MODERN KINESIS: MOTION PICTURE TECHNOLOGY, EMBODIMENT, AND RE-PLAYABILITY IN THE LATE NINETEENTH AND EARLY TWENTY-FIRST CENTURIES

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When new technologies are integrated with older media, potential viewers are introduced to these changes in extra-filmic contexts that make this transition visible. In four case studies I argue that the human body acts as a visible interface between machine and images in these moments to create an interactive mode of spectatorship. This is a process manifest in two forms: as a machine-body interaction that places the human body within the mechanisms of image-creation and as a means of intervention to make new technologies and new images familiar by asserting the spectator's physical presence in their plane of being. This assertion is an insertion, a comingling of the body of the image with the body of the spectator in a kinetic relationship.

My first two case studies use late 19th- and early 20th century American periodicals to argue that kinetoscope images, motion picture images, and x-ray images, all described as *shadow pictures* in the popular press, were discursively used as models of thinking via representations of the way the human body and mind were integrated with machines to capture thought. The images produced suggest that moving images functioned as a form of evidence for the unseeable not only in their ability to represent the unseen, but also in representations of thinking that reflect similar kinetic properties. Based on the context I sketch in my first two case studies, I conclude

my work in the silent era by considering how Hugo Münsterberg's neo-Kantian idealism coupled with his work in experimental psychology considers the human body as a form of evidence for the unseeable. This highlights how the origins of American film theory worked within a negotiation between materialism and idealism via recourse to the human body as a primary site from which to consider the mechanisms of cinematic style. Moving to the twenty-first century in my final case study, I argue that, like the discursive materials surrounding early-cinema, Michael Haneke's films represent a corporeality that is joined with the apparatus via the use of video technology that portrays a shortened divide between spectator and on-screen actor by engendering the ability to replay events.

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PREFACE

This project began in such a different iteration that I can hardly believe I have returned to questions about the visibility of the material of the photochemical film medium that first interested me when I began my work in film studies as an undergraduate at Carleton College and as a new graduate student at The University of Iowa. At Carleton I was encouraged to pursue my interest in the material nature of photochemical film, even if it just seemed strange and slightly Luddite at the time. While at Iowa Dudley Andrew and Lauren Rabinovitch's emphasis on the materials of historical research helped me to develop my concerns with materiality as a research methodology.

I can't thank Marcia Landy enough; she is the perfect dissertation advisor. She understood that I needed both time and distance to figure out how to become a historian. Writing alone in my office, I was only occasionally summoned by Carol via phone with the chilling message: "Marcia would like to see you tomorrow." I appreciated the freedom Marcia provided to develop this project on my own terms, and during those conversations I equally appreciated the rigorous questions she posed. The suggestions she provided were given with grace and patience and became indelible aspects of my dissertation. As my second reader Lucy Fischer was often the voice in my head pushing me to clarify and explain my ideas in greater detail. She once told me that she felt sorry that she was in my head – I wasn't. Adam Lowenstein was

gracious enough to join my committee although we'd never worked together prior to this project. I loved working with Adam because I felt completely respected and that we spoke the same language about film and history. As such, he provided me with a huge amount of confidence as I continued my work. Finally, Giuseppina Mecchia was the best professor with whom I ever audited a class. She animated the idea of history and context as a theoretical force in a way I never quite considered before. During my defense she framed my dissertation in a way that allowed me to see it in a whole new light, which makes me so incredibly happy that I had the chance to work with her.

Finally, Vern Bailey was an incredible mentor to me both as a researcher and as a teacher while I was at Carleton. He was also a great friend. From my time at Iowa I'd also like to thank David Depew for his seminar on rhetoric and the history of science, Natasa Durovicova, Prakash Younger, Chris Babey, Alison Latendresse, Jason Livingston, and Charlie Michael. I have to thank the members of the dissertation reading group at Pitt: Amanda Klein, Kara Andersen, Kristen Strayer, Tara Lockhart, Christine Feldman, and Brenda Glascott. Perhaps the most important person in my life as I wrote this (and after) is Brenda. She's my best friend, which is a good thing since we're nearly always together. I can't believe I get to spend my life with her. Without Brenda I could never have finished this dissertation. Thanks, chicks.

1.0 INTRODUCTION

The rapid crowding of changing images, the sharp discontinuity in the grasp of a single glance and the unexpectedness of onrushing impression: these are the psychological conditions which the metropolis creates. With each crossing of the street, with the tempo and multiplicity of economic, occupational and social life, the city sets up a deep contrast with small town and rural life with reference to the sensory foundations of psychic life.

-- George Simmel, "The Metropolis and Mental Life," 1902-3

One has dim foresight of hitherto uncomputed mechanical advantages who rides on the rail-road and moreover a practical confirmation of the ideal philosophy that Matter is phenomenal whilst men & trees & barns whiz by you as fast as the leaves of a dictionary. As our teakettle hissed along through a field of mayflowers, we could judge by the sensations of a swallow who skims by trees & bushes with about the same speed. The very permanence of matter seems compromised & oaks, fields, hills, hitherto esteemed symbols of stability do absolutely dance by you.

-- Ralph Waldo Emerson, 1834

In this dissertation I investigate the cultural formation of motion pictures at the beginning of the twentieth century as industrialization and modernity redefined the corporeal limits and function of the human body. To do this I create four case studies to consider how spectators or

potential spectators are invited to interact with motion pictures. Via these case studies I argue that the invention of the projected motion picture, the kinetoscope, and the discovery of the x-ray in 1895 introduce representations of the body displayed as machine-like by means of its interactions with image-producing machines. My first three case studies work with media published, shot, and exhibited during the silent era; in my final case study I read Michael Haneke's films to shift the questions surrounding the place of the spectator's body in the perception of modernity I previously explore to consider interactivity in a contemporary media context.

I have divided my dissertation into case studies because I find that they are open to both historical materialism and creative investigation. They allow one to consider how diverse texts are, as Carlo Ginzburg writes, "organically connected to a nucleus of specific problems."[1] Following Ginzburg, I have attempted to be as detailed as possible in my historical work in order to surface phenomena within a constellation of moving image practices popular in the eras of their investigation. The specific problems at the core of this dissertation are three-fold: 1. How do spectators experience a modern experience of movement endemic to the cinema? 2. How is a corporal relationship between spectators and image-producing technologies created? 3. As photochemical cinema transitions to digital forms, might physical interactivity emerge as an experience common across moving image media?

To illustrate the relationship between bodies and image-producing machines during the early-film era that I explore, it would be helpful to consider two films made and exhibited in 1908: George Méliès's *Long Distance Wireless Photography* and the Pathé Frères production, *Magic Bricks*. Neither of these singe-reel films has been widely written about, yet I find that each reveals how bodies were constructed as becoming unstable via processes of assemblage and

dematerialization prevalent in representations of interactions with image-producing technologies. Importantly, each show how this instability is the result of a process of visible assemblage between parts that highlight a kinetic relationship between machine and body.

The very title of Méliès's film provides a sense of the photographic practice he represents, which functions as a form of motion picture exhibition. The long distance wireless photography depicted use large-scale machines to photograph images and people, projecting these captured images across space creating moving images. The "wireless" aspect of the title indicates that there is no machine in the mise-ne-scene that actively projects the images; rather, the film suggests that, like radio waves or contemporary wireless technology, images may be captured and projected invisibly across space. In the film, bodies and objects are dematerialized from life and rematerialized on a large screen where they either come to life -- still images now move -- or, in the case of a photographed live body, the projected 'photograph' responds to stimulus applied to the actual living body. In the latter use of the represented photographic process, a living body appears doubled by the existence of a similarly living body wirelessly projected.

In the short an elderly couple visit a photographer's studio/laboratory to see his latest invention: long distance wireless photography. The mise-en-scene of the studio is filled with machines and apparatuses, wires and pipes, and has a large mechanical wheel/crank in the background. To demonstrate his invention, the photographer presents to his elderly audience and the auditorium audience watching the film a still painting that he then photographs and transmits across his studio so that its image is represented on a large screen at approximately ten times its original size. It's a bit mysterious why "photography" is used to name the depicted process since the objects captured all exhibit movement in their projected, large-scale, image forms. The

image of the still painting moves – the women depicted change position as they are displayed on the screen. The use of the term may indicate that any photochemical reproduction is photographic. Its use also draws attention to the way motion pictures were written about during the novelty era as photographs in motion.

Continuing his demonstration at a later point in the film, the photographer invites the elderly woman who has acted as one half of the on-screen spectator couple to be photographed and transmitted to the large screen. Importantly, this moment in the film displays that spectators are invited into the exhibition of moving pictures by suggesting they could participate in a physical way. It also calls attention to the body of the performer as similar to the body of the spectator. This similarity is a vital relationship in the era when projected motion pictures made their public debut and, here in 1908, that I argue may also be found in the way American periodicals theorized motion pictures by presenting them as images that could be interacted with and made less strange via the common ground of the body of the onscreen performer and the body of the spectator.

Figure 1. *Long Distance Wireless Photography* (1908)

In this film the transmission of a living body presents a process of corporal dematerialization and rematerialization as cinematic. The photographer elicits responses from her as she poses and these responses – her actions – are transmitted to the screen, so the image is

very much a moving picture (Figure 1). In this demonstration the body of the performer now displayed – albeit only her head – was once the spectator who has been positioned to interact -- to become -- the moving picture on the screen. To evoke Emerson, the very permanence of matter does appear compromised when living bodies interact with image-making technologies; especially, in the depiction of the ability of these technologies to dematerialize and rematerialize bodies.[2] This is a theme I will trace as it is used to theorize projected motion pictures across essays, articles, and other films in both the novelty and single-reel eras. This is a theme that also occurs in *Magic Bricks*.

Set in a faux-Asian magician's study, *Magic Bricks* uses the occasion of a magic show to display how moving pictures may deploy standard theatrical tricks, such as making a woman's body disappear into or emerge from an apparently small empty box. However, the majority of the film focuses on two magicians' use of magic square bricks to create a magical screen where moving images appear on command. The screen is assembled from the bricks as we watch; at the beginning of the process one magician turns a brick over in his hands to display it to the camera. He seems to do this as if to say: "See, it's just an ordinary white brick." After setting the bricks on top of one another to create a larger, square white surface, the magician knocks them over one-by-one, toward the camera (Figure 2). The film is then reversed so the audience sees the bricks reassemble themselves, returning to their previous position as a screen-like surface. As this process occurs, the bricks are no longer white: they are overlaid with

Figure 2. *Magic Bricks* (1908)

a moving image (Figure 3). Once completely composed, the moving image assembled on the bricks is the assembled image of a little girl blowing a kiss at the camera.

When the bricks are systematically knocked over, after this image has been displayed for a few seconds, a ghostly presence of the girl remains on screen for a brief amount of time (Figure 4). While there are a number of themes that may be considered concerning this short film, the way that the screen is characterized as magical and able to assemble and disassemble the toddler's body creates both the sense of corporal instability and the sense that this instability emerges when a body is represented on-screen. This provides an after-image and gives the impression of a permeable, shadow-like body left behind. What we also see is an assemblage – a process of being *in* time and *in* movement in the state of being composed. The film is referencing the cinema and in this reference demonstrates many of the traits that reoccur in the discourse surrounding cinema's invention that I will examine.

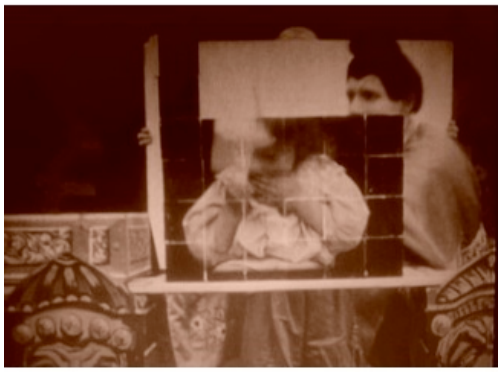

Figure 3. *Magic Bricks* (1908)

During the silent era projected motion pictures reflected and fostered an experience of interactive modernity within which the dematerialized nature of images were bound to a mechanical, industrial mode of presentation.[3] The motion picture projector dematerializes an object, translates it, and projects it onto a nearer space while elongating the time between capturing and translating the original filmed event. Motion

Figure 4. *Magic Bricks* (1908)

pictures embody and present a translation between materials in a number of ways. With the invention of the kinetoscope, the x-ray, and projected motion pictures, the idea that objects and bodies can be dematerialized and, as with the telegraph, sent over time and space, or, as with the cinema, captured in one time and space and represented in another becomes part of a Western cultural understanding of the dissolution of solid objects when encountering new technologies. Similar to the depictions of bodies, spectators, and new technologies in *Long Distance Wireless Photography* and *Magic Bricks*, this process is depicted in American cultural discourse as an ability of the human body to enter into a kinetic union with the images and machines that populate an industrially expanding culture.

The research in my first three chapters focuses on extra-filmic discourse to expand an understanding of a particularly American, middle-class experience of early-cinema. One of the questions that I had at the beginning of my work was that if we follow Tom Gunning and André Gaudreault's assertions about early-film operating as a "cinema of attractions," how do extra-filmic sites display and present the technological experience that marks that cinematic mode.[4] Alongside new work like Mark Jancovich and Lucy Fraire's study of theatre location in Great Britain that builds on scholarship such as Douglas Gomery's *Shared Pleasures: A History of Movie Exhibition in America*, I too see a need for film historians to be attentive to other aspects of the cinema going experience.[5] The extra-filmic texts I consider in these chapters reveal how a cinematic experience of modernity positioned the human body as unstable when faced with image-producing technologies that *seemed* able to penetrate bodies, as I will argue occurs in *Uncle Josh at the Moving Picture Show*. The instability of this experience may also be read in the stories and articles that used the figure of the *shadow* to describe both x-ray images, which do provide evidence of a literal penetration of a corporal boundary, and motion pictures. In addition

to this instability the human body is also cast as machine-like in its ability to interact with image-producing technologies. Both of these conditions were elicited in spaces and texts inside and outside of the film theatre.

When I examined the mass circulation periodicals of the novelty era I found a proliferation of news reports, fictional stories, and illustrated representations that explicitly and implicitly placed the human body in a relationship with image-producing technologies. For instance, the discovery of the x-ray and subsequent invention of the fluoroscope to capture images of the interior of a moving body places the body in direct contact with an image producing mechanism. Cinema technology also films bodies in motion and represents those bodies to expectant film audiences. Both inventions explicitly entail interactions between machines and the body. However, the discourse surrounding these quotidian examples contains a series of depictions that imply more implicit relationships, and these relationships suggest that these quotidian interactions may not be as everyday as I may have first thought.

For instance, in the fifteen years subsequent to the invention of the kinetoscope, thinking is repeatedly depicted via metaphors and images that find a similarity between the process of thinking and the movement between photograms in the kinetoscope. Similarly, both the Biograph and Vitascope are used in fictional stories to represent thinking as a series of photographs passing through the mind. Movies as mind, or vice versa, are not unique metaphors, but I found this phenomena interesting when I began to ask what is unique about this as a model for thinking in an American industrial era that values the mechanic as uniquely life giving and providing the promise of spatial and economic growth to a nation only thirty years removed from a Civil War. One argument I make is that the industrialization of the novelty and single-reel eras was made familiar and accessible via machine-body interactions.

When I considered the illustrations and descriptions of the new medium of motion pictures as it was explained and represented in the mass circulation periodicals of the day, I was confronted with a discourse that negotiates the transference from arrested or still representation to kinetic representation. This dialectic is present both in the form of the media – magazines circulate but they contain still images – and in the way that medium depicted a media of movement – motion pictures. Leo Charney and Vanessa Schwartz detail twin tropes of modern life: chaos and urban disruption paired with the rationalizing and standardizing forces of industrialization.[6] Rather than pulling between two different experiences: the motion, chaos, rapidity, and the upheaval of modern urban life balanced or opposed by the arrest of rationalization, standardization, and the machine-like consensus of twentieth century Taylorization, the depictions in the era's periodicals suggest a more radical experience of simultaneity, synthesis, and a machine-body interactivity that constitutes a mechanical mode of being as a defining experience of American modernity during the silent era. As such my work locates points of access between spectator and images that rely on a possibility for physical relationship.

Gilles Deleuze's use of Henri Bergson's understanding of the modern condition helps us to see the place of cinema in machine-body assemblage and in the way movement permeates the corporal experience of modernity. Deleuze's conception of the movement-image as an explication of Bergson's cinematographic mode of thinking creates an alternative to definitions of modernity that rely on fragmentation. Following both Deleuze and Bergson, fragmentation creates privileged instances that, in turn, privilege the experience of stability as a moment when one may 'take account' of an experience. This privileging becomes apparent when modern science begins to use time as a variable. Privileged instants necessitate that there is an addition of

movement rather than a joining of singularities in a process of movement. Recasting time in this way means that a relationship between time and movement exists where each is variable in relation to one another. This relationship is exhibited cinematically in the equidistance of snapshots that "reproduces movement as a function of any-instant-whatever that is, as a function of equidistant instants."[7] This relationship reminds us of two vital aspects of the cinema. 1. Materially and stylistically the cinema makes visible a process of assemblage at every moment. 2. This visibility at every moment de-privileges stability for movement creating what Deleuze names any-instant-whatever.

The way that motion particularly, but not exclusively, defines the American context I sketch in this dissertation can be seen in the selection from Emerson I use to begin this chapter. Emerson's experience of train travel is a bodily experience of movement that he describes as an interrelationship between the experience and other similar forms of movement, as in his description of the "swallow who skims by trees with the same speed" as he travels while on the train.[8] The common relationship he calls attention to is movement. However, it is also noticeable that the movement he experiences and perceives outside him is a single a process. This emerges when you consider his suggestion that "[t]he very permanence of matter seems compromised & oaks, fields, hills, hitherto esteemed symbols of stability absolutely dance by you."[9] The kinetic relationship between bodies and machines and how it casts continuity between objects mirrors the de-privileging of privileged instants Deleuze find in Bergson. Additionally, the dematerialization Emerson alludes to in 1834 becomes a part of the common discourse about bodies, as we saw portrayed in *Long Distance Wireless Photography*, and as we will see in the wake of the 1895 discovery of the x-ray.

In emphasizing the kinetic relationship between bodies and machines, I want to draw attention to the continuity that movement creates both corporally and mechanically. This is important because modernity is a constant negotiation of the place of the body in the modern, industrial world. I use body and corporality throughout this dissertation to shift away from phenomenology. I do this because, as Paolo Marrati explains, "Phenomenologically oriented approaches cannot account for what belongs to cinema itself insofar as they retain subjective or 'natural' perception as the model of reference, whereas the specificity of cinematographic perception lies precisely in the fact that it cannot be referred back to any subjective center."[10]

The thinking behind my historical work is then enormously informed by Deleuze's work on the cinema because I see continuity as the resonant condition of both modern and contemporary experience. This is also one of the reasons why I chose to focus portions of my work on magazines, which reproduce still images. As I will show, even in that medium, it is a series of images that is emphasized. By placing the photogram series in relation to the machines and bodies that provide motion, a cinematic mode of thinking is evoked because the photograms only become motion pictures when the body acts as the machine and de-privileges each instant. In this medium potential spectators experience cinema's becoming.

By focusing on the corporal experience provided by motion pictures, I emphasize that it is the body that *physically and mentally* perceives modernity's movement, which is also inscribed in the very movement of the body, both internally and externally. Simmel's description of urban modernity written at the turn-of-the-last century begins this chapter to underscore the place of the body – not a subject.[11] He measures the experience of the city via

perception and the physical interactions that psychologically order the space of urban modernity. The palpitant tempo of urban modernity registers in the way the body moves through the urban landscape.

1.1 'MECHANICAL ADVANTAGES' IN TRANSITION

The era in which early American film developed was one of extended national growth. In 1895, 180,657 miles of railroad were in use in the United States. Between 1869 (46,844 miles), the year in which the transcontinental railroad was finished, and 1900 (193,346 miles) total rail mileage in the United States quadrupled.[12] As national rail systems grew, goods could be more efficiently shipped from East coast manufacturing centers to the Midwestern and Western areas of the nation. In the sixty years from 1850 to 1910, the average manufacturing plant "increased its capital more than thirty-nine times, its number of wage earners nearly seven times, and the value of its output more than nineteen times."[13]

Following rail routes across the country, telegraph and telephone lines began to connect small rural towns to one another and to urban centers. By 1880, four years after the telephone's invention, 50,000 Americans were using the phone.[14] Brought into mass use after Alexander Graham Bell's U.S. patent expired in 1894, telephone service was extended to rural areas: "by 1890, 800,000 phones had been installed; in 1900, 1.5 million people in the smallest towns and rural areas knew about exchanges, party lines, and operators. As early as 1892, Eastern and Midwestern cities were connected to a long-distance network that soon reached the West Coast."[15] Additionally, postal communication with rural communities and farmsteads were facilitated by the growth of free rural delivery routes, which increased from forty-four in 1897 to

4,000 in 1900 to 25,000 in 1903.[16] Increased rural routes meant that weekly and monthly periodicals were able to spread beyond an East coast readership. Following Benedict Anderson's assertions about literacy, mobility, and nationalism, this increased public sphere helped fortify a sense of nationhood in the wake of the Civil War.

This sense of expansion and change is not simply relegated to the physical movement of goods and services. David Nye writes about how the use of incandescent electric light at the Philadelphia Centennial of 1876 marks electricity and, in particular, incandescent light as a spectacle that created the appearance of the ephemeral from the solid.[17] In 1888, less than one percent of American homes had electric light.[18] Its mass use remained a spectacular experience, particularly during the 1894 Columbian Exposition in Chicago, which had more lighting than any city in the country.[19] The 1901 Pan-American Exposition at Buffalo took the recent completion of the country's first hydroelectric power plant at Niagara as the inspiration to make electricity the central theme of the exposition.[20] Finally, the 1904 Louisiana Purchase Exposition prompted an attendee to describe the nighttime experience of buildings outlined in light as a "bouquet of light blossoming out of the darkness. For half a mile the flowers of light sparkle in the murk, clear-cut, golden."[21] From this description, Nye suggests that spectacles of coordinated and massive displays of incandescent light created an effect whereby "electricity dematerialized the built environment of the fair, transforming its buildings into enchanting visions, here naturalized as 'flowers' and 'blossoms'."[22]

At the turn-of-the-last-century a sense of the solidity of bodies and objects begins to dissolve. In this era telephones translate a voice into electricity and back again for the receiver after it's carried or projected across time and space; the telegraph lines that followed rail lines throughout the country translate written language into electric pulses of Morse code, which are

then re-inscribed into language for delivery; and Marconi's demonstration of a long-range wireless telegraph in 1897 forms the basis for radio transmissions by utilizing a process where a voice is translated into electromagnetic radiation signals (radio waves) which are then projected across time and space before the dematerialized voice is rematerialized for the listener. These technologies all rely on a process of disembodied dematerialization as they translate and transmit language in its two forms: spoken and written, across time and space.

More so than any of the previous technologies, the December 1895 announcement by Wilhelm Röntgen of his discovery of new rays that affected photographic paper after passing through organic material prompted an unheralded excitement in the popular press. Describing this excitement art historian Linda Dalrymple Henderson writes,

> Röntgen's publication of his findings … triggered the most immediate and widespread reaction to any scientific discovery before the explosion of the first atomic bomb in 1945…. By March 1896, twenty lectures on x-rays had been delivered before the French Academy of Sciences and were published in their *Comptes Rendus*. *Poole's Index* lists more than sixty articles in American and British periodicals for the year 1896, and the *Reader's Guide* chronicles the continued prominence of x-rays in America in thirty-five articles for the period 1900-04, twenty-eight articles for 1905-9, and thirty-three articles for 1910-14. [23]

My own research shows that limited to just *The New York Times Historical Index* between the years December 1895-1901 there are 824 entries for articles or advertisements that discuss both the 'x-ray and the photograph.' Compare this to the 194 entries in which the word 'Vitascope' may be found, and you will have an idea of the enormous impact made by the discovery of x-rays and the slight interest in projected moving photographs in comparison. One possible reason

for this, as Marrati's reading of Deleuze points out, is that cinematographic movement was seen as quotidian because it reflected modern science's conception of movement and time as variables.[24]

In the American press, considerable coverage of Röntgen's announcement begins in January 1896 and includes articles that emphasize both the photographic quality of the x-ray and its lack of effect on bones, as in this selection from the *Nation* published in its 30 January 1895 issue:

> These rays, which are wholly imperceptible to the eye, and the existence of which has been hitherto unsuspected, have the power of penetrating all kinds of wood and other organic substances and solid bodies, except metals and bones…. A photograph of the hand or leg shows only bones; the photograph of a man, whether clothed or naked, is merely a human skeleton with a watch or ring, if he happens to wear them."[25]

X-rays are described as both unseeable and capable of penetrating the body to photograph bones and foreign objects within the body, and the depiction of skeletal structures was the most pervasive demonstration of the device.

During the initial excitement about its discovery, however, a number of other applications were suggested. In the popular press x-rays were classified as a new form of photography. As such, the evidence of the produced image, as Lisa Cartwright has argued, cast photography as having the ability to reveal the unseen.[26] This form of photography and its ability to penetrate objects invited suggestions concerning its ability to capture spirits, the presence of a soul and, in one famous suggested application made by Thomas Edison, the ability to photograph the brain to understand the processes of the mind.[27]

1.2 EMBODIMENT, PERMEABILITY, AND INTERACTIVITY

My work began by looking at *Scientific American* as emblematic of the industrialization of the early-twentieth century and the spread in scientific discourse that industrialization brought with it in the United States. As an illustrated periodical, *Scientific American* also stands out because the detailed engravings that accompany its articles aestheticize new machine technology. I was curious how cinematic machines were positioned in a particularly American context that historians John Kasson and Leo Marx depict as seeking republican values in artisan traditions that celebrated "harmony between the fine arts and machinery."[28]

Ultimately, however, I engage the form of material history Gomery suggests via popular periodicals because they were the purview of an expanding middle class. Because the periodicals I examine enjoyed a wide geographic circulation, while limited to a particular public, I am not suggesting in my readings that the modernity I locate is inherently connected to an urban experience which has come to define a particular late-nineteenth and early-twentieth century modernity. Rather, I am invoking Miriam Hansen's insistence on reminding us of the plurality of modernisms and of the need to tailor one's articulation of modernity from the material conditions of the specific era under investigation.[29]

Considering the expense of attending an exhibition of image-making technologies in the pre-Nickelodeon era, I was interested in how an educated middle class was introduced to early-film. For instance, a display ad in the 19 May 1896, edition of the *New York Times* lists the cost of attending a demonstration of Röntgen rays and Edison apparatuses at .50 cents. In 1900 the average annual income for a family in the United States was $3000 (in today's dollars),[30] so the opportunity to attend the Electrical Show would be relegated to a select few. This advertisement

also shows how multiple image producing technologies often shared a bill for amusement shows in the years just after the discovery of the x-ray – until the danger of its radiation was fully understood.

I use periodicals as the primary sources for this study due in part to their relative absence in studies of film history. While scholars have certainly been attentive to fan and industry specific magazines, it is only recently that historical work, such as Kristen Whissel's study of early-cinema, modernity, and traffic, have taken advantage of a media form that historian Richard Ohmann argues, "'had become the major form of repeated cultural experience for the people of the United States.'"[31] Between 1890 (18 million) and 1905 (64 million) circulation for monthly magazines tripled, exceeding the combined circulation of newspapers and weekly periodicals (57 million by 1905).[32] During a similar period (1870-1900) the overall US population nearly doubled, increasing from 38,448,000 to 75,995,000.[33]

Working from the way popular American magazines wrote about projected motion pictures, in chapter one I argue that during the two years preceding and including what Charles Musser has termed the novelty era: 1894-1897, early-film technology was made visible to a literate, middle-class potential audience within periodicals, such as *Scientific American* and *North American Review*, that documented how motion picture projectors synthesize individual, still images into a blurred series resulting in moving, projected film. This educates audiences to engage with projected film images as multiple, single-frame photographs linked in a length of exposed film stock. The focus on the relationship between the 'hidden' individual photogram and the "blurred" or "blended" images of the photogram in motion represents the new technology of mechanically, projected motion pictures as a synthesis of parts in the projection of a whole or complete motion picture.

Reading the photograms as they are reproduced in the periodicals requires individual readers to animate the photograms as if they were the projection apparatus the periodicals illustrated alongside the photograms. The synthesis potential audience members are invited to undertake is made visible via the way published film stills were printed either in sequence or as a full-page of sequential frames alongside illustrations and description of the machines that "blurred" these individual "impressions" to manufacture motion pictures. These photograms are present in the discourse surrounding the advent of both the kinetoscope and projected motion pictures as elements that must be synthesized to create the kinetic process on which motion pictures depend.

The tension between arrest and movement embodied by motion pictures that makes this process visible is not simply a construction of modernism or conceived by theorists, intellectuals, or artists of the time intrigued by the possibilities for time and space exhibited by the medium's mechanical construction; rather, a wide, literate, middle-class public was enticed into these tensions through the very coverage of the pre-cinematic projection apparatus and the motion picture image within the modernity of the post-Civil War era in the United States.

From my historical research, I argue that the embodiment asked of readers coupled with the description of the 'blurred' images marks a form of modernity characterized by synthesis, the combining of discrete elements, which contributes to an industrial modernity where experiences and objects are depicted to have the innate ability to become something other than they appear. Similar to the way the materialization and dematerialization of written and spoken language is provided by the telegraph and the telephone, within the exhibition space the individual photograms of the film strip are dematerialized from their photographic form into projected light and reflected back to the audience as a motion picture. Each impression becomes light --

dematerialized and materialized on-screen. But the experience of projection offered by these pre-cinematic technologies may also be read as a translations between materials: from one object into another and back again. An aware form of synthesis that I name *becoming other* in my first chapter is present in a number of the inventions of the novelty era. The visibility of this synthesis coupled with the way the human mind is invited to act as a projection apparatus to synthesize these still images are two elements that mark motion pictures as participating in a modernity that exhibits the human body as an intertwined mechanical element. This is the form of a machine-body interactivity that I explore throughout this dissertation.

My work in this chapter draws from Tom Gunning's consideration of how exhibitors often differentiated the new technology of projected motion pictures from pre-cinematic amusements by demonstrating the "unbelievable visual transformation" of still images into motion pictures.[34] However, because part of my project is to consider exhibition space as more than theatrical space by drawing on popular, discursive materials that preview the processes and experiences of exhibition, I argue that published magazine accounts also readied potential audience members for the new motion picture experience they would encounter. By dramatizing wider parameters for the cinematic viewing experience, I expand the way spectatorship has been and may be perceived as an interactive experience, particularly, as Thomas Elsaesser recently suggests, during eras that see shifts in media form.[35]

Figure 5. X-Ray, 1896.

As I continued to research how image-producing technologies were written about in mass circulation periodicals, I was struck by the similar use of the description *shadow pictures* to

describe kinetoscope views, motion picture images, and x-ray images. Following this observation, in chapter two I continue the archival study of the way motion pictures were depicted in American periodicals to argue that the oft-used description for cinema as a *shadow world* and as *shadow pictures* creates a discursive bridge between the pre-cinematic practice of *ombromanie* or shadowgraphy (the use of hands to project and manipulate literal on-screen shadow images), motion pictures, and x-rays contributing to a conception of the human body as permeable, transparent, and kinetic. By considering how the description *shadow* was repeatedly linked in magazine stories and newspaper advertisements to the bodies of on screen actors, I suggest that in an American context the use of the term *shadow picture* unites all three image producing technologies in a cultural discourse where 'shadow images' were both the images of life in motion and the images produced from permeable bodies (Figure 5).

To examine this similarity I expanded the scope of my time frame from the novelty era through what Tom Gunning has named the single-reel era (1907-1913) and into the pre-sound 1920s to see how long the term *shadow* was a pervasive description for these three photographic products. Chronologically, all three technologies were referred to using the term predominantly during the 1900s, with only cinema images and x-ray images retaining the description during the later 1910s and into the 1920s. As the kinetoscope became less popular in urban areas, references to it in periodicals understandably decreased. Describing motion picture as *shadow pictures* also decreases as the US enters the sound era. The addition of talking people on screen seems to have lessened the impression of the way the term refers to permeable bodies by invoking the pre-history of shadowgraphy and the x-ray.

Permeability emerges as a theme because the invention of x-ray devices produced images perceived to be the shadows of bones. I argue that these images appeared similar to the shadows

cast when a body, particularly its hands, was placed between a light source and screen in shadowgraphy. The fragmentation of the human body displayed by both practices combined with a similar arrangement of machine, screen/photographic paper, and body creates a similarity between the practices. Add to this the fact that each exhibited an outline of an object, and we can imagine why both were called *shadow images*. The fact that this description carries over to motion pictures is initially curious. Even accounting for the pre-history of moving picture practices that Charles Musser has documented, the similarity between the x-ray and the cinema and their mutual presence as entertainment items and useful scientific tools suggested a link rooted in their mutual present.[36] When I first considered examining the similarities between the discourse surrounding x-rays and cinema, as Yuri Tsivian and Lisa Cartwright have done, I considered that the organic materials of the film stock would stand-in for the body of the patient undergoing an x-ray. What I found was that in articles that described motion pictures as *shadows* there were often substantial references to the body of the film performers, as if they were casting shadows on the film.

In addition to references made to *shadow pictures* found in popular magazines, the predominant texts I examine in this chapter are Albert E. Hopkins 1901 compilation of articles about magic, stage illusions, and trick photography taken from the pages of *Scientific American* and the popular Edwin S. Porter directed *Uncle Josh* shorts: *Uncle Josh's Nightmare* (March, 1900), *Uncle Josh at a Spooky Hotel* (March, 1900), and *Uncle Josh at the Moving Picture Show* (January, 1902). Hopkins's compilation provides a site in which the various "shadow" producing technologies are discussed and illustrates the importance of the interchange between body, machine, and image producing technology I have described. In this way, the space of a kinetic machine-body interactivity moves from the embodiment asked of readers/potential

spectators that I document in my first chapter, to the way the bodies are visibly transformed in the luminous path from machine to screen. For instance, shadowgraphy demonstrates this in the way hands become other objects during the performance.

I read the *Uncle Josh* shorts as narratives that document a desire to interact with shadow-like images in modernity. Working alongside Jonathan Auerbach's work on the cinematic display of bodies during the silent film, I consider the *Josh* shorts as narratives focused on how to interact with bodies in an age in which objects and bodies may be dematerialized in their interactions with machines. Ultimately, I focus on how *Uncle Josh at the Moving Picture Show* functions as a culmination of a desire to interact with kinetic shadow-like bodies in an age of motion and permeability. At the end of the film, the body of an on-screen performer is simultaneously portrayed as Josh's body – the body of the spectator – *and* the body of the projectionist, who is revealed at the end of the short. In this conflation of bodies, Josh, who at one point appears to enters the onscreen world creating his own body as shadow-like in appearance, accesses the image by interacting with both on-screen bodies and the projection apparatus.

Extrapolating from Edison's experiments with x-rays and his announced attempts to penetrate the inner reaches of the human brain, at the turn-of-the-century there are repeated references in the popular press to experiments that integrate the human body and mind with x-ray devices in order to photograph thoughts. In chapter three I contextualize the descriptions of machine-body interaction discussed in my first and second chapters within cinema's public American debut where the limits that defined corporal and psychic boundaries were in flux. I shift my focus from the body to the mind to draw attention to the way that the permeability the x-ray grants to bodies was also extended to the mind. As such, machine-body mechanisms were

created and written about that claimed to be able to photograph thoughts via the use of x-rays. To cast thinking as a process made visible provides for access, familiarity, and understanding to what was a previously unperceivable biological process. In this era when scientific exploration undertook to make the invisible visible; atoms, microbes, and thoughts are all under examination via new instruments, like the microscope, or new practices, like Freudian and experimental psychology.

To draw a connection between mind and body in this chapter I work from a published analysis of the x-ray written by Hugo Münsterberg to show that his insistence on a psychological examination of the cinema in his 1916 study *The Photoplay: A Psychological Study* is part of a larger late-19th/early-20th century American discourse that considered the mind as machine-like and the body as both machine-like and permeable. By reviewing Münsterberg's work I consider his position as both an experimental psychologist and an adherent to neo-Kantian metaphysics to consider how cognitive film theorists, such as Joseph Anderson and Gregory Currie, extract Münsterberg from his neo-Kantian world view in order to argue for a scientifically verifiable form of film theory and understanding of spectatorship.

As the author of the first long-form work of American film theory, Münsterberg's adherence to a form of modern, industrial science – he was a prolific writer on efficiency and motion, and the Carnegie corporation consulted him to improve the systematic efficiency of its workers – and idealism places Münsterberg's work squarely in the midst of the tensions between dematerialized, ephemeral experience, and the materialized experiences often associated with industrial modernity. As such, in this chapter I work with Akira Lippit's conception of surfaces after the invention of the x-ray.

Thomas Elsaesser considers that "whenever there is a transference of, or struggle over, symbolic power relations between one medium or media technology and another," we get narrative reminders that assert a desire for physical participation with images.[37] In my examination of extra-filmic discourse, I demonstrate how in the silent era periodicals help to dramatize this shift from still to moving pictures. As I argue in chapter four, in a contemporary media landscape a proliferation of analogue and digital video forms create a similar haptic experience of spectatorship.

I have focused on a kinetic relationship in my historical work because the context of American industrialization demands that attention be paid to machines and their movement. This context plays out in the films and articles I work with in my first three chapters. Although I focus on American reception, the films I use are not solely the products of an American film industry. *Long Distance Wireless Photography* is directed by Georges Méliès and *Magic Bricks* is a Pathé Frere production. Following this transnational spirit, which was prolific prior to the invention of sound, and the importance I see in locating instances where media forms and interactivity are under examination, in my fourth and final chapter I relocate my historical work with the kinetic experience of machine-body interactivity discussed in the previous three chapters to examine how being *in* time and having the ability to affect time affects continuity in Michael Haneke's films.

As film production adopts digital processes to replace the photochemical cinema that has dominated the previous one hundred years of film history, contemporary motion picture narratives resonate with anxieties and possibilities comparable to those played out in the earlier

era. As such, my fourth chapter also considers the interactive relationship between machine and body, but does so from a contemporary perspective by considering the use of new media in *Benny's Video* (1993), *Funny Games* (1997), and *Caché* (2005).

Considered against the embodied participation asked of early-film viewers, the undifferentiated flow of images Michael Haneke portrays speaks to the difficulty of locating non-mediated experiences within a now completely synthesized contemporary media experience. As cinema morphs from organic-based to digital forms, Michael Haneke's films explore the rhythm of contemporary, first world, middle-class life in both his narratives and use of different media in the material form of his work – shooting in HD-Video, transferred to 35mm for distribution, for example. I analyze how the use of video temporality in the diegesis of *Benny's Video*, *Funny Games*, and *Caché* allows a consideration of a temporal machine-body interactivity that uses video media to access contemporary experience derived from an image-rich cultural and social condition.

Haneke explores a desire to access images by employing multiple media technologies both diegetically and extra-diegetically. His conscious use of analogue video technology to question the relationship between past, present, and future engenders his characters with the ability to replay experience via a temporal manipulation as a result of their own control of the video image. In shifting my attention from mediated bodies and the kinetic models of thinking I have explored in the last two chapters to, again, consider how spectators are invited to consider their own interaction with media technology, I continue to consider motion, but I do so via its relationship with time.

Another reason that I turn to Haneke in this study, as opposed to, say, David Cronenberg or Jean-Luc Godard and their concerns with media, specifically video, is because Haneke is

actively engaged in a process that diagnoses and resists alienation and fragmentation as a condition. As such, his work has prompted scholars such as Brigitte Peucker to consider it alongside Walter Benjamin's theorizations of modernity. By inviting a consideration of Benjamin, Haneke's work allows me to examine interactivity in a contemporary new media context and return to the other forms of interactivity in modernity that are outlined in the earlier portions of my work. By considering how Haneke's films construct a unique combination of Benjamin dialectical modes of experience -- *erfahrung* and *erlebnie* – I argue for a form of contemporary spectator interactivity that relies on an ability to temporally interact with media in an experience that reinforces the inherent continuity of the any-instant-whatever that order motion pictures.

2.0 FROM STILLNESS TO MOTION: 'BLURRED IMPRESSIONS' IN LATE NINETEENTH CENTURY PERIODICALS

In the decades following the Civil War, there was a boom in the publication of mass-circulation periodicals in the United States. Reflecting the industrial expansion of the nation and the advent of a robust middle-class, these magazines offer a unique site to examine how a segment of the American public was introduced to the new experience and technology of projected motion pictures. Often the public reception of early motion pictures is documented through newspaper accounts primarily due to the immediacy of their coverage and the proliferation of daily newspapers in the presentation and interpretation of events. While newspapers were also published as relatively inexpensive daily editions, magazines were far more expensive, even after industry changes resulted in general subscription price reductions in 1892.[38] Accordingly, magazines became the purview of the growing post-Civil War middle class.

Examining how the periodicals of the novelty era covered the new technology and experience of motion picture viewing documents how a literate American middle-class was introduced to motion pictures. With this in mind, in my research I asked a simple question: How was a potential, middle-class motion picture audience introduced to projected moving pictures? As I will argue, the middle class readers who fueled the post-war periodical boom were introduced to motion pictures as a new technology and viewing experience where the still image becomes the sight of exchange between the projector and the exhibition space. While Tom

Gunning has shown that the "incredulity" recorded in accounts of early-film screenings was part of the screening experience crafted by exhibitors and showmen who evoked shock from the "unbelievable visual transformation" of still images into motion pictures, I will argue that in addition to exhibitor practice published magazine accounts also readied potential audience members for the new experience they would encounter.[39]

More so than simply suggesting that motion pictures are the next step for still projected images, these articles describe in great detail how each film *is* and is *recognized as* a series of still images. The publication of sequential and single photograms within a discourse of invention and mechanical processes invites readers to embody or become the motion picture projection machine as they read the articles in these periodicals.[40] Through reading practices and the placement of sequential photograms, we can imagine that readers of late-nineteenth century periodicals were asked to act as the projection apparatus described in the articles and depicted in the accompanying illustrations. In these periodicals photographic reproductions of individual photograms and entire lengths of film add to the way these articles describe motion picture technology as an evolution from still photography.

The tension between motion and stillness that defines *motion pictures* appears in the interaction between photograms and written accounts of the filmmaking process, as well as with the photographs published alongside photograms in the same articles. The interaction between these elements creates a counterpoint between the photograph's ability to capture a moment or an instant and the potential of motion pictures to capture a series of moments. The publication of the sequential photograms are simultaneously marked as discrete, individual images and images within a sequence. To negotiate the divide between photographs and motion pictures, the process by which motion pictures are created and exhibited is detailed for the middle class

readers of these periodicals. Within this explanation readers were positioned to reanimate the still photogram series via an invitation to embody the projection apparatus depicted in the articles and illustrations.

