The Cinema and its Spectatorship:

The Spiritual Dimension of the 'Human Apparatus'

By

Martha Blassnigg

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... a thesis in flux, whose metaphor is the angel

Abstract

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This thesis undertakes an excursion into the network of science, art, and popular culture at the end of the 19th century to examine the interrelations between these various strands in relation to the emerging cinema and its so-called spiritual dimension. Instead of an ontology of the image, or a cultural (metaphorical) analysis of spirits, phantoms or spectres as immaterial manifestations, this thesis proposes an ontology of the spectators' perception through which the spiritual dimension, frequently associated with audio-visual media, should be sought within the perceptual processes of the mind.

It takes the cinema spectators' experience into the centre of this investigation and argues for their active participation in and understanding of the cinema as philosophical *dispositif* from the very beginnings of its inception. It looks into the interconnections between the various constituencies that shaped the projecting image technologies and their reception at the time. In particular the context of a broader intellectual framework and concerns about time, movement, memory and consciousness, reveal a thickness and complexity especially in the interrelations of the oeuvres of Jules-Étienne Marey and Aby Warburg. Henri Bergson's system of thought, germane to these concerns, will be elaborated in detail and used to build an ontological/ anthropological model of the cinema spectator in order to suggest how the contradictory forces of the rational and the 'irrational' can help us understand the spiritual dimension of the emerging cinema. The cinema *dispositif* in this approach appears as a paradigm to exemplify the productivity of this nexus and provides a platform for further research into issues such as consciousness, precognition, intuition and psychic phenomena. The spectator in this anthropological/ ontological discussion — treated in a conceptual way and grounded in a historical context — appears in a fuller dimensionality that allows us to accommodate the so-called spiritual dimension beyond the dichotomy of the material and immaterial, the body and the mind. This model of the cinema spectator that this thesis proposes can be defined as an embodied, immanent and above all actively participant agent, which can be extended into a wider discussion of the perception, uses and interpretations of technology.

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Acknowledgements

Often when I started my writing day with a walk to the small rocky beach on the Hoe, I would contemplate the sun, the sound of the waves and the strains of classical music from the little café. It was such an idyll that at times I wondered how I ended up writing in this amazing place: I wondered if the *image* that I experienced was 'for real' because sometimes it seemed as if there was 'a wind blowing from paradise'. For the French philosopher Henri Bergson, thoughts and actions were intrinsically interchangeable; an idea, if it wanted to become alive, had to be lived as an experience, hence expressed as an activity. In this sense, an intellectual piece of work has to be regarded as penetrating into all areas and dimensions of ones life. As a philosophy, it 'is a life', as Gilles Deleuze has put it in one of his last works and through his oeuvre. My experience of doing a PhD was very much like these philosophers have expressed it and I can only hope that I have been able to animate my thoughts in such a way that they might turn into future exchanges as lived experiences.

In this sense it seems impossible to give credit to all those special people I have been privileged to encounter on this path and share precious moments in my life, which all have become in some way or other part of this project. I have decided to leave these gestures of gratitude to the domain of lived experience where I hope to have the chance to thank everybody in future encounters. In this spirit I would like to express here in these few words merely a modest 'thank you' to all of them, colleagues, friends and family, who have so generously engaged with me and my project over these last years.

This network of inspiring encounters also extends backwards and forwards to Vienna and to Amsterdam, where at the Netherlands Filmmuseum a chance encounter ultimately gave life to the initial ideas. It seems that a long line of 'coincidences' has brought this project into life; I restrict myself here to mentioning merely three nodes in this complex network that led me to this project: Manfred Kremser at the University of Vienna who has been incremental in shaping my anthropological approach to the topic of spirituality, and at the University of Amsterdam: Patricia Pisters who introduced me to Bergson's philosophy through her inspiring work on Gilles Deleuze, and Jojada Verrips whose insightful exchanges helped me situate my academic encounter with the dimension of angels which is always at risk at being disavowed by scientific methods and tools. Manfred, Patricia and Jojada most generously engaged with my ideas and were crucial in stimulating and inspiring me to develop this project.

Along with all the generosity that I have encountered on the way, this thesis, it has to be said, was inspired by an essentially immaterial dimension, most notably I feel indebted to the brilliant mind of Henri Bergson who has illumined my thinking and experiences through his spirit that persists in the momentum of his writing with such extra-ordinary originality, clarity and rigour. I also would like to mention my grandmother Lotte Hahn who with her inventive, inspiring and self-determining spirit has inspired me since my childhood and with whom I am grateful to have been able to share unforgettable moments both in life and during my research project engaging with her life and artworks. In both their spirits I would finally also like to acknowledge another immaterial dimension: the presence of countless *images* that have contributed to my thinking, feeling and being, especially those from the two creative sources of nature and film.

Since according to Bergson it is memory that links spirit with matter, it is my precious memory of all those shared moments in which the most strenuous efforts and engagements took place that finally shaped the material form of this thesis: in particular the generous help with the writing style and language; many thanks to Aparna Sharma and Judy Punt who have been an invaluable help through their patient reading and help to reduce my long and complex sentences. And to Michael Punt whose thoughtful, intuitive and insightful reading helped me negotiate between my rhizomatic pathways of thinking and my persistent habits of precision; is to him that I owe the courage to thrust this document into the realm of memory whilst its momentum remains in flux, and perfection is necessarily an aspiration.

Finally, in the spirit of this thesis, I would like to thank the reader, since only through this 'con-spirational', 'con-spiritual' engagement, will my thoughts become alive in ever new forms; I would like to ask forbearance with the insufficiencies that may be experienced and hope that our encounter will bring forth further exchange and possibly collaborations in the future.

Martha Blassnigg   June 2007

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> Let us suppose that we have to do a piece of intellectual work, to form a conception, to extract a more or less general idea from the multiplicity of our recollections. A wide margin is left to fancy, on the one hand, to logical discernment on the other hand; but, if the idea is to live, it must touch present reality on some side; that is to say, it must be able, from step to step, and by progressive diminutions or contractions of itself, to be more or less acted by the body at the same time as it is thought by the mind.
>
> (Bergson, 1991, p. 173)

Prologue

The *image* and the *angel*

Accounts of apparitions of *angels* whether experienced or imagined, and their appearance in allegories and art rarely claim authenticity for features such as form, colour, shape or texture that can be confirmed in a scientific, physical sense of a materialised existence. *Angels* seem to exist in the multi-sensorial perception of the beholder alone. *Angels*, like *images*, are not representations of a 'real', yet the perception of them cannot be considered as pure illusion. Since it can be argued that the difference between an *image* created through ordinary perception and extra-sensory perception does not differ in kind but merely in degree within a wider sensory spectrum, *angels* can be regarded as an epiphenomenon of the interstices between matter and spirit, beyond their various interpretations as for example as messengers, guardians, photonic fields or forces. There is invoked in this description of the *angel* another entity that straddles apparatus (matter) and experience (spirit): the cinema.

Here cinema is not merely an interface, but as a reflection of the projection itself it is seen as an interstice ascribed with a temporal quality where spirit and matter meet. In the

cinema it is not the 'real' we perceive, nor is it a 'representation', but as it will be argued in this thesis it is through an ontological, relational-perceptual model that the dimension of the spirit can be revealed within the perception of the spectator. In what follows, the *image*, the *angel* and the cinema as philosophical *dispositif* are ever present as overlapping concepts.

Introduction

The starting point of this thesis was informed by the hypothesis that if there exists a 'spiritual dimension[1]' in relation to human consciousness[2] that is not dependent on the concept of belief or imagination, its validation must be situated independently of religious or cultural institutions. Consequently the discussion of the spiritual dimension in this thesis proceeds from an ontological understanding, and explores it in relation to the way that immediately after its introduction to the public, the cinema became a platform where otherworldly dimensions were being displayed, expressed and made accessible. From whatever point we look at the cinema in the way it has emerged and been shaped through various periods and transitional phases, the engagement, interpretation and experience of so-called 'spiritual' dimensions persist, most evidently in popular culture,

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[1] The term 'spirit', 'spiritual' or 'spiritual dimension' is used in this thesis according to its etymological origins from Latin *spiritus* (breath) and the Greek term *psyche*, standing for the principle of animation, or life (Stowasser and Losek, 1994), also referring to the conception of the mind. It inherently reveals an ontological dimension segueing into an understanding of the 'spiritual dimension' in this thesis as experience embedded in the ordinary perceptual processes of the human mind. This definition excludes any references to religious practices or theological heuristics, as well as to any other forms of institutionalised or personal belief systems. This approach is reminiscent with Allan Kardec's definition of the term in his *The Spirit's Book* originally published in 1857; he applies the terms 'spiritist' and 'spiritism' to institutionalised forms of beliefs and practices in spirits and the otherworldly, and the terms 'spiritual' or 'spiritualism' to an acknowledgement that there exists something more than matter, however, this latter definition does not include beliefs in the existence of spirits, or communication with the visible world. (Kardec, 1989, p. 21)

[2] The term consciousness is here used according to Bergson who seems not to adhere to its to strict definition, when he mentions that: '... life is connected either with consciousness or with something that resembles it.' (1998, p. 179) He further states that: '... for want of a better word we have called it consciousness.' (1998, p. 237) This notion will be further elaborated in the following chapters.

the film's content, and occasionally in some theoretical approaches in film and cinema studies. This arena of a popular engagement with the 'spiritual' constitutes a threshold that in the discourse of cinema studies has been underexplored and largely ignored. Whenever the issue of the spiritual has been studied, the responses by and large have departed from the spiritual as a transcendental or imaginary plane detached from the evidence that spirituality can be and is experienced. Most frequently these studies rely heavily on textual analysis, that is, understanding the film as encoded text with its very specific form that habitually visualises the spiritual dimensions through conventions such as superimposition and the remediation of conjuring techniques. Some historical accounts have discussed the spiritual dimension in the context of personal or institutionalised belief systems or beliefs in magic associated with either the technology itself or the psychological precondition of the spectators, often related to naïve or animistic and pantheistic worldviews.

This thesis addresses the so-called spiritual dimension relative to the cinema by building on recent criticism and historical revisions to suggest another way of looking at the spiritual. It will situate the spiritual in a discussion of the very human perceptual processes during the activity of cinema perception. Cinema perception here is taken to be a conscious human response in the presence of a particular apparatus and it's setting beyond textual or contextual theories on the reception studies of audiences. This thesis does not claim to answer any unresolved questions about the nature of the human spirit nor the popularity and persistence of this dimension in cinema but attempts to establish a new perspective for investigations into the spiritual dimensions of the human condition in respect of the cinema perception. It will pave the way for a consideration of spirituality relative to the emergence of cinema by firmly situating this topic in the historical context of the late 19th century and an identification of the converging forces and aspects of science, spiritual practises and popular culture.

The intellectual focus of this thesis lies in the period from the 1890s until approximately 1907[3] when those constituting elements and imperatives that shaped the emerging cinema[4] are particularly evident as a network of forces that impacted on the interaction of the spectators with the cinema apparatus. As new historicist approaches[5] to cinema have shown, it was a period characterised by heterogeneous forms of production, exhibition and reception that were continuously transformed, in contrast to the later stabilised system and industrialised standardisation which became the dominant form of the cinema *dispositif* as we know it today. This thesis does not treat films as a product with content, but it rather addresses the cinema as a *dispositif* with its various apparatuses at work. The term *dispositif* was initially applied to the cinema by Jean-Louis Baudry (1975) and translated in English into the misleading term 'apparatus'. It is being used in this thesis in its French version which Frank Kessler has reminded us indicates an arrangement or assemblage of heterogeneous elements, as well as a certain 'tendency' that the connections between the elements bring forth and their interplay resulting in a specific historical formation. (2004, p. 1) The term 'apparatus' instead is used in this thesis in the sense of either the technology or devices[6].

This thesis is situated at a convergence of cinema studies, philosophy and anthropology as an interdisciplinary[7] investigation into the dimension of the human spirit in the context

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[3] This is commonly regarded as the period of the emerging cinema before certain production and distribution processes became standardised and industrialised, and the narrative structure and continuity editing became the dominant techniques applied to film form.

[4] This thesis avoids the term 'early cinema' and 'pre-cinema' since they commonly refer to a teleological, determinist perspective that looks at the cinema as the presupposed outcome of a linear progressive development from hindsight.

[5] The new historicist approach will be addressed in chapter 1; it relates to the revisionist approach to historical research in the 1970s as amongst others proposed and applied by Gallagher and Greenblatt (2000).

[6] From Latin *apparare*: make ready; *parare*: prepare. Defined as: '(1) The things collectively necessary for the performance of some activity or function; the equipment used in doing something; a machine, a device'. It is also defined in the sense of a system of government: '(2b) The organs etc. by which a natural process is carried on... (4) An organization within a political party or State.' (Shorter Oxford English Dictionary, 2002, 5th edn.) The term 'apparatus' will be distinguished through the context in the text, and only when specifically referring to Baudry's definition it will be referenced.

[7] As Kellert, Longino and Waters proposed: 'The appreciation of the need for interdisciplinary approaches in science studies aligns with pluralism at the metaphilosophical level. Because the scientific enterprise is itself a complicated phenomenon, no single disciplinary approach can

of the cinema experience. When film and cinema theory and philosophy are brought together in one and the same discourse, what often happens is that philosophers assume the position of film theorists and vice versa, a tendency which has often revealed problematics of a particular bias[8]. While this thesis touches upon selected strands of research from both disciplines and merges them in a dialogue with each other, at the same time it avoids assuming either or both positions. The methodology used in this thesis is first and foremost a meta-discursive approach using insights gained from cultural anthropology to open up a discussion beyond specificities of film form and content, culture or period. This thesis proceeds from previous research on the spiritual dimension of the human existence in the context of empirical data, a strategy for which cultural anthropology provides useful tools and methodologies[9]. From this vantage it discusses these strands from an ontological point of view and the perspective of the perceptual processes involved. The evidential base of this study is mainly in the past, the context of the late 19th century, consequently the methods employed comprise literature surveys, critical literature reviews, discourse analysis and philosophical synthesis. The literature review proceeds from a first-hand reading of original texts by Henri Bergson, Jules-Étienne Marey and others[10] and is extended through critical commentaries and contextual reading.

Through this reading the thesis undertakes a philosophical journey to explore those qualities and aspects of the cinema *dispositif* that lie beyond the visible, the surface and the text in audio-visual media and discusses them from a philosophical perspective with

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provide a fully adequate account of its conceptual, technical, cognitive-psychological, social, historical, and normative aspects.' (2006, p. ix)

[8] One of the successful exceptions of the 20th century may be the French philosopher Gilles Deleuze through his cinema books (1986, 1989).

[9] This conception builds on previous research including an empirical field-study conducted by the author as cultural anthropologist in the years 1997-2000 in Vienna and a broader observational context in Europe, which examined the extra-sensory perception of clairvoyants and the repercussions of related spiritual phenomena such as angelic apparitions in popular culture and in particular in relation to the multi-sensorial cinema perception. (Blassnigg, 2000)

[10] Other first-hand literature includes publications by Hugo Münsterberg, William James, William Crookes, Camille Flammarion, Allan Kardec, Thierry Lefebvre, etc. These texts have been read in the English translation according to availability, however, in some instances the French Original has been consulted to clarify terms and expressions. Any citations from French originals have been translated by the author and are referenced accordingly.

an ontological/ anthropological bias focusing on the perceptual processes of the spectators. It is not considered primarily as a contribution to the history of cinema, since it uses historical research selectively in order to establish an exemplary framework in which a contemporary discussion of the spiritual in relation to the emerging cinema can be located. This thesis takes a view of history that resonates with Jonathan Crary's introductory remarks in *Techniques of the Observer*:

> ... my broad temporalizing is not in the interest of a "true history," or of restoring to the record "what actually happened." The stakes are quite different: how one periodizes and where one locates ruptures or denies them are all political choices that determine the construction of the present. Whether one excludes or foregrounds certain events and processes at the expense of others affects the intelligibility of the contemporary functioning of power in which we ourselves are enmeshed. (1990, p. 7)

Recent historical research into cinema reveals that from whatever perspective the late 19th century audiences and the perception of cinema is studied, there is evidence of the popularity of engagement with spiritual dimensions. In relation to the history of cinema this aspect can no longer be ignored especially since there is a persistent trace of this engagement right up until the present day. The discussions of spiritual dimensions, such as they have been, have by and large been centred around the issues of 'belief' and the practices of magic, conjuring, spiritist séances and telepathy. This treatment has supported, and been reinforced by a general assumption that the audiences of the late 19th century were somewhat naïve or easily duped. Nothing is more symptomatic of this than the persistence of the totally unfounded myth of the early audiences ducking at the sight of the approaching train on the screen. This thesis rejects this assumption and supports the notion of a sophisticated audience by revisiting the wider intellectual framework that includes philosophy. It will do this through a review of literature and various historical sources, with particular focus on the works by Jules-Étienne Marey and Aby Warburg. In doing so it will resituate the spiritual dimension within the human perceptual 'apparatus' from the perspective of a contemporary reading of the philosophy of Henri Bergson. Through this it will be argued that the spectators can be regarded as having agency when they perceive and create meaning in the cinema and this agency includes a dimension which has hitherto been neglected: that of the spirit.

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As a consequence, part of this thesis aims to revise the 'I that makes the film', to use Christian Metz' notion, within a wider intellectual context than is usually adopted in film and cinema studies. (1975, p. 51) In this lies one of the original contributions of this thesis. When looking at what followed Metz' intervention it appears that this 'I' has been identified in film and cinema studies as for example a psychological 'I', a semiotic 'I', a transcendental 'I', a gendered 'I', a socially-constructed 'I', an economically determined 'I', a culturally shaped 'I', and so on. This thesis extends this catalogue of 'I's' to include the spiritual 'I'. This should be understood as significantly differentiated in its call upon ontology to become understood as embedded within the embodied 'I'. This conceptualisation takes us beyond the common treatment of the spectator's position, condition and reception in relation to specific films and will lead on to a discussion of the cinema *dispositif* beyond the textual (semiological, psychological, cultural, ideological) significance of film. Proceeding from Bergson it will critically revisit attempts to address the immaterial dimension in 'apparatus theory' and extend the conceptual framework that focuses on the ideological implications and constraints of the cinema 'apparatus' to an ontological/ anthropological approach which regards the cinema perception as an immanent, embodied experience of 'spiritual dimensions.' In this way this thesis aims overall to restore the human faculty of consciousness as a significant part of the cinema *dispositif* in its full dimensionality and hence it becomes not merely subservient to the ideological constraints of the cinematic apparatus but an empowering agency of the spectators' active engagement within the perceptual processes. In this lies a further original contribution of this thesis to the understanding of cinema.

Chapter 1 and 2 will review the historical context regarding a discussion of the spiritual in relation to the cinema experience during the late 19th century in the literature of film and cinema studies. It will place this review within a wider network of ideas and forces situated in the convergence of science, art and entertainment in order to ground them in an empirical framework. The first chapter addresses the claim that while cinema history has become more and more sophisticated in its procedures, the understanding of early audiences has by and large left them unchanged and without agency. It will discuss what

appears to be the two main ways in which audiences were assumed to be naïve: the first refers to an assumption that the cinema spectators were ignorant of the technology and attributed magic powers to it, the second one refers to the interrelation of the cinema reception in the 1890s and the belief in 'magic', the 'supernatural' or 'otherworldly', often referring to traditional world views such as animism or pantheism. The first two chapters will elaborate these claims in order to situate one implication of this thesis that calls for a fuller account of the spectatorship including the spiritual dimension in a discussion of cinema history.

The first chapter will draw attention to the scientific context of production, the cinematic context of distribution in relation to conjuring practise, and the public awareness of the advertising and marketing strategies of new technologies. It will refocus the historical significance of the intimate connection between the emerging cinema and conjuring relative to the public awareness of new technologies. By examining the specificity of the contract between the conjurer and the audience, which the emerging cinema appropriated, it will show that far from the audiences being naïve or believing in 'magic' the pleasure of the conscious and deliberated deception, knowing that the cinematic apparatus produced an illusion which perceived it 'as if it was real', can be regarded as constituting one of the driving forces of the persistent popularity of the cinema as an entertainment form.

The cinematic apparatus in this reading appears as a double that functions both as a material manifestation of a technological process and as a conduit for less material dimensions to be experienced which needs to be seen against the background of a proliferation of spiritist practices throughout the 19th century. This 'doubling' was quickly recognised by magicians and conjurers who exploited the cinema in their performances and shows, extending even to film productions as in the case of Georges Méliès in France, David Devant[11] and George Albert Smith[12] in England, and Harry

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[11] David Devant became business partner of John Nevil Maskelyne's Egyptian Hall in London. (Milbourne, 1973, pp. 167-179; Barnouw, 1981, pp. 54-59)

[12] George Albert Smith, first a Magic Lanternist and later filmproducer and pioneer in the emerging cinema, also closely collaborated with the Charles Urban Trading Company which will

Houdini[13] who initially became famous through his programme featuring 'Second Sight[14]' (Milbourne, 1973, p. 132) and even ventured into a brief Hollywood career. Similarly some spiritist séances also incorporated aspects of the new technology in their 'performance' and mise-en-scènes. This encouraged conjurers to imitate spiritist séances in their set-ups[15] which also influenced the mise-en-scène of the emerging cinema[16].

Despite these obvious interconnections most conjurers vehemently disavowed spiritual phenomena such as clairvoyance[17] or spiritist séances for strategic reasons. They found in the cinema, however, a platform with a similar contract with the audiences as in their conjuring shows: the conscious agreement to a distortion of the perceptual process. In this respect this chapter also reminds us that the spectators were very well aware of the mechanisms of the technologies involved in the cinematic processes, through popular scientific journals and not least the narrator's explanations that accompanied the cinema performances. By embracing both the rational and 'irrational' dimensions, the cinema *dispositif* became a platform for science and entertainment, in which a fascination with the immaterial or spiritual dimensions functioned as a significant underlying driving force of the spectators' engagement. This chapter suggests that the cinema's appeal lay in its ability to merge the idealists' metaphysical aspirations and rationalist scientific

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also be mentioned later on in relation to the early scientific film in chapter 4. (Herbert and McKernan, 1996)

[13] Harry Houdini, who named himself after the great Robert-Houdin, of Hungarian origin eventually moved to the US where he founded the Houdini Picture Corporation that turned into a financial failure. (Barnouw, 1982, pp. 78-93)

[14] The term 'second sight' refers to the phenomenon of clairvoyance; see Inglis (1985, pp. 47ff)

[15] For example the Davenport brothers imitated séances during their performance and were famous for being connoted with supernatural powers. (Milbourne, 1973, pp. 156-7)

[16] Similarities between the spirist séance, the cinema séance and the scientific investigations into the unconscious are being discussed in this chapter, as for example apparent in Albert Londe's stage where he photographed hysteric patients at the *Hospice de la Salpêtière*: the black background – also used in Georges Melies trickfilms – the props, the subjects and moving objects appearing as well light surfaces, and even certain gestures relating to either trance states or mystic experiences and ecstasy. (Braun, 1992, p. 90)

[17] Clairvoyance is a general term that refers to alleged psychic abilities to perceive things or events by an extended range of the power of our sensory system. It is associated with precognition, remote viewing, telepathy or extrasensory perception (ESP), which also includes clairaudience and sensations of a wider multi-sensorial range. In the best case (depending on the psychological constitution of the clairvoyant) it is a conscious activity that can be controlled and performed at will. See Inglis (1985, p. 47), Geley (1927, p. 29), Blassnigg (2006a/ b).

paradigms[18] in a single apparatus. It paves the way for chapter 2, which focuses attention on the somewhat neglected relationship between spiritist practices and the immediate appeal of the emerging cinema.

Chapter 2 discusses how some spiritist practices impacted on the way that the cinema was understood. It maps out the relationship between spirit photography, the Modern Spiritualist Movement[19] and other practices such as spiritist séances, telepathy, and their popular manifestations in the emerging cinema. It argues that the cinema *dispositif* should be understood as a platform that facilitated and accommodated socially sanctioned euphemisms, connotations and practices which ran counter to the dominant rationalist paradigm of science and the 19th century bourgeois materialist orthodox values. This antagonism has tended to encourage a rationalist history and suggests that we need to revisit the spectator of the emerging cinema as a sophisticated and intellectually developed participant in the interpretation of a technology, with an overt interest in 'otherworldly dimensions' as manifest in spiritist practices. The chapter, however, does not take these practices at face value and begins to identify the specific appeal of the cinematic apparatus in its intervention in the larger problems that lay at the heart of much of the discussion of the immaterial and otherworldly. It concludes by suggesting that the cinema as a time-machine could be understood as a technological manifestation of a contemporary philosophical *dispositif* in its release from external, quantitative time constraints. As such it leads us to a fuller consideration of the problem of time as it was widely discussed in the late 19th century relative to simultaneity, synchronicity and duration.

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[18] The bitter disputes between rationalists and idealists, mostly resulting in polemics, was nowhere more manifest than in the persecution through the courts and excessive condemnation of spiritualist and clairvoyance practitioners who claimed to be 'scientific' but were dismantled as frauds using trickery. See for example the case of Henry Slade (Inglis, 1977, pp. 277-85) or George Albert Smith. (Luckhurst, 2002, pp. 73-4)

[19] The Modern Spiritualist Movement arose in America; it is usually traced back to 1848 and the events around the famous Fox sisters in Rochester and their rapping séances (Pearsall, 1972, p. 29), which grew into a national and international exported movement attempting to construct a 'spiritual science' from the doctrines of mesmerism, electrophysiology, and reformist Christianity (Sconce, 2000, p. 12). For more background on the Modern Spiritualist Movement see for example *The Rise of Modern Spiritualism in America 1848-55* by Alan Gauld (1968, pp. 3-31), Braude (1983), Inglis (1992), Pearsall (1972).

A theorisation of the cinema spectatorship is always necessarily speculative, since it concerns a generalisation of a very intimate event and experience in a collective forum. Consequently, textual and contextual reception studies have oscillated between the extremes of an infinite pluralism on the one hand and essentialism on the other, either drawing on an 'empirical spectator' situated in a socio-economic context, or abstracting a subject-position constituted by the techniques applied in the film. This thesis discusses a subject-position of the spectator, which is not regarded as constituted by the film, but approached from an ontological/ anthropological perspective[20], in particular in the way the 'human perceptual apparatus' facilitates the accommodation of the immaterial, imaginative and spiritual dimensions of the cinema experience.

Chapter 3 begins this reconsideration of the spectators' engagement with an introduction to Henri Bergson's ontological approach to the perceptual processes as he elaborated them in his early works[21]. These were developed concurrently with the emergence of the cinema, but Bergson's system of thought is not taken into consideration for this more obvious reason. More significant is his recent reception in film and cinema theory especially as introduced by Gilles Deleuze and his *Bergsonism* (1991) and two cinema books (Deleuze, 1986, 1989)[22]. Bergson's philosophy is particularly appropriate for this

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[20] An overview on reception studies from an anthropological point of view with a focus on ethnographic film can be found in Crawford and Hafsteinsson (1996), in particular in the articles by Banks (pp. 118-134), Martínez (pp. 69-100) and Morley (11-27).
[21]*Essai Sur les Données Immédiates de la Conscience*, 1889 (*Time and Free Will*, 2001), *Matière et Mémoire*, 1896 (*Matter and Memory*, 1991), *L'Evolution Créatrice*, 1907 (Creative Evolution, 1998), *Introduction à la Métaphysique*, 1903 (*An Introduction to Metaphysics*, 1912)
[22] However, Deleuze touches on the topic of the spirit only marginally especially through the conception that the time image enables the cinema spectator to enter into a dimension of time and the dimension of spirit. Both in Deleuze's Bergsonism as well as in the broader contemporary recognition of Bergson's significance in film and cinema theory, the extension of consciousness and the realm of spirit within the human condition are still underexplored — Patricia Pisters (2006) has elaborated on the dimension of spirit in a Deleuzean reading of specific film texts. However, the focus in media studies and discussion of Deleuze's cinema theory by and large focus heavily on the concept of the 'virtual', which from a Bergsonian perspective, as Hansen (2004) or Mullarkey (2004) have pointed out, needs to be reconsidered in relation to the 'actual.' Deleuze's caution at the time, however, is not surprising considering that when he wrote his intervention in filmstudies in the 1980s in a post-structuralist, post-modernist context, the focus

thesis since his ontological approach enables a discussion of the spirit (*l'esprit*)[23] as embedded immanence within the embodied experience of the spectators beyond the dichotomy of realism and idealism and the ideological constraints of the cinema apparatus. Bergson, who originally trained as a mathematician, was very well aware of contemporary research into psycho-physiological phenomena, the unconscious, hysteria, aphasia, etc. and through his study of memory treated the perceptual processes of the human mind. His philosophy is also significant for this thesis since it addresses some of the underlying aspects that drove the popular and prevailing fascination with the 'spiritual' or 'immaterial', concerning discussions of time as flux, synchronicity, simultaneity and movement. Its particular significance for this thesis, however, derives from Bergson's understanding of *images* as situated in between the realist notion of a 'thing' and the idealist notion of a 'representation'. They are rather understood as multi-sensorial perceptions and fully embodied relational networks through which in the perceptual processes matter and spirit, outside and inside, meet through the faculty of memory. Bergson's system of thought reveals the underlying processes of 'becoming' through which he understands 'being' or 'life' as a continuous flux of change in duration, *durée*[24], driven by the *élan vital* (life-force).

This chapter will elaborate in particular how Bergson situates the dimension of spirit as related to matter within the ordinary perceptual processes of the human mind. The

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of his inclusion of Bergson's philosophy lay, as Guerlac points out (2004), on the concept of multiplicity and processes of becoming, with the aim to dismantle the dominant discourses of psychology and semiotics as part of his wider claims and objectives for his philosophical project.

[23] *L'esprit* is translated in *Matter and Memory* (1991) as the 'mind' or 'spirit', a translation that Henri Bergson in 1908 approved. Bergson also relates the terms 'soul' and 'mind' with one another, in the original terms *ame* and *esprit*. (1991, p. 11) These terms will be variously used in this thesis, following the most appropriate meaning with regard to the context.

[24] F.C.T. Moore has proposed an alternative translation of *durée* through the old English term 'durance', in this thesis, however, the term duration is being used according to the approved translation by Bergson, even though 'duration' does not exactly express the meaning of the French original. (1996, p. 59) Suzanne Guerlac in this regard remarked that the different meaning in the English translation of 'duration', lies in its reference to: '... a period of elapsed time considered retrospectively and bounded by time limits of a beginning and an end.' (2006, p. xiii). Bergson understood *durée* in his philosophy of time as a continuous flux of the whole of our internal states that are not spatially distinguished. See for example Bergson (2001, p. 100; 1996, p. 59). Wherever necessary the French original will be included in brackets in order to emphasise Bergson's meaning.

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foundation of understanding the human perceptual apparatus as an interface where spirit and matter meet, according to Bergson's philosophy, provides the basis to shift the focus in the following from the technology and the screen as interface to the broad spectrum of the spectators' processes of perception, where the spiritual dimension of the cinema *dispositif* is going to be resituated. This revision of his work, informed by a first hand reading and secondary critical commentaries, will define how Bergson's system of thought deals with the perception of the *image* in terms of a relational model rather than the model that dominated throughout a major part of the 20th century which refers to a 'representation of reality' or the materialist or phenomenological interpretations of the concept of the image. The dialogue with Bergson's system of thought also attempts to shed some of the current revision of Bergson's work, which has been distorted through certain teleological histories of the 'moving image.' This has been addressed by some contemporary theorists, such as Suzanne Guerlac who reminds us that the issue of experience has been ignored in the post-structuralist, French Bergsonism (Guerlac, 2004); and the philosopher John Mullarkey, who criticises the common bias in Media Studies for its emphasis on the 'virtual' in the contemporary reception of Bergson's philosophy[25]. A return to Bergson's published works provide the groundwork for two moves that constitute the main intervention in this thesis: a discussion of the spiritual within the perceptual processes of the cinema experience and, through this, a recognition of the spectator's agency in the way their engagement has shaped the emerging forms of the cinema. This introduces an ontological approach to cinema spectators, not merely metaphysically, but, as Elizabeth Grosz (2004) suggested, grounds them in the background of the historical, social and political context of the later 19th century, when read against the elaborations in the first two chapters.

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[25] Not least through a provocative title for his article, 'Forget the Virtual...' Mullarkey declares that: 'Driven by the popularity of Deleuze's use of the virtual, this image of Bergson (seen especially through *Matter and Memory*, published in 1896, where the idea is introduced) generates an imbalance that fails to recognise the importance of concepts of actuality, like space or psychology, in his other works. In fact, I argue that the virtual is not the key concept for Bergsonism and that there is a good deal of evidence in Bergson's other writings...' (Mullarkey, 2004) It is evident from this that also Deleuze's Bergsonism has been interpreted by some authors with an emphasis on the virtual which probably stems from a tendency toward a focus on the virtual in media studies pertinent to references of the post-human and the popularity of cyborg culture throughout the 1990s, the period that characterises the belated reception of Deleuze in English speaking countries after the translation of Cinema 1 and 2 in 1986 and 1989.

