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**'A Mirror Image of Ourselves'?
The Technological Uncanny
and the Representation of the
Body in Early and Digital
Cinema**

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ABSTRACT

This thesis argues that there exists an analogous position in how the human body is represented on the cinema screen, and the response of spectators to this, within two key turning points in film history: the technological advancements made during the late 19th Century (what is commonly referred to as ‘early cinema’), and the move away from analogue techniques in the rising dominance of digital filmmaking practices at the turn of the last century (in what can be broadly termed the ‘digital age’). In both instances the filmic human body is used as a central spectacular attraction in the promotion of new and novel technologies intended to entertain, startle and challenge audiences. In particular, the use of trick photography in the late 1890s and the popularisation of motion-capture technology at the beginning of the 21st Century are comparable in the way these special effects technologies draw on the aesthetics of photographic realism and the idea of cinematic indexicality, whilst simultaneously rendering their depiction of the human body as unstable and transformative. An analysis of audience reactions to these technologies reveals how spectators from both eras have found these bodies strange, compelling and eerie: these filmic humans are uncanny. This thesis compares the technologies of early and digital cinema and their representation of the human form under the theoretical framework of the uncanny. Inspired by Freud’s argument for the *unheimlich*, this investigation argues for the presence of a technological uncanny: an experience of the uncanny which has been provoked by the experience and direct contemplation of cinematic technology in its mediation, simulation and representation of human bodies.

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INTRODUCTION

In 1896 the presidential candidate William McKinley was filmed at his home in Canton, Ohio. In the film, McKinley is seen walking towards the stationary camera with an aide by his side, framed in medium long shot (Figure 1). Over one hundred years later, at the turn of a new century, another body on film dominates the opening shots, this time in the 2001 CGI-created feature *Final Fantasy: The Spirits Within*¹. The main protagonist, Aki Ross, is first introduced to the audience within her dreamscape and several edits frame Aki's body from a variety of angles, including extreme close ups (Figure 2). The juxtaposition of these two images may seem to reveal little in common between the two films – for example, the films have different ages, content, length, purposes and appearance – but the comparison actually embodies the concerns and questions which fuel this investigation: how new technologies are incorporated into cinema; the effect this has upon the representation of the human form on-screen and how spectators respond to this sight; and how the concept of the uncanny informs these questions and can help evaluate them. For both the McKinley film and *Final Fantasy*, the technology behind the illusion on-screen is the central attraction, as it 'directly solicits spectator attention, inciting visual curiosity' (Gunning, 1986, 384)². At the time of McKinley's stroll on his front lawn, cinema³ was in its early days and demonstrations of projectors which could make photographs move drew large audiences in the USA and Europe to marvel at the

¹ From now on, I shall refer to the film as just *Final Fantasy*.

² Tom Gunning's concept of a 'cinema of attractions' will play an integral part in defining the early cinema period, as well as a useful concept to think about spectacle and special effects in the cinema. This argument shall be outlined in more detail in Chapter 2.

³ By 'cinema' I mean the practice of watching moving pictures, photographically produced, projected onto a large screen in front of an audience. This definition acknowledges the diverse history behind the development of cinema emerging in the late 1890s and shall be discussed in greater length in Chapter 2. It should also be noted that I use the term 'cinema' to thus refer to both the practice of experiencing moving images in this way and the larger, industrial context. I use the term 'film' to refer to the medium itself although I will discuss the difficulties with this word – particularly in the digital age – in further detail in Chapter 3.

illusion. A similar motivation can be found in *Final Fantasy*, albeit in a different era and context. Although ‘cinema’ was well established by the time Aki Ross made her filmic debut, *Final Fantasy* arrived at a time when new technologies in moving image production provided different novel attractions which again aimed to dazzle audiences. In this case, the spectacular sight of photographically realistic digital animation. Both films are as much – if not more – about the cinematic technologies which created them, as they are about their content (the presidential candidacy campaign for McKinley and the science fiction narrative in *Final Fantasy* respectively).

The McKinley film was made at a time when moving photography represented the latest scientific achievement which promised to revolutionise the way daily life and realistic motion could be recorded and projected. *Final Fantasy* encompassed a later, different set of technological advancements which sought to radically redefine these parameters of production in cinema through the use of digital. Crucially, both films use the sight of the human body as the way to draw attention to this very technology. McKinley’s walk is emblematic of the spectacle at the heart of early cinema’s main attraction which inventors and exhibitors hoped to emphasise: movement. The film encapsulates the realistic manner in which photographs were brought ‘back to life’ by focussing on McKinley’s movement across the screen, which is composed in such a way so as to produce the longest journey (and therefore more visible movement) for the presidential candidate: McKinley and his assistant begin on screen left in the background, before moving towards the camera’s position and exiting in the foreground on screen right. *Final Fantasy*’s opening similarly focuses on Aki’s body, as a montage of shots portrays the computerised protagonist’s form moving in various ways. The spectacle here is again the realistic motion of a human body, but

this time a body which has been created digitally, in place of the photographic and analogue technology which emerged at the time of McKinley's film. Therefore both examples represent significant turning points in the history of cinema in regards to the filmic representation of a photographically realistic human body. The selection of the above two films highlights the first strand of this thesis's investigation: to compare the historical context and contemporary reception of significant cinematic technologies from the late 19th/early 20th Centuries in the period commonly described as 'early cinema', with the reception of specific digital technologies in the late 20th/early 21st Centuries, broadly coined the 'digital age' of cinema.

Over the past decade, other academic literature has sought to evaluate the changes to cinema occurring as a direct result of the widespread integration of digital technology into filmmaking practices, distribution and exhibition. Many of these commentaries muse upon what cinema is – or what it is becoming – by looking back at what cinema *was*, particularly in its earliest days (Mulvey, 2006; Manovich, 2001; North 2008; Gunning 2006). My work thus aims to contribute to this recent tradition in academic writing which adopts a methodology of drawing attention to the past in order to reflect upon the present but for a different purpose: to draw the comparison between early cinema and digital using the uncanny to show parallels between responses to new technology and particularly the representation of the human body on-screen (points I shall elaborate below). My intervention to this discourse therefore argues for continuity between historical changes to cinema, rather than a severe break as others have said: in the age of digital, I do not believe that cinema is

‘dead.’⁴ Instead, bringing the differing contexts of audience reaction to the cinemas of old and new into dialogue reveals a fascinating history into how new visual effects technologies are assimilated (or not) into mainstream practices, and how the representation of the human body and the uncanny have a particular historical importance to this story of cinema through the ages.

Why should the uncanny specifically be applied to audience reactions during these two eras in film history? In a second strand of this thesis, I argue that the theory and concept of the uncanny illuminates the complex and nuanced reactions of spectators in both eras towards the new technologies represented on the cinema screen. As indicated above, such technologies were presented as spectacles and audiences responded to such displays with the expected reactions of awe. Yet evidence also suggests that spectators and commentators also found the sight of this technology bewildering, forcing viewers to evaluate the nature of the image before them and the illusion behind it. In the case of early cinema, this characterisation of the awe-struck and dazzled spectator is reminiscent of the popular story which claims the first viewers of cinema were somehow physically overwhelmed by the images they saw, unable to discern reality from the pictorial representations before them and therefore reacting with fear. I shall discuss this urban legend in Chapter 2 in more detail but I will state now that this is not a conclusion I share, nor is it a belief I wish to uphold here. Rather, characterising the reaction of early cinema viewers towards these moving pictures as uncanny provides a more appropriately nuanced description of spectators who were amazed – not fearful – of the images projected on the screen. Viewers did not mistake the animated pictures for reality but rather the audience

⁴ I use the word here to mean ‘at an end’ although the word ‘dead’ has an additional significance: although cinema has survived into present day, the representation of the dead onscreen becomes an important theme in the films I analyse. This emphasises the importance of the uncanny to this discussion again as the slippage between life and death is a central uncanny trope.

actively engaged in discerning the mechanism behind the illusion, as audiences participated in a 'vacillation between belief and incredulity' where 'the apparent realism of the image makes it a successful illusion, but one understood as an illusion nonetheless' (Gunning, 1995a, 199).

I argue that the uncanny is a productive theory to use to analyse these reactions precisely because the concept itself represents a complex experience, as famously theorised by Freud in 1919. The uncanny is not simply synonymous with horror: Freud writes that an experience of the uncanny is a very particular kind of 'dread', one he concludes occurs when the familiar becomes induced with the unfamiliar: *das unheimliche*. The uncanny is not, as Freud contemplates, as straightforward as fear, but rather it is an unsettling experience which forces one to question the natural order of things. Is that object animate or inanimate? Is that body alive or dead? Is this event real or imagined? Has this situation happened before? Freud lists the double, automata, compulsion to repeat and déjà vu as prime examples of tropes and experiences which can evoke the uncanny. As such, the uncanny occurs when boundaries are blurred and one struggles to comprehend the nature of a situation: it is a strange experience of limbo which forces an evaluative response to restore understanding and re-insert familiar borders (moving/still, living/dead, etc.). Adapting the theory of the uncanny in this way, I intend to apply this definition to the response of spectators towards new visual effects technologies: the uncanny provides a very apt way to describe the crisis such technologies have evidently inspired, fundamentally questioning the nature of the cinematic medium. What I theorise here, and the term I call this process, is the *technological uncanny*, as provoked specifically by the representation of the human body on-screen. The human body possesses an important part in the theory of the uncanny, as Freud links

many uncanny experiences explicitly to examples of unsettling encounters with other human bodies, be they doubles, dolls or automata. It is this lineage of the uncanny that I explore further in this thesis, finding a direct correlation between the uncanny experiences evoked by the human body on-screen and responses to the technology of cinema both old and new.

The decision to utilise the uncanny, and specifically the trope of the body within it, is not an arbitrary choice either. Chapters 1 and 2 of this thesis will show how theories of the uncanny – as related to technological advancements in the West during the 18th and 19th Centuries – are historically related to the growth of cinema. This shared historic context points once more at the suitability of using the term uncanny as a theoretical model by which to evaluate early spectators' response to the technologies of cinema. Furthermore I show how the representation of the body on-screen is an important attraction to early viewers and filmmakers, allowing a direct line to be drawn between the science of the automaton and the technologies of the cinema: both demonstrate the latest development in a mechanised human body and both are key tropes in the theory of the technological uncanny. I am therefore using the theory of the uncanny in a specific, historically-contextualised fashion which is related to the development of cinema and finds considerable use again in the digital age. Once again, responses to the representation of the human body as enabled by new technology can be characterised as uncanny. Additionally research into these responses, by looking at published reviews and commentaries on digital films, shows a much more direct use of the term uncanny, particularly with the popularised theory of the uncanny valley. The term 'uncanny' has thus garnered a cultural currency in the contemporary age as cinema's audiences, once again, question the new

technologies before their eyes and how this effects the representation of the human body.

In summary, this thesis shall compare the reaction of audiences from early and digital cinema towards the representation of realistically rendered human bodies on-screen and I characterise this response as uncanny. This line of argument appreciates the diverse contexts into which these audiences and contemporary cinematic practices existed but shows the two to be comparable. The uncanny provides a way to bring these contexts into dialogue, illuminating their continuities and revealing that the representation of the human body on-screen continues to pose fundamental questions about what viewers find acceptable concerning this portrayal, as cinematic technology continues to evolve. In the next section of this introduction, I shall expand on these points as they shall be explored in the thesis through further analysis of the McKinley film and *Final Fantasy*. By drawing on these examples from early cinema and digital respectively, I shall show how specific examples of films placing emphasis upon the human body in both these eras and correlating spectator response supports my central argument for utilisation of the theory of the uncanny to understand these reactions. These films shall also demonstrate the wider issues at stake in this thesis, which shall be outlined with some further clarifications on the usage of particular terms. I shall conclude with a comprehensive break-down of how these topics shall be explored in succeeding chapters.

The Trace of McKinley: Early Cinema, the Uncanny and the Index

Part of the purpose of this thesis is to show how the development of moving picture technology has impacted upon the experience of spectators of cinema, including viewers from the medium's earliest days. A report written in *The Sheffield &*

Rotherham Independent in 1896 makes this point and helps to outline the wider impact cinematic technologies were having at the time the McKinley film was released. At this stage in the mid-1890s, the Lumière's *Cinématographe* had made its debut in Paris and was then exhibited in London. The *Sheffield & Rotherham* newspaper writer attempts to capture the excitement surrounding this latest innovation in moving picture technology, which promised to revolutionise how audiences interacted with animated photography. Importantly, such reports do not seek to claim the *Cinématographe* and its films appeared from nowhere: the author of the *Independent* story reminds viewers they 'may probably remember the old "Wheel of Life," and they are more likely still to be familiar with Edison's kinetoscope' (Anon, 1896c). So the *Cinématographe* was not the first to produce moving pictures and this important distinction – which shows how the cinema did not suddenly 'begin' nor has its development ever been a teleological progression – shall be discussed in more detail in Chapter 2. But the author still recognises the event of the machine's premiere in London near the beginning of the 20th Century as an important historical moment. The author describes the experience in some detail:

At the end of the hall is a large white screen upon which the pictures are thrown, and the illusion is so complete that you appear to be looking through a window at something actually occurring in the next street. First of all you are shown a factory. The gates open. The girls pour out, laughing and (apparently) talking. Then a boy comes out, jumps on a bicycle and rides off. Suddenly a pair of doors are thrown back, the crowd opens, and a brougham is driven out, and so on. Then you are shown a railway station; a train is seen in the distance. It comes nearer and nearer. You see the steam from the funnel and valves, and you can almost imagine you hear the puffing of the engine. The train comes to a stand, the passengers jump out, and the whole platform

is full of life and activity. Porters rush up and down, the guard bangs the doors, and the arrivals are greeted by their friends. (Anon, 1896c)

As will be argued throughout this investigation, it is the portrayal of the human body on the screen which is a specific attraction of this new technology. The writer describes the individuals seen in *Workers Leaving the Factory* (1895) before a ‘crowd’ pours out into the frame. Other films, such as that showing a card game and *The Gardener* (1895), focus on the interaction of bodies. A film like *The Arrival of a Train at La Ciotat Station* (1895) is thrilling not only because of the sight of the locomotive approaching the screen, but for the human figures which emerge from within it. Just like the digital films to be discussed in this thesis, the films – and audiences – of early cinema also emphasised the human body on the screen to demonstrate the latest technological marvel. Importantly, as highlighted at the beginning of this introduction, this writer reporting on the *Cinématographe*’s performance does not contend that viewers were fooled into believing the illusion before them was real: it is still clear this is a ‘screen upon which the pictures are thrown.’ Yet the suggestion that the experience of this screen could be compared to a ‘window’, because of the realistic nature of the moving pictures, is an idea which underpins much traditional film theory: the photographic process by which these images were recorded retains a special link, or trace, to the real world. This distinction becomes clearer when considering an early example of a specific human body being portrayed on the cinematic screen. When researching examples of US audiences responding to moving picture technology at the same time as the report above, the McKinley film receives considerable mention. This film, made to promote McKinley’s presidential campaign, was shown extensively in film programmes in the USA with newspaper reports recording the reaction. One writer observed how

'[the] audience went fairly frantic over pictures thrown on a screen ... The biggest part of enthusiasm began when a view of a McKinley and Hobart parade in Canton was shown' (Anon, 1896l). Another agreed that spectators thought the film 'was capitally lifelike and a very popular feature' (Anon, 1896m). These commentaries reveal that the transformation of this real, recognisable human body into photographic form to be projected onto the screen was a popular attraction. Again whilst the reports do not claim that anyone was ever fooled into believing this was the *real* McKinley before them, the language of these authors do reveal a slippage in terms of the body that was filmed and the body that appears on the screen. One reporter writes: 'Major McKinley is likely to get an ovation to-night when he advances to the footlights' (Anon, 1896j). Similarly, another author notes that 'pandemonium broke loose' at a screening of the film when an excited audience 'caught sight of the next President himself, 'in the flesh'' (Anon, 1896k). One more remarks: 'So natural and life like is this view that it seems to the spectator as if McKinley himself were there instead of his picture' (Anon, 1896o).

What is important in this film for the spectators is the veracity of the image before them. McKinley was present on his front lawn at home when these images were recorded and it is these images which are shown to audiences: the pictures have a direct link or trace of the real McKinley, an element important for his prospective electorate. This element is also important in the theorisation of such images. As Jonathan Auerbach notes: 'Eagerly viewed by audiences across the nation, the 1896 cinematic debut of the presidential candidate ... offer an important means to gauge the effects of a new kind of visual technology' (Auerbach, 2007, 15). One these 'effects' Auerbach references is, I argue, the importance of the indexical relationship of the filmed body to the world for early cinema audiences. The body on display in

these early films forces the viewer to contemplate the nature of the technology and illusion playing before them and this process is one which evokes an uncanny experience. Another commentator writing about the McKinley film uses the event as an opportunity to reflect upon this latest technology of moving pictures. The author concludes: ‘No ghost can startle after this, no Frankenstein pursue us, for we have seen the instrument of the day become the playful specter of the night. John Baptist’s gory head and Herodias’ dancing feet are both specters of the same show’ (Anon, 1896s). The unease for this writer again concerns the intimate relationship between the human body and its representation on the screen. This is McKinley on the screen but it is not: it is the presidential candidate’s ‘specter’, an echo of the real body which appears so life-like before the viewer. And this body is distinctly unnatural: the McKinley is film a Frankenstein-esque creation, the mechanical (re)production of a living human body. Once again the language of the uncanny comes to the fore.⁵ This is both McKinley’s body but also his immortal double; a static photograph made to perform (to come to ‘life’) before the eyes of the audience. The indexical nature of early cinema and the uncanny potential of these films becomes an important strand in my investigation into the era in Chapters 1 and 2, particularly when the verisimilitude of this filmed body becomes transformed, mutated and abused in trick films. Just as *Final Fantasy* created unease due to its unconventional mixing of CGI animation with photorealist aesthetics, as we shall see, so too do the later trick films of early cinema become an important part of this technological uncanny experience of cinema as the reliability of the photographic image becomes unstable.

⁵ As noted above, this image of the dead becoming living again is a visual trope I shall explore in more detail when analysing my case study films. The theme of haunting, as evoked by this Cincinnati Enquirer reporter, finds particular resonance with the work of Georges Méliès, which is explored in Chapter 2.

The Digital Body

Final Fantasy's story is set in the future where the majority of the earth has become uninhabitable due to an alien invasion by creatures known as the 'phantoms'. The narrative follows Aki's attempt to discover the vital 'spirits' which will release the planet from the phantoms' colonisation but the film's opening shots are very much concerned with the intricate detailing of human flesh, rather than the ethereal. Aptly, the first shot of the human character does not reveal a whole body but rather, in an extreme close-up, isolates the blinking of an eye. It is a fleeting moment but visible are the intricate details of this facial feature: the strands of hair of the eyebrow, eyelashes and hair framing the face; the subtle wrinkles at the top of the cheek; the lines of the forehead; and the reflective fluid of the eyeball, which mirrors the desolate landscape revealed in the establishing shot seconds before. The film cuts back to the camera's investigative pan through this wasteland before returning briefly to the human eye as it blinks again, the eye narrowing and the eyebrow frowns. In a shot-reverse shot with the expanding sun, the owner of this eye is revealed as a young woman – the main protagonist, scientist Aki Ross – who, in a medium shot, raises her arm to shield her face from the brightening light. Further cuts reveal more of Aki's body from varying angles: a zoom into the face as she removes her hand; a shot from behind her which silhouettes her against the sun; a medium shot of her head and shoulders; a close-up of her foot; and a shot of her whole body from below, beneath a sheet of water. Two more shots of Aki's face appear before the music crescendos with the expanding sun and an abrupt cut reveals the sequence to be a dream (computerised text writes: 'Dream Recorded, December 13.2065'). A pan of the camera connects this dream to the same woman, who is now framed from the side in a close-up, the shot favouring the same eye seen at the very

start of the film. Aki's voice-over narration begins as the camera moves for another close-up – this time of both eyes – and further facial features are again emphasised: the pores of the skin are visible, as are the differing textures in the eyes.

It is fitting that the film's enigmatic opening – framed as it is by such an intense focus on the eyes – should emphasise the micro details of this human body. On its release *Final Fantasy* was marketed as a breakthrough in cinematic special effects, featuring the first use of realistically rendered computer-generated human characters in a full-length feature film. To create a CGI film which attempted to render photorealistic all aspects of the human body – from its proportions and movement down to the finite details of hair and skin tone – was no small achievement⁶. As Andy Jones, the animation supervisor on the film commented: 'It seemed like an impossible thing to do, given the tool set that we had at the time and where the technology was' (Jones, 2001, 34). As the opening to *Final Fantasy* testifies, the detail emphasised by these close-up shots certainly highlights the film as 'a turning point in the history of moving-image media' (Monnet, 2004, 97). It is *Final Fantasy*'s positioning as a 'turning point' in the progress of cinema's visual effects which permeates the material published at the time of the film's release, both for promotional and critical purposes. In *Cinefex*, Jody Duncan emphasises how *Final Fantasy* seemed like a 'pipedream' of Hironobu Sakaguchi's – the creator and director of the film and the original computer game franchise – and how doubts still remained as to whether the project for realistic CG humans could be achieved, even after production commenced (Duncan, 2001, 34). Information appearing in the press release for the film also emphasises the film's historic status of over-coming seemingly impossible obstacles with the power of technology. As part of *Final*

⁶ Further discussion on the aesthetic and conceptual issues raised by the notion of 'photorealism' shall be explored in Chapter 1 (with the introduction of the theory of the index); Chapter 3; and Chapter 5.

Fantasy's advertisement, Silicon Graphics (SGI) – the makers of the computer servers used during the film's production – released technical details about the technology being used, emphasising the unprecedented scale of the film's ambition: 'Four SGI(TM) 2000 series high-performance servers, four Silicon Graphics(R) Onyx2(R) visualization systems, 167 Silicon Graphics(R) Octane(R) visual workstations and other SGI systems were used to create the film ... more than 200 CGI artists and close to 30 programmers from all over the U.S., Japan, Europe and Asia' (Silicon Graphics Inc., 2001).

SGI's account of the film clearly delineates *Final Fantasy* as a historically and technologically momentous event: the human characters are, it claims, 'virtually indistinguishable from live human beings.' In the same press release Greg Estes of SGI calls the film a 'milestone of CGI magic' and predicts that 'hyperReal virtual characters will be a part of the future of digital storytelling in Hollywood and around the world' (Estes, 2001). This sentiment is shared by Sakaguchi, who states in an interview that '[it] has long been the dream to create a superior computer-generated human character so real that a distinction cannot be made between it and that of a live action film' (Sakaguchi, 2001b). Such prophetic rhetoric expressed at the time of *Final Fantasy*'s cinematic release was not exclusive to technical commentaries on the film's technological marvels or official press releases. Critics reviewing the film also emphasised the film's importance to the development of cinematic technologies. Robert Ebert described the film as 'the first citizen of the new world of cyberfilm' (Ebert, 2001) while Ian Freer for *Empire Magazine* called the experience akin to seeing 'a medium expanding its boundaries before your very eyes' (Freer, 2001). *Final Fantasy* simply is, Lisa Schwarzbaum writes, 'a cinematic art of the future' (Schwarzbaum, 2001). The accolade afforded to *Final Fantasy* went further: in line

with Estes's claim that the verisimilitude of the animated characters is 'virtually indistinguishable' from real, living people, the critics commenting on the film in 2001 also seriously discussed the implications of a photorealistic film made without actors as a very real possibility in the near future. Schwarzbaum continues that *Final Fantasy* may only be taking 'baby steps today' but '[those] steps open possibilities human actors might well worry about' (2001). Bob Graham noted that the widespread use of virtual actors is 'knocking at the door' (Graham, 2001).

Other writers were much more optimistic and announced that the age of the synthespian – the digitally created actor indiscernible from the real thing – as a future inevitability. Although this prediction for such digital doppelgängers has not come to pass, in present day 2015, the pervasiveness of this idea permeated many publications at the turn of the century. For example, in an article for *The Toronto Star* published the same year as *Final Fantasy*'s release, Tyler Hamilton wrote a special on the '3D View of Tomorrow' calling the film the first 3D animation to make 'human characters that look believable and real' (Hamilton, 2001). As a result, Hamilton seriously entertains the possibility for a systematic replacement of actors with synthespian counterparts. He writes: 'Why use a human stunt person when a digital one will do? Why spend a fortune on Keanu [Reeves] when a cheaper digital Keanu can do the same job - or better?' (Hamilton, 2001). Paul Salvini is more direct on the matter: 'We're going to have movie stars that don't exist, that are completely fabricated' (Salvini, 2001). *Time Magazine*'s Chris Taylor writes that, as a result of *Final Fantasy*'s technological breakthrough, soon 'our screens will be stuffed with synthetic thespians' (Taylor, 2000). Rick Fulton, in an exclusive article on *Final Fantasy* just prior to its release, writes saying that the characters 'look so real that you could almost reach out and touch them' (Fulton, 2001). In Fulton's view the film

does not predict the future development of synthespians, so much as report they are already here: '*Final Fantasy* uses state-of-the-art virtual actors - known as vactors or synthespians.' This stance is supported by Ruth La Ferla who notes that Aki from *Final Fantasy* is the 'most realistic of a new generation of computer-generated bombshells' although other examples of (specifically female) digital human beings have been emerging elsewhere: La Ferla cites Webbie Tookay and Vivian Livingston as examples of synthespians who have been signed by prestigious modelling agencies (La Ferla, 2001).

The prediction made at the beginning of the 21st Century that digitally created synthespians would soon overtake the need for human performers, particularly in film, were also discussed in other forums as well, including academia. Barbara Creed wrote a piece for the 'Millennial Debates' section in *Screen's* special turn-of-the-century edition of the journal which focused on the question of the 'cyberstar.' Creed writes that 'central' to the effect of digital technology dominating cinematic practices is 'the possibility of creating a virtual actor, of replacing the film star, the carbon-based actor ... In the future, living actors may compete with digital images for the major roles in the latest blockbuster or romantic comedy' (Creed, 2000, 80). This 'virtual actor', Creed notes, could be an original creation or the digital simulacrum of deceased stars, technologically brought back to life on the big screen. In either case the effect for the viewer could be quite unnerving: together with the general 'flatness' of texture and space created by digital filmmaking (in place of celluloid), Creed questions if this 'one-dimensionality' seriously inhibits the audiences' engagement with such synthetic actors. She notes that synthespians are digital humans which may look authentic, but are lacking attributes associated with real humans: complex emotions and spontaneity which can only be procured by a

real, lived experience of the world. Creed concludes that synthesians are – or will be – ‘actors without an Unconscious’ (85).

Interestingly, Creed’s article was published before *Final Fantasy*’s release so it cannot comment upon Aki Ross’s importance to such discussions in the popular press just a year later. However Creed does include reference to *Final Fantasy* in a re-publication of the above article in her book *Media Matrix: Sexing the New Reality*. Published in 2004, Creed edits the original article to include the now famous film but her conclusions remain the same: cyberstars are a real possibility and one must ponder the effect this will have for future audience engagement with unreal and non-living bodies in tomorrow’s films. In this respect, *Final Fantasy* provides an illuminating test-case and Creed’s inclusion of the film into her original analysis demonstrates how her point still remains. Indeed, not only does the creation of Aki fulfil Creed’s prediction that the attempt to make digitally created human bodies realistic will occur, but the author also cites the film’s narrative as poignantly engaged in the discussion surrounding audience engagement with such stars. *Final Fantasy*’s plot revolves around the quest of discovering the essence of life, a point emphasised by the fact Aki’s body literally hosts a ‘spirit within’. Creed postulates that the film’s narrative preoccupation on what is life and what is the soul of living things attempts to emphasise the ‘living’ nature of Aki and her counterparts in the film, thus distracting the viewer’s attention away from the fact they are digitally rendered and not living at all. These conclusions, written two years after the film’s release, demonstrate how the importance of the figure of the synthesian to predictions concerning cinema’s future continues to hold significant influence in the early 2000’s. This point is also evident in the fact that Aki was voted into *Maxim*’s ‘Hot 100’ list and appeared – in a new bikini outfit – on the magazine’s cover; the

first artificial woman ever to do so (Figure 3).⁷ The way the synthespian continued to occupy popular imagination is paralleled in *SImOne* (2002), released a year after *Final Fantasy*. The film, which tells the story of a failing director who replaces his leading lady with a digitally-created star, dramatizes the possible future usurpation of real actors with synthespians. Peter Rainer, reviewing *SImOne* on its release, writes that the film ‘managed to come up with something that credibly resembles the shape of things to come, Hollywood-style’ (Rainer, 2002).

Final Fantasy and the media furore around synthespians it inspired at the time of its release helps to illuminate one of the central concerns of this thesis, as indicated at the beginning. I am interested in capturing and analysing these ‘turning points’ of technology, moments when films are made and sold as revolutionary in their representative ability and critics, spectators and academia respond accordingly. What makes these specific films significant historic markers in the wider tradition of cinema? In the case of *Final Fantasy* the answer to this question is intimately related to the rise of digital technologies in cinema. As evidenced above, a common theme in the discourse surrounding *Final Fantasy* concerns the prospect of actors being replaced by realistically rendered digital replacements, or synthespians. It should be noted that not all participants engaged in this discussion inspired by *Final Fantasy*’s release endorsed such hyperbolic conclusions. Many other writers noted, as Graham did, that such a revolution ‘[is] not going to happen any time soon’ (Graham, 2001). Indeed, even the makers of the film emphasise that such a goal is not the aim: ‘It’s [synthespians] a really silly idea ... No matter how good it gets, it will always be animation’ (Jones, 2001, 129). It should also be qualified that in highlighting *Final*

⁷ Another example of Aki Ross crossing the boundary as a synthespian into other popular media outlets for stars is when she was included in the ‘IT List 2001’ for *Entertainment Weekly*. See: <http://web.archive.org/web/20010625105611/http://www.ew.com/ew/itlist/2001/7.html>

Fantasy as a ‘turning point’ in cinema history is not to claim such major developments in the world of cinematic special effects occur in a vacuum: as Creed illuminates, the film is an extension of the extensive digital technologies that have been used in cinema since the late 1980s onwards.⁸ As such it is not my aim here to ignore the wider contexts of special effects, or to argue that the prediction for synthespian integration into film is (or was ever) going to happen. Rather, *Final Fantasy* represents a good example when several forums of debate were engaging in such rhetoric, discussing the fundamental nature and purpose of cinema’s special effects. These questions, I contend, significantly focus on the representation of the human body.

One only need consider the opening to *Final Fantasy*, as described earlier, to perceive the emphasis placed upon this representation of the body by the film itself. The true purpose of this scene is clearly to emphasise the verisimilitude of the body shown and the real star here is the minutiae: the pores of the skin and the texture of hair. In the case studies shown in future chapters, this attention to detail afforded by the films themselves shall be a reoccurring feature. It is also little surprise, then, that such emphasis is reflected in the critical reaction to the films and *Final Fantasy* is no exception. What is surprising is that such reactions were negative. For example, one reviewer writes the ‘realist human faces look shriekingly phoney precisely because they're almost there but not quite’ (Bradshaw, 2001). Another called the digital humans a ‘soulless mimeograph of humanity ... it's like watching Disney World animatronic figures do soap opera’ (Atkinson, 2001). A different critic described the CGI bodies as ‘kind of close to real, but ultimately just high-tech marionettes’ (Zacharek, 2001) and another writer concurs: ‘[the characters are] an eerie similitude

⁸ Examples of these include *Tron* (1982), *Terminator 2: Judgement Day* (1991) and *Titanic* (1997).

of an actor.’ (Graham, 2001). When comparing these reactions some patterns begin to emerge. One particular grievance for these critics is the anxiety concerning the close juxtaposition between the portrayal of realistic human bodies with ‘real’ human emotion, and the technology of special effects. The result, for these writers, is either the feeling that *Final Fantasy* characters are merely animated puppets (‘high-tech marionettes’) or realistic humans lacking a convincing life-source (‘soulless’). Ironically for a film subtitled *The Spirits Within*, viewers of the film struggled to resolve the relationship between the realistic human body and the digital special effect. The result is that the characters become something ‘there but not quite’: an in-between entity which is not completely convincing but not wholly unreal either.

It is here that the theory of the technological uncanny becomes important. As stated earlier the uncanny concerns that slippage of understanding where boundaries blur or become indistinct. For Freud an important uncanny trope is the uncertainty between what is alive or dead; the animate versus the inanimate. The films studied in this thesis, like *Final Fantasy*, directly challenge this distinction as well, calling into question how digital effects, particularly CGI, have affected the portrayal of other worlds on film, and particularly the human characters within it. At stake here is another slippage in definitions, this time between live-action and animation. *Final Fantasy* is not realistic enough to be live action (Aki is not mistaken by the viewer to be a real actor) yet the human characters have too high a degree of verisimilitude to adhere to those qualities traditionally associated with animation. In this sense, the unease evoked by *Final Fantasy* stems from the complexity over where the *real* human body exists behind and beyond the frame: can technology aim to produce ‘authentic’ looking human bodies, without the need for the photo-chemical processes of old, but with the same effect? Just as the concept of the uncanny explores what is

real behind the illusion and what is the ‘original’ amongst the simulacra, so too do these responses to *Final Fantasy* point to the wider debates surrounding film theory, particularly the idea of the trace or index. The index, as postulated by Charles Sanders Peirce, is a theory which highlights how (in the case of analogue cinema) the physical imprint of the referent present in the chemical processes of photography reflects the unique link the medium retains to the ‘real’ world, as seen in the discussion on the McKinley film. Part of this thesis’s investigation is then to ask: does the theory of the index have any effect on an audience’s reception of a film, and in particular their engagement with the human body on-screen? I argue that it is the *idea* of the index which is significant to this relationship and informs the conceptualisation of this uncanny experience.

Further Notes on Terminology and Methodology

As will be apparent from the analysis above, my utilisation of the theory of the uncanny does not reflect Freud’s use of the term in the construction of his castration complex thesis. Freud’s essay on the uncanny remains an important departure point for this topic although I will historically situate the term and its tropes. Investigating the uncanny in broader terms which include, but move beyond, Freud’s work will both help elucidate the latter’s contribution to the topic further, and illuminate different avenues through which the uncanny can be explored. The technological uncanny is one such avenue, as discussed above. The phrase refers to a specific experience and the analysis in this thesis will seek to describe what such an experience *feels* like. The uncanny is not entirely positive but it is not wholly negative either; it is a feeling of intrigue, unease and excitement. The experience is related to the tropes of the double and automaton, which are concerned specifically with the representation of the human body. The parameters and contexts of this

experience may change in the periods I look at, but all are intertwined and comparable within the technological uncanny concept. This term therefore outlines a specific mode of spectatorship between the screen and the viewer; the display of spectacular visual effects and its reception by audiences. I identify the presence of the technological uncanny and its experience for viewers through the application of what I have termed the ‘language of the uncanny.’

This phrase points to three interconnected areas of interest which underpin my research. First, this ‘language’ acts as reminder of the historical contexts of the uncanny which begin in literature, and particularly the literary traditions of the Gothic. Second this language is identified in the audience responses I have gathered which either explicitly evoke the uncanny tropes outlined above or engage with the uncanny experience of technology by contemplating upon the medium’s ontological properties. For both early and digital cinema contexts, I focus my data collection on Western Europe and USA contexts, drawing upon major newspapers, trade journals, magazines, and blogs as well as published personal anecdotes⁹. It is from these responses that I shape my engagement with, and working definition of, the cinemas in question. This is not to claim the early or digital contexts as homogenous; indeed, revisionist histories into early cinema, for example, have emphasised the diversity of the period in terms of production and exhibition practices, audiences and films. A comparable trend is evident in the digital age: one significant impact of the digitisation of film is the increased variety of ways through which such texts are viewed, from domestic equipment (such as DVD players and computers) to mobile

⁹ The focus on a Western context and audience for both time periods is one which appropriately reflects the archives and resources used in this research, as well as the themes covered by existing scholarship. This is not to forget the importance of other contexts or the research conducted in these areas (see, for example, the scope covered by Maltby *et al.* (2011) and the current scholarship summarised in Chapter 2). Indeed, the cultural and geographical specificity of the technological uncanny model I outline here is questioned by the popularisation of the theory of the ‘uncanny valley’ which originates from Japan. This is explored in further detail in Chapter 3.

devices like tablets and phones. To explore all these nuances is outside of the scope of this particular study and so my intervention into this discourse is to contextualise the responses I have collected against this complex backdrop and propose the technological uncanny as another lens through which this history can be evaluated.

The difference in time periods means this research faced specific challenges unique to both contexts but the collected responses do still compare as I have utilised sources which have 19th Century and 21st Century equivalents (such as newspapers). In total, the research in this thesis is based upon my collection of 522 accounts of viewer reactions. These reactions inevitably delineate what is meant by ‘cinema’ in this thesis, especially for the early cinema period which is particularly difficult to define for the reasons outlined above. As Richard Maltby notes, the attempt to historically situate the *experience* of early cinema is particularly challenging as scholars seek ‘something as insubstantial as dreams ... we pursue the heterogeneous purposes of the unidentified participants in a myriad of undocumented events’ (Maltby, 2011, 33). The reactions collected in this thesis result from these rare instances of *documented* events in specific viewing circumstances: films which were projected for public consumption in places which would evolve into the purpose-built movie theatres we recognise today (such as the music halls). As such this thesis engages with a history of early cinema which emphasises what Robert C. Allen calls its ‘sociality’; a factor which is ‘one of the most striking features of the experience of cinema for a hundred years’ (Allen 2011, 44). Chapter 2 shall further explore the history of this ‘sociality’ and how the language of the uncanny infuses the reactions recorded from these early experiences of public or group film screenings in a Western context.

The language of the uncanny is also present in the scholarship which reflects upon the technology of visual effects from both time periods and the representation of the body too. Allen provides a useful example of this in his account of how to write the history of cinema and its experience. He notes how the changing of contemporary viewing habits means, today, '[more] and more movie theatres serve as haunted houses' which 'summon the ghost of a bygone epoch' (44). The comparison between early and digital eras is characterised here using the terminology of the uncanny: evocations of ghosts, hauntings and the double. Chapter 3 shall explore further examples of this trend which highlights again the cultural currency of the technological uncanny. Interestingly, Allen also extends such imagery in his description of film itself, calling the moving pictures 'unnatural acts of mayhem [which] flash on the walls' (44). The use of term 'unnatural' speaks to the tensions between the verisimilitude of action and the use of visual effects outlined in the analysis above, and this illuminates the final way in which the 'language of the uncanny' is explored in this thesis. This language is, I argue, translated onto the screen by filmmakers. In the films analysed, the uncanny potential of the medium is incorporated into the portrayal of the body although the result of this differs: in some instances the uncanny is intentionally used and in others the experience is unintentionally provoked. The purpose behind such representations may also vary. As the above analysis of the McKinley film and *Final Fantasy* indicates, the films studied in this investigation are broad; the McKinley example is representative of the broad range of topics filmed in the early cinema period, including actualities, scientific demonstrations and fiction, whilst *Final Fantasy* reflects the different genres digital visual effects are used for, and the eclectic audiences for which they are aimed: *Final Fantasy* is a science-fiction tapping into an established computer

game franchise fan-base, whilst the Zemeckis case studies in Chapter 4 are predominantly literary adaptations aimed at family audiences. In all these cases, it is the representation of the human body which allows for comparison and indicates the cultural currency of the uncanny once again. The language of the uncanny evident from such a portrayal speaks to a wider metaphor on how the comparison between early and digital cinema is part of a larger narrative of the technological uncanny.

I am concerned here with the realistic representation of the human body and the relationship this has to photorealistic aesthetics. These ideals are linked back to theories of indexicality and the filmic medium. However, it should be stressed that I am not arguing for a definition of cinema based on the index; rather, I contend the theory of the index is linked to the ideas present in the concept of the uncanny. These ideas orbit the audience responses collected and I argue that it is the *idea* of the index – rather than an argument that this theory is in reality an ontological truth – which informs this reception. As stressed earlier, the relationship between theories of the index and the uncanny point to an analysis of film history which characterises technological changes in terms of continuity. This is not to conflate history by ignoring contextual differences, or to isolate these examples in a way which fragments this picture either. Instead the comparison emphasises continuity by juxtaposing these areas of engagement and the history of visual effects technology. The idea of the index is particularly prevalent in the portrayal and reception of new visual effects technologies: when technology is still new and novel and thus a catalyst for conceptualising what such changes mean for the understanding of the filmic human body and its mediation. As mentioned above, the technological uncanny unites these concerns under a larger, ongoing narrative.

Finally, I believe all these areas of research are encompassed by the phrase used in this thesis's title: 'a mirror image of oneself?' This is a quotation from E. T. A. Hoffmann's *The Sandman* (1816) which inspired Freud's research on the uncanny. A detailed account of the phrase's relevance to the history and development of the technological uncanny is explored in Chapter 1 but I offer some pertinent observations now. The phrase evokes the image of a human double which is at the heart of this research, and in this project the double is the technological reconstruction of the human body displayed on screen. This convergence between visual effects and the body evokes anxieties about machines becoming more human, or humans becoming more like machines. This is a notion which, in the technological uncanny's history, dates back to at least the 18th Century. The addition of a question mark into Hoffmann's quote is reflective of the concerns which run throughout this thesis. In what ways does the portrayal of the human body relate to the presentation of new cinematic technologies? How did viewers respond to this? What can such a comparison tell us about the relationship between cinema, technology, and the body? The framework of the technological uncanny offers a new way to interrogate these questions.

Chapter Breakdown

As McKinley's film appearance and *Final Fantasy* have shown, this thesis is interested in gauging moments of great technological change in the cinema, as guided by when such technologies engage with theories of the uncanny. On-going themes throughout this thesis will thus be the nature of special effects, realism, animation versus live action and the transformation of the human body through photographic recording or digital rendering techniques. Bringing these moments of change in the cinema into dialogue with each other reveals an interesting continuity:

the way the human body is presented on-screen continues to be a ripe site for the evocation of the uncanny, indicating the concept's renewed cultural currency. To explore these themes this thesis shall isolate the major topics into separate chapters. In Chapter 1 I shall outline my definition of the technological uncanny for the purposes of this thesis. This chapter shall begin by exploring Freud's essay on the topic as he is the recognised authority on the concept. I will outline the tropes of Freud's I am particularly interested in – the double and the automaton – and argue why these are suited to a historical investigation into the reaction of cinema's spectators. Contextualising Freud's essay historically reveals the uncanny to be a much older phenomenon which can be attributed to the technological revolutions beginning in the 18th Century. As such, the theory of the uncanny developed in conjunction with – and in response to – the scientific developments which would lead to the birth of cinema. This is why I argue the technological uncanny has a very special link to the cinema and can explain more thoughtfully how audiences engaged with these early films. The definition of the technological uncanny I shall use is that the uncanny is an experience of uncertainty and unease towards the visual representation of a human body on the cinema screen. This hesitation of feeling compels the viewers to evaluate the nature of cinematic technology which is, in and of itself, a strange and uncanny practice of bringing the dead and inanimate back to life by mechanising the human form.

In Chapter 2 I shall utilise this definition of the technological uncanny in the investigation of early cinema. Here I will show my methodology for investigating this part of cinema's history which focuses on the early period from approximately 1895 – 1906. This snapshot of the early development of cinema is long enough to appreciate the variations in special effects on display at this time but stopping just as

many of these techniques become normalised – and therefore no longer novel attractions – a period which began with the solidification of the industry, as with the establishment of the studio system in the USA in the years following. This chapter shall outline the difficulties in defining such a time period due to the diversity of audiences and exhibition contexts. Such complexity originates from the poignant question posed by Stuart Hanson: ‘When did cinema *begin*?’ (Hanson, 2007, 7, original emphasis). Hanson notes that ‘[it] is a simple question: yet less simple to answer’ (7). This simplicity is impossible precisely because of the aforementioned complexities which reveal early cinema was not a monolithic, homogenous phenomenon. This chapter shall reflect upon these factors and outline how the technological uncanny offers another way of engaging with the intricacies of this history. My first central argument in this chapter is that the earliest films actively draw attention to the human body on the screen as an unusual and strange attraction, thus evoking the theory of the technological uncanny. This uncanny is pushed to the fore by cinema’s dual ability to both faithfully record the realistic movements of the body but also mutate this familiar form into strange creations, as is seen in the trick films. I will explore this tension by looking particularly at the films of Georges Méliès. The portrayal of the body in such films, and the evidence from the audience responses collected, support the overall distinction I wish to uphold in this thesis: in general audiences did not react in fright to the images before them but rather actively engaged in evaluating the new technology on display before them. This is where the idea of the index becomes important in framing this experience within the concept of the technological uncanny.

In Chapter 3 I move onto the second historical period of this comparison, outlining the background and technological developments in the late 20th and early 21st

Centuries which engage again with the technological uncanny. I have named this period the ‘digital age’; as shall be explored in this chapter, the term is not to suggest that digital technologies suddenly emerge in cinema without precedent. Instead this period – dating from the start of the millennium – indicates a time when such technologies dominate visual effects in mainstream productions and inspire a broad range of scholarship reflecting upon this transition. The themes emerging out of this chapter shall be the importance of the index and the pro-filmic; live action versus animation; and the digital body and the sublime. I argue that, like other theorists, the index is important to understanding these changes and developments in cinema but the characterisation of digital as strictly ‘non-indexical’ is somewhat restrictive and not does appear to equate to viewers’ perception of cinema. Rather, it is the *idea* of the index which emerges from spectators’ commentaries on digital films, which is integral to their potential to become uncanny. Just as early cinema spectators mused upon the possibility for cinema to record and (re)present real human bodies, so too does the digital enter this debate with technology such as CGI. The language of the uncanny once again becomes important as uncanny tropes permeate scholarship on this topic and are used in the construction of the ‘uncanny valley’ theory. Whilst this theory reflects a renewed interest in the uncanny, I argue the concept is better understood under the historically contextualised traditions of the technological uncanny.

Chapter 4 is where I focus on specific case studies which demonstrate the presence of the technological uncanny in the representation of the body in the digital age, and audience reaction towards them. As with the early cinema analysis, I will focus on a time period of approximately a decade, dating from the release of *Final Fantasy* in 2001 and up to the release of *Mars Needs Moms* in 2011. These films not only focus

on innovative use of digital technologies but also draw attention to this display on both narrative and aesthetic levels. The human body is still the central focus as these films use a digital technology which promotes the creation of a realistically rendered human body as its main attraction: motion-capture technology. This technology uses the data collected from actors performing in special suits recording their movement as the basis for a digital character in the final film. Motion-capture therefore shows the intimate relationship between the body and the digital, and raises once again the issue of the index: is the real, human actor's presence *felt* in the final film? And what consequences does this have for film theory and the distinction between live action and animation? I address these questions through the work of Robert Zemeckis, analysing his motion-capture films made during this period: *The Polar Express* (2004), *Beowulf* (2007), and *A Christmas Carol* (2009). I argue that Zemeckis also engages with the language of the uncanny in his depiction of the motion-captured body but does so in order to emphasise the 'liveness' of his digital creations. These strategies ultimately fail as viewers' reactions indicate that these digital bodies evoke an experience of the technological uncanny.

In Chapter 5 I bring these two areas of comparison into direct dialogue again through my analysis of *Hugo* (2011). The film aptly incorporates the themes which are discussed across this project: the film was released at the end of the time period I am focusing on; it utilises digital visual effects technology; and it tells a story about the creation and reception of technology in early cinema by focusing on the story of Georges Méliès. The film re-lives the making – and the reception – of these early films, and portrays the close relationship such cinematic technologies share with previous mechanical developments, especially that of the automaton. Yet *Hugo* is equally about the technological possibilities of digital cinema and, by directly

combining old and new technologies within the narrative, *Hugo* offers further reflections on how these periods intersect. One of the consequences of the prevalence of digital technology in the contemporary age is that it is fundamentally changing how we can now interact with older forms of cinema, including that of early cinema. This chapter shall point to some of these new interactions and particularly the experience of Méliès's original works through YouTube. I argue that *Hugo* demonstrates the methodological basis for this project – the comparison between early and digital technologies – as well as illuminating ways the technological uncanny impacts upon the experience of the human body on-screen. The reactions I have gathered from Méliès's YouTube existence reflect how the technological uncanny remains relevant as the interaction between visual effects technologies and the depiction of the human body continues to fascinate, inspire and worry audiences.

Pictures for the Introduction



Figure 1 - *McKinley at Home* (1896).



Figure 2 - *Final Fantasy: The Spirits Within* (2001).

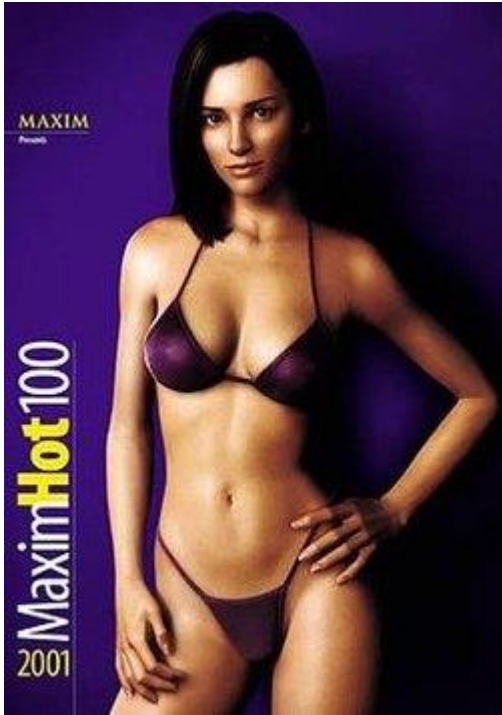


Figure 3 - Aki on the cover of *Maxim* (2001).

CHAPTER ONE

‘A mirror image of ourself’? Defining the Technological Uncanny

Only rarely does the psychoanalyst feel impelled to engage in aesthetic investigations ... Yet now and then it happens that he has to take an interest in a particular area of aesthetics, and then it is usually a marginal one that has been neglected in the specialist literature.

One such is the uncanny.

(Freud, 1919, 123)

Freud’s opening to his seminal essay ‘The Uncanny’ in 1919 has, in a way, taken on an uncanny existence of its own. Freud’s exploration of the theory of the uncanny – that unnerving experience of finding the familiar and the homely made unfamiliar – has been explored in a broad range of disciplines but uniting most of these diverse applications is, unsurprisingly, the utilisation of Freud’s ideas¹⁰. Freud appears to remain the authority on this concept and, as this chapter maintains, the point at which further investigations into the uncanny should begin. In this sense one could not imagine that had circumstances been different, as Freud implies, perhaps he would not have even considered the uncanny as worthy of investigation. As Michael Arnzen notes: ‘One might say that this is not only the “century of the uncanny” ... but also a century of uncanny scholarship’ (Arnzen, 1997, 315). As this thesis will attest, the importance of studying the uncanny continues into the 21st Century but has origins which stretch further back than the 20th Century. Freud’s essay exists as the dominant voice in this wealth of scholarship but it is a strange work; despite his authority on the topic, there remains an absence, a kind of theoretical void

¹⁰ These subject areas include architecture (Vidler, 1992), art history (Masschelein, 2011), sound (Spadoni, 2009), literature (Royle, 2003; Punter and Byron, 2004) and film (Mulvey 2006; Gunning). Many of these examples will be explored in this chapter.

surrounding the conceptualisation of the uncanny. Freud's essay, quite paradoxically, poses as many questions as it claims to answer: it does not completely achieve what its opening sets out to do and it never quite satisfies the ultimate question 'what is the uncanny?' It is this strange contradiction which I am concerned with in this chapter. I, too, want to address this question and analyse how Freud answers this question – and how he does *not* answer it. What motivates Freud to write about this concept? Why should such an investigation take place at that particular time and within the field of psychoanalysis? And, importantly, what bearing do these observations have upon the relationship between the uncanny and cinema; between filmic bodies and viewers' reactions to them?

This chapter shall focus on answering these questions in order to establish two strands which will become the foundations of further investigation in this thesis. First, I shall define the uncanny as a physical experience of shock, unease and intrigue which occurs in reaction to intellectually challenging stimuli: for the cases outlined in this thesis, this is the challenge posed by particular – and unusual – representations of the human body on the cinema screen. Whether this filmic human is the body of a person filmed 120 years ago in cinema's earliest days, or the performing body of an actor converted into digital as with motion-capture technology used in recent years, these cinematic bodies pose fundamental questions concerning the close juxtaposition of the human body and cinema's technology. Does the cinema (re)present us with an image of real human bodies which are to be interpreted as the indexical recording of moving, organic forms? Or is the body necessarily transformed by the filming (and exhibiting) process and, if so, into what exactly? These questions focus on the conceptual slippages which occur when analysing technology's role in representing the human form on-screen: the tension

between the real and artifice; live-action and animation; analogue and digital processes; documenting bodies and altering them through visual effects.

It is precisely these slippages which are responsible for why viewers can find the filmic body uncanny. This is evident by the language used in response to the films explored later in this thesis. These reactions draw on Freudian uncanny tropes – the double, automata, ambiguity over what is living or dead – in order to express what is strange and intriguing about the relationship between the photographically realistic human body and, as shall be explored throughout, its transformation through new and novel visual effects. The use of uncanny tropes to conceptualise these changes is also present in academic discourse and this, together with the terms used in the audience reactions, represent what I term the ‘language of the uncanny.’ The uncanny is, itself, a slippage in definitions between what is known and new; a blurring of boundaries between the familiar and the unheimly¹¹. This chapter shall establish how the uncanny provides an illuminating theoretical framework for exploring different forms of filmic bodies and their relationship to definitions of the cinematic medium. The succeeding chapters use this characterisation of the uncanny in order to contextualise and compare two specific points in film history and visual effects technology which inspired extensive commentaries by film spectators and scholars alike: early cinema and the digital age.

The second theoretical strand this chapter establishes is the importance of the history of automata and the figure of the double to my analysis. These areas of research form an important part of the uncanny’s genealogy which I explore below. The link between the double, automata, the uncanny and cinema is perhaps unsurprising: as

¹¹ As Freud discusses in his own work into the etymology of the word, *unheimliche* – translated into English as the uncanny – combines the homely (*heim*) with its opposite (the unheimly) in its very construction (Freud, 1919, 134). This is discussed in more detail below.

the above musings reveal, integral to this investigation are questions pertaining to the relationship between the human body and technology – in this case, the technology of the cinema. Automata are an embodiment of this uncanny unification: mechanical machines which are often made in the human form and seek to mimic naturalistic movement. The experience of watching such automata – as many spectators in the 18th and 19th Centuries attested to – is quite uncanny: the verisimilitude of an android's appearance and movement acts simultaneously as both an uncanny reminder *and* distraction from the automaton's clockwork insides.

Therefore the lineage of the uncanny's history I shall utilise in my own work is one which is particularly concerned with the uncanny potential of technology: inventions which seek to recreate the human body in mechanical form. These creations are uncanny not only because the body's appearance may be duplicated – the creation of a doppelgänger – they are uncanny because this mechanised double is able to *move*; technology is given (and provides) the appearance of life. Such inventions evoke fundamental questions over what it is to be human or, more specifically, what it is to be human in a world where developing technologies can adopt the forms and functions of the body. I propose that these questions have been translated into cinema, where this relationship between the cinematic representation of the human form and its impact on spectators becomes a central tenet in the discussion of the medium in its earliest days, and then again over a century later as digital technology establishes itself as a dominant tool in filmmaking. What I am arguing for, then, is the *technological uncanny*: a specific response and accompanying theory which demonstrates how it is the merging of the human body with the mechanical which is vital to the uncanny experience. Automata – and, later, cinematic images of the body

– evoke an uncanny reaction through the contemplation of the invention’s technology and its relationship to its human appearance.

I will further establish the definition and rationale for the technological uncanny in this chapter which is divided into three main sections. First I analyse Freud’s writing on the uncanny and, as shall be seen, Freud’s work outlines several paths of possibilities for exploring the uncanny. Interestingly, the psychoanalyst struggles to reconcile these approaches and, I argue, it is precisely the strangeness of Freud’s text – its inaccuracies, contradictions and obscure conclusions – which points the way to further exploration of the topic. I contextualise the uncanny in relation to Freud’s larger oeuvre and contend that it is by approaching the concept through historical analysis that the two major uncanny tropes permeating this investigation can be fully understood. To illuminate the relevance of this history to my definition of the technological uncanny, and how it is used in future chapters, I will use the nuances of the phrase ‘a mirror image of oneself’ to structure these ideas. The words are dialogue spoken by Clara in Hoffmann’s *The Sandman*, a major literary influence on Freud’s work, and the quote appears in the title of this thesis. The relevance of Clara to Hoffmann’s tale – and how this character relates to the major themes of the Freud’s text – shall be considered in due course but, for now, I want to use the striking image evoked by the words as a way of illuminating the complex history of the uncanny and structuring sections two and three.

In section two I consider the ‘ourselves’ part of Clara’s metaphor: how the technological means to construct the human body – to create ‘ourselves’ in mechanical form – is an integral part of the development of automata. The automaton is at the heart of understanding Freud’s analysis and its wider historical relevance. The automaton is a key figure in Hoffmann’s work and other literary examples, and this

points to the importance of the language of the uncanny. This section will reveal how it is the creation of the human form through technological means which is key to my definition of the technological uncanny as it shall be used in future chapters. In the third section I focus on the ‘mirror’ part of Clara’s phrase. Here I am concerned with technology’s ability to create other forms of double and, in particular, those technologies and practices which focus on the reproduction of the human body through projection and, eventually, photography. I argue that it is photography’s perceived relationship to the index – the idea of images retaining an essence of trace of the object photographed – which is integral to the technology’s uncanny potential. This potential informs the reception of early cinema and my definition of the technological uncanny. The history of the double therefore reveals a specific mode of spectatorship: a viewer who marvels at the realism of the illusion of this doubling but is encouraged to think about the processes of this mediation. This chapter will conclude with a short section outlining my definition of the technological uncanny as result of this analysis. As I will show, the technological uncanny finds its roots within the 18th and 19th Centuries which are inextricably linked to the emergence and experience of the human body as uncanny. To illuminate this link I begin, once again, with Freud.

Freud’s Uncanny

Freud states straightaway at the beginning of his article a definition for the uncanny: the uncanny is that which ‘belongs to the realm of the frightening, of what evokes fear and dread’ (Freud, 1919, 123). However the uncanny is different from general feelings of horror and it is through his investigation of the German word *unheimlich* that Freud finds a fortunate coincidence: ‘Heimlich thus becomes increasingly ambivalent, until it finally merges with its antonym *unheimlich*. The uncanny (das

Unheimliche, ‘the unhomely’) is in some way a species of the familiar (das Heimliche, ‘the homely’)’ (134). The unfamiliar, therefore, is not enough in order for an occurrence or interaction to be experienced as uncanny: something ‘must be added to the novel and the unfamiliar if it is to become uncanny’ (125). Freud briefly discusses his theory in relation to some common uncanny occurrences and objects, including the automaton. But the main focus of his analysis, around which his subsequent analysis will orbit, is E. T. A. Hoffmann’s *The Sandman*. Published in 1816, Hoffmann’s short story focuses on the troubled life of a man named Nathaniel. As a child Nathaniel becomes fixated upon the fictional figure of ‘The Sandman’ who was said to prey on naughty children refusing to go to bed by removing their eyes. The young Nathaniel identifies this horrific figure as a lawyer named Coppelius and, after the boy’s father dies in an accident, this man – the object of Nathaniel’s terror – mysteriously disappears. Nathaniel’s childhood trauma gains a revival when, as a student, he is at first convinced that an optician named Coppola is none other than the evil Coppelius. His fiancée Clara convinces him, momentarily, this is not the case and, in the meantime Nathaniel devotes more and more of his time watching the home of a university professor, Spalanzani, because in one window he can see the professor’s strange daughter Olympia. Just as his love for the girl has overwhelmed him so much that he plans to propose, Nathaniel encounters a heated argument between Coppola and Spalanzani where it is revealed that Olympia is in fact an automaton. The sight of the girl’s synthetic and detached eyes evokes a fresh delirium in Nathaniel, who is committed to an asylum. Sometime later Nathaniel is reunited with his fiancée Clara who, when out walking together one day, decide to climb the tower in the town square. Nathaniel sees Coppola in the crowd and, with his madness induced again, attempts to throw Clara over the edge of the

steeple. As the townspeople rush to save her, Nathaniel eventually spares Clara and throws himself over the side, onto the stone floor below. Coppola disappears into the crowd.

Freud observes that 'the author leaves us in doubt as to whether we are dealing with the initial delirium of the panic-stricken boy or an account of events that must be taken as real within the world represented in the tale' (137). This ambiguity can be located in the doubling of the characters Coppelius/Coppola/The Sandman which may represent the presence of real doppelgängers or these doubles could be the fictitious imaginings of Nathaniel's disturbed imagination. For Freud the most relevant part of Hoffmann's story is within 'the figure of the Sand-Man, and therefore to the idea of being robbed of one's eyes' which 'is quite often a substitute for the fear of castration' (138-9). The nucleus of the uncanny is, according to Freud, the castration complex: a fear which can be traced back to childhood and is the ultimate representation of the strangely familiar or *unheimlich*. There are two sources through which this uncanny process can occur: infantile fears or infantile wishes or beliefs. The latter relates to the automaton and thus the unease over what is animate or inanimate, living or artificial. Freud expands his thesis to include a range of experiences which may evoke the uncanny including: the double; wish fulfilment; the compulsion to repeat; feelings of an 'evil eye' watching; and the 'omnipotence of thoughts'. In all these examples the uncanny is the 'frightening element is something that has been repressed and now returns' (147). Freud's (tentative) conclusion for the uncanny is summarised as thus:

[The] uncanny element we know from experience arises either when repressed childhood complexes are revived by some impression, or when primitive beliefs that have been surmounted appear to be once again

confirmed ... in real life it is sometimes impossible to distinguish between the two species of the uncanny that we have posited. As primitive convictions are closely linked with childhood complexes, indeed rooted in them, this blurring of the boundaries will come as no great surprise (155).

