



Flying Through the Image

Vection and Immersion Through Technical Analysis of the “Movie-Ride” Effect

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Acknowledgement

For the patience of my advisor, and for the support of my family.

Without your perseverance, I would have broken down in surrender, a long time ago.

As for the man in the sky, you started this in me, and so, I dedicate this to you.

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Abstract

Starting with an interest taken in the immersive quality of images, this thesis looks at immersive visuals, a set of formal aspects that instigate a sensation of spatial presence in the audience. In particular, it focuses on a contemporary visual effect found in mainstream cinema dubbed “movie-ride” effect.

Although the literature shows the historical importance of immersive images, it falls short of thoroughly discussing the “movie-ride” effect and its immersive qualities. To that end, this thesis presents a technical and thematic reading of said effect, to a purpose of reading it as an immersive style that aims at transporting the audience member inside the virtual space of the image. The technical analysis provides a formal dissection of the constituents of said effect. The thematic reading, on the other hand, introduces the possibility of seeing it as an influence from new media onto the old.

Following principals from Grounded Theory and case study analysis, this thesis provides a qualitative, technical analysis of four instances of the movie-ride effect emanating from four contemporary mainstream films. It does so by comparing it to a list of criteria extracted from Riecke and Schulte-Pelkum’s (2015) work. This contained a set of technical qualities in Virtual Reality applications that enable vection: the illusion of self-motion. By analyzing the four instances, this thesis finds a strong adherence to the visual criteria, with two cases fully conforming to them. Therefore, it concludes that the movie-ride can potentially instigate an illusion of self-motion in the audience.

The thesis then argues towards a direct link between vection and immersion as an illusion of self-motion implies that the audience member feels themselves moving with the visuals, and therefore, as existing within the virtual space of the depicted image.

Then, the thesis acknowledges present writing on the relationship between the movie-

ride effect with theme park attractions, but introduces a new thematic reading of said effect. Through theories of intermedia relationship, in particular through the rejuvenation argument, the movie-ride effect is read as a direct influence from new media such as Virtual Reality. By following this argument, the movie-ride effect emerges as the result of the old medium of Cinema borrowing strategies from the new medium of Virtual Reality to appeal to the younger audience. This further highlights one of the comparative core powers of cinema: to retain control over the audience.

Chapter One: Introduction

1.1 Introduction

The human relationship with the image is an interesting subject within art and design disciplines. Our history with images dates far back to the earliest evidence of humans creating images such as the cave paintings at Lascaux and other instances. Throughout that time, art historians and scholars have constantly questioned the relationship between creators, images, and viewers. Today, we continue to do so in order to improve our understanding, at a time where the image is increasingly more present and influential, forming a greater part of our daily lives (Grau and Veigl, 2011).

One aspect of our relationship to the image is a mysterious quality that some images present, referred to by many as immersion. To be clear, immersive images help create a sensation of spatial presence (Lombard and Jones, 2015), of “stepping through Alberti’s¹ window” (Lister et al, 2009: 115), of existing inside the virtual space² of the image. Increasingly we are subjected to this seemingly new quality of the image where new technologies promise a deeper and more intense pull inside the virtual space. But our history with immersive images dates much further back. In fact, Oliver Grau (2003) shows examples as early as 60 B.C. as a series of frescoes in the Villa Dei Misteri. This, and other examples scattered throughout human history, show a distinct quality of images that overwhelm the senses of the viewer and imbue a sensation of existing inside the depicted space of the image. However, with time and exposure, the audience get habituated to these spectacular images. In addition to that, with more refined techniques,

¹ “Leon Battista Alberti was an early fifteenth-century art theorist who is widely credited with formulating an influential method of constructing images using perspective. At the risk of considerable oversimplification, we may say that Alberti’s method established the ground for a whole tradition of pictorial representation, the subsequent history of Western art, which eventually leads to the photographic camera.” (Lister et al, 2009: 115)

² Virtual space denotes the space depicted inside the picture, following Michael Kubovy (1986).

and further technological developments, the audience is increasingly subjected to more intense and more effective immersive images and the space between audience and image grows ever smaller.

In contemporary times, this is most evident in entertainment media. Mass audiences are now subjected to imagery through new modes of delivery such as video games and Virtual Reality. These new media that emerged some half a century ago, no longer cater to small niche markets or scarce artistic installations, but are available for mass consumption by the public, and are increasingly part of our contemporary entertainment experience. The frescoes at the Villa Dei Misteri received a shy number of visitors comparatively, it being bound by its physical location. The contemporary immersive images know no geographical limitation with the digitization of media and the global access that is allowed by the internet. In other words, immersive images are increasingly becoming more accessible as new media makes it available to the mass public (Lister et al, 2009: 109).

New media emerge with all kinds of connotations attached to them. As the literature shows (Lister et al, 2009), new media introduce fantastical utopian ideals: the democratization of content, for example, the mass availability of information, or perhaps, simply, a more spectacular image than its precedent. Amongst these powerful potentials is the quality of immersion (or immersiveness³). New media are often referred to as being immersive, as innately having that quality in their nature (Lister et al, 2009: 114). In fact, it is a major selling point in advertising today regarding new media and new display technologies⁴.

³ Following Riecke and Schulte-Pelkum (2015) in their usage of “immersiveness” to denote the immersive qualities of the medium. See immersion section in the Methodology chapter..

⁴ Just a glance on the – heavily advertised – immersive aspect of Virtual Reality and of IMAX cinemas would prove the point. (Moulton, 2013)

When generally inspecting the topics of media and technology, an age old debate immediately arises: technological determinism. Championed by media theorist Marshall McLuhan (1964), especially in his infamous quote “the medium is the message” (1964: 6), this view attributes qualities of the image to the nature of the technology behind them. Opposing this viewpoint are many contemporary media theorists, chief among them is humanist Raymond Williams. To him, technological determinism is an “untenable notion” as it would destroy any social, political, or economic intention in communication media (Young, 2006:xv). Technologies are developed and reshaped according to the desires of social groups, to achieve specific social purposes (Lister et al, 2009: 86)

Another issue in media discussions is the relationship between new and old media. McLuhan introduced the concept, contrary to his technological deterministic views, of media cannibalism. In this view, new media borrows elements, such as styles and strategies, from old media, effectively basing itself on the principles of its predecessors (Young, 2006:xix). Such was the case between photography and painting, for example, or in the case of television and cinema. Once established, new media continue in their own strategies, certain aspects of which are usually unattainable by old media⁵.

So what of the strategies of old media once new media gets established? Are old media affected by such emergence, or is it a one-directional relationship between the two? Jay David Bolter and Richard Grusin ‘s “remediation” (2000) and McLuhan’s media cannibalism (Young, 2006) help map the complex interaction between established and emerging media. Through these theories, old media do get affected as they not only share content but strategies and modes as well. Established media refashions itself to fit

⁵ Consider for example the immediacy and indexicality of photography, compared with paintings. Or perhaps, consider the interactivity of video games versus static, definite content in cinema.

the needs of contemporary audiences, according to forms and technologies borrowed from new media (Young, 2006, Lister et al, 2009).

Amidst all of these discussions, an interesting point of focus can be placed on the visual qualities of old media and how they are shaped with our changing expectations of the image. Here, I am referring to the collection of formal or stylistic qualities of a given work or set of works⁶. To be clear, this is distinct from philosophical aesthetics, which denotes the academic dissection of beauty in art (Slater, n.d.). Rather, I am targeting the formal aspects of the objects of discussion, irrelevant of their value of beauty. In fact, the value of these stylistic configurations are of interest due to their immersive aspect.

Therefore, while focusing on the immersive aspect of images, and moving away from notions of technological determinism, this thesis looks at the stylistic choices of cinema and attempts to identify present imagery that help create an immersive experience for the audience. To be clear, this experience relies on a multitude of constituting elements such as display technologies, new media, and immersive visuals. Consequently, analysis may pertain to any number of those elements.

Within this thesis, however, the focus is placed on the immersive qualities of the formal aspect of images in contemporary mainstream cinema. More precisely, it focuses on a single visual technique, referred to by many as “movie-ride” (Balides, 2003) effect. This effect depicts intense motion following the point of view of a character, similar to the view of looking forward on a train or a roller coaster ride. This technique is shown to have roots in early cinema (Moulton, 2013) and strong connections to the theme park (Balides, 2003). Its immersive effect, however, is rarely discussed in detail, especially regarding how this style creates a sensation of presence in the audience. Therefore, this

⁶ This is in line with the Oxford Learner’s Dictionaries’ (n.d.) first definition of aesthetic as a noun. In this thesis, I refer to the collection of stylistic qualities of a given instance.

thesis builds on present knowledge, but goes further by providing a more focused reading of this type of visual and presenting it as an immersive effect that aims at drawing the audience inside the image. Through theories of media convergence, this effect emerges as a response to the proliferation of immersive new media, as new and old media share similar techniques and modes of communication.

1.2 Statement and Objectives

The thesis, then, asks the following questions:

Can we identify a style in contemporary Western cinema that aims at immersing its audience in the virtual space of the image? More specifically, is the movie-ride effect a valid immersive effect? If so, what are its technical characteristics? And how can it be read in relation to contemporary media theories on the relationship of new and old media?

The objectives of this thesis, therefore, are threefold:

First, to identify the movie-ride effect and provide a technical analysis of the content of such an effect, thereby formulating a list of technical criteria for its creation. Second, to read this effect as an immersive attempt that aims at immersing the audience in the virtual space of the image. Third, to read the movie-ride effect through media theories, highlighting new aspects of the same phenomenon.

1.3 Methodology

The thesis achieves its objectives in two parts: one through technical dissection of immersive styles and another through theoretical readings. The first part relates to a development on the vertical axis, focusing on the technical aspect of the movie-ride effect and on reading it as an immersive one. The second part relates to a development

on the horizontal axis, branching the discussion to a thematic one on the relationship between new and old media, thereby providing a new reading of the movie-ride effect.

The first objective is achieved initially through the literature review by identifying the movie-ride effect and presenting the current knowledge on its usage. The research then moves to a qualitative analysis of case studies that contain said effect. The purpose is to dissect its formal properties, extracting its technical characteristics. This is achieved by following the work of Bernhard E. Riecke and Jörg Schulte-Pelkum (2015). In their chapter titled “An Integrative Approach to Presence and Self- Motion Perception Research”, Riecke and Schulte-Pelkum identify visual characteristics that help instigate an illusion of self-motion in the audience, within Virtual Reality applications. These characteristics are reshaped into a list of criteria which the case studies from contemporary Western films are tested against. The goal is to analyze the stylistic qualities of the “movie-ride” effect, and to link it to the illusion of self-motion, orvection. All of this is ultimately used as a summary of current usage of the movie-ride effect, within the discussed cases. It also informs the direction of the second objective.

The second objective is to read the movie-ride effect as an immersive strategy that aims at transporting the viewer inside the virtual space of the image. This is initially presented through the literature review. There, the literature first disambiguates immersion as its various meanings are discussed as well as its understanding in different media. Next, it presents an overview on essential media theories and inter-media relationship discussions, particularly those related to the relationship between new and old media. This section also justifies its focus on formal aspects of this phenomenon, by presenting literature on technological determinism. Finally, the literature reads previous analyses of the movie-ride effect as well as the importance of digital space construction. The thesis, then, introduces its arguments by reading the movie-ride effect as an

immersive strategy in cinema to pull audiences inside the virtual space of the image. This is achieved through a more focused reading on what was provided in the literature review and by using the primary data extracted from the first objective. Using this data, the research presents the movie-ride effect as one that helps instigate a sense of immersion. It does so by arguing towards a logical link between vection and immersion. The third and last objective looks at the movie-ride effect through theories of intermedia relationship. This is only allowed after the first two objectives are met, as the discussion is now breached on the similarities in content between instances in Virtual Reality and in Cinema. Here, the purpose is to provide a new reading of the movie-ride effect, one that links it to content from Virtual Reality applications.

The analysis of the cases follows Grounded Theory and methodologies presented by Lothar Mikos (2014) for analyzing film. By following these methodologies, data extracted from the analysis of the cases helps formulate the general conceptual theory. An initial sample of four contemporary films is selected. Post-analysis, this sample is found to be satisfactory in highlighting the technical aspect of the effect, without running into redundant analysis. By analyzing these cases, data emerges in the form of technical attributes of the movie-ride effect.

These attributes are formal, stylistic attributes, emerging from Riecke and Schulte-Pelkum's (2015) work. They are: type of motion, direction of motion, speed of motion, separation of background and foreground, fixation on a central object, and lastly, presence of detail in the center versus the periphery.

1.4 Outcome

By highlighting the concept of immersive effects, the thesis discusses in technical detail the instances of movie-ride effects through recent case studies. More specifically, it

analyzes these cases against a list of criteria extracted from Riecke and Schulte-Pelkum's (2015) work. It finds a strong adherence to these criteria, with the majority of cases fitting them, and with two cases completely conforming to them. This places the movie-ride effect as one that is capable of instigating an illusion of self-motion, which is then argued to be directly linked to a sensation of spatial presence, of immersion. By analyzing occurrences of the movie-ride effect, the criteria discussed above emerge as a list of recommendations, in a first attempt at technically directing images towards being more immersive.

This technical analysis also prompts a discussion on the relationship between media. Given that the source of the technical analysis criteria were sourced from Virtual Reality applications, and applied to cases of Cinematic content, the discussion is shifted towards new and old media, how one influences the other, and how the movie-ride effect could be read as such an influence.

Within the discussion, it is acknowledged that this effect has a long history in cinema and a strong connection to theme park rides. However, it is argued that it is still an immersive effect that helps draw the audience inside the image, and is presented as part of a reaction to the emergence of new media with their ever more powerful immersive images. While it does indeed have a history in cinema, the contemporary movie ride effect is read as an influence from new media such as Virtual Reality, through theories of intermedia relationships. This sheds a new light on its usage in cinema as a discussion on the notions of control ensues. In this discussion, the movie-ride effect emerges as an immersive style that shifts control back, away from the audience member and towards the filmmaker. Added to present notions of control in the spectacular representational feats of digital animation, the movie-ride effect becomes an

increasingly complex and valuable phenomenon, worthy of critical analysis and scholarly discussion.

1.5 Value

It is entirely possible that these findings and discussions are innately understood by professional filmmakers, computer animators, and visual effects artists. Perhaps it is, as David Bordwell (2013:29) puts it, that filmmakers learned by trial and error how to influence their audience and aren't generally interested in explaining the underlying mechanics. That task is left to the scholars who attempt to analyze and theorize on the inner workings of given phenomena. Yet, in scholarly writing, our findings and topics aren't found to be clearly discussed. Additionally, while scholarly discussions on a multitude of qualities of the image are found, such as appeal or beauty, immersion is less to be found. Therefore, a part of the value of this research is a contribution on an aspect of images that is not yet fully understood, yet certainly is part of our relationship to the image, as clearly shown by Grau (2003). This is achieved primarily in the literature review, whereby current writing on this subject is documented. The literature review, then, contributes towards a better understanding of this phenomenon.

Furthermore, the discussion presented in chapter five pushes knowledge forwards by thematically analyzing said effect and presenting it as (a) part of immersive effects, and (b) as an influence from new media. While the thesis acknowledges present writing on the topic, providing this additional discussion furthers the scholarly discourse and helps reveal the effect's possible mechanics. Additionally, this discussion branches out and highlights other mechanics at work, such as those related to notions of control in the cinematic medium. This further expands the value and contribution of thematically analyzing the movie-ride effect.

Another is a technical contribution to the community of image creators and producers. As of yet, there is no guaranteed causal relationship between immersive images and a sensation of spatial presence. The relationship is thought to exist but is not fully established. Furthermore, and while immersive technologies increasingly become commonplace in media discussions, formal aspects are rarely (if ever) focused on as playing a part in the immersive experience. However, since contemporary media theories divert us away from technological determinism, then content must be given some thought, in order to reveal how images can be immersive. This thesis then presents an initial step towards a focus on styles of immersion. Academically, it instigates a discussion on the possibility of the existence of stylistic qualities that create immersion, in the first place, as independent from the medium of delivery. This is achieved by placing focus on formal content present in two distinct media. On the more practical side, the technical criteria of one particular style, the movie-ride technique, are highlighted, based on the reviewed cases. Once again, this presents a standing ground for more refinement and dissection in the future, possibly through alternative approaches and methods.

1.6 Scope and limitations

At its core, this research is desk-based. And while it is an important, constitutional aspect of the research, it does introduce certain limitations. For one thing, counter arguments only exist in what is found in the literature; there are no other opposing viewpoints from scholars or professionals that might challenge the discussion, nor to solidify the validity of the arguments. But such is the nature of certain pilot researches. Balides (2003) and Moulton (2013) gloss over the immersive aspect of the movie-ride effect. Recuber (2007) and Prince (2012) seem to tackle similar concepts in cinema, but mostly focus on technologies of display with barely a mention of content. This research

focuses more clearly on reading the movie-ride effect as an immersive one. Naturally, discussion follows that, once it is part of the scholarly community. Second, primary data gathered in the analysis of case studies follow only the researcher's views, even if backed by the literature. There is no primary data from immersed viewers, for example, and that would be perhaps a good focus in further studies.

Furthermore, while the literature review covers a broad range of sources, the technical analysis relies heavily on the works of Riecke and Schulte-Pelkum (2015). The analysis itself is novel, and follows methods discussed in chapter three. It also relies on the support of other, secondary sources such as Prince (2008), Ross (2012), and Moulton (2013). However, since the source of analysis criteria emanates from Riecke and Schulte-Pelkum (2015), chapter four appears to be overwhelmingly reliant on this specific writing.

On another note, this research focuses on immersive effects, driving away from the popular discourse on immersive technologies. But that is not to say that technologies play no part in the immersive experience. As previously mentioned, formal styles are chosen because there should be something more to the discussion than the technology at hand, contradicting theories of technological determinism. Therefore, while display technologies aren't in the spotlight here, their function and importance are recognized.

Lastly, the thesis analyzes the movie-ride effect both technically and thematically. It is important to note, that this thematic discussion of the movie-ride effect pertains to a general Western culture. This is due to two main reasons: First, the selected filmography used as case studies is populated by mainstream, Western, contemporary movies. The worldwide popularity of these films leads to a discussion irrelevant of a singular local culture but one that pertains to a quasi-international audience. It is still

however, technically still part of Western culture. This links to the second reason for this selection, and that is the documentation on the history of immersion. As shown in the literature, immersion or immersiveness, is a staple of Western Art (Grau, 1999, 2003). Therefore, introducing this general scope becomes more important, for reasons of validity⁷.

1.7 Thesis Structure

The thesis is divided into six chapters beginning with the Introduction. Chapter two contains the Literature Review. Here, key information is introduced on immersion, new and old media, and digital images, ending with current knowledge on the movie-ride effect. Chapter three is Methodology whereby the methods of analysis are discussed. Chapter four revolves around the Technical Analysis. Here, the case studies are analyzed following the established criteria. Chapter five contains the Discussion, whereby the previous technical analysis is taken to a thematic direction with the discussion on the movie-ride effect as an immersive one. This chapter also contains a further reading of the effect as an influence from new media such as Virtual Reality. This leads to a discussion on the present notions of control within the movie-ride effect. The last chapter, chapter six, contains the Conclusion where all arguments are summed up and recommendations are given. As a starting point, the literature review in chapter two propels the discussion on the primary topics of the thesis.

⁷ For a more expanded discussion on this issue, see chapter three: methodology, on the case study selection criteria.

Chapter Two: Literature Review

2.1 Literature Introduction

The literature review provides current knowledge on the topics of this thesis. This knowledge is used as secondary data originating from various sources. The information in this literature review is divided into three main sections pertaining to immersion, new media theories, and digital imagery.

In the first section immersion is discussed through its definition, history, and its application in cinema. This section also introduces the concepts of presence and vection, which are vital to the discussion. The second section relates to media studies and theories, especially ones regarding the relationship of new and old media. There, concepts such as remediation, media cannibalism, and technological determinism are discussed. The last section is in regards to digital images. This section looks at contemporary digital animation and computer-generated imagery at large, focusing on the portrayed space of animation. This leads to an overview on modes of viewing this space, while finally focusing on a particular effect in cinema dubbed as “movie-ride” effect.

In short, the literature combines high concepts like immersion and presence to the stylistic qualities of computer animation, passing by studies on new media. This whole chapter provides the necessary information to establish current knowledge. It also informs the discussion in chapter five, which combines the three main topics present here: immersion, media theories, and digital imagery. The beginning is then, with the topic of immersion.

2.2 Immersion in the Virtual

The primary aim of this section of the literature is to present the discussion on the phenomenon of immersion. With its occurrence in various media, immersion warrants proper dissection before being included in a discussion. The literature, therefore, presents its definitions, history, and certain specific applications of interest to this research. It begins by disambiguating the term immersion, providing definitions and usages from recent writings. It follows with an historical overview that grounds it as an important aspect of image-making. It further narrows down the definition by discussing presence and vection, and ends on its application in cinema. The beginning is then, with a section on the multiple definitions of immersion.

2.2.1 Definitions of Immersion

In this section, the literature presents an overview of the term immersion. The term has been confusingly used to depict different phenomena. As scholarly writing increases, the interest in the topic rises, and confusion rises with it. Multiple references seem to point towards similar concepts and meanings. However, the topic still lacks a clear-cut definition that is generally agreed upon especially in defining terms and what they specifically mean.

Throughout his book *Virtual Art: From Illusion to Immersion*, Oliver Grau (2003) refers to immersion as a mentally absorbing process characterized by reducing the critical distance between audience and image, as well as increasing the emotional involvement in the action depicted. To him, this is distinct from the imaginative sense of immersion found in dream journeys or literary absorptions (2003:15). This view is shared by Recuber (2007). He notes that immersion was previously used in a metaphorical sense, describing an emotional or intellectual involvement with media. More recently,

immersion has become more actual as a sensation of existing in the virtual space (2007:320).

Grau (2003) argues that immersion relies partly on illusion, where conscious submission to the image exists, but goes beyond it by intensifying the image and overwhelming the senses to a purpose of reducing the distance between viewer and image and blurring the boundary between image space and real space. This relationship with illusion is reiterated by Lister et al (2009) as they note that illusory images, while not immersive, do share similar strategies with immersive images. The purpose of these strategies is to hide basic elements of visual representation such as the surface and the frame which is the threshold between the physical and virtual (Lister et al, 2009: 132).

Similarly, Giacomo Albert (2012) writes: “Immersion destroys the frame that separates the world of the work from that of the viewer. [...] the reality becomes confused with the work” (Albert, 2012:1). To him, immersion is less a property of the medium and is more concerned with the relationship between the audience and content. More specifically, it is concerned with the way content is created and on the audience’s perception of it.

Grau (2003) argues that the audience that are unaccustomed to the new visual experiences are overwhelmed by the moving images. This suspends their inner psychological ability to distance themselves from the depicted image. This suspension diminishes over time in a process that he describes as habituation, where the illusion slowly loses its power to captivate the audience, the further they are exposed to it. The illusion, at this stage, fades and the audience is more receptive of the content of the image, “until finally a new medium with even greater appeal to the senses and greater suggestive power comes along and casts a spell of illusion over the audience again.”

(Grau, 2003:152). According to Grau, this process has recurrently occurred in the history of European Art since the Renaissance, with every immersive medium building on its predecessor and on the available technology.

To other writers, immersion denotes another phenomenon. Riecke and Schulte-Pelkum (2015), based on Vidyarthi (2012), view immersion as a psychological process of being mentally absorbed in an activity. Furthermore, they differentiate immersion from immersiveness, which to them, is the medium's ability of providing immersion.

Writing on immersion in Video Games, Gordon Calleja (2011) sheds further light on the discussion. He writes: "Although there has been consensus that the experience of presence or immersion is important, there has been confusion over precisely what the terms mean" (Calleja, 2011:18). He further argues that this confusion has negatively affected the progress of scholarly writing on the topic. In fact, Calleja highlights four categories of confusion in using the term immersion, summarized in the following list:

- Using immersion to refer to a sense of general involvement in a medium or to the feeling of being transported to another space;
- Using immersion in different types of media that are inherently different⁸;
- A dependence on technology. Calleja states that the technological qualities of the medium do not necessarily imply or assure immersion;
- Calleja calls for considering involvement in media as a continuum of varying degrees as opposed to a binary situation;

Thus, Calleja (2011) argues towards the necessity for a new concept to describe engagement in video games. He first introduces the Player Involvement Model (PIM) which relies on six dimensions of involvement: Kinesthetic, spatial, shared, narrative,

⁸ Calleja argues that immersion is particularly troublesome because it is used to describe engagement in media where the audience have no influence on content such as the case of cinema or static images. Engagement in video games is qualitatively different (Calleja, 2011:18).

affective, and ludic. He then presents the term incorporation as an alternative to immersion and presence, pertaining specifically to the case of video games⁹.

Providing an opposing viewpoint are Farrow and Iacovides (2014). To them, the issue lies with Calleja's approach to digital embodiment. They write: "Calleja's PIM does not so much solve the problem of digital embodiment, but suspends judgement on the problem" (Farrow and Iacovides, 2014: 6). They argue that digital embodiment is so distinct from primordial¹⁰ embodiment, that "the idea of a *totally* immersive experience is fundamentally fallacious" (Farrow and Iacovides, 2014:11. Emphasis in source).

Similarly, Grau (2003) notes that differentiating between reality and depictions of virtual worlds is a basic human capability. However, Western art and media history have recurrently tried to blur those boundaries.

2.2.2 A history of immersion

Immersion may immediately bring to thought current technological innovations and recent cyberpunk concepts of physically diving inside an image. Yet, immersion as a concept dates further back from the digital times, as far back as Antiquity, according to Oliver Grau (1999). In his writings (1999, 2003), Grau traces the history of presenting viewers with images that aim at "transposing the audience into an enclosed, illusionary visual space" (Grau, 1999: 365). He begins with a fresco in Casa dei Misteri at Pompeii dating back to the year 60 BC. In this earliest of examples, the wall paintings engulf the field of vision of the spectator forcing them to share a common virtual space. Because

⁹ Incorporation cannot be used in non-ergodic media such as cinema, for example. Incorporation relies on an interaction between player and content through the player's embodiment in the form of the avatar.