In order to ground this philosophical excursion into Bergson's philosophy, this thesis takes a detour in the following two chapters in order to apply it to the historical context of the emergence of the cinema. It will be used to inform a discussion and connect his philosophy of movement, time and duration (*durée*) to the discourse of the emerging cinema by looking at the intellectual, scientific and discursive precedents of cinema, especially some aspects of sophisticated commentaries and discussions around the issues of movement and time in the fields of art, science and philosophy. These two chapters will discuss specifically the interventions by the physician Jules-Étienne Marey and the art-historian Aby Warburg. This discussion highlights the intellectual ambition and original intervention of this thesis in that it establishes an interrelated triad comprising the innovative works of Henri Bergson, Étienne-Jules Marey and Aby Warburg in order to ground a discussion of the spiritual dimension. The complexity of this triad with its overlaps, reiterations and speculative connections means that it can only be partially unravelled and retain its coherence. Consequently chapters 4 and 5 ask from the reader forbearance and some patience in order to undergo this intellectual journey. However, the route it undertakes is vital to ground the interdisciplinary strands of this investigation, which are largely rooted in cinema studies, philosophy and anthropology. These moves (almost in the form of a zig-zag line) through the work of Marey and Warburg in relation to Bergson's philosophy, provide a dialogical structure which places greater emphasis on the relevance of Bergson's philosophy with a particular emphasis on a more sophisticated understanding of the emerging cinema as a pivot for investigations into the immaterial realms. Marey only remotely touches upon the immaterial aspects of these issues explicitly, and where he does so, he defers them to a discourse of aesthetics and the arts. To understand the significance of Marey's diversions, a brief account of Aby Warburg's intervention in respect of art will be valuable. Both Marey's and Warburg's interventions venture into the dimensions beyond the visual and the surface of appearances, Marey and Warburg intrinsically interrelate with Bergson's philosophical framework wherein the

activity of the perceiver's mind is pivotal in interrelating the dimensions of matter and spirit.[26]

Chapter 4 will elaborate on Jules-Étienne Marey's work, which will be shown to being intersected with contradictions and paradoxes; nevertheless he produced images of certainty for scientific research purposes. While his analysis of movement is most frequently referred to, his underlying research interest lay foremost in the issue of time as duration, simultaneity and synchronicity. His concern with time is intimately related to his analysis of movement, which he understood as the expression of an underlying energy or life-force manifest in any living organism.

While Marey's search for the principles of life is commonly regarded within a strictly scientific context in which he most frequently situated his work[27], this chapter argues that it needs to be acknowledged that his research touched the ephemeral or immaterial in various aspects. While some of these forces became evident in his early interest in aerodynamics and the movement of invisible energies in air and water, others were displaced into a discourse of art and aesthetics. The physical body, the prevailing object in physiology, for Marey represented merely the surface and symptoms of underlying forces. However, his investigations of course departed from a common basis in his belief that all these forces could be measured and explained by scientific methods. He recognised the insufficiency of our sensory system and language, which he sought to be resolved through scientific, technological instrumentation. In this respect he becomes a positivist foil for Bergson. However, in addition to Marey's generally acknowledged

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[26] This discussion is not about the emerging cinema per se, since in their own work, the cinema features only marginally; Bergson merely relates to it as an analogy in order to exemplify the tendency of the intellect and the scientific method, Marey's work has historically been insufficiently or sometimes even incorrectly applied to the discourse around the so-called pre-cinema technology mostly from a teleological perspective, focusing on the technological or material aspects. The significance of Warburg's work to the discussion of cinema has only recently been elaborated on notably by Philippe-Alan Michaud (2004). Therefore the discussion in chapter 4 and 5 focuses on they way they addressed the immaterial and situated it in a discourse on art and philosophy with overlapping points of connection.

[27] Marta Braun (1992) has published the most extensive research on Marey's work at a time when he was only marginally known and his work still undervalued partially due to the misappropriation and misconception of his work in various teleological accounts of cinema histories.

body of work, this chapter will emphasise some unexplored aspects of Marey's interest in art by making unprecedented links in the literature of the 19th century between art, science and the occult.

In a review of the literature going back to primary sources in addition to secondary commentary, Marey's composition and construction of his chronophotographs will be discussed. Attention will be paid to the understanding of aesthetics, comprising the mise-en-scène, subjects/ actors, lightening, composition, etc., as well as some notions on the suggested use of chronophotography for artists and their study of the human body in motion in his publication *Movement* (1895). This will be contextualised in a brief overview of contemporary photographic practice, debates around instantaneous photography, the discourses surrounding the 'persistence of vision' and some commentaries on an interpretation of Rodin's work relative to Bergson's philosophy. The intimate interconnections discussed in chapters 4 and 5 reiterate the close networking and exchange between scientists, artists and the public, revealed in chapters 1 and 2, and in this double contextualisation lies one of the original contributions of this thesis. It reveals that by looking at Marey's work from the perspective of Bergson's philosophy and against the wider intellectual background of the time, Marey's marginal statements regarding his interest in the immaterial appear crucial to understanding his significance for the emerging cinema possibly more than his frequently cited stop-motion images.

Chapter 5 places Marey's work alongside the art-historian Aby Warburg's insistence that art was primarily movement; an internal motion and dynamism that existed prior to the material form and from which it could be retrieved. Once Warburg is introduced into the interpretation of Marey's work (particularly in the presence of Bergson), it appears less surprising that his instantaneous photographs have been applied and remediated by early 20th century avant-garde artists. However, while Futurism and Cubism emphasised the simultaneity of instantaneous movements in regard to Marey's work, as Braun argues, it is most notably Antonio Giulio Bragaglia and his photodynamism that reveals similar concepts of flow, energy, dynamics and speed which, as this chapter claims, all three — Bergson, Marey and Warburg — share. This strengthens the connection to the 19th

century preoccupation with the visualisation of invisible forces as it was practiced through an application of photography to capture the manifestations of spirits during spiritist séances, or in spirit photography, as discussed in the first two chapters.

While Bergson makes continuous indirect references to chronophotography in his early works, it is not until *Creative Evolution*, published in 1907, that he explicitly referred to the cinematographic mechanism, which he compared to the processes of our intellect and the scientific method. In his view the cinematographical method exemplifies the mechanisms of the intellect, the splitting of the whole into single instances, where time has been compromised to a measurement in space. With this in mind it becomes clear that Bergson understood the cinematic apparatus technologically — exactly as the scientific community understood it in the 1890s and expressed in its nuanced form in the work of Marey. What emerges from a close reading of Bergson's analysis in a wider intellectual context, however, is that when his system of thought is applied in a contemporary interpretation to a discussion of the cinema spectators, it allows us to more fully account for the psychical dimensions. The key issue of time as quality as it is experienced through conscious processes of the human perceptual apparatus becomes paramount. Chapter 6 then reveals the key intervention of this thesis as it applies a contemporary interpretation of Bergson's system of thought to this human dimension in the presence of the historic cinematic apparatus and asks what this means for the way we can understand the cinema as a philosophical *dispositif*.

Chapter 6 addresses the view that the dominant systems of thought and heuristic models within film and cinema theory throughout the course of the 20th century have not proven satisfactory to fully account for the persistence of the spiritual connotations of the cinema. In the 1960s apparatus theory attempted to address the specific viewing condition of the cinema *dispositif* and included a discussion of the rather immaterial issues of the cinema experience in its discourse, conceptualised mainly through a psychoanalytical interpretation of the spectators' participation in relation to the ideological imperatives inherent in the apparatus. This chapter will suggest how the immaterial dimension of the cinema *dispositif* can be addressed from a Bergsonian

perspective, not in the apparatus, nor in the image or the interpretation of the image, but with a particular focus on time as duration in the spectators' experiences and the processes of the intellect and intuition. This is contextualised through a discussion of the dominance of movement over time in film and cinema theory. In a post-Deleuzean reading of Bergson, after having resituated him in the context of the late 19th century, this approach will offer a new possible reading of his insights into perception, time and matter beyond the film text and form. This will more fully account for the way in which the complexity of the cinematic *dispositif* can support the claim that there is a spiritual dimension to the perception in the cinema. This insight suggests shifting the focus from the attention of the cinema as technological apparatus to an understanding of its philosophical implications, and what could be coined as the 'human perceptual apparatus', in order to relocate from an ontological perspective a discussion of the spiritual dimension of the cinema within the processes of perception in the spectators. In this way the cinema *dispositif* will be discussed as an exemplification of Bergson's thinking and be reinterpreted as a pivot for an anthropological-philosophical study, providing a platform to resituate the discussions around the spiritual dimension in the experience of time as *durée* in the conscious engagement with *memory-images* in the perceiver.

This chapter will argue that the cinema *dispositif* engages the spectator in a special condition, where the conscious engagement with 'spirit', which for Bergson is constituted by pure memory in the virtual realm of the past with the potential to actualise in the present, evokes and provokes a conscious engagement with the spectator's own perceptual apparatus. Consequently the cinema in this way can be re-interpreted not merely as an epistemological interface of an establishment to create meaning, but also as a vehicle that facilitates an amplification of spiritual experiences, which in a Bergsonian sense can be understood in a rather political sense as means for action. Hence this thesis is first and foremost a contribution to the way we think about cinema and understand its *dispositif* by placing the human as interpretive agent in the centre of the investigation. It suggests that in this light, the restrictions on the spectators' interpretive framework must be weighed against the space of freedom for the spectators' perception to subvert the

experiences of quotidian human perception and proposed ways to examine them with a more sustainable ontological approach specific to the context of the cinema experience. In short, this move characterises a shift from the treatment of the spiritual as belief (or delusion) to an acknowledgement of the spiritual as experience (a participatory engagement). This finally allows us to consider the cinema experience as an epistemology within the empirical-ontological framework established in this thesis and suggests an application of Bergson's philosophy through an interdisciplinary cross-fertilisation between cinema studies, visual anthropology and consciousness studies. Cultural anthropology, in particular Geertz' notion of 'interpretive anthropology' (Geertz, 1983), visual anthropology, in particular MacDougall's notion of 'shared consciousness' (MacDougall, 1998), Varela's and Maturana's concept of *autopoesis* (1980) and Henri Bergson's philosophy are suggested as useful methods that may enable a more sustainable approach to understanding the perception of cinema in a contemporary context — this constitutes the main discussion in chapter 7.

Chapter 7 briefly touches upon some aspects that emerged from this investigation and indicates a potential for further research, in particular addressing the issue of consciousness, intuition and research into psychic phenomena. In a comparative approach between the clairvoyant perception and the perception of the cinema they will be regarded as both constituting an amplification and extension of the ordinary perceptual faculties. It attempts to outline such an approach and the suggested inclusion of a more 'mature' anthropology drawing on discussions of the self-reflexivity of the participant observer, and the oscillations between an inside (emic) and outside (etic) point of view. Although this repeats the orthodox problematic of the subject-object dichotomy that appears to surface in the epistemological interface of the screen, Bergson's philosophy, as it is used in this thesis in relation to the cinema, offers a liberation through his different approach both in regard to the concept of the *image* and the subject-object positions of the cinema spectator reconceptualised as 'observing participant'. Bergson's philosophy suggests a way to incorporate both the subjective and objective perspective as two distinct motions of the intellect that oscillates between introspection (intuition) and

ideological framework by liberating the spiritual dimension of the spectators' perceptive capacities and conscious engagement within the cinema *dispositif*.

The application of Bergson's system of thought in this thesis allows us to situate both the rational and the 'irrational' and their diverging, contradictory forces, such that the cinema appears as a paradigm exemplifying the productivity of this nexus. Treated in a conceptual way and grounded in a historical context, the spectator in this vision appears in a fuller dimensionality that allows for the inclusion of an 'irrational', or so-called spiritual dimension. This model of the spectator is defined as an 'I', to extend Metz' notion to an embodied, immanent and above all an actively participatory agent or 'observer'. Chapter 6 concludes that in a wider contemporary context this may allow us to rethink the users of technology in a more heterogeneous way by including a broader spectrum of dimensions that may impact on the way technology is understood, interpreted and used.

By placing the 'human perceptual apparatus' in the main focus of the cinema *dispositif* this finally allows us to critically review the reductive connotations of conjuring and the belief in magic[28] which have haunted our understanding of the spiritualist practise and the popularity of the cinema. This thesis has resituated the spiritual dimension within the

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[28] In the literature there often seems to occur a synonymous application of the terms magic and conjuring, actually concurrent with the Shorter Oxford English Dictionary (2002, 5th edn.), while there is a clear distinction to be made in relation to the professional practice and the use of the term magic in relation to a transcendental experience. Conjuring in contemporary terms is understood as a professional practice of trickery produced by sleight of hand or other natural means. Magic can additionally be understood as an enchanting quality of the unknown or mysterious, in terms of a mystical experience or the mystification of an ephemeral phenomenon. The connection between this specific figurative quality of 'magic' and conjuring lies in the origin of the word conjuring from Latin *conjurare* meaning 'band together by an oath', 'conspire', or 'invocation of supernatural powers by appealing to an oath or something sacred.' (Shorter Oxford English Dictionary, 2002, 5th edn.) This conspiracy points to a transitive aspiration of the performer with his subject matter, between the technology and the spectator, especially to the specific contract with the audiences who know there is something involved that is not revealed to them, and which in the case of the cinema always exceeds the rational understanding of the involved perception. This characteristic has often been implied in the connotations of the cinema experience with 'magic', whereby the cinema is regarded as a 'universality'. In this respect Edgar Morin called it a 'natural esperanto' and elaborates on the internalised magical qualities of the human mind such as metamorphosis or doublings in relation to the cinematic perception, as an immediate perception of the soul. (2005, pp. 189-199)

outward rational investigation, both culminating in the moment of perception, the moment when matter and spirit meet.

This chapter further suggests acknowledging extra-sensory experiences as part of the broad spectrum of the human perceptual capacities and processes in their engagement with cinema perception, as outlined in the application of Bergson's philosophy to the cinema *dispositif* in chapter 6. Instead of highlighting the cinema as an extra-ordinary situation, or an 'altered state' of consciousness, it proposes a claim for a condition of extended consciousness in a Bergsonian sense as part of the cinema experience, situated within the quotidian perceptual faculties of the human mind. In this sense it resituates certain notions that have been applied to the cinema experience, such as 'transcendental' capacities, notions of a metaphysics of technology or film form, phenomenological approaches to the screen or the image, or discourses of 'representation', and places them within the agency of the conscious processes of the spectator. This thesis suggests that Bergson's philosophy, grounded in scientific research and ontology, paves the way for a more rigorous and sophisticated investigation into these phenomena. In this way it proposes a special claim for the cinema as being a paradigmatic arena for further research into processes of human consciousness from a perspective grounded in a convergence of an empirical and philosophical framework.

Through the critical review of the reductive connotations of technology and magic this thesis attempts to provide a more rigorous theoretical and methodological framework to study the spiritual implications of the cinema experience as well as to lay the ground for wider implications of technology and the 'technological imaginary'. In this way the so-called 'spiritual dimensions' of the cinema experience can be understood not in the sense of conditions of altered states, connotations with magic or transcendentalism, but rather as revealing an exemplary arena in the cinema *dispositif* to illuminate and enhance the workings of our quotidian human conscious processes — a threshold where spirit and matter meet.

In a final after*image* this thesis will reflect on the prologue that addressed a speculative interrogation of the ephemeral qualities of the *image* and shift the analogy with the concept of the *angel* to a consideration of the projecting stream of light as providing the constituent medium of the cinema in its most ephemeral dimension, revealing the domain of consciousness as shared spiritual experience[29].

Terminology

In this thesis some key terms are used in specific ways and the definition of these terms is taken up in the footnotes, usually where they first appear. With regard to the spelling, this thesis uses the English spelling except in the citations where it follows the original text unremarked. The term Cinématographe, is used when refering to the patented apparatus or technological device, it appears as cinematographe or cinematic apparatus when the term refers to a generality of moving image apparatuses, practise or the technological concept. When the term cinema is used, it is understood as the cinema *dispositif* as defined in the introduction, in case it is used in a different sense it will be identified in the text. The term 'spirit' is used according to Bergson's philosophy, as introduced in chapter 3 and as defined in footnote 1; the term 'spiritual' or 'spiritualism' relates to an acknowledgement of immaterial forces, while the term 'spiritist' or 'spiritism', as introduced by Allan Kardec (1989, p. 21), refers to the belief in spirits and the otherworldly (see also footnote 1). The term *image* is italic when it is used in a Bergsonian sense as defined in chapter 3, otherwise it refers to the common meanings of 'image' related to the specific context[30].

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[29] The preparation for this argument along with some of the ideas for the *afterimage* have been developed for a presentation at the International Conference: Consciousness, Theatre, Literature and the Arts at the University of Wales, Aberystwyth, 7 - 9th of May 2005 and published in the proceedings (Blassnigg, 2006b), as well as in Blassnigg (2006a).
[30] The term 'image' comprises a broad spectrum of meanings, such as a representation, appearance, likeness, copy, mental representation, idea, description, metaphor, figure of speech, etc. (Shorter English Oxford Dictionary, 2002, 5th edn.)

Chapter 1

Cinema and 'Magic': The Figure of the Spirit in the Cinema *Dispositif* and the Context of Science, Cinema Distribution and Conjuring Practise

This thesis aims to restore a fuller account of the audience's perception and engagement with the cinema. The first chapter establishes a framework that allows us to go back to the period of the 1880s and 1890s and connect with some of the threads or dead-ends of history that have been lost or underexplored in cinema studies. The following discussion presents a selective choice among a vast range of literature and does not specifically account for the national differences or specific social and economic frameworks that are interrelated with these phenomena. The main objective of this chapter is to problematise the commonly attributed naivety to the audiences for which the discussion in the following chapters seeks relief and liberation.

The connotations of naivety and passivity with regard to the cinema spectators partially have to do with bad history: before the 1970s there was hardly any access for historians to the materials of film archives. Gunning gives an overview on the historicisation of the cinema before the new-historicist period and talks about three significant assumptions that underpinned the so-called continuity model of the classical cinema histories: the first he calls the 'evolutionary assumption' that saw the so-called 'early cinema' as a predecessor of the more mature film styles and practices, which developed from 'infancy' into an artform. (1996, p. 71-72) This teleological and determinist perspective has been very common and still haunts cinema history and leads repeatedly to distorted theorisation. The second assumption, the 'cinematic assumption' (1996, p. 72), according to Gunning derived from the first and points to an essentialist argument of the cinema's inherent potential as an artform, which according to film historians such as Béla Balázs (1952), Georges Sadoul (1948, 1972), Jean Mitry (1967) or Jerzy Toeplitz (1972), in the period of the emerging cinema was restricted to the technological and theatrical first steps. This view refers again to an 'infantile' emerging cinema as a predecessor to the more mature classical narrative cinema with its continuity editing style — a teleological view driven by a belief in the continuous progression of technology

expressed in film form. One of the problems with both these assumptions is that they tend to proceed as though a media technology such as the cinema is fully born at a particular moment in time, or at least it is discussed as if the cinema has been introduced as a form that we understand as the 'cinema' today. Lisa Gitelman reminds us that:

> The introduction of new media... is never entirely revolutionary: new media are less points of epistemic rupture than they are socially embedded sites for the ongoing negotiation of meaning as such... Their histories must be social and cultural, not the stories of how one technology leads to another, or of isolated geniuses working their magic on the world. (2006, pp. 6-7)

This revisionist critical perspective is pertinent with new historicist research into the emergence of the cinema. These revisions have revealed that when in 1895 the Lumière Cinématographe was introduced to the public in Paris, as other projecting devices already had earlier on[31], they were not perceived as so important and outstanding as has often been claimed by hindsight. They were competing with other, at times, even more successful, technological innovations and inventions, as for example the X-Ray[32], which according to Harding and Popple was as popular as the cinema in 1896 in Britain (1996, p. 18) and promised more sensationally than the cinema a visualisation of the body's interiors without the use of a camera or lenses. Only when looking back does the emerging cinema seem to bear a greater importance to us today than it actually had in a wider context of technological innovations and the entertainment industry at the time. Such a perspective has repeatedly produced teleological, determinist perceptions on how

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[31] The Lumières renamed what originally was called 'projecting chronophotographe' to 'Cinématographe' when they patented their apparatus in February 1895. The name draws on Étienne-Jules Marey's Chronophotograph of which the Lumières possessed an example, since they were well connected with Marey. See Braun (1992, pp. 193-4). Marey comments on this novel solution of projection technique: '[This invention], under the name Cinématographe, attained considerable success, and its name, which is only that of a particular chronophotographe, will long remain associated in memory with all syntheses of movement.' (Braun, 1992, p. 195)
[32] The history of the discovery of the X-Ray has suffered a similar faite as that of the cinema, Wilhelm Conrad Röntgen patented the device in 1895, while Ivan Pulyui had already obtained images by 1890 using what he called in published scientific papers (1880-1883) invisible light. The X-Ray is defined as 'Invisible electromagnetic radiation having a much shorter wavelength than light between 10-8 and 3x10 metres...' (Cambridge Encyclopedia, 2000, 4th edn., p. 1190) The various technologies such as evacuated glass tubes derived from numerous contributions such as by Ivan Pulyui, Heinrich Hertz, Johann Wilhelm Hittorf, William Crookes, Nikola Tesla, and Philipp Eduard Anton von Lénárd, to name a few. This reiterates the various histories of projection technologies, which ultimately settled on the Lumières as the inventors.

the cinema came about, which treated the cinema like other discussed media 'as the self-acting agents of their own history.' (Gitelman, 2006, p. 9)

As a third assumption, the 'narrative assumption' (1996, p. 72) Gunning refers to a semiotic perspective on the cinema as introduced by Christian Metz in the 1960s, which assumes a narratological development from single one-shot sequences in the early days to the introduction of the cinema as narrative medium with D.W. Griffith's epics. This evolutionary view on the cinema as a medium with a continuous development into something more advanced, goes along with a separation from literature and especially the theatre, in particular when during the 1960s Film Studies claimed its own place as a theoretical body within Universities, having originally derived from literature studies, language departments and linguistics. It precariously balanced its place between the arts and sciences with some recent attempts to bring it even closer to the sciences by borrowing the methods from neighbouring disciplines such as literature studies, linguistics and psychology, or as it for example happened in the 1970s through the introduction of cognitive science to film studies[33]. It could be stated that it is due to this bias toward positivist science or at least the framework of a rationalist inflected intellectual environment, that consequently the 'immaterial' or rather 'ephemeral' dimensions intrinsic to the medium's perception and interpretation was necessarily undermined by its discourse, even though they persisted in the popular perception and popular genres such as science fiction, Japanese anime or the magic realist cinema. Consistent with the rationalist scientific paradigms, however, the prevailing discussions on film form have been dominated by discourses around realism[34] while a more popular agenda of immaterial connotations in relation to the cinema *dispositif*, evident from the very beginnings of its existence, has remained underexplored or neglected.

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[33] Cognitive science draws on the empirical study of the mind, exploring issues such as brain mechanisms, emotions, artificial intelligence, imagination, perception, and the acquisition of specialised knowledge and abilities like language, and was introduced by David Bordwell and Noël Carroll (1996) into film studies as an approach rather than a 'theory'. See also Carroll. (1996, pp. 321-335)

[34] See for example Bazin's conception of realism informed by French phenomenology (1967), Kracauer (1997), or socio-economically determined materialism in relation to cinema (Chanan, 1980; Jameson, 1990).

The orthodox teleological and determinist histories of the cinema have been critically reviewed, especially after the inception of the closer connection and collaboration between theorists, historians and archivists. The 1978 annual meeting and symposium 'Cinema 1900-1906' of the *Federation of International Film Archives* (FIAF), held in Brighton, England, signified a landmark in a revisionist approach to so-called 'early cinema' studies. This meeting between archivists, historians and theorists stimulated and initiated new historical research into cinema by going back to original archival materials, both film and non-film materials which appeared to reveal new and sometimes contradictory evidence in regard to existing historical accounts. As a consequence of a widespread investment in national and local film archives around the world, film histories were not written any longer from the memory of one screening, but incorporated a variety of aspects of cinema history alongside a close examination of the film materials in order to contextualise them within the framework of other original resources such as exhibition documentation, patents of various technological devices, programmes, contemporary journals, advertising, censorship board information, surveys, etc. The examined films themselves in this context have since then been understood as open systems in the way their material shape and distribution has undergone continuous change and reinterpretation throughout history (from production, distribution and censorship to restoration)[35]. These attempts to rescue film history from teleology and determinism have criticised the orthodox mechanistic approaches with their implicit assertions of chains of cause and effect and have instead examined a historical perspective in more complex ways[36], for example by: '... reconciling the creative actions of individuals and groups with specific social, economic and intellectual contexts.' (Punt, 2000, p. 148) The period of the late 19th century provided a pivot for these revisions, not only since it signified the

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[35] It needs to be remembered that, as is estimated by film historians and archivists, the still surviving nitrate film heritage up to the 1920s is considered to constitute only 10% of the film production in the early years. Many films got lost not only through fires, bad storage and the decomposition of the medium but also were willfully destroyed during the introduction of the sound film or simply discarded because they were not considered as interesting any longer. (Cherchi Usai, 1994, p. 18)

[36] See for example the work of Noel Burch (1973), Michael Chanan (1980), Jean-Louis Comolli (1986, 1980), Tom Gunning (1995, 1989, 1986, etc) André Gaudreault (1990), Charles Musser (1997, 1994, 1991), Thomas Elsaesser (1998, 1990), John Fell (1983), to mention merely some of the most well known pioneering attempts.

emerging manifestations of the cinema in the form of public performances with a single screen, but also because there were still questions around the 'why' regarding the emergence and popularity of the cinema for which none of the varyious approaches could provide satisfactory answers.

The extensive exploration of economic, socio-cultural and technological determinants that impacted on the formation of the emerging cinema *dispositif* have more recently shifted the emphasis to reception studies and the significance of the spectators as determining agents in these processes. Throughout these innovations within film and cinema studies, however, the bias has remained within the materialist paradigms arguing for realism particularly in regard to the fascinations with technological innovations in capturing movement, as the main argument for the popularity of the emerging cinema; an imperative that has created an apparent impasse within its subject matter. While acknowledging scientific data from psychological and neuroscientific studies of perception, projection, identification and emotional response, and the wider socio-cultural and economic frameworks (to mention but a few of the more recent textual and contextual reception studies), these still restricted perspectives commonly overlook historical evidence on — not so much the interrelation and the fascination with the occult in popular culture — but more importantly the spectators' awareness of the amplified perceptual experience in the cinema, which more fully acknowledges the dimensions of what could be coined as the 'human perceptual apparatus'[37].

In this way mainstream film and cinema studies still by and large overlook the revised understanding of cinema as a pivot for the convergence between science, art and spirituality in a more sophisticated and complex model than simply seeing them as separate forces at work. The evidence for this converging complexity can be retrieved in film content, but also, and this is what this thesis intends to elaborate further, in a revised understanding of the very implicit processes in the cinematic experience of projection, perception and conscious interaction with the human mind in an entangled encounter

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[37] The term apparatus is here applied to an understanding of the human perception as a nexus of a variety of processes, as later exemplified through Henri Bergson's philosophy, set out specifically in chapter 3 and also in the discussions of the following chapters.

between matter and spirit, screen-interface and mind. While Gilles Deleuze's cinema theory has attempted to recover some of these dimensions from a philosophical perspective, his treatment of the cinema in a historical perspective is built on similar assumptions as critically reviewed by new historicists such as Gunning's suggestion above. What also becomes apparent is that despite an increasing sophistication in historical research, the treatment of cinema audiences has remained more or less the same in terms of their agency and left them in the assumed shadows of naivety and passivity[38]. In order to recover the spiritual dimension as an element embedded in the cinematic processes from a historical and anthropological perspective which departs from the material and embodied experience, this thesis starts by going back to the beginnings, to the period of the 1880s and 1890s where significant shifts in the intellectual and popular context related to the emergence of the cinema occurred.

The problematic identified in many cinema histories is that they do not provide adequate intellectual methods to acknowledge the incompleteness of data and the quality of the sources in relation to the investigators' framework — a problematic that has been dealt with for example in the discipline of cultural anthropology in particular by Clifford Geertz' (1973, 1983) critical reflection on interpretive frameworks, whose work was also influential for the new historicist method. From a different angle Lisa Gitelman (2006) has recently pointed to the problematic of the media producing their own history, especially in regard to the by now generally acknowledged convergence of a variety of forces during the emergence of public projection practices. This suggests that one needs to look critically and carefully at the often rather sensationalist accounts of technology as it was exhibited at the time[39], such as the introduction of cinema and the popular engagement with spiritualist séances, both of which may have been hyped in popular journals and newspapers. While these may merely feature the loudest voices they do not necessarily represent a broad spectrum of possible interpretations. A famous example for

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[38] This treatment goes so far as to the extent that in media theory there appears a general misconception that the digitisation and interactivity of 'new media' environments are supposed to have liberated the passive audience from the cinema 'cave.' This thesis clearly takes a position against such assumptions.
[39] See for example Singer (1995), Gunning (1986, 1994), Mücke (2003).

this is the myth of the panic that accompanied one of the first screenings of a train's arrival at a station, such as the Lumière film *Arrivée d'un train en gare de Villegranche-sur-Saon* (Arrival of a train at the station Villegranche-sur-Saon), where spectators are reported to have screamed and ducked in their seats. This, however, turned out to have been a sensationalist distortion of early cinema history written in the 1910s. (Gunning, 1989, p. 31) Alan Williams has rather emphasised the sophistication of the general audiences:

> This public was presumed to be interested in the question of the "realism" of the images, though certainly *not for the sake of the subjects represented* but for the demonstration they afforded of "scientific" interests and technical virtuosity. (Williams Alan, 1983, p. 158 – emphasis in the original)

It has to be acknowledged that we will never know what actually happened and can only approach an approximation while being fully aware of the distortions of memories and processes of selections that are necessarily subjective and context-driven. In this light of uncertainty and post-objectivism, nonetheless theorists are still struggling with methodologies to support any valid epistemology[40]. Most cinema histories take a variety of sources into account often based on micro-historical archival research, to make claims about a particular strand or aspect of the investigation, while even in their recently more common synthesis of approaches in the 1990s they always necessarily remain partial and selective. It has been acknowledged that the emerging cinema of the late 19th century in particular seems to escape any attempt of explanatory models due to its complexity of interwoven forces and interrelations, and its manifold transformations. Cinema histories have extended and brought forth a large amount of material discussing cinema technology, institutions, the exhibited films and their audiences. In some of these accounts, the inclusion of a discussion around 'spiritualism', which had a widespread popularity in Western countries especially throughout the second half of the 19th century, has been used to explain certain characteristics of the emerging cinema, mainly focusing on the entertainment side of these practices.

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[40] Miriam Hansen gives a lucid account of the theorisation and discusses the inherent problematics of a historicisation of spectatorship in *Babel & Babylon: Spectatorship in American Silent Film.* (1991)

In some of these attempts to recover the intrinsic spiritual dimensions in a historical revision of the period of the emerging cinema undertaken in a broader context of film and cinema studies, this dimension has often been referred to as the 'magical' quality of cinema[41]. This association with 'magical' has usually either born direct references to the involvement of magicians and conjurers in the early film production or to their stage magic and theatrical illusions incorporated in the film content; yet there have also been more problematic ontological connotations to either a certain connoted mysteriousness of the technology, the particular theatrical setting in its similarities to spiritual séances or the psychological effect of audio-visual[42] perception and finally to predispositions of the psychological mechanisms or the audiences aspirations and expectations. In short, the most frequent treatments of 'magic' with regard to cinema are either those that attribute technology or the quality of the image with a mystified agency or power, and/ or those that ascribe a pantheist or animistic worldview to the spectators' engagement with the cinematic technologies. These approaches commonly do not treat the audiences as heterogeneous and sophisticated, neither do they acknowledge the films of the period as carefully constructed products. Furthermore, as the following discussion intended to revise these connotations will show, in most cases the notion of 'magic' retains an understanding of the cinematic experience within the unsatisfactory restrictions of a framework of re-presentation and the dichotomies of body and mind or subject and object relations. It will moreover reveal an almost universally determinist understanding of technology and most significantly a view of the audiences as naïve.

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[41] The term 'magic' has been commonly used in regard to the ability to exercise psychic control over matter, often over distance and/ or through summoning the help of spirits or other forces. As Inglis states, this research area into the psychic control over matter exercised by mediums, as it was very widespread in the second half of the 19th century, constituted a: '... grey area, in which European observers found difficulty in separating the physical from the psychical elements in magic.' (1992, p. 24; see also 1985, pp. 263-266)

[42] It needs to be remembered that performances of the emerging cinema were usually never silent, but accompanied by music, sound effects and a narrator who commented on the various programs and acts. (Abel and Altman, 2001) Also it needs to be emphasised that the first known experiments with the play-back of visual recordings in the Edison West Orange, New Jersey, studio called 'Black Maria' by William Kennedy Laurie Dickson some time between Sept. 1894 and March 1895 included live sound recordings. The sound for these test recordings of the Kineto-Phonograph were discovered on a broken wax sound cylinder at the Edison National Historic Site and restored in 2000. This 15 seconds clip is available on a DVD compilation by the National Film Preservation Foundation (www.filmpreservation.org).

The following sections intend to outline how new historicist research has established a more differentiated and sophisticated understanding of the 'cinema apparatus' in its complexity of sources, functions and meanings; from the imaginary, the technological to the interpretative frameworks of the perception of cinema technology. They will look in particular at the dense period of technological inventions and innovations of the late 19th century. A number of theorists have shown since the 1970s that beyond a mere film analysis and the construction of the very common generative accounts of movie histories to prove the progress of film as an art form, it has proven useful to look more closely into theories on the history of technology. By additionally emphasising the engagement of the audiences and the distribution and reception of the apparatus, the following revision serves to find more re-constructed and sophisticated approaches to an understanding of how cinema has been shaped and understood at the time and where the term 'magic' has been located in the theoretical contexts of the meta-commentaries.

1.1 Science and the Emerging Cinema Technology

This section begins by discussing the theoretical treatment of the period of the emerging cinema, in particular the specific scientific interests and their relation to the immaterial and to their audiences.

Revisionist historical research reveals the emergence of cinema at a nexus of converging forces; most studies have either focussed on the scientific, economic, or socio-cultural frameworks, all of which appear to have impacted on the development of the so-called 'moving image' devices in the 1890s. Regarding the production side of early cinema, new film history has moved away from deterministic, linear accounts of first's of inventions, exhibitions, etc., and revealed new insights by broadening the scope of research and original resource materials such as photographs, paper prints, programmes, posters, patents, advertising, etc. The following section discusses the particular intersection between science, technology and studies of the paranormal from a production

point of view and the way in which this nexus impacted on the formation of emerging cinema technology.

