *Jaws* swelled from $4 million to $9 million during production, it became the highest grossing film in history - until *Star Wars*. Both *Jaws* and *Star Wars* were the *first* films to earn more than $100 million in rentals.
* A little film released by Ralph Bakshi named ***Wizards (1977***) was originally named Space Wizards but was changed due to the release of Star Wars. It was also planned to be released the same week, but was pushed forward a month to limited theaters.
* One of the best model miniatures in my opinion was the *Cygnus* from Disney’s **The Black Hole (1979).** At 12 feet long, 120 pounds, and consisting of 150 automotive light bulbs; two of them took a 15 member crew a year to build at a cost of $100k each.

Noteworthy science fiction films from the 1970’s:

***The Andromeda Strain (1971)***

***The Omega Man (1971)***

***Silent Running (1972)***

***Westworld (1973)***

***Soylent Green (1973)***

***Logan's Run (1976)***

***Capricorn One (1977)***

***The Black Hole (1979)***

***Star Trek - The Motion Picture (1979)***

1970’s Talent Pool:

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| George Lucas (USC)  | Robert Altman |
| John Carpenter (USC) | Francis Ford Coppola (UCLA)  |
| Bob Rafelson | William Friedkin |
| Alan Pakula | Terrence Malick  |
| Martin Scorsese (NYU) | Michael Ritchie |
| Brian De Palma (NYU) | Woody Allen |
| Peter Bogdanovich | Paul Mazursky  |
| Michael Cimino | Hal Ashby |
| Steven Spielberg  | John Cassavetes |
| Paul Schrader (UCLA) | John Milius (USC) |
| Dennis Hopper | Mike Nichols |
| David Lynch | George Romero |
| Wes Craven | John Milius |
| James Cameron | Jonathan Demme |
| Joe Dante | Bruce Dern |

References:

1. *Movie Magic: The History of Special Effects in the Cinema* by John Brosnan (1974)
2. NOVA Online \_ *Special Effects Titanic and Beyond \_ 1970s.htm*
3. Top 10 *Most Influential Films of the 70s \_ Generation Film!.htm*