One such account may be seen in the 17 April 1897 issue of *Scientific American* (Figure 6). The cover from this issue of *Scientific American* emphasizes the industrial and mechanical processes of motion picture development alongside a familiar, audience-filled, theatrical exhibition space. As a document from 1897, this cover provides us with a demonstration that the attraction and novelty of motion pictures for the readers of *Scientific American* was in the theatrical projection and the methods that made that projection possible. What can we understand about how pre-1900 American film audiences were introduced to projected motion pictures from the way this cover illustration, similar to other images published during the post-Civil War era, represents the exhibition of motion pictures? Furthermore, what do this cover image and the depictions of photograms that illustrate the accompanying article reveal about the way mass-circulation periodicals depicted motion pictures to a potential audience?

The cover illustration for this issue shows four engraved drawings depicting the production of motion pictures.[41] These images include "The Dark Room and Reel For Developing Films," which depicts large troughs over which are suspended great, wooden, skeleton reels around which lengths of negative film are wound, a view of the "Interior of the 'Mutoscope'," including the profile of hundreds of individual mutoscope cards, and a view of two men using a "battery-driven Mutograph camera" to film a distant approaching train in a rural setting. The fourth illustration is labeled "The Biograph at Work in a New York Theater"; the right side of this image features a train ready to steam off the theatre-size movie screen into the waiting audience, while the opposite side of the same image is dominated by the throw of a

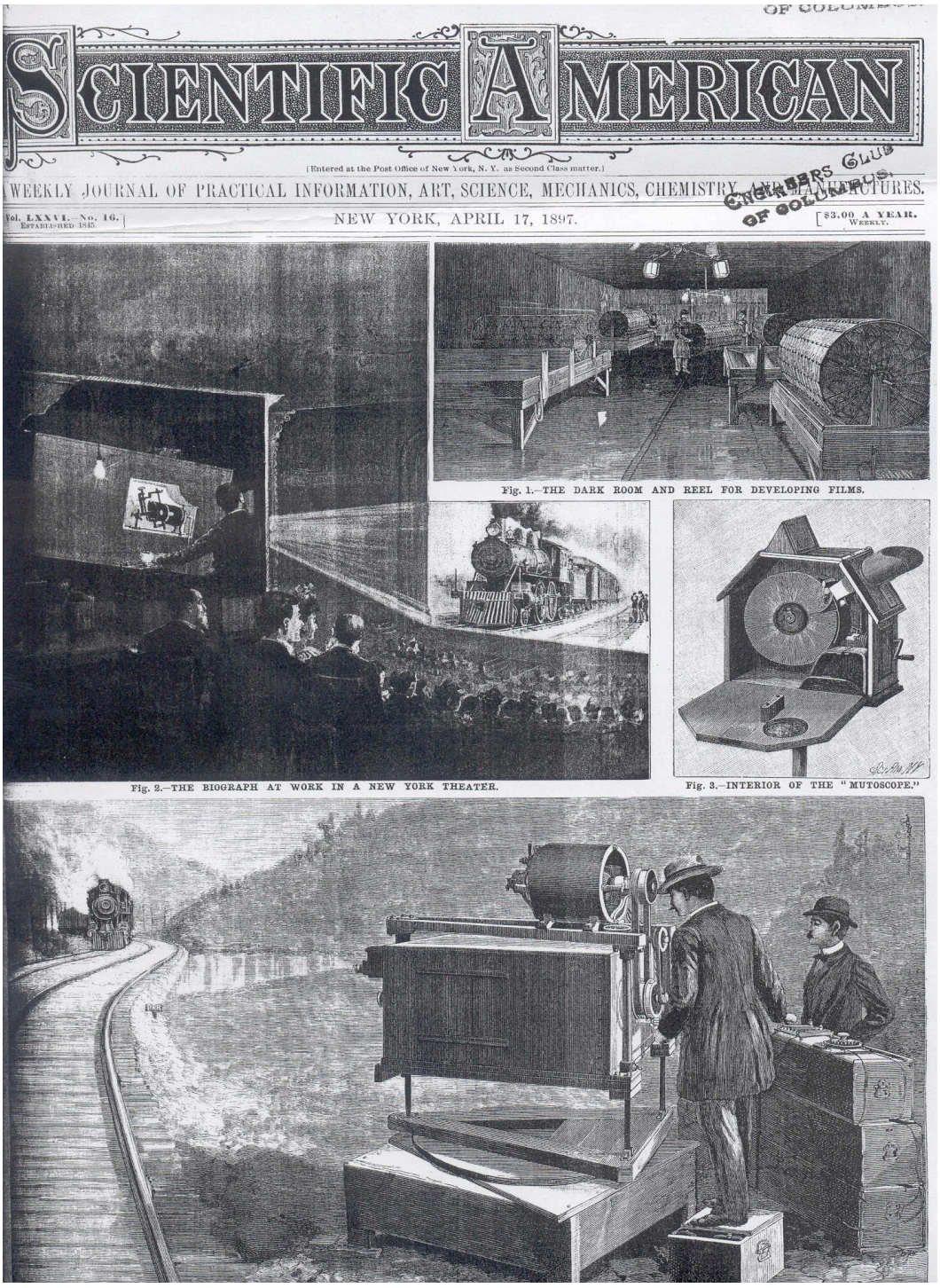

Figure 6. *Scientific American* 17 April 1897, Cover

projection beam and a glimpse into the theater's projection booth. Inside the booth, in profile, a Biograph projector is drawn as if one were able to see through its outer surface, revealing the inner-workings of the mechanism. The arrangement of images provokes a union between the process of developing motion pictures and the mechanized, projection process of the motion picture exhibition space. The center illustration is the projected image of a train steaming into the theatre audience. Highlighted by the white screen the train is projected on and the projection beam, this engraving is differentiated from the other image's dark lines and heavy halftone and the darkened space of the exhibition hall. In this depiction of a 'motion picture' motion is suggested by the light beams emanating from the projection booth, which is 'opened' for a view of its interior. Our movement as we read the image follows the projected light to highlight the exhibition space and the projected image as the primary interest.

This approach is hardly surprising; placing this image at the center of the cover emphasizes the topic of the corresponding article: "The Art of Moving Photographs," but it also draws one's eye to the center as we read the illustrations from left-to-right. While the largest of the four images depicts two mutograph operators filming the Pennsylvania Limited's rail approach – evoking the projected train we see in the theatrical space – the implied dynamic movement of light emanating from the projector forces the eye to measure the three smaller illustrations first. The reader's attention is drawn to depictions of development and exhibition before noticing the largest illustration, the capturing of images by the mutograph. As the three dominant images on the cover, then, the smaller images that surround the image of the theatrical projection space leads the eye to an interior view of a mutoscope with its cylinder of individual, still, image cards and the "dark room and reel for developing film."

In addition to this cover image, I will examine four compelling instances of published photograms printed either as a photograph of a filmstrip, illustrating the medium's sequential frames, or as individual frames published concurrently but not obviously sequentially. Many of these articles distinctly referred to the "individual impressions" found on each length of film. In fact, the only instances during this period where I found published photograms were as part of articles that attended to the industrial processes of development and production; although, sequential photograms of the Edison kinetoscope film "Eugene Sandow, the Modern Hercules" were published and distributed in 1894 as The Edison Souvenir Strip Kinetoscope. Noted alongside the images, in what appears to be the same script as the printed title, is a description of the images: "Observe that each picture has a slight change of position as it passes the point of vision. The rapid photographing of these different stages of movement at the rate of 46 a sec or 2070 a min. upon a long strip of light sensitive film creates the illusionary spectacle of moveable figures."[42] The inclusion of photograms from American Mutoscope Company films in the body of the *Scientific American* article corresponds to the cover described above and in articles about Edison's kinetoscope and vitascope in a September 1896 issue of *North American Review* that emphasizes the "individual impressions," taken on each length of motion picture film.[43] Similar descriptions of the individual photogram as 'individual impressions' are also published in the popular magazine *Illustrated American* in November 1896 and in a June 1894 article entitled, "Edison's Invention of the Kineto-Phonograph," in *The Century Illustrated Monthly Magazine*, complete with two full-page photographs of vertical lengths of exposed film.[44] These articles published during cinema's pre-history encouraged me to ask what these depictions of the new medium's industrial practices, exhibition space, and relationship with photography may suggest

about how film, a medium of motion, was depicted within the magazines of the American periodical boom of the late-nineteenth century.

2.1 'A MANIA OF MAGAZINE-STARTING'

One way to consider the important part played by mass-circulation periodicals in determining the relationship between motion pictures and still photography is in the way ownership of individual films was determined during the single-reel era. Peter Decherney has written about this relationship as it pertains to the Edison/Lubin court battles of 1903. These early piracy cases show how individual films were often classified as a photograph (and, then, sometimes were not) for copyright purposes, especially after the length of a reel was photographed and published for promotional purpose. From 1903-1911, the Edison Company copyrighted its films on the basis of their classification as photographs, a practice which began, Decherney suggests, when someone in the company photographed the entire film of Fred Ott's sneeze to illustrate the new technology for an 1894 story in *Harper's Weekly*.[45] Using photographs of films to secure copyright prior to the 1912 inclusion of motion pictures in U.S. copyright law substantiates the legal importance of ontological classification. The circumstances surrounding the Edison Company's ability to copyright motion pictures classified as photographs also hints at the importance of the way magazines wrote about and illustrated the new medium. This importance is not solely juridical; rather, it also helps film historians understand how a particular portion of the American public was introduced to projected motion pictures.

Before and during the Civil War magazines were marketed to educated, wealthy men, while newspapers were available in comparatively inexpensive daily editions. However, in the

two decades after the Civil War the increase in magazines marketed to middle-class households throughout the United States was simply explosive, increasing nearly 400% from 700 in 1865 to 3300 in 1885.[46] Historian Theodore Peterson cites "what one contemporary called 'a mania of magazine-starting'" in the two decades after the Civil War.[47] This mania was fueled by a general spirit of expansion and the availability of capital, by technological advances in printing trades, and, perhaps most directly, by the newly favorable mailing rates for periodicals.[48] The Postal Act of March 3, 1879 reduced the .2-cents per pound rate for weeklies and the .3-cents per pound rate for monthly and quarterly periodicals to .1-cent per pound for all second-class mailings.[49] As postage rates for periodicals decreased and rural delivery routes increased, the rise in national media increased the circulation of information in a nation recently divided by war. The economic boom in periodical publishing also corresponded to the ability of increasingly specialized magazines to reach a wider reading public. Literary historians John Tebbel and Mary Ellen Zuckerman cite nearly 11,000 different magazines issued between 1885-1905: "by 1885, there were periodicals for every occupation, activity, or interest, and that specialization has persisted until it has becomes the prime characteristic of the industry."[50] The four periodicals I work with in this essay -- *North American Review, Illustrated American*, *Century*, and *Scientific American* -- were part of this expansion both in their competition with daily newspapers, subscription price adjustments to the market, and in their place in a wide range of middle-class homes.

During this period, and accelerating during the last decade of the nineteenth century, magazines became mass-market products resulting in increased competition with newspapers for ad dollars as well as increased competition over the interpretation of events. By 1900, there were at least fifty national magazines some of them with circulations of more than 100,000. At the

time of the article I cite, *North American Review* had both "an enormous circulation" of 76,000 for a literary magazine and "enormous influence," on "an educated class of means."[51] Rivaling *North American Review* for literary influence, *The Century Illustrated Monthly Magazine* had a circulation of 200,000 at its height in the 1890s.[52] The less expensive popular monthly *Illustrated American* had a circulation of 40,000 and *Scientific_American* had a circulation in 1897 of between 50,000 and 75,000.[53] Tebbel and Zuckerman suggest that in the post-war period "magazines enjoyed a time when they were not rivaled by radio, motion pictures, or television. They were the only national communications medium, and their audience was unlimited. But primarily, they were the voice of the vast middle class."[54]

The growth of magazine publishing in the United States corresponds to a period that saw extended growth within the manufacturing and technological base. This fostered industrial growth in production and distribution as the country emerged from its war years into a period of economic prosperity unparalleled until the post-World War II era, sixty years later: from 1850-1910 the average manufacturing plant, "increased its capital more than thirty-nine times, its number of wage earners nearly seven times, and the value of its output more than nineteen times."[55] National communication and movement networks also opened the interior of the country for increased information, manufacturing, and transportation. This increase in industrialization and the ability to move information and people at new speeds is also seen in print communication. Rural routes increased and postage for mass circulation publications decreased, increasing both the number of periodicals published and the scope of their circulation. By the last decade of the nineteenth century changes in printing technology including the introduction of assembly lines and conveyor systems made mass-market periodicals the more profitable printing option for magazine publishers.[56]

While the changes in magazine production and distribution increased the potential to reach a mass readership, it is the lowering of subscription and issue prices that solidified the availability of magazines to a wide public of middle-class readers. This class was invited to read these publications through subscription price wars that began in 1892 when S.S. McClure, publisher of *McClure's*, John Brisbon Walker, publisher of *Saturday Evening Post*, and Frank Munsey, publisher of *Munsey's*, began aggressively competing for additional readers by lowering periodical rates from an average of .25-.30 cents per monthly issue to .10-.15 cents an issue with advanced annual subscriptions costing little more than a dollar.[57] For instance, *Illustrated American* began as a .25-cent folio periodical with detailed illustrations. Its initial .25-cent issue price seemed to limit its circulation, so in 1892, as part of the price wars to gain middle class readers, its size and price were reduced so that at the time of the 1896 issue I cite it was a .10-cent quarto page periodical. After this change, its circulation increased to 40,000 yearly until its 1897 sale.[58]

The 1881 sale of *Scribner's Monthly*, perhaps the most popular and widely influential U.S. periodical of the nineteenth century, transforms *Scribner's Monthly* into *The Century Illustrated Monthly Magazine*, published until 1930. *Century* "epitomized secular high culture" during its history throughout which the magazine was "a showcase for fiction and poetry by the nation's leading authors… Howells, James, and Twain all serialized novels in the *Century* during the 1880s…"[59] Mott argues that from 1885-1905, "the leaders in the field of national illustrated monthlies devoted to the publication of literary miscellany were two New York magazines, *Harper's* and the *Century*; and at the end of the period, though more or less battered by competition of many kinds, these two, with the addition of *Scribner's*, were still leaders in what they liked to call the 'quality magazine' class."[60] Petersen confirms Mott's contention writing,

"In 1890, educated readers of substance, readers who could easily afford magazines, had a place on their library tables for perhaps only *Century*, *Harper's*, and *Scribner's*. In artistic and literary quality, in volumes of respected advertising, in sales, these three magazines were the leading general monthly periodicals."[61]

What had once been solely the intellectual domain of "an educated class of means," was now within the purview of a wider middle-class. As publications ranging from Frank Munsey's pulp magazines to *McClure's* literary magazine dropped their rates, a new public of readers were invited into the national discourse. While *North American Review* and *Century* remained periodicals aimed at the upper-tier of an educated, middle class readership, that class grew within the manufacturing and industrial boom of the post-war era. As a proliferation and strengthening of a national culture for a middle-class readership emerged from the distribution and information networks provided by the dominance of a few publications, so too did differentiation. The economic boom in periodical publishing also corresponded to the ability of increasingly specialized magazines to reach a wider reading public. Historian Richard Ohmann suggests that the mass-circulation magazines of the 1890s were essential to the class identity of the nascent professional-managerial middle class. He argues, for instance that "Engineers sensed a kinship not just with other engineers, but with urban administrators, lawyers, managers, health workers" and other employees in the professional-managerial middle class.[62]

The inclusion of detailed descriptions of scientific discoveries, as well as the proliferation of nineteenth century periodicals concerned with new inventions and the documentation of patent applications in the United States, corresponds to a well-documented period in Western history, written about by Stephen Kern and Mary Ann Doane, where industrialization helped mark capitalist modernity as an era besieged by technological invention. Concerning magazine

readership during this era, Tebbel and Zuckerman write, "whereas once there was only limited audiences for scientific, technical, and trade journals, now scientific education in schools and the interest generated by the great number of important new inventions provided a broad general readership… For citizens who wished to keep generally abreast with developments in the pure and applied sciences, there was *Scientific American* to inform them."[63] At the time of the April 1897 issue I work with, *Scientific American* was a weekly small-folio periodical in its fifty-fourth year of publication. The magazine specialized in presenting illustrated articles on the new inventions of the day and in publicizing patent announcements. A year's subscription cost three dollars, each issue cost .10-cents.[64] Contributing to the attention given to invention and industrial innovation, both the Centennial Exposition of 1876 and the 1893 Columbian Exposition in Chicago generated a wide public interest in new industries and inventions, the latter doing so with an overwhelming attention to middle-class material culture.[65]

As rural routes opened and Western and Midwestern cities grew in population, the public class of readers spread from the urban Eastern centers of the United States into the Midwest and West.[66] The particular modernity in place in the pre-1900 era in which motion pictures are introduced in the United States is one where expansion, contraction, and differentiation help characterize the mobility of the era. The experience of simultaneous contraction -- a nation growing smaller through technologies of communication and transportation -- and expansion -- the literal geographic expansion in the United States and the expanded possibilities for travel worldwide are forces at work within the periodical trade.[67] The post-Civil War growth of rural routes and the expansion of railroads, via which goods and periodicals were delivered, is coupled with the spectacular growth of national periodical publication and distribution that helped foster

a national culture. But within this expansion there is also differentiation and contraction as individual interests or small-group interests were profitably addressed through nationally circulated specialized periodicals, like *Scientific American*.

These forces are also present in the conflation of spaces and elements concerning motion pictures as they are covered in these periodicals. To hold onto opposing forces at once invites movement between poles — the dialectic that has become a defining trope of modernism -- but to occupy both poles at once is to exist in the conflated experience of synthesis. This process relies on the individual to embody a practice of synthesis demonstrated by and represented in the machine-made age of the time. Mary Ann Doane has argued that in the 1890s in the United States "much of the standardization and rationalization of time can be linked to changes in industrial organization and perception of an affinity between the body of the worker and the machine."[68] I see this affinity reproduced in the periodicals examined in this chapter where periodical readers are asked to enact the synthesis of images accomplished in the projection apparatus. The publication and description of photograms that make the difference and sameness between motion pictures and photographs apparent is presented via a process of change. This process is simultaneously married to the photographic development process and the viewing experience to illustrate the new experience of mechanized, projected motion pictures for periodical readers.

2.2 'BLURRED IMPRESSIONS'

After seeing the connection between exhibition and production spaces depicted on *Scientific American*'s 17 April 1897 cover, a reader turning to the accompanying article is confronted with

a narrative tracing the path of the film stock in which an emphasis on the individual images printed on the gelatine-celluloid film is highlighted above all other aspects of the viewing experience.[69] For instance, the article notes, "Inside the camera is a strip of gelatine film 2 ¾ inches wide and usually about 160 feet in length…" A description of the precise path undeveloped film takes through the Mutograph camera continues for some time until "…160 feet of film has streamed past the lens, received its *one thousand impressions* and been wound with its precious record upon its receiving spool then the film is sent to the American Mutoscope Company where … *they* are taken to the dark room, the interior of which is shown in the accompanying engraving" (my emphasis).[70] The emphasis on the individual photogram found in this article is echoed across the articles I located that describe the novel technology of motion pictures. Each example includes this emphasis despite the fact that the photogram is elided in the viewing experience once the projection apparatus animates the film reel.

Figure 7. *Scientific American* 17 April 1897

Accompanying this description, which continues with a detailed account of the developing and printing process, are five illustrations across the two full-pages of the article. The largest and most detailed is an engraving of the "Drying and Retouching Room" with a "'Mutoscope shown in the foreground'" (Figure 7). In this image,

we see rows of women bent over reels of film and working with individual image cards for the Mutoscope. One woman appears to be inspecting the images – for what we're not sure – while two other women and a man use a Mutoscope to view moving pictures in the foreground of the engraving.

As in the cover illustration, this engraving bypasses the distinct spaces of the public viewing experience – both for the solitary Mutoscope viewer and the multiple Biograph viewers in a theatrical venue – for a composite space where both the production and viewing of images occurs. Arguably, the same images being worked on in the development space are depicted as photograms in the article. In these photograms two events are shown in succession, with 1/4 inch of space separating each image, are labeled: "'Mutograph' Pictures of Clay Pigeon Shooting" and the "Firing of a Ten Inch Disappearing Gun at Sandy Hook" (Figure 8).

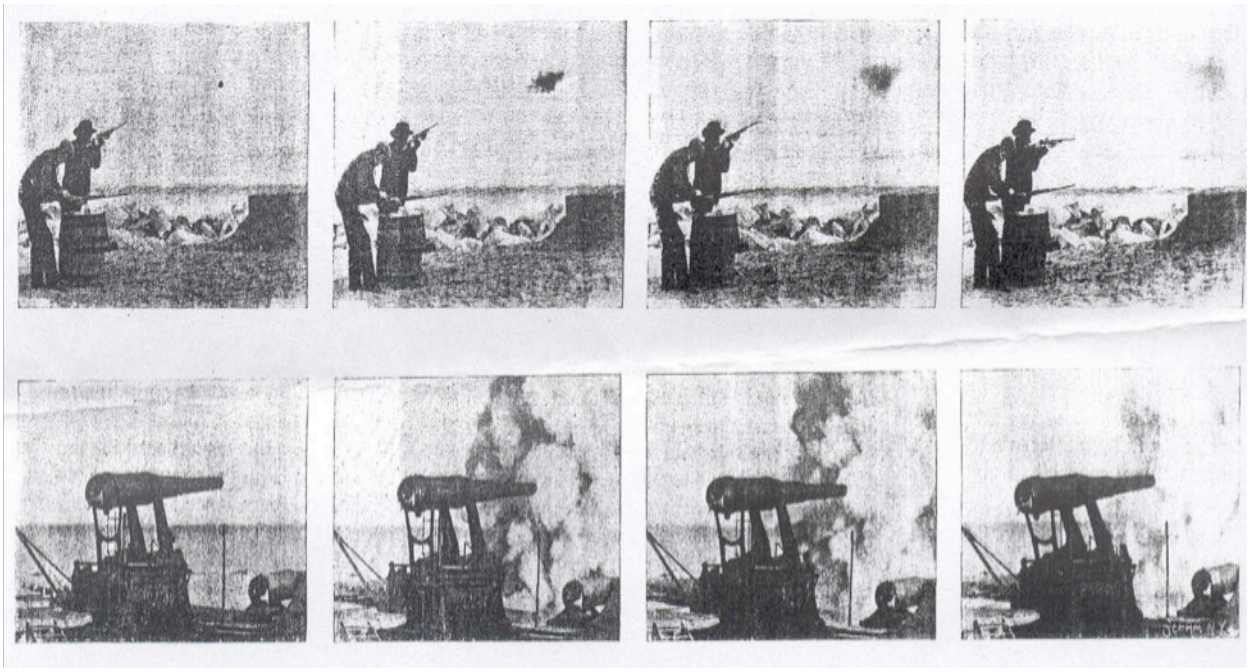

Figure 8. "Clay Pigeon Shooting" (top), "Sandy Hook" (bottom).
Scientific American 17 April 1897

The eight individual photograms shown in series that share this page of the article may conceivably act as the close-up of the images processed in the illustrated engraving of the composite processing and viewing space. The composite viewing and development space presented in the article and on the cover contributes to the transformation of these small photographs into photograms. Because the biograph projector operated with a series of rollers rather than a claw device to pull and stabilize the film as it moved through the projector, the absence of sprocket holes in each photogram removes any trace element of the projection apparatus from each photogram. (In other instances that I will discuss later in this chapter, the sprocket holes are presented within the photograms.) They are certainly included in the article as an illustration of the "impressions" taken by the mutograph. The images are not shown in sequence as a whole film section, viewed fluidly from top-to-bottom or left-to-right to illustrate the succession of parts within a whole, but are distinctly divided from one another and read, like written Western languages, from left-to-right with clear divides between each photogram. These images have been placed within a multiple context of both capturing a moment and reanimating that moment through the reader's act of reading the photograms as single images in succession. Running your eye quickly over the images produces a sense of progressive motion and allows a reader to recreate the movement of the film through the projector with one's own eyes, but what's fascinating about these images is that their selection and placement emphasize the individual image first, and only then the possibility of animation through their interaction as a sequence.

In this example, where a series of distinct photograms are published alongside a composite illustration of a viewing and development space accompanying the article's descriptions of the individual images placed into motion in the projection apparatus, the reader is

invited into the mechanized processes on which motion pictures depend. Via the depiction of the mutoscope in this composite illustration the reader is provided the chance to step into the projection and development space and to embody the projection apparatus depicted on the cover and alluded to in the article's prose. The potential for movement suggested in the photograms is made into movement once the reader places himself into the position of the machines presented here. Tom Gunning has suggested that "one needs to feel the force of the phrase 'motion pictures' as an oxymoron," and I would argue that through embodied synthesis this oxymoron establishes the novelty of motion pictures in an era marked by the synthesis of opposing tensions.[71] For potential viewers in the single-reel era the force of the name *motion pictures* visualizes a relationship between capturing an instant and capturing motion — change across time and space.

The projection of images both in three-dimensional form and two-dimensional form, as in magic lantern shows, was a familiar experience for late-nineteenth century audiences.[72] So what was it that motion pictures provided in this era? Amusement and novelty, yes, but cinema also provides translation and synthesis – a process of *becoming other* – the creation of new worlds and objects before one's eyes and through interactions with these new objects, the possibility for new experiences that was visible for a middle-class reading public. Interacting with the machines of the age within the amusement of the Mutoscope parlor or the theatre experience of a Biograph or Vitascope show was part of the attraction of the era.[73] While the photograph offers the chance to capture a moment and to pull it from the forward thrust of time, the photogram offers the ability to pull a moment clear of time's progress and to reanimate that moment in new moments of mechanized, projected experience. This reanimation is promised by the embodied projection made visible to readers of these mass-circulation magazines. When the photograms

are projected each photogram is blended or blurred in synthesis to become something other: motion pictures. In the magazine articles I cite this translation is presented to the reader in the depictions of photograms and the conflated industrial and exhibition spaces presented in these periodicals. Providing for this process of synthesis made visible to readers is also apparent in other ways, especially, but not exclusively within the remainder of "The Art of Motion Pictures" article. The following page of the *Scientific American* piece includes three additional illustrations: one large still photograph, a smaller photogram from American Mutoscope's 1897, 32 meter film *The Sausage Machine* featuring an image of the "Catchem Stuffem's Sausage Factory," and, producing an effect similar to what I have described previously, nine photograms labeled "'Mutograph' Pictures of a Blanket Court Martial at Governor's Island" (Figure 9).

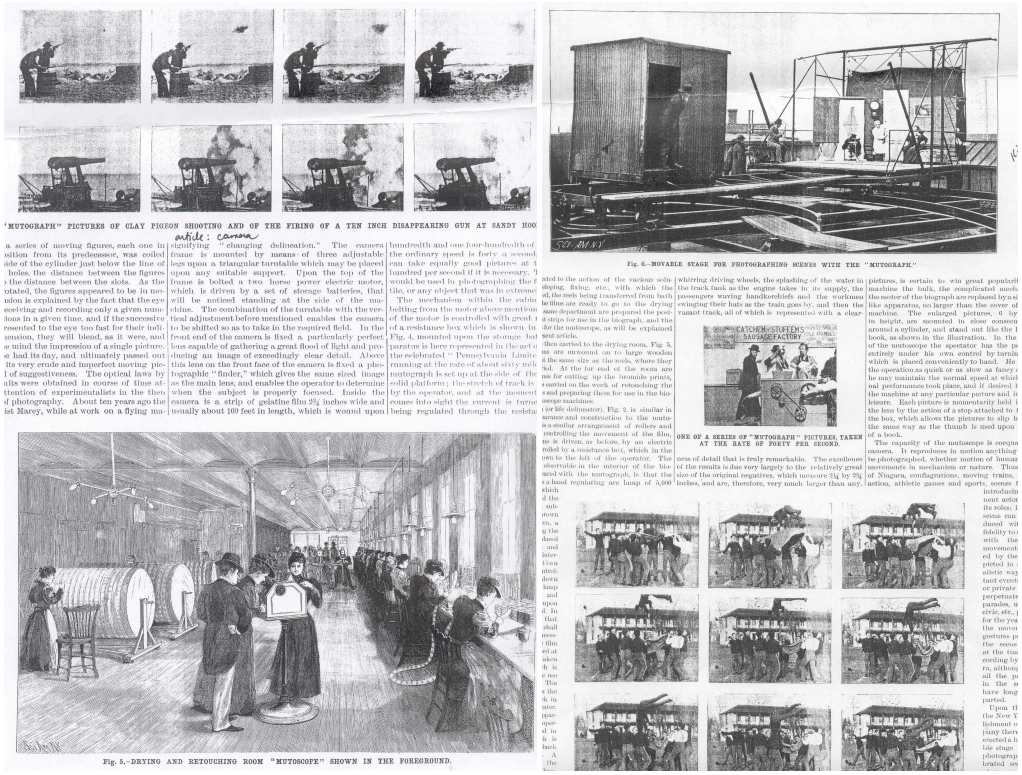

Figure 9. Facing Pages, *Scientific American* 17 April 1897.

When a reader in 1897 read this article these pages would face one another so the "Retouching Room" engraving would be opposite the "Blanket Court Martial" and the "Mutograph Pictures" of the "Pigeon Shooting" and gun firing would be exactly opposite a photograph taken of the New York roof-top studio of the American Mutoscope Company labeled: "Movable Stage for Photographing Scenes with the 'Mutograph.'".[74]

The image shows the enclosed booth in which the Mutograph was housed and the open-air set opposite, dressed as a domestic living space with what appears to be a man and woman embracing on a chaise while an old woman peers around the room's door, intruding on the couple. There are four men off set: one in the doorway of the camera booth and three others, perhaps actors, waiting to enter the stage area. If the photograms opposite may be read as the close-up of the detailed work done in the engraving of the processing room, then this image may be read as a further close-up – one that penetrates the image of the photogram to provide an image of the

Figure 10. "Catchem Stuffem's Sausage Factory," *Scientific American* 17 April 1897.

making or filming of the photogram distilled in the individual set and scene captured in the photograph – frozen, if you will, in an instant and offering a counterpoint to the photograms that suggest movement.

Directly below this image, in the center of the page's three columns, is a single photogram labeled, "One of a Series of 'Mutograph' Pictures, Taken at the Rate of Forty Per Second." Here is the photogram from *The Sausage Machine*.[75] The text in the article that corresponds to this image suggests that its inclusion is to show a "clearness of detail that is truly remarkable," and that " the excellence of the results is due very largely to the relatively great size of the original negatives, which measure 2 ¼ by 2 ¾ inches, and, are therefore, very much larger than anything that has ever been taken in this class of photography."[76] The 3:4 aspect ratio produced by the American Mutoscope & Biograph Company's first cameras as well as the lack of perforations allowed the image to occupy nearly the entire width of the film producing a projected image sharper than the 35mm standard.[77] While the larger photogram may have contributed to the success of the company, I suggest that the size and the clarity of the image also aided in the illustration of motion pictures as foremost individual images in written accounts of the apparatus and, in this example, highlights the theme of *becoming other* inherent in the visible process from photographs to motion pictures.

In the single printed photogram a name, Catchem Stuffem's Sausage Factory, is prominently displayed over a rudimentary machine operated through a series of wheels and reels turned by a single man positioned at frame right (Figure 10). He crouches and hand-turns a wheel connected by a thin ribbon-like rope to a pulley which itself threads the ribbon around two reels bolted to the front-piece of the sausage machine. Each of these reels look remarkably like film reels, so much so that I'd bet that they are film reels used in the production to construct the

machine from materials readily available on-set. The physical power of the man turning the crank wheel engages the machine as a second man feeds puppies (!) into the top of the box. A funnel is attached to the left side of the box-like sausage machine out of which falls ground, encased (puppy!) sausages. There are two other men in the frame: A third worker, complete with butcher's apron, who holds extra puppies -- apparently to provide the primary machine feeder with more potential sausage -- and a fourth man standing behind the funnel at frame left wearing a black overcoat and bowler hat. He could be a supervisor, but he could as easily be a customer waiting for his product.

There are some likely possibilities when reading this image culturally and historically. Focus on slaughterhouse conditions and the standardization of food production due to improved refrigeration and transportation technologies grew during this era, as did the amount of canned or tinned food.[78] However, in each of these processes the ingredients were not made obvious through regulation and labels -- a concern perhaps satirized in the suggestion that one's sausage could be made from puppies.[79] The consumption of meat, particularly the amount of beef one could afford to eat, was also a sign of class position. Husband and O'Loughlin cite one study that estimates "that families with per capita incomes of over $800 consumed over twice as much beef than those earning under $400. However, since most Americans were not wealthy, beef was not the most frequently eaten of meat." [80] I would argue that alongside all of these possible readings there also exists the possibility of reading this image as emulating and enacting a process of production made visible.

One rarely, and thankfully, sees what goes into sausage, but in this instance the reader and potential film viewer is exposed to the process by which one object -- a puppy -- becomes another object -- sausage. Although this is certainly gruesome, the original object is broken into

parts by running it through a box-like contraption, complete with attached film reels, producing individual links strung together to form a series. There is something filmic about the sausage production in this photogram, especially when it is read alongside the other images and illustrations in the article. All of these elements expose the process by which the individual image becomes the photogram of motion pictures. While reading the 'Catchem Stuffem' machine in this way shows that it runs in reverse from the film projector -- in the former a live, animated being is fed into the machine that produces dead links -- the machine may productively be read as a stand-in for the mutograph camera and the part it plays in the production of individual images printed on a film ribbon waiting for projected re-animation. The use of this particular photogram also highlights the use of a machine in the production of a product, which would adhere to *Scientific American*'s concern with technology and industry.

As a periodical devoted to the illustration of new inventions, *Scientific American* works to dissect and make visible the parts that comprise whole new inventions, but reading this coverage alongside others allows us to confront the ways these periodicals present the possibility of synthesis provided for by a translation between still photographs and motion pictures. This occurs via the juxtaposition of the photogram as individual image and its place in a series latent with the movement embodied in motion pictures. In September of 1896, seven months prior to the *Scientific_American* cover, the *North American Review* published a five-page article, "Stage Scenery and the Vitascope," on the invention of Edison's Vitascope projector. *North American Review*, a literary periodical unlike *Scientific American*, also focused attention in its writing on the process of image production, specifically paying attention to the "gelatine film or ribbon" on which "there are some *750 negatives*" on "fifty-feet of photographic gelatine film."[81] Although the focus of the *North American Review* article rests on the question of whether projected motion

pictures may replace stage scenery in the theater, "heightening theatrical verisimilitude," the first half of the piece addresses the mechanical process by which individual images are imprinted on the gelatine film.[82] George Parsons Lathrop, the author of the article, first documents the apparatus of the kinetoscope as a precursor to the vitascope projector and then delineates the similarity in the use of film images between the two:

> The vitascope is an elaborate machine…which, by means of electric power and light, magnifies and throws upon a screen images previously photographed by the kinetoscope apparatus on a long and narrow sensitized gelatine film, like a ribbon. These small negatives on the gelatine ribbon are made at the rate of from forty-six to fifty per second…. The lens has a shutter, which opens just long enough *to admit one impression of the moving object*; then closes, while the ribbon passes on for the space of perhaps a quarter of an inch and opens again to *receive another impression*. *Every one of the impressions thus received becomes a perfect and sharply outlined photographic negative*, stamped on the ribbon in a small fraction of a second…. In one minute about 3,000 of these negatives are made. In the kinetoscope this ribbon afterward, for the purpose of bringing together in the spectator's eye *the blended images* of all the negatives, [creates] for him *the total impression of a moving form*…(my emphasis)[83]

Lathrop continues by describing the film ribbon's path in the vitascope, "a far more complicated and powerful structure," concluding that "the light from the carbon burner blazes fiercely through the translucent ribbon, and projects the images on the negatives there, *blended*, to a distant screen."[84] Lathrop's description of the individual impressions printed on the negative film coupled with their blurred projection as "blended" single images echoes the description of

"individual impressions" moving through the apparatus found in the *Scientific American* article. The use of "blended" to name what happens to the photogram once it's placed within the vitascope and projected to an audience suggests that it is not the motion which operates as the major attraction but the synthesis of still images to create the "total impression of a moving form."[85]

In perhaps the most succinct and pronounced example, this impression is echoed in the emphasis on the synthesis of individual images published in *Illustrated American* in its 28 November 1896 issue: "In the biograph, the inventor has accomplished the feat of passing *40 to 100 photographs per second before the eye*… Between each negative there must be a pause, infinitesimal, but still long enough to prevent the whole work from being a mere blur" (my emphasis).[86] This selection starkly illustrates the transition between individual photographs and motion pictures for middle-class readers and potential audience members introduced to the new technology within a discourse of scientific invention concerned with the interaction of components to create the motion seen on the screen. Perhaps more so than in the previous two examples, this selection illustrates the relationship between the individual photograms and the "whole work." [87]

In both of these periodicals the projected result is not of as much interest as the preceding synthesis of stillness and motion, which occurs during projection. The film's path through the projector depends on the initial photographic feed into the projection mechanism where "the light from the carbon burner blazes fiercely through the translucent ribbon" that emerges, intact, as a whole "moving form" of blended individual photograms.[88] With the blazing light the interior synthesis is literally projected for an audience. Here we have the reverse of the process depicted in the photogram from *The Sausage Machine*, which, while depicting an industrial

process, left the particulars of that process hidden within the box-like machine. The described projection used for pre-cinema screen practices in this mechanized era invites the potential viewer to embody the machine – to understand it through imitation, as in the sequential photograms in the *Scientific American* article or in 1894 coverage of Edison's Invention of the Kineto-Phonograph," in *The Century Illustrated Monthly Magazine*.

The nine-page article written by Antonia and W.K.L. Dickson in *The Century* presents a step-by-step description of the process by which the kineto-phonograph takes and displays pictures in motion, a process the article firmly credits to Thomas Edison as the genius behind the invention: "the synchronous attachment of photography with the phonograph was early contemplated by Mr. Edison, in order to record and give back the impressions to the eye as well as to the ear."[89] The Dicksons describe the two components of the new hybrid machine: "The comprehensive term for this invention is the kineto-phonograph. The dual 'taking-machine' is the phono-kinetograph, and the reproducing-machine the phono-kinetoscope, in contradistinction to the kinetograph and the kinetoscope, which relate respectively to the taking and reproduction of movable but *soundless* objects."[90] In their description of the hybrid kineto-phonograph the Dicksons consider the image taking and reproducing devices as part of the same larger invention. The names of the dual device are similar to those which will be used for the mutograph camera and the mutoscope — the phono-kinetograph takes the photographs, while also recording the sounds emitted from the recorded object via a phonograph, and the kinetoscope animates or reproduces the original event complete with phonographic synchronous sound.

The Dicksons begin their article with a long description of the way the phono-kinetograph works in a way that should be familiar in its emphasis on a photographic process concerned with individual images captured on a length of film:

> These perforations occur at close and regular intervals, in order to enable the teeth of a locking-device *to hold the film steady for nine tenths of the one forty-sixth part of a second, when a shutter opens rapidly and admits a beam of light, causing as image or phase in the movement of the subject.* The film is then jerked forward … and held at rest while the shutter has again made it round, admitting another circle of light, and so on until *forty-six impressions are taken a second, or, 2760 a minute*. This speed yields *165,600 pictures in an hour*, an amount amply sufficient for an evening's entertainment, when unreeled before the eye. (My emphasis)[91]

After finishing with the description of the 'taking-machine,' and discussing at length the amount of light necessary to capture these images, the Dicksons describe the process by which the images may be viewed. Sharing the page with this description, which will continue with a description of the projection experience possible with this invention, is a double-strip section of sequential photograms from the "kinetoscopic band of two sections of *The Fencers*, showing minute gradations in pose" running vertically down the left-hand

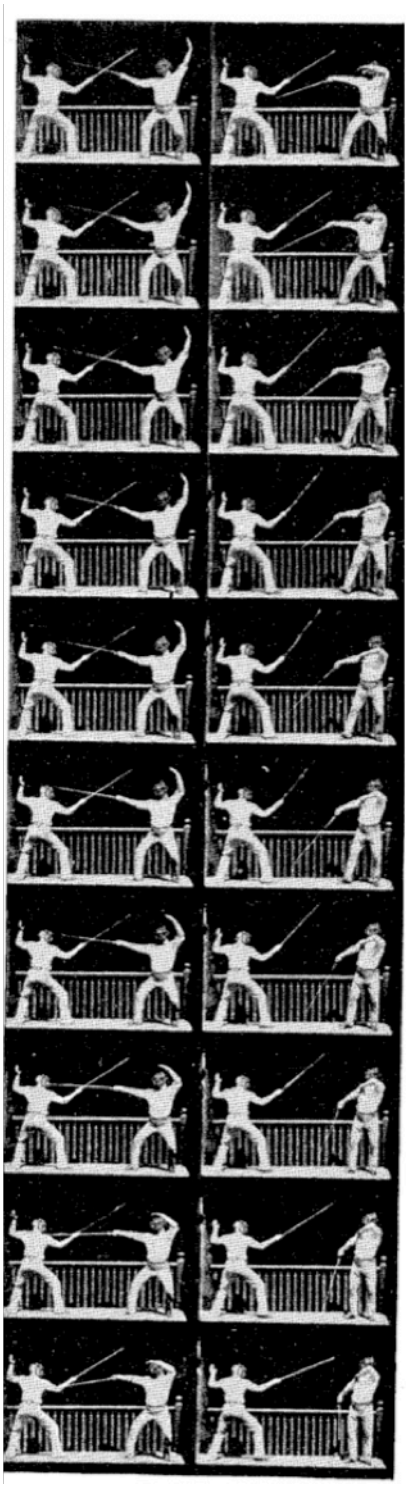

Figure 11. "The Fencers," *The Century* June 1894

column of the page. (Figure 11)[92] The Dicksons write, "The film is in the shape of an endless band fifty feet in length, which is passed through the field of a magnifying-glass perpendicularly placed. The *photographic impressions pass before the eye at the rate of forty-six per second*, through the medium of a rotating, slotted disk, the slot exposing a picture at each revolution, and separating the fractional gradations of pose. *Projected against a screen, or viewed through a magnifying-glass, the pictures are eminently lifelike* [sic]..."[93]

While this article appears eighteen months before the initial December 1895 public exhibition of the Lumière cinématograph in Paris, the kineto-phonograph is presented within the context of projected exhibition -- a private exhibition within the photographic department of the Menlo Park labs.[94] Although the invention is, in part, intended to produce bands of film to be used in the box-like, non-projected kinetoscope, the Dickson's describe at length seeing the images taken by the phono-kinetograph via projection. They detail that experience in the paragraph that follows their description of the film sections running through the phono-kinetoscope:

> On exhibition evenings, the projecting-room, which is situated in the upper story of the photographic department, is hung with black, in order to prevent any reflection from the circle of light emanating from the screen at the other end, the projector being placed behind a curtain, also of black, and provided with a single peep-hole for the accommodation of the lens. The effect of these somber draperies, and the weird accompanying monotone of the electric motor attached to the projector, are horribly impressive, and one's sense of the supernatural is heightened when a figure suddenly springs into his path, acting and talking with a vigor which leaves him totally unprepared for its mysterious vanishing. Projected

> stereoscopically, the results are even more realistic, as those acquainted with that class of phenomena may imagine, and a pleasing rotundity is apparent, which, in ordinary photographic displays, is conspicuous by its absence.[95]

The description of the new device uses a familiar kinetoscope experience to remind the viewer how the images on the left side of the page can be seen and animated. This experience is then synthesized with the described shift to a projection situation asking the reader to animate the images as the projector or the kinetoscope would do. The inclusion of the photograms, as in the *Scientific American* article, animates the process being described to the reader by placing the reader in the position of the machine -- machines they may be familiar with, like, the kinetoscope, but also to suggest the translation between similar technologies.