Recently it has proved useful to focus part of the research on the history of cinema technology as a pivot of converging forces (economic, social, imaginary, etc.) and one of the constituting aspects of its development. While thorough historical reviews on technologies surrounding the emerging cinema have been integrated in historical research only partially up to the 1980s, it has become a significant strand in the canon of new cinema history[43]. As Peter Wollen reminds us, cinema technology is a heterogeneous conglomerate of various scientific areas, it: '… covers developments in the fields of mechanics, optics, chemistry and electronics.' (Wollen, 1980, p. 20) Historical research into the second half of the 19th century has revealed that cinema technology has not been 'invented' as a complete product but has emerged from a convergence of innovations by a variety of scientists from various disciplines, often in collaboration with instrument makers and also simultaneously in various locations around the same period, as documented from numerous countries in Europe and the USA[44].

From this perspective cinema technology emerged from devices that were originally developed as scientific instruments or at least in a scientific context in close collaboration with instrument makers and technologists, as for example in the case of the Lumière's Cinématographe in Lyon[45] in collaboration with Jules Carpentier, and Thomas Alva Edison's Kinetoscope developed in his laboratories by William Kennedy Laurie Dickson[46], or the Theatrograph[47] by the scientific instrument maker Robert Paul in the

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[43] See for example reseach by Deac Rossell (1998, 1995), Raymond Williams (1989, 1974), Brian Winston (1996), Michael Punt (2000).
[44] See for example the historical elaborations by Burch (1990), Chanan (1980), Elsaesser (1990, 1998), Gunning (1986, 1995), Musser (1997, 1994, 1991), Punt (2005, 2004, 2000).
[45] Alan Williams pointed out that the Lumières, positioned as 'scientific' industrialists in the photographic business, used their established networks and channels to exhibit their novel technology as a demonstration of the workings of the apparatus in order to distinguish their interests from a vaudeville style entertainment as for example the Edison's kinetoscope. (Williams, 1983, p. 158)
[46] See Charles Musser's study of Edison, *Edison Motion Pictures, 1890-1900: An Annotated Filmography* (1997).

UK. Talking about the cinema as 'invention' (as the phonograph, the telephone or the X-Ray photography have been classified) has been criticised as not referring to the correct term[48], since the cinema as we understand it now, first of all did not exist at the time. Furthermore what was exhibited was rather a conglomerate of various existing technologies merged into one or several separate apparatuses[49], with some innovative features added to existing optical devices, all aimed toward the creation of an appearance of movement. The illusion of movement in the visual perception was achieved by the specificities of the projection technologies that were holding each frame of a filmstrip (paper-strip or glass plates) still in the gate for fragments of a second, which also was interrupted by a shutter to reduce the flicker effect[50]. These specificities point to the fact that the projection technologies were developed alongside scientific research into the physiology and psychophysiological processes of visual perception, as will be discussed later.

Similar to the previously discussed traditional cinema histories, historical overviews on exclusively technological developments traditionally have also been grounded in a trend of deterministic and teleological approaches embedded in a thinking of progress. More recently there have appeared less (or so-called 'soft') deterministic accounts, as for example discussed by Marx and Smith (1994), including critical counters to determinism, which emphasise the complex processes involved in the development, production and

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[47] The Theatrograph was renamed Animatograph at a screening of the second prototype at the Alhambra in London in 1896. It was a copy of Edison's Kinetoscope with new features, since Edison had not patented his apparatus in Europe. (Barnouw, 1981, p. 56)

[48] See for example David Nye's definition of invention as fundamental breakthrough in entirely new devices in contrast to innovations understood as improvements or extensions of existing technologies. (2006, p. 33f)

[49] In the case of the Lumière Cinématographe it was one single apparatus used as camera, printer and projector. Jules Carpentier, instrument maker in Paris, built the Cinématograph for the Lumières: a light-weight small wooden box that housed a transport mechanism, a hand-cranked shutter system, a detachable lens and a mirror system, operating at a speed of 15 frames/second. The film after the exposure was rewound, ready for chemical processing. The Cinématographe was simply turned into a printer using contact processing and then into a projector using an external light source. (Lumière, 1967, pp. 49-51)

[50] The projection speed varied at the time, usually between 16-20 images per second, in Europe today the speed is 24 images per second. For a good overview on this topic see Brownlow (1990).

reception of technology. Soft deterministic visual media histories[51] have brought to our awareness that technological devices of visual deception and illusion have been popular for centuries and have elaborated on their developments, intersections and characteristics in, what could be called, encyclopedias of optical technologies, and these have further broadened the spectrum of data and perspectives to be drawn upon. In these archaeological studies of audio-visual media, the various cinematic apparatuses often appear as novel technological machines extending previous optical devices, instruments and toys, and tend to repeat, although more sophisticated, the pitfall of teleology.

The commonly used term 'pre-cinema' resonates with the perspective of technological determinism in that each previous invention is understood as a homogenous and linear development that finally convergenced as the cinema. In contrast, Barbara Maria Stafford (2001, 1999, 1997, 1994) takes a more complex approach to technology in her work by including a wide range of converging disciplines and forces, as she explores in *Devices of Wonder* (2001). In this she examines analogous conceptions of both old and new technologies, which she also calls 'media machines', and explores their social and cultural implications and intersections with a particular interest in the uncanny connotations from a phenomenological and symbolic perspective. The integration of more sophisticated histories of technology with histories of the cinema has also impacted on the study of contemporary media devices. Examples of such an approach are the critical comparative study by Lisa Gitelman (2006), or the archeological method of Siegfried Zielinksi in *Deep Time of the Media* (2006; see also 1994a, 1994b) in which he attempts to uncover not so much the old in new media by going back in history, but rather the new in the old.

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[51] These include those by Mannoni, Warner and Nekes (2004). In Mannoni's previous elaborate study with a borrowed title from the seventeenth century treatise by Athanasius Kircher with the same title *The Great Art of Light and Shadow* (2000), his intervention lay in the extension of film history which previously started with the Lumières or at its best with Edison — Burch (1979) for example has shifted the common Bazinean Realist/ Formalist split between Lumière and Méliès to a distinction between Lumière and Edison et al.— to the acknowledgement of the range of optical devices of previous centuries. In this Mannoni achieves an admirable overview of data and facts, but his account retains a teleological perspective in that he identifies 'pre-cinema' devices as predecessors of the cinema.

An inclusion of a complexity of forces including the socialised human in the discussion around histories of technology has been applied by David Nye (2006, 1996, 1990)[52], David F. Noble (1997)[53], John D. Peters (1999), Friedrich A. Kittler (1999), Eugene Ferguson (1992), Carolyn Marvin (1990), Bruce Mazlish (1965), Wolfgang Schivelbusch (1986, 1995), Jonathan Crary (1999, 1992) or T. Pinch, W. Bijker and T. Hughes (1987). Some of these accounts concern an analysis of a specific technology, such as for example the phenomenon of electricity, (Nye, 1990; Schivelbusch, 1995), the railway (Mazlish, 1965; Schivelbusch, 1986) or communications technology (Peters, 1999). In other cinema and audio-visual media specific historical works, Raymond Williams for example critically discusses the implicit, sometimes explicit, assumptions of theoretical predispositions that are incorporated and often drive historical accounts of both technology and science (1974, p.13-14), which are often driven by technological determinism, and regard technological research and development as independent self-generating and self-acting force. All these critical revisions acknowledge the determining influence of the human participant.

Jonathan Crary's intervention in particular is focused on the participant and directed toward an understanding of the specific position and implications of the observer (in the sense of spectator) in relation to the technological implication of vision. He marks a significant shift that occurred during the early 19th century due to investments into the corporeality of vision, whereby he regards the photographic camera not from the perspective of a technological achievement, but in regard to the accomplished detachment of the observer from the observational process. Crary discusses in particular the embodiment and subjectivity involved in the processes of seeing and their impact on the technological development at the rise of modernity, bringing forth new forms of control and standardisations of vision. (1990)

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[52] David Nye gives a good overview on general questions around technology from a variety of perspectives, such as historical, cultural, economic, on issues such as agency, control or prediction. (2006)

[53] Noble's work for example is exemplary for a socio-economic approach in that he argues that technology is the product of complex social processes and constitutes therefore an integral part of the socio-economic relations between corporate-style, science-based industry and an academic and governmental institutional base. (1997)

The first public exposition of the Cinématographe took place on 28 December 1895 at the *Salon Indien* at the *Grand Café* in Paris. However, Jean-Louis Comolli (1971, 1980) has shown that the cinema could have been invented as early as at the beginnings of the 19th century in terms of technological know-how, arguing that it was only due to the social demand and adequate economic framework that made the scientists interested in resolving difficulties of manufacturing the devices for photo-chemical processing and projection in the latter part of the 19th century. Michael Punt (2004, 2003, 2000, 1995b) picks up this argument to show how an even more complex network of various intersecting forces was necessary to bring the cinema into existence and argues against a mono-realist teleology of cinema's invention. His early cinema study (2000) liberates a discussion of cinema technology from the constraints of technological determinism in that he uncovers an interdependence and contingency of a variety of determinants and most significantly argues for the audiences' engagement with technology as a key determinant of the way cinema took shape as well as for the public interaction with science. These examples of new historicist interventions critically reflect on technological determinist and archaeological studies of audio-visual media. Most significantly they recognise the the audiences' persisting fascination with the pleasure of visual deception that points towards the insight that these devices should rather be understood as apparatuses that bring to the fore the intrinsic conscious observation and awareness of perception.

The scientific community throughout history has not only developed optical devices following new scientific findings, for example the refraction of light, lenses and microscopes, etc., but also had a persistent interest in phenomena beyond the visible, tangible and measurable spectrum even after the Enlightenment period. Particularly in the second half of the 19th century there were numerous attempts to come to terms with the so-called 'psychic' or 'metapsychical[54]', later called 'paranormal' dimensions that went hand in hand with innovative scientific findings such as electromagnetism or electricity,

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[54] The term 'metapsychical' was coined by the physiologist and psychic researcher Charles Robert Richet to replace the 'supernormal'. (Inglis, 1992, p. 419; 1985, p. 24)

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and also kept a persistent grip on the Western public. The close intersection between science, technology and entertainment and the dialogue between the scientific community and popular culture has been acknowledged in cinema history; however, few have recognised this threshold as a nexus for serious investigations into dimensions of the so-called 'paranormal' or spiritual dimensions from the perspective of an active participatory engagement of the audiences in the shaping of technology. This intersection with the 'paranormal' did not merely occur due to the very popular engagement with spiritist practices and persistent beliefs in the otherworldly in the late 19th century, or as Gunning has argued, as a prolongation of practices of spirit photography[55] in the cinema context (1995), but notably in the persistence of some scientists in studying paranormal phenomena, which placed them in an ambiguous position within the exclusive rationalist and dogmatic positivist paradigm to which the discipline of natural sciences finally has bowed. As a consequence scientists often occupied a highly eminent position in the scientific community, while at the same time investigating into psychic phenomena: a professional schizophrenia with a seeming contradictory agenda that also seemed to be consistent with attitudes held by the general public.

The close interconnection between science and metaphysical investigations in the 19th century has its origins in the tradition of the involvement of science and spiritual investigations, and persisted even after science was established as a positivist discipline. During the 19th century, Michael Faraday (1791-1867) most notably, a natural philosopher who held a chair at the Royal Institute in London, sought relations among various forces, especially in his research in electricity and magnetism which he found unified in nature. He was very actively engaged in both science and religion, as Lawrence Fagg (1999) has discussed in his work *Electro-Magnetism and the Sacred*. The astronomer and writer Nicholas Camille Flammarion[56], founder of the astronomical

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[55] The subject of spirit photography seems to have gained new attention in the exhibition circuit in recent years, see for example Fischer and Loers (1997), Cheroux, et al. (2005) and Photographing the Invisible: 19th century Spirit Images from the Cyril Permuti Collection, at Keith de Lellis Gallery in New York, Sept. 15 – Nov. 15, 2005. For an elaborate account on spirit photography see Coates. (1973)

[56] Flammarion (1842-1925) was both a serious scientist as well as a populist. He founded, and was the first president of the *Société Astronomique de France* (Astronomical Society of France)

society in France in 1887, is another famous example with a wide-ranging influence on both spiritist movements as well as the scientific community of astronomy. Sir William Crookes, president of the British Royal Society and highly distinguished physicist and chemist[57], attempted to examine whether spiritist phenomena could be explained by scientific laws or if they demonstrated the operation of supernatural forces. (Luckhurst, 2002, p. 25; Gunning, 1995, pp. 54-6) Crookes explains his own position in an article in the quarterly Journal of Science in 1871:

> ... let me take the opportunity of explaining the exact position which I wish to occupy in respect to the subject of Psychic Force and Modern Spiritualism. I have desired to examine the phenomena from a point of view as strictly physical as their nature will permit. I wish to ascertain the laws governing the appearance of very remarkable phenomena which at the present time are occurring to an almost incredible extent. That a hitherto unrecognised form of Force - whether it be called psychic force or X force is of little consequence - is involved in this occurrence, is not with me a matter of opinion, but of absolute knowledge... (Crookes, 1871)

In his address at Allan Kardec's funeral on April 2, 1869, with whom he had been closely affiliated, Nicolas Camille Flammarion stated that: '... spiritism is not a religion but a science,' and that: '... we are now at the dawn of an undiscovered science.' (1923) Similar to Crookes' view, in a new application of Kardec's term 'spiritism', Flammarion refuted 'spiritualism'[58] as doctrine with beliefs in contact with spirits, etc. in contrast to

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in 1887, and in 1882, he was given a private observatory, *l'Observatoire privé de Juvisy*; his novels generally classified as science fiction were widely read. He also investigated psychic phenomena intensively, and amongst other things conducted research into mediumship. He was a close associate of Alan Kardec, and eminent in both the areas of astronomy and psychic research, in his capacity of his affiliations mentioned above and also his association with the Society of Psychic Research.

[57] Crookes was president at different times of the Royal Society, the Chemical Society, the Institution of Electrical Engineers, the Society of Chemical Industry, the Society for Psychical Research (from 1896-1899) and the British Association.

[58] Flammarion, even though he was very close to Kardec, applies Kardec's terminology in a slightly different way; he applies 'spiritism' to the scientific study of psychic phenomena. To distance his approach from others, he proclaimed that spiritism is: '... in general, in bad repute, and deserves to be. Most of its disciples are unmethodical; they are often lacking in mental poise, are often dupes of illusions. They prefer a belief and a religion which merely console, to the impartial and critical investigation without which we can be sure of nothing. These are bad conditions for research; adequate safeguards are lacking.'

'spiritism' under which he understood the scientific enquiry into psychical research[59].
(Flammarion, 1923) In the course of the 19th century a variety of institutions were
founded to pursue research into 'paranormal' or 'psychic' phenomena, for example the
Society for Psychical Research (SPR), founded in 1882 by Edmund Gurney, Frederic
William Henry Myers, Henry Sidgwick and Edmund Rogers[60] in London, the American
Society for Psychical Research, founded by William James in 1884 in Boston, the
London Dialectical Society in 1869 that promoted psychic phenomena as spiritual
manifestations (Inglis, 1992, pp. 246-9) or The Parisian Society of Psychologic Studies
founded by Allan Kardec alias Léon-Dénizarth-Hippolyte Rivail.[61] Prominent scientists
such as William Crookes scientifically investigated spiritualist séances with supportive
results (Hall, 1984). William James (1842-1910) initiated the SPR in the United States
and also studied the phenomenon of spiritist mediums[62]. Among many other offices such
as professor at the *Collège de France* and member of the *Académie des Sciences morales
et politiques*, Henri Bergson was also president of the SPR in 1913-14 and part of a
research group at the *Institut Général Psychologique* (General Psychological Institute)

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[59] Flammarion's investigations are paradigmatic for a rigorous scientific research interest in
psychic phenomena at the time. He claims openness and curiosity with a method of rigour for
scientific pursuit: ' The history of the progress of science is continually teaching us that great and
far-reaching results may take place from the most simple investigations and from unscientific
observations. In the domain of scientific investigation nothing ought ever to be neglected.' (1900,
p. 5) Very much in the spirit of the time he claims a place for psychic phenomena within the
scientific field, but not as would be expected in the raising discipline of psychology:
'Mediumistic experiences might form (and doubtless soon will form) a chapter in physics. Only it
is a kind of transcendental physics which touches on life and thought, and the forces in play are
pre-eminently living forces, psychic forces.' (2003, p. 2)
[60] For a discussion on the foundation of the Society of Psychical Research see Alan Gauld (1968).
Luckhurst outlines the controversy around the foundation of the SPR; Dawson Rogers claimed it
was his original idea, which he shared with William Barrett in 1881 and finally resulted in a
conference in 1882 in the headquarters of the British National Association of Spiritualists and
ultimately led to its foundation with Henry Sidgwick as first president. (2002, p. 51)
[61] Allan Kardec's works on spiritism became very famous and popular, most notably *The Spirit's
Book* (*Le Livre des Esprits*) first published in 1857, comprising a series of 1,019 questions
exploring matters concerning the nature of spirits, the spirit world, and the relations between the
spirit world and the material world. (1989)
[62] John Durham Peters reminds us that William James 'psychical research is not peripheral but in
many ways is at the center of his thought'. (1999, p. 188) James studied in particular the medium
Eleonore Piper from 1885 until his death in 1910. (1994, p. 189)

together with other eminent scientists such as Étienne-Jules Marey[63], Pierre and Marie Curie[64], Jacques-Arsène d'Arsonval[65], Charles Robert Richet[66], Gilbert Ballet[67], Jean-Baptiste Perrin[68], Jules Courtier[69], Mr. Youriévitch[70] to investigate psychic phenomena[71]. A letter announcing the foundation of this research group from the 3 December 1901 acclaims the intention of a rigorous scientific enterprise to study those phenomena that fall outside of the established frameworks and scientific laws, with the aim to ask the following question:

Quelle est la part de réalité objective et quelle est la part d'interprétation subjective dans les faits décrits sous les noms de suggestion mentale, télépathie, médiumnité, levitation, etc.[72]? (Robinet, 1972, p. 510)

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[63] Marey was professor at the *Collège de France*, member of the *Académie des Sciences* and the *Académie de Médecine*.

[64] Maria Sklodowska-Curie in her full name.

[65] D'Arsonval was director of the Laboratory of Biological Physics, Professor at the *Collège de France*, member of the *Académie des Sciences* and the *Académie de Médicine*.

[66] Richet was professor of physiology at the Faculty of Medicine in Paris and a psychical researcher. He won the Nobel Prize in physiology and medicine in 1913, and was honorary president of *La Societé Universelle d'études Psychiques*, president of the *Institut Métapsychique Internationale*, and president of the Society for Psychical Research, London (1905). (http://www.spiritwritings.com/charlesrichet.html), see also Richet (1923, 1930).

[67] Ballet, trained in medicine, became *Chef de clinique* with Jean Martin Charcot at the *Salpêtrière* where he concerned himself extensively with neurology. He became *Médecin des hôpitaux*, in 1900 he was appointed professor of psychiatry, in 1907 professor of medical history. As an historian he wrote biographies on the mystic, philosopher, and theologian Emanuel Sweden Borg (1688-1772), on Leonardo da Vinci (1452-1519), and others. (Enersen, 1994-2007)

[68] Perrin was professor of physical chemistry at the Sorbonne, University of Paris; he won the Nobel Prize for physics in 1926.

[69] Courtier was Professor of Psychology at the Sorbonne.

[70] Youriévitch was General Secretary of the *Institut Général Psychologique*.

[71] See Braun (1992, p. 279, 1996, pp. 49-50), Robinet (1972, pp. 509-510), Inglis (1985, pp. 121-122; 1992, p. 423f). Some original reports of the experiments at the General Institute of Psychology with Eusapia Paladino from 1905-1907 are included in a publication by Gustave Geley, president of the Metaphysical Society in Paris. (1927, pp. 360-372) A letter from the *Groupe d'études de phénomènes psychiques* from 2 December 1901 announcing the aim to study psychic phenomena, is printed in *Henri Bergson: Mélanges*. (Robinet, 1972, p. 509-510) The original group that signed this letter comprised d'Arsonval, Bergson, Branly (Professor of Physics at the *Institute Catholique*), Brissaud (Professor of the Faculty of Medicine), Duclaux (member of the *Académie des Sciences* and the *Académie de Médecine*, Director of the *Institut Pasteur*), Marey and Weiss (affiliated with the Faculty of Medicine).

[72] 'What is the part that concerns objective reality and that of subjective interpretation in the observations described by the terms mental suggestion, telepathy, mediumship, levitation, etc.?' (Translation by the author)

In this respect Marta Braun reminds us that this: '... seemingly incongruent meshing of science and pseudoscience was one of the more common threads linking the pre-eminent philosophers, scientists, and artists of the nineteenth century[73].' (2004, p. 417n, footnote 39)

With regard to the scientific investigations into spiritual phenomena at the time it is significant to mention that in the wider framework of scientific developments within the Humanities at the second half of the 19th century the foundation of the 'science of religions' or 'comparative studies of religions' as an autonomous discipline took place. Mircea Eliade reported that various university chairs in Europe were founded at the time, starting in 1873 in Geneva, followed by four chairs in Holland in 1876, and in 1879 at the *Collège de France* in Paris. (1957, pp. 217-218) While religion studies were occupied with traditional forms of religious beliefs and rituals both in Western and non-Western societies, in the latter case they strongly followed the tendencies of evolutionary theories as established in cultural anthropology such as those by Edward B. Tyler, Johann Jakob Bachofen, James Frazer, Émile Durkheim, or Lucien Lévy-Bruhl[74]. In parallel to the study of 'primitive religion', investigations into the phenomenon of occult practices and spiritualist séances nearer to home, however, were mostly conducted by the disciplines of the 'natural sciences' such as physics[75], by the emerging discipline of psychology, clinical psychology (and what today would fall under neuroscience) and philosophy[76].

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[73] Braun refers to scientific research into psychic phenomena and the attempts to prove immaterial dimensions of spirit as independent domain from matter, by scientists such as Cesare Lombroso, William Crookes, Charles Robert Richet, Charles Russel Wallace, Camille Flammarion, Théodore Flournoy, William James. (1996, p. 48)

[74] Inglis mentions the reception of Western spiritism within the field of cultural anthropology, which at the time was driven by evolutionism and materialism, regarding primitive culture as barbaric and on a lower developmental scale than Western civilisation. Edward Tylor, who wrote *Primitive Culture* in 1871, regarded psychic phenomena in the Western civilisation as degeneration, and James Frazer more explicitly denounced 'magic practices' as: "... spurious system of natural law as well as a fallacious guide of conduct; it is a false science as well as an abortive art." (Inglis, 1992, pp. 399-400)

[75] Janet Oppenheim elaborates on the relation between physics and psychic phenomena. (1985, pp. 326-390)

[76] For a discussion on the relevance of psychical research for religious studies see Jonathan Harrison (1976).

Scientific investigations of the 19th century were particularly rich with references to ephemeral phenomena, especially toward the latter part when psychology became established as a scientific discipline and studies of the unconscious, hypnosis and other psychic states occupied scientists from various fields[77]. This preoccupation was also shared by technologists and engineers. Tom Gunning has for example pointed to the apparent link of a certain, what he called, 'mentality' between inventors of technology and spiritualists, such as Thomas Watson, A.G. Bell's assistant who explored the possibility of the telephone to aid in spiritual discoveries. (1995, p. 46) Similar accounts are known from the invention, application and interpretation of electricity; Jeffrey Sconce elaborates for example on the application of electricity for treatment of physical but above all of a variety of mental and nervous disorders, since the body became understood as a transmitter of 'natural electricity', a mainly nervous capacity which was in particular ascribed to female mediums channelling energy and 'invisible streams of "spiritual electricity" during séances[78]. (2000, pp. 50-6) David Nye discusses the very nature of electricity and its ephemeral ambiguous characteristics that according to him led to speculation and confusion. Furthermore he elaborates on examples of electrotherapeutic devices such as McLaughlin's electric belt or Dr. Scott's electric corset, and convergences of Galvan's and Faraday's principles, the X-Ray and electricity most notably in Edison's X-Ray machine for hospitals[79]. (1990, pp. 153, 163-6) Both Auguste Lumière and Thomas Alva Edison experimented with the uses of Röntgen's X-Rays, an invention that also gained a strong interest from conjurers and features in early films, which again served as a platform for spiritual enquiries with regard to for example clairvoyance ('clear seeing'), an ability by which sometimes the underlying organs and bodily features are revealed to the 'seer'[80].

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[77] For reports on scientific research into spiritist séances see for example Faraday (1853), Crookes (1871, 1874), Münsterberg (1910), Flammarion (1900, 1907), Carrington (1907, 1909, 1913, 1954), Doyle (1926), Geley (1927) or Feilding (1963).
[78] Anne Braude (1983) in this respect elaborates on the way mediumship became a driving force in the feminist movements of the late 19th century in the US. Alex Owen discusses in particular gender issues and power structures regarding women's involvement in spiritist practices in Victorian England. (1989)
[79] See also Ernst Benz on The Theology of Electricity (1989).
[80] The term is defined in the introduction of this thesis.

Punt (2000) has elaborated on the very profound interests of some of the scientists related to the emergence of the cinema in the plausibility of other dimensions beyond the established scientific canon: Auguste and Louis Lumière for example are known for not having much interest in the Cinématographe as an entertainment medium[81], as they were dedicated scientists who had a photographic supplies factory in Lyon that produced photographic plates, devices, optics, film emulsions, etc. that were sold around the world[82]. The Lumières were so to say technocratically inclined, scientific industrialists and successful businessmen. Rather than capturing 'real life' on 'moving images', Punt has reminded us that they had a particular interest in stereoscopy, in developing three-dimensional photography and they experimented with carbon chemistry and poly-dimensional approaches. (2004, p. 51; 2000, pp. 57-61) They were integrated within a network of scientists such as Gabriel Jonas Lippman[83], head of the Physical Science department at the Sorbonne, Paris, who experimented with photographic colour reproduction for which he was awarded the Nobel Prize in physics in 1908. Before their public screening in Paris, the Lumières used their scientific network for pre-viewings, very common at the time, such as at international photographic congresses in Brussels and Lyon or in May 1895 at the *Société d'Encouragement à l'Industrie Nationale*. Every new invention or innovation it seems, that extended or amplified the sensory spectrum of perception and the perception of time and place, appeared to have undergone a complex negotiation between a variety of intelligences (scientific, popular, spiritually informed) in order to establish an agreed consensus on their possible meanings, what Punt called 'mutual intelligibility.' (2000, p. 20)

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[81] It has been repeatedly pointed out that they did not think their invention would last long and had sent their grandfather Antoine to the first public screening in Paris on 28 Dec. 1895 in the *Salon Indien* at the *Grand Café*. As Braun has pointed out, in the latter part of their lives they reestablished their image as scientists rather than businessmen in the entertainment industry. (1992, p. 260)

[82] The Lumières factory employed 300 workers at a time when 80% of the companies in France employed less than four people (Punt, 2000, p. 58; p. 155 footnote 61) – it constituted an enormous business; by 1894 they sold around 15,000,000 photographic plates a year. (Mannoni, 2000, p. 420)

[83] Lippman was a colleague and friend of Étienne-Jules Marey, see also chapter 4, section 4.2.

This complex network of forces and negotiations between various interpretators stands in relation to another crucial aspect to be emphasised in this section, namely that the scientists' intentions when developing innovative technologies did not always match with the way their inventions were perceived, see for example elaborations by Nye (2006), Punt (2000, 1995b). The cinema was no exception to this, as has already been mentioned with regard to the Lumières' initial limited interest in the Cinématographe, Edison's initial reluctance to support W.K.L. Dickson's research into 'moving image' technology, or the fact that Robert Paul built the first Kinetoscope in Europe not on his own initiative but on request of two Greek entrepreneurs. (Barnouw, 1981, p. 41) Félix Louis Regnault was also another significant innovator — most commonly cited in the context of early ethnographic studies — who was inclined by moving image technologies and the extension of visual capture devices for uses in medicine, anthropology, prehistory, sociology, history, zoology and psychology. He was a physician who studied movement in an intercultural comparison from the locus of an evolutionist doctrine (while Eadweard Muybridge had focused on gender specific movements, and Jules-Étienne Marey on athletes and the implications of time). Regnault had an interesting vision on a twofold development of the cinema: what he called the Cinématoscope for the cinema of entertainment, and the Cinématographe for the cinema of science; he suggested:

> Cinema expands our vision in time as the microscope has expanded it in space. It permits us to see facts which escape our senses because they pass too quickly. It will become the instrument of the physiologist as the microscope has become that of the anatomist. Its importance is as great. (Rony, 1996, p. 46)

Maxim Gorky expresses the ambiguity of the Cinématographe between science, art and popular culture in his report on a Lumière screening at Aumont's at the Nizhni-Novgorod fair in July 1896:

> But why of all places should this remarkable invention of Lumière find its way and be demonstrated here, this invention which affirms once again the energy and the curiosity of the human mind, forever striving to solve and grasp all and ... while on the way to the solution of the mystery of life, incidentally builds Aumont's fortune? I do not yet see the scientific importance of Lumière's invention but, no doubt, it is there, and it could probably be applied to the general ends of science, that is, of bettering man's life and the developing of his mind. This is not to be found at Aumont's where vice alone is being encouraged and

popularised... And soon probably Lumières invention will be perfected, but in the spirit of Aumont-Toulon and Company. (Harding and Popple, 1996, p. 6)

While many scientists initially were (and often remained) rather sceptical of the reliability of 'moving images' for scientific research, some scientists, most notably those involved in the study of physical movement such as Étienne-Jules Marey, were significantly involved in the technological development of the analysis and synthesis of movement[84]. Marey, who applied photography rather late in his career, became convinced that technology provided the better visual apparatus than the human physiology, and even though he aligned himself with the positivist scientific paradigm, his studies of time and movement provide an important oeuvre for a discussion of philosophical connotations with regard to the aspect of time in the perception of visual technology[85]. From this perspective the cinematic apparatus was perceived as a supplement or complementary platform for extra-sensory perception. It is not surprising that some of those scientists interested in these technological features were also inclined to investigate so-called psychic phenomena, which at the time were mainly studied within the disciplines of physiology and medicine, but also in the upcoming discipline of psychology. Primarily intent on exposing cases of frauds and performative applications, it is reported, however, that manifestations of spirits, ectoplasm or telekinesis were achieved by mediums without any aid of hidden mechanisms, as it is reported in the case of Eusapia Palladino[86].

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[84] Marey himself gives an overview on his involvement in the technological development of his chronophotographic apparatus in their various innovative stages in his publication *Movement* (1895) in the Heinemann's Scientific Handbook series.

[85] Marey's work will be elaborated more in detail in chapter 4 and 5.

[86] Inglis dedicated a whole chapter to Eusapia Palladino and gives a good account on the controversy around her séances, but especially the acknowledgement of the support her prominence gained through serious investigations amongst the scientific community. (1992, pp. 419-432) Eusapia Palladino was one of the most famous mediums at the time and frequently studied by a variety of scientists and research institutes pursuing research into psychical phenomena. Amongst those scientists was the astronomer and author Nicolas Camille Flammarion who alongside with a host of several other famous scientists, studied the medium Eusapia Palladino when she visited Paris in 1898, 1905 and 1906. He also studied her during séances in the salon of his home in Paris, where he reports to have witnessed most famous and well known mediums worldwide from the latter part of the 19th century: 'During a period of more than forty years I believe I have received at my home nearly all of them, men and women of divers nationalities and from every quarter of the globe.' (Flammarion, 2003, p. 3; 1900, p. viii)

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Michael Punt reminds us that science at the time retreated into institutions, while medicine remained an interface between science and the public whereby traces of a non-technological science remained visible. (2000, p. 140) Technology in this way became the sublimation for the public desire in scientific novelty, a tendency that became very obvious regarding the public fascination with the cinema; hence, as is now widely agreed, the cinema exhibitions at the end of the 19th century were more about the performance of technology rather than to do with a fascination with movement or the representation of 'reality' as has sometimes been argued. In this way the cinema became a threshold in a dialogue between popular culture and science by embracing the rational as well as the 'irrational' as contingencies, as well as the paranormal and alternative approaches to science in its technological imaginary. As Christian Metz illustratively put it:

> A little rolled up perforated strip which 'contains' vast landscapes, fixed battles, the melting of the ice on the River Neva, and whole lifetimes, and yet can be enclosed in the familiar round metal tin, of modest dimensions, clear proof that it does not 'really' contain all that. (1975, p.47)

The 'irrational' dimensions had largely been abandoned by the established scientific community who wished to preserve the values of Enlightenment science. Punt suggests that the audiences and their popular engagement with the occult need to be understood as a driving force in the shaping of technology and the early reception of cinema, both technologically as well as in film form and exhibition modus.