¹⁰ These are based on Merleau-Ponty's phenomenology of embodiment. To him, the perception of the world is an interpretation of bodily stimuli. To be able to perceive the world, one must be in the world where the self is always embodied and there is no "view from nowhere" (Merleau-Ponty, 1962: 60-61).

of their religious nature¹¹, Grau likens the images to a portal by which the gods enter the physical realm and the real people cross into the virtual.



Figure 01 - Villa Dei Misteri – 60 BC

Grau (2003) continues to the Renaissance era, where illusionistic images were increasingly becoming more common in paintings and frescoes with the development of methods of portraying perspective. According to Lister et al (2009), Leon Battista Alberti is widely credited with the creation of the method for creating visuals according to perspective. They claim that Alberti's method established future ways of creation of visuals and the following history of Western Art (2009: 115). It is the reason why immersion is sometimes described as “stepping through Alberti's window” (2009: 115).

¹¹ The wall paintings were part of the initiation room of a Dionysian community.



Figure 02 - Sant'Ignazio Church Ceiling – 1688-1694

Passing through the Baroque period, which witnessed a large usage of immersive ceiling paintings, Grau (2003) focuses on the Panoramas of the Industrial Revolution, and on their political aspect. Early in the 20th century, he arrives at cinematic attempts at immersion.

Grau highlights the effects of the setting of the cinema such as the darkened room and the restriction of the seats as well as the size of the display screen. He discusses early projections of cinema where, for the first time, camera lens angle and audience viewpoint aligned. Such is the case of *'L'Arrivée d'un train en gare de La Ciotat'* (1896) whereby the audience witnessed the arrival of a train into a station in such a manner that it seemed to be heading towards the audience¹². Their reaction reportedly consisted of panicked screams, fainting, and fleeing. Grau continues by covering

¹² This was the first public film to be projected in 3D according to Grau (2003). However, he notes that the technology is unlikely to have shown three-dimensional imagery.

technologies such as the stereoscope¹³, Stereokino, CinemaScope, Sensorama, and IMAX¹⁴.

Grau places all of this historic content on a continuum that emerges as evidence of the desire for that particular quality in the relationship between spectator and image.

To Grau, then, Virtual Reality is the most immersive humanity has reached. Developed as early as the late 1980s, Virtual Reality (VR) displays digital images that fully engulf the viewer's vision¹⁵. But as he clearly shows, virtual reality is beyond recent technological achievements; it is grounded in the history of art. In fact, Grau asserts that "virtual reality forms part of the core of the relationship of humans to images" (Grau, 2003:5). It differs from past media, however, in its presentation of interactive images. He writes: "In virtual reality, a panoramic view is joined by sensorimotor exploration of an image space that gives the impression of a "living" environment. Interactive media have changed our idea of the image into one of a multisensory interactive space of experience with a time frame" (Grau, 2003:7).

Furthering the discussion on the history of immersion, Lister et al (2009: 126) divide such cases under two categories: environmental, and device based. Environmental instances of immersion refer to the architectural frescoes of Antiquity and Baroque, for example, whereby the content of the image and its configuration achieves the immersive

¹³ According to Grau (2003), the stereoscope dates back to 1838, long before cinema's arrival. The device relies on humans' ability to perceive depth. It combines two images taken from a small distance apart, to be viewed simultaneously. The resulting effect is one of depth in the image.

¹⁴ IMAX (Image Maximization) was introduced in the 1990s, according to Grau (2003). It is a filming and projection system that allows curved, massive screens of up to a thousand square meters of space, that engulf the audience's vision. It is combined with contemporary stereoscopic display to create 3D-IMAX.

¹⁵ This is achieved through Head-Mounted Displays (HMD) or through panoramic projections such as the CAVE system (Grau, 2003: 3)

effect. Device-based examples include the stereoscope and other technologies that rely on an apparatus to achieve the immersive effect.

2.2.3 Presence

The literature also witnesses a focus on another term: presence¹⁶. Immersion and presence do seem to have a link. To some, the two terms are synonymous. Grau, for example, uses both terms to convey the same principle, pertaining to a sensation of “being there”¹⁷ (Grau, 2003:7). To Slater and Steed (2000) the two are different but linked in such a way that immersion is a quality of the technology that has the potential to create a sense of presence. Furthermore, Slater (2003) argues that immersion can be objectively assessed. Presence, it being a sensation an observer might feel, is a subjective quality that varies from one person to another, even if they were experiencing the same immersive content¹⁸.

Some have even opted to simultaneously use both terms, such as using “immersive 3D telepresence work” (Fuchs et al, 2014). This way, the authors bypassed the ambiguity of each term and avoided presenting a definition for each. Others also use both terms within the same writing without providing clear delineations. Seel (2014), for example, traces immersive aspects of cinematic displays and their influence on immersive displays at the consumer level. He follows a definition of (tele)presence as the sensation of existing in an environment other than the physical environment one is in, whether it be a more distant physical environment, or a virtual one such as the case of video games. As for immersion, a term that he uses alongside presence, no definition was given. It is mostly used as a property of technologies such as IMAX or Stereoscopy

¹⁶ Presence as a short-term for telepresence. See Lombard and Jones (2015)

¹⁷ Grau overlaps immersion and presence because he rejects the imaginative aspect of immersion. His usage of immersion is not

¹⁸ Slater (2003) also differentiates both immersion and presence from involvement, interest, and emotion.

(2014:127). It is also used as a property of certain media such as video games (2014:131). Seel also uses it as a potential of emerging technologies such as head-mounted displays (2014:133).

While Seel (2014) does not provide clear definitions, he discusses technologies in both cinema and television that enhanced the immersive experience or the sensation of presence in a virtual environment. Mainly, Seel refers to the size of the visual and how much it covers the field of view (FOV) of the spectator. Widescreen television displays cover more than standard televisions. They are also available in larger sizes. Head-mounted displays aim to cover an even larger section of the FOV. But originally, it was gigantic cinematic presentations that came before. Innovations such as the Cinerama and IMAX showed massive content, engulfing the audience in the presentation. It is interesting to note that the first Cinerama movie “This is Cinerama” from 1952, contained a roller-coaster sequence creating “a visceral sensation similar to an actual ride” (Seel, 2014:127). Seel quotes a review of the film that likens the amazement of the audience to those that first experienced cinema, half a century ago.

Like immersion, presence suffers from an ambiguity within scholarly writing as Lombard and Jones (2016) show. Different sources attribute divergent, and sometimes overlapping, properties to the same term which leads to confusion and impedes progress in the field (Waterworth et al, 2015). Lombard and Jones (2015) present a review of the literature to show how scholars confusingly use the term presence. They then provide recommendations for future writings on the topic to better delineate the meaning behind it. According to them, authors should situate themselves amongst previous definitions presented, regardless if they choose to use the same terminology or not. Furthermore, they call on authors to follow their terminology, as clearly and consistently as possible, in order to avoid confusion.

Lombard and Jones (2015) begin by showing that presence is elsewhere defined as ““feeling,” “engagement,” “perception,” “action,” and “sensation.”” (Lombard and Jones, 2015:14) alongside labels such as “telepresence, co-presence and spatial, social, virtual, immersive, perceived, subjective, environmental, and corporeal presence” (Lombard and Jones, 2015:14). The authors differentiate between objective and subjective forms of presence. The first revolves around easily observable characteristics such as technologies of communication. The second revolves around the experiences of individuals.

They also differentiate between spatial and social presence¹⁹. Spatial presence involves mainly the experience of space whereas social presence involves living, or seemingly living, entities such as mass communication technologies. Spatial presence is the phenomenon whereby one feels like they exist in a space other than the physical space they actually occupy. A subset usage of spatial presence is in regards to virtual environments and the sensation of “being there” (Lombard and Jones, 2015:23).

Virtuality is another point of divergence as Lombard and Jones ask to differentiate between remote, virtual, and medium telepresence. Remote telepresence revolves around the interactions of multiple parties across a distance, such as the case of video calls, for example. Virtual telepresence occurs in interactions with people and objects generated by technology such as the case of simulated software, as an example. Medium telepresence revolves around the interactions with the technologies themselves such as the case of toys or machines that seem to be alive.

¹⁹ Spatial and social presence are presented as the major categories of presence. The authors delineate the usage of presence as spatial, social, self presence, engagement, realism, cultural presence, and parapresence.

Lombard and Jones also ask scholars writing on presence in the future, to highlight the levels of mediation that occur in their instances of presence. They also warn of the ambiguity in using real and realistic and call for clarity in usage. Lombard and Jones further note that in most definitions, presence is considered a subjective quality or experience that can only occur through internal mental processing. Additionally, they found that spatial presence is the most common type of presence.

2.2.4 Presence and Vection

In another chapter from *Immersed in Media*, Riecke and Schulte-Pelkum (2015) discuss the bi-directional relationship between spatial presence and the illusion of self-motion (vection) in the context of Virtual Reality (VR). Vection is a phenomenon that occurs when stationary viewers are subjected to a moving visual stimulus that covers a large section of their field of vision. In those instances, the viewers mistakenly feel themselves moving in the opposite direction of the displayed motion. A given example of physical vection is that of being in a stationary train and witnessing, through the windows, a parallel train moving. Because the visual information is limited to the view of the second train, the viewer might feel like the train they are in is moving in the opposite direction, when it is, in fact, stationary. They trace the literature on vection for more than a century back and assert that vection can occur for all motion directions and along all axes (Riecke and Schulte-Pelkum, 2015:193), focusing on two main types of vection: linear vection and circular vection.

The authors' focus is placed mainly on vection within VR applications. Tracing the literature, they show that this topic has mostly been investigated in terms of the low-level features of the visuals and their impact on vection. Here are the aspects the authors covered through literature review:

- Larger visuals that cover larger sections of the field-of-view (FOV) of the spectator, induce a stronger sensation of vection;
- Clear foreground-background separation affects the occurrence and intensity of vection. Vection occurs when the background is shown moving, inducing a false sensation of self-motion. Additionally, objects perceived to be in the foreground, whether static or moving opposite the motion of the background, facilitate and increase vection;
- Fine detail in the central view and less detail in peripheral view can lead to stronger vection;
- The speed and direction of the presented visual affect vection. In linear vection, forward and upwards movement are favored over downward and backward movement;
- Vection occurs faster when the eyes are fixated on a stationary point instead of roaming around;
- Adding spatialized auditory clues facilitates vection as well as presence;
- Other non-visual clues also improve vection such as vibrations or air blown with the direction of travel;

Riecke and Schulte-Pelkum's argument however, is in regards to "higher-level" influences on vection such as cognitive and attentional aspects. They start by showing that participants experience vection more readily if they are shown that they actually can physically move in the direction of motion, such as being part of a carriage or being seated on a moving chair. They also discuss the power of witnessing a naturalistic visual - as opposed to an abstract one - in the creation of both vection and presence. Perceiving the visual in a natural manner is also important such as seeing an upright image as opposed to an inverted one. Additionally, through a set of two experiments, the authors show a high correlation between presence and vection in VR presentations, further adding "higher-level" influences on vection.

Regarding the cinematic medium, Katherine J. Thomson-Jones (2013) asserts that both illusion and imagination are joined in the audience's experience of viewing a movie. In her chapter on the philosophical approaches to understanding viewing movies, Thomson-Jones focuses on visuals that induce a sense of motion within the viewer.

Based on Film theorists David Bordwell and Kristin Thomson (2008), Thomson-Jones (2013) writes that filmmakers often attempt at, and allegedly succeed in, inducing a sense of movement in the audience. They do so by using a moving camera, portraying the navigation of a space. This leads to an impression of motion in the audience, even though one never forgets they are seated in their physical environment.

Thomson-Jones (2013) suggests three possibilities of explaining this sense of movement: The first is a proprioceptive illusion of self-motion, which can be viewed as a total illusion and sense of motion. Here the audience member might feel themselves falling from their chair. The second possibility, is a visually-induced sense of motion, one that the audience member cannot test and verify. Similarly to Riecke and Schulte-Pelkum (2015), the example of the stationary train is given. Thomson-Jones (2013) also argues that visuals can successfully inducevection, especially when the recipients lack physical information to contradict the visuals, as one does, for example, when their whole view is covered by the projected image.

The last possibility proposes that the illusion of motion can be enriched by the experience of imagined movement. Here the audience might not necessarily physically feel themselves moving but do imagine themselves moving. In this case, the audience retain their perception of the physical space but imagine themselves moving inside the virtual space of the image, rather than moving in their physical seats. Thomson-Jones (2013) then quotes Bordwell and Thomson (2008) on moving the camera in that “it enhances three-dimensionality. It puts you in the space, and if you move the camera the audience becomes aware of the space” (Thomson-Jones, 2013:128).

2.2.5 Immersion in Cinema

Immersion is not new to cinema. One could argue that transporting the audience into the virtual space of the image is at the heart of cinema itself. As a matter of fact, Lombard and Jones (2015) trace the origins of the term presence to key film theorist André Bazin. It was Bazin who first used the term in the sense of placing the audience within the same space of the actor. Bazin writes: “[i]t is false to say that the screen is incapable of putting us ‘in the presence of’ the actor’ since it reflects the actor’s image as a mirror and ‘relays the presence of the person reflected in it’” (Bazin, 1967: 97).

This potential of cinema to share a space with actors is discussed contemporarily in different terms. Namely, it is shifted towards a discussion of technological spectacle. In *Immersion Cinema: The rationalization and Reenchantment of Cinematic Space*, Tim Recuber (2007) discusses some changes in the experience of the cinema spectator through what he dubs as immersion cinema. To him, “[...] immersion cinema represents a new set of technological and aesthetic criteria in which sensory experience and the physical immersion of the spectator within the medium are of paramount importance” (Recuber, 2007:321).

Recuber discusses the apparatus theory of cinema where the passivity and immobility of the audience forces them to suspend their disbelief and accept what they are presented with as truth. According to this older theory, this emerged from the audience’s inability to test truth from fabrication. Recuber argues that contemporary cinema stimulates the senses with such an intensity that it no longer needs to avoid the reality tests of the audience. Contemporary cinema also differs from its predecessor in that it is less voyeuristic. The audience is less configured as watching from afar as technologies shorten the distance between audience and content.

Contemporary cinema uses a list of technological and architectural devices to create a more intense and immersive experience. This list includes massive wide screens, more advanced audio-visual projections, and seats created in the style of stadiums. Recuber writes: “New cinema spaces turn moviegoing into a series of technologically induced thrill rides and enveloping simulations” (2007: 316).

By cinema spaces, Recuber (2007) seems to be discussing two types of spaces²⁰. The first is the physical space of the cinema theater. Recuber charts its changes across cinematic history. The modern cinematic theater increased the size of the screen relative to its surrounding space. These new screens cover most of the spectator’s peripheral vision, a feat that early projections could not achieve. The theater space has also become less distracting as older theaters tended to be magnificent spaces that helped draw in spectators. The contemporary theater aims at drawing the spectator into the screen.

Inside the screen is the second space that can be induced from Recuber’s (2007) writing. This is the virtual space within the screen, the displayed space. This space is presented in such a way that the spectator feels like they are inside it. He notes a selection of films that “create fantastic digital geographies that are explored by the audience seated in the theater as much as by the characters on screen” (2007:321).

To Recuber, “The utilization of first-person, “you-are-there” perspectives is one of the key aspects of these immersive spectacles” (2007:320). “Although first-person perspectives are not new to cinema, these kinds of technological advances help propel

²⁰ Recuber here seems to be using “cinema spaces” to denote properties of physical and virtual spaces as is explained above. This is unrelated to the spatial theories presented later in the article. Those theories are built on Henri LeFebvre’s (1995) work. LeFebvre identifies three related types of space: physical, mental, and social. Recuber builds on LeFebvre in order to present an alternate understanding for film theory.

the viewer into the filmic action in ways that simple camera techniques on their own could not” (Recuber, 2007:324). Recuber notes the technologies that enable this immersive experience: “The spectator becomes one with the spectacle through these technological interfaces; one no longer goes to the theater and simply watches a movie, one is plugged into it, experiencing it as much viscerally as visually²¹.” (2007:324). He also highlights that this is a departure from the apparatus theory of cinema:

“This experience differs from the voyeuristic identification with the camera that has been the center of apparatus theory, for this camera gaze does not attempt to hide. Instead, the technologically enhanced camera perspective announces itself by swooping around objects and characters on screen and simulating extreme experiences for audiences.” (Recuber, 2007:320).

Recuber notes that the spectacle is at its closest to its audience, as ever before, the viewer still has no input in said spectacle. The audience’s interactions or reactions to the displayed content have no effect on the presentation itself. Recuber argues that immersion cinema prevents audience agency. “Its [immersion cinema] overemphasis on physical experience creates passive consumers who pay to plug in to visceral thrills without, necessarily, any meaningful interaction with the film” (Recuber, 2007:325).

In chapter 5 of his book *Digital Visual Effects in Cinema: The Seduction of Reality*, Stephen Prince (2012) discusses immersion in digital cinema. While mostly focusing on technologies that allow greater immersion, Prince touches on the aesthetic repercussions of such tools. He begins by stating that cinema often presents imaginary worlds that rely on being convincing in order to beckon the audience towards them. He writes: “Cinema belongs to a long history of illusion spaces that aim for maximum perceptual credibility, and many of its technological innovations can be understood as advances upon this underlying goal” (Prince, 2012: 183). Afterwards, Prince amalgamates technology with

²¹ Recuber likens this amalgamation between audience and film to Haraway’s(1991) cyborg.

creative choices by writing: “The history of cinema shows a continuing movement within the medium toward providing viewers with greater perceptual immersion, achieved by stylistic accretions in the areas of framing, lighting, editing, color, sound, large-format film gauges, stereoscopic space, and high definition video” (Prince, 2012: 225-226). To Prince, then, immersion in cinema both relies on technological as well as stylistic development.

Based on Oliver Grau (2003) and on Alison Griffiths (2008), Prince (2012) reiterates the history of immersive media and links current IMAX presentations to the history of immersive paintings, frescoes, ceilings, and panoramas. Following displays that engulfed the viewer by hiding the edges of the image, Prince arrives at amusement park rides that are empowered by physical stimuli simulating displayed motion. These were called ride-movie experiences or motion simulation rides (Prince, 2012: 185). They were, and continue to exist as popular amusement park experiences, especially those related to cinema studios such as Universal Studios and Disneyland. These rides are often themed by popular films and typically display 360-degree moving images coupled with motorized kinesthetic movement. Their history dates back to early twentieth century attractions of Hale’s Tours and Scenes of the World.

Back in those attractions, the audience was placed in a mockup of a train car with its facing side displaying visuals taken from the front of a train. The audience subjected to these images, accompanied with sound and rocking movement, were convinced they were aboard a train ride (Prince, 2012: 185). Immersing viewers in virtual spaces came naturally to cinema, according to Prince. He quotes Lauren Rabinovitz in writing that these types of films function:

by appealing to multiple senses through experiences featuring forward movement, wraparound screens, objects or lights flashing in the viewer’s

peripheral vision, subjective camera angles, semisync realistic sound, seat or floor movement, and narratives that alternate danger and command.” (Rabinovitz, 2004: 102)

Prince (2012) continues the discussion by focusing on stereoscopic cinema and its immersive aspect. Stereoscopic movies are often referred to as being 3D. However, Prince argues that traditional monoscopic films already are three-dimensional in their portrayal of a three-dimensional space (whether real or computer simulated) and in their usage of depth cues²² that inform on that aspect of their nature. Labeling stereoscopic movies as 3D is then confusing as both can be seen as three-dimensional, according to Prince, but continues to do so for its familiarity (Prince, 2012: 206). Prince highlights some of the depth cues used in cinema to inform on the dimensionality of space and on the positioning of objects within it. These are quoted (Prince, 2012: 199) through this list:

- occlusion or overlap (near objects occlude farther objects along a line of sight)
- relative size (objects appear smaller with increasing distance)
- height in the visual field or picture plane (farther off looks higher up)
- aerial perspective (hazing from the atmosphere and a color shift toward blue affect very distant objects)
- motion parallax (differences in the apparent rate of motion according to distance from the observer)
- convergence (movement of the eyes toward each other to sight a near object)
- accommodation (change in the shape of the eye’s crystalline lens to focus on a near object)
- binocular disparity (differences in the retinal location of an object as found in each eye)

2.2.6 Conclusion

Immersion as an aspect of cinema is thus shown to be not only a contemporary occurrence, but one that goes further back. In fact, if visual media are considered at

²² Prince (2012) notes that stereoscopic cinema uses these monoscopic clues and shows images through stereopsis. Furthermore, stereoscopic cinema influences the stylistic choices of its content as there is a need for a change in shot composition, usage of depth of field, and editing choices (Prince 2012: 206).

large, immersion is spread throughout its history, and across multiple media. It is important then, to both understand and explain what is meant by immersion, as has been shown above. Indeed, immersion has been shown to refer to multiple phenomena, ranging from involvement to physically feeling transported into a virtual space. It is also closely related to presence and is increasingly part of the discussion on contemporary media, even though, it is shown to have a long history in Art. In the next section, the discussion focuses on the media themselves, on their history as well as on current discussions.

2.3 New and Old Media

2.3.1 Overview

Part of the discourse present in this thesis connects to one on new media and their relationship to both old media and the audience. These discussions naturally branch off to a focus on technologies which are generally regarded as integral to media studies. Within this thesis, the focus is shifted away from technologies and placed on content, particularly on stylistic choices. The literature in this section provides solid ground to justify this thematic focus on content, by mapping the current discourse on technological determinism. The literature also highlights the present knowledge on the relationship of new and old media, which will be used in the discussion in chapter five. To help map out these topics, and the key theories behind the discussion, the literature relies on two main references. Those are Lister et al's (2009) *New Media: A Critical Introduction* and Paul Young's (2006) *The Cinema Dreams Its Rivals: Media Fantasy Films from Radio to the Internet*. While the literature covers other sources deemed

relevant, these two texts present valuable overviews on current discussions within these topics.

Specifically, Lister et al (2009) summarize and introduce key, formative notions such as the definition(s) of new media, their history, their relationship to established media, the technological imaginary, and technological determinism. On the other hand, and while Young touches on some of these issues himself, the value of his text lies in its introduction. There, Young (2006) proposed three arguments, that contradict his stance, and argues against them. In doing so, he situates himself within the discussion on intermedia relationship, thereby revealing key elements of the discussion. This thesis found Young's views to be quite valuable to the discussion at hand and therefore provides a summary of them. The next section provides an overview on new media.

2.3.2 Media and New Media

In the book "New media: a critical introduction" (Lister, M., Dovey, J., Giddings, S., Grant, I., and Kelly, K, 2009), the authors present some of the contested issues related to the emergence of new media and their various relationships with old media, technology, their users, and culture at large. They present an overview on existing theories of media studies and trigger discussions, instead of simply providing divisive answers.

Naturally, anything described as new must have a counterpart that is older, and media is no exception. In fact, to Lister et al (2009), the history of new media, and the relationship of the two, is an important part of the discussion. "New things do not have no history; rather, they make us search a little harder for their histories. Indeed, new things may bring out overlooked histories in order to answer the question of where they come from" (Lister et al, 2009:4). Furthermore, media that is referred to as "old" in

today's time was once new. Their cultural relevance and impact was studied, just as today's media is. It is then useful to take into consideration the history²³ of new media for reasons that go beyond simple archiving of the ways of the past.

First, the authors define what is being meant by the term “media”, the plural form of “medium”. Colloquially used as a singular collective term, the media usually refers to “communication media”, according to Lister et al (2009:9). Studying the media may pertain to a study of institutions or the cultural product of said institutions, i.e. its content. Additionally, studying the media may mean focusing on processes of distribution, reception, and consumption of generated content. The authors argue that this consumption of media has changed²⁴ as the world witnesses new ways of consuming media. They point to multiple changes such as: migration of content across multiple media; a shift from “audiences” to “users” and from “consumers” to “producers”; a shift from mass audience toward niche markets; the loss of control and regulation on the part of the state; etc.

Of the very earliest questions asked in this book (Lister et al, 2009) is what constitutes new media? What does this term encompass? The authors do not provide a listing of new media nor a categorical set of defining features. Rather, they present new media as part of different cultural changes that occurred such as:

- A shift from modernity to postmodernity;
- An increase in the intensity of globalization;
- The replacement of the industrial age with the information age;

²³ This history would not just be the technical ancestor of a particular medium. The history could focus on the relationship between medium and consumer, or on the societal impact a given medium produces, for example. Seen as these are issues that also face new media today, it is important to look at how these now-old media handled, and continue to handle those issues.

²⁴ Changed but not disappeared. New media present new ways of consuming content but it does not necessarily mean that “old” ways of consumption no longer exist. A simple example would be the reading of a book.

- A decentralization of geopolitical orders.

In a way, new media were caught within these cultural changes, with a cause-and-effect relationship between them. New media are thus seen as formative parts of a new culture, containing modernist connotations of progress and of being better than the old (Lister et al, 2009:11). The authors posit that new media may present:

- New textual experiences;
- New ways of representing the world;
- New relationships between subjects and technologies;
- New experiences of the relationship between embodiment, identity and community;
- New conceptions of the biological body's relationship to technological media;
- New patterns of organization and production;

Additionally, the authors note that the term “new media” is an inclusive term.

They write:

So, while a person using the term ‘new media’ may have one thing in mind (the Internet), others may mean something else (digital TV, new ways of imaging the body, a virtual environment, a computer game, or a blog). All use the same term to refer to a range of phenomena (Lister et al, 2009:12).

