

3-D and the Cinema of Distractions:
The Rise of 3-D as a Gimmick, and Its Inevitable Fall

by

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Abstract

3-D has had a long and tempestuous relationship with mainstream cinema. From its early days as a parlour attraction to its use as a gimmick in the huge Hollywood blockbusters now being made, the cinematic standardization of 3-D has always been in question due to its cycle of success and failure. By examining what factors influenced the decline of other film gimmicks—factors such as economics, technology, and psychology—and examining how closely 3-D is being affected by those same pitfalls, it is determined that 3-D is seeing yet another downfall. The reason for the consistent renaissance of 3-D technology in particular is also considered, as the industry is doubtlessly using it as a stepping-stone for the development of cinema as a form of virtual reality.

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3-D and the Cinema of Distractions: An Introduction

Movement itself was the first attraction of the cinema. Having been so accustomed to the static image provided by the revolutionary and artistically-controversial technology of photography, the idea of a moving picture was a phenomenon which impressed audiences worldwide. The moving photograph captured the imagination of its viewers and ushered in a new form of art and entertainment which is arguably the gravitational center of popular culture for the 21st Century—an artform which has been more consistently grounded in spectacle over any other entertainment medium. The moving picture was the beginning of the trend in cinema to constantly reach further and further into the realm of possibilities with greater technological marvels, to capture the attention of viewers again and again with their impressive novelty value. This is particularly evident in the early films of the century. Before the industry became the international behemoth and financial powerhouse it is today, filmmakers experimented with a variety of attention-grabbing features to add to the spectacle value of the moving picture, known as the 'cinema of attractions'. Best known for coining the term 'cinema of attractions', the work of film scholar Tom Gunning not only defines the typical spectacle-based fare of yesteryear, but also helps to define the new form the modern-day cinema of attractions is taking.

But what is 'the modern-day cinema of attractions'? While the term 'cinema of attractions' seems to connote the black-and-white silent films of a bygone era, based on the examples used in Gunning's writing, in truth, the criteria to which he outlines what contributed to what is considered classic 'cinema of attractions' still resonates with the spectacle-based blockbuster of today. Gunning himself describes the cinema at the time

of his writing somewhat disparagingly: “[c]learly in some sense recent spectacle cinema has reaffirmed its roots in stimulus and carnival rides, in what might be called the Spielberg-Lucas-Coppola cinema of effects” and finishes his thought with the caveat “[b]ut effects are tamed attractions”.¹ While that may have been truer of cinema twenty-five years ago, the contemporary blockbuster might make Gunning reconsider. Huge widescreen multiplexes with sprawling surround sound, vivid digitally-enhanced colour, and explosive computer-generated imagery are rife with the trappings of the 'cinema of attractions' type of spectacle, and the emphasis in the past few years on the glamour on the silver screen has forced film producers to continually go beyond the spectacle of each preceding film. They have invested in the fabrication of amazing places, creatures, and visual magic than is impossible in reality, foregrounding the visual impact of 'attraction'-like features such as increasingly sophisticated CGI or 3-D, as the 'cinema of attractions' did in the past.

The emphasis of the 'cinema of attractions' is directly upon the concepts of “exhibitionist confrontation” versus “diegetic absorption”;² the main differential force behind the nature of something which is meant to distinctly draw attention lies in whether it is trying to blend in with the aesthetic of the film itself, so as not to disrupt the immersion of the audience into the narrative, or whether it embraces its visibility and makes no such efforts to mask its goals. The 'cinema of attractions' as they were during the beginnings of the moving picture were very much concerned with confrontation—this is due to the fact that the film often replicated the stage show as a sort of frame narrative, focusing on the presentation of visual marvels themselves (such as using in-camera

1 Tom Gunning. “The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde.” *Early Cinema: Space, Frame, Narrative*. Ed. Thomas Elsaesser and Adam Barker. London: BFI, 1990. 61.

2 Ibid, 59.

editing to make characters disappear or change costume with a puff of smoke). One of the biggest changes with regards to the spectacle of contemporary cinema is this relationship which the screen has with its viewer. It is presently considered, at best, to be a postmodern nod to the tropes of cinema to regard the presence of the audience by breaking the imaginary fourth wall breached by the film camera, and at worst, to be a gaffe on the parts of a director and editor to allow such a personal acknowledgement of the film viewer as a voyeur.

As Gunning describes in his piece, he notes that this trend faded into obscurity—no doubt with the popularization of the narrative and feature films—and is an intriguing difference to the current renaissance of the 'cinema of attractions'-level fare current film viewers are receiving today. He writes:

[a]n aspect of narrative cinema which I have written about in other articles is emblematic of this different relationship the cinema of attractions constructs with its spectator: the recurring look at the camera by actors. This action, which is later perceived as spoiling the realistic illusion of the cinema, is here undertaken with brio, establishing contact with the audience. From comedians smirking at the camera, to the constant bowing and gesturing of the conjurers in magic films, this is a cinema that displays its visibility, willing to rupture a self-enclosed fictional world for a chance to solicit the attention of the spectator.³

The solicitation of the attention of the spectator has now done a full turn with the emphasis placed on the immersive experience of the cinema—disruptive graphics or poor editing choices make the experience one of distancing, and purposefully drawing the audience's attention by means of acknowledgement also interrupt the illusion of the diegetically invisible audience.

Naturally, this is evident of the different challenges being faced by the spectacular film of the modern age—the attractions are still there, but they themselves seek to blend

3 Ibid, 57.

in seamlessly amongst the other eye-catching fare which the moving picture seeks to consistently provide. The bright technicolour, surround sound, IMAX widescreen, and ever-improving CGI all contribute to the spectacular nature of the modern blockbuster, and must face the additional requisite of becoming an invisible part of the aesthetic of the film. While this is easier with some non-intrusive aspects of modern cinema—like IMAX and surround sound—it is notably more difficult for additions which require distracting supplementary changes, such as 3-D.

Gunning notes that Georges Méliès himself declared that his prototype of the narrative films (most notably his 1902 seminal work *Voyage dans la lune*, also known as *Trip to the Moon*) was in fact just a “pretext for the 'stage effects', the 'tricks', or for a nicely arranged tableau”⁴ which follows logically, due to Méliès' own love of illusion and career as a stage magician, and notes the tendency to remain “plotless, a series of transformations strung together with little connection and certainly no characterization”.⁵ What marks the 'cinema of attractions' is the emphasis on the mechanism of the spectacle—the possibilities of the camera and film medium itself—and places it on an equal level of spectacle as the images themselves: “[i]t was the Cinématographe, the Biograph or the Vitascope that were advertised on the variety bills in which they premièred, not *Le Déjeuner de bébé* or *The Black Diamond Express*”.⁶ Even the tricks which we now take for granted—the cut, the close-up, the superimposition, the action in slow-motion or even reverse-motion—were once all part of the novelty of the cinema, as they are visually impossible to experience without the outside assistance of a camera and film. This trend extended past even the inception of narrative film, although was relegated to be found

4 Ibid.

5 Ibid, 58.

6 Ibid.

only in 'experimental' and 'avant-garde' cinema. Examples of this kind of usage can be found in visual manifesto films, such as Dziga Vertov's famous ballad to the Russian city, *Man with a Movie Camera* (1929). Vertov himself—the proponent of the 'Kino-Eye'—was a man so in love with the abilities of the camera itself, that he essentially wished to be one. He treats the camera as a sentient character itself in the film, as we can see stop-motion animation of the camera on a tripod dancing on-stage, and even seems to place the camera lens and the eye of Mikhail Kaufman, the titular cameraman, on the same level on importance in many shots.

Ultimately, early cinema had it easy; the foregrounding of the technological potential did not need to balance itself against the immersion necessary to sustain a narrative. Today's 'cinema of attractions' must not only be competently-made and commanding enough to justify the marketing that the films get from their use (like advertizing it in IMAX or 3-D), but must also ensure that their spectacle meshes perfectly with the narrative, allowing for the spectator to sink in to the still-spectacular characters and story. Other academics have given their own similar interpretations of Gunning's work in the context of modern cinema, as well. Dick Tomasovic writes that some aspects of the 'cinema of attractions', such as exhibitionism and the phantom ride aesthetic, are still very much present in modern-day cinema, but slightly altered to fit the times. He uses Sam Raimi's *Spider-Man* and *Spider-Man 2* films (2002 and 2004, respectively) as examples, as he cites the supernatural basis of the story as an attraction feature and “aims at the fantastic element and transfers the attraction of the technology toward the diegetic”

⁷ with shots from the 'spider-cam' to emulate the pendulum feel of the superhero swinging

7 Dick Tomasovic. “The Hollywood Cobweb: New Laws of Attraction (The Spectacular Mechanics of Blockbusters)”. *The Cinema of Attractions Reloaded: Film Culture in Transition*. Ed. Wanda Strauven. Amsterdam University Press, 2006. 315.

between buildings on a spiderweb. He also claims that directors “want to re-conquer the fetish of these assailing views by proposing a complete catalogue of extreme visual possibilities”⁸ highlighting mobility (the 'ride' aspect) as an element of attraction as well. Stephen Prince insists that the point which Gunning makes relating to the switch from spectacle to narrative hegemony in film culture is a false one, particularly in the wake of the possibilities of digital cinema, as the two aspects of cinema are forever interlinked:

[t]he relation between narrative and spectacle is a function of a given film's aesthetic design and the sensibilities and goals of filmmakers on a given production. Spectacle can serve narrative; it can also be a more autonomous artifact of style. There is no necessary and unchanging relation between the two. Cinema undeniably offers its viewers the pleasures that Gunning identified as those of the attraction. But it is also the case that viewers seek the pleasures offered by a well-told tale and that spectacle for its own sake, especially when poorly integrated with narrative structure or with a structure that is poorly elaborated, may be perceived as the mark of a badly made film.⁹

In other words, the idea of the 'cinema of attractions' is still alive and well in today's movie industry. But while the novelty draw of IMAX or digital imaging has lessened in the wake of increasingly sophisticated technology, one novelty has re-emerged in the public consciousness with great grandiosity, in spite of its many falls from grace throughout the history of film: 3-D.

3-D is an aesthetic which is undeniably aligned with the 'cinema of attractions', as it has been discussed, in terms of its exhibitionist confrontation. The technology itself is constantly foregrounded in advertisements for the theatrical showings, the cinematography of the films are often designed in such a way as to take advantage of 3-D's notorious emergence effect (objects seemingly flying out towards the audience) to the

8 Ibid.

9 Stephen Prince. *Digital Visual Effects in Cinema: The Seduction of Reality*. Rutgers University Press, 2011. 39.

point where even if the technology is never diegetically acknowledged (as films nowadays lack the 'frame narrative' context to explain the presence of the 'movie magic'), the audience is still made very aware that the film itself knows that there is an audience watching it. While the characters rarely break the fourth wall as they used to in the old movies, the objects of a 3-D movie often seem to—that is, after all, the appeal of the 3-D experience.

But to what end does this 'cinema of attractions'-esque technology bring the world of film? 3-D has been a significant presence in cinemas for the past 6 years, and is enjoying a successful renaissance unlike any of its other revivals throughout the past century. While it absolutely has enjoyed its stay in theatres in recent times, it is hardly fair to qualify it as a 'novelty' anymore—it barely counted as a 'new' experience in the first place. Over the next few years, will we see the technology cement itself as a new cinematic standard, or will it once more fall from grace, a perpetually-doomed gimmick which has lost its novelty value yet again? The modern-day 'cinema of attractions' seeks to attract moviegoers away from their small screens at home and into the theatre, where they can experience spectacle like no other—will 3-D become an aesthetic revolution?

When considering these questions, one must first examine the trials of other technologies which have struggled in their journey to cinematic standardization. What factors play into the success or failure of a cinematic novelty, and either normalize the feature or else allow it to phase out and thus return the industry to the status quo? The first chapter will examine certain cinematic technological novelties that sought to become a standard feature of the film experience and will identify the elements which affected their staying power in cinemas.

Once those factors are determined, examining how they are affecting this current revolution of 3-D will most likely give clues as to whether or not 3-D can expect to be a cinematic staple in years to come. The second chapter will take those factors and apply them directly to 3-D. By giving a brief historical background of the novelty of 3-D and how 3-D's recent comeback has been different from the ones before, it is determined that the most likely outcome of 3-D technology is one of yet another passing fad. Far from the 'attractions'-level of spectacle, 3-D succeeds instead at becoming a distraction for the viewers trying to become immersed in the narrative—the soliciting of viewer attention to compete with the narrative turns 3-D into more of a 'cinema of distractions'.

The third chapter will give a more psychological explanation of this outcome, and explain how the viewer physically and psychologically experiences the moving picture, to better explain why 3-D is a supplementary technology and is simply not necessary for the immersive effect sought by filmmakers. As a hypothetical example, a brief analysis of the film *Avatar* (2009) is given, as not only is it an example of how 3-D might possibly be used to greater success relating to its standardization in the future once the current issues of its use in films are overcome, but it is also thematically aligned with the idea of virtual reality, which one posits is the reason that filmmakers keep trying to resurrect 3-D as a film standard. The idea of completing the immersive illusion of a film allows for control of perception, and allows filmmakers to use 3-D as an ontological tool for the control over reality.

What follows is the beginning of the exploration into the themes of novelty and film gimmicks and their constant quest for acceptance into the mainstream.

CHAPTER 1: Failed Film Gimmicks and What Killed Them

Movies and television have a constant and unusual symbiotic relationship with regards to their form and content, but with the increasing prevalence of home-based media (such as video games or internet subscription services), the competition for entertainment profits has remained strenuous for the cinema. With more and more filmgoers opting to forgo the lines and high fees at the box office in favour of a Netflix subscription at home (or, as is increasingly the case, by pirating a film online), film innovators have had to constantly create new attractions to draw movie-watchers into the cinemas. While the composition and narrative of a film is attractive to film viewers, what in fact draws crowds has historically been spectacle; to combat the draw of the other audiovisual media available to the average consumer, enterprising film executives have been constantly striving towards breaking ground on the next popular mainstream format by developing new film technologies which capitalize on the spectacle of the theatre experience—the next 'attraction'. Setting itself apart from parlour novelties or the television, the ambiance, sound system, scale and resolution producing a crystal-clear image are supplements that historically could not be replicated at home. Some film innovations, like talking pictures and Technicolour, are now standard for cinemas worldwide. Other unique ideas, as intriguing as they were, have not stood the test of time and for various reasons, have eventually faded out of public consciousness.

However, to divide the wide array of cinematic attractions which have been developed to entice audiences into the movie theatre into merely two categories of 'successes' and 'failures' makes it difficult to place certain technologies which may have failed on their initial introduction to audiences, only to return in a different format or

venue to viewer's acclaim. While sound and colour are well-known examples of successful technologies which emerged to nearly instant viewer approbation, adopted as a cinematic standards across the film industry a short time after their introduction, other film innovations have not had such a clear and linear rise to industry standardization. One such example of this is 3-D: a cinematic gimmick which has had several rises and falls throughout the history of film itself, with its most recent renaissance occurring within the past decade. Currently, the 3-D trend seems—on the surface—to finally be the next film innovation to be standardized, like colour and sound before it, with many big-budget Hollywood blockbusters being released in 3-D every year. But is this truly evidence of the induction of a new technology into an industry standard, or merely the apex signalling the beginning of yet another fade into obscurity?

If one is to examine the recent re-popularization of 3-D, an investigation into the other forms of technological film innovation that fell by the wayside is a good starting point to determine the trends which might offer answers to establishing contemporary 3-D's (possibly lingering) place in modern cinemas. The technologies examined here are two unique takes on film technology from the 1950s—"Percepto!" and Cinerama, and the modern-day D-BOX technology (as well as a brief look at its grandfather technology, Sensurround), which all failed in their own ways. "Percepto!", unique to a certain film producer, mixed live performances from theatre employees and various interactive elements built into the theatres themselves to bring the events of the narrative from the screen to the spectators, ultimately relying on supplementary objects exclusive to the film itself to attract audiences. Cinerama took the already-large scale of the theatre screen and boosted it to grandiose dimensions, wrapping an immense curved screen around the

audience so they could experience a triple-sized movie, filmed on a specially-adapted camera and projection set-up, thereby attempting to capitalize on the existing spectacle of the size of the cinema screen. D-BOX technology, and its mid-century relative Sensurround, both interpreted a 'moving picture' very literally as both of these technologies were made to create a physical experience for the viewer as they experienced the film both visually and aurally, seeking to add to the cinematic sensory experience: Sensurround shook the theatre, while D-BOX shakes the individual viewer. All of these technologies were hailed and advertised as the next wave of cinematic technological standards, and—while not entirely devoid of merit—each one diminished into the realm of mere novelty or else were and are touted as 'gimmicks' in spite of these strategies attempting to cement their place as cinematic standards.