Freud's commentary on Hoffmann is by far the most illuminating passage in his text. Freud offers a compelling interpretation of Hoffmann's tale which captures the eerie mood of the ambiguity surrounding Nathaniel's versions of events in the story. However, Freud quickly begins to doubt the conclusions he draws from the story. At first Freud asserts with confidence how one should distinguish between the uncanniness of real life experiences from those in fiction, and even the latter should make this difference clear in the construction of the story world. Yet Freud undermines his own argument by then claiming: 'This is the fact that an uncanny effect often arises when the boundary between fantasy and reality is blurred' (150). In this instance the blurring of boundaries is integral to experiencing the story as uncanny. Freud also struggles with his different methodological approaches. The essay opens on an etymology of the word *unheimlich* which reveals the uncanny to be an experience of the familiar made strange. However Freud attempts to prove this thesis through several disparate areas of inquiry including: the close-textual analysis of Hoffmann's work; applying his ideas to real instances of the experience; and linking this all back to the anxieties fostered in childhood. Freud's argument for the castration complex, return of the repressed and the experience of the familiar made unheimlich as all embodiments of the uncanny translate awkwardly onto each other. Indeed, Freud's assertion to have finally explained the uncanny is undermined near the end when he admits his analysis did not 'exhaust the possibilities' (157). I believe the reason for these difficulties is revealed by considering the findings of another author – and fellow psychoanalyst – who is analysed but rejected in Freud's

work. In 1906 Ernst Jentsch published ‘On the Psychology of the Uncanny’ and so pre-dates Freud’s exploration of the topic. Jentsch’s influence on Freud’s work is evident as both authors identify the blurring of boundaries as key to an uncanny experience: Jentsch notes that an uneasy feeling can arise when what is known becomes ‘new/foreign/hostile’ (Jentsch, 1906, 219). Jentsch also links his conceptualisation of the concept to language, finding the same ‘fortunate formation’ in *unheimlich*, noting that ‘the word suggests that a lack of orientation is bound up with the impression of the uncanniness of a thing or incident’ (217). As such, the two writers adopt very similar approaches – Jentsch also offers a reading of Hoffmann’s work – and construct comparable conclusions.

However, where Freud wants to account for the uncanny in its entirety – to pin down this strange experience through theoretical discourse – Jentsch aims instead for a ‘working definition of the concept’ (217). It is this ‘working definition’ which Freud forcibly rejects in his own work. Jentsch writes that the experience of the uncanny is reflective of an ‘intellectual uncertainty’ on behalf of the viewer: to experience the uncanny is to suffer a cognitive dissonance, struggling to comprehend the event perceived in relation to the mind’s interpretation of this situation. This highlights the difference between the two theorists again. For Freud, the uncanny is a universal concept, applicable to all because of the processes of repression inherent in the mind. For Jentsch, the uncanny occurs only when the mind’s capacity for conceptualisation is challenged. In this way the writers envision very different characterisations of the uncanny, with Freud asserting: ‘The notion of intellectual uncertainty in no way helps us to understand this uncanny effect’ (139). Neither writer presents an account of the uncanny which is without concern. Jentsch’s pseudo-anthropological basis for an ‘intellectual uncertainty’ is based on the premise that ‘primitive’ minds are more

susceptible to uncanny effects than the sophisticated or intelligent. Freud, on the other hand, forces his conclusions to fit his idea of the castration complex which remains unsupported by his research and gender-essentialist. Yet Jentsch's work helps to illuminate why Freud's own writings on the topic appear so disjointed and contradictory. The phrase 'intellectual uncertainty' – when set aside from Jentsch's personal interpretation of the term – aptly reflects the processes Freud's work struggles with. Freud displays uncertainty in many of his conclusions; these are stated with force at the beginning but quietly questioned elsewhere in the essay as another idea or trope distracts him. Uncertainty is everywhere in Freud's writing: 'We are faced, then, with a text and its hesitating shadow' (Cixous, 1976, 525). Hugh Haughton observes this facet is because Freud is too quick to dismiss Jentsch: '[Freud] constantly returns to [Jentsch's 'intellectual uncertainty' theory] as if haunted by an uncertainty about the uncertainty principle that he claims to have banished' (Haughton, 2003, xliii). Paradoxically, it is this return to uncertainty which is the strength of Freud's work and illuminates why his essay continues to inspire and intrigue fellow scholars on the topic of the uncanny. Freud's uncertainties demonstrate what it is to *feel* an uncanny experience and attempt to comprehend this: 'To write about the uncanny, as Freud's essay makes admirably clear, is to lose one's bearings, to find oneself immersed in the maddening logic of the supplement, to engage with a hydra' (Royle, 2003, 8).

Anneleen Masschelein also comments that the strangely familiar nature of the uncanny and an uncanny experience is reflected in the uncertainty of Freud's essay. Several other writers, investigating the uncanny at the end of the 20th Century in particular, also highlighted this finding. As such this analysis of Freud's work has instigated a methodology which Masschelein calls 'uncanny thinking' (Masschelein,

2011, 2): a process of deconstruction whereby the uncanny can – and does – lurk everywhere, in all disciplines. This is supported by Arnzen’s aforementioned observation that there is a plethora of ‘uncanny scholarship’ for an uncanny century. Stanley Cavell is an example of this trend, finding the uncanny in the everyday in what he terms ‘the uncanniness of the ordinary’: ‘the sense of the human as inherently strange, say unstable, its quotidian as forever fantastic’ (Cavell, 1988, 154). This argument is pursued by Barbara Creed who argues for the uncanny in ‘our everyday condition’ as can be seen by the representation of sexuality (Creed, 2005, 483). These two examples reflect Masschelein’s observation that ‘the uncanny affects and haunts everything’ (2). This scholarship on the uncanny thus embodies a strange double movement: the uncanny refers to a very specific experience which Freud’s work is central to understand, but this experience can be provoked by a variety of catalysts so that the mutability of the term is used for differing theoretical purposes. It is this paradoxical nature of the uncanny’s presence in academic discourse which motivates Masschelein to characterise the uncanny as ‘the unconcept’. She writes that the uncanny has a certain metaphorical ‘stickiness’ about it which is able to hold together ‘a cluster of heterogeneous conceptual elements like a Band-Aid or adhesive tape’ (13). Masschelein continues:

[The unconcept] also serves as a reminder of the [uncanny’s] peculiar location ‘in between’ or ‘on the verge’: on the verge of sliding from the plane of immanence onto the plane of composition and vice versa, on the verge between concept and affect, and on the verge of no longer being a concept, of dissipating again into chaos or into *doxa* and emerging from it in unexpected ways (11).

Importantly, Masschelein argues that this conceptualisation of the uncanny occurs numerous years after Freud first published his essay, as the work fell out of favour

for several decades. It was only in the 1970s and 1980s – when Freud’s uncanny was rediscovered by theorists – that the conceptualisation process of the uncanny occurred. It is for this reason that Masschelein argues ‘*the Freudian uncanny is a late-twentieth century theoretical concept*’ (4). Yet this is not to say that one cannot identify specific influences within Freud’s ideas which help to illuminate the inspirations behind his work and how the 1919 essay fits into Freud’s larger oeuvre. Masschelein observes that Freud’s central thesis – that an uncanny experience signals the return of the repressed – is an idea that can be traced back to Freud’s earlier work on *Totem and Taboo* from 1913. In this latter work (which consists of four essays) Freud describes different cultural practices whereby objects, rituals or people are made ‘taboo’ – and *unheimlich*. Neil Hertz argues that the uncanny’s influence on Freud’s thinking can be traced even further back as he notes Freud makes reference to an old draft of the essay from many years before, ‘perhaps as long as a dozen years’ (Hertz, 1980, 297). From this perspective, ‘The Uncanny’ correlates to Freud’s longer investigation into anthropology which he utilises for the benefit of psychoanalysis. The development of this methodology can be seen in the later essay where Freud translates the ‘primitive’ practices of alien cultures into the ‘primitive’ areas of the mind: the uncanny occurs when repressed memories and experiences return from the subconscious into the conscious mind. Such memories are uncanny precisely because they probably took place during childhood – that ‘primitive’ stage of an adult’s life.

There is another historical reason – external to Freud’s own psychoanalytical thinking – which also explains why the uncanny would be of interest near the beginning of the 20th Century: World War I. As Masschelein notes, Freud’s ‘attention shifts to social problems and to the ‘maturity’ of civilization: ‘One of the

impulses that triggered this change of perspective was clearly World War I' (33). As such 'The Uncanny' must also be evaluated as Freud's attempt to understand, in psychoanalytical terms, the real trauma of the world's first modern war. As Anthony Vidler observes, 'The Uncanny' incorporates 'many observations on the nature of anxiety and shock that [Freud] was unable to include in the more clinical studies of shell shock' (1992, 7). The huge political, social and economic effects of World War I upon the Western world – which was soon disrupted again by the outbreak of World War II 21 years later – partially explains the uncanny's longevity as a concept:

Thus historicized, the uncanny might be understood as a significant psychoanalytical and aesthetic response to the real shock of the modern, a trauma that, compounded by its unthinkable repetition on an even more terrible scale during World War II, has not been exorcised from the contemporary imaginary. Estrangement and unhomeliness have emerged as the intellectual watchwords of our century (9).

Therefore one of the questions asked at the start of this chapter – *why* Freud should write about such a concept as the uncanny in 1919 and within the realm of psychoanalysis – has been partially answered. But this is not the whole story. Jentsch's paper on the concept was published in 1906, eight years before WWI, indicating that the uncanny as a term was already in use¹²; indeed, one can deduce from Jentsch's interest in it that the topic was significant enough to warrant academic investigation. As Royle observes: 'The uncanny has a history: this is a fact that Freud scarcely acknowledges, even if its significance is at issue everywhere in his essay' (Royle, 2003, 8). It is this 'history' which I would like to extrapolate

¹² If, as Hertz suggests, Freud may have been investigating the topics pertinent to 'The Uncanny' several years before, it still remains unclear if Freud used the term *unheimlich* explicitly in these earlier drafts. Hertz sees the evidence that Freud worked on similar ideas earlier as more relevant to the emphasis Freud places on the 'compulsion to repeat' thesis in later works (Hertz, 1980).

further. In contrast to Masschelein's approach – which maintains the concept's crucial development in the 20th century – I would like to contextualise the uncanny within the 18th and 19th Centuries. It is here, I argue, that the uncanny's emergence is revealed as a direct response to particular scientific and technological developments which pre-date those which defined the world wars. The technologies include: the industrialisation and mechanization of the workforce in the 18th Century; the development of steam technology and locomotives; the expansion of medical knowledge and practices; and a proliferation in the invention of optical illusions and devices. These technologies are inextricably intertwined with the history of the uncanny tropes of the double and automata and it is out of these contexts that technology for the cinema develops, as shall be seen in the next chapter on early cinema. Elucidating this older history of the uncanny will show how Freud's conception of the uncanny can be better understood and it is through this process that the technological uncanny will be characterised and defined. As highlighted earlier, to outline this history I will use Clara's evocative phrase – 'a mirror image of ourself' – to consider this history in two parts, beginning with automata.

'Ourself' in Mechanical Form: the Automaton

I contend that one way to simultaneously better understand the elusiveness of Freud's work and isolate my definition for the technological uncanny in respect to cinema is to understand the history of the automaton. In this section I illustrate how the automaton comes to symbolise the fusion between technological innovation and the human body. This unnatural marrying is emblematic of the central tropes Freud's essay identifies: there is blurring between the organic and the mechanical, living and the dead, animate and inanimate. The automaton is a liminal figure, occupying the unusual space between these binaries which can evoke feelings of intrigue and

unease. The automaton is also a figure evoked in audience reactions to new visual effects technologies on the cinema screen; the filmic bodies are compared to these mechanical creations and this metaphor evident again in scholarship on the topic. This section therefore elucidates the importance of analysing the uncanny through language and this is a key component in this thesis's methodology. This section will underline the importance of language by showing how the uncanny – and its key trope the automaton – originates in literature.

It is particularly apt that Freud should argue his case for the uncanny in an 'aesthetic investigation', specifically a literary one focussing on Hoffmann's *The Sandman*. Appearing in 1816, it is an iconic literary tale in the horror fiction tradition and intersects with Hoffmann's association to the Romantic Movement emerging in the late 18th Century. Yet the story, like this movement, is equally invested in another tradition, that of the Gothic. Similar to Romanticism, Gothic fiction was not a unified movement of a few writers, following agreed narrative tropes toward a specific end. Rather, retrospective analysis can identify a series of literary conventions, also beginning in the 18th Century, which draw on particular contextual developments and anxieties that have since been grouped together as the Gothic tradition. Gothic literature concerns eerie representations of life and events which challenge or threaten the well-being of central protagonists. These stories are indebted to the uncanny: suspenseful, unusual occurrences which question the binaries Freud identifies as integral to the uncanny experience (animate/inanimate, life/death, etc.) permeate this literary tradition. Indeed, David Punter and Glennis Byron see 'the representation of the uncanny is at the core of Gothic, since [the Gothic], like the uncanny, deals in the constant troubling of the quotidian, daylight certainties within the context of which one might prefer to lead one's life' (Punter

and Byron, 2004, 286). This link is demonstrated by Edgar Allen Poe's story *The Fall of the House of Usher* – itself an example of this literary fiction and published two decades after Hoffmann's work – which features a description remarkably similar to Punter's and Byron's comparison of the Gothic and uncanny: 'the bitter lapse into everyday life – the hideous dropping off of the veil' (Poe, 1839, 231). The earlier assertions by Cavell and Creed that the uncanny concerns the everyday and is everywhere (Cavell, 1988; Creed, 2005) can be historically located as a mode of thinking originating within Gothic literary traditions.

The theory of the uncanny can therefore be contextualised within a Gothic mode which includes Hoffmann. This already helps to see Freud's work in a more informed light: Freud's choice of Hoffmann as his main case study is not arbitrary and actually helps to evoke a longer tradition of writing which is indebted to the uncanny tropes Freud seeks to investigate. It is from this tradition that the automaton becomes a key figure. To understand this link, one must further contemplate the historical contexts into which the Gothic emerged. This history, I believe, can be identified by the definition of 'Gothic'. This meaning is not easily located as the Gothic, even today, has several connotations¹³. Punter and Byron reflect upon this difficultly observing how by the 18th Century the word 'Gothic' was used to describe anything from the past's 'medieval' days, including the period leading up to, and including, the 17th Century. The writers note:

This equation of the Gothic with a barbaric medieval past served not only to establish through difference the superiority of the more classical traditions of

¹³ Historically, the term 'Gothic' originates from the original Germanic tribe the Goths, who were involved in the fall of the Roman Empire in the antiquity period. Today the term preserves this historic reference but also can include a style of architecture, a mode of writing, film genre and a music subculture. For a detailed history of the Gothic develops see Punter and Byron, 2004.

Greece and Rome, but also to confirm the virtues of the equally civilized, ordered and rational present (Punter and Byron, 2004, 4).

Chris Baldick concurs with this assertion, finding a similar link between the association of the Gothic with the medieval in order to emphasise the rational thought of the Gothic authors' present day. The Gothic, he writes, 'belongs specifically to the modern age of Europe and the Americas since the end of the 18th century' (Baldick, 1992, xx). Baldick notes that the uncanniness of Gothic fiction is a symptom of 'historical fears [which] derive from our inability finally to convince ourselves that we have really escaped from the tyrannies of the past' (xii)¹⁴. These 'tyrannies', it is qualified, are not metaphorical. These are literal, historically specific events: the Protestant fear of another Counter-Reformation; the age of science, logic and reason being consumed by foolish, medieval superstition; the reversion of the established middle-class back into the oppression of a feudal aristocracy. Gothic literature, therefore, is a product of the Enlightenment period. This is an integral part of the uncanny's history which, as Royle noted earlier, Freud does not explore even though 'its significance is at issue everywhere in his essay' (Royle, 2003, 8). The uncanny's privileged place within the history of the Gothic can be contrasted with the Romantic movement which is associated with notions of the sublime 'in which the mind is overwhelmed by, or swoons before, something greater than itself' (Punter and Byron, 2004, 11). Like the uncanny, the sublime is an experience which forces the viewer to contemplate what they view but the latter is associated with sights such as landscapes. The sublime is a reaction against the Age of Reason and its scientific developments by placing the emphasis on the terrifying beauty of

¹⁴ The idea that Gothic fiction is associated with the medieval in order to emphasise the rational thinking of the literature's contemporary day is further supported by the fact many Gothic stories are set in the past. This was a trend initiated by what is generally concerned the first Gothic text: Horace Walpole's *The Castle of Otranto: A Gothic Story* (1764).

nature, as detailed in Edmund Burke's famous thesis on the topic (Burke, 1757)¹⁵. The uncanny emerges in the same historical context but is a reaction which directly contemplates those scientific developments; it is a more intimate reflection upon the self's relationship to technological change. The distinction between the two emerges again in Chapter 3 where I restate how it is the representation of the body which concerns the uncanny reactions of digital visual effects and thus my definition of the technological uncanny – rather than a 'technological sublime' – is more accurate.

Therefore the uncanny is revealed as an important trope in the traditions of Gothic literature from the 18th Century. This history provides a vital underpinning for Freud's later conceptualisation of the topic, as indicated by his utilisation of Hoffmann's tale. Terry Castle expands this connection even further. As the title *The Female Thermometer: 18th-Century Culture and the Invention of the Uncanny* suggests, Castle also identifies the 18th Century as historically bound to the uncanny, even postulating that the era 'invented' the experience. Castle highlights again the strange ambiguities inherent in Freud's original text, noting that despite Freud's attempts to view the uncanny as a 'timeless' phenomenon through the lens of psychoanalysis (as mentioned before), it is precisely this movement – to define the uncanny as the 'surmounting' of infantile, and more specifically, primitive beliefs – which also creates a very historically precise moment: 'When did this crucial internalization of rationalist protocols take place? At least in the West, Freud hints, not that long ago' (Castle, 1995, 10). The 'estranging of the real', and resulting uncanniness which Freud foregrounds in his argument, Castle situates as an integral part of modernity. An ambiguous term itself, perhaps, but Castle historically

¹⁵ Immanuel Kant's *Observations on the Feeling of the Beautiful and Sublime* (1764) offers further reflections on the topic.

contextualises this as the complex developments occurring during the period of Enlightenment. As Castle notes:

[T]he very psychic and cultural transformations that led to the subsequent glorification of the period as an age of reason or enlightenment – aggressively rationalist imperatives of the epoch – also produced, like a kind of toxic side effect, a new human experience of strangeness, anxiety, bafflement, and intellectual impasse (8).

The uncanny thus emerges in the 18th Century as a result of the period of Enlightenment. The radical social, political and economic changes which developed across this period force a reflection upon this change which Castle characterises as uncanny. I think we can expand Castle's argument further and link this explicitly to the analysis of the Gothic above. The Gothic is a symptom of the uncanny reaction to the Enlightenment. The tales of unease which pervade this literary tradition directly reflect upon the changes occurring in reality by exorcising these concerns and anxieties onto fictional worlds and characters, often set in a medieval – and therefore more 'primitive' – past. The Gothic, and Hoffmann's work within it, is part of what I term the language of the uncanny: descriptions and reactions which draw upon the strangeness of experiences of the modern which evoke the tropes Freud later highlights in his essay. This language is part of a larger narrative of film history, where viewers use uncanny imagery to reflect upon their experience of new visual effects technologies of the medium. The story of this technological uncanny begins here, in Gothic literature written during the Age of Reason in response to technological change. Science and industry provide an invaluable source of inspiration, and reaction, against the Gothic tropes of castles, monsters and vampires. The human body occupies a significant role in this history. The Industrial Revolution saw mass migration to urban settlements and rapid mechanization of the workforce.

The Gothic appears at a time '[t]he very ideas of what it meant to be human were disturbed in the face of increasing regimentation and mechanistic roles' (Punter and Byron, 2004, 20). I argue that the automaton is a symbol of this period and it is by considering this figure further that Freud's argument is finally unravelled and my definition of the technological uncanny – the response which is evoked from specifically the merging of the human body with technology – is further established.

The importance of the automaton is revealed by returning to Freud's analysis of Hoffmann's work. As mentioned previously, Hoffmann's tale features the uncanny body of Olympia who is revealed to be an automaton. Interestingly, despite the historical contexts outlined above, Freud does not merit Olympia's mechanical nature with much significance to his theorisation of the uncanny. Freud writes that Olympia's presence in the story – and the reader's and Nathaniel's reaction to her – is 'quite irrelevant' (Freud, 1919, 139). Freud's dismissal of Olympia may well be in order for the psychoanalyst to focus upon connecting his 'return of the repressed' thesis with the castration complex but this move is still strange: as the earlier analysis of *The Sandman* demonstrates, Olympia is intimately related to Nathaniel's eyes and their ability to look (or, at least, *see* the truth), as well as representing the uncanniness created by the tension between animate and the inanimate. Indeed this latter trope is central to Freud's essay throughout but the extension of this motif to Olympia is not strongly established. This omission also seems strange because Olympia is key to the uncanny effect of the story upon *the reader*. It is significant that Olympia's true mechanical nature is unknown to the reader as well and this fact is divulged simultaneously for reader and protagonist: we are startled by this revelation at the same time Nathaniel is traumatised by the fact. Jentsch's account of the uncanny again differs from Freud on this front. Jentsch does notice Olympia's

centrality to the story and uses this opportunity to discuss the uncanniness of such figures. He writes that ‘automatic figures’ are uncanny not just because they cause uncertainty as to whether they are animated or not – alive or dead, real or artificial – but also because they are ‘life-size machines’ which can ‘perform complicated tasks’ (Jentsch, 1906, 223).

In this way Olympia is uncanny because she represents an instance of a machine, made in the shape of the human form, which fools others into believing she is a real person; or, at least, no one questions that she is synthetic. Importantly, it is not only Nathaniel who is fooled into believing this illusion as truth in the tale. Whilst no one else in the story is enraptured with Olympia in the manner Nathaniel is, and the latter’s friend Siegmund notes that everyone else finds her ‘strange’, ‘rigid and soulless’ (Hoffmann, 1816, 116), the other characters still do not suspect her to be an automaton. In fact, Olympia makes an appearance at a ball and attends numerous tea mornings undetected which is why her creator, Spalanzani, is exiled from the town when Olympia’s clockwork innards are made public knowledge: ‘[it] was everywhere regarded as an altogether impermissible piece of deception to have smuggled ... a wooden puppet instead of a living person’ (121). It would be easy to assume that Olympia’s automatic nature is part of the fabric of Hoffmann’s fiction, as fantastical as The Sandman figure. Yet this is not the case and the contextualisation of the history of the tale and its uncanny effects, as outlined above, reveals why: automata were a prominent feature of 18th Century scientific and entertainment exhibitions, with mechanically operated dolls of chess players, musicians and animals all amazing contemporary audiences with their verisimilitude of appearance and movement. Castle writes ‘Hoffmann’s uncanny piece of literary invention, therefore, was thus dependant on an *actual* invention’ (Castle, 1995, 11).

Like the science behind the optical illusion of the phantasmagoria considered below, the technologies behind automata have a long history which culminates in the advancements made during the Age of Reason. Life-like, three-dimensional humans have long been made by artists, often through sculptures made of stone. Such human simulacrum have even been made to move: in ancient Crete, Daedalus is attributed with building the bronze statue Talos which could be animated with fluid. Other, ancient and medieval creations of human figures being made to move, usually by ropes or simple mechanisms such as those later used in churches, can also be identified as early examples of automata. But it was the advancements made in mechanics and clockwork in the 18th Century which brought the dual concerns of the artistic rendering of the human figure and realistic movement together, and this signalled the Age of Reason to also be the age of mechanical life. As Tom Gunning notes: ‘the creation of an artificial anthropoid became one of the emblematic projects of the Enlightenment’ (Gunning, 2006, 327). There are several examples of automata emerging throughout Western Europe during the 18th Century but arguably the most renowned were made by Jacques de Vaucanson. In 1738 Vaucanson premiered his ‘Flute Player’: a life-size human who could perform several different musical renditions on the flute. The sight of musical automata would be a common one throughout the century but Vaucanson’s Flute Player had a distinct feature: the music was created by the Player’s real interaction with the instrument, as though it were human. Vaucanson gave his Player artificial lungs which could inflate and expel air under the control of the automaton’s clockwork mechanisms. In this way the Flute Player used air, the positioning of its mouth and the manipulation of its fingers on the instrument’s holes to play music in exactly the same way a human flute player does.

Vaucanson continued with this trend of creating realistically looking, moving and *performing* automata with his next invention: the 'Pipe and Drum Figure', exhibited in 1739 (Figure 4). This automaton went beyond the Flute Player's repertoire by now playing two instruments, with similar air bellows for lungs. The Pipe and Drum Figure also extended the uncanny realism of its predecessor with its choice of instrument: the pipe is a difficult instrument to play and Vaucanson chose this deliberately for that very reason. Whilst the Pipe and Drum Figure could manipulate air as efficiently as the Flute Player, Vaucanson was not at first entirely satisfied with the sound of the music the former produced. The Figure's wooden fingers proved ineffective at creating the correct pitch and so Vaucanson reportedly gave his automaton's digits real skin, which was presumably made from leather (Wood, 2002, 24). After this modification was added, the Pipe and Drum Figure played as impressively as the Flute Player: an achievement made all the more notable by the automaton's mastering of the pipe.

Vaucanson's automata are examples of the major advancements that had been made in science during the 18th Century and this was also their main attraction for contemporary viewers: complex tasks could now be performed by mechanical androids made by man. The practical and philosophical questions raised by such endeavours were wide-ranging: does this mean that 18th Century scientists had discovered a secret to creating (inorganic) life? Would humans be replaced by the machines built in their own image? If the body of an automaton and a real person can look, move and function in such similar ways, what then does it mean to be human? As Punter and Byron illuminate earlier, the 'very ideas of what it meant to be human were disturbed' in this period (Punter and Byron, 2004, 20). These questions were brought to the fore by another 18th Century automaton which continued to amaze

spectators in the 19th and 20th Centuries. It has even enjoyed a revival in the 21st Century with its reconstruction being detailed in a BBC report from March 2013 (Gopnik, 2013). This automaton is called ‘The Mechanical Turk’ (Figure 5). Invented in 1770 by Wolfgang von Kempelen, this famous chess-playing machine played – and defeated – some of the world’s best chess players as it toured the globe in the 18th and 19th Centuries.

The Mechanical Turk complicates the distinction between human and machine, enhancing the uncanniness of Vaucanson’s earlier human androids:

By choosing to make his machine a chess player, a contraption apparently capable of reason, Kempelen sparked a vigorous debate about the extent to which machines could emulate or replicate human faculties (Standage, 2002, xiii-xiv).

Vaucanson’s automata may have possessed the ability to look and move like humans, but Kempelen’s machine had the apparent ability to produce independent thought, albeit for one particular purpose. With such inventions present in the popular psyche of the 18th Century, it is therefore not surprising or too fanciful that Olympia should trick people into believing she was real in *The Sandman*. Indeed I argue Olympia’s presence in the story is indicative of the wider uncanny experience emerging from these 18th Century inventions. For these reasons Freud’s analysis would benefit from mitigating the emphasis placed upon Nathaniel’s subjective experiences – including his ‘repressed’ castration complex – in order to better mirror the centrality of Olympia to the story and the prominence such automata enjoyed in real life and in the influences directly inspiring Hoffmann.

Lydia H. Liu offers another reason why Freud may not warrant the iconic automaton with much attention. Liu looks again at the part in Hoffmann’s story where

Coppelius threatens to take Nathaniel's eyes as a child (on which Freud bases his conclusion) and notes how the action continues in this scene: Nathaniel's father successfully saves his son's eyes, but Coppelius continues to observe the 'mechanisms' of the child's hands and feet. The story narrates, in Nathaniel's own voice, this traumatic scene as thus: 'And with that he [Coppelius] seized me so violently that my joints cracked, unscrewed my hands and feet, and fixed them on again now in this way, now in that' (Hoffmann, 1816, 91-2). That Freud should miss the uncanny potential in this violent action seems strange. One could speculate that Freud's overlooking of this scene occurred in order to strengthen his own argument for the castration complex (as mentioned earlier). Or the omission could function to help Freud distance and distinguish his own investigation from Jentsch's, although neither theorist explores the implications of Nathaniel's 'unscrewed' limbs. Liu argues that Nathaniel is, then, the automaton of the story:

What I am suggesting here is that Nathanael may well have been the cleverest automaton ever invented by the fiction writer Hoffmann to compete with the inferior doll Olympia, which is designed by the scientist. The character Nathanael is so effective and so successful that critics and psychoanalysts, Jentsch and Freud alike, do not seem to entertain the slightest doubt about his ambiguity as a living human character or an undead automaton in the context of the story ... Freud's insight that the most uncanny of all is what is most familiar and at home with us is probably the highest compliment that Hoffmann's fiction has received from any reader; the novelist did succeed in fooling many of us about where to look for the uncanny (Liu, 2010, 222).

The interpretation of Nathaniel as an automaton taps directly into the uncanniness embodied by The Mechanical Turk. Automata are not only uncanny because they merge the delineations between the animate and the inanimate, the moving and the

stationary, but are also uncanny because they propose a slippage between human and machine. This is, I argue, the technological uncanny. Nathaniel's potentially successful deception does incorporate wider concerns surrounding the human body's relationship to machines emerging in the 18th Century. As previously mentioned, the Age of Reason featured the mass mechanisation of industry and thus Nathaniel and The Mechanical Turk are creations from a time which 'coincided with the beginnings of the industrial revolution, when machines first began to displace human workers, and the relationship between people and machines was being redefined' (Standage, 2002, xiv). Importantly this 'redefinition' could work both ways. Machines were becoming more human in the 18th Century, as the numerous inventions of automata in the form of realistic human bodies prove. But, at the same time, the human body was becoming more mechanical: the invention of automata which could emulate basic human functions – like breathing – suggests that the human body is nothing more than a complex mechanism which can be broken down and reproduced mechanically. The human body was only another machine. It is in these precise terms that Julien Offray de la Mettrie characterises the body in his thesis *L'homme Machine* (de la Mettrie, 1748). The idea is enhanced if one considers the unrealised plans Vaucanson had for his automata-making skills: the inventor wanted to create a complete artificial human being which could function in a manner which exceeded its clockwork origins. He built his performing automata in order to fund this larger project which was never completed: to build an automaton which mimicked the blood flow of the human body. Vaucanson wanted to create an automaton which could *bleed*. Although this plan did not come to fruition, it still represents a vivid example of how the technological uncanny emerges in the 18th Century creating a new blurring of boundaries beyond those identified in Freud's

essay: automata which made machines more human-like, but conversely humans more machine like.

This form of the technological uncanny is also evident in Hoffmann's *The Sandman*. Liu notes that Nathaniel may be the real automaton of the story but I contend there is another uncanny character present in the tale which could equally qualify as a secret machine: Nathaniel's fiancée Clara. As noted earlier, Olympia is described by Nathaniel's counterparts as 'rigid' and 'lifeless'. The later revelation of Olympia's true form confirms the validity of such aspersions but she is not the only character who is frequently described this way. The main narrator of the story digresses and interrupts the narrative flow of the tale near its opening to describe Clara in great detail. She is not, he maintains, what one would call beautiful but she is physically perfect in proportion, shape and appearance. The narrator finds her appearance and personality enthralling (in a manner comparable to Nathaniel's doting of Olympia) but not everyone concurs: he notes that 'Clara was stigmatized by many as cold, unfeeling, prosaic' (Hoffmann, 1816, 102). Such descriptions begin to mirror the accusations aimed towards Olympia, a proven automaton. Yet the number of occasions in which Clara's 'cold' nature is mentioned in the tale far outnumbers those attributed to Olympia. On one occasion, Nathaniel daydreams about an attack made upon him by Coppelius, involving Clara, which he then writes into a poem. In a strange prophetic doubling to the story's later developments with Olympia, in his imagination Nathaniel sees Coppelius remove Clara's eyes and throw them towards him. Unlike the later real event which would evoke madness in Nathaniel, in this dream version of events, Clara is able to save Nathaniel from the flames and the couple embrace. Yet the victory is not entirely a content one: 'Nathaniel looked into Clara's eyes, but it was death which gazed at him mildly out of them' (105).

Clara's eyes are thus devoid of life and the suspicion this casts upon the 'living' status of her body is vocalised by Nathaniel shortly afterwards. When he gains little reaction from reading his poem aloud to Clara, Nathaniel loses his temper with his fiancée, calling her a 'lifeless accursed automaton!' (106). The accusation could be ironic: Nathaniel sees the lifeless in the living, but not in the real machine of Olympia with whom he blindly falls in love. But the outburst could equally be another revelation which Hoffmann only subtly refers to elsewhere as a possibility: Clara is also an automaton. Whilst there remains no 'real' occurrence within the story which could provide evidence of Clara's mechanised physical form, it is still notable that the evidence to *suggest* such a possibility vastly outnumbers the one instance identified by Liu for the argument that Nathaniel is an automaton. If *The Sandman* does contain another, hidden automaton then I believe close analysis of the story suggests this is much more likely to be Clara than Nathaniel. Indeed the story presents a direct challenge to Nathaniel – and the reader – to discover this possibility. During Nathaniel's daydream when it is revealed Clara has not been harmed by Coppélius's attack, Clara assures her lover of her safety, asking him: 'Do you not see me?' (105). With the emphasis Hoffmann places upon eyes and Nathaniel's later lack of ability to observe and ascertain the truth (as with the case of Olympia), Clara's question is provocative: one could argue Clara challenges the main protagonist and the reader to *see* her true form as a machine.

There is, however, another possibility: the frequency with which Clara is described as cold or mechanical cannot be ignored but this could be interpreted allegorically. Clara may not be an actual automaton but rather possess the *attributes* of one: her emotional detachment from Nathaniel and her penchant for the rational and scientific world view make her appear lifeless and automated, as though she were a machine.

Indeed, Nathaniel does not share any of the passionate embraces with Clara as he experiences with Olympia, an actual robot. In this way Clara is representative of that 18th Century uncanny trope of the human becoming like the machine. This transformation may not be physical – although Nathaniel does comment on her ‘dead’ eyes – but rather her commitment to the rational thinking which characterises the Enlightenment period mechanises her personality. When Clara advises Nathaniel that his childhood experiences may all have been part of his imagination, she writes:

But if we possess a firm mind, a mind strengthened through living cheerfully, we shall always be able to recognize an inimical influence for what it is; and then that uncanny power must surely go under in the struggle we must suppose take place before it can achieve that form which is, as I have said, a mirror image of ourself (96-7).

It is here that Clara speaks the metaphor which is the title of this chapter. Her speech rallies against the ‘uncanny power’ which Nathaniel experiences in the story and, indeed, her criticism can be extended to viewing the larger context of the Age of Reason in this way. This is, in fact, a non-sequitur: Nathaniel *has* to experience the uncanny as this is purpose of the story. The tale also needs to provoke an uncanny experience for the reader as Tzvetan Todorov observes when he writes how the ‘incredible, extraordinary, shocking, singular, disturbing or unexpected’ provoked in the characters should have a ‘similar’ reaction in the reader (Todorov, 1975, 46)¹⁶. Hoffmann’s work is also part of the Gothic tradition – an example of the language of the uncanny – and so is already embedded in a tradition which is historically contextualised with the uncanniness of technology. Given the tone of some other

¹⁶ Todorov also outlines his own theory of the uncanny in relation to the literary mode of the ‘fantastic’. Todorov notes that the ‘fantastic’ exists as an in-between hesitation which is only resolved when the story reveals itself to be ‘marvellous’ (the supernatural accepted) or ‘uncanny’ (the supernatural explained) (Todorov, 1975). Interestingly, Todorov’s categorisation of the uncanny misses the inherent liminality of the concept which he, instead, describes as the ‘fantastic.’

passages in Hoffmann's work it is probable that he is being satirical here or, I think more likely, ironic: the words are given added poignancy if spoken by an automaton. Clara, the machine, is a 'mirror image of ourself', a technological creation made in the human form. Her body is a symbol of the larger developments of the Enlightenment age which saw a blurring of boundaries between the body and the mechanical. She is a trope of the technological uncanny as I have defined it and how it will be used in the rest of this thesis. The cinematic visual effects technologies considered in this thesis create realistic looking human bodies through mechanical means: in this way the filmic body is an automaton. The films considered draw attention to the processes of this creation and mediation and so the uncanny nature of this body is conveyed to the viewer. The experience of the technological uncanny is indicated in the language used in the responses gathered in this project which, quite aptly, often turn to images of these humanoid robots.

The relationship between 19th Century cinema and 18th Century invention, particularly the automaton, did not go unnoticed by the earliest filmmakers. Georges Méliès – whose work shall be the focus of close study in the next chapter – made a film called *Coppelia the Animated Doll*. This story is inspired by the ballet *Coppelia* which in turn is based upon Hoffmann's original tale *The Sandman*. The film was made around 1900 and unfortunately is now lost. But the connection between Hoffmann's work and the Gothic, 18th Century automata, the technological uncanny and cinema is one Méliès continues to promote as a major theme in his work. I contend that Méliès is indebted to the 18th Century's uncanny and the characterisation of the human body as a machine, as represented by popular inventions like automata. He renders these anxieties visually with his manipulation of the body and its doubling through trick shots in his films. As shall be explored in

the next chapter, Méliès pushes the potential for the uncanny in response to the mechanisation of the body one stage further: if the human body is mechanical then it can be broken down into fragments, like a machine, and rebuilt in different ways. This mutability of the body is reminiscent of Nathaniel's limbs which are removed by Coppélius and then re-attached 'now in this way, now in that.' The transformative ability Méliès observed in the cinema points to a radical reconceptualization of the human body comparable to that envisioned by Vaucanson and Kempelen in the 18th Century. As Gaby Wood notes:

[Méliès] revived that Promethean spirit with the content of his movies. By repeatedly filming stories of dolls coming to life, by endlessly reproducing mechanical tricks, Méliès transferred the quest of earlier android-makers to a new virtual reality. He made the human body do impossible things, and proved how mechanical or puppet-like our celluloid selves could be. Méliès, like Vaucanson, Kempelen and Edison before him, tested the boundaries of what was human (Wood, 2002, 167-8).

As highlighted by the analysis in this section, Wood's comparison between Méliès and the technology of cinema is not arbitrary. There is a historical link between the traditions of Gothic literature, the Age of Reason context and Hoffmann's tale with automata. It is a link which helps to illuminate why Freud's essay struggles to reach satisfactory conclusions. The uncanny must be historically contextualised and it is through this contextualisation that the importance of the automaton is revealed. The trope is an apt metaphor for the filmic human body and this is evident in the responses later analysed in this thesis which use this language of the uncanny. As mentioned previously, Chapter 2 shall show how Méliès directly engages with this language by depicting human bodies which are mechanical and easily fragmented. The language used by audiences reflecting upon the films of early cinema uses these

tropes too as viewers acknowledge the filmic body as unreal but admire the veracity of the moving picture's realism. It is an effect often labelled 'startling.' The figure of the automaton returns again in Chapter 3 as scholarship reflects upon the mechanised human body in the digital age. This is particularly apparent as the theory of the uncanny valley emerges within the context of robotics science. These androids are the 21st Century automata. Comparisons to humanoid robots permeates the reactions given by viewers in response to motion-capture in Chapter 4 and *Hugo* re-establishes all these links with its portrayal of an automaton, as will be discussed in Chapter 5. The technological uncanny is therefore a historically-situated theory of the interaction between the human body and technology which can be applied to cinema. Additionally, the technological uncanny is a reaction: it is the eerie, strange, and compelling experience of viewing this mechanised body. The next section shall outline how this mode of spectatorship can also be historically situated and look at how the trope of the double enters this equation.

Making a 'Mirror Image': the Double

The double is also identified by Freud as an important uncanny trope. The *doppelgänger*, Freud notes, can appear in various forms including: identical physical appearances between people; telepathy; the belief that one is 'someone else'; and through repetition, specifically the reoccurrence of facial features, character traits, names, 'destinies' and 'misdeeds' over generations (Freud, 1919, 141-2). This kind of uncanny, then, is a crisis of the self: the blurring of the boundaries which would otherwise ensure the identity and individuality of each person. If one's physical appearance, personality or thoughts are not unique, then we must ask: what makes 'me', me? This question is the experience of the uncanny and it is one evoked in Hoffmann's work, as indicated by Clara's above reference to a 'mirror image of

ourselves'. Her phrase is useful once again and I use it here for articulating how the trope of the double is part of the history of the technological uncanny and how this relates to the audience reception of different forms of doubles. A double is a 'mirror image': a duplication of a physical form which, for the examples discussed in this section, is enabled through technological means. The 'mirror' is particularly relevant to photography and cinema as light is reflected from mirrors onto a negative in order to capture the object or body in front of the lens. Yet Clara's phrase also points to how such doubled bodies may be experienced. To feel the uncanny is, in Clara's terms, to become a 'mirror image of oneself.' The experience of the uncanny is, in a sense, to become a double: the unease or awe felt in response to such stimuli forces the acknowledgement of this uncanniness on behalf of the viewer. As such, the spectator is forced to contemplate the nature of this interaction; to comprehend, in the examples used in this section and those in the following chapters, the mechanisms at work behind the illusion. The double therefore highlights how the technological uncanny is a specific mode of spectatorship too.

This section will explore this mode, arguing that this form of reception frames the responses which shall be analysed in the forthcoming chapters. I will begin by outlining Freud's thoughts on the double although, in a manner similar to my contextualisation of automata, there are wider histories and influences which need to be considered to fully understand the historical importance of this trope. Like automata, the double also finds its roots in literary traditions although this history reveals the significance of the double as the reception and *experience* of the technological uncanny. To illuminate this link I will then look at the tradition of the phantasmagoria – a contemporary to the historical contexts outlined above. The phantasmagoria is particularly important as it is one of the many traditions of image

projection which influences the development of cinema, and this spectacular display of visual effects actively encourages spectators to contemplate the nature of this illusory double. The phantasmagoria also incorporates the uncanniness of the tension between the living and the dead which is reflected in the popularity of other (proto-cinematic) technologies and traditions: specifically, I will look at Spiritualism and spirit photography. Interestingly, these two trends adopted a slightly different mode of spectatorship: viewers are encouraged to believe in the ethereal and the photographic medium is provided as proof for the existence of ghosts. However, I show how it is not the supposed capture of ghosts which is part of the technological uncanny but the doubling of the *living* human body which is the specific double of interest to this history of the uncanny. I will conclude this section by showing how it is photography's indexical ability which informs this uncanny perception and this argument shall provide the basis for the analysis of early cinema in Chapter 2.

In his essay, Freud considers what is precisely uncanny about the *doppelgänger*. As noted earlier, Freud links a series of uncanny effects back to infantile wishes/beliefs and anxieties, and these doubles he suggests are related to this latter 'psychoanalytic experience'. He writes that the uncanniness of Hoffman's tale is directly attached 'to the figure of the Sand-Man, and therefore to the idea of being robbed of one's eyes' (Freud, 1919, 138-9). The double is therefore at the heart of Freud's castration complex thesis. As has been noted throughout this chapter, Freud's essay and the conclusions drawn are often more complicated than they first appear and extend elsewhere in the text, or beyond it. Freud helps to draw a historical link to the uncanny double and the development of the ego by quoting the work of another author: Otto Rank's study *The Double*. Rank's work, published 1914, is contemporaneous to Freud's study (Rank also references Freud to his reader) but

whilst connected, the writers differ considerably in their emphasis. Where Freud writes of the double as one of many tropes in his quest for the uncanny, Rank does not seek an explanation for *das unheimliche* but rather discovers it in his focus on the doppelgänger: for Rank, the double *is* the uncanny.

Rank outlines a specific type of historical contextualisation, involving anthropology, in order to locate the origins of the double as an uncanny trope. Rank frequently describes the doubling he finds in Hoffmann's work as uncanny and he links the continual presence of this motif in this literature through a similar anthropological methodology as Jentsch. Using the anecdotes of folklorists, Rank argues that the first physical double identified was the shadow: as a literal doubling identical from its owner, and irremovable, the shadow became 'coequivalent with the human soul' (Rank, 1914, 57). As such, the double has always occupied a tentative position between life and death. The doubling of one's form as testament to a 'soul' can equally expose the owner to injury or death should their image be misused. Rank writes:

Savages believe that the soul is embodied in the image reproduced by glass, water, portrait, or by a shadow... The similarly based dread of one's own portrait or of a photograph is found all over the world ... Since these people visualize the person's soul in his image, they fear that the foreign possessor of this image can have a harmful or deadly effect upon it. (65)

Rank highlights how the doubling of photography – or, more specifically, the contemplation of the technology of photography – becomes uncanny. It is in this way that the figure of the double becomes related to a particular way of thinking. Freud, Jentsch and Rank all identify the uncanny in Hoffmann's work and (to varying degrees) place the double at its core. All publishing within just over a decade

to each other, the writers' works demonstrate the development of psychoanalytical ideas in the early 1900s from which we can draw some similarities in their accounts of the uncanny. The uncanny, they argue, is a psychological response to external stimuli which provokes an unease caused by earlier developments in the human psyche (the 'primitive' stage). The prominence of the double motif in literature (beginning with Hoffmann) makes these tales uncanny because doppelgänger remind the readers (albeit unconsciously) of these fears and wishes which would otherwise have remained hidden. In this way, all three writers also contribute to what Freud calls the uncanniness of psychoanalysis itself: the uncovering of 'secret forces' (Freud, 1919, 150) through a process which itself induces a kind of doubling, becoming a stranger to one's self.

In this way the double is intimately linked to the historical contexts of the 18th Century, as outlined above. Rational thinking – of which psychoanalysis is a descendant – inevitably causes this 'split' or doubling *in the mind about the mind*. This is the doubling outlined by Clara's 'mirror image of ourself' phrase and Clara – the suspected automaton – is also representative of this mode of rationalist thinking. Further study into the double as a motif strengthens this connection. In a much more recent review of the double in German literature, Andrew Webber aligns the figure of the doppelgänger much more strongly with the concept of the uncanny as he writes that the double is the very embodiment of the uncanny: 'the *Doppelgänger* is archetypally 'unheimlich': a prime figure of the uncanny precisely in that it is an original resident in the 'Heim'' (Webber, 1996, 8-9). Webber envisions the double as the 'home' in the 'unhomely' – the *unheimlich* – in two ways. First, the doppelgänger is a disruptive element in the literal home of the protagonist, often serving as a 'figure of displacement' for the problems inherent to that environment

already (8).¹⁷ Second, the doppelgänger signifies a split from one's own 'home' in oneself, and thus the relationship between the body and what is 'real'. The doppelgänger, Webber writes:

[embodies] a constitutive, domestic split in subjectivity ... the phenomenon creates a scandal for the epistemological order of things ... The duplication, I will argue, points up an essential lack which must be supplemented, a lack within the 'real self', and by extension within the order of the real (8-9).

In this way, Webber too alludes to the uncanniness of psychoanalysis – of becoming alien to one's self – which perhaps further explains both the importance of the double within the uncanny (the *unheimlich*), and the centrality of the concept of the *unheimlich* in experiences and discourses on the uncanny. But Webber also suggests why it is Hoffmann that provided the inspiration for these explorations into the uncanny which the psychoanalysts were drawn to:

If psychoanalysis was to return to Hoffmann as a privileged literary precursor and proponent, then this is not least because his fictions are in a sense so many case-histories, working out in narrative form contemporary theories which pre-empt key elements of the psychoanalytical project' (33).

Through Rank, Freud's and Jentsch's work on the double can be contextualised. The trope of the double was clearly a popular topic for psychoanalysis at the beginning of the 20th Century and the writers' universal reliance on Hoffmann and his contemporaries demonstrates again the importance of this literary heritage. What I have termed the language of the uncanny thus continues to be an integral part of this history for the technological uncanny. Through Hoffmann, the double is historically

¹⁷ This can be seen in *The Sandman* with the literal invasion of the home in the legend of the Sandman told to Nathaniel as a child, and the presence of Coppelius the lawyer in the protagonist's home at night. Webber also notes how the doppelgänger is usually gendered as male and is inextricably linked to the sexuality of the main protagonist (4-5). This is an aspect highlighted by Freud and Rank as both writers identify the Sandman/Coppelius/Coppola as a 'disruptor of love' (Freud, 140).

situated within the same Enlightenment period as the invention of automata. Although Rank adopts a pseudo-anthropological approach, his work's role in the larger establishment of psychoanalytical theory demonstrates how the double is an uncanny experience which involves perception. I want to unpack this idea further and develop the contextualisation of the double to help illuminate the experience of this trope as part of the technological uncanny which speaks to a specific mode of spectatorship. Jentsch's idea of the uncanny as an 'intellectual uncertainty' is useful here. Jentsch characterises the uncanny experience as one which challenges mental faculties and skills of interpretation. Nathaniel embodies this concept as, Freud notes, that there is doubt whether to interpret Nathaniel's version of events as the 'delirium of the panic-stricken boy' (Freud, 1919, 137). Clara is the opposite because, as illuminated earlier, she represents rational thought. Indeed as quoted earlier, Clara describes in detail how Nathaniel must have misremembered his childhood trauma with the Sandman and provides logical explanations for the supernatural sights Nathaniel claims to have seen (Hoffmann, 1816, 95). Clara therefore functions as the counterpoint to the uncanny experience in the story. Ultimately she reinforces the uncanniness of the tale because her account does not satisfactorily explain the strangeness of events. There were other technological developments of the 18th Century which engaged with the tension between uncanny and rational modes of thinking, of which Clara is a descendent. Considering these technologies will further demonstrate how the double emerges as a key component in experiencing the technological uncanny as a particular type of reception between illusion and spectator.

The 18th Century technology which demonstrates this link is the phantasmagoria. The invention of the phantasmagoria is attributed to the Belgian inventor, scientist

and showman Étienne-Gaspard Robertson in the late 1700's. Significantly, the idea and basis of the phantasmagoria was inspired by Athanasius Kircher to whom the invention of the magic lantern (although not named as such until much later) is attributed to in the 17th Century. As such the phantasmagoria is an important part of the lineage of cinema: it is an early example of scientists and showmen experimenting with the art of projecting moving images. The first phantasmagoria display (or what Robertson called 'fantasmagorie') took place in Paris in 1798 as a 'Gothic extravaganza, complete with fashionably Radcliffean décor' (Castle, 1995, 146). The surrounding in which the phantasmagoria took place would continue to be an important part of the show: once the display had become a popular attraction, Robertson later moved the phantasmagoria to an old crypt within a convent, where he performed amongst the graves and tombs. The sequence of the show's events changed little during this time: the performance would commence with a general display of optical tricks and illusions before the main part started. For his main attraction, Robertson, in keeping with the 'aggressively rationalist' sentiments of the Enlightenment, would inform the audience that the supernatural world was false: ghosts did not exist. Immediately after his opening speech, the spectators would be plunged into total darkness and the phantasmagoria display would commence: ghosts and spectres would be made to appear from the gloom, growing in size and often transforming before the eyes or mutating into other demonic forms. As one contemporary account testifies, often the audience participated: spectators claimed to see their family's departed appear again during the show and, on one occasion, a man claimed to see his dead wife and 'ran off, not believing it a phantom anymore' (quoted in Castle, 1995, 148).

The phantasmagoria's ability to supposedly make the dead return to life is already quite uncanny: this provides an early example of Freud's uncanny trope of doubting the distinction between the inanimate (the dead) and the animate (the living). Robertson's choice of location surely contributed to this: staging the phantasmagoria in the crypt of a convent transformed the space for the spectator from the quiet resting place of the deceased into a portal between the living and the dead, where the quiet and still reserve of the burial chambers are infused with animation and chaos. The location and show also brought together two elements of the controversial debate emerging in the 18th Century: the tension between religion (the religiously interred graves) and science (the technology behind the phantasmagoria). It is this tension which begins to reveal how the uncanny emerges as a distinct experience in the 18th Century. Castle notes Robertson's phantasmagoria 'induced in the spectator a kind of maddening, contradictory perception' (159): viewers are explicitly told, in Robertson's rationalist introduction, that ghosts do not exist and yet they are made to see them anyway. This is quite different from an attempt to indoctrinate the audience into the *belief* of ghosts and the supernatural, as a séance (which also emerged in the 18th century) may do: rather, human senses concurred that these ghosts actually appeared. Castle notes: 'And in a crazy way they *were* real ghosts. That is to say, they were not mere effects of the imagination: they were indisputably there; one saw them as clearly as any other object of sense' (159).

The phantasmagoria therefore addresses the viewer in a very specific way. Spectators are encouraged to think about the mechanisms which create the illusion. The audience is aware that this is just an illusion – a trick of the mind – as they are explicitly told before the show that the images projected are not real. The automata described earlier function in a similar manner: the clockwork figures were presented

as entertainments and, for The Mechanical Turk, many engaged in debate about how the technology behind the illusion was achieved¹⁸. Despite Hoffmann's tale to the contrary, automata were not made to fool crowds into believing they are real people. It is this mode of address based in these 18th Century entertainments – of establishing an actively engaged and participating viewer – which underpins my idea of the technological uncanny. Interestingly, the phantasmagoria complicates the nature of its reception with the inclusion of ghosts; the event deliberately selects subject material which cannot possibly materialize, thereby challenging the viewer further. This provides another useful metaphor for the 18th Century experience: just as the rational becomes an established mode of thinking, the mind 'doubles' itself with the ghostly experiences offered by shows like the phantasmagoria. The experience of the uncanny is, once again, historically situated.

The tradition of bringing the dead back to life through mechanical means finds historical relevance again through Spiritualism. Like the phantasmagoria, these traditions are concerned with the creation of doubles, specifically the doubling of non-living entities. However, whereas the phantasmagoria revealed the working of its own mechanical nature by stressing to the audience the illusions were unreal, the traditions of Spiritualism and its related schools of thought used technology as confirmation that spirits were real through the use of 'spirit photography'. The technology behind photography developed several centuries ago although experiments into how to capture a *permanent* image of reality gained momentum in the 18th Century. Advancements in the camera obscura (mentioned in the next chapter) and the magic lantern (which the phantasmagoria used) are integral to this

¹⁸ It should be noted that The Mechanical Turk was not the complete clockwork invention Kempelen claimed. Coincidentally, Edgar Allen Poe was one of the authors who speculated on how the Turk operated and he guessed – correctly – that the automaton concealed a real person (Poe, 1836). The Turk was probably operated by a series of levers and magnets (Standage, 2002).

development. The first successful attempt to take a photograph took place in the early years of the 19th Century and thus photography represents a technology which bridges the period of Enlightenment with the rapid modernisation of the Western world which would continue and accelerate in the following century. Photography is also a prerequisite to the cinema: it was the use of the technology to chemically record an image which became the basis for moving and projecting such pictures in a form which we recognise today as cinema. Photography is also instrumental in enhancing the importance of the uncanny to the 18th and 19th Centuries as it creates a physical double of its captured subjects. This, in itself, is quite uncanny and indicates the strangeness of science – and the incomplete banishment of supernatural belief – prevalent at this time. As Tom Gunning observes:

[If] photography emerged as the material support for a new positivism, it was also experienced as an uncanny phenomenon, one which seemed to undermine the unique identity of objects and people, endlessly reproducing the appearances of objects, creating a parallel world of phantasmatic doubles alongside the concrete world of the sense verified by positivism. While the process of photography could be thoroughly explained by chemical and physical operations, the cultural reception of the process frequently associated it with the occult and supernatural (Gunning, 1995b, 43).

Spiritualism extended this potential considerably: ‘spirit photography’, mechanically recorded the bodies of the living with images of the dead. The spirit photographs of the 19th Century usually depict portraits of people with an ethereal twist: somewhere in the picture can be seen another face, translucent and ghostly, which the spiritualists claimed to be the soul of a departed. If not an actual picture of a deceased person (i.e., a decipherable human face), spirit photography would capture images which were claimed to be evidence of spirit activity. Images often feature strange vapours or fluids emanating from a living person’s body (usually a medium

or those involved in conducting a séance) which was identified as ‘ectoplasm’. This ectoplasm was Spiritualism’s proof that such unseen forces radiated from the dead. Photography merely made such an unseen force visible. In this way spirit photography closely mirrors the experience of the original phantasmagoria: despite Robertson’s claims to the contrary, the show’s attraction was rooted in the ability to make the dead come back to ‘life’ before the spectator’s eyes. The difference, of course, is that the phantasmagoria was a self-conscious spectacle, an attraction invented for entertainment purposes. Spirit photography, on the other hand, was considered (by the movement at least) the irrefutable evidence of ghostly presences which justified the movement’s existence. Science itself is thus made strange and uncanny, as Gunning continues: ‘The Spiritualist encounter with photography reveals the uncanny aspect of this technological process, as one is confronted with doubles that can be endlessly scrutinized for their recognizable features, but whose origins remain obscure’ (66-67). Photography becomes a double of itself: it is the scientific process of chemical reactions which can be rationally explained, but the technology is also transformed through spirit photography into an integral component in the mysterious practices of the supernatural.

It must be noted that these photographs from the 19th Century have since been dismissed by the majority as frauds: the ‘ghost’ figures which appear next to the (living) bodies in the pictures were usually created through double-exposures. But even the knowledge that this photographic ‘proof’ of the spiritual world is false does not usurp the images’ uncanny potential: the Spiritualism movement revealed how even scientific technologies like photography – which is a product of the rationalist thinking and invention which started in the 18th Century – can be revealed as unreliable. Photography, in this sense, is no more trustworthy or ‘proof’ of events

than the séance and mediums of the 19th Century, or the phantasmagoria of the 18th Century, claimed to be. This tension has been transferred into conceptions of the cinema and this dichotomy – between cinema as photographic evidence of events and/or a special effect and entertainment – has only been exacerbated by analogue’s replacement with digital technologies. This is a topic discussed at length in Chapter 3. To better understand how photography’s ability to create a double is related to both the technology’s capability to capture reality and its capacity to manipulate that appearance, one must consider the theory of the index.

The uncanniness of early cinema emerges, in part, from the medium’s ability to create an indexical double of the human form which is based on the technology of the photograph. One of the most famous discussions of this ontology is by André Bazin who argues that photography has satisfied this need for realism, particularly because the medium is a ‘mechanical reproduction in the making of which man plays no part’ (Bazin, 1945, 12). Indeed, the crucial link here is between the medium’s relationship to its subject: ‘The photograph as such and the object in itself share a common being, after the fashion of the fingerprint’ (15). Bazin’s association of photography with fingerprints strongly invokes theories of the index, as postulated by Charles Sanders Peirce, highlighting that the physical imprint of the referent present in the chemical processes of photography reflects the unique link the medium retains to the ‘real’ world. Bazin underlines this point by contrasting photography from its aesthetic predecessor painting, noting how photography becomes the mechanical reproduction of the real. This raises the notion of the index: photography’s *reproduction* of reality maintains a unique link or essence to that which it represents. Photography captures a moment of the ‘real’ in its immediate

form but releases the ephemeral from the chains of time and space, artificially granting immortality to that which shall otherwise physically decay.

Roland Barthes clearly articulates these ideas in his investigation of photography and his language further reveals the potential uncanniness of the photographic process. Like Bazin, Barthes identifies photography's indexical nature as central to its ontological status: 'A specific photograph, in effect, is never distinguished from its referent ... the referent adheres' (Barthes, 1980, 5-6). As indicated, the mechanical process of the camera ensures a direct link between the final photograph and that which it represents: its object of study. Indeed, in his quest to define the 'essence' of photography, Barthes remarks that it is the 'stubborn' presence of the referent – the capturing of the *object's* 'essence' – which is at the heart of photography's nature (6). For Barthes this raises significant implications for the viewer and the viewed (the photographed). With the latter, Barthes describes the act of being photographed as the ultimate fusion between the human body and its flesh, machine (the camera), and its artificial reproduction (the photograph). He writes that to be photographed is to transform from subject into object and to feel this metamorphosis at the point of posing: 'I instantaneously make another body for myself, I transform myself in advance into an image' (10). Posing, then, is a conscious acknowledgement of the conversion of the image of one's body 'now' into a photographic representation. The implication of this for temporality is expressed by Barthes soon afterwards:

But today it is as if we repressed the profound madness of Photography: it reminds of its mythic heritage only by that faint uneasiness which seizes me when I look at 'myself' on a piece of paper (13).

