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# Digital Cinema: The Motion Picture Industry and Consumer Impact

Filmmaking is an art form that has been constantly revolutionized and adapted since Thomas Edison and William Dickson first introduced the Kinetograph camera in the 1890's.[1] Cinema has gone from silent to sound, black and white to Technicolor, and Academy to widescreen exhibition. The changes were and continue to be necessary for the survival of filmmaking, and the industry has always had to adapt to what the audience desires. The latest dramatic change to cinema has been occurring since the early 2000s. Digital cinema - exhibition and photography is the new revolution in filmmaking. It has garnered serious opposition, but also has been welcomed by a wide mass of consumers and filmmakers. The increased use of digital cinematography poses challenges for the motion picture industry and consumers as an art form, and as a business.

Film viewing has gone from exclusively theatrical to an endless platform medium, including "platforms" such as television, laptops, iPod's, and smartphones. People are less picky about how they watch movies now. The screen can now fit in the palm of one's hand. Ariel Rogers, a Mellon postdoctoral fellow in Cinema Studies at Colby College has an article: "'You Don't So Much Watch It As Download It': Conceptualizations of Digital Spectatorship." It discusses how digital cinematography and digital cinema projection have widened movies' appeal with viewers. She states that "audiences both gain and lose" with cinema's adoption of these technologies. What audiences gain is the ability to view films at the touch of a button. Being able to download and stream films is something that gives everyone the ability to study and admire the art of any filmmaker

around the world (Rogers 224).

On the opposite token, the apparent "loss" to audiences is the social and cultural aspect of "going to the movies." What used to be a weekly activity for many in the U.S. is now reserved for monthly/yearly visits to the movie theater. Going further, Rogers attributes the demise of the multiplex theatre system to increased digital viewing platforms (227). In the recent past, filmmakers produced their films for theatrical exhibition, but since the increased use of multi-platform viewing, the mindset has changed. This has led most filmmakers to reform their strategy and style to cater to audiences that won't be seeing their works on the silver screen. "Filmmaking aesthetics are changing due to new image-capturing technologies" and Rogers concludes that this has led to the "democratization of filmmaking" (231).

Digital exhibition reveals challenges for consumers as well as filmmakers. Another aspect of the digital revolution that is mainly a challenge for producers is digital motion picture photography. This includes cameras, data gathering, and archival. John Mateer is a senior lecturer in film and television production at the University of York in England. In his article, "Digital Cinematography: Evolution of Craft, or Revolution in Production?" he talks about the specific advancements in digital cinematography and what it means for production work. It states the realities behind the resolution capacity and workflow of digital vs. film. Mateer mentions the role of the cinematographer and how it is unchanged, even with all the new advancements. Although the role has stayed the same, cinematographers can now shoot films much cheaper than before. The cost difference between the two mediums is substantial. To shoot with an industry standard 35mm film camera (Arriflex 435es), it costs a total of $44,615 for a one-week shoot to

gather 10 hours of footage.[2] The main costs are for film stock and processing, which makes up $31,670 of the total per week. On the opposite side, the total cost per week to operate the industry standard digital Arri Alexa is $15,660.[3] The only main expenses are for rental and data/cine processing (Mateer 8).

Although the statistics prove a major economic advantage of shooting digital, the main point that Mateer makes is that the art of storytelling is unchanged; digital as a medium is just another artistic choice, although the digital system is "more efficient and cost effective" (12). Despite the apparent advantages, there are downsides with shooting digital. The challenges with digital are mostly technical: stylistically and aesthetically. "Highlight clipping" is something that happens with digital sensors that is hard to overcome. This occurs when the brightest areas of the image are too much for the sensor to compensate, and it results in a "blown-out" sky or highlight(s). This happens with film as well, but the chemical emulsion in the film gives a more romantic and less-harsh result (Mateer 7). Some cinematographers use this to their advantage when shooting on film, compared to having to compensate or adjust with digital. This creates logistical and time-consuming challenges when on location.