These specific technologies were chosen over other gimmicky attempts at film novelty such as Smell-o-Vision because these three technologies still have echoes of their success being integrated into modern entertainment, thereby indicating the criteria of 'potential' in the selection of historical examples. Ultimately, like 3-D, they are a part of that middle-ground between success and failure—"Percepto!" is echoed in the modern amusement park venue, Cinerama sired IMAX and the adoption of the widescreen format as a standard, and Sensurround and D-BOX are an integral part of contemporary ride-film attractions. While Smell-O-Vision, for example, might better represent a more complete failure of a film technology to leave even a trace of its existence in the minds of modern audiences, the technologies which still linger as shadows of their former selves indicate that the technology had the right idea, and could more realistically have caused a film aesthetic revolution. This makes the chosen technologies like Cinerama and D-BOX

more aligned with the situation 3-D currently faces, where the potential for mainstream permanency is there for various reasons, but for separate reasons—specifically technological, economical, and even psychological ones—the ultimate fate was a fall into obscurity and thus earned the 'gimmick' moniker. Smell-O-Vision is a gimmick which would barely count as an attempt at an aesthetic revolution, being so sparsely used in practice; by contrast, film attractions like Cinerama and “Percepto!” did in fact have enough of a cultural impact to warrant viewer interest and further discussion. The various reasons for their popularity and subsequent falls from grace are important to consider when analyzing the viability of a new cinematic technology; gimmicks which never stood a chance need not apply.

1.1 Film, Theatre, and Live Interaction: “Percepto!”

The use of supplementary objects, a classic example of a failed film innovation strategy, is embodied to excess in filmmaker William Castle's notorious theatrical gimmick “Percepto!”. William Castle is a figure in Hollywood who is famous for his unique take on horror films, and who paid careful attention to what methods failed or succeeded to draw audiences. Arriving in Hollywood in the late 1930s, Castle was dedicated wholly to his cause of “scaring the pants off America”. Indeed, his 1976 memoir *Step Right Up!* is subtitled *I'm Gonna Scare the Pants Off America*, emphasizing Castle's showmanship.¹⁰ With a background in Broadway and live theatre, he knew precisely what an impact an interactive or live component to a show could do for an audience, and attempted to bring the same real-world involvement to the audiences in the

¹⁰ William Castle. *Step Right Up! I'm Gonna Scare the Pants Off America*. New York: Putnam, 1976.

cinema. While his filmography is filled with inexpensively-produced B-movie fare—such as *Macabre* (1958) in which a doctor's daughter is kidnapped and buried alive and he has only a few hours to rescue her, *House on Haunted Hill* (1959) where a suspicious millionaire offers five guests each \$10,000 if they can survive the night in a haunted house, and *The Tingler* (1959) where a scientist discovers a spine-crushing 'tingler' creature which feeds off of its host's fright—what endeared Castle to the public and made his films so popular was his showmanship. Each of his films employed a unique set of gimmicks, offering a blend supplementary elements of live theatre with those of the cinema.

These gimmicks—although not necessarily as 'scary' as Castle might have hoped—were nonetheless what made his films noteworthy and popular, differentiating his works through a unique blend of clever marketing, technology, and live theatre in order to create a more engaging cinematic experience. As a marketing bid for his film *Macabre*, audience members were given “scared-to-death” life insurance policies in the national advertisement campaign upon the film's release, as a response to New York Paramount's use of a 'nurse' who would wait in the lobby during Terence Fisher's *The Curse of Frankenstein* (1957).¹¹ For the exhibition of *House on Haunted Hill*, Castle had theatres fitted with a glow-in-the-dark skeleton which would fly above the audiences' heads—a technique he named “Emergo!”, as the effect would be one of the skeleton-ghost 'emerging' from the screen and into the theatre.¹² Another of his clever inventions was “Illusion-O”, the accompanying technology to his film *13 Ghosts* (1960), in which each audience member was given a 'visualiser' made of red and blue cellophane, and

11 Kevin Hefferman. *Ghouls, Gimmicks, and Gold*. Durham and London: Duke University Press, 2004. 97-98.

12 Ibid, 98-99.

were left to decide whether or not they were brave enough to watch the movie through the red filter, allowing the blue-tinted ghosts (which would ideally be rendered invisible should the film-goer view through the blue cellophane, although in practice the effect was imperfect no matter which option the viewer chose) to be seen against the black-and-white film.¹³ However, the one form of technological gimmick for which he is best-known was the development of “Percepto!”, the altered theatre seats he commissioned for *The Tingler*. During the narrative of the film, the Tingler monster supposedly escapes its cage and crawls across the projection lens and into the theatre where the movie was playing—then cued by the voice of Vincent Price (playing the scientist in the film), the real-world projectionist in the theatre's projection booth would flip a switch which would activate small vibrating buzzers hidden in the seats of some of the audience members, spooking them.

While requiring extra work on behalf of the movie theatre, Castle included the live-performance-interaction aspect to encourage audience participation. By giving small introductions to some of his films (in the same 'formal address' style that Alfred Hitchcock used in his television anthology *Alfred Hitchcock Presents*, also popular around the 1950s) he would outline the new technology that the audience had come to expect from his directorial pieces and suggest methods to enhance their “Percepto!” experience in the theatre, as well as associating his own persona with his work to inextricably tie both himself and his bizarre style of showmanship together. This was his personal introduction to *The Tingler*:

I feel obligated to warn you that some of the sensations, some of the physical

¹³ James Francis Jr. *Remaking Horror: Hollywood's New Reliance on Scares of Old*. North Carolina: McFarland & Company, Inc., 2013. 102-103.

reactions which the actors on the screen will feel, will also be experienced for the first time in motion picture history by certain members of this audience. I say certain members because some people are more sensitive to these mysterious electronic impulses than others. These, uh, unfortunate sensitive people will at times feel a strange, tingling sensation. Others will feel it less strongly. But don't be alarmed, you can protect yourself. At any time you are conscious of a tingling sensation, you may obtain immediate relief by screaming. Don't be embarrassed about opening your mouth and letting rip with all you've got, because the person in the seat right next to you will probably be screaming too. And remember this: a scream at the right time may save your life!¹⁴

While only the altered chairs are technically referred to as the “Percepto!” experience, in truth, the entire Castle technological collection was definitely a bundle package, meant to enhance the perception of the events in the film, from the marketing and advertisement of the film, the technologies themselves, and the immersive experience afforded by the actors surrounding the theatre.

Currently, very few exhibitors make use of “Percepto!”-esque technologies. The troubles exhibitors faced with William Castle's “Percepto!” films in their initial run were numerous, in spite of the generally positive reactions to his films (enough to spawn teenaged fan clubs¹⁵), even if it was not particularly scary as Castle might have preferred. For one, the economics for installing “Percepto!” technology was simply not feasible for mainstream release as a standardized film technology:

[a] saturation opening for *The Tingler* was impossible because of the needs of the Percepto stunt at the center of the film's publicity, including surround speakers at the rear of the theater and the tremendous cash outlay for the vibrating motors. After August and September prerelease “screamiere” engagements in Baltimore, Boston, and Detroit, the film was released into downtown houses during the slow Halloween season of 1959, capitalizing on the holiday, the orphan period, and the national publicity for the gimmick.¹⁶

An additional roadblock came in the form of many theatre owners, who grumbled at the

14 *The Tingler*. Dir. by William Castle. Perf. by Vincent Price, Patricia Cutts, Philip Coolidge, and Judith Evelyn. Columbia Pictures, 1959.

15 John Law. *Scare Tactic: The Life & Films of William Castle*. Lincoln: Writers Club Press, 2000.

16 Kevin Hefferman. *Ghoul, Gimmicks, and Gold*. 98.

insistence of the performative aspects of the Castle movie experience (such as being forced into the yellow-lit 'Coward's Corner' if you attempted to leave the theatre and reclaim your box office fees), claiming that exhibiting one of his films was—in the words of fellow cult-film director and Castle-enthusiast John Waters—“just too damn complicated”.¹⁷

Yet, the idea of adding theatrical embellishments in the form of props and actors is not one which has entirely disappeared. “Percepto!” undoubtedly saw its end in the cinema, but its echoes linger on in a different venue. One of the few locales where audiences can still find “Percepto!” techniques to enhance the viewing experience is in theme parks or amusement parks, where the physical installations required for the “Percepto!” chairs and live ambiance can be a permanent fixture and run for years at a time; in these settings, the fact that the films are not on a few-month exhibition cycle works well, and is most likely the only way that “Percepto!” can be used in any sensibly economic fashion. For instance, *It's Tough to Be a Bug!* (1998) is the name of a 9-minute film that Disney World installed in their Animal Kingdom park; at the end of the film, as the characters on-screen insist that the audience remain seated so as to let the 'beetles, maggots, and cockroaches' exit the theatre safely first, small gears grind under the audience's seats giving the illusion of writhing bugs beneath them. In another exhibit from the *Honey, I Shrunk the Kids* franchise, when a vast herd of mice are let loose from a science lab and run 'towards' the audience, waving leather strips installed beneath the seats wiggle to give the impression of mouse tails brushing past legs—even more sophisticated than what William Castle had ever developed, this Disney “Percepto!”

17 John Waters. *Crackpot: The Obsessions of John Waters*. New York: Scribner, 2003. 19.

show choreographed the 'mouse tails' to hit the audience in a wave, with the first-row chairs feeling it first before the chairs in the back row. The *It's Tough to Be a Bug!* installation is still in operation.

Despite the ironically unfrightened amusement Castle's "Percepto!" horror movies afforded audiences, "Percepto!"'s complicated props and live-performance elements allowed the attraction to settle better into permanent exhibitions in amusement parks and museums, which can provide the live ambient interaction and altered seats for longer periods of time.¹⁸ While falling out of mainstream popularity, the lingering traces of William Castle's film technology can be found in these locales to this day, showing that the relocation of a gimmick into a different entertainment context allows the technology to flourish in a way that it would never achieve in the cinema.

1.2 Panoramic Film: Cinerama

Initially, the technology of a quality moving picture was essentially restricted to the cinemas; anyone wishing to experience film had to give their money to the box office in exchange for admission to the screening of a moving picture. While the television had been invented by the 1920s, the technology was "primitive" as the "images were blurry, audio was scratchy, and the picture barely visible on available 2- or 3-inch screens".¹⁹ However, with the widespread popularity of the improved television in post-World-War-II America—a device which was found in over 8 million homes by 1950, and 41 million by the decade's end, with many households owning more than one²⁰—film innovators had

18 "Exhibition". *Immersed in Media: Telepresence in Everyday Life*. Ed. Cheryl Campanella Bracken & Paul D. Skalski. Routledge, 2010.

19 Catherine Kellison, Dustin Morrow, and Kacey Morrow. *Producing for TV and New Media: A Real-World Approach for Producers*. 3rd ed. Burlington: Taylor & Francis, 2013. 25.

20 Murray Pomerance, ed. *American Cinema of the 1950s: Themes and Variations*. United States: Rutgers,

to figure out a way of competing with what was essentially a smaller version of the theatre screen, which could be viewed as often as desired in the comfort of one's own home. Their solution was to clearly distinguish cinema from television; if small screens could attract viewership away from the big screens, then perhaps they could be won back with even bigger screens.

Cinerama, created by photographer and inventor Fred Waller, was intended to do what a family-room-sized television set could not: utilize a human's peripheral vision to create a more immersive moving picture experience. Larger film cameras with three diverging lenses (comprised, of course, of three interlocking solo cameras) allowed a filmmaker to create images with a 142-degree field of vision, which recorded the images on three separate film reels running at the same time. Audio was recorded on six microphones to capture the best and most accurate soundscape.²¹ To exhibit the film, three projection cameras as well as three projectionists must work in tandem to perfectly synchronize the three thirds of the image together to form a “trptych”, alongside a fourth member who monitored sound control for the film's six audio tracks, and a fifth member (who had a place at the front of the screening room) who would act as an overseer for the process, and would ensure that the three images and the audio played harmoniously on-screen like a conductor conducts an orchestra.²² The Cinerama screens themselves were of gargantuan proportions, with some reaching six times the size of a regular cinema screen²³ and featured a signature concave curved screen, so the effect was one of the image wrapping around the viewer. The curved screen would involve the use of

2005. 7.

21 Kevin Hefferman. *Ghoul, Gimmicks, and Gold*. 18.

22 John Belton. *Widescreen Cinema*. Cambridge: Harvard University Press, 1992. 107.

23 Jason E. Squire, ed. *The Movie Business Book*. Berkshire: Open University Press, 2006. 514.

peripheral vision—truer in nature to the angles in which humans typically experience the world—and give a more immersive feel to the picture²⁴. The first feature created for a Cinerama-compatible theatre was aptly named *This Is Cinerama* (1952), and was immensely popular:

the response [to the film] was unprecedented. Both audiences and critics raved about the new process. For the first time in its history, the New York Times ran a story about film on the front page, celebrating the opening of Cinerama as the start of a new era in motion picture exhibition ... The film proved to be an instant success, prompting critics to invoke it as the standard against which to measure all other productions and would-be spectators to wait in lines for hours to buy tickets.

²⁵

The film itself is akin to the travelogues produced in the early days of the Lumière Brothers' cinematographe, where the sights of far-off countries and peoples paired well with the demonstration of the fantastic new technology. *This Is Cinerama* features a point-of-view shot from the front of a rollercoaster, and picturesque scenes of foreign settings (including Niagara Falls or the waterways of Venice) as well as famous American landmarks—the Grand Canyon, New York City, and the Golden Gate Bridge to name a few.²⁶ Other similar films such as *Cinerama Holiday* (1955) and *The Seven Wonders of the World* (1956), as well as narrative films like *How the West Was Won* (1962), were also produced. Due to the precision that three cameras could bring the immense wide-screen format, Cinerama lingered in popularity in spite of other technologies attempting to cash in on the public interest in widescreen films. Competing technologies like Cinemascope—a widescreen technology utilizing only one lens, which would eventually grandfather modern-day cinema's standard wide-screen format (albeit on a flat screen)—still paled in comparison to the visual spectacle that Cinerama

²⁴ John Belton. *Widescreen Cinema*. 99.

²⁵ Ibid, 103-104.

²⁶ Ibid, 103.

provided. Film scholars say of Cinemascope that “the appeal was less visceral. Though early ads ... resembled those for Cinerama, CinemaScope extended a much more subtle invitation to audiences to enter into the screen space. CinemaScope and other wide-screen processes sought a middle ground between the notion of passive consumption associated with at-home television viewing and that of active participation...”²⁷ However, the promise of fabulous picture quality and immense size could not sustain the viability of Cinerama as a mainstream film technology for long.

What is intriguing about Cinerama is that even within the few-decade time frame of its popularity, the format had its own rise, fall, and subsequent rebirth. Widescreen was something that Hollywood innovators were already dabbling with in the very early stages of narrative 'talkie' cinema. However, the first attempt at popularizing widescreen formats were unsuccessful, due mostly to issues within the industry—such as lack of properly-equipped theatres and lack of available finances in the wake of the recent conversion to sound²⁸—rather than the economic context of the Depression. Major studios such as RKO and Paramount did not experience losses until 1931 (after widescreen standardization had been set aside), and in fact made more money in 1930 than in 1929. The true failure of early widescreen processes had more to do with the problem of converting the screens in existing theatres—for reasons which ranged from the high cost of experimentation in order to find a suitable contender for what might become 'industry standard' size to lack of demand for novelty by an audience already dazzled by the recent conversion to sound cinema—and therefore could not produce as much revenue as traditionally-sized cinemas.²⁹ When the interest in extremely large-scaled images came back in the wake of

27 Ibid, 190-191.

28 Ibid, 51.

29 Ibid, 53-54, 59.

the popularization of the television in the 1950s, Cinerama still came with a variety of technical issues.

Fox engineer Lorin Grignon complained of 'inherent picture distortion ... a very limited area of seats where the visual effects are best ... [and] technical difficulties of identical projection from three separate machines and three separate prints all in exact register are extremely hard to surmount'. Though [Fred] Waller had developed a vibrating comblike device called a 'gigolo' to blur the blend lines in projection, the lines between each of the three separate panels remained quite visible ... At the same time, screen brightness varied from panel to panel, depending on the exact color temperature of the arc lamp in each of the three projectors ...³⁰

The utilization of three cameras also made in-camera movement effects (zooming in or out, racking focus, etc.) nearly impossible, as the edges where the three fields of view would normally overlap would be sent completely out of synchronization; the overall composition of the shots used in Cinerama would—by necessity—be inherently static. What condemned Cinerama technically was the overcomplexity of putting the image together. Making the three reels perfectly synchronous in both the editing room as well as the movie theatre proved to be no simple task—consider that if any damage or discolouration occurred to a single reel which necessitated the removal of a few frames, the same matching frames had to also be removed from the other two reels—and veritable squads of cinema employees were required to run the shows to ensure that the technology worked properly while the film was being screened.

However, economics still did play a factor in the rise and decline of the wide screen:

[b]y [1954], *Variety* reported that *This is Cinerama* had brought in \$6.5 million in its engagement in six cities. However, the tremendous outlay of money needed to convert a theatre to Cinerama was a major impediment to its implementation as anything like an industry standard. Estimates of conversion cost varied from

³⁰ Ibid, 108-109.

\$70,000 for basic equipment to as high as \$150,000 including construction costs, consulting fees, and labor.³¹

As such, companies like CinemaScope and Panavision were developed in order to appease the demand for wide-scope films, while balancing what economic power they had to make the wide-screen technology feasible.