Lister et al (2009) present six defining characteristics of new media. To them, new media are: digital, interactive, hypertextual, virtual²⁵, networked, and simulated²⁶. The authors argue that these characteristics are what make new media different. They also note that not all of these qualities are present in all instance of new media, and certainly not at the same levels.

²⁵ It is argued that the connotation of the term “virtual” in the digital age, has shifted from being an incomplete version of a reality to a simulated alternative to the real, perhaps even containing possibilities of being better than the real (Lister et al, 2009:36).

²⁶ The authors differentiate between computer simulations, a characteristic of new media according to them, and postmodernist understandings of simulation.

One point of major interest to this thesis is the interactive aspect of new media. Lister et al argue that interactivity changes the audience of new media from viewers to users. They write: “In interactive multimedia texts there is a sense in which it is necessary for the user to actively intervene²⁷; to act as well as viewing or reading in order to produce meaning” (Lister et al, 2009:22). The authors further subdivide interactivity into subcategories such as registrational interactivity, interactive communication, hypertextual navigation, and immersive navigation. In the last subcategory, the authors refer to an immersed user that navigates and explores represented three-dimensional spaces (ibid).

Navigation in the virtual space is also hailed as a new media characteristic by another key media theorist: Lev Manovich. In his book *The Language of New Media*, Manovich (2001) discusses the emergence of new media, or what he refers to as the one metamedium of the digital computer. The computer, Manovich reflects, mediates production, distribution, and communication. According to him, this mediation changed both media and computer: old media became new media; computers became media processors and manipulators. With the computerization of media production, Manovich presents cinema as “slave to the computer” (Manovich, 2001:48).

Within this book, Manovich (2001) attempts to theorize and record the development of new media. His analysis revolves around placing it within the history of modern visual and media cultures, all while using cinema as a framework for investigation. He defines five principles of new media: numerical representation, modularity, automation, variability, and transcoding. Furthermore, he examines the effects of the computer revolution on visual culture and investigates the way new media builds on preceding

²⁷ This is an essential mechanism in a large section of video games whereby the narrative ceases to advance should the player stop interacting with the game.

forms as well as how it breaks from them. He also discusses the unique ways “new media objects create the illusion of reality, address the viewer, and represent space and time” (Manovich, 2001:34). To Manovich, the shift to computer-based media presents a change to the nature of said media as well as to its aesthetics. Manovich highlights two of the emerging aesthetics that are native to new media: database and navigable space. To Manovich, then, navigable space is a key form (or aesthetic) of new media; spaces in new media are always spaces of navigation (Manovich, 2001: 218).

According to these sources, then, new media seem to have overarching principles that are connected to a changing culture, at large. New media also seem to have their own language, specifically in their formal qualities such as with their spaces of navigation. This language, and other features as well, are not irrelevant of previous, established media. In fact, the study of the relationship of new and old media is one that must be paid attention to.

2.3.3 New and old media

To understand the relationship between new and old media, their histories must be studied. As previously touched upon, the history of new media informs current studies on its nature and on its relationship with previous media.

Lister et al (2009) present two theoretical frameworks that help explain the relationship of new media to history. These are the teleological account and the genealogical account. Through the first theory, new media emerges as a direct result of past processes. This places new media at the end of a linear progression beginning with oral communication. Lister et al (2009: 53) write that this reflects an assumption that new media realize dormant potentials of older forms of communication, where the past somehow prepares the innovations of the present.

The second approach moves away from notions of historical culmination. Genealogy was advocated by Michel Foucault which was initially introduced by Friedrich Nietzsche, according to Poster (1999: 12). In media studies, according to Lister et al's (2009) review, genealogical approaches focus on dynamic relationships between new and old, as opposed to a linear progression from origin to culmination point.

Lister et al argue that each medium contains a defined characteristic or quality that will emerge in time through experimentation and usage. This pertains to the modernist approach whereby the medium needs to create a radical shift from the past in order to be considered new.

Following this modernist approach, Lister et al (2009: 61) present a general interaction between new and old media. At first, it is historically evident that new media adopt the conventions of old media. Lister et al write:

There is the case of the early photographers known as the Pictorialists, who strove to emulate the aesthetic qualities of painting, seeing these as the standards against which photography as a medium had to be judged. [...] Similarly, it is well known that early cinema adopted the conventions of the theatre and vaudeville, and that television looked for its forms to theatre, vaudeville, the format of the newspaper, and cinema itself. (2009:62)

In the case of painting and photography, Lister et al (2009) present Clement Greenberg's²⁸ arguments. At a time where the mechanical reproduction of photography provided some advantages over painting, Greenberg argued that painting should purge itself from illustrative functions and focus on what makes it unique. In this way, painting would find its true power and achieve its true nature.

Lister et al (2009) present other cases where "history is not seen simply as a matter of linear chronology or unilineal progress in which the present is understood mainly as the

²⁸ Clement Greenberg was a modernist art critic and theorist that was particularly interested in the case of painting and photography (Lister et al, 2009)

superior development of the immediate past; rather, short-circuits and loops in historical time are conceived” (2009:64). This closely resonates with postmodernist theories, whereby the past functions as a database of styles available for contemporary resurgence²⁹. Lister et al argue that such approaches also inform on the complex relationship between new and old media.

Lister et al (2009) also present that emerging media are often painted as having the potential to overcome the shortcomings of established media. They refer to these cases as workings of the “technological imaginary” (Lister et al, 2009: 66). This term has its roots in psychoanalytic theory³⁰. When used in media studies, it presents technologies as “other”, capable of fulfilling the desires of the viewer and making them feel complete. This drives the discussion towards notions of escapism and of merging with the virtual. Lister et al, based on Kevin Robins (1996), write:

Co-existing with this desire for technologically empowered control, the technological imagination leads us to dream of the pleasure of shifting our existence to ‘an alternative environment, one that has been cleansed of the real world’s undesirable qualities’ by entering ‘into the image’. This is now achieved through the IMAX screen and lies behind our fascination with the prospect of immersive VR; formerly it was sought in the form of Hayles tours, panoramas, and early cinema. (Lister et al, 2009: 70)

2.3.4 Remediation

Oliver Grau argues that comparing new media to older ones helps to understand the qualities of the new form. Concurrently, it changes the perception of the old forms.

²⁹ See Jameson (1991:18) on Postmodernism, pastiche, and historicism.

³⁰ Lister et al (2009) link this back to psychoanalyst Jacques Lacan in his development of the “imaginaire” (French for imaginary). It relates to a world of concepts and images that are whole and complete. According to Lacan, humans, being incomplete, desire the imaginary as it completes them.

“Understood in this way, new media do not render old ones obsolete, but rather assign them new places within the system” (Grau, 2003:8).

Lister et al assert that media do not appear in a vacuum by presenting Bolter and Grusin’s “remediation” (2009: 47). Lister et al (ibid.) write: “They [Bolter and Grusin] propose and argue at some length that the ‘new’, in turn, in new media is the manner in which the digital technologies that they employ ‘refashion older media’, and then these older media ‘refashion themselves to answer to the challenges of new media’”. Young summarizes their views in the following way:

"Remediation" means that "new" media borrow conventions of the "old" in the process of constructing their own brands of realist representation, while at the same time old media incorporate aspects of the new in an attempt to reanimate their appeal to consumers (Young, 2006: xx)

New media may borrow textual strategies from established media. With time, and as new media become better established and becomes a part of the consumption sphere, old media appear to be driven towards reshaping its forms, to better align itself with the new. This is especially apparent with contemporary digital media. Lister et al write: “Digital media are in the process of representing older media in a whole range of ways, some more direct and ‘transparent’ than others. At the same time, older media are refashioning themselves by absorbing, repurposing, and incorporating digital technologies.” (Lister et al, 2009: 62).

Young applies this discussion on the relationship between cinema and other media in the contested Cannibalism view which claims that cinema and other media share and absorb each other’s qualities and capabilities. This is a view that Young partially agrees with. Specifically, Young agrees with McLuhan in that “newer media "cannibalize" forms, formal strategies, and styles from elder media, as early film did with theater, and as television eventually did with film” (Young, 2006: xix). Young further asserts that

Hollywood picks and chooses what to incorporate in its classical forms in order to rejuvenate their content for newer audiences who might view classical cinema as obsolete.

In summary, remediation occurs both ways with new media incorporating elements of the old and vice versa. In this digital age, these elements cannot but contain new technologies, a key factor in digital media. Alas, the discussion inevitably arrives at one regarding technology.

2.3.5 Technological determinism

Discussing the role of technology is an important element of media studies. Lister et al (2009) summarize the on-going debate, dividing it into two major opposing ideas. These are presented by two key media theorists: Marshall McLuhan and Raymond Williams.

The issue, in general, is whether the technology used in media should be considered as the *raison-d'être* of said medium, whether it determines its content and its message. This is known as technological determinism and it was championed by Marshall McLuhan in his text *Understanding Media: The Extensions of Man* (1964). Lister et al (2009) analyze McLuhan's work and present some of his key ideas. According to them, McLuhan claims that content is irrelevant as the real message lies in the capabilities of the medium and the technology behind it. These capabilities come in the form of the medium's potential to instigate a change in human affairs, changing their perception of the world. It is important to note that to McLuhan, there is no difference between a medium and its underlying technology (Lister et al, 2009: 83).

Contrary to this theory is the humanist approach championed, according to Lister et al (2009), by Raymond Williams. Williams' argument is sociological in nature as he traces the development of technologies according to the needs and desires of social

groups. Existing technologies are reshaped in order to achieve certain social purposes. This calls for a consideration of the reasons particular technologies are developed, socio-economic elements that affect them, and the purpose of the usage of these technologies. According to Lister et al (2009), mainstream media studies tend to favor this view (2009: 86).

To be clear, Williams' arguments differ from McLuhan's in whether a particular technology guarantees its usage and its social effect. Furthermore, they oppose each other in the result of the previous statement, on whether the nature of media shapes culture; on whether it is technologically determining or not.

Young (2006) applies this debate in the first of the three contested claims he presents: The Ontological-Evolutionary view on cinema. This is a perspective that claims that cinema evolves according to its own inner laws and therefore has little to do with the evolution of other media. Young links this view back to Andre Bazin, and to the technological determinism of theorists Jean Baudrillard, Friedrich Kittler, and Marshall McLuhan. Young bases himself on Raymond Williams in opposing this view³¹ who refers to technological determinism as an "untenable notion" because it would destroy any social, political, or economic intention in communication media (Young, 2006: xv).

Young further writes:

Film may be an aesthetic medium and a communications medium, but it is also the medium by which the capitalist industries that shape and define it communicate specific messages in specific ways at different times, under internal and external conditions and pressures that may be altogether unrelated to a medium's technological base. (Young, 2006: xv)

At every stage in its history, the identity of film mutated not because of an intrinsic logic of "progress" but because of crises forced by social and economic exigencies. (Young, 2006: xvii)

³¹ Later, Young references Carolyn Marvin for more anti-deterministic views who stated that social discourses, not the properties of a technology, inform the usage of media. She also refers to media as "pliant entities with "no natural edges"" (Young, 2006: xxv)

Young further links this issue to the relationship between new and old media. To Young, if the medium indeed dictates the content of its message, then conventions would never have been borrowed from other media in the first place, such as discussed through remediation and media cannibalism.

2.3.6 Cinema and new media

Young's (2006) last of the three contested views is unrelated to previously discussed issues. Nonetheless, it is an interesting argument on the relationship between cinema and new media and is therefore summarized below.

Young presents the Box-Office view which claims that cinema attacks other media for fear of losing its market share in the profits. In other words, it is a fear that viewers might prefer to spend their money on other forms of entertainment and thus create economic losses for cinema. Young argues that the relationship "must be more complex than economic fear and loathing" (2006: xviii) as production studios create a lot of content for TV and other media and are generally involved in a multitude of lucrative aspects beyond production such as distribution and cross-marketing (which involve the creation of tie-in merchandise such as games and clothing, for example).

To him, the seemingly troubled relationship between cinema and newer media is more concerned with qualitative than with economic competition, especially that these media present products from the same category as Hollywood (entertainment) and include additional promises such as inter-user communication instead of the one-sided communication of creator to audience. This led to cinematic content being formally influenced by a number of ways. In relation to television, Young writes on an increase of close-up shots, respecting television safe area, an increase of editing pace and generally conforming to viewership on a smaller screen that must grab the attention of

the viewers that can relatively control what they watch (Young, 2006: 209). Regarding the relationship of cinema with video games, Young writes:

If Hollywood continues to reap profits from tie-in video games, classical action films will probably come to resemble game action even more than they do already, so that games can be more easily modeled after them—and vice versa (Young, 2003: 230)

If PlayStation and Game Cube games seem more and more like movies, this is in part because action movies have progressively adjusted the proportion of action scenes to characterization and psychologically motivated plot events to resemble that of the most popular games (Young, 2003: 230).

Young also writes on the involvement of major Hollywood studios, sometimes through their parent companies, in the development of other digital media. He claims that these media technologies are developed in a way that keeps films visually interesting, such is the case of digital visual effects for example. He writes: “Besides attracting record crowds, digital effects carry the added ideological bonus of displaying the cinema as an institution in synch with the technological times “(Young, 2006: 202)

2.3.7 Conclusion

Through Young’s (2006) views, digital visual effects emerge as a link between media, as was also argued by Manovich (2001). It is clear then that new and old media share a complex relationship, one that is also connected to multiple cultural, technological, and economic aspects. As argued by Lister et al (2009), new media do have histories. Yet part of new media’s nature is to instigate a change. It is also connected to both cultural and technological changes.

Through remediation and media cannibalism, the relationship between new and old media becomes more intricate. The literature shows how media acquire and repurpose formal strategies and technologies to become, or to remain, part of the consumption sphere. Specifically, in relation to cinema and other media, Young (2006) presents a

relationship that is both tense and co-dependent. To him, visual effects' role goes beyond attraction as it paints the medium as up-to-date, and still relevant in the cultural sphere. This places a thematic importance on visual effects, one that connects to the discourse on intermedia relationship. Furthermore, the technical analysis in chapter four, as well as its subsequent discussion in chapter five, will present cases of computer generated imagery which will be analyzed both technically and thematically. Therefore, the remainder of this literature will focus on digital animation, visual effects, and computer-generated imagery.

2.4 Digital Animation

2.4.1 Introduction

Discussing computer animation becomes necessary at this stage of the literature. The primary reason for that is that computer-generated imagery (CGI) seems to play a large role in the creation of visuals that are analyzed throughout this research. More to the point, the focus is placed on the space of animation, as opposed to other constitutional elements such as characters, for example. To be clear, space of animation within this study is used as a term to denote all that surrounds the figures in animated visual representations. Other synonyms may include environment or setting.

The literature follows by presenting discussions on how these spaces are accessed, how they are perceived by the audience, leading to a section on a particular visual effect dubbed "movie-ride" effect.

While this research amalgamates digital animation, digital visual effects, and computer-generated imagery, it is acknowledged that these terms are not synonymous. For the purposes of this research, since they share the same methods of creation and the same

potential set of stylistic qualities, the discussion moves away from a delineation of these terms and looks holistically at digital imagery, at large.

2.4.2 Digital Animation and Computer-Generated Imagery

Computer-generated imagery (CGI) [...] now a feature of many mainstream popular films, is usually key to big budget blockbusters, and has virtually eliminated hand-drawn and cel animation³² in animated feature films. While it is widely used in postproduction to generate hard-to-shoot backgrounds or lighting effects, it is in its explicit application as spectacular special effects that it has generated intense excitement, anxiety, and popular and critical debate. (Lister et al, 2009: 133)

According to Lister et al (2009), this wide usage of CGI in mainstream productions has historical roots in cinema but also informs a particular technological imaginary. They also argue that the popular discourse on CGI usage emerges paradoxical, whereby the audience is both submissive to the spectacle yet aware of its modes of operation. They write: “With the advent of popular CGI cinema we are left with an apparently paradoxical notion of realism, one that refers both to a perceived immediacy but also to a heightened illusion and spectacle” (Lister et al, 2009: 142). Mihailova (2013) further argues that the technologically mediated images that flaunt their aesthetic achievements on the screen draw marvel from its viewers, who in turn become more susceptible to it: “[...] today’s impressive and marvelous CGI is, simultaneously, the product being sold to the awestruck audience and that product’s own advertisement” (Mihailova, 2013:142).

In his book *Digital Visual Effects in Cinema: The Seduction of Reality*, Stephen Prince (2012) writes on a multitude of issues regarding visual effects³³. First of which, Prince writes on the perceived dichotomy between visual effects and live action

³² Cel animation is a form of traditional animation that relies on the creation of individual drawings, referred to as Cels (plural form of Cel) (Wells, 2006: 90)

³³ Prince (2012) notes that not all visual effects are used for spectacular effects. For the purposes of this research, however, the focus is placed on spectacular visual effects as they are more connected to the present discussion.

cinematography. He argues that this traces all the way back to early cinema and the stylistic and conceptual split between Georges Méliès on the one hand, and brothers Auguste and Louis Lumière on the other. While the Lumière brothers filmed actual physical events, Méliès' cinema was fantastical and moved away from the real. Prince argues that once the viewer bypasses this early cinematic dichotomy, visual effects can be found to be harmonious with narrative, and "digital tools have made them more expressive, persuasive, and immersive." (Prince, 2012: 4). In fact, Prince asserts that "The history of cinema and the history of visual effects are inseparable" (2012: 227).

In contemporary times, Prince (2012) discusses the issue of trust in regards to the digital image. He presents several views that argue that since digital photographs can be effectively altered, they lose their indexicality and their authority. Following the photographic model of cinema, the view championed by cinema theorist André Bazin that attributes objectivity to cinema as it is derived from the objectivity of photography, digital cinema also loses its relationship with reality as it can no longer function as an index. In fact, Lister et al write: "The privileged status of photography as a medium of verisimilitude accounts for much of the confusion around CGI." (2009: 140).

Prince (2012) then, based on multiple sources, provides counter arguments to the notions discussed above. First, he argues that digital cinema builds on an aesthetic continuity from its analog predecessor, as well as on foundations from art (2012: 152). Then, Prince argues that photography, and cinema by extension, follow aesthetic conventions of representation and therefore aren't separated from creative intervention. Simple creative decisions such as framing or exposure setting change the intent and communication of an image. Furthermore, the underlying technological apparatus also informs the nature of the picture. This happens to such an extent that arguing that the photographic camera shows objective truth becomes absurd, as Snyder writes (1975):

A photograph shows us "what would have seen" at a certain moment in time, from a certain vantage point if we kept our head immobile and closed one eye and if we saw the equivalent of a 150-mm or 24-mm lens and if we saw things Agfacolor or in Tri-X developed in D-76 and printed on Kodabromide #3 paper. (Snyder, 1975: 152)

Prince (2012) further argues that cinema goes beyond the photographic model as it combines a multitude of traditions for visual representation, namely painting and animation. According to Prince, these have been integral features of cinema throughout its history.

2.4.3 The space of animation

The space of animation holds a great importance to this study. Perhaps because, as J.P. Telotte posits, it is animation's flat nature that "has consistently evoked the specter of depth and spatial presence—or underscored, even capitalized on, the almost necessary absence of those characteristics." (2010:9). It is precisely its flat nature that raises questions and concerns around immersion in its capacitive spaces, more so perhaps with the recent shift towards realism.

Animation theorist Ülo Pikkov (2010) argues that the importance of space lies in the fact that it is created from scratch. This purposeful creation of the animated space, where randomness is minimal, leads one to think of meanings and reasons for their creation and display to the audience. The animated space shows the film's general world as well as the animated character's image of the world, constituting the collective consciousness of the animated subject. According to Pikkov, without this space the characters would have no thoughts, memories, nor dreams. In fact, Pikkov concludes that: "It is precisely animated space which brings lifeless objects to life, persuades us to believe in their having a soul and, hence, to sympathize and identify with them." (Pikkov, 2010:136).

Prince (2012), in a chapter titled “Digital Environment Creation”, writes on a shift in contemporary digital cinema in the creation of virtual space. He notes that “most of the time our sense of place in cinema is a manufactured perception, achieved by conjoining different categories of images and environments” (Prince, 2012: 156). This is a standard practice of cinema throughout its history as the portrayed space is often an amalgamation of real and fake environments. “Screen space is composited and constructed rather than photographed” (Prince, 2012: 226). Even the portrayed space tends to be a section of a whole that isn’t shown and possibly not even dressed properly. Prince also points to the practice of matte painting, which is the creation of environments as large paintings and used as a background to the photographed action, to create an illusion of an extended environment similar to a Trompe l’oeil effect. The change began in the 1990s as matte paintings started turning into three-dimensional space, becoming more interactive with the action and camera. “They became immersive extensions of 3D space.” (Prince, 2012: 166). This led to an evolution of the backlot filming approach whereby the physical set has been replaced with CGI. He writes:

Examining cinema’s landscapes through the digital looking glass shows us the medium’s enduring characteristics, its continuing strengths and its appeals and challenges to some of our orthodox assumptions of what cinema is. Numbers have transformed and enlivened pictures. Digital methods bridge the analog era while taking viewers to new thresholds of optical experience. (Prince, 2012:10).

This optical experience derives not only from the creation of spaces but on the way they are perceived by the audience. As Whitley (2008) highlights the value of the setting, or space, in animation, he also places an importance on how the space is being displayed, and how it is viewed citing cases where the viewer experiences the space through the eye of the character. The next section focuses on how digital spaces are presented and accessed by the audience.

2.4.4 Viewing the space of animation

An important part of the discussion on animated space in this research considers the way the space is portrayed, and how it is accessed, not merely what it contains. In relation to this topic, Mike Jones (2007) provides fruitful arguments:

Jones begins (2007) by transgressing the concept of camera from an apparatus, a physical object that captures light, to a vehicle or entity that provides a point-of-view (POV) or perspective embodiment. He discusses that live-action cinematography's *mise-en-scene* is a process of staging for the camera. On the other hand, with 3-dimensional computer-generated animations, in what Jones calls the *mise-en-space*, the entirety of the virtual world is typically created and the camera is then posited within it, a process he highlights as a staging of the camera. The camera, in the latter's case, no longer is a compositional tool, as it does not affect the way the space is composed, but a compositional element, being another point existing in this virtual world. Jones links the origin of the virtual camera to the world of video games and argues that this link exerts an influence on the cinematic expectations of the viewers highlighted in the virtual camera's occasional departure from the cinematographic set of rules and processes. Furthermore, Jones discusses another effect and that is the changing of the movie production process since the camera can be altered at any (later) point during production.

Jones introduces the concept of the diegetic camera as "identifiable by the viewer as physically belonging to and occupying the scene" (2007:233). Conversely the non-diegetic camera transcends the spatiality and physicality of the scene and reigns omnipotent over it and, as Jones shows, " 'sees what the space sees' rather than what the character can or might see"(2007:237), an anthropomorphism of space itself. Jones

shows the physical camera as a medium that passes the experience to the viewer and argues that the virtual camera presents an unmediated construction of space; a pure, cinematic presence of the viewer, “where engagement with cinematic space and cinematic depiction is total, unregulated and intimate” (Jones,2007:238). He follows by differentiating between the diegetic camera that tells the viewer the story, and the mimetic (virtual) camera that shows the viewer the story, unmediated and unconstrained. This mimetic depiction presents a situation that is perceivable as not real, as beyond real, as hyper-real.

A similar argument is presented by Brown (2009), however, with a blatant negative connotation in his depiction of “Monstrous cinema.” He draws on Deleuze who proposed the concept of “time-image cinema” which is denoted by blurring the boundaries between the real and virtual, and long takes that highlight time: moving from a cinema of montage (cutting) to a cinema of montrage, a cinema that shows. Monstrous cinema, Brown proposes, is a cinema that (1) shows in the first place, but it (2) shows continuities that were previously impossible (doing so using virtual spaces and cameras). Since the mode of address is alien to the human eye, (3) the image is monstrous because it is inhuman. Given that whatever is being displayed on the screen is an (4) unreal digital simulation makes it further monstrous. Brown argues that monstrous cinema renders everything in it monstrous and uses *Beowulf* (2007) as a case study for all the aforementioned points showing how the movie portrays most characters as monsters.

Another film that portrays an example of this view on how the space is presented is Robert Zemeckis’ *The Polar Express* (2004). Aldred (2006) discusses the film’s apparent incorporation of language and elements native to the world of video games. She argues that this “playful mode of address” is different from that of classical

narrative cinema as it speaks to a viewer familiar with the viewing and navigation of the space of video games. However, she points out that the film follows traditional aspects of cinema as much as it follows aspects of the video game, leading to a confusing situation for the viewer who tries to reconcile these modes. Aldred builds on references to argue that the digital imagery is in the process of domestication, largely attributed to the widespread availability of video games “which allow an ever greater number of players to explore, concretize, and experience digital spaces and subjectivities that could otherwise remain invisible or conceptual” (Aldred, 2006:159). She presents how the video game medium imitates certain aspects of cinema, mainly with the cinematic non-interactive animation sequences (cut-scenes), but argues towards an apparent shift where film is following techniques and setups native to video games. Aldred notes three features and explores the last two in the case of *The Polar Express*: elaborate environments that beckon for exploration, prolonged subjective “embodied” sequences (first-person-shooter video game perspectives), and episodic (read multi-level) narratives. Aldred finally presents the challenge of the “digital narrative”: A hybrid form of narrative that combines the nostalgia and warmth of classical children’s storytelling with the purposeful adventure narrative of a video game, all within a digital environment.

Thus, although the type of hybrid ‘digital narrative’ Buckland (2000) identifies in a science fiction film such as *The Fifth Element* may provide a relatively seamless mode of immersive ‘video pleasure’ for the viewer, the different narrative strands of *The Polar Express* do not fuse nearly so seamlessly (Aldred,2006:165).

Narrowing down further on styles by which the digital space is accessed, the next section focuses on a particular effect referred to as “movie-ride”.