To be photographed, then, is to mechanically create a double of oneself, an artificial doppelgänger identical to the original. Barthes's phrasing is reminiscent of Clara's

description of the uncanny as a ‘mirror image of ourself.’ Yet, unlike a mirror, the double in photography fossilises the immediacy of the moment captured, elevating the instance of posing to a permanent temporal positioning that the original subject – the photographed body – will inevitably move beyond. In short, the physical body will age but the photographed body will endure. It is here, then, that one moves from being the subject (at the point of being photographed, under the photographer’s or, more precisely, the camera’s gaze) and into an object simultaneously. The unique ontology and temporality of the photograph, Barthes writes, thus reveals a strange facet inherent to the medium. He surmises:

And the person or thing photographed is the target, the referent, kind of little simulacrum, any *eidolon* emitted by the object, which I should like to call the *Spectrum* of the Photograph, because this word retains, through its root, a relation to ‘spectacle’ and adds to it that rather terrible thing which is there in every photograph: the return of the dead. (9)

Barthes reveals the final element explaining the uncanniness of photography: the doubling and exclusive temporality of a photograph causes the uncanny realisation that one’s image shall continue long after its subject-matter – the physical body – has perished. This re-affirms photography’s position in a longer tradition of artificially creating one’s ‘own temporal destiny’ as identified by Bazin with painting and other, more literal, forms of creating physical reminders or ‘casts’ of the body, as with life and death masks¹⁹. But for Barthes this fact produces distinctive effects upon the viewer of the photograph – those looking at the dead ‘returning’ – which can be only described as uncanny. Again, his language is revealing. Barthes writes that upon viewing photographs he feels ‘... something more like an internal agitation, an

¹⁹ There is another parallel here to 18th Century contexts as the period saw the popularisation of waxworks which were equally concerned with capturing a ‘trace’ of a body. Marina Warner notes that such ‘unflinching verisimilitude foreshadows the precision lenses of photographers’ (Warner, 2006, 35).

excitement, a certain labor too, the pressure of the unspeakable which wants to be spoken' (19). In this statement, which could double as an epigraph for the notion of the uncanny itself, Barthes describes the strange feeling that comes from acknowledging the 'facts' presented by photography.

Barthes and Bazin therefore outline the indexical connection photography maintains with reality, their descriptions evocative of Peirce's formulation of the concept. The technology of the photography also aligns with the technological uncanny's history of creating doubles. Moreover, Barthes begins to elucidate this indexicality as a specific mode of reception. He writes how particular images can produce a startling affect, what he terms the '*punctum*' (examples of which for early cinema I will explore in Chapter 2). Intriguingly, the *punctum* occurs when the uncanniness of the above ontological facts, which permeates every photograph, comes to the fore. Vitality, however, this happens upon viewing another human body:

From a real body, which was there, proceed radiations which ultimately touch me, who am here ... A sort of umbilical cord links the body of the photographed thing to my gaze: light, though impalpable, is here a carnal medium, a skin I share with anyone who has been photographed (80-1).

The emphasis returns then to the indexical nature of the medium: the materiality of the photographic form and its mechanical processing records reality and confirms the existence of this physical body. This photographed body acts as the trace to its physical counterpart, perhaps long since passed. Experiencing photography thus allows for the possibility of re-capturing the 'essence' of the photographed person: indeed, Barthes' musings upon the medium are motivated by this very quest and his success at finding the 'essence' of his late mother in a photograph of her as a child. The index is, then, another integral part of the technological uncanny's history. This

is a history which is rooted in other technological reproductions of double and, in particular, in the spectacular – and uncanny – sight of the human body. The contemplation of this strange convergence is the acknowledgement of the technological uncanny. Laura Mulvey helps to illuminate these links:

A sense of the uncanny, often experienced as a collapse of rationality, is a property of the human mind and its uncertainties ... [Bazin and Barthes] reveal ways in which the two, the index and the uncanny, interweave in their reflections on both sides of this (Mulvey, 2006, 55).

It is an awareness of early cinema's photographic and indexical properties which, I contend, inform the reactions of viewers to the medium. However, this is not to argue for cinema – or, indeed, photography – as strictly indexical, or to present this notion as the medium's defining element. Although the index has been used in this way for other theorists²⁰, Tom Gunning highlights how the rigidity of the term negates its usefulness (Gunning, 2007). However, I argue it is the *idea* of the index, rather than its reality, which is important here to the reception of cinema within an experience of the technological uncanny. Some clarifications on the theory of the index help to illuminate this significant nuance. Peter Wollen observes how Charles S. Peirce did not consider his system of signs – of which the index is one – to be 'mutually exclusive' and the theorist considered photography to be capable of some significant 'overlapping' in his theories (Wollen, 1969, 123). When one returns to Peirce's original text this overlapping becomes apparent. Peirce calls the index 'a sign which refers to the Object that it denotes by virtue of being really affected by that Object' (Peirce, 1955, 102). It is this connection which encompasses Bazin's and Barthes's characterisation of photography: the impression of light from the object which is reflected onto the negative is indexical in this way. However,

²⁰ See Kracauer (1960) for an example of this.

photography is equally the product of another of Peirce's signs, the icon: 'An *Icon* is a sign which refers to the Object that it denotes merely by virtue of characters of its own' (102). Photography – and, by extension, cinema – is also iconic because it *looks* the same as the object it captures. This resemblance is not negated by the presence or absence of the index.

This raises the question as to why it is the index which is given a privileged position in Bazin's and Barthes's writings rather than the idea of the icon; after all, it is photography's iconic capabilities in creating a double which is a central concern for both writers. Dudley Andrew considers Bazin's association with indexical theory as 'the epiphanic view of cinema with which Bazin has always, but not quite accurately, been associated' (Andrew, 2010, 5). Bazin's identification of the indexical qualities of the photograph translate complexly onto his writing on cinema in which he argues not for the unmediated presence of the 'real' in the analogue image, but for a particular type of *aesthetic* which bears a special relationship to the *possibilities* for identifying the real. As Andrews explains:

Remember, Bazin claimed that photographic portraits don't represent their subjects; rather, they are 'grey or sepia shadows, phantomlike ... the disturbing presence of lives halted in a set moment in their duration.' Cinema confronts us with something resistant, to be sure, but not necessarily with the solid body of the world. Through cinema, the world 'appears'; that is, it takes on the qualities and status of an 'apparition.' (9)

Andrew's description here is evocative of the doubling properties of the phantasmagoria which forces the contemplation of the ghosts it creates. The phantoms of cinema and photography, however, are the recorded bodies of real people. It is the acknowledgement of this *idea* which forces the spectator to reflect upon the technology's properties in relation to the index. Andrew continues:

What is on screen is not reality but its precipitate, its tracing, its remains which, like the mummy, may allow us to conjure the presence of something fuller, the phantom of that paradoxically more solid reality that hovers spectrally around, behind, or before the screen (41).

Andrew's evocative image here helps to shift the discussion concerning the index away from strictly ontological considerations and begins to illuminate the viewer's experience of photographed pictures, including cinema. This latter factor is the crucial point for Niels Niessen: whilst cinema may have a relationship to the index, this bond – in analogue or digital films – is not necessarily acknowledged by the spectator *as an experience of the index*:

The answer in all these cases comes down to the impossibility of seeing the index-as-trace itself. The indexical connection between the analog image and the profilmic is never perceived, or experienced in a broader sense, immediately, but is always mediated (Niessen, 2012, 171).

Niessen notes that this does not mean that the index is never 'felt'; rather, the image needs to contain 'trustworthy markers of indexicality' in order to say 'here it is, the trace' (172). It is here that the technological uncanny can be better understood. As will become apparent in later chapters, it is cinema's ability to be both indexical *and* iconic which is central to the use of visual effects in the films analysed. But viewers often return to the *idea* of the index – that the image on-screen bears some physical relationship to reality – in their experience of these visual effects as uncanny. This is, I believe, because the uncanny trope of the double can be traced back beyond Freud to a history of technologies producing doppelgängers of the human body (alive and dead) which demanded viewers *think* about what they are seeing. It is a type of thinking which, again, should be contextualised within the Enlightenment period and influences the development of technologies which would later influence cinema. The

idea of the index is one which forces the viewer to think about the ontological possibilities of the photographic medium: of the relationship between the double on-screen and the living body it depicts; of how visual effects technology can marvel audiences with the verisimilitude of the image whilst undermining this iconic resemblance of reality through manipulation. It is this mode of spectatorship that is part of the technological uncanny and influences the viewers' experience of visual effects technologies.

Defining the Technological Uncanny

As this chapter demonstrates, my definition of the technological uncanny begins with but extends beyond the musings Freud provides in his key text on the topic. The difficulties Freud has in pinning-down the uncanny in a single, all-encompassing explanation reflects the complexity of dealing with the concept. To repeat Royle's vivid description of the process, the attempt to write about the uncanny is 'to find oneself immersed in the maddening logic of the supplement, to engage with a hydra' (Royle, 2003, 8). This is because the uncanny is about the in-between, the slippages in definitions and the blurring of boundaries. It can cause feelings of unease, intrigue and be startling. Freud successfully evokes what it *feels* like to experience the uncanny, even if his explanation for the phenomena is not wholly satisfying. My own use of the term therefore does not follow Freud's main argument concerning the castration complex. To echo Lesley Stern's thoughts on the topic, the uncanny 'is a perfectly operative concept without castration and so my usage does not entail this underpinning' (Stern, 1997, 353). For me, the importance of the term can only be understood through historically contextualising the concept. I argue it is this history of the interplay between scientific developments, realistic representations of the human body, the tradition of literature, an informed mode of spectatorship and

the idea of the index which exemplify the technological uncanny. The technological uncanny is both the experience of feeling the uncanny, as described above, and the contemplation about the nature of the technology and body which forces this reaction. This response can be identified through language where the tropes of automata and doubling inform the audience reception to early and digital cinemas.

The technological uncanny is therefore a specific strand and tradition I have identified within other projects on the topic. The technological uncanny is, to extend Royle's metaphor, the characterisation of my 'hydra head' in wider scholarship on the uncanny. The way in which the technological uncanny will inform my analysis of these selected time periods is again indicated by Clara's phrase: 'a mirror image of ourself'. Cinematic technologies provide the means to create filmic doubles of the recorded body; realistic representations of the human. Yet this is not truly 'ourself': it is a mediated, technological reproduction. The films analysed in this thesis draw attention to these visual effects and engage directly with the language of the uncanny on a visual level. I demonstrate the first of these links now in Chapter 2 where I shall explore the technological uncanny in early cinema.

Pictures for Chapter One



Figure 4 - Vaucanson's Automata.



Figure 5 - Kempelen's Mechanical Turk.

CHAPTER TWO

Early Cinema, the Technological Uncanny and the Human Body On-Screen

The Uncanny, in other words, had left its physical, concrete self behind; it no longer solely took the form of a single automated figure, but had become generalized, diffused throughout a new world of spectacle and magic. Into this world came another mechanized monster: the celluloid frames of the cinema, editing together by technological Frankensteins and brought to life. On film, man was made mechanical, reproduced over and over like an object in a factory, and granted movement by the cranking of a machine.

Cinema was a direct descendant of the androids of the Enlightenment; its birth was a Promethean, or Pygmalionesque, event

(Wood, 2002, 160).

In the last chapter the theory of the uncanny was contextualised historically as a concept and a reaction emerging within the 18th Century in response to several scientific developments. The automaton and the double are identified as prominent uncanny tropes intimately connected to the technological advancements instigated during this period and the impact these have on the representation and reception of the human body. It is here that the technological uncanny finds its roots. The concept encompasses what is uncanny about the convergence between body and technology: the unease surrounding the mechanical nature of the body or the machine made more human; the doubling which forces the viewer to contemplate this experience; the relationship of the uncanny to language and the difficulties in conceptualising this experience; and this mode of reception which is intimately linked in photography – and, by extension, early cinema – to the idea that the medium is indexical and yet mediated, capable of manipulation. Gaby Wood's opening quotation sums up the trajectory of this history, drawing a direct link between automata – which were the

starting point of establishing my definition of the technological uncanny – and the beginnings of cinema; I shall explore early cinema in this chapter as a period which dialectically engages with the technological uncanny once again, as the spectacle of the human body is now a representation projected on-screen. The language of the uncanny – descriptions which evoke these tropes and others slippages in definitional boundaries – is evident in the responses viewers had to this spectacle and in the emphasis placed by filmmakers upon the portrayal of the body as an attraction.

This chapter will, then, support the conclusions of Chapter 1 and develop these further. It will show how the technological uncanny becomes relevant once again in the history of the representation of the human body and is intimately linked to the reception of those moving pictures, as well as the existing scholarship contemplating these notions. It is interesting that Wood should describe early cinema as ‘a new world of spectacle and magic.’ Descriptions of the new spectacular visual effects analysed in this thesis are often compared to magic, with the term gathering particular significance in the connection between the technological uncanny and digital bodies in Chapters 4 and 5. The emphasis on magic helps to illuminate an important nuance which underpins this analysis and my use of the technological uncanny as a concept and, more specifically, as a mode of spectatorship. Matthew Solomon explores the idea of magic as comparable to the cinematic address of audiences by contrasting this with Spiritualism. He notes how the use of photography in Spiritualism as mechanical ‘proof’ of the existence of the afterlife does not find an equivalent in early cinema. As noted in Chapter 1, spirit photography addresses the viewer in a different way to the traditions of doubling in literature and the phantasmagoria, in that photography’s indexical nature is upheld as irrefutable proof in Spiritualism traditions. Solomon argues the ‘incipient cinema’s

cultural associations with magic ... worked to repress and displace the medium's phenomenological affinities with apparent spirit phenomena' (Solomon, 2010, 16).

This chapter also emphasises the relationship between early cinema and traditions of magic but it does so to further explain the technological uncanny's mode of spectatorship. To characterise the reception of early cinema as part of the history of the technological uncanny is not to endorse the view that the images on-screen were interpreted as 'real'; rather, these are photographically *realistic* pictures related to reality through the complexities of the idea of the index. Indeed, to be fooled into believing cinema images were depicting events actually taking place would not be an experience of the uncanny. The uncanny is based on an acknowledgement that there is a strangeness present, an alienating experience whereby the mind metaphorically doubles itself to consciously reflect on this eerie occurrence. To be completely fooled is to be ignorant of the illusion and therefore not aware of the uncanny potential or processes taking place. This distinction is particularly important when analysing early cinema as such investigations can easily assume spectators were overwhelmed by the images because of a complete unfamiliarity with the medium. The contextualising of the technological uncanny within early cinema and its relationship to the traditions of magic helps to counter this view, whilst illuminating further how one can characterise the experience: what the technological uncanny *feels* like.

To explore these themes this chapter is divided into four sections. First, I will outline how the history explored in Chapter 1 provides the backdrop for the context and development of early cinema. To show this I will interrogate the term 'early cinema', clarifying my use of the phrase. My reference to the technology of the mid-1890s as 'cinema' is to help highlight the importance of moving photographic images as a

historically significant event which emerges from earlier developments but also encompasses a distinctly new experience for audiences. This continuity with the past whilst engaging with the possibilities of the new is a trend which is identified again through the technological uncanny when these photographic practices are merged with digital technologies, as explored in Chapters 3 and 4. The aim in this chapter is to speak of ‘early cinema’ as a specific time period which is historically situated and characterises the early film audience as informed and experienced spectators. In my own analysis I am focussing on a period which dates from approximately 1895 – 1906. My overview of this history emphasises the diversity of the audience and where such films were experienced between these dates: of particular importance is the issue of class, national contexts and the trends in exhibition, with a move toward purpose-built theatres towards the end of this era. This section shall provide a summary of these important aspects by drawing upon important, recent histories in early cinema studies. Section two builds upon this history and demarcates my intervention into this debate by aligning my theory of the technological uncanny within current scholarship on early cinema spectatorship. Tom Gunning’s ‘cinema of attractions’ (Gunning, 1986) and Dan North’s idea of ‘performing illusion’ (North, 2008) are of particular significance here, with the latter explicitly drawing on the magic traditions referred to above. Gunning’s work also illuminates why the dates selected for my own focus are significant when thinking about early cinema as a spectacular attraction within the larger history of visual effects technologies. With these theories in mind I will outline a selection of responses to early cinema which begin to show the uncanny potential of the medium.

Section three will highlight how it is the representation of the human body, in particular, which is key to early cinema’s interaction and evocation of the

technological uncanny. Here I look at the different types of bodies on display, how viewers respond to them, and will show how the language of the uncanny permeates these reactions. Finally, section four will bring all these threads together by looking specifically at the work of Georges Méliès. Méliès's films are reflective of the spectacular display of the human body on the cinema screen but I argue his work takes these representations further. Méliès's works help evoke the experience of cinema as uncanny for its viewers but these representations of the human body actively engage with this potential by incorporating the tropes of the technological uncanny – the double and the mechanical body – into their portrayal. Méliès's films help to solidify the link between the contexts of the 18th Century outlined in the last chapter, the representation of the body as analysed in this chapter, and how defining these bodies as part of the technological uncanny highlights the way this era can be compared to the technological developments investigated in Chapter 3.

Defining Early Cinema

There are several points which need to be considered when analysing early cinema as even the term is problematic: which years does this term refer to exactly and is this really 'cinema'? How should we account for the variety of exhibition venues – carnivals, music halls, nickelodeons, picture palaces, etc. – and the differences implied by the terms 'living'/'animated'/'moving' pictures? André Gaudreault notes: 'We must come to terms with the fact that so-called early cinema was, in a sense, not yet ... cinema' (Gaudreault, 2009, 10). Historicising the earliest years of cinema is therefore fraught with challenges. Points of conflict may include the date on which cinema was 'born' – ranging from 1894 to 1896 – a factor dependent largely upon

one's national preferences.²¹ Equally, early cinema history has been depicted as an achievement of the many, be they scientists, inventors or exhibitors, and as the individual success of a few, with figures like Thomas Edison, the Lumière brothers Auguste and Louis, and Robert W. Paul looming tall. Theorists have written history solely through the films early audiences enjoyed (or what is left of them) and alternatively through the inventions that created them. It is not my purpose here to address all of these (often contentious) issues in this chapter but it is still important to gauge a working definition of 'early cinema' for use in this investigation. I will thus begin by outlining some aspects of cinema history pertinent to my own intervention into early cinema – including acknowledging the diverse contexts of exhibition for early film and its audiences – and, later, how this relates to the theory of the technological uncanny and spectator response.

Following in the footsteps of a now well-established approach to film history, it is not my intention to construct a teleological interpretation of early cinema. Older accounts of cinema history, Simon Popple and Joe Kember note, include a technological determinism ethos whereby 'cinema is regarded as belonging to pre-existing technologies and is implicitly judged by existing conventions' (Popple and Kember, 2004, 25). In this version of history, cinema is characterised as the superior successor to previous illusory technologies, naturally evolving from pre-existing optical illusions and tricks. In such an account cinema has a pre-determined end point of what cinema 'is' – or should be – and thus earlier forms of cinema are assumed to be primitive stages in this cinematic phylogeny. Terry Ramsaye's work, *A Million and One Nights: A History of the Motion Picture Through 1925*, points to

²¹ The *Cinématographe*, for example, was patented in 1892 but its first (private) performance took place in Paris in 1895. The invention premiered in London the following year. The public premiere of Edison's Kinetoscope took place slight earlier, in 1893.

such an approach. This extensive study of cinema's earliest years was first published in 1926 and is thus an important historical document in and of itself: Ramsaye's detailed work is one of the first attempts to conduct such research and provides for us today an invaluable example of the history and ontology of cinema as perceived within thirty years of the medium's supposed 'birth'. It is in describing this arrival that Ramsaye adopts a similarly evolutionary-inspired metaphor:

He who will have the patience to follow this growth of the motion picture will find it too, like the tree, clearly an organism, following organic law in its development ... The motion-picture may be called the last-born off spring of the parent impulse of all the arts of expression (Ramsaye, 1926, xxxvii-xxxviii)

In a similar vein, there are those approaches to film history which contend that cinema's 'invention and subsequent technological development [are] as the result of the brilliance and sacrifice of a small group of dedicated men' (Pople and Kember, 2004, 27). An example of this 'great man theory' is also present in Ramsaye's identification of Thomas Edison as the 'wizard' of cinema. A frontispiece of the book depicts a portrait of Edison with the caption: 'Thomas A. Edison, inventor of the motion picture film, the camera and the Kinetoscope – the technological foundation of the art of the motion picture.' Frederick A. Talbot's work, *Moving Pictures: How They Are Made and Worked*, is another example of this approach: Talbot's work is an even earlier example of a historical investigation into cinema's origins (published in 1912) and places particular emphasis upon the work of Robert W. Paul as the first to 'perfect animated pictures upon a screen' (Talbot, 1912, 39). The period of early cinema can also be identified through technical developments, such as the Lumieres' debut of their *Cinématographe* (Williams, 1996), or through other such 'first' achievements: Méliès is often credited with being the grandfather

of cinematic special effects and a ‘first mentor’ of the fantasy film (Hammond, 1974, 9). Méliès has also been identified as the ‘inventor’ of the trick shot, a claim made by the filmmaker himself (Méliès, 1907).

Wider scholarly debate on this period has sought to extend the scope of how to research early cinema, discouraging a determinist approach. In highlighting some of these methodologies two main threads come to light: early cinema must be understood within wider historical contexts and traditions of spectacular attractions; and paying attention to the nature and experiences of the audience is an integral part of ‘fleshing out’ this history. My formulation of the technological uncanny therefore complements and builds upon this existing research. Deac Rossell’s work is part of this wider research which criticises the quest for finding cinema’s ‘true inventor’ and the suggestion that cinema was always intended to follow a particular trajectory: ‘The beginning *was* the beginning, and few if any of its initial participants had any idea of the scope and impact that the new medium would have in the following century’ (Rossell, 1998, 3). In fact Rossell goes one step further and discredits the need to construct a neat, linear history of cinema which reflects one invention or development leading seamlessly to the next, with one goal in mind. Instead, Rossell advocates a ‘nonlinear and multidirectional perspective’ (3) which illuminates the plethora of ideas, technical innovations (some successful, some not), and inventors all contributing to the technology and entertainment of the 1890s. It is the analysis of these ‘artifacts’ which shall produce an ‘undistorted history’ of cinema. Rossell writes:

Within this changing world, the first generation of moving picture inventors approached the problems of capturing and recreating natural motion through photography. Their respective experiences and habits of thinking influenced

both their concepts of what moving pictures could be, and the specific artifacts they created to fulfil their dreams. (5)

Rossell's idea of 'artifacts' is an intriguing one. As Chapter 1 demonstrates, the wider history and contexts of the Enlightenment period are crucial in understanding the relationship with technology I am characterising in this thesis. The automaton and the double are, in a sense, 'artifacts' of this time, which re-emerge as tropes of the technological uncanny within early cinema. To analyse history in this way is not to reinsert the linear trajectory Rossell argues passionately against, but to illuminate the continuities and similarities which inform the larger conceptualisation of the history of moving images. For Tom Gunning, Rossell's work is one of two 'great contributions' in the study of the origins of cinema: the other is Laurent Mannoni's *The Great Art of Light and Shadow: Archaeology of the Cinema* (2000). Mannoni's work complements this idea of identifying the 'artifacts' of history, as Gunning notes in his introduction to Mannoni's study:

With Mannoni's work, we discard a method which traces offspring back to a single point of origin. He substitutes almost the inverse figure: the device we recognize as motion pictures, when traced backwards, fragments and multiples, unravelling a skein of influences and practices that move back into centuries-thick layers of culture and history. (Gunning, 2000, xxi)

As Gunning's synopsis reveals, Mannoni's work extends the scope of research conducted by Rossell to include a wide range of optical devices and traditions which can be said to have influenced the numerous technologies which became cinema. Mannoni's interest in the topic stretches back to consider the 'camera obscura' whose origins can be traced to the 13th Century. As Mannoni notes:

The only device our ancestors could use to entertain and frighten themselves ... at least until the arrival of magic lantern in the seventeenth century, were a

dark room ('camera obscura', in Latin) and some complicated tricks with mirrors' (Mannoni, 2000, 3).

Significantly, this very early illusion was a form of *projection*: contrary to popular belief, the arrival of devices such as the *Cinématographe* was not the first in history to have the ability to project images upon a wall or screen. Other 'fragments and multiples' which Mannoni identifies are the major impact the 'magic lantern' had upon the development of modern projection. Indeed this invention, which developed over decades as the modification of several 'camera obscura' inspired practices, is quite 'a potent symbol for the century of the Enlightenment'. He continues: 'For several decades, the whole population ... had access to miracles of the arts and sciences emanating from the lamps of optical instruments' (77). The development of projecting photographic pictures is the result of several, disparate lines of inquiry stretching back over the centuries. This point is reinforced by Stuart Hanson who notes that '[audiences have been viewing projected images as part of public entertainments since the sixteenth century' (Hanson, 2007, 7-8). Even with the advent of photography, the projection of 'animated photographs' was still not a determined destiny: '[I]f imaginations were being fired by the prospect of projected living images, photography itself lagged some way behind technically, dampening the excitement' (Mannoni, 148). Together Rossell and Mannoni reveal the trial and error behind cinema's history which was not pre-destined. Yet their research acknowledges that the idea of *cinema* – the projection and illusion of moving photographs – was still a significant achievement: their research reveals this development to have wider implications in a longer history and tradition of illusion.

Whilst Rossell and Mannoni take a macro approach to film history, other historians have sought to focus on the micro history. For example, other writers focus on the

time period when the invention of moving photographs became widely available and the technology began to establish the infrastructure and economy we recognise now as ‘cinema’. These approaches also seek to re-contextualise previously held assumptions about early cinema and point to a different set of influences and practices. Integral to this research is the demographics of cinema’s earliest audiences and exhibition practices. For example, Nicolas Hiley considers these questions of spectatorship within the British context. This ‘mass audience’ he significantly identifies in Britain to be working class, a fact which had great influence in the subsequent moral cleansing of the entertainment by authorities attempting to create a more stable, exclusive and inevitably middle class attraction (Hiley, 1998). Yet without this knowledge, and the economic contextual evidence which accompanies it, we would never fully appreciate how ‘cinema’ progressed from the domain of the music hall and showmen into the purpose-built movie theatres. Richard Butsch develops a similar methodology for his approach to the US context (Butsch, 2000). Just as class is the key element for Hiley in the British context, so does Butsch (and elsewhere Melvyn Stokes and Richard Maltby, 1999) identify a range of social groups – including women, children, ethnic minorities and immigrants – who all need to be considered to fully comprehend the development of cinema in the United States. Similarly, Butsch also places equal emphasis upon *where* this heterogeneous audience interacted with these moving images. In the US context animated pictures moved from the fairground to the nickelodeons and vaudeville theatres; in Britain this transition occurred from the music halls and variety theatres to the purpose-built picture palaces.

Another thread which runs through Hiley’s and Butsch’s work is the stress placed upon the diversity in the screenings of early films. The earliest films were often not

the main attraction of a show but usually part of a programme of other events: for example, moving pictures would have been only one of the several attraction tents in the fairground, and in the music hall films would often be seen along-side 'live' acts such as comedy routines, acrobatics, juggling, singing and dancing. Indeed, even the famous premiere of the Lumière 'reversible chronophotographic camera' (it was not named the *Cinématographe* until later) at the *Société d'Encouragement pour l'Industrie Nationale* in Paris was only one part of a larger programme in which Louis Lumière would lecture on the various facets of the cinematographic industry (Mannoni, 2000, 425). The popularity of the 'projection Kinetoscope' with the invited audience came as quite a surprise to the inventor: 'Lumière had been expecting his coloured slides to be the success of the evening ... it was only afterwards that he realized the commercial and artistic importance of the animated photographs' (425). When such commercial potential was realised, and film became an established entertainment in its own right (away from being simply a component within a variety of acts), 'cinema' was still not a unified experience: exhibitors enjoyed a high degree of creative control, re-editing and projecting films in a manner to suit their own establishment and audience. David Bordwell cites the famous 'bandit firing at the camera' in *The Great Train Robbery* as the example used by Tom Gunning and similar historians as emblematic of this fact; the shot could be used at either the opening or close of the film – a decision made ultimately by the exhibitor (Bordwell, 1997, 126). Thus to identify an essence or defining feature for early cinema, or even for a particular country, period or invention, is impossible. Charles Musser quite aptly notes: 'How one characterizes the cinema of 1896 is not necessarily the same for cinema in 1898 (just two years later)' (Musser, 2006, 160). It is for this reason that elsewhere Musser attempts to avoid such controversies by

talking instead of a history of ‘screen practice’ (Musser, 1990): a form of analysis which in turn inspired the investigations of Rossell and Mannoni.

What impact do these revisionist approaches to film history have upon my own investigation? First, it is useful to consider this research in order to clarify what I mean by the term ‘early cinema’. As has been explored, referring to the emergence of moving photographs as ‘cinema’ is fraught with conceptual difficulties: the course of this development was not pre-destined and included a diverse range of exhibition practices. I would like to add the history of the technological uncanny into this mix; this concept illuminates a different contextual strand in the development and reception of moving picture technologies. There is a need, however, to employ some specifics in order to investigate the period of early cinema which is why I shall be concentrating my analysis primarily on films produced from the mid-1890s onwards: as other researchers have shown, it is from this date that the popularity and commercial success of animated photographs were established. I shall also mainly concentrate on those films which were projected onto a screen: although some reference will be made to other exhibition modes for moving photographs (namely, Edison’s Kinetoscope), this qualification allows me to focus upon a practice of viewing images which would profoundly influence the concept behind ‘cinema’ as we understand it today²². Additionally, thinking about how films were made specifically to be projected upon a larger, communal screen, permits an illuminating comparison with familiar practices for films today, which shall be explored in subsequent chapters. Thus whilst I will make use of the term ‘early cinema’ for ease

²² Rossell also highlights two types of early cinema screenings: those performed by travelling exhibitors and those taking place in theatres (Rossell, 2000). In this study I am interested in the latter category as it is within this context that the reactions gathered (from newspapers, etc.) took place. Interestingly, the distinction between these different types of exhibition venues is evoked again by the dramatization of the ‘train myth’ twice in *Hugo* (2011). These reactions are analysed in detail in Chapter 5.

(there exist few other suitable terms) I do appreciate the nuances which must be considered when investigating such a period: for example, one must acknowledge the diversity of motion picture consumption and the importance of other social and economic contexts. Indeed, my work into the history of the uncanny has already started this process: Chapter 1 showed how the technological uncanny is a concept which must be understood historically, with aspects such as cultural changes and scientific developments being key contextualising factors. The fact this early cinema period involves the projection of *photography* is highly significant: Laura Mulvey identifies the technology as a turning point for the uncanny (Mulvey, 2004). By defining this concept within the technological uncanny we can see that it is photography's ability to create a double and mechanise the human body – whilst maintaining a trace to the lived original – which is the key element in this tradition.

Second, the work analysed above indicates the difficulty of dating early cinema. Rossell's and Mannoni's work in particular traces a complex history of illusionary technologies, all of which influenced the development of (what would become) cinema. As I have already indicated, whilst I appreciate these complexities, I am interested in the period where moving photographs were projected and enjoyed commercially by a wide audience; this is a time when the technological uncanny evidently informs the reception of this new technology. The start date of approximately the mid-1890s is suitable for this purpose and incorporates the differing contexts of the West: experiments to develop a film projection system 'began more or less simultaneously in France, England, Germany and the US' (Grieverson and Krämer, 2004, 31). The end date of early cinema is, in many ways, much more difficult to discern. Many theorists recognise the speed with which motion-pictures developed, adapted and transformed into varying guises of 'cinema'

over the first decades of its popularity: '[The] length, style and subject matter of early films, their exhibition, audiences and social function changed with great speed from the 1890s to the 1920s' (Grieverson and Krämer, 2004, 1). As Lee Grieverson and Peter Krämer indicate, one could consider this thirty-year expanse as early (or what they categorise as 'silent') cinema. Another cut-off point could be the rise of the Hollywood Studio System after WWI when the economic infrastructure which would dominate the world's production, distribution and exhibition of moving pictures would be established. Yet, as indicated by my work on the uncanny in the previous chapter, I am primarily interested in when the technology of cinema was still either a novelty itself or was used mainly for spectacular purposes. Tom Gunning's idea of a 'cinema of attractions' is useful to consider here. Gunning suggests that cinema's novelty phase occurred early in its development when the main concern was still with an 'ability to *show* something' in what was then 'an exhibitionist cinema' (Gunning, 1986, 382). Gunning thus focuses on films up to 1906, after which, he writes, a 'true *narrativization* of the cinema' takes place which sees such attractions subsumed into the 'self-enclosed diegetic universe' whereby such features are transformed into signifiers and supporters of the narrative film (385-6). I too shall focus initially on these early years of film and will explore the implications behind Gunning's theory further in the next section.

Finally, it is important to emphasise through this review of early cinema scholarship that I am not endorsing a teleological account of film history, particularly when historicising the technological uncanny within this era. It would be easy to assume that the identification of the response to early cinema as uncanny is to suggest this was the case because cinema was brand new: under this assumption spectators, shocked at the new experience of seeing life-like moving images upon a screen,

became fearful of what they saw (and I shall return to explore this popular ‘myth’ of early cinema spectatorship shortly). As the above has emphasised thus far, moving image technology was by no means *new* in 1890 and, as has the above account and last chapter have shown, audiences were accustomed to such illusory attractions. Additionally, this mythical account also works against the definitions of the uncanny explored previously: as was established in the last chapter, to feel the uncanny is not to experience absolute fear but rather an unease or disquieting where one’s comprehension of events or boundaries is temporally questioned. Similarly, the uncanny cannot operate on the fear of the unknown alone: it is the familiar made unhomely – Freud’s *unheimlich* – which is at the heart of this concept. Thus my application of the technological uncanny to early cinema is much more nuanced than a determinist approach would allow and is dependent upon the consideration of several of the contexts explored above²³. I will now turn to the question of the technological uncanny and explore how the responses of early audiences can be characterised as such. Using this discussion I will develop how the technological uncanny points to a particular mode of spectatorship, which can be further elucidated by considering the emphasis these films placed upon the depiction of the human body.

²³ My approach is to thus use the historical contexts and theoretical framework of the technological uncanny to elucidate the experience for early cinema audiences and a particular type of spectatorship. Interestingly, in his recent edited collection on audiences, Ian Christie draws similar links between these early reactions and the notion of the viewer, albeit in a study which encompasses a far greater number of topics (Christie, 2012). Nevertheless, Christie’s reference to Maxim Gorky (mentioned below) and Rank (analysed in Chapter 1) highlights again the importance of this historical context, acknowledging that ‘the audience [as] essential for film seems to have been understood for over a century’ (Christie, 2012, 11). My work is thus an intervention into this discussion too, offering another way to study the diverse nature of this historically-situated audience.

The Uncanniness of Early Cinema

It certainly was a marvellous device, and those who availed themselves of the opportunity to see it in operation by means of the nimble nickel, expressed undisguised wonderment; to many it appeared uncanny (Talbot, 1912, 30).

Writing in 1912, Frederick Talbot charts the emergence of ‘the marvellous, universal popularity of moving pictures’ still in its infancy but nevertheless already ‘a vast industry’ (Talbot, 1912, 1). One may wonder how the audiences of this strange new medium reacted; what did spectators of the late nineteenth century think of seeing the spectacle of such moving images? Talbot’s opening sentiment (remarking here on Edison’s Kinetoscope) is representative of the reactions documented in the press at the time, which have since informed the history of these cinematic inventions and their audiences in Western Europe and the USA. These responses invariably include a sense of awe, amazement or wonder: following Talbot’s lead, I would like to characterise this response in terms of the technological uncanny. Yet what does it mean to call an experience of early cinema uncanny? To call such a response uncanny is not necessarily to endorse what Stephen Bottomore calls ‘the train effect’ (Bottomore, 1999). This legend suggests that, upon viewing moving pictures for the first time, terrified audiences ducked in the aisles to the arrival of a train into a platform on-screen: supposedly unable to comprehend the technology behind the illusion, the story tells us, early audiences were perplexed at the sight of ‘real’ images moving before them in ‘real’ time, thus supposedly believing the pictures to have potentially ‘real’ consequences (a train crashing into them or waves hitting rocks splashing over them, etc.). It is an idea that has become pervasive, even into the present day. In his overview of the history of film (accompanied by a

documentary film²⁴) Mark Cousins writes: ‘Audiences ducked, screamed or got up to leave. They were thrilled, as if on a rollercoaster’ (Cousins, 2004, 23). It is a legend which I explore again in Chapter 5 through *Hugo* (2011) which reconstructs the famous story twice within its narrative. As Bottomore notes, the story of the ‘train effect’ is ‘one anecdote which seems to be perennially fascinating to layman and historian alike’ (Bottomore, 1999, 177). It is therefore important to evaluate this myth in relation to its original contexts and illuminate how the technological uncanny fits into this equation. The ‘train effect’ elucidates how the moving picture technology addresses its audience, drawing attention to the processes of its own mediation *and* realistic appearance. It is the simultaneous contemplation of both these aspects which I contend is integral to experiencing cinema as part of the technological uncanny.

The endurance of the legend is not without its evidence: several newspapers and journals from the turn of the century provide detailed reports of audiences responding to projected moving images in a manner which upholds the viability of this myth. For example, *The Optical Magic Lantern Journal and Photographic Enlarger* writes that *The Railway Tragedy* is a particularly sensational example of animated photography which ‘will make the audience hold their breath’ (Anon, 1903c, 115). Another film, this time depicting a fire engine travelling at speed down a road, reportedly caused quite a stir particularly when:

On one occasion, an old lady in the audience, quite unable to suppress a scream, started up in her seat and tried to scramble out, and in doing so knocked over the person behind her in her endeavour to get away from the

²⁴ *The Story of Film: An Odyssey* was written, directed and narrated by Mark Cousins and was broadcast in September 2011 on More4.

horses; many more cases of the same sort have been known (Anon, 1896a, 101).

Another writer from *Strand Magazine* notes how films depicting trains can evoke emotive responses such as this:

The train is the most stirring spectacle you can image. On the platform the porters and passengers are waiting. It's here! You see it arrive, get bigger, gain speed; it seems to come out of the screen, to race towards you. Real flesh-and-blood women recoil in horror, the reality is so striking! The train is the star of the show, if a train can be a star (Anon, 1896v).

The American Biograph notes several similar instances including:

The other night two ladies in one of the boxes on the left-hand side of the horseshoe, which is just where the flyer [the Empire State Express train] vanishes from view, screamed and nearly fainted as it came apparently rushing down upon them (Anon, 1896p).

Bottomore writes that these responses fall into two categories of film. The first is the transportation genre which often features the railway and is perhaps the most commonly reported (and presumably the basis upon which the myth has endured). The second genre includes films which feature the stormy sea and similar reports of shock and fear are also evident. The *Optical Magic Lantern Journal and Photographic Enlarger* also reports a film where the breaking of a wave in another example was so realistic that 'a shudder can hardly be suppressed' (Anon, 1896a, 101). Similarly *Strand Magazine* in 1896 recalls how *A Rough Sea at Ramsgate* shows the waves breaking on the rocks and notes:

[The] spray is thrown up in so realistic a fashion as to make the people in the stalls actually start involuntarily, lest they should be drenched! (Anon, 1896w).

These reports show a strong correlation between the themes of the offending films (the two genres Bottomore identifies), the reaction of the spectators (physical responses such as shock or scrambling to move away) and the reasons behind this behaviour (the motion on-screen is thought to have potential, real-life consequences). Given the frequency with which such reports occurred one cannot simply say the myth of the 'train effect' is a total fabrication: contemporaneous evidence such as that detailed above would support the opposite view. However to completely accept the 'train effect' as a historically accurate account of how all spectators responded to early moving pictures also seems illogical: it has been noted that spectators were accustomed to other illusory entertainments so it would be unlikely that early cinema pictures would evoke such a shock for the contemporary viewer. Additionally, many film historians have emphasised how quickly the consumption of animated photographs became a popular past-time, rapidly becoming an established industry akin to the cinema we recognise today; this development surely would have been hampered if this latest attraction caused such fear and discomfort amongst its patrons. As Bottomore's investigation reveals, a balanced approach to this topic is needed. Bottomore stresses how the authenticity of many claims could be questioned, and it is no coincidence that such anecdotes would provide invaluable publicity for the new technology (5). Yet Bottomore does not totally dismiss the train myth as others have done:

I would maintain that, amid the various reports of the enthusiastic and astonished audience responses to the first films, there are a number of descriptions of a more physical reaction, which do seem to be genuine and not exaggerated. (10)

An explanation Bottomore offers for this is that the anxiety felt upon seeing the projected train travelling toward the viewer is actually a cognitive reaction of the

psychological effect of seeing an object growing rapidly in size (13). This response is, therefore, a pre-disposition of the mind resulting in perceptual confusion in the viewer. This argument provides a reasonable explanation for some of the reports of strange reactions to early moving pictures detailed in newspapers at the time. It is also interesting to note that the ‘train effect’ could not be an entirely invented myth – the motivation behind which would be to perhaps indulge in approaches which view early cinema and its audiences as ‘primitive’ – as early films themselves seem to parody this effect for comedic purposes. An example of this would be *Uncle Josh at the Moving Picture Show* from 1902. This Edison film formed part of a larger series where the reoccurring character – Uncle Josh – found himself in a variety of predicaments often caused by his own ignorance. This film begins with a tableau framed in order to show a large white screen on the right (which, in an early form of self-advertisement, features the words ‘Edison Projecting Kinetoscope’) and a spectator box on the left containing the Uncle Josh character. As the film within the diegesis begins to role (called *Parisian Danger*) we are thus both audience members of this film, like Uncle Josh, and spectators of the Edison feature. The spectator is positioned so that it is Uncle Josh’s viewing experience which is the central attraction here. Logistically this framing allows us to fully comprehend the joke: *Parisian Danger* begins with a view of a woman dancing and Uncle Josh soon climbs over the side of the box to ‘join’ her on stage for the performance. Unable to discern the illusion on-screen from reality, Uncle Josh interprets the moving images to be ‘real’: in a poignant re-enactment of the ‘train effect’, Uncle Josh dives out of the way of an express train as a locomotive is projected onto the screen (Figure 6). The film ends with Uncle Josh readying himself for an altercation with a cavorting

‘country couple’ but instead tearing down the screen in his confusion and being wrestled to the ground by an angry exhibitor.

The Uncle Josh performance adds another degree of complexity to how one should evaluate the myth of ignorant, frightened early cinema spectators. On the one hand, *Uncle Josh at the Moving Picture Show* could be a re-enactment of the numerous cases of the ‘train effect’ published in previous years: this would thus be an example of film becoming a form of ‘living newspaper’ (Auerbach, 2007). Yet, on the other hand, the comedic purpose behind the film – we are most certainly intended to laugh *at* Uncle Josh’s expense – points to the more likely scenario that the film playfully discredits the viability of a myth which contends that viewers ever thought moving pictures were ‘real’. Or, more specifically, should this ever have been the case the fault is transferred away from the verisimilitude of the illusory technology and directed towards the ignorance of an inexperienced viewer: it is highly significant that Uncle Josh should be an uneducated, lower class man. This observation does not discredit that the ‘train effect’ ever took place – or that it occurred for viewers from a different demographic from Uncle Josh – but rather the Uncle Josh film demonstrates that, at the very least, the myth was exorcised within popular culture to be associated with the less-modern and unsophisticated viewer. This, in itself, could point to an anxiety implicit within early cinema spectatorship. As Bottomore notes: ‘Perhaps this was one way in which people learned to be comfortable with this new medium of cinema, by ridiculing a group – the naive yokels – who clearly were not’ (8).

Uncle Josh at the Moving Picture Show also demonstrates that any account of early cinema viewers needs to appreciate the complexity of these spectators and a more nuanced approach to the ‘train effect’ is required. Indeed, the film itself features a

kind of ‘scale’ of acceptable responses to the moving image. Uncle Josh is not immediately frightened by the images on screen and in fact applauds with wonder at the sight of the dancing woman *before* he climbs over the box to join her on the ‘stage’. It is only after this initial awe-inspired reaction that Uncle Josh’s behaviour becomes comically absurd (jumping away from the train and pulling down the screen). This therefore suggests that to be amazed at the sight of moving pictures is not outside of the realm of possibility and early advertisements and reports for the technology in the mid-1890s emphasise this very fact. In another article from *The Morning Post* called ‘Science in the Music Halls’, it is noted that the Lumière *Cinématographe* ‘is a truly marvellous representation of life and motion’ (Anon, 1896f). *The Sheffield & Rotherham Independent* uses the same terminology, noting how ‘marvellous’ the moving picture technology is and states that the films shown were ‘wonderfully effective’ (Anon, 1896i). Indeed, confirming Bottomore’s suspicion that all social groups enjoyed the novel technology – and perhaps the ridiculing of the lower-classes in figures like Uncle Josh mitigated the unease felt by higher-class customers – the newspaper notes that the Empire Palace then had new patrons, among them ‘men and women who had not previously entered the doors of a music hall.’

It is here that the mode of spectatorship central to the technological uncanny begins to reveal itself and is a useful concept for engaging with this film history. Tom Gunning also considers the train myth and, in much the same way I have outlined so far, suggests that the legend needs to be approached historically, stating: ‘Only a careful consideration of the historical context of these earliest images can restore an understanding of the uncanny and agitating power they exerted on audiences’ (Gunning, 1995a, 116). As such Gunning does not deny that cinema certainly had a

distinctive effective ‘power’ upon its first audiences, as caricatured by Uncle Josh expressing wonder at the dancing lady on-screen. Yet Gunning seeks to interpret this response within a context of an audience familiar with moving image technology (and this is where Uncle Josh departs from reality for comedic purposes). It is a combination of both this knowledge and the astonishment of such effects which parallels closely to how such reactions may be defined as uncanny. Gunning writes:

Far from being placed outside a suspension of disbelief, the presentation acts out the contradictory stages of involvement with the image, unfolding, like other nineteenth-century visual entertainments, a vacillation between belief and incredulity ... the apparent realism of the image makes it a successful illusion, but one understood as an illusion nonetheless (1995a, 119).

Early cinema audiences may well have experienced the uncanny at the sight of a train approaching, but it is an uncanny infused with ‘contradictory stages’, an oscillation between the familiarity of such effects with the unfamiliarity of the new technology producing them. The unhomely is superimposed upon the homely and the experience becomes *unheimlich*. This development parallels closely to how I conceptualise the technological uncanny as detailed in the last chapter: much more than a feeling of fear, the uncanny occurs first as a physical sensation in the body and it becomes a contemplative process as the attempt is made to re-assess our comprehension of the world in light of new factors or experiences questioning it. The experience of cinema for early spectators becomes much more than passive viewers experiencing the uncanny as a result of ignorance; rather, it is the unfamiliarity with the technological developments within the context of moving images – and the subsequent re-conceptualisation of how this technology operates in relation to reality and its indexical properties – which illuminates the technological uncanny as central to this process of comprehension and assimilation.

Dan North's notion of 'performing illusions' stresses this point further. North notes early cinema should be 'examined as the culmination of decades of experimentation in visual and cultural entertainment' including magic theatre (North, 2008, 48). The latter is particularly important because the traditions of stage magic provide an analogy to how the contemporaneous technology of moving pictures addressed the audience in a comparable manner. North writes that the nature of this 'illusionism' is:

... an interplay between the practitioner and the recipient, the former testing out the latter's knowledge of other deceptions, adapting each trick to circumvent the viewer's ever-expanding awareness of the means and mechanisms behind the illusion. Though there may never be a state of perfect illusionism, whereby the simulation is absolutely imperceptible, this does not mean that its pursuit is a fruitless quest, since it is the dialogic quality of illusory practice that characterises it. (13)

There is a harmony here with Gunning's articulation of the cinema of attractions. As previously mentioned, Gunning argues that the films of cinema's earliest days are inherently exhibitionist in nature; the films' attractive qualities reside in 'its ability to *show* something' (Gunning, 1986, 382). In this way the cinema of attractions explicitly acknowledges the audience and highlights the nature of the viewing process. The mode 'directly solicits spectator attention, inciting visual curiosity, and supplying pleasure through an exciting spectacle' (384). Like the 'dialogic quality of illusory practice' (North), the cinema of attractions necessitates the contemplation of the new medium and the nature of its visual effects. As Jay David Bolter and Richard Grusin note, this is a form of address in which the audience oscillate between 'a sense of immediacy and an awareness of that sense'; the duality of alternatively 'looking *at* and looking *through*' the medium (Bolter and Grusin, 2000, 155). The

cinema of attractions is therefore intimately linked to my conceptualisation of the technological uncanny: both are concerned with how these early films presented the *medium* itself for the attention of viewers and its ability to create new and spectacular visual effects. Yet I want to use the technological uncanny to situate this dialectic relationship with viewers within a much longer history of the uncanny, and use the concept to contemplate how such an experience was *felt* by early cinema audiences. Gunning's use of the term 'attraction' is a useful starting point for this. The term is borrowed from Sergei Eisenstein's 'The Montage of Film Attractions' where the latter finds a 'fortunate formulation' in the word 'attraction' as he writes:

An attraction ... is in our understanding any demonstrable fact (an action, an object, a phenomenon, a conscious combination, and so on) that is known and proven to exercise a definite effect on the attention and emotions of the audience (Eisenstein, 1924, 35-6).

An attraction, according to Eisenstein, should affect the audience *emotionally*. I think the nature of this emotion for the uncanny is also hinted at by the term 'attraction'. The word 'attraction' denotes a pulling force or traction, what the Oxford English Dictionary lists primarily as 'The action of drawing or sucking in.' This can refer to the forces of physics (as with magnetism or gravity) but equally the attraction of a person towards a particular entity or 'thing', be it ideological, an object or another person: the allure, charm or desirability of something *attractive*. Thus the word attraction itself contains a positive dimension but, importantly, this goes beyond the idea of simply presenting something 'pretty' or aesthetically alluring (in the non-physics sense of the word): attraction in all its forms is about a powerful force, this 'sucking in.' Yet in magnetism, an attraction needs both a positive and a negative force of equal measure and in this dynamic I find my own 'fortunate formulation': to feel the uncanny is to experience the pleasure of a fearful anticipation or sudden

shock. The resulting discomfort is equally a thrill; the experience is compelling, intriguing and uneasy all at once. It is, to borrow Barthes's description of the uncanniness of the indexical photograph, 'an internal agitation, an excitement' (Barthes, 1980, 19). This sensation is present in the language of the uncanny used by spectators and writers, and finds particular resonance with the experience of viewing the human body on-screen. It is this part of the technological uncanny reaction I shall turn to now.

The Body in Early Cinema

As a firmer idea of how the technological uncanny intersects with an evaluation of early cinema's spectator response has now been established, a useful question to now ask is: what, in particular, did viewers find uncanny about early moving pictures? As the above evidence reflects, the answer to this question certainly relies on the strange combination of realistic images – photographic representations of life on-screen – and the ability to make such pictures *move*. The cases which detail more extreme reactions to the moving images – spectators running away in fear – certainly have a close correlation to the genres Bottomore identifies: transportation and the stormy sea. But if the reaction of fear represents a minority of cases and it is more accurate to describe a larger audience as experiencing film as uncanny – as a 'vacillation between belief and incredulity' – then what did these spectators see on the screen to evoke such a reaction? What did early films *show*? One has to acknowledge straight away that a complete answer to this question is impossible: unfortunately many of the films produced during the earliest days of cinema no longer exist, either having been destroyed by chemical erosion or fire (film stock was highly combustible), or simply lost over time before formal institutions established archives for film. Therefore one cannot assess all the material that these spectators would have

enjoyed. Arguably, even if one could *see* these films, it would be highly unlikely that the *experience* of said films could faithfully replicate the exhibition contexts of the 1890s which, as has already been noted, were extremely diverse.

Instead I propose looking at a particular subject matter in these remaining films which was evidently popular and relates closely to the history and conceptualisation of the technological uncanny presented so far: the representation of the human body on-screen. Details from news reports and trade journals, as well as the surviving films, indicate that several of the earliest films portrayed moving human bodies as their central attraction. This representation, I argue, constitutes an additional, third genre to those suggested earlier by Bottomore. Yet my category also extends out to a history beyond early cinema where the attraction of the mechanised body is an integral part of the uncanny tradition. The earliest copyrighted film in the US – Edison’s *The Sneeze* (or *Fred Ott’s Sneeze*) in 1894 – was shown on the inventor’s Kinetoscope and depicts 45 frames of a man feigning a sneeze. Presented in a medium shot, the short film shows the man exaggerating the movement of his head and hands in anticipation of the bodily function. Other Edison films made within these early years of cinema’s development include: *The Great Sandow* (1894), which shows the famous strongman flexing his muscles for the viewer; *Blacksmith Scene* (1893) which depicts the workmen’s bodies straining from their intense labour; and *The Serpentine Dance* (1894) featuring Annabelle Moore, a dancer who became famous for her lively performance in several early Edison films. *The Serpentine Dance* was also the subject for the Lumières’ *Cinématographe*: often hand-coloured, the film’s attraction resides in the combination of a photographically realistic human body which is made to move in an extraordinary manner. The fluidity of this movement is emphasised by the sublime shapes created from the cloth of the

dancer's dress which draws the viewer's attention constantly back to the continuous motion and the ontology of the technology behind it.

The Arrival of a Train at La Ciotat Station (1895) is perhaps one of the best-remembered Lumière films (and an integral part of the 'train effect' myth), but many of the earliest *Cinématographe* films also feature moving human bodies as their subject matter. *Baby's Breakfast* (1895) shows the Lumière family feeding the newest edition to their family, and *The Morning Post* describes the film *Bathing in the Mediterranean* as showing 'a number of bathers ... taking headers from a diving-board into the sea' (1896d). The famous *Workers Leaving the Factory* (1895) has as its main attraction the realistic portrayal of a mass of human bodies as they move across the screen. Indeed, even the Lumière's famous locomotive film includes the spectacle of moving bodies: 'people push forward to enter the carriages, and the familiar scene of bustle and confusion incidental to the arrival of a train, passes before the eyes of the spectator' (*The Morning Post*, 1896f; Figure 7). *Uncle Josh at the Moving Picture Show* indicates the prominence the representation of bodies on-screen enjoyed during early cinema and the importance this subject matter has for evoking the uncanny: the first film shown to the enthusiastic spectator is of a dancing woman. The lively movements from this performance are the initial cause for Uncle Josh's amazement at what he sees (and believes to be real) before him. Filmmakers in this early era thus chose the human body as their subject matter to demonstrate the novelties of the new cinematic technologies. Jonathan Auerbach argues that placing the body at the centre of early cinema history is crucial, as he writes:

While early films clearly paid attention to many other objects, such as swaying trees and steaming trains, it was primarily the human figure, moving

in and through and creating space that enabled cinema to become what it became (Auerbach, 2007, 2).

Investigating early cinema in relation to the depiction of the human body also correlates well with the definition of the technological uncanny used in this thesis. The last chapter demonstrated how ideas concerning the body are particularly ripe for the evocation of an uncanny experience: at a fundamental level, the uncanny experience – the unease of the unhomely – provokes a re-evaluation of the self in relation the world and others. The cinematic image provides a realistic and photographically-indexical double of the human body. The cinema therefore builds upon the technological uncanny traditions of the photograph, as outlined in the previous chapter through Barthes. Interestingly, the relationship between the body as an attraction and photography finds another precedent in the works of Eadweard Muybridge and Etienne-Jules Marey who created chronophotographic studies of, amongst other subjects, the human body. Corey Keller notes how in these works Muybridge ‘took (mostly) everyday actions and broke them into fragments of time ... allowing the viewer the opportunity for a lingering look at what was otherwise invisible’ (Keller, 2010, 225). The isolating of this movement reveals the human body’s interconnected working mechanisms; the limbs which connect to joints and how these bend and contort. In this way these studies represent the body as a machine in a manner comparable to the 18th Century anxieties concerning automata, as outlined in Chapter 1. This idea finds resonance again in Chapter 4 when the body is similarly fragmented through motion-capture technology. For the early cinema context, Muybridge’s and Marey’s works are another ‘artifact’ (Rossell, 1998, 5) in this history of the technological uncanny.

These works also provide a reminder that early cinema's moving bodies are the *illusion* of motion. The close juxtaposition of the human body with the mechanical processes of moving photography not only parallels the strange combination of bodies with technology inherent in the figure of the automaton, but the cinema doubles this uncanny potential by rendering its similar effect –making bodies move – an illusion sourced in the mind of the spectator: it must be remembered that the illusion of motion perceived is as a result of the human eye being unable to register the individual frames of a film when projected at a suitable speed. The joke at the heart of *Uncle Josh at the Moving Picture Show* subtly reminds us of this fact. The framing of the tableau permits us to comprehend Uncle Josh's naïve antics but it also forces us to become a double: we are both viewers of moving pictures on the screen *with* Uncle Josh and spectators of the film *of* Uncle Josh. This jarring experience draws overt attention to the nature of spectatorship and what we do when we watch films: as Uncle Josh indicates, the images on the screen are projected at a rate where they appear to move and, together with their photographic realism, thus appear imbued with a large degree of verisimilitude. Uncle Josh's extreme reactions to the moving pictures remind us of a basic fact: the people on screen do not 'move' at all – motion is simply an illusion in the mind of spectator. The contemplation of this ontological truism not only evokes the uncanniness of the photograph in its complex relationship to the index and reality (as explored in Chapter 1), but also illuminates the way in which the *moving* photograph may be manipulated: this is a facet exploited by Méliès in his films.

With these observations in mind, I propose exploring further the relationship between early cinema, the filmic body and the technological uncanny in two, interrelated ways. First, I will investigate instances where uncanny reactions to early

film centred upon the representation of the human body. This approach is not without its difficulties (as shall be elaborated below) but I believe the evidence available for these responses further highlights the importance of moving bodies in early cinema reception. Second, I want to suggest that the relationship between the uncanny and the filmed human body also has a dialectical dimension: there exist examples of early films which appear to actively incorporate many uncanny tropes into their presentation of the body on-screen. This strengthens again the connection between the uncanny and early cinema but also illuminates how filmmakers also sought to emphasise this relationship in their products, suggesting that the strangeness of the new medium was an integral part of its attraction to spectators. I shall explore these ideas again with some of the works from Georges Méliès.

To explore this first point – evidence of uncanny reactions from viewers in direct response to human bodies on-screen – is a complicated task. Like the films of early cinema, documents containing detailed analyses of spectators' reaction to these moving pictures are rare to find. The study of film history suggests there could be several reasons for this. Exhibition practices were so diverse and changed so quickly it would have been difficult to undertake a thorough survey of spectator reactions; the moving pictures, particularly in the earliest days of cinema, would have been only one attraction of several experienced by viewers; and, most significantly of all, no-one in the 1890s could have known how popular this form of visual entertainment would become nor could it have been deduced that 'cinema' – in all its forms – would become such an integral and influential part of future generations' culture and communication. Other writers who have explored the importance of the body on-screen make similar references to the difficulty of collecting such data. Jonathan Auerbach notes that: 'in the absence of any empirical data on reception, I enter more

speculative grounds' (Auerbach, 2007, 12). Similarly, in her exploration of the bodies represented in the Lumière actualities, Cynthia Baron recognises 'the perils of discussing historical reception in the absence of direct or even anecdotal evidence' (2001, 170). Jack T. Munsey also researches specific responses in the early cinema period and notes that such texts are elusive, remaining 'unindexed, buried in out-of-the-way places' (Munsey, 1964/5, 96).

However the contextual evidence I have collected shows how the technological uncanny becomes a useful way to characterise the response to early cinema. One of these is Maxim Gorky's personal account of watching the Lumière's *Cinématographe* in 1896 where he describes the experience as a 'Kingdom of Shadows', writing:

It is not life but its shadow, it is not motion but its soundless spectre ... As you gaze at it, you see carriages, buildings and people in various poses, all frozen into immobility. All this is in grey, and the sky above is also grey – you anticipate nothing new in this all too familiar scene, for you have seen pictures of Paris streets more than once. But suddenly a strange flicker passes through the screen and the picture stirs to life. Carriages coming from somewhere in the perspective of the picture are moving straight at you, into the darkness in which you sit ... All this moves, teems with life and, upon approaching the edge of the screen, vanishes somewhere beyond it (Gorky, 1896).

It is important to note how, as detailed here, Lumière presentations often began with the projection of a *still* image before working the projector to make this picture 'move' – a fact too often forgotten, Gunning notes, by cinema history (Gunning, 1995a). This fact, as expressed in Gorky's experience of events, emphasises again the uncanniness of the cinematic experience: the technology is based on a familiar sight, the still photograph, but imbues this 'homely' product with strangeness, as the

lifeless bodies in the picture begin to move – an ability exclusively inherent to living creatures. This then extends the uncanny potential of Marey's and Muybridge's still images of the human body: like an automaton, this mechanical body is now given the ability to become animated. Importantly as Gorky watches the screen stirring 'to life' human bodies are an integral part of the image he sees, rather than just a steaming locomotive or waves crashing onto rocks. Gorky's account is particularly interesting because he acknowledges the potential of the moving image to induce an experience akin to the 'train effect'. He writes that the moving transportation featured in the picture (on this occasion carriages) are 'moving straight at you, into the darkness in which you sit'. His words imply a threat, as though the forward trajectory of the carriages may break free from the confines of the screen at any moment. Yet in what comes closer to an experience of the uncanny rather than the fear of physical injury, Gorky notes how these lively images simply vanish 'somewhere beyond' the screen: as convincingly as the cinema can grant life, it can also make this life disappear or, at least, as Gorky eerily suggests, this life has just disappeared from our window into the scene (the screen).

Gorky's implication that the life on screen may continue to 'live' on, somewhere beyond our vision, ties in well with his assertion that the moving pictures are 'not life but its shadow, it is not motion but its soundless spectre'. The emphasis Gorky places upon the greyness of the image is a reminder of the critical approach needed to investigate the 'train effect': most viewers could not have believed their senses were fooled into experiencing film as 'real' because the moving pictures were so *un-real* (black and white and silent). Instead it is the acknowledgement that this is a recording of life which has the *potential* to affect the viewer and the *potential* to transform corporeal bodies into life-like but insubstantial spectres which is at the

heart of Gorky's uncanny experience of the on-screen images. Lisa Bode notes that the 'lack' Gorky observes here 'lies in tension with a plenitude of movement and its implications of life' (Bode, 2006, 174); the bodies on-screen are a slippage between the excess of movement – photographs do not usually move – but an absence of life. Gorky's words are infused with the *idea* of the index: that the images are clearly related to the real world, maintaining an essence or trace of this street and these people when they were recorded. But these bodies are now inevitably transformed by their capture on film and re-animation on-screen; they are made mechanical. The filmic body is uncanny because it is liminal: existing in a place between life and death, animation and stillness. As Gorky's reflections reveal, this liminality is evident by the way the bodies seem to move and exist both on the screen but also somewhere else beyond it.