Cinerama's rebranding as a single-filmstrip technology was the 'rebirth' aspect of the Cinerama phase, which came into popularity around the 1960s. To combat the tripled production and exhibition costs due to the troubles of recording and running three reels, a solitary anamorphic camera lens was developed for 70mm film, which would project onto Cinerama's signature curved screen, called 'Ultra Panavision', which got rid of the vertical lines dividing the image into thirds, but also reduced the impressive aspect ratio held by the original three-strip technology.³² Some of the films that were produced in the 70mm-Cinerama-style include *It's a Mad, Mad, Mad, Mad World* (1963), *The Greatest Story Ever Told* (1965), and *Battle of the Bulge* (1965).³³ But ultimately, the high production costs proved too much for Cinerama even as a single-strip film format, and was only used sporadically until the mid 1970s. Nevertheless, despite Cinerama's failure as a mainstream film technology, its effects echo even in modern-day cinema in then-unanticipated ways. In spite of the initial attempts to draw viewership away from the small screen of television to the big, curved, immersive experience of Cinerama, what really struck a chord with filmgoers was the attraction of widescreen in general, paired with the directionality of multiple audio tracks.

In the case of Cinerama, then, economics and technological complexity became

31 Kevin Hefferman. *Ghoul, Gimmicks, and Gold*. 19.

32 John Belton. *Widescreen Cinema*. 109.

33 *Ibid*, 110.

the biggest issue. Cinerama is not entirely dead and buried as a technology, due to its echoes being felt in the standardization of the widescreen format and surround sound as a mainstream feature. Even though Cinerama does not itself exist as a film entity, specialty theatres for those dedicated to the format still exist in North America, in much the same way that IMAX (Image Maximum) theatres currently do, although no feature films have been made for Cinerama since its dissolution in the mid-1970s.

1.3 Moving Picture, Moving Spectator: Sensurround and D-BOX

“Live the cinema of tomorrow” promises D-BOX: a more modern take on new cinematic technologies from a Canadian-based company in Longueuil, Quebec. Taking William Castle's “Percepto!” idea and bringing it into the 21st Century, D-BOX is a movie-viewing technology whereby entirely new and computerized chairs are programmed by the company to react, frame-by-frame, to the motion of the films on-screen. Many small robotic motors in both the seat (as well as the platform on which the seat is built) are choreographed to replicate the experiences reflected on-screen. The variety of motion described by the company includes adjustments of pitch (back and forth tilting of the seat), roll (side to side tilting of the seat), heave (up-and-down motion of the seat), and the company claims that their MFX-132 theatrical chairs “[enable] the moviegoer to live the action that is taking place onscreen, providing an unmatched, realistic, immersive experience”.³⁴

The idea for motion embedded in the chairs of the viewers, however, did not originate with the innovators at D-BOX. In 1974, the technology called Sensurround was

³⁴ “D-BOX: Products”. *D-BOX*. D-BOX Technologies Inc. 2004. 27 Jun 2014. <http://www.d-box.com/en/consumer/theater_products>.

developed upon the release of the movie *Earthquake*, for which the sound developers were given an Academy Award.³⁵ Like the small robots creating vibrations in the D-BOX chairs, the large Sensurround speakers installed in the theatres acted like strong subwoofers, producing low-frequency sound to shake the entire theatre and simulate an earthquake. Where William Castle would warn his viewers about the terrifying dangers of viewing his horror films, Sensurround delivered on its warnings, as structural damage to the theatres themselves were reported upon the release of the technology, forcing one Hollywood theatre to install a ceiling net to catch falling pieces of plaster.³⁶ Apart from the complaints made by theatre owners and patrons of the Sensurround films, multiplex moviegoers in other screening rooms watching quieter, dialogue-heavy films would be constantly disturbed by the shaking and rumbling of the Sensurround movie playing in the next screening room over. The cost of renting the Sensurround speakers—five hundred dollars per week—was also too much for many multiplex theatres.³⁷ After *Earthquake*, only three other films were made for the Sensurround technology—*Midway* (a 1976 war film), *Rollercoaster* (a 1977 film about a bomb placed in an amusement park), and the 1979 theatrical release of the pilot episodes of *Battlestar Galactica*—before the technology was laid to rest.³⁸

Nevertheless, the idea that the body of the spectator could be used to add a sensorial experience to the existing audiovisual one of the cinema is still present in the form of the ride-film. Motion simulation ride-films have been in operation since 1986,

35 Douglas Gomery. *Shared Pleasures: A History of Movie Presentation in the United States*. Madison: University of Wisconsin Press, 1992. 227.

36 Mark Thomas McGee. *Beyond Ballyhoo: Motion Picture Promotion and Gimmicks*. North Carolina: McFarland & Company Inc., 1989. 120.

37 Douglas Gomery. *Shared Pleasures*. 227.

38 *Ibid*, 227.

when *Tour of the Universe* was installed in the basement of Toronto's CN Tower; the flight simulator featured a “pre-show”³⁹ of sorts (no doubt inspired somewhat by William Castle's foyer props) where the viewers are led into a room which was space-themed, enhancing the idea of the ride-film before the viewer even steps into the apparatus.⁴⁰ This connection of screen, seat, and foyer suggests a true integration of the physical body with the experience of viewing; the surreality of the events on-screen and the reality of the immersive additions to the lobbies and foyers of such ride-films are mediated by the motion-enabled seats, essentially acting as the middleman between the two realities. Lauren Rabinovitz states that certain ride-films such as *Star Tours* (1987)—which is based on the *Star Wars* franchise—seem more realistic to viewers than generic car chase ride-films as the film “recovers the gap between the index and the referent”, as the movie references its own imagery as reality, that is, a *Star Wars* ride-film need only visually compete with *Star Wars* visuals, rather than “an ideal referent which it can never equal”.⁴¹

With the development of D-BOX in the late 2000's, film technology is seeing a resurgence of the physical element added to the cinematic viewing experience, and with over 100 theatres boasting D-BOX seating in the United States, Canada, and the United Kingdom combined, D-BOX Technologies is citing themselves as the way films will be experienced in the future. However, this may merely be optimism on the part of the company. Nonetheless, D-BOX clearly desires not only to cater to cinemagoers but to the home-viewers too. D-BOX Technologies provides domestic options as well, with the hardware costing between a substantial \$8700 to \$12,000 depending upon the complexity

39 Lauren Rabinovitz. “More Than The Movies: A History of Somatic Visual Culture through *Hale's Tours*, Imax, and Motion Simulation Rides”. *Memory Bytes: History, Technology, and Digital Culture*. Ed. Lauren Rabinovitz and Abraham Geil. Duke University Press, 2004. 116.

40 Ibid, 120.

41 Ibid.

of the system.⁴² While Sensurround was a mainstream failure, D-BOX is trying desperately to avoid the same fate in a contemporary setting; the current reviews for the technology, however, indicate that it can probably be considered a mainstream failure as well.

While not as overtly dangerous as Sensurround's refrigerator-sized speakers designed to shake a building, the introduction of the D-BOX's physical movement into the cinematic viewing experience is not without its pitfalls; there are a wide variety of issues which would deny a person the use of a motion-enhanced seat in a theatre, as well as the variety of films which could (or perhaps, should) be converted into the motion-enhanced format. The illness issues which came with the introduction of Sensurround also seem to be entirely probable with the D-BOX technology; specifications for who can make use of the D-BOX chairs would no doubt exclude those with injuries or certain medical conditions such as weak hearts or pregnancy.

With such restrictions placed on the demographic of viewers who can safely experience D-BOX, the narrowed number of possible sales paints the standard stationary experience as more economically successful. Some critics of the technology also question the appropriateness of D-BOX motion-enhancement to all films; if this technology is standardized into the mainstream, as the company hopes that it will, the question arises as to whether or not all films can benefit from the added physical element. While it is evident that the technology makes sense for action-adventure films which feature a lot of movement (particularly from point-of-view shots) such as the flying scenes in *How to*

42 Darryl Wilkinson. "D-BOX SRP-230 Motion Platform and Standalone Series IV-BD Motion Controller". Review. *Sound & Vision*. 24 May 2012. Web. 10 Sept. 2014
<<http://www.hometheater.com/content/d-box-srp-230-motion-platform-and-standalone-series-iv-bd-motion-controller>>.

Train Your Dragon (2010), the motion-enhanced experience would make no sense for calmer, dialogue-heavy films with little action, like a romantic comedy. In much the same vein, it is possible to go too far in the other direction, as one can hypothesize that particularly action-laden films would result in illness and vertigo, as is the risk with other amusement-park based motion simulation rides.⁴³ Journalist Laura Sternberg, writing about her personal experience of one of the D-BOX theatres in Michigan (screening the 2010 post-apocalyptic action-drama *The Book of Eli*), notes as well the layer of irony that adding physical elements to films can do: “[f]ight scenes were a lot less fun in the D-BOX chair, which jerked you right along with the fight choreography. Unfortunately, this sometimes left me empathizing with the nameless thug left sprawled on the ground at scene’s end rather than the Eli of the film’s title. In fact, the appearance of a machine gun left me cringing in anticipation”.⁴⁴ Inside the D-BOX enabled theatre, she notes that only certain seats are enabled for motion, while the rest of the seats remain the standard stationary ones, and for the privilege of experiencing a D-BOX enhanced film, viewers pay an additional \$8 on top of their regular box office price.⁴⁵ She summarizes her experience as “sometimes distracting,” not only for her, but also most likely a similar distraction to the people seated in stationary seats behind her⁴⁶ which, in a medium which is constantly seeking to develop and improve the involvement in which the audience experiences and relates to the characters and story on-screen, is a definite step backwards for the technology.

43 “Thrill Rides”. *Popular Mechanics*, Vol. 172, No. 4 (April 1995). 139.

44 Laura Sternberg. “Review of Movie Theater D-BOX MFX Motion Seats at Emagine Canton”. Review. *About.com*. Web. 10 Sept. 2014 <http://detroit.about.com/od/movietheaters/a/D-Box_Movie_Seats.htm>.

45 Ibid.

46 Ibid.

The ultimate question is whether or not this type of technology was viable as a mainstream staple, to which history and contemporary criticism responded with an emphatic 'no' in the cases of Sensurround and D-BOX, respectively. While this technology might make sense in smaller locales (such as features in museums or amusement parks) or even industrial simulation (which D-BOX also professes to produce), exorbitant prices, restrictive viewing demographics as well as jarring, distracting experiences on only a selected genre of films in which the technology would make any sense—most notably, the ridefilm—render the attempt of physical motion enhancement in mainstream cinematic viewing firmly in the realm of the novelty.

1.4 Conclusion: The Nails in the Coffin

When considering the reasons why certain technologies failed, the troubles boil down to three important factors which must be satisfied in order for a new film aesthetic to emerge successfully into the mainstream in the same vein as the success enjoyed by sound and colour as Hollywood staples: economics, technology, and psychology. Naturally, exactly the way in which the aesthetic is brought to the screen—the mechanics and hardware of it all—play an important factor in the standardization of a new film attraction; both sound and colour benefited from becoming a simple addition to the filmstrip and therefore, once the process was perfected with trial-and-error with other formats (think of the infamous off-sync scene from Gene Kelly's 1952 musical *Singin' in the Rain* which depicts some of the issues with Vitaphone's sound-on-disc format), the new standard was set requiring the installation of speakers and colour projectors. Technological problems, by contrast, were markedly destructive for “Percepto!” due to

the complex variety of cast and props that were necessary to install, Cinerama for the logistical difficulty of perfectly synchronizing all three cameras and sound system, and D-BOX for the jarring roughness of the movement (the very effect which is suppose to attract viewers). Economics also goes hand-in-hand with the issues relating to the newer technologies. For “Percepto!”, the high production costs came from the over-complexity of exhibition the films, as alterations to the theatre as well as funds for the live performances were necessary; historically, only permanent theme parks could afford to sustain a “Percepto!”-esque installation; Cinerama found trouble first with the prices of the scope of the production, having tripled the production costs by tripling the size of the film being made—even in the 70mm format, Cinerama could not get its foot in the proverbial door of the mainstream film industry during times of economic crisis; D-BOX still has not gained high ground in the mass media markets, mostly due to the high price tag still attached to both box office tickets and at-home hardware. The psychology of the technology is something which must also be considered: if the depiction of moving images consistently strives to be as true-to-life as possible with their aesthetic changes—after all, colour and sound are two reality-imitating stepping stones on the way towards the cinema presenting a passable facsimile of reality (an idea which will be discussed later)—then how well the technologies succeed in their aim of adding another dimension to the illusion of reality is also a significant factor. Colour and sound, despite being initially disruptive to the viewing experience, allow for quick mental habituation by the audience, and the 'distraction' factor was limited; no added supplementary elements are required on behalf of the viewers themselves, and so there is little to draw attention away from the immersive effect. Notably, the failed film technologies mentioned in this chapter

all had some aspect of their gimmick which served to draw viewer attention away from the happenings on-screen: “Percepto!” had actors and props, Cinerama's peripheral effect was only viable in a select few seats in the theatre, and Sensurround and D-BOX actively shakes the viewer's body. All of these technologies lacked the indirect cerebral impact of colour and sound on the body, in favour of supplementary additions that directly impact and/or affect the physical space of the viewer. Accepting these limitations, or else manipulating their faults in some way, all these middle-ground technologies eventually found their place in the contexts in which we experience them today.

Therefore, to assess the viability of 3-D film as a mainstream staple, one must therefore consider how technology, economics, and the psychological effect of the illusion of reality might impact the performance at the box office, and these criteria will be used as a groundwork for analyzing the current comeback of 3-D in the next chapter, and the potential issues it faces on its quest for cinematic standardization.

CHAPTER 2: The Renaissance of 3-D

As the previous chapter suggests, film technology in the middle-ground of the standardization face various technological, economical, and psychological barriers between the initial conception of the idea and its eventual acceptance into a legitimized form of entertainment experience, whether in the cinema or other amusement venues. The constancy of 3-D as a film attraction, with its many renewals in pop culture, indicates that the interest and value of the technology is there. After all, the world is experiencing yet another attempt to renew interest in the 3-D film, and seemingly to a larger degree of success than previous attempts. The constant goal of 3-D is to add an additional sensory dimension to the moving picture—like colour and sound before it—in order to increase the immersion of the audience into the world of the screen, making the spectacle feel more 'real' with the use of depth. However, the question of whether this current incarnation is the final one is not yet evident, as the technology has still yet to be perfected.

Depth has always had an interesting relationship with the medium of the flat cinema screen. It is a popular legend amongst fans of early film history that upon seeing the titular locomotive in the Lumière Brothers' famous short film *The Arrival of a Train at La Ciotat* (1895), audience members supposedly screamed and jumped out of the way as the train bore down on them, amazed at the depth of field and the effect of the approaching train towards them. The larger size of certain screens certainly helped to play on the 'looming' aspect of the train, coupled with a very real danger of the time (locomotive fatalities), and did in fact cause certain individuals (usually seated in the front row) to startle, although reports of entire audiences fleeing buildings in terror are

examples of marketing exaggeration.⁴⁷ However, tepid reviews from individuals at the time indicate that the effect of depth was neither as thrilling as the myth posits, nor even was the movement of the picture enough to truly thrill certain audience members; for example, the unenthusiastic review written by Maxim Gorky after having viewed the Lumière films in 1896, including the famous *Arrival of a Train*, explains his disappointment at the hype of the moving picture. He describes the film's movement as intriguing, but it is ultimately representative of a “Kingdom of Shadows” where the people at the station represent “life deprived of words and shorn of the living spectrum of colours—the grey, the soundless, the bleak and dismal life.”⁴⁸ This is but one indication of the desire for greater replication of reality in film, planting the metaphorical seed which blossomed into such standards of today's cinematic technology as synchronized sound, colour, and widescreen; the latest step in this sequence of increasing attempts at audience immersion is arguably 3-D. But while colour and sound became permanent fixtures in film production consciousness before 3-D's first golden era in the 1950s, the addition of depth and the emergence effect of 3-D was actually already in development prior to the true invention of the moving picture.

While its resurgence into public consciousness has affected the last several years in film-making, 3-D film has had a longstanding and tumultuous history with the medium, with several attempts to integrate it as the 'new' standard technology, that is, the next change comparable to the addition of sound and colour. However, those efforts—having met with little success in the past—seem to be generating some debate with

47 Stephen Bottomore. “The Panicking Audience?: Early Cinema and the 'Train Effect'.” *Historical Journal of Film, Radio, and Television*, Vol. 19, No. 2 (1999). 190.