Two full pages of the article feature what are labeled "Kinetoscopic Views." The first view is a full-page photograph of a segment of the film *Hear Me Norma* printed as five sections of the films strip (Figure 12). The other kinetoscopic view, re-printed in the same way on the seventh page of the article shows photograms from the film *The Barber Shop*. The photograms from *Hear Me Norma* are not printed with any discernable division between the strips, unlike the photograms published in *Scientific American*. The images from *The Barber Shop* are printed with a slight division line between each length, separating each strip and outlining the individual lengths (Figure 13). By publishing a double-strip, the reader must actively engage the photograms in the top-to-bottom way that the kinetoscope or phono-kinetoscope would register each photogram as part of a top-to-bottom sequence. Reading the images left-to-right, in this instance, would yield an experience of non-progressive images and would contradict the Dicksons' promise: "Projected against a screen, or viewed through a magnifying-glass, the *pictures* are eminently lifelike" (My emphasis).[96]

"HEAR ME, NORMA." KINETOSCOPIC VIEWS, SHOWING FIVE SECTIONS OF THE STRIP.

Figure 12. "Hear Me Norma." *The Centurv* June 1894.

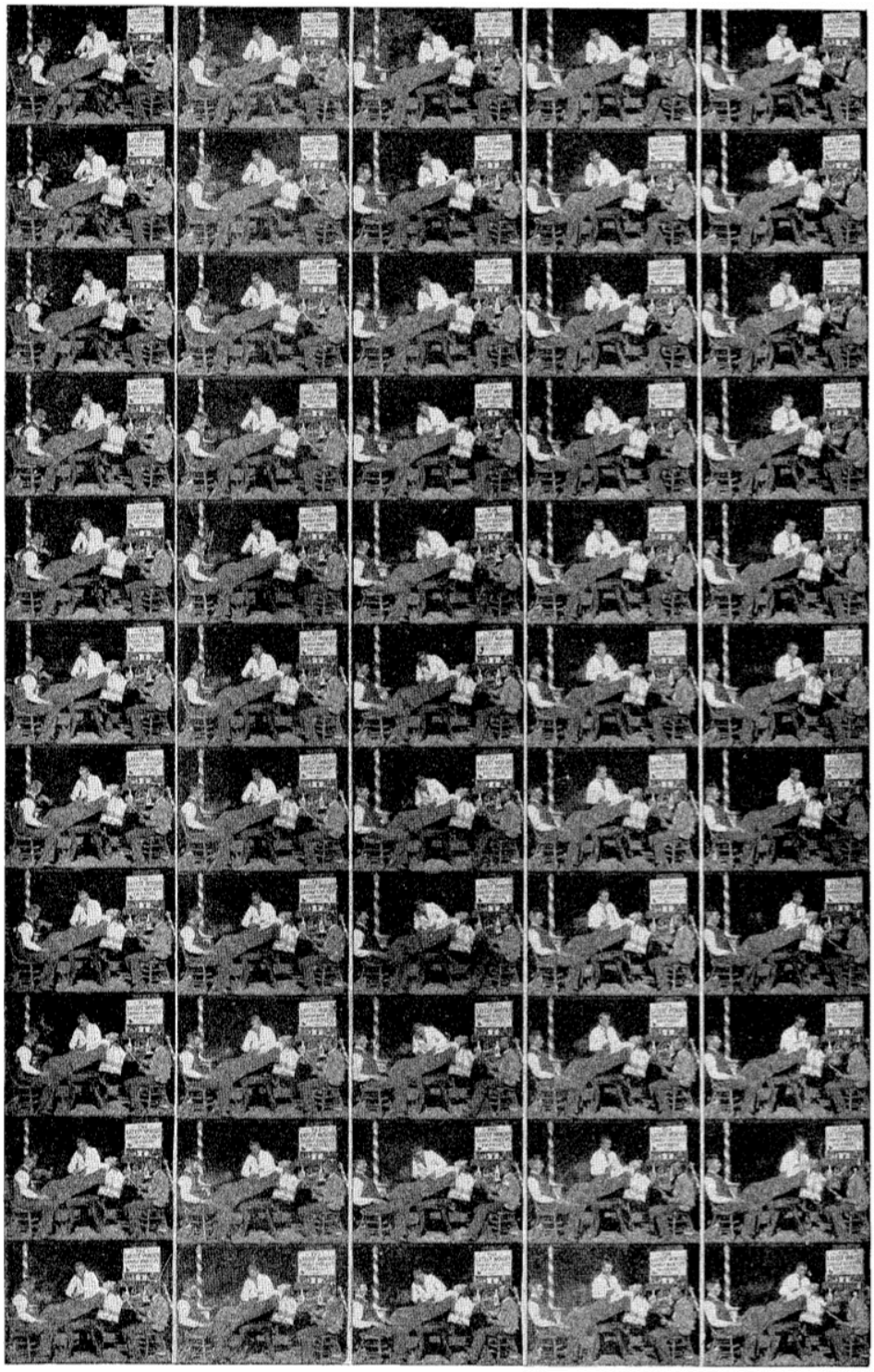

Figure 13. "The Barber Shop," *The Century* June 1894.

The article concludes with the Dickson's commenting on the experience of viewing the images taken by the phono-kinetograph: "The *inconceivable quickness of the photographic succession*, and the exquisite synchronism of the phonographic attachment, have removed *the last trace of automatic action, and the illusion is complete*" (my emphasis).[97]

From the citation we can see that this sentence is interrupted by a full-page; it is divided by a full-page of sequential photograms from *The Barber Shop* (Figure 13).[98] A reader would finish the phrase, "the inconceivable quickness of the photographic," and turn the page to the photograms from *The Barber Shop* before they continued with the sentence detailing succession as the relationship between the individual photogram. I don't think this break was intentionally placed to introduce the photographic images into the reader's page-turning pause, but, functionally, it does just that. After a reader has been taught how the new Edison invention operates and have been invited by the placement of *The Fencers* to animate the images as they have read the machines animate the images, they are provided with a full page of photograms to now animate for themselves (Figure 11).

Because the cinema relies on synthesis to animate individual images — the successive photogram on film — the Maltese cross, the Latham loop, the invention of an intermittent mechanism to stabilize the image, and the use of shutters to increase fps to the sound-standard 24 flicker-free frames per second all could be understood as problems in the evolution of a stable projection unit. Theatrically, the flickering image, dim projection light, or jerky motion as the film passed through the machine prior to the invention of the Latham loop and Maltese cross created reactions that are typical of this observation published in the *New York Tribune* of a Veriscope film of the 1897 Corbett-Fitzsimmons fight: "The projected images were larger than any that have been seen hitherto, but the flickering and vibration were most troublesome to the

view and extremely trying to the eyes."[99] Because of the spasmodic motions that characterized new moving pictures, the verisimilitude promised by film exhibitionists and manufacturers in the very names of their machines: Veriscope (truth-viewer), Vitascope (life-viewer), Biograph (life-delineator) often fall short in the exhibition space.

From a functional perspective this experience is also conveyed in the Dicksons' article four years prior to the *Tribune* article and a year before projected motion pictures became a phenomena: "By connecting the two ends of the strip, and thus forming a continuous band, the pictures can be indefinitely multiplied. In this connection it is interesting to note that *were the spasmodic motions added up by themselves*, exclusive of arrests, on the same principle that a train record is computed independent of stoppages, the incredible speed of twenty-six miles an hour would be shown" (my emphasis).[100] The spasmodic motion *is* the motion, it *is* part of the experience and not yet seen as a flaw in the presentation, but rather, is the means by which the translation from still photographs to photographs in motion was made visible for a potential audience of middle-class readers.

2.3 INTERACTIVE DRIFT

These records suggest that a process of visible synthesis between still photographs and motion pictures was used to make the translation between these media visible to potential audience members. Because stability is the goal sought to complete the promise of life suggested in the names of various projection apparatuses -- Veriscope (truth-viewer), Vitascope (life-viewer), Biograph (life-delineator) -- histories of early film technologies often emphasize the story of the

image's stabilization and elide the importance of the presence of intermittent movement in narratives that account for a progression toward the stability of the projected film image.

During the novelty years, the discourse surrounding the projection of moving images often focused on the synthesis of still images – photograms -- into "blurred" or "blended" images seen on the screen. This description was not predicated on the imperfect projection of images, but on the combination and recognition of single items joining together to form and perform a new material reality. Once this process of synthesis moves underground or is elided by a projected stable image, a loss of an awareness of the medium's specificity and photographic pre-history is altered and replaced by the movies -- the name for a new entertainment experience.

In his work on film and modernity, Leo Charney has used his concept of "drift" to identify what he sees as a defining feature of modernity: even within "the rush" of modern life there exists "the ability to fix or halt." For Charney, it is the possibility of attaining either pole or of drifting between the two without specifically locating or defining experience at either extreme that ultimately introduces the de-centered or ambiguous experience of modern life – an experience marked, for Charney, by a desire to locate an always-elusive present. Via his concept of "drift," cinema's re-conceptualization of time and space mirrors the ephemeral narrative pull of Proustian sentences as they weave through always-fleeting moments.[101] Through intersections with Proust, Heidegger, Benjamin, Marey, and others Charney characterizes an untethered modern age as a counterpoint to the motion/stillness dichotomy that has come to define the era in modernism. For Charney, "drift" captures both the chaos, the running through, of modernity as well as the disoriented reaction to that chaos and subsequent standardization.

I am compelled by Charney's formulation of "drift," and his concern with the inability to locate the present within modernity -- he characterizes Muybridge and Marey's still-motion

studies as attempts to locate the present, demonstrating that "the present is an empty shell" -- may be understood as the difficulty in locating the singular amidst the mobility and connectability of modernity, which then makes multiplicity its condition.[102] However, I am equally compelled by the evidence found in these periodicals that suggest that uncertainty is not quite what the introduction of projected motion pictures presents to middle-class periodical readers in the novelty era. Rather, it is a process of synthesis or what I have come to understand as *becoming other* that is shown in the ways these examples show an indeterminacy whose process of *becoming other* is both depicted and enacted for and by the readers of these periodicals, which themselves participate in the spread of information and technology that has come to define this era as modern -- in many ways prefiguring the cinema as emblematic of modernism.

The coverage in the periodicals I cite suggests an alternative or simultaneous experience of the synthesis of photograms and the exhibition space. Ironically, as projectors are 'perfected' to stabilize the photogram in the machine producing a stable projected image, the photogram is erased from the cinema experience. The rationalization of industrial standards and patent control in the economic arena ends the process of synthesis these images literally present. It's at this moment that the image enters into a fluid and life-like space for description and the cinema exits its novelty era.

The possibility and invitation to embody the machines depicted in the periodicals I have examined points to a larger discourse of machine-body dualism that exists during the novelty and

single-reel eras. Positioning the human body as a gateway to new technologies, such as the projected motion picture or, as I will discuss in the next chapter, x-ray machines, allows a familiar corporal form to mitigate new experiences ushered in by industrialization. It is via an interaction with machines that the new operations they introduce become familiar.

3.0 SHADOWS, SCREENS, BODIES, AND LIGHT

In September 1921, *Life* magazine published "The Vanishing Man," a short story that explores the possibility of a fourth dimension in space. The story suggests that a fourth dimension surrounds us at all times and that it is merely the limit of human perception that makes it impossible to perceive an additional physical space able to be occupied by objects, such as human bodies, by simply crossing an invisible barrier and disappearing into this fourth dimension. The story uses several interesting themes – perception, mathematics, magic, permeable and vanishing bodies, and "the moving shadows of a cinematograph" -- to build its fantasy about the ability to appear and reappear at will. The story also suggests that it is possible to occupy a space that is outside the bounds of human perception.[103]

The title character – he vanishes incrementally and then tragically at the story's close – is identified as a professor of mathematics. The narrator points out that mathematics professors "are not magicians," yet this professor is able to vanish and reappear before the eyes of the narrator, a student who is collaborating with him on a book on "Multidimensional Perspective."[104] The story creates a scene where the stability of the human body is questioned not based on its physicality but on a spectator's ability to perceive and engage the body's movement between spaces. The vanishing man at the center of the story performs a physical permeability and instability that appears magical, but, in the world of the story, is scientifically explainable.

Written twenty-four years after the 1895 invention of the cinema and the discovery of x-rays, the story's consideration of the human body is particularly interesting. After the professor vanishes he incrementally reappears to his student "like water in a lock": first his feet, then his legs, etc.[105] The narrator describes watching as the professor's veins gradually fill with blood until his entire body materializes in front of his amazed student. The narrator points out that while he blocked one of the professor's arteries with his thumb as it filled with blood, there was no stain remaining on his own thumb. While a 'real' body appeared before him, the lack of evidence for his interaction with that body was like an interaction with a representation or image. There is an interaction occurring here that is widely cinematic: the viewer of the professor's body may interact with that body but in a way that is less than present: traces of one body do not contaminate the other. The descriptions of the vanishing scenes, two of which comprise the entire story, repeatedly position the student as a spectator to the amazing vanishing feats of his professor, interacting with a body that is both present to the eye and not present, able to be interacted with, but not able to be controlled, which will result in the tragic reappearance of the professor's head in a fit of exuberance inside a wooden desk.

The incremental nature of the professor's reappearance is described as "gradually slid[ing] back into the Universe (sic)."[106] Accordingly, the fourth dimension is accessed by simply having knowledge of that extra space; knowing that it is there allows one to access it. One has the ability to know of its existence not because one is able to see it but because one gains an awareness of its existence. Using the example of a cinematic body the professor explains the process: "Now suppose that a being in two dimensions—a flat creature, like the moving shadows of a cinematograph—were suddenly to grasp the concept of the Third

Dimension, and so step out of the picture (sic). He might only move an inch, but he would vanish completely from the sight of the rest of his world."[107]

Because of the way it casts the interaction of the cinematic and the corporal around the figure of the shadow, there are three major elements I'd like to take from this story. First, the invention of the x-ray and the images it produces ushered in a conception of the human body as no longer defined by an impermeable boundary but, rather, as being permeable, much like a shadow or the moving shadows of a cinematograph. Second, after the discovery of the x-ray and the use of microscopes to produce photographs of 'invisible' matter in the late-nineteenth century, the human body could be represented as an organism that can be assembled and reassembled based on this permeability. Finally, the "moving shadows" analogy used by the professor in the story coupled with the visibility of only sections of a body as it appears and disappears calls to mind the trick photography of the late nineteenth century and the trick cinematography of the early cinema where phantoms and devils appeared and reappeared, where heads and other limbs were severed from bodies only to appear in soup bowls or found hovering over scenes.[108]

As I will examine in this chapter, these practices emerge from the late-nineteenth century practice of *ombromanie* or shadowgraphy. Considering how popular discourse linked the creation of actual shadow images with kinetoscope images and projected motion pictures, which appear interchangeable in the published accounts I've found, creates a discursive bridge between the three viewing experiences and provided an already familiar description for the on-screen images produced by the new technology of projected motion pictures. As in my argument in the previous chapter about the way photograms are described in periodicals to emphasize their

presence within the 'blurred ribbons' of images, here the idea of *becoming other* carries through in the realm of the shadows.

I want to emphasize the similarities in form between this exhibition practice and the practice described in my first chapter both because of the recurrent use of shadows to describe motion pictures and because with the introduction of shadows into this idea of *becoming other* the presence of the human body is emphasized above all else. While Yuri Tsivian writes about the "death spectacle" of x-ray images in a Russian cinematic and theatrical context,[109] in an American context the use of the term *shadow image* to describe x-ray images as well as motion picture and kinetoscope images unites all three image producing technologies in a cultural discourse where *shadow images* were both the images of life in motion and the images produced from permeable bodies.

3.1 SHADOW BOXING

Yesterday I was in the kingdom of shadows…. There, everything – the earth, the trees, the people, the water, the air – is tinted in a grey monotone: in a grey sky there are grey rays of sunlight; in grey faces, grey eyes, and the leaves of the trees are grey like ashes. This is not life but the shadow of life and this is not movement but the soundless shadow of movement.

-- Maxim Gorky, July 1896

There are a range of ways that motion pictures are linked to shadows in American periodicals and newspapers around the turn of the last century. Many of the references implicitly link motion pictures to photography. These descriptions connect motion pictures to its

photographic pre-history where the impression left by objects was often popularly understood to arise from the "contrast between light and shade" created by an exposure that revealed "the shadows of the objects."[110] Even in its earliest stages this is a fundamental misunderstanding of the photographic process. The ability to fix an image relies on the reflection of light from the surface of objects and not on the obstruction of a light source creating a shadow. Yet during this era marked by the invention of motion pictures in 1895 and the x-ray earlier, and more astonishingly, that same year, multiple image creation technologies were written about using the figure of the shadow to describe the images produced. Held over from explanations of photographic method earlier in the nineteenth century, writers in the American popular press used phrases like "photographic shadow," "shadow-image," and just plain "shadow" to describe flickering on-screen images, x-rays and continued, as late as 1902, to use the figure of the shadow to delineate photographs.[111]

The deployment of the shadow to describe film images, as Gorky writes about in 1896 or as Hughes does in "The Vanishing Man" in 1921, is a pervasive way to describe moving images during the late-nineteenth and early-twentieth centuries in popular American newspapers and periodicals.[112] In fact, it's pervasive enough that an 1896 notice published in the *Los Angeles Times* takes the opposite position, arguing that motion pictures are reality itself. The notice, "At the Playhouses," differentiates reality and its shadow by describing Edison's vitascope as a "wonderful mechanism" that seems to project "reality and not a shadow."[113] While thirteen years later the same newspaper published a regular section about the movie business entitled "The Shadow Realm."[114]

In the *North American Review* article from 1896 cited in the previous chapter, George Parsons Lathrop describes the potential of the vitascope for rear-screen theatrical projection also

by referring to shadows: "These 'living pictures' in a new sense -- these illuminated shadows that have all the naturalness -- and a nearly perfect semblance, of reality…"[115] Later in the same article, Lathrop problematizes the use of the vitascope to project stage scenery from the usual front-of-house placement of the projector. He writes that the on-stage actors would "cast grotesque and disconcerting shadows on the vitascope scenery behind them" unless the vitascope is placed backstage, behind a muslin screen, "so that there would be no possibility of its radiance causing shadows from the figures of the living actors in front of the screen."[116] Lathrop's use of shadow to indicate both a "comparative darkness" in relation to the radiance cast by the projector's beam and, as in his first use: an illuminated shadow, suggests that the figure of the shadow shifts with its use and extends Gorky's grey, lifeless shadow world to an instance of illumination that is, in fact, not actually a shadow at all.

A 1901 review of Rudyard Kipling's novel *Kim* published in the monthly magazine *The Independent* aligns the main character's experiences with a vitascope viewing experience:

> …all these things he has seen as no other living man can see them, and the *impressions* down to the last detail remain fixed in his mind with photographic accuracy. There is something almost terrifying in this extreme hyperesthesia of the optical nerve; we feel that the brain of the seer must by obsessed by a *shadowy* jostling throng of images like the brain of a child that is haunted by visions in the dark. The result in this story of *Kim* calls to mind the mechanic marvels of the vitascope, when the *photographic shadow* of moving scenes is thrown on the canvas before us. The light is a trifle hard and fatiguing to the eyes, there is an unpleasant clicking of machinery, and the pictures seen are necessarily presented

> without much artistic design in their composition, but we are still spellbound by the miraculous ingenuity of the invention (my italics).[117]

This editorial description of Kipling's novel is interesting because the formal comparison between the novel and the "photographic shadow" of the vitascope does not rest on the narrative or stylistic qualities of the moving scenes but on the reader's awareness of the "mechanic marvel" of the vitascope as a kinetic model of thought. Like the descriptions of the apparatus in the previous chapter, "impressions" pass through the child's brain producing shadow images.[118] This description also foregrounds the importance of the human body – here, the brain – interacting, however metaphorically in this instance, in the production of shadows.

Moving from the metaphorical to the literal, an unsigned critical assessment of Dublin's Abbey Theatre that appears in *The Living Age* remarks directly on the placement of the human body in the production of motion picture shadow images: "Dublin will not have the opportunity of comparing the Abbey players on the boards of their theatre with their shadows on the cinematograph screen" for those films are solely meant for American distribution.[119] This use of shadows to describe motion picture images draws attention to the actors whose bodies would here literally cast their own shadow on the screen once they are photographed by the cinematograph. Less so than the grand shadow world Gorky appears to ascribe to the cinematograph, this unnamed reviewer sees that the on-screen shadow images are cast once the actors' bodies obscure a light source.

Describing projected motion pictures as shadows was fairly common during the years after cinema's invention, but the frequency of this description increases markedly in the 1920s and the years just prior. Describing how Edison's work on the kinetoscope would lead to W.K.L Dickson's invention of the kinetograph, the machine Edison and Dickson claim in accounts was

the first to project motion pictures in 1894, in the 1926 film history *A Million and One Nights* Terry Ramsaye describes Edison's work as follows: "Edison had put a blazing electric light into Athanasius Kircher's *Magia Catoptricia* of two hundred and fifty years before, and now he was about to put the essence of life into its shadows on the wall."[120] Here Ramsaye uses the essence of life to differentiate the shadows cast by the magic lantern from motion picture images, a differentiation he observes earlier when describing the beginnings of photochemistry: "Observers were noting that substances faded or darkened in the light. With opaque stencils they began to make patterns on surfaces coated with fading substances. These patterns, of course, were mere shadows, and could not be called pictures any more than Kircher's magic lantern shadows cast by devils painted on glass."[121] But even as Ramsaye works for a distinction between shadows and images/pictures, he is later pulled back to a description of the motion picture thrown by the Biograph projector as the "shadow on the screen."[122]

Coupling the new technology of projected motion pictures with remembrances of shadows projected from stencils on glass, as Ramsaye does, bridges the two viewing experiences and offers a ready metaphor for the on-screen images seen with the new technology of projected motion pictures. During the 1920s as shadowgraphy and projected silhouettes wane as an amusement in metropolitan areas, the use of shadows to describe motion pictures increases. Anticipating the coming of sound, in 1917 the *Los Angeles Times* publishes a four-stanza poem, "Deus Ex Machina," that gently mocks the "part mechanical, part make-believe" quality of the age of the "moving-talking, ten-cent picture show." In the third stanza the writer questions what is lost and gained when sound completes the verisimilitude of mechanical representation:

> Yet when a voice preserved upon a shelf, // And men and women, only light and // shade, // Have of grand opera, drama art itself, // At best a dead-alive amusement

> made, // Some of us, fall'n on these cold-storage // days, // May wondering ask, "Where does the soul come in?" // Calling to memory Shakespeare's famous phrase, // "One touch of nature makes the whole // world kin." // While moving-pictures talk and shadows // chatter, // If life goes out of date it really doesn't matter.[123]

In the poem the writer laments the loss of the soul in the canned and mechanical "phantom forms" of the moving picture show by casting the "part mechanical, part make-believe" movies as "shadows" when compared to theatrical entertainment.[124] While the sentiment expressed in this poem mirrors Gorky's soulless shadow realm, in all of these examples the colloquial use of *shadows* to describe projected motion pictures extends Gorky's critical description into the vernacular of American public discourse over thirty years after his famous description appears. Like this poem, many of the published examples from the late-teens and early-twenties use the figure of the shadow to highlight a soulless, mechanical world.

A 1920 article written for *Overland Monthly* and *Out West Magazine* argues that "good music" is essential for good motion pictures. Concerning music accompanying motion pictures he writes, "Music is the pulsating soul of screen pictures. It imparts to them emotion and depth, and raises them above the level of noiseless fleeting shadows that appeal only to the eye and gratify no other sense."[125] Had it not been written seven years later, one might imagine that critic Perceval Reniers was responding to this assessment in his regular column, "The Shadow Stage" published from 1925-1928 in the monthly magazine *The Independent*, when he writes about the development of motion pictures in the preceding thirty years. Arguing that title-writing, the invention of the vitaphone, and the coming invention "that records voice on the film emulsion itself" has obscured the "pure pictorial language" of motion pictures, he writes, "Only those who

are testing out their new spectacles will need to pay moving shadows any attention whatsoever." The rest will simply have to "open their ears and close their eyes."[126]

Contrasted with the soulless shadow realm described in the poem published in the *Los Angeles Times* or the description in *Overland Monthly*, Renier takes a view that silent motion pictures are true to the pictorial nature of the medium. The fact that such opposing descriptions of the medium could employ the same figure: motion pictures as shadows, only adds to the pervasiveness of the description in American discourse. These descriptions concerning the addition of sound to silent film also point to an additional register of motion in the medium. The distinction between a soulless realm and one where music and sound impart depth and emotion exists in the presence of or lack of an interiority that is itself kinetic. Sound is conveyed via vibrations captured by the ear, similar to the vibrations of light captured by the eye or the faster vibrations of the x-ray captured on photographic paper. The addition of sound in these examples point to another dematerialized register that exists as invisible motion that is captured and made present via the mechanics of projected motion pictures.

The name of Renier's column is also interesting when considering the place of bodies and shadows. Its very name, "Shadow Stage," ties motion pictures with a theatrical tradition. Perhaps drawing on the fact that early-films were screened as part of live vaudeville performances or on the pre-history of silhouette created shadow-plays, Renier's column draws attention to the stage as both a site of display for motion pictures and in its suggestion that the stage itself is a shadow. Considering a theatrical tradition, Renier's column seems to remind readers (and potential viewers; it was, after all a column about the motion picture industry) of the on-stage objects and bodies of performers made into shadows via motion picture technology.

A 1924 review of Cecil B. DeMille's *The Ten Commandments* published in *Outlook* magazine criticized the film for not embracing the power and simplicity of the bible's original story, replacing it with spectacle. The unnamed reviewer refers to the film as one of the "most powerfully effective spectacles that has yet cast its shadow on the screen."[127] I point to this example because here the spectacle of DeMille's film is seen as an object able to cast a shadow. Indeed, the enormous size of DeMille's production casts its shadow on the screen bringing together the filming event and the exhibition event in one figure: the shadow. This review brings to mind both the 1901 review of Kipling's *Kim* and the notice about Dublin's Gate Theater published in 1920. Each of these uses of the shadow departs from Gorky's soulless realm, echoed across many of the examples I've included, to return to the original idea of shadow-images as those cast by the obstruction of a light source by an object.

This conception of filmed bodies or objects ability to cast shadows accelerates in the twenties. For instance, beginning in September of 1926 and continuing until May 1929, the *Los Angeles Times*, by now the hometown newspaper of the major film studios, regularly publishes pictorials of the major stars of the day, including John Gilbert, Clara Bow, and a young Joan Crawford, as part of their "Motion Picture" listings section. Listed under each publicity still are the actor's name and the film in which he/she appears, which is listed alongside the Los Angeles theatre running the film. The images are grouped under two alternating headings: "Shadow Screen" and beginning in May 1929, "Shadow Speakers."[128] Like the notice about the Gate Theater or the review of DeMille's production, the suggestion of the *Times*' heading is that the bodies of Hollywood actors – stars – intervene to produce shadows on the screen; their on-screen presence is the shadow of their corporal form.

3.2 CORPOREAL PERMEABILITY AND THE SHADOW

The figure of the shadow to describe film projection is so pervasive in film history that silent film scholars Lee Grieveson and Peter Krämer suggest that Gorky's distinction between life and its shadow creates a dichotomy between "film as either a hyper-realist medium or… a shadowy, unrealistic space of fantasy" in the response to and generic structure of early-film.[129] For Grieveson and Krämer, Gorky's shadow shades-in the classic and now outdated film history dichotomy between the realism of the Lumière brothers and Edison and the fantasy created by filmmakers that employ trick photography like Méliès or, as I'll examine later in the chapter, Edwin S. Porter's *Uncle Josh* series. But Gorky's grey world is hardly that of fantasy, it's the shadow world of remnants. Like the shadows cast in Plato's allegory, the on-screen images Gorky describes are "forms from which the substance has departed."[130] But if we examine both the practice and representations of shadowgraphy in the late nineteenth century, it becomes clear that the forms that cast their shadows remain present.

Beginning in the 1880s and continuing, with less preponderance, until the late-1960s, the manipulation and creation of projected shadows was termed shadowgraphy: "A picture formed by a shadow thrown upon a screen or other lighted surface; an exhibition of a series of such pictures as a form of entertainment."[131] In the late-nineteenth century the projection of shadows onto a screen was a popular form of entertainment that used both the animation of silhouettes to depict moving narratives and the skilled manipulation of an artist's hands to create shadow images on a screen. By manipulating paper in different forms, backlit, animated silhouettes appeared on muslin screens to create shadow plays, a form of theatre used by the Chinese and the Javanese for centuries prior to cinema's invention. This latter tradition is also employed in animated films in the first decades of cinema's history. For instance, *The Original Movie,*

released in April, 1922, as part of *Tony Sarg's Almanac*, a 1921-1923 animated short film series uses back-lit silhouettes to depict Muybridge's famous experiments to sequentially photograph a horses gait while an intertitle explains that "this is how people think the movies began."[132] Sarg's film concludes with silhouettes of cameras and an on-set film production to critique the erasure of the screenwriter from the filming process.

This use of silhouettes in animation and shadowgraphy is part of cinema's pre-history; however, the additional practice of the manipulation and animation of the shadowgrapher's hands to create shadow images is absent. While the lack of image projection employed in this theatrical form may allow us to divorce shadowgraphy's full tradition from cinema's projected pre-history, the fact that the figure of the shadow remains a reoccurring description for cinematic images asks that we consider the relationship between the figure of the *shadow* and projected motion pictures. Indeed, the increased popularity of motion pictures at the turn-of-the-last-century contributed to the re-staging of shadow plays in Munich in 1908.[133]

What a shadow is seems basic enough, yet there are over fifteen definitions and even more variations listed under the noun *shadow* in the Oxford English Dictionary, and this doesn't even bring us to its use as a verb. In the mid-1800s a shadow is both "an attenuated remnant; a form from which the substance has departed," a "trace," a "spy or detective who follows a person in order to keep watch," or, in its most common definition, "comparative darkness." This last definition is quite possibly the most familiar: "Comparative darkness, esp. that caused by interception of light; a tract of partial darkness produced by a body intercepting the direct rays of the sun or other luminary."[134] Gorky's description of the Lumière's cinematograph that begins the last section works with this meaning by emphasizing the grayness of the on-screen world – the comparative darkness of the "grey rays of sunlight" measured against a sunny reality.[135]

By measuring the darkness of the image with the use of a shadow, it is the "dark figure of a body cast upon a surface" that is highlighted in the on-screen presentation.[136] As in the other descriptions that employ shadows to describe projected motion pictures, the figure or body that is cast on the screen is often the human body of the actors. So, when Renier's "Shadow Stage" column or the *LA Times* publishes movie listings under the heading of "Shadow Speakers," it is the presence of the photographed body that has left a trace of itself on the screen. If the on-screen images are the shadows of figures that are no longer present, they serve to remind us of the performance that once took place.

In his 1901 book *Magic: Stage Illusions and Scientific Diversions*, Albert Hopkins compiles and adapts articles first published in *Scientific American* that explained and highlighted the tricks and illusions – sleight of hand, trick photography, mental magic, and science used in the theatre – that dominated nineteenth-century amusements. Of particular interest for this chapter are the sections of the text that explain the theatrical practices of shadowgraphy and neoöccultism -- which describes how x-rays were used as a conjuring trick -- and the chapter about the projection of moving pictures. These sections are important because each details the techniques and technology used to blur a line between illusion and belief. Listing these three entertainments in a book that links magic and illusion with science offers a way to consider how the new technology of projected motion pictures was received in the late-nineteenth century. Including projected motion pictures in a book about magic points to the fact that the transformation from stillness to motion detailed and explored in chapter one works against a backdrop of illusion and belief. The transformative potential of *becoming other* offered by motion pictures is further revealed by Hopkins' willingness to see the new technology within a discourse of magic and illusion. Furthermore, the common features Hopkins locates between the

three may also help us to see why the figure of the shadow was used to refer to silhouettes, motion pictures, and x-rays.

Taken from the pages of *Scientific American*, Hopkins' anthology leans toward scientific explanation. The described illusions and practices reveal the mechanics, physics, and chemistry that create the illusions and effects that dominated popular entertainment at the close of the nineteenth century. The book contains chapters about curious toys, sleight-of-hand illusions, trick photography, and cinematography among other subjects. Coupling the practice of magic, a practice that depends on illusion and belief, with detailed explanations of the mechanics of these effects links the mechanical progress of the industrial age with a pre-modern sense of wonder and belief at the unexpected and the unknown. In this dialectic, science offers to debunk the mysteries of belief and replace it with the wonder of mechanical know-how. Belief in a system of thought is then replaced with wonder – an ephemeral and fleeting experience that highlights surprise rather than dogma – with the possibilities of movement. As the mechanical means by which illusions and trickery come to be known increased, part of the pleasure of the experience lay in understanding the underlying and hidden means of production. Hopkins' book demonstrates that the experience of the illusions perpetrated reflects a shift in belief from a form of faith in the unknown and magical to a faith in the mechanical processes of creation.

Within this emphasis on the mechanical, the continued popularity of shadowgraphy is curious until one imagines that part of this interest is in the dexterous transformation of one object into an infinite number of figures seemingly contained within the original object. Similar to the way images appeared to come to life when exhibitors of early motion pictures began their shows with still images projected on-screen, the transformation from recognizable human hands to, as illustrated in Hopkins' book, dogs, a fisherman in a boat, or a fight between a janitress and

a tenant offers narratives in motion and the ability to witness the artist's transformation of his hands to actors in a scenario with motion. The description of shadowgraphy in Hopkins' text describes the art as a "collection of figures capable of being made with the shadow of the hands" that can be given "motion and life."[137] Descriptions of shadowgraphic staging emphasize the manual skill involved for the formation of the figures, while the illustrations show the beam of projected light, the screen on which the figures will appear, and the shadowgraphist manipulating his hands within the beam of light. By obstructing a portion of the light source the shadowgraphist creates figures in the screen. By being visible to the audience, the transformation of the corporal form of the shadowgraph's hands becomes something else on the screen, but the relationship between the two elements is preserved by each element's visibility in the viewing environment.

As with the photograms examined the previous chapter, it is within the interaction of light and screen that the manipulated hands become recognizable as something other than what they are. Continuing this similarity, like the emphasis on the ribbon of film and the presence of still photographs within the projection apparatus, there is an acknowledgement of the duality of the on-screen shadow figure: like the celluloid stock that runs between lens and light, the hands of the shadowgraphist are visible between screen and light during the shadowgraphy show. This emphasis on the human body within these amusements extends beyond the direct manipulation of the body inherent to shadowgraphy to more indirect manipulations and representations of the body by x-ray images and projected motion pictures during this era. In this instance, as in the last chapter, *becoming other* is a property that performs a transformation from within. Both in their juxtaposition with each other and, most importantly, in the moment of transformation

performed in exhibition, the still image contains the potential for the moving image -- much like the possibility of other forms held in the hands of the shadowgraphist.

Considering the placement of the body, a 1910 review of the autobiography of Jules Turnour, a veteran clown of the Ringling Circus, links pantomime with moving pictures by arguing that the new technology emerges from the older practice:

> The art of pantomime, having passed through a state of suspended animation, vigorously reasserts itself to-day in the moving picture. The Kaleidoscope is enthroned in a hundred fanes once consecrated to Melpomene. In the shadow pictures of Europe, this renascence assumes still another aspect (sic). The moving picture show, with us, is the joy of the tenths intellectually submerged. In Germany and France, shadow pictures delight the cultured.[138]

Here the writer calls on an image of the theatre as a temple or fane to suggest that temples once devoted to tragedy are now devoted to optical illusions. While not directly arguing that the human body acts as a fulcrum between these arts, that relationship is apparent in the way the unnamed writer uses the shadow images of the movies to introduce the subjects of pantomime and clowning. Using a contemporary technology to remind readers of the theatrical practices of the past builds a non-critical continuum. The use of this rhetorical strategy also suggests a cultural relationship already familiar to readers.

The way that the writer uses the idea of "suspended animation" to describe how pantomime has been stilled in the interim between its height as an amusement and it's re-animation in motion pictures and twice highlights the phrase "shadow pictures" suggests that the cultural relationship between shadowgraphy and motion pictures is not merely one of similar theatrical practices, but that there is something similar in the way the human body exists in the

two practices. Later in the review, pantomime is described as a universal art because it is practiced by one "who talks with his hands."[139] Kept in suspended animation the motion of the pantomimes' hands are stilled, but motion pictures put his body in motion within their shadow images. Linking the two practices in this way places pantomime's body at the fulcrum between the images projected on-screen and the new technology of projected motion pictures. The described shadow images are the reanimated body captured in motion by the new technology.

Bridging true shadowgraphy, the body of the performer is present either in the form of the hands interrupting the light beam as the shadowgraphist creates scenes or with the use of stencils backlit onto a screen. The change presented by projected motion pictures is of the memory of the performance locked into the remnant on the screen. Trace and memory are mechanisms found in film theory to talk about the film image. Here we can see that those connotations are built from this history of the figure of the shadow that bridges past screen practices and, in its use in popular periodicals, also reminds the viewer of the theatrical practices that surround the production of the on-screen image. This bridge also serves as a reminder that an object obscures the projection beam at the moment of projection, and, as I argued in chapter one, the presence of the celluloid film running through the projector becomes part of the viewing experience, as does the technology that allows for the projection.

3.3 CORPOREAL PERMEABILITY AND THE X-RAY

After considering this pre-history, the dichotomy Grievison and Krämer describe doesn't seem like a dichotomy at all. In fact, the figure of the shadow to describe projected motion pictures is even more fully understood by a detour through the invention of the x-ray. Beginning in 1896

and continuing until the late-1970s, the term shadowgraph was increasingly used to refer to the image created by the bombardment of x-rays.[140] Although 1895 marks the invention of projected moving pictures for film historians, at the time, the year's great invention was the discovery of the x-ray by German physicist Wilhelm Röntgen. Both film historian Lisa Cartwright and art historian Linda Dalrymple Henderson have documented the immense cultural fascination with x-ray technology at the time of its invention. As Henderson writes, "Röntgen's publication of his findings… triggered the most immediate and widespread reaction to any scientific discovery before the explosion of the first atomic bomb in 1945."[141] During the initial excitement about the x-ray a number of applications were suggested, but the use that is most frequently mentioned is as a form of photography. It is this application and the description of x ray images as *shadow images* concurrent with the same description applied to motion pictures that links the two technologies.

Working in November of 1895, Röntgen was testing the idea that cathode rays would not penetrate glass; he covered a Crookes tube – a glass tube evacuated of air that acted as a vacuum – with cardboard, which is impervious to cathode rays. In the course of the experiment, he saw that a barium-platynocide-coated screen that happened to be in his lab was glowing, despite the complete blockage of cathode rays with the cardboard stopper. He concluded that another type of invisible ray must have been acting on the screen causing it to glow. Over the next seven weeks, Röntgen's work allowed him to conclude, according to Cartwright, that the

> 'Mysterious rays' caused certain substances to fluoresce, were highly penetrating, exposed photographic plates, and resisted refraction, reflection, and deflection. His studies indicated that the entity causing the fluorescence was not light, cathode, or ultraviolet rays, but a hitherto unrecognized kind of radiation.[142]

Röntgen names the phenomena "rays" because of "the regular shadow pictures produced by the interposition of a more or less permeable body between the source and a photographic plate or fluorescent screen… a kind of relationship between the new rays and light rays appears to exist; at least the formation of shadows [and] fluorescence."[143]

The relationship between x-rays and light that Röntgen broaches in 1896 is echoed in a 1902 article that traces a history of photographic technologies from Daguerre's "shadow image" to the x-ray. The writer suggests that the x-ray's ability to "pass through" or penetrate objects occurs in part because "the luminosity of the ray of light differs from that of ordinary light."[144] Throughout Röntgen's description of his experiment the produced photographic images that, as Cartwright points out, "functioned as the primary indicator of the x-rays very existence,"[145] are referred to as shadows or "shadow pictures."[146] Using shadow pictures to name the images produced by x-rays brings with it the cultural association of the theatrical tradition of shadowgraphy and its emphasis on the manipulation of the human body between light source and screen.[147] In fact, in the same article in the April 1896 issue of *McClure's* that publicized Edison's intention "to photograph the human brain" via x-rays, the images produced by x-rays are exclusively referred to as shadow pictures, including the following description: "It is with these pictures as with a shadow of the hand thrown on the wall—the nearer the hand to the wall, the more distinct becomes the shadow."[148] Another description, also published in 1896, draws a direct relationship between x-ray images and shadowgraphy via silhouettes: "In photography with X-rays no camera is needed [sic]. This explains why all the pictures taken with the new rays are silhouettes. They are pictures of shadows only."[149]

While in the 1902 description the writer mistakes x-rays for a different kind of "light," the writer constructs her history around the interactions of light and shadow in an act of

penetration that shows a preoccupation with interiority across both imaging technologies. While a photographic record may provide evidence of the existence of x-rays, this record is first determined by the degree of permeability held by the obscuring object. Röntgen's work relied on the measurement of the density and permeability of various bodies to gauge what objects the rays were able to penetrate and to what degree. Röntgen tested the density of objects bombarded with the new rays to see which objects would allow the rays to pass through and which would obstruct the rays, creating shadows on an otherwise illuminated phosphorescent screen. The use of such a screen or a similarly created luminous background is described in many of the articles published in the United States after Röntgen's discovery is publicized. In May 1896, three months after Röntgen's discovery is translated and reported in *Science*, *Century Magazine* published a twelve-page symposium on "Roentgen rays" led by Thomas Edison who declares that Röntgen is "photographing the unseen by electric rays."[150] Repeated throughout the symposium, and in articles from daily newspapers and periodicals, is both the use of "shadow-pictures" to describe the x-ray produced images and the use of a "luminous screen" on which the "transient shadows" may be seen.[151] At the advent of this new technology, then, there are two viewing methods available: sharp, clear radiographs and transient shadow images seen against a luminous background.