2.4.5 Movie-ride Sequences

Constance Balides (2003) writes on immersion in mainstream cinema, especially in “movie ride” effects used in film. The term “movie ride” is used in films that instigate the sensation of using a theme park ride. She speculates on the cultural implications of these immersive images as modes of consumption linking them to a change in the realm of production. More specifically, it is in regard to the changing worker’s subjectivity in contemporary periods of Post-Fordism.

Balides acknowledges the different aspects and levels of immersion across multiple media. An immersive effect in cinema generally lacks the physical motion simulation of the viewer or any interaction between audience and content such as that which is found in video games and Virtual reality. Balides writes:

The immersion effect in mainstream film now, however, generally works through an imaginary emplacement of the spectator in the world of the film achieved through textual strategies such as the placement of the camera in the literal position of a character (a point of view shot) or one associated with a purported character’s view as well as special effects zoom shots created with the use of an optical printer and/or involving computer graphic images suggesting movement inward into the image. (Balides, 2003:317)

To Balides then, immersion in film occurs through formal, stylistic qualities. This is later backed by her opposition to notions of technological determinism in writing: “One of the assumptions in this paper is that cultural practices define the meanings of technologies, whose social significance and political consequences are negotiated in public arenas” (Balides, 2003:321). However, these stylistic qualities aren’t thoroughly delineated. While Balides refers to point of view shots that enhance the immersive effect, it is unclear what other qualities must be accounted for. Otherwise, every single POV shot would be an attempt at immersion. This is not part of her argument, however, as she picks a select amount of instances to discuss. From what little Balides highlights

in her quote above, it is understood that formal qualities such as camera placement in POV position, along with inward movement, help create an effect of immersion.

Basing herself on Henry Jenkins' "convergence of media" theories, Balides proposes that the "movie ride" film is the most literal film example of immersive strategies and is also the most explicit example of a convergence between films and theme park rides, a connection that works both ways." (Balides, 2003:317).

Balides (2003) moves to highlight certain occurrences of this immersive effect. She first acknowledges that this effect existed very early in cinematic history but Star Wars (1977) is often considered to be the originator of the effect. She discusses scenes from Jurassic Park (1993), Hackers³⁴ (1995), and The Game (1997).

Balides also mentions some of the implications of new media, especially interactivity and nonlinear information retrieval. These have produced polarizing views as some consider it to be a democratizing element while others view it as a "disguised form of hegemony in which choices that appear to be freely made are already circumscribed in ideological and political ways" (2003: 322).

Lastly, Balides (2003) writes on the cultural importance of immersive spectacle. She bases herself on Siegfried Kracauer's "The Mass Ornament", whereby he refers to the aesthetic pleasure derived from the mass ornament as legitimate. She follows by referring to the immersive spectacle of the "movie ride" films as virtual ornament.

Balides ends by highlighting the cultural importance of virtual ornaments, writing: "As opposed to critics who turn away from immersion and simulation, cultural criticism

³⁴ In the case of Hackers (1995), the immersion was supported thematically as it was in moments where the protagonist was figuratively diving inside the virtual spaces of the computer.

should acknowledge the popularity of virtual ornaments as an index of their more substantial cultural meaning.” (2003: 329).

Similarly, the value of mainstream media is hailed by Williamson as he writes:

Popular films always address – however indirectly – wishes, fears and anxieties current in society at any given moment . . . Anyone interested in the fantasies and fears of our culture should pay close attention to successful films, for their success means precisely that they have touched on the fantasies and fears of a great many people. (Williamson 1993: 27)
(Lister et al, 2009: 153)

In the article *The Future is a Fairground: Attraction and Absorption in 3D Cinema*, Carter Moulton (2013) discusses contemporary styles in cinema that are linked to the re-emergence of stereoscopic films. Basing himself on sources such as Manovich (2002), Gunning (1994, 2000, 2003), and Balides (2003), Moulton links technologically-driven spectacle in contemporary cinema to an early cinema of attractions. In particular, he examines aesthetics in contemporary cinema, to which he refers to as “3D aesthetics” (Moulton, 2013: 6). To him, these aesthetics are both an effect of stereoscopic technology as well as formal descendants of early cinema techniques. He highlights four such cases, grouped under two categories: outward and inward aesthetics.

Under outward aesthetics, Moulton (2013) discusses *The Shock* and the *Showman* techniques. In *The Shock*, objects appear to pop out of the screen and into the physical space of the audience, creating a sense of confrontation and shock. The *Showman* technique is more subdued but still shows elements from the image transgressing into the physical space. Under inward aesthetics, Moulton (2013) discusses *Roaming* and *Riding* techniques. *Roaming* is a subdued, inward aesthetic that aims at showing the space slowly. On the other hand, *Riding* is an intensive inward aesthetic that shows forward motion.

This Riding aesthetic is one tightly linked to attractions, both present and past. In the past, Moulton discusses “phantom ride” movies whereby filming was achieved with cameras positioned on the front or back end of a train. Of the earliest examples, Moulton cites the Lumière Brothers’ *Passage d’un tunnel en chemin de fer* from 1898. He writes: “While the train’s movement is relatively slow and straightforward, the sensation of movement is enhanced by our seeming ingestion of railroad and the interlaced nature of the bridge it traverses through.” (2013: 9). Moulton then claims that this aesthetic has changed in three ways since the Lumières’ earliest example: “the speeds are faster, the grades steeper, and the perspectives closer to the track.” (2013: 9). Moulton continues the discussion by focusing on advertising material for these movies. He analyzes 50 film trailers, half of which are stereoscopic and counts the number of occurrences of the aesthetics discussed. He concludes by noting an increase in the number of occurrences.

Moulton discusses a multitude of aspects within this article. From the cinema of attractions, to the four aesthetics, to the occurrences in film trailers. However, none of these subjects were tackled to great depths and the reader might be left questioning multiple aspects of this article. This would be, perhaps, the point of the article: to initiate a discussion. Specifically, regarding the four aesthetics, Moulton barely describes what constitutes these visuals and how they are manifested on the screen. Alternatively, Moulton simply relies, in most cases, on enumerating instances of such an effect, leaving questions on their constitution and definition vague.

Moulton’s article also lacks a definition for immersion which leads to some additional ambiguity. While writing on a large number of filmmakers’ interest in immersing their audience into their films, Moulton writes: “But, it remains rather unclear whether they

are interested in transporting us into the space of diegetic worlds or into the affect of diegetic characters.” (2013: 10). This clearly shows two separate ways of understanding immersion, as inducing spatial presence or as involvement and empathy with displayed characters.

In her article *Invitation to the Voyage: The Flight Sequence in Contemporary 3D Cinema*, Sara Ross (2012) discusses a particular sub-category of the movie-ride effect which she refers to as the flight sequence³⁵. Central to her discussion, is the thematic linking of these sequences to the narrative. To her, this link is a classic filmmaking trope that has a long standing history³⁶. Therefore, Ross focuses her discussion on films such as *Wings* (1927) on the one hand, and *Avatar* (2009) and *How to Train Your Dragon* (2010), on the other. Throughout her analysis, Ross recurrently links the displayed action to the film’s theme or character arc.

However, Ross also focuses on the aesthetic and technological qualities of the flight sequence. To her, this effect is the highlight of contemporary 3D spectacle, as negative parallax effects – what Moulton previously describes as the outward shock aesthetic – are increasingly seen as disruptive and excessive. The flight sequence, according to Ross, can be used both spectacularly and in a more subdued fashion when integrated within the narrative. She focuses on a particular sub-type of flight sequence: the forward traveling point-of-view shot. This type of visual situates the viewer at the center of a flight path with visuals rushing by. To Ross, this is the most powerful type of visual in the flight sequence. Through it, the audience is subjected to a composition that

³⁵ These are movie-ride moments of film that are thematically bound to a narrative of flight. Ross mentions other, ground-based themes such as running and tunneling.

³⁶ In fact, Ross (2012: 211) quotes film theorist André Bazin who draws an analogy between the myth of Icarus, the Ancient Greek figure that attempts to fly, and the myth of cinema.

emphasizes the importance of the center, all while it keeps displaying intense visuals in the periphery.



Figure 03 - Avatar (2009) - A Shot From A Flying Sequence

According to Ross, technological innovations in cinematic history have aided the flying sequence. She cites as examples Cinerama and IMAX that made use of peripheral vision and surround sound effects to further the illusion. She continues that contemporary CGI surpasses practical stunt effects of old while 3D contributes further with an additional sense of depth and parallax.

Furthermore, and although Ross links the usage of the flight sequence to stereoscopic technologies of display, she acknowledges that the effect retains its spectacular value in non-stereoscopic versions of these films, “making it a good fit for a market in which non-3D theaters and 2D ancillary technologies make up a significant portion of a film’s revenue” (Ross, 2012: 210). In fact, Ross claims that stereoscopy shows more depth in the flight sequence but does not change its nature. She also states that the historical

resilience of this effects lies in its formal content, in the “perceptual force with which it activates depth, movement, and constant renewal of detail, [...]” (Ross, 2012: 211).

In regards to the similarities and differences in visuals between the three cases presented above, Ross (2012) finds a similarity in the style’s core with changes pertaining to modern filmmaking practices. In particular, Ross find in the recent entries faster editing and angles provided by CGI that would have been impossible in *Wings*. Most notable of these angles is those that form over-the-back shots which Ross found to be abundantly present in the recent installations. In these shots, the camera follows the characters from the backside as they are flying. Of the similarities between the cases, Ross found that all of them make a restrained use of “phantom ride” shots, or POV flying shots where the camera is configured in the place of the flyer. This leads Ross to state that characters and their flying devices “are nearly always visually present in the frame as they fly, somewhat muting the perceptual experience of forward motion” (Ross, 2012: 219).

2.4.6 Conclusion

As shown, the movie-ride effect is a common element of contemporary cinematic spectacle, one that has a long history in cinema. It goes back to its earliest forms: “the cinema of attractions”. It is one of the many ways digital cinema entices viewers and immerses them in their virtual spaces. These spaces, as shown, have undergone changes too, with the advent of computer-generated imagery. The ever-important space of animation is now empowered by contemporary digital tools.

2.5 Literature Conclusion

Digital images are now a common element of contemporary entertainment. These are accessed by the consumer through various media, both new and old. In cinema,

spectacular digital effects play a multitude of roles. One of these roles pertains to immersing the audience in the virtual spaces depicted. This is an argument that was touched upon by the likes of Balides (2003), Moulton (2013), and Ross (2012). Through the analysis in chapter four, these arguments will be expanded upon, especially from a technical standpoint, in an attempt to dissect the methods by which the movie-ride effect creates a sense of immersion in the audience. In chapter five, the discussion will expand further to provide an alternate approach to the thematic value of said effect, by linking it to the relationship of new and old media.

The literature has, therefore, covered three main topics pertaining to immersion, new media, and digital imagery. It has also converged, in the last section, on the particular “movie-ride” effect. The remainder of this thesis will focus almost exclusively on this effect, its formal qualities, as well as on its role in contemporary cinema.

This begins in the following chapter, by examining the methods by which this analysis and discussion occurs.

Chapter Three: Methodology

3.1 Analysis

The aim of this research is to dissect the visual qualities of the movie-ride sequence, extracting its technical constitution, and reading it as an immersive effort that draws the audience inside the virtual space of the image. This is provided by performing a technical analysis on a number of case studies whereby this effect is present. This analysis is qualitative by nature as it focuses on the particular characteristics of the movie-ride effect. The aim of this analysis is to extract data in the form of a list of characteristics in which this effect is used. In other words, this analysis attempts at answering the question: how is the movie-ride effect being used in contemporary cinema? What are its aesthetic and formal characteristics? Answering these questions provides primary data which would be combined with additional secondary data in formulating the main argument. In other words, answering these questions leads to uncovering how the movie-ride effect creates a sense of immersion in the audience. Furthermore, this primary data allows the formulation of a list of technical characteristics of current usage of the movie-ride effect which would ultimately be used as a list of recommendations for immersive images in cinema. What follows is a description of the methodology used to gather said data.

The research follows a qualitative analysis of a multitude of case studies to extrapolate primary data. Robert Yin has the following to say on the choice of case studies as research method:

[...] case studies are the preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. (Yin,2003:1)

Yin's statement explains the benefit of choosing case studies as method within this research. The aim of this research is to explore a contemporary phenomenon which is the usage of the movie-ride effect in contemporary cinema. Furthermore, these are occurrences over which the researcher has no control, while only questioning how they are manifested and analyzing their technical characteristics.

The analysis is therefore informed by methods of case study analysis. However, since multiple cases are found, and further are known to exist but are not the subject of current investigation, this thesis does not completely follow a case study analysis. Rather, it uses the methods of case study analysis to dissect a selection of cases. The number, and selection criteria for the cases to be analyzed, are detailed below.

Regarding the number of case studies to be analyzed, the reliance on a multitude of case studies is more beneficial as individual cases might seem like singularities or exceptions. Multiple case studies present a better insight into an occurring phenomenon (Creswell, 2003; Yin, 2003). However, using a large number of cases, or high samples, might be counter-productive on three levels:

Firstly, analyzing a large number of cases immediately increases the scope of the research, leading to a greater need for time and energy to arrive at a conclusion.

Secondly, as the number increases, the nature of the argument shifts towards a quantitative analysis. The choice of using qualitative methods of analysis originate from the nature of the research questions, for they deal with a question of how, requiring an answer on the nature of the event the research is focused on. In contrast, quantitative methods would have been more appropriate had the question required numeric answers. Had the question been, for example, "to what extent is this effect being used?", or "has the usage of the movie-ride effect changed over time?", then quantitative methods

would have been more appropriate as the answer would be in the form of a percentage or a relational number that shows the increase or decrease of usage over time³⁷. Finally, the concern with a larger selection is redundancy.

Therefore, the number of case studies must aim at highlighting the needed qualitative data without running into redundant analysis. An arbitrary number of four cases is selected. It is understood that this number is subject to change as the analysis progresses. A preliminary assumption placed the need to have one or two cases to be enough to highlight the needed discussion. However, following recursive processes from Grounded Theory, this number was revised to three and then finally, to four cases. This number enables the discussion to move forward without running into redundancy, especially within the analysis section.

In general, regarding sampling decisions, Rapley writes: “It is enough to make good, analytically driven, thoughtful, decisions” (Rapley, 2014: 55). It is important to understand the typicality of the selected cases, all while they are tightly connected to the core theory or phenomenon of the research.

These choices also inform that the selection of samples is purposefully non-random, a key criterion in qualitative research sampling (Rapley, 2014). Random sampling is more popular in quantitative research as it is a formative step towards generalization. In qualitative research, the focus is placed on the typicality of the selected cases, which is informed by gained knowledge of the phenomenon. The typicality of cases is then subject to change, as knowledge develops further.

³⁷This, of course, would require sampling a large number of cases – from different time periods in the case of the second question – in order to assert the occurrence of a change. A similar method has been used by Cuttin et al (2011) to show four linear changes in cinema, over the course of 75 years.

Regarding the connection between theory and sampling, Rapley (2014) highlights two main approaches:

The first approach entails a selection following a particular theory. Through this approach, one might be testing certain areas of a fairly established theory, typically changing certain parameters in order to validate or invalidate aspects of said theory.

The second approach pertains to grounded theory whereby sampling occurs in a multitude of rounds. Through the initial round of sampling, which is based on pre-existing notions, conceptual ideas are generated. The following sampling rounds aim at developing these conceptual ideas further, and so cases are selected in such a way that better builds the core theory at hand. The importance of this approach rests not in proving generalizability through varied, representative samples, but in showing the permeability of the proposed theory. With each additional sample, the theory is shaped, and grounded, further, and so, “the demonstration of adequacy is understood in the transportability of the theoretical ideas.” (Rapley, 2014: 59)

In this particular research, the choice of usage of the second approach, the grounded theory approach, is evident in the lack on a reliance on a robust, pre-existing theory to be tested. The theory is both developed and tested with each additional case studied.

3.2 Case Selection

What follows is a tentative list of titles to be considered as case studies. As analysis evolves, following recommendations present in Mikos’ (2014) work (see next section), the list might change as the objectives and variables become clearer. This list contains more than four entries as it is an initial list which would be pruned down as the research progresses.

- Peter Jackson's Lord of the Rings trilogy (The Fellowship of the Ring (2001), The Two Towers (2002), The Return of the King (2003)) – Entries from this trilogy are selected with an initial assumption of high typicality. Each of the three films contain at least one instance of the required effect.
- Avatar (2009) – Avatar has been the subject of great focus for its visual impact on audiences, its technological advances and its immense profitability, to name a few topics. However, to this researcher's knowledge, there haven't been any writing on the subject of immersive effects. Additionally, Avatar is a prime example of a film with highly immersive imagery and where the focus in popular discourse generally falls on the technological tools of presentation. By placing a focus on the content, this study contributes to an already rich discussion of a popular film.
- Star Wars Episode VII: The Force Awakens (2015) – some of these visuals date back as early as the first Star Wars film: Star Wars Episode IV: A New Hope (1977) and may be present all throughout Star Wars installations. In fact, A New Hope may have been the first film to rely on visual effects to create this sort of effect. Further analysis of current ways this style is applied might revise or refine such a statement.
- Marvel Cinematic Universe (2008 - present) – A range of 22 theatrical films which have come to epitomize the contemporary mainstream film. Entries from this arching universe commonly feature sequences of flying and spatial traveling.
- The Harry Potter film series (2001 - 2011) – A range of eight films where flying is a key visual from its earliest installments.
- Other - It is highly likely mainstream animation movies use this effect as well. A multitude of contemporary animated movies will be considered throughout the scope of this research.

Entries in this list are of films containing at least one instance of the movie-ride effect.

These are all movies released within the past two decades³⁸. Additionally, all these movies are considered to be mainstream Western movies. This is a selective choice made by the researcher for the following reasons:

First, mainstream movies are, by definition, the most popular within the medium. In other words, they have high viewership and are available to a larger section of (possibly worldwide) population. This would be more indicative of immersion being a request of

³⁸ This is not necessarily a criterion for selection but it is mentioned simply because I rarely found earlier examples, except those from early cinema of attractions (following references). This, along with digitality and a reliance on computer effects, are common attributes of these entries but were not criteria of selection at the beginning of the selection process.

the masses as opposed to a result of an artistic installation, as a contrasting example.

This reasoning follows Williamson who wrote: “Anyone interested in the fantasies and fears of our culture should pay close attention to successful films, for their success means precisely that they have touched on the fantasies and fears of a great many people.” (Williamson 1993: 27) (Lister et al, 2009: 153). Furthermore, it is probably more likely to find scholarly writing and a range of critical reviews on popular items such as mainstream films.

Second, focusing on Western mainstream movies is justifiable not only through its popularity, but also because of the literature supporting the main arguments. The literature discusses immersion, in contemporary and historical forms, in the eyes of Western societies. Studies on immersion and presence did not consider cultural differences and it is possible to assume that there are none. But Oliver Grau (1999, 2003) specifically analyzed Western art history where he highlights a recurrence of attempts at blending between physical and virtual space. It is entirely possible that other cultural art histories might have not shown such a tendency, or possibly not in the same way³⁹. Therefore, for validity reasons, the focus is placed entirely on Western mainstream films.

Analyzing Western mainstream films that are internationally prevalent bears an implication that the target is a universal culture of sorts, or to the very least, revolves around a universal viewer irrelevant of his/her local culture. This is one of the reasons

³⁹ It is also possible to argue that cinema has been around for more than a century and has mostly been a one-sided cultural effector, from Western to other cultures, thereby permitting the focus on other cultures and their cinematic products within the same parameters. However, it falls outside the scope of this research but could simply be a follow-up to this initial discussion on immersion in Western Cinema. Additionally, if one could establish that immersion is not an inherent purpose of Eastern art, then Western mainstream media could present a cultural clash when viewed within Eastern cultures. This would be an interesting study that may use reception theory, placing the viewer and their cultural predisposition at the center of the reception of content.

why the thesis does not necessarily focus on any particular culture, especially the current local one.

Following a round of recursive analysis, the above list of sampling criteria was amended to only include films that are part of franchises, such as those having sequels, or trilogies, for example. The reason for that choice is that it now alludes to the extensive availability of the effect without the need to analyze every singular installation. The result is that an analysis of four cases taken from trilogies, pertains to a potential analysis of, at least, twelve cases. The added benefit is that the analysis doesn't fall into redundancy traps. By focusing on four singular cases, and by acknowledging the presence of the effect in the particular sequential installations present, the analysis discusses the point effectively, without repeating the same analysis over and over.

Furthermore, since the thesis has no purpose to be exhaustive in its selection of cases, four instances emanating from sequential installations are therefore deemed to be relevant to the thesis, providing a good breach into the topic, and avoids running unnecessary analyses.

Finally, to be able to justify that these cases are part of mainstream culture, the focus was placed on the most popular recent films. This was informed by the box office numbers (Top Lifetime Grosses, N.D.) which show how fiscally successful⁴⁰ entries were. This led to the selection of four franchises: The Lord of the Rings, Star Wars, Wizarding World, and the Marvel Cinematic Universe. One film out of these four franchises was then selected with an assumption of typicality⁴¹.

⁴⁰ Naturally, the more fiscally successful, the more popular a film is; the more people have paid to see it.

⁴¹ Typicality is left as an assumption simply because proving it would change the nature of the study. In other words, in order to prove that these cases are typical, regardless whether they be typical within their own franchise or across other films as well, I would need to chart as many instances of the movie-ride effect as possible, and then present some of them as typical. This would change the nature of the

The four selected cases therefore are:

- Case 01 – The Lord of the Rings: The Fellowship of the Ring
- Case 02 – Star Wars: Episode VII: The Force Awakens
- Case 03 – Harry Potter and the Half-Blood Prince
- Case 04 – Thor: Ragnarok

It is important to note that while entries refer to select movies, only sections will be primarily analyzed⁴². Specifically, sequences that use a movie-ride effect within these movies will be analyzed to extract data on their formal qualities. That is not to say that nothing else would be considered within each entry. It is important to have a holistic view regarding each case and an even larger one regarding all considered instances, across multiple cases. The reason goes back to the typicality of the shot. Understanding formal qualities about this type of effect helps establish how typical it is amongst other cases. It also helps explain how typical it is within one given case. For example, how many times has it been used in each case? What is the function of it, as a whole? What role does it play in the film's communicative role, if any? These questions, and possibly others, can only be answered when the case is looked at as a whole. So, while the primary analysis pertains to the formal qualities of the movie-ride sequence, it is important for the reader to be presented with an overview of certain aspects of the given case, as well as any relationship this sequence might have with others, or any other aspect of the film.

3.3 Methods

To methodically analyze these sections of film, the thesis turns to The SAGE Handbook of Qualitative Data Analysis (Flick, 2014). As previously mentioned, this thesis takes

thesis into a more quantitative one. Therefore, the typicality aspect is left as an assumption and the thesis is left to be a qualitative analysis of the movie-ride effect.

⁴² These sections are provided as movie files in the accompanying CD for reference.

cues from Grounded Theory, in its sampling decisions. In general, according to Thornberg and Charmaz's (2014) literature review, Grounded Theory allows generation of theories revolving around the studied phenomenon by simultaneously collecting data and analyzing it. The underlying framework of Grounded Theory relies on both induction and abduction. Induction highlights patterns from analyzing multiple cases, thereby formulating a theoretical concept. Abduction refers to the process of "selecting or constructing a hypothesis that explains a particular empirical case or set of data better than any other candidate hypotheses, as a provisional hypothesis and a worthy candidate for further investigation." (Thornberg and Charmaz, 2014: 153).

In addition to general approaches to Grounded Theory, the research follows the content of chapter 28: Analysis of Film (Mikos, 2014) of Flick's handbook whereby the author provides valuable insight on qualitative analysis of film.

In this chapter, Mikos (2014) asserts the value in analyzing film, referring to their communicative aspect and their social contributions. He presents some tools and methods to investigate films systematically, to a purpose of extracting objective knowledge, which is the purpose of academic inquiries. This involves accepting that film, like all media, is rooted in subjective decisions that reflect particular interests, be they individual or societal. In fact, Mikos presents a blatant anti-technological determinism in writing "It is not the medium that is the message, but its role in social use." (Mikos, 2014: 411). Further to this point, Mikos highlights that while film can be regarded as social practice, it does not necessarily dictate the audience's reception of them. In other words, Films may attempt at creating a reaction or formulating meaning but it is through audience's engagement that such results occur. Therefore, analysis of film must always differentiate between possible and actual reception. The former is studied at the level of the film and the latter pertains to the audience's reception.

Mikos presents five levels film analysis might focus on, which are presented in the following list, verbatim (2014: 413):

- Content and representation
- Narration and dramaturgy
- Characters and actors
- Aesthetics and configuration
- Contexts

The current research focuses on the fourth point from this list: aesthetics and configuration. To this point, Mikos writes on the value of analyzing images in film, it being mainly a visual medium. Furthermore, he notes that film is a medium of a moving image so the analysis cannot simply be reduced to analyzing static images, and thus “In analysing the formal, stylistic means, we have to look at images both individually and in their mutual interactions” (Mikos, 2014: 419). What Mikos means by that is that formal analysis might focus on static images in film, but should also cover a range of images to extrapolate data. Mikos also notes that analysis might focus on what is being presented as well as how it is being presented. On what is being presented, any number of elements within the *mise-en-scène* can be focused on. This accounts to anything that is presented within the frame, such as set pieces and *décor* but also light, sound, special effects, etc. But the analysis might also cover how things are presented. Mikos writes:

How things are configured can also become central to analyzing contents and representation, narration and dramaturgy, as well as figures and actors. The reason is that the formal and stylistic means of configuring moving pictures positions the viewer *vis-à-vis* with what is happening on the screen, and this constitutes the quality of films as experience. (2014: 418)

In relation to this thesis, the focus is placed on formal qualities within the cinematic image, particularly the “movie-ride” effect present in the selected case studies. The analysis of such instances covers what is being displayed, elements present within the

frame and their appearance. These might include an analysis of subjects as well as environmental elements such those that constitute the background or the setting for the action. The analysis might cover attributes of such elements such as their appearance, color, relative size, apparent distance from camera, etc. Furthermore, following Mikos (2014), the analysis will also focus on how these elements are presented. Namely, this thesis is concerned with the camera movement and the on-screen depicted motion. More precisely, the thesis analyses the speed of displayed motion and movement by tracking visual markers and their persistence within the frame.