48 Maxim Gorky. “A Review of Lumière Programme at the Nizhni-Novgorod Fair, 1896”. *Kino: A History of Russian and Soviet Film*. Ed. Jay Leda. London: George Allen and Unwin, 1960. 407.

regards to the success (or otherwise) of its integration in the present day. Is 3-D ever going to be any more to film aesthetics than just a gimmick? The topic is a divisive one. Some academics claim that the eventual permanency of 3-D as a mainstay in cinemas is inevitable. Others are of the opinion that the current phase of 3-D is a mere repetition of the attempts made in the past to make it a standardized feature:

[t]o combat the threat of piracy, as well as to upgrade the event character of going to a movie theater for a night out rather than watch a film as streaming video on your home entertainment centre, via Netflix or the iPad, Hollywood had to come up with a new gimmick—a special effect—and to hype a new attraction. The new gimmick in fact turned out to be an old gimmick that had already been short-lived the first time around, but because Hollywood does not have a memory, or is out of fresh ideas, 3-D tried again and failed again.⁴⁹

While this seems like a statement officially condemning 3-D as a perpetual novelty, it is still worthwhile to examine the ways in which 3-D has risen and fallen time after time, to better understand the reasons for its fall from grace in recent times, and situate it either as a modern-day gimmick or as the beginning of a permanent 3-D era using the three criteria (economics, technology, and psychology) as outlined in the previous chapter.

2.1 A Brief History of the Third Dimension

The human mind can perceive the body's immediate environment in three dimensions due to the overlap of images resulting from our species' possessing two eyes; close one eye and then the other and the discrepancy between what each eye takes in of the world is made immediately apparent. This has been understood since the Renaissance, and has long been understood as a problem for representative arts like painting. As the famous Italian polymath Leonardo da Vinci noted:

⁴⁹ Thomas Elsaesser. "The 'Return' of 3D: On Some of the Logics and Genealogies of the Image in the Twenty-First Century". *Critical Inquiry*, Vol. 39 (Winter 2013). 219.

[p]ainters often despair of being able to imitate Nature, from observing, that their picture have not the same relief, nor the same life, as natural objects have in a looking-glass, though they both appear upon a plain surface ... It is impossible that objects in painting should appear with the same relief as those in the looking-glass, unless we look at them with only one eye ...

If one eye be shut, and you look with the other, the [foreground object F] will entirely cover [background object R], because the visual rays beginning at one point, form a triangle, of which F is the base, and being prolonged, they form two diverging tangents at the two extremities of F, which cannot touch the body R behind it, therefore can never see it...⁵⁰

However, in spite of the two-dimensional nature of a single retina of a human eye, the attempt at successfully translating a human's innate sense of three-dimensional space onto the two-dimensional plane of the canvas or screen has proven to be a challenge, even moreso into the age of the moving picture. As Rudolph Arnheim noted “[t]he effect of a film is neither absolutely two-dimensional nor absolutely three-dimensional, but something between. Film pictures are at once plane and solid.”⁵¹

Three-dimension photography predates three-dimensional film, just as plain photography led to plain moving pictures into existence around the turn of the 20th Century. However, stereoscopic viewing predates even still photography, with humble beginnings in lenses, mirrors, and hand-drawn images. The credit for three-dimensional viewing from two separate images slightly offset—in much the same way the bright red View-Master toys of the mid-20th Century operate with the use of the paper stereoscopic disks featuring tableaux—is often given to two British scientist-inventors, Sir Charles Wheatstone and Sir David Brewster. Wheatstone initially developed the concept of a stereoscope while studying optics and the science behind binocular vision around 1838, and invented what was called the 'reflecting mirror stereoscope', which utilized two

50 Leonardo da Vinci & John Sidney Hawkins. *A Treatise on Painting*. Trans. John Francis Rigaud. London: Columbia University, 1802. 54-55.

51 Rudolph Arnheim. “Film and Reality”. *Film as Art*. Berkeley: University of California Press, 1971. 12.

mirrors placed 45-degrees to each eye, hypothesizing that presenting a flat representation of what each eye would see separately from one another would produce the 3-D effect.⁵²

While claiming to have discovered the truth to the source of three-dimensionality in binocular vision, Wheatstone caught the attention of Brewster, who—apart from being his contemporary and scientific rival—took offence to Wheatstone's notion that he had discovered the connection first, and claimed that opticians and mathematicians such as Euclid, Galen, and “optical writer” Baptista Porta⁵³ had been writing of that fact more than ten years before Wheatstone's publication, but had never come forward with the same declarations simply because they figured that Wheatstone's conclusions were obvious to anyone who studied vision.⁵⁴ Nevertheless, Brewster would also contribute to the field of stereography by establishing the ideal set-up for stereographic images to most accurately reflect human physiognomy, which included camera lens apertures of $2/10^{\text{th}}$ of an inch, that the focal lengths of the camera and viewer lenses be equal, and that the distance between the two images be $2 \frac{1}{2}$ inches to better replicate the distance between the average human eyes. By the mid-nineteenth century, Brewster had developed a 'lenticular stereoscope', which looked and functioned much more similarly to the modern View-Master than Wheatstone's mirrored stereoscope, as two stereographic images were placed side-by-side in a box with separated lenses for each eye.⁵⁵ The initial production of the stereoscopes was beset with unlikely problems, as in a bid to find endorsements for the widespread production of his stereoscope. The first five men of the French *Section de*

52 Ray Zone. *Stereoscopic Cinema and the Origins of 3-D Film, 1838-1952*. Lexington: University Press of Kentucky, 2007. 5-7.

53 Sir David Brewster. *The Stereoscope: Its History, Theory and Construction with its Application to the Fine and Useful Arts and to Education*. London: John Murray, Albemarle Street, 1856. 6-8.

54 Ray Zone. *Stereoscopic Cinema...* 9.

55 *Ibid*, 10-11.

Physique of the Académie des Sciences that Brewster demonstrated his device to all suffered from some form of stereoblindness, ranging from strabismus to only having one eye. Only the sixth gentleman to observe the device actually had medically normal vision and could experience the three-dimensional effect.⁵⁶ The commercial production of the stereoscope was ultimately initiated in part due to the delight the device brought Queen Victoria, who fortunately did not suffer from stereoblindness as the first five potential endorsers of the French *Académie* had, and thus popularized the product.⁵⁷ The device also saw some popularization overseas due to the efforts of American writer and physician Oliver Wendell Holmes, who not only wrote about the three-dimensional effect with the flowery language of a poet (“I ... leave my outward frame in the arm-chair at my table, while in spirit I am looking down upon Jerusalem from the Mount of Olives”), but even produced a simplified design based on Brewster's lenticular stereoscope, which allowed the device to be hand-held, making it much more manageable for viewing.⁵⁸ The golden age of stereography, from 1870 to 1920,⁵⁹ occurred simultaneously with the development of photography and, later on, the moving picture, and its impact on popular culture forever intertwined 3-D with its brethren in visual novelties.

One interesting aspect of the stereoscope's creation is the prophetic stance that Brewster took with regards to the stereoscope's novelty influence in 'amusements'. He dedicates a chapter of his writings on the stereoscope—amongst the many other chapters describing the benefit the device would provide for painting, architecture and engineering, natural history, and education—to the simple enjoyment of his device. He

56 Lenny Lipton. *Foundations of the Stereoscopic Cinema: A Study in Depth*. New York: Van Nostrand Reinhold Company Inc., 1982. 26.

57 Ibid, 27.

58 Ray Zone. *Stereoscopic Cinema*. 13.

59 Ibid.

writes:

... the most interesting scenes in our best comedies and tragedies might be represented with the same distinctness and relief as if the actors were on the stage. Events and scenes in ancient and modern history might be similarly exhibited, and in our day, binocular pictures of trials, congresses, political, legislative, and religious assemblies, in which the leading actors were represented, might be provided for the stereoscope. For the purposes of amusement, the photographer might carry us even into the realm of the supernatural.⁶⁰

Like Maxim Gorky, writing years later about the lack of colour or sound in the *Arrival of a Train*, this section of Brewster's manifesto points to the extensive interest in the accurate reproduction of reality, and the possibilities of technology providing exactly that; even in the early stages of three-dimensional viewing, the efforts to produce a primarily entertaining picture 'with the same distinctness and relief' of reality is an ultimate goal. This becomes particularly important when discussing why 3-D is the novelty that the film industry perpetually resurrects in theatres.

Around this period in history, the development of the motion picture began to become a global force, thanks to the combined efforts of the Lumière brothers in Europe as well as famed innovator Thomas Edison in North America, as viewers admired the novelty value of pictures that moved. Incidentally, it paired well with the novelty of stereographic images as well, which led to the development of many prototypes of stereo cameras around the turn of the century, in an effort to capitalize on the fun and interesting new motion picture technology. Proposed twin-strip film technology and twin cameras and projectors were patented by 1903, and attachments for stereoscopic filming on preexisting cameras were patented by 1907.⁶¹ The first public exhibition of stereoscopic films was in 1915 at New York's Astor Theatre, courtesy of William E. Waddell and

60 Sir David Brewster. *The Stereoscope*. 204-205.

61 Ray Zone. *Stereoscopic Cinema*. 87.

Edwin S. Porter (famed not only for his mechanical savvy, but also for his help in the development of narrative in motion pictures, supported by his 1903 seminal work *The Great Train Robbery*) and consisted of inexpensive technology reminiscent of the famous red-and-cyan anaglyph stereoscopic technology which most people associate with the 3-D film, although Porter was said to have used green tints instead of cyan.⁶² The differently-coloured anaglyph images in 3-D technology were directly linked to the technology of the industry during that time period, as anaglyph was perfected during the time that the film industry was making strides towards colour in motion pictures around the 1920s.⁶³

While multitudes of different versions of stereoscopic film and stereographic technologies were being developed over the years with many different camera set-ups and film formats, 3-D films remained an experimental technology until mid-century, when the large Hollywood 3-D boom which defines the technology sprang to life from the theatrical release of the film *Bwana Devil* (1952). Using a process called 'Natural Vision', which consisted of interlocked cameras which shot into a pair of mirrors 45-degrees from the lens axes,⁶⁴ the two-eyed technology used in the *Bwana Devil* film catapulted stereoscopic film into its golden age. With TV stealing away some of the revenue from the box office, the industry's new 3-D aesthetic spectacular brought back those viewers who sought something which they could not experience in the comfort of their own home. Full-colour and wide-screen were also available at the cinema. The mid-century 3-D boom also saw the change from the red-and-cyan anaglyph viewing to the

62 Ibid, 97-98.

63 Ibid, 103.

64 Lenny Lipton. *Foundations of the Stereoscopic Cinema*. 149.

neutrally-tinted glasses⁶⁵ with which most contemporary 3-D viewers are familiar.

Money is always a significant aspect of the film industry, and the reintroduction of 3-D as a film style is no different. Regarding the success of *Bwana Devil*: “[i]t seems very likely that the promise of financial windfall, rather than stereoscopic delight, was the motivating factor for Hollywood to initiate the 3-D boom of the 1950s ... Polaroid stock rose 30 percent in 1953 as the [Warner] company granted Natural Vision an exclusive one-year contract. At ten cents each, [Natural Vision creators] sold 100 million 3-D glasses to exhibitors”.⁶⁶ Yet in spite of the initial success of the technology, the 3-D phenomenon faded away within a few years, due mostly to the gimmicky nature of the attraction itself:

[d]espite [efforts] of the best stereographic minds to give 3-D motion pictures a permanent place in exhibition, by 1954 the Hollywood 3-D movie boom was winding down. Did the novelty factor of stereoscopic motion pictures, the gimmick of off-the-screen effects, relegate it, once again, to a short life in exhibition? Film historian William Paul has argued: ... [s]o long as the emergence effect remained central to the experience of 3-D, the process inevitably became tied, as I have argued elsewhere, to exploitation fare.⁶⁷

The effect suffered from a lack of understanding of the possibilities of the technology. The polarized glasses were more expensive to produce than the simple and easy red-and-cyan anaglyphic ones, but the true-to-Nature colour made polarization a must-have feature in spite of the cost. The overzealousness of many filmmakers to take the emergence effect of 3-D to the extreme meant that 3-D was not always comfortable for viewers, as headaches and other issues were linked to the viewing of 3-D films. Even

65 Bernard Mendiburu. *3-D Movie-Making: Stereoscopic Digital Cinema from Script to Screen*. Burlington: Focal Press, 2009. 2.

66 Ray Zone. *Stereoscopic Cinema*. 185.

67 William Paul. “Breaking the Fourth Wall: ‘Belascoism’, Modernism, and a 3-D *Kiss Me Kate*.” *Film History: An International Journal*, Vol.16, No.3 (2004): 229. Cited in Ray Zone. *Stereoscopic Cinema*. 188.

Julian Gunzburg—one of the minds behind Natural Vision 3-D, and a career ophthalmologist as well—went so far as to note that “less than 5 percent” of people have truly ideal vision and would be comfortable watching 3-D, as “Natural Vision and other similar double-band systems—because of errors in photography or projection—often produce serious eyestrain for people with normal vision and, far from being a [diagnostic] service to those with defects in vision, turn out to be an irritant to just about everyone.”⁶⁸

Even as the 3-D craze faded out by the end of the 1950s, the interest in 3-D was not entirely dispelled, as the 1970s and 80s saw a resurgence of 3-D films using a single-strip technology. However, the focus of many of these newer 3-D films was on the negative parallax of the emergence effect (that is, objects flying out of the screen towards the audience), which was exploited to its limit by the horror genre, as films such as the 3-D release of *Friday the 13th Part III* (1982) and Andy Warhol's *Frankenstein* (1974) married the extreme violence of the subject matter with the visceral effect of emergence.⁶⁹ The 1980s 3-D resurgence faded on the heels of *Jaws 3-D* (1983), as the horror genre failed to sustain viewer interest with the violence and literal darkness of the image: “... the subject matter is usually dark and ill suited for single-strip 35mm 3-D and the deficiencies of the format with illumination.”⁷⁰

Nevertheless, 3-D seemed to have merely been placed in the back of the minds of film innovators, as the past few years has seen yet another renaissance of the attraction using the neutrally-tinted polarized glasses with a circular filter and screen and camera

68 Lenny Lipton. *Foundations of the Stereoscopic Cinema*... 152.

69 Ray Zone. *3-D Revolution: The History of Modern Stereoscopic Cinema*. Kentucky: University Press of Kentucky, 2012. 115-116.

70 Ibid, 122.

technology of RealD. The circular filter of the 3-D glasses negates the “ghosting” and image breakage effects that the older, linear filters allowed if audience members turned or tilted their heads away from the screen, and the “passive” aspect of the technology made it more suitable than the polarized glasses (containing their own batteries and wiring) which were much heavier, relying on the glasses themselves to produce the 3-D effect rather than the screen.⁷¹ RealD glasses function in tandem with the projector and screen:

the left and right eye frame alternate out of the 2K digital projector at seventy-two times a second (144 hertz) and projected through the z-screen polarizing modulator. This makes a silver screen necessary to prevent depolarizing and ghosting of left and right eye images. RealD has developed a combination silver/matte white screen with high gain reflectivity and a wide viewing angle so that the screen is compatible for both 2-D and 3-D projection.⁷²

The contemporary renaissance of the 3-D format is credited to several different films for several different reasons. Ray Zone argues that the digital 3-D age began with *Spy Kids 3-D: Game Over* (2003), an innocuous and critically-panned children's film which, surprisingly enough, set aside the polarized technology in favour of the coloured anaglyph method of bygone years, interweaving the bizarre colour effect the anaglyph glasses to make sense contextually in the narrative (as the 3-D glasses are meant to be worn whenever the titular characters are brought into the video-game world). Yet in spite of the complaints from the older patrons, the targeted younger audience of the film was said to have enjoyed the effects immensely, and the film opened its first week in the box office with a higher gross than either of the previous two *Spy Kids* films in the franchise.⁷³ Bernard Mendiburu states that *The Polar Express* (2003) should be credited with the ignition of the 3-D boom, as the significantly higher amount of “revenue per

⁷¹ Ibid, 261.

⁷² Ibid.

⁷³ Ibid, 251-252.

copy” produced by the 3-D version (averaging out to drawing in approximately 14 times the revenue than the 2-D version did over the years of Christmastime re-releases on both silver screen and television) indicates the level of interest in the technology as compared to its 2-D counterpart.⁷⁴ Miriam Ross notes that apart from the financial windfall, James Cameron's famous 3-D project *Avatar* (2009) is a prime example of the technological potential, due to the directorial intention of including 3-D emergence as a primary aesthetic feature:

[a]lthough *Avatar* also emerged during a time in which 3-D films were seen by the studios to promise significant financial benefits (Cameron's film quickly found its place as the highest grossing film to date), there were considerable attempts to differentiate it from 3-D films that primarily used the technology to increase box-office returns. Much has been made of the time and effort Cameron spent on developing 3-D filming techniques that would be pleasurable to watch, and the majority of stereoscopic screenings took place on digital screen that were able to standardize the exhibition of images so that errors in projection were no longer an issue.⁷⁵

While the source of the most recent Hollywood 3-D boom may be a subject of debate, the ultimate result is a vibrant renaissance that—unlike its previous mid-to-late-century attempts at becoming the aesthetic of choice—has seemingly found its foothold in the minds of producers, directors, and exhibitors alike. However, the question still remains as to whether this shift is another wave in a mutable and notoriously fickle industry, or a permanent addition to the film aesthetic, improving the film form with its blend of art and reality, the way sound and colour did before it.

With this framework of how 3-D has played a part in cinematic history, one can examine the current challenges and discourses being faced by the technology in its contemporary resurgence, in a better attempt to analyze the current status of 3-D as either

⁷⁴ Bernard Mendiburu. *3D Movie-Making*. 4-5.