The latter is described in one article as using a "screen so luminous that the shadows are clearer than in the X-ray [sic] photographs."[152] The article continues, describing the viewing conditions for this technology by arguing that the experiments are only satisfactory "if the room is quite dark, the screen in the closed tube appears immediately, upon putting the eye to the hole in the tube, to be perfectly luminous. It will be more luminous under these precautions than luminous paint which has been held in the sunlight and brought into a dark room."[153] This

description feels deeply cinematic; especially, when it is coupled with Röntgen's description of the new rays as having "a kind of relationship" with light rays "at least in the formation of shadows [and] fluorescence."[154] Casting a similarity between the x-ray and light in the creation of both shadows and a glowing effect brings to mind the projected motion pictures on a luminous screen. This similarity continues especially when coupled with his description of the fluoroscope device — where an object in motion, most often part of the human body, is placed between a Crookes tube and a luminous screen on which the object's interior movements are seen: "'If one holds the hand between the discharge apparatus and the screen, one sees the darker shadows of the bones within the much fainter shadow picture of the hand itself.'"[155] A similar description of the images produced by the fluoroscope was published in *The Century*'s symposium:

> We hold our hand behind the screen, and, closely observing the luminous surface, perceived within the dim outlines of the flesh the sharp and distinct image of its skeleton…. It is impossible to describe the feeling of awe that one experiences on actually seeing the image of his own skeleton within the enshrouding flesh. Wonderful are these phosphorescent pictures…[156]

These descriptions of the fluoroscope describe how x-rays may be used to transmit and display a moving image on a screen.[157] Concerning the ability to view moving bodies, one of the participants in the same symposium writes, "One immediate and important application… is to the study of moving objects projected on a fluorescent screen…."[158] The ability to exhibit on a screen the movement of living bodies in the moment they are revealed — where the "shadow of the moving parts was clearly visible upon the screen" — is one of the attractions x-ray's provide.[159]

This attraction is written about widely in the popular press. While the previous descriptions are from *The Century* and the smaller circulation, specialized periodical *Medical News*, the following selection is from the widely circulated *Frank Leslie's Popular Monthly*. This article, complete with illustrations and photographs of x-ray images and a working fluoroscope, describes Röntgen's invention and the possible medical and practical applications that may be found for the x-ray. (One such application, which is adopted briefly in American and European shoe stores, is the ability to x-ray a customer's foot while wearing a new pair of shoes to gauge their fit.) The article ends by describing the fluoroscope image produced as a goose digests food mixed with bismuth salt, which absorbs x-rays. The writer describes the process as viewing a "shadow cast upon the fluorescent screen," and continues by describing how the path of the food in the animal's body "could be plainly traced by the moving shadow cast on the fluoroscope."[160] When used with the fluoroscope as an exhibition practice, x-ray technology provides a way to create and display permeable bodies on a luminous screen.

In article after article the description of how x-rays may display the internal movement of bodies in motion employs the figure of the shadow to describe the image. The similarity between projected motion pictures and x-ray images extends beyond tracing how popular discourse used the shadow as a description of both image-making technologies. The use of shadow images in this section echoes the description Gorky publishes after viewing one of the Lumière's travelling shows in 1896. But cast through a cultural discourse of light and shadows found in published accounts of x-ray technology and shadowgraphy, his description begins to emit a second meaning. Gorky's shadow world has always been understood as devoid of life, but in the wider cultural discourse of the day shadow images were the images of life in motion and the images produced from permeable bodies. In the case of shadowgraphy, both meanings co-

exist. The silhouettes back-lit on a screen act as a representation in the way Gorky describes motion picture images; however, the alternate practice of shadowgraphy entails the presence and manipulation of a living body as it obstructs a light source creating a shadow on a screen. X-rays overcome obstruction by penetrating living bodies, displaying their motion on a luminous screen.

3.4 EXUBERANT PERMEABILITY

Living flesh is transparent…We have all seen pictures taken by rays that penetrate the flesh and give us silhouettes that appear to the eye precisely as the thing itself would appear could the eye see through the flesh to the bones.

-- Charles Barnard, *The Chautauquan*, April 1896

The Lumière's, it is said, used a translucent screen that passed the image in reverse across to the other side. Thus spectators could pay more to sit on the side of the projector, and less to view the screening from the other side… In this sense, the original apparatus, with its transverse flow of light, more closely resembled the luminous economy of the x-ray. The first film screen was itself a kind of porous tissue.

-- Akira Mizuta Lippit

Viewed within the context of single-reel film exhibition, the permeability of on-screen bodies can be examined within the popular *Uncle Josh* films Edwin S. Porter made for Edison at the turn-of-the-century. By 1902 audiences of Edison moving picture shows were familiar with the exploits of Uncle Josh, a reoccurring single-reel character used in comedies that profited from the comedic juxtaposition of country ways with big-city living. Played by Charles Manley,

Uncle Josh was, perhaps uncharitably, a stereotypical rube used by Edwin S. Porter in three shorts: *Uncle Josh's Nightmare* (March, 1900), *Uncle Josh at a Spooky Hotel* (March, 1900), and *Uncle Josh at the Moving Picture Show* (January, 1902). Both films made and copyrighted in 1900 rely on trick photography to portray the appearance and disappearance of devils, ghosts, and objects along the lines of George Méliès magical fantasy films and the trick photography documented in Hopkins' book. Where Méliès often, but not exclusively, relied on fantastical settings – the moon, the sun, under the sea – to account for the suspension of the laws of nature to justify the appearance and disappearance of objects, Porter uses sleep and the idea of dreams to animate a difference in the quality of perception in the first two Uncle Josh films, a trend he will continue in *Dream of a Rarebit Fiend* (1906).

In *Uncle Josh's Nightmare* Josh dreams that a black-clad devil has become visible in his room appearing, disappearing, and reappearing after Josh fights with the devil for his bedclothes and over the disappearance and reappearance of his bed. During the brief film, we see Josh go to bed and thus assume that the devil's appearance is part of a dream in which Josh is both awake and asleep – he dreams his awake self battling with the devil in his bedroom. The film concludes with Josh waking from his long and active dream; we know that he is now awake because the room has returned to its pre-sleep composition, devoid of any evidence of what we have just witnessed. Dream-life is demarcated by otherworldly chaos marked by a fluidity in the perception of objects: Josh thinks he sees a devil but when he turns his eyes away that object has disappeared only to reappear in another place. The same can be said for his bed and the trunk into which he stuffs the devil at one point in the interlude.

The use of trick photography to create the illusion of objects and bodies appearing and disappearing at will is a common cinematic practice during the single-reel period. Like the use

of shadows to name filmic images, trick photography uses practices taken from shadowgraphy, as detailed in Hopkins' manual of trickery, illusion and mechanical magic. In Hopkins' text the chapter on trick photography begins with a description of the apparatus used for taking silhouettes. These highly detailed shadows project the head of the subject onto dried and well-oiled paper on which the artist precisely measures the ratio of the shadow's facial features to the subject's features. The artist traces the subject's shadow to produce an accurate representation of the subject's head separated from his/her body. Since it was the most accurate representation of a person's appearance, before photography the shadow silhouette was used like a snapshot. In this form of representation the image is literally created by the shadow of the subject, which is traced onto a paper. The need to precisely locate and still the subject's head carries over into the arena of cinematic trick photography because of the use of a requisite black background and the need for the precise placement of objects in the unexposed portion of the sensitized plate. Hopkins' text highlights the relationship between trick photography and silhouettes to explain the effects of the new industrial images via practical similarities with the older image-making practice. As in the previous sections of this chapter, as one practice drifts into the other, elements from the practice of tracing a shadow to create a permanent image are used to capture the fleeting uncoupling and permeable boundary of the industrialized body.

The same set of tricks and confusion that plague Josh during his *Nightmare* reoccur when he is shown his room, a little before midnight, in a *Spooky Hotel* in the 1901 film of the same name. In this instance Josh is awake for the supernatural appearances that provoke the hotel manager into thinking Josh has struck him on the cheek. As the two men sit, the hotel manager points-out the time: 11:55 PM. At this point Josh becomes agitated repeatedly pointing to the clock with his umbrella as he moves about the room, seemingly, deciding whether or not to leave

as the midnight hour approaches. As Josh's agitation increases, a white-clad apparition appears behind the men, hits Josh on the ear, and disappears. Josh assumes the manager has struck him, so he responds in kind. This marks a pattern of mistaken actions and interactions: each man believes the other is hitting him until the manager sees the ghost, which Josh as not yet seen, and flees the room. The film's comedy emerges from these mistaken actions and the physical responses taken by the confused Josh, who must undergo both the manager's retribution and the apparition's torments over the course of the short film. The film's physical humor is augmented by the juxtaposition of one body for another and the general inability to properly see the apparition, creating a minor case of mistaken identity between the ghost and each man. Josh slaps the ghost's leg after it has taken the adjacent seat; he does not realize that a supernatural presence has replaced the hotel manager. The shock at the film's end, when Josh turns to the white-shrouded figure and finally sees it, only works if the apparition can be mistaken for a person. In this case of mistaken identity the permeable body of the apparition has been mistaken for the solid bodies of Josh and the hotel manager.

With these first two *Uncle Josh* films Porter establishes a pattern: Uncle Josh must repeatedly confront apparitions or bodies that are present and not present, bodies that affect Josh but are visible only in certain temporal states: dream-life or the midnight witching hour. The uncanny presence of these apparitions is expressed via their physicality. It is the appearance of the apparition: a full-body white shroud with expressive black eye-holes, or the appearance of a devil – clad in a full-body black suit with capelet and small horns – coupled with their ability to appear and disappear at will that marks these bodies as other than human. Josh (and the hotel manager) can interact with the bodies but they are at a distinct disadvantage when it comes to controlling these bodies. This lack of control invites the physical comedy on which both shorts

depend. In these ways the film echoes the story of "The Vanishing Man" that begins this chapter. Each film inherently asks how one might interact with bodies that possess physicality and are able to act upon other bodies but that are also able to dissolve their corporal existence and reconstitute that existence in another space.

Motion pictures like these first two *Uncle Josh* films rely on the confusion caused by the presence of unstable bodies. Read within the dichotomy Krämer and Grieveson construct, these films *do* use the fantastic possibilities provided by trick photography to depict ghosts and devils wreaking havoc. However, placed within the then-contemporary cultural discourse of shadow-bodies made fluid and penetrable by technologies like the x-ray and by the cinema, importing practices made familiar via shadowgraphy and silhouette creation, these films use the inability to control the physical demarcations that mark corporal boundaries as a source of their comedy. While these films do not depict outwardly permeable bodies, the third film in the series, *Uncle Josh at the Moving Picture Show*, extends the corporal confusion of bodies depicted in the first two films by introducing Josh to on-screen bodies. As the third film in the series, the preoccupation with cinematic bodies may be read as an extension of the otherworldly apparitions that populated the first two films. In the course of this short, Josh himself enters in the on-screen world when his body is made permeable via an interaction with projected light and a film screen during a motion picture show.

The description of the Edison catalogue explains that while attending a moving picture show Josh is confused by the projected images because he mistakes the on-screen representations for the vaudeville actors that had previously occupied the stage. This juxtaposition between present theatrical actors and the on-screen images functions like the juxtaposition between Josh and the devil and apparition in the previous films. The presence of one type of body carries over

to the other constituting confusion and a subsequent lack of control over the actions performed by these permeable bodies. As the film begins, Josh occupies a theatrical box from which he watches the beginning of the moving picture show. According to the Edison catalogue, a dancer appears on screen and in response "Uncle Josh jumps to the stage and endeavors to make love to her, but she flits away, and immediately there appears upon the screen the picture of an express train running at sixty miles an hour. Uncle Josh here becomes panic stricken and fearing to be struck by the train, makes a dash for his box."[161]

As one watches the film, Josh begins his role as spectator by both looking out toward the audience and, presumably, toward the projector while also applauding the Edison intertitle which has the appearance of hovering over the stage. This appearance is a by-product of the in-camera superimposition technique used by Porter to juxtapose Josh and the projected images. The screen for the show is placed onstage with an arch surrounding it. The arch so tightly frames the screen that when the first images of a Parisian dancer finish, it appears that the women exits off-stage before the next projected images begin. The screen placement and use of superimposition creates a curious effect: the motion pictures appear to float over the stage, an affect that is accentuated when the first images of the dancer appear. The onscreen wooden floor appears to be a continuation of the stage floor, but elevated, hovering, like an apparition, and the darkened, black background of the projected image merges with the empty, black space behind the screen. This aspect of the mise-en-scene leads to Josh's confusion that the dancer on the screen is, in fact, corporally present and, like the appearance and disappearance of the bodies in the previous *Josh* shorts, fuels the comedy of the film. Confusing the presence and ability to interact with the onscreen images highlights the fluidity these onscreen bodies posses. Josh may engage with their images, but their ability to appear and disappear at random robs Josh of his ability to

interact with them or predict the actions of these partner-bodies. Like the clock announcing the midnight hour at the beginning of *Uncle Josh at the Spooky Hotel* and the dream-state alluded to as Josh's head hits the pillow in *Uncle Josh's Nightmare*, the opening inter-title shown on the diegetic screen offers an explanation for the confusion: Edison's Projecting Kinetoscope. The 'projecting kinetoscope' offers an ill-defined space for the spectator-participant embodied by Josh.

As in the periodicals examined in the first chapter, taken together the Uncle Josh films provide an education, of sorts, for early film audiences in how to navigate the motion and space inhabited by the bodies displayed in projected motion pictures. In those periodicals the synthesis of still images and motion pictures is accomplished via detailed explanations and descriptions of the projection apparatus and the blurring of the individual photograms in the reaction of synthesized motion. More particularly, the readers of those periodicals were invited into this process not only as potential spectators, like Josh, but as an active co-creator of the motion via the implicit invitation to become the projection apparatus and to animate the photograms included with the descriptions of the process behind projected motion pictures. In *Uncle Josh at the Moving Picture Show* the comedy that stems from Josh's confusion relies on the audience's recognition that Josh's attempt to interact with the on-screen image is absurd in some way. What is communicated in these films is not that projected motion pictures aren't real-life men and women somehow pinned to a screen; rather, what's at stake is the recognition that the corporal boundaries of bodies are non-static and permeable and that motion pictures help create that state.

The non-static nature of these filmed bodies is emphasized in the way the apparitions appear and disappear in the first two films, but that quality is expanded in an intriguing way in this third film. The hovering delineation between stage and screen that contributes to Josh's

attempts at interaction with the on-screen dancer is complicated by the expected placement of the projection apparatus. Josh only attempts to engage the dancer from a position at stage left, just below his stage box, leaving the view of the dancer unimpeded for the audience he acknowledges at the beginning of the short and also the throw of the projection beam in the theatre. This staging places Josh at the edge of the on-stage screen.

Figure 14. *Uncle Josh at the Moving Picture Show* (1902)

This logically positions him to investigate the next set of images: a locomotive crossing the screen from left to right, heading away from Josh and toward the assumed audience. As the train approaches from a distance, Josh ducks and weaves into the space of the superimposed projection in what I first assumed was an attempt to look behind the screen to see of the train was actually about to steam into the theatre, a mocking poke at the realism of the image. However, repeated viewings have convinced me that diegetically Josh is not investigating the reality of the scene; rather, he is getting a closer look at the train as it figuratively steams by (Figure 14). As his body breaks the plain of the screen superimposition, Josh's body dematerializes within the screen's frame. Half of his body appears as before, solidly rooted to the stage, but his torso appears to have become shadow-like as its crosses *into* the projected image of the Black Diamond Express (Figure 15). Josh approaches the train tracks to

get a better view and appears to cross over into the projected scene. While a portion of his on-stage body disappears from the stage setting, it simultaneously reappears in the projected image. His double presence – both on stage and on screen, both a solid body and a pale shadow of the body we have just seen -- creates the appearance of permeability between his body and the images on the screen.

Figure 15. *Uncle Josh at the Moving Picture Show* (1902)

Most likely this double-presence is an accident of an exuberant performer entering the space where the on-stage screen will be superimposed; however, this effect is repeated with the next set of images in an instance that is clearly diegetically motivated. After getting a closer look at the locomotive, Josh dives back into his theatrical box. He emerges and takes his place at stage left to watch a projection of the short film (within a short), *The Country Couple*. As with the dancer at the beginning of the projection, Josh acts out his reactions to the on-screen couple by laughing and slapping his knees. According to the Edison catalogue, this continues until Josh thinks he recognizes his daughter on the screen comforting the other half of the country couple after an accident. Seeing his daughter with a man, Josh throws down his coat and jumps up and down on stage. He rubs his hands together, pushes back his sleeves, and prepares to confront the on-

screen man. As he jumps at the screen his body dematerializes, again marked as a faded shadow-like corporeal form, and appears to have penetrated the screen, entering the projected narrative. With Josh's penetration of the projected images, Porter abruptly ends the superimposition effect to allow for the completion of the film: Josh pulls down the screen revealing the kinetoscope operator behind the screen. As in the previous films, a physical confrontation takes place between the men; they fight and roll around on the stage to end the film. In this action between bodies, Josh gets what he's been after the whole time he's been viewing the projected images: an interaction with a solid body.

A noticeable in-camera cut that marks Porter's use of superimposition to create the effect of Josh watching films *within* a film, forces us to see difference between the screen on which the films Josh reacted to were projected and a sheet placed in the exact on-screen space as the previously experienced screen. The placement of objects and bodies in a way that allows a single space to be conflated in time -- which recalls the tragic fate of the "Vanishing Man" who tried to occupy the same space as a table – uses the same principles of trick photography and silhouette creation described in Hopkins' text. Furthermore, to carry over another of the characteristics of the first two films, Josh must find a solid body with which to fight. (He fights with the hotel manager in the second film and with his bedroom furniture in the first.) Amidst so many shadow-figures and uncontrollable bodies, the only person with whom Josh may have a logical fight is the projectionist. So when Josh pulls down the screen/sheet, the projectionist must be revealed sitting behind the screen/sheet with Edison's machine.

The placement of the projectionist behind the screen also reanimates the space occupied by the superimposed screen within the actual space of the diegetic stage set and calls to mind the rear-projection of light used in silhouette shows. Josh's obstruction of the projection places his

body in the space that would be occupied by the shadowgraphist when he obstructed light to create shadow images on-screen or the written accounts that explicitly or implicitly emphasized a film performer's body's ability to cast a shadow on screen. In this case, Josh's 'shadow-image' reinforces the fact that on-stage bodies are now generated and projected by machines. Josh no longer fights with apparitions; he fights with projectionists. In the previous films, Josh is able to physically interact with the apparitions and devils that have the ability to materialize and dematerialize. But here, it is his own body that materializes and dematerializes as he enters the on-screen world.

Once Josh removes his coat his appearance matches that of the on screen male figure. When he enters the space that the superimposed Edison Kinetoscope images will occupy, his body becomes both part of the screen onto which those images will be projected and an apparition-like body. His body is itself projected into the screen world, like the shadow of a body caught in the projector's beam, but his grayed, shadow-image is simultaneously shadow and solid body because he occupies both the on-stage diegesis and the on-screen diegesis. *Uncle Josh at the Moving Picture Show* baldly demonstrates a coupling between on-screen bodies in motion, the screen itself, and the bodies of the spectators participating with the images. It does this by displaying the permeability of corporal forms, particularly Josh's corporal human form, by reveling in the confusion the fluidity between permeability and solidness provides in this era.

4.0 MÜNSTERBERG'S SHADOW

The discourse surrounding a conception of x-ray images and motion pictures as shadow images serves to remind viewers of the permeability of bodies in fin-de-siècle America. As I argue in the last chapter, the recurrent use of the word *shadow* to describe both types of images highlights how these photographic processes maintain a trace of the actual objects represented and calls attention to their perceived ability to penetrate solid objects producing unstable, permeable bodies via their penetrations. With the invention of the x-ray the possibility that one could see inside a body – including the brain – enters popular discourse, yet the model used in periodicals and regional newspapers to describe thoughts perceived inside the brain is often either the kinetoscope or the projected motion picture. This coupling, which also occurs via the common description of shadow images, suggests that with the x-ray one can see inside a body and once inside one will watch thoughts stream by like the blurred images produced by the kinetoscope or, as in the example below, the vitascope.

Recall the 1901 review of Kipling's novel *Kim* cited in the last chapter. Alongside the descriptive term "shadow" is discourse that imagines that one may be able to see inside the mind of a character finding in that mind thoughts configured as the "shadowy… images" of a moving picture show:

> There is something almost terrifying in this extreme hyperesthesia of the optical nerve; we feel that the brain of the seer must by obsessed by a *shadowy* jostling

> throng of images like the brain of a child that is haunted by visions in the dark. The result in this story of *Kim* calls to mind the mechanic marvels of the vitascope, when the *photographic shadow* of moving scenes is thrown on the canvas before us (my emphasis).[162]

This selection does more than simply describe thoughts as shadowy images. This is a description of thinking where the writer uses the new technology of projected motion pictures to visualize what thinking could look like inside the human mind.

In this brief description many of the hallmarks of early-film projection I have accounted for in the previous two chapters are present. The writer's description of multiple images "jostling" together is akin to the "blurring" of images in the published accounts I discuss in my first chapter that explain the transformation from one image-making technology – photography – to another – motion pictures. Here we again have a process of *synthesis*. Drawing a simile between "jostling images" and the brain of a child suggests confusion and underdevelopment until "the mechanic marvels of the vitascope" create moving scenes, which, in turn, create order from the confusion.[163] The mechanics of the technology provides ordered movement expressed in an image of thinking that is itself mechanical.

While the last chapter sought to show how new technologies propagated new conceptions of the body, in this chapter, I want to explore how those conceptions were extended to images of the human mind, particularly to the process of thought. What is it about the way the human mind and brain were understood during this era that makes this image of the mind possible? With the emergence of psychology and psychoanalysis, as well as increased attention to neurology, figures of thought give way to models of thought, particularly in an American context that saw

experimental psychology as a modern, industrial engagement with metaphysical questions once the sole purview of philosophy and religion.

Furthermore, how do these models and their variations influence the way early film theory conceived of motion pictures? To that end, considering Hugo Münsterberg's engagement with experimental psychology, the x-ray, and single-reel film at the turn-of-the-twentieth century, including written descriptions of both x-ray and motion picture images as shadow images and a description of the synthesis required when viewing the multiple impressions of passing photograms, allows us to consider how motion picture technology was represented as a model for thinking in both popular periodicals – Münsterberg was a prolific writer for middle-class magazines – and regional newspapers. This allows me to consider how the interface between mind, body, and cinematic machine has been conceived in film theory that advocates a scientific study of biological processes to understand how spectators interact with moving images, particularly in a contemporary cognitive context. Understanding Münsterberg in his cultural context, which contemporary cognitivism does not, demonstrates how scientific discourse is as much an offshoot of culture as it is the result of laboratory experimentation.

4.1 THOUGHT MACHINES

Popular accounts of thinking that harness the kinetoscope, projected motion pictures, and x-ray images as models for the processes of human thought abound in the first twenty-years of cinema's existence. As I argue in my discussion of shadows in the previous chapter, those

accounts link the mechanical structures of these new, image-producing technologies to physiological and psychological processes that suggest a popular conception of permeable bodies. As the term "shadow-image" creates a discursive bridge between technologies, so do the ways these technologies are referred to in periodicals to depict an invisible process – thinking – by penetrating the human brain with light or the x-ray, often via a subject's eyes. The permeability in the accounts that follow occurs in the way thoughts are made visible via evidence present in images. These depictions also show that subjectivity became popularly linked to these technologies because they offer a widespread model for thought in fin-de-siècle America. The fact that a series of kinetoscope images, for instance, may be recognized and repeatedly used as a model for thinking suggests that in a figurative sense subjectivity and image-making technologies are a recognizable element of public discourse about moving-image technologies.

One of the first things you notice when looking at how fin-de-siècle short stories and non-fiction articles published in popular periodicals and regional newspapers used motion pictures as a model for the human mind at work is that the projection of images is often eschewed in favor of a model of the human mind that uses the kinetoscope and the blur of images it creates as its main metaphor. In this way, an image of the human mind at work harnesses the synthesis of individual elements in the creation of a whole. These stories and articles, then, refer us back to the work done in my first chapter where I show that similar articles surrounding the invention of projected motion pictures chronicled how individual photograms were synthesized to create a fluid motion picture. Most of the examples I will cite refer to the way the mind works as a kinetoscope, "biograph of the mind (sic),"[164] or, less often, as a Vitascope, as in the example that begins this chapter. These representations relate thinking to the

kinesis of motion producing machines and thoughts to the induced images these machines animate in a way that overcomes physical and psychical limits.

Suggesting that the mind works in a way similar to the speed and synthesis offered by the kinetoscope had become a recognizable, perhaps even colloquial, representation in articles in early-twentieth century American periodicals and newspapers. This and similar representations act as evidence of a mechanical presentation of thinking that was used in articles that had no other relationship with motion pictures. This discursive model is used in periodicals ranging from popular mass readership magazines like *Puck* to magazines aimed at specific readerships like *The Ladies' Home Journal* and in short-lived literary magazines like *The Critic*, published in its final iteration from Philadelphia for only eight years (1898-1906). In an essay in the aforementioned magazine the writer describes the impossibility of a single reader both choosing and reading all the books and magazines published in 1900 and the ploys used by publishers to attract potential readers. The scope of such a project, she asserts, is impossible because there is a book published every ninety-two seconds. After asking if anyone can read a book in ninety-two seconds, the writer suggests that only "minds working like kinetoscopes geared up to ninety-two" could extensively and properly read such an amount.[165] In her suggestion the writer equates the process of mind necessary for reading a vast amount of written material with the kinetoscope's ability to rush a length of individual photograms past a viewer's eyes at "ninety-two" frames per second.[166] Her simile only works if the reader is familiar with the mechanisms that animate the individual frames and their mechanical synthesis, indicated with the unfinished phrase, "*geared* up to ninety-two" (my emphasis), which indicates a mechanism used to regulate a uniform rate.[167]

The author assumes that the reader will understand that the photograms pass by at a particular speed to create the illusion of motion in the machine. While the standard rate for the kinetoscope is between 40-46 fps,[168] the author is either unaware of this or has accelerated the rate by a factor of two to emphasize the speed needed to accomplish the task she presents. In either case, her description retains the mechanical synthesizing element of the machine. In this way the allusion equates the process of reading performed in the mind with this mechanical synthesis – that taking in ideas from the page and thinking is a mechanical process akin to images moving past the eye. In this essay the writer does not advocate this accelerated form of thinking. In fact, she suggests that it would lead to death at age eighteen from, one can imagine, the taxing effort such reading would entail; however, it is how the conception of mind and body is similar to the mechanics found in the kinetoscope that interest me in these publications. The very fact that one model of the process of thinking uses motion pictures is interesting as we investigate why motion pictures seemed to provide an immediate metaphor for thinking and thoughts.

Similarly, a selection from an April 1901 issue of *Puck* also uses the kinetoscope to model how the mind works: "When Easter morning dawns cloudy it would take a kinetoscope to picture the changes of a woman's mind in regard to her costume."[169] This example is taken from a full page of random jokes, aphorisms, and advice. Ignoring the sexism of the statement, the reference to the kinetoscope differentiates stages in a decision process where each change of mind is found on an individual photogram that, once put into motion, leads to the next stage in the process. In these examples, thinking is not a fluid process creating continuous movement between ideas or thoughts; it is a kinetic process that is recognized as a series of fragments coming together. This conception of the process retains an awareness of the junctions between

elements. It also retains knowledge of the machine that enables the coming together of parts to create a whole. Via this knowledge, the awareness of each passing stage depicts a discursive model that registers time as a series of passing moments that each occupies a distinct space. The mechanical ordering of time is visible in the process of thought depicted in the statement because each element is brought together via the motion induced blur that both separates each image and brings it together. The ability to hold both stasis and kinesis in a single process marks the machine-like depictions of thinking found during this era.

A similar use of the kinetoscope to embody thoughts at a traumatic moment is found in an 1906 story published in *American Illustrated Magazine* about adventurers pursuing ancient artifacts: "That which followed drove its swift sequence across her field of vision like the frantic simulacra of the kinetoscope. Through some such unreal medium of dancing notes she saw Harding rally from the onslaught."[170] Finally, nearly thirteen years after the height of the kinetoscope's popularity, a 1909 story published in *Overland Monthly and Out West Magazine* one of the characters is threatened by a wildfire; in the moment of the fire's approach "like a kinetoscope his brain showed recurrences of his innocent youthful days…."[171] In these examples, as in the previous, an understanding of thinking as a synthesis of discreet elements uses moving picture technology to model that process in a moment of trauma that highlights the motion of the "unreal medium."[172] This calls to mind the mechanical – or unnatural – motion on which the kinetoscope relies. Referring back to the need for speed-reading at 92 fps, these articles and stories evoke both the trauma of a machine-body dualism and the way trauma calls forth a particular mechanic kinesis to overcome the mind's limits in a moment of extreme duress.

Unlike the review of *Kim* that began this chapter or the incidents of thoughts and thinking brought forth as kinetic models of thinking later in the chapter, in the latter two examples

traumatic events prompt the flow of images seen in the heads of the fictional characters. A similar use may be found in "Walled In," a multi-chapter story published in *Harper's Bazaar* in the late summer and early-fall of 1907. In the story the protagonist, a man tormented by the memory of his mistress's near-death, remembers that trauma by invoking a film projector:

> In the study alcove it was dark; even the rose candle was quenched. Ferris lay with hands pressed upon his staring eyes, but the terrible retentiveness of the retina reproduced the biograph of the evening; it was as if its successive scenes were etched upon the optic nerve with steel dipped in a powerful acid. The storm raged in his blazing brain…[173]

In first establishing the darkness of the room and the presence of Ferris' "staring eyes," the writer evokes a sense of cinematic exhibition in a darkened space where images pass before spectators' eyes.[174] In this scenario the view the protagonist sees is his own body pressed down on his eyes; this shifts his sight to images moving in his mind as he relives "the biograph of the evening."[175] In this instance, the Biograph stands-in for the events of the past evening, which he will now re-see as if "its successive scenes were etched upon the optic nerve."[176] The projection apparatus here encompasses the narrative events of the previous hours actions; these were particularly dramatic – a near drowning and the realization by the protagonist that he loves his nurse more than his wife.

From these examples it seems that the later stories, written between 1906-1909, tap into past events or memories as images that pass before the eyes. Unlike previous examples that suggested the kinetoscope modeled thinking, with the increased proliferation of single-reel narrative films in a post-novelty era that saw a shift from kinetoscopes to nickelodeon parlors and projected motion pictures, motion pictures begin to be associated with stories or narratives

that are similar to the memories described in these examples from the later-1900s. Here the mechanics of the process become subsumed by the narratives told by the images; this is much like the shift from a cinema of attractions to a cinematic narrative mode that begins to dominate motion picture production in the single-reel era and beyond.

As I will show in my next section, the kinetic models of thinking prevalent during this period of time are also discursively associated with descriptions of experiments that sought to capture thoughts by bombarding the human head with x-ray and light. These captured thoughts are depicted as iconic images that rely on a mechanical process that highlights a machine-body dualism. This dualism is similar to the invitation for the body to act as a projector, which I argue was inherent in the representations of photograms published during the novelty era.

Shifting from the preceding depictions of thinking, we can see that moving pictures, particularly the kinetoscope and the Vitascope and Biograph projectors offered the most readily available model for thinking of the era, particularly when coupled with depictions of thoughts photographed via the optical pathway between brain and eye. The placement of moving pictures or photography evidence is almost always accompanied by a machine/body mechanism that depends on both images and moving parts to document thinking and the resultant thoughts. So a published dispatch describing Edison's attempts to photograph the human brain via Röntgen's rays is comprised of the same press release printed in nearly every story about Edison's x-ray experiments, the headline reads: "The New Photography: Edison Arranging to Take Pictures of the Wheels in Human Head."[177] This headline conveys the idea that the human mind functions akin to the invented mechanics of a wheel; its gears and cogs turn, often producing kinetoscope views, but also that thinking is conceived of both via the thoughts which are produced and the process that produces them. Consciousness itself is an object in the popular press of the era.

4.2 CORPOREAL EMANCIPATION

It is clear… that there is a mode of existence, a sphere of being, an unseen universe into which should pass when emancipated from the limitations of the body…If our natural senses were at this moment miraculously quickened, we should find that we are surrounded by sphere upon sphere of natural activities now utterly beyond our perception. We should analyze the infinite-ether, watch electro-magnetic radiation, recognize the chemical combinations that produce illumination glowing in our electric lights. These are realities, but they are supersensuous realities (sic)…This knowledge enlarges and liberates mind and heart.

-- Anglican Archdeacon Wilberforce of Westminster

At this moment in modernity the penetration of corporal and psychic limits redefine the models of subjectivity that ordered metaphysical conceptions of consciousness, which are under assault in a quest for new, scientific models of thinking. For instance, in American religious-themed periodicals and columns in secular periodicals, I found a prevalent theme concerning the invisibility of a Christian, spiritual world that prompts the use of the x-ray and photography as devices to engage the invisible world. In a 1902 essay titled "The Snap-Shot and the Psychological Novel (sic)," published in *The Bookman: A Review of Books and Life* the writer critiques fiction writers who presume to make the motives of their character's known. She suggests that in this age "we are brought before a realism so exact, so minute, that the organ of

sight with which our Creator has endowed us is quite incapable of perceiving it. Great is the authority of science."[178] Additionally, she questions whether in the age of the x-ray and snapshot there may be an "inner sanctum" where the motives behind human nature are not penetrated by the novelist who writes in a manner akin to the penetrative ability reflected in the images produced from those technologies.[179]

She provides a literary critique of naturalism and psychological realism that uses the x-ray and "kodak snapshot (sic)" as examples of "impertinent and prying instruments" able to penetrate the heart and mind of a character, as authors do when they provide a character's motivation within the text.[180] The proliferation of mechanical image-making technologies allows the writer to suggest that "the evidence of things unseen is admitted, and the human eye has become obsolete as an authority."[181] In harnessing these machines as mechanisms able to penetrate a person's very psyche, the writer argues, "Plain people do not go about our business with a kodak in one hand and an X-ray apparatus in the other (sic). In our blundering fashion we perceive a fellow-being only as the sum or result of a series of incredibly rapid motions that cannot be seen with the naked eye."[182] Here the writer widens her critique from the penetrative abilities of these technologies to their inability to account for motion. Her suggestion that perception is the "sum… of a series of" invisible and "rapid motion" is remarkably similar to the kinetic models of thinking presented via the kinetoscope in the examples from my last section.[183]

Lillian Whiting, a prominent Boston writer whose syndicated Christian-themed column "The World Beautiful," which was collected and published in three volumes in 1898 and reissued in 1901 and 1920 by the Little, Brown publishing company, often engaged the relationship between religion, thought, and the x-ray. In one, she reviews the recent publication of a collection of sermons by the Anglican Archdeacon Wilberforce of Westminster; including

the portion of one such sermon that begins this section. Seemingly taking the lesson of the sermon that "supersensuous realities (sic)" surround us, Whiting applies the ability of x-ray vision to the Archdeacon's abilities: "The secret of the boundless capacity of the human soul revealed in some of these pages when the archdeacon turns the X-ray of his thoughts on the profoundest philosophy of life (sic)."[184] In this selection and the selection from the sermon itself, the limits of the body's ability to perceive the world is enhanced by technologically enhanced vision; this enhancement, which emancipates one from the body's limits, is coupled with faith or a belief in that which cannot be explained or seen.

In a Christian context belief may be augmented by the possibilities for perception offered by the x-ray and, in the next example, photography. In a regular column in a 1907 issue of the Christian magazine, *Zion's Herald*, the writer focuses on similarities between developing a photograph and the power of a Christian god to make a person's character visible. This writers suggests that life's trials develop character much like a photographer develops his image:

> I am using the word develop as a photographer uses it. You know how he brings out the lines of his pictures. The picture is laid in the vessel, and the liquid is moved and moved across it; it passes over the face of the picture, and little by little the hidden graces are disclosed. 'All Thy billows are gone over me.' That is the Lord's developer; it brings out the soft lines in the character.[185]

So much of the context for the accounts I work with in this chapter dwell on the tension of a modernism experienced as machine-like. Often these experiences demonstrate the promise of technological development and often, as in the last section, they reveal how traumatic events summon modern intervention when those inventions allow the body to overcome physiological and psychical limits. With these Christian-themed uses of technology we see how faith and

science were not necessarily at odds during this era. While I argue in my last chapter that science offers to debunk the mysteries of belief and replace it with the wonder of mechanical know-how, in these sermons and articles, we see how organized Christian religion gleans the language of science and industry, yoking itself to it to become part of a new faith in technology.

In a different column in same issue of *Zion's Herald* the x-ray's ability to penetrate bodies and minds is extended to an image of the x-ray yoked to Christ's power to see into one's soul. Considering this alongside Whiting's article, similar to that selection's use of the x-ray to penetrate the surface of the human body as a metaphor for Christ's ability to see and heal hidden sins, the writer of this column suggests that, like Christ's power, the x-ray exhibits curative ability; it may, then, be coupled with the ability of faith to heal.

As the X-ray pierces through solid substances and discloses what is within (sic), so that our flesh is transparent to it and only our bones cast a shadow, so Christ can pierce to the deep things of the heart, and everything is naked and open to His eye. But light goes nowhere except to heal, and the X-ray (sic), with its strange penetrative powers, is proving itself a mighty curative agent, conquering lurking diseases that for all ages have baffled the physician. So also Christ, though He, the Word, is sharper than any two-edged sword and pierces even to the joints and marrow, yet He thrusts with healing and pierces with peace.[186]

In this Christian context, casting the x-ray as a curative agent is done because of its ability to make the body permeable to a form of sight which itself may heal a diseased or sinful body. However, the ability of the x-ray to heal in miraculous ways was not limited to a Christian context. Reports of the x-ray's power to heal, particularly to restore sight for the blind, were prolific in the two years following their discovery. In a compilation of stories published on the East coast and in the Midwest in 1896-1897, re-printed in *The Chautauquan: A Weekly*

Newsmagazine, experiments with Röntgen rays in Boston, San Francisco, and in Menlo Park are discussed. Entitled "Science and the Blind" the article reviews stories previously printed in *The Baltimore Sun*, *The Pittsburg Post*, *The Burlington Hawkeye* (Iowa), *New York Herald*, and *The Boston Journal*. The summary article begins by describing how a San Francisco doctor recently experimented with restoring the sight of a completely blind boy whose father, coincidently, "conducts a phonograph and kinetoscope establishment and in this connection has an X-ray apparatus."[187] According to the article, "The boy had been totally blind for fourteen years but as soon as the fluoroscope was applied to his eyes he declared that he could see. He was able to distinguish objects but without the X ray he was as blind as ever."[188] The summary continues by detailing how Thomas Edison is currently conducting similar experiments; the selections from the aforementioned newspapers nearly all refer to a promise attributed to Mr. Edison that "within three years [the blind] shall be enabled to see, provided they have the optic nerve intact."[189] The summary article concludes that "Mr. Edison has accomplished so much that was beyond the hope of mankind thirty years ago — the telephone, phonograph, kinetoscope, and incandescent lamps — that it is hoped his present experiments may be successful and that he may round out the age end of our present century by enabling the blind to see."[190]

A similar series of experiments are reported in a March 1897 issue of *Current Literature* in an article reprinted from the *Hartford Times* entitled "Eyes for the Blind; Wonderful X-Ray Test." That article includes a description of Edison's work but the majority of it is devoted to how Dr. Cocke of the Boston University School of Medicine is using the x-ray to extend limited visual ability. In this report, as in the previous accounts, it is not x-ray vision that is created, but the extension of human vision via a union between a permeable body and machine that the experiments seek to attain. I am going to include a description of the experiment at length to

highlight the way the body and technology are united. The experiment documented here used a specially constructed tube to deliver the "most intense Roentgen ray" possible.[191]

> Seated in front of the tube glowing with yellowish green light, at a distance of four feet, Dr. Cocke held [the subject's] head down so that the rays struck on its top. He first felt a sensation that he could not describe, a certain something which disappeared in the moment the light was cut off and was instantly felt when the tube was in glow. A pair of cutting pliers were held halfway between his head, bent down, and the glowing tube. He at once described them. A thing with prongs, so long, and held in this direction; when turned, he described the change of direction; when they were moved rapidly – all without sound or stir – he became dizzy and ordered it stopped...When he was allowed to touch the object, he knew at once what it was. Then he added: 'I can't see these things. I can only feel their shadow. It is just a sensation..." After a rest the hammer was gently replaced in the same position. He exclaimed: "I know that. That's the hammer!" The week before they had tried him with this at the X-rays, and he [now] instantly remembered [last week's] impression [of the hammer].[192]

The subject of the experiment, a blind man with acute senses, reports at the experiments end: "I can't see these things. I only feel their shadow. It is just a sensation."[193] In this description the memory tapped into by the appearance of the hammer suggests a form of recognition that is very like human sight – recognizing objects is one way we are able to know what it is that we see. Furthermore, sight itself is not reproduced but is changed, one might argue enhanced, via the union of the human body – the head and brain – and the x-rays being bombarded at the top of the subject's head. Placing the object between the subjects' head and the x-ray producing device,

the impression, sensation, or "shadow" is carried through the skull, in essence dissolving the corporal boundary of the human body. The subject's eyes do not function as a conduit in this description; their blindness seems to close them off as a permeable boundary. Instead, with the addition of the x-ray the objects are dematerialized allowing their shadows to appear in the subject's mind:

> The result of these experiments certainly amount to this: That, without sight, the shape of objects held between the light and [the subject's] head was carried to his brain, and there produced the impressions that enabled him correctly to describe them and the position they were held in… It seems as if the cortex, or outer shell of the brain, were rendered fluorescent, like the sensitive plate, and the shadow of these objects was communicated to it and then transmitted to the visual areas at the posterior part.[194]

Scientific development casts the validity of this experiment in question; however, media scholar Akira Mizuta Lippit argues that the invention of cinema, discovery of the x-ray, and development of psychoanalysis at near-exact moments in Western society altered the way surfaces were understood to define limits. Explaining this development Lippit writes,

> Three phenomenologies of the 'inside' thus appeared in 1895 — the x-ray, cinema, and psychoanalysis, attempting to expose the anatomies of the body, motion, and the psyche, respectively. These three technologies not only altered the status of the referent or document of interiority, they also changed the terms by which such interiorities were viewed. They changed the structure of visual perception, shifting the terms of vision from the optical to the phenomenal register. Moreover, the x-ray, cinema, and psychoanalysis appear to be

> inextricably fused to one another, appropriating each other's features, functions, and rhetorical modes. The capacity to see through the surface of the object, to penetrate its screen, thus emerged in 1895 as the unconscious of the Enlightenment "look."[195]

He argues that both cinema and the x-ray employ a "decomposing look" to break through the limits offered by surfaces.[196] The shift from optics to phenomena that he claims is more nuanced than a simple shift in registers of perception.[197] As the preceding examples concerning blindness, sight and visibility enter a bodily space of feeling and measurable phenomena. In the last discursive mode of sight, bodily "sensation" is indelibly tied to both "feeling" a "shadow" image and the transmission of a thought via the x-ray. Seen in this depiction, disentangling the two optics and phenomena is not simply a question of a shift in perceptual registers. In fact, the previous and next three depictions of the discourse surrounding the shift Lippit describes show something less like a shift and more like an intermingling. This is seen in the way that the human body is placed within mechanical apparatuses employed to capture thoughts that use the path of human sight. This path is often the imagined, physical conduit between eye and brain, which transmits light and/or x-rays from outside the body through the brain and back outside the body, transmitting thoughts to photographic plates. Here, as in my first chapter, we find a union between machine and body within the discourse surrounding mechanical reproduction.