The thesis also considers contextual aspects of the effect, within each case, if they are found to be relevant. These could be the relationship to the general themes of the film or to its genre, the role of effect within the narrative, or simply the placement and timing of the effect. This data is highlighted whenever it is found to exist.

In summary, Mikos' (2014) chapter supports the intentions for aesthetic analysis within this thesis.

Mikos (2014) also writes on three main challenges that arise when analyzing films: “the volatility of moving images, the general infinity of analysis, and the lack of a universal method of analysis” (2014: 420). He continues by proposing fourteen steps to orient the research, presented in this list, verbatim (2014: 420):

1. Development of a general cognitive purpose
2. Watching the visual material
3. Theoretical and historical reflection
4. Development of a concrete cognitive purpose
5. Development of questioning
6. Sampling of the material for analysis
7. Fixing of analytic tools
8. Collection of data

9. Description of data collection
10. Analysis of data – Inventory of the film components
11. Interpretation and contextualization of analysed data
12. Evaluation I – Assessment of the analysed and interpreted data
13. Evaluation II – Assessment of the results with the regard to the cognitive purpose and the operationalization
14. Presentation of the results.

To Mikos, the first six steps better define scope of the analysis and reduce the general infinity challenge. He also notes that the first 8 steps are preparatory while the rest contain the main analytic effort. To confront the volatility of moving images, this thesis relies on analyzing films transcribed from their original material (in DVD or BluRay form) and converted into playable media files on the computer. This allows finer control especially in viewing scenes on a frame-by-frame basis, as well as measuring shot durations, and other player capabilities such as pausing, resuming, skipping to desired times, etc. In addition to the selected sequences, the study might rely on additional sources in the form of behind-the-scenes footage or special features that discuss elements related to the main sequences.

The general cognitive purpose of this research is to investigate the formal qualities of the movie-ride effect as it exists in contemporary cinema. This will eventually be read as an immersive effect that aims at creating a sensation in the audience of being drawn inside the virtual space of the image. Prior to such a reading, the sampled cases need to be technically analyzed. The following section details the criteria according to which the cases are analyzed.

3.4 Analysis Criteria

Following Riecke and Schulte-Pelkum (2015) who discuss the link between vection and presence in Virtual Reality applications, a list of criteria is extracted and is used to analyze the case studies of movie-ride effect in contemporary mainstream cinema. In full disclosure, it is important to note that only the key parameters that pertain to visual information are extracted from Riecke and Schulte-Pelkum (2015)'s work and translated into the given case studies⁴³. Further technical details are added to allow a methodical analysis of the vection-inducing movie-ride effect. What follows is the list of criteria used in the analysis, and the explanation of each entry.

Type of motion: this is the first general look at the nature of the portrayed motion and could be considered as the most primitive information regarding the example. There are two types of motion to be considered in these examples, leading to two types of vection: linear motion, allowing linear vection, and rotational motion, allowing circular vection. As Riecke and Schulte-Pelkum (2015) and others show, these are the main types of visual vection and either can be effective in creating the illusion of motion in the virtual space. Each of the given cases will first be identified as whether they display linear or rotational motion, if only for classification purposes, as both types of vection are assumed to be equivalent in creating the illusion of being inside the virtual space. Additionally, some examples might portray a combination of both types.

Direction of motion: The direction of the portrayed motion plays a role in creating a sense of vection and therefore should be noted as part of the analysis. Furthermore, Riecke and Schulte-Pelkum (2015) favor forward and upward motion within linear

⁴³ For example, one of their discussed points relates to auditory effects that induce vection. This point is disregarded as the analysis focuses on visual effects. Another criterion is in regards to larger visuals that cover a greater section of the field of view. This falls to the viewing method and scale and distance of screen from the viewer. Since this study focuses on the content, especially the formal choices taken within the presented cases, this criterion is disregarded.

applications. In regards to rotational motion, no preference is suggested and both clockwise and counter-clockwise rotations are assumed to be equivalent.

Speed of motion: This is an important factor that is prominent in movie-ride effects. In order to formally classify the speed of the portrayed motion, the visuals are scanned for perceivable trackable points or shapes. Once selected, they are manually tracked so long as they stay within sight. The duration of their persistence is therefore measured in number of frames. The results are analyzed in order to classify them in relative categories of regular motion, fast motion and extreme motion. A preliminary arbitrary number of 20 frames is chosen as a cutoff between regular and fast motion. If the persistence of the shape is less than 20 frames, then motion is considered to be fast. If the number exceeds 20, then motion is considered to be regular. Should the number be any less than 6 frames, then it would be considered as extreme motion, bordering on flashing visuals.

Separation of foreground and background through motion: Following Riecke and Schulte-Pelkum (2015), this criterion focuses on the type of separation evident through contrasting motion. Some examples include static foregrounds and moving backgrounds, or grounds that move in opposite directions.

Fixation on a central object: This point is linked to the previous one in that it requires a separation of foreground and background. The centrality of the object is also key within this analysis.

Detail in center versus the periphery: This last point regards the amount of fine detail presented in the visuals. In particular, it focuses on the amount of detail present in the center of the frame versus its periphery. According to Riecke and Schulte-Pelkum (2015), vection-inducing visuals should aim at presenting high detail in the center and

less detail in the periphery. The amount of present detail in the case studies are therefore analyzed relative to one another. The results are presented as relative between center and periphery, as whether the center contains more, less, or perceivably the same amount of detail as the periphery.

For the last two points, the visual center and periphery need to be defined. These two concepts can be defined as relative opposites; the center and periphery are mutually exclusive visual elements that constitute the whole of the perceived image. The periphery of the image is all information within the exterior of the center, and vice versa. Additionally, an arbitrary cutoff point can be chosen to delineate the boundaries of what is considered to be the center. This may need a source. The cutoff point can be a mathematical ratio or perhaps the diameter of a circle centered in the frame.

In order to test these variables, a pilot case study is performed to get a better understanding of their applicability. It is important to note, at this stage, that the analysis presented in this thesis does not follow any previously published writings. It relies on the methods discussed in the methodology chapter (chapter 3), in multiple aspects. These pertain to Qualitative Analysis (Creswell, 2003; Yin, 2003; Rapley, 2014; Flick, 2014), Grounded Theory (Rapley, 2014; Thornberg and Charmaz, 2014), and Film Analysis (Mikos, 2014). However, these are general paths for methodical qualitative analysis. This thesis does not model its analysis on any other work and only relies on the presented observations.

3.5 Notes on Immersion

Following the breadth of literature on immersion and its possible meanings, it is important to note, at this stage, what phenomenon is under consideration within discussions in this thesis. Following Grau (1999, 2003), Recuber (2007), and Albert

(2012), the thesis uses the term immersion to denote the psychological illusion of existing inside the virtual space of a cinematic image. This is most distinct from a feeling of general involvement in the depicted images (Calleja, 2011; Slater, 2003) and from imaginative immersion such as literary absorptions (Grau, 2003).

Furthermore, and following Lombard and Jones (2015), this thesis is concerned with a discussion on cases of spatial presence in the virtual space of the image. To be clear, it revolves around the subjective feeling of existing within the image, a sensation of “being there” (Lombard and Jones, 2015:23).

As the literature shows, there is still no consensus on the delineations of the terms immersion and presence. While I have tried to be as clear as possible in regards to the discussed phenomenon, I refrain from presenting my own delineation of the two terms. Instead, immersion and presence will be used interchangeably. The thesis, therefore, looks at the phenomenon of immersion which pertains to spatial presence, a sensation of being inside the virtual space of the image.

As to the qualities of a given medium, which may not be within the core of the discussion, I follow Riecke and Schulte-Pelkum (2015) in their usage of “immersiveness” to denote the immersive qualities of the medium. This is done in an attempt to alleviate some pressure from the term immersion and the adjective immersive. Immersiveness is then used regarding potentials of the medium or a given technology, leaving immersive, immersion, and presence in regards to content.

Furthermore, following Calleja (2011), Slater (2003), it is noted that immersion is not a universal binary switch that occurs in everyone, whenever subjected to these types of imagery. Immersion occurs on a spectrum and is a culminating factor of a multitude of reasons, the details of which may be unknown as of yet. The purpose of this thesis is to

further the discussion on immersive effects. It is therefore acknowledged that this is only a focus on one aspect of the experience of presence, not a negation of all other possible ways that lead to this phenomenon.

However, and to reiterate, any part of the immersive experience will not be looked at as neither as a binary occurrence, nor as a consequential causality. In other words, the immersiveness of a medium cannot guarantee the sensation of presence in the audience. In this sense, a medium may allow or afford immersion but its result may not necessarily be observable in the audience. The same is applied to immersive effects.

Through the qualitative methods discussed in this previous chapter, as well as the analysis criteria presented, the technical analysis ensues in the following chapter.

Chapter Four: Technical Analysis

4.1 Introduction

As the literature shows⁴⁴, immersion and presence are a result of a multitude of factors. These range from being part of the nature of the technology at hand to being the result of formal choices. The focus here is tipped towards formal choices taken in cinema. In particular, this thesis focuses on one aspect of a particular visual effect used in cinema: the movie-ride effect. Within this section, the topic is inspected on the vertical axis. Specifically, this effect is read and analyzed in regards to its vection-inducing capabilities. In other words, the discussion revolves around this stylistic form that has the capability of inducing an illusion of self-motion. This is achieved by technically analyzing the content of four case studies, focusing primarily on their vection-inducing capabilities. The findings of this analysis are presented at the end of this chapter in the form of a table that summarizes where each case adheres to the selected criteria. These findings, along with the literature review, inform the discussion in chapter five.

4.2 Case Analysis

4.2.1 Pilot Case

The Lord of the Rings: The Fellowship of the Ring. The Extended Edition (2001).

While all three entries in Peter Jackson's Lord of the Rings trilogy contain instances of movie-ride effect, I have chosen the first of the cases as representative of the other films in the trilogy. This emerged from an early assumption towards the typicality of the presented case, a criterion recommended by Rapley (2014) within non-random

⁴⁴ This is especially evident in the first section of the literature review (2.2), where the discussion revolves around immersion and presence.

sampling. Therefore, *The Fellowship of the Ring* is selected as the first case, representative of the trilogy, while assuming it as a typical case of movie-ride effect.

This high fantasy movie from 2001 contains three distinct cases of the movie-ride effect where the camera hurdles through the constructed space. These are noted from the extended edition of the film at 1:16:24, 1:54:20, and 2:23:32. To avoid redundancy within the same case, the focus is placed on the first of these occurrences, lasting from 1:26:24 to 1:16:34.

The shot itself begins with a cut at 1:16:18 and ends with a cut at 1:16:34. It is part of a larger sequence beginning at 1:15:15 which witnesses a floating virtual camera that oversees and traverses the plains of Orthanc, arriving at the top of the tower, where the character Gandalf is held prisoner. In this long take that lasts a full minute, the camera first roams and overlooks the grounds, where the underground caves are visible. A moth then enters the frame and the camera follows it to arrive at the top of the tower where Gandalf catches it. A cut takes the audience to a close-up on the moth as Gandalf speaks to it for 4 seconds. A cut then shows a high-angle shot of Gandalf releasing the moth and it flying away from the frame, before the camera hurdles down the tower into the caves underground. This last shot is placed at the center of the discussion for its vection-inducing potential.

The analysis focuses on the last ten seconds of this shot. As the figure shows⁴⁵, the camera begins traveling down the tower slowly and picks up speed as it traverses the tower and halts at a top view of an anvil being struck inside the caves.

⁴⁵ Due to the dimness of the visuals, the screenshots used in this section have an increased brightness of 75% to convey to the reader the details present.

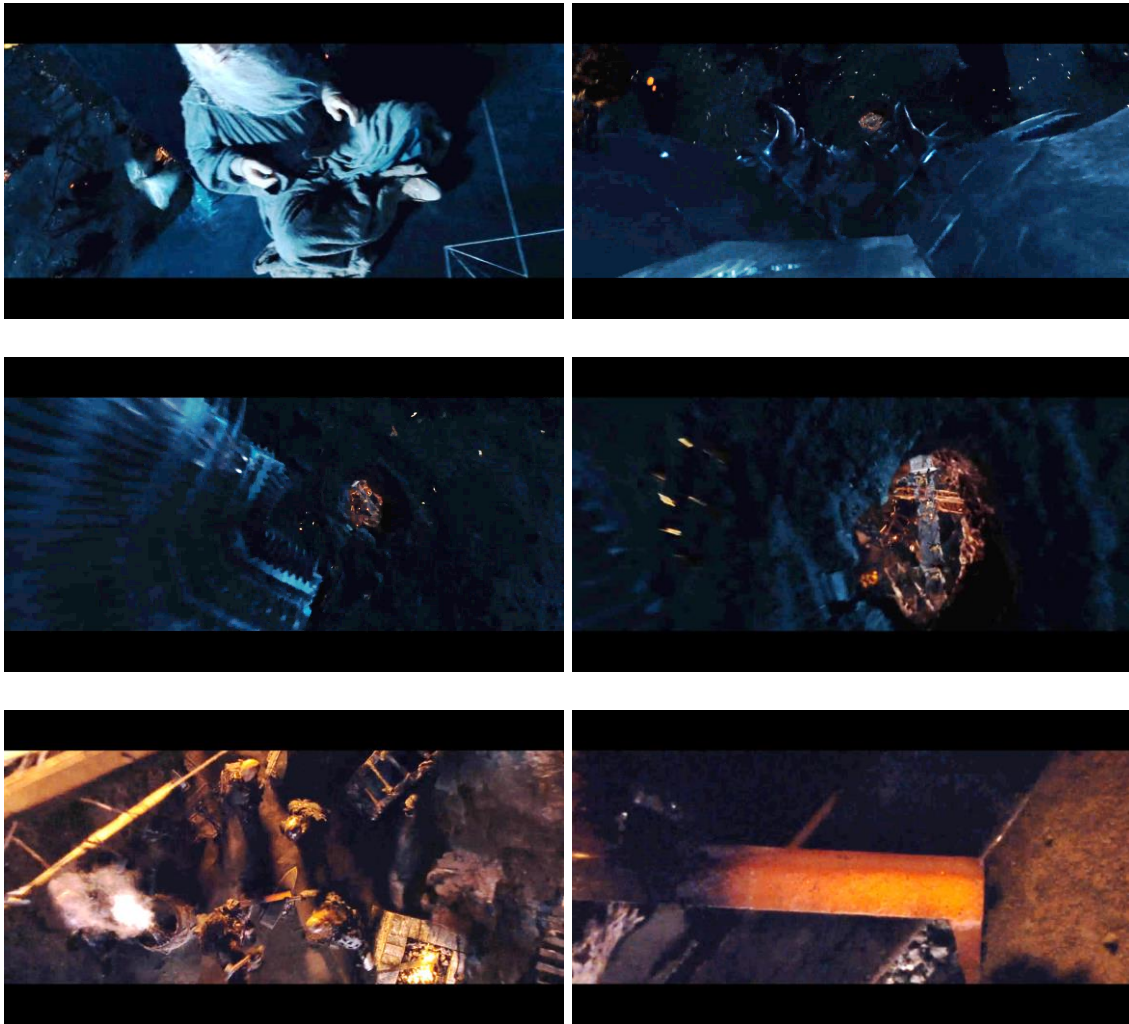


Figure 04 - Case 01 - Flying Down The Tower To The Underground Caves

It is evident that the shot portrays an intense motion. What follows is an analysis in relation to the vection-inducing criteria highlighted in the previous section above. These are in order: type of motion, direction of motion, speed of motion, separation of background and foreground, fixation on a central object, and lastly, detail in the center versus the periphery. The analysis begins with the type of motion present in this case.

First, this shot combines two types of motion, therefore, potentially two types of vection. By diving head-first down the tower, the visual contains a primary linear motion as it traverses the space. This is evident from the vanishing point perspective created with the long object, as it seems to stretch towards the horizon, and by the new visual information created by the moving virtual camera as it traverses the virtual space.

However, the camera also rotates a quarter of a turn as it is traversing downwards. This is particularly evident in the first part of the shot, as the camera travels down the tower. The V shape created from the outer walls of the tower shift from the bottom of the frame to its left side. This V shape is vertical at the beginning of the shot and ends horizontal towards its last sighting. This indicates a rotational action whereby the camera rotates approximately 90 degrees clockwise. This shot then has the potential for both linear and circular vection. The direction of motion is noted to be forwards (for the linear motion) and clockwise (for the rotational motion).

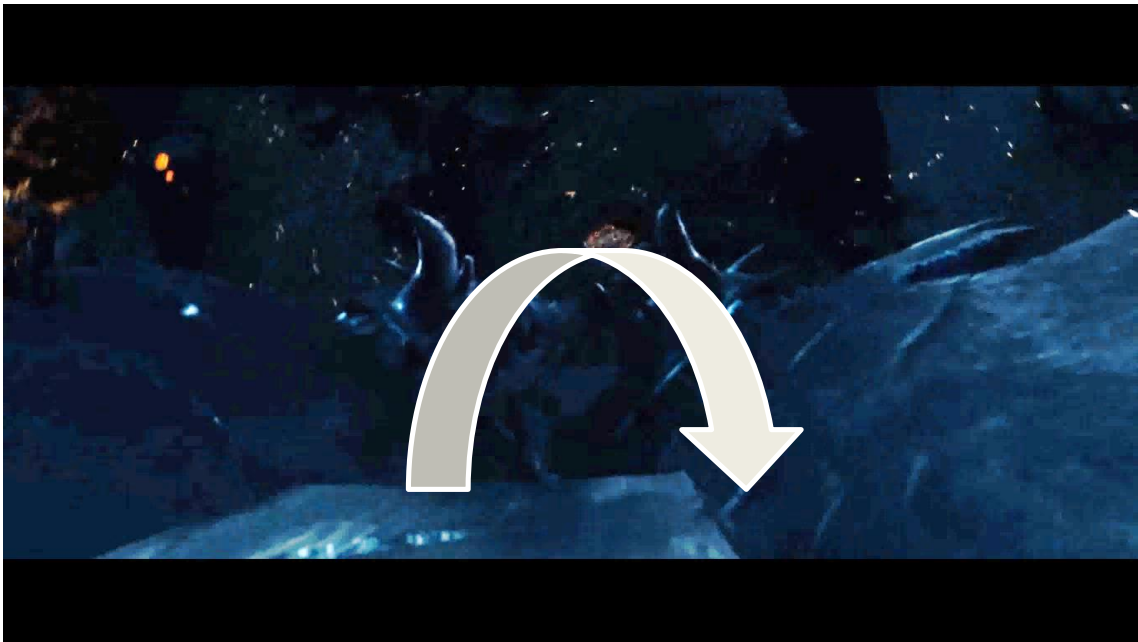
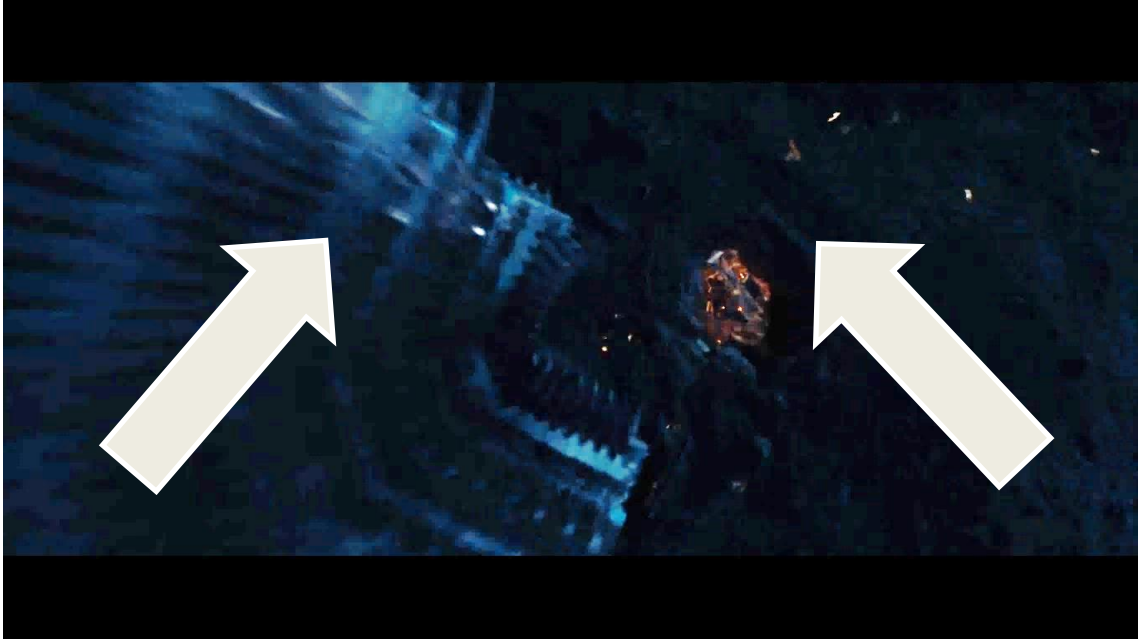


Figure 05 - Arrows Showing Forward Linear Motion (Top) and Clockwise Rotational Motion (Bottom)

As previously mentioned, the speed of motion varies in the shot from beginning to end. The camera begins its action slow and picks up speed as it moves down the tower. For example, the top-most thorn on the building on the right side appears at the beginning of the descending action and last for 45 frames. In contrast, at 1:16:28, two specks of light on the building visible on the left side, last only 25 frames before disappearing from the left side of the frame. This indicates that the linear motion in this shot increases speed with time. The rotational speed does not, however. It remains at a constant pace as evident from the V shape of the building, lasting around 90 frames. Once the camera traverses the threshold of the cave, the rotation stops altogether leaving the linear motion to continue.

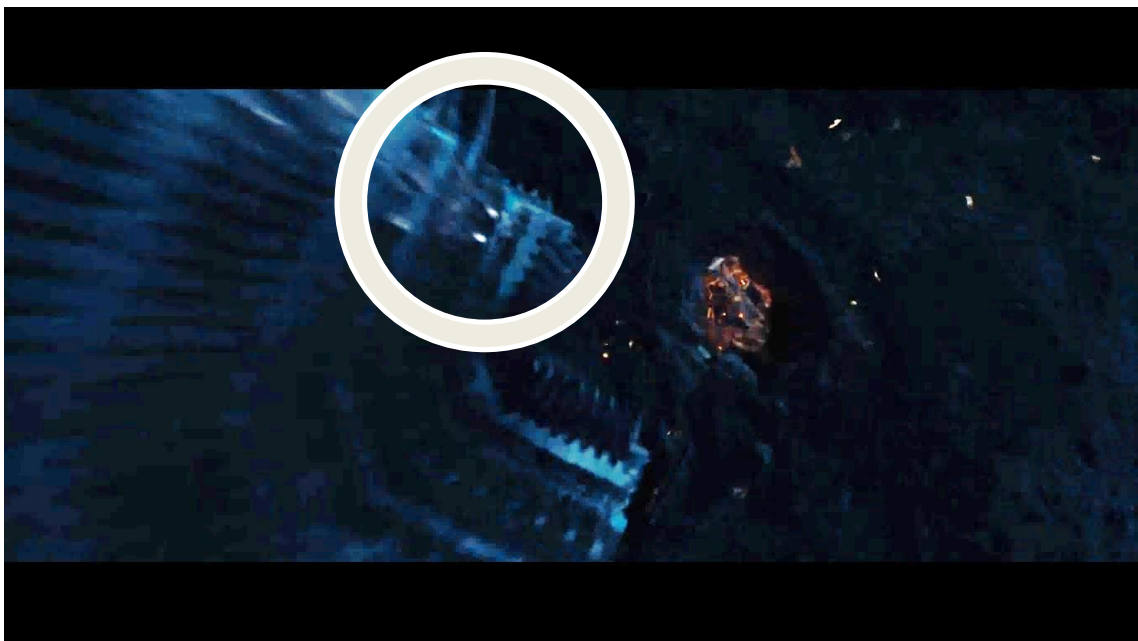


Figure 06 - Circle Highlighting The Tracked Area

In this example, there is no clear separation of foreground and background, especially in regards to the motion of the camera. To be clear, and while certain distant objects can be perceived to be in the background for they are further away from the camera than other objects, this is not conveyed through motion but by the visual cues present in the scene. The vanishing point perspective created with the converging lines of the tower

walls, for example, as well as the relative size of objects that diminish as they stand further than others, create a strong, naturalistic perspective. However, it provides no clear delineation of foreground and background as the visual shows a range of elements that range from close to far in relation to the viewing eye. Arguably, as the camera travels down the space, what is perceived to be in the background (especially towards the beginning of the shot) soon becomes part of the foreground as the camera flies past it. This further points to an amalgamation of foreground and background.

While the shot shows no clear delineation between foreground and background, it does focus on a central area towards which the camera travels: the underground caves. Even from the very beginning of the shot, the caves are almost at the very center of the frame. As the shot progresses, the caves do become the central point towards which the camera travels, arriving finally at a close-up of an anvil.

These last two notions are echoed by Sara Ross (2012) who wrote on forward-traveling shots in cinema. She notes that even though objects are in high motion – becoming faster the closer they are to the foreground – the spectator’s gaze remains on the center of the frame. Ross Writes: “The result is a composition with a highly active periphery that nonetheless grants visual priority to its deep center” (2012:211).