⁷⁵ Miriam Ross. “The 3-D Aesthetic: *Avatar* and Hyperhaptic Visuality”. *Screen*, Vol. 53, 4 (Winter 2012). 382.

a gimmick or a new permanent addition to cinema aesthetics. Opinions on the subject range along a spectrum where 'Doomed Gimmick' and 'Aesthetic Revolution' sit firmly at opposing ends; where on the spectrum the technology will eventually find itself depends upon the same factors which influenced the other film technologies seen previously. The economics, the technology, as well as the psychology of the film form will eventually determine the fate of the three-dimensional film.

2.2 Discussions on Economics

The financial incentive of stereoscopic 3-D film is most likely its most enticing argument. Defenders of 3-D as a new cinema standard tend to point to the revenue earned by the 3-D film as definitive proof of not only the general public's acceptance and active enjoyment of 3-D, due to the amount of money they are willing to spend at the theatre, but also of the acceptance by the industry itself as a new realistic aspect to add to film cinematography. The numbers are indeed staggering upon initial glance: *The Polar Express*, for example, earned 25% of its total profit on only 2% of its screens (the ones showing the film in IMAX 3-D), and *Journey to the Centre of the Earth* (2008) earned 66% of its domestic revenue from 30% of its screens (again, the 3-D ones).⁷⁶ However, in spite of impressive profit drawn by 3-D film, one cannot immediately conclude that 3-D has revolutionized modern film exhibition the way its staunch defenders may claim. Before claiming a new aesthetic as a permanent fixture, one must consider the longer-term economic trends it is displaying.

In their statistical analysis of 2013's North American box office revenue, the

⁷⁶ Charlotte Huggins. "Stereoscopic 3D". *Visual Effects Society Handbook: Workflow and Techniques*. Ed. by Susan Zwerman & Jeffery A. Okun. Focal Press, 2012. 460-461.

Table 1.1: Average Profit Drawn by 3-D Releases Since 2008 (in US & Canada)

Year	# of 3-D Films Released⁷⁷	3-D Showings % of Total \$⁷⁸	Total Box Office Receipts (in USD)⁷⁹	Average Profit Per 3-D Film
2008	8	2	9.6 B	24 M
2009	20	10	10.6 B	53 M
2010	26	21	10.6 B	85.6 M
2011	45	18	10.2 B	40.8 M
2012	40	17	10.8 B	45.9 M
2013	45	16	10.9 B	38.6 M

Motion Picture Association of America noted that 3-D hit its financial peak around 2010 (21% of all revenue came from the twenty-six 3-D movies released that year, coincidentally riding on the coat-tails of *Avatar*'s December 2009 release) and has since seen a decline to 2013's figure at 16% of box office revenue, in spite of nearly doubling the number of 3-D movies released (forty-five). Obviously cognisant of the profit and popularity that 3-D movies can bring the industry, the production of 3-D and 3-D-conversion films have seen a steady increase since the early 2000s; but the downward trend of the total revenue for 3-D movies indicates that less and less total money is being made in profit per film; in 2010, each 3-D release earned about 0.81% of the total revenue for the year, while in 2013, each 3-D release earned only 0.36% of the total revenue. This decrease is also not because less total money was made in 2010, skewing the percentages in favour of 3-D film profits that year. Total domestic profits have remained relatively steady over the past five years, in spite of the increase in production

77 "Theatrical Market Statistics – 2013". *Motion Picture Association of America*. 2013. <http://www.mpa.org/wp-content/uploads/2014/03/MPAA-Theatrical-Market-Statistics-2013_032514-v2.pdf>. 22.

78 Ibid, 9.

79 Ibid.

of 3-D movies—the industry has been averaging around \$10.6 billion since 2009, with some years being either slightly more or less profitable by only a few million dollars; the biggest increase was actually between 2008 and 2009, which saw a leap in profit by a full 1 billion dollars. To the credit of 3-D, however, that billion-dollar spike coincided with a huge increase in 3-D movies produced, as well as the jump in average revenue per 3-D film. While the use of numerical averages may seem to discount the huge impact of wild success stories like *Avatar*, it is fair to consider that averages also even the field by taking into account box office flops (such as the very expensive *John Carter* (2012) which is generally accepted to be a critical and financial failure). Ultimately, it seems as though the promise for financial windfall was a very legitimate source for the belief that 3-D would become a mainstay in contemporary cinema in the early, optimistic years of the 3-D renaissance, however, in light of the falling average of profits brought in by the films in spite of the greater numbers of 3-D films produced, economics alone cannot yet sustain 3-D as anything more than a mere gimmick.

2.3 Discussions on Technology

2.3.1 Industry Formatting: Analogue to Digital

Certain critics dismiss 3-D as an overt attempt by the film industry to increase profit due to the markup of 3-D ticket prices. Mark Kermode calls 3-D a “con” and boldly states that aside from the complaints about the polarized glasses and the sub-par handling of emergence, 3-D's purpose is to “head off movie piracy and force audiences to watch badly made films in overpriced, undermanned multiplexes. It is a marketing ploy designed entirely to protect the bloated bank balances of buck-hungry Hollywood

producers.”⁸⁰ Yet in the face of such vitriolic criticism, 3-D still remains a mainstay in spite of oft-quoted profit loss, calling into question the true validity of the economic drive which critics like Kermode claim fuels the 3-D craze. What then could be the possible cause, if not exclusively profit, of the renaissance of 3-D? The answer, claims John Belton, is the film industry's shift towards exclusively digital formatting. Stepping away from the traditional analogue format of 16, 35, and 70mm prints which many film scholars claim capture colour and the true essence of film better than their modern-day digital counterparts, the influx of digital films marks a fascinating shift in the industry, one which—unlike the shift to sound and colour—is virtually invisible to modern audiences. Convincing exhibitors to drastically overhaul their analogue methods of projection to digital ones without any real change being seen by audience members (and therefore, offering little reason to change box office prices to offset costs) is not a great incentive, and thus, some academics claim, 3-D film made itself a convenient tool: “[d]igital 3D marks an attempt on the part of the film industry to artificially manufacture a novelty phase for digital cinema. But, if it does give digital cinema a novelty value—something that it could do that conventional cinema could not—it is not a genuine novelty. 3D is not new...”⁸¹

Thomas Elsaesser notes that one of the reasons for 3-D's initial failure is the cyclical way in which finances played into the downward spiral of the medium. He notes that 3-D films did not seem to make as much of a profit as their 2-D counterparts upon the initial release of the attraction in the 1950s, and—knowing this—exhibitors were reluctant to screen the 3-D versions and spend the extra money to convert their 2-D

80 Mark Kermode. *The Good, The Bad and The Multiplex*. Great Britain: Random House, 2011. 126-7.

81 John Belton. “Digital 3D Cinema: Digital Cinema's Missing Novelty Phase”. *Film History: An International Journal*, Vol. 24, No. 2 (2002). 190.

projectors to 3-D ones, thereby creating a “self-fulfilling prophecy”⁸² which left 3-D exhibition by the wayside. With the increasing use of digital film in the industry, however, 3-D as it was is therefore worth a revisit. In spite of the cost, the simpler methods for content delivery offered by digital film as well as the encryption capabilities to reduce piracy are attractive to modern theatres, and coupled with the added intrigue of 3-D as incentive for viewers to make back the costs of conversion at the box office, the digital shift was no longer a hard sell. As of 2013, the MPAA reported in their market statistics that 80% of cinema screens worldwide were digital.⁸³ While such a statistic may seem like solid evidence for the revolution of 3-D, only 40% of North American digital screens are actually built for 3-D capability, the lowest percentage of 3-D screens over any other region worldwide.⁸⁴

Belton describes the recent shift in theatres to the digital format as a misleading change that cannot be placed on the same level of medium change as the standardization of colour or sound:

[d]igital projection as it exists today does not, in any way, transform the nature of the motion-picture experience. Audiences viewing digital projection will not experience the cinema differently, as those who heard sound, saw color, or experienced widescreen and stereo sound for the first time did. Cinerama, for example, did transform the theatrical experience, producing a dramatic sense of audience participation. It was as if the audience, surrounded with image and sound, had entered the same of the picture ... Digital projection is not a new experience for the audience. What is being offered to us is simply something that is potentially equivalent to the projection of 35mm film.⁸⁵

But the issues do not end there. While the necessity of novelty being attached to the shift to the digital brings criticisms of its own, there lies even deeper the question of

82 Thomas Elsaesser. “The 'Return' of 3D”. 220.

83 “Theatrical Market Statistics – 2013”. *Motion Picture Association of America*. 2.

84 *Ibid*, 7.

85 John Belton. “Digital Cinema: A False Revolution”. *October*, Vol. 100, Obsolescence (Spring 2002). 104.

what would become of the industry should the change to digital media overhaul the industry entirely. While 3-D can arguably be used successfully on action-packed sci-fi/fantasy films, a genre which clearly lends itself best to the otherworldly CGI possibilities afforded it by not only 3-D but the digital format itself, it becomes harder to justify when using examples from films of other genres. Romance, comedy, drama, and other genres that emphasize narrative often lack the spectacular visual effects upon which sci-fi/fantasy and digital 3-D rely; the question then is whether or not 3-D is justifiable as a permanent exhibition aesthetic when only a fraction of the films produced make the most of the technology:

[s]ci-fi and special effects action films have become the dogs that wag Hollywood's tail. But it is not the only dog in Hollywood; there are still other genres ... There is no reason for the digital fantasies of sci-fi to drive an industry that, since the sci-fi blockbusters of the late 1970s and early '80s, has become increasingly diverse in terms of narrative content. Indeed, the danger is that an all-digital cinema might very well lead to an all-fantasy cinema—to essentially one genre.⁸⁶

2.3.2 Spectacle-Dependant Spectacles

Bernard Mendiburu, author of *3D Movie Making* and *3D TV and 3D Cinema*, is a self-professed 'stereographer and digital cinema consultant' whose contributions can be found in the production of such films as *Meet the Robinsons* (2007) and *Monsters vs. Aliens* (2009); he is also one of the more vocal defenders of the technology and its applications not only in Hollywood, but in the television industry as well. Regarding the current RealD technology available, he acknowledges the limitations of the glasses-reliant 3-D system in use today and sees the wait for autostereoscopic technology as a non-issue:

⁸⁶ Ibid, 105-106.

[Not investing in 3D technology unless it is glasses-free] would be good advice if people in the know had not already waited more than 20 years for glasses-free 3D [technology] to reach a decent cost/quality point. Those displays generate 3D viewing by beaming a set of 2D images to specific viewpoints. Since they divide the display resolution, they need to synthesize the additional viewpoints. This means that you start by paying for a 4K (or quad HD) display, feed it with pristine stereoscopic content, and enjoy 3D conversion artifacts on a less than 720p resolution. For half the price, most people would prefer to wear 3D glasses and enjoy full HD-3D upscaled on a gorgeous 4K display.⁸⁷

This point in particular becomes important with the recent worldwide release of the Nintendo 3DS in 2010—in spite of this device not intentionally being used for filmmaking, it is nonetheless relevant in the consideration of 3-D technology as a standardized cinematic possibility given that the device does not require polarized glasses in order to gain the 3-D effect from the 2-D screen. Autostereoscopic technology—that is, the glasses-free 3-D—is created by either parallax barriers or lenticular sheets which, when provided with two columns of pixels (one of each being meant for the right or left eye), will block the opposing columns' pixels from sight of the opposing eye (opaque strips in the parallax barrier method, or cylindrical lenses in the lenticular sheet method).

⁸⁸ While this type of technology is useful for hand-held gaming consoles like the Nintendo 3DS, when applied to a larger-scale viewing arrangement such as a cinema, the technology fails. Even on such a small screen as the 3DS, one must position their head in precisely the perfect spot to benefit from the effect, as moving one's head to one side or the other causes the illusion to break down⁸⁹—trying to broaden the scale to cinema-sized proportions may mean that perhaps less than ten seats in the theatre will actually be in the right spot to see the autostereoscopic effect, while the other hundred seats lack this

87 Bernard Mendiburu with Yves Pupulin and Steve Schklair. *3D TV and 3D Cinema*. Elsevier: USA, 2012. 7.

88 Gerard Kim. *Designing Virtual Reality Systems: The Structured Approach*. USA: Springer Science & Business Media, 2007. 88-89.

89 Ibid, 89.

benefit.

While colour and sound are immersive aspects which require no additional effort on the part of the viewer, the current lack of completely non-active options with which to experience 3-D film is a notable problem that many claim must be overcome. This is a reflection of the issue of supplementary items that were a problem with so many of the other film technologies experienced. William Paul notes that during 3-D's first boom in the 1950s, the glasses used in the cinemas earned a poor reputation: “[t]here were reports of eye infections caused by re-using 3-D glasses. And a New York assemblyman went so far to introduce a bill that would require theatres showing 3-D movies to put a one-foot high sign above the box office that clearly announced, 'Glasses Required'. It is clear, then, that objection to the glasses was not an insignificant thing that could be offset...”.⁹⁰ His complaint is a common one. Many cinemagoers who cite discomfort at having to wear impersonal one-size-fits-all spectacles on their face, or else place them awkwardly over their own pair of corrective spectacles (if they happen to wear them).

The promise of glasses-free autostereoscopic technology is thus markedly attractive for cinema viewers who already wear corrective lenses for various common eye issues, such as myopia, hyperopia, and astigmatism; this situation is not easily discounted as a special case, as visual impairment is a prevalent concern, with over 314 million individuals suffering from some form of visual impairment worldwide.⁹¹ While the possibility of film viewers having contact lenses (or, to a greater extreme, corrective surgery) removes the concern about wearing two pairs of spectacles, this is not an

90 William Paul. “The Aesthetics of Emergence”. *Film History*, Vol. 5, No. 3 Film Technology and the Public (Sept. 1993). 331.

91 Kumar, Dhavendra, ed. *Geonomics and Health in the Developing World*. UK: Oxford University Press, 2012. 327.

ultimate solution to the problem, as various factors such as comfort levels and price influence whether or not a viewer can consider alternatives to eyeglasses for their impairment.

While Bernard Mendiburu insists that 3-D will be an 'Aesthetic Revolution', and John Belton is equally certain that it is a 'Doomed Gimmick', Thomas Elsaesser seems to be in the middle, attempting to reframe the resurgence of 3-D in terms of its current application in the industry. His argument is based on four key factors:⁹²

- 1) Digital 3-D is ultimately leading an internal industry change rather than an external one (as Hollywood products are sufficiently prevalent enough across multiple platforms to not have to compete with TV like it once had to), so once cinema has been entirely digitized, it makes no difference whether or not 3-D is here to stay, as the true revolution will have already been completed;
- 2) 3-D is meant to complement the sound systems used in cinema today (as surround sound employed by most contemporary theatres is arguably the auditory equivalent of 3-D) and is not meant to be entirely a visually-influenced shift, but rather meant to match the already multidimensional sound-scapes of modern films;
- 3) 3-D has historically had other uses in industries outside of the cinema—as the traditional 2-D aesthetic was brought on by the attempt to transform film into an acceptable bourgeois art medium—and thus has not really 'returned' so much as 're-emerged in the cinema'; and
- 4) 3-D is moving more towards invisibility, and aesthetics are changing from the bursting-from-the-screen emergence method towards a smooth, unnoticeable

92 Thomas Elsaesser. "The 'Return' of 3D." 220-221.

enhancement of the image, and in fact can enhance the experience of real-world images (such as 3-D documentaries) over merely restricting it to the realms of fiction.

This final point is a peculiar one, as it begs the question of the true point of 3-D, if it indeed fades into the state of 'invisibility' as Elsaesser predicts it will. The psychology of 3-D is therefore an additional criterion to consider, as it paints 3-D as a double-edged sword in terms of its 'realistic' capabilities versus its logistical capabilities.

2.4 Discussions on Psychology

The psychology of 3-D cinema goes invariably hand-in-hand with the technology currently in use to produce the visual effect, and the issues with the glasses have always certainly been a handicap to the acceptance of 3-D into the mainstream. The seamless invisibility which a sound and colour film possesses is conspicuously absent as long as polarized glasses are necessary to experience 3-D films:

the central difficulty that 3-D faced and continues to face is its inability to become invisible. You can never forget you are watching a 3-D movie because there must be some reason why you are wearing those glasses you don't ordinarily wear, and so long as you're wearing them you might as well let rocks, fists, arrows, chairs, phallic monsters, even kissing women all emerge from the normally flat space of the screen.⁹³

The latter part of the previous statement is what is described as the 'emergence effect'—the visual addition of 3-D aesthetics which has regularly been a difficult film effect to master. Writing on some of the criticisms that 3-D has faced during its most recent renaissance, Mendiburu points to the stylistic choices, viewing media, as well as revenue as being some of the more divisive concerns facing the standardization of the technology. He discusses the use of 3-D by filmmakers as an addition to the film's style, but also

93 William Paul. "The Aesthetics of Emergence". 331.

states that the way in which it is used can be alienating to some viewers—in particular, the favoured trope of having an object on screen reach out into the theatre:

[i]f you make some objects fly into the theater, half the critics will say you are slapping the audience in the face. On the other hand, if you push all your imagery behind the screen, the other half will complain there were no 3D effects at all. Do both, and someone will complain that the 3D confused the storytelling. We won't blame the audience for this; interview more than a handful of stereographers, and you are sure to hear the same rants from the creative side. Everyone has his taste for 3D, and there's no rule about how much is enough, how much is too much, and how much is barely enough.⁹⁴

Thomas Elsaesser also notes the proclivity for 3-D films to use this invasive aesthetic as one of the main ways in which it was used back when the technology was first widely released: “3-D as a special effect in the 1950s mostly concentrated on thrusting big, round, or pointy things at the audience—be it arrows, swords, boulders, or bosoms”.⁹⁵ It is the way that the 3-D technology is used which often leads to its status as a gimmicky 'distraction'. With the emerging of an object into the audience, 3-D is only being used for the novelty of the effect rather than for any specific narrative or aesthetically-enhancing purpose.