Edison's much-covered 1896 claim that he would soon be able to use the x-ray to photograph the human brain was not the only popular report of brain photography discursively or directly linked to Röntgen's discovery. While the popular press reported that Edison was working to discover the commercial value of Röntgen's invention, including brain photography,[198] in an 1896 story that ran in the *Bismarck Tribune*, a New York doctor claims to

have been the first to photograph a "living human brain."[199] Dr. Simon, a reported student of the French neurologist and psychologist Jean-Martin Charcot, claims to have photographed his own brain "without the use of Roentgen rays."[200] Instead, Dr. Simon used projected light and "platinum photographic plates" to capture the image of his brain; furthermore, through the judicious placement of mirrors he was able to see his brain "light up" so that he was able to see its "pulsations" and interior" during the course of the experiment.[201] Like the penetrative process of the snapshot in *The Bookman*, harnessing still photography to the proven ability of the x-ray to penetrate organic tissue extends the latter's ability to penetrate bodies.

In a March 1896 article that ran in two regional newspapers, the West Virginia *Wheeling Register* and the *New Haven Evening Register*, a report received from London via telegraph claims that, bettering the ambition to "reproduce a living human brain in black and white," a successful photograph of thoughts had already been captured.[202] The article, which also includes a description and report of images produced by "Roentgen's rays" at Kings College, London,[203] describes a process for thought photography and the resulting images by describing two attempts at photographing thoughts. The article describes both attempts, each staged in a darkened room:

> In the earlier experiments a few moments of intent *gazing* through a dark camera… resulted in a subsequent development of two white marks representing the pupils of his eyes. In a later effort, close thinking on the face of a child who had died results in…the shadowy representation of the child's features, of which there was no other record in existence (my emphasis).[204]

While there is little cinematic or kinetic about these attempts, the plausibility of these attempts rests in recognition that one can *see* thoughts; that it is a possibility only in need of an applied technology. Furthermore, the fact that the proof offered is two photographs suggests that

mechanical representation was itself able to penetrate corporal limits, including those of the brain. Finally, like the photographic evidence that proved the existence of the x-ray, which Cartwright highlights, here the existence of thoughts is offered via photographic proof.[205] But even more than simple proof, the evidence offered is an iconographic representation of the thought-of child conveyed through the subject's eyes. As we shall see, this form of evidence is produced again and again.

In 1897 and again in 1898 regional newspapers in Kansas and Montana ran an account of a wonderful new invention: the "thought picture," created by Thomas A. Edison Jr. The first, brief account describes how Edison Jr. "by means of the Roentgen rays applied to the back of a man's head… photographed round objects, which Edison believes to be the quarter of a dollar upon which the subject had, according to directions, concentrated his thoughts."[206] The simplicity of the thought – a single quarter – is acknowledged as a limit to the scope of the thought able to be captured; the report suggests that "a complex thought, such as a landscape" would be too much for his process: "The most that he now hopes for is that he may be able to photograph a single object on which the subject will concentrate his mind… so as to demand some exercise of faith and imagination."[207] Although Edison Jr. "declined to tell where his experiment was conducted," nor was he forthcoming about the method by which the quarter's image was formed on a "sensitive plate," the dispatch concludes that the experiment was "convincing" to Mr. Edison Jr. and "also to others who witnessed" it.[208]

The second account of the same experiment is more complete in its description of the process, including an emphasis on the use of the subject's eyes as the conduit for x-rays to reach the photographic plate on which his thought is revealed. After describing how he affixed three batteries to each side of his subject's shaved head in preparation for the experiment, Edison

illustrates the final steps: "Finally, a sort of mask covered all of his head and face, leaving holes for the eyes and for breathing…. With the subject seated in front of a brass tube with his eyes about three inches from a minute opening in the end of the tube, the X rays were applied to the base of the head (sic)."[209] Within these tubes "there were several prisms…[used] to collect all the light rays which came from his eyes."[210] These prisms, Edison Jr. points out, did not block the tubes, but left a small opening within them "for the direct passage of the X rays (sic)" via the tubes and through the eyes to expose the photographic plate.[211] Unlike the descriptions of the experiments to cure blindness where the damaged eyes closed them off as conduits, forcing the experimenters to bombard the brain, through the head, with x-rays carrying with them the "shadows" of the objects attempted to be perceived, in these articles about Edison Jr.'s thought pictures, the imagined permeability of human eyes are harnessed.

It is likely safe to say that none of these images actually captured thoughts; however, it is a fact that during this period in the U.S., efforts to produce thought pictures became somewhat popular. In her work on how the invention of the x-ray, and subsequent critical fascination with it, acted as an influence on fin-de-siècle European artists such as František Kupka, Marcel Duchamp, and the Cubists, Linda Dalrymple Henderson describes how thought photography was a part of the occultism of the era. She writes,

> The notion of capturing thoughts or dreams by means of an x-ray, or other type of photographic plate, was discussed frequently by occultists as well. Thus, whether related to the scientific pursuit of a means to x-ray through the skull to the brain or to the occultist goal of recording thoughts as psychic emanations, brain or thought photography was a prominent motif of the period.[212]

First published in the *New York Herald* and then distributed as a wire report an account of such efforts explains that thought photograph clubs are forming in the United States using the same method of focused concentration described in Edison Jr. and Dr. Simon's experiments.[213] While the use of x-rays varies with accounts, in this description the "luminous pictures…visible [at times only] in shadowy outline," are achieved because, according to the article, "every human being has the power of expressing conscious or unconscious thoughts exteriorly…[by] a mysterious impalpable force [that] resides in and emanates from the human body. In the sphere formed about us by this vital emanation our thoughts create forms which the sensitive plates seize upon and retain. The discovery of the Roentgen rays was a preparation for this statement."[214]

The preceding accounts show how the discovery of x-rays and the dissolution of corporal boundaries that discovery introduced to the public becomes part of a discourse that saw photographing the unseen, including thoughts, as a *scientific* possibility rather than, as Henderson claims, as part of a purely occultist fascination. Taken as a body of evidence, these articles in regional newspapers, which appear after the invention and widespread reporting on Röntgen's invention, suggest that popular conceptions of the interior of the brain confirms a conception of thought as images or as pictures that can be captured and recognized in contexts other than the interior of the brain. Thoughts, then, can be seen and read like photographs, or moving pictures, or x-rays; they are conceived of as iconographic. Coupled with similar depictions of kinetoscopes and Biograph projectors as models for the mechanisms of human thought, these representations point to a popular fusion of these technologies around representations of thinking.

In Yuri Tsivian's study of the way the x-ray was implicitly and explicitly evoked in films from the period surrounding each invention, he writes that one phobia he observes in the popular press surrounding x-rays is that "x-rays will make mind reading possible."[215] While Henderson, Lippit, and Tsivian work within a predominately European context, my work in this chapter is to consider the discursive relationship between x-rays and motion pictures as they were used to conceptualize and represent models of thinking in popular American periodicals and regional newspapers in the period surrounding the invention of both technologies. Fifteen years after Röntgen discovers the x-ray, a 1910 *Los Angeles Times* article announces discoveries at Clark University in Massachusetts that will allow "moving pictures of the brain in motion" via the combination of the "x-ray with the cinematograph."[216] The claim of the researchers is that with the ability to magnify brain cells and see them in motion, they will be able to determine "the capacity of the nominal man for education" and "whether or not the miserable person squirming in a cell on a charge of murder is really fit to be freed…."[217]

A similar excitement is expressed in a 1914 column in *The Independent*, "Photographic News," which published news of refinements to x-ray devices, like the fluoroscope, that would limit the amount of exposure time necessary to produce an image. This discovery eliminates the need for long sittings, often resulting in unusable images due to movement and radiological harm to the patient. In the same column, which also announces a new oblong lens that can produce photographic caricatures, the column suggests that it's only a "short step" from the discovery resulting in instantaneous exposures to "'moving pictures' of our interior.[218] Here the combination of refinements to improve the quality of the images produced by x-ray devices like the fluoroscope is linked to motion picture technologies via moving images that transcend the limits of the body's corporeal surface. In each of these articles the kinetic relationship between

motion picture technology and the body is captured in the new found recognition of the constant motion occurring within the body. This relationship is also used to suggest how a visible record of these movements may be used to determine institutional disciplining of the body and the mind.

In the early 1900s and continuing into the 1920s in the United States, the anxiety Tsivian describes is present as part of a disciplinary motif that surrounds depictions of x-rays in fictional stories published in popular periodical and in aphorisms published in magazines with particular middle-class readers.[219] A short story published in *Lippincott's Monthly Magazine* in 1913 uses the idea that x-rays will be soon "perfected to the extent of revealing thought."[220] The story does not assign this idea to any particular character. Instead it's used to comment on a hidden arrangement arrived at between two characters. The narrator wonders if "the sleep of innocence" is reserved for the "fair-dealing."[221] Concluding that sleep comes to everyone and not only those who are honorable and "fair-dealing," the narrator suggests that a "perfected x-ray" will soon be able to root out sins and secrets.[222] Moving between sleep as an internal, moral monitoring mechanism and the external mechanism of the x-ray as one that may discover secrets, the x-ray is conceived of here as a disciplinary force that enables a form of surveillance to gain access to and control of inner, hidden thoughts.

For instance, the use of the x-ray to read someone's mind is depicted in a story published in a 1914 issue of the magazine *Puck*. In this example the x-ray is referred to in a story about two trolley car passengers each struggling with the decision of whether or not to claim an umbrella forgotten by a previous trolley passenger. While attempting to read the other man's intentions, the narrator thinks, "His fidgeting about told me as plainly as if I had had an X-ray on his thoughts that he was thinking the same about me."[223] This story in *Puck* is about self-discipline,

differing from the institutional discipline highlighted by the previous two references. The narrator spends most of the story measuring how to ethically claim the lost umbrella for himself while being watched by another passenger. The image of the x-ray reading one man's thoughts is not used to discipline the man whose thoughts are read, but is used to discipline the behavior of the man who would 'deploy' the x-ray. In fact, at the end of the story it's revealed that the second passenger was never plotting to take the umbrella as the narrator assumed, based on his own intentions. Instead the narrator realizes that the mere presence of the other man and his projection of his own desires onto this man functioned as a sort-of conscience, halting him from claiming the lost object.

In an earlier but similar reference, a 1903 column in *The Ladies' Home Journal* about the way social customs discipline women's behavior, the writer suggests that the custom of social calls would end "if by some X-ray force the mind of the average hostess and caller could be revealed (sic)…"[224] In this instance, the visibility provided by reading thoughts via x-rays is liberatory because it would free women from the social obligations expected of them; however, in both this column and the story published in *Puck*, the prospect of making interior thoughts visible promises liberation from social constraints. If only everyone realized that no one would like to visit or be bothered with a social visit and, similarly, if only the trolley-rider had not imagined his desires were being monitored he would have been liberated from his guilty conscience.

According to Lippit, "The Enlightenment had determined, in its pursuit of limits, the parameters of a singular subject bound by the desire to expose and appropriate the world around it."[225] To draw a distinction between classical subjectivity and dialectical subjectivity, Lippit invokes Adorno and Horkheimer's argument that the Enlightenment project is a "totalitarian"

endeavor aimed at the "mastery of nature" that requires "a master-subject who stood outside the limit, unaffected and in the Kantian sense, disinterested."[226] He then argues,

> That dialectical subject defined itself in its encounters with the limit. The presence of limits, in turn, maintained the viability of such a subject. With the appearance of the x-ray, however, the subject was forced to concede the limits of the body, erasing the limit against which it claimed to be outside. For the x-ray image, with its simultaneous view of the inside and outside, turned the perspective of the spectator-subject inside out…Against the field of x-ray vision, the Enlightenment had exceeded the function of the classical subject: the traditional subject was now inside the frame, an aspect of the spectacle.[227]

The disciplinary aspects of the x-ray I show and the way that technology was discursively tied to both the kinetoscope and projected motion pictures, draws our attention to the ability to see both outside oneself, while considering one's place in that projected world. We see this in the cases of the x-ray and fluoroscope where that representation is both inside and outside the body, as Lippit describes, and in the case of the kinetoscope, Vitascope, and Biograph where the ability to transcend the limits of the human body by these technologies emerges in the way they were repeatedly offered as models of thinking in the popular press of the day.

Projection and subjectivity go hand-in-hand in these examples, which is why the models in this chapter predominately focus on thinking and thoughts rather than consciousness. In these examples subjectivity becomes recognizable when the thinking agent/active mind of philosophical idealism is linked to a machine or mechanical process that augments the Cartesian subject's ability to determine the independent existence of objects. The x-ray examples in this section often depict how x-rays are imagined as a tool to reflect on one's own thoughts and

feelings by projecting those feelings onto another, as in the case of the trolley rider deciding whether to claim an umbrella that had been left behind. The anxiety prompted by the x-ray in these examples isn't that it will be deployed by a person to read another person's thoughts but that the x-ray invites self-reflection. Essentially this entails entering into one's own consciousness, turning Lippit's "spectator-subject" in on herself.[228]

The same relationship may be seen in the descriptions of the thought pictures found in periodicals and regional newspapers in the years surrounding the discovery of the x-ray and when the kinetoscope was particularly popular. These descriptions either depict a projection of a thought through the subject's eyes onto a photographic plate or, when that pathway is obscured, a projection into the brain by the shadow-images of various objects placed between the x-ray apparatus and the subject's head. In Lippit's contextualization of a shift in the way dialectical subjectivity is conceived "in its encounters with [its] limit" in the late-nineteenth/early-twentieth centuries,[229] he invokes Freud's wish "to offer a material figure or image of the psychic apparatus."[230] Freud's conceptualization defines the limits of a psychic figure that may be both, to use Lippit's word, "*viable*," and, as I emphasize throughout the previous two chapters, *visible*.[231] In these examples, the visibility provided by the mechanical devices is used to model both the process of thinking and the ability to confront one's own thoughts.

During the nineteenth century there are multiple conceptualizations of the practices used to determine an understanding of the human mind: Jean-Martin Charcot's arguments for neurological structures, William James's advocacy of a stream of consciousness, Wilhelm Wundt's experimental psychology, and Sigmund Freud's psychoanalysis. Of all these strains, it is Freud's conception of the unconscious and the subsequent Lacanian strand of psychoanalysis that has gained the greatest prominence in film studies. Freud creates his apparatus through

narrative and dreamscapes. His psychoanalytic approach to imagining the psychic apparatus uses the unfinished materials of the mind to suggest its construction. Relying on a human desire and talent for narration, Freud's work differentiates the human mind from the physiology of the brain by rooting his understanding of the mind's structure in its unconscious textual play. Lippit's outline of the shifting modes of subjectivity at stake in the intersection of technologies and the human body at the turn-of-the-last century offers an invaluable context in which to consider the metaphors and models for human thought present in the American periodicals of the last section. He details a correspondence between x-rays, psychoanalysis, and the cinema that follows a Freudian conception of psychoanalysis that has often been privileged in the way interpretation and spectatorship has been addressed in film theory.[232]

Lippit and Henderson invoke Freud to draw attention to two things: the shifting discourse concerning an understanding of the human mind – a discourse involving the new science of psychology – and the fact that at the moment of cinema's public debut the limits that defined corporal and psychic boundaries are in flux. Lippit offers Freud as a way to invoke a figural penetration of the human mind – a contribution made via the use of dreams, action, and the unconscious in psychoanalysis. Ultimately, Lippit adopts Freud's conception of the unconscious in his contextualization of the exploding limits of subjectivity because Freud's psychoanalysis demands a second subject in the process of making meaning of a patient's unconscious desires and neurosis. Freud's conception of the human mind, more so than Charcot's use of anatomy, heredity, and neurology, offers something other than a physical penetration of the brain and an understanding of its physical structures. Dreams act as the site of an encounter between a physical state – a phenomenon measured via the body – and a psychic state in which the mind's connection to the body is neurologically severed. Dreams break a bond

between mind and body while simultaneously traversing the limits of conscious desires. Additionally, Freud's system offers Lippit an ephemeral intra-subjectivity of multiple minds making sense of thoughts. Instead of a "disinterested" "master-subject" standing outside the mind's limits, a secondary subject was now interpreting inside those limits.[233]

However, the models of human thought I document in this chapter point to a mechanical conception of thinking reliant on kinetic models that characterize a machine-body dualism where the secondary-subject is one's own ability to examine the photographic evidence– or shadow-images – of one's own subjectivity made familiar via a correlation with machines documented in the popular press of the day. To know the limits of an object allows for an imaginative filling-in defined by limits; when those limits are broken through or expanded to the point of meaninglessness, the possibilities for interior composition are thrown into disarray. Documenting the difference between Freudian figures of thought and the kinetic models found in popular, American periodicals via analysis of Hugo Münsterberg's psychological and film theory will allow us to consider how American experimental psychology worked alongside the models of penetration offered by the cinema and the x-ray, including a January 31, 1896, essay in an issue of *Science*, a popular American magazine, where Münsterberg writes an essay entitled, "The X-Rays" that explains how the new discovery works and evaluates the scientific possibilities the discovery holds. Furthermore, examining this dualism in this context will allow us to evaluate the way cognitive film theory has adopted a neurological and biological conception of subjectivity beginning with Hugo Münsterberg's early-twentieth century psychological work. Understanding Münsterberg in his cultural context demonstrates how scientific discourse is as much a consequence of culture as it is the result of experimentation.

4.3 MÜNSTERBERG'S SHADOW

In the particular case of the x-ray, I'd like to consider one final example of the coverage Röntgen's invention prompted that historicizes in an American context the correspondence Lippit draws. Published approximately one month after the Lumière's first public cinematographic performance in Paris, Hugo Münsterberg writes an essay entitled, "The X-Rays" that explains how the new discovery works and evaluates the scientific possibilities it holds. Written from the University at Freiburg, Germany, which Münsterberg recently rejoined after three years (1892-1895) heading the experimental psychology laboratory at Harvard University,[234] Münsterberg's role as the author of the essay prompts more than a few questions. Specifically, what can we discern from Münsterberg's analysis of x-rays and the relationship between mind and body inherent to his psychological training that may have prompted an interest in both motion pictures and x-rays? Finally, how does this contextualization of Münsterberg's thoughts allow us to revisit the relationship between mind and body in film theory's cognitive strand and consider Münsterberg's place in this strand of thought?

In the autumn of 1897, Münsterberg returns to Harvard at the invitation of William James and university president Charles Eliot to chair the philosophy department and head the psychological laboratory, posts he held until his death in 1916 – just after the publication of *The Photoplay*.[235] Per his training with Wilhelm Wundt, Münsterberg was part of a European strand of psychology that held that mimetic understanding – imitation – was the way by which subjectivity developed, an idea echoed in the x-ray examples from the last section and found in the way Münsterberg considers the objective world ordered by the mind in *The Photoplay*.[236] As Münsterberg's dual positions at Harvard suggest, in Germany and the United States the new science of psychology was crossing its own boundary from metaphysics to science. In Germany,

Wilhelm Wundt started the first European experimental psychology laboratory dedicated to the empirical analysis of human behavior. Jonathan Auerbach suggests that this laboratory "helped to establish psychology as a scientific discipline rather than a branch of metaphysics, as it had been treated in the nineteenth century."[237] Wundt pushed for this reconceptualization from a metaphysical field to a scientific discipline by arguing for psychology's place within sociological and biological paradigms. Wundt's particular understanding of psychology held to the importance of mimesis, yet he expanded this position's idealism by pioneering a "field of physiological psychology, which sought to examine the intimate links between the mind and physiological processes of brain and body, which move most often from external causes (stimulus) to inner effect (sensation)."[238]

Münsterberg studied with Wundt for the first of his three doctoral theses. According to Donald Fredericksen's study of Münsterberg's film theory and philosophy, Münsterberg's training with Wundt helped to solidify an understanding of the biological and causal mechanisms of the human mind as the basis of a "'new psychology' [that] broke down mental phenomena into elements and studied their combinations, as if they were a kind of 'mental chemistry."[239] Even as Münsterberg follows Wundt's study of psychology as a new science grounded in the empirical analysis of human physiology and neurology, Wundt's idealism continued to influence Münsterberg's work.

In 1904, Münsterberg claims, "Psychology is the most favored of all the philosophical disciplines in America at the present time."[240] His alignment of psychology and philosophy shows how he continued to see his work in a philosophical tradition, albeit one more inclined to conceive of the "psychical facts" of the human mind as "atomistic," borrowing a model from chemistry and physics.[241] His model highlights the combination of parts in the formation of a

whole. As the Christian-themed periodical articles incorporate scientific discoveries and language into their rhetorical traditions, Münsterberg's role as a philosopher and psychologist allows him to address questions once solely considered metaphysically with scientific methods of analysis. Asserting this relationship between philosophy and psychology by insisting that objects only exist on the basis of values,[242] Münsterberg argues that both psychical and the physical objects are "mechanisms" that must not be separated from "values and ideals."[243] As he explains,

> Neither the physical objects nor the psychical objects represent reality, but both are ideal constructions of the subject, both deduced from the reality which is no physical object, no psychical object, and even no existing object at all, as the very conception of an existing object means a transformation of reality. Such transformation has its purpose for our thoughts and is logically valuable, and therefore it represents scientific truth; but thus truth nevertheless does not reach the reality of the untransformed life.[244]

The real world is, for Münsterberg, "still nearer to us, than the existing world;" the real world is our duties and our values.[245] The untransformed life Münsterberg writes about is the realm of the will and values that entails a new iteration of idealism that "allows us to transcend the isolated flashlike experience…[to] seek the identity of experiences. That is the one fundamental act which secures for us a world."[246] There is existence, which is perceivable, and then there is real life: "The real world we live in has no existence, because it has a form of reality which is endlessly fuller and richer than that shadow of reality which we mean by existence. Existence of an object means that it is a possible object of mere passive perception; in real life, there is no passive perception, but only active appreciation,"[247] which is an act of will that requires the

presuppositions of the eternal values. The system of thought envisioned by Münsterberg in both his film theory and experimental psychology rests on "absolute, universally valid, and eternal values" that guide individual will in an effort to rise above a chaotic assembly of perceivable experiences.[248] Making sense of perceivable experiences is the role of psychology and science, so when Münsterberg engages with Röntgen's discovery perception is his foremost concern.

As one might expect, Münsterberg begins his essay about the x-rays with a basic description of Röntgen's invention, but there is a peculiarity in the form he chooses for his description. Rather than describing at the outset what x-rays do, Münsterberg highlights their invisibility to the naked eye before turning to the effects they produce. By ordering his introduction in this way, Münsterberg highlights the perceivable experience of visibility as the foremost measure of existence followed by effects. He writes, "Röntgen has found a new kind of rays -- he calls them the X-rays -- which, though invisible to the eye, affect the photographic plate; which produce fluorescent phenomena; which pass through wood, metal and the human body; which are neither broken by prism and lenses nor reflected."[249] With his description Münsterberg asks how we can register these rays if we are unable to see their action in performance?

In the way that Münsterberg focuses on visible evidence in this essay, we begin to see his scientific concern with causal order. Indeed, he spends more time on this issue: "If in a dark room we cover the tube by thin, black cardboard, nothing can be seen at all, even if we bring the eye in the direct neighborhood of the tube during the electrical discharges."[250] These rays cannot be seen; they can only be registered via their causal effect on other objects. For Münsterberg the ability to perceive effects is of particular importance because without measurement the ability to perceive stimuli in the world of objects is not possible. Effects must be measured in objects and

bodies in order to be part of the existing world that visibly surrounds us, which for Münsterberg is the perceivable world of objects. In his essay "Psychology and Mysticism," published as part of his *Psychology and Life* collection Münsterberg writes, "Even if a man… were to perceive solids by the Roentgen rays" the psychologist would have no basis for skepticism as long as the physical transmission from the outer object to the brain is admitted.[251] He further explains that one could determine this by his "state of attention" because "a man's thoughts must be manifest physically in order to act as stimuli for the sense organs."[252] Recording effects of invisible causes introduces invisible elements into the world of objects. Physical manifestations conveyed via the body hold similar evidentiary properties, then, as the shadow images produced by x-ray devices.

In his essay, "Psychology and Life," Münsterberg further draws a connection between mental process and the human body as the object that registers an invisible process made visible: "We know the whole idea of personality crystallizes about those tactual and muscular and optical sensations which come form the body…"[253] If, in Münsterberg's system of thought, invisible forces, like x-rays or thoughts, must be manifest in physical bodies to act as sensory stimuli, the images produced affirm the viability of these invisible forces as able to be perceived. The causal relationship between the body and unseen forces registers both on the body and via its mechanical extension. As I discuss in my last chapter, Cartwright argues that part of the shift in perceptual relations that the x-ray prompts is that photography may act as a record for invisible forces. In effect, this mechanical measure of invisible rays, which differ only from light rays in the higher frequency of their vibrations, extends the limits of corporal perception via the technical adoption of photography – of shadow images – as a physical manifestation of what cannot be seen by the naked eye.

These images extend sensory perception because they are the result of mechanical, machine-like, modes of perception. In this way, the x-ray creates and reveals a new limit to the physiological potential of human eyesight in its ability to extend itself via machines to penetrate the surface of objects. The potential of the x-ray to penetrate the surface of objects/bodies aligns both the body that registers the visibility and the image-producing machines that transmit the images in their accomplishment of similar tasks. As Münsterberg points out in his essay, even placing one's eye near the tube emitting the x-rays will not allow one to see the material that carries the impression to be imprinted on the fluorescent paper. This bombardment releases an emission of electromagnetic energy, like light, which is measured in the experiment via the exposure of fluorescent paper. X-rays are invisible to the naked eye and able to be 'seen' only in a casual union between the object undergoing the radioactive bombardment, the rays themselves, and the photographic paper that 'sees' the hidden object.

To explain the way an x-ray works even to a readership familiar with scientific discourse, Münsterberg casts the invention's measured effect in the language of sight: of light and shadow. He writes that ordinary photography is not possible because the rays cannot be refracted so "the pictures of the objects are only shadows."[254] These "shadow-pictures," he points out, can be taken of an object enclosed in another object.[255] The x-ray may penetrate the limits of the human body by offering images of the bones within, transcendentally carrying human sight through the limit of human flesh, a use Münsterberg mentions at the end of his essay when he discusses the ability to asses "fractures and diseases of bones" as well as to locate metal objects embedded in the body.[256]

As we have seen in the previous two sections and preceding chapter, in the United States during the late-nineteenth/early-twentieth centuries the x-ray, in particular, throws dialectical

subjectivity into chaos by breaking through the corporal limit, penetrating the physiology of the body to locate clean, solid objects within the corporal form. These objects are pictured devoid of the organic mass of organs, fluid, and tissue; pictured instead is a skeleton that works together – like a machine – where the visceral organs are cleansed in their shadow-image and made into modern, kinetic objects that are bound together. As they are seen, they appear to be constructed to function predictably. Münsterberg's insistence on objects within objects in his explanation of the x-ray both confirms and extends the importance of psychical and physical objects or facts in his own psychology.

Isolating Münsterberg's work on motion pictures solely as an examination into subjectivity and cognitive processes ignores the philosophical foundation of his thinking. Münsterberg was "associated with the so-called Baden or Southwest school, one branch of the neo-Kantian movement that dominated German philosophy at the end of the nineteenth century. The school emphasized the investigation of value judgments, especially those with a claim to necessary, i.e., universal, status."[257] Spurred by models offered by physics and chemistry, Münsterberg creates a two-tired system of reality in which he argues that perceivable experience is populated by both psychical objects and physical objects "deduced" from the reality we will into being via "subjective will relations" that seek access to eternal values.[258] This access allows for interpretation and appreciation of perceivable experience on the terms of eternal values. Only in the use of subjective will is one able to interpret and appreciate, rather than simply in describing objects, do psychical and physical objects exist.

The primary tenet of Münsterberg's philosophy is that "we have logical ends and purposes"[259] and that the world of objects is the realm in which "will is the bearer of all science and thought."[260] According to Fredericksen, "In Münsterberg's view, science does not give us

knowledge of what a thing is in itself, but of what it can be transformed into by causal processes (the "thing in itself" under discussion here is not Kant's famous *ding an sich*)."[261] Working within a discipline that draws from both metaphysics and modern scientific discourse allows Münsterberg to argue that science may be able to devise laws to describe the mechanisms of the natural world, but that without an ability interpret and appreciate, rather than to solely describe and explain, science has no access to eternal values.

Concerning the ability of science to access the "world of will," in "Psychology and Life" Münsterberg writes,

> Natural science considers the world as a mechanism, and for that purpose transforms the reality in a most complicated and ingenious way. It puts in the place of the perceivable objects unperceivable atoms which are merely products of mathematical construction quite unlike any known thing; and nevertheless these atoms are scientifically true, as their construction is necessary for that special logical purpose. To affirm that they are true means that they are of objective value for thought. But it is absurd to think, with the materialistic philosopher, that these atoms form a reality which is more real than the known things, or even the only reality, excluding the right of all not space-filling realities. The physical sciences of matter is true, and is true without limit and without exception; materialism is wrong from beginning to end. There is, indeed, no physical object in the world which natural science aught not to transmute into atoms, but no atom in the world has reality; and these two statements do not contradict each other.[262]

His claim that "no atom in the world has reality" reaffirms Münsterberg's method of substantiating the existence of objects as solid and of the world as only one tier in his two-tiered world-view, while contending that that which is unseeable is not part of what he terms reality. For Münsterberg reality is measured by the perceivable and the registerable in and of the human body. Münsterberg's thought reflects the intermingling of optics and phenomena seen in the previous section's examples concerning sight and the x-ray in a machine-body dualism.

For instance, to have emotions as part of Münsterberg's reality they must affect the body in a causal relationship. For Münsterberg the *world of existence* includes that which is not perceivable by the unaided body – including eternal values, will, and atoms. Because these ordering forces are not part of perceivable reality they determine that actions are acts of will possible because of all acts presuppose the logical system of ideals and values that allow all actions to occur. It is the inability to access these forces that provide Münsterberg with the sense that *existence* is ordered beyond the access of man. This is true for him because, as atoms are products of mathematical construction, atoms are true because they are needed; without them the world has no scientific cogency. There is a need to create a logical foundation comprised of eternal laws and values because without them there is no way to interpret the actions of history. This becomes understandable when we recall that for Münsterberg interpretation is only possible with the presuppositions provided by the world of will. As Münsterberg writes, "…to dissolve even the will into its atomistic sensations, and their causal and unfree play, we are blind if we forget that this transformation and construction is itself the work of the will which dictates ends, and the finest herald of its freedom"[263]

The transcendental logic at the heart of Münsterberg's neo-Kantian philosophy demands that one must be able to actively interpret and appreciate objects, rather than passively describe

them, via knowledge of the "necessary presuppositions for the very existence of those facts of experience."[264] For Münsterberg subjectivity is not an individual matter; there is only subjectivity as far as one is able to interpret and appreciate from the presuppositions that determine objects. Description without appreciation and interpretation remains a passive form of engagement. Action only occurs when the will is evoked to appreciate and interpret objects via the universal, eternal values that constitute the reality of Münsterberg's worldview. One is unable to engage objects without access to these values because the very conditions of your engagement are subtended by the presuppositions that allow your experience to occur.

While cognitivist film scholar and Münsterberg champion Allan Langdale refers to the "behaviorist tendencies"[265] in Münsterberg's film theory and Gregory Currie grounds a cognitive strand of film theory in the idea that "cinema is preeminently a medium of subjectivity,"[266] each fails to account for Münsterberg's belief that subjective experience is by no means solely individual or merely a function of biology but is a conduit to reach absolute, universal values. Following a Kantian idealist conception of these values Münsterberg's philosophy and psychology use "transcendental logic [to move] from facts of experience to the description of the logically necessary presuppositions for the possibility of these facts…Crucially," according to Fredericksen, "these facts consist of value judgments...Thus in the realm of aesthetics, both Kant and Münsterberg find it inconceivable that one would make a judgment that something is beautiful without the logically necessary presupposition that the judgment is universally valid."[267]

For Fredericksen, "to read Münsterberg's aesthetics of the photoplay without accepting the role of the Kantian claim in it is to miss the point;"[268] Münsterberg himself writes, "The thesis of his book is both psychological and esthetic."[269] Yet the revival of Münsterberg's work

on the photoplay vis-à-vis cognitive film theory's methods of empirical research and neurological causation seem to do just that. By considering the system of human perception as the basis of an understanding of how film functions, the basic cognitivist approach offered by Gregory Currie and Joseph Anderson adopts Münsterberg's assessment that film is a specialized instance of human perception that places the interaction of film and viewer not as a cultural interaction but as a perceptual interaction that may be quantified.

Anderson argues that film elicits real thoughts and feelings, so it is viewer reaction that determines the realness of the film. As he writes, "The danger in a thriller is not real; the fear we feel for the character in danger is. The tragedy in a movie's narrative is not real; the empathy and sorrow we feel are."[270] The value of film as a perceptual system is in the reactions it evokes in viewers, which are measurable and therefore real. The ontology of film is first inherently tied to the experience of the viewer and second to the reactions produced in the viewer. For Anderson cognitivism provides the methods for determining why these reactions are produced in the mind as a result of the perceptual system that feeds the mind the material used to elicit reactions.

Currie is working out whether film functions pictorially rather than as a language. Concluding that it does function pictorially as a system in which viewers recognize signs, he insists that viewers must not and do not think of it as similar to a language, considering that what it purports to represent – fiction – does not exist. For him film offers the chance to investigate pictorial perception. Film functions pictorially because viewers recognize signs; they do not see or imagine they are seeing fictional characters or events. While each of these scholars has contributed individual approaches and ecologies of the film experience as a component of cognitive and perceptual psychology, Currie explains that the fundamental goal set by cognitive film theory is to find out how film functions not how it is perceived to function.[271]

The key term here is *function* because the desire to reach an understanding of the dependent factors that determine how motion pictures operate as in instance of uniform perception points to the scientism at work in the cognitivist approach to film theory. Münsterberg applies both experimental psychology and aesthetics to motion pictures to highlight the medium as an event where the cognitive apparatus is made visible on-screen and able to be represented in a way akin to the evidence of invisibility provided by the machine-body dualism discussed in this chapter's previous sections. The photoplay is both an instance of the machine-body dualism and a demonstration of cognitive processes that model those processes for the viewer. He makes this point when he writes in *The Photoplay*, "To imitate the world is a mechanical process; to transform the world so that it becomes a thing of beauty is the purpose of art."[272]

Fredericksen explains that Münsterberg considers art "to give us knowledge and experience of something in its isolation, not knowledge about its past or future, nor about its connections in a causal nexus."[273] Münsterberg sees that "by subordinating ourselves to scientific truth we grasp the outer world as an independent self-persevering thing. By devotion to natural and man-made or artificial beauty, we grasp the outer world as a self-agreeing will."[274] In his valuation of aesthetic objects Münsterberg argues that film must be considered an art and, as such, must be seen in isolation from the causal forces that determine a self-sustaining outer world of objects. The isolation of art allows recognition of the universal, eternal values that determine art as art, neither in communion with the spectator or considered via her subjective view: "Both logical and aesthetic values are absolute because they do not adjust themselves to personal desires and because they must satisfy every person who wills a real world... Logical valuation demands that the thing remain identical as an object; aesthetic valuation demands that the wills of a thing remain the same – that they finally are one will, whose parts agree with one

another."[275] The adoption of Münsterberg by Currie and Anderson shifts the unifying will-force of eternal values – universal values – from a neo-Kantian impulse of values and ethics is replaced to an ahistorical faith in the scientific method now cast as a contemporary eternal value.

In addition to the cultural context I have sketched in this chapter, according to Fredericksen, to assume that Münsterberg's primary goal is to discover ways in which the process of the mind are available for

> Conscious reflection and empirical research interactively inform[ing] our perception and apperception of the conceptual, affective and formal registers of film… is to fundamentally misjudge what he is about. This is because the psychological study that takes up the first half of the [*The Photoplay*] is explicitly nested within, and at the service of, a prior neo-Kantian aesthetic value theory. In the latter… the governing and honorific concepts are those of disinterested interest, the isolation of the aesthetic object and of the aesthetic experience form the concerns of practical life and scientific knowledge, and the resultant claim for the aesthetic experience sui generis of harmony and beauty. The function of Münsterberg's 1916 study of the psychology of film is to reveal how the then new medium of film could find a legitimate place within the traditional arts that are taken to be exemplars of these qualities, as seen by him through the lens of neo-Kantian philosophy in general and its aesthetics in particular.[276]

Transcendental logic functions differently than the inductive logic that orders the scientific method relied on by contemporary cognitivists. In turn, for Münsterberg subjective experience can only be measured by the individual will gaining access to eternal values that categorize and give meaning to subjective experience. In this system of thought subjectivity is not determined

by individual perception, even as a model for biological perception, but as the means to access the eternal values demanded by the individual will.

For Noël Carroll, "Cognitivism itself is not a unified theory. Instead it is a stance toward film research, one that advocates the exploration of hypothesis about film reception in terms of the cognitive and perceptual processes of spectators, rather than in terms of the unconscious processes and syndromes favored by Theory."[277] For both Carroll and David Bordwell, both of whom identify themselves as cognitivists,[278] film studies has no identifiable *film theory* because there is no scientific basis from which to construct a stable set of rules and governing ideas at the basis of film analysis. Because Bordwell and Carroll see *theory* as an explanation for how a device works, the discipline of film studies operates without a theory because there is no settled understanding of how films work for the viewer. In the absence of a stable method of analysis, like the scientific method, to understand how each film's patterns of construction elicit and prompt specific reactions from viewers, there is no stable basis of understanding both how films elicit reactions and what is at the basis of those reactions. In this way, cognitivism disavows any entangled discursive registers, like the entanglement between optics and phenomena found in the periodicals discussed in this chapter. By limiting the scope of analysis questions may engage, cognitivism limits itself to causal relationships, which is a position Münsterberg disavows in relation to the photoplay as art.

Vitally, for Currie, Bordwell, and Carroll the lack of a scientific method in film studies relegates the discipline to a fractured existence that relies on creative theory and textual readings to explain the basic epistemological and ontological questions of the medium. According to Currie, "Film theorists have… failed to produce a plausible psychology of the experience of cinema" because they have no method for this investigation.[279] And both Bordwell and Carroll

advocate a commitment to "letting mid-level theories compete in the field" as a way to reinvigorate film studies with active theoretical formations.[280] Bordwell writes that mid-level research does not require "determining philosophical assumptions about subjectivity or culture" nor does it require "univocal metaphysical or epistemological or political presumptions."[281] They argue against these *grand theories*, which they define as the "encompassing schemes that were developed to explain society, language, and psychology" that have been used "as the indispensable frame of reference for understanding all filmic phenomena: the activities of the film spectator, the construction of the film text, the social and political functions of cinema, and the development of film technology and the industry.[282] Carroll argues simply that cognitivists do not deny that "cinematic structures never have political consequences" just that some questions about cinematic perception may be better answered via analysis of cognitive processes.[283]

Currie, Anderson, and Carroll each begin recent collections with epigraphs from Münsterberg's 1916 study – casting his insistence on film as a "subjective medium" as an invitation to understand the root causes and effects the human perception system has when interacting with films to provide an understanding of how film works as part of circuit of perception. Münsterberg's suggestion that "'The motion picture is structured in a way that is analogous to the structuring processes of the mind,'"[284] which is quoted in Anderson, allows these strands of cognitivism to adopt Münsterberg's impulse to study the cinema psychologically as part of the biological and cognitive processes of the human mind. In these cases Münsterberg is adopted as the scientific road not taken, with only Carroll acknowledging the metaphysical impulses of Münsterberg's neo-Kantian philosophy concerning art.

Carroll considers the role of art in Münsterberg's review of how cinematic devices, like the close-up, parallel editing, flashbacks, and flashforwards, function analogously to the working of the mind. [285] For Münsterberg art must not simply copy reality but must "transform the world" creating an object in isolation from causal forces, i.e. an instance of pure will that is eternal and universal. Münsterberg follows Kant claiming, "The work of art shows us the things and events perfectly complete in themselves, freed from all connections which lies beyond their own limits, that is, in perfect isolation."[286] Carroll casts this aesthetic isolation as a way to consider art as an examination of the particular while the psychological mode Münsterberg also engages is a way to examine the general; this draws a distinction between two modes of thinking: the scientific/scholarly and the artistic.[287] The machine-body dualism I locate in the periodicals of this period access the restful isolation of art because the machine-body suggests both an isolation from subjective impulses, an automaton, and a way of affecting that automation via the filmic techniques Münsterberg focuses on, which act as a transformation of reality by filmmakers.

In addition to his philosophical and theoretical paradigms, we can locate elements of Münsterberg's film theory that resonate as products of the cultural interactions of the silent film era. For instance, the context I have sketched allows us to see how Münsterberg's provocative claim —"The objective world is molded by the interests of the mind"[288] -- may be understood as analogous to the projection of subjectivity we saw in the way the x-ray was deployed as a self-examination tool in the era. Furthermore, he finds a model for thinking that recalls the way the kinetoscope was conceived to model thinking when he writes, "Our mind is split and can be here and there apparently in one mental act. This inner division, this awareness of contrasting situations, this interchange of diverging experiences in the soul, can never be embodied except in the photoplay."[289]

Additionally, writing about memory in *The Photoplay*, Münsterberg suggests a model that is remarkably similar to the presentation provided in the short story "Walled In" from 1907. He writes, "Again the events are seen in continuous movement; and yet the pictures break up the movement into a rapid succession of instantaneous impressions…. Memory breaks into present events by bringing up pictures of the past: the photoplay is doing this more richly than any chance imagination would succeed in doing."[290] This description both recalls the synthesis of individual impressions I wrote about in the first chapter and the union of machine and mind found in periodicals and regional newspapers. Münsterberg finds in film a template on which to apply his two modes of thinking, which provides him the necessary body – the human body or a stand-in for that body in the film form itself – to register and invisible process, but it is a template that was used widely at the time during which he was working.