The case from *Lord of the Rings* certainly follows this remark. While the tower’s walls pass through the frame with a certain speed, the caves underneath retain their visual priority being in the center. This further allows a discussion on the relative amount of detail in the center versus the periphery. As the camera picks up speed, and as the cave becomes more central, detail emerges in the center as it vanishes from the periphery.

For example, consider the following screenshot.



Figure 07 - Detail In The Central Caves

The center clearly shows more fine detail than the periphery. This is achieved through multiple aesthetic choices. The framing and staging of the shot allows more physical detail in the center. This is empowered by choice of lighting whereby the caverns are more lit than the exterior. This dim-lit approach allows a considerable amount of detail to be discarded from the periphery all while focusing it on the center. Finally, and perhaps most importantly, detail is preserved in the center and lost in the periphery due to motion blur.

Motion blur is a common aesthetic in the discussed cases. As noted by Berys Gaut (2009:82), it is a staple of digital animation, when compared to traditional methods, as it is more easily achievable⁴⁶. It is a key aesthetic in creating photorealistic imagery. This refers to digital images that mimic photographs of real object, since motion blur is

⁴⁶ For a more technical discussion on motion blur in digital images, see Brinkmann (2008).

considered to be a by-product of the camera, not of the human eye⁴⁷. As Stephen Prince puts it: “Motion blur is an artifact of the camera’s way of seeing.” (2008:28)

As its name infers, motion blur occurs when rapidly moving objects are captured by the camera (Brinkmann, 2008). The amount of blur is relative to the amount the object moves through the frame⁴⁸. In other words, it depends on the speed of motion of the moving object. Therefore, strong motion blur implies an immediate association of fast motion.

Within the current case study, the periphery is blurred as the camera moves forwards. Central figures are less affected by the blur as they move less, relative to the moving camera. Therefore, motion blur in forward-traveling shots automatically blurs the surrounding while maintaining detail in the center.

In summary, this case follows a multitude of aesthetic criteria presented by Riecke and Schulte-Pelkum (2015). Namely, this movie-ride effect contains both linear and circular motion, with a regular motion that gathers speed as it moves forwards. The shot contains no clear separation of foreground and background yet still focuses on a central area through a set of stylistic choices. The shot also contains more detail in the center, relative to the periphery.

By reading this shot through Riecke and Schulte-Pelkum (2015) ‘s criteria, it is shown to have a strong potential to createvection. For one thing, it contains both linear and rotational motion. Riecke and Schulte-Pelkum (2015) do not mention an added benefit to having both types of motion present simultaneously. Yet, it is safe to say that the

⁴⁷ Photorealism assumes the photograph as the standard for reality, with the digital image attempting at replicating that standard. Furthermore, Gaut writes: “Photoreal animation is a central means for achieving the realism of fantasy and special effects digital movies.” (2009:82)

⁴⁸ Motion blur also depends on the shutter angle of the camera and other technical issues (Brinkmann, 2008:55). However, these are irrelevant to the present discussion on the aesthetic value of motion blur.

potential for vection should be greater as there is potential for linear vection as well as circular vection. In fact, the analysis places this case as conforming to most of Riecke and Schulte-Pelkum (2015) 's recommendations, given the lack of a clear separation of foreground and background. In fact, this type of shot is commonly referred to as a phantom-ride shot (Ross, 2012; Moulton, 2013). In a phantom-ride shot, the camera is configured in the place of flying object and the visual emerges as simply traveling the space. In this particular case, the camera's seemingly unrestricted movement doesn't follow an action by a character but simply traverses the space, taking the viewer from the top of the tower to the depth of the caves underneath.

4.2.2 Case Study Number 2

The next case to be considered is within Star Wars Episode VII: The Force Awakens (2015). As evident from the title, this entry is the seventh film from the Star Wars franchise, which has, to date, comprised of eleven major motion pictures starting in the year 1977. It is important to note that virtually all entries within this franchise contain one form or another of the movie-ride effect⁴⁹. Episode VII was selected to confine the discussion to contemporary cases.

As previously mentioned, even within this single entry, there are a multitude of instances to be considered as cases for the movie-ride effect. To remain consistent, and to spread out the discussion amongst multiple film entries, only one instance is considered for the current discussion.

The case in point regards a shot towards the climax of the movie, occurring at 1:54:42 and lasting three seconds, beginning and ending with a cut. It is part of a large space

⁴⁹ This is based on personal observation and consumption of said films. Even the earliest film in this franchise, Star Wars Episode IV: A New Hope (1977) contained shots of the interior of the cockpit with a starry visual on the outside that could potentially be a vection-inducing effect.

battle scene. In this shot, the camera follows the X-Wing fighter jet of character Poe Dameron flying through the outer defenses of Star Base Killer. The spaceship is shown to be flying towards a burning element which Poe will later fly through to access the interior of the base. This shot is bound by two reverse shots of the interior of the spacecraft for a reaction on the pilot.⁵⁰

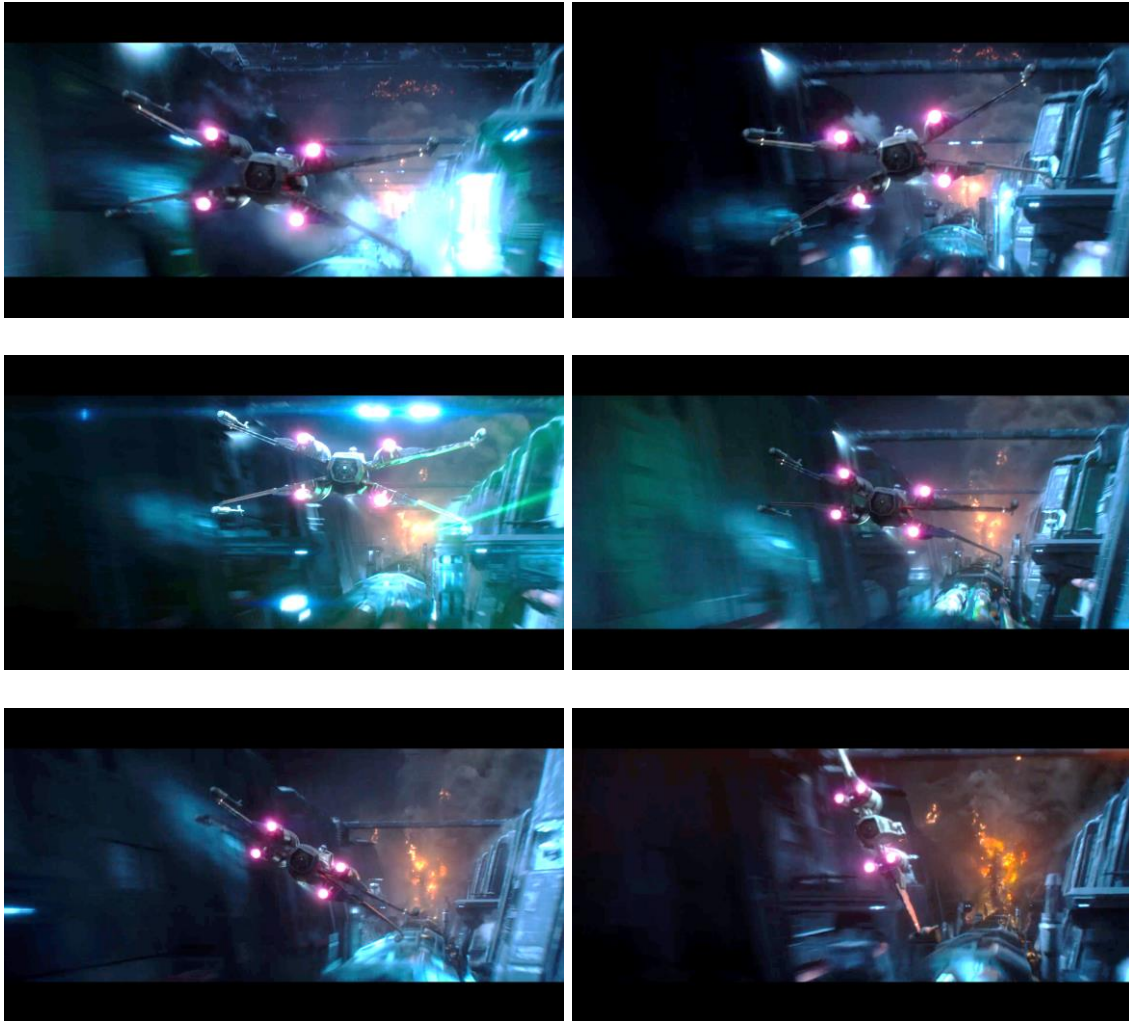


Figure 08 - Case 02 - Flying Towards The Fire

The first thing to be noticed is that this is not a phantom shot. Unlike the previous case from Lord of the Rings, this shot follows an object as the camera traverses the virtual space. These two cases do share some coincidental similarities, however, in relation to

⁵⁰ Due to dimness of the visuals in this sequence, the screenshots from this section have an increased brightness of 50% and a decreased contrast of 20%.

shot composition and lighting setup. Generally, this shot also entails a massive built structure that composes most of the peripheral environment. It is also configured as a general V shape, standing upright throughout the shot. The lighting also is quite dim with shadows covering almost half of the image. Lit areas comprise of highlights on parts of objects, and luminous light sources such as the red exhaust of the spacecraft or the burning elements in the far distance.

The aforementioned V shape confirms the general motion of the camera. Since it stands upright throughout the shot, the camera clearly contains little to no rotation from beginning to end. It does, however, portray a strong linear motion as the space is traveled heads on, towards the burning elements which comprise the vanishing point of the perspectival composition. Therefore, the shot has a potential to create linear vection in the audience with a forward linear motion, as portrayed by the arrows in the following figure.



Figure 09 - Linear Forwards Motion Of The X-Wing Fighter

Throughout this traveling action, the spacecraft retains its relative scale to the viewer. This denotes that the camera is traveling at the same speed as the spacecraft. Therefore, the majority of the discussion on the speed of motion should be focused on the environment. In order to quantify the speed of motion of the camera, multiple areas from the seemingly moving environment are tracked. It is immediately obvious that numbers vary based on the distance away from the camera but they all denote a strong moving visual in a constant forward action.

Consider for example the speck of light on the right, visible in the first frame of the shot.



Figure 10 - The Tracked Speck In The Environment

This point is tracked as it moves in screen space and is measured to last 20 frames before exiting the right side of the composition. 20 frames can be considered to be fast as it does not last a full second in sight. However, when considering the burning elements in the background, the focal point the camera is traveling towards, these last for the duration of the shot: 80 frames. Similar to the case from Lord of the Rings, when

focusing on the central element the camera is traveling towards, the motion appears to be less intense than when focusing on the closer elements of the space. The burning elements certainly become larger, with clearer details towards the end of the shot. This definitely denotes the presence of motion as it is clear evidence of physical progression of the camera in the depicted space. However, I suggest that it should not be a criterion for the measuring of the intensity of motion as tracking elements closer to the camera yield greater results.

In a way, it is similar to a passenger on a jet plane looking down at the landscapes below. When in full flight, these landscapes appear to be barely moving, relative to the airplane when in fact, the plane is traveling at quite large speeds. When landing or taking off, however, as the plane is closest to the ground, even smaller speeds can be perceived to be much more intense, from a passenger's point of view. Therefore, I posit that an accurate study of the perception of the intensity of motion should focus on elements closer to the camera.

This discrepancy between perceived motion in elements close to and far from the camera once again point to a stretched environment that gradually dissolves between foreground and background. In regards to the environment, it is evident that it stretches from the closest to the furthest ground. What is different in this case is the presence of a compositional element that is unmistakably perceived to be in the foreground: the flying spaceship.

As argued before, the spaceship remains at constant speed with the camera, meaning that the two are relatively traveling at the same pace. This allows the perception that this element is in fact the foreground of the composition while all else falls to the background, regardless of its apparent motion. Even the burning flames change in

apparent scale as they are perceived to be larger by the end of the shot. The spaceship, however, retains its scale as is therefore the element that constitutes the foreground. In this matter, this case checks off another criterion from the list as it clearly portrays separation of foreground and background through an element that seems to be static in screen space while all else portrays motion.

In regards to the detail in the center versus the periphery, once again the staging of the shot, the lighting setup, and the presence of motion blur, all help detail to be retained in the center while being washed out in the periphery. Similarly to the previous case, detail in the central part of the environment is preserved. The burning flames are visible throughout the shot and detail increases as the camera approaches it. The peripheral section of the environment, consisting of the large, inverted tunnel-like construct, continuously loses detail as it is traversed. This is once again emphasised by choice of lighting and the presence of motion blur: detail in the periphery increasingly gets blurred as the camera approaches it.

However, since this shot contains a relatively static element central to the composition, detail in the center is constantly present in the form of the spaceship. As previously mentioned, the central spaceship retains its scale throughout the shot and constitutes the foreground element while all else falls to the background. Detail is retained in the spaceship as it remains in the focal point of the composition. Furthermore, seen as it barely moves relative to the camera, the spaceship is barely affected by motion blur and so retains its detail throughout the shot.

Furthermore, this shot contains many depth cues that Prince (2012: 199) highlights in his book⁵¹. He lists a set of stylistic choices that inform on the dimensionality of the portrayed space. Within the Star Wars case, we find evidence of the following entries: occlusion, relative size, aerial perspective, motion parallax, and convergence. All these visual choices help emphasize the three-dimensionality of the image space.

In summary, this case from Star Wars Episode VII: The Force Awakens shows increased potential for instigating vection. The shot portrays a strong forward linear motion with a clear fixation on a central target and a visible delineation between foreground and background through the focusing on the flying spaceship. In regards to detail, aesthetic choices allow the retention of detail in the center versus the periphery with additional detail constantly present in the center on the flying spaceship. The analysis shows that this case follows all criteria extracted from Riecke and Schulte-Pelkum (2015)'s work.

4.2.3 Case Study Number 3

The next case comes from the sixth installment of the Harry Potter film series: Harry Potter and the Half-Blood Prince (2009). Similar to other fantasy themed entries discussed in this thesis, this movie franchise provides plenty of cases that could well instigate a sense of immersion in the audience⁵². This particular case is selected for its apparent adherence to the discussed criteria. Moreover, its duration is quite longer than other proposed entries and so it is selected specifically for that reason. By using this

⁵¹ This case is not the only one to follow some of these choices. However, since they are not part of the main argument, they are only mentioned in this case to avoid straying from the primary point. Instead, they are used here only as a backup to the discussion on this specific case.

⁵² This is once again based on personal observation of the abundant flying sequences and fly-through shots within this film franchise.

instance, the discussed cases now vary in shot length, therefore adding more variation to the presented cases. The core of the discussion remains true as the analysis of the criteria shows in the following section.

The shot in question comes at the beginning of the film. Technically, the shot begins at 1:31 where the camera passes through some office blinds and slowly roams in the cloudy sky. The section of interest to this discussion, however, is marked at 1:48 and continues until the end of the shot with a cut at 2:08, lasting a whole 20 seconds.

Therefore, while the whole shot lasts 37 seconds, it is the last 20 seconds of it that are related to the discussion at hand. This discussion will cover the whole of the 20 second shot with a focus on shorter sections that are highlighted as needed.

These 20 seconds feature a flying camera action beginning in the stormy clouds with the appearance of 3 flying Death Eaters, visualized as streams of black smoke, that are followed in their downward flight towards central London. About halfway through the shot, as the camera reaches street level at 1:56, the Death Eaters vanish from the screen and the camera continues its flying trajectory through the streets of London. Here, while traveling the streets at high speed, the camera turns 4 times before taking a fifth turn to fly between 2 buildings. This moves the visuals from the exteriors of the streets of London to the interior of what is presumed to be The Leaky Cauldron, a famous location in the fictional world of Harry Potter. This interior space is traveled quickly, reaching the back wall which explodes as the camera reaches it, revealing the hidden wizarding street Diagon Alley. At this point, the Death Eaters appear once again within the frame as the camera continues its forward movement. Diagon Alley is traversed with the 3 Death Eaters until Ollivander's shop is reached. One of the Death Eaters crashes inside the shop, causing it to explode. This concludes the shot with a cut and ends the section of interest for this case study.





Figure 11 - Case 03 - Flying Down To London ; Traveling The Streets Of London ; Traversing Diagon Alley

Clearly, a lot happens in these 20 seconds, as evident from the description and the amount of screenshot frames necessary to portray the action. Therefore, and to avoid overly running and repetitive content, this case is looked at holistically and only certain sections are highlighted when necessary.

While the case is looked at as a whole, the discussion could benefit from breaking this long shot into shorter sections, if only for referential purposes. To that point, this shot can be dissected into 4 sections as follows:

Section A, from 1:48 to 1:56, where the camera follows the Death Eaters down from the clouds.

Section B, from 1:56 to 2:03, where the camera travels the streets of London.

Section C, from 2:03 to 2:04, where the camera crosses the interior of The Leaky Cauldron.

And lastly section D, from 2:04 to 2:08, where the camera traverses Diagon Alley.

Unless otherwise noted, the discussion covers the whole of the 4 sections, A through D, highlighted above.

Even for a long take of about 20 seconds, the visuals portray a powerful motion as the camera travels down from the clouds to ground level, navigates through the streets, enters the interior environment, and lastly traverses the hidden street behind the wall. Throughout this shot, the camera is traveling forwards at all times and therefore has a potential to create linearvection in the audience.

Moreover, the camera witnesses short rotational motion at certain times. These are marked 4 times at 1:56, 1:57, 2:00, and 2:02. They all fall within section B of this case, with the first and last of the rotations bounding the previously highlighted section. In other words, the first rotation occurs at the beginning of section B and the last rotation at the end of it.

These short rotational actions come especially when the camera is making sharp turns. In these instances, the camera naturally banks to provide more realistic action. Pertinent to this discussion, however, the rotational movement increases in intensity as the shot progresses. The last two rotations, marked at 2:00 and 2:02 witness an approximate angle of 30 and 45 degrees of rotation, respectively. These are also achieved rather quickly as it takes the camera just 20 frames for the former and a mere 15 frames for the latter, to complete the rotation. While possibly not intense enough to merit a discussion of rotationalvection on their own, these rotational additions to the forward movement

can only help with the general possibility of vection, as seen in previous cases. The primary motion remains, however, a forward linear action.

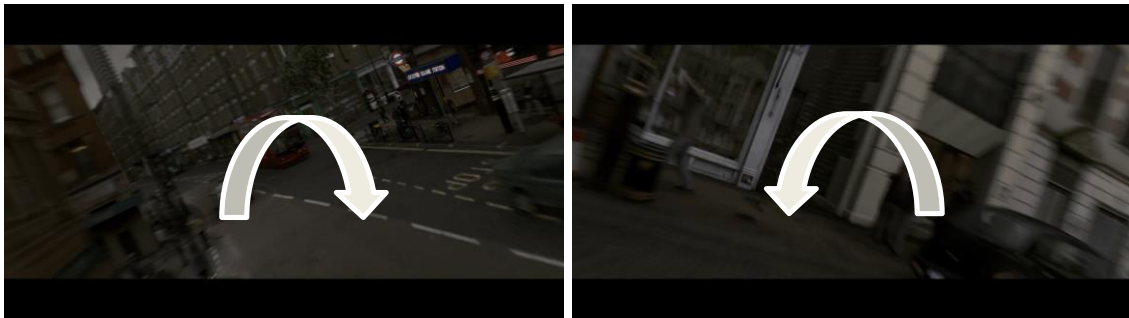


Figure 12 - Both Clockwise and Anti-Clockwise Rotation

As the camera flies through this shot, the apparent motion and its intensity changes. Consider the first two sections A and B. Logically, to fly down from the clouds and reach ground level in about 8 seconds (section A) would be considered an extreme action. This equates to traveling hundreds if not thousands of meters in a very short period of time⁵³. And yet, comparatively, section B certainly seems to portray a more intense motion than that of section A. This all comes back to the way the environment is portrayed and the distance between camera and objects. For example, throughout of section A, the environment remains a landscape far from the camera. The closer the camera travels towards it, the more the perspectival point of view take place, shifting the environment from an inaccessible landscape to a navigable space. Of course, the camera does indeed travel this space throughout section B, as it does for the remaining spaces in sections C and D. But in comparing the intensity and speed of motion between sections A and B, the prominent perspectival view provides a greater sense of perceived motion than that of the flat landscape view of the beginning of section A. Consider the following technical analysis of two instances from sections A and B:

⁵³ Hypothetically, if the beginning of the shot places the camera at around 500 meters of altitude, traveling to street level in 8 seconds gives an average speed of 62.5 m/s or 225 km/h.



Figure 13 - The Tracked Detail From The River

At the very beginning of the shot, some of the visible boats on the river can be tracked. This static element in the scene lasts 50 frames, which is a little more than 2 seconds. Comparatively, when tracking the double-decker red bus from section B, it lasts 26 frames. This equates to roughly half of the speed witnessed in section A.



Figure 14 - The Red Double Decker Bus

Of course, this is further intensified by the naturalistic motion blur that is quite prominent in sections B, C, and D while almost completely missing from section A. Motion blur certainly gives the added feeling of an intense action occurring. From the same analyzed visuals, one can easily witness the abundance of motion blur present in section B. The earlier visual from section A appears to be devoid of any motion blur, in

regards to the background. This brings the discussion to another criterion of vection: the separation of foreground and background.

Clearly, this 20 second shot does not always show elements in the foreground. To this point, sections A and D show the 3 Death Eaters flying through the frame. Sections B and C do not. In fact, had it not been for the presence of these 3 characters, the whole shot would be a phantom-ride shot (Ross, 2012; Moulton, 2013). Instead, only sections B and C can conform to that definition, whereby the characters are missing from the frame. In sections A and D, the characters show a clear separation of foreground and background. This occurs through choice of color and portrayed motion. The dark and dense visual of the 3 Death Eaters comes as contrasting to the environment providing a clear separation between foreground and background. The relative motion of the characters also informs of their presence in the foreground as they remain within the same distance from the camera. To be clear, the 3 Death Eaters are in fact moving around the frame, whether they be shifting positions or spiraling towards the center. Their motion, however, keeps them comparatively at the same distance from the camera. This informs the viewer that the camera and the characters are traveling at almost the same speed. Additionally, their individual actions further explain that they are not part of the built environment as they move freely around the frame.

On the other hand, due to these characters' motion around the frame, this sequence lacks any fixation on central elements. Throughout all sections, the camera flies down to and through the streets of London but never fixates on a clear target. Even in sections A and D, when the Death Eaters are visible, they roam all around the frame. This leads to a lack of fixation on a central element, all throughout this sequence.

Regarding the amount of detail present in the frame, this case conforms to earlier findings in other cases, in particular regarding motion blur. With the exception of section A of this shot, all other sections show an abundance of motion blur. This is increasingly evident as the action takes place in the interior of the Leaky Cauldron, in section C. In this section, where apparent motion is at its most intense, the camera is configured as traveling the space heads-on. This creates a large amount of blur towards the edges of the frame while keeping the center relatively sharp⁵⁴.



Figure 15 - The Intensity Of Motion Blur From Inside The Leaky Cauldron

In summary, by dividing this case into 4 sections, the analysis highlighted the strongest points of vection-inducing effects. Most of the shot conforms to the criteria presented by Riecke and Schulte-Pelkum (2015), by portraying strong linear forward motion aided by small instances of rotational action. Section A and D show a clear separation of foreground and background. Sections B,C, and D show increased motion by swiftly

⁵⁴ Motion blur in these types of shots creates perceivable lines that run from the center of the frame towards its edges. This further adds to the illusion as the vanishing point perspective is empowered by these types of visuals. For more on perspectival composition and motion blur, see the pilot case study in 4.2.1

navigating the space and relying on motion blur. This also ensures that detail remain in the center while being blurred in the periphery. However, and while detail is preserved in the center, the whole sequence lacks a sense of fixation on a central character, and so misses on this criterion.

Interestingly, section A has the least apparent motion and the least amount of blur, as previously discussed. It falls shorter than other sections in regards to it conforming to the analysis criteria. However, it is the section where the 3 Death Eaters spend most time on screen and are clearly separated from the environment through the contrast in color and motion. In a way, this section benefits from the added presence of these characters. It could very well be a choice taken to not only establish the driving characters, but to increase interest (if not to say increase vection) in the earlier part of the shot. In terms of the current analysis, it is clear that the presence of these characters in this first section increases the potential for vection as another criterion is added to the list. Regarding the last section, where the visual witnesses the return of the characters, the increase in the potential vection adds to the impact of the overall sequence as section D acts as a climax to this shot.

4.2.4 Case Study Number 4

The last case to be discussed comes from Thor:Ragnarok (2017), the third installment in the Thor movie franchise. In the film's introduction, Thor uses his hammer Mjöltnir⁵⁵ to attack a number of opponents. The camera's action follows Mjöltnir as it smashes its way through Thor's enemies. This occurs in two shots, that are of interest to the discussion, separated by two other shots that are not. This sequence begins at 5:12 with the first shot of interest to this discussion, henceforth shot A, whereby Mjöltnir travels

⁵⁵ The letter "j" is pronounced as "y" in Mjöltnir

sideways through the frame as it circles Thor. The camera locks on to the hammer and travels with it, keeping it in the center. This shot lasts 3 seconds. At 5:15, two interjecting shots occur that will not be covered in this discussion: a top shot of the battle scene, and a midshot of Thor calling back his hammer. Next, at 5:18, comes the second shot of interest, henceforth shot B. Here, Mjölfnir is in the center of the frame but the camera takes its direction, showing it heads-on. During this shot, which lasts 6 seconds, Mjölfnir rotates 180 degrees. The camera still follows it but is now showing the other end of the hammer as it is traveling the space.