Although some scientists were involved in the technological developments that led to the devices for the projection of instantaneous photography, they were mostly not interested in the public display of their apparatuses which were often created solely for scientific purposes[87]. It was rather through entrepreneurs and opportunists such as conjurers that the scientific instruments reached the public domain and through the audience's

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[87] This has been expressed most notably by Étienne-Jules Marey, as will be elaborated in chapter 4, and also by Louis Lumière, who clearly was an opportunist businessman, who emphasised that his main interests lay in science, not in the commericalisation of the cinema, in order to rectify his more prestigeous image in the scientific discipline, as for example in an interview with Georges Sadoul: 'I have never engaged in what is termed production'. (Braun, 1992, p. 260) See also Punt (2000).

engagement interpreted it as a technology for entertainment; an apparatus that later became acclaimed as a curious mix of an 'industrial art.' (Deleuze, 1986, p. 7) This reinterpretation of scientific instruments as devices for entertainment by the audiences: '... is not simply financial opportunism but is also indicative of the tensions in the struggle for control of scientific enquiry between the layman and the professional.' (Punt, 1998b, p. 353) These transformative forces that shaped the emerging cinema, in this view, can be understood as a subversion of the rationalist paradigm as it was posited by the scientific community through the agency of the audiences. (Punt, 1995a; 2004, p. 13)

The convergence of science and art in the way science engaged in instrumental visualisation bears a long tradition; the complexity of this interaction has been explored for example by Barbara Maria Stafford (1991) in the way the field of medicine visualised the 'unseen' and 'immaterial' in previous centuries in ways that subsequently became entertainment, for example the anatomical atlas or Royal Institute lectures. The cinema in this way is no exception; an extra-ordinary example of the unintended convergence of science (medicine) and entertainment in the late 19th century in relation to the cinema are the films by the French surgeon Dr. Eugène-Louis Doyen (1859-1916)[88], one of the most famous surgeons at the turn of the century, who had his surgical operations recorded on film for demonstration and education purposes[89]. Doyen also experimented with stereoscopic film around 1903, microcinématography around 1911 and colour film around 1912, and presented these films (around 60 in total are reported) at international medical conferences[90], where they were contextualised with systematic commentary, analysis and discussions. However, Thierry Lefebvre reminds us that there was a great appetite and fascination for these films beyond the scientific context among the general

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[88] For an elaborate discussion on Doyen's relation with the cinema see Lefebvre. (2004)

[89] The visitors of the festival *Il Cinema Ritrovato* 2004 in Bologna, Italy, were privileged to being able to see one of the two surviving thematic anthologies out of three that Doyen had put together between 1906 and 1911 for the *Société Générale des Cinématographes Éclipse*: '*Les Opérations sur la Cavité Crânienne*', France 1911, 18 min (16 frames/sec). These two anthologies were restored by the *Cinemateca Portuguesa* in 2002. (See the program catalogue of *Il Cinema Ritrovato*, 2004, Cineteca del Comune di Bologna, 19th edition).

[90] For example in Edinburgh, Paris, Amsterdam, Berlin, London, Moscou, Lisbon.

public[91], as reports on illegal backstage projections and commercial exploitations behind the back of Doyen exemplify. (Lefebvre, 2006, pp. 162-4) Doyen's cameraman, Ambroise-François Parnaland had clandestinely exhibited films at fairground shows and had commercially distributed them through Pathé[92]. In 1906 Doyen sold a major part of his films to the *Société Générale des Cinématographes Éclipse* for restricted distribution for educative and professional purposes, but their administration shows that they had also organised some public screenings against Doyen's distribution agreement. (Lefebvre, 2006, pp. 163-4) The performative aspects of Doyen's extraordinary skill in these single shot surgeries can furthermore be traced in the films by George Méliès, at least in the way they are paralleled in performative style and in one of the most favourite Méliès' themes of body transformations. George Méliès is the most famous example of first an amateur and later skilled conjurer and entertainer who saw the potential of the cinema and became one of its most successful producers and exhibiters, since he appeared to meet the appetites and popular imaginations of the audiences with his fantastic journeys. Although at first glance this opens the way for the exploration of the spiritual dimension of cinema, as we shall see in the next section, the very fact that one strand of the cinema's innovation was led by conjurers actually repressed the psychic dimension.

1.2 Cinema and Conjuring

Between the aspirations and works by scientists, instrument-makers and entrepreneurs with visual technology and the negotiation with the audiences' perception of the cinematic technology, which was merely one novelty among a variety of other devices and 'wonders of science', there has long remained an enigma around the question how it was possible that the 'cinema' took off so rapidly. Especially since it gained the

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[91] Doyen himself presented his films following an invitation from Prince Albert 1st of Monaco in the summer of 1900 as a spin-off from the World exhibition in Paris. This screening reportedly was attended by a number of physicians, but also a lay public from the aristocratic circles. (Lefebvre, 2006)

[92] Doyen apparently won a legal fight against Parnaland. (Stephen and McKernan, 1996) — Pathé also financed Jean Comandon's research into microcinematography and incorporated some of his films in their catalogue. (Landecker, 2005)

audience's fascination beyond the expectations and impetus by the contributors to its material existence in the first place. The search for answers has often led to a dominance of economic arguments, as for example the case that has been made for the Lumières and their worldwide established network of agents (Williams, 1983). However, Punt (2000) has argued that every inventor, scientist or layman involved in the emerging cinema business has to be examined as an individual case-study in order to draw a sophisticated understanding from the complex networks around science, technology and entertainment at the time. He reminds us that this missing epistemological link between invention and popularity has often been tackled by accounts of the influence of other parties over the invention, such as: '... neglected inventors, opportunist visionaries and inspired entertainers who saw ways of making money, to accounts of more sophisticated entrepreneurs, committed to a measure of control over the industry by monopolising patent rights and/ or securing distribution networks.' (2000, p. 145) This missing link in the literature has also been addressed from the perspective of conjuring practice by Erik Barnouw (1981), a fact that has already been noticed by Edgar Morin in 1956 who emphasised that it was the imaginary faculty of the audiences' participation which was mediated by conjurers and magicians who understood the needs and aspirations of the audiences that transformed the Cinématographe into cinema. (Morin, 2005) Barnouw has elaborated the role that conjurers and magicians played in the enforcement of public popularity and distribution of optical projections and 'moving pictures' in his book *The Magician and the Cinema* (1981) on a broad scale, which he based on historical research, amongst other into the Houdini collection (Library of Congress, Washington DC), one of the largest collections on the subject areas of magic and conjuring, and the Mulholland's magic collection.

Barnouw demonstrates through various examples that magicians were amongst the first businessmen taking 'moving image' shows into their programmes and turning into significant agents in the distribution network of the cinema, alongside the major business networks of for example the Lumières and Pathé. Carl Hertz is an interesting example for an extended international distribution of the cinema in a conjuring context. Hertz persuaded Robert Paul against his better judgement to sell him his second Theatrograph,

which Paul wished to keep as a backup for the Egyptian Hall in London. Hertz took it on his world-tour to the Empire Theatre of Johannesburg as early as May 1896 and further on to Melbourne and other Australian cities, then to New Zealand, China, Indo-China, India, Burma and Ceylon. (Barnouw, 1981, pp. 58-62) Barnouw identified some of these less known magicians and their involvement with the early cinema distribution and popularisation and brought them to the attention of film scholars in the early eighties. The most famous and well known example is and remains of course the former shoe-maker and later conjurer George Méliès who bought the theatre of Robert Houdin[93] in Paris in 1888 and was later engaged in film production until 1913. After the rediscovery of the few surviving films of his vast oeuvre (of more than 500 known titles) in recent years, which were typically situated at the convergence between science, art and the popular imagination, also called the *genre féerique et fantasmagorique*, Méliès has been reconstituted in his proper place in the history of cinema after obscurity overtook him during his lifetime[94].

Barnouw has elaborated on the mutual connections and business relations between the cinema and the conjuring performers in both their contingencies and competition. His argument that the Cinématographe was the next logical step as technological invention following the previous magician's engagements with optical illusions such as Robertson's (alias Étienne Gaspard Robert) famous *Fantasmagorie* in Paris (Levie, 1990), may be questionable, in how far is it based on a teleology. Barnouw's conclusion that after the first decade of the emerging cinema the magicians' own conjuring programmes eventually were outrun by the popularity of cinema is currently being revised by Matthew Solomon in his forthcoming publication *Cine-Magic Tricks: Silent Film, Houdini, and the New Magic of the Twentieth Century[95]*. Solomon claims to take a more ambiguous approach than Barnouw by examining magic as a historical continuum of practices with a definitive locus in the professional culture of magicians rather than

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[93] For an elaboration on the conjurer Robert Houdin see for example Milbourne. (1973, pp. 131-154)

[94] Méliès work has been discussed for example by Jenn 1984, Barnouw 1981, Bessy 1967, Frazer 1979, Hammond 1974, Maltête-Méliès 1973, Méliès 1945, Sadoul 1961.

[95] University of Illinois Press, there is no scheduled date announced yet on their website (last visited on the 9th of June 2007).

attempting a historicised reading of the comparative affects of magic and cinema before 1908. As Solomon explains, he is looking into a study of conjuring periodicals to shed light on the spectatorship of the emerging cinema and its redefinition in the course of the early twentieth century[96].

What we today call 'cinema', since the very first public demonstrations from the 1890s onward immediately became widely appropriated by conjurers, since they recognised a similar contract of the audiences regarding the wilful illusion of their perception as was customary in their conjuring performances and magic shows. Edgar Morin refers to this ambiguity as a profound unity with contradictory character between sentiment, magic and reason. (2005, p. 181) The emerging cinema entered the realm of popular culture and became a major attraction and business on fairgrounds, etc. and in theatres. These venues were also displaying curiosities and actualities including conjuring as for example in the *Théâtre Robert-Houdin* in Paris through Georges Méliès or in the Egyptian Hall in London, so-called England's Home of Mystery, through the conjurer David Devant who became a business partner of the co-founder John Nevil Maskelyne. (Lant, 1992, p. 99; Milbourne, 1973, pp. 155-180)

There was a strong connection between the technological production side of the devices and the business side of the distribution and exploitation through conjuring performances; this places conjurers at the cutting-edge of scientific findings and devices before they became fully integrated in the public domain and discourse. As a consequence conjurers always had to be slightly ahead of the public's familiar knowledge to employ for example hidden magnets or other electromagnetic forces, light, sound transmitters, chemical reactions, pneumatics, etc. in their trickery. (Shoosmith, 1918) In terms of methodology and epistemology conjurers saw themselves as representatives of applied science so to speak and opposed themselves firmly against public performances of clairvoyance and spiritist mediums who claimed ontological truth in their invoked experience of 'magic.'

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[96] Matthew Solomon has recently curated a programme section of the Pordenone Silent Cinema Festival *Le Giornate del Cinena Muto* entitled 'Cinema and Magic', see http://www.cinetecadelfriuli.org/gcm/edizione2006/edizione2006_frameset.html. See also his article 'Up-to-Date Magic: Theatrical Conjuring and the Trick Film' (2006).

They strictly opposed psychic séances, obviously because their popularity blurred and weakened the artful and scientific craftsmanship of their own performance which in their view had nothing to do with paranormal or otherworldly dimensions. This did not prevent some conjurers, however, to take advantage of paranormal associations with their skills, since it was part of the attraction and popular reception of their shows. Nevertheless, conjuring by and large appears to have formed an underwritten alliance with the late 19th century scientific positivism that (with exceptions) turned against spiritist practices, with the aim of uncovering conjuring tricks in séances.

It also needs to be remembered that if conjurers were found to apply any supernatural powers or abilities, or if mediums were revealed to pretend false capabilities, they were put on trial, as it happened in the famous case of Henry Slade in 1876[97] (Milbourne, 1973, p. 166; Luckhurst, 2002, pp. 44-7) or the conjurer and film producer George Albert Smith who together with his collaborator Douglas Blackburn was accused of fraud in their performances of thought transference, also called 'second sight.' (Luckhurst, 2002, pp. 73-4) Notwithstanding there was not only hostility but also an inspiring exchange and copying between conjurers and spirist mediums. The famous British magician John Nevil Maskelyne for example was inspired by the spiritist shows by the Davenport brothers and produced his own recreations of séances as a stage act to disprove the supernatural involvement of these illusions; similarly Eugène Houdin unmasked their illusions in his own interpretation based on scientific (mechanical) trickery. (Gunning, 1995, pp. 60-61) It becomes apparent that increasing rigorous scientific investigations into psychic phenomena posed a dilemma for conjurers' own professional regimes in view of the widespread entanglement between conjuring and the context of popular culture and entertainment, which also included 'stage spiritualism[98].'

This section suggests that the sophisticated contract that the spectators engage with in the cinema performance, similar to the conjuring performance, contrasts with the notion of

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[97] Curiously enough it was the great magician Maskelyne who testified for the authenticity of Slade who was soon released. (Milbourne,1973, p. 166)
[98] The term 'stage spiritualism' relates to merely performative enactments and imitations of psychic phenomena, as it was also practices by conjurers.

naïve or unsophisticated audiences in regard to the perception of the cinematic illusion. It is reported that the audiences themselves engaged in dismantling and uncovering the conjurer's tricks during the performances, and in this sense they were both their fans and critics. The pleasure and fascination lay exactly in the disparity between the full knowledge of the mechanism and the illusion created by the perceptual apparatus, which seemed to escape rational explanation and in doing so repressed the exposition of the spiritual dimensions of the cinematic experience. This discussion now moves into an examination of this more complex underlying interrelation of the cinema, popular science and the spectators, in which the most persistent connotations with the term 'magic' appear to be embedded.

1.3 Mediation and Advertising of Technology and Public Awareness

A predominant argument in cinema studies positing a 'magic' connotation with the cinema is related to a certain mystification of technology presupposing uninformed or ignorant audiences. The following section discusses some evidence from a literature review that supports the claim that late 19th century spectators were critical, informed and discriminating. It is well understood that the Cinématographe was one of many competing public entertainment forms, originally exhibited for example in fairgrounds, in music halls, or small shop-front shows called 'Penny Gaffs[99].' Fairgrounds are reported to have constituted a major attraction where numerous tastes and interests were served within a framework of pleasure and entertainment (Harding and Popple, 1996; Chanan, 1980; Nasaw, 1993; Charney and Schwartz, 1995; Von Mücke, 2003; Hansen, 1991); from displays of new scientific experiments, to sensational curiosities, performances, conjuring tricks, and the exhibitions and presentations of novel technological inventions such as electricity[100], electromagnetism[101], the X-Ray[102] and the projection of animated

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[99] For an in depth study of the cinema at fairgrounds and travelling showmen, see Vanessa Toulmin's work (2000, 1996, 1994), also see Harding and Popple (1996).
[100] David Nye (1990) has elaborated on the history of electricity in America especially with regard to social meanings and interpretations.

images. When the emerging cinema with its seeming 'moving' or so-called 'living' images was introduced to the public, other inventions such as Thomas Edison's Kinetoscope and Kinetophone, were already well established and wide spread items in the entertainment industry. As mentioned earlier, the audiences were familiar with the visual deception of moving images as far back as at least the 17th century, when optical toys became popular and this popularity increased in the Victorian period. (Stafford, 2001) While the cinema was still competing with the sensations of other hugely popular inventions such as X-Ray[103] and electricity, cameramen in the city streets with their wooden tripods very soon became an ordinary part of city life.

However, it was not the novelty of the 'moving images' themselves that attracted the first audiences to the public screenings, but, as has been argued extensively, the technology itself and the immediate experience of the cinema apparatus. Stephen Heath has pointed out how only after an explicit description of the workings of the apparatus, a brief overview on the film titles followed on the programme of the Lumière brothers at their first screening in the *Grand Café* in Paris[104]. (Heath, 1980, p. 1) The audiences were very well aware of how the technology worked and even took an active role in the way the cinema *dispositif* took form in its beginnings. This, according to Punt, was inevitable due to the close interaction between the audiences and the exhibitors who modified the

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[101] Lawrence W. Fagg (1999) gives an account of electro-magnetism at the frontier of spirit and matter from the perspective of science, history as well as interpretive frameworks of the meaning of light in religion and spiritual beliefs. Electro-magnetism was scientifically investigated among others by Michael Faraday and Humphrey Davy, who both also pursued a vivid interest in research into psychic phenomena.

[102] Larsen mentions the huge popularity of Röntgen's invention of 'cathode rays' which he called X-Ray for their mysterious character, which produced some peculiar commercial connotations before their health-damaging influence was known, such as 'X-ray proof underwear — no lady safe without it', 'opera glasses with X-ray appliance' or attempts in 'photographing the soul'. (Larsen, 1947, pp. 135ff) In a scientific context, William Crookes expressed his belief that X-rays: '... may have a possible mode of transmitting intelligence which, with a few reasonable postulates, may supply a key to much that is obscure in psychical research...' (Luckhurst, 2002, p. 89)

[103] For a discussion on the relationship between X-Ray and the cinema see Lefebvre (1997).

[104] 'This apparatus, invented by MM. Auguste and Louis Lumière, permits the recording, by series of photographs, of all the movements which have succeeded one another over a given period o time in front of the camera and the subsequent reproduction of these movements by the projection of their images, life size, on a screen before an entire audience.' (Heath, 1980, p.1)

performance according to the audience's desires and tastes in terms of the film programme including shows and variété, film editing, musical accompaniment and narrators. (Punt, 2000) The entrepreneurs, conjurers and exhibitors in this way constituted a direct link between the audiences and the scientific community and technologists. Furthermore, another interface was provided by popular scientific journals, which advertised the mechanisms of the novel technological devices and scientific experiments, as well as popular science lectures where for example demonstrations of electricity were combined with other entertainments such as conjuring and optical illusions applying new apparatuses of visual deception. These various channels enabled a diverse exchange and engagement between the scientific community that provided the know-how of certain new materials and mechanisms, the technologists who experimented with the implementation of these laws and the audiences who engaged with new scientific findings via the display of technology.

Such platforms where new knowledge was socialised were for example fairgrounds or the more elaborate exhibitions of the international world exhibitions, such as in the Crystal Palace[105] in London, scientific public lectures which had a broad constituency and popular scientific journals. Michael Punt argues that these platforms were emerging rapidly throughout the 19th century by the rationalisation and mechanisation of science that displaced the layman observer with technological devices. In his overview on the historical development and differences of the dissemination of popular science in journal publications in France, the US and Britain, he points out that:

> As the new professional discourse of science that emerged in the later part of the 19th century eliminated its earlier concern with what might be called natural philosophy and the question of anti-science or conscience, it used positivist philosophies instead to cast suspicion on the perceiving human observer as a reliable witness. Scientists increasingly insisted on instruments that could "objectively" record the physical world. Experimental methods were developed and standards of objectivity set, requiring instruments that were generally unavailable to the practical scientists and the amateur observer. (2000, p. 136)

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[105] For a brief but insightful note on the significance of the Crystal Palace for the Victorian era see Stocking. (1987, pp. 1-6)

The scientific community traditionally had been in close touch with the public, especially throughout the 18th century when the layman was considered an equally reliable observer as any trained scientist. Despite the development towards a stronger isolation of scientific research from public access, which went hand in hand with a more rigorous endowment of positivism in the scientific community at the end of the 19th century, the newest scientific inventions such as patented (or pre-patented) technological devices were still part of the daily news agenda. They provided a means of knowledge transfer encouraged by the public's engagement in the formation of shared knowledge and new ideas which concerned a dissemination within: '... a socially heterogeneous community who had well-developed attitudes towards science and technology.' (Punt, 2000, p. 146)

During the end of the 19th century, popular scientific journals were still a main source for knowledge transfer and communication, such as in France for example the popular journals *Les Mondes* edited by Abbé Moigno or *La Nature* edited by Gaston Tissandier, which was a populist weekly journal also highly regarded by scientists who regularly published their novel scientific findings and experiments, such as Marey, Janssen, Edison, Londe, Demeny̆, Muybridge and the Lumières[106]. Punt (2000) has pointed out how the scientific journal became the major channel during the 19th century to quickly distribute information on individual scientific experiments which depended in their rapid development on these exchanges[107].

Historical research into the advertising of novel technological devices has shown that the argument of a mystified technology of the cinema cannot be sustained, since the audiences were very well informed about the mechanisms of the apparatuses, not least since the projectors were commonly placed within the auditorium and featured as a major exhibition item, and since the screenings were often accompanied not only by narration of the film's content but also by explanations regarding the mechanism of the apparatus

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[106] Amongst popular scientific journals in the US were for example the *Scientific American* or *The American Journal of Science*, and in Britain *Nature*, *The Mechanics' Magazine*, *The Engineer* or *Engineering*.
[107] Punt mentions that the number of internationally available journals in Europe and the US increased from 750 listed ones in 1800, to Thousand in 1845, and culminated in 5.100 in 1885. (Punt, 2000, p. 130)

— cinema constituted a truly multi-media performance in the spirit of the 19th century vaudeville and variety theatre. From this de-mystification of the technology follows that the success of the cinematic apparatus lay not in a fascination with the mysterious or the unknown in the technology itself, but rather, as this thesis suggests, in the conscious engagement with the deception and the ambiguity of a perception that suspended rationalisation in its very appearance. Hence theories about the 'magic' of the technology in the sense of mystery or even Gunning's notion of 'astonishment' may merely suggest particular aspects of a much broader spectrum of a more sophisticated engagement and interaction.

Taking such historical evidence into account, Punt (2000) most notably has argued against the common attribution of naivety to the cinema audiences. He demonstrates how the audiences shaped the forms of these new technologies through their active engagement with the emerging cinema, through which they constituted a significant force amongst the competing imperatives in the convergence of science, technology and entertainment that fostered in particular the engagement between 'the exhibitor and spectators in a stable relationship of mutual intelligibility.' (Punt, 2000, p. 145) This revision of the complex network of forces involved in the cinema's reception and interpretation opens a perception of audiences as empowered agents through which they can now be understood as determining forces in the creation of what cinema has become. This chapter has attempted to remind us, how a thorough revision of the audiences refers to both their understanding of the mechanisms of the technology as well as their understanding of the construction of film form. The latter has been another persistent misconception in film studies, what Gunning called the 'evolutionary assumption', as mentioned at the beginning of this chapter. Here the common single-shot-scenes, often edited in the camera, were regarded as simplistic first attempts of coming to terms with film form which only much later developed into more sophisticated models. While it can be asserted that montage technique, narrative structures etc. did of course become more complex later, this does not dismiss the sophisticated skills necessary to tell a story in a single-shot-scene, time-limited by the length of the filmstrip. Consequently each scene had to be performed and timed with exactness and creativity, as Marshall Deutelbaum has

discussed in regard to the Lumières' films. (1983, p. 299ff) This misconception often went along with a 'realist' argument of the emerging cinema and especially the Lumières' films, which has been critically revisited. (Vaughan, 1990; Deutelbaum, 1979; Gaudreault, 1990) In these revisions early films such as *La Sortie des usines Lumières* (Workers Leaving the Lumières Factory, 1895), *L'Arrivée d'un train en gare de la Ciotat* (Train arrival in the station of La Ciotat, 1895) or *L'Arroseur arosé* (Watering the Gardener, 1895) are understood as sophisticated, socially constructed 'micro-narratives' (Gaudreault, 1990, p. 71) with a sensitivity to the artful, a structural use of space, repetitions, mirroring, etc., and not merely a straight-forward documentary film style that represented life as it unfolded[108].

Consequently, the spectators of the emerging cinema were well trained and sufficiently aware to understand these complex constructions and far from naïve both in terms of their understanding of the technology and the perception of the moving image. Furthermore, they were recognised by the exhibitors as heterogeneous constituencies, while the growing industrialisation of the cinema produced, what might be called a 'mass subjectivity'. Miriam Hansen has discussed the reception of the emerging cinema in a case study of American audiences and emphasises that: '… the formation of a mass audience involved a process of multiple and uneven transition, drawing on and combining different types of public sphere.' (1991, p. 88)[109] Punt also reminds us that: '… cinema (the institution) can be seen as a machine which effectively masks both the heterogeneity of its audiences and the fractures within the individual spectator by anticipating their response.' (1995b, p. 391) A similar argument regarding the agency of the spectators in reference to technology more generally is posited by David Nye (2006),

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[108] Elsaesser summarises referring to historical research by amongst others Stan Brackage, Standish Lawder and Noel Burch, Marshall Deutelbaum, Tom Gunning and Charles Musser: '… what was noted was neither the realism nor the magic of the images, but the extreme artificiality of the Lumières films, their sophisticated mise-en-scène, the exactly calculated camera placements and the almost uncanny precision with which the technical and material limitations — the predetermined length of film, the fixed camera and the absence of editing — were made productive as a 'will to style' and a conscious principle of formal organization.' (1998, p. 52)
[109] The audiences have also been treated as heterogeneous and as interactive for example in Barnes (1996), Charney and Schwarz (1995), Crary (1990), Gunning ([1986] 1990, [1989] 1994), Musser (1994), Nasaw (1993), Penley, et al. (1990), Punt (2000), Williams (1994).

who recognises the influences of social and cultural interactions with technologies as determining factors on how technology has been shaped, changed, understood and interpreted throughout history. These arguments provide two levers for this thesis: they firstly liberate technology from its mystification and secondly, they recognise heterogeneous audiences as sophisticated and articulate, constituting driving forces in the way cinema has been shaped and interpreted. Both these aspects open new ground for investigations into the actual perception of the cinematic experience in a wider framework of interest and scope.

It follows consequently that the technology itself cannot actually be claimed to having been perceived as 'magic', but was merely advertised as mystified or associated with magic, due to the awareness of the mechanics and an understanding of the emerging cinema as 'technology at display'[110]. This full knowledge of the mechanism while experiencing an illusion created by the perceptual apparatus, offered an experience which seemed to escape rational explanation. This not only provided the pleasure and fascination that lay exactly in this disparity; it constituted a discrepancy between intellectual knowledge and subjective experience — the very problematic that science has been struggling with and still is. The dominance of the rational paradigm has consequently produced certain meanings and interpretations of the cinema with an emphasis on the material while acknowledging the spiritual dimension merely as insignificant fancy and illusion in the context of entertainment.

The critical debates concerning realism in film and cinema studies and a consequent reconsideration of a critical revision of the histories on the inception of the cinema have, however, opened up an opportunity for a more complex and serious discussion of the spiritual dimension regarding the cinematic experience. In particular the acknowledgement of the broader frameworks of the histories of technology, of science and generally of prevailing ideas converging with those of popular culture and the

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[110] Landecker (2005, p. 933) also reminds us that audiences were familiar with the technology involved in the production of scientific films such as microscopy, which is pertinent with Crary's argument that the modernist shift in vision and visualisation concerned foremost a change in the observer which then was implemented in technological devices. (1990)

spiritualist practices during the period of the emerging cinema shifts the perspective to a serious treatment of the audiences with a focus on their perception and the inherent processes of the mind. The fact that psychic phenomena have seriously been studied by the scientific community in the context of the widespread practice of spiritism, supports the significance of a revision and reconsideration of the immaterial, spiritual dimensions in relation to the paradox of the cinema experience. This discrepancy, as identified above in the cinematic experience, marks the pivotal where the philosopher Henri Bergson has situated his system of thought, as the discussion following chapter 3 will show. Before we enter the philosophical domain, the next chapter will elaborate on the popular engagement with spiritualism in relation to the cinema and discuss the manifold connotations with 'magic' or the 'paranormal' in regard to the audiences' aspirations and expectations of technology in the late 19th century.

Chapter 2

The Emerging Cinema, Spiritist Practices and Time

The nature of the popular interest in science ensured a sophisticated engagement with the Lumière Cinématographe, et al., not merely with the technology in its material form and mechanistic processes but also as a philosophical apparatus. The active agency of the spectator is key to an understanding of this philosophical interpretation, as will be argued, which lies in the experiences of cinema perception. Some exhibitors and producers exploited this dimension especially by emphasising the enigma of the photographic image and its appeal to an appetite that was stimulated by amongst other things the Modern Spiritualist Movement and other populist spiritualist and conjuring practices. The audience appear to have shaped an interpretation of cinema informed by a wide-ranging interest in the psychical dimensions and experiences of earlier entertainments. The cinema appears to have added to the magic lantern shows for example an extra dimension in virtue of its extensions and amplification of these psychic dimensions. It stimulated a heightened fascination with self-recognition that persisted in their popularity across cultures during the rapid worldwide distribution and reception at the end of the 19th century. This perspective situates a significant part of the cinematic activity within the perception of the audiences and constitutes a parallel with the perception of clairvoyance, as was briefly hinted at in the previous chapter and will be discussed further in chapter 7.

Through a critical examination this chapter supports this view by discussing some selective associations between popular associations with spirit and cinema during the late 19th century and establishes this link as a significant component as part of the spectrum of the cinematic experience, one that has been underexplored. This dimension on a meta-level can be regarded as neither confined to the period nor to the technology, as a brief discussion on the emergence of television in regard to the expectations of the spectators will show. In this perspective, the discussion also suggests new theoretical interventions in possibly a variety of fields relating to technology and its interpretation by users. What this critical review suggests is that a more robust basis for seeing the cinema as crucially

embedded in discourses of the spirit at the point of its inception will provide a fuller account of the cinematic experience.

2.1 Spiritualism and the Reception of the Emerging Cinema

In some studies of cinema during its inception at the end of the 19th century, its relation with the popular engagement with otherworldly dimensions has been recognised, especially by accounting for the influence of the tradition of spirit photography that influenced certain characteristics of cinema technology and its exhibition. On the most mundane level associations with the survival of the dead were most obviously reflected in the names of devices such as Robert Paul's Animatograph, Jenkins' Phantascope, later renamed Vitascope, or Skladanowsky's Bioskope. These popular iterations of the technology stood in contrast to the choice of the name Cinématographe by the Lumières, which referred to a more scientific meaning: the 'inscription of movement.' In this connection it is also significant to mention that the Victorian cult of death[111] manifested itself in a quasi necrophilia and, as Antonia Lant (1992, 1995) has discussed, in the popular fascination with the cults of ancient Egypt, as for example in the decorations and programme content of the Egyptian halls[112], and more obliquely in phantom-rides and Hale's tours[113], etc. As often cited, Thomas Alva Edison believed in the survival of the individual personality after death and toward the later part of his life worked on a device that would guarantee: '... that at the moment of death, our electromagnetic consciousness would not simply evaporate and drift away, but would remain decidedly material, unified,

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[111] For a discussion of this topic see for example Curl (1972); for an account on the visual representation of death through photography in the US see Ruby (1995).

[112] Lant explores the complex interrelations between the emerging cinema and references to the preservation in time like mummification, its chemistry in both cases, the cinema as necropolis, film text as hieroglyphics and a general revelation of mystery, the fantastic and visualisation of (especially female) sexuality. In her view the Victorian visions of Egypt, excavations and exhibitions legitimated and conceptualised the emerging cinema. (1992, p. 90) Bazin refers to this legacy in relation to the cinema when he mentions the mummy complex in ancient Egypt as signifying a psychological drive to overcome death through preservation in time, at the start of his account on 'The Ontology of the Photographic Image'. (Bazin, 1967, p. 9) Lant contextualises Bazin's notion of the cult of Egypt as one of the last traces of this interrelation in Cinema and Film Studies. (1992, p. 112)

[113] See for example Rabinovitz (2006).

and coherent, even in the face of the etheric ocean's infinitude[114].' (Sconce, 2000, p. 82)

The late 19th century amusement and entertainment industry has also been discussed emphasising this fascination with death and bodily transcendence for example by David Nasaw (1993), Dorothea E. von Mücke (2003), Miriam Hansen (1991) and, Leo Charney and Vanessa R. Schwartz (1995). The cinema seemed to provide a novel platform for the constructed visibility and resurgence to the dead, spirits, and other ghostly apparitions from the imaginary; so much so that it was considered to bring them to life[115]. Analogies and metaphors drawing on death and resurrection were frequently used in advertisements announcing novel cinematic devices, but also, most notably, in film content: Georges Méliès and Ferdinand Zecca[116] both featured the imagery of resurrection and phantoms in their fantastic apparitions and transformations[117].

When various technological apparatuses that had developed within the framework of positivist science, entered the public domain, they were frequently advertised with reference to the supernatural. This apparent connotation of the supernatural with technology preceded cinema. Sir David Brewster for example who had vehemently rejected the connection with the spiritual realms and argued for the scientific rationalist paradigm in respect of optical illusions, nonetheless claimed an analogy with supernatural qualities as a teaser in his advertisements for his stereoscopes in 1858. (Gunning, 1995, p. 47) Similarly, with the marketing of the cinematic apparatuses, although the mechanism was advertised technologically, the advertising rhetoric often invoked spirituality or

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[114] Sconce cites from Wainright's article 'Scientists Research Machine to Contact the Dead'. (1963)

[115] This was facilitated through the reciprocal interrelationship between technology, spiritism and science, as discussed in the previous chapter, amongst other by conjurers who acted as intermediaries between the audiences desires and expectations and technologists. Just as they were able to defuse new science to mass audiences they were also able to reflect back new directions for research and innovation.

[116] Richard Abel claims the particular influence of Méliès on the films of Zecca who worked for Pathé. (1994, pp. 81-2)

[117] Tom Gunning (2007) explores the metaphorical character of the 'phantom' as manifest in visual media during the introduction of modern media, in particular in the way it constituted an element of the cultural imaginary at a nexus between popular fascination with the otherworldly and premodern scientific metaphorical referents for perceptual phenomena. What Gunning calls an 'ontology of mediated vision', he rather transfers into a discourse of visual culture tracing the historical connotations of the term 'phantasma' in relation to the scientific and popular visualisation of paranormal phenomena.

connotations with 'magic', for example Randall Williams' Grand Phantascopical Exhibition, the Kinemacolor posters including angels and floating women (Harding and Popple, 1996, p. 158ff) and even the Lumière Cinématographe that was advertised as scientific apparatus was regularly accompanied with poetic descriptions. (Harding and Popple, 1996, p. 8) Every novelty had to have something 'extra' — a term that was also used to describe the apparitions of spirits on the spirit photographs[118]. (Peters, 1999, p. 98; Gunning, 1995, p. 51)

Just as some scientists and sceptics seemed willing to adopt the rhetoric of spiritualism when it suited them, so did the advocates of psychic dimensions seem equally contradictory in relation to the photographic image and it's later application to the cinema. The popularity of spirit photography has long been regarded as one of the key influences in relation to spiritual dimensions in the emerging cinema in the way it constituted a continuation of a certain interpretative model for the audiences. However, through the application of the photographic practice to metaphysical investigations such as contact with the dead, the investment into otherworldly realms was relayed into a discourse of realism, as it was understood in the interpretation of photography as a 'realist' medium. Consequently while seeking support for spiritual phenomena in scientific apparatuses, the implications of the photographs appeared to contradict the regime of their own practice. Nonetheless the apparent comfort that both communities (rationalist and spiritualist) drew from each other indeed formed one of the key attractions of the emerging cinema.