Münsterberg rejects psychoanalysis because it relies on figural forms and eschews the world of science in its methodology. Münsterberg responds to Freud's conception of the unconscious mind by arguing that there is no unconscious. In his *Psychotherapy* Münsterberg argues, "'the story of the subconscious mind can be told in three words: there is none.'"[291] According to Fredericksen, "Although Münsterberg worked in part as a psychotherapist, his belief is that mental maladies are not symptoms of unconscious mental factors but are physiological malfunctions…his antipathy against Freud, in particular, was such that he reportedly left Boston when Freud visited Clark University in 1909, to avoid any possible meeting with him!"[292] Freud's psychoanalysis offers a space in which consciousness functions, working in the context of the shadow-images I have detailed over the last two chapters, Münsterberg believes that one is able to register unseeable forces, like thought, making them real only when they are fixed or solidified, like the bones one sees when one penetrates the body's

limits. His aversion to Freud points to why he insists repeatedly in his philosophy for descriptions and facts that are measurable models, and not figures of thought. It also suggests why moving pictures became a viable model to discuss his understanding of physiological psychology.

For Anderson and Currie, had other film theorists followed Münsterberg's psychological path into the processes of the cinema, film theory wouldn't be what they see as a mash of psychoanalysis, structural Marxism, and postmodernism, which for Anderson is "elitist and cynical."[293] Accordingly, Currie argues against psychoanalysis and conceptions of realism that posit that the medium is transparent, directly presenting that which is represented. Currie rejects psychoanalysis: "I believe that psychoanalysis is false, not just in the sense of getting a few things wrong, as relativity theory probably does, but in the sense of being wildly, deeply, and unrescuably false, as Aristotle's physics is."[294] He wants psychological investigation and not psychoanalytic narratives because psychoanalysis creates a tendency to see film as an illusion that allows people to think of film as a real world. This is demonstrably false for Currie because film is not "typically productive of any cognitive illusion to the effect that what it represents is real; our standard mode of engagement with the film is via *imagination* rather than belief."[295]

Anderson explains that cognitivism holds that higher-level capacities for language and cognition are in-built within the human mind. According to Anderson had film semiotics followed Chomsky's deep structure instead of Saussure's culturally determined signified, film semiotics would have a cognitive/ecological foundation that would allow it to use the scientific method and empirical research to determine its epistemology or, if you're more inclined to cognitivism, function.[296] The absence of scientifically verifiable methods of analysis coupled with an insistence that perception is culturally constructed dooms film studies to be a discipline

without a theory or underpinning philosophy. Currie, Anderson, and to a much lesser extent, Carroll, seek a method on which film theory may make claims about the physiological process that both allow filmed motion to be perceived as it is and that explains the mass appeal of film narrative and form. Carroll does see the viability of political and cultural analysis, arguing that some questions don't necessarily lend themselves to that approach.

All three men see Münsterberg's film theory as advocating psychological methods to discern the physiology at the core of film engagement. Anderson, in particular, argues that style develops along *accessibility*, as Münsterberg argues in *The Photoplay*, and that this accessibility is what determines a film's success, and cultures, but that the process whereby film works is not merely a matter of culture. According to Anderson, "it is more functionally a matter of perception;" therefore, filmmakers create a program for the viewer who is "a standard biological audio/video processor."[297] Part of the problem in contemporary film theory that that this chapter seeks to address is that while Münsterberg is positioned in the contemporary cognitive work of Currie and Anderson, in particular, as the *scientific* film theory that could have been, the ways cognitivism understands reception obscures how culturally specific Münsterberg's project was in the first place. It also obscures how much Münsterberg's thoughts do not rely on a supposed logic of science but on an ordering of reality that depends on idealism.

4.4 SURFACES

We saw that the impression of movement results from an activity of the mind which binds the separate pictures together. What we actually see is a composite; it is like the movement of a fountain in which every jet is resolved into numberless drops. We feel the play of these drops in

their sparkling haste as one continuous stream of water, and yet are conscious of the myriads of drops, each one separate from the others. This fountainlike spray of pictures has completely overcome the causal world (sic)…. A movement is started, but before the cause brings its results another scene has taken its place. What this new scene brings may be an effect for which we saw no cause. Not only are processes interrupted; the intertwining of the scene that we have traced in detail is itself a contrast to causality. It is as if different objects could fill the same space at the same time. It is as if the resistance of the material world had disappeared and the substances could penetrate one another.

-- Hugo Münsterberg, *The Photoplay: A Psychological Study*

In conclusion, the cultural context Münsterberg writes within is perhaps best summarized in this long passage taken from *The Photoplay*. So many of the elements I have worked with over the course of the last three chapters reappear in this passage that I can't help but imagine Münsterberg writing it with a stack of open periodicals surrounding him. Harnessing the simultaneity at the heart of how motion pictures order time and space via the synthesis of individual impressions, he evokes an image of a "fountainlike spray of pictures (sic)" that is at once separate drops of water and a continuous, kinetic stream.[298] The way one is conscious of the synthesis resulting from the motion of the mechanism recalls the way the tension between individual photographs and continuous movement was created by synthesis of a continuous ribbon of photograms written about in my first chapter.

Furthermore, in this passage Münsterberg merges his desire to have a perceptible, causal world of objects with the isolation of art – the function of editing allows both a conscious perception of synthesis coupled with a lack of causal explanation for the change of scene within

the filmed experience because, as he writes, "The pictorial reflection of the world is not bound by the rigid mechanism of time." Here Münsterberg describes how simultaneity allows both a dematerialization of the surface of the material world, as we see in Méliès' 1908 single-reel film *Long Distance Wireless Photography* and in the shadow images produced from x-rays. In this use, simultaneity allows for a penetration of objects by other objects as was considered in chapter two, particularly in the short story "The Vanishing Man" and in Porter's *Uncle Josh at the Moving Picture Show* (1902). In this passage Münsterberg brings these kinetic forces into alignment by seeing how the formal function of editing creates a seeming penetration of one photogram with the other, blurring the boundaries between each in a perceivable and conscious form where "the idea of heaviness, solidity, and substantiality must be replaced by the light of flitting immateriality."[299]

Lippit's argument that "the x-ray forced a transposition of the language of the Enlightenment from a figurative to a literal sphere," [300] is found in the models for thinking and subjectivity offered by the descriptions of thinking and conceptions of the mechanisms of the mind that are found in the magazines I cite in the first part of this chapter. They extend Lippit's critical-historical alignment and Henderson's art historical readings to a middle-class context where x-rays are often seen as able to penetrate the secret recesses of the mind giving disciplinary access to thoughts while motion picture technology offers a model of thinking that highlights motion. A fundamental connection between x-ray images, the mechanisms of the mind, and the cinema emerge in this literal sphere.

Considering the models for thinking during this era that I have documented, Münsterberg's work on the photoplay can be seen to echo many of the ideas found in popular discourse. As I discuss in my last chapter, Cartwright argues that part of the shift in perceptual

relations that the x-ray prompts is that photography may act as a record for invisible forces. In effect, this mechanical measure of invisible rays, which differ only from light rays in the higher frequency of their vibrations, extends the limits of corporal perception via the technical adoption of photography – of shadow images – as a physical manifestation of what cannot be seen by the naked eye.

These images extend sensory perception because they are the result of mechanical, machine-like, modes of perception. However, Münsterberg's vehement rejection of Freud and consistent insistence on the use of models and perceivable evidence does suggest that while the era saw a dissolving of corporal boundaries, Münsterberg resists this trend as much as he embraces the new limits extended perception offered. Registering evidence in a two-dimensional photograph or shadowgraph and his repeated explanations in *The Photoplay* that part of the cinematic experience was perceiving flattened bodies in space,[301] suggests that as much as the x-ray, cinema, and kinetoscope dissolved surfaces they also reinforce the importance of surfaces as the site where the evidence of the unperceivable occurs.

5.0 ACCESSING THE RE-PLAYABLE: INTERACTION, MICHAEL HANEKE AND CONTEMPORARY MEDIA TEMPORALITY

Preceding this chapter my central argument has been that in the novelty and single-reel eras image-producing devices – x-ray machines, the kinetoscope, and film projectors – were discursively bound via their interactions with the human body. By linking these technologies to the body and to thinking as a corporal process, the experience of interacting with kinetic, mediated bodies early-film provides is made accessible to potential audiences. In this chapter I argue that the advent of video recording technology and pervasive home viewing and editing capabilities provide the opportunity to reconsider who constitutes a spectator and how she/he is invited to interact with media images in a machine-body mode. By considering how Michael Haneke uses multiple media temporalities in *Benny's Video* (Austria, Switzerland, 1993), *Funny Games* (Austria, 1997), and *Caché* (France, Austria, Germany, 2002), I shift the question of corporal engagement with on-screen bodies to the way spectators are depicted as participants who employ media technologies to replay events from a position of temporal manipulation.

Although I have focused on the role of kinetic interactions in the discursive materials I have used to consider how potential spectators were introduced to image-producing technologies as an interactive form of experience, including and most pervasively the cinema, movement and time are integrated in this form of interaction. As we see in *Uncle Josh at the Moving Picture Show* a desire to interact with a recognizable on-screen body works alongside a need to stop the

forward progress of cinematic time – to halt it at the moment that Josh tries to physically interact with an on-screen body. The mediation images necessarily create obscures a right of entry or engagement with the event at hand. However, halting motion and mechanical time establishes a plurality of bodies interacting with one another to provide a form of engagement, a form of interaction. As I will argue in this chapter, this plurality of bodies echoes across both the silent era and contemporary new media practices. As it does so it takes a machine-body form emerging from the interactions of represented spectators and image-producing technologies.

For Haneke media alone is nothing; there's nothing essential about its material nature. It only becomes vital when examining the viewing habits it invites through the form of its presentation. The advent of digital and analogue video establishes the viewer's ability to manipulate temporal experiences fostered by images. By shifting to contemporary media and questions of interactivity rooted in its time-based mode of experience, I want to consider time alongside my previous consideration of movement among and between kinetic bodies. This shift follows a change in viewing practices that move the ability to watch on-screen images managed by a projection apparatus to an at-home experience where the viewer becomes a direct participant in the way images are put into motion. This contemporary machine-body dualism shifts the place of the potential spectator's machine-like interaction from projection technology or corporal interaction with permeable bodies to an interaction marked by the union between the spectator/participant's body and the digital or analogue video technology that grants *temporal* interaction with images.

5.1 ACCESSING THE CINEMATIC BODY

Because of a lack of direct physical interaction with bodies and objects, images alone foster perception that is predominately optical and ephemeral. Even as images elicit physical and emotional responses in viewers, the interactions that prompt these reactions are within a fundamentally dematerialized mode of exchange: luminous frequencies carried from images to a perceiving body. These frequencies are then decoded and represented in the mind as mental images of perceivable objects. The interactions between image-producing technologies, depicted spectators, and on-screen bodies I have considered in previous chapters document instances where corporal interaction functions to rematerialize images to tangible body-like forms.

The common corporal forms of spectators and on-screen bodies locate an engagement with the image in a relationship that strives to be tactile and present in the moment of its presentation. In the cinematic depictions I have written about *access* is depicted as a physical confrontation, which works as a way to push past the mediation implicit in a proliferation of images. This process creates the ability to join with the technological reproduction and to physically interact with displayed bodies. The machine-body interactivity I have chronicled during the silent era emerges via the movement of machines, invisible forces, and depicted and potential spectators as they attempt to physically interact with mediated bodies. As documented in the discursive materials I have considered, this dualism often occurs via the use of media technologies to penetrate the physical boundaries of real bodies.

At the core of this understanding are corporal interactions between the human body and kinetic, image-making technologies. We have seen this in *Long Distance Wireless Technology*, *Magic Bricks*, and the *Uncle Josh* shorts. In these films we can see how the concept of interactivity is portrayed in the way that the human body acted in concert with new image

producing technologies to create discursively recognized shadows of living, kinetic bodies in this era to the way corporeal permeability was imagined in *Uncle Josh at the Moving Picture Show*. Whether it is the mind as a machine-like, organic technology playing the role of projector as it animates photograms in magazines or attempts to capture thoughts via devices that stabilized the human head for its bombardment with x-rays, in this era a pervasive link is depicted between new image-producing technologies and the roles to be played by the human body in the production of images.

The pervasive formal and narrative uses of time-based media in Michael Haneke's films prompts a return to some of these same issues concerning the machine-body relationship I address in previous chapters because Haneke's films blur any remaining divide between spectator and image. In many of Haneke's films, particularly the three I will consider, he emphasizes the replacement of meaningful human contact with experience defined and mediated by mass images, an experience Baudrillard argues defines the postmodern condition. For Baudrillard, contemporary experience is marked by a loss of metaphysics and with this the loss of the possibility of comprehension beyond direct experience.[302] However, in a culture that may only access experience through mass media, there is no ability to escape these layers of mediation. This creates a simulation of the *real* – the "established order itself, well before institutions and justice come into play" – that creates a world alienated from authentic, reflexive, direct experience.[303] As he argues, "simulation corresponds to a short circuit of reality and to its duplication through signs."[304] One's actions are then limited by those offered by media, creating a deadened, alienated contemporary simulacrum that offers no reflection on actions and, correspondingly, little opportunity to interact outside of a conception of reality defined by images.

This formulation has dominated critical consideration of Haneke's work. Brigitte Peucker frames the narrative of *Benny's Video* as a film that "revolves around a postmodern consciousness for which representation and reality are nearly indistinguishable."[305] Mattias Frey reviews the same film in which he invokes "Baudrillard, Virilio, and Augé's sur-modernité" to engage Haneke's creation of "a world completely mediated through video and saturated by spectacle."[306] Haneke's films do purport to document an inability to gain access to the experience of human interaction that is superseded by a simulacrum that mediates all experience and alienates individuals from interacting in the realm of the real. However, taken within a consideration of how media images have historically been linked to corporal interaction as a way to gain access to them, Haneke's use of interactivity complicates the postmodern media landscape Baudrillard envisions.

In films such as *Uncle Josh at the Moving Picture Show* and *Long Distance Wireless Photography* we are shown how spectators desire to not simply watch images, but to physically engage with the bodies depicted. Akin to the way Uncle Josh attempts to physically interact with the on-screen bodies in 1902, and in the process permeates the divide between bodies produced cinematically and the body of the spectator, Haneke's films depict how the advent of digital and analogue video technologies relocate kinetic, physical interaction to a broader ability for spectator/participants to manipulate interactions and experiences via time.

Using this consideration, I argue that the way that temporal experience is represented as intertwined with contemporary media technologies in Haneke's films demonstrate two vital positions when considering contemporary media interactivity. First, the possibility of interactivity and manipulation offered by analogue and digital video technology relocates the experience of a fragmented modernity, refracted in the photogram's cinematic form, to a form of

representation that lacks material division in its computational form. As such, this temporal interactivity creates the ability to delay and replay images at will. Second, Haneke's restoral of spectator as participant demonstrates how interactions between spectators, images, and image producing technologies may operate to assert an individual's ability to access the temporality of contemporary images, and, via this access, to re-gain participation in the way images form contemporary reality.

For both viewing practices and exhibition space, home video technology personalizes the viewing experience and shifts the temporal manipulation of the moving image away from the cinematic operator/projector to the individual viewer/remote controller. Haneke's characters attempt to break into or interrupt the flow of images, in effect, reasserting the spectator/participant's primacy in assembling the images before them and escaping the continuous flow of images that mask the ability to act within their conditionality. In *Benny's Video* Haneke is concerned with the interplay between adolescence and the consumption of images that appears to order his upper-middle class world: Benny is consumed by B-horror films and a self-shot video from his family farm but not the murder he commits one afternoon when his parents are away. *Funny Games* stars Ulrich Mühe and Susanne Lothar as an upper-middle class couple trapped within their terrorized bourgeois life and Arno Frisch and Frank Giering as the affectless young men whose demeanor and actions depict the cruel, murderous possibility of extreme rationalism; finally, the European and US critical success, *Caché*, marketed as a Hitchcockian thriller, stars Juliette Binoche and Daniel Auteuil as a book-notes-type television intellectual confronted by an unknown video surveillant. *Caché* returns to the theme of surveillance and questions of representation first found in *Benny's Video* to investigate the culpability of French bourgeois life in regard to colonization. In all three of these films the use of

home video recording and viewing technology highlight the existence of a mediated reality. However, simultaneous to this mediation are depictions of interactive uses of this technology that often work to either affect the diegetic on-screen temporal order or work to show how marginalized individuals may gain access to image and, this the order of contemporary reality. By gaining this access, a mode of manipulation and interactivity is provided for.

In Haneke's films it is not only on-screen characters who are positioned to interact with images. *Funny Games*, for example, subverts the ultra-violent, fascist fantasies offered viewers by the form and narratives of American action films.[307] Catherine Wheatley writes about the "underlying ethics" Haneke's films present to their spectators in relation "to the problem of ideological interpellation in the cinema."[308] Wheatley argues that Haneke's use of violent situations and his indictment of bourgeois inaction in the face of political and cultural injustice draws from both the counter-cinema of the 1960s and 1970s – a period D.N. Rodowick labels "political-modernism" – and in critical work that questions how "morality [is] played out within a narrative context."[309] She argues that the violence Haneke often depicts also indicts viewers in the same violent rhetoric as participant/witnesses. His use of Brechtian devices breaks the illusion of the on-screen world bringing "the spectator to rational awareness" of the apparatus.[310] This signals to Wheatley that Haneke is working within a counter-cinema tradition while he also examines questions of morality played out in his cinematic narratives. This allows Haneke to appeal to an emotional level in his spectators.

For Wheatley this appeal allows her to consider his films within a Kantian ethical tradition that prompts an emotional experience in the spectator that "matches Kant's description of respect for the moral law: a complex emotion comprised of two conflicting experiences."[311]

She argues,

> Haneke's denial of standard models of cinematic pleasure and revelation of the spectator's complicity in the cinematic dialectic creates a feeling of discomfort, intensified by the more direct negative emotional response to narrative events. But at the same time the spectator's critical engagement with the narrative text and realization of his freedom can give rise to a deep sense of intellectual satisfaction.[312]

Creating this reflexive experience for the cinematic spectator is offset, however, by his depictions of media spectators in his films. Wheatley lists a number of the cinematic devices Haneke uses to create the rational reflexivity she describes; however, she does not mention the ability of the on-screen media participants who are able to effect the flow of diegetic time and, thus, the outcome of narrative events. These moments are interesting because when placed against the embodied participation found in early films and the discourse surrounding it, they depict a form of spectatorship rife with the possibility to interact with images by both modeling behavior on those depicted in images and in controlling the way cinematic duration is played out.

Focusing on the latter point, this manipulation reflects an expectation of interactivity that new media technologies provide in a contemporary landscape. As Miriam Hansen and Jamie Poster have shown, the question of cinematic interactivity is not relegated to new media but may, in fact, be found in the 1936 version of Benjamin's "The Work of Art in the Age of Mechanical Reproduction," which Hansen argues was his ur-text for the later and more widely translated version of the essay. In the 1936 essay, Benjamin argues that film creates the greatest contemporary *space-for-play*. Hansen explains that Benjamin's conception of *spiel*, or *play*, which may alternatively be translated as game, performance, and gamble, is uniquely important to understanding the political role cinema plays for Benjamin.[313] In this section I am going to

focus on Hansen's use of performance and the role of the screen actor in Benjamin's consideration that the screen actor engenders a process of identification between the spectator and the actor. The body of the actor acts as in intermediary between screen and apparatus and in its representation presents a modern mode of humanity to the cinematic audience.

In the duration of his performance, however, the actor exchanges only with the cinematic apparatus, so Hansen emphasizes that Benjamin's use of the screen actor's presentation of his humanity is "not as heroic as it seems"; rather, the actor's humanity is that of the "'fifth wheel on the carriage of its technology.'"[314] As such the screen actor presents his self-alienation. Hanson argues that this is valorized by Benjamin "for making self-alienation materially and publicly perceivable, in other words, quotable and available for action: '*In the representation of the human being by means of an apparatus his self-alienation has found a highly productive utilization*.'"[315] Hansen argues that Benjamin's use of *play* considers how the cinema may "spark collective innervation at the level of reception, in the corporeal space of the audience, assembled in the theater, through processes of mimetic identification specific to cinema."[316]

Haneke's films are germane to Benjamin's formulation and the corporality of spectators and on-screen actors because, like the discursive materials surrounding early cinema, he represents a corporality that is not simply mediated by a motion picture apparatus but is joined with the apparatus via the use of video technology that shortens the divide between spectator and on-screen actor. In drawing together Hansen's work on Benjamin and her own work on new media interactivity, Poster points out that

> [C]ontemporary analyst of media culture, David P. Marshall, also approaches the question of play and a potentially new, more empowered, relation to mass media. Like Benjamin, he believes that the fundamental aspects of new

> media…encourage users to become more engaged with the technology and representations, resulting in a general approach to the world that is akin to being aware of ones "self-alienation." The two theories obviously stem from different eras and discuss different media, but they converge on the importance of play in reassessing the ordering systems of society and the self. The two theories combined provide a productive framework for thinking about physicality in computer games, and how such experiences are part of a broader transformation of one's relationship to ideology and mass media.[317]

Hansen dramatizes the notion of play as an activity by explaining that "Benjamin complicates the mimetic, fictional dimension of play ('doing as if') with an interest, following Freud, in the 'dark compulsion to repeat,' the insatiable urge to do 'the same thing over and over again.'"[318] Similarly, for Marshall game play subjectivity "spills over into other aspects of life; it is a general way of being-in-the-world. People grow accustomed to having choices and manipulating their environments."[319] Before writing the screenplay for *Benny's Video*, Haneke began clipping newspaper stories that contained the phrase: "I wanted to know what it was like."[320] We might read this as asking what it is like to experience events and activities that are inaccessible for whatever reason. In a mode of contemporary, modern experience, this feeling of inaccessibility may be coupled with Marshall and Poster's contention about game-playing subjectivity as a contemporary state-of-being that offers limitless, *replayable* experiences.

The fact that Haneke's films are almost always populated with adolescents, often male, who surround themselves with media forms – Benny is only the most obvious and important example – may also demonstrate how a new form of interaction based on games and media is marketed to contemporary youth. The young men in *Funny Games* and Majid's son in *Caché* are

all implicated, however obliquely, with the ability to manipulate and access temporal experience. In *Caché* the presence of the video surveillance creates a series of dreams and flashbacks that narratively thrust George back into his childhood. As Haneke edits these images, there is no break between the present temporality of the film and the past temporality of the memory and dream. The crosscutting is startling because nothing in the narrative prepares us for the temporal shifts. They seem to emerge organically via the mere existence of the video and hand drawn images that arrive in George and Ana's home. In *Funny Games* at the moment the film's proto-rationalist psychopaths, Peter and Paul (played by Arno Frisch who also plays Benny in *Benny's Video*),[321] lose control of the terrorizing narrative game they are playing with a bourgeois family they have imprisoned in the family's vacation home, Paul achieves surprising manipulation of the narrative and the non-diegetic film text by rewinding the diegetic film and replaying the sequence to favorably affect its outcome. Especially in this later instance, the replayability Haneke assigns the young men exhibit the characteristics of Benjamin's sense of play: performing a game and the "dark compulsion to repeat," a mode also exhibited at the film's end when Peter and Paul call on another lakeside home to begin their games again.[322]

This is more than simply a device of Brechtian cinematic style.[323] By highlighting the places of spectator within the frame as he attempts to manage temporal experience via contemporary media technology, Haneke depicts a form of temporal interaction that works to create an access to the images that surround his characters. The process by which synthesis, and, as such, access that I have detailed in previous chapters is elided until his depicted characters may gain access to the temporal experience these images portray. By embodying depicted projection technology to self-animate published photograms, the reading practices I document in the novelty era invite spectators to confront what Tom Gunning refers to as the "oxymoron" of

motion pictures.[324] In these instances potential spectators access images by entering the mechanical process that kinetically and temporally brings these images to life.

In considering interactivity and temporality in the way video-based media is depicted in Haneke's recent films, I work from Eisenstein's sense that, vitally, the continuity or organicness of a work resides in the relationship between the spectator and the "movement of the structure of the work."[325] Describing this organicness, Eisenstein writes,

> Evidently, whatever may be the kind of organic-ness in it, the work has a completely individual affect on its perceivers, not only because it is raised to the level of natural phenomena, but also because the laws of its construction are simultaneously the laws governing those who perceive the work, inasmuch as this audience is also part of organic nature. Each spectator feels himself organically related, fused, united with a work of such a type, just as he senses himself united and fused with organic nature around him.[326]

Eisenstein's argument that the work of art draws its own form of continuity from the conditions that surround it places the interaction of spectator and text at the center of this form. This interactivity augments the kinetic and physical interactivity I document as part of the cinematic and discursive experience of early-cinema. Instead of working outward from the category of the fragment, a category well worn in modernity, I wonder how Haneke's films can be understood as explorations of interactivity and the ontological dimensions of media forms during an era in which media casts fragmented experience as a connected experience.

5.2 FRAGMENTATION AND MOTION PICTURE TEMPORALITY

As categories used to understand the spatial and temporal experiences of time-based media, continuity and fragmentation reverberate in both theorizations of modernity and in postmodern conceptions of new media and interactivity. As a cultural category and characteristic of modernity, fragmentation is heavily referred to in the published work on Haneke's films. Writing in *Film Comment* critic Richard Combs describes Haneke's film style as "a refutation of mainstream cinema's implicit claim that 'we can show reality as a whole, which isn't true….Our perception of the world is naturally fragmented."[327] In addition to recognizable, modern techniques of fragmentation such as his use of black leader in *71 Fragments in a Chronology of Chance* (1994) to create segments within the film's temporality; his style of intercutting tightly framed shots to reflect emotional distance between characters in both *Funny Games* and *The Seventh Continent* (1989); or his discontinuous and jarring use of sound effects and musical scores, as in his use of punk musician John Zorn to accompany portions of the narrative in *Funny Games*, Haneke uses a mixture of time-based media forms to highlight their ontological differences. He does this based on how each form orders a perception of time and invites reflection on the ability of spectators to temporally interact with images.

His films re-approach questions of how cinema may represent the fragmentation of modern life via its use of formal, aesthetic, and narrative techniques. The methods by which cinema may display spatial and temporal verisimilitude has been one of the consistent topics of classical and contemporary film theory. Cinematic time is measured via both narrative and formal modes of continuity and fragmentation. These modes are often configured as either a realist conception of time -- seen, for example, in Renoir's *The Rules of the Game* (1939) or in films that employ the classical Hollywood style -- or formal, fragmented temporality that is

highlighted via montage or subjective narrative forms like those found in Godard's *One of Two Things I Know About Her* (1967).

Anticipating the questions about realism that film theory will consider in the wake of World War II, Bazin distinguishes between two trends he sees active in the cinema between 1920 and 1940: "those directors who put their faith in the image and those who put their faith in reality…those that relate to the plastics of the image and those that relate to the resources of montage, which, after is all is simply the ordering of images in time."[328] Bazin's sense of cinematic realism relies on a long-take, deep-focus aesthetic to create a continuous frame space in the mise-en-scène in which to observe interactions between the actors/characters populating the film, as in neo-realism.[329] For Bazin the formal techniques that allow for this sense of realism are most notably found in the way Welles and Toland use deep focus to restore a sense of continuity to the cinematographic illusion.[330] Running parallel to Welles' techniques for cinematic realism is a formalist approach that reflects a form of modern subjectivity that Bazin finds in both classical editing and in Soviet montage.[331] For Bazin, this form of realism is marked by a sense of shock and discontinuity from which meaning evolves from the juxtaposition of images.[332]

Bazin sees that the aesthetic of realism acts as a continuous mode of temporal representation because, as Francesco Casetti remarks in his reading of Bazin:

> Cinema…[adds] the ability to reproduce time to photographic objectivity: 'For the first time the image of things is also an image of their duration, almost the mummy of change.' The existent no longer appears only as it is and by means of an automatic process, but also as it is becoming, and the possibility of similarity becomes more or less complete.[333]

The realism offered by cinema is more than simply spatial and temporal verisimilitude. Bazin finds that every form of realism "is profoundly aesthetic"; it is only through artifice that realism may be attained.[334] Casetti beautifully explains Bazin's emphasis on the relationship between reality and cinematic representation when he writes, "cinema evokes the Holy Shroud…Between cinema and reality there is an existential relationship, a deep continuity, and they belong to each other at an ontological level"[335] Continuity between reality and the cinematic spectacle is one way to organize the cinematic representations of time and space as it is able to be objectively captured by cinematic machines.

For my consideration of bodily interactivity, Timothy Corrigan presents a useful dichotomy for objective and subjective cinematic time. He describes,

> [T]wo main narrative configurations of temporality: (1) An objective temporal continuity presenting a progressive or universal pattern of time (the usual definition of most classical cinemas) or (2) a subjective temporality which demands that time adjust to the relativity of place and so shifts the potential for historical coherence to the individual before or within the narrative (the common scheme of much modernist cinema and the signature of its hand-held camera techniques).[336]

The first configuration follows Lukács's understanding of a linear perception of time found in epic narrative forms that present a realistic totality. This form of time follows agrarian and biological conceptions that follow a life cycle and is undifferentiated between subjectivities. As a universal sense of time, epic time is objective because it does not recognize the individual experience of time, nor is the effect of history on a perception of temporality recognized. Subjective temporality marks modern time, which is also influenced by history and location –

reflecting a shift in urban and rural experience. This emerges from a novelistic form of narrative measured by the linear continuity of nineteenth century European novels, but also marked by the ways these novels work to represent subjectivity.

Lukács' conception of epic and modern temporality is defined via the modes of narrative each form is reflected within: "The novel is the epic of an age in which the extensive totality of life is no longer directly given, in which the immanence of meaning in life has become a problem, yet which still thinks in terms of totality."[337] Even in its classical forms cinema's engagement with novelistic forms of temporality highlights the place of subjectivity within nineteenth century realism and the search for what Lukács describes as nostalgia for the totality of an epic, classical temporality that provides "form to a totality of life that is rounded from within; the novel seeks, by giving form, to uncover and construct the concealed totality of life."[338]

Benjamin also sees a shift in spatial and temporal experience ushered in by the machine-age of modernity. Like Lukács, Benjamin locates a pre-modern mode of epic time, *die erfahrung*, which is "etymologically rooted in the notion of going through" that "presupposes tradition and continuity" and refers to a "long" or "connected experience."[339] Correspondingly, in his study of the discourse surrounding industrialization in Western Europe Christoph Asendorf explains that *erfahrung* is a mode of experience "grounded in the domain of the epic tale, the storyteller, and the craftsman; [it] is bound to notions of continuity, habit, and sequence."[340]

In the history of film, cinematic modernity is often marked not by nineteenth century forms of narrative and subjectivity but by a full refraction of modern life through individual subjectivity, shifting the universal to the perception of individually located perception, which orders the exterior world. This temporality is marked by a fusion of subjective perception with an

objective reality. The novels of Alain Robbe-Grillet and corresponding films such as *Last Year at Marianbad* (1961) or Antonioni's trilogy: *L'Avventura* (1960) *La Notte* (1961), *L'Eclisse* (1962), and including *Red Desert* (1964) demonstrate how history, time, and space become as fragmented the individual experience that cannot locate any experience from which to orient him/herself in the experience of modern life. Following Corrigan's configuration of temporality in film style, Lukács's description of modern temporality could function as cinematic temporality 1.5, with the full force of modern disorientation appearing in the narratives and films of the mid-1960s that disrupt a linear perception of temporality.

This latter form is akin to Benjamin's conception of *mechanized time*. At the turn of the twentieth century he diagnoses a new form of experience characterized by mechanized temporality. This temporality ushers in a form of experience – *das erlebnis* – characterized by a "discontinuous experience of the city, which is manifest as information (the form of communication corresponding to the industrial labor process), as sensation, or else as adventure."[341] *Das erlebnis* "entails shock and discontinuity" characterizing an "immediate experience."[342] This mode of experience is predicated on a form of spatial displacement introduced by urban life within which, "Things no longer inhabit a spatiotemporal continuum but exist only momentarily and in isolation."[343] From this mode of experience emerges the Benjaminian notion of the fragmentation of modern life, demarcating both the isolation of things and the inability to perceive things outside of urban modernity's pervasive, isolated milieu. In Benjamin's categorizations of spatiotemporal relations, the experience of fragmentation and isolation implies that a continuous experience has been broken and that modern experience is available only in isolation. Within the discourse of modernism, this suggests that an agrarian,

pre-industrial world-view as been broken into fragments that are inadequate to sustain human life without alienation and chaos.

Both in their form and narrative Haneke's films conform to Benjamin's description of modern life as technologically saturated and fragmented. Much of the critical response his films have generated are concerned with reading the deadening effect of media on the rhythms of a perceived natural life. Inspired by Austrian film critic Wolfram Knorr's description of Haneke's "anorexic images" in *71 Fragments of a Chronology of Chance* (1994) as having "been carved with the surgeon's scalpel from the 'fatty images' of a voyeuristic cinema," Peucker questions how Haneke represents the fragmentation of the *real*. She deploys Benjamin's image of the surgeon to theorize that Haneke's project in his family trilogy (*The Seventh Continent*, *71 Fragments of a Chronology of Chance*, and *Benny's Video*) works with "a conception of film that is based upon the Benjaminian model, one whose aesthetic politics repudiates organic models for the work of art, and theorizes the filmic text with respect to acts of fragmentation rather than a concept of wholeness."[344]

Following Benjamin and Marx, Asendorf argues that the spatial and temporal displacement shaped by *das erlebnis* "affects the perception of things."[345] The discontinuity Bazin recognizes in film style is a pervasive trope for an experience of modernity diagnosed by both Benjamin and Kracauer. Mary Ann Doane sees Benjamin's location of montage and juxtaposition as a formal delineation of cinema's ability to shock associated with its "ability to register or represent contingency."[346] Doane argues, "Montage functions for Benjamin not so much to confer order or meaning but to rapidly accumulate and juxtapose contingencies. In this, the film form mimics and displays for the spectator the excesses of technologically saturated modern life."[347] Kracauer also locates contingency and the accompanying shock of the new at

the core of cinema's ability to represent the modern world. For Kracauer, Miriam Hansen explains,

> The same indexicality that allows photographic film to record and figure the world also inscribes the image with moments of temporality and contingency that *dis*figure the representation. If Kracauer seeks to ground his film aesthetics in the medium of photography, it is because photographic representation has the perplexing ability not only to resemble the world it depicts but also to render it strange.…"[348]

Film inscribes a form of temporality that is structured by the chaotic urban milieu; the "flow of life" Kracauer experiences "equates life with the street":

> The street in the extended sense of the word is not only the arena of fleeting impressions and chance encounters….The Kaleidoscope sights mingle with unidentified shapes and fragmentary visual complexes and cancel each other out, thereby preventing the onlooker from following up on any of the innumerable suggestions they offer.[349]

As a flow of life, the street now stands in place of the epic totality that Lukács locates in classical narrative. This coupled with the lack of control – the possibility of contingency captured and displayed – creates a form of representation that functions at the will of chance. Both Benjamin and Kracauer insist that the participants of modern life experience that life via fragmentation and that cinema registers that fragmentation formally and narratively.

With each new media form issues of temporality and movement are revisited. The form of modernity dependent on contingency and fragmentation that both Benjamin and Kracauer locate in the early-twentieth century rely on cinema as the mode of representation most able to

confront the changing terrain of the era's industrial time and space. In its ability to represent past moments in the present, cinematic time disrupts the linear, pastoral time of classical narrative and agrarian culture. Cinematic representation offers the appearance of the present, yet it simultaneously provides historical time because it is able to capture motion or the duration of change. Following the shifting subjectivities of modernity, time is also able to portrayed as an individual, subjective experience. In its fragmentation and ability to present duration cinema presents a form of subjective, historical time. In this context, objective universal time is marked as a form of nostalgia for a pre-industrial past.

However, contemporary temporality is no longer defined by the fragmented cinematic time Benjamin and Kracauer found so pervasive. When considering contemporary forms of representation, it is far more likely that broadcast, including web-based broadcast sources like YouTube and Hulu, and home theater technology order our experience of history and the present because of their pervasiveness in our everyday experience. An ability to interact with the flow of images we see occurs because we are able to change the channel or website to see in the present programs filmed and first broadcast decades before we were born. We get a semblance of this experience via repertory films; however, the difference is that there is rarely a frame around the broadcast images we watch to locate them in a historically specific moment. Unlike a TCM introduction of a broadcast of *Sunset Boulevard* (1950), there is no introduction to a rerun of *Green Acres* when Robert Osborne explains when the show was made, by whom, and its place in television history.

Broadcast and video media display the ability to elide historical time to influence how mediated time is experienced. It does this in the way that duration shifts from a captured experience to one affected by the interaction between spectators and viewing technology that

creates replayable experiences. This interaction is similar to the invited interaction between spectator and projection apparatus posited in the first chapter because each affect duration and, thus, temporality. However, there is a diagnosable difference in the mode of temporality created. Cinematic temporality and the bodily interaction I document in periodicals invite a synthesis of discreet elements, merging in the projector/spectator's mind as they are brought into a historical duration in a process of becoming. That motion, however, moves in a single direction: toward the future or the end.

In the three films directed and written by Haneke that I consider in the next section, contemporary temporal interactivity creates a form of bodily experience that I read as a strange combination of the modes of experience Benjamin diagnoses at the turn-of-the-twentieth century: *erlebnis* and *erfahrung.* This combination points to a form of experience that employs the technologies of an apparently isolated, urban mode of being as a way to regain a sense of continuous historical time marked by "connected experience."[350] In effect, this works to manage the passage of time and the ability to sequence time's order to re-experience past events under the guise of individual manipulation.

Motion may be measured by time, so by accounting for the temporal relations in Haneke's films, we can see how Benjamin and Kracauer's critiques of the fragmented time of modern experience have been adopted to consider Haneke within a particularly form of modernity. Both Benjamin and Kracauer saw the fragmentation of modern life reflected in the aesthetic and formal possibilities provided by the cinema. I contend that the role of interactivity and analogue and digital video in Haneke's films shows how contemporary experience marked by the figure of the fragment is an inadequate engagement with the media temporality Haneke depicts.

The interactivity contemporary media representation invites elides a visible process of synthesis for an automatic synthesis that does not make visible a process of *becoming other*, as projected motion pictures did in the novelty era. Instead, new forms of media link interactivity with temporal manipulation, offering a reviewable and replayable temporality. Concerning contemporary temporality Corrigan suggests,

> [B]oth videotape and the temporal and spatial rethinking it provokes reflect and focus a larger crisis played out in models of contemporary or postmodern culture where the purported condensations of space and time…become linked to various emancipatory or apocalyptic visions of history.[351]

This may be similar to broadcast time; however, particularly when considering Haneke's films, the temporality marked by video images seem to not simply collapse historical time but to invite the opportunity to replay or review and alter a past event. Corrigan follows Kracauer and Benjamin's critiques to see a "shift into contemporary culture of fragmented temporality."[352] However, the interactivity and replayability Haneke represents demonstrates a mediated form of temporality where spectators work to regain control over modern, mechanical forms of experience.

Located in the urban, bourgeoisie, Haneke's depictions relocate the physical movement of the *flâneur* through the modern city to a temporal experience of movement through time. This relocation affects both the place of the crowd – no longer does the crowd figure as a prominent part of an interactive experience that channels modern energy into the individual walking amidst the flow of the masses. Rather, the energy of the masses is distilled and localized in the ability to interact and to effect the duration of images and experiences that are defined via media images.[353] Haneke's re-playability lifts the individual from one among the crowd to one

re-asserting his individuality via his ability to interact with, and often manage, the images that surround him.

5.3 WHEN IS A FRAGMENT NOT A FRAGMENT? WHEN IT'S "PLAYBALE"

> Distraction and concentration form an antithesis, which may be formulated as follows. A person who concentrates before a work of art is absorbed by it; he enters into the work, just as, according to legend, a Chinese painter entered his completed painting while beholding it. By contrast, the distracted masses absorb re the work of art into themselves. Their waves lap around it; they encompass it with their tide.
>
> -- Walter Benjamin

> "[T]o make reality into something playable."
>
> Michael Haneke commenting on *Benny's Video*

In this section I will explore how Michael Haneke conveys contemporary experience via diegetic temporal representations that convey a sense of media saturation within a new experience of *replayability*. Like the interactions represented discursively and cinematically in previous chapters, this experience is created via corporal interactions with media technology. In the contemporary incarnation of this experience that Haneke depicts, this interactivity creates a reviewable experience of reality that operates as a combination of Benjamin's *erlebnis* and *erfahrung*. This combination enables the spectator to "follow up" on the fragmented cinematic experience referred to by Kracauer. In *Funny Games*, *Benny's Video* and *Caché* Haneke works with video technology to generate a strange combination of *erlebnis*, which marks discontinuous,

modern temporal experience and *erfahrung*, which marks epic, agrarian temporal experience. This combination points to a third mode of experience that employs the technology of apparently isolated, urban experience as a way to regain a sense of continuity. In effect, this works to manage the passage of time and the ability to sequence time's order to re-experience past events under the guise of individual control. In the way video images are used in these films the potential for any disruption of a continuous temporal forward movement is placed firmly in control of the diegetic viewer who can review, pause, single-frame advance, or perform any number of other temporal manipulations offered by video and digital technology.

The use of these technologies reflects the desire to locate modes of experience that both re-play "notions of continuity, habit, and sequence,"[354] understood as elements of *erfahrung*, as well as re-cast the inherent possibilities of experiencing things in isolation, a characteristic of *erlebnis*. Another way to consider this shift that places the spectator at the center of its configuration is to imagine the way Benjamin describes the experiences of distraction and concentration.[355] While he labels these experiences as antithetical to one another, in fact, one might ask what is common between being "absorbed by" a representation and "absorbing the work" into oneself. The painter in Benjamin's description is the creator of the image, so he has physically interacted with the image – creating it in an interplay between his body and mind. The "distracted masses" have little physical interaction with the representation and instead absorb it into their own minds. Distracted, they do not contemplate the image they overpower it.