It is interesting that Gorky should use the term 'spectre' as other spectators compared the experience of watching moving images to the ethereal or the otherworldly. The Cincinnati Enquirer quoted in the Introduction also used the term, calling the filmic body the 'playful specter of the night' (Anon. 1896s). There is another slippage here: the living of the day become ghostly under the fall of darkness. One can read this metaphorically as the darkness of the early cinema show. Henri Clouzot also comments on the strangeness of this darkness and compares the experience of moving images to Spiritualism where the 'cinematograph gives its séances' and the pictures start to move when the machine operates and 'the Incantation begins.' It is then that the 'image comes alive' (Clouzot, 1896). This is not to say that spectators mistook the illusion of moving bodies for actual ghosts or that the technology was conflated with practices such as séances: as Solomon noted earlier, early cinema largely distinguished itself against such traditions and became

‘an anti-Spiritualist medium’ (Solomon, 2010, 11). Rather the comparison by Clouzot, Gorky and the journalist correlate with the mode of spectatorship outlined by Gunning and North. These audiences are addressed not as viewers to be fooled by the moving images but, like the audience of a magic show, to actively engage in contemplating the nature of the illusion presented before them. This is evident by the fact that the technology behind the illusion is not hidden: indeed, Gorky *sees* the still photograph become animate and Clouzot *hears* the whirring of the projector²⁵. This is an experience of the *technological* uncanny: a feeling of estrangement which demands contemplation but this reassessment of the world is forced by the workings of a machine specifically. The observation extends to the bodies presented: the apparent vitality of life coinciding with a visual *lack* (no sound or colour) draws attention to these bodies as mechanical. Indeed, Gorky’s description of this experience is reminiscent of Nathaniel’s description of Clara in *The Sandman* as a ‘lifeless accursed automaton!’ (Hoffmann, 1816, 106).

Comparing the accounts of early film experiences itself becomes uncanny as these reactions encompass the positive and negative forces I identified earlier as a useful description of uncanniness in the term ‘attraction.’ Taken together these accounts are liminal, slipping on the borders between extreme physical reactions (like the minority who responded to the ‘train effect’), the ghostly experience of Gorky’s, and the pleasure for other viewers in seeing life made mechanical and doubled for the cinema screen. In these latter accounts the filmic bodies are not described as ghosts or machine-like; rather, it is the technology of the machine which is made more lifelike by the inclusion of the recorded bodies. The description of *Sheffield & Rotherham Independent* account outlined in the Introduction is a good example of

²⁵ The visibility of the projector is depicted in the second of the ‘train myth’ scenes in *Hugo* (2011) and this feature is explored in Chapter 5.

this. Like Gorky, this writer also comments on the dynamics of the screen but on this occasion the sheet bursts with movement and ‘the illusion is so complete that you appear to be looking through a window at something actually occurring in the next street’ (Anon, 1896c). As has been stressed throughout this chapter, this is not to say that the film is mistaken for real life, as Uncle Josh dramatizes; the points raised above ensure against this. Rather, it is the reflection upon the film’s ontological properties and its relationship to the bodies it records which is the primary attraction and the source of its uncanniness. Here the bodies which are described (a boy on a bicycle, train passengers and porters) help to give vitality to the pictures which are ‘thrown’ onto the screen. As Gorky reminds us, the sight of the projected photograph alone is not new or unfamiliar; this familiarity is made strange by the inclusion of movement. For the *Sheffield & Rotherham Independent* reporter, the screen acts as a window framing real life; for Gorky this screen becomes a portal into a netherworld.

Other writers also comment on how the technology is imbued with life. One commentator notes:

It is a wonderful reproduction of scenes with movement. The photographs are transferred to a large screen by means of a modification of the optical lantern, and as the audiences see it, living figures and objects are shown in motion on the screen as in real life (Anon, 1896h).

In these instances the human bodies on-screen operate to emphasise the illusion of ‘livingness’ enabled by the new technology and this evidently formed a key attraction for early cinema spectators. Other writers also noted how the projected people were ‘in a sense of actuality, of realist’ in appearance (Anon, 1905d) and another claims ‘the cinematograph pictures are more realistic than ever’ (Anon, 1902a). *The Sheffield Daily Telegraph* writes: ‘This is an invention of Messrs. A.

and L. Lumière, and it is said that by its means a real scene of life and movement can be reproduced before an assemblage of spectators, in a moving, animated, and life-size picture' (Anon, 1896b). In these examples science has achieved the creation of life: Gaby Wood's reference to 'technological Frankensteins' (Wood, 2002, 160) which opened this chapter is an apt analogy. More specifically, I argue that the attraction and uncanniness of these projected, living bodies also resides in the longer tradition of 18th Century entertainments, and particularly the automaton. Just as Vaucanson endowed his clockwork creations with a form of life through air and skin (and planned for this to include blood), so too are the *Cinematographe* and *Bioscope* projectors described by these spectators as having 'life' and realism by capturing and recording these pro-filmic moving, living bodies. Indeed, this distinction is present in how these films were eventually referred to as 'living pictures'; for example *The Observer* describes the 'novelty' of 'living pictures' showcased at The Empire (Anon, 1900e). In my research into European and US press articles from this time, the term 'living pictures' is still used in the mid-1890s to refer to *tableaux vivants* – living models who would pose stationary depicting various scenes – even after cinematic technologies had been debuted²⁶. It was in the late 1890s and into the start of the new century that the term evidently changes in meaning to refer exclusively to filmic technologies (as in *The Observer* example). This shift is illuminating as an inverse is revealed: inanimate living people now become animate mechanical bodies.

The idea of the index seeps into these reflections: the impression of life so vividly described by Barthes in the last chapter is now animated and there is a blurring of boundaries in these commentaries between the illusion on-screen and the living body

²⁶ The tradition of *tableaux vivants* provide a striking contrast to other entertainment which focussed on frozen bodies, such as the popularity of the displayed corpses in the Paris Morgue (Schwartz, 1995) and waxworks (Warner, 2006); in these cases the inanimate bodies were non-living or deceased.

depicted. *The Dover Express* reflects this when describing: ‘the well-known cinematograph, or apparatus for producing “living photographs,” that is to say, photographic images endowed with movement and apparently with life’ (Anon, 1896q). Notably, this effect is described as ‘living photographs’; the double created through pictorial technologies of old are now ‘living’ doppelgängers produced by new technologies. Early cinema technology extends Barthes’s idea that a photograph creates ‘a sort of umbilical cord that links the body of the photographed thing to my gaze’ (1980, 80-1). This is apparent as some writers muse upon how the technology may be used to capture and send themselves ‘photographed in motion’ to family and friends to provide a direct link between distant persons (Anon, 1902b). This uncanny collapsing of time and space also includes life and death, as commentaries also muse how the mechanical life of these moving pictures will preserve the filmic body long after the physical person has perished. History itself can be re-animated:

Many peers and peeresses are having living pictures taken of themselves in their robes, to provide their descendants with such heirlooms as no family has yet been able to possess. We can hand down to posterity not only the robes but even the deportment of the witnesses of King Edward’s Coronation (Anon, 1902c).

What priceless treasures some of the ancient events would be if they had been recorded as living pictures! The history of to-day will be equally valuable if handed down for future generations to witness. No matter how good the ordinary photo or picture, it lacks the action which impresses itself on the mind (Anon, 1905a, 1).

These responses from the early cinema period show spectators reflecting upon the ontology of the medium, utilising the language of the uncanny (doubling, haunting, mechanical life) in order to conceptualise this experience. Some writers contemplate further on this experience, using terminology which correlates to the uncanny; these

are terms which are more nuanced than the descriptions of the ‘train effect’ analysed earlier. Rather these words echo the technological uncanny as described earlier: a tension between the uneasy and the attractive; disquiet and pleasure. *The Manchester Guardian* describes the moving pictures as ‘striking’ (Anon, 1897d) and *The Observer* agrees, noting the technology to have a ‘striking ... stirring effect’ (Anon, 1900b). On another occasion the latter newspaper writes of the: ‘mysteriously appearing and disappearing living pictures which are intended to puzzle as well as delight their spectators’ (Anon, 1900e). These viewers are disconcerted, surprised and *startled* by what they see. This latter word is highly significant as it occurs several times in accounts from this time. *The Morning Post* notes how the Lumière films offer a ‘startling contrast’ in their representation of different views (Anon, 1896d). Similarly, *The Times* also promotes the *Cinématographe’s* ‘New and Startling Pictures’ (Anon, 1896g), as does *The Observer* with ‘startling living photographs’ (Anon, 1897j). The *Belfast News-Letter* advertises:

The Great, The Original, and The Only Lumière Cinématographe:
Marvellous, *Startling*, Amazing, Astounding, Must be Seen to be Believed!
Living People From all Parts. (Anon, 1896t, my emphasis).

The Cheshire Observer writes that the:

... animated photographs thrown on the sheet are perfect in every detail ... while there are others all more or less of a startling nature, startling in their realistic representation (Anon, 1897a).

The *Daily News* advertises the attractions at the Egyptian Hall including:

A brilliant programme of startling novelties, including the finest display of Animated Photographs ever exhibited (Anon, 1897g).

The *Freeman’s Journal and Daily Commercial Advertiser* runs a similar advertisement for forthcoming events:

There is a great treat in store for those who intend to witness the Cinématographe living pictures taken from real life ... He [the MC of the events] has some startling revelations to bring before the audience, and will show about sixty photographs from life (Anon, 1898d).

The frequency with which ‘startle’ was used by contemporary reporters in their description or advertisement of moving pictures indicates the ubiquitous nature of this uncanny experience of early cinema. Contextualised within the technological uncanny, these responses are comparable to Barthes’s description of photography’s ‘*punctum*’ outlined in Chapter 1; the startling effect of viewing a photographed body which draws attention to the nature of the image’s ontology (Barthes, 1980, 80-1). This uncanniness of the moving image was also evidently exploited – and enhanced – by filmmakers. The Edison films described earlier provide an intense focus on the mechanics of human movement; the attraction here is physical motion of everyday bodies. Such a spectacle builds upon the work of Muybridge and Marey, and Laurent Guido notes how this is also expressed in the early dance film which ‘would position spectators under an irresistible rhythmic spell’ (Guido, 2006, 139). Tom Gunning notes how the use of direct looks in these films is emblematic of his cinema of attractions model. The bodies on-screen gazing into the lens and out to the viewer beyond represents how ‘this is a cinema that displays its visibility, willing to rupture a self-enclosed fictional world for a chance to solicit the attention of the spectator’ (Gunning, 1986, 382). Judith Buchanan comments how early trick films used their visual effects on the destruction and reconstruction of the human body, as can be seen in *Explosion of a Motor Car* (1900). Buchanan writes:

It was fully evident to all that the action of such ‘trick films’ could not really have happened in the real world as presented in the cinematic one, but the films traded on the medium’s reputation for veracity to savour their own

mischievous betrayal of the very ‘photographic truth’ that the actuality films of the period were simultaneously promoting’ (Buchanan, 2009, 273).

This ‘betrayal’ of ‘photographic truth’ also extends to the ‘truth’ on how such an effect is achieved. An article in *Illustrated London News* vividly depicts how the French version of this popular trick film subject matter was made thereby drawing attention once again to how these moving pictures are mediated and thus ripe for manipulation (Anon, 1908a; Figure 8). Jonathan Auerbach argues how Edison explores this possibility in his strange commingling of life, death and the *performance* of life and death in his films on McKinley. As noted in the Introduction, McKinley’s moving body was a key attraction although the President’s death became just as popular when Edison filmed the state funeral. Interestingly, Edison was unable to film the execution of the man convicted of McKinley’s assassination and so the filmmaker recorded a re-enactment outside the real prison. These three films together reveal the slippages between the living and the deceased, the real and the artificial made possible by moving picture technology. Auerbach describes the effect in equally uncanny terms:

Passing from life to death, the figure on the screen goes from motion to frozen stillness ... thereby reversing the normal animating process by which the cinema works its magic. This reversal is all the more unsettling in that the electricity throughout the nineteenth century was typically regarded as the very medium of animation (think of *Frankenstein*): the body’s nervous life force, not the harbinger of death. Such an arresting process of physical disembodiment thus foregrounds the kind of disembodied immediacy that we see in other early filmed historical reenactments (Auerbach, 2007, 40).

In these instances the technological uncanniness of early cinema’s bodies is stressed even further by filmmakers who actively draw attention towards the mechanical nature of this life. The language of the uncanny used by commentators in their

experience of early cinema is translated into the representation of the filmic body on behalf of filmmakers. These films demonstrate once again the cultural currency of the uncanny and its tropes. It is this dialectic dimension between filmmaker and viewer, the filmic body and the cinematic experience which I explore further in the concluding section on Georges Méliès's early films which feature 'mobile, capricious convulsive' and 'hysterical' bodies that 'presented audiences with images of such morphic variability' (Baron, 2001, 170-1).

The Body in the Early Films of Georges Méliès

THE MYSTERIOUS KNIGHT. A Scene in a Castle, commencing with the conjuror drawing the head of a Knight on a blackboard with chalk. He takes this head and places same on a bottle, afterwards impaling same on a sword, the head constantly turning, laughing, and talking to him. Other novel tricks, entirely new to Cinématography, such as Dissolving, &c., are depicted, making in all one of the most interesting and startling subject ever produced by Mons. Méliès. (Anon, 1900a)

The above extract details the synopsis of a trick film, *The Mysterious Knight*, made by Georges Méliès in 1899. Crucially, this advertisement describes the film as 'startling': as has been detailed above, evidence from other newspapers about other films – particular the Lumière actualities – often describe the features as 'startling'. The link between the uncanniness of the cinematic medium and its representation of the moving human body has been established. However the 'startling' nature of Méliès's films is of a different order. As the above advert for *The Mysterious Knight* indicates, in Méliès's films bodies are suddenly malleable and unpredictable. It is the purpose of this section to consider the ways in which these bodies are presented (and re-presented) to the viewer in Méliès's early work and how this links to the theories of the technological uncanny in early cinema discussed so far. In doing so I will

reveal that these early works engage with the uncanniness of the human form on-screen in four ways: by extending the conventions of magic theatre into the cinematic medium; by using specifically filmic techniques – beyond the traditions of the stage – in the establishment of the trick shots; by reflecting upon the new moving picture technology in films without trick shots; and by establishing narratives which draw attention to the act of spectatorship. Méliès's work therefore brings together the points discussed above, demonstrating once again how early films actively incorporate these themes and uncanny tropes into their imagery, thereby stressing once again the centrality of the body in early cinema.

Georges Méliès was born in 1861 in Paris and developed a talent for puppetry and art whilst at boarding school. He wanted to become a professional painter but, at the insistence of his father, instead trained in the family business of shoe manufacturing. Méliès spent some time in London in 1884 for this business and, whilst there, experienced many of the illusions on display on-stage at the Egyptian Hall. This initiated Méliès's interest in magic, which culminated in him purchasing the Théâtre Robert-Houdin in 1888²⁷. It was there that Méliès would manage and perform on-stage until 1915, when financial difficulties eventually forced him to sell the theatre. The Théâtre Robert-Houdin would also provide the blueprint for Méliès's purpose-built film studio in 1897: Méliès built the film studio to the same size and dimensions as his theatre. He constructed this studio after first viewing – and becoming fascinated with – the Lumière's moving pictures in 1895. It was at this time that Méliès began his parallel career in film production, direction, editing and performance, creating over 500 films. The combined influence of the magic show

²⁷ Melies's purchase of the theatre could also be viewed as another 'artifact' (Rossell) in this history of the technological uncanny: Melies also inherited and displayed automata which functioned as fellow attractions alongside his magic shows and, later, moving pictures.

and the *Cinématographe* in Méliès's life therefore stresses that these two facets must be considered together, in dialogue, in Méliès's works. As André Gaudreault notes: 'Méliès was, *first and foremost*, magician, and he was a magician even when he was, and at the same time as he was, a kinematographer' (Gaudreault, 2007, 32).

It is for this reason that Gaudreault, along with other historians (North, 2008; Solomon 2010), emphasise the importance of acknowledging the conventions of the magic theatre which Méliès used in his films. A good example of this is *The Vanishing Lady* (1896). The film begins with Méliès entering a stage from screen right and taking a bow towards the camera. Already the film establishes the conventions of a magic show. We are viewing a theatrical stage – indeed it is space closely modelled on the real stage in the Théâtre Robert-Houdin – and Méliès is dressed in formal attire signifying he shall be the performer. Audiences familiar with Méliès's other work at the time would also recognise (and thus expect) that he will perform as a magician. The bow to the camera follows the same routine expected from a stage act where the magician would usually perform in front of a live audience. Here the spectator is implied but the direct address to the camera anticipates the eventual film's exhibition to a similar audience. Méliès continues his performance as though his audience were already present: directing all of his actions towards the front of the stage (and the camera). Méliès brings a female assistant on-stage, shows us a 'normal' chair, and has the helper sit down. When Méliès proceeds to cover the woman with a large cloth the contemporary spectators would know the order of events to come: the cloth will be removed to reveal the woman has disappeared and Méliès the magician shall make her reappear for the act's finale.

The 'Vanishing Lady' trick was a popular 19th Century act and Elizabeth Ezra notes that Méliès probably would have seen it performed during his time in London (Ezra,

2000, 8). Méliès's transference of the trick to the screen could be classified under Gunning's cinema of attractions and I think two exemplary features in *The Vanishing Lady* demonstrate this. The first is the direct address to the camera, which emphasises the importance of the spectator's involvement. In this way the film correlates to other gazes into the camera which aim to 'solicit the attention of the spectator' (Gunning, 1986, 382). This look is deliberate and purposefully implicates the viewers' in the spectacle shown on-screen. Yet the look is equally an example of the 'dialogic quality of illusory practice' (North, 2008, 13) which encourages the magician/filmmaker's audience to actively engage in the experience and contemplation of the spectacular trick. The second feature is the 'magic' itself: the trick shot used to make the woman disappear and then later reappear. This effect is produced by stopping the camera at the required point, re-arranging the mise-en-scène or performers as necessary, and then starting the recording again with the slightly modified view. The transition from one frame to another in a trick shot is synthesised in the editing room, although the scene appears to be shot in a single take when projected back onto the screen. The presence of the trick shot to complete the magic act – which, in the theatre, would be performed using stage props – emphasises the ability of the camera to 'show something' (Gunning, 1986, 382, original emphasis): moving pictures can perform novel but familiar acts for the amusement of theatre-experienced audiences.

But Méliès does more than simply record a familiar magic act with a camera. The use of the trick shot to achieve the necessary disappearance of the woman – rather than using any theatrical devices – already points to the distinctly *cinematic* nature of the film. It is also relevant that Méliès does not simply follow the disappear-reappear formula of the Vanishing Lady act commonly found on the stage: Méliès adds

another, exclusively filmic, touch. When the cloth is removed from the chair and it is revealed the woman has disappeared, Méliès the magician waves his arms expectantly through the air to make the woman reappear but, importantly, without the aid of the cloth. As his arms exert his 'magical powers' over the chair, another trick shot makes a skeleton appear suddenly (Figure 9). Disappointed at this result, Méliès then uses the cloth to make the original woman appear in complete form and both take a bow to signal the end of the show. The appearance of the skeleton suggests that, whilst it is important to acknowledge Méliès's theatrical background, this should not mitigate his inventiveness as a filmmaker. It is for these reasons that Gaudreault advocates an analysis of Méliès which emphasises his work's 'trickality': narrative and theatricality are important influences but these should come second to Méliès's adept mastering of cinematic effects (Gaudreault, 1987). Frank Kessler emphasises a similar point, noting that Méliès's address to the audience was not simply as a magician within the traditions of magic theatre but as a filmmaker 'so that he could create new illusions that allowed him to play with the, literally, phenomenal difference between the stage and the screen' (Kessler, 2012, 44). It is also significant that in this instance this 'trickality' should involve the substitution of a live human body with a skeleton. Aptly tying in with the reports of early cinema's 'startling' effects and Gorky's admission that moving pictures create 'spectres', Méliès's cinematic re-working of a traditional theatre trick reveals this 'phenomenal difference': the filmed human is a body made mechanical, a mediated presence of real life liable to manipulation. Early cinema's animated photographs can bring life (movement) and death (stillness) to the human body on-screen.

There are other films from Méliès's early work which also make this explicit reference to death and the decay of the human body. In *The Haunted Castle* (1897), a

series of ghosts and apparitions torment a wealthy gentleman. Beginning with the strange movement of inanimate objects, a strange ghost-like figure appears and, frightened, the gentleman draws his sword. As he lunges the spectre turns into a skeleton and then into an armoured knight (Figure 10). The trick shots utilised in this film are not in the service of an existing theatrical act as with *The Vanishing Lady*: here the cinematic effects serve their own narrative purpose, namely the portrayal of a haunted castle. Removing the familiarity associated with a common theatre trick – and thus the expectation for what will happen – *The Haunted Castle* further emphasises the potential uncanny experience inherent in these films as viewers shockingly discover the insubstantial nature of the filmic body. Ghosts in human forms can appear and transform into skeletons which can then become human again. *The Magician's Cavern* (1901) also features this skeleton trope. In this film the skeleton is prominent in the mise-en-scène from the start, hanging – lifeless – towards screen-left. In a reversal of *The Vanishing Lady* act, the magician places the skeleton on a chair and ‘magically’ makes it transform into the body of a living woman who stands and bows to the camera. Just like the films discussed previously, here the tension between the living and the dead – implicit in the cinematic medium itself – is played out for comedic effect.

Yet even those pro-filmic living bodies which appear stable are rendered unreliable like the spectres of *The Haunted Castle*. After the transformation of the skeleton into a woman in *The Magician's Cavern*, the fact this female performer takes a bow would perhaps suggest this to be the end of the trick (as it was in *The Vanishing Lady* and usually is in stage magic traditions). But the magician then makes this living woman morph into the image of a *different* woman, who is then later converted back into skeletal form. This de-stabilising of the human body through

cinematic effects is extended in the film described at the opening of this section: *The Mysterious Knight*. In this film the attraction resides in a series of trick shots which show a human head magically transported onto various implements within the scene's mise-en-scène. The novelty of the film's ability to 'show something' is emphasised again with reference to theatre traditions: as the head is placed on the first object, a bottle, Méliès as the magician and knight gestures to the camera and crawls underneath the table to show no hidden device or apparatus is present. As the advertisement at the beginning details, the 'startling' aspect of this film is the fact the disembodied head is 'constantly turning, laughing, and talking' with Méliès whilst it is impaled on a sword (Figure 11). The strangeness of the filmed body is thus illuminated by a body (or body part) which continues to act 'naturally' under the most unnatural of circumstances.

The Mysterious Knight also extends the self-reflexive comment on the uncanniness of cinema gestured towards by the presence of skeletons in other Méliès films. This film creatively parodies the processes of illusion behind moving picture technology. *The Mysterious Knight* begins with Méliès drawing a head upon a blackboard: this head is magically rendered three-dimensional and alive. This reflects the processes behind cinema: pictures are 'animated' to create the illusion of movement and life. Méliès the magical knight – and filmmaker – can give this picture life but he can also render the pro-filmic human body unstable and unpredictable. Interestingly, after the trick shots of the disembodied head, Méliès normalises this appendage by giving it a body. This body is subject to the vanishing and appearing acts featured in the other films but it remains un-abused and complete for the duration of the middle-part of the film. Quite aptly, it is towards the end of the film when Méliès removes this head from its body again and transforms it back into a chalk drawing which is then rubbed

out: as Gorky poignantly notes, life in film disappears ‘somewhere beyond’ the screen and, in this case, also beyond a blackboard. Melies exploits film’s capacity for these illusions which would be impossible to perform on stage and, importantly, the medium’s photographic basis still allows the trick to appear realistic. As North notes:

The exploitation of technological developments and apparatus by magicians made them well placed to appreciate the spectacular potential of moving pictures, but more importantly, illusory films offer a response to questions of film’s capacity for verisimilar reproduction of the scene before the lens’ (North, 2007, 176).

All of the Méliès films analysed so far make extensive use of these ‘technological developments’ and the ‘spectacular potential’ of cinema, in particular with the use of the trick shot. Despite Méliès’s claim to the contrary, it is unlikely that he accidentally discovered this effect or that he was the first to use it (Méliès, 1907). An Edison film from 1895, *The Execution of Mary, Queen of Scots*, is probably one of the first to use such an effect. In this film the condemned monarch is shown kneeling over the execution block, adjacent to the camera. As the axe is raised and dropped to strike her neck, a trick shot substitutes the actress for a dummy which is decapitated in her place. The ‘head’ is then lifted towards the camera. The trick shot in this film is used for substitution purposes and is thus not designed to draw attention to itself as a trick: the effect should make it appear as though the living human body has been beheaded ‘live’ on screen. This slippage between life and death, the pro-filmic ‘real’ body and the fabricated executed body is reminiscent of Auerbach’s analysis of the McKinley assassination and the reconstructed execution of the perpetrator. Méliès therefore takes the transformative abilities of the trick shot and uses this for fantastical purposes. Or, more specifically, the effect is used in elaborate fictional settings but with the purpose of drawing the viewer’s attention towards this form of

mediation. For example, Méliès also makes use of an axe in *The Famous Box Trick* (1898) but does so to mysteriously separate (or ‘cut’) one boy into two: this spectacular use of the prop thus signals the film’s preoccupation with a cinema of attractions mode which, I argue, can be contextualised historically within the traditions of the technological uncanny.

Any analysis of Méliès’s work must be careful not to suggest that the trick shot and creation of fantastical events are the only traits present in his films. Indeed, Ezra’s re-evaluation of the filmmaker seeks to undermine the common ‘myth’ that ‘Méliès made primarily fairy tales and fantasies’ (Ezra, 2000, 149). As Ezra’s work demonstrates, Méliès also filmed actualities and reconstructions which are comparable to those made by other contemporaries, including Edison and the Lumières. Ezra cites the series of political films made by Méliès depicting the Dreyfus case and scandal as a key example but there are others. An early Méliès film, *Card Party* (1896), appears to be an actuality closely based on the Lumière film *Playing Cards* as it is also a tableau of a scenic afternoon and it features a direct look at the camera. A waitress appears from screen left to pour drinks for the gentlemen sitting in the centre of the screen and, after performing her task, she appears to glance periodically and nervously towards the camera. She exits the scene briefly before returning with a tray and lingering to hear the humorous story recited from the newspaper by Méliès. Méliès and the other men laugh, as does the waitress, but she directs her amusement towards the spectator as she looks directly at the camera, rather than maintaining the internal logic of the film’s diegesis.

In this way Méliès’s work also features a ‘rupture’ (Gunning, 1986, 382) drawing the viewer’s attention to the medium’s uncanny ontology and this is again signalled through the representation of the body but, this time, without the aid of a trick shot.

Another actuality made by Méliès – *After the Ball* (1897) – also features a direct look to the camera which forces a re-evaluation upon the nature of the cinematic image and its viewing. In this example the look comes as quite a shock with the apparent intent to startle the viewer. A wealthy woman arrives home to her boudoir and begins to undress with the help of her maid. This undressing continues until the woman is almost nude and then stands in a bath tub for her maid to help her bathe. Gunning writes that films which feature such stripteases are another common theme within the ‘cinema of attractions’ phase and the voyeuristic pleasure of such displays is usually acknowledged by a knowing look to the camera. This look occurs in *After the Ball* but, significantly, it does not come from the wealthy, undressed woman. After the latter has bathed she exits the scene at screen-left. The maid lingers to collect her clothes and, whilst doing so, turns to look directly at the camera before also exiting screen-left (Figure 12). The way this direct look comes from the maid, rather than agent of the striptease, only works to emphasise the voyeuristic nature of the scene and provides an explicit notification of this fact to the viewer. The maid, like the spectator, has watched these events and forces the audience to acknowledge her/his own viewing habits – habits enabled by the strange experience of the cinematic image. Therefore in a film where the main ‘attraction’ is the portrayal of a realistic, nearly-nude human body, Méliès still highlights the disruptive nature of this representation.

Other Méliès films which use trick shots or fantastic settings still feature this unsettling message, alerting the viewer to the strangeness of the moving image, but do so through narrative devices. Another ‘myth’ Ezra seeks to correct is the assumption ‘Méliès’s work is largely devoid of narrative structure’ (Ezra, 2000, 150). This view stems from Gunning’s cinema of attractions model in which

‘theatrical display dominates over narrative absorption’ (Gunning, 1986, 384). Ezra insists this is not the case:

Even Méliès’s shortest films, while undeniably full of exhibitionist spectacle, also contain a strong narrative component. As in other films, attractions and narration interact to form a complex and internally heterogeneous semiotic universe (150).

Charles Musser’s work complements Ezra’s ideas as he too seeks to reinsert ‘narrativity’ alongside the attraction elements, commenting on how both could exist not only in the same film, but even in the same moments of a film (Musser, 1994, 396). Musser develops these ideas to propose an alternative theorising of early cinema spectatorship with the notions of a ‘cinema of contemplation’ and a ‘cinema of discernment in which spectators engage in intellectually active processes of comparison and judgement’ and thereby reaffirm the ‘importance of narrative’ (Musser, 2006, 160). Accounts from the time support Musser’s assertions; even though some writers find Méliès’s work ‘startling’, as noted above, other authors’ comments draw attention to the fact such effects are used for narrative purposes. A description of *The Impossible Voyage* (1904) (also known as *Whirling of the Worlds*) describes the film not as a list of its effects but as the trips taken as part of the film’s depicted journey:

Quite a feature was that set entitled "Whirling of the Worlds," which is characterised as "the rage of London." It is at the same time interesting, entertaining, and mirth-provoking, including a trip to the sun by train, motor car, and flying machine, returning by submarine (Anon, 1905c).

Similarly, *A Trip To The Moon* (1902) (also known as *A Fantastical Trip to the Moon*) is contextualised within literary traditions:

An amusing demonstration of "trick" photography is afforded by a series of thirty tableaux, entitled "A Fantastical Trip to the Moon," conducted more upon the lines of Jules Verne than of Messrs. Cook (Anon, 1902d).

I think the technological uncanny offers another option in how to marry Méliès's trick films with their narrative potential and, more broadly, how one can then analyse the body in early cinema. Méliès's films do indeed contain narrative elements but I believe we can read these elements allegorically as well. Even in Méliès's films where a series of events are presented within a linear narrative progression – as in *The Impossible Voyage* – the fact remains that these films present the moving picture medium itself as a spectacular attraction. The presence of visual effects (like the trick shot) emphasise the visual impact in contemplating this ontological fact but the uncanny potentiality *is already present*. This is evident in the reactions of the uncanny detailed above which relate to a broad range of films and visual styles (the trick film, the dance film, the direct look, etc.). The constant here is the depiction of the human body: the uncanny pleasure in viewing and contemplating the nature of real life made mechanical, and the mechanical made more life-like through the projection of photographically realistic bodies. Indeed, even in a film like *The Impossible Voyage* which seems to appeal more to 'narrativity' (Musser, 1994, 396) than the trick films described above, the representation of events can still 'startle' the viewer because of the exhibitionism of this cinema of attractions. This reaction causes the viewer to contemplate the nature of the technology behind the illusion. As a writer for *The Evening Standard* notes in relation to *The Impossible Voyage* observes:

It is so cleverly done that many people are deceived into believing that at least some portions of it are "genuine," though, as a matter of fact, it is nothing but skilled deception (Anon, 1904b).

I argue that Méliès's films do indeed feature a narrative but this is the much larger and historically contextualised story of the technological uncanny. Méliès's films are fascinating because they incorporate many of the popular themes and techniques used by his contemporaries but these are regularly and explicitly related to the depiction and mutilation of the filmic body. This body, and its relationship to the uncanny, finds a precedent in the 18th Century contexts outlined in Chapter 1. Méliès's portrayal of bodies which are sometimes stable, often manipulated and regularly doubled tell the story of how the body has traditionally intersected with technology and how this convergence evokes an experience of the uncanny. This is a narrative which is conveyed through: a mode of spectatorship which draws attention to the visual effects of moving image technology; an experience of those images which forces contemplation upon the ontology of this technology which, in the case of photography, evokes the idea of the index; the language of the uncanny used in these written accounts; and how this language is translated onto the screen through the alignment of the body with additional uncanny tropes, such as doubles, dummies and skeletons.

Therefore, in addition to the effects, theatrical traditions and actualities which destabilise the filmed human body, Méliès's construction of narrative also incorporates these uncanny tropes in reference to the larger 'narrative' of the technological uncanny. To contextualise Méliès's work in this way is not to mitigate Méliès's contribution to the visual effects of early cinema, or to ignore the importance of early cinema itself as a turning point in moving picture technology which offered a unique viewing experience for spectators. Indeed, this latter point can also be read as a form narrative in Méliès's work. There are several films in Méliès's oeuvre which feature dream sequences and the narrative construction of

these plots follow a similar pattern: a man will be seen going to bed and, as he drifts asleep, strange occurrences will take place courtesy of a series of trick shots. These nightmare apparitions are eventually subsumed and the man may sleep again. In two of these dream narratives – *The Astronomer's Dream* (1898) and *The Rajah's Dream* (1900) – it is significant that within their unconscious states, the sleeping men are punished for attempting to seduce the beautiful women which appear before them. Just like the maid's startling look to the camera in *After the Ball*, these men are taught how these illusory bodies are insubstantial and unattainable – a lesson which can be extended metaphorically to apply to cinema itself.

Yet I think these narratives which depict the subjective experience of dreaming can also be read allegorically as the uncanny experience of viewing moving pictures. In *A Nightmare* (1896) the dreamer's body is transported to a variety of scenes: first a castle with a beautiful woman who then transforms into a dancing devil and then into a clown. As has been seen throughout the Méliès films analysed, these transient bodies often transform at will and without warning – with or without the authorial presence of the magician. Some bodies on-screen may appear realistic – and it is significant that in this film the dreamer's body remains whole, unpunished and not transformed by tricks – but these 'safe' bodies are still exposed to impossible and fantastical surroundings: in *A Nightmare* the man reaches towards the distant moon only for it to suddenly grown in size, anthropomorphised, and bite his arm. In the context of Méliès's other works, I suggest that in this film the dreaming man can be read metaphorically as the cinema spectator's body: physically untransformed by the events unfolding on screen but startled – and experiencing the uncanny – nonetheless. This reading is emphasised by the fact highlighted earlier that the illusion of moving pictures is a trick of the mind: the eye's inability to see the 'join'

between images projected at speed. The subjective nature of cinematic viewing parallels well with the subjective theme of this narrative: what we view is in the mind of a sleeping man, just as the illusion of the film's movement is in our own mind. In this way Méliès draws the spectator's attention, once again, back towards the novel and uncanny nature of this new technology. Importantly, aligning the dream-world of the protagonist with the viewing experience of a real audience is not to suggest that the opposite is also true: that the 'waking' and 'real' world of the diegesis – or of any 'real' scene depicted on-screen, as with actualities – would thus be experienced with relief by the viewer and without the uncanny. As the research in this chapter has outlined, several of the bodies portrayed within early cinema often evoked an uncanny reaction in the viewer by re-emphasising the strange, startling process of the moving picture technology's illusion. *A Nightmare* poignantly represents this. At the end of the film the man wakes to find himself back in his original surroundings (Figure 13). Expressing his joy at being home, and confirming his eyes do not deceive him, the man pats the surrounding walls with relief. Except this 'reality' is false and there is an illusion at work still: the artificial and obviously painted backdrop accidentally sways beneath his touch. The flimsy movement of this 'artificially arranged scene' (Méliès, 1907) acts as a final reminder that the eyes do deceive: all moving pictures are the experience of an illusion and the uncanny mutability of the real human bodies it depicts is never far away.

In conclusion, this chapter opened outlining the difficulties in analysing this period in film history noting how, for example, 'early cinema' refers to a wide range of films, audiences and exhibition venues. It was also observed how gauging film reception can be difficult and the enduring legend of the 'train effect' poses several challenges in characterising this film response. Without ignoring the specificity of

such experiences, this chapter argues that one can characterise the period through the observation of trends and historically contextualise the films and the reaction of viewers within the traditions of the technological uncanny. The recording and presentation of the human body via mechanical means provided early cinema viewers with an experience which was both new and novel, but also old and familiar. Indeed, if we return to literature this connection between 18th Century contexts, the development of cinema and the technological uncanny is emphasised once again through the representation of the human body. In 1886 – approximately a decade before the *Cinématographe* debut – Villiers de L’Isle-Adam published *Tomorrow’s Eve*, an uneasy story about the (fictional) exploits of (the real) Thomas Edison. Although the book pre-dates early cinema, de L’Isle-Adam comments – through a monologue by Edison – upon the potential of photography to capture and preserve life in a manner comparable to the reactions outlined above. This is because, he notes, of the indexical qualities of the photograph which retains ‘absolute reality’ (de L’Isle-Adam, 1886, 21). In this sense de L’Isle-Adam prophesied the nature of the uncanny reactions in commentaries on early cinema which involved, of course, the work of the real Edison. Moreover, de L’Isle-Adam’s story depicts Edison inventing mechanical life not through moving pictures but by building an automaton: Edison creates the android Hadaly for his friend Lord Ewald when the latter conveys his melancholy at being attracted to the body but not the mind of his love interest. Hadaly is described in terms which encompass the technological uncanny traditions of 18th Century automata and the filmic body in early cinema. Edison writes: ‘Hadaly is in the first place a superlative machine for creating visions, almost a creature in her own right, a stunning likeness’ (84). Chapter 3 will now address how the properties which evoked the uncanny for early cinema spectators have changed –

or not – as film moves into the digital age. The technological uncanny once again influences this conceptualisation; indeed, Hadaly is emblematic of the 21st Century automata which inspired the theory of the ‘uncanny valley’, a term which is also associated with the filmic (and now digital) body on-screen.

Pictures for Chapter Two



Figure 6 - *Uncle Josh at the Moving Picture Show* (1902)



Figure 7 - *The Arrival of a Train at La Ciotat Station* (1895)

THE MAKING OF EXTRAORDINARY LIVING PICTURES :

FRENCH CINEMATOGRAPH FEATS.



The photographs were taken at the **Cinematograph** works of M. G. G. in Paris. They betray the secret of the amazing cinematograph films that are shown in music-halls. The subjects are a comic motor accident in which the victim, when his motorcar runs over a man, an animated cellar-flap and a lamp-post which pursue a runner; the adventures of a man whose head ran about the streets and of a magnetic man who attracted all the iron he came near. The man's wife tried to escape him by giving him an electric belt, with the most comical results.

Figure 8 - *Illustrated London News* (1908)



Figure 9 - *The Vanishing Lady* (1896)



Figure 10 - *The Haunted Castle* (1897)



Figure 11 - *The Mysterious Knight* (1899)



Figure 12 - *After the Ball* (1897)



Figure 13 - *The Nightmare* (1896)

CHAPTER THREE

From Analogue to Digital: The Re-emergence of the Technological Uncanny

Fundamental to this thesis is the analogy I identify between two major points in cinema history: the technological advancements made during the late 19th Century, which together formed 'early cinema', and the move from celluloid to digital (broadly termed as the 'digital age'). Using the theoretical framework – and historically pertinent concept – of the technological uncanny, a comparison of these moments reveals a correlation in the ways spectators have responded to important changes in the medium: specifically, the use of new technologies in the representation of moving bodies on-screen. So far my comparison has considered: the history of the uncanny; its intimate relationship with representations of the mechanised body; and how this intersects with the reception of early cinema, with commentaries from the time utilising uncanny tropes of the double and automata, in a trend that I have termed the employment of the 'language of the uncanny.' Filmmakers such as Méliès engaged dialectically with this public conceptualisation of the new moving image technology, translating this uncanny 'language' into the startling representations of the transformative bodies central to his trick film productions. It remains to investigate how the uncanny influences and impacts the audience reception of contemporary cinematic technologies; specifically, how the technological uncanny has re-emerged as an important theoretical tool in evaluating commentaries by viewers in response to the increasingly visible digitisation of cinema in the late 20th and early 21st Centuries. In order to do this, this chapter will consider what major technological changes have taken place which mark digital cinema as contrasting (or, indeed, similar) to the practices of a century earlier; what are the fundamental differences between digital technologies and their older,

analogue forms; how notions of the uncanny are evident in conceptualisations of this change; and how the technological uncanny is key to these proceedings as the representation of the human body becomes central to these debates.

This chapter shows how conditions for the technological uncanny re-emerge in the digital age of cinema in the 1990s and continue to be relevant in the theorisation of cinematic visual effects technologies. Chapter 4 demonstrates how the technological uncanny becomes a defining feature in the reception of motion-capture films at the beginning of the 21st Century. This chapter outlines the contexts and technological innovations which trace the return and growth of the technological uncanny as an important concept for evaluating audience reception. I first provide an overview of some of the major ways digital technology has impacted filmmaking practices, with a particular emphasis upon what I term the ‘digital age’ of the 1990s. Here, the question of film’s ontology – and specifically its capacity to be indexical – becomes a dominant theme for debate. To help illuminate the complexities of this discussion, I draw on examples of the early digital and animation work of directors James Cameron and Robert Zemeckis: with *Who Framed Roger Rabbit?* (1988) and *Forest Gump* (1994) directed by Zemeckis, and *Titanic* (1997) directed by Cameron. With their own complex ontological make-up, these films encompass some of the key ideas of the index’s renewed relevance in the digital age. The decision to draw on examples of specific films by Cameron and Zemeckis is not arbitrary: both directors harken from a generation of directors ‘obsessed by pure technique and technology’ (Kagan, 2003, 3) and both write, direct and produce some of the highest-grossing box-office successes to date²⁸. In both cases, the films in question are blockbusters

²⁸ To date, *Forrest Gump* ranks at number 79 out of the 100 films with the highest worldwide box office grosses. *Titanic* is at number 2, only second to Cameron’s latest release *Avatar* (2009) (<http://www.boxofficemojo.com/alltime/world/>). The latter is discussed in Chapter 4.

which incorporate – and are promoted for – the promise of spectacular visual effects²⁹. Comparison of Zemeckis’s and Cameron’s work provides a good overview of the development of digital effects technology in Hollywood, although production designer Rick Carter suggests the connection between the two directors is more direct, with a competitive element underpinning Cameron’s and Zemeckis’s own ambitions to be at the forefront of technological innovation. He writes their relationship is on ‘the Lennon-McCartney level. Look how healthy that competition was ... there’s a tremendous awareness of what the other is doing’ (Carter, 2009, 16). Given these shared contexts, it is unsurprising that the works of Zemeckis and Cameron can be easily compared in terms of visual effects and commercial appeal, two traits which are emphasised again in the next chapter.

The comparison also reveals how the complicated relationship between the digital and indexicality is shifted onto another slippage of boundaries: the distinction between live-action and animation. In this framing of the debate, the recurring theme of visual effects in the representation of the human body, as discussed in my investigation into early cinema, materialises again as a central feature. The uncanniness of this merging in the motion-capture films Zemeckis and Cameron direct later is another topic for discussion in Chapter 4. In this chapter I trace the origin of this uncanny by exploring the interactions the new, digital cinematic technologies had upon portrayals of the body a decade earlier. The juxtaposition of the directors’ work reveals how the body is placed at the forefront of the spectacular use of digital effects, reinforcing this connection on narrative and extra-textual

²⁹ The success of *Titanic*, for example, is inextricably linked to its vast special effects and its consequently huge budget. Alexandra Keller notes the link between these aspects and the film’s success: ‘[I]t makes plenty of sense that after the first wave of people went to see what the most expensive film looked like, a whole new wave of spectators went to see what the most profitable film might be like to see’ (Keller, 1999, 133).

levels. These directors' own commentaries on their respective films present us with a complex, even paradoxical, picture of cinema's ontological status in the digital age. As shall be seen, Cameron and Zemeckis present their films as examples of how cinema has *not* altered under the increased use of digital technology and have commented on the need for technology to be 'hidden' (Cameron, 1997; Zemeckis 2003). At the same time, both filmmakers use the spectacle of visual effects as a central attraction showcasing the potential of new technologies on the screen. I argue this complicated conceptualisation responds to a cultural anxiety over where the pro-filmic body (the body present in front of the camera at the time of principal photography) ends, and (digital) animation and visual effects begin. As my investigation so far has shown, this is not a new debate: Méliès's films demonstrate how visual effects can draw attention to the indexical, pro-filmic components of motion-picture technology, whilst simultaneously undermining them with the reminder that all such portrayals are mediated and thus subject to manipulation. Yet the uncanny potential of this juxtaposition comes to light again, and this is similarly indicated by the language used in critical discourse. I will show how there is a resurgence of the language of the uncanny both in academic discourse analysing this change, and the use of the word in popular culture, as indicated by the popularisation of the theory of the 'uncanny valley.' For the former I will look at how representations of the body have found particular resonance with the digital effects used in science-fiction, the creation of multiple bodies, and the portrayal of transformative individual bodies. I will show how these aspects parallel and engage with the theory of the uncanny valley and conclude that this concept – when applied to cinema – can be better understood as a reincarnation and development of the technological uncanny identified in early cinema.

The Digital Age

In Chapter 1, the indexical nature of analogue filmmaking processes was analysed in depth through a comparison of the influential works of Bazin and Barthes. Inspired by the work of Charles Sander Peirce, both theorists argue for a material trace present in photographically-produced images, thereby establishing a unique relationship between the subject photographed and the object (image) produced. For Barthes this is the photograph itself; for Bazin this argument is extended to cinema. It is the mechanical nature of film's reproduction of photographic images, then, which separates this practice of picture production apart, both in theory and technique, from other arts. The importance of this idea of the trace in commentaries from the 1890s was analysed in Chapter 2; it is the relationship of the new moving picture technology to reality which was particularly emphasised by early cinema spectators, not least of all to distinguish the animated images from other, similar forms of projection – like the magic lantern – and the possible applications the technology may have for the advancement of science. In this sense there appears to be a distinctive link between the idea of the photographic trace and the uncanny, as characterised by Mulvey. My own analysis found historical support for these ideas, as the reception of early cinema viewers indicates the realistic photographic recording and projecting capabilities of the *Cinematographe* and its contemporary equivalents to be a fundamental basis for its attraction to spectators, who often mused over the medium's ability to preserve and re-animate the life it records. However one must tread carefully here: as my definition for the technological uncanny reveals, this analysis of early cinema reception emphasises a dialectical relationship between the screen and viewers. Just as audiences did not (for the most part) believe the projected images to be 'real', so too did filmmakers not intend to

fool their spectators or suppress the mediated nature of the projected image. As is seen through my analysis of Méliès's work, the verisimilitude and indexicality of the photographic moving picture is not taken to simply equate 'reality'; rather, a fundamental part of the technological uncanny identified in Méliès's work and viewer responses is a recognition of the slippage which occurs between index and icon (in Peirce's terms), photographic realism and cinematic manipulation. It is for these reasons I argue, in line with Niessen's argument, that it is the *idea* of the index which persists which is a more fruitful way of appreciating the nuances of reception outlined by my technological uncanny framework.

With the foundations of the photographic ontology firmly established in cinema's history, it is easy to see how the emergence of digital technologies becomes a disruptive factor. If cinema is defined (albeit in part) by its physical component – the photochemical reaction of the filmstrip – then what is cinema in the digital age? Can images filmed – or projected – digitally be indexical? And how does this confusion affect the parameters of the technological uncanny outlined so far, with its links to the *idea* of the index, and is this still applicable in the digital age? To answer these questions, it is important to define, straight away, what is meant by the 'digital age' and why digital technology is given a particular pedestal in film history as a technological innovation impacting the fundamental definitions and practices of cinema. In short, the 'digital age' acknowledges the dominance of digital technologies in contemporary, commercial cinema across all areas of production, distribution and exhibition. This is not to say that other areas of filmmaking have not been affected by digital technological innovations or that analogue forms of film

production have ceased entirely³⁰. Rather my attention given to the idea of a ‘digital age’ is influenced by two important factors: the identification of this period by other film historians and theorists as a significant change to the cinematic medium; and, most importantly of all for this investigation, the fact that the technological uncanny, as I have defined it, finds particular resonance again in this era, in a manner comparable to early cinema reception, as analysed in Chapter 2. This is not to say that other technological advancements in cinema are not important, or that spectators have not responded to these changes as uncanny. The implementation of synchronised sound could be an example of such a technological advancement (see Spadoni, 2007). And there are other major developments which one could isolate as pivotal moments in cinema’s technological development, providing innovative new attractions for spectators, such as Technicolor, widescreen or stereoscopic projection. There are even those developments which question the dominance of traditional cinematic practices: i.e., the viewing of celluloid film projected in a darkened theatre. Most notably, television and home-movie technologies (particularly the VCR) have sought to re-define the cinematic experience. However, I will not focus on these particular developments in this investigation. Aside from the impossibility for a single study to detail, in depth, the wide-ranging impacts of such changes, my main reasoning for focusing on digital cinema in mainstream, commercial cinema is because I am guided by the idea of the technological uncanny. My attention is focused where spectators have commented on the uncanniness of the visual effects on display and this coincides with particular representations of the body. As shall be seen, discussions provoked by developments in the digital age contextualise and elucidate the re-emergence of the technological uncanny.

³⁰ One of the effects of the increased digitisation of film has been the growth of a ‘countercinema of sorts’ outside of the major Hollywood studios because of the technology’s relatively low cost (Belton, 2002, 106).

To isolate precisely when the ‘digital age’ began is difficult. Robin Baker announced in 1993 that ‘[the] computer is now a ubiquitous machine and most areas of the creative and performing arts have fallen under its influence in one way or another’ (1993, 31). Baker admits it is difficult to ascertain precisely when this ‘influence’ took hold, but he cites *Alien* (1979) as an example of such effects being used within the film’s narrative (rather than a title sequence) and *Tron* (1982) as the film which showcases the full potential of new computer technologies (33-4). In his more recent study, Stephen Prince notes that the ubiquitous nature of such effects is thanks to the research conducted within academic and industry computer laboratories in 1960s and 1970s (Prince, 2012, 12). As such, it would be misleading to suggest the prolific use of digital technology seen in contemporary cinema over the last two decades suddenly appeared without precedent. As was noted in the last chapter, the technology for early cinema was also the product of several years of scientific developments and a wide array of entertainment contexts; in much the same way, the incorporation of digital technologies into mainstream filmmaking practices has been a diverse and heterogeneous transition. But one could postulate that the digital age comes to fruition in the 1990s – in what Michelle Pierson calls the ‘wonder years’ – because ‘CGI effects became the focus of intense speculation not only for cinema audiences but also for the special effects industry itself’ (Pierson, 2002, 137). *Forrest Gump* and *Titanic* fall into this category and the impact new effects technologies have upon the construction of narrative, spectacle and how the directors conceptualise them will be discussed shortly. Nevertheless, if digital effects had been used to varying degrees before this period, then this raises the question as to why the increased use of the technology in the 1990s should inspire a particular cause for concern or debate, particularly when considering other technological innovations

appear to have been more threatening to the cinematic practice of projecting images, as noted above. As Christopher Williams states, the key difference is that the earlier technologies – television and the VCR – do not tackle the very heart of the matter which is addressed in several commentaries on the impact of digital on cinematic technologies: the question of ontology (Williams, 1996, 7). Put simply, digital is not an indexical medium in the Bazinian sense of the term. The question this raises for cinema is articulated well by Lev Manovich:

But what happens to cinema's indexical identity if it is now possible to generate photorealistic scenes entirely on a computer using 3-D computer animation; modify individual frames or whole scenes with the help of a digital paint program; cut, bend, stretch digitized film images into something with perfect photographic credibility, even though it was never actually filmed? (Manovich, 2001, 295)

In the wake of the dominance digital technologies have established over more traditional forms of visual culture – particularly analogue cinema and filmmaking – some commentators ask this question much more succinctly: 'Is cinema dead?' (Bergan, 2007). Any possible answer needs to account for several complexities: it is important to understand *how* digital has usurped analogue's position in cinema. Manovich's longer articulation of the crucial question helps considerably in drawing out several significant points here. To speak of 'digital' is not to necessarily refer to a single practice but rather several permutations of moving (and still) images created utilising such technology. One can film live-action (people before the camera, as one would with analogue) but such images – recorded and stored, as they are, as digital code – can be easily and invisibly modified (as Manovich puts it, 'cut', 'bent' and 'stretched'). Additionally digital enables the easy synthesis between live-action footage and digitally-created, artificial characters, scenes or locations within the

same text and with equally photorealistic results. The most recognisable form of this would be the popular use of CGI, particularly in Hollywood productions, the presentation of which Pierson calls ‘a cinema of interiors’: the spectacular and ‘self-conscious showcasing of a new type of effects imagery’ (125). Further along this spectrum is the ability to create moving images entirely from digital technology; that is, images constructed on the computer which can appear to be photographically credible and/or serve the purposes of 3D computer-generated animated films. The photorealistic animation of Pixar films and motion-capture technology are good examples of this category, and I will explore the distinction between the idea of photorealism and animation in Chapter 4. Although one can broadly separate out these practices into a scale such as this, it also remains true that digital imaging has infiltrated, as Lisa Purse notes, ‘almost every aspect of filmmaking, including sequence pre-visualisation, blue and green screen shooting, face and body capture, compositing of image elements and digital rotoscoping, non-linear editing and sound mixing’ (Purse, 2013, 2). As Manovich’s earlier reference to using a computer implies, ‘digital’ also impacts upon the spectator’s experience of moving images. Traditional cinema – moving images projected onto a large screen in a darkened room – is just one way, rather than the dominant way, of engaging with images in the digital age. Movies are transferred onto DVD or are downloaded and watched on ever-changing screen sizes, from television to mobile phones. The digital status of film has, in turn, rendered films malleable not only from the filmmaker’s point of view but also from the viewer’s: spectators can, and often do, pause, copy, rewind, upload clips of films, thereby radically altering the temporality of the viewing process also³¹.

³¹ As noted in the Introduction, for the most part I will not be focusing on these particular avenues for

The Return of the Index

This plasticity makes the ontology of digital technology difficult to discern. Does digital imagery not have a trace, in which case how does the technological uncanny – which is intimately linked to the idea of the index – become relevant in the cultural reception of cinematic digital technology? To help illuminate these connections, I now examine *Forrest Gump* and *Titanic* together to demonstrate some of the uses of digital technology mentioned above and how these special effects engage with the idea of the index outlined thus far. Integral to both films (albeit in slightly different forms) is the veracity of the photograph within fiction: how the indexical nature of the pro-filmic, and the photographic image, is an integral part of the perceived truthful nature of historical events; how CGI and other digital special effects in the ‘digital age’ can uphold and undermine this assumption in various ways; and how this is framed within the dialectics of illusionism between the screen and spectator, in narratives which seek to synthesise fictional stories with real-life events. As such, it is not that *Forrest Gump* or *Titanic* seeks to reinstate the index as the defining component of moving image technology - for either analogue or digital - as my exploration of the index in Chapters 1 and 2 reveals, this would be a difficult position to defend. Instead, these films respond to the renewed interest in theories of indexicality as a result of the increased – and visible – use of digital technology in the creation of *visual effects*. It is for this reason that the focus here is on the use of digital technology in the creation of spectacular special effects which are

exhibition. However, the increased availability of early cinema films because of new technology shall be addressed in Chapter 5.

diametrically opposed to the supposed idealisation of analogue of the pro-filmic³². The two films demonstrate why the *idea* of the index is so pervasive in the cultural reception of film – even more so as production of popular cinema moved into the digital age – and yet the indexicality of cinema now and in the past evidently remains simply that: an idea.

Forrest Gump and its use of invisible effects help elucidate this position. The film tells the story of a man of the same name (played by Tom Hanks) who narrates his life to strangers on a bench. Gump's narrative reveals how he has engaged with, and sometimes profoundly affected, key moments in the history of the United States, albeit often unwittingly. To incorporate Forrest's story into real-life events, Robert Zemeckis's film uses CGI to place Hanks into the frame of stock news footage, most memorably when Forrest meets President John F. Kennedy (Figure 14). The use of such historical footage evokes several issues related to the index. The footage of President Kennedy would have performed, at the time of its making, a direct access to events within the White House for television viewers in 1962 (when the footage was originally recorded). As the footage has become archived it is now a historical document, rather than a contemporaneous event, but the ontological significance of the images is the same: this footage is a direct recording of actual events; a photographic capturing of the 'real'. In this respect, the Kennedy film performs a similar function – and fulfils the same purpose for audiences – as the McKinley footage recorded over sixty years earlier. As explored in the Introduction, a

³² Rodowick points out that live-action recording with a digital camera is much the same as an analogue one: 'To say that film is disappearing means only that photochemical celluloid is starting to disappear as the medium for registering, distributing, and presenting images ... [digital cameras] are still based on the same optical geometry as traditional cameras and rely on the same historically and culturally evolved mathematics of depth and light rendering descended from *perspectiva legitima*' (2007, 10-11). My own analysis therefore does not focus on the simple substitution of analogue cameras for digital ones, but rather on the use of digital as a visual effect which, by its nature as a spectacular attraction, draws attention to its new and novel ontology.

fundamental part of the attraction of these analogue moving images is that the Presidential candidate was present at the time of recording; the pro-filmic body is represented to audiences during exhibition. The indexical link between the President Kennedy events of 1962 and the filmic representation retained of them is an integral part of that 'distinctive bond between a photographic image and that of which it is a record' (Nichols, 1991, 5). It is this which informs the expectation (or potential) for the documentary film to represent, even reflect, reality as it 'holds' the 'exact shapes and contours, patterns and practices, of the historical world. We expect to apply a distinct form of literalism (or realism) to documentary' (Nichols, 5). It is this expectation that can be applied to the historical footage of President Kennedy and, arguably, one can assume spectators literate with the history of the US (and therefore familiar with the scenes the footage depicts) engage with the archive film in this way. Yet these expectations are subverted in *Forest Gump*: first, by the footage's inclusion in a commercially-produced fiction film – which thus indicates a re-framing of real history for the purpose of narrating fictitious events – and second, by digitally altering the original filmic images thereby seriously altering the ontological make-up of such footage and its relationship to the 'real'.

Tom Hanks's image is superimposed into the archive footage to appear alongside President Kennedy, as though he were an original component of the historical images. The realistic effect is achieved using digital compositing techniques which successfully integrate Hanks's body seamlessly into the frame – an impressive display of technology in itself – but the illusion extends further: digital effects are also used to manipulate Kennedy's lip movements and, with additional dialogue provided by an impersonator, the President is made to look as though he is conversing with Gump too. As such the assumed veracity of such filmed historical

footage, with intimate links to the notion of the index, is made visually questionable and, importantly, this undermining is a result of digital technology. Significantly, *Forrest Gump*'s use of digital techniques to manipulate images in this way is not an isolated instance emerging in the earlier 1990's, nor is the practice unique to the cinema. Brian Winston notes that in 1993 (one year before *Forrest Gump*'s release) 'the status of the photographic image as evidence was becoming somewhat tattered' with the revelation in several British and US newspapers of extensive use of 'digital image manipulation' on photographs which hide the trace of any technological intervention: 'Absolute undetectability, for the first time, is undermining the mimetic power of all photographic processes' (Winston, 1995, 5-6).

This is not to say that viewers of *Forrest Gump* will not detect the illusion at work in the President Kennedy scene: aside from the physical impossibility of the image clearly apparent to all spectators familiar with Kennedy's form, there are several other diegetic and extra-textual markers which signal this (for example the fictional narrative, the apparent age of the footage and Hanks's star persona). Instead, it is the *seamlessness* with which the illusion is rendered which evokes a re-evaluation of the photographic image, its supposed indexical nature and relationship to the 'real'. As North writes: '[R]ather than perniciously seeking to bypass the spectator's critical faculties with its immaculate illusory credentials, *Forrest Gump* seeks to subvert the integrity of photographic history by showing up its very pliability' (North, 2008, 142). Importantly it is the use of *digital* effects which, in this instance, are the cause of such a subversion and this has implications for both the spectator's experience of such images and the conceptualisation of the medium for theorists: 'The resulting image [of *Forest Gump*'s Kennedy scene] is perceptually realistic but referentially

unreal, a paradox that present film theory has a hard time accounting for' (Prince, 1996, 34).