In writing on the demise of 3-D in its initial appearance in the 1950s, William Paul notes that in spite of the economic trials that the technology faced—a not insignificant factor in the demise of many 'attraction' technologies, as discussed in the previous chapter—the emergence effect that drove audiences to the cinema was also what drove 3-D film into the metaphorical grave. However, Paul also notes an interesting denial of that trend by Hollywood figures themselves. He notes that: “3-D always had to find very direct ways of announcing its status to the audience, paradoxically a point of

94 Bernard Mendiburu, et al. *3D TV and 3D Cinema*. 6.

95 Thomas Elsaesser. “The 'Return' of 3D”. 220.

attraction that probably led to its eventual demise. How many things could you shove at the camera before the audience wearied of the whole process? ... Implicit in this statement is one of the most familiar arguments of the period, namely that bad films killed 3-D.”⁹⁶ However, Paul also proffers questions regarding the ultimate goals of the industry which produces the films which he claims were ultimately self-destructive: “[c]ould Hollywood, generally prized for its narrative drive and brilliant ability to subordinate everything to story, actually have produced films memorable only for their flying objects? Could the story for once have been made fully subordinate to the image? Conventional Hollywood wisdom denied this.”⁹⁷ He cites defences made by Samuel Goldwyn of Metro-Goldwyn-Meyer and producer Jerry Wald, who both vehemently denied that films produced in Hollywood ever put any effect—gimmicky or otherwise—before the narrative. Aside from the bias clearly held by the individuals in question, the statement regarding the supposedly non-subordination of the narrative is clearly a false one.

However, with the release of such films as *Avatar* (2009), the production of films with the 3-D effect in the forefront is demonstrably changing with respect to the way directors and cinematographers treat the use of the 3-D emergence effect, possibly rendering this complaint obsolete. It is notable for relying less on the shock-and-pop style of emergence, which many academics as well as audience-goers claim is alienating, and instead uses the emergence effect as an embellishment for an already colourful futuristic world. This shock-and-pop version can be seen, for example, in other such contemporary sci-fi films as *Star Trek Into Darkness* (2013), where in the first few scenes, the audience

96 William Paul. “The Aesthetics of Emergence”. 323.

97 Ibid.

receives a spear directly in the eyes due to the 3-D effect. This is opposed to the softer use of emergence in *Avatar*, barely noticeable in the gentle convex curve of a sci-fi computer screen in use by one of the characters—it is a simple effect, yet the bubbling out of the computer screen offers more immersion and subtle beauty to the screen that the jarring shock-and-pop effects of a spear in the face cannot match. In spite of *Avatar*'s earlier release date, it demonstrates the respect that directors are affording the 3-D effects of emergence as a means of adding to the diegesis of a film.

John Belton has a much less optimistic viewpoint over the future of 3-D film, especially with respect to the aesthetics of emergence that the technology relies so heavily upon, citing it as a drawback from which even the most sophisticated and artistically significant works cannot truly escape, never entirely separating the attempts at aesthetic stereography from its history as a carnival attraction:

3D relies upon emergence for its effectiveness with audiences. It is essentially an avant-garde technology, throwing itself at audiences and making them aware of it as an intrusive rather than immersive experience. It communicates its three-dimensionality by seemingly emerging from the surface of the screen and entering the space of the audience. In doing so, as [William] Paul has argued, it violates/ruptures normative space, calling attention to itself as an attraction. If it is ever to become a norm, it must cease calling attention to itself ... Yet, if 3D is to be 3D, it must necessarily exploit the phenomenon of emergence, violating the segregation of spaces that lies at the core of the experience of classical cinema.⁹⁸

It is thus the challenge of 3-D cinema to find a balance between exploiting the aesthetic potential of emergence and using it to enhance a narrative in the same way that sound and colour did upon their induction into the industry mainstream, and becoming too indulgent with the effect to the point where the emergence consistently calls attention to itself and away from the narrative. Should stereographers be able to create the perfect balance, 3-D

98 John Belton. "Digital 3D Cinema"... 194.

films have the potential formula to rise above the status of 'gimmick' and away from the 'cinema of distractions' circle in which it has found itself.

2.5 Conclusion: The Decline of Depth

Exploding in popularity in a time when technological novelties became accessible entertainment for the layman, stereoscopic pictures—moving or otherwise—have never truly ceased to capture the attention of the general public. Fading into and out of obscurity in a history longer than cinema itself, 3-D has doubtlessly earned itself recognition as a fanciful addition to film aesthetic, but seemingly cannot escape the disparaging title of 'gimmick', and continuously fails to live up to previous success stories in film aesthetic revolution, such as the standardization of colour and sound into film production. Considering the same factors which drove previous film technologies into the ground, namely economics, limitations of the technology itself, as well as psychology when viewing the film, 3-D seems to be experiencing the same problems. Economically, the 3-D film is inarguably a money-maker, but the downward trend of profits per 3-D film indicates that 3-D alone will not be able to maintain the fiscal status quo; 3-D simply is not making the profits that it had in the beginning of its modern renaissance.

Technologically, the stereoscopic film may very well be merely a catalyst for the conversion of many theatres to digital exhibition over analogue rather than a true overhaul in film aesthetics. The fact that 3-D still requires the supplementary item of polarized glasses in order to work is also a crutch of the technology, as autostereoscopic visuals are, at the time of writing, still only viable for small screens and even so, still require specific head positioning in order to function properly. This ties in with the

psychological pitfall of the technology, where wearing glasses which are unfamiliar draw your attention away from the screen and instead towards the spectacles on your face. The emergence effect itself is as much of a psychology-based problem as it is a feature for immersion into the film. If the effect is used too much, it draws attention away from the story and more towards the uncomfortable feeling of objects flying at the viewer's face, and if the effect is used too little, it begs the question of what the point was in including 3-D at all.

The psychology of how movies are viewed—called 'psychocinematics'— and how it actually functions in relation to the viewing of a 3-D film will be explored more in the next chapter. This will elaborate more on the conclusion that 3-D is condemned as a truly immersive technology by its own gimmicky effects and auxiliary pieces, becoming a double-edged sword of cinema technology, and how 3-D is simply unnecessary as a supplement to the moving picture. But if 3-D is doomed to remain a mere gimmick—as it always has been throughout history—why does the industry keep trying to revive it? What exactly is the true issue, and what are film-makers trying to achieve with 3-D specifically? The relationship that visual experience and psychocinematics has with reality will also be developed into an analysis of the true goal of the constant resurrection of 3-D.

CHAPTER 3: The 'How' and 'Why' of Seeing Eye-to-Eye

As 3-D is definitely showing the similar signs of failure that drove other film technologies away from the mainstream of cinema, this begs the question of why the industry keeps making attempts to revive 3-D in particular and marketing it as the next step in film aesthetics when it has failed before and will undoubtedly fail again. There have never been any attempts to re-introduce technologies like Smell-o-Vision into theatres, so what is so unique about 3-D that has earned it multiple second chances? While film scholars like Belton and Elsaesser suggest it is a tool to be used by the industry until the conversion to digital film production and projection is complete, the fact that 3-D is consistently revitalized indicates a broader purpose with regards to the imitation of sensation in movies and the way viewers perceive stimuli as reality.

Movies began as carnival and side-show attractions, building upon the popularity of earlier magic-lantern shows. In these contexts, audiences were entertained by the fundamentally illusory effects of cinema, by the tricks that film could play on the spectators. The most basic trick was to produce the impression of movement and depth from still and flat images, effects that are still the basis of even the most artistic film. Movement is merely an optical illusion wrought by our brains being too slow to keep up with the high frame rate of each passing static image, and instead interpret what we see as movement. Even this illusion which we now take for granted took time and effort to perfect into the standardized 24 frames-per-second rate we have all come to expect from cinema. Altering numbers of frames or the speed at which they pass can alter the life-like imitation of movement, and makes the scene seem unearthly or surreal. The illusion of depth on a two-dimensional plane takes advantage of the visual cues not related to

stereopsis. Rules used in drawing and painting—such as the use of horizon lines, occultation, relative sizes, and others—are all monocular methods of implying depth on-screen. Even if one closes one eye, one understands that larger objects are nearer to the viewer, while smaller objects are further away, for example. These rules which do not rely on binocular viewers are nonetheless effective for creating the implication of depth on a flat plane.

Basic continuity editing also exploits the idiosyncrasies of perception in the human brain. Editing itself is jarring—the jump from one image to a different image destroys the sense of seamless reality, as in our own world, we do not experience editing in our perception. To preserve the illusion of reality, film editors will make liberal use of techniques such as the match-on-action (where a cut is disguised by placing it in the middle of an action, like cutting from one angle to another as a character begins to rise from a chair, to finish standing as the angle changes in the next shot) or the maintenance of space in a scene with the 180-degree Rule (where an invisible line is made between two characters in a shot, and all shots are taken from one side of that line, so the spatial relationships between the two characters and the background are not confusing) in order to disguise their edits and maintain the illusion that the sequence is playing out before our eyes in real time. This is so ingrained in our experience with films that when there are continuity errors in editing cuts or in the narrative, it is often exposed to vitriolic comments by viewers, and considered a poorly-made film; the illusion of 'reality' is broken, and becomes a 'distraction'.

The manufacturing of this illusion is the basic drive of cinema, and while some experimental directors attempt to break down conventions by defying the established

rules of filmmaking, it is inarguable to say that the goal of mainstream cinema is to dissolve the boundary between life and the screen, and create magic shows that defy imagination by creating a believable yet fantastic facsimile of reality. The director James Cameron, in an interview with *Variety* magazine's Senior Editor David S. Cohen, argues that realistic illusion is the basic goal of filmmaking:

I believe that [French New Wave filmmaker Jean-Luc] Godard got it exactly backwards. Cinema is not truth 24 times a second, it is lies 24 times a second. Actors are pretending to be people they're not, in situations and settings which are completely illusory. Day for night, dry for wet, Vancouver for New York, potato shavings for snow. The building is a thin-walled set, the sunlight is a xenon, and the traffic noise is supplied by the sound designers. It's all illusion, but the prize goes to those who make the fantasy the most real, the most visceral, the most involving [...] The characters, the dialogue, the production design, photography and visual effects must all strive to give the illusion that what you're seeing is really happening, no matter how improbable the situation might be if you stopped to think about it—a time-travelling cyborg out to change history by killing a waitress, for example.⁹⁹

Cameron's goal is to create powerfully realistic cinematic images. However, this goal is not limited to only Cameron with respect to his desire for believable realism. Film critic and theorist André Bazin in his famous essay “The Myth of Total Cinema”, argues that the technical development of the cinema is driven by an unrealizable desire to replicate reality as truthfully as possible—an end to which attractions such as movement, colour, synchronized sound, *et cetera* all move. His paradoxical conclusion is that cinema in its ideal, “mythological” form does not yet exist:

[t]he guiding myth, then, inspiring the invention of cinema, is the accomplishment of that which dominated in a more or less vague fashion all the techniques of the mechanical reproduction of reality in the nineteenth century, from photography to the phonograph, namely an integral realism, a recreation of the world in its own image, an image unburdened by the freedom of interpretation of the artist or the irreversibility of time ... Every new development added to the cinema must,

⁹⁹ James Cameron. “James Cameron Supercharges 3-D.” Interview with David S. Cohen. *Variety* 10 Apr. 2008. 14 Sept. 2014 <<http://variety.com/2008/digital/news/james-cameron-supercharges-3-d-1117983864/>>.

paradoxically, take it nearer and nearer to its origins. In short, cinema has not yet been invented!¹⁰⁰

Therefore, it is reasonable to claim that there is an aesthetic desire to replicate reality, whether one believes it to be an inherent desire of humanity or simply a means of achieving “the prize” of fame and wealth, and that the more accurately reality is represented on screen—that is, the closer to achieving the state of 'total cinema' in Bazin's view—the greater the possibility for immersion, unfettered by the breakages between the viewer's reality and that of the screen.

But realism itself is a style, and a style which is not shared by all films; what then, of the unrealistic film? It is true that the aim of some filmmakers is to jar the audience out of that dearly-sought illusion in order to provoke certain artistic reflexivity about films themselves. These are the thoughts which many independent, experimental, and New Wave directors wish to instill in the audience to think critically about cinema as a whole. While these are valid philosophies brought up by noteworthy films, it is important to note that most, if not all of these experimental films fall outside of the realm of 'mainstream' or else gain cult popularity in certain times, places, and cultures outside of the typical Classical Hollywood context. However, it is the fact that the conventional Hollywood film is considered 'mainstream'—aided not only by culturally-codified genres and narratives but by box office draws—that emphasizes the point that immersion and illusion can be considered common aesthetic goals of cinema in general. While 3-D may yet find stability as an aesthetic in peripheral independent genres, the main focus here will be 3-D's relationship with mainstream cinema. Ergo, when discussing cinema

¹⁰⁰André Bazin. “The Myth of Total Cinema.” *What is Cinema?, Volume 1*. Trans. by Hugh Gray. University of California Press, 2004. 21.

throughout this chapter, the emphasis is placed squarely on the typical Hollywood blockbuster in order to encompass the widest range of possible viewing exposure; experimental films are nowhere near as generally popular and arguably do not emphasize illusion and immersion as a goal, and so have been excluded from this analysis.

What, then, accounts for the most basic and necessary aspects of Classical Hollywood film in order for it to be enjoyable, and therefore, successful? What creates or destroys the coveted viewer immersion which is 'the prize' of the filmmaker? The answer lies within psychocinematics, which attempts to explain precisely how viewers experience the images on-screen both physically and mentally, and what visual aspects contribute to the creation of realistic illusions in Hollywood cinema.

3.1 How We Watch Movies

'Psychocinematics', a term coined in 2013 by scholar Arthur Shimamura, is a field of study which aims to “consider the psychological and biological underpinnings of our movie experience”¹⁰¹ and ultimately aims to determine *how* we watch movies. The field of study, however, began nearly around the same time as narrative cinema itself with psychologist Hugo Münsterberg's 1916 publication of *The Photoplay: A Psychological Study*. In his attempt to classify movies as a legitimate art form, he outlines the psychological responses to moving images, including impressions of how depth and movement are possible on a flat planar surface of the screen (using Brewster's stereoscope as an instrument in his explanation of optics, no less) and even describes a prototypical version of what would become the anaglyphic methods of 3-D filmmaking

¹⁰¹Arthur P. Shimamura. “Psychocinematics: Issues and Directions”. *Psychocinematics: Exploring Cognition at the Movies*. Ed. Arthur P. Shimamura. Oxford University Press, 2013.

and projection (as he suggests utilizing dual cameras and red-and-green tinted lenses for viewing through each eye).¹⁰² Ultimately, the movie—claims Münsterberg—is not on the screen, but in our minds, as the artform utilizes a number of mental quirks to imply depth and movement. Like an illusionist, it arranges itself to draw our attention purposefully, taking advantage of natural instincts to gaze at “the quick action, the unusual action, the repeated action, the unexpected action, [and] the action with strong outer effect.”¹⁰³ He also describes certain cinematic techniques as replicating mental processes in an aesthetic way—the close-up on an object, for example, is an artistic representation of the brain focusing attention on an object, calling it the “[objectivation] in our world of perception our mental act of attention.”¹⁰⁴ He also describes the flashback (or as he calls it, a “cut-back”) as the “objectivation of our memory function,”¹⁰⁵ that is, an artistic facsimile of how the mind recalls instances from the past, in smaller snippets.

The formal way that the film is put together thus constitutes a deliberate and precise formula for guiding attention to where it is desired in a predictable way, and much of that can be said to be achieved through film editing. It is said the film editing is its own language, but the language so closely resembles the human way of thinking about objects and times that it is effortlessly understood by any viewer. The formal practice of editing feels so natural, that cinema made around the world still makes use of techniques invented by Hollywood—any person of any culture can understand the concept of cross-cutting or shot-reverse-shot without much training; even the 'objectivation of memory function' through flashbacks is a universally understood mechanism for implying the

102Hugo Münsterberg. “The Psychology of the Photoplay”. *The Photoplay: A Psychological Study*. New York: Arno Press, 1970. 48-49.

103Ibid, 77.

104Ibid, 86-88.