The mass experience of the urban crowd acts as a substitute for individual contemplation and creation. As we see in Haneke's films, the individual is re-centered within a contemporary media landscape that demands singular interaction in the face of media. Once the cinematic machine is replaced by the human-machine interaction of the video image, modern life exits a

clear conception of modernism and its mechanized, fragmented time to usher in a synthesis of that experience with an epic, agrarian, and human form of time marked by continuity. In Haneke's films, this synthesis allows for the re-experience of foundational events from a position of control. This is a position that does not depend on fragmentation; rather, it uses the technologies of fragmentation – technologies based in modes of experiences qualified by "communication as information" found in *das erlebnis* – to re-sequence experience. As seen in *Funny Games* this form of experience asserts individual manipulation over the image and ascribes this control within a continuous mode of experience that re-centers the individual.

During a game of chance Anna must recite a short prayer back-to-front to win the choice of whether she or her husband is killed first and by what fashion. As Anna practices her prayer for the game, we can make out a VCR and slide projector in the deep background on the dining room table. To begin this 'funny game' Haneke cuts between a close-up of Paul and a close-up of Anna in the family's living room as Paul recites the rules of the game. The tight framing and crosscutting highlight the constructed duration of fragmented images and moments. At one point during this sequence, framed in close-up, Anna lunges toward frame right; the camera responds by cutting and reframing to a mid-shot of Anna and Paul facing each other, each reaching for a shotgun that has been left on the coffee table. At this point Haneke cuts to a close-up of Anna's hands closing around the gun's handle as she gains control of it and jerks it backward out of the frame.

The carefully laid out living room mise-en-scene places both the television and VCR in the background of this close-up as if preparing us for the video technique to come. This close-up is held for a mere two seconds before Haneke quickly cuts to Anna who turns the gun toward Peter, killing him. Prior to that shot Haneke gives us a mid-shot of a slack-jawed Peter frozen

against the living room wall. The editing rhythm Haneke employs in this sequence is extremely quick: from the time we see Anna reciting her prayer to the moment of Peter's death only ten seconds of screen time passes. During those ten seconds there are eleven cuts, ending with a close-up of Paul after Peter's death. Within this sequence, which resumes its quick pace after Peter is propelled against the living room wall by the bullet's force, Haneke chooses to hold a mid-shot of slack-jawed Peter just before his death for three seconds; there is no action in the shot – Peter doesn't move his body and barely registers movement in his facial expression.

At this moment of apparent triumph for Anna, Paul, who is visibly surprised by these turn of events, frantically searches for the television remote control. We watch his search in a long shot that frames the entire scene for us: Peter, slightly obscured by a living room chair, dead against the wall, George lying unconscious on the floor in front of an end table, and Anna, still bound, on the couch, where Paul has pushed her after regaining control of the shotgun. Paul stands above the scene, shotgun in hand, while searching for the remote control in the couch before finding it on the table. At this moment in the narrative Haneke cuts to a close-up of the remote control with Paul's hand wrapped around it – a framing reminiscent of the earlier shot of Anna' hands wrapped around the shotgun handle. When Paul picks up the remote it is pointing at the wall against which Peter's body lies. While it seems that Paul points the remote at the event he wishes to alter, the frame composition and dynamic action within the frame does not seem to indicate that he's deliberately pointing the remote. He just picks it up and starts pressing the buttons without consciously directing its signal. However, Haneke's mise- en-scene creates the impression that Paul points the remote at Peter's inert body as if he was a VCR that stubbornly can't pick up a signal.

Holding the close-up we see his thumb quickly press a series of buttons. Then the image freezes on this shot of the remote control. Unlike the stillness of the moment before Peter is shot, when his slightly responsive facial expression and the 'liveness' of the soundtrack indicate that we are operating in a filmic time, i.e. the narrative events are moving forward, this freeze frame uses the sudden motionlessness in the interaction between the remote and Paul's hand to measure that an 'unnatural' stillness has descended. This freeze frame holds for four second of screen time, the image flutters back to life, and the sequence we have just watched runs in reverse: the soundtrack is present, yet in reverse, and the images and shot sequence repeat exactly as they were before. Arriving safely at a point prior to Anna's rebellion, the image reverse stops back at the close-up of Paul explaining the prayer game to Anna.

The film continues from this point without any further reminder of the remote control and Paul's desire to use it to alter the events we have just seen. Just as it seems to resume Haneke provides another freeze frame, which lasts four on-screen seconds. The image presents a freeze frame of a close-up of Paul's face, his mouth clearly in mid-sentence. The freeze ends and the film restarts on these lines spoken by Paul: "That was the trial run and now we are going for Olympic Gold."[356] The sequence plays once more, but this time at the moment Anna lunges for the gun Paul catches her hand, thwarts her attempt, picks up the gun, and, after telling her she's broken the rules, shoots and kills her husband. This resequencing of the original version is marked both by the slower rhythm of the editing: five shots in twenty-five on-screen seconds. The mid-shots that comprise the sequence are all held much longer, on average of five seconds each.

By re-enacting the sequence with a different temporality not only does Paul save Peter's life, they regain control and stability of the narrative, which, in turn, is marked by the stable

continuity of the film image advancing into the narrative's future. All that happens in the narrative that follows depends on Paul's ability to dominate not only of the narrative situation but also its form of presentation. As viewers, at this moment one is forced to confront the interactivity and subsequent complicity this potential for interaction creates. Images are accessible; they are able to be physically interacted with on, at least, a temporal level.

In addition to the previous example from *Funny Games*, in both *Benny's Video* and *Caché*, Haneke suggests that video images and video techniques may be used to exert control to re-order or re-sequence time in order to not simply re-experience filmed events but to alter their outcome, as in *Funny Games*, but also to manipulate the experience of the present, as in *Benny's Video*, and the past, as in *Caché*. All of these films suggest that video temporality offers a chance to influence time's passage and, as such, to exert control by interacting via media with contemporary experience. In *Caché* the juxtaposition of the film viewing experience and video technology is presented in the film's opening minutes – the film opens with a surveillance video of Georges (Daniel Auteuil) and Anne's (Juliette Binoche) home. Because these are the first images the film viewer is given, when they begin to fast-forward we experience a jarring discontinuity as we realize that the film we are watching is under the control of video technology. In this instance, which echoes the techniques of the opening sequence in *Benny's Video*, the viewer must confront the different possibilities of experience afforded by video and film. These possibilities are made apparent within the body of the films via moments when continuous movement, the hallmark of cinema, is halted –stilled-- and the forward progress of movement is mindfully altered.

The stillness of the image is important in both this sequence from *Funny Games* and as it is used in *Benny's Video*. In both films, the stillness of the film image indicates a pause or

caesura in its temporality. This pause functions as a shift between cinematic temporality and the spectator/actor's ability to interact with video temporality. In *Benny's Video* Haneke explores the conditions and effects of an adolescent boy's preoccupation with media. The film's narrative traces its opening video image of a pig being killed at Benny's parent's farm, through the results of Benny 'replaying' the incident in his bedroom when he kills a teenage girl he's just met at the local video store, which he frequents to rent 1970s, B-horror movies. Much of the film occurs in Benny's bedroom, which is dominated by a media center complete with stereo, multiple VCRs equipped for playback and recording, cable television, monitors enabled with switchers to vary the feed able to be viewed, and video cameras positioned to record what occurs outside Benny's window, which is itself curtained off -- its view provided on a small video monitor in the media center.

There are four sequences in *Benny's Video* that I will focus on because by examining these we may see that Haneke's film is not simply a chronicle of the effects of a deadened state of modernity, but rather represents how this condition has created a third mode of experience that emerges from a re-ordering of time recognized by the possibility of enacting experience via video images. In the film the resequencing of time occurs both narratively and in the way Haneke edits the video and film images. His editing style demonstrates the idea of resequencing as a form of replayability and its connection to interactivity via video images.

The film begins with a video image. The image announces itself as such because the grain of the image is coarse, the colors washed out in a peculiar grayish-brown tone, which also reflects the weather on the farm where the video is shot, and the shakiness of the frame. Its amateur quality is made apparent by the abrupt swings the image undergoes as the shooter focuses first on a man who brushes off its gaze with a wave of his hand and then on a pig,

focused on from above. As farmhands begin to still the pig, to gain control of it, the camera zooms slightly to re-frame the body of the pig in a medium shot so that its head as prominently placed in the center of the frame. Because the image reframes the pig before the film viewer is made aware of what is about to happen, it is clear that whoever is shooting the video knows what is about to occur: a farmhand places a cylinder on the pig's head and presses the device. The soundtrack exhibits a depressed boom, the pig writhes and squeals, after which the on-screen image stutters and begins to rewind.

After running backward through the event of the killing, the video image stops and begins to run forward again, beginning at the moment just before the pig is shot, this time in slow motion with modified, amplified sound – the sound of the shot echoes in such a way that I couldn't help but imagine a sonic boom heard from the ground. After we have seen the killing of the pig three different ways: the original video image of the action, the action in reverse as the video image is rewound, and the final slow-motion frame advance with the modified soundtrack, the screen shifts to static and the film's title credit appears: Benny's Video. Edited in this way the film's title credit also acts to name the video we have just seen and, apparently, names the video shooter: this video is Benny's both because he owns it, which we later learn, and because he shot it. As the film progresses, during which we will see this same presentation of the video once more, complete with rewinding and resumption of play.

The video image that begins the film fills the screen at the movie's outset, so it is only at the moment when the film's forward progress flutters and begins to move backward that we register the fact that we are watching a film of a video image. Because we are not given a frame, the first time the video is shown our temporal experience indicates that we are seeing something occurring in the diegetic present. When the image begins to rewind, we adjust our temporal

marker in response to the recognition of a temporal frame. At the moment the image is stilled, the past, present, and future coalesce into a single, still moment. The expectation of viewing an event as it is occurring runs into a new viewing position. By rewinding the image, Haneke repositions the viewer: we are now seeing something that occurred in the past; thus, we are watching it from the future, marked from the event. By exerting this manipulation over the on-screen image, Haneke provides a striking diagnosis of a new form of experience. Time is inseparable from actions and things; to manipulate things one must manage time and one way to manage time is through images, particularly, as his films show, video images. This form of temporal experience overcomes fragmentation as a chaotic modern condition and embraces a capability to review and re-experience past moments and, from this, re-sequence time to understand experience.

This is a arresting moment in 1993; this is the first theatrically released film I can think of that doesn't pre-frame the video image but allows it to blur into the film image, a technique Haneke will again use at the beginning of *Caché*. The fact that *Caché* is shot in HD and that Haneke allows the viewer to believe they are watching an objective camera's depiction of his narrative, rather than subjective video footage shot by an unknown surveillant, as in that film's similar opening shot, elides the ontological difference between media in *Caché*. In *Benny's Video* it is only when the image begins to move in response to traditional video commands: fast-forward and rewind at the behest of off-screen characters, for example, or in *Caché* with the intrusion of viewer commentary on the soundtrack, that the break between media is signaled to the film viewer.

In each film we are given no indication that we are watching someone watch an image or that we are concurrently watching the image as the video shooter watches the image. The

modified sound – the muted sonic boom-like sound I described earlier – hints that we are watching an image within an image but this occurs after the moment we realize that we are watching a video image within a film image – the moment the image flutters, halts and begins to move backwards. It is never made clear to the film viewer who is watching and controlling this video image. Because there is not an assigned diegetic viewer we are left to wonder who is controlling the image. In the theater the only spectator available is the filmgoer who can only witness the video effects taking place on-screen.

At this moment and in similar instances in this film and in *Caché*, as well as *Funny Games*, the film viewer, the diegetic spectator, and the interactivity allowed by the video technology perform a machine-human dualism that affects an ability to move freely across a linear time, recreating an experience of continuity in the film medium. Within a continuous flow of images that mirrors the movement of life, the ability to re-order time afforded the viewer with the remote control does not account for discreet fragmentation because they have been provided with the ability to rewind and begin again. The ability to halt or fix – to recognize a specific moment of time and to occupy that moment, or to be aware if it as a passing duration that must be valued in its moment due to its ability to pass through to a second moment is the ability to be present and aware of the process of history; this is experience made available through re-staging and re-living.

The spatiotemporal role of the rural landscape is particularly highlighted after Benny's parents decide how they will dispose of the girl's body and possessions: "Take it to the farm?" asks his mother to his father, before deciding that there's no way to get it there without being caught; Benny's father decides that dismemberment is the only feasible manner of undetected disposal. The farm holds the potential to erase the brutality of the event which has occurred at the

same time that its setting is intertwined with the possibility of that event: the pig is killed at the farm and it is from the farm that Benny nicks the captive bolt pistol he uses to kill the unnamed girl in his re-creation of the original killing. Continuing this dichotomy, following his parent's surprisingly rational conversation of what to do about the body in Benny's closet, Haneke cuts to a mid-shot of Benny lying in his bed with his video monitor positioned at frame right to offer the exterior urban view from his bedroom window.

Following this cut, Haneke inserts a series of long shots that highlight the urban setting that surrounds the events we have just witnessed. He cuts from the mid-shot of Benny's bedroom to a wide-angle shot of the highway which we are led to believe is adjacent to Benny's apartment complex – the angle of the shot suggests that the camera is placed in an apartment window – he then inserts a sequence of long-shots: a pattern of city streets, autobahns filled with traffic, and an apartment building, before cutting to a wide-angle, mid-shot of Benny and his mother in their apartment building's elevator. Shot from behind, we watch as they exit the elevator to the parking garage. The next image is shot from inside their car: Benny's mother is driving and Benny is in the passenger seat.

When we reflect on the opening scene in light of the farm's presence in the previous sequence, we must confront the brutality of the killing on the farm and the fact that as we watch the sequence for the first time, we are assigned neither a viewer nor a shooter. During our first time seeing the pig killing on-screen, in the video image, the actions depicted are of primary importance not who captures them, and, as such, it is the killing of the pig that commands our attention. Just as the killing of the chicken holds such psychic violence for George in *Caché*, the

killing of the pig serves to remind us in this dichotomy of the brutality present in the rural landscape and works to counter a myth of the pastoral as an uncorrupted, nostalgic space when seen against the urban.

The thematic dichotomy between the two locations is far more complicated than a reinforcement of a modern, urban, experience conceived of as an alienated, fractured time. Instead, by highlighting a relationship between these two spaces: the urban and the rural, Haneke represents, for instance, the "notions of continuity, habit, and sequence," which are characteristic of *erfahrung* – the mode of experience grounded in epic time – as pervasive across the modern urban and rural spaces in *Benny's Video*.[357] In fact, in *Benny's Video* the discontinuous experience of the city is a myth or, at the very least, outdated for a contemporary mode of experience that depends on continuity as the primary mode of experience. By highlighting a temporal relationship between urban and rural space – by synthesizing *erfahrung* and *erlebnis* – via video images and memory, Haneke creates a mode of continuous experience from what had once been imagined as a form of discontinuity. This synthesis of temporal relations mediates the difference of spatial relations countering a purely industrial form of *erlebnis* where "things no longer inhabit a spatiotemporal continuum but exist only momentarily and in isolation."[358]

This synthesis is marked in these films by the ability to freely move across a linear time-scape that reinvigorates the concept of continuity. In both *Benny's Video* and *Caché*, this experience is marked by the brutality of the rural space as it bleeds into contemporary mediated existence. This shifts agrarian experience to a much more violent incarnation as Haneke's films engage Benjamin's categories to show a depiction of a contemporary mode of experience dependant on a contemporary iteration of continuity.

The temporal possibilities at play in the dichotomy between the pastoral and the urban are not only suggested via a thematic relationship informed by the critical reception of Haneke's films. Rather, Haneke's depiction of a contemporary mediascape pushes his viewers to confront the process of re-sequencing and repetition in order to chronicle the processes by which the continuity between these synthesized spaces is achieved. He does this at particular moments in the film where he disrupts a linear flow of narrative time through the use of the home movie footage shot periodically during the film, footage often marked by the washed grain of the image and by the shakiness of the frame. The shot that directly follows the title credit that follows the opening video images – the first filmic images we see on screen – is a wide-angle, steady, mid-shot framed from the back of an elevator. The frame lines correspond to the elevator's width; the image is composed and lit such that, while filled with twenty-something men and women, Benny's father is the focal point of the shot: he is visible in the far left corner at the front of the elevator, adjacent to its doors, marked by the fact that he is both in focus, well lit, and still when compared to the milling of the other occupants. This film image, marked as such by the steady frame lines and its long-take aesthetic, is cross-cut with video images of, what we will discover to be, a party in Benny's parent's apartment thrown by their eldest daughter. It is at this party that we are introduced to one of the recurring themes of the film: the airplane game.

The significance of the airplane game – a ponzi scheme – has been overlooked in the critical work concerning Haneke, but it is a vital to the contemporary condition he chronicles in the film. The game introduces the idea of exchange as the basis for relations, an idea both thematically and formally reinforced throughout the film. Four times Haneke cuts between the elevator descending and the video images of the party. The first time watching the movie, it appears that Haneke is cross-cutting between two simultaneous actions: Benny's father on the

elevator, possibly arriving at the apartment and interrupting the party/game, which we are watching being chronicled in the video image. However, a close look reveals that this is not an instance of crosscutting. In fact, similar to the film's opening sequence, the temporal structure is out of joint in this sequence. Haneke is crosscutting between film images of Benny's father escorting his daughter and her guests from the party with video images taken of the party. We're moving back and forth in time in this sequence.

The editing intercuts the party held in the past to its end in the future. These events are diegetically linked by the video images and their ability to simultaneously occupy both the present for the film viewer and the past in the film's diegesis. These hand-held video images, marked by the shakiness that indicates the actions of a shooter, are assigned the ability to resequence time. When the elevator reaches the ground floor, its movement stops, its doors opens, and the disjointed time snaps back into place as we see Benny's sister say goodnight and apologize to her father. When the spatial movement of the elevator stills, the temporal disjunction is resolved.

Talking about this film Haneke remarks, "Benny thinks he can control things by incorporating them into video, for example, with the camera in the street. Of course it's an illusion, even a dangerous illusion. Why do people film vacations...? I find that totally perverse.[359] Haneke equates home video technology with the illusion of control, yet in both *Funny Games* and *Benny's Video*, both characters played by Arno Frisch do gain control of their experience, both mediated and unmediated, via direct, individual interactions with home video/broadcast technology. The individual viewing experience offered by home video technology, broadcast media, and web-based images all invite a physical interaction with the machines that provide control of the images.

For instance, Benny records his parent's dining room table conversation about disposing the young girl's body. Recording seems to be default position he holds onto, and ultimately it is one that provides him a semblance of control over the actions in his life when he exchanges this video of his parent's culpability with the police. Reinforcing the importance of media, Haneke features a close-up of an officer's hands removing from a VCR the video Benny secretly shot of his parents' dining room discussion. At this moment in the film's narrative, the diverse strands of video techniques and temporal resequencing come together. The video record of his parent's complicity presents the possibility of returning to the moment when he shoots the videotape to alter the aftermath of his actions. Benny's intentions here seem opaque because he chooses to confess to, what has become, an undiscoverable crime. However, the film's temporal irregularities have shown us that actions one may wish to alter – Benny's sister's party is restaged, now with parental permission toward the end of the film and the killing of the pig is re-watched and then re-staged with the girl – may be changed if they have been previously captured on video tape. The ability to temporally interact with images shows Benny that situations may be exchanged by resequencing the outcome through repetition inflected with difference, a technique previously demonstrated in *Funny Games*.

Because Benny's self is defined by acts of vision, performed in the film by the reminder of his hand's control over his shaky video images, taping his parent's conversation is an assertion of his self into the situation. As in the temporal resequencing earlier in the film's formal structure, he chooses to assert that self at a later moment. At the end of this final sequence, Haneke shows his viewers the police station exchange of Benny for his parents on a video monitor fed from surveillance cameras. Diegetically this works as an exchange of surveillance images: it is the surveillance video Benny shoots of his parents that allows him to return to that

previous moment and resequence its outcome. He must exchange his video with the police to alter the outcome of the event he has captured. After Benny has confessed, he leaves the interrogation room and meets his parents outside the door. Framed in individual mid-shots, Haneke shoots each family member looking at Benny as he looks at them. Haneke then cuts to a shot of a video monitor, presumably in the police station's surveillance center. From this position, we watch Benny walk past his parents. Benny makes the final exchange of the film: he exchanges places with them; they will now be questioned.

Arno Frisch plays both Paul and Benny, so it's difficult to watch *Funny Games* and *Benny's Video* without importing Benny into Paul and vice versa. The world Haneke creates here differs from Paul's direct use of video techniques in *Funny Games* because the ability to properly resequence time is yet nascent for Benny. Because his viewing position is outside the world viewed, he lacks any real sense of control. He watches but cannot yet find a way to act or exchange with the video images he captures. After he has killed the unnamed girl, and drunk a glass of milk, Benny sits, naked, in the dining room surrounded by photographs, prints, and posters. Haneke cuts between Benny's gaze and a dining room wall crowded with images from the history of Western art, hung as if in a mad group show jumbled together as in broadcast time. Among these are a print of the *Mona Lisa* (1503-1506), an exhibition poster of Warhol's *Marilyn Diptych* (1962), multiple 17th century Dutch still life reproductions, images from the prehistoric Lascaux cave paintings, a print of a Renaissance pieta, a reproduction of a photograph of Einstein, and, finally, a print of Magritte's *La Reproduction Interdite* (1937).

When Haneke cuts between this wall and Benny there is no recognition in Arno Frisch's face that suggests he's looking at anything. Yet, the sight lines and frame composition Haneke uses clearly indicate that Benny is looking at this wall. The stillness these images present, as a

counterpoint to the motion in the video images, places into relief the importance of temporality in this third way of experiencing the world. The still images are not able to watch or act because there is no duration at play in their immediate temporality. Those images just are, they are not acting, they do not exchange, and they do not exist in time for Benny. He relates to events within a progression of captured time because he may then rewind those events and resequence their outcome.

As he does throughout the film, he blindly sees. He does this until he catches his image in a mirror; he looks at himself, notices blood at his waist, and watches in the mirror as he wipes it away. After Benny has finished his milk, Haneke brings us back into his bedroom where we watch on the video monitor as Benny films himself wiping the blood from his naked body – restaging the previous actions. For Baudrillard videotape dramatizes an inability for its spectator to assert himself:

> The absolute proximity of, the total instantaneity of things, the feeling of no defense, no retreat…it is the end of interiority and intimacy. The overexposure and transparence of the world which traverses him without obstacles. He can no longer produce the limits of his own being, can no longer produce himself as a mirror. He is now only a pure screen -- a switching center for all the networks of influence.[360]

As Magritte's image suggests, there is no self available for an external view, no exchange to be made; there is no one to look at Benny until Benny sees himself in the mirror and then re-stages the action for his video camera. He uses the video technology to complete the viewed/viewer exchange. He places himself as the spectator creating that position in his own video reflection.

5.4 ACCESS

What we are looking for there, like in the photographs, is not an image; it is an access.

-- Jean-Luc Nancy

In the films and discursive materials from the silent film era that I have written about, I see a need for the *access* Jean-Luc Nancy formulates in the discursive and cinematic depictions of machine-body interactions as the spectator searches for a way to identify with projected and permeable bodies.[361] Nancy's concept of the singular, plural, from which this description of access is taken, considers that meaning arises in the open distance between two singulars in permanent relation. *Access* relies on a space of meaning that is "an interlacing of strands whose extremities remain separate even at the very center of the knot."[362] For Nancy, access is an interaction that is at once marked as individual and as together – as both simultaneously singular and plural. Nancy wants to recoup the concept of *with* as an attribute of the *I*, creating a condition of being in contemporary philosophy that binds I *with* we – the singular with the plural.

Nancy's concept of the singular, plural forces us to be attentive to the place of movement and time in human experience when he writes,

> Circulation – or eternity – goes in all directions, but it moves only insofar as it goes from one point to another; spacing is its absolute condition. From place to place, and from moment to moment, without any progression or linear path, bit-by-bit and case-by-case, essentially accidental, it is singular and plural in its very principle.[363]

Movement is necessary, yet so is the space between elements. The emphasis Nancy places on *with* as a conjoined concept of being that defines the singular, plural depends on movement between elements; without any of these relations meaning is impossible.

From Nancy's work, I want to extract his emphasis on the relationship between plurality and singularities. Considering *Uncle Josh*, for instance, the *with* is articulated when Josh both stops the flow of cinematic time by interrupting the on-screen image and tries to interact with that image. At that moment Josh appears to merge with the image and in that process exerts control over it. Much like projected film prompts the recognition of the tension between the still, single photogram and its blurred incarnation in motion through the process of synthesis, the idea of singularity exists in two planes. The material sense of the single photogram and its recognition as a singular moment is balanced by its blurred continuity in a plurality of duration that orders cinematic time. As a corporally active process, the synthesis I locate in the archival materials examined in the first chapter acts as process of assemblage. It is a process that presupposes the singular plural: exposed film stock is comprised of uniform photograms that are always already in relation. However, when continuity supersedes assemblage the ability to reassemble and assemble is lost. With this is lost a recognition of Nancy's *with*.

Considering the emphasis on individual elements in the processes of *synthesis* and *becoming other* I show in my first chapter and the representation of an alienated world saturated by images that are indistinguishable from reality that Haneke presents in his films, Nancy's insistence on the plurality of being may be used to intervene in a contemporary media culture that obscures the experience of synthesizing singular elements. This obfuscation is represented in the way that video images elide the physical interstice between photograms present in motion pictures creating an experience of continuity that is intractable. With this intractability comes the

elision of the ability to locate movement between singularities. The visibility of the interstice invites the spectator into an active process of movement in which meaning is created. Haneke's use of video techniques – rewinding or fast-forwarding the on-screen film image or consciously blurring the space between the on-screen diegesis, the objectively filmed experience, and depictions of diegetic video images and sequences, force us to attend to the differences between images and reality.

Moving back to the beginning of this dissertation, the photogram is singular, plural because it is always within a plurality of its form – the exposed filmstrip – and because within particular historical periods it is recognized as a discrete element undergoing assemblage in the projection apparatus. The awareness of these instances – of these singulars – running together in the projection apparatus, blurred past the waiting eyes of an anxious audience, marks a mode of existence particular to the last one hundred years. This is a process within which the viewer participates in the creation of duration and the unfolding of time – a process we saw highlighted in the articles and illustrations published at the end of the nineteenth century. Even after the novelty era, access to on-screen bodies is created by direct, physical interactions between bodies and machines. Haneke's films demonstrate that in an age where photographic representation can act as the evidence of the unseen, the only way to confirm what we see is through tangible interactions that force their way past mediated experience. It is this form of interaction that emerges in Haneke's films via the use of video temporality.

Writing about how video temporality overwrites historical time, Corrigan suggests,

> Experiential time recorded (as it is happening, not passing) is aligned with the theoretical capacity and allure of capturing every moment from potentially every angle…to describe a space in which temporality seems to explode as an infinite

> number of experiential encounters with each single moment or temporal fragment of social life…temporality here does not provide a historical logic….The temporality of videotape signals instead a plethora of fragmentary instants always open to multiple perspectives and significances and therefore always in crisis, as an emergency."[364]

Corrigan's reading of video temporality suggests that video time structures the ability to permanently access the present. However, offering video temporality as another form of modern fragmentation seems to place it as a subsidiary to cinematic time, rather than as a form that invites a new form of interactivity and replayability akin to the idea of *play* both Benjamin and Marshall consider when confronted with new media forms.

The infinite encounters Corrigan locates in video temporality do echo Nancy's conception of the infinite relationality of singular, plurality. The experience of replaying that I locate in Haneke's films offers infinite outcomes but does so from a limited initial horizon. That horizon is demarcated by the parameters of the moving images themselves. Those parameters are defined spatially and temporally, so by gaining access to the temporal parameters of the images, spectators are able to gain access to the possibilities that order contemporary experience.

NOTES

[1] Carlo Ginzburg, *Clues, Myths, and the Historical Method*, 1986, John and Anne Tedeschi, trans. (Baltimore: Johns Hopkins University Press, 1989): 22.

[2] Ralph Waldo Emerson, *The Journals and Miscellaneous Notebooks of Ralph Waldo Emerson*, William H. Gillman, et al eds, vol. IV (Cambridge, Mass.: Harvard University Press, 1987): 296. Qtd in John Kasson, *Civilizing the Machine: Technology and Republican Values in America 1776-1900* (New York: Grossman Publishers, 1976): 116.

[3] Invoking Miriam Hansen's insistence on a distinction between *modernity*, the "material conditions of living," and *modernism*, the "articulated intellectual, artistic, political response to modernity and the process of modernization," in my first three chapters my use of modernity depends on both a shift in political economy -- from feudalism to capitalism in Western Europe and the United States and the subsequent shift from agrarian to industrial societies -- as well as an accelerating processes of globalization this era experienced as a result of industrialization. My conception of the modern, as it relates to film, also depends on the means through which time and space became malleable during the late-nineteenth century in the United States, Western Europe, and parts of the Pacific Rim through communication and transportation innovations like the railroad, the telegraph, the telephone, and film as a recording device that captured events from particular views and re-presented those events to Western European and U.S. audiences. Miriam Bratu Hansen, "America, Paris, the Alps: Kracauer (and Benjamin)," *Cinema and the Invention of Modern Life*, Leo Charney and Vanessa Schwartz, eds (Berkeley: CA: University of California Press, 1995) 390: note 6.

[4] For more information consult Tom Gunning, "The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde," *Early Cinema: Space, Frame, Narrative*, Thomas Elsaesser with Adam Barker, eds. (London: BFI, 1997): 56-62.

[5] For more information consult Mark Jancovich and Lucy Faire, *The Place of the Audience; Cultural Geographies of Film Consumption* (London: BFI Publishing, 2003).

[6] Leo Charney, "Introduction," Leo Charney & Vanessa Schwartz, eds. *Cinema and the Invention of Modern Life* (Berkeley: CA: University of California Press, 1995): 1. When Charney and Schwartz do turn to cinema's place within these tensions, they fall squarely into the imprecision Charlie Keil charges with his 'modernity thesis' critique. For instance, Schwartz and Charney write in their introduction: "All of the essays generate from the premise that *cinema*, as it developed in the late nineteenth century, *became the fullest expression and combination of modernity's attributes*. While some essays more than others directly address the links between the cinema and other modes of modernity, *all presume that modern culture was 'cinematic' before the fact*. (1, italics mine). For more information consult Charlie Keil, "'To Here from Modernity': Style, Historiography, and Transitional Cinema," Charlie Keil and Shelley Stamp, eds. *American Cinema's Transitional Era: Audiences, Institutions, Practices* (Berkeley: University of California Press, 2004): 51-65.

[7] Gilles Deleuze, *Cinema 1; The Movement-Image*, 1983 Hugh Tomlinson and Barbara Habberjam, trans (Minneapolis: University of Minnesota, 1996): 5.

[8] Emerson qtd in Kasson 116.

[9] Ibid.

[10] Paolo Marrati, *Gilles Deleuze; Cinema and Philosophy*, 2003, Alisa Hartz, trans (Baltimore: The Johns Hopkins University Press, 2008): 2.

[11] George Simmel, "The Metropolis and Mental Life, *Simmel on Culture*, Ed. David Frisby and Michael Featherstone (London: Sage, 1997): 175.

[12] Julie Husband and Jim O'Loughlin, *Daily Life in The Industrial United States, 1870-1900* (Westport, Conn.: Greenwood Press, 2004) 61-2.

[13] Theodore, Peterson, *Magazines in the Twentieth Century* (Chicago: University of Illinois Press, 1964): 4.

[14] Crandall Shifflett, *Victorian America 1876-1913* (New York: Facts on Film, Inc., 1996): 69.

[15] Shifflett 70.

[16] Petersen 4.

[17] David Nye, *American Technological Sublime* (Cambridge, Mass.: The MIT Press, 1994): 148.

[18] Nye 147.

[19] Ibid.

[20] Nye 149.

[21] Marshall Everett, *The Book of the Fair, The Greatest Exposition the World Has Ever Seen. A Panorama of the St. Louis Exposition* (Henry Neil, 1904): 201. Qtd in Nye 150.

[22] Nye 150.

[23] Linda Dalrymple Henderson, "X Rays and the Quest for Invisible Reality in the Art of Kupka, Duchamp, and the Cubists," *Art Journal* 47.4 *Revising Cubism* (Winter 1988): 324.

[24] Marrati 8.

[25] *The Nation*, "Notes," (30 January 1896): 101. Qtd in W. Robert Nitske, *Wilhelm Conrad Röntgen*, Tucson, AR: University of Arizona Press, 1971): 115.

[26] Lisa Cartwright, *Screening the Body: Tracing Medicine's Visual Culture*, (Minneapolis: University of Minnesota Press, 1995): 3-4.

[27] "Edison Working to Xray Human Brain," *New York Times* (7 February 1896), 33.

[28] Kasson 147.

[29]Hansen 364.

[30] Steve Mintz, "The Twentieth Century; The United States in 1900," 2007, *Digital History*. 12 December 2009. http://www.digitalhistory.uh.edu/database/article_display.cfm?HHID=205

[31] Richard Ohmann, *Selling Culture: Magazines, Markets and Class at the Turn of the Century* (New York: Verso, 1996): 29. Qtd in Kristen Whissel, *Picturing American Modernity: Traffic, Technology, and the Silent Cinema*, (Durham, NC: Duke University Press, 2008): 19.

[32] Ibid.

[33] Husband & O'Loughlin 20.

[34] Tom Gunning, "An Aesthetics of Astonishment: Early Film and the (In)Credulous Spectator," ed. Linda Williams, *Viewing Positions: Ways of Seeing Film* (New Brunswick, NJ: Rutgers University Press): 119.

[35] Thomas Elsaesser, "Archaeologies of Interactivity: Early Cinema, Narrative and Spectatorship," *Film 1900: Technology, Perception, Culture*, Annemone Ligena & Klaus Kreimeier, eds (New Barnet, UK: John Libbey Publishing, 2009): 9-20. I read Elseasser's essay after drafting this dissertation.

[36] Charles Musser, *The Emergence of Cinema: The American Screen to 1907* (Berkeley, CA: University of California Press, 1990): 15-54 and Stephen Herbert, *A History of Pre-Cinema*, Volume 2 (New York: Routledge, 2000).

[37] Elsaesser 19.

[38] Peterson 1.

[39] Gunning, "Aesthetics" 119.

[40] Throughout this essay I use the term *photogram* to indicate both singular film images and multiple, sequential film images following Garrett Stewart's use of the term: "The photogram is the individuated photographic unit on the transparent strip that conduces in motion to screen movement." As Stewart also notes, this use of the term should not be confused with an early-twentieth century use indicating a photograph "produced with photographic materials but without a camera" through the exposure of light-sensitive paper to a light source ("Photogram," Def. 3, Oxford English Dictionary Online). While using the term 'film still' would highlight the idea of a still film frame, I use *photogram* to retain the photographic pre-history of the cinema image and the literal primacy of individual photographs on any analogue film. I also wish to retain the relationship with the Greek origins of *–gram*, *γρ*ά*μμα*, indicating "something written, letter (of the alphabet)" in order to maintain the force of an assemblage of parts to create a meaningful whole ("*–gram*," Oxford English Dictionary Online). Coupled with *photo-*, also from the Greek, *φωτ*-meaning "light of an unknown origin" ("*photo-*," Oxford English Dictionary Online), the resulting term *photogram* contains the meaning of something written by light but with the sense of individual elements combined to create a written record. Oxford English Dictionary Database Online, University of Pittsburgh, 27 February 2007

<http://dictionary.oed.com/entrance.dtl>. Garrett Stewart, *Between Film and Screen: Modernism's Photo Synthesis* (Chicago: University of Chicago Press, 1999): 5.

[41] Cover, *Scientific American* LXXVI, no. 16 (17 April 1897). An image of this cover may be found in Musser, *Emergence* 182. Musser reproduces the image within his discussion of what he terms "cinema's novelty year 1896-1897," but he never refers to the cover, its images, or the three-page article that describes the "Art of Moving Photography," in any depth. The cover image is included in Musser's work as an illustration of motion picture operators in both the projection and filming space.

[42] David Robinson, *From Peepshow to Palace* (New York: Columbia University Press, 1996): 44. Robinson includes a photograph of the souvenir taken from the Library of Congress, Motion picture, Broadcasting, and Recorded Sound Division. It can still be found on its website: http://www.loc.gov/exhibits/treasures/images/at0128as.jpg.

[43] George Parsons Lathrop, "Stage Scenery and the Vitascope," *North American Review* vol. 163, no. 478 (September 1896): 377.

[44] See Figures 12 & 13.

[45] Peter Decherney, "Copyright dupes: piracy and new media in Edison v. Lubin (1903)," *Film History*, vol. 19, no. 2 (2007): 109-110.

[46] Peterson 2.

[47] Ibid.

[48] Ibid.

[49] Ibid; Frank Mott, *History of American Magazines 1850-1865*, vol. 4 (Cambridge, Mass: Belknap Press, Harvard University, 1967): 20.

[50] John Tebbel & Mary Ellen Zuckerman, *The Magazine in America, 1741-1990* (New York: Oxford University Press, 1991): 68, 62.

[51] Peterson, *Magazines* 2; Edward Chielens, "*North American Review*," *American Literary Magazines: The Eighteenth and Nineteenth Centuries*, ed. Edward Chielens (New York: Greenwood Press, 1986): 289.

[52] The 1881 sale of *Scribner's Monthly*, perhaps the most popular and widely influential U.S. periodical of the nineteenth century, transforms *Scribner's Monthly* into *The Century Illustrated Monthly Magazine*. Per the contract of the original sale, six years afterward *Scribner's Magazine* begins in 1886. Fred Robbins, "*Scribner's*," *American Literary Magazines: The Eighteenth and Nineteenth Centuries*, ed. Edward Chielens (New York: Greenwood Press, 1986): 369.

[53] Mott, *History of American Magazines* 58; *Scientific American*'s circulation amounted to "nearly 50,000 before the hard times of the early nineties affected it"; however, "that retardation was only temporary, and in a few years it was again forging to new high levels" (58). From his figures, which includes a circulation number of 75,000 measured in 1907, we can surmise that at the time of the April 1897 cover image *Scientific American*'s circulation was between 50,000 and 75,000 (Mott 322).

[54] Tebbel & Zuckerman, *Magazine in America* 77.

[55] Peterson, *Magazines* 4.

[56] At *Century* the slow flatbed press was replaced by a Hoe rotary press, which was able to print greater volume at ten times the speed (Peterson, *Magazines* 5). In 1899, C.B. Cottrell and Sons Company produced a rotary web perfecting press used by *Youth's Companion*, *Harper's*, *Lupton's*, *McCall's*, and other magazines, and an enlarged, improved version of the Cottrell

press was built for *Munsey's* in 1898. As mass-circulation periodical manufacturing became economically sustainable, even the appearance of magazines shifted during this period. Hand engraving and tinting gave way to the comparatively inexpensive mechanical process of photoengraving and half-tone printing. Before photoengraving, a magazine like *Century* paid up to $300 for a page size woodcut; now a publisher could buy a halftone for under $20 (70). The introduction of photoengraving meant that "magazines no longer had to depend for their art work on reproductions of sketches, laboriously and expensively engraved by hand on copper or wood—and even colored by hand, as when *Godey's Lady's Book* hired 150 women to tint its illustrations" (5). It's interesting to note the role of women in the hand tinting of illustrations in the era prior to half tone and color printing technology. Even as printing technologies make this work redundant in publishing, the new industry of cinema will employ hundreds of women to hand-tint films during both the novelty and silent era.

[57] Peterson, *Magazines* 1. Beginning in 1892, *McClure's*, a literary magazine that published writers such as Rudyard Kipling, Robert Louis Stevens, and muck-raking journalist Ida Tarbell, was the first to lower its price to .15-cent monthly. At the time, the 10-.15-cent range represents the inexpensive new magazines introduced after 1893 when the competition for middle-class readers spurred a drop in subscription costs (7).

[58] Mott, *History of American Magazines* 58.

[59] *Century's* editor, Richard Watson Gilder, serialized literary works like Mark Twain's *Huckleberry Finn* and published Joel Chandler Harris's Uncle Remus stories, as well as work by Jack London, Kate Chopin, and Walt Whitman.

[60] Mott, *History of American Magazines* 43

[61] Peterson, *Magazines* 3. Also see Nancy Glazener, *Reading for Realism; The History of a U.S. Literary Institution, 1850-1910* (Raleigh, NC: Duke University Press): 266.

[62] Quoted in Husband & O'Loughlin 180. Also see Ohmann, 220.

[63] Tebbel & Zuckerman 52.

[64] Mott 332.

[65] Shifflett 23.

[66] Husband and O'Loughlin write, "From 1870-1900, the total U.S. population nearly doubled, increasing from 38,448,000 to 75,995,000… [and] in 1870, 25.7 percent of the U.S. population was urban... by 1900, nearly 40 percent of Americans were city dwellers…Between 1870 and 1900, Detroit grew from 80,000 to 286,000 residents; Minneapolis increased from 13,000 to over 200,000; [and] Los Angeles expanded from 6,000 to over 100,000" (20).

[67] "As part of an effort to establish trade between the east coast and the newly acquired territory in the west, the federal government subsidized the building of railroads and made free land available to western settlers" through the Homestead Act of 1862 (Husband & O'Loughlin 14). Furthermore, "With the rise of the railroads, it became practical and quite profitable to ship items to rural areas that could not support a chain store. The arrival of new catalogs became a celebrated moment in rural and small-town life" (170).

[68] Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, The Archive* (Cambridge, Mass.: Harvard University Press, 2002): 5.

[69] The article provides a brief history of the development of motion pictures with a now familiar emphasis on the story their development from the zoetrope and other motion-illusion devices to the 1894 presentation of the cinematograph by the Lumière Brothers. It's worth noting that at the

same time this cover article appeared in *Scientific American*, April 1897, the American Mutoscope's Biograph had begun to replace the Lumiere's Cinematograph for independent exhibitors. As Musser writes, the Cinematograph often "replaced the Vitascope in vaudeville houses during the late summer and fall of 1896, [and] was displaced in turn by the Biograph system late in 1896 and into 1897. This shift was evident in Keith's theaters along the East Coast as well as the Orpheum circuit on the West Coast, and with other smaller vaudeville entrepreneurs as well." Charles Musser, "Movies and the Beginning of Cinema, 1896-1897," *American Cinema 1890-1909: Themes and Variations,* Ed. Andre Gaudreault (New Brunswick, NJ: Rutgers University Press, 2009): 48. In Musser (1990), see his section "Projecting Motion Pictures: Inventions and Innovations," for a complete history of the competition between the two companies. See also André Gaudreault, "The Infringement of Copyright Laws and Its Effects (1900-1906)," *Early Cinema: Space, Frame, and Narrative*, ed. Thomas Elsaesser (London: BFI Publishing, 1990), 114-122, Janet Staiger, "Combination and Litigation: Structures of US Film Distribution, 1896-1917," *Early Cinema: Space, Frame, and Narrative*, ed. Thomas Elsaesser (London: BFI Publishing, 1990), 189-210, and Charles Musser, "The American Vitagraph, 1897-1901: Survival and Success in a Competitive Industry," *Film Before Griffith*, ed. John Fell (Berkeley, Calif.: University of California Press, 1983), 22-66.