Many filmmakers have stayed loyal to shooting strictly on film, and the number appears to be growing. 2014s best picture Oscar nominees *Boyhood*, *Foxcatcher*, *The Grand Budapest Hotel*, and *The Imitation Game* were all shot on 35mm film. In the fall of 2015, the number of big budget films captured the "old-fashioned way" has grown to at least seven, including *Bridge of Spies*, *The Hateful Eight*, *Star Wars: The Force Awakens*, *Son of Saul*, *The Big Short*, *Spectre*, and *Joy* (Hart 2). The cinematographer of *Bridge of Spies* Janusz Kaminski has stated, "There's more emotion in the emulsion"

when comparing digit imagery. The filmmaker goes on to say that there are advantages when shooting digitally, but there isn't as much capturing of shadows or contrast in the image (3).

What most of the filmmakers argue in the debate of film vs. digital photography is the fact that each medium is different, and each medium should be respected and available to the artist—in regards to the preservation and continued production of film stock. According to director László Nemes, the human experience "shouldn't be recorded only in zeros and ones" (Hart 7).

Although the arguments for shooting film vs. digital are well founded and provocative, another growing challenge facing the filmmaking industry is market saturation. James Irwin, an employee for Ernst & Young LLP in Lyndhurst New Jersey, has an article titled, "On Digital Media As a Potential Alternative Cinema Apparatus: A Marketplace Analysis." In it, he explains the growing and saturated independent film marketplace since the rise of digital cinema. Irwin discusses the difficulty for independent producers to get their film distributed to audiences with such an influx of filmmakers currently creating motion pictures. The cost effectiveness of digital cinema has driven filmmakers to distribute to audiences by bypassing the theater system and using on-demand markets and the Internet. This is due to the rise in consumer consumption of entertainment, in the platform driven exhibition world. Audiences have an "insatiable appetite" for new films in the marketplace (Irwin 3). Coincidently, this revolution in film distribution has caused studio producers to become detached from audiences with the stories they tell and how they tell them. With no clear reachable demographic in the marketplace, the platform driven nature of exhibition has caused producers and studio heads to

rethink their strategies of reaching audiences. Conclusively, Irwin emphasizes that digital has become the top choice of independents because of its "quality, cost savings, and flexibility" (7).

The realm of digital filmmaking has been ever improving since George Lucas first used 24p digital video on *Star Wars Episode II: Attack of the Clones*. The technology has lent limitless possibilities for filmmakers that simply are not possible with shooting analogue film. Author Matthew Wallin, the founder and Visual Effects Supervisor of Mantron Corporation, and Jorge Benitez, and an alumnus of Virginia Commonwealth University wrote an article entitled "Rethinking the Silver Screen: Science, Film And, Art after 'Avatar'." Their article discusses the emerging digital equipment and techniques that grant filmmakers new visual and narrative options, due to the release of the film *Avatar*. What the film did to progress cinema was the fact that the director James Cameron and his team at Weta Digital/Workshops in New Zealand, blended science and art in order to give the audience a new and exciting experience (Benitez and Wallin 51).[4]

*Avatar* expanded the experience of 3-D to a new technological level, in which a new type of camera called Fusion Camera System, (also known as Reality Camera System) was developed. This technology let the filmmaker camera operate in a virtual world—all done in a motion capture studio. Tracking sensors positioned on the camera tracked the movements and composition of the camera. Another use of the system and its main purpose allowed filmmakers to capture the performances of actors digitally, in regard to facial expression and movement, which has revolutionized the art of motion capture. Lastly, the camera rig was also developed to shoot features in stereoscopic 3D. This meant that, on live-action sets, the camera employed two lenses that converge sepa-

rately to give an illusion of depth when processed together (52). This technology has since been improved and used on features such as *Life of Pi*, *Tron: Legacy*, and *The Hobbit* trilogy. None of this technology would be possible in the analogue world, and it has opened up endless possibilities for filmmakers. Even so, Orson Welles once cautioned, "the absence of limitations is the enemy of art."

The challenges facing the motion picture industry as well as the consumer are more apparent now than ever in the history of cinema. The digitization of film photography and exhibition has made things easy, but also more difficult. Film consumption for consumers has been made easier by the increased world of multi-platform viewing; a con to this is that the artistic intent of the filmmaker has been degraded to a handheld device (Rogers 224). This has also opened up the market for anyone who owns a camera to distribute their work, in turn, leading to "market saturation." Accordingly, filmmaking has now been "democratized" because of the ease and cost-effectiveness of digital photography and distribution (Irwin 3). Contributing to this is the revolutionizing of photography that has broken down walls of limitation for filmmakers. James Cameron's *Avatar* blended art and science to create a new direction for cinema (Benitez, Wallin 51). Despite all of the revolutions in the industry, filmmaking—the art of visual storytelling, remains the same. Film-format traditionalists argue that "there's more emotion in the emulsion" (Hart 3). The aesthetic and stylization of shooting with film stock is a creative choice that remains a choice as an artistic medium. The way movies "look" has changed and continues to change. With 60% of films now being shot digitally, and most all movie theatres projecting digitally, one cannot dismiss the impact made on the industry and consumer. Doors have been opened to dreamers and storytellers, thus letting everyone being

capable of filmmaking. The look has changed, but the ideas remain the same. Although the Welles prophesy remains - "the absence of limitations is the enemy of art."