This reflects a general tendency at the second half of the 19th century to seek refuge in ambiguous interpretations of realism when confronted with uncertainty, especially since novel scientific findings in a variety of fields such as medicine, psychology, as well as in popular belief systems, the social and economic structures, etc. created spaces which made it unavoidable to encounter alternative worldviews including what might today be

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[118] John Durham Peters illustrates how communication and interpersonal contact between humans or between humans and spirits was inspired by or became associated with innovative technological apparatuses and communications technologies, such as the notions of: '... making contact, tuning in or out, being on the same wave-length, getting good or bad vibes.' (1999, p. 5)

called 'paranormal' dimensions[119]. William Crookes, as we saw in chapter 1, section 1.1, acknowledged this when he spoke about: '... the appearance of very remarkable phenomena which at the present time are occurring to an almost incredible extent' (Crookes, 1871) and along with other scientists recognised the possible productivity in this ambiguous relationship that the assumed 'realism' of the photograph (and later the cinema) proposed. The French Neurologist Jean-Martin Charcot's scientific studies of hysteria, and the application of photography provides a classic example. He attempted to both provoke as well as capture 'frozen' hysteric bodies in his *Iconographie Photographique de Salpêtrière*[120]. Gunning argues that: '... photographic technology served as a means of rational defence against the lack of physical and mental control of hysteria.' (Gunning 2005, p. 12) It achieved this by convincingly amalgamating two contradictory worldviews on a single platform in which the concept of reality was mutable. The success of this strategy was such that the task to create a systematic photographic iconography of nervous diseases was given to Albert Londe. He was an expert in photographic processes and technologies, who became director of the photographic service at the Clinic for Nervous Disorders at the *Hospice de la Salpêtière* in 1884, where he applied medical photography in his self-constructed photographic devices on which he also collaborated with Étienne-Jules Marey (Braun, 1992, p. 85), whose significance will be discussed in chapters 4 and 5.

The photographic image became a pivot for pressing issues at the time, most notably the crisis and redefinition of subjectivity in the light of shifting conceptions of time and its rationalisation. Several theorists have critically reflected on the impact of modernism on the perception of space and time, and emphasised the crisis of subjectivity. The detachment of vision from the body of the observer in the first half of the 19th century (Crary, 1990) led to a variety of instrumentation that reconstructed and reinterpreted the disparity between the description and the actual experience. Subversive strategies and counter-movements to the rationalisation of time and the material world have been

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[119] Kern (1983) argues in this respect how new perceptions of time impacted on the social-economic networks and habits and created a sense of uncertainty and relativity.

[120] George Didi-Huberman (1982) discusses Charcot's application of photography to the staged gestures aimed at achieving scientific validity that served as a visual model for hysteria.

manifested for example in the popular culture (such as the emerging cinema) or in the widespread spiritist practices during the 19th century, through a merging of novel technologies and scientific discoveries with performative as well as philosophical elements. In this way both tendencies, the rational and the 'irrational' converged in a struggle to face these changes and uncertainties. From this emerged, according to Mary Ann Doane, contingency: '... as a site of awe and fear, constituted as both lure and threat.' (2002, p. 13) Doane discusses the interdependence and alliance between these two tendencies, the abstraction and rationalisation and the emphasis on contingency, chance and the ephemeral, in the context of a restructuring of temporality in the late 19th, early 20th century. In her view: '... the rationalization of time characterizing industrialization and the expansion of capitalism was accompanied by a structuring of contingency and temporality through emerging technologies of representation — a structuring that attempted to ensure their residence outside structure, to make tolerable an incessant rationalization.' (2002, p. 11) In regard to the cinema and the photographic image she argues that: '... the technological assurance of indexicality is the guarantee of a privileged relation to chance and the contingent, whose lure would be the escape from the grasp of rationalization and its system.' (2002, p. 10)

Doane's approach departs from a meta-discursive framework with a focus on indexicality, on a Peircean basis. She supports a materialist perspective, when she alludes to contingency as provoking a threat of an 'evacuation of meaning.' More positively it could be argued instead that it enabled the engagement with the realms of spirit whereby in a Bergson sense, as will be discussed in the following chapters, creation based on free will becomes possible. The extensive engagement with psychic phenomena at the time could be read in this context, as a recovery of the irreversibility of time of which, contrary to Doane's view, it could be said the cinema became emblematic for. Doane's understanding of cinematic time as an archive for temporality, as a form of preservation of lost time of the present, refers to an understanding of memory as an archive of the present. The discussions in the following chapters will elaborate Doane's call for a shift towards ontology through revisiting Bergson's philosophy, in which memory is understood as driving force actualising continuously in the present moment of perception.

The cinema in this way is understood as a vehicle to perceive presentness, as an actualisation of memory in the present moment of the cinematic experience. While Doane revisits the cinema from the perspective of a meta-discourse positing the understanding of the cinematic time in reference to modernism, this thesis instead revisits the emergence of the cinema from the vantage point of the period in a close examination of the interdisciplinary collaborative network involved in science, technology, the arts and psychical research which simultaneously and in a contingent way addressed the issues of perception of time, space and memory.

Several other theorists (Rank, 1979; Morin, 2005; Gunning, 1995; Barthes, 1981) have pointed to the ambiguous character of the photographic image, to both the indexical relationship with an actual event and its artificial construction of a double resemblance, or as Barthes (1981) expressed it, the *studium* and the *punctum*. This apparent dichotomy contributed to the argument that posits the pleasure of the cinematic perception in this ambiguity. It is in particular the realm of the *punctum* in Barthes' terms that provided a platform to situate the so-called 'magic qualities' of the image which appears also in some accounts in regard to the enigmatic dimension of the cinema. Such approaches sometimes relate an understanding of 'magic' to research on ritualistic practices in cultural anthropology, where it is commonly situated within an animated, pantheistic worldview or the context of the observer/ participant.

Edgar Morin (2005 [1956]) for example discusses the function of art in his anthropological study of the cinema experience, which according to him enriches the affective power of the image and reveals magical qualities through the potential presence of the double. He speaks of the nascent quality of magic in an intermediate zone, which is commonly called sentiment, soul, or heart. He proposes that psychological states of the spectator's mind are transferred onto the image, which consequently reveal affective qualities of the image, and if these affections become alienated and projected into objects (as in the doubles on the screen), then magic is no longer an external belief, but an interiorised feeling. The magic in cinema for Morin is transformed into an affective-rational syncretism in aesthetics and serves as an analogy for what he calls the 'archaic'

worldview. In this way Morin lays open processes of the human mind, even calling the cinema a 'mind-machine', where projection and identification produce our 'affective participation' in and with the world. The impact of human affective participation with technology was not necessarily a straightforward contract of cause and effect. For example despite strenuous efforts, the supporters of spirit photography were, aside from some minor exceptions never able to establish a convergence of science and spiritualist practices. It could be argued that this was due to the very realist (indexical) paradigm that on the one hand, sought to prove the truthfulness of the photographic apparition on the emulsion; while on the other, undermined the plausibility of dimensions beyond the rationalist domain. The outcome was a persistent suspicion of trickery that surrounded photography and a scepticism regarding the reliability of the photographic apparatus as scientific instrument, as Gunning has remarked: '... the attitudes such explanations [of spirit photography] reveal toward photography are as ideologically revealing as they are rationally unconvincing.' (1995, p. 65) What the widespread 19th century spiritualist photographic practice in any case clearly demonstrates is the popularity of spiritualist practices amongst their audiences, both as entertainment and fascination with the otherworldly, which has been relayed into a discussion of the emerging cinema and its fascination with the occult.

From the mid-19th century interest in the occult became focused on the Modern Spiritualist Movement. As a movement it did not develop homogeneously, finding different constituencies and pathways in different communities[121]. In literature surrounding the movement, it is claimed to go back to the famous Fox sisters and their rapping séances that quickly spread in the United States and abroad. (Pearsall, 1972, p. 29) As Anne Braude in her research into female mediumship states: 'Spiritualism spread

[121] There were national differences in the way spirit photography became introduced in relation to both the Modern Spiritualist Movement and the scientific community. The publication following the exhibition The Perfect Medium: Photography and the Occult (2005) takes some of these issues up and discusses how for example in France the acceptance of spirit photography had been held up by the influence of Allan Kardec, founder of The Parisian Society of Psychologic Studies and reportedly only after his death in 1869 took off and got widely spread and accepted. Kardec's influence must have been significant, since even the Emperor Napoleon III who was known for his interests in spiritist phenomena sent for him several times for conversations on the revelations in The Spirit's Book. (Kardec, 1989, p. 15)

"like a prairie fire", unhindered by the need for special facilities or trained emissaries.'
(1989, p. 19) The Modern Spiritualist Movement was rapidly taken over and imitated by
followers, believers as well as conjurers, and even became a customary parlour pastime at
high tea in bourgeoisie households, influencing a broad constituency across classes,
genders and age groups as well as religious movements and shaping entertainment forms.
This rapid diffusion and broad appeal was more or less mirrored in the diffusion of the
cinema, with the exception of the bourgeoisie in the very early years. It's particular
appeal to the audiences' appetite, aspirations and expectations, rapidly carried it into a
wide range of constituencies in the early years. With the rise of D.W. Griffith's film
oeuvre, as soon as there was investment in purpose built theatres it turned into an
essential bourgeois medium[122]; some even argue that Griffith betrayed the cinema by
investing it with bourgeois values and styles. Miriam Hansen recognises more complex
processes at stake and argues in her study of the social compositions of early American
cinema audiences:

> Griffith's naïve striving for cultural respectability only literalized the industry's
> attempts to stabilize the new public sphere that had crystallized around the
> cinema, among other things, by borrowing the cultural façade of a bourgeois
> public sphere. (1991, p. 64)

As Hansen, Doane (2002) and others have pointed out, the cinema (more than
photography) was a technology that was adept as reconciling contradiction. One of the
often cited earliest film historians and cinema spectators, Maxim Gorky, gives an account
on what for him was an alienating experience when he wrote in 1896 after a visit to a
Lumière Cinématographe presentation at the Nizhni-Novgorod fair:

> Last night I was in the Kingdom of Shadows. If you only knew how strange it is
> to be there. It is a world without sound, without colour. Everything there — the
> earth, the trees, the people, the water and the air — is dipped in monotonous grey.
> Grey rays of sun across the grey sky, grey eyes, in grey faces, and the leaves on
> the trees are ashen grey. It is not life but its shadow, it is not motion but a
> soundless spectre... And all this in a strange silence where no rumble of wheels is
> heard, no sound of footsteps or of speech. Nothing. Not a single note of intricate

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[122] According to many reports the fire at *Bazar de la Charité* held by the *Société Charité Maternelle* in Paris in 1897, which was started by a lamp used to project a Cinématographe film show and that killed over one hundred people, was influential in deterring the middle and upper classes from going to the cinema. (Ramsaye, 1926, pp. 353-7; Braun, 1992, p. 408n)

symphony that always accompanies the movements of people. (Harding and Popple, 1996, p. 5)

The cinema, however, was able to provoke new aspirations on a metaphysical plane that caught the audience's fascination, and which conjurers and entrepreneurs were ready to exploit. Gorky expresses also these impressions:

> It is terrifying to see, but it is the movement of shadows, only of shadows. Curses and ghosts, the evil spirits that have cast entire cities into eternal sleep, come to mind and you feel as though Merlin's vicious trick is being enacted before you. As though they had bewitched the entire street, he compressed its many-storied buildings from rooftops to foundations to yard-like size. (Harding and Popple, 1996, p. 5)

Considering the Spiritualist implications in the early reception of cinema, such as the idea of 'living, animated images' or 'life after death', it seems as if spiritualism had paved the way for cinema to be perceived in both its rationalist (conscious of its mechanism) and its metaphysical appearance in the perception of the images. Cinema in a certain sense was far less spectacular than the coloured magic lantern shows, however, it did have some 'extras', even though the image was monochrome, blurred and flickering.

From the point of view of the popularity of spiritualist practices and their intersection with popular culture it could be suggested that the pressure from institutionalised rationalism on all fronts (science, economics, education, social imperatives, etc.) enforced a certain counter-current in the reception and widespread adaptation of optical apparatuses for spiritualist means throughout the 19th century. Of course the history of metaphysical connotations with optical toys goes far back in history, but it seems that in the 19th century it became a significant bottom-up movement. There have frequently been ascribed specific characteristics to the way optical devices fused various forms of intelligence into a fascination with the visual, which for example is exemplified in a poem accompanying a Lumière screening announcement in 1896 as the notion 'Living Picture craze' (Harding and Popple, 1996, p. 8), in Comolli's phrase the 'frenzy of the

visible' (1996, p. 109; 1980, p. 122)[123], or what Gunning and Gaudreault called the 'cinema of attractions' (Gunning, 1990) and the 'aesthetic of astonishment' (Gunning, 1989, 1994). The performativity in the cinema exhibition whereby a technology became a medium that through its display provided heightened experiences, was also a familiar characteristic at many attractions at the world's fairs[124] since the mid-19th century. David Nasaw discusses how the world's fairs exhibited the latest technologies in such a way that they induced a convergence of work and play into city life, between culture and commerce, where: '... education and amusement, fantasy and reality, beauty and excess, propriety and immodesty were delightfully blurred.' (1993, p. 79)

In this regard it should be remembered that generally the occult in the public arena has often expressed its ecstatic forms through performance[125]. For example traditional shamanistic practices invariably include quite substantial performative elements[126]. The conscription of technology as a performative medium is evident in both conjuring practices and in traditional indigenous ceremonies in the colonies, as it is reported for example by anthropologists such as Franz Boas and by missionaries and travellers in previous centuries[127]. Even before indigenous peoples were 'turned into performers' at the world's fairs, it is reported that North American conjurers for example adapted certain indigenous practices and arrangements to evoke the power of what Western observers

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[123] Comolli discusses the notion 'frenzy of the visible' in regard to the effect of the 'social multiplication of images', the geographical extension of the field of the visible and the representable, and the multiplicity of scopic instruments. (1980, pp. 122-3)

[124] George Stocking gives a good account of the popular fascination with the novel technologies on display at international exhibitions and world's fairs, such as the Crystal Palace in London, within a context of the intellectual environment of the Victorian period. (1987, pp. 1-6)

[125] Fascinating to think of the expressions of hysteria in this context as a form of subversion to a dominant ideology. Anne Braude accounts for the strong feminist movement that took place amongst spiritist healers and alternative medicine movements as a subversion against the dominant view and treatment of the female body as weak, prone to illness and hysteria, and as a counter movement against the practices of general physicists who still used strong medical treatments such as opium and occasionally the ancient method of bleeding. (1998, pp. 142-161)

[126] For an elaboration on the performative character of shamanistic séances see for example Vitebsky, 1995, pp. 122-4; the specific practices of religion and rituals from an anthropological perspective have most notably been theorised by Victor Turner (1969), the specific relationship of ritual with theatre have been elaborated by Richard Schechner (1985).

[127] Milbourne reports for example on an explanation by Boas for a sophisticated burning-alive illusion staged in northwest Canada which incorporated a box with a bottom, a secret tunnel, a long speaking tube and a dead seal. (1973, p. 77)

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commonly called 'magic'. These included performances in the open air under the night sky with tom-tom beats and campfires casting flickering shadows accompanied by occasional flashes of lightening[128]. (Milbourne, 1973, p. 69) Such performances also belong to some of the earliest events recorded on film, such as W.K.L. Dickson's Sioux Ghost Dance from 1894[129] in which there is a nesting of performing technologies: the drums, the light effects, and the cinematic apparatus. It seems that during the 19th century a convergence of conjuring, performative scientific demonstrations as well as traditional rituals engaging with supernatural powers or 'magic', and the growing use of audio-visual media and other technological devices in these various forms of performances, increasingly blurred the distinction between the practices of traditional ritual, scientific experimentation and Western theatre, or in anthropologist Richard Schechner's terms between efficacy and entertainment. (1977)

With regard to the performative convergence of science and entertainment John Durham Peters (1999) discusses William James' report on his spontaneous intervention during a popular public lecture on physiology by one of his Harvard Medical School Professors demonstrating the pulsations of nerves in a turtle's heart when charged with electricity. The demonstration was projected onto a screen in front of the Sanders Theatre, and when halfway through James realised that the heart's nerves were not reacting as they usually would, he made the appropriate movements appear on the screen through manipulation. James claims to have 'fixed' the demonstration, otherwise the audience would have been cheated of an understanding of physiology. Peters highlights the significance of James' intervention in that James suggests that all our knowledge may rest on strategically concealed frauds: 'The criterion for knowing should not be accurate duplication of the world, but the ability to make our way through with the best aids we can get... Where we cannot know the original, we might as well take the best image we can get[130].' (1999, pp.

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[128] The striking lightening offers an association with the zig-zag lines which will later on return in chapter 5 in the discussion on Aby Warburg and the serpent ritual, as well as Bergson's doctrine; it is worth bearing this connection with North American Conjuring practice in mind.
[129] This film is available online at the Library of Congress at http://memory.loc.gov
[130] Sometimes mediums were revealed as frauds in their application of certain conjuring tricks such as wired connections to facilitate electrical currents to stimulate movement, comparable to elaborate set-ups of stage shows. When applying Peters' statement to spiritist séances, the issue of

265-6) Peters concludes that: '... communication involves not the direct sharing of truth but the manipulation of effects' and emphasises that James shifts the focus in communications from fidelity and authenticity to the responsibility of the audiences[131]. (1999, p. 266) Mary Ann Doane has identified this shift to truth as a provisional condition as a consequence of the heightened awareness of contingency[132] during that period, which became characterised in her words by the: '... ideological stress accompanying rationalization and abstraction.' (2002, p. 10)

Similarly to James, for Morin not only reason but also magic and sentiment constitute means of knowing, sometimes contradicting the realms of reason, but always their necessary double. In his view, the cinema offers the ideal exemplification of this and constitutes a privileged medium for an incorporation of these processes, in which the objective reality of the photographic image, saturated with its charm or magic power, draws together the subjective interpretative processes of projection and identification. Morin continues that these psychological mechanisms consist of two important moments — the state of subjectivity and the state of actual substantiation; in the latter the alienated, fixed, fetish projection becomes a 'thing.' This, to Morin, is when one truly believes in duplicates, spirits, god, sorcery, possession or metamorphosis. Morin describes these spiritual entities as projections of our mind, as illusions, as the materialised duplicates of our mind. But nevertheless they effect and influence us and are part of one and the same perception, expressing a condition of immanence rather than transcendence; and in the case of cinema, in his view, the processes of projection and identification integrate the spectator in the flux of the film, and the film into the psychical flux of the spectator.

fraud is put into a different light and questions the relativity of knowledge, especially since there were no clear distinctions between the various forces (visible and invisible) at work.

[131] Hugo Münsterberg would probably not have shared this view, since he did not support the validity of psychic phenomena. According to Inglis he attempted to unmask the famous medium Eusapia Paladino as a trickster, and remarked that: "...he should be the last man to see through the scheme and discover the trick"; the investigators should be conjurors, not psychologists.' (Inglis, 1992, p. 426) This was an opinion that actually goes back farther in history regarding the convergence of experimental science with conjuring or supernatural forces; some contemporary psychic investigators shared this view, such as Everard Feilding who claimed that: "... no one is easier to deceive than a man of science". (Inglis, 1992, p. 426)

[132] By contingency she discusses the excess that threatens continuity and the integrity and stability of rationality through rupture of established systems, unpredictability of modernity, chance and arbitrariness.

In both the cinema and observations of psychic phenomena, the spectrum of interpretations ranging from illusion, trickery, magic or realist approaches merge and constitute their ambiguous character. In the context of 'new film history' Tom Gunning has argued that it was not the realism that attracted the audiences to the 'living pictures', but a shock of astonishment deriving from the transformative powers of moving images. (1989, 1994) Critiquing Gunning's frequently cited argument of an 'aesthetic of astonishment' or a 'cinema of attractions', Punt instead introduces an 'aesthetic of disembodiment[133]', a move that acknowledges the inherent spiritual aspirations of popular culture with regard to tele-presence, telepathy[134] and teleportation and the audiences' engagement with these concepts in their 'cinematic imaginary.' (2003, 2005) By this Punt emphasises that the scientific engine of cinema was not received as a device to enhance the impression and experience of 'reality', as has commonly been claimed in historical accounts but was rather understood as an extension of consensual realities constituting a 'cinematic imaginary' of the unknown and unknowable. Cinema in his view became a socially sanctioned platform to publicly engage with other (immaterial) dimensions, after science had discredited the 'spiritual' or 'paranormal' even in the populist agenda. As a consequence the Cinématographe was soon exploited as an entertainment device appealing to that part of the popular imaginary, intent on undermining the methods and paradigms of the professional scientific community. Cinema became a performative technology with a subtext of occult beliefs and practices, in the same way that Röntgen's X-Ray did by providing a rational explanation for clairvoyants' abilities to perceive opaque bodies. (Princenthal, 2006, p. 107) In this way, the technology in its invention as material culture, and its perception and interpretation as

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[133] For a discussion on out-of-body experience see for example Celia Green (1968).

[134] The term 'telepathy' derives from the Greek terms *tele* ('distant') and *pathe* ('occurrence' or 'feeling'), which Luckhurst interestingly defined as intimacy (tele-) or touch (pathos). The term was coined in 1882 by the French psychical researcher, amateur psychologist and poet Fredric W. H. Myers, one of the founders of the Society for Psychical Research (SPR), which followed from the previous French term 'communication de pensées' — 'thought-transference,' or 'thought-reading.' Luckhurst (2002) gives an elaborate account of both the persistence and the history of telepathy between 1870-1901 by applying a multi-disciplinary approach. Peters points out that telepathy originally was aimed as a term to scientifically explain a psychic phenomenon, and did not relate to any paranormal activity. (1999, p. 105)

a platform for immaterial dimensions interwoven with experiences, expectations and the imaginary, places cinema as an alliance between the public awareness of spiritualist practices and the occult that constituted an undercurrent in 19th century popular culture.

The end of the 19th century is marked by an enormous centrifugal surge, pulling all kinds of forces from popular culture, entertainment, philosophy, science, both 'irrational' and rational into the centre of the public's interests and fascinations. It became almost impossible to distinguish between serious investigations into the 'paranormal' and practices of conjuring which implied scientifically based trickery, and parody. It almost seems like a vicious circle in which one constituency is referring back to the other, hardly ever finding firm let alone common ground[135]. This tendency has brought forth great variety, aspiration and creativity in attempts to ground each novelty in the tradition of the most convenient field, as it is also evident in the uncertainty caused by debates concerning relativity in the early 20th century, which were already foreshadowed decades earlier.

2.2 The Cinema, the Séance and the Spectators' Share

The cinema with its wide variety of multimedia mixtures and continuous re-interpretations and manipulations of the available and developing techniques and materials in its early period, quite soon conformed with the imperatives directed by the economic trend of monopolisation, capitalisation and institutionalisation. It is generally claimed that they caused the reduction of the great variety of so-called 'pre-cinematic' moving image experiences to be subsumed into a single direction of a mainstream, linear narrative film form, in much the same way that photography was primarily regarded as a mainstream realist and documentary medium. In the history of the cinema this conformity takes place as producer control becomes established, and purpose-built theatres become the primary location for film exhibition. It follows the trend that Jenkins (1975) described

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[135] What happened with popular interpretations of the cinema and spiritism also appeared in other domains, such as was for example in the case of the novelty of electricity which was conceived as both a healing as well as dangerous force. (Sconce, 2000, pp. 50-6)

in regard to the photographic industry with a three-phase model from imperfect to perfect competition, finally balancing the relationship between market demand and supply, preparing for the final phase of monopoly. Economic determinism can account for the reduction and folding of the great variety of technological platforms into the cinema as a unified system in terms of standardisation of perforation, image size, materials, chemical processing, etc. against the background of a progressive conformism with the positivist trend of the sciences.

Alternatively it can also be argued that the magic lantern did not become redundant because of its technological inferiority to cinema with regard to movement, as has been argued (Carels, 1994), but rather because it did not reconcile a multidimensional view of plural 'realities' or dimensions deceiving the perception of the viewer in time, space and movement as profoundly as the emerging cinema did through its various apparatuses and techniques. Although devices such as the magic lantern, Mutoscope or flick-book were able to deceive the eye into perceiving movement, they did not operate in a way that was cognitively impenetrable, one could shift attention between the cause of the illusion and its effect. In the cinema, however, although the process may be rationally understood, it nevertheless always deceives the spectator into experiencing something beyond the rational perception. This situates the cinema as a socially sanctioned arena for a cognitively impenetrable experience, and not as is often claimed merely the most effective realisation of movement or representation of reality — or a technology of attraction.

This suggests that from a broader historical and philosophical point of view, it could be suggested that the interpretation of the cinema was at its most compelling when it compromised its vast creative possibilities. In this interpretation it ameliorated the great uncertainty experienced at the end of the 19th century concerning social, economic and technological change in an exchange for the view of cinematography as both an indexical image of an axiomatic reality while at the same time maintaining its 'double' and

ambiguous character[136]. The original multiplicity of forms, contents and technological diversity, was progressively absorbed into the two continuous forms of optical/ chemical representation: the cinematographic and the photographic image. At the same time, although dismissed by science, within popular culture the paranormal persisted through forms of reception and referential connotations related to the cinema and its technological *dispositif*. As a consequence the undercurrent of an occult, or less polemically, a specific avant-garde, mainstream and popular metaphysical investigation worked its way through the established canon of film form and has remained since as an important momentum in mainstream film. This thematic trend with relevance to its reiterations in contemporary film culture based on mythologies and on spiritist and science fiction narratives, in a convergence with contemporary technology defines the platform from which to investigate further into the spectators' expectations and desires.

As exhibitions of the cinema became quickly widespread at the end of the 19th century, there appeared to develop a profound fascination with self-recognition in the cinematic séance. The simple act of watching oneself on the screen became a huge attraction in the cinema and constituted one of the great early successes of cinema were scenes filmed in the streets in front of theatres followed by screenings in those same theatres. It is reported that audiences flocked to the theatres to watch themselves on the screen, an appeal that is also evident in street scenes in the recently recovered Mitchell and Kenyon films in England[137]. However, it was not only the actual appearance onscreen of filmed spectators, but also the recognition of oneself in the 'other' that constituted a fascination with a fluctuation between the experiences of two simultaneous realities one outside and one inside the viewer. The argument given for the popularity of this genre is that the spectators were not only excited to watch themselves on the screen, but that in any film

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[136] For discussion on the 'double' of the photographic and cinematic image see Rank (1979), Morin (2005), or Gunning (1995).
[137] The Mitchell & Kenyon film negatives were rediscovered in 2005 in Blackburn. This footage filmed by Sagar Mitchell and James Kenyon between 1900 and 1913 for traveling cinema tours consists mainly of footage of local people and their everyday activities. The films have been restored by the BFI National Film and Television Archive in collaboration with the University of Sheffield National Fairground Archive and broadcast in 2005 by the BBC as the series *The Lost Films of Mitchell & Kenyon*. A compilation is also published by New Yorker Video, 2005, on the DVD *Electric Edwardians - The Lost Films of Mitchell & Kenyon*.

they were watching 'themselves' through a process of identification. It could be said that it produced a state of a perpetual 'becoming other' or 'else' in both a Deleuzean and a Morinian sense. John Durham Peters (1999) sees in this relationship a certain alienation between ourselves, our inner lives and the other, and the interferences of various communication techniques, with the reason for the desire for transcendental experiences. He critiques the search for 'spiritual fullness' as a mystification of technologies, which according to him is a futile hope for finding satisfactory communication between the self and other. If his view with regard to communications technologies is applied to the cinema, it places the cinema in the long line of attempts to interpret technology as a means to bridge the inside with the outside in the subject's perspective. It will be argued later that in regard to Peters' view on an ultimate failure of a deferral to spiritualist realms, Henri Bergson's philosophy offers a relief in a similar perspective by an understanding of spirit as embodied experience seeking communion beyond the techniques of language and the outwardly directed intellect.

However, one aspect that has often been overlooked in this discussion of the 'other' especially in regard to the cinema is the 'gaze back' of the filmed subjects. This is a very prominent discussion in the discipline of cultural anthropology and bears some relevance in this context. A quote in the journal *L'illustration* discussing the Dahomeyan Ethnographic Exhibition from 1893 reverses the common discourse of the gaze of the observer in the framework of 19th century evolutionary and the Western-centric colonial perspective:

> A phrase that practically all know, men, women, and children, is "Give me some change!" The little ones, so funny with their shaved heads that resemble bronze objects, suck happily on sticks of barley sugar that some ladies present to them. But what impression on their ignorant souls is produced of the curiosity of which they are the object? Does the spectacle of ourselves that we offer them amuse them just as we are amused by what they offer us? Perhaps they are delighted to be present for free at an exposition of Parisians. (Rony, 1996, pp. 40-1)

The emerging cinema safely incorporated this public fascination with the subject of indigenous, non-European peoples: '... in its proliferation of travelogues, scientific research films, safari films, scripted narrative films, and colonial propaganda films.'

(Rony, 1996, p. 43) According to Fatimah Tobing Rony the emerging cinema eliminated 'the potentially threatening return look of the performer', as exemplified in the citation above, and according to her offered a 'more perfect scientific voyeurism.' (1996, p. 43) In the experience of the emerging cinema there is an analogy between a fascination with the 'other' in terms of cultural difference — which during the 19th century, it has to be remembered, was also understood as a difference in 'time' in an evolutionary sense from a Western perspective — and the popular engagement with the 'other' from the 'other side' or 'otherworldly' dimensions.

The so-called 'savage', however, was not only regarded as subordinate to the white race, but at the same time this imaginary 'savage' in tune with his/ her natural environment also served as exemplary model for the healthy and heroic ideal that was contrasted with the weakened, civilised white citizen, prone to illness in an unhealthy industrialised, highly artificial environment. At the same time indigenous peoples were often regarded as pathological — Freud's *Totem and Taboo* contributed to this strand of evolutionist thinking by referring to the 'savage' as infantile — or even as 'near death (if not already dead)'[138]. (Rony, 1996, p. 46) In an analogy with the exploration of the 'other' in relation to spiritualist practices, the departed, ghosts or spectres appeared in various forms of mediation often connoted with nascent technological devices, especially those which allowed experiences remote in time and place. Johannes Fabian has shifted the focus from 'self' and 'other' in cultural anthropology to a discussion of time; he suggests:

> Constructions of otherness do not begin with evolutionism and other schemes of distancing whose ideological character we now recognize; they are already built into our very presentations of identity/ sameness as an exclusive 'here and now' which we accept without much questioning. One trick, especially, which we seem to play again and again — the trick of denying coevalness, same time, to those whom we perceive as distant and different — works as a construction of time. (1992, p. 230)

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[138] Cultural anthropology coined the term 'urgent anthropology' to record and study disappearing indigenous peoples, mostly threatened through colonisation and Westernisation, which today is understood as a complex process of mutual interaction rather than the dichotomising enforcement of stereotypes, as expressed in the post-colonial discourse.

To discuss some formal aspects of these intersections of converging as well as sometimes conflicting imperatives in regard to 'other' dimensions and the cinema, it needs to be remembered that there was something particular about the cinema's theatrical exhibition which in itself strongly resembled the set-up of séances at the time. Towards the later part of the 19th century displays of telekinesis became very common. Set mostly in dark space, normally inert objects moved[139], while various sounds accompanied the events or performances appearing like voices turning up or tuning in from the 'other side.' There are very precise descriptions of séances conducted under the scrutiny of scientific observation, for example séances with the medium Eusapia Paladino that took place between 1905-1907 and were studied by the International Metaphysical Institute Paris and the General Institute of Psychology in Paris. Gustave Geley, President of the Metaphysical Society in Paris, included some original reports of the experiments at the General Institute of Psychology[140]. In his publication *Clairvoyance and Materialisation: A Record of Experiments* from 1927 he compares them to the outcomes of experiments at his institution. (1927, pp. 360-372) From these precise reports the set-up of the séances becomes apparent, every single step of the events is recorded, the controllers of Eusapia's hands and feet are mentioned each time, the position of her hands are exactly described during the levitation of tables for example or other moving objects[141]. In this account Henri Bergson is reported as one the controllers and Étienne-Jules Marey's apparatuses and graphs are described as being used to measure the movement of the teleported objects[142], such as his 'tambour' to measure the phenomena produced by Eusapia Palladino. (Chéroux, et al., 2005, p. 253)

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[139] Ronell points to Thomas Watson, Alexander Graham Bell's assistant involved in the invention of the telephone in 1876, who believed that mediums transformed radiation from within the body into mechanical forces that were expressed through rappings, writing, or telekinesis. (1989, p. 250) Watson writes in his biography: 'I was now working with that occult force electricity, and here was a possible chance to make some discoveries. I felt sure spirits could not scare an electrician, and they might be of use to him in his work.' (Ronell, p. 245)
[140] This was the institute where Marey and Bergson collaborated on studies of psychic phenomena, see also chapter 1, 4 and 7.
[141] For photographic documentations of events during séances see also Chéroux, C. et al. (2005)
[142] See also chapter 4. Clément Chéroux discusses a similar technological enquiry by William Crookes in his scientific analysis of the medium Daniel Douglas Home in order to achieve quantifiable data through the scientific experimental method. (2005, p. 47)

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Some descriptions of these scientific experiments, however, rather evoke a theatrical character and these set-ups are reminiscent of the cinema environment of the dark theatre with the illumined screen as an interface where analogously contact with spectres were thought to occur. Tom Gunning has suggested an analogy between the séance with the production process of photography: '... the darkness needed to protect the sensitized photographic plate from exposure serves as an analogy for the darkness in which mediums held their séances.' (2003b, p. 10) Everard Feilding, Honorary Secretary of the British *Society of Psychical Research*, evokes a theatrical setting in his report on a spiritist séance again with Eusapia Paladino:

> ... levitations; curtains billowing out; raps and bangs; musical instruments giving off sounds; furniture and other objects moving; touchings and graspings; hands becoming visible, also "objects more or less like heads"; luminosities; a cold breeze... (Inglis 1992, p. 427)

The term 'spectator' incorporates 'spectre' from the Latin *spectrum* (Latin *specere* means 'to look') referring to an apparition, a ghost, one of a terrifying nature or aspect. But perhaps more significantly it also refers to 'an image produced by reflection or other natural cause'[143]. The image as a (reflected) double is a common concept, and the spectres in spirit photography[144] sometimes appear as the double character of a figure manifest in reflections, as for example in a medium's emanation of doubles as in the case of Florence Cook (Hall, 1984), who was amongst others studied by Arthur Conan Doyle and William Crookes. In other accounts the ghostly apparitions were also claimed to occur without any interference of a camera or lens but entirely through the photographer's telepathic mediation (Coates, 1973 [1911]), (this is also referred to as 'thoughtography', a term by the Japanese psychology Professor Tomokichi Fukarai from 1910. (Princenthal, 2006, p. 110)) It seems that so called 'supernatural powers', commonly attributed to spiritual forces or entities such as angels, that commonly were conceived through mediums, now became transmitted directly through technology. The term 'thoughtography' seems particularly apt in this context since, as John Locke has

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[143] Shorter Oxford English Dictionary, 2002, 5th edn.
[144] Princenthal mentions how internationally widespread the practice of spirit photography was: 'By the early 1920s, séances and spirit photography reached from Japan to Puerto Rico...' (2006, p. 109)

argued, spirits have: '... a more perfect way of communicating their thoughts, than we have, who are fain to make use of corporeal signs...' (Peters, 1999, p. 81) Locke, however, proceeded from the view that all mental activity first had to pass through — and be perceived and processed by — the body. (Peters, 1999, p. 82) This is consistent with the common conception of the technician who had to provide a certain degree of sensitivity in order to operate the devices while being guided by immaterial forces. Similarly, the particating spectators in the séance setting also contributed to the gathering of forces through their mental and physical presence and concentration.