105Ibid, 95.

passage of time. Theories have been passed around in academic circles regarding psychocinematics of film-viewing since the inception of the art itself, but it is only in recent years that film theorists and psychologists have taken an empirical approach to studying the way the human brain interprets such typically visually-invasive effects like the basic 'cut', which explain the success of the old techniques of match-on-action and other film editing tricks and why they are so easily learned by any film-viewer. Some psychologists and film enthusiasts have performed experiments using eye-tracking technology and clips from several movies to determine the validity of phenomena which filmmakers have come to rely on, such as 'edit blindness':

[Münsterberg's observations have] been recently confirmed by the application of high-speed infrared eye tracking to dynamic scenes. Because of acuity limitations, a viewer must move his or her eyes (perform a saccadic eye movement) to see a part of a visual scene in detail. This action projects the external area of interest onto the most sensitive part of the retina, the fovea. After a saccade, the eyes are relatively stable (fixated), and visual encoding can occur. The sequence of saccades and fixations made during a dynamic scene mirrors the honing in to a scene typically seen within the Hollywood style. Viewers attend to areas of high motion, faces of people engaged in conversation, and objects relevant to the viewing task. The timing of these shifts is yoked to the timing of cuts and vice versa.¹⁰⁶

The efforts to soften the impact of editing to the illusion of reality is a basic step towards greater immersion, but it does not aim to completely wipe out the collision of shots, and for a good reason. In spite of the 'mechanical reproduction of reality' that film has so often been accused of pursuing, Rudolph Arnheim also explains in his own publication (written over 15 years after Münsterberg's piece) that—inversely—it is the knowledge that films are *not* reality that allows them to be enjoyable. He describes the lack of discomfort of viewing montages and film editing:

106 Tim J. Smith, Daniel Levin, and James E. Cutting. "A Window on Reality: Perceiving Edited Moving Images". *Current Directions in Psychological Science*, Vol. 21, No. 2, 2012. 107-108.

[o]ne might expect the spectator to be overcome by physical discomfort akin to seasickness when watching a film that had been composed of different shots ... It might be supposed that this lightning juggling with space would be most unpleasing. Yet everyone who goes to the movies knows that actually there is no sense of discomfort, but that a [montage] can be watched with perfect ease. How can this be explained? We have been talking as though the sequence had actually taken place. But it is not real and—which is of the greatest importance—the spectators have not the (complete) illusion of its reality. For, as has already been said, the illusion is only partial and film gives simultaneously the effect of an actual happening and a picture ... One looks at them calmly as one would at a collection of picture post cards. Just as it does not disturb us in the least to find different places and different moments in time registered in such pictures, so it does not seem awkward in a film.¹⁰⁷

Essentially, because the viewer has only a partial illusion of reality (as they know it is taking place on a screen, with actors), it allows the film to be enjoyable and allows viewers to accept the differences between the formally-composed film montage versus the steady stream of reality from a single point-of-view which makes up daily living. This implies that complete immersion would in fact be counter-intuitive to the enjoyment of the film, as the sharp edits of something which looks more aesthetically 'real' would be too jarring to comfortably process—the aspect of depth is fine, but 3-D might be a step too far. This difference also explains the early popularity of 'attractions' (that is, a self-aware tool of early cinema) versus today's 'distractions' (which draws negative attention to itself), as the move towards realism arguably turns what might be an attraction *into* a distraction.

Colour and sound are stimuli which do not require any additional action on behalf of the viewer with the environment itself in order to be experienced. All that is required is to create a plausible semblance of reality—disguising edits sufficiently to not be jarring, mimicking the colour and brightness of life, with synchronized sound, inclusively—

¹⁰⁷Rudolph Arnheim. "Film and Reality". *Film as Art*. Berkeley: University of California Press, 1971. 27-28.

seems to be satisfactory for creating something visually involved and agreeable. Having only the partial illusion allows for a safe mental distance from what is occurring on-screen; the flatness of the screen and the unrealistic fourth-wall point-of-view photography which is a feature of almost all films historically since the acceptance of colour as an aesthetic norm prevents a modern repeat of the startled, jumping viewers attempting to escape the train arriving at Le Ciotat.¹⁰⁸

Yet that does not stop the industry from trying to recreate that visceral effect on viewers with their film gimmicks. The technologies which began as 'cinema of attraction'-type endeavours—such as movement, sound, colour, and modern IMAX widescreen—are permanent additions to film aesthetic, while the aforementioned Sensurround, D-BOX, Cinerama, and, of course, 3-D were all attempts to create a sense of realism at the cinema, all to varying degrees of success before their inevitable demise. Psychocinematic factors however, indicate that beyond colour, sound, and movement on-screen, not much else is truly needed in order to create a realistic, immersive film—and that 3-D is in fact disruptive to that endeavour and thus will always be considered a 'distraction'.

Returning to Arnheim, who concisely explains the nature of human perception, the implication is that illusion is possible by the natural biases of our brains, and not from the completion of stimuli to create a full picture:

[a]ccording to an outdated psychology that is still deeply rooted in popular thought, an illusion can be strong only if it is complete in every detail. But everyone knows that a clumsy childish scribble of a human face consisting a two

¹⁰⁸Stephen Bottomore claims that there is even a psychocinematic reason why this effect occurred in the first place: “[t]here is considerable evidence to believe that animals and humans may have a neural organisation and even particular neurons 'specifically sensitive to changing size' in perceived visual images, a change sometimes known as 'looming'” thereby triggering “avoidance and flinching and a defensive head movement”. (“The Panicking Audience”... 189.)

dots, a comma, and a dash may be full of expression and depict anger, amusement or fear. The impression is strong, though the representation is anything but complete.¹⁰⁹

The impression to which he is referring in this passage is a mental phenomenon known as 'apophenia' (a term coined in 1958, about 25 years after Arnheim's publication) where patterns are made between unrelated items; this is now thought to be a bias which is universal to all humans, and is beneficial for the interpretation of everyday chaotic stimuli which promotes survival.¹¹⁰ Human brains are pattern-seeking supercomputers—it is for this reason that Rorschach inkblots can function as a psychological tool. The more well-known term 'pareidolia' refers to a type of apophenia wherein inanimate objects can look like they have human faces, as in Arnheim's example. It is neither a rare, nor vestigial phenomenon.

Arnheim continues to say that:

[t]he reason [a simplified image of a human face] suffices is that in real life we by no means grasp every detail ... That is to say, in real life we are satisfied to take in essentials; they give us all that we need to know. Hence if these essentials are reproduced we are content and obtain a complete impression that is all the more artistic for being so strongly concentrated ... So long as the people on the screen behave like human beings and have human experiences, it is not necessary for us to have them before us as substantial living beings nor to see them occupy actual space—they are real enough as they are.¹¹¹

Essentially, the true relief of life is superfluous when the basics of shape and expression are already provided. Basic shapes are all that are needed to extrapolate necessary information—having the actual face (or in the case of 3-D, the depth of an actual face) is gratuitous mental information.

109Rudolph Arnheim. "Film and Reality." 29.

110Bruce Poulsen. "Being Amused by Apophenia." *Psychology Today*. 31 July 2012. Sussex Publishers, LLC. 7 Oct. 2014 <<http://www.psychologytoday.com/blog/reality-play/201207/being-amused-apophenia>>.

111Rudolph Arnheim. "Film and Reality." 29.

Yet in spite of all of the trouble and effort that the industry has gone to in order to bring the sensation of the physical reality to the screen, the methods they have employed (which focus on increasingly specific human senses) are in fact counter-intuitive to the goal of immersing the audience in the diegesis. Filmmakers seem to have made the mistake of assuming that to produce an immersive picture, one must produce an accurate experience of reality and in doing so, to gain accuracy, they seek to utilize all of our senses in harmony with the moving image to create that effect. It is from this belief that viewers get gimmicks like 3-D or D-BOX or Smell-o-Vision. In assuming that immersion equals the believability of screen objects in physical space, the attempts to create immersion constantly refresh the idea of the self in the space of the theatre with the addition of supplementary necessities, literally distracting the audience from the screen. True immersion is in fact nearly the opposite: the dissolution of the sense of the physical self when viewing a moving picture.

The idea that you can convince an audience that something is 'really happening', as James Cameron phrased it in his interview, is a naive goal and an oversimplification of what is occurring when viewers watch a film. It is doubtful that most viewers were tricked for even a second into thinking that *Avatar's* Pandora is a possible place or that *Terminator 2's* liquid-metal robotic assassin is a physical thing that could 'really happen'. What makes the images immersive and engrossing is how seamless and non-jarring the visuals and audio are to the viewer. Classical Hollywood relies on the dissolution of the viewer's sense of self in order for immersion to take place:

[t]he history of cinema has always assumed that moviegoing affords a means for achieving a blissful state of disembodiment. Classical models of movie spectatorship presume that cinema produces modernist subjectivity through *being* a giant, disembodied set of eyes [...] Involvement in the cinema has always meant

the fantasy of a despatialized, dematerialized self [...] a disavowal of corporeal presence (embodiment) and an absorption into the distant world of image and sound.¹¹²

The desire for the disembodiment of the viewer need not be explained in complex terms in order to be understood. Disruptions in the theatre setting, for example, are irritating to most viewers. Talkative neighbours, bright screens of cellphones, feet kicking the back of the chair—all are examples of ways in which our absorption into the world of the screen can be drawn away from the film. Our own physical selves work against the cognitive dissolution which is necessary to be drawn into a film the way most directors wish—you cannot help noticing the other theatre patrons shifting in seats around the corners of your vision, and must struggle to block out any idle chatter from the people around you. Such distractions from the film's screen-reality is bothersome. However, it is hardly fair to blame the film medium itself for the interruptions wrought by the carelessness of others. Where the 'cinema of distractions' becomes more of an issue is when the films themselves, in a misguided attempt to replicate reality as literally as possible, attempt to use techniques which capitalize on those same active senses.

Humans have multiple sensory capabilities in order to interact with the world around them—while we are taught about Aristotle's main five (sight, hearing, touch, taste, and smell as outlined in his famous treatise *De Anima* or, *On the Soul*), other more specific senses also allow for human understanding of their own bodies in time and space. For example, many academics argue for a different delineation of the senses into 'exteroceptive' (those which detect stimuli from outside of the body, such as sight and hearing) and 'interoceptive' senses (which detect changes within the body, such as

¹¹²Lauren Rabinovitz. "More Than The Movies: A History of Somatic Visual Culture through *Hale's Tours*, *Imax*, and Motion Simulation Rides". *Memory Bytes: History, Technology, and Digital Culture*. Ed. Lauren Rabinovitz and Abraham Geil. Duke University Press, 2004. 100.

proprioception—the ability to sense where your body parts are in relation to each other without any outside visual help).¹¹³ They also argue for other senses as being considered separate from the typical five due to the specific ways in which the body receives the information physically. As there exist different nervous receptors in the skin to detect pain, pressure, and temperature which are all highly distinctive experiences, it can therefore be said that there exist three different senses for pain, pressure, and temperature rather than simply catching them all in the vague umbrella term of 'touch'.¹¹⁴ This differentiation applies to sight as well. If one is stereoblind, such as only having one functional eye, the individual cannot be said to have no sight. After all, the individual can still sense brightness and colour, as the physical rods and cones are intact and functional in the single working eye, and it is only the stereopsis that is affected; the individual is not 'sightless' in spite of the visual handicap. However, to say that they are entirely blind to depth would not be factual either—the visual cues as described in the previous chapter (such as a horizon line or occultation) are still possible with the single eye; the depth might not be as quick or as accurately interpreted, but it is still possible to tell which objects are closer and which are further away. Stereopsis is the fusion of information brought to the brain from visual stimuli entering both eyes, but is still subordinate to the other optical senses and is not as drastically necessary as the other aspects of sight, such as brightness, when forming an image of the immediate environment. Therefore, as long as the rods and cones are functional in at least one eye, a complete image is still possible, with the brightness, color, and impression of depth intact. As Arnheim described, all the necessary visual information is there, and the 3-D at that point is superfluous, catering to

¹¹³Fiona Macpherson. "Introduction: Individuating the Senses". *The Senses: Classic and Contemporary Philosophical Perspectives*. Ed. by Fiona Macpherson. Oxford University Press: 2011. 15-16.

¹¹⁴Ibid, 19.

a subsidiary sense.

In spite of what most would agree is a visual process, Miriam Ross argues that 3-D is, in fact, an attempt to tap in to not only the visual senses, but the tactile ones as well, and claims that 3-D is an example of hyperhaptic aesthetics, which are inviting to the senses of touch:

[i]n the production of unambiguous images, ocular viewing is encouraged with little call to engage the senses beyond vision and hearing. The haptic cinema screen ... is distinct from the traditional screen in that it demands a different type of engagement. It constructs a fractured statement by refusing to position clear signs and relations between objects on its surface, which in turn draws attention to the images' textured and tactile quality ... Films that utilize this type of screen refuse visual plenitude and instead engage other senses which react to the sense memories that are elicited by the content ... Stereoscopic moving images...take place within a 3-D field screen which exists alongside, and as an evolution of, the traditional and haptic screens ... Rather than finding distance from the screen and a sense of mastery over the images, we consider and reconfigure our bodily placement in relation to the screen content.¹¹⁵

By focusing on replicating the sensation of the body in an environment by adding filmic features which are directed towards increasingly specific senses such as depth and touch (in the case of 3-D), the viewer becomes overwhelmed with stimuli. The effect is one not of the immersive dissolution of the self, but in fact the opposite—hyperawareness.

The brain uses biases and mental shortcuts in order to comprehend and interpret the stimuli which it receives and relies heavily upon habituation, that is, the process by which the brain ignores old or consistent stimuli to focus on the new, and possibly more important stimuli. It is for this reason that individuals, for example, are not always constantly thinking about the fact that they are wearing clothes. One does not forget that one is wearing clothes, for example, but the sensation of the cloth on the skin is

¹¹⁵Miriam Ross. "The 3-D Aesthetic: Avatar and Hyperhaptic Visuality". *Screen*, Vol. 53, 4 (Winter 2012). 385-386.

experienced upon first being dressed and then consequently no longer prioritized and ultimately discounted from conscious thought. This mental ability is so important that those who have difficulty with the prioritization of experiences suffer from overstimulation, and may consequently become anxious and irritable; it is even a possible factor in migraines¹¹⁶. The more senses that films attempt to appeal to, the greater the risk of overstimulating the audience, leading to discomfort and shattering the immersion it was attempting to create.

Aside from the physical aspect, the stylistic use also impacts the way viewers experience 3-D. 3-D is most visually powerful the closer an object is intended to seem to the viewer's face—the further away the objects are to the viewer, the less dynamic the effect. If one holds a finger a few centimeters in front of one's nose, and then opens either eye to look at the finger, the images are significantly different depending on the eye, producing the full depth of the finger in front of the face. If one does the same exercise looking at a finger held in front of a friend's face, who is standing a few feet away, the 3-D effect of the finger is lessened, as the images being received by the brain are more similar. If the friend stands several yards away, again, the 3-D effect is reduced even more. Depth is most noticeable the closer the object is intended to be, and is thus most noticeable in close-ups on faces or objects which naturally do not make up a bulk of the shots of a film. This is the double-edged sword aspect of 3-D. Places in the movie where it would make the most sense to use the emergence effect are rare, and even in doing so, the effect itself draws viewers away from the narrative to focus on the visuals instead. It is perhaps this fact which makes the appropriation of 3-D into the cinema aesthetic more

¹¹⁶Ellen Pastorino and Susann Doyle-Portillo. "Possible Benefits of Habituation: Protecting the Brain." *What is Psychology? Foundations, Applications, and Integration*. 3rd ed. Cengage Learning, 2015. 227-228.

difficult to achieve, as it is the question of balancing between too much and too little of the effect which has proven a constant complication of every iteration of 3-D.

Therefore, even without the 3-D effect meant to be taken in by the brain's tendency towards stereopsis, one posits that a complete picture—communicating all of the information required to form a complete and accurate interpretation of spatial relationships and object qualities in the image on-screen—is nonetheless possible. Immersion, which is the 'prize' of a filmmaker, does not equate to physical believability. 'Improvements' to film aesthetic which attempt to allow more believable sensation run the risk of overstimulating the audience. As demonstrated, a balance of reality (colour, sound, movement), surreality (editing), and mentally enthralling narrative (believable characters and story) seem to be key in producing an enjoyable film to experience psychocinematically. 3-D as an aesthetic is simply not necessary in order to form a sufficiently detailed and complete image.

3.2 3-D as Control of a Virtual Reality

If 3-D is not necessary—nor are any other film techniques short of the basic formal editing style, colour, and sound—in order to create an immersive and realistic image, why does the industry consistently attempt to revive a dead gimmick? It is not 3-D itself which is the goal of the film industry, but instead that sense of immersion and realism they are after—whatever the means, 3-D or otherwise? Control over the possibility of immersive experience is control over human sensation, and ergo, reality itself.