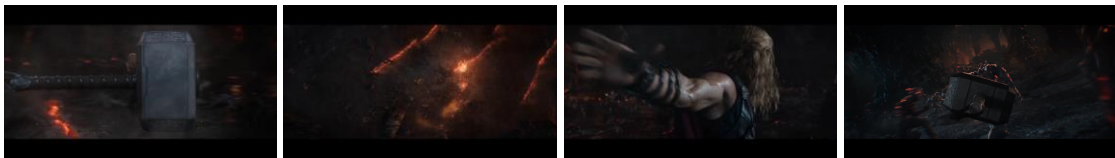


Figure 16 - The Whole Sequence Bracketed By Shots A And B And Interjected By Two Shots That Are Not Covered

The reason both shots A and B are considered in the discussion is because they convey a coherent visual narrative structure that is intercut by two other shots, as demonstrated in the graphic above. Shots A and B are visually continuous and so are considered as part of the same case. However, upon further examination, they do have some details that are distinct from one another. Therefore, both shots are considered in an effort to broaden the discussion on the forms of vection.

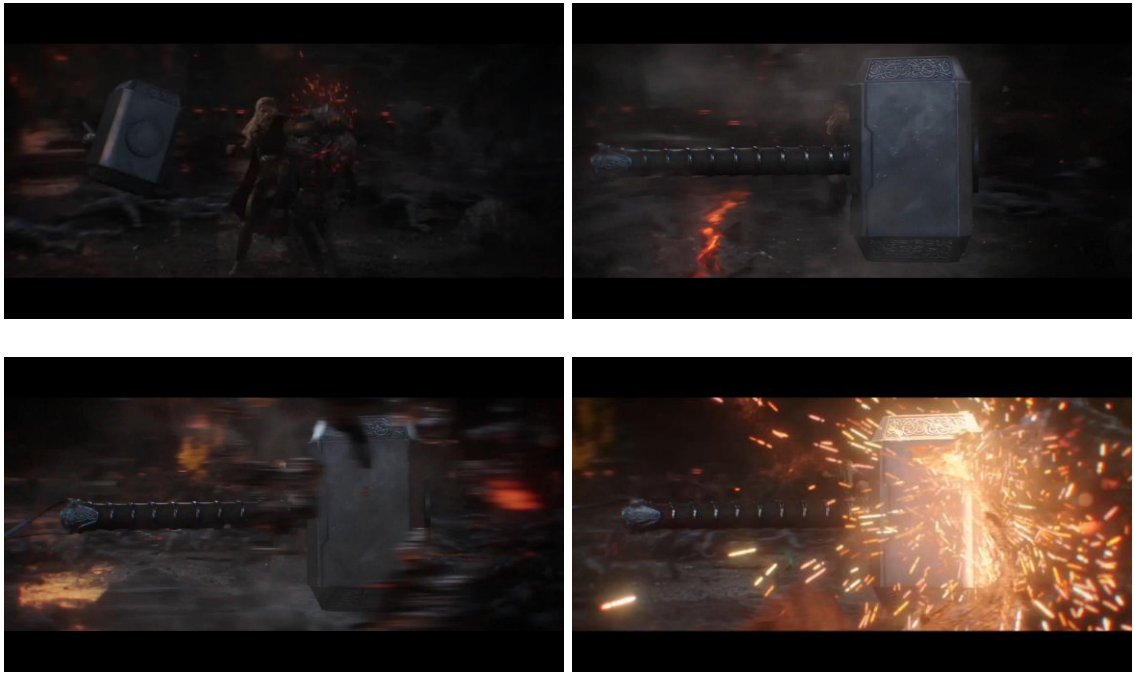


Figure 17 - Case 04 - Shot A: Mjölner Travels Sideways

Shot B, 5:23 ends the area of interest, even though the shot technically ends at 5:24.





Figure 18 - Case 04 - Shot B: Flying Forwards With Mjölhnir

Beginning with shot A, the first detail to be noted is the direction of the depicted motion. In this shot, Mjölhnir circles around Thor, destroying his enemies in its path. The camera tracks the hammer's action, showing a side view of the flight. Therefore, while the hammer and camera ensemble are technically rotating around Thor, the depicted action is one of sideways linear travel as the hammer seems to be flying from left to right, in edge view, crushing obstacles in its path.

Therefore, and especially regarding the current analysis, the type of motion in this shot A is one of linear motion with the direction depicted as sideways, going from left to right. This is shown in the figure below as the arrow points to the direction of motion of the camera and the flying hammer.

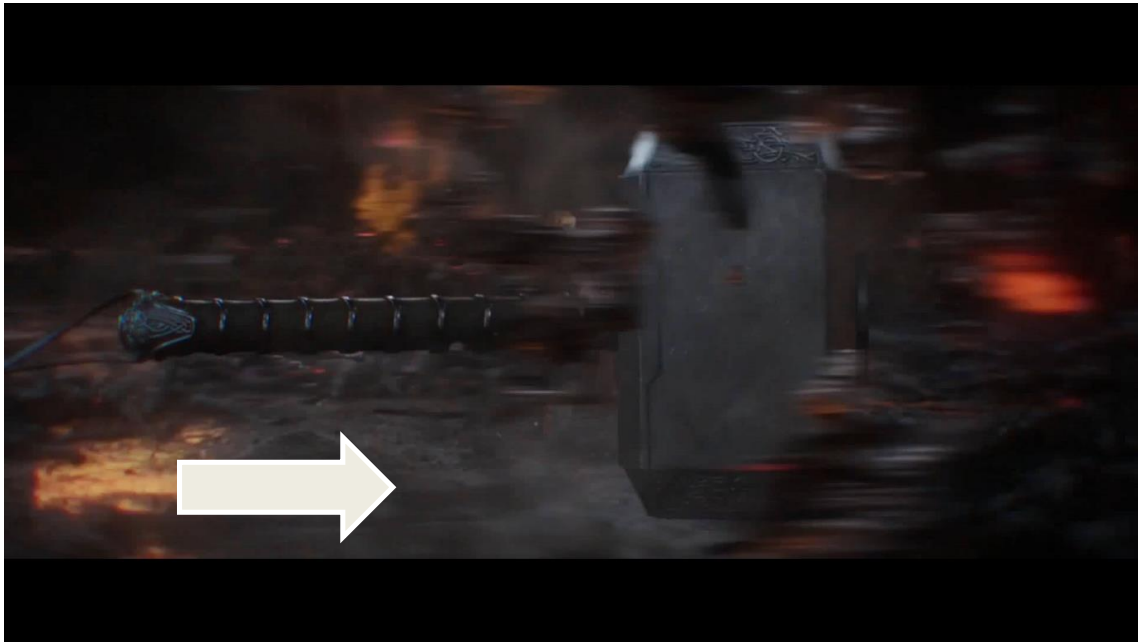


Figure 19 - Mjölhnir In A Sideways Linear Motion

Even from initial viewings, the portrayed motion of this shot is quite extreme. The hammer is understood to be circling the space from the glimpses one can see of Thor, and the whole space, rotating in the background. Yet even in those glimpses the visuals are so amalgamated with motion blur, showing the intensity of rotation of the background. These are only glimpses, however, due to the obstacles that are appearing in the foreground. As the hammer flies through the space, it meets and crushes enemies in its path which explode on impact. The result is that the foreground is suddenly populated with flying debris and short explosions that only appear for a few frames.

Any attempt at analyzing the speed of the foreground elements would be futile as these flashing visuals rarely last more than a couple of frames. For the most part, these elements can't even be tracked visually as they are also disintegrating. Additionally, their action is not of interest to this discussion as the analysis must attempt at focusing on the motion of the camera. In fact, they are only mentioned as an explanation to the cover-up of the background.

Conversly, Mjölfnir remains almost perfectly static throughout this shot, relative to the viewer. The shot begins with the hammer flying into position. This happens fairly quickly as it takes it just 11 frames to reach the new position. Onwards, the hammer barely wiggles in screen space and overall inches towards the right side of the screen.

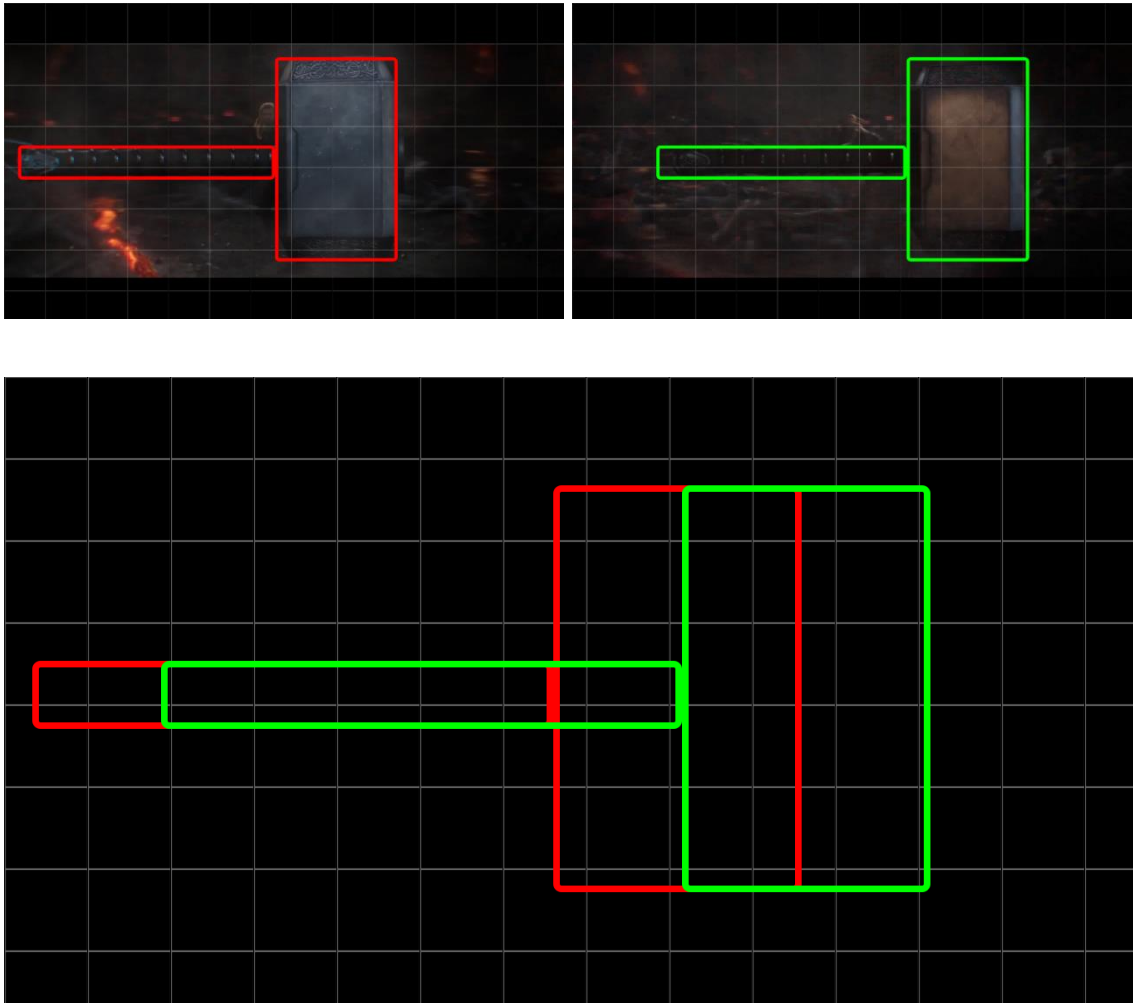


Figure 20 - Red Marks The Beginning Position Of Mjölfnir While Green Depicts Its End Position

As the figure above highlights, the red outline demarks the beginning position of Mjölfnir, while the green outline demarks its end position. The two shapes' positions from the first two images are merged in a third image to convey Mjölfnir's minute progression in the frame. In fact, Mjölfnir traverses only 10% of the horizontal space, from beginning to end.

While Mjölfnir barely moves in screen space, many other elements can be easily perceived to be moving quickly. In this case, the hammer constitutes the foreground of the shot. The background, then, is the space where this battle is occurring. In its center is Thor, battling his enemies as they close in on him. The separation of foreground and background is mainly informed by the lack of motion of the object in the foreground, and its abundance in the background⁵⁶. The analysis can therefore focus on the background to determine the intensity of the portrayed motion.

While the background is partially obstructed by Mjölfnir and the flashing objects in the foreground, some of its elements can be tracked to inform on the speed of motion within this shot. Central elements such as the figure of Thor remain relatively static within the shot. Others such as the red dots in the background, can be used to deduce the speed of motion, as seen in the figure below.



Figure 21 - The Glowing Creatures That Are Tracked

⁵⁶ This separation is enhanced by a certain amount of blur following the rules of depth of field.

Multiple points were taken into account to better approximate the movement due to them often being obstructed by the foreground elements. The background visuals last between 9 and 11 frames within view and seem to be constant across the shot. An average of 10 frames is then deduced as the overall duration of the visual in the background within this shot. This is another indicator of the intense speed of the shot.

As previously discussed, Mjölnir's action in contrast with the environment provides a clear separation between foreground and background. This fulfills two criteria simultaneously as the shot also witnesses a fixation on a central object.

Regarding the last criterion, the presence of detail in the center versus the periphery, the shot doesn't clearly achieve it. The composition of the shot allows the presence of fine detail in the foreground against the background, as Mjölnir remains in sharp focus throughout the shot. While central to the composition, Mjölnir extends towards the outer edges of the frame instead of simply being limited to the center. The background, on the other hand, is generally blurred due to the depth of field and the motion blur.

To summarize, shot A contains clear separation of foreground and background with a heavy linear motion and a fixation on a central object. The only criterion that is not fully checked is in regards to the detail in the center versus the periphery, as Mjölnir extends towards the outer edges of the shot. In fact, it is unclear whether this criterion is fulfilled in this case or not, and so remains as possibly fulfilled.

The last piece of analysis focuses on shot B of Thor: Ragnarok. In this shot, the camera once again follows Mjölnir as it flies back to Thor's hand, crushing enemies in its path. Instead of flying laterally as it did in shot A, the camera in shot B adopts the hammer's

path and flies forwards with it in the center. The motion is once again a linear motion with a forward direction⁵⁷.



Figure 22 - Forward Linear Motion Alongside Mjölfnir

In the beginning, the camera remains static for about a second as Mjölfnir halts its flight, changes course, and starts flying back to Thor. Onwards, the hammer and camera pick up speed. Tracking the enemies present in this scene, the most they last is around 15 frames while some vanish more quickly at around 10 frames. This once again points to an intense motion. Of course, this is further enhanced by a strong presence of motion blur throughout the flight.

⁵⁷ Early in its flight, as evidenced in the figure, the camera and hammer include a subtle rotation of about 15 degrees. This occurs as the hammer banks on its flight back to Thor. While noteworthy, there is no reason to focus on it as a vection-inducing property as the main action remains a forward linear motion.



Figure 23 - Tracked Glowing Creature In Shot B

Early in the shot, Mjölfnir is immediately established as the main foreground element.

The first few frames witness a shift in focus as the hammer approaches the static camera. Here, Mjölfnir takes up the central part of the composition while all else falls to a blur. This configuration remains in the rest of the shot with the hammer being the central object in the foreground. This checks off multiple criteria simultaneously.

First, by moving across the space and remaining relatively the same size, Mjölfnir is the foreground while all else defaults to the background. This shows a clear separation of foreground and background through motion. Second, the hammer provides a key central object around which the motion is fixated. This fixation remains as elements pop in the composition, such as when enemies explode on impact, providing flash visuals. In these instances, Mjölfnir remains as the central figure that the eye targets.

Third, Mjölfnir's centrality offers fine detail in the center versus the periphery. As soon as it is established as the central foregrounding element, the hammer remains in focus for the remainder of the shot while all else is blurred. Early in the shot, this blur is due to the depth of field of the camera. As the shot progresses and the motion increases, the

blur is enhanced further as motion blur increases. Throughout this time, Mjölfnir remains in focus and provides the sharp detail in the center of the frame.



Figure 24 - Mjölfnir Remains In Sharp Focus

To recapitulate, shot B checks off all criteria extracted from Riecke and Schulte-Pelkum (2015). The shot portrays a strong linear forwards motion with a central element providing clear separation of foreground and background, a fixating central element, and a high amount of detail in the center versus the periphery.

4.4 Summary of analysis

Throughout the previous section, four case studies have been analyzed according to the criteria extracted from Riecke and Schulte-Pelkum's (2015) work. It is important to note that these cases certainly present a small fraction of the popular movie-ride effect that seems to be prevalent in contemporary cinema. However, as explained in the methodology chapter, this study's qualitative nature requires a smaller sample base with a focused analysis on each case.

This analysis has yielded results that can be used for a discussion. All of the presented cases follow most criteria, with some checking them all. The table below shows a summary of the results.

	Motion Type	Motion Direction	Motion Speed	Background and Foreground Separation	Fixation On A Central Object	Detail In The Center Versus The Periphery
Case 01	Linear + Rotational	Forwards + Clockwise	Regular	No	Yes, the caves	Yes
Case 02	Linear	Forwards	Fast	Yes	Yes, the fighter jet	Yes
Case 03 - A	Linear	Forwards	Regular	Yes	No	No
Case 03 - B	Linear + Rotational	Forwards + Clockwise and Counterclockwise	Fast	No	No	Yes
Case 03 - C	Linear	Forwards	Fast	No	No	Yes
Case 03 - D	Linear	Forwards	Fast	Yes	No	Yes
Case 04 - A	Linear	Sideways, left to right	Very Fast	Yes	Yes, Mjölnir	Possible
Case 04 - B	Linear	Forwards	Very Fast	Yes	Yes, Mjölnir	Yes

Table 01 - Summary of Case Study Analysis. Cells in Green and Orange Denote the Availability of the Item

Table 1 above shows how the cases conform to the given criteria. Two of the cases, Case 02 and Case 04 – B, fully conform across the board. Case 03 – D and Case 04 – A lack one item only. Case 01, along with Case 03 – B and Case 03 – C, lack two items. Lastly, Case 03 – A lacks 3 items.

Numerically, out of the 48 available slots, the cases combine a total of 37⁵⁸. While this number is not indicative of the experience in these cases, which is elaborated in their own sections, it is a simple index of a strong correlation between these cases and the criteria presented. In other words, while not all cases follow these criteria to a point, these aesthetic choices still form the majority as used in the cases.

⁵⁸ Because of reasons covered in 4.2.3 and 4.2.4, these two cases were split into multiple ones. However, had this choice not been taken, the overall entries would have been 4 cases with a maximum of 24 applicable entries (as opposed to the current 48). Within each case, it would have sufficed for one section to contain an element that fits the criteria for it to be applicable. The results would differ then in cases 03 and 04 whereby Case 03 would only miss one criterion while Case 04 would miss none. Numerically this would mean that the cases would have amassed a total of 21 out of 24 possible entries, pointing to a stronger relationship between the two.

Furthermore, cases such as Case 04, portray a strong and fast motion, visibly more than the others. Case 01 portrays both linear and rotational movement. Additionally, Case 03 – B presents both linear and rotational movement which alternate between clockwise and counterclockwise, adding further motion. These cases, for example, qualitatively imbue a stronger relationship with the criteria.

4.5 Analysis Conclusion

The case study analysis yielded clear results that are used in the discussion that follows. It compared the formal choices taken in four separate case studies, to a list of criteria extracted from Riecke and Schulte-Pelkum (2015). The results show a general alignment with the criteria, with two cases completely conforming to them. This allows a discussion on the relationship of these stylistic choices with the illusion of self-motion.

Chapter Five: Discussion

5.1 Introduction to the Discussion

This chapter contains the discussion of the findings of the analysis which explores the topic on the horizontal axis. It is split into two main parts.

The first part (5.2.) relates directly to the technical analysis presented in chapter four. In this part, a discussion combines the findings and the literature on vection and immersion to argue that all of these stylistic choices help instigate a sense of immersion in the audience.

The second part (5.3. and onwards) witnesses a shift towards a conceptual discussion on the possible driving factors and repercussions of these immersive choices. Having breached a discussion on inter-media relationships, with a formal analysis on cinema using tools of Virtual Reality, this section follows that thread further. Through media theories, the movie-ride effect is presented as an influence from new media unto the old. Throughout this part, the focus of the discussion shifts towards the possible cultural meaning of this effect with a discussion on control as a core element of cinematic presentations. The purpose of this discussion is to provide a new reading of this formal effect and its possible values, thereby furthering the scholarly writing on the movie-ride effect, and holistically, on the immersive effects.

5.2 Movie-Ride, Vection, and Immerison

The literature's discussion on immersion clearly relates the phenomenon to different, non-mutually exclusive, components. To the very least, it shows that immersion and presence have a strong connection to technological innovations, display media, and content. The analysis section focused on the last of these connections: immersion and

content. Specifically, it focused on a contemporary style in cinema: the movie-ride effect.

The movie-ride effect has been covered in the literature review⁵⁹. Constance Balides (2003) even writes on its immersive qualities, yet does so in an ambiguous fashion that leaves much to question. Part of the *raison d'être* of the technical analysis, is to provide a more comprehensive and thorough work on the immersive qualities of the movie-ride effect and, consequently, on the immersive qualities of formal aspects of the image. In this sense, this thesis builds on Balides's (2003) work and tries to fill the gap present in her writing. It features a methodical analysis of the movie-ride effect to a purpose of studying its immersive qualities.

In order to achieve its goals, the movie-ride effect is first analyzed in relation to whether it can induce vection, the illusion of self-motion. Riecke and Schulte-Pelkum (2015) presented a list of criteria for vection-inducing visuals within virtual reality applications. These criteria were adapted and tested on the selected case studies in this thesis. The technical analysis dissected the visuals from the case studies and analyzed them in relation to the extracted criteria. These criteria were: type of motion, direction of motion, speed of motion, separation of background and foreground, fixation on a central object, and lastly, detail in the center versus the periphery. The results showed a strong adherence to the qualities with some cases, such as Case 02 and Case 04 – B, fully conforming to the criteria.

Therefore, through this analysis, it can be said that the movie-ride effect has a strong potential to create vection. In other words, this contemporary style has the possibility of

⁵⁹ This is first touched upon in 2.2.5 Immersion in Cinema. Later, more focus is placed on this effect in 2.4.5 Movie-Ride Sequences.

instigating a false sensation in the audience member, convincing them they are moving, when they are not.

Certainly, the discussion here revolves around potential and possibility, and not about certainty. The experience of vection through visual displays is one that relies on a multitude of factors. To the very least, these factors include display technologies, qualities of specific media, and variation according to the individual. The stylistic criteria previously discussed are but one factor and so, the discussion must always realistically present the findings in terms of possibility and potential.

However, this potential is quite a sizeable one. When the four case studies are analyzed against Riecke and Schulte-Pelkum's (2015) criteria, they are found to be closely related. As shown in section 4.4, all the presented cases have a strong correlation with the criteria. Two of the four cases completely conform to these stylistic criteria. This means that, irrelevant of all other constituents of vection, the qualities present in the movie-ride effect can effectively induce vection in the viewer. In this sense, we can safely say that the movie-ride effect, especially one that follows the discussed criteria, presents a strong potential in creating an illusion of self-motion in the audience.

This has already been discussed by Thomson-Jones (2013). The difference here is, however, by performing this analysis on the case studies, we have a more technical approach and understanding of what could create vection in cinema, especially in regards to the formal aspects. Therefore, this work constitutes a continuation of Thomson-Jones' (2013) work by adding the technical criteria that has the potential to create vection in the audience.

However, vection is not the target of this research, merely a vehicle for the discussion. The end goal is a discussion on immersion, on the feeling of spatial presence in a virtual space, narrowed down to a discussion on a contemporary style in cinema.

To Riecke and Schulte-Pelkum (2015), presence and vection influence and support each other. This is at the core of their discussion and experiments. They relate vection to cognitive high-level processes such as presence. They also show a relationship between an increase in spatial presence and an increase of vection.

But even at a more basic level of discussion, I would argue that an illusion of self-motion must relate to an increase in presence. Consider any of the presented cases in the analysis section. Once again, by focusing solely on the stylistic properties of the movie-ride effect, we reached a conclusion of a strong potential for vection. Hypothetically, then, a person viewing said visuals can potentially feel themselves moving when in fact they are not.

Within their physical space, the person is stationary⁶⁰. However, inside the screen space, the virtual space of the presented film, the person is moving along the visuals. Of course, the person isn't actually moving but merely feels like they are. This feeling, however, informed by the strong visuals, pushes the person into traveling as the camera travels. In a phantom-ride shot such as in Case 01, the person would feel like they are traveling with the camera down the tower of Isengard. In other cases, such as Case 04-B, they would feel like they are traveling with Mjölfnir as it flies through the cave.

⁶⁰ This is certainly true in traditional cinematic presentations. Newer additions to the cinematic complex include motorized seats that physically move along the displayed images. This is commonly referred to as 4D cinema, whereby stereoscopic 3D cinema is amended with real, physical effects such as moving seats, mist, fog, smells, etc. (Maddox, 2011). The discussion in this thesis does not cover such instances. It is focused on traditional, regular screenings with stationary seats.

Traveling through a space, be it virtual or physical, lies on an assumption that one exists in said space. Certainly, one must exist in a given space in order to travel it. At a more rudimentary level, one cannot exist without a given space, as Edward Casey writes: “To be at all – to exist in any way – is to be somewhere, and to be somewhere is to be in some kind of place” (1997: ix). Given that, by now, the audience member feels like they are themselves traveling with the camera and objects in that virtual space, consequently means that they believe they exist in that same space. This is the essence of the discussion on immersion and on its definition as spatial presence. By thinking that they are traveling inside the virtual space, the audience member in that moment surely believes they exist in that virtual space⁶¹.

Therefore, the movie-ride effect can be viewed as a tool for immersion. Its visuals have a strong potential in instigating an illusion of self-motion. By tricking the audience member into thinking they are moving, this kind of visual effectively places them inside the virtual space of the image.

It is important to note that such a result needs not be viewed as a negative aspect in the storytelling art of cinema. Firstly, as Balides (2003) and Prince (2012) write, there is value in presenting a spectacle, and it need not be viewed as contradicting the core values of a given piece. Secondly, and perhaps more importantly, there could be great value in immersing the audience within the virtual space of the cinematic image.