Significantly, the President Kennedy scene is not the only instance of digital special effects used in the film. Other instances include similar manipulations of archive footage (as when Forest Gump meets other historical figures such as John Lennon) and other more subtle effects: computer generated extras for large crowd scenes and a digitally rendered ping pong ball which was 'animated on the computer from a digitally scanned photographic model' (Prince, 30). As these last two examples indicate, the presence of digital technology is not always overtly visible which in many ways speaks to the unease some writers have expressed towards the disruptive potential of the digital in traditional conceptions of analogue media as indexical. The notion that such a disruption may pass the viewer by unnoticed is a particular worry for some: Wheeler Winston Dixon calls *Forest Gump* 'disturbing' in the way it appears 'at first glance – [not] to contain any effects at all' (Dixon, 1995). Arguably this 'undetectability' (Dixon) is epitomised with the digital effect used to remove actor Gary Sinise's legs after his character Lieutenant Dan Taylor loses the limbs in an explosion whilst fighting in the Vietnam War. The effect, which was created by George Lucas' special effects company Industrial Light and Magic, provided a new level of verisimilitude to the illusion, sparking debates as to whether Sinise's appearance was only an effect.³³ Zemeckis's commentary on his own film adds to the controversy over how spectators engage with such visual effects – and whether they should notice the presence of digital effects at all. He notes that the illusion of

³³ Fans of the film reportedly enquired whether Gary Sinise was an actual amputee which is reflected on the actor's website which features the page: 'Forrest Gump's Special Effects or, 'Does Gary have legs?'' (<http://sinisefans.org/gump/gumpfx.html>) The reaction is parodied on the social entertainment website Reddit which asks: 'How did Gary Sinise's legs grow back after filming Forrest Gump?' (http://www.reddit.com/r/shittyaskscience/comments/192hyh/how_did_gary_sinises_legs_grow_back_after_filming/)

Sinise's injury was not *all* digitally achieved but he stops short of revealing the precise details, saying 'You've got to keep everybody guessing.' He continues: 'We [the production team on *Forest Gump*] didn't do our effects for spectacle; they're spectacular in their subtlety' (Zemeckis, 2003, 141-2).

The use of digital technology in *Titanic* is, on the surface at least, quite different. The film is about the famous ship's fateful maiden voyage as told through the lens of a class-crossing love story. The scale and ambition of the film's historical reconstruction is markedly larger in comparison to *Forrest Gump* and this is made explicit by the film's extensive use of visual effects. In this respect *Titanic* quite consciously draws the spectator's attention to the processes of its own illusionism which forms an integral part of the film's attraction, in much the same way the digital functions in the case studies I shall discuss in the next chapter; these effects are not 'hidden.' Yet the several layers of effects at work in *Titanic* provoke a similar discussion to that posed by *Forrest Gump* regarding the status of the photographic image in the digital age, which feeds into notions of the indexical. In some ways *Titanic*'s use of digital special effects is directly comparable to those presented in *Forrest Gump*: for example, digital technologies were used to create some backgrounds and sizable crowds, with many extras being motion-captured to aid with the creation of their digital doppelgängers (the details of this process are discussed in the following chapter). *Titanic* is also similar in the way that it seeks to re-frame real-life historical events within a fictional narrative. But it is the film's unique combination of real footage, digital effects and storytelling which illuminates the slippage between indexicality, realism and the pro-filmic (whether this is captured digitally or in analogue formats or not). Cameron capitalises upon *Titanic*'s (i.e., the real ship's) prominent position in 20th Century history and thus extra-textual

information becomes another important element in the experience and interpretation of the film's narrative, although Cameron's own commentary complicates this relationship.

What makes *Titanic* such a remarkable case is that the film project did not begin with plans to digitally re-create the recognisable ship but with actual footage of the real ship wreck. As director James Cameron notes:

At some point it occurred to me, like a jolt ... the *Titanic* is not a myth. Not only did it exist ... it still exists. She sits now on the seabed, two-and-a-half miles below where she hit the iceberg all those years ago. And if you are enterprising enough, you can go there and see it. *And film it.* From the moment I had this thought, I knew not only that I must make this film, but that in making it I had to film the real ship ... (Cameron, 1997, viii).

Cameron successfully filmed the real *Titanic* wreck in a Deep Dive expedition consisting of several scientists, engineers and technicians and an array of vehicles (such as the submersibles named Mir 1 and 2). The equipment used needed to be able to function at such depths and this included the first camera able to do so outside of the submersibles. The footage taken not only provided the basis for the visualisation of the special effects in the film: these real images are also incorporated into the finished product. As such *Titanic*, like *Forest Gump*, incorporates historically-relevant and 'real' images into the construction of a fictional narrative but, whereas the *Gump* footage uses manipulated archive footage as one of several elements in a multi-faceted story, *Titanic* uses real footage which Cameron has filmed of a historical site in order to build a fiction around the images. *Forrest Gump* re-constitutes historical images in the service of a larger narrative but *Titanic* establishes a narrative in order to bring to life a real-life past event, closely informed by the real images taken by the Deep Dive crew. The language Cameron uses to

discuss this complex relationship between the real images of the Titanic wreck and their incorporation into his fictional film is revealing:

Integrated into the fabric of the film, these video images possess an undeniable emotional power because of the fact that they are real, focusing our minds like a lens through the ravages of time. Everything else we subsequently created for the film had to live up to that level of reality. (Cameron, xii)

Cameron explicitly identifies the footage of the wreckage as automatically powerful and poignant because it is 'real'. This echoes the assertions put forward by Nichols and Dixon regarding the documentary film and how the idea of the index permeates popular conceptions of how film relates to what it records. In a similar fashion to Bazin, Cameron identifies the importance of the pro-filmic event: i.e., the wreck was in front of his lens at the time of its recording. Inextricably linked to this is the idea of the index: the images we see of the wreck have 'emotional power' because this pro-filmic, photography-based process retains a special physical link to the pictures recorded. This is what makes those images unquestionably 'real'. This positioning stands in stark contrast to the special effects of the film, including the extensive use of computer-generated imagery either in the construction of the ship or in the compositing of shots in post-production (adding details to models built for on-set filming). As such the ontology of these images is entirely different, completely fabricated, as they were constructed from numerical code to create a copy or simulation of the ship. One would think that the close juxtaposition of these forms of filmmaking would be jarring for the viewer but *Titanic* actively draws attention to these disparate images and, in a rather convoluted manner, the two processes actually help to enhance the verisimilitude of the film.

This first point – how the film draws attention to its use of these digital special effects – is marked on numerous occasions by editing transitions which move from the ‘real’ footage into the fictional narrative and digital compositions, and back again. For example, in the scene when Jack and Rose, the lovers, embrace on the bow of the ship, their image slowly fades as the ship deteriorates around them (Figure 15). The dissolve comes to an end on the image of the actual wreck of the Titanic filmed on Cameron’s expedition. In this sequence Cameron not only emphasises the distinct and contrasting nature of his film’s imagery – the real and the fabricated – but explicitly draws attention to the processes of the film attempting to synthesise these two elements. Viewers are encouraged to engage with the dialogue between illusion and real-life at work here, which is emphasised further by the fact the shot then pulls back to reveal the real footage is being watched on a monitor by the fictional character of the old Rose. The act of looking – and contemplating – this real footage is dramatized and visually present in the film’s diegesis too.³⁴

The ability of the film to present such images – to merge the photographically real with the digitally fabricated – is an integral part of the film’s spectacle, and therefore its attraction, in Gunning’s sense of the word. Yet rather than reducing the impact of the digitally-constructed scenes by reminding the spectator such images are resonantly not real (and therefore, by reversing Cameron’s logic, less ‘emotionally powerful’), the real footage of the wreck helps to validate the verisimilitude of the digital simulation. Spectators are to marvel at the realistic *illusion* of the digital Titanic. The use of the word ‘illusion’ is important here: as the work of Gunning and North has revealed, the idea of an indexical cinema is not to be conflated with the

³⁴ Perhaps a new level (and a renewed interest) has been added to the way in which the film draws attention to its special effects and the act of looking with its recent conversion to 3D. This 3D version of the film was released in cinemas in 2012 to coincide with the centenary of Titanic’s demise.

idea of ‘fooling’ any viewer into thinking the images onscreen are occurring in real-time (as discussed with early cinema) or that the special effect is interpreted as anything other than an effect (as worries about the digital, like Dixon’s and Nichol’s, often contend). Indeed, extra-textual details concerning the production of the film were used in the promotion of *Titanic* (which emphasised how Cameron had filmed the real wreck) and the likely familiarity of viewers with the historical event ensures that spectators are always consciously aware of the digital illusion on display in the film. Juxtaposing this illusion with the footage of the real wreck, as the Jack and Rose embrace scene does, instead permits a direct comparison of the two which emphasises the success of the digital imagery: viewers can discern for themselves how well the effects capture the dimensions and look of the original ship.

The likely knowledge spectators would possess of the historical event helps to emphasise this evaluative quality to the film further: most viewers would know what the original *Titanic* looked like, enabled by either historical documents or previous documentary and fiction films³⁵. As such, the digitally composed image of the ship in *Titanic* also needs to correspond to previous knowledge and expectations of what it *should* look like. Interestingly, whilst the film is successful in this respect, this does not seem to be a primary concern to Cameron. He writes that part of the purpose of capturing and including real footage of the wreck into the film is to give *Titanic* an unprecedented relationship – and physical link – to the real historical facts: ‘[Not] only is history a responsibility, it is also a challenge ... the challenge of sorting out fact from misinformation, misperception and downright lying’ (xiii). Elsewhere, Cameron insists: ‘My goal was always to capture the spirit of the *Titanic*’

³⁵ It is noteworthy that the original ship was a symbol of advanced technological developments and dissemination of its image and tragic end were aided by other distinctly modern technologies and modes of communication: newspapers, photography and newsreels.

(Cameron, 1997, 23). Cameron's connection between seeking the truth and filming the actual ship wreck correlates well with the Bazinian notion of realism: film has the ability to capture this reality – the ship's 'spirit' – and this relationship is forged on the idea of the index.

Cameron's use of digital technologies to re-create the famous ship within a fictional narrative does not appear to undermine this cause but, in an unexpected manner, actually appears to be enhanced by it. In the footage of the real wreck there appear to be two levels of a 'trace' at work: the photographic images of the film acts as a trace or index of the wreck (as Bazin and Barthes would argue) and the wreck itself is now the only remaining trace of the original ship; an impression or shadow of its original self which testifies to the existence of the real ship. The combination of these facets as they are composited with the computed-generated reconstruction acts as a form of indexical trace for the digital imagery too, establishing a third level to the veracity of the image. The real wreck acts as evidence of the digital imagery's realistic nature and how the verisimilitude of the ship would be impossible without such technology. Significantly, the digital illusionism of the Titanic presented in the film is always closely aligned – visually, stylistically and narratively – with the presence of the real footage of the real wreck which indicates, as Barthes postulated with the photograph, how the 'referent adheres' (Barthes, 1980, 5-6). Indeed the digital special effects of the film enable the aesthetic representation of the element Barthes found most uncanny about the photographic image: 'the return of the dead' (Barthes, 1980, 9).

The Uncanny and the Pro-filmic

Both *Forrest Gump* and *Titanic* engage with the exploration of the index in cinema in the digital age in a variety of ways. Together both films are representative of the

increased use of digital technologies in the construction (and manipulation) of filmic images emerging in the 1990s – the ‘wonder years’, in Pierson’s terms – on a broad scale: from the subtle digital manipulation of previously filmed footage to the complete construction of computer-generated imagery. As the analysis of both films reveal, they uphold the Bazinian notion of the index in some respects, whilst undermining it in others, or offering alternative visions of this altogether, as with *Titanic*’s implication that digital imagery can be infused with a form of ‘trace’ too. The films demonstrate the complexity of the index in the digital age: they do not simply say the digital is not indexical or that the index never existed. Rather, they present a complicated dialogue between screen, spectator and cinema’s ontology in a cinema that increasingly utilises both overt and subtle digital effects.

One could postulate that it is readily apparent why the notions of the uncanny become important again for cinema in the digital age. The moving image’s relationship to the index, as portrayed on the narrative and aesthetic levels in *Forrest Gump* and *Titanic*, appears to have become quite *unheimlich*: the digital image has injected further doubt and uncertainty into the veracity and conceptualisation of the photographic image, making the latter’s technological familiarity suddenly seem strange and unhomely. As Barthes postulates about the photograph, despite differing styles of presentation (as influenced by the choices made by the photographer), one can be certain that the subject photographed actually *existed* (Barthes, 1980). This is, after all, at the core of the photograph’s (and later analogue cinema’s) privileged relationship to the real. Digital removes this certainty: if images can be partly or even entirely constructed from ‘nothing’ – binary codes and numbers – but masquerade as a photograph, how can one discern what is ‘real’ (actually existed in front of the camera) and ‘fake’ (created on a computer)? The above seems to have

been the intention of directors like Zemeckis, who comments how the digital manipulation of the image in his work should ‘keep everybody guessing’, as quoted earlier. There is an affinity here with the unease Olympia’s true identity provokes in *The Sandman*: if machines can successfully masquerade as human at social events and even inspire the infatuation of another person, how does one identify the real from the simulacra? The apparent loss of indexicality in the digital image appears to translate as an anxiety concerning the life-source of an animate being: is this representation the result of pro-filmic and (in the case of human bodies) organic matter, or is it an illusion of machinery/digital code? The combining of live-action (existing entities or pro-filmic objects) with digitally-created scenes (artificial creations) injects a sense of uncertainty into the movie-watching process for the spectator. As Manovich states, one may not be able to distinguish between what is ‘real’ and what is not (Manovich, 2001). This returns us to the idea of ‘intellectual uncertainty’ as described by Jentsch (Jentsch, 1906). Just as Jentsch defines this concept of the uncanny to be a pensive experience evaluating the boundaries between two factors, particularly the inanimate and the animate, the experience of digital could be uncanny in much the same way: we, too, are uncertain what is truly ‘animate’ (real) and not.

The evidence of this uncanniness once again resides in the language used in discourses on the films. Years later, after the release of *Titanic*, Cameron claims that, in the digital age, ‘it’s all meaningless now’. James Clarke explains that ‘[the] ‘it’ that Cameron refers to was the established trust that filmmakers *and* audiences had in the reciprocity between realism (and its claim to truth) and photography, both still and moving’ (Clarke, 2014, 15). Even though one could interpret *Titanic*’s use of digital visual effects as a refashioning of cinematic indexicality so that the digital

image can become infused with a 'trace' via pro-filmic photography (as with the integration of the digital ship with footage of the original wreck), Cameron implies that a hierarchy of effects remains: analogue technology remains the truth-bearing medium which digital technology can only imitate – merging the two in the quest for 'realism' – or undermine. Some film theorists reflect this rhetoric in their argument for how digital has radically altered the definition of cinema. David Rodowick, whilst acknowledging how digital films still *look* much the same as their analogue forbearers, writes that the breadth of impact digital has had upon several avenues of film production, distribution and exhibition requires us to ask 'not whether cinema will die, but rather just how long ago it ceased to be' (Rodowick, 2007, 26). Steven Shaviro addresses this question with an equally provocative answer, arguing that we are now existing in a state of 'post-cinematic affect'. Shaviro writes that digital technologies are offering 'radically new ways of manufacturing and articulating lived experience' to the extent that we should speak not of film but of *media* products (Shaviro, 2010, 2). Shaviro argues for a decisive break occurring between the old and new forms of making, distributing and experiencing moving images with 'developments that are so new and unfamiliar that we scarcely have the vocabulary to describe them' (2). Shaviro's sentiments are reminiscent of the commentaries written in the late 19th Century, analysed in Chapter 2. Yet, in much the same way these early cinema spectators employed uncanny tropes in their evaluation of the new moving picture technology, so, too, does Shaviro find the words to encapsulate this change; words which are tellingly interwoven with the notion of the index and the uncanniness of pictorial reproduction. He writes: 'The analog cinematic image is indexical, in the well-known sense defined by Andre Bazin; but the digital image is

not. Where the cinematic image is a copy, the digital image is rather a simulacrum' (172-3).

In Shaviro's view the digital image is a new kind of double, complicating the distinction between reality and its trace, the icon or representation and the index. But how does such a technological change become uncanny? Following Shaviro's logic, theoretically the uncanny should not occur. In his evocative formulation the digital image is an unknown imposter; as Freud's exploration of the uncanny and my own historical contextualisation of the concept reveals, the uncanny occurs as a result of the strangely *familiar*. Manovich's commentary on cinema's move into the digital age offers a radical solution for demonstrating how such 'new media' (Manovich uses the same terminology as Shaviro) actually signals a reversion of cinema back to earlier forms of representation, and thus the return of the familiar. In another use of language as the key metaphor signalling the increased use of digital, Manovich argues: 'We no longer think of the history of cinema as a linear march toward a single possible language' (2001, 8). The 'language' of digital, therefore, is just one amongst many in the developments occurring throughout cinematic history. Manovich's definition of 'new media' incorporates those developments and innovations which revolutionise communication and its channels. The 14th Century printing press and 19th Century photography can, respectively, be viewed as previous forms of 'new media' (19). In this way, the digital is just another development in the progression of technology which began over seven hundred years ago – digital, then, is not the special and disruptive element often characterised. However this is not to lessen the significance of computer technology in our interaction with the world: 'This new revolution is arguably more profound than the previous ones, and we are just beginning to register its initial effects ... the computer media revolution affects

all stages of communication, including acquisition, manipulation, storage, and distribution; it also affects all types of media – texts, still images, moving images, sound, and spatial constructions’ (19).

Vitally for Manovich, this new technology affects ‘all stages of communication’ of which cinema is just one. Again this portrayal of digital seeks to contextualise cinema into the larger landscape of ‘new media’ but this is not to say Manovich does not consider the specific effects digital technology has had (and is having) upon the tradition of cinema. Cinema has certainly evolved and mutated over the past few decades but this change actually signals the transformation of cinema *back* into earlier visual forms, rather than becoming an entirely new one. This form returns cinema to those practices used before the dawn of the photography-based cinema, to those art-forms identified by Bazin, most notably painting: ‘... the manual construction of images in digital cinema represents a return to the pro-cinematic practices of the nineteenth century, when images were hand-painted and hand-animated’ (295). Taking this argument further, Manovich concludes: ‘cinema can no longer be clearly distinguished from animation. It is no longer an indexical media technology but, rather, a subgenre of painting’ (295). With the proposal that history is, in a way, repeating itself, the suggested newness of ‘new media’ is not new at all but rather older than cinema itself. Therefore it is the photograph’s ontology which is the anomaly here, briefly intersecting in the tradition of visual arts whereby the artist/painter/animator was central and the verisimilitude of the image was not a primary goal.

In this way, digital technology can be considered uncanny because it signals the return of ‘what was once well known and has long been familiar’ (Freud, 1919, 124); the return of cinema to the moving picture traditions of animation. Another link to

early cinema can be made here: my exploration in Chapters 1 and 2 into the disparate technologies which influenced and informed the establishment of cinema in the late 19th Century reveals the comparisons commentators made in reaction to the moving photographs, with many likening inventions like the *Cinematographe* to the magic lantern. However, these writings on early cinema also isolate the new *realism* of such images as a key component in the technology's attraction, and the complex relationship of the index with photography forms the basis, I argue, for how early cinema was experienced as uncanny. As such, the notion of verisimilitude and, specifically, photographic realism, is still a significant factor: as will become integral to my exploration of the digital, the new technology's conscious attempts at appearing 'real' are a common theme, whereby the ontology of the photograph becomes the 'benchmark'. Therefore whilst the creative nature of digital may be comparable to the artistic concerns of those operating in cinema's preceding years, the undeniable place that the photographic tradition has occupied for the last one hundred and fifty years should not be forgotten. The use of archive footage in *Forrest Gump* analysed earlier is a visual reminder of this.

Live-Action or Animation?

Manovich is not the only writer to characterise films made in the digital age as a form of animation. Dudley Andrew muses how blockbusters' use of digital visual effects mark them as a 'cinema of manipulation' which 'deserve to be classified as 'animated movies'' (Andrew, 2010, 42-52). J. Hoberman agrees: 'With the advent of CGI, the history of motion pictures was now, in effect, the history of animation' (Hoberman, 2012, 5). To portray the use of digital technology as evocative of the traditions of animation is another way to characterise the unease felt by commentators in relation to cinema's increasingly digital identity. This slippage of

distinctions between what is live-action and animation points to another way in which cinema in the digital age provokes notions of the index and can become uncanny. Looking back to another special-effects driven feature of Zemeckis, but this time with the focus on animation, helps to illuminate why. On the eve of the digital age of the 1990s, Zemeckis directed *Who Framed Roger Rabbit?* (1988), which tells the story of how a celebrity ‘Toon’ rabbit, Roger, becomes the unwitting suspect in a murder investigation. The film’s diegesis features two disparate realms: the everyday (and live-action) Hollywood, and ‘Toon Town’: a cartoon world of animated characters. The film combines live-action and traditional-looking cell animation within the same frame as the pro-filmic actors interact with the cartoon characters and locales. *Who Framed Roger Rabbit?* combines the techniques of live-action and animation but, importantly, the film keeps these two image-making processes as distinct and separate entities within the diegesis, and this was mirrored in the film’s production. The live-action portions of *Roger Rabbit* were filmed as normal and thus are reflective of the pro-filmic and photography-based image recording which could be identified as indexical. Props or stand-ins were used on-set for the cartoon characters to help guide the performance of actors. The animated portions of the film, however, were created and then composited by hand with the live-action footage in post-production. As such the cartoon characters remain segregated from the pro-filmic actors at the level of production and in theoretical debate: this animation is a non-photographic process and therefore not indexical. As Paul Wells and Johnny Hardstaff write in their account of animation:

‘Constantly aware of its own high artifice and illusionism, and the overt presence of an author always configured in the self-conscious nature of the image-making, animation has insisted upon its distinctiveness and potential difference, if not subversiveness as a form’ (Wells and Hardstaff, 2008, 25).

In a manner comparable to the spectacle of seeing Tom Hanks speak with President Kennedy in *Forrest Gump*, the impressive illusion of pro-filmic actors interacting with cartoon characters in *Roger Rabbit* is an integral part of the film's special effects and its attraction for spectators. Yet the two films' comparable special effects have slightly different results and implications for the viewing experience of the spectator. The impossible conversation between Hanks and the deceased President in *Forrest Gump* is presented with an important degree of verisimilitude. Whilst obviously an illusion, the sight of these two bodies conversing in the same frame is authenticated on an aesthetic and diegetic level by important indexical markers – or the *appearance* of such markers – which Niessen would say helps alert the viewer to the idea of the photographic index: 'here it is, the trace' (Niessen, 2012, 172). These markers could include setting (Gump meeting the President is justified within the film's own story trajectory and temporality); the overt use of real archive footage; and, importantly, the effective compositing of Hanks's image into the frame to appear as though he is an original component in the historical film: the digitised image matches the original footage's colour, film grain and time with Hanks's era-appropriate costume. As was noted earlier, this illusion therefore plays with the idea of film as an indexical medium: on the one hand this is supported by the presence of the archive footage (these are undoubtedly real images recorded when the real President Kennedy was present in front of the camera) but on the other this is subverted by inserting Hanks so realistically into the frame. Can film be trusted now that it is so easily manipulated by digital? Could it ever be trusted and what does this mean for the conception of film as indexical?

Roger Rabbit effectively side-steps this debate. Whilst both films create a similar illusion, *Roger Rabbit* does not evoke these questions because of the self-reflexive

nature of animation Wells and Hardstaff emphasise. Watching Bob Hoskins interact with Roger Rabbit does not appear realistic (i.e., pro-filmic) in the same way the Gump/Kennedy conversation does because it is not intended to. Whilst still creating an impressive illusion, the cartoons of *Roger Rabbit* clearly emphasise the ‘self-conscious nature of the image-making’ process behind them, which is distinctly non-photographic and non-indexical. The film does not subvert the question of the index but, in a strange manner, actually supports it. The attraction of the film is seeing the impossible communication between the binary opposition of cinematic images: the pro-filmic, live-action with the artificial and animated. By stressing the animated nature of the ‘Toons’ – they are traditionally animated cartoons – they become the antithesis of the live-action footage. If the cartoons are representative of ‘high artifice and illusionism’, then the reverse must also be true: pro-filmic, live-action footage is mechanically accurate, photographically realistic and indexical.

There is, however, a paradox here. Although the separation of the pro-filmic and animated characters of *Roger Rabbit* acts to emphasise and reinforce the ontological difference between the two, their integration and interaction within the frame considerably undermines this; the fact cartoons can be seamlessly merged into the same frame as the pro-filmic is an important reminder that all moving pictures are mediated. *Roger Rabbit* appears to overcome – or, at the very least, suppress – this unnerving truth by inscribing the indexical difference between the two forms of representation onto the *body*; the animated creatures in *Roger Rabbit* move and defy the physical laws of the real world, which the live-action characters still obey and are limited by. This is established in the film’s opening, which begins with ‘A Maroon Cartoon’ title sequence for an animated feature called ‘Somethin's Cookin!’ with its star characters Baby Herman and Roger Rabbit. This clearly operates as a homage to

early cartoon features, particularly those produced by Warner Brothers in the 1930s, and thus immediately establishes the expectation for what such animated characters can and will do: their artificial forms have transformative capabilities and often this malleability is showcased in fantastical circumstances.³⁶ The following cartoon does not disappoint as Roger, the babysitter, struggles to protect Baby Herman from a series of escalating dangers in the kitchen as the latter attempts to reach the cookie jar. Roger's eyes elongate and protrude from their sockets in extreme alarm when he sees Baby Herman climbing the kitchen counter by pulling out the drawers underneath, sending the sharp utensils flying (Figure 16). The absurd transformations to Roger's form become more eccentric as the punishments from Baby Herman's destructive actions in the kitchen become more extravagant: at one point Roger flies through the air attempting to remove a plunger from his face only to land on the end of a vacuum cleaner. The vacuum switches on and expels air into Roger's mouth, forcing his body to swell to impossible dimensions. As Roger appears to reach bursting point, he is released and shoots back into the air and his body gradually converts back to its original form as though he were a released air balloon.

The sequence ends with the refrigerator on top of Roger's head and cartoon birds appear and circle the rabbit's dishevelled form. At this point 'Cut!' is called and a live-action actor walks onto the 'set' to criticise Roger's 'performance'. This is of course the joke of the film – that cartoons exist and perform in Hollywood

³⁶ It is important to note that the Warner Brother reference establishes a particular type of expectation for the animated characters. Animated characters, in general, have transformative capabilities but this is tempered by the conventions of a particular production and its contexts (for example, the studio). Warner Brothers cartoon characters became known for their extreme malleability and physical transformations as the studio style 'became synonymous with a particular style of anarchic cartoon – wise-cracking characters, endless chases, vast piles of TNT.' (Whitehead, 2004, 58) Tex Avery, one of the animators who worked on the *Loony Toons* series, is particularly remembered for using this style as he 'treated animation as if the universe itself was at his command and all the laws of physics, reality and movie grammar were his to bend and break as he saw fit.' (Whitehead, 2004, 59)

productions just like any other actor – but the close juxtaposition between a pro-filmic actor and the animated character in the frame here emphasises further the difference in ontology and production between the two. In addition to the reinforcement of ideas of the index outlined above, this opening of *Roger Rabbit* also highlights the inherent ‘subversiveness’ (Wells and Hardstaff) of the animated form because of its transformative capabilities. Roger’s body can stretch, twist and contort, whilst sustaining extreme physical injury, in a way only an animated body can, and his integration into a world with live-action actors emphasises this further. This is brought to the fore again later in the narrative when Roger accidentally handcuffs himself to Bob Hoskins’ character, Eddie Valiant. Without the key to separate the handcuffed bodies, and with Doom’s weasels on their way to capture Roger, the rabbit panics and enacts a series of extreme physical transformations and movements to indicate his fear. Roger’s face distorts out of shape and his mouth elongates in shock before rocketing across the room looking for a place to hide. Roger’s body squeezes into a chest of draws and the kitchen sink: all the while, Valiant remains attached and although he is affected by Roger’s erratic movements (he is dragged across the room), his body not does transform, remaining human, pro-filmic and real.

Although *Roger Rabbit*’s attraction is undoubtedly the visual effects which allow cartoon characters to integrate and interact with real, living actors, these two forms of pictorial representations are still distinct entities. Indeed, this separation is emphasised on a diegetic level where Toon Town is a largely segregated area and the plot, which centres on Roger’s efforts to dispel the false accusations about him, is made feasible because of the discriminatory attitudes held by (some) human authorities against the animated community. This is done largely for comedic

purposes of course but *Roger* demonstrates how unease over pictorial representations can be re-framed as a slippage between live-action (or the pro-filmic) figures and those which are animated at a later stage of production. *Roger* illustrates how the difference between the two is particularly resonant in the portrayal of *bodies*, and adds another layer of complexity to the debates surrounding the integration of digital into visual effects technologies. Digital – a form of animation – disrupts not only any claim live-action photography has on the index, but specifically the distinction between the pro-filmic and visual effects. The potential unease evoked by the convergence of digital technology with the depiction of human bodies haunts the language Zemeckis and Cameron use to talk about their early forays into the technology in the 1990s. Zemeckis comments how effects like those achieving Sinise's injured body should be subtle, and Cameron advocates a similar position in the digital effects used on the human bodies in *Titanic*. As much as Cameron is keen to emphasise the spectacular visual attraction of his digitally-composited ship, the 'emotion' he speaks of is only possible, he states, with the physical presence of performance for live-action (read: pro-filmic and indexical) actors. He notes that actors Kate Winslet and Leonardo DiCaprio have to be the 'real' element in an artificial, digitally-created mise-en-scène: '[The actors] know where they are both physically and emotionally and it keeps the moment alive ... [The aim is] to create moments that function on an emotional level. The technology itself *has* to be invisible' (Cameron, 154).

One of the complexities arising from the digital age is thus how far visual effects impact the representation of photographically realistic human bodies. In *Roger Rabbit* Zemeckis keeps the animated characters and human actors at opposite ends of the scale (of caricature animation versus pro-filmic photography), a technique he

appears to uphold again in *Forrest Gump*: the digital visual effects are ‘hidden’, maintaining the integrity of the pro-filmic body even when its photographic indexicality is playfully challenged (the doctoring of historical footage to place Hanks in the Kennedy footage, for example). Cameron draws a similar line between *Titanic*’s extensive use of spectacular effects and his insistence that only the pro-filmic presence of actors (and the real shipwreck) can evoke an emotional engagement from the audience. Digital compositing and animation remain separate – subservient even – to the physicality of the pro-filmic; to its indexical potential. Cameron and Zemeckis both appear to challenge the assumptions of indexicality in their deployment of animation and digital effects, whilst upholding these ideals in their rhetoric. The attempt to draw a distinct line between the pro-filmic, live-action body and the use of digital visual effects – as *Roger Rabbit* does in its synthesis of animated and real performers – is somewhat disingenuous, however; in both *Titanic* and *Forrest Gump* motion-captured performances form the basis of the creation of hundreds of digital doppelgängers to fill large crowds and perform stunts. These films therefore utilise photographically-realistic, digitally animated human bodies as an integral part of their spectacular visual effects. As a symbol of the removal of the boundaries between the pro-filmic and animation, these hybrid entities are already potentially uncanny; the mechanisation of the human form suddenly becomes malleable to ‘bend’ and ‘stretch’ (in Manovich’s terms) in unpredictable ways (Manovich, 2001). The implications digital technology has upon former conceptions of film and visual effects are therefore extensive, disparate and challenging. This difficulty is signified in the contradictory commentaries Cameron and Zemeckis supply, and in the quest for a new language to conceptualise these changes, as both Sharivo and Manovich argue for.

The Digital Body: the Sublime and the Morph

To appreciate how the technological uncanny becomes an important part of this language it is important to outline other ways the question of digital technology's ontology is translated onto representations of the body in the 1990s and early 2000s. Several writers comment upon the intersection between digital special effect technologies and the science-fiction and action genres, where the technology on display is often showcased in extended spectacular scenes (for example, see Kuhn 1990 and Sobchack 1987). Pierson notes how, from the 1990s onwards, this digital attraction:

produces a distinct break in the action ... In these films, effects sequences featuring CGI commonly exhibit a mode of spectatorial address that – with its tableau-style framing, longer takes, and strategic intercutting between shots of the computer generated object and reaction shots of characters – solicits an attentive and even contemplative viewing of the computer-generated image. (124)

Pierson's description of the digital effect sequence's *modus operandi* is evocative of Gunning's cinema of attractions: narrative progression is subordinated to the exhibitionist spectacle in order to shock and intrigue the viewer; affects which are now, in the digital age, extended to the character spectators present within the diegesis also. The dominating sight of alien craft in *Independence Day* (1996) is a good example of this. Even the first sight of the infamous ship in *Titanic*, which is shown several times from different angles with a large crowd looking on, could be an example of this trend extending into melodrama and romance genres. However Chuck Tryon notes that it is within science-fiction – or, more specifically, within a cycle of films he terms 'cyberspace thrillers' – that digital visual effects are used the most to capitalise (in economic and aesthetic meanings of the word) upon their

potential as attractions. In doing so, these films engage in the complex debates concerning digital technology and its relationship to the human body. Tryon writes that ‘the use of digital effects in Hollywood science fiction films has invoked debates about the potential for digital technologies in general to challenge traditional definitions of the human, as well as tradition definitions of what counts as film’ (Tryon, 2009, 40). He extends this argument further to state that these films actually mythologise several aspects of cinema’s transition to digital practices and in particular the anxiety evoked from the visible (and invisible) malleability of the digital human body. Quoting examples such as *The Matrix* (1999) and *Dark City* (1998), Tryon writes that in these films

the instability of the cinematic image produced through digital effects becomes a means by which these films explore these questions about fluid identities ... combining nostalgia for the history of film with their projections of a post-biological and post-filmic future (45).

Digital technology is thus used as an attraction for spectacular displays which simultaneously are identified as the symptom of larger sinister plots in technological development which may have dire results for the autonomy of the body (*The Matrix*) and mind (*Dark City*) of human beings. Tryon therefore demonstrates how the digital effects of science-fiction can extend beyond Pierson’s characterisation of the narrative-interrupting spectacle and actually contribute – shape, even – the perimeters of discussion concerning digital technology and representations of the human. Tryon demonstrates how digital technology can be both hero and villain on narrative levels and in the wider context of cultural reception.

The anxiety and ambivalence that is an integral part of viewing and analysing new digital visual effects and its relationship to the body permeates several academic

commentaries on the topic. Broadly speaking, one can divide these theories into two camps: those which address the unprecedented scale in which visual effects are used (in the literal sense: the coverage of the screen) and those which focus on the detailed rendering of specific, individual bodies. Together these commentaries acknowledge the wide array of aesthetic avenues and production practices which digital technologies begin to envelope within the 1990s and, once again, writers draw their primary examples from blockbuster genres: science-fiction and action films. For this first category, writers comment on the depiction of vast scales of objects, crowds or landscapes which become more and more prevalent from the 1990s onwards, as CGI effects become more advanced, are employed for greater durations and within larger numbers of films. Kirsten Whissel calls this depiction the digital multitude: ‘massive computer-generated armies, swarms, armadas, and hordes composed of as many as hundreds of thousands of digital beings’ (Whissel, 2014, 60). In many ways, the digital multitude is an extension of digital ‘extras’ used to populate the crowds in *Forrest Gump* and as numerous stunt doubles in *Titanic* to help convey the devastating scale of the tragedy. However these effects, as Zemeckis and Cameron note, are intended to remain ‘invisible’ or, at least, are not supposed to function as the standout, self-conscious spectacle diverting attention away from narrative development, as Pierson describes. It is for these reasons that Whissel discounts this kind of digital doubling of bodies from her equation, arguing that the digital multitude instead operates as a visual effects emblem³⁷:

it is a computer-generated spectacle that functions allegorically within the narratives in which it appears so as to give spectacular expression to a

³⁷ Whissel defines an ‘effects emblem’ as ‘a cinematic visual effect that operates as a site of intense signification and gives stunning (and sometimes) allegorical expression to a film’s key themes, anxieties, and conceptual obsessions – *even as it provokes feelings of astonishment and wonder*’ (Whissel, 2014, 6).

constellation of concepts concerning historical change and collective action, *even as it provokes feelings of astonishment and awe* (61, my emphasis).

This last part is important. Whissel, like Tryon, demonstrates how digital visual effects can work as plot action, to illuminate narrative themes, and aid interpretation. Specifically, the digital multitude also works to evoke a specific spectator response: namely, astonishment and awe. This awe is a reaction towards the impressive spectacle but it also facilitates ‘contemplative viewing’ (Pierson, 2002) whereby the viewer can discern the spectacle’s allegorical potential. Whissel argues this interpretation reinforces the narrative motivation (the gathering of forces in order to overcome a threat), which can also be abstracted and read emblematically as the individual versus the collective. This reading can be applied to the contexts in which these films are produced (such as the mechanisms of global economies) but Whissel hints at how such an interpretation can be extended to the digital technology itself as these ‘computer-generated images ... seem to announce the cinema’s digital turn’ (88). I would take this argument further and argue the awe response inspired by such images is directly related to the contemplation of the technology. The viewers’ astonishment derives from their positioning as incredulous spectators (in Gunning’s words) who acknowledge the digital technologies at work behind the spectacle. They are, as Purse points out, digital ‘literate’ spectators (Purse, 2013, 25), and yet marvel at the scale of the illusion and its photorealism nonetheless. The attraction – and the anxiety – of such images derive from digital technology’s ability to render computer-generated images and bodies realistically, by animating such scenes to compare favourably to a photographic aesthetic. The digital multitude exacerbates the awe – or, as Dixon states, the terror – one may feel in response to the effects in *Titanic* and *Forrest Gump*, in correlation to the larger scales encompassed by the technology.

The armies depicted in *The Lord of the Rings: The Two Towers* (2002) at the battle of Helm's Deep are a good example of this. Nicholas Rombes describes a similar effect when viewing digital technologies on a vast scale, but this time when the image is frozen. Pausing moments, like the digital multitude Whissel describes, acts as a particularly potent reminder of the impossible compositions which are made possible by digital technology. Rombes writes that these moments of great movement, now paused, 'tear asunder reality in ways that approach surrealism' (Rombes, 2009, 145). Citing the example of the immense tidal wave animated in *The Day After Tomorrow* (2004), Rombes notes: 'It is in Hollywood movies – and in CGI blockbusters especially – where the most bizarre, transgressive and experimental images and sequences lie, a radically refashioned understanding of the real' (143).

What Whissel and Rombes describe here is an experience of the technological sublime. As was mentioned in Chapter 1, the sublime is another theorisation of viewer response in relation to nature and aesthetics which shares similar historical contexts to the development of the uncanny. As I concluded earlier, the sublime and the uncanny are indeed related – both can be said to be the conceptualisation of the diverse changes and experiences emerging in the 18th Century – but they are not the same. The uncanny concerns the experience of the quietly unsettling, the unease or intrigue towards objects which question established borders (for example, living and dead) and thus force a re-evaluation of perceived perimeters of understanding. In my own characterisation of the technological uncanny, I argue this tradition places a particular emphasis upon the merging of technology and representation of the human body. The sublime, in contrast, concerns the overwhelming experience of viewing vastness; the conflicting impressions of beauty and terror which are evoked from

looking at and evaluating large objects, particularly in nature (broad landscapes or the enormity of oceans, for example). Edmund Burke writes that nature produces the strongest feelings of the sublime because it has the potential to evoke astonishment which 'is the effect of the sublime in its highest degree' (1757, 53). Rombes's example of the natural disaster depicted in *The Day After Tomorrow* parallels Burke's description quite well but, like Whissel's digital multitude, these images are not real, or, at least, not entirely pro-filmic. They are the product of digital visual effects and it is the knowledge of this fact which leads to reactions of astonishment; hence the *technological* sublime.

Scott Bukatman adopts this phrase in his analysis of special effects. Returning the emphasis once again to those technological displays of vastness commonly found in science-fiction, Bukatman argues that these portrayals of the 'artificial infinite' force attention upon the ontology of such representations and their relationship to human experience. He writes: 'It is technology that inspires the sensations characteristic of sublimity; therefore, it is technology that alludes to the limits of human definition and comprehension' (Bukatman, 2003, 82). However, as Rombes's reference to these effects as a refashioning of an 'understanding of the real' implies, this is not to say the experience of digital cinema as an illusion is incomprehensible. Rather, as Sean Cubitt reminds us, it is the process of this sublime as technological experience which draws attention to the image's mediated status. He notes:

[At] the moment of its arrival, the sublime effect, in transcending the medium through the medium's own resources, has the *appearance* of speaking the ineffable. In this way it circumscribes its own sublimity, identifying the boundary of communication with the technical limits of mediation' (Cubitt, 1999, 129, my emphasis).

Yet like Tryon's theory of how such science-fiction mythologises the possibilities for impact of technology upon the body, Bukatman highlights how it is the technology's sublime potential which forces the viewer to contemplate the radical potential for such mediation. This is a potential for altering the 'boundary of communication' – for what cinema *is* – but it is also the consideration of what the future may hold for human experience in a technological world. Bukatman writes:

The sublime not only points back toward a historical past; it also holds out the promise for self-fulfilment [*sic*] and technological transcendence in an imaginable near future. Under the terms of the sublime, technology is divorced from its sociological, rationalist underpinnings to become a technology without a technocracy, a technology beyond the scope of human control. There is thus an inevitability to the fact of technological progress, and thus accommodation becomes the one valid response. (106)

The anxiety over the positioning of the human within the technological sublime returns us, like a Mobius strip, back to the question of how digital technology has affected the representation of the human body, and thus to my second category for how such technologies have been discussed by theorists. This category concerns less the reproduction of vastness and, instead, the photographically realistic rendering of individual bodies which have the ability to transform. Whissel provides another emblematic classification for this figure – which she terms 'the morph' – and a useful definition: the digital technologies which 'allow characters and creatures to shape-shift their surface appearances from a source image into a target image in single scenes organized around the display of instantaneous transformation' (131). The ability for characters to transform in front of the camera is not a unique asset to CGI – indeed Méliès's trick photography can be characterised in this way – nor is the figure transformed by digital technology necessarily human – the translucent

being in James Cameron's *The Abyss* (1989) is one of the earliest examples of this. But it is the interrelation between the human figure and digital technology which marks the trail through which the technological uncanny comes to light at the beginning of the 21st Century. Lisa Purse points to the action body in contemporary cinema, and particularly those bodies which are depicted in the superhero film, as a particular site where digital manipulations on the body are especially pronounced (Purse, 2007). The body has traditionally been an important symbol in extrapolating larger meanings and historical contexts in the action film (Jeffords, 1994) and this trait has been continued into contemporary cinema whereby the hero's body is now marked by its relationship to new digital visual effects technologies.

Superhero comic book adaptations offer particularly fruitful examples as these action films centre on bodies which either defy natural laws or lack a real-world referent, such as Hulk (*The Hulk*, 2003). Purse, using Hulk's beyond-human physique and strength as an example, highlights how spectator engagement can be adversely effected when these digital effects attractions both draw attention to the impossibility of movement and bodies on display and the photorealism with which this is depicted in an otherwise live-action film: 'Extended contemplation forces the spectator consciously to confront the fact that this is not a "real" body, a process that gradually brings the spectator out of their imaginative immersion in the film world' (Purse, 2007, 12). The unsatisfactory response viewers may have towards these uneasy representations is one reason, Purse argues, that the extreme transformative body is often substituted onto the villainous characters (as with the diverse group of mutants in *X-Men* (2000)), or are aligned to be mutually exclusive and apart from the 'safe' representations of the pro-filmic body, as seen with the Agents versus the rebels in *The Matrix*. Either way, the human body which interacts with the possibilities of

digital visual effects has the potential to cause unease because, Purse notes, these bodies have an ‘uncanny verisimilitude’ (3). Her word choice is significant: these transformative bodies are unsettling not because they trick the viewer into believing they are real (the superhero narratives guarantee against this possibility), but because these bodies aspire towards a high degree of photorealism. These bodies may be construed as uncanny because they are realistic-looking but move impossibly. The familiar sight of the human is made unstable and unhomey.

As this overview demonstrates, the increased use of digital technologies in mainstream cinema from the 1990s onwards and the questions this raises in regards to conceptualisations of realism and the index were translated onto representations of the body in striking ways. On the one hand many films use the technology to create the illusion of vastness: the human body is doubled to infinite numbers. The technological uncanny potential is apparent here – particularly through the trope of the double – but this is hindered because the body is at a remove from the impact of the technological display, which is dependent upon the portrayal of scale rather than detail. This particular use of digital evokes, instead, the technological sublime. On the other hand, the technology animates impossible bodies so the human figure can morph, mutate and move in ways which defy laws of nature and yet appear photographically and realistically rendered. This realism could be classified, following Purse’s term, as uncanny. However these bodies also perform in a manner which is appropriate to their narrative contexts and comic book influence. The uncanniness is contained. I argue it is somewhere between these two extremes – the sublime and the uncanny verisimilitude – that the technological uncanny emerges at the turn of the century. Just like its emergence in early cinema, this technological uncanny does not appear from nowhere, but rather is the culmination of several

historical developments and technological innovations. The technological uncanny is a product of digital technology's propensity to raise questions of the indexical nature of cinema, its use as a visual effect both invisibly and as a spectacular attraction, and the digital's ability to create photographically realistic bodies both in huge numbers, filling the frame, and with intricate detail on individual bodies. Most importantly of all, the technological uncanny re-emerges because the language of the uncanny returns in the critical discourse evaluating these changes and in the tropes employed by filmmakers portraying the human body. This is explicitly indicated by the use of the actual word 'uncanny' in common vernacular, as evident by the theory of the uncanny valley. I shall explore what this theory is now and elucidate how its popularity since the turn of the century can be better understood as a continuation of the technological uncanny.

The Uncanny Valley

The uncanny valley (*bukimi no tani* in Japanese) is a term which was originally proposed by scientist Masahiro Mori, who seeks to understand the relationship between human-looking androids and the reaction of people engaging with them. He theorises that there comes a point at which the 'life-ness' of an artificial human being becomes familiar but the remaining imperfections of the illusion – the overtly mechanised movement or lifeless eyes – forces acceptance of this figure to drop. This rejection of the artificial human as creepy or disgusting is indicated by a sharp drop in engagement levels, exemplified by Mori on a graph depicting the so-called 'valley' (Mori, 1970; Figure 17). The uncanny valley is therefore a response signalling the rejection of artificial faces or bodies attempting to look like authentic, living human beings. At the time of the essay's publication in 1970, the uncanny valley was not given any substantial attention and Mori's work did not develop his

ideas further or provide any empirical data. However, early in the 21st Century his work was translated into English and, since that time, the theory has been investigated in other scientific fields and has entered into the popular vernacular³⁸. Mori's ideas originally address the problems facing android scientists and those in robot production but it is easy to see how, given the advances in digital technology in creating photorealistic human bodies, the term has now become widely used when critiquing film special effects and computer games. Indeed, it is because of film that the term has become so popular, with *Final Fantasy: The Spirits Within* – the film analysed at the beginning of this thesis – being cited as the main reason the concept has garnered such attention (Prince, 2012). The term has not lost its relevance over the last century, as Michael Phillips demonstrates in 2011 with his review of *Mars Needs Moms* (2011), which comments that the film's effect 'isn't quite human and isn't quite animated, and the stylization feels stuck in the uncanny valley of inexpressivity' (Phillips, 2011).

As we shall see in the next chapter, the uncanny valley is often used by critics and spectators to express disquiet at the digital human bodies displayed onscreen, particularly the photorealistic animation enabled by motion-capture technology. There is, therefore, extensive anecdotal evidence that the uncanny valley correlates to the reception of digital bodies – and these reactions shall also be studied in more detail in Chapter 4 – but scientists have also attempted to test Mori's thesis to better understand the phenomenon. Possible explanations for why one's experience of viewing synthetic humans falls into the uncanny valley include the intricacies of

³⁸ The uncanny valley is a useful counterpoint to the focus on western texts and audiences which are the main case studies of this thesis. The re-emergence of theories of the uncanny in popular culture originating from a Japanese context speaks to the fluidity of the concept within wider geographical and cultural contexts. This facet is supported again by the Japanese origins and international team which created *Final Fantasy: The Spirits Within* (which is explored again in Chapter 4). This helps to point the way for further research into how the technological uncanny model operates within different locales and contexts. I reflect again upon these possibilities in the Conclusion.

perceptual processing (such as threat avoidance, empathy and evolutionary aesthetics) and cognitive systems (such as paradoxes of identity, terror management theory and cognitive dissonance) (MacDorman *et al* 2009). Several of these investigations draw striking conclusions. For example, Shawn A. Steckenfinger and Asif A. Ghazanfar note how monkeys prefer to look for longer at real photographs or obviously synthetic, caricatured faces, rather than synthetic faces attempting to look real (Steckenfinger & Ghazanfar, 2009). Jun'ichiro Seyama and Ruth S. Nagayama support these findings, as their own experiments using human participants states that as the realism of an image depicting a human face increases, so too does the probability of the viewer's experience falling into the uncanny valley (Seyama & Nagayama, 2007). Seyama and Nagayama also highlight how an abnormality on the face increases this risk exponentially and, in another study, the scientists consider the size of eyes as a specific contributing factor (Seyama & Nagayama, 2009).

The questions posed by the uncanny valley, and the resulting scientific explorations, raise similar themes to those which have been recurrent in discourses concerning the digitisation of cinema. The uncanny valley occurs because of the uneasy juxtaposition of technology and the human form; when technology can take the form of realistic-looking faces and bodies. Many of the observations expressed by filmmakers and theorists in the summary above also centre on these uneasy couplings. Digital visual effects are used to mimic photographic properties – to abide by the rules governing what one expects photographic realism to look like – and this complicates the distinction between the live-action or pro-filmic and the digital visual effect. This is signalled both by the subtle effects used in *Forrest Gump* and the overt spectacle of the digital multitude. It is significant that the uncanny valley becomes widely known in popular culture and in scientific investigations just as

these visual effects are able to produce *Final Fantasy*; a whole film made using digital technology which aims for photographic realism. The film could thus be viewed as a continuation and expansion of the uses of digital technology in realistic portrayals emerging in the 1990s. Reactions to *Final Fantasy* also mirror the conclusions of the scientific investigations, as the negative responses indicate a difficulty for viewers engaging with this new form of realism, and specific mention was given to the characters' emotionless eyes (Atkinson, 2001). Yet this is not to say that *Final Fantasy* and its aim for digitally-created photorealism should be viewed as the single ambition previous films using such technology aim for; as investigations into early cinema demonstrate, the medium did not intend then to hide its own illusion, and the self-reflexive nature of the visual effects described above indicate that digital cinema is the same in this respect. The goal does not seem to be for complete simulation of the real, imperceptible from reality; rather, the emergence of the uncanny valley represents the larger context of explorations into the interactions between new technology and the body in which digital visual effects can be placed. This is a context which includes film special effects and the building of androids, but also larger concerns such as the conscious effort to give different types of technology a human face to facilitate interaction (MacDorman and Ishiguro, 2006); the ideas discussed in commentaries on new media and digital convergence (Jenkins, 2007); the expanding literature on the figure of the 'posthuman' (Graham, 2002); and the narratives exploring these issues as with the science-fiction films of the 1990s and the cyberthrillers in literature (Peters, 2003).

The uncanny valley thus helps to illuminate how the discussion outlined in this chapter can be contextualised within wider explorations into the relationship between the human and new technologies. Yet a closer look at Mori's theory also

demonstrates how the uncanny valley is a contemporary articulation of previous ideas permeating the uncanny and its application to cinema; what I term the technological uncanny. Mori begins his essay by musing upon the negative reactions evoked by interactions with robotic devices made to look human, such as prosthetic limbs. He notes how, at first, one may not realise that the appendage is artificial, so this can prove challenging to comprehension and cause a shock (99). Mori's description is evocative of Jentsch's observations concerning automata and his idea that this kind of intellectual uncertainty can lead to an experience of the uncanny. Indeed, it is this very experience which Hoffmann fictionalises in *The Sandman* when Nathaniel discovers the awful truth about Olympia. And it is this particular aspect of the uncanny which other scientists have attempted to replicate and study, as mentioned above. However Mori's work illuminates a key ingredient in this uncanny experience: movement. Many of the more recent explorations into the uncanny valley base their experiments upon the response provoked from still images, such as the investigations into the duration of looks and empathy (Steckenfinger and Ghazanfar, 2009). Mori notes the unnerving experience of viewing technology made in the human form comes not just from the machine's external similitude but its ability to *move* realistically. As Freud and Jentsch note, it is the slippage between the animate and the inanimate which is a key ingredient in provoking an experience of the uncanny. Automata are a prime example of this occurring with the juxtaposition of technology and the human form and are thus a key trope in the genealogy of the technological uncanny. Mori's description of prosthetics and robots extends this history whereby the 21st Century experiments in robotics are directly comparable to the automata made in the human form in the 18th and 19th Centuries. Mori notes the creepy potential of present-day technology, writing:

Since the negative effects of movement are apparent even with a prosthetic hand, to build a whole robot would magnify the creepiness. This is just one robot. Imagine a craftsman being awakened suddenly in the dead of the night. He searches downstairs for something among a crowd of mannequins in his workshop. If the mannequins started to move, it would be like a horror story. (100)

Mori may not have tested his hypothesis under any controlled experiments, but he does offer some ideas as to *why* the uncanny valley occurs. Mori suspects that the sensation of the uncanny valley occurs because it is related to self-preservation; to a core function which operates to keep the body safe and away from harm. He proposes that one of triggers that can cause a ‘descent’ (100) into the valley is the sight of corpses. As an inverse of the logic posed by human-like machines that can move, viewing a dead body is to see that which once moved – lived – as still, inanimate. Interestingly, this is a conclusion which now has scientific credence (Misselhorn, 2009) but Mori’s ideas are reflective of Freud’s original essay on the topic. Mori may not directly reference Freud but the latter’s presence can be felt in Mori’s evocation of the uncanny, its relationship to technology and the human form, and its connection to the fear of mortality. It is from this tradition that the history of the technological uncanny can be traced and applied to the reception of early cinema, and the theory takes on renewed significance in the 21st Century. This, I contend, is particularly significant for the reactions evident in response to digital visual effects in cinema. Ironically, Mori does not reference film special effects specifically, even though the uncanny valley is often used in this context today. This could be an indication of how visual effects have developed since the 1970s (when the essay was first written) as the technologies used in mainstream cinema have been explicitly referenced in further writings on the topic since, with theorists even offering advice

in how to avoid the valley for digital animators (MacDorman *et al* 2009). But there is one image which Mori describes which is reminiscent of the uncanny descriptions which have been applied to cinematic technology. He writes that even though an uncanny experience can be felt on viewing dead bodies, he notes: 'We might be glad that this arrow leads down into the still valley of the corpse and not the valley animated by the living dead' (100). The comment is a rather cryptic one which is not elaborated further but contextualising his ideas about the uncanny valley within the wider tradition of the technological uncanny offers one suggestion. Mori's reference to the 'living dead' is reminiscent of the characterisation many commentators evoked regarding early cinema. We have seen how writers conceived of the new technology as the reanimation of real events and lived experiences; of the preservation of life and movement beyond death. These ideas are inextricably linked to notions of the indexicality of the photograph. Indeed, the phrase echoes Barthes's image of the 'return of the dead' made possible through photography. Méliès's startling trick photography playfully engages with this dialectic, reminding the viewer that the realism of the moving image is a convincing one but ultimately an illusion nonetheless. Mori's playful reference to the 'living dead' is an apt summation of this oxymoron: the moving film image may be related to reality (the pro-filmic) and depict a high degree of verisimilitude through realistic movement – it can create 'living' bodies – but it is also an illusion which may be manipulated through special effects. The filmic body is an unstable creation which can be transformed, mutilated and transcend boundaries: it is, in this sense, 'dead'. Digital visual effects can be seen as another way the human body has incorporated these questions in contemporary cinema, as film theory, the use of visual effects as a central attraction

and wider explorations into the connection between the human and technology, all continue to be haunted by the ideas and tropes of the uncanny.

In conclusion, the uncanny valley is therefore another way of articulating the disquiet and conceptual difficulties which emerge with the juxtaposition of new technology and the depiction of realistic human bodies. The historical contextualisation of the digital age shows how this question becomes particularly apparent in cinema history around the 1990s with the increased use of digital technology for cinematic visual effects. This becomes particularly apparent in the move into the 21st Century, which sees the first attempt to create a photorealistic digital animation with *Final Fantasy*. The complex nature of digital's ontology and its relationship to previous cinematic technologies is a major theme in theoretical debate, with older ideas about the medium – such as the index – becoming important once again. The uncanny valley becomes part of this discussion, as well as highlighting the wider contexts into which the human and technology are merging, as with robotics. The uncanny valley – and Mori's evocative descriptions of this concept – can be viewed as examples of the language of the uncanny returning in attempts to articulate the experience of engaging with these technological developments. As such, the questions posed by the digital age and the uncanny valley are new interpretations of a much older idea: the uncanny which emerges in the 18th Century. It is in this way that early and digital cinema can be compared. The cinema which emerged in the late 19th Century may have different historical contexts and utilise different technology to films made using digital visual effects at the dawn of the 21st Century, but a principle focus remains the same: the construction and manipulation of realistic human bodies using new technologies which appear photographically realistic. This technological uncanny therefore becomes a fruitful

way to characterise an important aspect of the digital's impact upon cinematic representation, and its relevance to the reception of such images shall now be explored in Chapter 4.

Pictures for Chapter Three



Figure 14 - *Forest Gump* (1994)



Figure 15 - *Titanic* (1997)

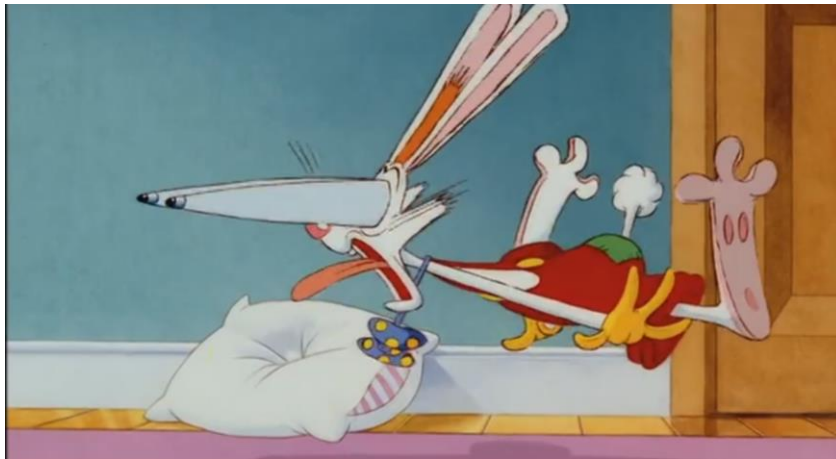


Figure 16 - *Who Framed Roger Rabbit?* (1988)

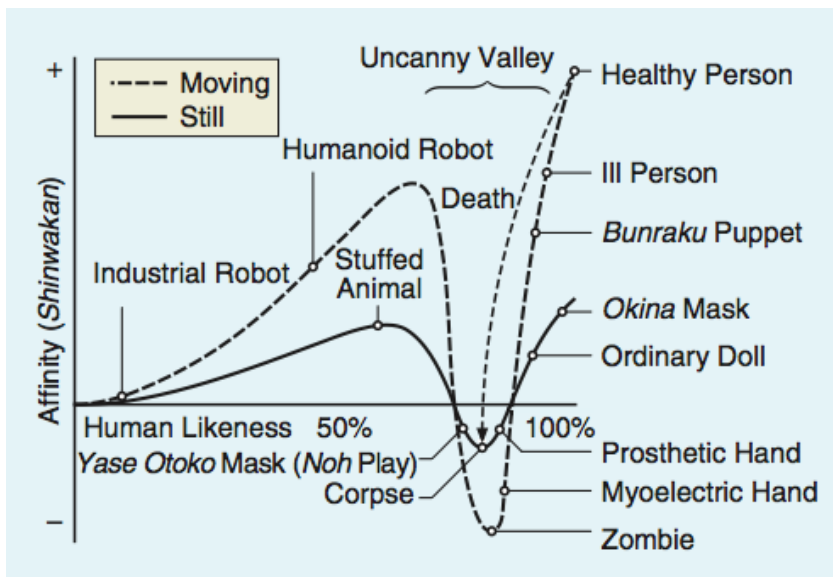


Figure 17 - The Uncanny Valley (Mori, 1970)

CHAPTER FOUR

Motion-Capture Technology and the Uncanny

Avatar opens with Jake Sully's (actor Sam Worthington) voiceover informing us that when he was injured in hospital, with a 'big hole blown through the middle of [his] life', he would dream of flying. The accompanying image complements Jake's sentiments, as the camera sweeps above trees and through mist in the sky. When dreaming, Jake informs us, he was 'free'. The brief prologue is, of course, a prophetic device, acting as a premonition for when Jake actually does fly and become free, as his Na'vi double. For now, the opening narration is bitterly ironic, as subsequent scenes seek to emphasise the opposite is true of Jake's waking life: his brother is dead, he is an ex-marine who has agreed to participate in a project on a foreign world and he is now wheelchair bound because of his injuries. Jake's induction on Pandora – the alien planet – emphasises the lack of agency Jake has over his life in the military-controlled project and how his physical injuries mark him as inferior in the eyes of his fellow soldiers (one comments Jake is 'meals on wheels'). Jake's fortunes change when he is transported into his Na'vi avatar. We first see the Na'vi double with Jake, as he views it within a laboratory tank. Jake and his doppelgänger are framed within the same shot, permitting a comparison between the two. Shortly afterwards, Jake is 'uploaded' into the Na'vi body for the first time. This scene begins with a point-of-view shot, with medics rousing Jake to check his responses and reflexes. In a mid to close-up shot, Jake's blinking eyes – now in Na'vi form – are emphasised, in a framing which mirrors his earlier waking-up from his dreams of flying. 'Welcome to your new body' one of the scientists remarks and Jake, against the demands of the medics to remain seated, immediately stands up and walks out of the bio-lab to go outside and experience his alien body. As he runs

through the grounds, the military buildings and assault course retreat into the background and the surrounding fauna become increasingly more alien-looking. A low-angled, medium shot focuses on Jake's running feet and, when he stops to take a deep breath of Pandora air, his bare, blue toes nestle into the soft soil. Grace, the lead scientist of the project now also in avatar form, throws Jake a Na'vi fruit, which he eats with relish.