Notes

1. The Kinetograph was designed in conjunction with the Kinetoscope, which was a peephole device that allowed viewers to see twenty to thirty second clips of film. These devices were the first public motion picture viewing platform, used in five-cent Nickelodeons in the 1890s.

2. The Arriflex 435es is a 35mm film camera released in 1995 for non-sync sound production (MOS)—due to the loud motor. Another attribute to the camera is the ability to record 1-150fps, allowing filmmakers to shoot high-speed, slow motion photography. The 435es has continued to be the industry standard MOS film camera, being used on most all film shoots. Some films include *The Lord of the Rings* trilogy, and more recently, *War Horse* and *Lincoln*.

3. The Arri Alexa is a digital camera operating with a super-35 censor (same size as film cameras), released in 2010. It records in ProRes and Raw, which lends flexibility in postproduction work. The current lineup of Alexa camera models include: Plus, Plus 4:3, M, Studio, XT, and 65.

4. Weta Digital/Weta Workshops are a post-production and CG studio operating in Wellington, New Zealand. The company started under the supervision of director Peter Jackson. The post-house and CG studio gained recognition after working on *The Lord of the Rings* trilogy. Other credits include *King Kong*, and *Avatar*. Currently the VFX producer for Weta Digital is Joe Letteri. Weta Workshops is operated by Richard Taylor.

Works Cited

Benitez, Jorge, and Matt Wallin. "Rethinking the Silver Screen: Science, Film and Art after 'Avatar'." *International Journal of Science in Society* 2.3 (2011): 45-54. *Academic Search Complete*. Web. 5 Oct. 2015.

Hart, Hugh. "Why Shoot 'Bridge of Spies' and 'Hateful Eight' on Film Instead of Digital? For the 'Emotion in the Emulsion'" *Los Angeles Times*. Los Angeles Times, 3 Dec. 2015. Web. 06 Dec. 2015.

Irwin, James R. "On Digital Media As a Potential Alternative Cinema Apparatus: A Marketplace Analysis." *Atlantic Journal of Communication* 12.1 (2004): 4-18. *Academic Search Complete*. Web. 3 Oct. 2015.

Mateer, John. "Digital Cinematography: Evolution of Craft or Revolution In Production?" *Journal of Film & Video* 66.2 (2014): 3-14. *Academic Search Complete*. Web. 24 Sept. 2015.

Rogers, Ariel. ""You Don't So Much Watch It As Download It": Conceptualizations of Digital Spectatorship." *Film History*. 24.1 (2012): 221-34. *Academic Search Complete*. Web. 5 Oct. 2015.

Digital Cinematography and the Future of Filmmaking:

An Annotated Bibliography

*Thesis Statement: What does the increased use of digital cinematography mean for the motion picture industry as a business and as an art form?*

Source #1

Rogers, Ariel. ""You Don't So Much Watch It As Download It": Conceptualizations of Digital Spectatorship." *Film History*. 24.1 (2012): 221-34. *Academic Search Complete*. Web. 5 Oct. 2015.

Summary Annotation #1

Ariel Rogers is a Mellon postdoctoral fellow in Cinema Studies at Colby College. In this article, Rogers discusses how digital cinematography and digital cinema projection have widened movies' appeal with viewers. Also, she goes on to talk about what audiences gain or lose with cinema's adoption of these technologies. Going further, Rogers gives figures pointing to the demise of the multiplex theatre system, due to increased digital viewing platforms. The article mentions how filmmaking aesthetics are changing due to new image-capturing technologies. Rogers also talks about how independent cinema has increased due to the democratization of filmmaking.