As we have seen, the term 'spectator' in its etymology is defined as being a 'close observer', a 'scientific observer' or 'participant observer' — or as will be suggested in chapter 7, an 'observing participant.' In this context, he/ she can be defined as a close observer of spectres while being a spectre him/ herself throughout the active engagement in the occurrences of the séance. This notion is particularly significant in the context of the common observation of séances by scientists — a discourse of spectators versus spectres, science versus popular culture and the question: 'Who is actually (ob)serving who?' The interchangeable positions of the spectator with the spectres on the screen becomes important in phenomenological[145] approaches to cinema perception or for example when Deleuze speaks about 'unknown bodies' still hidden from our view, '... disturbances of the visual and suspensions in our perception.' (1989, p. 201) He cites Jean-Louis Schefer:

> ... the object of cinema is not to reconstitute a presence of bodies, in perception and action, but to carry out a primordial genesis of bodies in terms of a white, or a black or a grey (or even in terms of colours), in terms of a 'beginning of visible which is not yet a figure, which is not yet an action. (1989, p. 201)

This chimes with Edgar Morin's cinema theory in which he discusses various connotations of the cinema experience in relation to 'magic' and mystic or fantastic dimensions in his chapter on 'The Charm of the Image.' (2005, 13-83) This recalls Jean

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[145] Phenomenology is not been dealt with further in this thesis since, although significantly influenced by, it is distinguished from Bergson's philosophy, which conceived of matter as incorporating consciousness, as elaborated in his *L'Evolution Créatrice* in 1907 (Creative Evolution, 1998).

Epstein's term 'photogenie' (1981) as well as future visions of the cinema as consisting of shapes of light and ghost-like apparitions, whereby the cinema *dispositif* has dissolved into a world of spirits where phantoms manifest in an aerial world filled with omnipresent spirits[146]. Morin further refers to other notions on visions of the cinema *dispositif*, for example those by Alexander Dovzhenko who prophesied in 1931 a different arrangement: '... a cinema without a screen, where the spectator would take part in the film as if he were at the center of the cinematic action.' (Morin, 2005, p. 42) In this vision, which is reminiscent of the Phantasmagoria that used transparent glass as invisible screens for ghostly apparitions, the cinema screen has dissolved in space and the world of film has become itself a world of spirits or ghosts: '... an aerial world, which omnipresent spirits navigate.' (Morin, 2005, p. 42) René Barjavel has developed a similar vision on a 'telecinema of the future' in his *Cinéma Totale* (1944): 'Waves will carry the images throughout space. Receiving sets will materialise them at will[147].' (Morin, 2005, p. 42) Morin has elaborated these visions further in his own idea of a future cinema, where the spectators would be surrounded by their own phantoms and virtual imaginations: 'They are among us, corporeal spectres, identical to ourselves.' (2005, p.42) To make this happen, according to Morin, cinema needs the spectators' participation in order to enable the characters on the screen to take the spectators' souls and bodies to become alive; while they rest in the dark cinema space they become their very phantoms, their ectoplasmic spectators who, provisionally dead, watch the living: '... it is we who become ghosts in comparison to ghosts who have ceased to be mortal[148].' (2005, p. 41)

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[146] This is reminiscent of Maxim Gorky's description of his first visit to the Lumières' Cinématographe screening in July 1896 at the Nizhni-Novgorod fair: 'It is not life but its shadow, it is not motion but a soundless spectre. ... It seems as if these people have died and their shadows have been condemned to play cards in silence unto eternity'. (Harding and Popple, 1996, pp. 5-6)

[147] Barjavel writes: '*Maintenant, c'est le prélyde du grand spectacle. Des ondes, des vagues de couleur naissent et meurent dans l'air obscurci. Elles se concentrent, se concrétisent en une boule lumineuse, au-dessus des dix mille couché dans leurs fauteuils...*' (1944, p. 59) Barjavel also elaborates almost more interestingly on possible applications of stereoscopy and relief photography to 'tomorrow's cinema' (*le cinema de demain*). (1944, pp. 50-51)

[148] The French original reads: '... *c'est nous qui, devenons fantômes par rapport aux fantômes qui ont cessé d'être mortels.*' (Morin, 1956, p. 49)

Morin's idea refers to an active engagement of the audiences in the cinema, distinguishing between affective and cinematic participation, and the aesthetic imaginary (2005, pp. 88-98), in contrast to the widespread conception of the spectators as physically passive as a consequence of sitting comfortably but sensorially deprived in a darkened environment. Instead Morin argues for an active participatory engagement, conscious of the processes of perception and deception, projection and identification. (2005, pp. 103-6) The orthodox understanding of the audiences as passive participating observers — similar to their commonly accredited role in spiritist séances — is primarily bound up with materialist approaches within cinema studies and with technological determinist perspectives that exclude or limit the audiences' perspectives in the first place. In this respect it is remarkable for example that in Inglis' account of Eusapia Palladino (1992) he cites a striking statement from her and it seems that neither the involved scientists at the time during the séances nor Inglis have fully accounted for the possible meaning that her words suggest:

> Eusapia made no attempt to deny that if she was given the opportunity to cheat, in her trances, she might take it – particularly if that was what witnesses wanted; "they think of tricks, nothing but tricks; they put their minds on the tricks and I automatically respond." (Inglis, 1992, p. 430)

This suggests that in Eusapia's experience the spectators during the séances were not mere silent passive participants and observers, but actively steered the occurrences during the séances via an engagement or interconnection with their minds, possibly something to do with the phenomena commonly referred to as telepathy[149]. Nicolas Camille Flammarion made a similar observation:

> One may lay it down as a principle that all professional mediums cheat. But they do not always cheat; and they possess real, undeniable psychic powers... The words "fraud" (*supercherie*) and "trickery" (*tricherie*) have in this connection a sense a little different from their ordinary meaning. Sometimes the mediums

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[149] For an elaborate account on telepathy see *The Invention of Telepathy* by Roger Luckhurst. (2002) Luckhurst discusses how in the SPR the term telepathy became the main term for a variety of heterogeneous phenomena in 1882 such as 'mesmeric effects, Spiritualist mediumship, apparitions and ghostly manifestations, Crookes's "psychic force", Cox's psychism...' (2002, pp. 58-59) According to the SPR's Literary Committee, the term telepathy could cover: "... all cases of impression received at a distance without the operation of the recognised sense organs." (Luckhurst, 2002, p. 61)

deceive purposely, knowing well what they are doing, and enjoying the fun. But oftener they unconsciously deceive, impelled by the desire to produce the phenomena that people are expecting. (2003, pp. 3-4)

This almost seems analogous to the reversed roles in Morin's idea of a future cinema, in which the living spectres watch the actual living who are provisionally 'dead'; here instead it is the passive entranced medium[150] responding to the actively participating spectators — the spectres themselves. This lack of attention to the role of the audience, suggested in the quote above by Eusapia, may be attributed to the fact that as Braude (1983) has noted, the emphasis in spiritualism has shifted the attention after the American Civil War (1861-65) away from the medium channelling personal messages from departed relatives to generally, more nonverbal interactions and audio-visual manifestations of ghostly apparitions. This may account for the observing scientists' focus on the apparitions and Eusapia's physical movements rather than the mental capacities involved, apart from their materialist focus within the positivist paradigm. At the beginning of the 20th century, however, another shift took place, which was away from the capture of spirits in images as in spirit photography to an act of communication in a joint effort between the medium and the spectators. (Gunning 1995, p. 66) This suggested shift opens up a new perspective in the study of spiritual phenomena by drawing attention to the fact that shared consciousness has not been fully recognised within the scope of these cited studies.

2.3 Expectations of Entertainment Technologies and the Problem of Time

Studies of 19th century intellectual and popular contextualisation (Gunning, 1995, 1996, 2003b; von Mücke, 2003; Pearsall, 1972; Punt, 2000, 2005;) reveal an intrinsic link between technology and spirituality, and the popular beliefs in otherworldly dimensions. This provides a basis for a discussion of cinema that acknowledges the spiritual as a crucial force in the popular interpretation, which continuously subverted the cinema as a

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[150] Certain spiritual movements such as Theosophy initiated by Madame Blavatsky, or the Greek-Armenian mystic Gurdjieff in this regard abhorred spiritualism; they considered trance-states and occupation by spirits as degenerative. (Luckhurst, 2002, p. 258)

scientific apparatus. In this way the cinema emerges as a subtext of cultural expressions

of many popular beliefs and imperatives including a preoccupation with other dimensions

and the occult[151]. This claim proceeds from an acknowledgement of a public awareness

of mediation and tele-presence from which a connection can be drawn to the

interpretation and expectations of several technological inventions in the later part of the

19th century.

One particular strand of these popular interpretations concerns connections between

'remote seeing or sensing[152]' and television ('seeing at distance') by way of analogy, to

which new film history studies point us (Gunning, 1995, 2003b; Punt, 2000; Uricchio,

2000, 1994). After the diffusion of the telephone patented by Alexander Graham Bell in

1876, inventors, writers and the audiences anticipated the advent of television. This trend

has been expressed in popular culture by numerous creations of cartoonists or science

fiction writers, most notably Jules Vernes, referring to the expectation of a simultaneous

transmission of sound and image. A visionary example is the Téléphonoscope[153] by the

French illustrator and writer Albert Robida, one of his futuristic technological projections

into the 20th century in his novel *Le vingtième siècle*[154]. (1883, pp. 53-57) Robida's

Téléphonoscope bears some resemblance to Graham Bell's Photophone or

[151] Punt has elaborated on this interrelationship between cinema and the popular awareness of spiritual practises such as telepathy with reference to contemporary media. (Punt 2004, 2005)
[152] It is revealing in this context to find that in the Shorter Oxford English Dictionary (2002, 5th edn.) the term 'remote sensing' is defined according to contemporary cutting edge technology, as 'the scanning of the earth or another planet by satellite or high-flying craft in order to obtain information about it.' 'Remote sensor' is defined as 'a recording device (as a camera on a satellite) which carries out remote sensing.' The human faculty of 'sensing' in this context has been entirely transferred onto technological devices in the context of outer space.
[153] The term 'téléphonoscope' appeared for the first time in 1878 in the French magazine *Punch* to accompany an illustration by George du Maurier, attributing a conceptual invention by Edison, wherein a couple is using a telephone in their sitting room to be connected to the live transmitted image transmitted onto a huge screen, bigger even than home-movie screens nowadays. (Lange, 2003) Edison had imagined a transmission of pictures through a combination of the telephone and projected images. (Grau, 2002, p. 235)
[154] Robida's illustrative inventions also extended into the domain of the theatre, by which it could be attended remotely via this novel technology and which featured even multi-lingual choices. He also engaged with ideas of what today we call 'infotainment' in public transport displaying a headset (similar to the 'audio-tour' idea) for each seat with various audio-channels for different subject choices. See also Haakman (1994).

Phonautograph and anticipated the Visiophone[155]. (Lange, 2003) These visionary projections remain an aspiration since television is still only a one-way broadcast system and has never been able to develop as a two-way 'many-to-many' system, while this facility has indeed been envisioned by 19th century imaginative minds.

What the discussion of television and the telephone reminds us of is the aural experience associated with the technological mediation of other realities. John Durham Peters reminds us that contemporary experiences and interpretations of new media devices such as the internet or virtual reality: '… were explored in analogous forms in the eras of the telegraph and photograph, the phonograph and telephone, the cinema and radio.' (1999, p. 143) In this respect, new media not only look 'old' in the historical review, as Gitelman (2006) amongst others has pointed out, but sometimes do not really appear much further evolved from their infancy; especially since their richness and variety of anticipated possible meanings and potentialities before their actualisation mostly gets obscured. An example of this is the vision of interactive television to which a few decades later an advertisment by Theo Matejko[156] of 1928 refers to: it shows an early interpretation of an interactive form of television in which a pilot is lying comfortably in his bed while piloting a plane remotely using live-transmission projected on a screen above his bed. But interactive television goes back also to one of Albert Robida's creations in which a woman is shopping via the television screen and chooses the textiles remotely in a live-interaction with the salesman. All these cases inherit simultaneity as a means for communication; as Johannes Fabian expressed: 'Successful communication demands that we share time, that we are coeval.' (1991, p. 226)

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[155] Only some of these 19th century 'science fiction' accounts eventually have been actualised more than a century later — in a more modest form, however — see for example the visiophone in France, http://www.visiophone.com/ and its launch in 2004, http://www.01net.com/article/256764.html. David Nye reminds us that the AT&T Picture Phone was already launched at the New York world's fair in 1964 but it did not take off; according to Nye this was caused by the miscalculation of direct mass marketing instead of niche marketing and a general public misunderstanding of an intrusion into privacy rather than its potential as a data-display terminal — a fact that is reminiscent of the complexity of converging forces involved in the invention and interpretation of novel technologies. (Nye, 2006, pp. 39-40)

[156] The text of the advertisment reads: 'Wunder, die wir vielleicht noch erleben werden: Besichtigung der Welt vom Bett aus durch den Fernseher.' ('Miracles that we may yet be able to encounter in our lives: Sightseeing of the world fromout the bed through the television'. — translation by the author). Berliner Illustrierte Zeitung, 8. January 1928, p. 157.

It is significant to emphasise in this respect the importance of sound or voice-over above the image. This appears in reports from scientific observations at spiritualist séances as well as from the apparent predominant role of sound in the technological development of audio-visual media; as Abel and Altman argue: sound has always anticipated vision. (2001, 1999) This was the case with the invention of the telephone and the anticipation of tele-vision, with Edison's invention of the phonograph in 1877, followed by the Kinetoscope in 1888, which finally he combined in the Kineto-phonoscope in 1913. The recording of sound through the phonograph was the next step in the direction of the anticipated tele-vision following the introduction of the telephone[157]. It was William Kennedy Laurie Dickson, chief collaborator of Edison, who achieved around 1894 the first synchronised sound and image recording in the Edison laboratory[158].

The image can be even more of a supporting redundancy in the spiritist séance, for example clairaudience practices, the hearing of voices or an 'inner voice' which seemed to precede or happen more frequently than visual apparitions, commonly referred to as clairvoyance. (Inglis, 1992; Geley, 1927) It is also reported that spiritist séances toward the end of the 19th century were accompanied by the moving or elevation of objects (telekinesis) or shared feelings at distance (telesthesia). However, more frequently noises and sounds were heard, most famously rappings (in Peters' words 'telegraphists of the spirit world.' (1999, p. 95)), reported as one of the earliest forms of spiritualist phenomena that became very popular during the 19th century[159]. (Pearsall, 1972, p. 34ff)

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[157] More recent technological innovations show a similar pattern, such as the introduction of wireless telephones and consequently mobile phones with image capture. While the eye is commonly perceived as the dominant sense of perception, in terms of the technology, audio-communication still dominates the additional eye-sight-communication as for example via Internet connection.

[158] William K.L. Dickson used perforations on edges of tape to run a film through a prototype projector combined with Edison's electrical phonograph resulting in the first sound film screenings with the Kineto-phonograph, recorded in the West Orange, New Jersey studio, produced by the Edison Manufacturing Company. The clip can be downloaded at http://www.loc.gov/rr/mopic/ndlmps.html

[159] The séances of the Fox sisters, Margaret Fox Kane and Catherine Fox Jencken, became famous for their communication with the dead through rapping sounds, also referred to as 'telegraphic rappings', in their Q&A communication with spirits; one knock signified 'yes' and two knocks signified 'no' (Princenthal, 2006, p. 106; Hagen, 1999, p. 345), later they used the

Uricchio (1994) has pointed out that inventions of visual devices have often been developed parallel to sound even in independent inventions. He refers to the synchronicity between Daguerre and Fox Talbot's experiments with photography in 1839 and Samuel Morse's first demonstrations of his electronical telegraph in 1837, or Reynaud's Praxinoscope or Muybridge's Zoopraxiscope in 1876 and Bell's invention of the telephone in the same year. His argument provides an understanding of the early development of television through Paul Nipkow's invention of the 'electrical telescope' (later called the Nipkow-disc) in 1884, which later became the crucial mechanical element for the television in the 1940s used to transmit visual signals electronically[160]. Similarly in 1895 when the Cinématographe had first been exhibited in public by Antoine Lumière at the *Grand Café* in Paris, in the same year Giuglielmo Marconi succeeded with his first radio transmission in Italy[161].

Uricchio has argued that the basic technology for television had already been invented simultaneously with cinema, and that the audiences were expecting the simultaneity of an audio-visual transmission; in his view the cinema could be interpreted historically as a temporary deviation from television. This argument on the one hand does account for a more complex (but still limited) history of technology in the perspective of new historicism, but on the other hand argues from hindsight and only seems to make the question about the huge popularity of cinema even more urgent. It nonetheless reveals some aspects, which are important for further discussion especially with regard to the issues of time and simultaneity.

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alphabet, confirmed letters by knocking, to spell out full words and sentences in their communication with spirits. (Peters, 1999, p. 95)

[160] Lazare Willers Phoroscope from 1889 consisted of a similar system but in the form of a drum with turning mirrors, and Charles Frances Jenkins patented his Phantascope in the same year when the Lumière Cinématographe was presented to the public; consisting of two apparatus developed in collaboration with Thomas Armat, one an apparatus for moving images, the other a tele-vision system that was able to transmit simple shapes. (Uricchio, 1994)

[161] Alongside with Guglielmo Marconi's patent in 1943, his mentor Nikola Tesla's wireless communication technology is also accredited for early wireless transmission; see Tesla's description of his early experiments on the 'Transmission of Electrical Energy Without Wires'. (Tesla, 1993)

The understanding of the emerging cinema in relation to a complex network of determinants, forces and imperatives and Uricchio's synchronous reading of the developments of visual and sound recordings and displays in the context of his revisionist television history (1994), consequently allow us to situate various events with regard to 19th century technological inventions and innovations in a wider perspective and interconnection with spiritual dimensions. In this way, from a meta-perspective, the synchronicity between Daguerre and Fox Talbot's experiments with Daguerreotypy in 1839 and Samuel Morse's first demonstrations of his electrical telegraph in 1837 can be extended by the link between telegraphy and telepathy[162]. In this sense the physicist John Trowbridge claimed in 1899 that wireless telegraphy came close to telepathy. (Peters, 1999, pp. 104-5) In his historical overview of communication and its relation to the spiritualist traditions, Peters has pointed to the link between telegraphy and mesmerism[163], in that they both concern 'electrical connection between distant individuals.' (1999, p. 94) In as much as the telegraph, radio and other means of wireless communication were very enthusiastically received, as they stimulated atavistic desires of communication over distance, communion of souls in the fluid of ether, or contact with the so-called otherworldly. Tele-graphy, tele-phony, tele-pathy and tele-vision all refer to the overcoming of both time and distance in space through recording and transmission technology and techniques. In this way: '... to many, the electrical telegraph seemed the

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[162] Hagen has elaborated a schematic chronology of the parallel development of telegraphy and its analogy in spiritist séances, from rapping, telekinesis, automatic writing, trance speech to the manifestation of hands in levitation, according to Hagen signifying the input reference of the telegraphic message centre. (1999, p. 347) In a review on two exhibitions, 'Blur of the Otherworldly: Contemporary Art, Technology and the Paranormal', Center for Art and Visual Culture at the University of Maryland, Baltimore County (Oct. 20 – Dec. 17, 2005), and 'The Perfect Medium: Photography and the Occult', Metropolitan Museum of Art, New York (Sept 27 – Dec. 31 2005) Princenthal similarly accounts for the contemporary actuality of the link between technology, science and the arts with regard to the paranormal as exemplified in both exhibitions. (2006)
[163] Mesmerism goes back to the popular interpretation of the work by physician Franz Anton Mesmer who toward the end of the 18th century suggested a universal fluid as an interconnecting force and medium between all living matter, also called *animal magnetism*, which he found he was able to apply in medical healings and methods later referred to as telepathy. His method became hugely popular, especially in Paris and became commonly known as Mesmerism. (Inglis, 1992, pp. 141-151) Related to the scientific implications of this phenomenon, Lawrence W. Fagg (1999) has elaborated on the scientific and spiritual connotations with electro-magnetism, what he calls a 'frontier of spirit and matter.'

latest in a long tradition of angels and divinities spiriting intelligence across vast distances.' (Peters, 1999, p. 94)

As Uricchio has pointed out, both the interests of the inventors and engineers, as well as the audiences' expectations were already prepared for the advent of the tele-vision before the invention of cinema. From the perspective of technological progress and teleological histories, the cinema could indeed be regarded as a diversion of television — the apparatus that finally allows both simultaneous transmission as well as home-cinema screenings. Television in the narrowest (essential) sense focuses its main interest, strictly speaking, in simultaneity between actual events and their live transmission from news to live sitcoms; it disposes its audiences into other locations and lives, but not predominantly into other 'times' in a chronological sense (except through films and movies whose very form derives from the medium of the cinema). The common expectation of television as medium of simultaneity at the end of the 19th century reiterates the popular perception and depiction of the practice of spiritist séances where mediums claimed to be in simultaneous, real-time contact with the dead, with spirits from 'other dimensions.'

In the late 19th century scientists could no longer close their eyes to these spiritual phenomena since their popularity was so widespread and commonly accepted, as expressed in William Crookes' statement, cited in chapter 1, section 1.1: '... appearance of very remarkable phenomena which at the present time are occurring to an almost incredible extent.' (1871) However, the sciences at the end of the 19th century also had their own interest and curiosity in investigations into 'other' dimensions which expanded the boundaries of the traditional conception of the material and immaterial. Examples for this stretch from the investigations into electromagnetism, electricity, the capture and transmission of sound and image to the invention of X-Ray photography, early versions of the facsimile and other devices dealing with tele-communication and envisioned 'portation.' Various histories of media have eventually adopted the issues of synchronicity and simultaneity with a tendency toward the notion of teleportation, similar to the way spiritist séances developed from rappings to a more visual orientation with

enclosed cabinets or manifestations of ectoplasm, also coined as 'teleplasm' referring to the manifestation of 'flesh' over distance. (Peters, 1999, p. 99) The great challenge in these technologies has always been to reduce the time in between the event and its transmission to other locations, reminiscent of the telephone, which succeeded in exactly this fulfilment of the public desire with regard to sound. Generally speaking, the materiality of portation remains in the science fiction realm, notwithstanding quantum teleportation has succeeded on the quantum level to transmit information via photons by way of entanglement, whereby the properties of two particles can be tied together even when they are far apart; a property that Einstein, Podolsky and Rosen (1935) called 'spooky action at a distance [164].'

The aspect of time is particularly significant, since it was only in 1884 that at the Prime Meridian Conference in Washington, Greenwich was proposed as zero meridian and the measure for a worldwide twentyfour hour time-zone schedule that became the legal time in England in 1880, in France in 1891, and in Germany in 1893[165]. (Kern, 1983, p. 12; Doane, p. 5) This unification and rationalisation of measured time stood in contrast to an increasing awareness of the experience of a subjectivity of psychological time and stimulated the enormous interest in and popularity of alternative ideas about time such as the concept of simultaneity. Émile Durkheim for example (who also occupied a chair at the *Collège de France*, alongside Bergson and Marey), discussed the issue of time in relation to social organisation and distinguished between private time and 'time in general', conceiving of time as the 'rhythm of social life.' (Kern, 1983, p. 19) In his view, different societies produce different concepts and perceptions of time. Unlike Bergson,

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[164] Today the term teleportation has been transferred into the field of Quantum Physics, for example in the case of current scientific research into quantum computing with preceding examples such as fax machines, digital image production and electronic transmissions of data. As Anton Zeilinger, however, makes clear in an interview, it is not matter itself that is been transported, but merely attributes on a quantum level without time interval. (http://www.signandsight.com/features/614.html)

[165] This change followed the introduction of the telegraph and railroad, as Kern (1983) or Doane (2002) have pointed out; before the 1890s each country, county or even major city, had their own time. Kern mentions that on a railroad journey between Washington and San Francisco every town had a different time and a traveller would have to set his clock over 200 times to keep up; Doane gives a similar example from England. This standardisation of time had also a major impact on science that preceded from a homogenised universal time principle. (Kern, 1983, p. 12)

Durkheim located the variability of perceptual categories not in the domain of subjective experience, but in differences among various forms of social organisation. (Olick, 2006) In contrast the concept of the flux of time exceeded any form of representation and became very popular following William James' concept of the 'stream of consciousness' (Kern, 1983, pp. 24-26), which bears similarities with Bergson's articulation of time as duration *(durée)*. Marta Braun also reminds us of the debates about time in the context of Étienne-Jules Marey's work that was produced with means of the unified scientific and mathematical time — which was, however, interpreted and transposed into 'artefacts of subjective time' in the early 20th century modern arts movements. (1992, p. xx) Elsewhere in the scientific field there was a persistence of interest in alternative conceptions of time, which were sometimes merely implicit or even explicitly acknowledged in this context. Ernst Mach is an often cited example since in 1883 in his work *The Science of Mechanics* he refused Newton's views on absolute time and absolute motion and dismissed absolute time as an 'idle metaphysical conception.' (Kern, 1983, p. 18)

In relation to time, the cinema is often claimed as being anything but a medium of simultaneity; it is most frequently regarded as an experience of 'not being in the present', transposing the spectator not only into remote locations, but also remote in time, either the past or an imaginative future. What could be regarded as a lack from the point of view of a television history, from another point of view could be seen as particularity or 'extra' that enabled the experience of time travel into the future and the past, and hence also the connotations with the survival of the dead, as Edison most famously acclaimed. However, in Uricchio's distinction between a history of television from the history of the cinema, he merely touches upon their formalist technological analogies, mechanisms and functionalities. From the perspective of a popular and metaphysical reading of various inventions throughout the 19th century there appears to be a deeper seated distinction relating to the aspects of synchronicity or simultaneity and time-travel beyond the idea of travels through geographical space as exemplified in the travelogues, but rather in terms of travels within mental 'spaces.' Georges Méliès' films were exemplary in picking up this fascination of time and expressing these dimensions through his various fantastic

tales including envisioned space travels to the moon and other planetary systems. What Méliès' films exemplify is that the idea of time-travel was very popular in the 19th century, not least through novels and literature, but even science and engineering were concerned with this idea.

Méliès' films appealed to the popular fantasy of time-travel using stop and accelerated animation techniques. Other filmmakers such as George Albert Smith or Robert Paul also famously used the cinema to extend dimensions. Ramsaye included the complete patent description by Paul dated October 24, 1895, in which Paul described an installation of a cinema *dispositif*, which he calls 'platform' for a fully immersive[166] time-travel experience:

> My invention consists of a novel form of exhibition whereby the spectators have presented to their view scenes which are supposed to occur in the future or past, while they are given the sensation of voyaging upon a machine through time, and means for presenting these scenes simultaneously and in conjunction with the production of the sensations by the mechanism described below, or its equivalent. (Ramsaye, 1926, p. 155)

Paul further details the set-up of this novel platform; how the seats would rock gently, air fans would give the impression of flight and the whole platform would move forward whilst the projector would slide forward and backward in order to increase and decrease the image projection. At the same time films of various periods would be shown in sequence on the screen, catapulting the spectators into the past, forward to the future and back to the past again, with a suggestion to finally announce the location of the performance or by showing a recognisable building in order to transport the spectators back into the present moment. Paul further suggests:

> After the last scene is presented I prefer to arrange that the spectators should be given the sensation of voyaging backwards from the last epoch to the present, or the present epoch may be supposed to have been accidentally passed, and a past

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[166] The strong emphasis on the set-up for an immersive experience is not uncommon but mainly became incorporated into audio-visual entertainment media at the beginning of the 20th century, such as for example Raoul Grimoin-Sanson's Cinéorama at the 1900 Paris Universal Exposition, building on the popularity of painted panorama's, or the previously mentioned Hale's Tours, invented by George C. Hale in 1904. See also the article Immersion in Early Cinema by Jan Holmberg (2003).

scene represented on the machine coming to a standstill, after which the
impression of travelling forward again to the present epoch may be given, and the
re-arrival notified by the representation on the screen of the place at which the
exhibition is held, or of some well-known building which by the movement
forward of the Lantern can be made to increase gradually in size as if
approaching the spectator[167]. (Ramsaye, 1926, p. 157)

Paul even proposed leading the audiences into a setting of historical interiors afterwards
to enhance the impression of actual time-travel and 'presentness' in a remote place; these
visions reveal an anticipation of the Hale's tours, the rail-travel simulators with
projection screens, and a combination of audio-visual installation settings in museums[168].
(Ramsaye, 1926, pp. 155-7) When reading Paul's sophisticated description of how he
imagined this 'cinematic time travel machine' to involve the audiences in a fully
immersive experience, any account of the naivety or simplicity of the emerging cinema
appears unsustainable. Clearly the cinema technology was understood by some as a key
term in the contemporary debate about kinds of time.

Most commentators interpreted the time- and space-travel idea as a tool to liberate the
spectator from the 'here' and 'now', as Ramsaye also has noted. (1926, p. 158) What this
thesis in the following chapters suggests, however, is that this connotation of time-travel
arises when studying the cinema from the perspective of film content; when approaching
the cinematic experience from the view point of the spectators' active engagement and
the context of a widespread fascination with spiritualism, the counterargument, that
cinema is an apparatus of 'presentness' becomes plausible, since in the spectator's
experience there is an immersion in the actuality of a present, no matter if this present on

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[167] This suggested end-scene is reminiscent of the very sophisticated and self-conscious Lantern
Shows and in particular Charles-Émile Reynaud's animated paperstrips of his Théâtre Optique in
which one of the two surviving films *Autour d'une Cabine* integrates the indication '*La
presentation est Terminée*' (The show is finished) into the narration by the appearance of a small
boat on which its oarsman unfurls a sail where these words appear. (Mannoni, 2000, p. 384)
[168] Mary Ann Doane reports on a similar account from a publication in December 1895 in
Scribner's Magazine called The Kinetoscope of Time, whereby a visitor undergoes a profound
experience of the past and future and simultaneity of non-chronological time in a oblique space;
the experience of the Kinetoscope, Edison's peep-whole viewing machines, is combined with real
actors incorporating the characters from the past, contrasting this time-less experience with the
shock of the present when entering the busy street-life with its electrical machines and
mechanisms. (2002, pp. 1-3)

a chronological scale is situated in the past or the future; the experiences render it present, and simultaneous. In this regard Ramsaye reflects Bergson's thinking when he writes:

> It [the Wells-Paul idea] sought to liberate the spectator from the instant of Now. The Now to which our consciousness is chained is but a mathematical point of no dimensions travelling ever forward, describing the line which extends behind us as the Past and ahead of us as the Future. (1926, p. 158)

We will see in the next chapter how in 1896 Bergson envisioned the present moment as merely a schematic representation of a point while in reality the past is ever pushing into the future and all we perceive is the future that is already past in a constantly forward oscillating movement. In Paul's words it is a present which is 'accidentally passed over', and as Ramsaye put it: 'It was a plan to give the spectator possession, on equal terms, of *Was* and *To Be* along with *Is*.' (1926, p. 159) In this Ramsaye acknowledges the interrelations with Paul's and Well's conception of the cinematic time machine and Ouspensky's philosophy[169] as well as Einstein's philosophically inflected mathematics: 'The author and the philosopher alike often in their flights come beating against the walls of Space and Time. They are just expressions of the human wish to be liberated from the cage of the eternal Now.' (Ramsaye, 1926, p. 159) From a Bergsonian perspective, we will see that it is merely matter that encases us in the here and now where our bodies are driven to act; the spirit or consciousness extends beyond any chronological, spatial time conception in a continuous flux of a qualitative time duration — however, *through* and immanent within the body, not beyond in a transcendental state. The cinema as a Bergsonian 'time-machine' will be re-interpreted as a platform that allows us to liberate the spirit (and time) from material constraints during the cinematic perception. We are plunged into time through an experience of continuous presentness.