This opening section of *Avatar* effectively incorporates the themes about the motion-captured body which shall be explored in this chapter. The transformation of Jake into his Na'vi double is at the heart of *Avatar*'s spectacular attraction. Continuing the trend identified with the films in the last chapter, the development of digital visual effects is indicated with the body. *Avatar* skilfully delays the revelation of the moving Na'vi body and emphasises the physiological difference of the species to humans even further through a comparison with Jake's paraplegic condition. Jake's Na'vi double is seen to escape the medical facility with the vitality and speed that Jake's human form unfortunately cannot match, as indicated by his arrival on Pandora as the former soldier who is unable to 'fall in' with the new batch of 'fresh meat' (as one of officers describes them) who run from the transport ship. Jake's avatar, however, has complete movement and Jake is keen to test his new body's abilities. This scene emphasises the physicality of this digital body by appealing to all five senses: Na'vi Jake can hear and see differently; he takes a moment to smell the Pandora air; Jake enjoys the new found feeling in his feet; and is overwhelmed by the taste of the fruit. Jake's physical dexterity as a Na'vi is later an important plot point, when he completes the Ikran challenge and thereby achieves his dream to fly. This chapter will look at the ways in which other digital bodies are given this

embodied portrayal, emphasising to the viewer the ‘livingness’ of creations which are digitally constructed.

The opening to *Avatar* also highlights that it is not enough for the digital body to move in a realistic manner: it must *look* real as well. As was explored in the last chapter, this realism has a complex relationship to ideas of indexicality, whereby it is the aesthetic of *photographic* realism which is the accepted marker of the ‘real’. *Avatar*’s aims for this level of photorealism with its Na’vi population and Jake’s first experience in his alien body emphasises the detailing of his skin and eyes, and the dexterity of his facial movements. Like the unusual plants (and, later, creatures) which inhabit Pandora, the Na’vi are the unreal rendered realistically. This is another important factor to be explored in this chapter: the digital bodies examined here also aim to convey convincing, nuanced and – above all – *human* performances which retain the physicality and presence of the actor upon which the digital character is based. These films thus retain a resemblance to the real-world actor and this is also highlighted in *Avatar*. Our introduction to Jake’s avatar takes place simultaneously with Jake’s first encounter with his blue doppelgänger and this juxtaposition permits us to marvel at the similarity between them (Figure 18). This is reinforced through dialogue, as Jake muses how the creature looks like his brother and Norm quickly corrects him: ‘It looks like you.’ The point is emphasised further when Jake is first uploaded into the body and several mid to close-up shots occur focusing on his face which gives time for the spectator to acknowledge Sam Worthington’s likeness.

This shot choice is reminiscent of the opening to *Final Fantasy* analysed in the Introduction, which portrayed the details of Aki’s face in minute detail. As was mentioned then, this series of extreme close-ups is the spectacular attraction; the showcasing of digital effects technology which can now reproduce photorealist

human bodies. Indeed *Final Fantasy* and *Avatar* have another factor in common which provides the foundation for analysis in this chapter: namely, motion-capture technology which was used by both films to create the illusion. *Avatar*'s opening is an apt analogy for the process. In both cases the human performer provides the basis for the movement and appearance of the digital avatar: in *Avatar* this is achieved through the uploading of Jake's consciousness into a separate body; in reality, Worthington wore a special suit with markers which could record his physical movements on set. *Avatar* therefore draws further attention towards its own digital visual effects by self-reflexively establishing a link between the creation of Jake's Na'vi double within the narrative, and the photorealistic alien for the film's digital effects. There is, however, a major difference between what *Final Fantasy* achieved a few years earlier and the end result of the illusion in *Avatar*: where the former was widely criticised as summarised in my Introduction, the latter was widely praised for its use of digital effects and became one of the highest grossing film of all time. *Final Fantasy* evokes a sense of the technological uncanny far above and beyond the spectacular display of bodies in *Avatar*. This chapter will investigate what informs this reception and therefore how one may characterise the technological uncanny of the 21st Century.

To draw out these points, this chapter will concentrate on a cycle of films which, like *Final Fantasy*, focus on the creation of photorealist human bodies within animated films. These films use motion-capture technology and were widely deemed uncanny by viewers in a manner I will argue is symptomatic of the technological uncanny. These films are those made by Robert Zemeckis's company ImageMovers (later named ImageMovers Digital) and include: *The Polar Express* (2004), *Monster House* (2006), *Beowulf* (2007), *A Christmas Carol* (2009) and *Mars Needs Moms*

(2011). For the main part of the analysis, I will focus on *The Polar Express*, *Beowulf* and *A Christmas Carol* as these films made the most extensive use of motion-capture technology and were directed by Zemeckis himself.

This chapter is divided into three main sections. First I outline the motion-capture process and its complex ontological properties. I will compare how other writers have approached the questions motion-capture poses for film theory in the digital age and highlight how uncanny tropes seep into these commentaries. Next, I summarise the reviews and reactions I have collated on Zemeckis's motion-captured films, outlining the recurring themes. It is here that the language of the uncanny re-emerges again, with many of the writers likening the digital human characters to eerie doubles, emotionless automatons and synthetic beings symptomatic of the uncanny valley. These comments shape the third section which outlines why these feelings emerge and is divided into four subsections. I argue Zemeckis is aware of the importance of making the digital characters appear human, and there are several strategies employed in these films to emphasise this fact including: stressing the humanness of the characters by establishing an indexical link to the real actor's performance; displacing the uncanny onto other non-human characters and locales; and conveying the physicality of the digital body through action sequences. I summarise these points through *Mars Needs Moms* and conclude it is, ironically, precisely these efforts which result in impressions of the uncanny for viewers.

Motion-Capture Technology

Stephen Prince notes that there are three ways an actor can inhabit the digital world of an effects-laden film. The actor can be 'the live action component of composited shots', such as Worthington's performance as the paraplegic marine at the opening

of *Avatar* arriving on the digitally animated world of Pandora. The actor can be motion-captured to become a digital animated character her/himself, as Worthington does when Jake is uploaded into his Na'vi double. Finally the animator can also be an actor because the professional 'who creates a digital character onscreen must give a performance, expressed through the character as it is created, shaped, and given movement in the expression of feeling and attitude' (Prince, 2012, 103). In this instance, the team of animators at Weta Digital, who recreated digitally the facial data collected during the motion-capture process for *Avatar*, would fall into this category. This chapter will focus on the second approach – the motion-captured body – although, as the following description reveals, it can be difficult to keep these categories separate. Nevertheless, the motion-capture process is important to isolate for analysis because the technology raises the concerns of the index outlined in the previous chapter, and the language of the uncanny returns within both the scholarship engaging with this type of visual effect and, as shall be seen through Zemeckis's work, in the reactions of film viewers.

Motion-capture is the process whereby the movements of a person are recorded and used to form the basis of an animated character. The technology has been used in fields such as medical research, robotics, film and computer game design, with the basic premise remaining the same. Individuals wear skin-tight suits which are fitted with a series of reflective dots concentrated to mark the areas where major joints and muscles bend and contract during movement. These dots reflect infrared light back into the cameras surrounding the performance area, called the Volume, where the actors move and interact. This 360° stage space is relatively sparse and colourless, making room only for the suited actors and minimal objects which form an integral part of a scene. The technology has now developed to record facial movement,

where the term ‘performance-capture’ is preferred.³⁹ The collected data is then used to shape an animated body. As Jody Duncan and Lisa Fitzpatrick describe:

By recording the swarms of dots, the motion is “captured,” and can then be edited, refined, combined with backgrounds and other virtual elements, and then played back days or even months later, to bring the actors’ performances back to life (Duncan and Fitzpatrick, 2010, 16).

Motion-capture is, in essence, a digitised version of rotoscoping⁴⁰ although the technology’s increased use in a variety of films – including *The Mummy* (1999) and *Happy Feet* (2006) – highlights its importance in defining the digital age. Andy Serkis’s career has been instrumental in this. Beginning with Gollum in *The Lord of the Rings* series (2001-3), Serkis has played motion-captured characters in *King Kong* (2005), *Rise of the Planet of the Apes* (2011), *The Adventures of Tintin* (2011) and *Dawn of the Planet of the Apes* (2014), and I shall refer to Serkis’s work as a counterpoint to Zemeckis’s use of the technology. Serkis’s career as a self-proclaimed ‘cyber-thespian’ illuminates how motion-capture is difficult to conceptualise: it is both the recording of live-action actors and a digital visual effect which is completed by animators – the third of Prince’s categories. This strange ontology is captured by Duncan and Fitzpatrick above, when they highlight how motion-capture brings ‘the actors’ performance back to life.’ The inference here is that the technology enables a virtual re-animation of the dead; there is an uncanny tension between the animate and inanimate which further complicates the distinction between the live-action recording of an actor and the role of animation, as discussed

³⁹ Zemeckis pioneered performance-capture, advancing the technology in *A Christmas Carol* to the point where every aspect of the actor’s movements is recorded except the tongue. *Avatar* used a form of performance-capture except the facial data was recorded using individual cameras mounted on headsets.

⁴⁰ As Tom Ambrose notes, motion-capture is ‘rotoscoping’s flashy cousin’ (Ambrose, 2007). With the technique ‘sequences to be animated could be filmed in live action and then blown-up frames would be traced and painted over to turn them into animated pictures’ (Whitehead, 2004, 35). The technique was famously used in *Snow White* (1937).

in the last chapter. Vivian Sobchack highlights this complexity in her analysis of *Final Fantasy*. Sobchack observes how the film creates a ‘deathlife’ of animation, reversing Alan Cholodenko’s term ‘lifedeath’ coined to describe the inherent uncanny quality of animation which always embodies its opposite; that of inanimateness (Sobchack, 2006, 171). Sobchack utilises the term ‘deathlife’ instead to reflect the negative reactions *Final Fantasy* evokes. This uncanniness – which was outlined in my Introduction through viewers’ reaction to the film – stems, in Sobchack’s view, from a disconnect between its visual and narrative premises. The story concerns the ‘spirits within’ but the film’s aesthetics promote the premise that photorealistic effects can be achieved without the need for real actors: the rejection, therefore, of the idea that photorealistic protagonists need to embody a ‘spirit’ – i.e., be real – in order to *look* real.

Final Fantasy fails because it appears too realistic to be animation, and not realistic enough to be live-action, evoking a ‘deathlife’ impression for viewers. However, concentrating solely on the film’s aesthetics misses the true reasoning why the film is specifically uncanny: *Final Fantasy*, just like the Zemeckis’s films explored in this chapter, was made using motion-capture. This fact makes Sobchack’s ‘deathlife’ remark even more poignant; *Final Fantasy* is uncanny because the film utilises a technology which abstracts real actors’ performances and then brings these ‘back to life’ (Duncan and Fitzpatrick) later in the process to appear photorealistic. *Final Fantasy*’s uncanniness is actually a response evoked by human performance which has been recorded, uploaded and shaped using digital technology. It is not surprising that Sobchack does not draw the link to motion-capture in her analysis because *Final Fantasy*’s use of it was not widely publicised; indeed, the film’s advertising and discussion in the popular press emphasises only the power of the digital technology

involved in the illusion. Jessica Aldred notes that the absence of the motion-capture information in *Final Fantasy*'s promotion appears deliberate, as the rhetoric surrounding the film 'suppresses' the real humans who were integral to the digital characters' creation, including the main protagonist Aki. Aldred explains:

Far from being a purely synthetic synthespian, made of nothing more than ones and zeroes, Aki is actually a decidedly hybrid assemblage of human and technical interventions, one of which — motion capture — actually makes her a kind of precursor to the digital characters of *The Polar Express*, for all that her promotional materials would seek to suggest otherwise (Aldred, 2011, 4).

The promotional material outlined in my Introduction supports Aldred's observations. A typical piece is represented by Michael Petrou who writes: 'Ideal pin-up girl anything but real: Don't be fooled, movie star Aki Ross is entirely computer generated' (Petrou, 2001). *Final Fantasy*'s promotion effectively erases the role human performance played in Aki's creation although this raises the question: does knowledge of the film's motion-capture affect the film's uncanniness? I argue that it does because this 'hybrid assemblage of human and technical interventions' complicates the film's ontological make-up, highlighting how motion-capture itself is a technological in-between, a fusion between pro-filmic ideals and the digital animator's creative prowess. The technology encompasses many of the debates on the index outlined in the last chapter and commentaries contemplating motion-capture tellingly use uncanny imagery in their conceptualisations. Livia Monnet draws this link most overtly by analysing *Final Fantasy* in terms of Freud's uncanny. In a manner similar to my articulation of the technological uncanny, Monnet also emphasises the importance of Hoffmann's Olympia to Freud's theory but, for Monnet, it is Freud's repression of Olympia as a specifically *female* artificial

body which is comparable to *Final Fantasy*'s Aki, whose role, she argues, is also disenfranchised (Monnet, 2004, 97).

This repression is enacted against the backdrop of Aki's motion-captured creation which Monnet characterises in terms of the index: 'computer-animated trace of a real, referential movement' (111). Monnet writes that the film's digital figures are 'undead digital vampires or zombies' because 'the film's CGI humans literally "vampirize" the motion-capture actors who modelled them' (99). This knowledge impacts reception of the film as an animation with indexical movement and photorealistic animation. For Monnet, the uncanniness stems from the dissonance between the vitality Aki *et al* are given on-screen, and the difficulty in *seeing* the indexical trace from the motion-capture: 'a *disappearance of the materiality and sovereignty of life*' (107). Chapter 1 outlined this very difficulty, highlighting how cinema also relies on the iconic signifiers of photography (that the image *looks* like the object) and Chapter 3 discussed how the now-familiar aesthetics of analogue are continued in the digital age for this reason. *Final Fantasy*'s motion-capture complicates these distinctions and Lisa Bode agrees, noting that Monnet's vampire metaphor is an appropriate way to begin to think about motion-capture's relationship to the real. She writes:

A vampire is an undead creature: having all the form of a human being but no 'soul', and feeding off the living for its continued animation. In contrast, a 'haunted' or 'possessed' image implies the incursion of spirit or liveliness into an inanimate object, implying an excess of animation beyond that which the lines of the figure can bear (Bode, 2006, 177).

The vampire is itself an uncanny figure suspended between life and death, another double of human form without a 'soul', which works as a productive metaphor with

which to analyse *Final Fantasy*'s characters and the responses they evoke. Yet I would not dismiss this idea of 'haunting' altogether. The *Final Fantasy* characters are, in a sense, haunting doubles of their real-world counterparts, shadows or reflections now captured in digital form. This trace may not be visible – the characters do not bear an iconic resemblance to their real-world counterparts – but this invisibility is also the result of the film's publicity campaign. Interestingly, Monnet does not draw the conclusion that, in this sense, Aki is repressed twice: once by the film's patriarchal narrative, and again by the film's advertising which focuses on the (male) animators' achievements (Duncan, 2001). In denying Aki's motion-captured origins, *Final Fantasy* suffers from a double haunting, as Aldred explains:

[By] suppressing the multiple "real" bodies that "drive" Aki, *Final Fantasy* may have ensured they would come back to haunt her ... This "corporeal haunting" ... problematizes easy viewer identification, prompting an unsettling reflection upon the ambiguity of the animated body (Aldred, 2011, 4).

Images of haunting are also present both in the reception of Zemeckis's films and in the director's strategies for controlling the uncanny, as explored below. Haunting further informs Serkis's explanation of the technique. Serkis writes of his first motion-capture session as Gollum: 'What a buzz! Instantly it made sense ... I was in a totally virtual world of my own. I began to realise the potential for some pretty subtle, understated 'cyber-acting'' (Serkis, 2003, 36). Serkis maintains that the technology demands 'pure, truthful acting' (117) but refers to himself as a 'cyber-thespian' (119). In this way, Serkis equates motion-capture to live-action acting (like Prince) but the physicality of his performance is virtual; Serkis's presence is transformed into ethereal data ('world of my own'). Serkis haunts Gollum's on-screen existence, just as Gollum lives only as a 'perceptually realistic' (Prince, 1996)

visual effect composited to interact with pro-filmic actors. Scott Balcerzak illuminates this point through an analysis of Serkis's work, arguing that motion-capture does not enable a straightforward digitisation of the human body but rather the removal of the physical body altogether, in favour of an actor's electronic presence: the motion-captured body 'can transcend the bodily and move completely into the realm of the spectral' (Balcerzak, 2009, 198). The indexical potential of motion-capture becomes a form of spirit or, in Balcerzak's terms, an 'aura': [The] effect onscreen helps to humanise the special effects performance by 'ghosting' the actor as a tangible presence. Mo-cap provides a major step in supplying corporeality to the artificially animated by affixing the aura of a body' (210). For Balcerzak, the metaphor of haunting provides a precise tool with which to understand the experience of viewing the motion-captured body. In this characterisation of the technology, an abstraction of the original actor's form is retained in some capacity; for Balcerzak this trace is an 'aura', but for Monnet and Bode it is more a force akin to vampiric reanimation of the dead.

Barry King takes these arguments one step further. In his analysis of *Avatar*, King points to the difficulty in maintaining the indexical claim for motion-capture, likening the process rather to a form of digital 'prosthesis', a comparison also made by Bode (Bode, 2015). King notes that the Na'vi are less indexical traces of their real motion-captured actors than iconic representations, 'since they are based on resemblances' (King, 2011, 256). King argues that *Avatar* encourages such a comparison through its narrative of transformation, which is represented by the scene opening this chapter. King states that the technology converts 'external reference into internal reference as a self-contained reality' (257). In King's view, *Avatar* may maintain an *idea* of the index but this is one which is translated into the mechanisms

of transformation; the digital body moves beyond its ‘corporeality’ (Balcerzak). This idea of transformation is highlighted by Tanine Allison who likens motion-capture to a form of metamorphosis. Interestingly, Allison defends motion-capture’s indexical abilities, arguing that the technology represents a fusion of the index and icon in the digital age, whereby the indexical can become animation (in her example Serkis as King Kong) and ‘an instantiation of animation that takes the form of the indexical’: the animated character that maintains the shape and movement of the original performer (Allison, 2011, 335). Allison calls this hybrid form of indexicality a ‘translation’ and notes the connection the term has to the idea of magic: ‘Motion capture seems almost to be a kind of metamorphosis, a profound change in form that was once attributed to witchcraft or the supernatural’ (329). Tom Gunning draws a similar link, commenting on the shared history between visual effects and ‘Western traditions of magic and technology’ (Gunning, 2006, 322). In this instance, Gunning traces a lineage between the motion-captured body and older forms of mechanised bodies, like the ancient legend of the clay figure animated by Rabbi Loew. The relationship is highlighted by the apt similarity between the names ‘Gollum’ and ‘Golem’ (324).

In each of these cases, these writers use the language of the uncanny to conceptualise motion-capture and to help portray the experience of viewing this type of digital body. These theorists evoke images of haunting, of ‘deathlife’, the spectral, vampires, doppelgängers, metamorphosis and magic in order to characterise the nature of the motion-capture process. In one sense motion-capture represents continuity in the digital age to previous cinematic practices: the need for actors – as performers and animators – remains. Yet it also portrays how digital technology complicates notions of the index, which is central to conceptualisations of motion-

capture. With the exception of Aldred, all of the writers quoted refer to the use of motion-capture as a visual effect within a live-action film, as with *Avatar* and Serkis's work. These commentaries do not analyse Zemeckis's motion-captured films, aside from some brief mentions (King) or as a point of comparison (Aldred). This is, in my view, an oversight. Zemeckis's films are important contributions to this discussion because they form a bridge between early uses of the technology in *Final Fantasy* and its increased popularity in live-action films like *Avatar*. Like *Final Fantasy*, the Zemeckis films use the technology for the purposes of animation but, unlike the US-Japanese science-fiction, *The Polar Express et al* self-consciously emphasise the motion-capture used in their creation. Like *Avatar*, the Zemeckis films do this in part by self-reflexively thematising the motion-capture process but, unlike the Cameron film, Zemeckis's creations concentrate on the depiction of the photorealistic *human* body, as opposed to alien ones.

With this emphasis on the human body specifically, the Zemeckis motion-captured films form an integral part of the technological uncanny for the digital age. This is indicated by the uncanny tropes already used for describing the motion-capture process – as analysed above – and how this uncanniness has a complex relationship to notions of the pro-filmic and indexical, animation and visual effects. This is marked in the audience reception towards Zemeckis's creations, which can be broadly interpreted as reactions of the uncanny. I will now turn to this reception, analysing the language used by viewers and highlighting how several uncanny tropes – and in particular the figure of the double and the automaton – are recurrent. Through close analysis of these reactions, I will show how Zemeckis's films extend the discussion on how to conceptualise motion-capture and how the technological uncanny is an integral part of this process. By using motion-capture technology in

the service of animation – rather than live-action as with Serkis’s roles – Zemeckis brings to the fore the slippage in boundaries repressed by *Final Fantasy*. The uncanniness of Zemeckis’s projects exists in the liminal gap between live-action and photorealistic animation; between the mutability of visual effects and the indexical claims of motion-capture; and, most importantly of all, in the construction of a realistic human body which exists in an entirely digital diegesis but is anchored to the performance of a real actor.

The Reception of Robert Zemeckis’s Motion-Captured Films

The Polar Express (2004) is an adaptation of Chris Van Allsburg’s book and tells the story of ‘Hero Boy’, who doubts Santa Claus is real. A mysterious train arrives to take him and other children to the North Pole to validate Santa’s existence and renew the children’s collective Christmas spirits. The film’s importance in the development of motion-capture technology is reflected by the film’s reviews, which note it ‘constitutes a technological breakthrough’ (LaSalle, 2004) and sets a new ‘technical benchmark for the industry’ (Clifford, 2004)⁴¹. There is a consensus amongst the responses I have collected that *The Polar Express* marks a turning point in digital technology which, as Jeff Otto succinctly puts it, ‘in time, could exhibit endless possibilities’ (Otto, 2004). However, these viewers struggle to reconcile the ontological complexity of motion-capture with the aesthetic end-result of the film, and this discrepancy gives rise to feelings of the uncanny. James Plath struggles to engage with the film’s characters because ‘we’re always conscious that we’re watching a process on display’ and this ‘display’, he writes, ‘ends up falling somewhere in the cracks between animation and live-action’ (Plath, 2008). Ian

⁴¹ This is reflected again by the film’s placement on *Cinefex*’s 25th anniversary issue which celebrates the achievements of the visual effects industry.

Nathan concurs, noting: ‘There is some dispute over whether it’s exactly an animated film’ (Nathan, 2004) and Matthew Turner agrees, observing that the film’s ‘resulting “reality” is both unnerving and awe-inspiring’ (Turner, 2004). Marc Savlov writes ‘there’s also a bizarre, palpable sense of unease lurking just below the surface’ (Savlov, 2004). James Kendrick echoes these sentiments:

[Zemeckis’s] CGI recreations fall into a strange netherworld between the believable and the unbelievable, the real and the animated. They’re neither here nor there, which is the source of their unsettling creepiness (Kendrick, 2004).

In all the examples I have collected, viewers who express this ‘sense of unease’ and ‘creepiness’ towards the film unanimously identify the portrayal of the human characters as the source of this uncanniness: ‘The first and possibly biggest problem, one which continues throughout the entire film, is a flaw within the animation of the characters’ (Otto, 2004). Other critics agree: the ‘humans appear almost but not quite real’ (Puccio, 2007) or, alternatively, ‘almost-but-not-quite human’ (Lybarger, 2004). The motion-captured characters are ‘essentially lifeless’ (Roten, 2004), ‘a little too creepy for comfort’ (Dujcik, 2004), ‘whose faces are a little “too real” for animation’ (McEwen, 2004). Roger Ebert notes the characters ‘don’t look real, but they don’t look unreal, either’ (Ebert, 2004) and Rebecca Murray observes that ‘the “people” who populate *The Polar Express* are more frightening than life-like’ (Murray, 2004). The uncanny experience of *The Polar Express* emerges as result of acknowledging the complexities in conceptualising the motion-capture technology. The human characters embody this difficulty, as they blur the boundaries between live-action and animation, what is ‘real’ and what is artistic representation. This experience of the liminal is an experience of the uncanny: the unease and intrigue triggered when these familiar borders no longer seem so rigid and distinct. The

writers effectively convey their experience by relying on metaphors of the in-between, reflecting how the uncanny resides in the ‘cracks’, ‘the netherworld’ and ‘lurking just below the surface.’

The uncanniness of *The Polar Express* as a film of the ‘in-between’ is also marked through comparisons to other live-action and animated films, including those from Zemeckis’s oeuvre. Emanuel Levy sees a comparison between Zemeckis’s earlier work on *Who Framed Roger Rabbit?* (Levy, 2004) and Roger Ebert highlights *The Polar Express* as another collaboration between Zemeckis and Tom Hanks since *Forrest Gump* (Ebert, 2004). The latter was live-action and part of the attraction of *The Polar Express* is seeing Hanks’s performance transformed into animation (Papamichael, 2004; Hill, 2004; Cline, 2004; Lowerison, 2004; Park, 2004). *Final Fantasy* is identified as the film’s predecessor (Otto, 2004; Rooney, 2004; Clifford, 2004; Grimm, 2004; Bowen, 2004) and *The Polar Express* is compared to Pixar animations (Nathan, 2004; Lybarger, 2004, Wright, 2004; Grimm, 2004; Snider, 2004; Orndorf, 2004). Manohla Dargis uses Pixar’s *The Incredibles* (2004, released the same week as *The Polar Express*) and Serkis’s performance to analyse the film: ‘With their denatured physiognomy, the human characters in *Polar Express* don’t just look less alive than Gollum; they look less alive than the cartoon family in Brad Bird’s *Incredibles*’ (Dargis, 2004). A comparison is also made to Cameron’s earlier work (also analysed earlier): ‘Like *Titanic*, *The Polar Express* is a CGI marvel, but the characters are about as warm as the setting’ (Plath, 2008).

Comparing *The Polar Express* to both live-action and animated films emphasises the difficulty in classifying motion-capture. The film’s uncanny humans are linked to this crisis of ontology and there is one metaphor which appears frequently within the responses which demonstrates this: the machine. This trope is used in two ways: it is

employed to emphasise the mechanical impression of the human characters to the viewer; and the idea stresses the awareness of spectators towards the machines needed to create the photorealist aesthetic – the recognition of the mechanisms behind the illusion. The idea of the machine thus provides the tool with which writers conceptualise both the symptom (the human characters) and the cause (the motion-capture technology) of *The Polar Express*'s uncanniness. Desson Thomson remarks: 'There is life in the machine, and machine in these lives ... a fascinating intersection between the real and computerized' (Thomson, 2004). The uncanny suggestion that a machine may have 'life', or the living may be mechanical, is reinforced through the film's mise-en-scène which features an array of clockwork mechanisms, as Cynthia Fuchs observes: 'The idea of the machine extends throughout *The Polar Express*, from the train to the mechanical Santas that bother Hero Boy to the factory at the North Pole. Here the machine is everywhere and not a little menacing' (Fuchs, 2004). This mechanical presence is felt most vividly in the moving human bodies, which are described as robots (Aronsky, 2004); mechanical objects (Snider, 2004); virtual beings (Bowen, 2004); as digital versions of the android replacements in *The Stepford Wives* (Rooney, 2004; Lybarger, 2004); and as the latter combined with the central trope of the uncanny – the automaton: 'the result is rather creepy, with most of the "humans" coming off as little more than slick automatons. Just call this The Stepford Movie' (Brunson, 2004).

Matt Brunson's contention that the humans are like 'slick automatons' signals how *The Polar Express* engages in the longer history and cinematic context of the technological uncanny. The uncanny experience evoked from viewing the synthetic but photorealistic humans of *The Polar Express* is evocative of those 18th and 19th Century endeavours to create an artificial but realistic-looking human body through

mechanical means, as described in Chapter 1. The technological uncanny evoked from watching *The Polar Express* is precisely that: the uncanniness of technology which attempts to depict photorealistic human bodies without using traditional processes for achieving live-action recordings. The digital machine is part of this uncanny experience. The other ‘part’ of this experience reveals the opposite is also true: *The Polar Express* reveals the body to be mechanical too, to have the ‘machine in these lives’ (Thomson, 2004).

The responses outlined above comment not only on how the robotic human characters appear too realistic, but how the digital effects are not real enough: the bodies seem ‘lifeless’ or ‘soulless’. The photorealist aesthetic does not hide the traces of its mechanical construction – indeed, Zemeckis emphasises it – and this reminder highlights the strange doubling which occurs throughout the motion-capture process. The technology provides the digital image with a trace, an impression of the actor’s movements on the performance stage. Yet the process of physically marking the actor with the reflective dots and placing emphasis on the joints fragments the body’s movements down to its essential functions. There is an analogy here with Muybridge’s and Marey’s recording of motion, as described in Chapter 2, and Allison illuminates the link: these early photographic experiments share the ‘internal logic’ of motion-capture because ‘[just] as a photograph captures a moment on film, mo-cap attempts to capture authentic movement’ (Allison, 2011, 335). I would push this observation further and argue that motion-capture does not just ‘capture’ movement, so much as dissect the body and then re-build these parts – through the conversion into digital code – in order to achieve the ‘authentic movement’. The motion-capture suit becomes a double for the flesh which stretches over these inner workings, and the data recording during the capturing session helps

to metaphorically peel this skin back, to remind us that the body is also a machine. Like the trick photography in Méliès's films, motion-capture acts an uncanny reminder of technology's ability to render the body mechanical, as well as revealing that the body is, already, a 'machine'.

The unsatisfied reactions outlined above evoke images of the in-between and the mechanical because the film is both too realistic – it visually exceeds the expectations of the 'subversiveness' (Wells and Hardstaff, 2008) of animation – and is not real enough: the imagery lacks the nuance of the body's real working parts and its movement which motion-capture promises to preserve. The machine metaphor is thus more accurate than allusions to 'magic' (Allison) and the 'vampiric' (Monnet): the bodies of *The Polar Express* are not uncanny because they are simply ethereal or supernatural, but because they are a *combination* of organic movement and mechanical reproduction of performance. Balcerzak's characterisation of motion-capture as the transformation of the actor into a 'kinetic aura' (Balcerzak, 2009, 209) comes the closest to correlating to the above language used by critics. The uncanny valley is an apt concept to apply to this experience of viewing the motion-captured body, as the theory refers both to the mechanisation of the body as well as the humanisation of technology within the larger context of robotics. As explored in the previous chapter, the uncanny valley was popularised after its translation into English and the reception of Zemeckis's films helps to trace the widening usage of the term. In the commentaries collected on *The Polar Express*, only one writer explicitly refers to the concept. Andrew Wright writes:

Forward gazing software wonks and gaming geeks have long discussed "the uncanny valley," a buzzword term describing how the use of new-fangled CGI technology to replicate humanity has resulted in unintentionally

unsettling imagery. *The Polar Express* ... wallows in this valley (Wright, 2004).

As Wright's reference implies, the use of term at the film's release in 2004 was still quite specialist and restricted to groups with a special interest in digital technology. This changes for Zemeckis's other films, where the uncanny valley is increasingly used as a shorthand to express the anxieties described above. *Beowulf* (2007) was Zemeckis's next motion-capture film which is an adaptation of the Old English epic poem. The film tells the story of Beowulf who fights the monster Grendal and becomes king after entering a deadly pact with Grendal's seductive mother. The reception of *Beowulf* is very similar to that of *The Polar Express*: the photorealistic animation was uneasy for viewers to watch and the human characters were 'less than human' (Pejkovic, 2007, 'creepy and unconvincing' (Loder, 2007), and 'an unsatisfying compromise between animation and live action' (Ansen, 2007). Reactions to the film use more direct references to the uncanny valley to describe this experience. Tim Brayton argues the characters in *Beowulf* 'represent a new depth in the Uncanny Valley' (Brayton, 2007) and Tasha Robinson agrees: '[*Beowulf*'s] fakey rendering of life leave[s] it wedged in the uncanny valley' (Robinson, 2007). Interestingly, Rob Gonsalves uses the theory to compare *Beowulf* with its predecessor, *The Polar Express*, commenting that the latter 'drew justified fire because of its Uncanny Valley creepiness factor'; *Beowulf*, he notes, still does not solve the 'problems' with the human characters (Gonsalves, 2007).

The term is used again for *A Christmas Carol* (2009). Another literary adaptation, this final motion-captured film to be directed by Zemeckis re-tells Charles Dickens's classic Christmas tale of Scrooge, a greedy moneylender who is reminded of the value of kindness and charity. Simon Miraudo notes the film 'slides into the uncanny

valley, introducing us to supposedly-realistic “humans” that are both too human and not human enough’ (Miraudo, 2009). Other viewers agree: *A Christmas Carol* evokes ‘what psychologists call an “uncanny valley” that keeps the viewer at a distance of mild repulsion’ (Smith, 2009) and the film is ‘yet another dead-eyed dip into the uncanny valley’ (Bell, 2009). Keith Phipps claims the film ‘doesn’t dip as far into the uncanny valley as *The Polar Express*’ but the human body is still ‘an in-between creature’ in the director’s latest effort (Phipps, 2009). Brian Tallerico’s reaction strikes an exacerbated tone: ‘Why does Zemeckis simply not care at all about “The Uncanny Valley,” that area of animation where creations go from realistic to corpse-like?’ (Tallerico, 2009).

Examining the trajectory of the term’s popularity across Zemeckis’s films helps elucidate how the machine metaphor identified with *The Polar Express* develops and changes. Concerns over the mechanical humans expand into broader philosophical questions about cinema: ‘So is this the future of cinema?’ (Charity, 2007). Others note the debate concerning the characters’ realism ‘could all be moot in the near future; I’m sure Zemeckis is working on the next step in advancing the technology’ (Bowen, 2007). David Keyes urges caution:

Certainly, here we are at the helm of a true technical achievement in cinema, a complex and rigorous endeavour that marries the real and the digital ... Are [the characters] supposed to look authentic? Are we supposed to consciously acknowledge that they are thespians simply being represented on-screen by elaborate shell casings? The movie offers no answers, a terrible dilemma at a time when this bizarre and uncultivated sub-genre is in desperate need of rationale (Keyes, 2007).

Interestingly, no other response to Zemeckis’s films refer to them as a ‘sub-genre’, although the feeling that the motion-captured animations cannot be contained by

common generic definitions is a constant concern – an observation which was first expressed with the idea that *The Polar Express* falls into the ‘cracks’ between live-action and animation. The ‘rationale’ to conceptualising these films evidently does not emerge and this is signalled by how references to the uncanny valley do not replace, or even subdue, the use of uncanny imagery in viewer responses to all three films. In *The Polar Express* Tom Hanks looks ‘like he’s been killed, embalmed and resurrected by lightening’ (Papamichael, 2004); in *Beowulf* the characters’ ‘flesh is revealed to be plasticine and eerily smooth, like watching Barbie dolls come alive without human souls’ (Brayton, 2007); and *A Christmas Carol* reduces ‘live-action performers to pixel skeletons and then [pours] gummy CGI-wax over them’ (Croce, 2009). The science behind the uncanny valley evidently cannot, alone, sufficiently convey the experience of viewing these digital bodies. This is why evaluating these remarks within the technological uncanny helps illuminate how Zemeckis’s films symbolise both the impact of new digital technology on cinematic representations, and how such practices are part of a longer, older tradition of using the human body to explore such uncanny visual effects.

What remains to be seen is quite *how* these films evoke these strong reactions of the uncanny and the attempts made by these texts to control the uneasy potential of the digital human. In doing so, these films actively engage in debating the questions raised by viewers, as articulated by Tom Long: ‘Yes, [a film] could be made this way... but why bother?’ (Long, 2009). The answer to this resides in Zemeckis’s desire to explore the possibilities of digital visual effects technology, and motion-capture provides the means to do this through representations of the human body. This quest has wider implications for audience expectations of how a ‘real’ body should appear and the viewer’s experience of new and novel technology. I contend

that Zemeckis's films construct a dialectic relationship with the traditions of the technological uncanny to explore these implications; the films employ similar strategies to control the uncanny potential of the motion-captured body. These strategies are: attempts to emphasise the 'humanness' of the technological process in order to bring balance to the 'life in the machine' and 'machine in these lives' dichotomy; the endeavour to displace the uncanny onto other characters and settings to preserve the authenticity of the human body; and a strong emphasis upon action sequences which appeal to an embodied experience of cinema. These attempts fail and, ironically, Zemeckis's efforts to normalise the digital body reinforces its uncanny nature further. Using the above reactions as my guide, I now explore these strategies and illuminate how this language of the technological uncanny is uncomfortably translated onto the motion-captured human body.

Putting 'Life in the Machine'

The theatrical trailer for *The Polar Express* identifies Tom Hanks as the star in Zemeckis's feature, a fact reflected by the actor's top billing on the film's poster (Figure 19). Hanks was motion-captured for five of the character roles including Hero Boy, Conductor, Hobo, Santa Claus and Hero Boy's father. His voice is also used for the opening and closing narration of the film, which is spoken as Hero Boy's older self from an unspecified time in the future. Thomas Elsaesser notes how the digitisation of sound does not evoke the same anxiety as digitised images (Elsaesser, 1998, 201) so the narration marks Hanks's indexical presence on the film aurally, in preparation for the physical trace visible through motion-captured technology. The Conductor fulfils this purpose as this character retains the closest resemblance to Hanks's form and the film provokes a comparison between the actor and his digital doppelgänger early in the film. When the train stops for Hero Boy we

hear Hanks's voice calling 'All aboard!' A shot-reverse shot shows only a silhouetted form in the distance, obscured by the train's lights and copious amounts of steam, creatively delaying Conductor's introduction. As the boy approaches, Conductor is framed in a medium shot and the steam clears to reveal his face. The digital character is a realistic rendering of Hanks's familiar visage, displaying a close physical resemblance which is once again enhanced by his recognisable voice ('Well, you coming?'; Figure 20).

The Polar Express emphasises this *is* Tom Hanks, or a version of him, and this is stressed by the images of Hanks during his motion-capture sessions which were distributed as part of the film's promotion (Figure 21). *A Christmas Carol* takes these images further by creating a special feature on the Blu-Ray release of the film called 'Behind the Carol: The Full Motion Capture Experience.' This 'picture-in-picture' viewing experience allows the spectator to watch the film in two screens: one which depicts the motion-capture sessions recording in the Volume and the other displaying the finished animation. These two versions of the film run simultaneously (or there is the option to experience the story exclusively through the motion-capture view) and act as visual reminder that the human characters on-screen were performed by real actors. Thus when Scrooge walks down the street during the film's opening, Jim Carrey is also shown in his Lycra suit, hunched over and contorting his face in order to portray the bitter old man. As Scrooge pushes his way through pedestrians and, later, silently rebukes Bob Cratchit's (Gary Oldman) desire to put more coal on the fire, Carrey is seen interacting with actors in the Volume. Carrey's hand movements are mirrored by Scrooge as he caresses his coveted coins between his bony fingers.

Zemeckis reinforces the indexical and iconic link between actor and digital double, re-establishing the 'materiality and sovereignty of life' missing from *Final Fantasy* (Monnet, 2004, 207). Interestingly, the picture-in-picture feature on *A Christmas Carol* and the promotional pictures released for *The Polar Express* are only made possible because of the live-action recordings taken of performances in the Volume. This film acts as another reference point for the animators as it helps to preserve the real-life and the real-time interactions between the actors. Zemeckis's animations are enabled by the recording of a recording (the filming and motion-capture recording of the scenes) which provides another layer of 'materiality' to the final film's indexical claims. The Volume recordings make visible the invisibility of the index: they visually exclaim 'here it is, the trace' (Niessen, 2012, 172). This rhetoric is upheld by the actors' characterisation of the process which connects motion-capture and other forms of live-action acting, with the new technology even characterised as the latter in the discourse, which Zemeckis describes as 'liberating' because it allows actors to focus solely on their performance without distraction (Vaz and Starkey, 2004, 57). Colin Firth (*A Christmas Carol*) agrees the process allows more 'freedom': 'It's more authentic than doing theatre because there is no imaginary fourth wall' (Prince, 2012, 126). Anthony Hopkins (*Beowulf*) observes motion-capture speeds up production because 'you don't have to break [your performance] up the way you do on a conventional film' (Rowe, 2007).

The argument that motion-capture preserves an indexical link between actor and the final digital creation is one which has been pursued rigorously by Andy Serkis. As already mentioned, Serkis refers to the process as 'cyber-acting' but he considers the technique equal to its live-action equivalent. Indeed, Serkis, along with Peter Jackson, campaigned for Serkis to be nominated in the Academy Awards' 2003 Best

Supporting Actor category. The attempt failed but Serkis won other accolades, including a Saturn award and the MTV ‘best virtual performance’ (both in 2002). Serkis’s achievements with the technology continue to gather momentum as Serkis won the Empire best actor award in 2015 for his motion-captured acting in *Dawn of the Planet of the Apes* (2014), the first time a digital performance has won an award where the other nominees are live-action acting roles. Serkis further preserves his presence within his motion-captured roles by referring to the technology as ‘digital makeup’ (Hiatt, 2014), a term used earlier by Zemeckis (Granger, 2011).⁴² The phrase helps to illuminate how motion-capture works to *facilitate* the performance of a real actor, rather than replace it. In this way motion-capture has not changed the indexical relationship between the presence of an actor and the recording of the body. This is particularly underlined by Zemeckis’s work, where the digital creation bears a physical resemblance to the real actor, as with Conductor in *The Polar Express*. Motion-capture is thus conceived as a device in the wider digital toolbox which can transport an actor’s performance into the image, in a manner comparable to the digital compositing which allowed Hanks to converse with a dead president in *Forrest Gump*. In this formulation the human remains very much an integral part of the Zemeckis animations. However, thinking about motion-capture as ‘digital makeup’ still challenges the viewer and permits the uncanny to creep into the experience of watching the films. Ken Ralston, *The Polar Express*’s visual effects supervisor, inadvertently reveals why these efforts to contain this eerie potential fails. He notes how Zemeckis ‘didn’t want to throw Tom’s performance’ away and so:

⁴² ‘Digital make-up’ may have been used earlier by Zemeckis but the idea of ‘digital prosthetics’ was used by Jackson during Serkis’s Academy Awards campaign (see Bode, 2015).

The challenge was to create a CG feature where the performances on screen were as effective as live-action. In a live-action film, we take for granted all the emotional nuances that come through a performance. To translate that to CG, we had to create the illusion of that level of performance (Ralston, 2005, 114).

Ralston confirms that motion-capture is based on live-acting but the end result is the *illusion* of a performance, just as artificial as the diegesis in which the digital characters exist. The emphasis placed by Zemeckis and others on motion-capture as ‘digital makeup’ translates into an impression that a synthetic layering obscures or suffocates any trace of the real person underneath. This is indicated by the large number of responses which characterise the uncanniness of Zemeckis’s films as waxworks (for example Murray, 2004; Lumenick, 2007; Rickey, 2009). The uncanny is particularly potent when the ‘digital makeup’ transforms the actor’s real physical appearance: Carrey’s Scrooge has exaggerated features and, more radically, Hanks plays the child Hero Boy. The most startling transformation takes place in *Beowulf*, where middle-aged Ray Winstone appears on-screen much younger and with a completely different body type. Our introduction to Winstone works in reverse to Conductor’s reveal in *The Polar Express*: the camera zooms in to find Beowulf on a ship battling a thunderstorm. It is only after we *see* Beowulf that we *hear* Winstone’s voice speak. The effect is jarring: Beowulf’s photorealistic aesthetic suggests the film adheres to levels of verisimilitude which set it apart from other animations, and the level of detail afforded to the face – the pores of the skin, facial hair, wrinkles around the eyes – helps convey the feeling of a trace, of the real actor’s performance underneath (Figure 22). Yet the familiarity of the voice, in this instance, conflicts with the accompanying visuals and thus the internal logic of

Zemeckis's other motion-capture films becomes contradictory, creating another slippage into the uncanny.

Zemeckis seems to be aware of the uncanny potential of viewing and hearing Winstone in this way, as several strategies are employed in an attempt to keep Beowulf looking human and appearing 'alive'. Beowulf's movement is still driven by Winstone's actions and, whilst the final body does not correspond to the actor's reality on an iconic level, the digital character still retains some subtle resemblances, such as the eyes. The animators did not preserve Winstone's overall physical appearance because Zemeckis wanted his protagonist to be 'an iconic superhero' merged with Jesus Christ (Vaz and Starkey, 2007, 64). This posed a unique challenge as Doug Chiang, the film's production designer, notes: 'Beowulf is our only synthetic/human character; he doesn't really exist ... With Beowulf, we had to be more real than real' (Chiang, 2007, 64). The logic of appearing 'more real than real' in the final film is evidently not to hide Beowulf's unfamiliar appearance but to display as much of his body as possible: Beowulf is seen in various stages of undress throughout the film and strips naked to fight the monster Grendel (Figure 23). The extensive views offered of Beowulf's flesh draws attention to his more detailed skin texture, the definition of muscle and even scars, and therefore *Beowulf's* level of photorealism is far superior to *The Polar Express*. The continued emphasis on Beowulf's naked physique forces the viewer into a voyeuristic spectator positioning, appealing to what Laura Mulvey articulates as 'the erotic basis for pleasure in looking at another person as object' (Mulvey, 1975, 485). *Beowulf*, however, reverses Mulvey's characterisation of this gaze by establishing the *male* body as the sight of visual pleasure. In a sense, all the motion-capture films appeal to viewers' fascination with the body on-screen, as we are encouraged to look at the finite

detailing of human flesh which is often framed in close-up, as with the beginning of *A Christmas Carol*. The films encourage scopophilia but the ‘pleasure in looking at another person as object’ becomes the pleasure of looking at an *object* made to *look like a person*.

Beowulf consciously plays on the ‘life in the machine’ and ‘machine in these lives’ dichotomy. Beowulf’s naked body evokes the latter, with his defined muscles acting as a reminder of the constructs of the human body. The action of Beowulf removing his clothes to fight alludes to the stripping back of the motion-capture process, reducing bodies to their fundamental features. This theme is present elsewhere in the *mise-en-scène*, where characters’ bodily functions are emphasised within the mead hall, a space where ‘things were dirty, where people had sex and pissed and swore and got drunk’ (Gaiman, 2007, 36). This emphasis on the visceral as a reminder of the body’s inner workings is stressed again through Grendal’s appearance; the monster has fleshy, humanoid features which have degenerated to show the bone structure underneath. Yet the film equally emphasises the ‘life in the machine’ aspect; the opening investigative tracking shot through the hall depicts the vitality of the bodies. Similar to *Avatar*, *Beowulf*’s digital creations eat, smell, hear, look and touch, and the disorientation of this opening – which appears loud and chaotic – works to stress these people as *living*. The display of flesh in the film therefore operates to help Zemeckis balance the uncanny potential of his film. *Beowulf* draws attention to its own illusory status and self-reflexively characterises the motion-capture process, and yet these elements are not present to distract away from the vigour of the photorealistic human bodies. As seen from the reception above, these efforts do, however, fail. *Beowulf* does not bring these disparate elements into

harmony but, instead, presents them as conflicting forces: once again the illusion is realistic but still not real enough.

This feeling is exacerbated in *Beowulf* because the visibility of the digital human flesh becomes excessive, to evoke Bode's terminology. Linda Williams's notion of bodily excess is useful here; although *Beowulf* does not qualify as horror, pornography or the melodrama genres that Williams focuses on, the film does combine elements of these genres. This combination is embodied by Angelina Jolie's (almost) naked appearance as Grendel's mother, her seduction of Beowulf and the brutal murdering of his crew. *Beowulf*'s themes of sex and violence are excessive in comparison to the other films, which are Christmas family features, but there is another form of 'excess' here. Williams writes how the assumed gratuitousness of these 'body genres' operates as 'a cultural form of problem solving' (Williams, 1991, 216), which concerns the 'rapidly changing notions of gender – of what it means to be a man or a woman' (219). I want to suggest that *Beowulf*'s presentation of flesh, through Beowulf's nudity and the vitality of his peers, functions as another type of 'cultural form of problem solving'. The 'problem' here is not the question of gender but, rather, what it means to be *human* alongside technology's aim to be 'more real than real' (Chiang): can digital technology successfully present photorealistic bodies? Or are these digital doppelgängers, based as they are on real actors, already 'human', or are they something more, something excessive? *Beowulf*'s 'excessiveness' inevitability evokes these questions, signalling the failure of Zemeckis to emphasise the humanness of his creations in an uncomplicated fashion. This gives rise to the experience of his motion-capture films as uncanny.

Controlling the ‘Puppet Show’: Exiling the Uncanny

In *Avatar* Parker, the administrator of the Pandora occupation, calls Grace’s avatar project a ‘puppet show.’ The comment functions as another intertextual reference to the motion-capture process: the recorded actors’ movements are mapped onto a digital model or puppet, to be crafted by the animators. The metaphor is also used by critics to express their unease with Zemeckis’s films. The motion-captured characters ‘look more like puppets’ (Kimmel, 2009) and are ‘like Austrian marionettes from a particularly severe period’ (Smith, 2009). Even Zemeckis is drawn into this metaphor as he is compared to being more like ‘a puppeteer than [a] filmmaker’ (Levy, 2005), which is a point of contention for some: ‘You’re a filmmaker, Mr. Zemeckis, not a puppeteer’ (Gadette, 2009). The image is another example of how the human characters become uncanny: they impart the impression they are lifeless dolls which are forced to life but the ‘strings’ are still visible; the photorealistic animation is not good enough to hide the mechanisms of its own creation. The metaphor is doubly interesting because puppets are used as one of the ways Zemeckis consciously attempts to exorcise the uncanny onto other characters and elements within the films’ diegesis in order for his main protagonists to appear more human by comparison. In *The Polar Express*, Conductor walks Hero Boy through a carriage full of abandoned toys, with several puppets hanging from the ceiling, blocking the protagonists’ path. Conductor comments that the tangled marionettes ‘pose a particular problem’ and, as he moves into the next carriage, Hero Boy is left alone in the space. The lights suddenly extinguish and a medium shot shows a puppet’s hand touch the boy’s shoulder. A reverse-shot shows the toy moving and talking, telling Hero Boy he is ‘a scrooge’. The child recoils in fear and,

when he tries to run, the space suddenly becomes enclosed and disorientating. The camera circles 360° showing Hero Boy tangled in the marionette strings.

This scene of mild horror directly engages with the uncanny potential of motion-captured humans. By including puppets in the scene, Zemeckis playfully evokes the idea that the technology operates as a form of puppetry, whereby the actors ‘drive’ their animated avatars (Zemeckis, 2009). The juxtaposition also highlights the difference between these bodies: the puppet remains a caricatured wooden toy whereas Hero Boy is a photorealistic human. Significantly, another one of the puppets hanging in the carriage is a Pinocchio toy, who is isolated in a close-up shot (Figure 24). The metaphor is clear: Hero Boy is the puppet who has become the ‘real boy’ and Zemeckis, the Geppetto in this equation, uses his skills as puppeteer to direct the uncanny onto other bodies in order to preserve the photorealistic integrity of his digital humans. This strategy works in tandem with the techniques outlined in the section above; by emphasising the uncanniness of other creatures or locales, the humanness of the protagonists is exaggerated. However, just like the intention to express this livingness, Zemeckis’s attempts to control the uncanny also fails; the conscious inclusion of uncanny and (in some cases) horror tropes only work to exaggerate the dissonance felt by spectators of viewing animation masquerading as pro-filmic photorealism.

The use of toys to deploy this strategy in *The Polar Express* can also be interpreted as a meta-textual reference highlighting the difference between motion-capture’s realism and other forms of animation. Hanks’s involvement in Pixar’s *Toy Story* franchise as the voice of the toy Woody is part of the ‘paratextual halo’ (North *et al.*, 2015, 10) which orbits viewers’ experience of *The Polar Express*. This is highlighted by the collected responses which draw comparisons to Pixar’s style and it is worth

dwelling on this juxtaposition as it underscores how else Zemeckis tries to deliberately create uncanny (non-human) visuals. *Toy Story* was Pixar's first full-length digital animation and tells the story of how toys come to life when out of the sight of humans – a potentially uncanny notion itself. The toys' photorealistic verisimilitude is supported by their obedience to the 'reality' of their environment: they are subservient to gravity and their bodily existence is stable, without transforming or performing extraordinary feats, like flying⁴³. In Pixar films 'the pictorial realms of the imagination, the parameters of surreal fantasy, and the visual signifiers of spontaneity, are increasingly controlled, measured and authenticated as if they were real' (Wells and Hardstaff, 2008, 164).

Zemeckis's films are similar to Pixar films in the use of photorealistic animation. However, Pixar avoids any uncanny experiences by concentrating on non-human protagonists, as with *Toy Story*, or by caricaturing the humans. As noted earlier, spectators of *The Polar Express* compare it to *The Incredibles* but the latter's humans have exaggerated proportions with enlarged eyes and heads and synthetic-looking skin. Additionally, these humans possess impossible powers which allow their bodies to mutate in ways comparable to the physical transformations in *Roger Rabbit*: the super-heroes stretch and move at super speeds. Thus the aesthetics and narrative of *The Incredibles* ensure that these digitally animated humans do not evoke comparisons to pro-filmic, indexical expectations and thereby avoid the spectator's engagement slipping into an experience of the uncanny. It is Zemeckis's appeal to these very expectations which illuminates the difference between these types of photorealism: motion-capture is a pseudo pro-filmic process which emphasises its link to reality on indexical and iconic levels. It is for these reasons

⁴³ With the possible exception of Buzz Lightyear who notes: 'This isn't flying, this is *falling with style!*' (*Toy Story*, 1995).

that Zemeckis's films could be classed as hyper-realistic or 'hyperanimation' (Russett, 2009) although this should not obscure the advantage of comparing both as photorealistic. Where Pixar keeps non-human characters photorealistic, and caricatures the humans, Zemeckis conversely ensures the humans are photorealistic and the transformative or mutating properties are exclusive to non-human creatures. In this way, motion-capture's photorealism can be both an appeal to the comfortable familiarity of live-action aesthetics, and an attempt to evoke the familiar-made-strange experience of the uncanny.

One way this is achieved is by juxtaposing the human body with spirits or ghosts. In *The Polar Express* Hero Boy encounters Hobo, a strange man who becomes the literal embodiment of Christmas spirit. When Hero Boy struggles to stop a runaway train carriage, Hobo appears on top of the compartment, revealing the brake's location. As the carriage speeds through a tunnel, Hobo's body splinters into dust and disappears. The moment confirms that Hobo is an ethereal being, part of the magic the narrative confirms exists. This theme is extended in *A Christmas Carol* with the spirits who visit Scrooge. Carrey provided the motion-capture data for all three of the Christmas spirits but, unlike the appearance of Scrooge, these apparitions see Carrey's form radically transformed for the screen into non-human characters. He appears as a flame with a child-like face, a Bacchus-looking man, and the mysterious robed figure with skeletal hands. Whereas Hobo is associated with Christmas joy, the spiritual in *A Christmas Carol* is aligned with death. This is particularly true of the final spirit who shows Scrooge his impending doom on a gravestone, although this association is made earlier. The film's opening shows a line drawing of Marley's deceased face. As the camera tracks back from the close-up, the face evolves into the film's photorealist aesthetic and Scrooge enters the

frame. The editing transition acts as another reminder of how the film differs – and supersedes – traditional forms of animation in relation to realism. The moment also works to emphasise Scrooge’s living appearance by comparing his face to a lifeless corpse. The juxtaposition is made again when Marley’s ghost (Oldman) appears in Scrooge’s house and the encounter is staged as a horror scene. Heavy shadows surround Scrooge as the paranormal activity begins, diverse shots showing the protagonist in close-ups and aerial perspectives. Scrooge retreats in fear at the sight of the translucent decomposing body of Marley when he makes his sudden entrance. Marley is a figure of fright and disgust: at one point the ghost dislocates his jaw and his lifeless tongue rolls uncontrollably from his face (Figure 25). The interaction of the two bodies within the scene serves narrative and extra-diegetic purposes: Marley must warn Scrooge to change his life in order to improve his afterlife, and motion-capture provides this vital life-force emphasising Scrooge’s humanness (and current living status).

Beowulf also uses visceral horror in order to shift the uncanny potential away from the human body with the monster Grendel. Grendel is first glimpsed in an extreme close-up as he presses a claw against his temple, drawing blood. The monster’s association with bodily fluids is an apt preparation for the full revelation of his body. Similar to Marley’s arrival, Grendel’s first entrance is depicted as a moment of horror: darkness descends and a long silence is interrupted by his violent intrusion in the hall. The blue flames which emerge to light his attack provide only glimpses of the deformed creature as he rips humans apart, stopping to drink the blood from one severed torso. Grendel’s disgusting nature is matched by his appearance when he later fights Beowulf and the brighter lighting on this occasion allows us to fully appreciate his repulsive figure (Figure 26). Grendel is grotesque, having a vaguely

human shape but his face is misshapen, his skin constantly oozes and patches of exposed bone and muscle are visible beneath his diseased flesh. Beowulf's body, which is nude for this encounter with Grendal, should provide the comforting sight of familiar human attributes. Grendal, meanwhile, is an embodiment of the abject; of the rejection of the repulsive which 'safeguards' human identity (Kristeva, 1982, 2).

Grendal also evokes Noel Carroll's description of 'horrific creatures' which are 'impure' by being a 'fusion' monster (Carroll, 1990, 43). Grendal's visage '[transgresses] categorical distinctions' because he is both human and reptilian, made of flesh and bone but possessing supernatural strength and powers. Categorising Grendal in this way is important because such creatures should shape our reaction to him: 'we share with characters the emotive evaluations of monsters as fearsome and impure – as dangerous and repulsive – and this causes the relevant sensations in us' (53). However this attempt ultimately fails in *Beowulf*. Not only does the film not repress the uncanniness of the human characters, Grendal actually provokes more favourable responses from viewers, directly contrasting the fear shown by the diegetic humans. Tim Robey writes that Grendal is 'a triumph, a marriage of CGI and performance as good as *Lord of the Rings*'s Gollum' (Robey, 2007) and Robin Rowe agrees: 'The monsters are more convincing' (Rowe, 2007). How is it that the abject Grendal can be more engaging, and less uncanny, than the digital humans?

Carroll's work suggests an answer. Carroll's other category for 'impure' monsters is 'fission' where 'contradictory elements are ... distributed over *different*, though metaphysically related, identities' (Carroll, 46). More specifically, I argue Grendal is an example of 'spatial fission' where these elements 'conflict over space through the creation of doubles' (46). This 'space' is the technology of motion-capture: Grendal is both the digital monster of disgust designed by animators and the performance of

Crispin Glover whose live-action movements and interactions were recorded. Grendal is a doppelgänger, although these two ‘versions’ of Grendal are separated by time and space; fiction and reality. The same can be argued for the human characters who, through the use of motion-capture, are a type of double. However there is no ‘conflict’ in this fission for Grendal, which is where Carroll’s distinctions are reversed in *Beowulf*. Grendal’s ‘fission’ status should ensure we interpret him as the ‘impure’ but, as reactions to the film indicate, the opposite actually happens: whilst Grendal undoubtedly appears repulsive, his motion-captured beginnings ensure he has enough human performance visible to convey emotion and provoke empathy, but not too much human resemblance that the technological uncanny emerges. Grendal is, in this sense, comparable to the success of Pixar characters: the caricature mitigates the eeriness of any human resemblance without compromising on emotional engagement.

Serkis’s work is further proof of this. Grendal is often compared to Gollum, who was very favourably critically received: ‘Gollum is a wonderful creation ... given the most heartbreakingly expressive face, he’s far more than a digital effect: he’s really there taking up space, displacing air’ (Feay, 2002). The compliments for Serkis’s motion-capture work continue throughout the decade, as Felix Vasquez Jr. notes in his review of *Rise of the Planet of the Apes* that there are ‘characters we can care about who transcend the illusion of CGI’ (Vasquez Jr., 2011). The motion-capture technology is viewed in these cases as a way of assisting Serkis’s performance – rather than replacing or diminishing it – and bringing *real* life to the unreal. Vasquez Jr.’s use of the word ‘transcend’ is reminiscent of Balcerzak’s earlier use of the word: Serkis’s doppelgängers move beyond being simply ‘effects’. They are, in essence, Serkis *himself*. The ‘metaphysical’ (Carroll) relationship between actor and

digital avatar is retained. However, Serkis's motion-capture success parallels playing characters which are *not* human. *Beowulf* demonstrates how human characters evoke negative reactions because, as noted above, their lifelike appearance cannot resolve the disjuncture of watching actors' performances become photorealist human animations. Grendal's monstrosity avoids this problem. Zemeckis's attempts to contain the uncanny are unsuccessful because the *human* characters become the impure, fission creatures: the 'contradictory elements' in their creation are not resolved on aesthetic or narrative levels. Juxtaposing the human characters with uncanny tropes – puppets, spirits, death and the deformed – only confirms how such characteristics aptly correspond to the experience of watching the motion-captured actor. The uncanny reactions to these characters indicate how the human body becomes monstrous.