Evaluative Annotation #1

This article is very helpful because of the depth Rogers goes into regarding the overall digital influence of motion pictures. Unlike other articles, this one gives insight into the state of the industry and how the advent of digital cinema has brought major changes to the way people watch movies. Roger's states that the medium of digital cinematography has "enhanced the photographic realism"(7) of films. The article also describes the bodi-

ly experience and purpose of watching movies: how cinema holds the potential to offer viewers an "experience of immediacy"(15).

Source #2

Mateer, John. "Digital Cinematography: Evolution Of Craft Or Revolution In Production?" *Journal Of Film & Video* 66.2 (2014): 3-14. *Academic Search Complete*. Web. 24 Sept. 2015.

Summary Annotation #2

John Mateer is a senior lecturer in film and television production at the University of York in England. In this article, he talks about the specific advancements in digital cinematography and what it means for production work. It states the realities behind the resolution capacity and workflow of digital vs. film. Mateer goes on to mention the role of the cinematographer and how it is unchanged, even with all the new advancements. Also, he mentions the cost difference between the two mediums. The main point that Mateer makes is that the art of storytelling is unchanged; digital as a medium is another artistic choice, although the digital system is more efficient and cost effective.

Evaluative Annotation #2

Mateer gives the information in a very straightforward way. His non-biased view of the mediums of digital and film give a truthful depiction of the state of the industry. A quote that summarizes one of the main points is that "You can't make film smaller" (5). Furthering on this, he describes the elements of cinematography to explain why film photography is unchanged to a large extent. In a chart comparison, it was found that for ten hours of production, the cost of a film camera is $44,615 compared to a digital cinecamera, which cost $13,410 (8).

Source #3

Irwin, James R. "On Digital Media As a Potential Alternative Cinema Apparatus: A Marketplace Analysis." *Atlantic Journal of Communication* 12.1 (2004): 4-18. *Academic Search Complete*. Web. 3 Oct. 2015.

Summary Annotation #3

James Irwin is an employee for Ernst & Young LLP in Lyndhurst, New Jersey. Irwin's article explains the growing and saturated independent film marketplace since the rise of digital cinema. He gives background information of the difficulty for independent producers to get their film distributed to audiences with an influx of filmmakers. Irwin explains the growing consumer appetite for films, on multiple viewing platforms. Expanding on that, Irwin describes what the saturated marketplace on portable platforms means for the cinema multiplex system. He concludes, stating the expansion of the industry is due to the cheaper costs of digital production equipment and the democratization of the medium - from amateur to professional filmmaking.

Evaluative Annotation #3

This article is beneficial because it analyzes the state of the independent and studio film industry at the rise of digital cinema. Irwin describes how the cost effective use of digital cinema has driven filmmakers to distribute to audiences, bypassing the theatre system by using DVD and the Internet. He also explains why consumers have an "insatiable appetite"(3) for new films in the marketplace. Concluding, the author states why studio producers are becoming detached from audiences with the stories they tell and how they tell them. Irwin emphasizes that DV has become the top choice of independents because of its "quality, cost savings, and flexibility"(7).

Source #4

Benitez, Jorge, and Matt Wallin. "Rethinking the Silver Screen: Science, Film And, Art after "Avatar"." *International Journal of Science in Society* 2.3 (2011): 45-54. *Academic Search Complete*. Web. 5 Oct. 2015.

Summary Annotation #4

Author Matthew Wallin is the founder and Visual Effects Supervisor of Mantron Corporation, and co-author Jorge Benitez is an alumnus of Virginia Commonwealth University where he teaches art and film. This article discusses the emerging digital equipment and techniques that grant filmmakers new visual and narrative options, due to the release of *Avatar*. It goes on to explain the differences between science and art and how the film blended the two. The authors also go into the history leading up to the filmmaking advancements of today, from the 1880's-present day. Going further, the article talks about 3-D imagery and how *Avatar* expanded the experience to a new technological level.

Evaluative Annotation #4

This article addresses the digital technological enhancements in filmmaking due to the film *Avatar*, in a very effective way. It informs that James Cameron and his team inverted the traditional concepts of computer-generated imagery: introducing the "simulcam," virtual camera system allowing filmmakers to capture the performances of actors digitally (7). The article indicates the fusion of science and art and the impact that such creative endeavors can have on a society that seeks both "entertainment and dreams"(8). The article also emphasizes that for film students, the new technologies could lead to a world nearly limitless in technical and aesthetic possibilities.