It has already been argued by various authors that the shock that the emerging cinema is claimed to have caused lay not necessarily in the novel perception of an illusion of reality or the 'representation' of reality itself in a mediated form, nor in a mystification of a technology or the sheer fascination with movement. The novelty lay rather in its

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[169] Ouspensky's investigations into the at the time fashionable idea of a fourth dimension ([1909] 2005) and also his work on the Greek/ Armenian spiritual teacher G.I. Gurdjieff, mentioned briefly in chapter 1, were very widely referenced and popular at the time.

diversion and distortion of absolutes including the concept of time with its lapses, jump-cuts, slow and fast motion, repetition and reversals. These are regarded as analogous with conceptions of the rupture that modernism caused in respect of the perception of time and space. In the beginning films were rather short (on average from 20 to 50 seconds), but they were shown in various sequences and speeds[170], controlled by the exhibitors and influenced by the audience's desires and tastes. Slow or fast motion, reversed orders or repetition, and montage techniques were used almost at once and achieved by editing in the camera. Another very popular technique from the start was the idea of time running backwards and the films screened in reverse order, for example in the early Lumières film *Démolition d'Un Mur* (Demolition of a Wall) from 1895 which was screened both forward and backwards. Ramsaye also mentions in this regard a publication in the St. Louis Post Dispatch that compares the Kinetoscope's new feature to run films backward with Nicolas Camille Flammarion's ideas in *Lumen*[171] where a spirit-being travels on a ray of light and perceives both past and future of every lived moment of earth's and other planet's lives from outer space (1926, pp. 159-160) — Méliès à la carte it seems, or angelic intelligence? Other montage techniques, especially the morphing of images had frequently been applied in the magic lantern shows (Carels, 1994), which were exemplary in the way they bridged time gaps through narratives, and these were transferred to the cinema. In these film techniques there appears a convergence of a variety of interests including those of the sciences, the arts and engineering.

The discussion of the spiritual dimension of technology in this chapter has been used to show that the particular engagement with time, especially in the non-chronological application, should be factored into the account of the pleasure of cinema but not merely in the way time is externally perceived in the interpretation of the film sequences, editing, etc., but rather in the way the apparatus itself engages the audiences in an amplified awareness of their own mental and conscious activities and abilities in the process of

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[170] The average speed in the early period ranged between 18-24 frames per second (Cherchi Usai, 1994, pp. 16-7); see also Kevin Brownlow's article 'Silent Films – What Was the Right Speed?' (1990, pp. 282-290)

[171] The full text of *Lumen* is published online, see Flammarion (1897). Ramsaye's references derive from the Second Conversation, *Refluum Temporis*, 'Journey on a ray of light'.

perception, recollection and memory. It will be elaborated in the following chapters that the cinema in this sense is a time machine that allows a continuous oscillation between present perception, recollection of past memories and anticipation of the future within the spectator's mind, actualised in the present moment. This will be discussed in particular in relation to Henri Bergson's conception of time as duration. His system of thought, as will be suggested, provides a way to situate the dimension of the spirit within the perceptual processes of the mind in an entanglement with matter. Friedrich Kittler's remark that: '... the realm of the dead is as extensive as the storage and transmission capabilities of a given culture' (1999, p. 13) could be resituated from the connotations with technological media and the imaginary to the realms of spirit in a Bergsonian sense that characterises the virtual dimensions of our past, memories and possibilities. Hence it is a particular understanding of time in the cinema, namely the dimension of time that resides within the spectator's perception as a quality of consciousness, as Bergson has elaborated through his philosophy, that constitutes what this thesis consequently considers as the 'domain of the spirit' and the 'spiritual dimension' of the cinema. Sam Rohdie has pointed out that:

> The history of cinema belongs to modernism and the history of modernism is shaped by philosophical concepts of time, memory, desire, the unconscious: areas of uncertainty and instability. A history of cinema needs to take this philosophical/ideological context into account of the origins that made the cinema not only likely and possible, but necessary. (2001, p. 3)

According to Rohdie, both, the cinema and Bergson's philosophy are investigations into time and the subject. This leads into the next chapter in which, against the contextual background of these two previous chapters, Bergson's philosophy is taken up in-depth, in particular his discussion of the spiritual dimension.

Chapter 3

Henri Bergson's System of Thought: Image, Memory and Consciousness

First of all it is crucial to define how the term 'spiritual' or 'spiritual dimension' will be used further in this thesis. Etymologically the term 'spirit' derives from the Latin, *spiritus* (breath) and the Greek term *psyche* that stands for the principle of animation, or life[172]. Inherently they reveal an ontological dimension of the term, which segues an understanding of the 'spiritual' in this thesis as experience embedded in our ordinary perceptual processes. This definition excludes any references to religious practices or theological heuristics. It also excludes other forms of institutionalised or personal belief systems and is best expressed in the introduction by Allan Kardec in *The Spirit's Book*, originally published in 1857:

> Strictly speaking, Spiritualism is the opposite of Materialism; every one is a Spiritualist who believes that there is in him something more than matter, but it does not follow that he believes in the existence of spirits, or in their communication with the visible world. Instead, therefore, of the words SPIRITUAL, SPIRITUALISM, we employ, to designate this latter belief, the words SPIRITIST, SPIRITISM, which, by their form, indicate their origin and radical meaning, and have thus the advantage of being perfectly intelligible; and we reserve the words *spiritualism, spiritualist*, for the expression of the meaning attached to them by common acceptation. (Kardec, 1989, p. 21)

Kardec reflects Dilthey's distinction a century earlier between 'natural sciences' and 'sciences of the spirit' (literally translated from the German term *Geisteswissenschaften)* in his *Introduction to the Human Sciences* (1883), in which he acknowledged the shortcomings of the notion of 'spirit' that does not 'separate facts of the human spirit from the psychophysical unity of human nature[173].' (Dilthey, 1883) While this psychophysical relationship still occupies science today as one of the most significant unresolved problems, it foreshadows the way the term 'spirit' is discussed in the works of the French philosopher Henri Bergson (1859 – 1941), which will serve as a primary system of thought for further discussion in this thesis. Bergson situated his philosophy

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[172] Translation from German by the author (Stowasser and Losek, 1994). — The term 'soul' as it is commonly used in philosophy, however, is not being used in this thesis, mainly because it is too closely related to Plato's doctrine of a separation between soul and body.

[173] See also Marcus and Fischer, 1986, p. 30.

within the discipline of metaphysics, though it will become apparent that Dilthey's definition, stated above, regarding the field of 'human sciences' reflects Bergson's philosophical direction that also opens a space for the discipline of anthropology as another disciplinary foundation for this investigation. What we call the Humanities today, in the second half of the 19th century comprised several emerging disciplines such as anthropology, psychology and sociology, which entered the orbit of positive science with a general attempt at replacing theology and metaphysics with empirical natural sciences. George Stocking, however, reminds us that:

> ... the out-come was not as clear-cut as Comte might have envisioned, insofar as there continued to be significant diversity of "metaphysical" assumptions in the "sciences" that had been called "moral" and would be called "social", "behavioural", or "human" — even, in the German tradition, to the point of insistence on their fundamental epistemological differentiation. (1987, p. 325)

Initially it may seem arbitrary that Henri Bergson's philosophy of perception and consciousness has been chosen as a definition for the subject matter of 'spirit' in this thesis, but in the course of the following discussion it will become evident that the focus on Bergson's thinking is interrelated with many key discussions around the cinema. In particular not only does his thinking make an impact on the way in which we can understand the immediate popularity of cinema at the time of its emergence (as well as its continued popularity today), but also in the way his system of thought stimulates contemporary discussions around the issues of 'consciousness' and 'spirituality' in contemporary theory, especially as his philosophy offers an alternative to static, analytical and atomistic approaches to consciousness.

3.1 Introduction to the Philosophy of Henri Bergson

> *Ce professeur, paisible et de tempérament plutôt conservateur fut l'inventeur d'une philosophie explosive: celle-ci se présente comme une nouvelle vision du réel, imposant une rupture violente avec les systèmes d'idées et d'images quotidiennes*[174]. (Panero, 2005)

This chapter revisits the French philosopher, Henri Bergson's philosophy whose early works were written in the late 1880s and 1890s; at the time when the cinema came into existence and when the impulse to investigate subjects of time, movement and matter was vigorous and widespread. The end of the 19th century can be characterised as a milieu of competing cosmological paradigms, shifting concepts and experiences of time, the body, theories on evolution and on immaterial dimensions of humankind. Against this background Bergson became preoccupied with finding new ways for understanding these emerging ideas beyond a polemical, escapist or dialectical model. As a consequence of his philosophy and style he became hugely popular without being populist; and was eventually very active in public affairs and international politics during the 1920s[175].

Bergson's innovative approach to the prevailing dualism of body and mind established a way to regard matter and spirit, as well as consciousness and things as contingent, and intuition as a countermovement of the intellect, all constituting forces of a diverging

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[174] Henri Gouhier describes the philosophy of Henri Bergson in the introduction to his work *Bergson et le Christ des Évangiles* (1987, p. 11) as follows (translation by the author): 'This professor, peaceful and of a rather conservative character has created an explosive philosophy, one that presents itself like a new vision of the real, imposing a violent rupture onto the systems of ideas and the quotidian perception'.

[175] In the 1920s Bergson withdrew from teaching in order to serve as diplomat for the French government who sent him to the United States as a diplomatic emissary to meet President Wilson. Bergson was a foundation member of the 'League of the Nations' (later UN) and in 1922 he founded the *Institut International de Coopération Intellectuelle* (International Commission for Intellectual Cooperation) (Guesjnova, 2006) which he chaired as president and which has been regarded as the precursor to UNESCO (Lawlord and Moulard, 2004; Canales, 2005, p. 1168). This political involvement shows an intrinsic link with an ethical attitude in his philosophy, which he particularly elaborated in his last work *The Two Sources of Morality and Religion* (1935 [1932]). For information on his biography and political career see for example Soulez and Worms (2002), Soulez (1989), Worms (2004).

movement of the human mind[176]. Initially written mainly as a critique of Kant's extreme position of a transcendental philosophy, Bergson attempted to overcome the ancient and persistent dichotomy of matter and spirit, body and mind, by investing in a philosophy of immanence; an ontology of being wherein reality is perceived as duration (*durée*)[177]; an ever-changing 'becoming' and not merely as a given. In his philosophy, absolute knowledge would be possible without the necessity to establish a transcendental force (often referred to the concept of 'God') nor the persistence of consciousness as epiphenomenon:

> We are thus led, sometimes to an "epiphenomenalism" that associates consciousness with certain particular vibrations [in the brain] and puts it here and there in the world in a sporadic state, and sometimes to a "monism" that scatters consciousness into as many tiny grains as there are atoms... [178] (Bergson, 1998, p. 355)

The persistence of the idea of consciousness and the atomistic approach still dominates the majority of thinking today and Bergson's intervention is as much to do with science as it is to do with philosophy. This is not surprising since Bergson, who was trained as a scientist, he began as a successful young mathematician[179], then decided to dedicate his work to the discipline of philosophy. He wrote some of his major works on topics

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[176] There is a resemblance of the external and internal direction of the mind to Locke's conception of two sorts of 'discourse', one an internal stream of ideas deriving from sensation and reflection, the other expressions of these ideas in language addressed to the public sphere. (Peters, 1999, p. 83)

[177] F.C.T. Moore has translated *durée* with the old English term 'durance', in this thesis, however, the term duration is been used even though it does not exactly express the meaning of the French original. (1996, p. 59) Suzanne Guerlac in this regard remarked that the different meaning in the English translation of 'duration' lies in its reference to: '... a period of elapsed time considered retrospectively and bounded by time limits of a beginning and an end.' (Guerlac, 2006, p. xiii) Bergson instead understood as *durée* in his philosophy of time rather as a continuous flux of the whole of our internal states that are not spatially distinguished. Wherever necessary the French original will be included in brackets in order to emphasise Bergson's meaning. See for example Bergson (2001, p. 100; 1996, p. 59).

[178] Bergson states that both these approaches turn necessarily back toward an incomplete Spinozism or Leibnizianism, and finds a great impact on both the "epiphenomenalism" and "monism" in science of his day deriving from medical philosophers of the 18th century in their restrained Cartesianism. (Bergson, 1998, p. 356)

[179] Bergson won the first prize in mathematics at the age of 17 for the prestigious *Concours Général*, which led to the publication of his solution to a problem by Pascal in 1877, a problem which Pascal had claimed to have solved without leaving any publication or notation of the solution. (Lawlor and Moulard, 2004)

germane to the study of consciousness such as perception, memory and intuition from 1889 onwards[180] with numerous interventions not only within philosophy but also most notably in cognitive psychology. After his appointment as Chair of Ancient Philosophy at the *Collège de France* and the international translation of his article *Introduction à la Métaphysique* (*Introduction to Metaphysics*, 1999) published in 1903 in the prestigious *Revue de Métaphysique et de Morale*[181], his popularity grew amongst the academic, literary and artistic circles, as well the general public. This made Bergson the widest read philosopher of his time[182].

Bergson's work should be viewed against the background of the vigorous worldwide colonisation in the late 19th century; a period when scientists, philosophers and the emerging disciplines of sociology and anthropology attempted to get some purchase on the ancient debates concerning the supremacy of nature versus culture — or the body versus the mind. Darwin's biologically-based evolutionist theory also gained widespread attention, not least because the evolutionist perspective fitted the 19th century imperialist politics promoting the supremacy of Western civilisation. It was used to support the idea that traces of our ancestors were still surviving in the so-called 'primitive cultures' — today generally referred to as 'indigenous cultures' or 'first nations.' Herbert Spencer applied Darwin's evolutionist theory to the fields of Sociology and Associationist Psychology, drawing on mechanistic determinism and progress with positivist rationalism as the culmination of the evolution of intelligence.

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[180] Bergson's first major work was part of his doctorial thesis *Essai sur les Données Immédiates de la Conscience* from 1888, published in English in 1889 as *Time and Free Will*; previously his first scholarly publication was an article 'On Unconscious Simulation in States of Hypnosis', in the *Revue Philosophique*, 1886, ten years before Freud and Breuer's studies on hysteria.

[181] It was later reproduced as the centerpiece of *La Pensée et le Mouvant* in 1934 (*The Creative Mind*, 1992).

[182] A culmination to his popularity can be seen in amongst other things, the lectures delivered at the Columbia University (entitled 'Spirituality and Liberty' — apparently causing the first traffic jam in the history of Broadway), and the Gifford Lecture at Edinburgh University in Scotland in 1913 (on 'The Problem of Personality'). Bergson won the Nobel Prize in Literature in 1927 (Lawlor and Mulard, 2004) for his publication *L'Évolution Creatrice* ([1907] *Creative Evolution*, 1998) which the committee acclaimed as a doctrine in which: '... the master has created a poem of striking grandeur, a cosmogony of great scope and unflagging power, without sacrificing a strictly scientific terminology...' (Canales, 2005, p. 1183)

Bergson studied Spencer's theories after his move from mathematics to philosophy, and saw in his work a philosopher who tried to use precision and facts in a scientific and disciplined way. (Bergson, 1992, pp. 11-12) According to his own account, Bergson set out to address and consolidate some weaknesses he saw in Spencer's work and it was this that drew him into consideration of a reaction to his perception of Spencer's assertion that: '… time served no purpose, did nothing[183].' (1992, p. 93) Bergson on the other hand took the position that time was acting; in his view it: '… hinders everything from being given at once.' (1992, p. 93) He reports as having been struck to see: '… how real time, which plays the leading part in any philosophy of evolution, eludes mathematical treatment…' (1992, p. 12) and considered that: '… this duration which science eliminates, and which is so difficult to conceive and express, is what one feels and lives.' (1992, p. 13) Bergson consequently directed his critique of the reduction of internal psychological states and life in general against mechanistic and determinist laws of classical physics and radically claimed indeterminism as a principle of psychic life. He claimed free will as a profound modus of human agency, and an open and dynamic morality as ethics beyond institutionalised dogmas. His position, especially in his treatment of spirit and the topic of consciousness (as developed in *Creative Evolution*, 1998) can also be regarded as an intrinsic critique against the postulates of evolutionary theory within the discipline of anthropology during the 19th century, which was at the time turning into a rational science and supported the deprivation, or at least degeneration of the faculty of 'spirit' to 'primitive magic' in studies into human culture in order to fit the rational paradigm. Anthropologists such as Edward Burnett Tyler, Johann Jakob Bachofen or Lewis Henry Morgan, investigated the 'primitive forms of religion' from a historical evolutionary perspective without attending to emerging contemporary spiritualist practices in Western society.

While Bergson's own evolutionary theory, *L'Evolution Créatrice,* published in 1907 (*Creative Evolution,* 1998) confirmed Darwin's and Lamarck's theories on the

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[183] According to Bergson, Spencer: '… takes reality in its present form; he breaks it to pieces, he scatters it in fragments which he throws to the winds; then he "integrates" these fragments and "dissipates their movement". Having imitated the Whole by a work of mosaic, he imagines he has retraced the design of it, and made the genesis.' (Bergson, 1998, pp. 364-5)

progressive generation of species; however, he emphasised that the intrinsic impulse that furthered the movement into ever new forms, which he regards as the *élan vital*, has not driven living matter in a single direction:

> ... nor that the different species represent so many stages along a single route, nor that the course has been accomplished without obstacle. It is clear that the effort has met with resistance in the matter which it has had to make use of; it has needed to split itself up, to distribute along different lines of evolution the tendencies it bore within it; it has turned aside, it has retrograded; at times it has stopped short. (1920, p. 19)

Bergson's wholehearted acknowledgement of contingency means that his philosophy today, from the perspective of this thesis, can be regarded as a rigorous attempt to situate the spiritual within contemporary science and an approach towards an understanding of human consciousness. More particularly in evolutionary studies he stands against the development of a predominantly materialist Anthropology, also expressed in the new discipline of physical anthropology. Bergson's perspective is liberating as it introduces agency into subjectivity beyond the notions of 'cultural' difference — and in this way appears as persistently contemporary.

Bergson developed his early works against the backdrop of a familiarity with innovative theoretical models that challenged existing orthodoxies. This included innovative scientific research into, for example experimental psychophysiology (Wundt, 1874), hysteria and hypnotism (Pierre Janet, 1894, 1898, 1903; who was in contact with Charcot and Richet), and the unconscious and psychic conditions (Freud, 1891[184]; James, 1950, 1986). William James, whose work Bergson appreciated and to which he referred[185] (see

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[184] His work is sometimes regarded as having foreshadowed Freud's interventions in the mapping of the unconscious; Bergson cites Freud's early research into aphasia (Freud, 1891) in *Matter and Memory*. (1991, p. 124)

[185] Even though Bergson has expressed certain differences in his own thought in regard to the intellectual work of William James, they both expressed in their correspondence up to their first meeting in 1905 their mutual agreement between certain ideas. See Guerlac (2006, p. 28), Pitkin W.B. (1910, cited in Green, undated). William James is known for employing Bergson's critique of intellectualism; the following two extracts from James' *Principles of Psychology* (1950, the results of research since the 1870's originally published in 1890) are significant in regard to Bergson's first publication in 1889 (apparently their ideas on flux and duration developed independently and joined later in the mutual recognition of their work): 'The cause of the

for example 1991, p. 100), had made significant interventions into studies of consciousness since Gustav Theodore Fechner in the fields of cognitive science, transpersonal psychology (investigations of spiritual and religious experience), and psychical research. His most famous understanding of consciousness as a stream or flux gained him widespread popularity. He was equally fascinated by Bergson's work and, according to some, this accounts for Bergson's influence on american pragmatism. Most significantly Bergson's philosophy eschews belief and is founded in experience[186].

As a trained scientist Bergson was familiar with the seismic ruptures in the fields of classical physics whose scientific community got deeply shattered at the end of the 19th century by the so-called second scientific revolution. The first and second law of thermodynamics, which built on Newton's law of causal relations, gave classical physics the foundation of certainty. These were questioned from several sides as science moved to consider the subatomic level and at more or less the same time began exploring spectral analysis. Other key components of this revolution include Boltzmann's mathematical demonstration of entropy in 1872, Lorentz' electron theory of electrified matter in 1892, Röntgen's discovery of X-Ray in 1895, Bequerel's discovery of radiation in 1896, Kelvin's experimental engagement of physics with subatomic particles by 1897, Curie's discovery of radioactive emissions from the new elements polonium and radium, Einstein's discovery of the photon in 1905, Planck's theory of energy quanta and the

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intuition which we really have cannot be the duration of our brain-processes or our mental changes. That duration is rather the object of the intuition which, being realized at every moment of such duration, must be due to a permanently present cause... The duration thus steadily perceived is hardly more than the 'specious present,' as it was called a few pages back. Its content is in a constant flux, events dawning into its forward end as fast as they fade out of its rearward one, and each of them changing its time-coefficient from 'not yet,' or 'not quite yet,' to 'just gone' or 'gone,' as it passes by. Meanwhile, the specious present, the intuited duration, stands permanent, like the rainbow on the waterfall, with its own quality unchanged by the events that stream through it. Each of these, as it slips out, retains the power of being reproduced; and when reproduced, is reproduced with the duration and neighbours which it originally had. Please observe, however, that the reproduction of an event, after it has once completely dropped out of the rearward end of the specious present, is an entirely different psychic fact from its direct perception in the specious present as a thing immediately past. A creature might be entirely devoid of reproductive memory, and yet have the time-sense...' (James, in: Green, undated)
[186] Suzanne Guerlac has emphasised the importance of the concept of experience in Bergson's work, which in her view has been undervalued in Deleuze's Bergsonism in order to distinguish his Bergsonism from phenomenology during the 1960s. (Guerlac, 2004)

Planck Constant, Bohr's account of the structure of the hydrogen atom and electron orbits in terms of quantum states in 1913, and later Broglie's dual wave-particle hypothesis for all material particles, and Heisenberg's Uncertainty Principle by 1927[187]. These theoretical and experimental innovations introduced an irrefutable indeterminism into science, not only in regard to what is measurable but also to what actually may be knowable. Some claim that Bergson anticipated the direction modern science would take, as his intervention for example also asserts the current view of the relativity of knowledge[188]. Suzanne Guerlac is more cautious and sketches the scientific developments of the time: '… that would have enabled him to grasp the direction in which modern physics was heading.' (Guerlac, 2006) She quotes Miliç Capek (1971) with a statement that recalls Henri Gouhier's quote at the beginning of this chapter: '… hardly anyone could then guess even remotely the extent of the coming scientific revolution,' a vision that: '… loom[ed] on a very distant horizon… only in a few and heretically daring minds. Bergson was one of these.' (Guerlac, 2006) What is clear is that Bergson was widely informed and had considerable impact in many disciplines, particularly in his reconceptualisation of time.

Two of Bergson's earliest works, *Essai Sur les Données Immédiates de la Conscience*[189], 1889 (*Time and Free Will*, 2001) and *Matière et Mémoire*, 1896 (*Matter and Memory*, 1991) established his main thesis regarding his concept of time and space, and the relationship between matter and spirit that are considered as most crucial for this thesis. Bergson remained committed to his early work while he moved on with his thinking within the context of modern science and the political context of the time. In this way he continuously refined his system of thought for which a foundation had already been built and to which he later modestly refers to as a hypothesis. Given his original training and

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[187] Guerlac contextualises Bergson's oeuvre and provides a good overview on the scientific innovations around the turn of the century in the chapter 'From Certainties to the Anxieties of Indeterminism'. (2006, pp. 14-41)

[188] Canales reminds us that the issue of relativity was already known since at least 1795; she states that: 'Relativity, in this respect, had only rediscovered what had already been known.' (2005, p. 1176)

[189] This work was part of his doctorial thesis, the second part consisted of a then required Latin thesis, Quid Aristoteles de loco senserit (Aristotle's Conception of Place).

background, it is not surprising that his philosophical and metaphysical conclusions are grounded in scientific data that reflect the radical innovations of the epoch.

In *Matter and Memory* (1991) Bergson grounds his philosophy in the empirical data of contemporary scientific enquiries into the phenomena of psychophysiology, psychology, and what we nowadays call neuroscience. It is not the purpose of this grounding to resituate this work in a contemporary context; however, a literature review of Bergson's contemporary reception[190] shows his influence to be not only in film and cinema theory but also in the hard sciences such as physics and psychology. The renewed attention to his work reveals a recent revitalisation in thinking about the relevance of Bergson's philosophy in the light of new research elsewhere. This has foremost become clearest in the fields of visual media when they engage with philosophy, and can be said to be largely due to Deleuze's re-introduction to Bergsonism since the 1960s and in his cinema theory. (Deleuze, 1991, 1986, 1989) Bergson's work it seems has lost none of its novelty and originality even today and it bears particular relevance to some of the unresolved questions around consciousness and the relation between internal and external states; for example discussions around the so-called 'hard problem' in consciousness studies and neuroscience[191]. This renewed interest and a first-hand close reading of Bergson's works suggests that he has much to contribute to current discussions, as this thesis suggests, particularly in film and cinema theory and the developing interest in the spiritual domain.

In the contemporary reception of Bergson's philosophy, the spiritual and mystical implications of his work have been approached with reticence, similar to the way in which these dimensions remain underexplored in film and cinema studies, while they persist as crucial forces in the way that cinema has been shaped and perceived.

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[190] See for example Pearson's exploration of major aspects of Bergson's oeuvre (2002), Guerlac's introduction to Bergson's system of thought, in particular her contextualising of its relevance for a context of contemporary science (2006); Gallois discusses Bergson's philosophy in relation to contemporary neuroscience (1997), Mullarkey situates Bergson's central concepts within a spectrum of disciplines from sociobiology, cognitive science, ethics and metaphysics (2004, 1999).
[191] The hard problem concerns the common scientific conception of the world as consisting of pure matter and the difficulty to reconcile this perspective with the issue of consciousness. See for example discussions around the works by David Chalmers (1995, 1996).

Consequently this thesis reconfigures the term of the 'spiritual' by building on Bergson's philosophy and applying it to a contemporary reading of the implications of perception during the period of the emerging cinema. By placing the faculty of 'spirit' within the perceptual apparatus of the human mind, following Bergson's system of thought, this thesis illuminates the complex discourses around the way we understand the cinema *dispositif* from a philosophical and anthropological perspective that places the human agency with the inherent perceptual processes at the centre of investigation. In doing so it also will revitalise Edgar Morin's conception of an 'anthropology of cinema' (2005) in relation to David MacDougall's conception of an 'anthropology of consciousness' (1998) in chapter 7. Bergson's emphasis on time as duration prior to the issue of movement revolutionises our contemporary understanding of cinema as a philosophical time-machine rather than a technology of 'moving images' or for the 'representation of realism' (an understanding also introduced by Gilles Deleuze in his application of Bergson's philosophy to his cinema theory). However, these issues are being addressed in this thesis not from a Deleuzean perspective, but a Bergsonian position based on a close reading of his early work. This primary reading points to the relevance of Bergson's philosophy to new historicist research concerning the emergence of cinema with a particular intention in this thesis to refigure the 'spiritual' dimensions of cinema within the discourse of the discipline of cinema studies.

The so-called 'spiritual' dimension of cinema is mentioned by Deleuze in his cinema theory, but only marginally, and also expressed in his statement in an interview in *Cahiers du cinéma* in 1986[192] where he describes his initial fascination with cinema as: '... its unexpected ability to show not only behaviour but spiritual life [*la vie spirituelle*] as well.' (Flaxman, 2000, p. 366) However, as mentioned earlier, it is an aspect which Deleuze in his own work does not emphasise and to which scholars rather rarely direct their attention[193]. Suzanne Guerlac confirms this in her statement that: 'Deleuze had carefully edited out all those features of Bergson's thought that might appear "metaphysical", (2006, p. 179) which is pertinent within the context of structuralism and

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[192] *Cahiers du Cinema:* Issue 380: 25-32.
[193] See Patricia Pisters' work, in particular her recent publication on the spiritual dimension in Deleuze (2006).

post-structuralism and the anti-Hegel-project that Deleuze initially pursued with his revival of Bergsonism in 1966. (Deleuze, 1991) In contrast this thesis gives a contemporary reading of what Bergson himself called, the metaphysical implications of his philosophy in order to redefine the way the 'spiritual' has been addressed in the canon of cinema theory.

3.2 Bergson and the Relation between 'Spirit' and 'Matter'

In *Essai Sur les Données Immédiates de la Conscience*, 1889 (*Time and Free Will*, 2001), Bergson has laid out the foundation for his critique of binary oppositions and of the prevailing dualism of subject and object, quality and quantity, matter and spirit through a close analysis of the concept of time and space, and the issue of free will. While the investigations within science and the so-called 'paranormal' were still closely entwined during the 19th century, as elaborated in chapter 1, this dualism appears at the root of the barrier that largely excluded the spiritual dimension in a rigorous research context during the 20th century. Bergson, however, offers a 'third course' (2001, p. 238), a system of thought, which opens a space to discuss the spiritual dimension beyond the polemic of dualism. His main intervention lies in regarding internal conscious states as qualitative multiplicities, interpenetrating one another and enduring in an unquantifiable time quality and intensity, which he calls *durée*. This follows his distinction between time that is quantified and measured in space (thus externalised) and time as *durée* that lacks any externality. In Bergson's view there is a great deal at stake in the confusion of these two concepts of time, in particular since free will has been denied or disavowed. This inner *durée*, Bergson describes as: '... the continuous evolution of a free person' (2001, p. 229), since it is in this constant interpenetrating process of *becoming* (2001, p. 231) that freedom lies; it is: '... the relation of the concrete self to the act which it performs.' (2001, p. 219) According to Bergson, we can grasp our internal self by deep introspection (what he later calls 'intuition'), which happens rather rarely since we are mostly concerned with our outer selves and our social representations. In Bergson's view it is a necessity of our intellect to construct language and the external requirements relating to

our 'social self' within space, as Guerlac suggests: 'It is a social imperative for ordinary thinking and experience, as for ordinary language, to operate within a spatial framework.' (2004, p. 43) Further, it is intuition instead that places us in time through experience, as Bergson puts it: '... all intuition is thus found to be sensuous, by definition.' (1998, p. 361) This act of introspection requires what Bergson calls a 'strenuous effort of reflection' (2001, p. 233), through which we rest our attention within ourselves. Bergson elaborates this further:

> Hence there are finally two different selves, one of which is, as it were, the external projection of the other, its spatial and, so to speak, social representation. We reach the former by deep introspection, which leads us to grasp our inner states as living things, constantly *becoming*, as states not amenable to measure, which permeate one another and of which the succession in duration has nothing in common with juxtaposition in homogeneous space. (Bergson, 2001, p. 231)

As a consequence *durée* for Bergson escapes the paradigms of science and mathematics, and it is in this particular constellation of his thesis that he regards metaphysics (philosophy) as a necessary parallel component together with science in order not merely to study the external, measurable phenomena in space, but also to retain a grasp of time as it is lived and experienced internally. From this perspective Bergson addresses in his second major work, *Matière et Mémoire*, 1896 (*Matter and Memory*, 1991) the issues of metaphysics of matter, the psychology of perception and the problem of the relation of consciousness with matter.

In *Matter and Memory* (1991) Bergson establishes his hypothesis using clinical data from pathology and psychophysiology, especially on memory-disorders, such as the symptomatic occurrences in aphasia and amnesia. This data constitutes a crucial dimension for the development of his argument that will be elaborated in the following chapters from a metadiscursive perspective. Contextual reading into consciousness studies and contemporary neuroscience suggests that the sciences proceed much in the way that Bergson had anticipated with regard to certain tendencies at the end of the 19th century relating to the complex processes of perception. Already at the time Bergson had observed a tendency to localise sensations and movements in the physiology of the brain rather than treating the issue of how ideas come about. He stated: 'Thus the theory grew

more and more complicated, yet without ever being able to grasp the full complexity of reality.' (1991, p. 124) Science in this way limits the range and value of our senses and of our understanding from the perspective of our personal experiences and common sense. What had merely started for Henri Bergson as an analytical study of the subject of memory in *Matter and Memory* (1991) ended up as a critique of materialism and idealism by showing, through a hypothetical thesis situated in metaphysics, how matter (the body) and *l'esprit* [194] (the mind) relate to one another through the agency of memory.

Bergson establishes a discussion of 'spirit' beyond phenomenology, mysticism, theology or other philosophical systems that needed the faculty of a 'god' or 'absolute' to sustain their system when it comes to the relation between the 'material' and the 'immaterial'[195]. He thereby eliminates all hidden powers, mysteries and epiphenomena from matter (for example applied in Platonean or neo-Platonean philosophy, and even materialism in science with regard to the discussion of consciousness which still remains an epiphenomenon), and establishes the faculty of 'spirit' (*l'esprit*) as an independent reality. In doing so Bergson defines memory as the: '... point of contact between consciousness and things, between the body and the spirit.' (1991, p. 65) In this way Bergson's philosophy provides a new pathway to bridge the dualism between body and mind, for which he sees the cause in the two extreme conceptions of matter in both realism and idealism. According to Bergson, dualism regards matter as essentially divisible into separate objects and the states of the mind/ soul as rigorously inextensive, while the interaction between the two remains obscure. (1991, p. 220) Bergson treats matter in his thesis merely with regard to the relation between body and mind, and considers it as being placed: '... before the dissociation which idealism and realism have

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[194] *L'esprit* is translated in *Matter and Memory* (1991) as the 'mind' or 'spirit', a translation which Henri Bergson in 1908 approved. In its French meaning, however, it relates very strongly to the German meaning of *Geist*. Bergson also relates the terms 'soul' and 'mind' with one another, in the original terms *ame* and *esprit* (1991, p. 11) These terms are variously used in this thesis, following the most appropriate meaning with regard to the context, however, the focus lies on the terms spirit and mind.