'All Aboard!' Action, 3D and the Uncanny

In the reviews collected several writers comment on the number of action sequences in each film, comparing the moments to rollercoaster rides. *The Polar Express* devises, through the premise of retrieving a lost ticket, the sight of the train plummeting over steep cliffs with the main characters clinging to the front, and an extended scene of the locomotive sliding across ice. The film thus presents a 'series of blockbuster-style adrenaline rushes' (Kendrick, 2004) which *A Christmas Carol* matches with scenes depicting Scrooge flying over Victorian London. The latter is 'a morality play gussied up as a theme park ride' (Williams, 2009) so much so that 'it could easily be transformed into one of those virtual-reality attractions that are so popular at Universal Studios' (Levin, 2009). The frequency of these sequences signal another method Zemeckis uses to emphasise the 'liveness' of the human characters. I argue that the films' action sequences are intended to highlight the physicality of the

digital humans by devising instances which necessitate extreme exertion of the body. The rollercoaster-type action depicts the bodies under substantial duress and, in doing so, appeals to a sensory cinematic experience for the viewer too; this is exacerbated by the films' use of digital 3D. I conclude that Zemeckis tries to create an embodied experience for spectators with the logic that the viewers' heightened awareness of their own bodily sensations will garner a greater engagement and empathetic response towards the motion-captured humans on-screen. As shall be seen, these efforts do not quite translate into the reality of the films' aesthetic and this further provokes a reaction of the uncanny.

Zemeckis's extensive action sequences return us to Gunning's 'cinema of attractions' and, more specifically, to Eisenstein's original use of the word 'attraction' to evoke fairground rides (Eisenstein, 1924). Gunning observes the metaphor is applicable to contemporary films in what he calls the 'Spielberg-Lucas-Coppola cinema of effects' (Gunning, 2006, 387). Interestingly, Gunning notes that such action does not quite fulfil Eisenstein's 'revolutionary possibilities' for film, writing that 'effects are tamed attractions' (387). Yet I argue that Zemeckis's use of motion-capture seeks to reawaken the spirit of the cinema of attractions by using action sequences to draw attention to motion-capture's exhibitionism of the digital body. The 'magical possibilities of the cinema' (Gunning, 383) here is the promise that human physical presence can be conveyed using digital means. This depiction is comparable to the conventions of contemporary action films where, similarly, 'the body itself is constructed as spectacle' (Purse, 2011, 40), but one which abides by real-world rules. Lisa Purse writes how the action film's diegesis is 'carefully designed to preserve a viscerally felt sense of physically effort ... real-world physical correspondences of weight, momentum, force and the materiality of bodies and

objects, is retained' (46). I noted above how Zemeckis's films establish bodily stability in comparison to Pixar animations, and this feature is exaggerated during the motion-capture films' action sequences. Near the ending of *Beowulf*, there is an extended action sequence in which the titular character fights a dragon. Beowulf attaches a chain to the beast and is dragged through the sky, at one point hitting a branch, hurting him (Figure 27). After cutting himself free from the chain, Beowulf then plummets before catching the edge of a cliff and struggles to hoist himself up. He jumps on the monster again, using his weight to drive a blade into the creature. At the fight's finale, Beowulf hangs around the dragon's neck whilst trying to stab it directly in the heart. Straining from the constraint around his wrist and unable to puncture the vital organ, Beowulf severs the tendons under his arm to extend his reach, howling with pain as he does so. This sequence goes to great effort to show Beowulf's strength and dexterity, his muscles straining from the toil and reacting with suitable distress when injured. This action sequence works in conjunction with the portrayal of Beowulf's naked body; the realism of the character's visual appearance is now underlined with extensive physical action.

Such sequences are particularly important to the motion-capture films because the body on-screen does not exist, at least not in the traditional, pro-filmic sense. The films' action sequences therefore reflect a greater urgency to show spectacular moments which are anchored to real sensations, with characters responding appropriately to stimuli. Jenna Ng suggests these moments are effective not because they duplicate their live-action counterparts, but because the motion-capture process is the direct recording of movement itself: 'the experience of mocap becomes a specific sense of being, rather than one of seeing' (Ng, 2012, 247). Unlike pro-filmic processes which rely on the reflection of light to record the referent, motion-capture

‘distils movement from the moving body ... the moving image is now not of the audiovisual but of the kinaesthetic’ (280). Ng analyses *Avatar* to show how this ‘sense of being’ is stressed on a narrative level; my description of the film’s appeal to the senses at the start of this chapter is an example of Ng’s point. Zemeckis’s films also thematise what Balcerzak similarly terms the ‘kinetic aura’ of motion-capture, as all are broadly concerned with protagonists believing in a ‘spirit’ of life whether it be Christmas or heroism. One could extend Ng’s argument to say this ‘sense of being’ is stressed in the Zemeckis films’ promotional material and thus the knowledge that this is motion-capture on display during the action sequence has, already, communicated the physicality of the recorded body to the viewer.

The experience for the viewer is potent in action cinema as Purse argues that a display of such physicality ‘permits a sensorial recognition on the part of the spectator of physical principles that seem to approximate to our own real-world universe’ (46). Purse extends Williams’s body genres of excess (outlined earlier) to include action cinema, as the latter’s depiction of such ‘physical extremes’ has ‘the potential to prompt involuntary physical responses in the spectator’ (43). Zemeckis’s films also appeal to this physical experience of cinema, with their projection in 3D evoking responses from viewers utilising suitably sensory imagery. They write the films are ‘an involving and dazzling sensory experience’ (Puig, 2007); ‘eye poppingly spectacular (Hammond, 2007) and ‘will have you jumping out of your skin’ (Travers, 2007). The association of motion-capture with theme park rides emphasises this further. Cinema cannot, of course, literally transport the body through space like a rollercoaster, but the action in Zemeckis’s films aims to provoke the feelings *akin* to such experiences. The digital 3D is an integral part of this process, as objects which threaten the protagonists are framed, sometimes using a point-of-view

shot, to seemingly extend beyond the screen towards the viewers, as with a spear in *Beowulf* or the deathly finger of the third spirit in *A Christmas Carol*.

I contend that these films' heightened sense of physical motion and materiality of the fictional bodies is used to draw attention to the viewer's own bodily experience of the film. This strategy is intended to ground the 'kinetic aura' (Balcerzak) of the motion-captured human to another real body; to equate the digital experience to a real-world one. Zemeckis's films thus appeal to a phenomenological experience of cinema, as described by Sobchack: 'the film experience is meaningful *not to the side of our bodies but because of our bodies*. Which is to say that movies provoke in us the "carnal thoughts" that ground and inform more conscious analysis' (Sobchack, 2004, 60). Aptly, Sobchack notes that this process of thinking through the body reveals the 'sense and sensibility of materiality itself' (65). This is particularly important for engagement with the motion-captured body which seeks to dazzle audiences with its spectacular displays of technology, whilst grounding the vitality of the digital body to reality. Appealing to viewers' own sense of embodiment helps to source this 'materiality' as distinctly human. The 'lived body', which Sobchack argues helps to construct this meaning (61), is challenged by Zemeckis's films to experience the motion-captured humans as *living*.

The films' success with this is mixed. As already noted, critics enjoy the theme park-like action, which further confirms Sobchack's claim cinema has the capacity to stimulate the body in this way. However, the aim that these action sequences will then, in turn, emphasise the human characters as living is less successful. Tellingly, in the critics' description of the films, the action sequences are often considered in isolation, away from comments concerning the human characters: the action evidently does not aid engagement with the human characters. In fact, the 3D effects

are seen as a hindrance to this relationship, as Duane Dudek notes: ‘This feeling of constant distraction – of [being] visually stimulated without becoming engaged – may be the essential flaw in the 3D film experience’ (Dudek, 2009).⁴⁴ This ‘flaw’ has further negative consequences for Zemeckis’s films, which try to forge emotional identification between the photorealist, animated body and the viewer. The visual – and, indeed, embodied – stimulation of the action sequences provoke ‘conscious analysis’ (Sobchack), but this inadvertently leads to experiences of the uncanny, as outlined in spectators’ responses. There are two reasons why this happens. First, Ng’s translation of a sense of seeing into ‘being’ does not equate to viewers’ experience of Zemeckis’s films and this, I argue, is because the latter are photorealist animations, rather than live-action features like *Avatar*. Zemeckis’s films do not benefit from *Avatar*’s comparison and separation of the real actor’s body to its digital double on visual and narrative levels; and the presence of pro-filmic bodies within the diegesis to provide a counter to the excessive digital visual effects. The transformation which is thematised in *Avatar*’s opening has already taken place, off-screen, for Zemeckis’s creations, which thus rely on the strength of the animation’s photorealism to engage viewers.

Second, the action sequences which aim to enhance this engagement actually become a hindrance because they draw attention to the bodies on-screen for extended periods of time. Elsewhere, Purse links the duration of the virtual action body’s screen-time to a weakening of the viewer’s identification with such protagonists, because this time allows unfavourable contemplation of the visual effects. Purse writes: ‘Extended contemplation forces the spectator consciously to confront the fact

⁴⁴ Such flaws also speak to the wider criticisms aimed at digital 3D, including its lack of ‘novelty’ or ability to add anything substantially new or different to the contemporary cinematic experience (see: Belton, 2012).

that this is not a “real” body, a process that gradually brings the spectator out of their imaginative immersion in the film world’ (Purse, 2007, 12). I want to extend this argument further and argue that, for Zemeckis’s films, this contemplation does not reveal the on-screen body as just unreal; rather, it illuminates the body’s ontologically complexities. The films’ aesthetics, and motion-capture’s philosophy, aim for a realism which calls for comparison to live-action, pro-filmic traditions, as emphasised by the films’ style, narrative and extra-textual materials. The duration of the action sequences enhances the inadequacies of the illusion’s end result. Scrooge is afraid the ghosts’ actions will hurt him because he is ‘mortal’ and yet this impression of mortality is undermined by subtle details; Scrooge does not quite touch the objects he interacts with, like when he holds the second’s spirit’s robes. When Beowulf is flung across the room during his fight with Grendal, the digital human does not seem to land with sufficient force, his skin remaining unmarked from the physical impact. These moments demonstrate how humans fall into the ‘netherworld between the believable and the unbelievable’; the flaws in the animation, enhanced as they are by the extensive action, render the bodies ‘neither here nor there’ (Kendrick, 2004). The aforementioned scene of Hobo dematerialising in *The Polar Express* characterises this uncanny sensation. The Hobo character has an indexical and iconic gravitas in his link to Hanks, however Hobo’s startling disappearance visually reflects the instability at the core of all the characters: their verisimilitude is equally artificial, ready to disintegrate at any time.

Lesley Stern demonstrates how these elements – the on-screen body, its movement and the contemplation of the technology’s capabilities – combine to evoke a specifically uncanny bodily reaction from the viewer. Like Sobchack, Stern argues for a bodily experience of cinema, writing that while the cinematic experience

encourages ‘a certain bodily knowing, also, and in that very process, [it] opens up the recognition of a peculiar kind of not-knowing’ (Stern, 1997, 357). This ‘not-knowing’ is similarly signalled by the body, in what Stern describes as ‘a sort of bodily aphasia, a gap which sometimes may register as a sense of dread in the pit of the stomach, or in a soaring, euphoric sensation’ (357). Stern notes that this sensation occurs because of the ‘tension between stasis and movement’ (357) and she outlines the example of the difference between the stationary spectator’s body in comparison to the moving body on-screen. This moving/not-moving dichotomy is of course present in the reality of film’s materiality – moving pictures are based on the illusion of movement – and this is reminiscent of Mulvey’s association of the uncanny with this ontological truth (Mulvey, 2006). Mulvey identifies this in the association of stillness with death: the animate becoming inanimate. Stern reverses this idea to suggest it is the potency of sudden *movement*, of the shock evoked from recognising the vitality of the moving image, which causes the above sensations in the viewer. The uncanniness of cinema, in this sense, *moves* the spectator.

Stern’s characterisation of the uncanny is particularly applicable to those works by Zemeckis’s which are, as noted, compared to rollercoaster rides. The sensations Stern describes – such as a ‘soaring euphoric sensation’ – are those associated with theme park attractions, and the 3D in Zemeckis’s motion-capture films aims to replicate these feelings. Sara Ross argues flying sequences, in particular, are synonymous with contemporary 3D movies. Ross notes that, unlike other digital displays of spectacle, the flying sequence is narratively justified in films like *Avatar*, where such scenes can ‘be tipped towards wonder and exhilaration, spectatorial states that have versatile narrative functionality’ (Ross, 2012, 210). The ‘narrative functionality’ in *Avatar* returns us to the description of the film which opens this

chapter. Jake's dreams of flying are prophetic to his transformation into a Na'vi who flies an Ikran, and this skill is vital in the battle for Pandora's sovereignty at the film's conclusion. These flying sequences also operate as Kristen Whissel's digital effects emblems, in this case as examples of 'extreme verticality' which reflect the narrative struggles of overcoming rival forces (Whissel, 2014)⁴⁵. We can extend Ross's and Whissel's interpretation of *Avatar*'s flying sequences to include Jake's physical transformation into a Na'vi: this plot point functions diegetically as the overcoming of physical barriers for Jake – whose new alien body is now so strong and enables him to fly – and it can be read allegorically as the digital technology which allows Worthington's body to achieve such feats on-screen. It is significant that Jake is seen soaring through the sky only as a Na'vi and not in his original human body: motion-capture is allegorised as the liberating technological force behind this illusion, which promises new potential in the portrayal of the body on-screen.

Zemeckis's films can also be read in this way; the motion-capture films use action sequences – a high proportion of which feature flying and falling – in order to emphasise the physicality of the bodies on-screen by appealing to the sensations of the spectator's body. The sequences are also narratively significant – all are conceived as events which serve the larger themes of protagonists believing in 'spirit' forces and their own capabilities – although the metaphorical meaning relating to the technology which mediates such spectacles is more poignant: the realism with which such characters move is enabled by the recording of real motion. Yet unlike *Avatar*, Zemeckis's films evoke a sense of the uncanny in the viewer and this is also a direct result from these action sequences and the depiction of such

⁴⁵ See Chapter 3, note 37 for further information.

extreme movement. Stern helps to illuminate why. She writes that the depiction of sudden movement becomes uncanny not just because the movement itself is unexpected and startling, but because the action forces the contemplation that cinema itself – the medium of its mediation – is uncanny. Using similar terminology to Ng and Balcerzak, Stern argues that the uncanny experience is a ‘kinesthetic connection’: ‘There is something extraordinarily exhilarating, uplifting in the sheer bodily momentum that transforms the space and time. But there is also something that arouses dread and is analogous to disembodiment’ (355). This is the body ‘not-knowing’, finding the unfamiliar in the familiar sight of moving images: ‘an *unheimlich* quality integral to the cinematic experience itself’ (357). Stern uses a scene from *Blade Runner* to demonstrate her point, when the android Pris launches an attack on Deckard, somersaulting towards him. Drawing on Eisenstein’s note of the ‘rage’ in somersaulting, Stern argues that the moment is startling because of the suddenness with which Pris transforms from immobile to jumping (almost flying) through the air. This transition is analogous for the cinematic experience itself:

Though pro-filmic the bodies seem to have been taken possession of; I can’t quite get rid of the feeling that (despite what I see) they are mechanical toys that have been wound up and then let loose by the film. These moving images move me (361).

Stern’s characterisation of this experience asserts that her reaction is not the result of a cognitive dissonance, as Bottomore suggests could be an explanatory factor in the reaction of early cinema audiences to on-screen movement (explored in Chapter 2). For Stern, it is the contemplation of the movement’s mediation – as well as the movement itself – which gives rise to an uncanny experience: the knowledge that cinema, itself, is uncanny. Stern’s above example is especially apt as Pris is a replicant, the film’s envisioning of a future automaton, and thus already carries

uncanny associations. However Stern's account remains largely a-historical, relying on examples drawn across cinema's lineage. I suggest that by contextualising such experiences with the technological uncanny, one can identify more precisely the impact these films made at different times with diverse technologies, and therefore specifically *why* the uncanny is evoked. Zemeckis's motion-capture films were made at a time when the digital age expanded visual effects technology, as explored in the last chapter, and they engage with the suggestion that such technology can duplicate live-action aesthetics by replicating the most difficult illusion of all: the human body. Zemeckis thus takes up the mantle promoted by *Final Fantasy*, although *The Polar Express et al* mark a significant shift in the rhetoric surrounding this aim. The emphasis placed upon these films as motion-captured demonstrates that it is not just the duplication of human performance in digital form which is important; it is the transformation of *real* actors' movements into photorealistic doppelgängers which is the central purpose of these films. An awareness of the motion-capture technology used does not lessen the uncanny potential of these digital humans; as Stern suggests, it is this precise knowledge of the medium which makes the experience uncanny.

Zemeckis's strategies to avoid this uncanniness do not succeed. The reactions from viewers confirm that attempts to emphasise the 'humanness' of the characters using uncanny imagery adjacent to these bodies, and the sensory experience of action and 3D do not distract away from the instability and eeriness of the bodies on-screen. The action sequences, in particular, yield potent results because the appeal made to spectators' bodily experience of cinema does not evoke an empathetic response towards the human body on-screen. Rather, it illuminates the sensation of unease felt

by the viewer, feelings one can categorise and conceptualise as the technological uncanny.

***Mars Needs...* the ‘Human Element’**

Mars Needs Moms (2011) was the last motion-captured film released by Zemeckis’s production company ImageMovers Digital which, at the time, had joined forces with Disney.⁴⁶ *Mars Needs Moms* tells the story of how a boy named Milo must rescue his kidnapped mother from a matriarchal Martian society which uses the brains of human mothers to raise their (female) young. Like Zemeckis’s other motion-captured features, *Mars Needs Moms* was not well received by viewers, who found the digital humans have ‘creepy robot faces’ (Snider, 2011), are ‘waxy, inexpressive’ (Hale, 2011) and ‘dead-eyed and antiseptic’ (Bell, 2011). Marjorie Baumgarten writes that the problem with *Mars Needs Moms* is that the characters lack ‘the human element’ (Baumgarten, 2011). Her statement is reflective of the general consensus that the story did not emotionally engage the viewer (Horgen, 2011) and the alien characters were creepy (Anon, 2011) but Baumgarten’s point refers specifically to the human characters. The assessment is ironic: the human characters are created using motion-capture so, indexically speaking, they contain more of the ‘human element’ than, say, Pixar’s animations. However, as the analysis above demonstrates, the knowledge and experience of the human motion-captured character on-screen does not convey this ‘human element’ or, more specifically, it transforms them into eerie doppelgängers which viewers find uncanny.

⁴⁶ The joint project was set up in 2007 and provided Zemeckis with the facilities to produce and direct motion-captured films. Only *A Christmas Carol* and *Mars Needs Moms* were produced under this arrangement.

Mars Needs Moms was released the same year as two other films utilising motion-capture technology: *Rise of the Planet of the Apes* (2011) and *The Adventures of Tintin: The Secret of the Unicorn* (2011), both starring the motion-captured performance of Andy Serkis. As already noted, Serkis's career reflects the increased use and awareness of the technology as part of an actor's oeuvre, although his success parallels his restriction to conveying non-human characters: I argue his avoidance of the uncanny reactions aimed at Zemeckis's films is, in no small way, reliant on Serkis's evasion of human characters. *Tintin* is the only exception to this rule, where Serkis is motion-captured to become Captain Haddock. Yet this motion-capture *human* character did not evoke the uncanny imagery or reactions posited against *Mars Needs Moms*. One useful indicator of this is how the uncanny valley is used by viewers in their reception of the films. As noted earlier, awareness of the theory increased throughout the decade and in the responses gathered on *Mars Needs Moms* all references to the concept utilise the phrase to express their unsatisfactory experience. In the seventy reviews collected on *Tintin*, only seven refer to the theory of the uncanny valley specifically and only two use the phrase in a negative sense. More often, the term is used as a positive comparison; as Christopher Lloyd writes *Tintin* "[hits] that sweet spot in between a near-photographic representation of reality and just enough cartoony distortion to keep things above the rim of the "uncanny valley"" (Lloyd, 2011).

Lloyd reveals one difference between the films which explains the contrasting reactions: how the photorealism is used. *Mars Needs Moms*, like Zemeckis's other projects, uses motion-capture to establish photorealistic animation which evokes live-action aesthetics. *Tintin*, however, caricatures the humans in order for them to appear as digital versions of Hergé's original comic-book drawings. The opening to

Tintin reinforces this fact as a clever plot point, whereby Tintin sits for a portrait performed by the digital doppelgänger of Hergé himself, allows us to look at the traditionally drawn Tintin. The portrait is then removed and the new digital version of the character is revealed in a close-up. This reinvented Tintin encompasses everything we have come to expect from digital animation in recent years: the boy reporter has been given a three-dimensional form and attention is given to the smallest details, such as the texturing of his hair, the folds in his coat and the life-like expressions on his face. However, Tintin does not quite correlate to real-world expectations – his features are exaggerated to maintain a similarity to his drawn version – and so the film’s motion-capture aims instead for the photorealism of texture but the caricatured body of Pixar animations.

Some reviewers did express displeasure at *Tintin* and call its animation uncanny: as Brian Gibson notes, ‘the bodies still have some slightly stiff poses and the faces seem a touch plasticky’ (Gibson, 2011). However such reactions are much less frequent than the negative responses garnered by *Mars Needs Moms*. Indeed, Joshua Weinstein emphasises the difference between the two films, provocatively asking: ‘Can Steven Spielberg’s *Tintin* save motion-capture animation?’ (Weinstein, 2011). The inference is that Zemeckis’s films have doomed the technology. Weinstein’s article is a reminder that the uncanniness of Zemeckis’s motion-capture projects had commercial implications which culminated with *Mars Needs Moms*. The film made a huge financial loss and ImageMovers Digital were forced to cancel their future projects⁴⁷. The company also had their contract with Disney cancelled. Yacov Freedman also highlights how the technology’s complex ontology challenges industry definitions – the Academy has had to reconsider its definition of animation

⁴⁷ The film’s budget was \$150 million but it made only approximately \$39 million. See: <http://www.boxofficemojo.com/movies/?id=marsneedsmoms.htm>

– and divides opinion on how desirable the motion-capture effects are for audiences; Freedman notes how Pixar’s *Ratatouille* (2007), released the same year as *Beowulf*, announces proudly in its end credits a ‘quality assurance guarantee: 100% genuine animation! No motion-capture’ (Freedman, 2012, 39).

The future of motion-capture is, I contend, inextricably linked to the reception of the photorealistic digital human body which remains, to date, uncanny. Serkis’s successful career with the technology focuses exclusively on non-human and caricatured roles, and his planned future projects look to continue with this trend⁴⁸. Poignantly, a recent interview with Serkis dubbed the actor the ‘king of post-human acting’ (Hiatt, 2014). The phrase is telling, suggesting that Serkis’s virtual on-screen presence has superseded the limits of the pro-filmic body in a manner evocative of Barbara Creed’s prediction of ‘cyberstars’ over a decade earlier (Creed, 2000), as outlined in the Introduction. Yet Serkis’s accolade is paradoxical: motion-capture is reliant on the performance of actors and Serkis’s endorsement of the technology seeks to emphasise how his digital characters are *him*. Instead, I think the label points to the larger problem for motion-capture which has yet to be solved: will the photorealistic, motion-captured *human* body always be uncanny? The success of films like *Avatar* and Serkis’s works are currently reliant on the digital character being ‘post-human’; that is, not human at all. Or, thinking about this another way, Prince notes that the successful integration of digital visual effects is to create a sense of ‘perceptual realism’ where ‘unreal images may be referentially fictional but perceptually realistic’ (Prince, 1996, 32). The digital, photorealistic human body rendered through motion-capture complicates this truth where animated images may be referentially real – even indexical – but perceptually challenging and uncanny.

⁴⁸ Serkis’s performance-capture studio Imaginarium plans to release adaptations of *The Jungle Book* and *Animal Farm*.

Pictures for Chapter Four



Figure 18 - *Avatar* (2009)

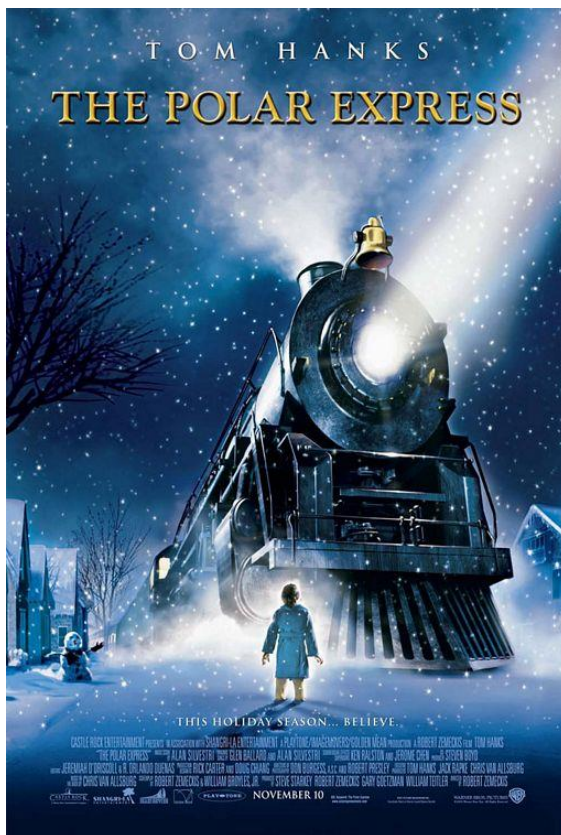


Figure 19 – *The Polar Express* Film Poster (2004)



Figure 20 – *The Polar Express* (2004)



Figure 21 - *The Polar Express* (2004)



Figure 22 - *Beowulf* (2007)



Figure 23 - *Beowulf* (2007)



Figure 24 - Pinocchio in *The Polar Express* (2004)



Figure 25 - *A Christmas Carol* (2009)



Figure 26 - Grendal in *Beowulf* (2007)



Figure 27 - *Beowulf* (2007)

CHAPTER FIVE

Early and Digital Cinema Converge:

Spectatorship, the Body and the Future of the Technological Uncanny in *Hugo*

Set in 1931, *Hugo* (2011) tells the story of the titular boy who is orphaned and forced to work in a train station winding the building's clocks after a fire killed his father and alcoholism leads to the demise of his uncle - his last living relative. No one knows of Hugo's presence or work in the station and, when he is not hiding evidence of his existence from the Station Inspector, Hugo works secretly on fixing an automaton which belonged to his father. Hugo steals parts for his machine from a toy shop owner, known as Papa Georges by his goddaughter, Isabelle. Hugo and Isabelle become friends and discover that Papa Georges is, in fact, the early film pioneer Georges Méliès and the children seek to lift the filmmaker out of his current melancholy and restore public appreciation for his work.

Directed by Martin Scorsese, *Hugo* represents a significant shift in focus for his career. The film is both Scorsese's first film aimed at children – based on the novel *The Invention of Hugo Cabret* (Brian Selznick, 2007) – and his first feature shot in digital 3D. The film draws the viewer's attention to the technology of cinema's visual effects through a dual movement: first by emphasising older special effects techniques with Méliès's character and incorporating the filmmaker's life story and original work into the fictional narrative⁴⁹; and, second, *Hugo* highlights contemporary cinematic effects by its use of digital and digital 3D. The juxtaposition of the film's narrative concerns of early cinema, together with its status as a digital

⁴⁹ It should be noted that some of the bibliographical details featured in the film are inaccurate; for example Jeanne d'Alcy (known as Mama Jeanne in the film) was Méliès's mistress, not wife, during the time shown in flashbacks. However, the most important plot point – that the filmmaker owned a toy stall after his filmmaking career's demise – is true.

feature, demonstrates how *Hugo* performs what Richard Grusin terms a kind of atavism: the use of contemporary digital, 3D technology to represent and mediate older cinematic forms (Grusin, 2014). As a result of this Manohla Dargis calls the film ‘poignant and paradoxical’ (Dargis, 2011), an idea Giovanni Tiso develops into a negative criticism of the film as he writes:

But Scorsese the passionate campaigner for film preservation doesn’t see the contradiction in making a movie in which the films of Georges Méliès are digitised ... at the same time as they are held as the thing that is authentic, the objective Real that modern cinema is founded upon and should seek to return to (Tiso, 2012).

Does a digital film about the life and work of early cinema’s Méliès create a paradox which indicates a contradictory vision in *Hugo*’s version of film history? As this chapter will investigate, this characterisation of the film is inaccurate. *Hugo* does not simply digitise Méliès’s work for the sake of it or characterise early and digital filmmaking practices as diametrically opposed. Rather, the analogue and the digital are brought into a complementary dialogue in *Hugo*, one which emphasises notions of continuity – instead of incongruence – in the film’s representation of film history. Scorsese encourages the viewer to reflect upon the differences between analogue and digital visual effects, but these technologies are both presented with a celebratory tone. For example, how Méliès achieved the trick shots in his films is meticulously detailed through flashbacks showing the filmmaking process and post-production activities. This is combined with spectacular displays of digital technology, such as the opening sweeping shots which track across a computer-generated Paris skyline and the use of stereoscopic effects in digital 3D, emphasised, for example, in moments such as when the Station Inspector’s dog glares at Hugo during a pursuit and the canine’s muzzle appears to extend beyond the screen. Analogue and digital

effects are both engaged in the creation of spectacular visual effects, and Scorsese encourages the viewer to appreciate both equally, urging for the preservation of the past. A clear purpose behind *Hugo* is to encourage audiences to remember filmmakers like Méliès – whilst engaging with contemporary technologies. In doing so, *Hugo* draws together several of the threads that have been discussed throughout this thesis. *Hugo* is a film which makes extensive use of visual effects technology as well as telling a story *about* those technologies and their impact upon cinema history, thus combining elements observed in the earlier case studies for both early and digital cinema. In doing so, the film highlights salient points arising from previous chapters including: the importance of the representation of the human body on screen the ways in which the motifs of the automaton and the double figure strongly in this narrative, and how, most significantly of all, the theory of the technological uncanny elucidates the similarities between early and digital film practices and spectators' responses to cinema.

As a digital film about early cinema and, particularly, Méliès, *Hugo* creatively integrates these elements on narrative and visual levels. This synergy illuminates my characterisation of the technological uncanny as a concept consistently informing the construction and reception of new cinematic technologies. The technological uncanny is a historically-focused theory of the uncanny which stresses realistic depictions of the human body through mechanical means, and viewers' responses to this marvel. The technological uncanny finds its origins through the Freudian uncanny tropes of the automaton and the double: motifs which were technologically realised in the 18th and 19th Centuries through a tradition of clockwork androids, optical illusions and photographic reproductions. The technology of cinema emerged from this context and is an expression of the technological uncanny. The concept

also helps to elucidate a specific mode of spectatorship: these spectacular displays of technology actively draw attention to the mechanisms of their own illusion, encouraging audiences to contemplate the nature of the body they are viewing. It is this double movement – to create realistic portrayals of the body but undermine this authenticity at the same time – which leads to an experience of the technological uncanny. The *unheimlich* experience of attempts to appreciate the verisimilitude of the illusion and comprehend the larger implications of such an invention is at the heart of this uneasy, compelling and intriguing sensation.

The early and digital case studies outlined so far contain some variations in how they forge this relationship to the technological uncanny. In the early cinema context, the attraction of photographic moving images was both its ability to record reality (with ideas of the index coming to the fore) and its capability for that reality to be manipulated with, for example, trick shots. Méliès's work explores these dimensions through the presentation of the body and illuminates how the language of the uncanny informs such portrayals and their audience reception. In the period I broadly term the digital age, these ideas of reality and artifice shape the discussion of how new imaging technologies affect these representations again, with cinema's indexical properties central to these debates. Motion-capture technology effectively encompasses these discussions as it combines live-action performance with digital compositing. Zemeckis's work explores the visual effects process through his portrayal of the human body and audiences widely labelled these films as uncanny. As such, whereas Méliès incorporates uncanny tropes in his depiction of the transformative, mutable body, Zemeckis uses such ideas in order to stabilise the digital body, exiling uncanny imagery onto the surrounding diegesis. The reception of these efforts for their respective contemporary audiences strike slightly different tones.

Where commentaries on the work of Méliès and his peers reflexed anxious anticipation for where the medium may lead, responses to Zemeckis's work are more overtly critical; writers draw comparisons with uncanny bodies (waxworks, automata, etc.) to complain that the motion-capture technology adversely affects their engagement with characters. These differences are largely due to context: as outlined in previous chapters, one must appreciate the mode of address influenced by varied illusory and entertainment traditions with Méliès's work, whilst the reception of motion-capture takes place within the established industry of 'cinema' recognised today. Yet this diversity does not mean any comparisons are impossible or unhelpful. Indeed, a central purpose in this thesis has been to illuminate continuities in these histories of visual effects and to establish the technological uncanny as a framework reflecting this. *Hugo* effectively draws together the analysis on early and digital cinema discussed so far, bringing into focus how the technological uncanny elucidates the analogous positioning between these two eras and their representations of the human body using new effects technologies.

This chapter shall demonstrate these points in three sections. First I will explore how *Hugo* conceptualises cinematic spectatorship, as the film dramatizes the reaction of early cinema viewers and shows this engagement as a defining point in the medium's history. *Hugo* re-tells the myth of spectators cowering at the sight of moving images but, I argue, its portrayal of the theme of looking presented elsewhere in the film complicates this legend, instead establishing a more nuanced reaction which correlates to notions of the uncanny. The second part looks more closely at how *Hugo*'s vision of cinema impacts upon its representation and conceptualisation of the filmic body, with particular emphasis on the narrative's automaton. The automaton – a central trope of the technological uncanny – demonstrates why this form of

mechanised body appears frequently in audience reactions to early and digital cinema. The third and final section considers how *Hugo* does not just reengage and consolidate the theory of the uncanny and its relationship to cinema as postulated so far, but also how the film's combination of early and digital technologies points to new ways for these cinema histories to interact. In particular, *Hugo* renews contemporary interest in Méliès's work, pointing to the importance of considering the experience of early cinema in the digital age. Contemplating this new mode of spectatorship is another way in which the technological uncanny continues to be relevant as audiences interact with new – and very old – visual effects technologies.

Dramatizing the Technological Uncanny Experience

Hugo differs from the other films considered in this thesis because, unlike the other case studies, the film did not evoke reactions from critics or viewers which identify the characters in the story as uncanny. *Hugo* is not uncanny in the same way as the Méliès films discussed in Chapter 2 or the motion-capture examples in Chapter 4 have been distinguished as such. The startling imagery of the trick film identified by early cinema viewers is, in *Hugo*, subsumed into a larger narrative about self-discovery and family unity. Similarly, viewers of the film – released the same year as *Mars Needs Moms* – did not find Scorsese's protagonists creepy or weird like the animation's motion-captured efforts. This is because the early and digital cinema examples analysed previously *perform* uncanny tropes, *evoking* reactions which can be contextualised within the technological uncanny; these case studies place particular emphasis upon the human body, drawing attention to the ontology of the medium enabling the transformation of this body into a filmic form. The importance of the uncanny in analysing *Hugo* operates differently. *Hugo dramatizes* the experience of audiences finding cinema uncanny. It does this in three ways. First,

Hugo prepares the audience for this narrative by emphasising from the very start the theme of watching. In both strands of its narrative – the story of Hugo’s life and the rediscovery of Méliès – the film constantly reminds us what it is to be a spectator and to look, with the most important form of ‘looking’ being a viewer’s engagement with the cinema screen. Second, the film emphasises the child spectator, in particular, in attempts to convey the specific *effect* of viewing cinematic images, which are often compared to notions of magic and dreams within the film. Third, *Hugo* complicates the last distinction by resisting the idea that 19th Century viewers are simply naïve/childlike viewers, completely unfamiliar with what they saw on the cinema screen. Instead Scorsese points to the complexity of such spectators by suggesting it is a combination of the images and – importantly – a contemplation on the technology behind the illusion of those moving pictures which is key to representing the reaction of audience members to early cinema. I argue that it is this process that can be theorised through the uncanny. In engaging with film history in this way, *Hugo* reminds us that a comparison can be drawn between those 19th Century viewers experiencing photographically-produced moving pictures projected for the first time and spectators of today consuming digital cinema and engaging with contemporary technologies. In both cases viewers are not straightforwardly frightened or naïve about what they see; rather these technologies contribute to a wider experience of moving images whilst offering new (or renewed) spectacles which necessitate further contemplation of the filmic medium. *Hugo* thus helps to tell a story of the historical importance of the uncanny to cinema, whilst, at the same time, suggesting ways this concept is still relevant to contemporary digital cinema and, indeed, to the viewing of *Hugo* itself.

The importance of looking is established in *Hugo*'s opening shots. After an initial view of a close-up of clockwork parts which dissolve into the Paris skyline, an edit to another long shot of the city then tracks into the *Gare Montparnasse*, the camera moving through the station, past the trains and its passengers, before finding and zooming into Hugo's face from behind a clock face, all in one take. Unlike the hustle and bustle of the trains and the passengers below, the boy protagonist is isolated and distinguished from his surroundings by the close-up shot of his face and the fact he simply watches. Several shot-reverse shots between Hugo's eyes and the train station reveal what he looks at from his high vantage point: the busy platforms, the Station Inspector and his dog, Monsieur Frick and Madame Emilie, and the florist Lisette, all of whom will feature in subplots of the film. Hugo's gaze is not simply voyeurism to its own end but, rather, becomes an analogy for viewing cinematic images, even at this early stage in the film. The characters given particular attention through Hugo's 'look' are those whose stories shall later coincide; Kristen Thompson comments how these subplots operate like 'mini early cinema vignettes', as though Scorsese pays homage to the stories and action which commonly appeared in early films, such as chase sequences, comical dogs and love stories (Thompson, 2011).

This idea that Hugo's looking is akin to cinema spectatorship is again reinforced by the boy's first interaction with Méliès, immediately following this opening scene. Once Hugo's initial watching of the station is over, he runs through all the clockwork mechanisms to reach another side of the clock face in order to ascertain Méliès's movements at his toy stand. There are two subtle moments in the interaction that follows which connect the act of looking to the cinema and to filming processes. Méliès, whose past as a filmmaker has yet to be revealed at this point, is

watched by Hugo who gazes out from the clock face a second time. Several edits move closer into Méliès's seated figure, pausing for a brief moment on an extreme close-up of the old man's eye, with the clock reflection visible (Figure 28). As fleeting as it is, this striking image visually aligns Méliès with the mechanisms of clockwork – a pairing reserved exclusively for Hugo up until this point – and thus suggests an association with the technology which the film later extrapolates to be that of cinema. Placing this emphasis upon Méliès's gaze hints at the importance of his 'looking' in his capacity as a filmmaker. The shot could also be read, extending Thompson's earlier interpretation, as another kind of homage to early filmmaking practices. The framing of Méliès's eyes as they flicker towards the clock face indicates knowledge of Hugo's presence; a fact confirmed later when the old man confronts the boy. This returning of Hugo's gaze again singles Méliès out from the other people watched in this opening scene and could be read as a form of direct address; a common occurrence in early cinema films, where characters look directly at the camera, acknowledging the presence of a spectator. Méliès portrays his awareness of Hugo's looking in a manner reminiscent of the direct look the real filmmaker used as a performer in his own films (as discussed in Chapter 2)⁵⁰. The use of this knowing gaze here helps to briefly align us, the spectators, with Méliès; we are shown Méliès's awareness of being watched and this information exceeds Hugo's knowledge at this point. Aligning the audience with Méliès may seem strange at this stage in the narrative – his identity is unknown and he appears to be just a dejected old man for the first part of the film – but Méliès's importance to the narrative and to the theme of looking is visually established early in preparation for the revelation of his previous life.

⁵⁰ The fact all this information is conveyed before the characters speak – they are *silent* – could be interpreted as another subtle nod to early cinema.

These juxtapositions of different forms of looking are extended further by the second brief but distinctive moment highlighted in this sequence. Believing Méliès is unaware of his presence, Hugo ventures out from within the clock and attempts to take the clockwork toy mouse from the stall. Méliès stops the boy, forcing him to empty his pockets and, in doing so, discovers the notebook which details the designs of the automaton. As Méliès flicks through the book, the images of the machine become animate, appearing to move in the fashion of a flick-book. The non-diegetic music on the score crescendos with the automaton's 'movement' (the automaton's head turns to look out at the viewer in another direct address) and Méliès shuts the book quickly, pushing it away and quietly exclaiming 'Ghosts!'. The movement of images in quick succession is, of course, the basis of the illusion of animated pictures, and how this technology developed into cinema is a central concern for *Hugo*. The flick-book allusion acts as a reminder of the plethora of technologies which influenced cinema's development⁵¹ and, most importantly, how the moving pictures of cinema are an illusion of *sight*. The gaze of a cinema audience is one directed at an illusion, an artifice which Méliès's films manipulate through the use of trick photography. Seeing the flick-book movement acts as a reminder of the technology behind cinema but also what it is to be a viewer. In this instance Méliès is also a spectator, looking through the notebook; this alludes to his transformation in the narrative to become accepting of the 'ghosts' of the past (his films); and his role as spectator of his own movies at the film's conclusion.

Therefore the opening to *Hugo* subtly reveals Méliès's relationship to the central themes of the film and how these shall progress. With the emphasis placed upon

⁵¹ The point is aptly raised again at the end of the film when Méliès argues to Tabard and other film enthusiasts that they need to go back to 'the cave pictographs of Niaux' to learn where cinema came from.

looking and watching, these two moments begin to illuminate Méliès's past as a filmmaker, his role as an actor/showman, and his future identity as a spectator and presenter of his own (the real Méliès's) work, and thus what it is to be a cinema viewer. This latter point is equally stressed through the depiction of Hugo's looking from his clock-tower. Significantly, early and digital film practices are not just juxtaposed but merged in these representations. The film establishes its digital credentials in the opening, moving shots, but these are combined with the above moments, which are reminiscent of a much earlier form of cinema. The interaction of the two main protagonists – the altercation over the notebook –reinforces the connection by representing digitally the fundamentals of analogue moving pictures. This encompasses the photographic basis of the medium explored in Chapter 2 and Méliès's manipulation of this ontological fact. As discussed then, Méliès's trick films are an illusion within an illusion, drawing attention back to the mediation of the moving image, just as Scorsese does with the flick-book. It is this very contemplation which evoked responses I have characterised as part of the technological uncanny. *Hugo* quickly establishes the dynamic relationship between early and digital cinema, and how the link this has to the technological uncanny is developed elsewhere in the succeeding narrative.

This theme of watching and its connection to cinema is developed more overtly later in the narrative when this characterisation of 'looking' is translated into the distinctive *experience* of cinema. Even before Méliès's past life is revealed, watching films and the cinema become important motifs in the story. Hugo recalls to Isabelle how going to the cinema was a special event he shared with his late father, whose first cinematic experience involved a film which showed a rocket ship flying into the eye of the moon; a film the children later discover to be Méliès's *A Trip to*

the Moon (1902). What is distinctive about Hugo's retelling of his father's first engagement with moving pictures is how the details of the story are less important than how his father *felt* about the experience; Hugo recalls his father saying cinema 'was like seeing his dreams in the middle of the day'. For Hugo, it is the combination of the technology enabling realistic moving pictures and the ability for those images to portray 'dreams' which is key to a cinematic experience and one he is keen to share with Isabelle who, to his dismay, has never seen a film. As Hugo and Isabelle's friendship grows, Hugo decides to take her on an 'adventure' – to the cinema. In a poignant moment in the film, Hugo breaks into the back door of *Le Cinema* and the two children watch Buster Keaton's *The General* (1926). This is the first time a cinema or film is shown in *Hugo* and Scorsese pays close attention to detail in the *mise-en-scène*, with several film posters displayed around the cinema and a sign advertising a 'silent film festival'. Yet when it comes to showing the film, Scorsese shifts the focus away from the cinema screen in order to emphasise the *watching* of the film. Once inside the cinema, the first shot focuses on the beam of the projector, with some other cinema patrons visible. A cut then reveals the Keaton film before the camera turns back to Hugo and Isabelle in the audience, the latter given particular attention as the camera zooms slightly towards Isabelle's face as she is framed by the light of the projector behind (Figure 29). Isabelle's experience of cinema is the central purpose of this scene: several shots back to her in the audience portray her watching the film enthralled, reacting to what she sees with awe, shock and surprise. The experience of cinema, *Hugo* suggests, is unique and evokes several emotions. This emotional response is a theme the film develops further and is characterised as one which occurs from the simultaneous contemplation of the marvellous images on the screen (in this case the death-defying physical comedy of

Keaton) and the illusory technology which creates them (signified by the light from the projector behind). It is with this link that *Hugo* shows the *uncanniness* of the cinematic experience.

An important part of this process is for *Hugo* to depict the novelty of moving images again; for a film set in 1931, it achieves this initially by portraying Isabelle's first engagement with film. It is also significant that Isabelle is a child spectator and thus our introduction to the cinematic experience and spectatorship is mediated through young eyes. *Hugo* prepares us for this alignment early, as has already been mentioned through the emphasis placed on the title character's looking in the opening shots. The emphasis placed on children is already evocative of early cinema: Dan North notes how children feature in many early films, particularly those by the Lumière brothers, as the movement of children helps to express the vitality and 'liveness' of the moving picture illusion. I would also add that the child as *spectator* finds historical resonance with the poster for the Lumière *Cinématographe*, which features quite prominently the child audience member standing up and pointing in response to the images (*The Gardener*, 1895) on the screen (Figure 30)⁵². The importance of the child spectator is present on another level too, as *Hugo* is aimed at a young contemporary audience who are, of course, familiar with a wide range of moving image technologies, of which cinema is only one. The importance of the child spectator on narrative and extrafilmic levels both serve the same purpose: to emphasise the awe-inspiring spectacle of cinema's moving images, in what refers to

⁵² Child spectators were also a common theme in critical responses to the medium, particularly as it developed over the decade into the early 20th Century. These commentaries are written with a cautious tone reflecting upon the immoral effects of cinema upon juvenile viewers: 'Those of us who know that these same children, after sitting in the cinematograph hall till 11 o'clock at night, come weary and listless to school ... many children become petty pilferers ... others actually begin their downward course of crime ... I dare to suggest that all who care for the moral well-being and education of the child will set their faces like flint against this new form of excitement' (Rawnsley, 1913, p.10).

as an ‘aesthetic of wonderment’ (North, 2015, 104). This is achieved through a fictional unfamiliarity with the medium within the film and an engagement with film’s history, whilst enjoying contemporary effects such as digital 3D in the present, respectively. In both cases, *Hugo* suggests that the uncanniness of cinema begins from the point of unfamiliarity; that the medium, or an aspect of the medium, are seen fresh and anew, from the naivety and inexperience of the child’s perspective. This alignment with the apparent credulity of children is developed through the enormous emphasis *Hugo* places on the description of cinema – and, specifically, visual effects – as magical or dreamlike. As has already been mentioned, Hugo’s father likens his experience of cinema to dreams, a metaphor that is utilised again in Rene Tabard’s book – most aptly called *The Invention of Dreams: The Story of the First Movies* – which is read aloud by Hugo and Isabelle when they discover the assertion: ‘The filmmaker Georges Méliès was one of the first to realise that films had the power to capture dreams.’ Tabard authenticates this claim when he recalls to the children in person his childhood encounter with Méliès and how the filmmaker’s glass studio appeared to the young boy like ‘something out of a dream.’ Indeed, his memories, shown to us through a flashback, depict how Méliès spoke to Tabard’s younger self – the latter clearly astonished at his surroundings in the film studio – and the filmmaker remarks: ‘If you’ve ever wondered where your dreams come from, you look around. This is where they’re made.’

The flashback of Tabard’s fond childhood memory watching the making of *The Kingdom of Fairies* (1903) provides us with another child spectator; a character who again draws an association between youth, film and dreaming. Interestingly, *Hugo* puts equal emphasis upon another metaphor for filmmaking and viewing which finds resonance with the child as the ideal audience: magic. Magic is, of course, relevant

to Méliès's narrative (and real life) biography as a trick photography filmmaker who began his career as a stage magician. Before the details of his past are revealed in the film, Méliès's talent as a magician is performed in Hugo's presence, as the boy watches Méliès in his shop absent mindedly performing card tricks, a skill Hugo attempts to imitate when alone with his automaton. The children use references to magic when discussing their plans to help Méliès, as Isabelle calls Méliès's threats to burn Hugo's notebook 'all a trick', and the latter urges that Tabard's private screening of *A Trip to the Moon* be a surprise for Méliès, 'like a magic trick.' Like dreams, magic is strongly aligned with these children and their journey in the film in becoming important cinema spectators. This, once again, is extended beyond the narrative to include the child spectators which *Hugo* is aimed at; as Kurt Cline argues, Méliès's work provokes a literal 'magical seeing' because the filmmaker's work – and, by extension, *Hugo*'s framing of it – 'partake of magic in a manner much more conscious and direct' (Cline, 2014, 247). Hugo and Isabelle, as child spectators, help to emphasise how cinema should be marvelled at 'like a magic trick', a sentiment Scorsese evidently wishes to impart to a contemporary juvenile audience, as North states: 'Embedded in *Hugo* is an injunction to watch films like a child, to reinvest the moving picture with some of its original novelty value' (North, 2015, 100).

This correlation in *Hugo* between naïve spectatorship, childhood, magic, dreaming and the cinema points to how the film demonstrates the uncanny potential of the medium. As Tom Gunning suggests, one can identify the importance of childhood naivety to Freud's work on the uncanny as the psychoanalyst discusses how repression occurs when 'primitive beliefs' have been surmounted, a process which takes place during the move from adolescence to maturity. Gunning continues:

If the uncanny as understood by Freud also harks back to childhood beliefs in animism and the omnipotence of thoughts, the fact many of us as children first encounter technology through the lens of such manufactured folktales, may in fact produce lasting impressions, preserved beneath a later learned rationality (Gunning, 2003, 47).

Therefore, it could be argued that *Hugo* portrays cinema and its experience as a means to return the viewer to an earlier state of childlike ignorance, where the familiar sight of moving images becomes magical and dreamlike, thus renewing older uncanny feelings one may have felt in first encounters with the technology, just like Isabelle. This combination of science and technology with the mystical or supernatural is also historically poignant to cinema's reception, as Chapter 2 explores how such a juxtaposition is frequently employed in contemporary commentaries on moving pictures – using a style which I have termed the language of the uncanny – written in the late nineteenth century. Gunning's reference to 'folktales' further supports these arguments, as Freud offers extensive commentary on the influence of fairy tales on the child's psyche and, as Jack Zipes reveals, magic is a central strand in those same stories which were extensively adapted into fairy tale films, of which Méliès's work is a cornerstone of that early cinema tradition. And fairy tales, Zipes reminds us, 'have an extraordinary, uncanny power over us' (Zipes, 2011, 1); it is quite apt, then, that Scorsese's selection of extracts from Méliès's original films is drawn mostly from the latter's fairy tale themed works.

However, I argue that *Hugo*'s dramatization of the uncanniness of cinema is more complicated than the initial relationship between child spectator and the experience of the moving image in the film may first suggest. Rather, the emphasis the film places on the children's viewing of cinema as magical, dreamlike and unfamiliar is only part of a larger process of engagement with moving picture technology. To

characterise an uncanny experience as simply the result of an ignorant interaction with the unfamiliar is a rather literal reading of Freud's essay, and indeed misses the important formulation Freud finds in the nuances of *das unheimliche*. As has been stated throughout, the uncanny is, instead, an experience of the homely made unhomely, of unfamiliarity's encroachment upon the familiar. *Hugo's* depiction of the uncanny does not, therefore, begin and end with its emphasis on the child spectator and the relationship of childhood to ideas of magic, dreaming and fairy tales. Instead *Hugo* develops these ideas to include other kinds of spectators and introduces the importance of viewers contemplating the technology behind cinema's illusion, of understanding how the 'magic' works: the importance, therefore, of finding *familiarity*. It is the film's dual approach in associating cinema's effect with a child's naivety and its detailing of filmic technology which more accurately accounts for *Hugo's* depiction of a cinema viewer; it is in this way that the film portrays a mode of spectatorship which engages with the technological uncanny.

This complexity in *Hugo's* representation of the uncanniness of the cinematic experience is demonstrated through the film's portrayal of the infamous 'train myth.' It is, perhaps, ironic that it should be the reconstruction of this enduring story of early film spectators cowering in fear at the sight of moving images that represents *Hugo's* nuanced portrayal of such experiences which points towards a theory of the technological uncanny. The 'myth', after all, contributes to misleading notions that cinema's earliest viewers were inexperienced spectators unfamiliar with the illusion of moving pictures, as analysed in depth in Chapter 2. *Hugo*, however, dramatizes the 'train myth' twice in the film, with each scene containing significant differences in how the action is framed and where the emphasis is placed. It is by comparing these two scenes that *Hugo's* dramatization of the technological uncanny – rather

than straightforward fear or ignorance – as the primary characterisation of audiences’ reaction to film is illuminated. The first time the ‘train myth’ is seen in action is when Hugo and Isabelle read aloud from Tabard’s book *The Invention of Dreams*. In this portrayal of the myth, *Hugo* reengages with ideas of the cinematic medium as ‘magical’ and ‘dreamlike’. The scene begins with Hugo reading from the book, telling us: ‘In 1895, one of the very first films ever shown was called *A Train Arrives in the Station* [sic] which had nothing more than a train coming into the station.’ Hugo’s voice, acting as a voice-over narration, is accompanied with a high-angled shot above the boy reading, with a picture of the Lumière train prominent on the book’s page. The film then cuts to actual footage of *The Arrival of a Train at La Ciotat Station* (1895), which is shown full-screen. As the train approaches, the camera pulls back to reveal that the Lumière locomotive is actually approaching two screens: the screen the viewer of *Hugo* observes, and the diegetic screen of an unnamed place in 1895 which is now revealed by the camera’s backward movement and signified both by the red curtains framing the image and by the backs of spectators watching the film. As the train approaches the corner of the screen, the spectators gasp and cower (Figure 31). By way of providing further explanation for this reaction, Isabelle, resuming narrating duties, explains: ‘When the train came speeding towards the screen, the audience screamed, because they thought they were in danger of being run over. No one had ever seen anything like it before.’

It would seem at this point that Scorsese’s film thoroughly endorses the ‘train myth’ as an unquestionable part of cinema history. The fact the director feels the need to reconstruct the experience a second time – during Méliès’s own retelling of the medium’s history – could support this fact. Yet I argue that, when considered as a whole, this scene acts only to reinforce the emphasis garnered from *Hugo*’s earlier

depictions of the child spectator and the ‘magic’ of cinema. The reaction of early film spectators *Hugo* wants to convey is not, conversely, one of fear primarily. This is indicated in the reaction that is shown in response to the incoming train; the spectators do jump and flinch, but – significantly – they do not ‘scream’ in the manner Isabelle’s reading of Tabard’s version of events states, nor do the audience members run away or faint as some of the primary sources analysed in Chapter 2 suggest. It seems, therefore, that Scorsese has already mitigated the full dramatic potential of this legend, opting instead for rather muted representation of the myth that does not fully correlate with Tabard’s account. Indeed, Scorsese appears to gently interrogate the validity of such a historical claim, as Isabelle reads the above words with a tone of disbelief and mocking; such incredulousness stems from a character who had only recently, herself, experienced cinema for the first time. Evidently *Hugo* thus portrays a rather watered-down version of the ‘train myth’, again shifting the main emphasis back to the idea of young spectators in awe of such a dreamlike spectacle. Immediately following Isabelle’s reading of Tabard’s text, the camera frames Hugo in a mid-shot as he looks up, and another cut shows a point-of-view shot looking at the grand painting of Prometheus on the ceiling. The light from the classical figure’s finger is framed in a close-up shot and begins to flicker like a film projector, with the machine’s noise audible on the soundtrack. In a voiceover, Hugo can be heard repeating the line ‘no-one had ever seen anything like it before’ as the ‘projector light’ reveals a curtained cinema screen and clips from several early films are presented in a montage. Several shots within this montage cut back to Hugo and Isabelle looking amazed and awe-stricken at the images in the book (as they exclaim at one point: ‘wow!’), which the editing helps bring ‘to life’ – i.e., moving – in another allusion to the ‘magic’ of cinema. In several of the reaction shots of

children's responses, Hugo is isolated in the frame, looking up and daydreaming about the wonders of the filmic medium, as indicated by the flickering projector light which continues to illuminate his face (Figure 32).

The scene therefore brings together two characterisations of the response of early cinema spectators. The dramatization of the 'train myth' conveys the shock and unease viewers felt, which is quickly translated into a childlike mode of spectatorship with the reactions of Isabelle and Hugo, where the audience is unfamiliar with and awed by the illusion before them. This is not fear *per se*: rather the ignorance of the cinematic experience is characterised as 'magical' and dreamlike, as indicated by the children's responses, which in turn builds on the strong association these terms have with the young protagonists elsewhere in *Hugo*. However this is only half the story: *Hugo* depicts the 'train myth' a second time but this time the attention is shifted from the child (or childlike) spectator to direct contemplation of the technology which makes cinema possible. It is this movement – from unfamiliarity to contemplative familiarity – which reflects *Hugo*'s representation of a myriad of cinematic experiences: a process I argue can be characterised as the technological uncanny. The second 'train myth' scene occurs after Méliès's true identity has been revealed and the old man discovers the children have brought Rene Tabard into his home for an impromptu screening of his work. Already the attention on how the moving images are considered has shifted to the technology: whilst Hugo and Isabelle are featured in isolated shots looking amazed at the projected images, for the first time in *Hugo* a projector is given exclusive attention, as a mid-shot depicts Tabard's slow cranking of the machine's handle. Indeed it is this technology which motivates Méliès to join the makeshift cinema audience in his apartment, as he remarks 'I would recognise the sound of a movie

projector anywhere.’ As Méliès narrates a flashback which will constitute the second portrayal of the ‘train myth’, it is interesting that this anecdote of cinematic initiation is not shown immediately and unexpectedly, as with the first time. Rather, Méliès’s narration – and the visual image which accompanies it – creates anticipation in delaying the reveal of the technology in question, with Méliès first recounting his career as a magician. His interaction with moving pictures occurs at a travelling circus, with a barker attracting patrons with the promise that the *Cinématographe* ‘will terrify you.’ Méliès describes the new technology as ‘something strange, something wonderful’ and the camera cuts to inside the tent in order to watch Méliès and Mama Jeanne enter.

The distinct differences between the depictions of the ‘train myth’ in both scenes demonstrate how the uncanny reaction to the moving images also has a direct link to contemplation of the technology used to create the illusion. The shot of Méliès entering the *Cinématographe* tent portrays the magician and his wife’s reactions to this strange sideshow attraction; in contrast to the previous ‘myth’ scene, the diegetic screen is initially hidden from our view. Their faces – depicting emotions such as uncertainty, curiosity and wonder – are initially in the background, only coming to the fore as the camera tracks and pans. This movement allows the shot to include – and, initially, privilege – the projector and its operator, which are positioned in the centre of the frame to begin with. The focus of this scene’s version of early cinema’s audiences is clear: it is the technology behind the marvellous illusion which is celebrated. This shift in attention is upheld even when the larger audience and projected film are revealed to us; a long shot shows the screen, the Lumière’s *Arrival of a Train*, the audience in front and, importantly, the working projector on screen-left. When the screen’s train approaches, the gathered spectators react very similarly

to Tabard's account of events, as they jump and gasp. Again, this reaction is not one of fear: an immediate cut to a shot in front of the audience reveals their amazement and laughter at their response to the illusion, as they take their seats again. The projector is seen in every shot in this scene: here it is emphasised again with a central positioning in the background and then a cut to a close-up on the machine shows Méliès approach the projector in awe, looking closely at the operator's rhythmic turning of the handle and the strange box's light sources (Figure 33). Méliès's voice-over narration tells us: 'it was like a new kind of magic.'

The reaction in response to moving images as depicted in this scene does not depend solely on an ignorance of the experience; rather, *Hugo* is keen to emphasise how the direct contemplation of the technology behind the illusion is just as important in audiences finding early cinema 'magic.' This modifies the mode of spectatorship encompassed in the first 'train myth' scene to move the distinction away from the ignorant viewer towards an informed and actively engaged audience. *Hugo*'s portrayal of cinema viewers therefore performs the 'oscillation' from the credulous to the incredulous spectators described by Gunning (Gunning, 1994), as analysed in detail in respect to early cinema in Chapter 2. This movement is perhaps already implicit in *Hugo*'s earlier scenes as the protagonist presents himself to Isabelle as an experienced cinema consumer and the very opening shots emphasise the boy's mastery over looking and the operation of the clockwork features which are later translated as synonymous with the making and viewing of cinematic images. Tabard's description of his childhood encounter with Méliès is also another inference this 'oscillation' in spectatorship is present in *Hugo*, as the child (read: ignorant and inexperienced) spectator watches not the final images of Méliès's work when they are projected onto a screen but rather the mechanisms behind the illusion,

as the young Tabard watches the production stage of the film. Tabard's expressions of awe and wonder in the scene, encouraged by Méliès's statement that what the boy sees is how 'dreams are made', is a strong example of Gunning's argument that 'the apparent realism of the image makes it a successful illusion, but one understood as an illusion nonetheless' (Gunning, 1994, 119). The understanding of this illusion is certainly given far more attention and emphasis in Méliès's retelling of the 'train myth', which is then followed with scenes detailing how Méliès built his own projector using parts from his automaton.