[70] "The Art of Moving Photography" *Scientific American*, LXXVI.16 (1897): 248-249.

[71] Tom Gunning, "Cinema and Modernity," *Cinema and the Invention of Modern Life*, eds. Leo Charney and Vanessa Schwartz (Berkeley: CA: University of California Press, 1995): 300.

[72] See Musser, *Emergence*: 15-43; H. Mark Gosser, "Kircher and the Laterna Magica," *JSMPE*, 90 (October 1981): 972-980; and Charles Musser and Carol Nelson, *High-Class Moving*

Pictures: Lyman Howe and the Forgotten Era of Traveling Exhibition, 1880-1920 (Princeton: Princeton University Press, 1991): 12-16.

[73] As Tom Gunning has famously argued, "Early audiences went to exhibitions to see machines demonstrated (the newest technological wonder, following in the wake of such widely exhibited machines and marvels as x-rays…) rather than to view films…" Tom Gunning, "The Cinema of Attractions: Early Film, its Spectator and the Avant-Garde," *Early Cinema: Space, Frame, and Narrative*, ed. Thomas Elsaesser (London: BFI Publishing, 1990): 58.

[74] "The Art of Moving Pictures," 249.

[75] *The Sausage Factory*, American Mutoscope Company, February 1897, 150 feet. The American Film Institute's online searchable index provides copyright information for this film, listing its holder as the American Mutoscope and Biograph Company effective November 11, 1902. But the index also notes that the film was first copyrighted in 1897 by Albert E. Hopkins only to have this copyright superseded in 1902. In fact, in the AFI index there are three entries for an 1897 American Mutoscope film concerned with a sausage factory; I have used the most complete entry and one that directly references the scene seen in the photogram in *Scientific American*. The other two entries list *Sausage Factory* as the title and note 152 feet (46 meters) and 161 feet (49 meters) as lengths. *American Film Institute Database*, *American Film Institute Catalog*, University of Pittsburgh, 14 November 2006 <http://afi.chadwyck.com/home>.

[76] Ibid.

[77] Paolo Cherchi-usai, *Silent Cinema: An Introduction* (London: BFI Publishing, 2000): 5.

[78] In 1876, Gustavas Swift introduced refrigerated railroad cars. This innovation helped establish centralized slaughterhouses in the Midwest -- Chicago and Kansas City -- where cattle could be

sent to slaughter with the resulting cuts of frozen meat rail-shipped around the country. Beef prices fell throughout the 1880s and the amount of beef purchased increased as a result (Husband and O'Loughlin 153).

[79] The Pure Food and Drug Act was not passed into law until 1906, the same year that the Meat Inspection Act is passed by Congress and signed into law by President Theodore Roosevelt in June. The latter required that all food labels be 100 percent accurate and allowed the Secretary of Agriculture to order meat inspections and condemn any products that returned unsatisfactory results.

[80] Husband and O'Loughlin 153.

[81] Lathrop, "Stage Scenery and the Vitascope" 378.

[82] Ibid.

[83] Lathrop, "Stage Scenery and the Vitascope" 377.

[84] Ibid.

[85] Lathrop, "Stage Scenery and the Vitascope" 377.

[86] *Illustrated American* vol. 20 (28 November 1896): 735. Qtd in Jack T. Munsey, "From Toy To a Necessity: A Study of Some Early Reactions to the Motion Picture," *The Journal of the Society of Cinematologists* vol. 4 (1964-1965): 101.

[87] Ibid.

[88] Ibid.

[89] Antonia and W.K.L Dickson, "Edison's Invention of the Kineto-Phonograph," *The Century Illustrated Monthly Magazine*, 48.2 (June 1894): 207.

[90] Ibid.

[91] Antonia and W.K.L Dickson 208.

[92] Antonia and W.K.L Dickson 210.

[93] Ibid.

[94] Whether or not this private projection event occurred is arguable; however, what is important is the description, not the actuality of the event.

[95] Ibid.

[96] Ibid.

[97] Antonia and W.K.L Dickson 210-212.

[98]According to an index of Edison kinetoscope films compiled by amateur historian and kinetoscope collector Ray Philips, which are drawn from copyright information, archives, and amateur collection records, there is no known remaining copy of *Hear Me Norma* in existence. Philips writes that it was first filmed in Edison's 1889 pre-Black Maria studio, but that it was re-filmed in the Black Maria sometime before June 1894. A record of the kinetoscope film exists in W.K.L. Dickson's file at the National Archives, which Philips quotes to detail the action portrayed: "'The organ grinder's monkey jumps up on his shoulder to the accompaniment of a strain of Norma.'" He notes that he's not found any catalogue entries for the film and suggests that it may have been an unpopular title. Ray Philips, *Edison's Kinetoscope and Its Films: A History to 1896* (Westport, Conn.: Greenwood Press, 1997) 155. Charles Musser's *Edison Motion Pictures, 1890-1900 — An Annotated Filmography* does not include an entry for *Hear Me Norma*, but includes the film, with a reference to the Dicksons' article in *Century* as well as a re-printed photogram that corresponds to the film labeled *Hear Me Norma* in *Century*, as the *Organ Grinder*. He cites the length of the film as 50 feet and writes that it was produced for

Edison's laboratory by W.K.L. Dickson prior to May 1894. Charles Musser, *Edison Motion Pictures, 1890-1900 — An Annotated Filmography* (Smithsonian Institution Press, 1997): entry 34, 98. Philips also includes an entry in his index for *The Barber Shop*. According to published accounts it was included as "one of the ten films shown on 14 April 1894, the first commercial showing of the Kinetoscope." Philips also notes that *The Barber Shop* "was one of the earliest films of an 'event', as distinguished from a dancer or an acrobat…" (119). Musser writes that *The Barber Shop* was likely filmed in 1893 and that the film suggests in an indirect, but profound way, how the new kinetoscope technology works: "With *The Barber Shop*, the parallel is not between the depicted work process and film production but between exhibition and the shave. A sign appearing in the mise-en-scène emphasizes their affinity by calling this shave 'the latest wonder'—a label routinely applied to the kinetoscope. Like the viewing of the film, the shave costs 5 cents. As the film demonstrates, both take about the same amount of time. And the voyeuristic pleasures of the peephole viewing are matched by the pleasures normally associated with the barbershop. Charles Musser, "Before the Rapid Firing Kinetograph: Edison Film Production, Representation and Exploitation in the 1890s," *Edison Motion Pictures, 1890-1900 — An Annotated Filmography* (Smithsonian Institution Press, 1997): 26.

[99] *New York Tribune* (23 May 1897): 8. Qtd in Musser (1990).

[100] Antonia and W.K.L Dickson, "Edison's Invention of the Kineto-Phonograph" 208.

[101] Leo Charney, *Empty Moments: Cinema, Modernity, and Drift* (Durham, NC: Duke University Press, 1998): 1-3.

[102] Charney 54.

[103] Richard Hughes, "The Vanishing Man," *Life* vol. 78, no. 2030 (29 September 1921): 7.

[104] Hughes 6-7.

[105] Hughes 6.

[106] Hughes 7.

[107] Ibid.

[108] Hughes 6.

[109] Yuri Tsivian, "Media Fantasies and Penetrating Vision: Some Links Between X-Rays, the Microscope, and Film," *Laboratory of Dreams: The Russian Avant-garde and Cultural Experiment*, ed. John Bowlt, Olga Matich (Stanford, CA: Stanford University Press, 1996): 82-86.

[110] This description is taken from a report issued by Dominque Francois Arago of the Commission of the Chamber of Deputies concerning pension awards to Louis Daguerre and the son of Joseph Niépce found in *Classic Essays on Photography*, ed. Alan Trachtenberg (New Haven, CT: Leet's Island Books, 1980): 16-17.

[111] "The Rise of Photography and Its Service to Mankind," *The Arena* vol. 28, no. 1 (January 1902): 29.

[112] Maxim Gorky, "The Lumière Cinematograph," 4 July 1896, *The Film Factory: Russian and Soviet Cinema in Documents 1896-1939*, ed. Richard Taylor and Ian Christie (1994; New York: Routledge, 2002): 25.

[113] "At the Playhouses," *Los Angeles Times* (6 July 1896): 6.

[114] "The Shadow Realm," *Los Angeles Times* (18 May 1919): Section III, 3.

[115] George Parsons Lathrop, "Stage Scenery and the Vitascope," *North American Review* vol. 163, no. 478 (September 1896): 377.

[116] Lathrop 379.

[117] "Literature," Review of *Kim*, *The Independent,* vol. 53, no. 2758 (10 October 1901): 2415.

[118] Ibid.

[119] "Turns and Films," "Life, Letters, and the Arts," *The Living Age* (4 September 1920): 590.

[120] Terry Ramsaye, *One Hundred and One Nights: A History of the Motion Picture* (New York: Simon and Shuster, 1926): 65.

[121] Ramsaye 15.

[122] Ramsaye 327.

[123] Harry F. Bowling, "Deus Ex Machina," *Los Angeles Times* (25 May 1912): 114. For more on the similarities between exhibition practices in the prehistory of motion pictures and its early-days see Tom Gunning, "An Aesthetics of Astonishment: Early Film and the (In)Credulous Spectator," ed. Linda Williams, *Viewing Positions: Ways of Seeing Film* (New Brunswick, NJ: Rutgers University Press): 118-120. Charles Musser, *Before the Nickelodeon: Edwin S. Porter and the Edison Manufacturing Company* (Berkeley: University of California Press, 1991): 9, 35, 226.

[124] Ibid.

[125] Harvey Brougham, "The Play's Not All," *Overland Monthly and Out West Magazine* vol. LXXVI, no. 5 (November 1920): 82.

[126] Perceval Reniers, "The Shadow Stage," *The Independent* vol. 118, no. 4006 (12 March 1927): 293.

[127] "The Ten Commandments," *Outlook* (30 January 1924): 169.

[128] "Motion Pictures," *Los Angeles Times* (30 September 1928): C17. "Motion Pictures," *Los Angeles Times* (26 May 1929): C14.

[129] Lee Grieveson and Peter Krämer, Introduction, *The Silent Film Reader* (New York: Routledge, 2004): 1.

[130] "Shadow," *Oxford English Dictionary Database Online,* University of Pittsburgh, 2 January 2009 <http://dictionary.oed.com/entrance.dtl>.

[131] Ibid.

[132] Tony Sarg, *The Original Movie*, 1922 (Treasures From American Film Archives: National Film Preservation Foundation, 2005), DVD.

[133] "The Startling Development of the Bi-Dimensional Theater," *Current Literature* vol. XLIV, no. 5 (May 1908): 546.

[134] "Shadow," *Oxford English Dictionary Database Online*, University of Pittsburgh, 2 January 2009 <http://dictionary.oed.com/entrance.dtl>.

[135] Gorky 25.

[136] "Shadow," *Oxford English Dictionary Database Online*, University of Pittsburgh, 2 January 2009 <http://dictionary.oed.com/entrance.dtl>.

[137] Albert E. Hopkins, ed, *Magic: Stage Illusions and Scientific Diversions, Including Trick Photography* (New York Munn and Co, 1897): 173, 175.

[138] "The Fine Art of Pantomime," *Current Literature* vol. XLIX no. 2 (August 1910): 198.

[139] Ibid.

[140] "A picture or photograph taken by means of X-rays, a radiograph." "Shadowgraph," *Oxford English Dictionary Database Online*, University of Pittsburgh, 2 February 2009 <http://dictionary.oed.com/entrance.dtl>.

[141] Henderson, "Kupka" 324. For more information consult Linda Dalrymple Henderson, "Francis Picabia, Radiometers, and X Rays in 1913," *The Art Bulletin* 17.1 (March 1989), 114-123.

[142] Cartwright 112. Cartwright provides a complete history of Röntgen's experiment, beginning with Hungarian physicist Philip Lenard's experiment with cathode rays that Röntgen reproduces at the outset of his November 1895 work.

[143] Wilhelm Roentgen, "On A New Kind of Rays," *Science* vol. 3, no. 59 (14 February 1896), 227-231, from the translation in *Nature* by Arthur Stanton from the *Sitzungberichte der Würzburger Physik-medic*, January 1895.

[144] "The Rise of Photography and Its Service to Mankind," *The Arena* vol. 28, no. 1 (January 1902): 33.

[145] Cartwright 111.

[146] Roentgen 230.

[147] Cartwright 113. Very few of the periodicals I examine made direct or indirect reference to the uncanny and death-like images produced by the x ray. However one such description appears in *The Chautauquan*, a weekly news magazine published by the Chautauqua Institution from 1880-1914:

> When the presence of new and unseen rays that have the photographic power of light with new powers of passing through glass is announced we see at once that a

> long series of experiments must now be made to discover the relative transparency of wood, paper, horn, flesh, bone and other things. Living flesh is transparent, bone is less so. This means that we can photograph the bones of a living hand. Such a photograph of a human hand seems at first glance strangely ghostly and uncanny. The hand is faintly yet clearly photographed, and right through the shadowy fingers shine the white bones, showing their perfect form and articulation, exactly as if the flesh were a transparent jelly clothed about the skeleton. Such a photograph, marking as it does the discovery of a new photography, may well point with bony fingers toward a vast field suddenly opened to human study and research. To what a strange land it points none can tell.

Charles Barnard, "The New Photography," *The Chautauquan* vol. 23, no. 1 (April 1896): 77.

[148] Cleveland Moffett, "The Röntgen Rays in America," *McClure's Magazine* vol VI, no. 5 (April 1896): 415.

[149] Barnard 78.

[150] "Photographing the Unseen: A Symposium on the Roentgen Rays," *Century Illustrated Magazine* vol. 52, no. 1 (May 1896), 120-131. Contemporary accounts use Röntgen as the correct spelling for Prof. Röntgen's name, so throughout I will use that spelling unless directly citing sources that use the Roentgen spelling, which was prevalent at the time of the x-ray's discovery.

[151] "Photographing the Unseen," 125.

[152] Edward P. Thompson, "Application of X-rays for Exhibiting Invisible Objects in Motion," *Medical News* (7 March 1896): 268.

[153] Ibid.

[154] Röntgen 331.

[155] Otto Glaser & W.C. Röntgen, *Dr. W.C. Röntgen* (Springfield, IL: C.C. Thomas, 1945): 42. Includes the author's translation of Röntgen's "Eine neue art von strahlen," which differs slightly from the translation published in *Science* in 1896. That version reads, "If the hand be held before the fluorescent screen, the shadow shows the bones darkly, with only faint outlines of the surrounding tissues" (Röntgen, "New Kind" 227). The 1945 translation from Röntgen's original 1895 article matches a new 2005 translation published in *Veterinary Radiology and Ultrasound* 36.5 (23 May 2005): 371-374.

[156] R.W. Wood, "Photographing the Unseen: A Symposium on the Roentgen Rays," *Century Illustrated Magazine* vol. 52, no. 1 (May 1896): 125.

[157] And in Paris, as Cartwright and popular accounts at the time reported, the Lumières were working to limit the amount of time and radiation required to produce a fluoroscope image. As far as Texas, the Fort Worth Star-Telegram reports that "M. Lumiere of Paris succeeded in producing plates which, used in conjunction with the reinforcement screens, reduced the time a third or quarter of what it had been before." Garrett Serviss, "Some of the Wonders of X-Ray Photography," *Fort Worth Star-Telegram* vol. 32, issue 285 (27 October 1913): 7.

[158] Thomas Commerford Martin, "Photographing the Unseen: A Symposium on the Roentgen Rays," *Century Illustrated Magazine* vol. 52, no. 1 (May 1896): 123.

[159] Thompson 268.

[160] E. Fleischman-Asceim, "Practical Radiography," *Frank Leslie's Popular Monthly*, vol LIV, no. 6 (October 1902): 550, 551.

[161] *Uncle Josh at the Moving Picture* , Edison Films Catalogue, Sept. 1902, *American Memory*, Library of Congress, Washington, 3 February 2009, web. As Charles Musser and others have pointed out, Porter's film is a nearly exact adaptation of R.W. Paul's 1901 film *The Countryman and the Cinematograph*. Paul's description of the film describes the Uncle Josh character as "the yokel." As in Porter's film, the comedy in Paul's short relies on the audience's ability to see the reaction to the projected motion pictures as outlandish.

[162] "Literature," Review of *Kim*, *The Independent,* Vol. 53. No. 2758 (10 October 1901): 2415.

[163] Ibid.

[164] Elizabeth Stuart Phelps, "Walled In" Part 6, *Harper's Bazaar*, Vol. 41 No. 9 (September 1907): 839.

[165] Gelett Burgess, "How to Not Read," *The Critic*, No. 36 (January 1900): 33.

[166] Ibid.

[167] Ibid.

[168] Musser, *Emergence* 78; Richard Burns, *Television: An International History of the Formative Years* (London: Institution of Electrical Engineers, 1998) 74; David Bordwell and Kristen Thompson, *Film History: An Introduction*, 2nd Edition (New York: McGraw Hill, 2003) 17.

[169] "In the Beginning," *Puck*, Vol. 49, No. 1257 (6 April 1901): 5.

[170] Mark Lee Luther, "Discoveries," *American Illustrated Magazine*, Vol. LXI, No. 3 (January 1906): 262.

[171] Fred Hunt, "En L'Oubliette," *Overland Monthly and Out West Magazine*, Vol. LIII, No. 6 (June 1909): 507

[172] Luther 262.

[173] Elizabeth Stuart Phelps, "Walled In," *Harper's Bazaar*, Vol. 41, No. 9 (September 1907): 839.

[174] Ibid.

[175] Ibid.

[176] Ibid.

[177] "The New Photography; Edison Arranging to Take Pictures of the Wheels in Human Heads," *Idaho Daily Statesman* 9 February 1896: 1.

[178] Annie Nathan Meyer, "The Snap-Shot and the Psychological Novel," *The Bookman; A Review of Books and Life* (May 1902): 260.

[179] Meyer 261.

[180] Ibid.

[181] Meyer 260.

[182] Meyer 261.

[183] Ibid.

[184] Lillian Whiting, "The World Beautiful," *Massachusetts Ploughman and New England Journal of Agriculture* Vol. 53 Issue 15 (7 July 1900): 6.

[185] J.H. Jowett, "Thoughts for the Thoughtful," *Zion's Herald*, Vol. 84 No. 15 (10 April 1907): 460.

[186] Amos R. Wells, "Thoughts for the Thoughtful," *Zion's Herald*, Vol. 84 No. 15 (10 April 1907): 460.

[187] "Science and the Blind," *The Chautauquan: A Weekly Newsmagazine*, Vol. 24, No. 4 (January 1897): 481.

[188] Ibid.

[189] Ibid.

[190] Ibid.

[191] "Eyes for the Blind," *Current Literature*, Vol. XXI, No. 3 (March 1897): 235. During this period Röntgen was often written as Roentgen.

[192] Ibid.

[193] Ibid.

[194] "Eyes for the Blind," 236.

[195] Akira Mizuta Lippit, "Phenomenologies of the Surface: Radiation-Body-Image," *Collecting Visible Evidence*, ed. Jane Gaines & Michael Renov (Minneapolis, MN: University of Minnesota Press, 1999) 75-6. His project is to expose a phenomenology of the surface comprised of technologies that pass through material and figural boundaries that define the limits from which a dialectical subject may be sketched in modernity. Breaking through particular boundaries in the location of new definitions is a theme Lippit explores when he turns to a discussion of the x-ray and the way it will be incorporated into cinema – particularly films, like *Hiroshima, Mon Amour*, that question the violence of invisible radioactive rays by juxtaposing them with the historical and political forces unleashed during the second world war and the violence perpetrated to the bodies exposed to that conflict.

[196] Lippit 67.

[197] Lippit 75.

[198] **“**Photograph of the Brain. Thomas A. Edison, the Great Inventor, Engaged in Startling Experiments,” *The New Haven Evening Register* Vol. LIII Issue 34 (8 February 1896): 3. “By the Cathode Ray. Mr. Edison Trying to Photograph the Living Brain,” *The Sun* [Baltimore] (Vol. CXVIII Issue 73 10 February 1896): 2. **“**Roentgen's Ray. Edison Working to Elaborate the New Discovery,” *The Butte Weekly Miner* [Montana] Vol. XVIII Issue 7 (13 February 1896): 6.

[199] “Simon's Success a New York Physician Takes a Photograph of His Own Brain,” *Bismarck Daily Tribune* [North Dakota] 14 February 1896: 1.

[200] Ibid.

[201] Ibid.

[202] “Ingles Rogers' Feat; Photographed His Own Thoughts,” *New Haven Evening Register* Vol. LIII, Issue 55 (3 April 1896): 3. **“** Photographed Thoughts. Extraordinary Development in the Use of Roentgen Rays,” *The Wheeling Register* Vol. 33 Issue 228 (6 March 1896): 3.

[203] Ibid.

[204] Ibid.

[205] Cartwright 111.

[206] “A Thought Picture; Thomas A. Edison Jr. Announces a Wonderful Invention,” *Emporia Daily Gazette* Vol. 7 Issue 2782 (20 December 1897): 1.

[207] Ibid.

[208] Ibid.

[209] "Gets a Thought Picture. Son of Thomas A. Edison Announces a Wonderful Invention-How He Got the Picture," *The Helena Independe*nt Vol. LXIII Issue 1 (1 January 1898): 12.

[210] Ibid.

[211] Ibid.

[212] Henderson, "X-rays and the Quest for Invisible Reality" 323.

[213] "Photographs of Thought Can the Camera Supply the Deficiency in Mental Power? Scientist Barodue Says," *Omaha Sunday World-Herald* [Nebraska] Vol. XXXII Issue 67 (6 December 1896): 7.

[214] Ibid.

[215] Tsivian 92.

[216] "Motion Views of the Brain," *Los Angeles Times* (30 Aug 1910): 14.

[217] Ibid.

[218] "Photographic News," *The Independent*, (11 May 1914): 245.

[219] For instance, 1914 literary essay in *The Dial* suggests that "x-rays" emanating from "the searchlight of genius… may show minds starred with a universe of thoughts or may glimpse others which stir only in an animal existence." "The Jupiter of Novelists," *The Dial; A Semi-Monthly Journal of Literary Criticism, Discussion, and Information*, Vol. LVI, No. 668 (16 April 1914): 329. And as late as December 1921, a the editorial page of the American periodical, *The Independent and Weekly Review*, chastises another periodical, *Freeman*, for the arrogance of a recent cover announcement commenting on a recent conference. *The Review* suggests that the *Freeman*'s comments are "like turning X-rays on a vacuum (sic)," suggesting that "to be everlastingly admiring the brilliancy of one's own mind, with never a

doubt as to what an X-ray examination might say about that (sic)!" Used here as a figure of speech; nonetheless, this image of an x-ray's ability to penetrate a brain to read thoughts is pervasive during the period. "Beatitude," *The Independent and Weekly Review* (24 December 1921): 316.

[220] Hattie C. Vaughan, "Mr. Winkler's Signs," *Lippincott's Monthly Magazine*, Vol. 91 (June 1913): 749.

[221] Vaughan 750.

[222] Ibid.

[223] Benjamin De Casseres, "En Route With A Conscience," *Puck* Vol. 76 No. 1959 (19 September 1914): 18.

[224] Edward Bok, "The Voice of the World," *The Ladies' Home Journal*, Vol. XX No. 2 (January 1903): 16.

[225] Lippit 67.

[226] Ibid.

[227] Ibid.

[228] Ibid.

[229] Lippit 67.

[230] Lippit 75.

[231] Ibid. My emphasis.

[232] Richard Allen, "Psychoanalysis," *Routledge Companion to Philosophy and Film*, ed. Paisley Livingston and Carl Plantinga (New York: Routledge, 2009) 448. Allen argues that Freud's conception of the unconscious as a source of psychosexual neurosis, accessed via dream

interpretation, offers a reverberating metaphor for the film spectator participating in a dream-like state while watching movies. He writes, "Freudian theories were used to explain the ways in which cinema was said to mobilize the spectator's fantasy and 'perversions.' Lacanian theorists argued that beyond the singular messages conveyed by individual stories it told, cinematic narration exemplified and contributed to the self-division of the subject as it is shaped by language and culture." See also: Francesco Casetti, *Theories of Cinema 1945-1995* (Austin, TX: University of Texas Press, 1999) 43-44, 159-178. Allen also distinguishes psychoanalytic use of dreams from surrealist thought to locate the unconscious mind's work in a Freudian-Lacanian tradition which values dreams and voyeurism, thus informing both Jean-Louis Baudry's work on the psychic regression of the spectator when faced with the on-screen dream world and Christian Metz's "'filmic state' of theatrical film going" in his early film theory and Raymond Bellour, Laura Mulvey, and Gaylyn Studlar work on perversion, spectatorship and gender in the 1970s. Psychoanalytic film theory also accounts for Commoli and Baudry's apparatus theory of the 1970s that argues for an Althusserian, ideological understanding of film images that unconsciously reproduced cultural and social ideologies within on-screen images and narratives (Allen 453). See also: Christian Metz, *The Imaginary Signifier; Psychoanalysis and the Cinema*, trans. Celia Britton, Annwyl Williams, Ben Brewster and Alfred Guzzetti (Bloomington, IN: Indiana University Press, 1977); Laura Mulvey, "Visual Pleasure and Narrative Cinema, *Film Theory and Criticism*, Sixth edition, ed. Leo Braudy and Marshall Cohen (New York: Oxford University Press, 2004) 839-841. Finally, according to Allen, "the task of psychoanalytic film theory became one of exposing the construction of the subject as an illusion and thereby revealing the truth of ideology from a cognitive standpoint that is outside it" (453). See also:

Jean-Louis Baudry, "Ideological Effects of the Basic Cinematographic Apparatus," *Film Theory and Criticism*, Sixth edition, ed. Leo Braudy and Marshall Cohen (New York: Oxford University Press, 2004) 362-363.

[233] Lippit 67.

[234] At the time of "The X-Rays" publication, Münsterberg had finished his planned three-year tenure at Harvard as the director of the experimental psychology laboratory, the first established outside of Europe, after meeting William James at the 1889 international congress of psychologists in Paris and developing a vigorous correspondence with James. Richard Griffith writes the most complete biographical account of Münsterberg's work in his introduction to Münsterberg's *Photoplay*. Richard Griffith, "Forward," *The Photoplay: A Psychological Study. The Silent Photoplay in 1916*, Hugo Münsterberg (New York: Dover Publications, 1970) vi-vii.

[235] Griffith vii. In his forward to *The Photoplay*, Griffith writes that Münsterberg's death at fifty-three, while delivering a classroom lecture, was precipitated by the stress of his outspoken attempts to foster German/American relations in the pre-war climate after August 1914. Griffith writes that Münsterberg saw himself as a "missionary" to whom "the Great War was an unimaginable catastrophe, nearly the wreck of everything. In the two years that remained to him, he tried to use all his influence to stop the war, or, failing that, to ensure that the United States did not enter on the British side…" (ix). According to Griffith, prior to this Münsterberg enjoyed the friendship and provided counsel to such men as Woodrow Wilson, Theodore Roosevelt and Andrew Carnegie. Griffith writes, "Industrialists trusted him because although he was a philosophic idealist, as the head of a psychological 'laboratory' he was very evidently an empiricist in everyday affairs —and he gave their own empiricism a scientific cachet" (x).

[236] Münsterberg, *Photoplay* 46.

[237] Jonathan Auerbach, *Body Shots: Early Cinema's Incarnations* (Berkeley: University of California Press, 2007) 47.

[238] Ibid.

[239] Fredericksen 428.

[240] Hugo Münsterberg, *The Americans*, trans Edwin B. Holt (New York: McClure, Phillips & Co., 1904) 437.

[241] Hugo Münsterberg, "Psychology and Life," *Psychology and Life* (Boston: Houghton, Mifflin and Company, 1901) 32.

[242] Münsterberg, "Psychology and Life" 21.

[243] Münsterberg, "Psychology and Life" 21.

[244] Münsterberg, "Psychology and Life" 19.

[245] Münsterberg, "Psychology and Life" 25.

[246] Qtd. in Fredericksen 427. Hugo Münsterberg, *The Eternal Values* (Boston: Houghton, Mifflin & Company, 1909) 74.

[247] Münsterberg, "Psychology and Life" 24.

[248] Fredericksen 425.

[249] Hugo Münsterberg, "The X-Rays," *Science*, New Series, Vol. 3, No. 57 (31 January 1896): 161.

[250] Ibid.

[251] Hugo Münsterberg, "Psychology and Mysticism," *Psychology and Life* (Boston: Houghton, Mifflin and Company, 1901) 237.

[252] Münsterberg, "Mysticism" 236.

[253] Münsterberg, "Psychology" 5.

[254] Münsterberg, "X-Rays" 162.

[255] Ibid.

[256] Münsterberg, "X-Rays" 163.

[257] Fredericksen 424.

[258] Münsterberg, "Psychology and Life" 25.

[259] Münsterberg, "Psychology and Life" 22.

[260] Münsterberg, "Psychology and Life" 23.

[261] Fredericksen 428.

[262] Münsterberg, "Psychology and Life" 19-20.

[263] Münsterberg, "Psychology and Life" 32.

[264] Fredericksen 425.

[265] Allan Langdale, "S(t)imulation of Mind: The Film Theory of Hugo Münsterberg," *Hugo Münsterberg on Film; The Photoplay: A Psychological Study and Other Writings* (New York: Routledge, 2002) 16.

[266] Gregory Currie, *Image and Mind: Film, Philosophy, and Cognitive Science* (New York: Cambridge University Press, 1995) xxiii.

[267] Frederickson 425.

[268] Frederickson 426.

[269] Münsterberg, *Photoplay* 73.

[270] Joseph Anderson, *The Reality of Illusion: An Ecological Approach to Cognitive Film Theory*, (Carbondale, IL: Southern Illinois University Press, 1996) 166.

[271] Currie xvi. At the end of their recent cognitive studies both Anderson and Currie are faced with providing an explanation for filmic engagement based on cognitive psychology. Each end or resolve their discussions with narrative: engagement with a film, be it via Anderson's concept of *play* or Currie's *imagination*, ultimately rests on viewer's ability to become involved in a story. *Imagination*, similar to Anderson's concept of *play*, is a cognitive activity that relies on the "capacity to see things inside the frame as being of a different order than things outside the frame" (163-164). Via this conception, he overcomes the sense in film theory that we suspend disbelief as we watch a film; this allows him to claim that *imagination* is the cognitive process by which film fictions are engaged (Currie 281-282). Anderson explains that we enter a motion picture because we are able to frame the event as an opportunity "to play," which is a "cognitive practice";[271] watching a motion picture *is* play (126). Ultimately, it is intriguing that the results of Anderson and Currie's investigations cast humanities-based conceptions – play and imagination – as cognitive activities best understood via experimental psychology. These activities, as activities, can't possibly be understood outside the realm of science.

[272] Münsterberg, *Photoplay* 65.

[273] Fredericksen 428

[274] Fredericksen 428.

[275] Fredericksen 429.

[276] Fredericksen 423.

[277] Noël Carroll, "Prospects for Film Theory," ed. David Bordwell and Noël Carroll, *Post Theory: Reconstructing Film Studies* (Madison, WI: University of Wisconsin Press, 1996) 48.

[278] While their idea of cognitivism is far less psychologically and biologically rooted than Currie and Anderson's ideas, Bordwell and Carroll suggest, "if our essays converge in any one area, it might be said to occur with respect to 'cognitivism.'" David Bordwell and Noël Carroll, "Introduction," *Post Theory: Reconstructing Film Studies* (Madison, WI: University of Wisconsin Press, 1996) xvi.

[279] Currie xvii.

[280] Bordwell & Carroll xv

[281] David Bordwell, "Contemporary Film Studies and the Vicissitudes of Grand Theory," *Post Theory: Reconstructing Film Studies* (Madison, WI: University of Wisconsin Press, 1996): 29.

[282] Bordwell & Carroll 1, xiii

[283] Carroll, *Prospects* 48-9

[284] Anderson 4

[285] Noël Carroll, "Film/Mind Analogies: The Case of Hugo Munsterberg," *The Journal of Aesthetics and Art Criticism*, Vol. 46, No. 4 (Summer 1988): 490, 492.

[286] Münsterberg, *Photoplay* 64.

[287] Carroll, "Film/Mind" 492.

[288] Münsterberg, *Photoplay* 46.

[289] Ibid.

[290] Münsterberg 74.

[291] Hugo Münsterberg, *Psychotherapy* (New York: Moffat, Yard, 1909) 125. Qtd in Donald Fredericksen, "Hugo Münsterberg," *Routledge Companion to Philosophy and Film*, ed. Paisley Livingston and Carl Plantinga (New York: Routledge, 2009) 423.

[292] Fredericksen 423.

[293] Ibid.

[294] Currie xiv

[295] Currie 281.

[296] Anderson 10.

[297] Anderson 12.

[298] Münsterberg 79.

[299] Münsterberg, *Photoplay* 77.

[300] Lippit 67. However, the shadow-images produced during the novelty and single-reel eras offer a different conception of the power of radiation Lippit offers in his predominately post-World War II examination of the violence induced by the destruction of surfaces he ascribes to the technological developments of modernity and the concurrent conceptions of modern dialectical subjectivity. When he writes, "the absolute radiance unleashed by the x-ray now absorbed the subject, enveloped it in a searing light," one cannot help but draw a connection to the destruction of Nagasaki and Hiroshima (67). What are markedly not evoked by his description are the x-ray images that circulated at the time of the confluence of technologies that penetrated corporal boundaries.

[301] Münsterberg, *Photoplay* 19, 24, 77.

[302] Jean Baudrillard, "The Precession of Simulacra," *Simulacra and Simulation*, 1981, Trans. Sheila Faria Glaser (Ann Arbor, MI: University of Michigan Press, 1994): 2.

[303] Baudrillard 20.

[304] Baudrillard 27.

[305] Brigitte Peucker, "Effects of the *Real*: Michael Haneke's *Benny's Video* (1993), *Kino-Eye: New Perspectives on European Film* 4.1 (8 March 2004), web, 20 September 2007.

[306] Mattias Frey, "A Cinema of Disturbance: The Films of Michael Haneke in Context," *Senses of Cinema* (September-October 2003), web, 20 September 2007. Also see: Adam Bingham, "Life, or Something Like it Michael Haneke's *Der siebente Kontinent*," *Kino-Eye: New Perspectives on European Film* 4.1 (8 March 2004), web, 20 September 2007.

[307] In an interview Haneke invokes the hyper-violence of a *Natural Born Killers*: "My goal here was a kind of counterprogram to *Natural Born Killers*. In my view Oliver Stone's film, and I use it only as example, is the attempt to use fascist esthetic to achieve an antifascist goal, and this doesn't work. What is accomplished is something the opposite, since what is produced is something like a cult film where the montage style complements the violence represented and presents it largely in a positive light. It might be argued that *Natural Born Killers* makes the violent image alluring while allowing no space for the viewer. I feel this would be very difficult to argue about *Funny Games*. *Benny's Video* and *Funny Games* are different kinds of obscenity, in the sense that I intended a slap in the face and a provocation." Christopher Sharrett, "The World That is Known: An Interview with Michael Haneke," *Cineaste* 28.3 (Summer 2003): 31.29.

[308] Catherine Wheatley, "The Spectator as Moral Agent: Kantian Ethics and the Films of Michael Haneke," *Plato's Cave to the Multiplex: Contemporary Philosophy and Film*, Ed. Barbara Renzi and Stephen Rainey (London: Cambridge Scholars Press, 2006): 64.

[309] Ibid. D.N. Rodowick, *The Crisis of Political Modernism: Criticism and Ideology in Contemporary Film Theory* (Berkeley, CA: University of California Press, 1994).

[310] Wheatley 67.

[311] Wheatley 71.

[312] Ibid.

[313] Miriam Bratu Hansen, "Room-For-Play: Benjamin's Gamble With Cinema," *Canadian Journal of Film Studies* 13.1 (Spring 2004): 4.

[314] Benjamin "Theatre and Radio," *Selected Writings* Vol. 2, 1932, Ed. Marcus Bullock, Howard Eiland, and Gary Smith (Cambridge, Mass: The Belknap Press of Harvard University Press, 1999): 585, Qtd. in Hansen 14.

[315] Hansen 15. Walter Benjamin, *Gesammelte Schriften*, Vol. 7 (1982): 369. See: Walter Benjamin, "The Work of Art in the Age of Its Technological Reproducibility," Second Version, 1936, *Selected Writings, 1935-1938*, Vol. 3, Trans. Edmund Jephcott, Howard Eiland and others, Ed. Howard Eiland & Michael Jennings (Cambridge, Mass.: The Belknap Press of Harvard University Press, 2002): 113. Italics in original

[316] Hansen 14.

[317] Jamie Poster, "Looking and Acting in Computer Games: Cinematic "Play" and New Media Interactivity," *Quarterly Review of Film and Video*, Vol. 24 (2007): 327.

[318] Benjamin, *Gesammelte Schriften*, Vol. 3 (1982): 131. Qtd in Hansen 4.

[319] Qtd in Poster 327.

[320] Michael Haneke, Interview by Serge Toubain, qtd. in Peter Brunette, *Michael Haneke* (Urbana, IL: University of Illinois Press, 2010): 37.

[321] Paul is alternatively named Jerry or Butthead; Peter is alternatively called Tom and Beavis.

[322] Hansen 4. Benjamin, *Gesammelte Schriften*, Vol. 3 (1982): 131.

[323] For an analysis of Haneke as a practitioner of Brechtian cinema see Traja Laine, "What Are You Looking at and Why? Michael Haneke's *Funny Games* (1997) with His Audience," *Kino-Eye: New Perspectives on European Film* 4.1 (8 March 2004), web, 20 September 2007.

[324] Gunning, "Modernity" 300.

[325] Sergei Eisenstein, "The Structure of the Film," *Film Form*, Ed. & Trans. Jay Leyda (New York: Harcourt, Brace & World, Inc., 1949): 162.

[326] Eisenstein 161.

[327] Richard Combs, "Living in Never-Never Land: Michael Haneke Continues the Search for a New European Cinema," *Film Comment* 38.2 (Mar/Apr 2002): 28.

[328] André Bazin, "The Evolution of the Language of Cinema," *What is Cinema?* Vol. I, 1958-1965, Trans. Hugh Gray (Berkeley: University of California Press, 1967): 24.

[329] Bazin, "Evolution," 33-34.

[330] André Bazin, "An Aesthetic of Reality," *What is Cinema?* Vol. II, 1958-1965, Trans. Hugh Gray (Berkeley: University of California Press, 1967): 28.

[331] Ibid. As practiced by Eisenstein, Soviet montage located shock and fragmentation both within images and in their confrontation via editing. For Eisenstein the continuity offered in a work of

art creates the organic unity of the work regardless of the verisimilitude or dialectic form used to evoke this union.

[332] Bazin, "Evolution," 25

[333] Casetti 31. Casetti works from the original French in this selection; the passage in English may be found in André Bazin, "The Ontology of the Photographic Image," *What is Cinema?* Vol. II, 1958-1965, Trans. Hugh Gray (Berkeley: University of California Press, 1967): 15.

[334] Bazin, "Aesthetic" 25, 26.

[335] Casetti 31-2.

[336] Timothy Corrigan, "Immediate History: Videotape Interventions and Narrative Film," *The Image in Dispute: Art and Cinema in the Age of Photography*, Ed. Dudley Andrew (Austin, TX: University of Texas Press, 1997): 315

[337] Lukács 56.

[338] Georg Lukács, *The Theory of the Novel*, 1920, Trans. Anna Bostock (Cambridge, Mass: The MIT Press, 1996): 60.

[339] Benjamin, *The Arcades Project*, 1007, n. 4.

[340] Walter Benjamin, *Gesammelte Schriften*, vol. 5 (1982): 962. Translated and qtd in Christoph Asendorf, *Batteries of Life: On the History of Things and Their Perception in Modernity*, Trans. Don Reneau (Berkeley: University of California Press, 1993): 5. Also see Walter Benjamin, "On Some Motifs in Baudelaire," *Illuminations*, Ed. Hannah Arendt (New York: Schocken Books, 1968): 159. Walter Benjamin, "Karl Kraus," *Selected Writings 1927-1934*, Vol. 2, Trans. Rodney Livingstone, Ed. Michael W. Jennings, Howard Eiland, & Gary Smith (Cambridge, Mass: Belknap Press of Harvard University Press, 1999): 433-458.

[341] Benjamin *Gesammelte Schriften*, 962. Qtd in Asendorf 5.

[342] Benjamin *Arcades*, 1007, n. 4.

[343] Ibid.

[344] Brigitte Peucker, "Fragmentation and the Real: Michael Haneke's Family Trilogy," *After Postmodernism: Austrian Literature and Film in Transition*, ed. Willy Riemer (Riverside, CA: Ariadne Press, 2000), 177, 176.

[345] Asendorf 5.

[346] Mary Ann Doane, *The Emergence of Cinematic Time* (Boston, Mass.: Harvard University Press, 2002): 15.

[347] Ibid.

[348] Miriam Hansen, introduction to *Theory of Film: The Redemption of Physical Reality*, by Siegfried Kracauer, 1960 (Princeton, NJ: Princeton University Press, 1997): xxv.

[349] Kracauer 72.

[350] Walter Benjamin, *The Arcades Project*, Ed. Rolf Tiedemann, Trans. and Ed., Howard Eiland and Kevin McLaughlin (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1999): 1007, n. 4.

[351] Corrigan 310.

[352] Ibid.

[353] Benjamin "Baudillard," 161-174.

[354] Asendorf 5.

[355] Benjamin, "The Work of Art," Second Version, 1936, 119.

[356] *Funny Games*, dir. Michael Haneke, perf. Susanne Lothar, Ulrich Mühe, Arno Frisch, Frank Giering, 1997, DVD, Kino, 2006.

[357] Benjamin, *Gesammelte* 962. Qtd in Asenderf 5.

[358] Ibid.

[359] Haneke, Interview by Serge Toubain, qtd. in Brunette, 26

[360] Jean Baudrillard, "The Ecstasy of Communication," The *Anti-Aesthetic: Essays on Post-modern Culture*," Ed. Hal Foster (Seattle: Bay Press, 1983): 127. Qtd. in Corrigan 318.

[361] Jean-Luc Nancy, "Of Being Singular Plural," *Being Singular Plural*, 1996, Trans. Robert Richardson and Anne E. O'Byrne (Stanford, CA: Stanford University Press, 2000): 14.

[362] Nancy 5.

[363] Ibid.

[364] Corrigan 318.

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