Humans experience the world through our many senses, and the information

provided to us through those senses gives us an interpretation of reality. We can smell when something nearby is on fire, we can see the bright red colour of berries which are poisonous, we can grasp an object on a desk and experience the weight of it in our hands—if any of these senses are to be tricked into believing in something which is not there, via illusions or otherwise, then it could be said that that individual's reality changed along with their perception of it. If, theoretically, there existed such a room with sufficient technology to alter light-waves to adjust all instances of the colour red into blue, and a person were to stand in that room and look at what would typically be a red apple, they would experience the apple as blue; as far as their reality can prove by perceivable empirical evidence, the apple is blue. Aside from basic knowledge that apples are typically not blue, that person could not deny the fact that the apple was blue at that moment and place in time, based on the typical trustworthiness of their own sense of sight and colour—in that theoretical room, the apple is undeniably blue. 3-D technology aims to play with a person's sense of depth and space in a similar manner—to make what is not true feel as though it could be true. To control the representation of reality is to control reality itself, at least for a few hours, in the case of a film, and that is the goal to which film producers strive.

The definition of reality is one which can vary depending upon the philosophical school of thought to which one personally subscribes. In the example of the blue apple, one might argue that 'reality' as it is was not changed, as it was an outside mechanism that merely tricked the eye into perceiving a blue apple, when in fact the apple was—in reality—red. That individual's reality did not change alongside their perception of the apple, but was merely a case of the perception changing and not the inherent reality of

apples themselves. The point of whether one places the value of reality in the unchangeable nature of objects and space and time (that is, there exists one reality viewed from infinite perspectives), or whether one places the value on the perceptive process itself (that is, that there exists an infinite number of realities based on the individual perceiving it) can both be acceptable if one can agree that the act of perceiving reality is an act which internalizes reality outside of whatever truths may exist; therefore, if someone's eyes have a defect which perceives normally red objects as blue, one cannot fault them for their own beliefs that a red apple is a blue apple—as far as they are concerned by the grace of their own empirical experiences, it is true. If anyone else tells that person that the apple is red, they are merely going on hearsay, rather than their own perception of reality. Plato's 'Allegory of the Cave' in his famous philosophical work *Republic* is an example of this sort of thinking—the shadows on the wall of the cave are reality until one can get up and leave the cave to learn the truth about the shadows and the world outside. Therefore, to avoid philosophical contention for the purposes of this discussion, reality will be defined as the stimuli we internalize and perceive as 'real', rather than any objective and universal truth. As each experience of a film is personal to the viewer, so is their 'reality'.

It is the control over the perception of reality that seems to be the goal of movie innovators. The greater and more elaborate leaps in film technology seek to constantly add different levels of 'realistic' stimuli to the film viewers' perception, and thus influences their personal reality. One might counter by saying that having control over a picture is not enough to convincingly control reality, but the ideal is conceivably possible, should the right leaps and bounds in viewing technology be made—that is, the

creation of something akin to virtual reality. For John Belton, interactivity is necessary in the creation of a truly digital reality: “[c]urrent digital projection technology is not interactive ... For it to be truly digital, it must be digital for the audience as well. There would have to be a computer mouse or a virtual reality glove at every seat in the theater.”

¹¹⁷ However, existentially, this virtual reality and basic reality can credibly be considered to have the same metaphysical value, even if a viewer chooses not to interact with the screen beyond passive observation.

Philosopher Philip Zhai discusses virtual reality and believes that with technologies that seek to mimic the perceptory experiences of human existence, privilege must not be placed on the sensations that are, in his words, not “transformed”. He calls this the 'Principle of Reciprocity between Alternative Sensory Frameworks', which states that “all possible sensory frameworks that support a certain degree of coherence and stability of perception have equal ontological status for organizing our experiences.”¹¹⁸

He elaborates by saying that:

[s]ome people might think that since devices of VR [virtual reality] are additions to the natural makeup of our sense organs, so they intervene in the normal passage of information from the physical to the brain, such intervention leads to distortion. But our sense organs and the connected nerves are devices of transformation to begin with. Adding one more phase of transformation with devices of VR cannot possibly turn something “real” into “illusory”. If you think that the fewer phases of transformation the signals undergo, the more real the sensory perception will be, then a subtraction would make the perception more “real” than the real. But would taking away the lenses in your eyes, which is clearly a case of subtraction, make your perception more real? ... Of course not. Therefore, whether the perception is real does not have a well-defined relation to how many phases of transformation the optic signals have gone through. Our tentative conclusion is that the “natural” and the “virtual” are either equally real if you anchor your notion of reality in the sensory, or equally illusory if you preserve the notion of

¹¹⁷John Belton. “Digital Cinema: A False Revolution”. *October*, Vol. 100, Obsolescence (Spring 2002). 105.

¹¹⁸Philip Zhai. *Get Real: A Philosophical Adventure in Virtual Reality*. Rowman & Littlefield Publishers, Inc.: 1998. 2.

reality ... for the core of personhood that preconditions the possibility of the sensory perception ... Therefore a digital virtual world that has a corresponding regularity to the actual world with an arbitrary sensory framework of organizing our experiences is ontologically as solid as the actual world.¹¹⁹

Therefore, arguably, should film technology innovators create a way by which the reality of the viewer and the reality of the screen are indistinguishable, they could have control over reality itself.

If creating a sense of control via virtual reality is the goal of 3-D technology, perhaps it is worthwhile to explore how this lofty aim is used in practice. While examples of basic, emergence-laced, and ultimately uninspired film fare are plentiful, presenting 3-D as a doomed gimmick is unhelpful if there is not at least some attempt to explain what exactly a film must do in order to get closer to the success film innovators desire. While the aesthetic is already seeing a fall from grace, the 2009 resurgence nonetheless indicates interest in the technology, and with certain uses of 3-D—different from the way it is used now—it may have a chance in the future of becoming a new visual standard for the action-adventure Hollywood blockbuster.

This philosophical take on the development of 3-D as a means of creating a virtual reality becomes all the more evident when one analyzes the harbinger of the modern digital age: *Avatar*. While still beholden to the same glasses-based issues that have caused issues with 3-D in the past, this film is nonetheless widely accepted as one which utilizes 3-D in a subordinate way, privileging other means of creating depth on-screen before relying on the emergence effect of 3-D, and is an example of the competent use of the technology. Furthermore, the themes presented in the movie are also

¹¹⁹Ibid, 33-34.

allegorical for the virtual reality which filmmakers hope to create, and what follows is therefore an attempt to describe the closest 3-D cinema has gotten to their lofty goals relating to 3-D as a standardized aesthetic.

3.3 *Avatar*: A Diamond in the Rough

Avatar itself is a film which not only attempts to make sensible use of the stereoscopic effect, as it is widely credited as beginning the start of the recent 3-D boom due to its competent use of the aesthetic, but is also thematically aligned with the idea of virtual reality and control for which the new film technologies strive. The film's protagonist is Jake Sully (Sam Worthington), a paraplegic ex-Marine who is sent to take his brother's place in the Avatar Program on the fictional moon of Pandora. By connecting his consciousness remotely to an artificial Na'vi body (called an 'Avatar'), he can possess the motor and sensory functions of the Avatar and interact with the world around him. While the overall themes surrounding the film are ones of environmental responsibility and imperialism versus indigenous cultures, the film itself is an allegory for what Cameron was attempting to do with his 3-D aesthetic. The 3-D used in the film is supplemented entirely by the Classical Hollywood techniques of film editing and cinematography in order for a more comfortable experience in viewing the emergence effect, and doubtlessly contributed to the recent popularization of the aesthetic. There are no instances where the emergence effect is used to throw something directly at the audience's faces. It is used instead to develop a sense of basic depth in tandem with already universally comprehensive film techniques. Moreover, the control of reality is played out thematically on the screen, aligned with the aims of 3-D itself trying to blend

screen and reality.

3-D effects are most potent in the film when they do not attempt to stand on their own in order to emphasize the depth of field to the audience. Several instances at the beginning of the film train the viewer to see how exactly the 3-D is going to be used, which is to say, sparingly. Miriam Ross' position regarding 3-D as a hyperhaptic effect is exemplified in the film *Avatar* by the consistent use of close-ups and extreme close-ups on faces, but notably lacks deep focus when pertaining to depth of field. The 3-D is meant more as a highlight on the texture of the skin and eyes of the subject (usually the face of Jake Sully, the protagonist, in the consciousness-transferring pods) rather than as an emphasis on the depth of field, as most of the content on screen is out of focus, which instead forces the viewer to use the emergence effect as a means of exploring the tactile surface of what is being presented on-screen—the character's face.

Shortly after this close-up on the face of the protagonist, the camera performs a racking focus into the extreme foreground to focus on a drop of water—explained by the narrative as a teardrop—floating in the zero-gravity environment of space. With the 3-D emergence effect, the drop is clearly floating closer to the audience than the face (now out-of-focus behind it), but the drop does not feel intrusive; the racking focus has already helped to guide the focus of the viewer to the extreme foreground. This allows for the emergence effect to feel like an addition to the depth of field of the scene, rather than the visual equivalent of a punch to the face. The racking focus negates any overstimulation that the viewer might experience by clearly guiding the eye, directing it where to look. The floating teardrop does not have to vie for the attention of the audience against the clarity of the face, as the background has been blurred. The racking focus shifts back to

settle on Jake Sully's face once more, and blurs the floating teardrop, redirecting the attention back to the protagonist. The shift is once again easy and comfortable to follow.

The cinematography is also used to ease the striking results of 3-D by utilizing horizon lines and receding lines to imply the depth along with the emergence effect which—in instances such as the ones that follow—recede from the audience, rather than jump towards them. After the previous sequence in the hypersleep pods, Jake Sully emerges into a long pod deck, where rows upon rows of hypersleep pods are shown to recede into the distance as medical attendants float in the zero-gravity environment tending to wakened soldiers. The sequence is brightly-lit and implies the cold sterility of a futuristic medical bay, but the lightness of the scene is contrasted by the dark metal bars that separate the rows of pods from one another. The dark metal bars create black lines which recede towards a horizon point in the upper right corner of the screen, while the 3-D effects imply the depth of the hallway which follows those lines towards the same horizon point. The visual guidelines allow for an easier parsing of the information provided in the scene. Notably, the scene uses depth to imply life and movement at a distance further from the audience than the main focus of the scene, which is Sully emerging from his pod and an attendant rushing to assist him: there are other soldiers and attendants floating every which way in the background, and the 3-D effects give them a sense of depth as well—that is, a soldier floats wearily closer to the audience than his attendant, who floats slightly further away, closer to the horizon point. The receding lines and relative size differences used typically in 2-D movies to imply depth remain in play in this scene, aided by 3-D to create a visually simple direction to follow along the hallway. The result is a deep field, but with no jarring layers of a person on top of

another, fading into an arbitrary point in the background.

Ultimately, the 3-D effects are secondary to the typical editing and cinematography that are usually used in 2-D movies to imply depth. The emergence or recession of objects in the space of the screen is merely there to augment the visual cues which are already placed in the scene to help direct the viewer where to look, as well as to imply which objects are foregrounded and vice versa. However, the film not only uses 3-D to visually garnish the scene, but the technology of the Avatars themselves thematically embody precisely what the 3-D effects are attempting to accomplish: the dissolution of the self into the world of the screen's 'virtual' reality.

The protagonist, Jake Sully, is paralysed from the waist down from an old war injury. His first narrated lines in the film say the following: “[w]hen I was lying in a V.A. Hospital with a big hole blown through the middle of my life, I started having these dreams of flying. I was free. But sooner or later, you always have to wake up”. Jake Sully is representative of the average film-goer, in that he is a capable person, but the physical reality of the limitations of his own body restrict him from autonomous movement without the assistance of a wheelchair; he has dreams of accomplishing the impossible, but notes that true reality inevitably intrudes upon awakening. However, the titular Avatars—artificial bodies into which consciousnesses of their pilots are placed—are representative of what 3-D and other attempts at 'immersive' film technologies are attempting to create. When Sully enters the consciousness-transferring pod, his consciousness and perceptive senses are transported to that of his Avatar—it is with this body that his ability to walk is regained, as well as other feats of alien athleticism which he notes are 'instinctive' with the Avatar body he pilots. The consciousness-transferring

Pods are clearly allegorical for the transformative powers of the cinema; the movement from the reality of his world in the science lab and the reality of the world outside in the forests of Pandora, where Sully is allowed to experience the freedom his physical disability denies him, is facilitated by a technological device which shifts perception from one place to another, and thus, the parallels between the technology in *Avatar* and that of cinema in general become clear. By submitting one's mental processes to the transformative powers of a unit of technology—intended to draw perception away from the immobile body in a dark and solitary location and into a bright, vibrant, and seemingly unattainable world—the boundaries between real and virtual, possible and impossible, dissolve. If Cameron can achieve through visual effects—3-D definitely included—what his characters achieve through their Avatar pods, then he will have achieved 'the prize' of which he spoke.

3.4 Conclusion: An Unnecessary Supplement

In summation, beyond basic visual cues relating to depth, the human mind does not require an onslaught of stimuli in order to accurately interpret the visual information they receive. Too much detail is ignored through various mental processes, and simple visual stimuli allows for the dissolution of the self in the theatre, producing an immersive effect. 3-D, inversely, often draws attention to the self in the theatre and can cause overstimulation by attempting to appeal to too many senses, resulting in discomfort—immersion does not require films to involve the physical self and can be quite distracting when the emergence effect is overused. *Avatar* is a rare example of 3-D used in tandem with 2-D depth cues to make the 3-D experience more comfortable, and in fact

thematically ties in with the true goal of immersive film technologies: that of creating and controlling a person's perception of reality, and thus, reality itself.

The End of an Era

From humble beginnings, 3-D technology has dramatically increased in scope and magnitude, becoming a significant aesthetic element in recent years. With many directors of action-adventure films opting to make their films in 3-D, and certain classic favourites being re-released in theatres with 3-D added in post-production, the viability of 3-D as a mainstream staple was doubtlessly on the minds of Hollywood film producers. With the popularity of 3-D figurehead films such as *Avatar* and *The Polar Express* bringing audience enthusiasm—and box office profits—to an all-time high, the modern renaissance of 3-D seemed destined to break the mold of its previous failed attempts at standardization. Yet, for all the positive marketing that 3-D has received, it cannot escape the gimmicky moniker it has held for decades.

Like other film attractions before it—“Percepto!”, Cinerama, Sensurround, and D-BOX, notably—the technology has found itself in a context which it cannot reasonably become standardized. Permanent installations have made other film tricks such as “Percepto!”, Sensurround, and D-BOX more affordable to maintain, not having to keep up with the weekly cycles of films coming in and out of cineplex venues. Cinerama's concept was one of great merit, and has since evolved into a version more suited for standard use; widescreen and IMAX are prevalent today, and offer many more possibilities than the technologically clunky and restrictive initial form of Cinerama. The factors which have affected these former film gimmicks have affected 3-D as well, and even a few years after the beginning of 3-D's new wave of success, it has already shown signs of succumbing to these same issues.

Profits are dwindling, even as more 3-D films are produced at greater cost, and in

spite of better digital cameras and screen technology making the 3-D image truer in colour and brightness, it still cannot be rid of the glasses which interrupt the immersive feel sought by the cinema. Not only do the necessity of spectacles reduce the bodily dissolution required for an absorption into the narrative, but the graceless handling of the emergence effect—the pop-out aesthetic of 3-D—has brought complaints from audiences, who despair at the ham-fisted use of an otherwise subtle effect. While it may have been a conduit for the transition from analogue to digital film formats, 3-D is still clinging to life in theatres, and may remain for some time yet.

However, the loss of 3-D is not the loss of depth. 3-D caters ultimately to a tertiary sense—that of stereopsis—and the human mind can process a detailed and layered image without it. In order to gain a level of stereographic depth, glasses are required to create the sense of 3-D; however, without the glasses, depth is not lost in a 2-D film due to the flat image making use of the same rules which imply depth in representational arts like painting. Horizon lines, relative sizes, occultation, and other rules are all indicative of the different planes in an image's depth of field, thereby making 3-D unnecessary. The emergence effect actually detracts from the immersive quality of the picture, as it constantly refreshes the sense of the body in relation to the image itself, thereby destroying the very effect it sought to create.

Yet 3-D is merely a stepping-stone for a greater goal: virtual reality. If film producers can create a film which mimics the sensation of reality via various film technologies akin to 3-D to fill in the blanks of those other senses, then it can be said that they have created a successful virtual reality. With the power over a virtual reality comes the control over the perception of reality—even if it only lasts for the length of a feature

film. This goal is represented in 3-D's most financially successful hit *Avatar*. Not only is it a rare example of film direction where 3-D is treated with subtlety and elegance, but also allegorically demonstrates that a piece of futuristic technology can transport the senses away from the drab limitations of the real world and into the vivid and bright possibilities of a fantastic, alien world. This is the control over reality that the champions of the 3-D wave ultimately seek.

While the goals of 3-D may seem lofty, they could perhaps become possible in the future, if—like the other film attractions discussed—3-D waits for more sophisticated autostereoscopic technology, or less emergence-based use of its negative parallax, or even changes in cost from production to exhibition. For now, however, 3-D remains as much of a gimmick as it has in the past century of filmmaking—rather than immersing the audience in the narrative, the in-your-face aesthetic instead turns 3-D into an obnoxious 'cinema of distractions'.

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