As the literature shows, especially in 2.2.2 A History of Immersion, there is a noticeable part of the relationship of humans and images whereby humans attempt to cross the line into the virtual space. Historically, there has always been an effort at immersing ourselves inside the image. This is especially evident in Western art, as Oliver Grau

⁶¹ For some possibilities on how the audience feels transported inside the image, see Thomson-Jones (2013) in section 2.2.4

demonstrates in his writings (1999, 2003). From classical-era architecture, to cutting edge technological innovations, crossing the threshold into the virtual space continuously exists as a staple of Western Art. From this perspective, the movie-ride effect in contemporary cinema is but one entry in the long list of attempts at traversing Alberti's window.

This effect can therefore be of great value. Its usage should help the audience cross a threshold into a virtual space, a concept that is demonstrably part of our collective history. In other words, the movie-ride effect can fulfill a desire that has long existed in consumers of visual media. This effect can even be compared to other stylistic choices. We can consider established knowledge on choice of color in a given composition and the effect it has on the emotions of the audience (reference). Similarly, length of shots, for example, etc. Certainly, aesthetic choices play a large, valuable role in the consumption of cinema. In effect, stylistic choices play a fundamental role in all of visual media consumption. To this point, I propose that our central style, the movie-ride effect, can therefore be added to the tool box of the contemporary visual communicator. For lack of better terms, it would help give the audience something they demonstrably long for.

To that point, what follows is a list of technical criteria that better affords immersion and sense of spatial presence in the audience, within the movie-ride effect. This list is based on the list from Riecke and Schulte-Pelkum's (2015) work, but has been updated with the findings of chapter four. Below is the updated list:

- Linear, rotational, or simultaneous linear and rotational motion
- In the case of linear motion, forward movement is favored
- Fast motion, which can be portrayed by fast moving objects, details in the environment to show traversal of the space, and the addition of motion blur which imbues a greater sense of motion

- Separation of foreground and background by having an object or character either remaining in the foreground or simply moving differently than the whole of the environment
- Fixation on a central object is informed by the foreground element discussed above being in the center of the frame
- Detail in the center versus the periphery can be achieved through shot composition, by physically reducing detail in the periphery, by dimming the periphery against the center, and finally, with the usage of motion blur which naturally blurs the periphery while keeping central objects more in focus

Furthermore, there is potentially another aspect of this contemporary effect to be considered. The discussion above technically links the stylistic qualities of the movie-ride effect to spatial presence. Throughout the following sections, the discussion shifts to more thematic aspects of the effect. I believe that this further discussion on the usage of the movie-ride effect presents an interesting discourse on multiple topics. Through the previous discussion, the historical perspective, the movie-ride effect can be viewed as a continuation of immersive strategies that have a long history in the human relationship with the image. However, and in hopes of furthering the scholarly discussion on the movie-ride effect, I would like to argue that there is an additional quality to this effect, one that links to two other topics: the relationship between new and old media, and the notions of control.

5.3 Further discussion

5.3.1 Introduction on a Further Discussion

Up until this point, we have argued that the movie-ride effect has a strong potential in transporting the audience inside the virtual space of the image. To proceed further in the discussion, I try to answer the questions: to what end is the movie-ride effect used?

Why does it exist the way it demonstrably does?

One possible answer has already been argued. As previously discussed, the movie-ride effect fulfills a desire present in the consumer, observable for a long history. This could be the reason for the effect's existence, as it tries to cater to this desire. A second possible answer emerges from the literature review where it has been argued that the movie-ride effect stems from theme park rides. Specifically, Balides (2003) presents this aesthetic as a technique used in films to instigate the sensation of using a theme park ride. Moulton (2013) further links it to attractions of both present and past, especially to the early days of cinema, in the cinema of attractions.

I present a third possible answer to the questions above. I would argue that, at least partially, it is a result of new media influence. Naturally, any phenomenon can be viewed from a multitude of perspectives and can therefore be explained through multiple approaches. Introducing a third possible answer serves in furthering the discourse on a multitude of topics. What follows is a discussion on this third possibility.

5.3.2 The Connection Between Cinema and Virtual Reality

Part of this section of the discussion is seeded in the analysis from its starting point. Throughout the thesis, but especially in the technical analysis section, the discussion on the relationship of two separate media was not explicitly addressed. Riecke and Schulte-Pelkum (2015) discussed their findings in the medium of virtual reality. The technical analysis in this thesis adapted their criteria and applied them in the cinematic medium. This has already highlighted a connection between these two different media as the visual criteria are transferable. By sharing some formal qualities, the discussion is allowed to cross into an influence between two distinct media.

Effectively, not only are they found to share similarities, they are further shown to have a strong adherence to the criteria. As the technical analysis shows, there is a strong

similarity, at times reaching complete translation, such as in cases 02 and 04 – B. The connection can now be considered stronger as both are now functioning according to the same principles. These visual principles govern the stylistic choices and are shared by both media.

With this solid connection, we can begin to discuss the relationship between immersive effects in two different media. With the present literature on the relationship of new and old media, we can further present the phenomenon as a result of said relationship. Of course, the focus is placed on a discussion between cinema (old media) and Virtual Reality (new media). All of this still revolves around immersive effects in cinema, which are now framed through a discussion on intermedia relationships. The purpose of this framing is to provide a new reading on the movie-ride effect as part of shared styles between emerging and established media.

5.3.3 The Relationship Between New and Old Media

As Virtual Reality enters the mainstream, Arnaldi et al (2018) remind us that it is a result of a long process, one that has mostly been inaccessible to the general public. Today, VR is increasingly and more widely available in commercial stores, and Arnaldi et al (2018: xxxiv) promise a continuation of this evolution in the future. This has led them to write: “Today, we are witnessing the renaissance and democratization of virtual reality, [...]” (Arnaldi et al, 2018:xi), as the technology surrounding this medium is more readily available to consumers, offering them a high level of performance, at a much cheaper price⁶².

This brings us to a discussion on intermedia relationships, on how media influence and are influenced by each other. From the literature, we can see that new media historically

⁶² This is also linked to a wider consumption of video games.

builds upon the standards of established media. Regardless whether this occurs linearly from old to new, or whether a more dynamic relationship exists⁶³, this influence primarily exists in the early times of a nascent medium. Lister et al (2009) provide historical evidence of new media relying on the conventions of established media in their nascent time. Further down, these media would ultimately abandon certain aspects of old media while focusing on its own true power and thus achieve its true nature⁶⁴.

Applying this to the current discussion, we could say that normally, a nascent medium such as Virtual Reality, possibly built on the early conventions of cinema such as those found in the cinema of attractions⁶⁵. Although not part of our primary discussion here, it could very well explain the influence of VR and its link to the attractions. It certainly rings close to the movie-themed simulation rides (Prince, 2012: 185), popular in contemporary cinema complexes⁶⁶. But that falls outside the scope of this research. Effectively, the current discussion revolves around the counterpart: the influence of the new on the old.

According to the literature, new media does influence established media. Grau writes: “[...] new media do not render old ones obsolete, but rather assign them new places within the system”⁶⁷ (Grau, 2003:8). In other words, the emergence of new media does not lead to the disappearance of old media but still exerts some influence over them.

⁶³ This pertains to the two theoretical frameworks presented by Lister et al (2009): the teleological account and the genealogical account.

⁶⁴ Here, a historical example is given in the case of painting and photography. See 2.3.3.

⁶⁵ Hale’s Tours is a fair example of a combination of screens, physical props, and locomotion to delude the audience into thinking they are traveling.

⁶⁶ It is as Lister et al write: “[...] it is suggested that certain uses and aesthetic forms of new media significantly recall residual or suppressed intellectual and representational practices of relatively, and in some cases extremely, remote historical periods” (2009: 62)

⁶⁷ Here, Grau writes on a reinvestigation of old media with the prevalence of new media. Throughout his book, Grau revisits old media such as frescoes and paintings, analyzing and comparing their properties against Virtual Reality’s contemporary qualities. In this sense, reinvestigating old media due to the emergence of new media means that old media does not disappear but is viewed differently.

Lister et al (2009) write on Bolter and Grusin's "remediation" (2009: 47) whereby new technologies employed by new media reshape old media.

Furthermore, these older media reshape themselves to comply with the challenges of new media. Lister et al (2009) write: "[...] older media are refashioning themselves by absorbing, repurposing, and incorporating digital technologies." (Lister et al, 2009: 62). Young (2006) writes: "[...] old media incorporate aspects of the new in an attempt to reanimate their appeal to consumers" (Young, 2006: xx). Young further asserts that Hollywood picks and chooses what to incorporate in its classical forms in order to rejuvenate their content for newer audiences who might view classical cinema as obsolete. This is referred to as the rejuvenation argument.

Remediation could help explain the tight connection between the movie-ride effect and the immersive visuals of Virtual Reality. Through remediation, we could say that the movie-ride effect is the result of an influence from VR. The technical analysis showed a high similarity in stylistic choices. This high similarity between visuals in VR and visuals in the cinematic movie-ride, if not coincidental, point towards an influence of sorts. Through remediation, it is entirely possible that cinema used the forms and effective methods of VR and implemented them in its (now) older medium. Following what Lister et al (2009) and Young (2006) wrote above, cinema could have very well incorporated the methods of new media, where applicable, in its established forms. Content, and specifically stylistic choices, is a common element that can be influenced from VR. This would mean that the movie-ride effect is an influence from the formal qualities present in Virtual Reality.

The question remains, however, as to what end does all this occur? Why would this influence occur in the first place?

5.3.4 Analyzing The Influence of Virtual Reality On Cinema

This influence can be discussed through two perspectives. The first perspective pertains to an economic argument whereby a direct influence upon cinema from new media such as Virtual Reality is explained through some monetary gain. This is readily challenged by Young (2006) who writes that the relationship between cinema and newer media is less concerned with economic competition but rather, with a certain qualitative competition. This qualitative competition forms the second perspective and the one this discussion focuses on.

Young (2006) explains that both cinema and newer media present products from the same category, i.e. Entertainment. However, newer media include additional promises. Within this discussion, I propose that these additional promises come in the form of: increased levels of immersion, and delegation of control through interactivity.

All the while, this is argued through the rejuvenation argument. It is then possible to discuss a change in content within cinema to conform to the viewing expectations of an audience that increasingly consume content through new media. Just as Young (2006) shows how cinema changed some of its practices and standards to conform to Television's needs, it is possible that some of the content of cinema changed to conform to newer media's increased usage. Within this discussion, we refer particularly to an influence between cinema and Virtual Reality and specifically on the immersive aspect of these experiences.

Immersion is a central part of Virtual Reality. In fact, Arnaldi et al refer to immersion as "the first fundamental principle of VR" (2018: xxiii). After all, it is key to achieving the central objective of VR, which is "to allow the user to virtually execute a task while believing that they are executing it in the real world." (Arnaldi et al, 2018: xxii).

If we are to follow the perspective that cinema and Virtual Reality are in some sort of qualitative competition on who could immerse their audience further in the virtual space of the image, cinema would benefit from borrowing methods from VR to a purpose of further immersing their audience. This once again brings us to our previous finding of cinema using the movie-ride effect to a purpose of further immersing the audience. By contrast, it is now framed through an intermedia discussion as opposed to a historically-driven humanist argument.

However, Young (2006) touches on another aspect within the relationship of cinema with new media. He writes on the latter's promise at inter-user communication instead of the one-sided communication of creator to audience. This is echoed by Lister et al (2009) who write on the defining characteristics of new media. Amongst other, new media are characteristically interactive and networked. They further argue that interactivity in new media changes the audience from viewers to users. More specifically, in regards to VR, interaction is key as it is considered to be "the second fundamental principle of VR" (Arnaldi et al, 2018: xxiii).

Virtual Reality (VR) specifically, allows a definite level of interaction with the virtual space. VR can be split into two main categories, according to Arnaldi et al (2018). The first is referred to as 360° Videos, whereby the user remains a spectator while being physiologically immersed in a three-dimensional virtual space. The second is referred to as VR Video where interactivity allows the user to have an impact on virtual space and characters within it. Here, the spectator is transformed into a "spect-actor" (Arnaldi et al, 2018) and the whole experience starts to resemble the world of video games. It is also important to note that even in 360° videos, the viewer does have a certain level of interactivity, present through the changing of perspective, as he/she is allowed the choice of selecting where to look, within the three-dimensional space.

Therefore, and to the very least, VR content allows the viewer to shift perspectives, choosing where to look within a three-dimensional world. By contrast, cinema lacks the interactivity of Virtual Reality. Naturally, cinema is not interactive in the way new media are; The VR viewer, or user, is allowed a choice, one that is not offered to the cinematic viewer. This intrinsic quality opens a new layer within this discussion. As Arnaldi et al write (2018: xxi):

In particular, in traditional cinema, the narration is constructed on the principle that the director, through their frames, will almost “lead the spectator by hand” to the point from which they want the spectator to view a particular scenic element. In a context where the spectator can freely create their own point of view, artistic construction does not remain the same.

This implies that interactivity, an intrinsic value of one medium but not of the other, has an impact on the artistic content of a given piece. But more importantly, and further to our current discussion, it has an impact on the weight it places on the audience and how much control is given to them. Even at their most basic, common level, VR content grants more control to its user than what cinema grants its viewer.

However, another way to look at it is through Clement Greenberg’s views (Lister et al, 2009: 61). These views are presented in relation to the medium of painting, in the age of the (then) new medium of photography. He argued that photography is better suited at illustrative work, leaving painting to “realize its true nature” (ibid.) which was to focus on the patterning of surface and color. He pressed that this should occur with any art. “By these means each art would exhibit and make explicit ‘that which was unique and irreducible to it’” (ibid).

Perhaps, cinema’s true power is in its retention of control. As previously mentioned, control is partially delegated in new media. In VR, specifically, it is delegated in the form of freedom of perspective. Cinema borrows VR’s conventions for more immersive

content but retains control over the audience. This retention of control comes as part of the nature of the medium. But it is also augmented when we considervection within all this discussion.

As previously argued, the movie-ride effect, when effective, presents a visceral experience to the audience: an illusion of self-motion. Through this effect, the cinematic presentation fools the viewer into thinking they are moving when in fact they are not. Through this effect, the body of the viewer is being taken hostage, for lack of better terms. The control of the sensations of the body has been delegated to the visual presentation. Control of the body is a form of control. In effect, the filmmaker, through immersive visuals, is taking control of the body of the viewer with the visceral sensation of illusion of motion, deluding them into believing they are part of the virtual space.

Notions of control are further highlighted in the case of digital animation. Nick Jones (2013) writes that virtual cinematography, which has the ability to surpass physical restrictions, expresses ideologies of abstraction and control. Mihailova (2013) further develops these notions of control by arguing that the animator has always been viewed as the omnipotent creator and controller of the image.

This notion is ever more present with computer animation, Mihailova argues, as the digital technologies offer more potential for the animator, allowing the reaching of “previously unimaginable representational feats” (Mihailova, 2013:133), namely evident in the aesthetic complexity of the depicted space. Mihailova further argues that the technologically mediated images that flaunt their aesthetic achievements on the screen draw marvel from its viewers who in turn become more susceptible to it, providing another layer of control over the viewer. “[...] today’s impressive and marvelous CGI is, simultaneously, the product being sold to the awestruck audience and

that product's own advertisement" (Mihailova, 2013:142). This is echoed by Brown and Krzywinska (2009) as they describe one of the pleasures of watching films in the submission to the events witnessed.

Through these views, we can present the movie-ride effect as one imbued with notions of control, further taking hold over the audience, increasing the pleasure of the experience of cinema. The movie-ride effect presented in the four cases discussed in the analysis section all rely on what Jones (2013) refers to as virtual cinematography. The content of those cases is constructed via digital tools and amalgamates real and digital elements. All of the presented action is captured by a virtual camera. By this I refer to Mike Jones' (2007) description of virtual cameras as ones that transcends the physicality, and the restrictions, of real spaces. The virtual camera is a perspective embodiment that is not bound to the limitations of the natural world.

In the first case, Gandalf is portrayed by a real actor and is surrounded by a digital environment that is traveled by a virtual camera, one that crosses a great distance as it flies down the tower and into the caves. The same goes for the fourth case, with Thor's performance coming from real action, while all else defaults to computer generated imagery. The second case from Star Wars even relies wholly on digital creation. The third case also relies on a virtual camera that crashes down from a great distance with such controllable precision, navigating the streets of London, and even crossing physical barriers once it crosses indoors.

All of these cases flaunt representational feats, in the sense that Mihailova (2013) uses. These impressive visuals add another layer of control on the audience, a core factor, I suggest, in the appreciation of cinema.

Through this proposed reading, the movie-ride effect emerges different from the simple, borrowed spectacle from theme parks and attractions that Balides (2003) and Moulton (2012) wrote of. Through intermedia theories, the movie-ride effect appears as a direct, rejuvenating influence, one that emanates from new, more promising media, towards an established, century-old medium. It also highlights a core, fundamental quality of cinema in the retention of control over the audience. Imbued with notions of control, and fueled by emerging technologies shared across multiple media, the movie-ride effect no longer remains a simple spectacle: it is now a tool to control the bodily reaction of the audience, instigating a visceral experience in an illusion of self-motion and carrying them across the threshold of the image.

5.3.5 Summary of the Further Discussion

In this section, I have discussed the possibility of framing the movie-ride effect in cinema as the result of influence from the new medium of Virtual Reality. I began by highlighting the common visuals as the connection between two different media as presented in the technical analysis section. Through literature review, I presented and argued towards the possibility that this effect could emanate from VR and could be understood through two topics: First, the rejuvenation argument presents the movie-ride effect as a tool for the old medium of cinema to borrow strategies from VR to appeal to the younger audience. Second, borrowing strategies from VR highlights the power of cinema and forefronts one of its core powers: to retain control over the audience. All this presents a new reading of the movie-ride effect as one that is influenced by Virtual Reality, but flaunts notions of control over the audience.

5.4 Summary of Discussion

Throughout this chapter, the information gathered from the technical analysis has been used for a discussion on a multitude of topics, all of which revolve around the movie-ride effect. To begin with, I have argued that it is a potential tool for immersion.

Afterwards, I presented multiple possibilities on what could be the driving factor of this effect. First, through the historical view, the movie-ride effect is another entry in the long list of immersive strategies present in Western Art. Second, by presenting a further discussion on the subject, I have argued towards the possibility that the movie-ride effect is an influence from Virtual Reality, within the discussion of influences of new media unto the old. This discussion has opened a new, branching one on the nature of the movie-ride effect, and quite possibly, on the nature of cinema as a whole. It revolved around the notions of control that are so imbued within the effect that they emerge as worthy of scholarly discussion.

Chapter Six: Conclusion

This thesis emanated from an interest taken with the relationship between image and audience. It moved to a piqued interest in the – almost mystical – immersive quality of images. Through the literature review, the thesis showed the prevalence of immersion throughout the history of Art and Design, from early architectural applications to current entertainment technologies. Finally, it arrived at a particular style found in contemporary cinema: the movie-ride effect. This interest was translated in an inspection of said effect, horizontally and vertically, in both technical and thematic fashion, producing multiple readings of the same phenomenon. This contribution would not be possible, however, without the technical analysis.

Indeed, the analysis on multiple aspects of the movie-ride effect proved to be an interesting endeavor to be taken. Following principles of Grounded Theory, certain end-results were clouded from the beginning. In other words, the approach taken was an investigative, fluid approach which was certainly shaped by the extracted data. This data came in the form of both primary and secondary data.

The secondary data was highlighted in the literature review in chapter two. It presented current knowledge on the three main topics of this thesis: immersion, new and old media, and the movie-ride effect. The literature introduced key concepts used throughout the thesis such as the definition of immersion, its extensive history in Western Art, its status in different media, the relationship between new and old media, writings on digital animated space, leading up to the then-current knowledge on the movie-ride effect. Here, lastly, Balides (2003) links it to the cinema of attractions, and Moulton (2013) links it to the theme park. None of these sources focus on the technical

characteristics of the movie-ride effect, nor do they really tackle how it might be an immersive visual.

The data also came in the form of primary data, presented in chapter four, in the technical analysis. In this section, four case studies taken from contemporary Western films were analyzed from a technical standpoint against a list of criteria. This list was extracted from Riecke and Schulte-Pelkum's (2015) work which highlights these technical characteristics in the medium of Virtual Reality. These were found to be applicable to the presented cases. Furthermore, the analysis showed a strong adherence to these visual criteria.

As shown in section 4.4, the results of the technical analysis show that all presented cases have a strong correlation with the criteria, with two out of the four cases completely conforming to all six of them. Case 02 and Case 04 – B, fully adhere to the criteria. Case 03 – D and Case 04 – A lack one item only. Case 01, along with Case 03 – B and Case 03 – C, lack two items. Lastly, Case 03 – A lacks three items. These results point towards the potential of these visuals, and how the visual qualities of the movie-ride effect can effectively induce an illusion of self-motion in the viewer.

All this data is fused together in the discussion in chapter five. Starting from the primary data of chapter four, the vection-inducing movie-ride effect is argued to effectively being an immersive effect. By creating an illusion of self-motion in the audience member, instances of movie-ride actually convince said audience member of moving inside the depicted space of the moving image. This is the exact meaning of an “immersive” effect: one that can actively create a sensation of spatial presence, a feeling of existing in the virtual space of the image.

However, the discussion does not halt at this point and continues in attempting to provide thematic or cultural meanings to this analysis. This is found through both primary and secondary data. Basing itself on the literature review, especially on the works of Oliver Grau (1999, 2003), the movie-ride effect emerges as a continuation of immersive strategies that is recorded to date back as early as the classical period. Through this historical perspective, the movie-ride effect becomes just another attempt at traversing Alberti's window, albeit, a contemporary one for an already established medium.

But the discussion continues by providing an alternate explanation to the existence of the movie-ride effect in contemporary Western cinema. The purpose of this additional discussion is to further the academic writing on what has proven to be quite an interesting object of analysis. Starting from the positive results of the technical analysis from chapter four, whereby content from two media were technically compared, the discussion shifts to the relationship of those two media, particularly within a shared look. Throughout section 5.3 and its subsections, the movie-ride effect is presented as a direct influence from the nascent medium of Virtual Reality unto the established medium of cinema; an influence from new media unto old media. This is argued following Bolter and Grusin's "remediation" (Lister et al, 2009: 47) whereby new technologies employed by new media reshape old media. In this case, the new technologies employed by Virtual Reality translate into cinematic immersive visuals, in the form of the movie-ride effect. Following Lister et al (2009) and Young (2006), the movie-ride style is explained by the "rejuvenation" argument, by which it refers to old media borrowing strategies of newer media to enhance and refresh their appeal to a younger generation of users.

Furthermore, by thematically analyzing the movie-ride effect, especially compared to Virtual Reality applications, interesting characteristics emerge. These are highlighted in section 5.3.4 as they pertain to the notions of control present into this effect. I have argued that through the movie-ride effect, filmmakers shift back the control, away from the audience. This occurs by taking hold over the bodily sensations of the audience member, and convincing them they are moving inside the virtual space of the image. Furthermore, with the movie-ride effect being a computer-generated spectacle, it contains subdued notes of control with its representational feats. I have also suggested that this retention of control could be at the core of cinema, as part of its very nature. To borrow words from Clement Greenberg, I have suggested that the retention of control would be cinema's "that which was unique and irreducible to it" (Lister et al, 2009: 61). This way, through an analysis of the movie-ride effect, I was led to a finding related to the whole medium of cinema.

Evidently, and upon close inspection, the movie-ride effect emerges as quite an interesting phenomenon, worthy of scholarly attention and of technical mastery. Throughout this thesis, I have argued towards the visuals of immersion with a focus on the movie-ride. My aim was to place the spotlight on this ostensibly simple effect, one that I have shown to be to be quite a promising and complex phenomenon. From its historic links to immersive strategies of Art, to its arguable connection to technologies of the future, the movie-ride effect emerges as something more than dazzling, hollow spectacle.

As a continuation of historical immersive strategies pertaining to different media, this research contributed to the immersive strategies of contemporary visual media, especially those found in Western cinema. By analyzing the movie-ride effect and reading it as one inducing spatial presence in the audience, I have added to the present

knowledge of immersive effects, which are more relevant than ever, in the age of the image.

As for the movie-ride effect's benefits, I believe they are quite substantial. From a technical side of the discussion, the movie-ride effect's *raison-d'être* matters less; regardless whether it be an influence from past attractions, from present theme parks, or from futuristic media, its technical advantages are of interest to all. Makers, designers, and consumers of images are all affected by knowledge on the movie-ride, and all that it has to offer. After all, as part of immersive visuals, it shifts control back into the hands of the creator, and it grants the audience a sensation they long for; a feeling that has been part of their Art for a long time: to travel inside the virtual space of the image.

Lastly, this entire investigation fulfills its role in quenching the thirst, if only partially, on the movie-ride effect, specifically, and on the immersive qualities of images, generally. To the very least, it has opened a path for discussion on multiple fronts.

Through this thesis, we can start to build a discussion on the technical requirements of the immersive cinematic image, and perhaps, to hone the criteria for the movie-ride effect. This would further our technical understanding, certainly, and allow us to take an even closer look at this interesting effect. Perhaps, conversely, it would enable taking a larger look at the effect and noticing its prevalence in contemporary entertainment, in a more quantitative fashion.

Ultimately, this thesis discussed the potential of the movie-ride effect in creating a sense of spatial presence in the audience. But within the confines of these pages, it remains only as potential, with burning questions left to be answered. How does this potential compare with the technologies of immersion, those that promised to fully transport the person into the virtual? How effective is it? How well does it work? Does it even

always work? Does it work everywhere and with everyone? Does it work with, or against Cinema? Does the medium even matter to it, or is it a case of message above medium?

A lot of research, data, and discussion is needed, enough to immerse oneself for quite a long time.

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