The complexity in *Hugo's* overall representation of cinema spectatorship as one which shifts from inexperience to informed curiosity forces us to question the emphasis the film places on the dreaming and magic metaphors which are so prevalent throughout. Acknowledging the contrasts between, in particular, the two versions of the 'train myth' illuminates the significant differences between the meanings of these two words: whereas dreaming denotes a process of imaged-based cognitive activity experienced during sleep, and dreams are often also associated with positive hopes for the future, magic may be experienced by a spectator as marvellous or other-worldly but it is essentially a trick; an illusion created and enabled by a skilled magician. The difference between these two words is important and *Hugo's* employment of both does not, I argue, indicate a mixing of the film's metaphors, but rather contributes another layer in its complex characterisation of early cinema audiences. To associate films with dreaming is to acknowledge the wonderment and overwhelming potential of the cinematic experience, as Hugo's father described his childhood experience of moving pictures. To think of cinema as magical is to maintain the potential for this childlike experience whilst recognising the mechanics behind the illusion: the craft and skill of the magician/filmmaker. The

latter reveals the idea of ‘magical seeing’ to be therefore better described as Gunning’s incredulous spectator. Indeed, *Hugo*’s emphasis on magic as part of the process for the production and reception of moving images incorporates and supports North’s contextualisation of early cinema viewers within stage magic traditions (North, 2008). In this sense, *Hugo* is a fitting tribute to Méliès’s work as a filmmaker *and* magician, as its representation of cinema neatly contextualises the influence of other 19th Century practices upon the development of moving picture technologies. The metaphors of dreaming and magic aptly evoke the language of the uncanny identified in my analysis of early cinema commentaries explored in Chapter 2; the film reflects the tension between the mystical and supernatural properties which were identified by 19th Century contemporaries as an intriguing part of the cinematic experience, whilst also acknowledging the scientifically advanced technology behind it – the mechanics of magic. *Hugo* treads carefully between these two extremes, portraying a nuanced model of spectatorship which permits the viewer to recognise the dreamlike, seemingly other-worldly appearance of cinematic images, whilst simultaneously actively engaging in discerning the inner workings – the clockwork – behind the magic trick. This adds another layer of meaning to North’s characterisation of an ‘aesthetic of wonderment’: wonderment, in *Hugo*, can mean both awe and the inspired curiosity to find out more about the unknown, or, indeed, to re-familiarise one’s self with that which is already known.

Hugo thus dramatizes the experience of finding cinema uncanny, historicising the reaction within early cinema contexts. Yet it should not be forgotten that this is a *digital* film mediating these events and this fact helps to illuminate how *Hugo* presents this mode of spectatorship as applicable to contemporary digital cinema. *Hugo*’s use of magic and the child spectator as metaphors are two ways this

comparison is highlighted, drawing together the analysis of early and digital cinema outlined in this thesis so far. As explored in Chapter 4, Zemeckis's animations appeal to young audiences and therefore implicitly evoke the child spectator⁵³. Yet, like *Hugo*'s evocation of this viewer, this is not to say Zemeckis's films assume a wholly ignorant spectator; rather, the motion-capture technology is utilised for spectacular displays of the new and novel, whilst drawing attention to the workings of this illusion. The films' use of 3D is integral to this process. As discussed in the last chapter, the technology is intended to help in the process of emphasising the humanness of Zemeckis's digital creations by appealing to the viewer's embodied experience. The use of 3D in action sequences, like flying, is part of this appeal although spectators found the combination of these features overwhelming, with many comparing the films to rollercoasters. This immersive (and, at times, intrusive) experience could be read as an extension to the film's overall promotion of new technology as spectacular attractions to marvel and inspire awe; motion-capture and 3D are forms of 'magic' establishing new ways of representing the human body on-screen. This is supported by the theme of magic which is present within the films' narratives, and how motion-capture is conceptualised within larger traditions of magic by theorists (Gunning, 2006; Allison, 2011). But, like *Hugo*, the magic metaphor works equally to emphasise the workings of the illusion too. The spectacle of the motion-capture films is reliant upon viewers' awareness of the technology behind the image, a fact which is emphasised through promotional materials. This is particularly important as motion-capture seeks to underline the human agency of this digital illusion by retaining an ontological link to the live-action actor. It is precisely the contemplation of this technology which, as outlined in the last chapter, leads to

⁵³ *Beowulf* (2007) is the exception to this and was aimed at a slightly older audience.

the experience of the technological uncanny, and it is this process which *Hugo* now narrativises.

Hugo also brings early and digital cinema into dialogue through its use of 3D. The digital 3D of the film is undoubtedly part of *Hugo*'s visual attraction but its use of the technology is not to just draw attention to its own status as a digital film – like the motion-capture films – but to draw attention to the attraction of early cinema films too. This is most overtly presented through the digitisation of Méliès's original works in order to project these films in digital 3D. *Hugo*'s stereoscopic design also evokes older traditions of image reproduction; Barbara Flueckiger notes the technology's origins in 19th Century experiments in the 'psycho-physical investigation of the senses' (Flueckiger, 2012, 102). *Hugo*'s conversion of Méliès's work into *digital* 3D, however, explicitly draws attention to the remediation of this work, which represents a fusion between early and digital traditions. Like the use of 3D in Zemeckis's films, the stereoscopic presentation of Méliès's work in *Hugo* draws attention to the spectacular qualities of the illusion on display, which has the ability to now reach beyond the confines of the screen. The shock and surprise of this effect is reminiscent of Gunning's cinema of attractions, which places an emphasis upon the spectator's relationship to the exhibitionist qualities of the illusions on-screen. In further considerations on the topic, Gunning reminds us that this attraction is marked by 'a sudden burst of presence' (Gunning, 2004, 45); the description is evocative of immersive qualities associated with digital 3D. It is these qualities which Chuck Tryon suggests are integral in *Hugo*, as the film's '3D can fulfil the desires for novelty that have been diminished as audiences have become accustomed to 2D films' (Tryon, 2013, 436). In this way, *Hugo* establishes a new form of cinema of attractions for its contemporary digital audience. However, there is a meta-

commentary going on here too: Gunning remarks how his original concept sees Méliès's trick films as 'emblematic examples of the cinema of attractions' (46). By converting Méliès's work into 3D, *Hugo* thus creates a new cinema of attractions based on the *original* cinema of attractions. This is evidence of *Hugo*'s attempts to 'self-consciously [locate] itself within the same history of cinematic illusionism' as Méliès's work as Purse noted (Purse, 2013, 149). In this way, the early and digital cinema modes of spectatorship addressed within the film are not just comparable but mutually reinforcing.

In conclusion, the portrayal of looking and cinema spectatorship in *Hugo* may appear, at first, to be rather simplistic, with the emphasis placed upon the legend of cinema's earliest audiences being afraid of moving pictures. However the film's emphases on looking, the child spectator, and the technology behind the screen, complicates this myth to depict a model of spectatorship which is nuanced, complex and contextualised historically. It is this model of spectatorship I argue can be characterised as the technological uncanny. In dramatizing this experience, *Hugo* demonstrates how viewer reactions to early and digital cinema can both be characterised through this concept, as old and new technologies converge in the film's creation of new attractions. On narrative and stylistic levels, *Hugo* reminds us that to find cinema uncanny is to experience the unfamiliar through a known medium, or to find the familiar moving picture illusion rendered unknown by new technologies.

'The Secret is in the Clockwork': *Hugo*'s Uncanny Bodies

Hugo demonstrates how the technological uncanny connects the experience of early and digital cinema, and it takes this representation further: just like my investigation

into the concept throughout this thesis, *Hugo* shows how it is the representation of the human body which is central to this process. There are two ways in which *Hugo* achieves this. First, *Hugo* engages with debates concerning cinema's indexical properties by evoking nostalgia for pro-filmic, analogue processes, whilst celebrating digital technology's ability to remediate, and even manipulate, the presentation of this earlier form of cinema. This does not signal a contradictory rhetoric. Rather, *Hugo* presents another continuity in its vision of film history, namely how this link to reality has always been highly debatable, as the transformative body in Méliès's films demonstrate. Digital technologies continue this trend in *Hugo* by altering and re-creating Méliès's original works. However the *idea* of the index – which has been integral to the responses collected on early and digital cinema in previous chapters – still informs these presentations. Second, *Hugo* contemplates the nature of the filmic body more broadly by aligning characters with clockwork. Clockwork and machines are a major theme throughout the film, their presence reinforced through dialogue and in the *mise-en-scène*. The conceptualisation of the body as a machine is symbolically encompassed by the automaton. The automaton is a key uncanny trope which has informed the reception of moving images for early and digital audiences, and I will explore how *Hugo* reflects upon this relationship through its portrayal of the automaton in *Hugo*'s dream.

In Chapter 1 I noted how the notion of the index closely informs the theory of the technological uncanny. The uncanny emerged as a response to the developments in the Enlightenment period which, as Terry Castle explains, fostered experiences and inventions of the familiar made strange (Castle, 1995). Freud's essay alludes to this history and two of his tropes – the double and the automaton – point to this context, which forms the background for the development of cinema. These tropes inform the

reception of early cinema for its viewers; commentaries from the time contemplate the mechanical nature of the on-screen body and how the photographic double of film reproduction relates to reality. These responses appeal to the idea that film is indexical: it bears an indelible mark or trace of the pro-filmic event it records. Chapter 2 explored the difficulty of this theory, which re-emerges again in debates on digital technology in Chapter 3 and informs the responses analysed in Chapter 4. In all these cases, I argued that whilst the claim for film's indexicality is, at best, difficult to maintain and suppresses the inherent contradictions in applying such a theory to cinema⁵⁴, the *idea* of the index infuses the language of the uncanny used by spectators. In early cinema responses, viewers muse how the photographic technology may preserve reality for future generations, and spectators of the motion-capture films reflect on the uneasy coupling of the actor's performance as a physical trace to reality within a digital doppelgänger. The index in these cases is inextricably linked to the apparent realism of the image; the *idea* of the index is used to interrogate the *ideal* photorealism provides as the dominant aesthetic.

Hugo effectively draws together how the idea of the index informs the construction of images in early and digital contexts and, in doing so, identifies the human body as the representation which can make this cinematic experience uncanny. *Hugo* evokes nostalgia for analogue film practices, as the film affectionately depicts the making of Méliès's films, including the splicing of the film cells during the editing process. In this way *Hugo* celebrates the materiality of the physical film as the vital ingredient in creating the 'magic' described earlier. Notably, it is the film's ability to capture a pro-filmic event – to impart a trace – which is conveyed in the story. Tabard convinces Mama Jeanne to allow him to screen *A Trip to the Moon* by reminding the

⁵⁴ I noted in Chapter 1 how, for example, the application of the index in film theory usually conflates the term with Peirce's other semiotic processes, such as the icon.

filmmaker's wife of her acting days. Jeanne modestly retorts that she was 'another person' then but Tabard asks: 'Would you like to meet her again?' The question encompasses the idea of the index which infuses the rhetoric of the reception of film analysed in this thesis. Tabard implies that the film reel he owns possesses a vital essence or trace of Jeanne's earlier self. The projection of the film reawakens and animates a previous life, causing an uncanny experience for her. As Jeanne's younger self is isolated in a mid-shot within the *A Trip to the Moon* projection, the older Jeanne as spectator is similarly framed, shocked and emotional from seeing the film. The Méliès film has preserved a double, a photographically realistic representation of a body frozen in time. Yet, when projected, this mechanical body is given life – it moves – and it is the contemplation of these ontological peculiarities which gives rise to an experience of the uncanny. The scene acts as a primer for how we should react to the showcasing of Méliès's (real) work near the end of the film. This celebratory presentation functions as a form of the cinema of attractions discussed above, whilst expanding this concept to further convey the uncanniness of the filmic medium. Like Tabard's screening, the Méliès films here are the re-animation of the past; the films fulfil the prophecy outlined by early cinema viewers that the medium could transport current events into the future. The attraction here is the force of the knowledge that this is now the *real* Méliès; the 'Here it is! Look at it!' of the cinema of attractions (Gunning, 2004, 44), is superimposed with the 'here it is, the trace' (Niessen, 2012, 172) of indexicality.

Hugo incorporates the theory of the index into its vision of film history but it also playfully contradicts it too. The home screening of *A Trip to the Moon* does not show the original Jeanne on screen but rather actress Helen McCrory's performance of Jeanne which has been digital composited within the original Méliès work (Figure

34). The indexical properties of film identified as the emotional power behind the experience described above are undermined by the overt digital tampering. As Chapters 2 and 3 investigate, notions of the index are usually conflated with the idea that this relationship to reality is straightforward and guaranteed; the doubt over digital technology's indexical status expressed by some characterises this new technology as a disruptive force in analogue film's history. But it is an awkward translation of the theory: the film image – both analogue and digital – is inevitably mediated and thus can always be manipulated. Motion-capture is a digital technology which confirms this fact: the process appeals to the idea of the indexicality of captured performance, whilst capitalising upon the mutability of this recorded data. Méliès's works similarly celebrate cinema's ability to capture and manipulate the body through trick photography. *Hugo* does not, then, seek to ostracise digital technology from its earlier form of the medium along indexical lines. After all, *Hugo* is a digital film and this technology evidently performs the same function as its predecessor in the recording of bodies; McCrory is composited into the old footage in a manner which maintains the photorealism of the image's source, in a way comparable to *Forrest Gump*. The conversion of the analogue-recorded bodies into digital 3D is *Hugo*'s reminder that it is the realism with which the bodies are rendered – a realism which evokes the idea of the index – which is central to the uncanny potential of such a depiction, in both forms of technology.

How the filmic body becomes uncanny is also explored in *Hugo* through its central theme of clockwork. Clockwork is the very first image we see during the film's opening and clockwork defines both Hugo's purpose in life and his living environment. These moving mechanisms also become the main metaphor of the film, relating Hugo's quest for familial security with Méliès's need for reconciliation with

the past. Hugo finds comfort in the analogy that the world is like a clockwork machine meaning he must be a 'part' of this larger whole and this is confirmed at the narrative's conclusion where Hugo is revealed to be the missing 'cog' in Méliès's life; the old man's previous melancholy is likened by the children to a machine which needs 'fixing.' The association of machines with people is visually supported elsewhere in the film, as with train passengers who live their lives with the comings and goings of the locomotives, and the Station Inspector's injured leg which is encased within a faulty leg brace. Yet the ultimate fusion of the human body with machine is represented by Hugo's automaton. The mechanical man is an uncanny, liminal body, distorting the thresholds between several forms of binary oppositions. The automaton exists as a link between life and death (Hugo believes the machine contains a message from his deceased father); between the past and the future (Méliès's reclamation of his status as a celebrated filmmaker); between movement and stillness (Hugo struggles to make the automaton operational); and between the metallic mechanisms of clockwork and the organic matter of human bodies (the machine requires a heart-shaped key to operate and Méliès comments he put his 'life and soul' into its creation).

The blurring of these boundaries is precisely the nature of the technological uncanny evoked in response to the filmic human body. This uncanny is evident in the reactions collected on the films studied in this thesis and in the films themselves which incorporate uncanny tropes on narrative and visual levels. Both of these traits are unified under the definition of the concept outlined: the technological uncanny is the contemplation of the technology behind the representation of the photographically realistic human body and its intersection with new visual effects. This experience may be described as exciting, intriguing and compelling, but it may

also be creepy, uneasy and disconcerting. All these responses are represented across this thesis and the favouring of one particular facet over another on behalf of a viewer does not signal a weakening of the technological uncanny's potential; analysis and comparison of these responses reveals these reactions exist on a scale. Méliès's films are described as startling as well as exciting, and, similarly, Zemeckis's films are fascinating but weird. The technological uncanny is a mode of spectatorship which encompasses all these things, uniting the experience of early cinema with the digital equivalent in my examples. This analogy is made stronger by the language of the uncanny used by spectators; language which draws on uncanny tropes such as the tension between the animate and inanimate, and the double, in order to help conceptualise the experience of these spectacular attractions. Méliès's and Zemeckis's works are comparable because they actively engage with these uncanny tropes, albeit for different purposes.

The technological uncanny which informs the films, spectator reactions and contexts of the early and digital technologies discussed in this project are effectively combined in and reinforced by *Hugo*'s automaton. The film's clockwork theme is represented by the automaton's mechanical ontology which is metaphorical for the construction and reception of the filmic human body on-screen. This point is illuminated by Hugo's nightmare. After Hugo awakes abruptly from a dream about a crashing train, a cut isolates the automaton in the shot, stationary at its desk with its arms resting gently on its writing table, poised for action but currently inanimate (Figure 35). The automaton's head is turned towards Hugo, its lifeless eyes conveying an ambiguous intent; the expression could be interpreted as a vague concern or a subtle threat. The latter seems more applicable, as Hugo looks around concerned, with shot-reverse shots between his troubled face, a close-up of the hook

with the pocket watch now missing and the automaton's face again; the montage of cuts implicating the machine in the theft. The sound of ticking is audible and becomes louder as the camera returns to the shot of Hugo, frantically looking around to identify the source of the noise. The camera pans down as Hugo pulls his nightshirt open and his exposed chest reveals not skin, but an open metallic chasm in his stomach with moving clockwork, including a turning cog and piston (Figure 36). A cut to a close-up on Hugo's panicked face gives way to a long shot which shows the flesh on Hugo's exposed legs – now standing – dissolve into metal framework, quickly followed by his hands. Hugo turns to look over his left shoulder in response to the sound of grinding metal as an extreme close-up of cogs and gears swing forward towards Hugo and the screen. The film cuts back to the long shot of the nearly mechanical boy and the clockwork parts, now large, loom in every corner of the *mise-en-scène*, trapping Hugo within this mechanical world. The camera tracks forward as the moving clockwork becomes increasingly claustrophobic, and a mechanical arm swings through the frame, transforming Hugo's face into the automaton's as it passes. The face disappears behind the oversized cogs which now dominate the frame. The camera then frames Hugo – now human again – as he wakes from the nightmare, the watching automaton visible in the background but framed to be in the centre of the shot.

Jennifer Clement and Christian B. Long suggest that the automaton 'embodies the uncanny and provides a locus for Hugo's deepest desires and fears' (Clement and Long, 2012). The writers argue that the real source of Hugo's nightmare transformation is not just his conversion into mechanical form ('a fear of technology at least as old as the Industrial Revolution') but how this change metaphorically represents Hugo's entrapment in a pre-destined life, forcing him to follow in his

father's career as a clockmaker (Clement and Long, 2012). The placement of the nightmare within the narrative supports this view; the nightmare takes place just after Hugo and Isabelle make plans for Tabard's secret screening, and just before Hugo's uncle is discovered dead and the Station Inspector's suspicions are raised. As such, the automaton nightmare occurs at a threshold moment for the story, marking the beginning of the end of both Hugo's and Méliès's previous lives as mourning and isolated individuals. The dream acts as a warning to Hugo to exert control over the coming changes, lest his 'part' in the world (as detailed in the aforementioned world-as-clockwork speech which is given just before this scene) becomes less a unique contribution to life than an automated cog in a larger, featureless machine/world. The scene's narrative positioning is, in this sense, uncanny: the dream appears at a point which is in-between the two stages in Hugo's life, highlighting how his familiarity with a life lived in clockwork is now becoming strange and alien. The tone of the scene underlines this: the eeriness of the automaton's silent threat yields to the real danger of mechanical workings which possess Hugo's body. The peril depicted in the dream extends far beyond any other hostile situation Hugo encounters; even his capture by the Station Inspector is still inflected with humour. In this way the nightmare stands apart from the surrounding narrative and, in fact, temporally pauses the plot's development: the scene interrupts the action of Isabelle and Hugo arranging Tabard's visit and the night of the screening, and has no bearing on the discovery of Hugo's uncle. Clement and Long note their reading of the scene as an embodiment of Hugo's 'desires and fears' is already established in the first dream where Hugo's venturing onto the railway tracks to find the key causes the train accident (Clement and Long, 2012). This nightmare-within-a-nightmare involving the automaton therefore serves no formal narrative or thematic purpose; its main aim

seems to be the attraction of watching the spectacle of Hugo transforming into a mechanical body *for its own sake*. The scene encompasses the ‘disorienting temporality’ Gunning identifies as the cinema of attractions. He continues:

The potential shock of the cinema of attractions provided a popular form of an alternative temporality based not on the mimesis of memory or other psychological states but on an intense interaction between an astonished spectator and the cinematic smack of the instant, the flicker of presence and absence (Gunning, 2004, 49).

Interestingly, Clement and Long agree with Gunning’s contention that Méliès’s works are geared towards the presentation of overt moments of spectacle, but the writers note how *Hugo* narrativises these attractions, thus subsuming Méliès’s films into a mode of storytelling which Gunning’s concept distinguishes itself against. This is another reason one may consider the film’s premise ‘contradictory’ (Tiso, 2012). I argue that the automaton nightmare counteracts these claims. The dream is a sudden, unexpected and unexplained moment which portrays a shocking and uneasy transformation unrelated to *Hugo*’s narrative concerns. It is a ‘flicker of presence and absence’ both in its interruption of the plot and through the speed with which Hugo’s body is consumed by the clockwork and then restored by the scene’s abrupt ending. Scorsese thus re-engages with the cinema of attractions not only by re-presenting Méliès’s work in a new format and to a new audience, as discussed above, but by also creating a new moment of pure spectacle reflective of Méliès’s original efforts. Hugo’s mechanical metamorphosis is reminiscent of the detachable parts of the bodies in *Adventures of William Tell* (1898) or the transformation of a dummy into a woman in *The Conjuror* (1899). This is not to say, as discussed in Chapter 2, that the spectacle of the cinema of attractions is completely unrelated to the notion of

narrative, as has been hotly debated⁵⁵. As argued then, I think Méliès's work can be interpreted as contributing to another form of narrative; namely, the tradition of the technological uncanny emerging in the 18th Century which influences and informs the reception of early cinema. This narrative now inspires the analysis of film history and *Hugo* offers a way to re-engage with spectacular attractions of early cinema and, moreover, with how these attractions compare to the visual effects created with digital technologies. *Hugo*'s nightmare automaton scene is more than a simple homage to Méliès: it demonstrates how early and digital cinema can be brought into a dialogue which reveals the importance of the technological uncanny to this history.

An automaton is an uncanny body. It is a machine which is made in the form of the human body, and a body whose livingness and vitality of movement is sustained through mechanical means. It is a double but this duplication is a technological reproduction. Chapter 1 explores in detail the history of these bodies and *Hugo*'s automaton deliberately evokes this context, as the makers cite the inspiration gathered from Vaucanson's and Kempelen's inventions (North, 2012). The automaton is a key uncanny trope in Freud's and Jentsch's work because this body encompasses *das unheimliche* on more than one level: the mechanical body is a collapse of identities as human form and function merge; the experience of viewing this body evokes an uncanny experience for the spectator too. Automata have formed an integral part of the technological uncanny as I have defined it because the concept specifically concerns the representation and reception of realistic depictions of the human body through technological means. An automaton fulfils one of these means. The shared historical contexts between this invention and the development of moving pictures, together with the evocation of automata in filmmakers' works and

⁵⁵ In particular, see Musser 1994 and 2006.

audience responses, indicates how the automaton becomes a symbol of cinema's history and a metaphor with which we can comprehend the effect of new effects technologies upon the filmic body. The comparison works for early cinema and digital bodies: in the films analysed in this thesis, the visual effects technology directly affects and informs the body's representation and transformation. In Méliès's films, the body is unstable and mutable; the trick photography technique allows sudden transformation, transfigurations and mutilations of the body and the attraction is seeing the photographically realistic humans move in this way. In Zemeckis's films, the familiar sight of a well-known actor's body is converted into a digital doppelgänger; the transformation is now an event which has already taken place prior to the film's reception. But the trace of the transformation's technological nature is still marked on the characters' bodies. This is signalled by the strange combination of a photorealist aesthetic within animation; by synthetic tactility remaining on the skin of the bodies; and through the impossible movement these bodies perform in action sequences.

The transformation of Hugo into a mechanical body is a visual reminder of the ontological truth which underpins the experience of cinema for both early and digital audiences: cinematic technologies render the body mechanical. Although the bodies of both types of cinema appear realistic – and this photorealism has a complex relationship to the idea of the index – they are not real: the body is now mediated and controlled through technological means. Significantly, Hugo's automaton is different from automata like *The Mechanical Turk* because the latter enclosed its inner workings in order to *appear* human, thus disguising the nature of its operation. Hugo's automaton – which the boy turns into within the nightmare – reveals the internal moving parts, without a faux skin or clothing to hide the clockwork

mechanics. This reinforces the notion that *Hugo* draws attention to the cinematic technologies behind the illusion and how this contemplation is uncanny. Automata are machines which are made to look human, whilst the filmic body is the human body made mechanical. Méliès incorporates this theme quite explicitly in his trick films. Zemeckis's films also present the analogy although the motion-capture technology re-delineates the parameters of the illusion with digital techniques. The character on-screen is a doppelgänger forged through technological means, and the motion-capture process itself, as discussed in Chapter 4, uncannily fragments the recorded body into its constituent parts. As mentioned earlier, this is reminiscent of the photographic experiments of Marey and Muybridge which depict the mechanics of human movement. The body as machine is an idea which links to wider Enlightenment ideals, including Julien Offray de La Mettrie's characterisation of the body in these terms in *L'homme Machine* (1748). Hugo's transformation into the automaton represents this idea and acts as a visual metaphor for the motion-capture process: the removal of Hugo's flesh to reveal the clockwork underneath is an apt analogy for the data recording of motion-capture which isolates the movements of muscle and bone beneath the skin. The fact the visual effect of Hugo's automaton metamorphosis is achieved *digitally* is another reminder of this connection.

It is, therefore, entirely understandable why the language of the uncanny – and particularly the tropes of automata and the double – infuse the reactions of viewers towards these filmic bodies. The technological uncanny blurs the boundaries between the idea that the body is already a machine, and the observation that machines can take human form. The 18th Century automata embodied the latter with the realism attempted in their creation; as outlined previously, Vaucanson created mechanical bodies which could breathe and planned to build one which could bleed

too. Hoffmann's Olympia and L'Isle's Hadaly fulfil this scientific feat as these automata challenge the characters in these stories to uncover their true mechanical status. There is an affinity here with the androids constructed and studied in robotics in recent decades, and spectators' interactions with these modern automata inspired the theory of the uncanny valley, a term frequently used to express the experience of the technological uncanny in contemporary cinema. The tone of Hugo's nightmare suggests that the relevance of the technological uncanny continues: the transformation is unnerving because technology still has the ability to evoke these themes, and the potential to make their experience uncanny. After waking up from the disturbing dream, Hugo looks suspiciously at the automaton which has continued to stare at the boy whilst sleeping. A high-angled shot, providing an aerial view of the room, depicts Hugo sitting on the edge of his bed directly facing the automaton, which is still seated behind its table (Figure 37). Sitting face-to-face in a similar position, the shot embodies the potential for such mechanical bodies to become uncanny but, more specifically, how the filmic human body is an integral part of this tradition. The technological uncanny will emerge when visual effects create spectacular attractions which engage with these themes; *Hugo's* concluding shot is a reminder of this fact as a close-up of the automaton shows the mechanical face now looking not at Hugo but out at *us*.

The Future of the Technological Uncanny

I suggested earlier that Scorsese's re-presentation of the cinema of attractions in Méliès's work (and, indeed, his own) can be interpreted as part of a larger narrative concerning the technological uncanny's historical relevance to the reception of visual effects and the filmic human body. *Hugo's* relationship to writing helps to underscore this point; the film is an adaptation of a book and books feature as a key

component in establishing Hugo's and Isabelle's friendship. As analysed earlier, it is Tabard's book which comes 'to life' as the children discover cinema's history and, most significantly of all, the automaton can *write*. One could read this latter point as an allegory for the analysis of automata in the section above: the automaton physically and metaphorically 'writes' cinema history, contributing to the larger narrative on filmic bodies and their reception which the cinema of attractions concept illuminates. I will conclude this chapter by reflecting in this section on how this 'narrative' of cinema and the technological uncanny may extend in the future. In particular, I focus on further intersections between early and digital cinema technologies, in a manner reflective of the methodology used in this thesis. Specifically, I look at how digital technology mediates early cinema in ways reminiscent to *Hugo*, by looking at how early cinema has become a popular topic in mainstream cinema and discourse, and how the films of early cinema, including those of Méliès, are easily viewed through digital platforms, including YouTube. Most significantly of all, it is the experience of *early* cinema through *digital* means which establishes new avenues for the technological uncanny to emerge for contemporary audiences.

In 2011 Pamela Hutchinson predicted that silent cinema was going to become a 'new vintage trend' as several releases planned that year reflected a resurgence in the public interest in early cinema (Hutchinson, 2011). This included a re-release of Eisenstein's *Battleship Potemkin* (1925), the British Silent Film Festival in London and the screening of silent films in old cinemas such as the Hippodrome, Scotland⁵⁶. Mainstream releases reflected (or instigated) this trend with the year seeing the

⁵⁶ The British Silent Film Festival was held at the Barbican in 2011: <http://www.barbican.org.uk/film/series.asp?id=994>. Details on the Hippodrome festival are here: <http://www.falkirkcommunitytrust.org/venues/hippodrome/silent-cinema/2011.aspx>

release of *Hugo* and *The Artist* (2011). Rather than directly incorporating examples of early cinema into its narrative like *Hugo*, *The Artist* is made to evoke an early style of filmmaking, specifically the silent films of the early 20th Century. *The Artist* does compare to *Hugo* in the manner in which it too incorporates reference to cinema's earlier days on visual and narrative levels; *The Artist* is about Hollywood's conversion to sound filmmaking⁵⁷. The interest in early cinema styles and techniques continued into 2012 with the release of *Blancanieves* (2012), a silent, black and white adaptation of *Snow White*. *Blancanieves*'s release evokes an implicit comparison between contemporary cinema and earlier styles of the medium, as that same year two other adaptations of the story – *Snow White and the Huntsman* (2012) and *Mirror Mirror* (2012) – were also made and these versions are notable for their extensive use of digital visual effects. The popularity of early cinema within mainstream forums inevitably evokes commentaries on the history of the medium, many of which negatively reflected upon the impact of digital. In a manner similar to the debates summarised in Chapter 3, Xan Brooks finds it apt that the Academy Awards should honour films like *Hugo* and *The Artist* because such projects reflect the digital death of cinema: 'Film is on the way out, killed off by the rise of digital, and this year's Oscars were its last hurrah' (Brooks, 2012). Jonathan Jones compares *Hugo* to Tacita Dean's art installation *Film* which is inspired by the same depressing conclusion: for Dean 'the digital revolution means a death, which she mourns' (Jones, 2012). Richard Grusin does not characterise these changes in technology in this dramatic fashion, but he does argue that *Hugo* does represent a break in cinema's history; the move into a period of the 'post-cinematic':

⁵⁷ For the reasons outlined in my Introduction (and re-stated again in Chapter 3) I do not look at all the major technological developments in cinema or effects which could also be argued evoke an uncanny response. This would be a much larger project and my aim, in this thesis, is to concentrate on one particular strand of the uncanny: the technological uncanny. Robert Spadoni investigates another form of this tradition with a particular focus on sound (Spadoni, 2007).

[*Hugo* speaks] precisely to the question of our current post-cinematic moment ... *Hugo* makes the case (in digital 3D) for the continued relevance of the earliest moments of cinema's history at precisely the time that the late age of early cinema is coming to an end (Grusin, 2014, 4).

As I have argued previously, I do not believe that digital technology has signalled the 'death' of cinema, nor has it fundamentally changed the narrative concerns and use of visual effects in mainstream cinema⁵⁸. The case studies for early and digital cinema included in this thesis under the framework of the technological uncanny are testament to this argument; *Hugo* is further proof of how emphasising the continuities of film history, however different the technologies involved, is a fruitful way to approach the conceptualisation of change. Looking back at Grusin's earlier work with Jay David Bolter in their argument for 'remediation' illuminates this further. Bolter and Grusin note that, at the dawn of the 21st Century, new and old forms of media 'are invoking the twin logics of immediacy and hypermediacy in their efforts to remake themselves and each other' (Bolter and Grusin, 2000, 5). The writers demonstrate how remediation finds resonance with older forms of media and its theorisation, specifically Gunning's concept of attractions. Bolter and Grusin note that this similarity represents a *continuity* between older and more recent developments in cinema, specifically, the equation of early cinema's attractions with the special effects-driven cinema of contemporary Hollywood. Crucially, the process of remediation could not happen without the spectators' familiarity with the medium: '[the] amazement or wonder *requires an awareness of the medium*. If the medium really disappeared ... the viewer would not be amazed because she would not know of the medium's presence' (158, my emphasis). This logic suggests that technologies

⁵⁸ As mentioned before, for an overview of this argument based on this very premise see Prince 2012.

may change the medium and its techniques but this does not mean that cinema can, or will, suddenly ‘end.’

The concept of remediation is a useful one for thinking about how digital technology engages with – rather than replaces or diminishes – the films of early cinema. It should be noted that the idea of remediation already finds a precedent in early cinema; Méliès’s trick films remediate the traditions of stage magic popular in the 19th Century (North, 2008; Solomon, 2010). I would add to this that Méliès’s portrayal of the human body as a central attraction also remediates the entertainments of previous years which similarly focused on uncanny representations of the body: automata, waxworks and morgue displays, as well as earlier forms of projection like phantasmagoria and the magic lantern, as outlined in Chapter 1. Digital technology continues with this trend by now remediating the work of Méliès and this is particularly apparent through channels such as YouTube. The relative brevity of Méliès’s work and its age (free from copyright legalities) makes Méliès’s films – and those of his contemporaries – a suitable choice for the video-sharing website, meaning contemporary audiences are able to access the filmmaker’s work with greater ease and speed than any previous generation. The act of viewing a Méliès film online, on the YouTube website, is to experience his work through remediation; like *Hugo*, this digital technology has changed the parameters for this interaction. And, like *Hugo* again, the act of this re-presentation can actually allow the different forms of technological displays to interact and reflect upon previous modes of spectatorship whilst establishing new ones. This is signalled in how YouTube can be compared to Gunning’s cinema of attractions.

Teresa Rizzo makes this comparison, commenting on both the large number of early cinema films available through YouTube, and how the site’s method of viewing is

reminiscent of the attractions model which places the emphasis on spectacular, exhibitionist displays. Moreover, Rizzo claims that a variety of the online videos – even if the films contain specific forms of narrative – are shaped by the YouTube site into a form of attraction; the very act of uploading or watching a video interacts with this process of engagement which harkens from an earlier age of moving picture reception. Rizzo writes: '[The clips] are not presented as self-contained narratives inviting the viewer into a diegetic world. They are decontextualised and recontextualised by users for the purpose of attraction' (Rizzo, 2008). Rizzo extends the comparison to note the similarity of subject material between YouTube videos and early cinema – notably, trains and dance – and calls such creations evidence of 'YouTube attractions' (Rizzo, 2008). Joost Broeren makes a similar analogy between early cinema and YouTube, contending that the latter draws on the specific features of spectatorship intended by the cinema of attractions. Drawing on Frank Kessler's reading of Gunning's work, Broeren emphasises the gaze or direct address, temporality and frontality as the key facets within online videos too (Broeren, 2009, 158). Broeren also remarks on the specific effect of viewing early cinema films in this way. He notes that the YouTube context inevitably re-frames this experience of early cinema film with the features unique to the site; specifically, the list of suggested other titles which appear alongside a selected video. Broeren notes that this means one can be viewing an early film when a clip of a contemporary recording may be recommended alongside and attract the viewer to select this one next. This eclectic viewing experience establishes, Broeren writes, a dialogue between early cinema and digital technology which he, significantly, compares to the idea of narrative:

The website's collection system thus establishes a dialogue between examples of early cinema and modern-day films. This film-historical dialogue — or sort of a narrative — is more or less constitutive of an afternoon spent browsing the collection (162).

Like *Hugo*, YouTube presents Méliès's original form of the cinema of attractions within another digital and contemporary mode of the cinema of attractions. The way YouTube allows viewers to jump between radically different types of videos, as Broeren describes, is also reminiscent of Eisenstein's original use of the term 'attraction' for his theory of montage, which juxtaposes contrasting images to construct new meanings (Eisenstein, 1924). I want to develop Rizzo's and Broeren's reflections on the intersection between early cinema and digital technology through YouTube further and argue that this interaction extends the narrative of the technological uncanny. YouTube offers not only a way for contemporary spectators to view early cinema film, but for a new way to experience these films as uncanny. This is evident in the comments sections below the videos uploaded to the site which I examined. Underneath the YouTube video for Méliès's *The Haunted Castle* (1897), user 'David van den Bergh' comments 'Wasn't planning on sleeping anyways...' and 'Amyr Silveira' agrees: 'Great, I gonna [*sic*] have nightmares now.'⁵⁹ The eerie experience of watching Méliès's films is located in their strange representation of the body. Under the video of *The Vanishing Lady* (1896) user 'AD-SD-vids and stop motion' says 'Wow, I wonder where the edits are' and 'gnikcohs' remarks on the startling inclusion of the skeleton in the trick effect, or what she/he refer to as 'little time paradoxes.' User al1936ful is awed by the experience, asking: 'How does he do

⁵⁹ YouTube comments are made by making an account with the website and commenters are identified through chosen usernames. The comments are not given precise publication dates (an indication on how long ago a comment was uploaded is given in brackets next to the user) but all comments on *The Haunted Castle* were found via this link: <https://www.youtube.com/watch?v=OPmKaz3Quzo> [assessed December 2014].

it?’⁶⁰ The startling bodily transformations of *The Conjurer* (1899) evoke a similar experience. ‘Allyza Marie Yanzon’ contends ‘This is so scary but that is the most perfect magic trick that I ever seen [*sic*]’ and, after another user explains the principles of trick photography, ‘satanicsquirrel01’ offers a more direct expression of astonishment: ‘fucking hell! That’s amazing!’⁶¹

These comments can be interpreted through the technological uncanny; the users express their experience of the films as amazing, startling and scary and, like the contemporary viewers of early cinema, this uncanny feeling is directly related to the contemplation of the technology used to create the illusion. This consideration is forced by the spectacular nature of the attraction on display; Méliès’s visual effects forces the viewer to experience the filmic body as mechanical, mutable and, invariably, mediated. Yet this technological uncanny has a new dimension: not only are these films remediated by their presence on YouTube: to watch Méliès’s work is to experience moving images recorded over a hundred years ago. The uncanniness of *then* is updated and transformed into the experience of *now*. The technological uncanny evoked by YouTube’s Méliès uploads is the contemplation of *how* such an illusion is achieved, at the same time one considers *when* the film was made. The addition of temporality into the uncanniness of the films’ ontological properties is also stressed in the comments section. On *The Haunted Castle*, ‘Ojaquet74’ remarks ‘it’s scary for the fact that it was made in 1896’ and online peers agree: ‘Amazing that this is almost 120 years old’ (‘hollymarg’); ‘This is scary because of how long ago this was actually made’ (‘DANCING GENIUS’); ‘Cannot believe this film is almost 120 years old!’ (‘2009jadeorchid’); ‘This is sick for 1896’

⁶⁰ Comments for *The Vanishing Lady* can be found here: <https://www.youtube.com/watch?v=f7-x93QagJU> [assessed December 2014].

⁶¹ *The Conjurer* at: <https://www.youtube.com/watch?v=zs5BBaNJ6mg> [assessed December 2014].

(‘impreprex1979’).⁶² Hutchinson sums up this alienating effect and dissonance which is evoked by watching early cinema today: ‘There’s something off-kilter about silent movies when you first meet them, and something unexpected about a supposedly modern subject area taking you so far back into the past’ (Hutchinson, 2014).

The digital remediation of, and interaction with, early cinema therefore provides new opportunities for experiencing the technological uncanny in the 21st Century. Like the reactions outlined throughout this thesis, present-day viewers of Méliès’s films find his use of visual effects uncanny but this online format for watching his films helps establish a new model of spectatorship. It is a model, however, which is comparable to the early cinema context, as YouTube evokes the nature of the cinema of attractions once again. I noted in Chapter 2 how this theory of viewer reception is linked to the historical contexts and experience of the technological uncanny, and the same is also true here: YouTube’s re-presentation of early cinema attractions through its own form of video attractions evidently results in the evocation of the technological uncanny. Yet this is an uncanny which adds the new dimension of time. The analysis of contemporary responses to the filmic human body within early and digital audiences earlier in this thesis inevitably focused on viewers responding to technology which was new and novel to their respective historical contexts. The YouTube videos of Méliès’s work are certainly novel to audiences unfamiliar with them today – watching, as they are, films made over a century ago – but they are certainly not new. Indeed, it is the fact that they are actually very old which provides a different avenue through which the uncanny emerges. There is a doubling of uncanniness here: the experience is felt once through Méliès’s representation of

⁶² <https://www.youtube.com/watch?v=OPmKaz3Quzo> [assessed December 2014].

unstable human bodies, and again through the realisation these images date from a time so long ago. This process is a reminder of film's history, that the technology experienced today – including the YouTube site which presents the early cinema works – has a past and a precedent. The technology for film is made uncanny again because it is so modern and yet so old. Cinema was established within the context of modernity and the industry has continued to develop new technologies which suggest exciting possibilities for the future, as with motion-capture. Yet Méliès's films equally seem archaic, with the bodies dressed in old-fashioned attire, living in a world completely alien to ours. In this experience, film technology is the familiar made strange; the medium, itself, becomes *unheimlich*.

This suggests that YouTube inevitably modifies the temporality which Gunning identifies as integral to the cinema of attractions. Gunning writes that attractions are 'limited to the pure present tense' (Gunning, 2004, 45). Méliès's YouTube reinvention suggests that this idea needs to be expanded to appreciate the uncanniness of viewing the 'present' of the film's moving bodies through a contemporary technology which draws attention to the fact that these bodies are artefacts of the past. However, this does not signal a break or 'death' in cinema's history. Indeed, finding the old uncanny in the present also finds a precedent with automata. Dug North, an automaton inventor who worked on *Hugo*, notes the uncanniness of looking at the 18th Century mechanical bodies today: 'When we see an automaton our wires get a little crossed ... our brains are trying to assess whether or not this thing is alive' (North, 2012). The reaction of automata's original audiences is comparable to the uncanniness such figures still evoke today. YouTube provides one way in which this process of the technological uncanny influences the experience of earlier forms of cinema for contemporary audiences. One could extend

Rizzo's and Broeren's cinema of attractions ideas to include social media: Twitter and Facebook both supply video uploading facilities, with the latter offering the option for videos to play automatically when scrolling through the 'Newsfeed'. It will be fascinating to see the new ways digital technology will remediate early cinema and this points to a number of avenues through which the technological uncanny can be further explored and analysed.

Pictures for Chapter Five



Figure 28 - *Hugo* (2011)



Figure 29 - *Hugo* (2011)

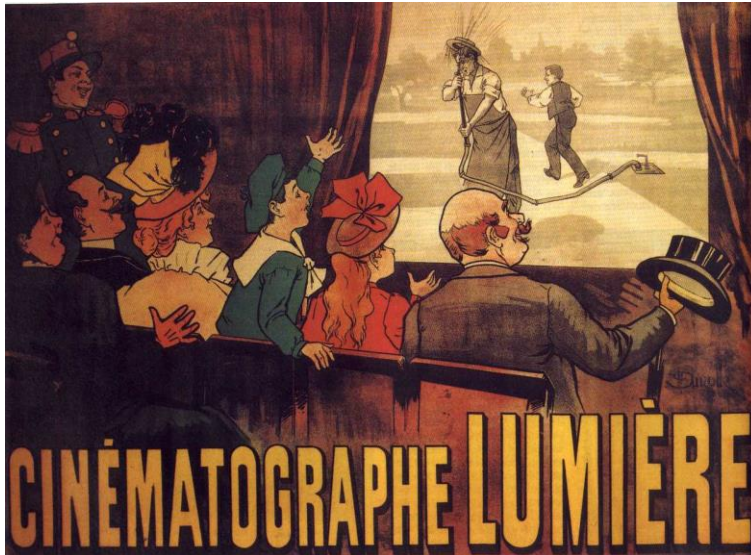


Figure 30 - Poster for the Lumière *Cinématograph* (1895)



Figure 31 - *Hugo* (2011)



Figure 32 - *Hugo* (2011)



Figure 33 - *Hugo* (2011)



Figure 34 - *Hugo* (2011)

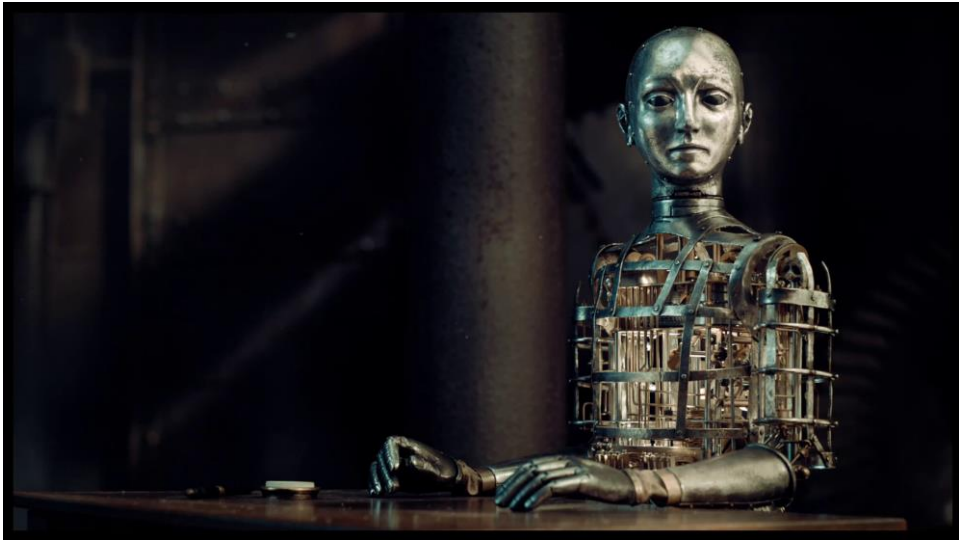


Figure 35 - *Hugo* (2011)



Figure 36 - *Hugo* (2011)



Figure 37 - *Hugo* (2011)

CONCLUSION

Stephen Princes notes ‘Nothing ever happens for the first time in film history’ (Prince, 2012, 11) and the scene of the train crashing through the station in *Hugo* is testament to this fact. In a dream, Hugo jumps down onto the railway tracks to recover the automaton key. Hugo’s contemplation of the object does not last long, however, as an incoming train rushes towards him and fails to break, colliding through the end of platform and into the concourse beyond it. The train continues its forward momentum before finally crashing through the walls and windows of the train station and collapsing head-first onto the pavement below (Figure 38). There are several significances which can be drawn from this spectacular and destructive sight. First the crash was actually a real-life event when in 1895 a train crashed through Gare Montparnasse station after failing to stop and landed in the way depicted in the film (Figure 39). Scorsese decided to include the scene after seeing the original photograph published in *The Invention of Hugo Cabret* and his decision illuminates the continuities between early and digital cinema this thesis has explored. The train crash took place in 1895 – aptly the same year as the *Cinématographe*’s debut – and Scorsese’s re-enactment of the event provides a subtle comment on cinema’s beginnings: Scorsese has brought the photograph to life in a manner reminiscent of the technological basis for cinema’s moving images. The crash is also evocative of the train myth: the sight of the locomotive propelling itself through the window visually depicts the fear expressed by some early cinema viewers, as analysed in Chapter 1, and again with *Hugo*’s treatment of the topic in Chapter 5. The scene is also reminiscent of Méliès’s own work, as a similar moment is depicted in *The Impossible Voyage* (1904; Figure 40). And, finally, the use of a train falling in this dramatic fashion is portrayed in *The Polar Express* as one of the action

sequences used in Zemeckis's motion-captured films (Figure 41). The effect of this moment is enhanced further by the film's projection in IMAX 3D.

These comparative moments act as a visual reminder to the central argument of this thesis: there exists an analogous position between the technological advancements in moving picture projection made during the late 19th Century and the digital filmmaking practices increasingly used at the beginning of the 21st Century. It is particularly apt that the images of the trains above should be a reminder of this. Lynne Kirby highlights the shared historical contexts of locomotives and cinema, noting how train travel is 'an important *protocinematic* phenomenon.' She continues: 'As a machine of vision and an instrument for conquering space and time, the train is a mechanical double for the cinema and for the transport of the spectator into fiction, fantasy, and dream' (Kirby, 1997, 2). The analogy has, it seems, travelled in a full circle as fans of *The Polar Express* can now ride in the 'real' train.⁶³ Kirby's observation also alludes to what has been the key element in this comparison: the experience of cinema or, more specifically, the representation and reception of the human body on-screen as uncanny. In the early and digital films analysed in this project, the filmic human body is used as a central spectacular attraction in the promotion of new and novel technologies intended to entertain, startle and challenge audiences. The technological uncanny provides an illuminating framework to analyse this and reveals the continuities paralleled by these train moments. The uncanny is a product of the 18th Century, a response to and a symptom of the age of Enlightenment and the increased convergence between the human body and technology. The uncanny tropes of the automaton and the double are important symbols of this change which converge again in the technologies of early cinema. A

⁶³ See: <http://www.weardale-railway.com/polar-landing-page/>

contemporary to the expansion of the railways, early films of the 1890s and early 20th Century explore the possibilities of the new medium through the representation of the body. I argue that these representations – together with the reactions of early cinema viewers – can be better understood through the technological uncanny: an experience of the uncanny which has been provoked by the experience and direct contemplation of new cinematic technology in its mediation, simulation and representation of human bodies.

In Chapter 1 I outlined and defined the technological uncanny. Beginning with Freud's writing on the topic, I argued that the technological uncanny needs to be understood through the contextualisation of its emergence in 18th Century contexts. In particular, the uncanny tropes of the automaton and the double revealed key historical links which would inform the rest of the thesis. The uncanny has its roots in literature and I outlined how the 'language of the uncanny' – the evocation of uncanny tropes and ideas – informs the responses of viewers, academic discourse on the topics, and the imagery within the films analysed in various ways across the time periods investigated. The historical contextualisation of the uncanny revealed that the intersection of this theory with the mechanisation of the human body points to the suitability of characterising this phenomenon as the *technological* uncanny. I outlined in some detail how this framework is revealed through Clara's vivid use of the phrase 'a mirror image of ourself': the words evoke the idea of machinery made in the human form – the automaton – as well as the doubling permitted through technologies such as photography. The latter also helped to point to a specific mode of spectatorship within the experience of the technological uncanny. Viewers of the visual effects outlined in this thesis actively engage in discerning the nature of the mechanisms behind the illusion which inevitably provokes contemplation upon

photography's (and, later, digital's) capability to double reality as well as manipulate its appearance: the *idea* of the index becomes relevant to the experience of the uncanny.

In Chapter 2 I applied my definition of the technological uncanny to the early cinema context. I outlined the parameters I used to investigate this period, focussing on the films made between 1896 and 1906. I investigated the technological uncanny evident at this time through an analysis of viewer responses and the depiction of the human bodies on-screen in early films. I argued that the language of the uncanny is present in both of these sources, revealing a dialectic mode of spectatorship between the screen and the viewer. The spectacular sight of the new moving photographic technology actively encouraged spectators to consider the nature of the illusion (and the medium's ontology) on display, and this form of address – and the response it evoked – can be characterised as uncanny. This differs from the famous apocryphal 'train effect', which I also analysed here; to experience cinema as uncanny is not to react in fear. The technological uncanny therefore appropriately encompasses an approach which appreciates the historical contexts (viewers were not ignorant of such spectacles) and nuances of reactions: the uncanny can be a simultaneous experience of anxiety and pleasure. These thoughts were brought together through an analysis of Méliès's works which feature the spectacular – and uncanny – display of the filmic body which is unstable and mutable. This tension between the photographically realistic human body and its manipulation through visual effects was a theme drawn out again in Chapters 3, 4 and 5.

Chapter 3 explored how the technological uncanny re-emerges once again in the digital age. I defined this 'age' to be the period from the 1990s when digital visual effects technologies became increasingly visible and other scholarly texts highlight

these years as particularly significant. Using film examples drawn from the work of Zemeckis and Cameron (whose works re-appear in Chapter 4) I discussed how the idea of the index permeated these debates and outlined how such discussions impact upon the representation and reception of the human body during this period. The impact of digital effects is marked by the slippage which occurs between the distinctions of live-action and animation, the digital effect and the pro-filmic. The language of the uncanny returned in the scholarship which engaged with these changes. The 1990s thus provides an important backdrop upon which the technological uncanny as defined in Chapters 1 and 2 re-emerges in the conceptualisation of the digital age, and the motion-captured bodies of the 21st Century which are explored in Chapter 4. Chapter 3 showed how the representation of the human body was interrogated the decade before through engagement with the technological sublime and the morph, and the uncanny re-enters popular vernacular with the popularisation of the theory of the ‘uncanny valley’. I argue these developments are better understood as part of the technological uncanny, which is explored through case studies in Chapter 4.

Chapter 4 demonstrated how the technological uncanny emerged in a way comparable to the analysis in Chapter 2 by focusing on case studies of the reception to spectacular digital visual effects technologies. My interest here was in the use of motion-capture technology. The technology itself represents a blurring of boundaries between live-action performance and digital construction, and my analysis of other writers’ theorisation of the topic illuminated the return of the language of the uncanny once again. This language was echoed again in the reception of audiences towards Zemeckis’s motion-capture films which were widely heralded as creepy, unsettling and weird. These accusations were aimed towards the representation of the

human digital characters, created using the technology. These responses therefore represent another part of the uncanny experience identified in Chapter 2: the uncanny can be both compelling and unnerving. Interestingly, Zemeckis engages with the technological possibilities for the uncanny – as does Méliès – but the motion-capture director does this in order to draw attention to his digital human characters as ‘living’. These strategies ultimately fail and, I argued, only helped to enhance the uncanny experience of these films further. This chapter concluded by observing how the technological uncanny is particularly apt for this analysis because it is the motion-captured *human* body which continues to evoke an uncanny experience for audiences.

Chapter 5 aligned all the topics discussed in the thesis through an analysis of *Hugo*. This film allowed for my investigation into early and digital cinema to be brought into a direct dialogue using a *digital* film which is about *early* cinema. This chapter therefore re-stated my argument for the technological uncanny, as my analysis of *Hugo* demonstrates the continuity between the early and digital eras in their use of the language of the uncanny; the use of spectacular visual effects; the depiction of the body as mechanical (and the machine as ‘living’); the importance of the tropes of the automaton and the double; and how the technological uncanny appeals to a specific mode of spectatorship as viewers actively engage in contemplating the uncanny potential of the medium’s ontological properties. This chapter also pointed to ways in which the technological uncanny continues to be relevant in the reception of early cinema films today. Using the examples of Méliès’s films on YouTube, I explored the idea that this digital platform appeals to the cinema of attractions model outlined in Chapter 2. I demonstrated how this forum provided new ways for spectators to engage with a cinema which appears novel but is actually very old.

My intervention has been to show a new way of analysing the representation of the filmic body on-screen; its relationship to new and novel technologies; audience responses to these depictions; and how film history's technological developments can be viewed in terms of continuity. The technological uncanny concept I have defined provides a framework in order to shape this analysis and illuminates the suitability of viewing this history through the historical contexts of the uncanny. This thesis has shown alternative ways to analyse the films discussed and juxtaposed these with audience responses. The latter is particularly important in the exploration of film history because, as Lisa Bode notes, so many of these responses can 'slide from view' (Bode, 2013, 185). Here I contribute to the task of preserving these reactions which, in the case of early cinema, are difficult to find and, in the case of digital cinema, are often transitory. This is particularly apparent for Zemeckis's films which were not widely acclaimed and have not been given substantial attention in scholarly discourse.

The technological uncanny now, as I see it, exists on a new threshold. The concept continues to be relevant within contemporary media as digital technologies explore representations of the human body although, interestingly, this engagement has also shifted (at least for motion-capture) into computer games⁶⁴. This is another fruitful area into which further research can be conducted. It shall be interesting to see how players characterise the experience of such bodies and whether the interactive interface makes a difference to the relative uncanniness of these digital humans. There is something of a poetic symmetry to this move from cinema to computer games via the technological uncanny and the motion-captured body: *Final Fantasy* –

⁶⁴ *LA Noire* (2011) uses motion-capture for its human characters, as does *Until Dawn* (2015) which is, intriguingly, also described as an 'interactive movie': <http://www.eurogamer.net/articles/2015-08-27-until-dawn-review>

the film which introduced this thesis – began as a video game franchise. When considered within this current context *Final Fantasy* (the film) helps to inspire two further aspects which may influence this future research. First, it shall be interesting to see how whether the motion-capture technology used in such games are an integral part of their marketing strategy. Are these visual effects promoted or are they relegated to the background, subordinated to other features like narrative and product familiarity, or even suppressed in the manner seen within *Final Fantasy*'s promotions (as explored in Chapter4)?⁶⁵ Second, *Final Fantasy*'s computer game origins is another reminder of how the film – and the franchise before it – was a distinctly international venture with its roots in Japan. This illuminates how the technological uncanny as explored in this thesis has been geographically and culturally specific to western contexts (for the reasons outlined in the Introduction). Yet future research may explore these nuances in more depth and open up the question of how the technological uncanny applies to different cultural contexts. This is a question which has already been implicitly raised through the popularisation of the 'uncanny valley' theory originating from Japan, and it is an enquiry which is well suited to the international creation and popularity of computer game texts.⁶⁶

In film, the challenge posed by Zemeckis's project for a photographically realistic, motion-captured digital human in cinema remains unresolved. Again this is an area I would like to explore further: what attempts – if any – will be made on behalf of filmmakers to explore the possibilities of using motion-capture in this way and how will viewers respond? Andy Serkis's work continues to be of interest as these films

⁶⁵ For *LA Noire*, at least, the latter does not apply as the motion-capture technology evidently played an important role in the games's advertisements, as well as featuring in broader discussions concerning the technology's use in future games. See:

<http://www.wired.co.uk/magazine/archive/2011/04/play/games-get-super-human>

⁶⁶ Again *Until Dawn* would be an example of this as this was developed by a British company (Supermassive Games), released by Japan's Sony, with a story set in Canada.

are more favourably received and raise the profile of motion-capture technology within popular discourse but – as discussed at length in Chapter 4 – it is significant that Serkis’s roles are mainly non-human transformations. However, Serkis’s success as a motion-capture performer raises the possibility of a new dimension to the technological uncanny: if it becomes common place for an actor’s presence on-screen to be mediated in this way, how does one *conceptualise* the experience of viewing such effects? Once again the language of the uncanny becomes a useful tool in characterising this digital body as a theoretical in-between: an embodied presence without the physical resemblance of the real actor on-screen. The scholarship outlined in Chapter 4 began to engage with this concern although future explorations will need to reflect upon the increased use of, and audience familiarity with, motion-capture technology beyond the novelty stages of development discussed through the case studies in this investigation. Will motion-capture – and the conceptual difficulties it encompasses – become completely homely or will it slip once again into the *das unheimliche*?

As well as looking forward, the technological uncanny has the capacity to look back. This thesis has explored the concept’s relevance to the history of early cinema with a particular emphasis on Méliès’s films. This database could be expanded further to include references to other filmmakers and different examples of the body on film. In particular, it would be interesting to gauge whether the diverse contexts of exhibition and audience demographics as referenced in Chapter 2 has a tangible impact upon these findings. Additionally, the technological uncanny could be used to further explore the so-called pre-cinematic technologies, such as the phantasmagoria and the magic lantern. These technologies open up the possibility of exploring a different kind of human body, with many magic lantern shows featuring slides of skeletons

(Mannoni, 2000). The question here then becomes not how did viewers respond to the representation of the living human body, but how did audiences react to the (re)animation of a dead one? Again, the shared historical contexts of the theory of the uncanny with the development of these early cinema technologies highlight the suitability of exploring such relationships through the technological uncanny concept.

As the conclusion of Chapter 5 indicates, the increased availability of early cinema films through digital technology is opening up new possibilities for experiencing the uncanniness of the old in the present. The increased interest in early cinema is providing new ways to experience early cinema films today⁶⁷ and therefore a renewed relevance for the technological uncanny, as these old images ‘seem distant but strangely present and modern, lifelike and recognizable yet also ghostly’ (Grieverson and Kramer, 2004, 1). One further way the technological uncanny may be utilised in forthcoming research is to explore this slippage between the old and the new in more detail. Expanding the inventory of YouTube responses used in Chapter 5 would be one way to do this. Another would also be to look at how contemporary, digital visual effects engage with the traditions and tropes of the technological uncanny in other contexts. The recent film *Ex Machina* (2015) is a good example of this. This science-fiction film tells the story of Ava, a robot built by a scientist hoping to test an AI’s ability to appear human during a Turing test. Importantly, the philosophical concerns surrounding the ethics of such an endeavour are visually represented on the body; it is Ava’s increasing verisimilitude and use of clothing and skin to hide her mechanical workings which leads to the film’s climax. The tale is

⁶⁷ Two intriguing examples include the work of Stephen Herbert in his re-creation of early film projectors (as discussed at *Domitor* Brighton, 2012) and Judith Buchanan’s *Silents Now* project: <https://www.york.ac.uk/hrc/engagement/silents-now/>

reminiscent of Hoffmann's *Olympia* and is therefore evocative of the historical contexts which inform the establishment of the uncanny as a concept, and Freud's later interest in it. Yet the story is equally about the uncanny potential of technology today as these concerns are explicitly discussed as part of the film's narrative as well as being present on an aesthetic level, with digital visual effects used to create the illusion of Ava's android mechanisms.

Either way, the technological uncanny has the ability to look back within film history as well as reflecting upon current and future prospects for visual effects and their impact upon audiences. The possibilities for the technological uncanny to emerge within future digital films using motion-capture, or through an engagement with early cinema today, return us to the ideas embodied by Clara's phrase: 'a mirror image of ourself?' The question mark still remains as we wait to see other ways filmic technologies will inspire, challenge and unsettle us with their depiction of the human body.

Pictures for the Conclusion



Figure 38 - *Hugo* (2011)



Figure 39 - Picture of the Montparnasse derailment (1895)



Figure 40 - *The Impossible Voyage* (1904)



Figure 41 - *The Polar Express* (2004)

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