[195] Because of his alliance with evolutionary theory and the extermination of the faculty of a 'god' as a superior being in his philosophy, Bergson's work has been put on the Index by the Roman Catholic Church following the publication of *L'Evolution Créatrice* in 1907 (*Creative Evolution*, 1998). (Lawlor and Mulard, 2004)

brought about between its existence and its appearance.' (1991, p.10) In this sense he sees the appropriate understanding of matter half-way between René Descartes' and George Berkeley's conceptions, and argues against Descartes' understanding of matter as a mathematical, geometrical extensity; and Berkeley's idealist conception of matter as pure idea. (1991, pp. 10-11) This, according to Bergson, is the understanding that common sense also assigns to it and he continuously, throughout *Matter and Memory*, refers to common sense as an agency that intuitively seems to get it right. Not surprisingly this radical approach to matter in his philosophy had a great appeal to the general public and Bergson became a cult-figure after the publication of *L 'Evolution Créatrice* in 1907[196]. (Creative Evolution, 1998)

Bergson sets out, in his introduction to *Matter and Memory* (1991), that even though the subject of the 'spirit' (the mind, the soul) has been treated extensively throughout the history of philosophy, in his view it has been studied in a very limited manner, in terms of a psycho-physiological relation beyond mere parallelism or 'epiphenomenalism.' Bergson critically reflects:

> Let us note that the most radical of mechanical theories is that which makes consciousness an ephiphenomenon which, in given circumstances, may supervene on certain molecular movements. But, if molecular movement can create sensation out of a zero of consciousness, why should not consciousness in its turn create movement either out of a zero of kinetic and potential energy, or by making use of this energy in its own way? (2001, p. 152)

These issues became widespread at the onset of the 20th century and were widely discussed across a broad spectrum of interest and expertise. Bergson's strategy brings his theory of perception into harmony with both common sense and the experience of *l 'esprit* (spirit) as well as with science, since it accommodates the heterogeneity of matter as a whole, and escapes the relativism of idealism and the inexplicable gap between the realist notion of matter and its internal unextended perception.

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[196] The relevance of common sense to him was something of a virtue, but some of his opponents took this up as an issue, that according to Bergson every philosophical system should be possible to be expressed in 'ordinary' language.

The importance of Bergson's philosophy, as we shall see, lies in particular in the way his insights into the processes of perception, memory, recognition and affect, open a spectrum of innumerable states of consciousness, or as he calls them 'planes of consciousness' that act upon each other. (Bergson, 1991, p. 241) This spectrum seems to be able to allow us to trace a great variety of theoretical perspectives on the issue of the cinema perception, from the cinema as illusion, dream-factory, mirror-phase, the double, the signifier of the imaginary, etc., and allow a heterogeneous, multiple reading in terms of the potentiality that lies in the spectrum of our ordinary perception:

> Between the plane of action — the plane in which our body has condensed its past into motor habits — and the plane of pure memory, where our mind retains in all its details the picture of our past life, we believe that we can discover thousands of different planes of consciousness, a thousand integral and yet diverse repetitions of the whole of the experience through which we have lived. (Bergson, 1991, p. 241)

The crucial foundation that Bergson established with his philosophy is the hypothesis that matter and 'spirit' are independent entities. The body is a mere instrument of action; in this sense: '... matter is here as elsewhere the vehicle of an action and not the substratum of a knowledge.' (Bergson, 1991, p. 74) Further he posits that our psychic life is independent from matter but interacts with it in the present moment of perception. In *Matter and Memory* (1991) Bergson defines 'matter' as an aggregate of *images*[197] that react to each other in the form of movements: '*I call* matter *the aggregate of images, and* perception of matter *these same images referred to the eventual action of one particular image, my body.*' (1991, p. 22 — emphasis in the original) By *image* Bergson understands objects or things as:

> ... a certain existence which is more than that which the idealist calls a representation, but less than that which the realist calls a thing — an existence placed halfway between the "thing" and the "representation." This conception of matter is simply that of common sense. (1991, p. 9)

Nowadays the term 'image' may at first sight appear misleading since it carries such a long history of numerous connotations with it, from phenomenological, materialist-

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[197] Whenever throughout this thesis the term image is used in a Bergsonian sense it will be emphasised in Italic.

realist, cognitive to post-structuralist conceptions[198]. Therefore it is necessary to elaborate that the perceived *images* for Bergson are not 'representations' of objects and things, but *images* formed by states of the mind perceived through the filter of our sensory apparatus — hence including the senses of touch, sound, smell, taste, etc., and not merely the sense of vision[199]. Bergson explains the choice for this term to express the indisputable fact that every reality has a relation with consciousness. (1991, p. 229) This is the extent to which he concurs with idealism, yet critiques the idealist point of view that all reality is confined to psychic states:

> ... there is no material image which does not owe its qualities, its determinations, in short, its existence, to the place which it occupies in the totality of the universe. My perception can, then, only be some part of these objects themselves; it is in them rather than they in it. (1991, pp. 228-9)

Hence Bergson places the perspective within the faculty of perception. It therefore becomes clear how Bergson understands the body also as being an *image*, which we perceive from within, through affections. (1991, p. 17) Bergson raises the question that if the body was merely understood as matter, how could it produce new *images* beyond reflecting its own *image* onto the world: 'My body, an object destined to move other objects, is, then a center of action; it cannot give birth to a 'representation[200].' (1991, p. 20) This would be coherent with a realist point of view, which understands objects in the universe reacting to one another in relation to the cause of an action which is executed through movement (Newton's law of cause and effect), yet realism does not satisfactorily

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[198] The notion of the 'image' seems to gain a lot of attention in recent publications, for example Brigitte Peucker's *The Material Image* (2007), in which she examines the relation of film to the visual arts. Temenuga Trifonova (2007) explores the discourses of the 'image' in relation to discussions of consciousness and impersonal, metaphysical, cognitive conceptions of subjectivity in French philosophy in a comparison between Bergson, Sartre, Lyotard, Baudrillard and Deleuze, seen from the perspective of a revival of metaphysics.

[199] It would be interesting to compare Bergson's philosophy in this regard with contemporary discussions in consciousness studies of 'qualia' (singular 'quale', from Latin meaning 'what sort' or 'what kind'), which classify the introspectively accessible aspects of our mental states with a very distinctive subjective character; generally defined as qualities and feelings, properties of our sensory experiences. Clarence Irving Lewis first used the term 'qualia' in its generally agreed modern sense in his book *Mind and the World Order* (1929), in his original definition they constitute the 'recognizable qualitative characters of the given'. (Lewis, 1929, p. 121)

[200] 'Representation' is translated by Paul and Palmer from the French 'représentation' in the sense of a 'mental image'.

explain the relation of things in the world with our consciousness. Bergson therefore does not make a distinction between *images* inside or outside of our perception: 'Every image is within certain images and without others...' (1991, p. 25) He emphasises that the *image* of our body is the only one that can bring forth conscious changes by choice; it is a privileged *image* in this sense. (1991, p. 25) The *image* of the body is like the part of the whole, an *image* amidst all other *images* — hence the internal is part of the external. Bergson distinguishes the body (including our consciousness) as a: '... center of action from which the interesting images appear to be reflected.' (1991, p. 47) Our body, according to Bergson, analyses other objects according to different plausible actions which it can exercise upon them:

> Perception, therefore, consists in detaching, from the totality of objects, the possible action of my body upon them. Perception appears, then, as only a choice. It creates nothing; its office, on the contrary, is to eliminate from the totality of images all those on which I can have no hold, and then from each of those which I retain, all that does not concern the needs of the image which I call my body. (1991, p. 229)

According to Bergson, what we perceive is determined by the interest of our consciousness regarding the decisions we take to act upon our environment: 'What you have to explain, then is not how perception arises, but how it is limited, since it should be the image of the whole, and is in fact reduced to the image of that which interests you.' (1991, p. 40) *Images* then are limited with regard to the fullness of their materialised existence in the world. Bergson exemplifies: '... if we could assemble all the states of consciousness, past, present and possible, of all conscious beings, we should still only have gathered a very small part of material reality because images outrun perception on every side.' (1991, p. 229) Our perception then is partial but does not distinguish the *images* from matter in kind, only in degree:

> My consciousness of matter is then no longer either subjective, as it is for English idealism, or relative, as it is for the Kantian idealism. It is not subjective, for it is in things rather than in me. It is not relative, because the relation between the "phenomenon" and the "thing" is not that of appearance to reality, but merely that of the part to the whole. (1991, p. 230)

Bergson claims in this regard that matter does not inhabit any mysterious powers and refers to the brain where realism especially often unavoidably situates the unknown and mysterious: 'All realism is thus bound to make perception an accident, and, consequently, a mystery.' (1991, p. 27) Instead for Bergson the brain: '... cannot exercise powers of any kind other than those which we perceive.' (1991, p. 71) In his view, realism needs a kind of *Deus Ex Machina* to bridge the gap between distinct objects in space and internal states of consciousness without falling pray to determinism and extreme behaviourism. In this regard, Bergson counters the opinion that perception might arise from or originate in brain states: 'In our opinion, then, the brain is no more than a kind of central telephonic exchange: its office is to allow communication or to delay it. It adds nothing to what it receives.' (1991, p. 30) Bergson sees the brain as an instrument to analyse movement, and an instrument to select movements that are executed, and compares it to the gestures of the conductor, which merely mark the motor articulations, but don't produce the music. (1920, p. 74) In a lecture in 1911 he states: 'It is therefore a crossway, where the nervous impulse arriving by any sensory path can be directed into any motor path', (1920, p. 9) an 'instrument of action and not of representation' (1991, p. 74): '... in order that it may set in action a motor mechanism which has been chosen, instead of one which is automatic' (1920, p. 9), to ensure it executes the most effective action on the object or situation we perceive. Consequently, Bergson concludes that 'the brain is an organ of choice.' (1920, p. 9) With regard to the relation between the brain and consciousness, the latter is synonymous with invention and freedom. Bergson suggests:

> In reality, consciousness does not spring from the brain; but brain and consciousness correspond because equally they measure, the one by the complexity of its structure and the other by the intensity of its awareness, the quantity of choice that the living being has at its disposal. It is precisely because a cerebral state expresses simply what there is of nascent action in the corresponding psychical state, that the psychical state tells us more than the cerebral state. (1998, p. 262)

Bergson's suggestion is that, what he calls 'our zones of indetermination' play in some ways the part of a screen (1991, p. 39): '... the brain is an image like others, enveloped in the mass of other images, and it would be absurd that the container should issue from the content' (1991, p. 41) — it is this concept that informs Deleuze's famous notion 'the

brain is the screen[201]. Bergson regards the body as we perceive it, itself as an internal *image*, not any different from all the (external) *images* around it. This is why for Bergson the body cannot function as storage <u>for</u> *images*, since it is a part of these same *images*. The *images* are not <u>in</u> the brain, but according to Bergson: '... it is the brain that is in them.' (1991, p. 151) He elaborates further that the fact that often misleads us to see the brain as a source of *images* is that the cerebral movements of the brain (constituting the main focus in contemporary neuroscience) are synchronous with perception, since perception is directed by choice and therefore in correspondence with the brain mechanisms that enable action: 'Conscious perception signifies choice, and consciousness mainly consists in this practical discernment.' (1991, p. 49) However, the brain itself is merely a function of the indetermination of free will, which Bergson has elaborated in his first book *Essai Sur les Données Immédiates de la Conscience*, 1889 (*Time and Free Will*, 2001), the brain's function is to set our body into action.

In Bergson's view the body reacts according to the sensori-motor power of a certain *image* (our body) which is privileged among other *images* (limiting itself as the centre of the aggregate of *images*) by feeling affections and performing actions. (1991, p. 61) He proposes: 'The greater the body's power of action (symbolised by a higher degree of complexity in the nervous system), the wider is the field that perception embraces.' (1991, p. 56) Perceptions for Bergson are nothing more than dawning actions (1991, p. 68): 'The actuality of our perception thus lies in its activity, in the movements which prolong it, and not in its greater intensity: the past is only idea, the present is ideo-motor.' (1991, p. 68) In this context Bergson critiques the common notion that sensation is unextended and perception is composed by an aggregate of sensations, in that scientific

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[201] 'Something that's interested me in cinema is the way the screen can work as a brain...' (Deleuze, 1995, p. 149) Departing from this insight by Deleuze in the philosophical implication of the cinema *dispositif*, by which he understands the screen as a brain, the cinema can furthermore also be regarded as a paradigm for the processes of consciousness, which this thesis has identified in a study of the spectators perception as an ontological enquiry, rather than a focus on the screen as a brain and an analysis of specific film contents. From this meta-view the approach taken in this thesis differs from Deleuze's take on an application of Bergson's philosophy in that it extends his concept of the screen as a brain into a pure study of the conscious processes involved, those moments when the spectators recognise (consciously or unconsciously) this model and engage with this mirroring, or to avoid confusion with psychoanalysis as this thesis calls it: this amplification of their perceptual processes.

positivism conceives matter as: '... homogeneous changes in space, while it contracts perception into unextended sensations within consciousness...' (1991, p. 70) Bergson explores further:

> Realists and idealists are agreed in this method of reasoning. The latter see in the material universe nothing but a synthesis of subjective and unextended states; the former add that, behind this synthesis, there is an independent reality corresponding to it, but both conclude, from the gradual passage of affection to representation, that our representation of the material universe is relative and subjective and that it has, so to speak, emerged from us, rather than that we have emerged from it. (1991, p. 54)

The way Bergson attempts to bridge the dualism between external and internal states is through the notion of extensity, of an extended consciousness placing itself into the things to be perceived; hence the moment of perception takes place in the thing to be perceived while internally, memories overlap with the process of perception and shift from virtual into actual qualities. Bergson situates perception amidst the aggregate of *images* where centres of indetermination for possible actions are filtered and selected according to the interests of the mind and lead to affection of one particular *image* to which our body is subjected. (1991, p. 64)

Given that *images* are external to the body (and the body not considered as storage space for *images*), Bergson continues, they subsist even when the body disappears, and sensations, because they are internal and intrinsically linked with the sensory system vanish together with the existence of the body[202]. In order to distinguish *image* from 'sensation', for Bergson perception (hence the *image*) is situated outside the body (in the object to be perceived), and the affection arises within the body, which is 'its actual effort upon itself.' (1991, p. 57) Hence affection consists of interior sensations relating to our body, as Bergson suggests:

> Between the affection felt and the image perceived there is this difference, that the affection is within our body, the image outside our body. And that is why the

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[202] This conception of consciousness leads Bergson to hypothetically assume the survival of consciousness, the mind or the soul after death, as he discusses in a lecture in 1912 (1920, pp. 29-59) — see also chapter 7.

> surface of our body, the common limit of this and of other bodies, is given to us
> in the form both of sensations and of an image. (1991, p. 234)

The important step Bergson then takes is to affirm that: 'Affection is, then, that part or aspect of the inside of our body which we mix with the image of external bodies; it is what we must first of all subtract from perception to get the image in its purity.' (1991, p. 58) Usually perception is always accompanied with affection, since virtual actions overlap with real actions; consequently perception consists of a virtual act: '... virtual action of things upon our body and of our body upon things'; (1991, p. 232) '... the perception being our virtual action and the cerebral state our action already begun.' (1991, p. 233) Bergson elaborates:

> Our sensations are, then to our perceptions that which the real action of our body
> is to its possible, or virtual, action. Its virtual action concerns other objects and is
> manifested within those objects; its real action concerns itself, and is manifested
> within its own substance. (1991, p. 57)

This suggests that for Bergson: '... it is not merely a difference of degree that separates perception from affection but a difference in kind.' (1991, p. 56) Sensations for Bergson: '... far from being the materials from which the image is wrought, will then appear as the impurity which is introduced into it, being that part of our own body which we project into all others[203]' (1991, p. 235), hence, '... affection is not the primary matter of which perception is made; it is rather the impurity with which perception is alloyed.' (1991, p. 58)

For the sake of analysis, Bergson introduces the concept of 'pure perception' which concerns the momentum of perception before memories join up and overlap this immediate perception: '... in pure perception we are actually placed outside ourselves; we touch the reality of the object in an immediate intuition.' (1991, p. 75) Bergson defines 'pure perception' as follows:

> By this I mean a perception which exists in theory rather than in fact and would
> be possessed by a being placed where I am, living as I live, but absorbed in the

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[203] Edgar Morin discusses this aspect of projection into other objects in particular in relation to the cinema experience (2005); see references to this in chapter 1 and 6.

present and capable, by giving up every form of memory, of obtaining a vision of matter both immediate and instantaneous. (1991, p. 34)

Pure perception for Bergson constitutes the foundation of our perceptual process — it is the grasping of an essential being of things prior to the attribution of 'accidents' (which he uses in an Aristotelian sense meaning internalised qualities). Bergson argues here against theories that see perception as mere projections of internal states, and emphasises the partial coincidence of the moment of pure perception in the object to be perceived as an externalised perceptual process of our extended consciousness, while simultaneously memories from the past impinge on the present moment. 'These two acts, perception and recollection, always interpenetrate each other, are always exchanging something of their substance as by a process of endosmosis.' (1991, p. 67) These two states according to Bergson are commonly mixed up and undifferentiated, regarded as difference merely in intensity and not in kind. Pure perception instead can only be understood as a specific time quality that Bergson assigns to *durée*:

> Pure perception, in fact, however rapid we suppose it to be, occupies a certain depth of duration, so that our successive perceptions are never the real moments of things, as we have hitherto supposed, but are moments of our consciousness. Theoretically, we said, the part played by consciousness in external perception would be to join together, by the continuous thread of memory, instantaneous visions of the real. But, in fact, there is for us nothing that is instantaneous. In all that goes by that name there is already some work of our memory, and consequently, of our consciousness, which prolongs into each other, so as to grasp them in one relatively simple intuition, an endless number of moments of an endlessly divisible time. (1991, p. 69-70)

Memory, according to Bergson, covers up and submerges, replacing continuously the present moment of perception. Therefore the moment of 'pure' perception in which intuitively a present moment, or thing, is grasped by placing ourselves in the very heart of things, becomes supplanted by memories and recollections, driven by utility overruling the perceptions of the present moment. Memory for Bergson then is the faculty that colours (external) perception with subjective qualities, it constitutes the, 'subjective side of the knowledge of things.' (1991, p. 34) Hence perception is never 'pure', but always overlaps with *memory-images* that root in 'pure memory' with the tendency to actualise and materialise in the present moment. Bergson explains:

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> Pure memory, as they become actual, tend to bring about, within the body, all the
> corresponding sensations. But these virtual sensations themselves, in order to
> become real, must tend to urge the body to action and to impress upon it those
> movements and attitudes of which they are the habitual antecedent. (1991, p. 130)

'Pure memory', which for Bergson constitutes the deepest layer of our virtual aggregate, has no link with sensations or any interests in the body in the present. Only when it coincides with the interest of the present moment does it turn into an *image*, and an idea develops into a *memory-image* in order to take part in the decision-making for possible sensori-motor actions. For Bergson, most significantly: '... memory does not consist in a regression from the present to the past, but, on the contrary, in a progression from the past to the present.' (1991, p. 239) What defines our present moment is the state of our body, but it is our memory instead, according to Bergson:

> [that] ... virtual state which we lead onwards, step-by-step, through a series of
> different *planes of consciousness*, up to the goal where it is materialised in an
> actual perception; that is to say, up to the point where it becomes a present, active
> state — up to that extreme plane of our consciousness against which our body
> stands out. (1991, pp. 239-240 — emphasis in the original)

According to Bergson, the past is not less intense than the present, since in his view: '... we do not go from the perception to the idea, but from the idea to the perception; the essential process of recognition is not centripetal, but centrifugal.' (1991, p. 130) He puts it even more strongly; memory does not emerge from matter, but quite the contrary; as he says: '... matter, as grasped in concrete perception which always occupies a certain duration, is in great part the work of memory.' (1991, p. 182) Bergson argues in this way because in his view science deprives matter from those qualities by which we perceive it[204], it regards it as an 'accidental garb of space' (1991, p. 72), and therefore creates room for connoting it with mystical powers and representations of spirit. The mistake, in his view, lies in the fact that perception is regarded as being placed within our consciousness, instead of the recognition that perception takes place in the thing we perceive, hence we perceive 'matter within matter.' By separating the processes of 'pure

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204 This issue is discussed in particular in relation to *qualia* in contemporary consciousness studies and philosophy, see for example Gibbons (2005).

perception' in the thing we perceive and the persistent flow of memory importing the past into the present moment and colouring perception with personal attributes, matter can be regarded independent from spirit (by which Bergson understands the past, memory and the virtual). In his view: 'If, then, spirit is a reality, it is here, in the phenomenon of memory, that we may come into touch with it experimentally.' (1991, p. 73) Bergson summarises:

> We maintain that matter has no occult or unknowable power and that it coincides, in essentials, with pure perception. Therefore we conclude that the living body in general, and the nervous system in particular, are only channels for the transmission of movements, which, received in the form of stimulation, are transmitted in the form of action, reflex or voluntary. That is to say, it is vain to attribute to the cerebral substance the property of engendering representations. Now the phenomena of memory, in which we believe that we can grasp spirit in its most tangible form, are precisely those of which a superficial psychology is most ready to find the origin in cerebral activity alone; just because they are at the point of contact between consciousness and matter, and because even the adversaries of materialism have no objection to treating the brain as a storehouse of memories. (1991, pp. 73-74)

This distinction that Bergson makes between the personal interior perceptive processes relating to memory and the motion of a pure perception at the foundation of our relationship with the external world, constitutes the threshold where matter and spirit meet: 'It is in very truth within matter that pure perception places us, and it is really into spirit that we penetrate by means of memory.' (1991, p. 180) Bergson suggests further:

> Essentially fugitive, they [personal recollections, pure memory] become materialised only by chance, either when an accidentally precise determination of our bodily attitude attracts them or when the very indetermination of that attitude leaves a clear field to the caprices of their manifestation. (1991, p. 106)

As mentioned earlier, Bergson had argued in 1896 against the misconception of the brain as a 'container' of images, of memory[205], and saw the origin for this argument in a

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[205] When it comes to the question of where pure memory should be localised, Bergson suggests: 'The centers of images, if these exist, can only be the organs that are exactly symmetrical with the organs of the senses in reference to the sensory centers. They are no more the depositories of pure memories, that is, of virtual objects, than the organs of the senses are depositories of real objects.' (1991, pp. 129-130) He concludes: 'Hence the only one plausible hypothesis remains, namely, that this region occupies with regard to the center of hearing itself the place that is exactly symmetrical with the organ of sense. It is, in this case, a mental ear.' (1991. P. 129) This recalls

confusion of two kinds of memory: pure *memory-images* that constitute an independent faculty (not locally defined) comprising all details of our psychical life localised in time, and movement, in the sense of motor mechanisms or habits — also called 'body-memory'. (1991, p. 152) Their use is controlled by utility and our will, which is understood as an instantaneous action in contrast to the first (utility), which is instead constituted by an association with an explicit *memory-image*. (1991, p. 88-95) Bergson states: '... it is from the present that the appeal to which memory responds comes, and it is from the sensori-motor elements of the present action that a memory borrows the warmth which gives it life.' (1991, p. 153) Through a rupture between incoming impression and a defined movement, the *memory-images* most similar to this impression slip in and allow recognition by adapting themselves to the present situation for which the sensori-motor movements have prepared. If this action is performed consciously through attention, which Bergson describes as a 'power of analysis' (1991, p. 102), an effort is needed to go backwards, since the movement of perception is driving us continuously into the future. (1991, p. 95) In his view: 'Memory thus creates anew the present perception, or rather it doubles this perception by reflecting upon it either its own image or some other memory-image of the same kind.' (1991, p. 101) This, Bergson suggests, can happen to the extent that perception and memory are no longer distinguishable; especially when the *memory-images* follow the movements of the body[206]. (1991, p. 106) He explains:

> The progress by which the virtual image realises itself is nothing else than the series of stages by which this image gradually obtains from the body useful actions or useful attitudes. The stimulation of the so-called sensory centers is the last of these stages: it is the prelude to a motor reaction, the beginning of an action in space. In other words, the virtual image evolves toward the virtual sensation and the virtual sensation toward real movement... (1991, p. 131)

philosophical and metaphyscial systems of thought that account for an 'etherial body' as a double layer integrated with the physical body, and also refers to the conception of alternative medicine and clairvoyance. See for example the elaborations on the ethereal body by Leadbeater (1920).
[206] Bergson cites in this regard the work of Münsterberg (Beiträge zur Experimentellen Psychologie, vol. IV, pp. 15ff) and Külpe (Grundriss der Psychologie, Leipzig, 1893, p. 185). (1991, p. 103)

In Bergson's view, the virtual, which is the same as the past: '... tends to reconquer, by actualising itself, the influence it had lost.'(1991, p. 131) He suggests further: 'Consciousness, then, illumines, at each moment of time, that immediate part of the past which, impending over the future, seeks to realise and to associate with it.' (1991, p. 150) Hence recollection is a continuous recirculation of *memory-images* in order to strengthen, enrich and complement perception with ever greater details, a constant process of creating and reconstructing, in his view: 'We maintain ... that reflective perception is a *circuit*, in which all the elements, including the perceived object itself, hold each other in a state of mutual tension as in an electric circuit...' (1991, p. 104). Hence Bergson proposes:

> ... every *attentive* perception truly involves a *reflection*, in the etymological sense of the work, that is to say the projection, outside ourselves, of an actively created image, identical with, or similar to, the object on which it comes to mold itself[207]. (1991, p. 102 — emphasis in the original)

The selection of *memory-images* according to Bergson is facilitated by two movements: one by rotation upon itself, revealing the closest recognition of contiguity or similarity in the pure memory; the other more disposed towards the immediate response of action in which the *memory-image* is translated into the present situation. (1991, p. 169) Memory in Bergson's view is not organised as a series of atoms side by side, but it constitutes a whole in which some memories may be dominant due to intensity. It is not our memory that is selective in terms of dissociation, but our processes of reflection and recollection that are selective in that only those parts of the whole of memory are chosen that are characterised by usefulness and contiguity with the present situation. In the way Bergson describes the processes of recollection, this whole of pure memory appears like a living entity, not like a database with fixed entities that can be categorised. It is rather like a breathing entity that expands and contracts continuously reacting to the needs of the present moment, as Bergson says:

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[207] This recalls Edgar Morin's notion of the 'anthropological range of projection-identifications', by which he understands the cinema experience as a platform for polymorphous projection-identifications with characters as well as objects. From a animistic perspective referring to an 'archaic wordview' Morin describes these psychological processes involved in the polymorphous cinema participation as anthropo-cosmomorphism. (2005, p. 106)

The work of localisation consists, in reality, in a growing effort of expansion, by which the memory, always present in its entirety to itself, spreads out its recollections over an ever wider surface and so ends by distinguishing, in what was till then a confused mass, the remembrance which could not find its proper place. (1991, p. 171)

One of the important conclusions that he draws from his study of memory suggests that our memory is always complete and whole, incorporating all details of our previously lived experience. These deep-seated, privileged *images* of affections are what defines our personality. Our character, so Bergson proposes, is the: '... actual synthesis of all our past states. In this epitomised form our previous psychical life exists for us even more than the external world, of which we never perceive more than a very small part, whereas, on the contrary, we use the whole of our lived experience.' (1991, p. 146)

As becomes evident at this point in Bergson's analysis: the factor 'time' becomes crucial for the way our consciousness interacts with matter. In his view, memory occupies a certain duration, how short our perception may be, it involves: '... an effort of memory which prolongs, one into another, a plurality of moments.' (1991, p. 34) Bergson again reminds us that what we actually perceive is infinitely more than we are able to consciously conceive:

The qualitative heterogeneity of our successive perceptions of the universe results from the fact that each, in itself, extends over a certain depth of duration and that memory condenses in each an enormous multiplicity of vibrations which appear to us all at once. (1991, p. 70)
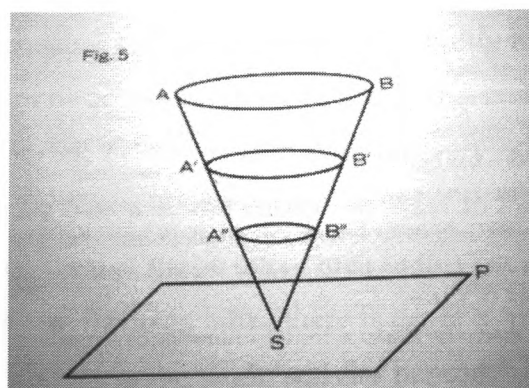

Fig. 1 Bergson's inverted cone

Bergson's diagram of the inverted cone above (1991, p. 162, Fig. 5) indicates a schematic illustration for the purpose of analysis of the two constant movements of our mental life: between the present moment (S) where we focus our attention to the action to be undertaken — which indicates the present perception of our body that Bergson also calls our 'sensori-motor equilibrium' (1991, p. 161) — and the other extreme the unconscious past of pure memory, the totality of recollections (the surface A, B). These mental states, pure memory, according to Bergson have affinity to one another, as all *images* do. In this way they are attracted through either contintuity or ressemblace to the present moment of perception, in order to facilitate the proceeding action. In this process of becoming, A and B then turn into *memory-images* (A', B', A'', B'') if we allow our attention momentarily to dwell beyond our focus in the present moment of point (S). Bergson describes our mental life as a continuous fluctuation in the space between the actual moment of the present (S) and the unconscious of the past, which he also calls the virtual. (1991, pp. 161ff) On the one extreme Bergson schematises the 'man of instinct', an automaton mainly acting according to sensori-motor schemata in the present moment, and on the other extreme the 'dreamer', for whom recollections emerge with no advantage in the present situation. In his view:'...the mind travels unceasingly over the interval comprised between its two extreme limits, the plane of action and the plane of dream.' (1991, p. 172) If an equilibrium is reached between these two extreme positions, Bergson talks about 'good sense', 'practical sense', the: '... happy disposition of memory docile enough to follow with precision all the outlines of the present situation, but energetic enough to resist all other appeal.' (1991, p. 153) The sensori-motor states in Bergson's view constitute intelligently constructed mechanisms, our 'bodily memory' (1991, p. 152); they delineate the present direction of memory and in this sense form the acting and actual extremities of our memories. (1991, p. 168) Pure memory is continually forcing itself into this present, driven by free will and choice, in order to modulate habit with a greater variety of past experiences that shape every idea in this oscillation of becoming actualised. Of course in reality, as Bergson adds, there is never a 'purely sensori-motor state' or an 'imaginative life without some slight activity beneath' it. (1991, p. 168) In this way the cone and his analysis are merely schematic tools to separate what normally

appears indistinguishable. Bergson summarises this oscillating movement of our mind as follows:

> Between the plane of action — the plane in which our body has condensed its past into motor habits — and the plane of pure memory, where our mind retains in all its details the picture of our past life, we believe that we can discover thousands of different planes of consciousness, a thousand integral and yet diverse repetitions of the whole of the experience through which we have lived. To complete a recollection by more personal detail does not at all consist in mechanically juxtaposing other recollections to this, but in transporting ourselves to a wider plane of consciousness, in going away from action in the direction of dream. (1991, p. 241)

These 'planes of consciousness', according to Bergson, exist virtually: '... with that existence which is proper to things of the spirit.' (1991, p. 242) We can conclude from this review, that for Bergson, a spiritual dimension is then active, when we creatively interact and act upon the world involving as many 'planes of consciousness' as possible through a creative process of becoming:

> ... to touch the reality of spirit we must place ourselves at the point where an individual consciousness, continuing and retaining the past in a present enriched by it, thus escapes the law of necessity, the law which ordains that the past shall ever follow itself in a present which merely repeats it in another form and that all things shall every be flowing away. We then pass from pure perception to memory, we definitely abandon matter for spirit. (1991, p. 235)

Hence the spiritual dimension in Bergson's view lies in the domain of our pure memories, in those virtual psychic states that can actualise any moment in the present in ever new forms and modulations; it refers to this very action that manifests a difference, an expression of free will within our sensori-motor driven actions and consequently supercedes the mere motor mechanisms or habitual body-memories. For Bergson this virtual, this: '...pure memory is a spiritual manifestation. With memory we are, in truth, in the domain of spirit.' (1991, p. 240) This is what constitutes our *esprit* (or soul), the whole of our lived experience, which for Bergson has a greater intensity than the parts we perceive from the external world that never remain in their purity since our psychic states continuously overlap with them. In the two distinct yet converging processes of consciousness, the links that are being established with the past, memory, are not as close and stable as those we establish with material objects in our perception, which behave

according to specific laws. Yet the content of the past, our memories, when actualised in the present moment, reveal its full potential; whereas in our perception of external objects the content we are able to grasp is always necessarily partial due to the multitude of unperceived elements and characteristics. (1991, p. 147)

Our memory is constantly pushing into the future and manifesting in the present moment — it is not for dwelling in the past, but for actualising our becoming in the here and now, every moment over and over again:

> Your perception, however instantaneous, consists then in an incalculable multitude of remembered elements; in truth, every perception is already memory. *Practically, we perceive only the past*, the pure present being the invisible progress of the past gnawing into the future. (1991, p. 150)

This present moment that Bergson refers to, is a concrete lived 'real' in which the body serves as an instrument of action, and it necessarily occupies a certain duration of time. It is characterised by sensation and movement directed towards the future, what Bergson calls the: '... actual state of my becoming, that part of my duration which is in process of growth.' (1991, p. 138) The brain, as our body, always only occupies the duration of the present moment, while our psychological states endure into the very moment[208]. The present for Bergson, in this sense, is not 'that which is', but: '... that which is being made'. (1991, p. 150)

The degree to which an existence in Bergson's view can be called 'spiritual' is related to the intensity by which we allow an ever richer and fuller access of our psychic life to connect with the present moment of interaction with the world. In other words it could also be said: it depends on our degree of choice and creative activity of our free will, as well as on the extent of our awareness by which we enable our experiences to grasp the

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[208] Here it becomes clear that this is where the problem of localising the 'containing' of the virtual lies, in that it applies a spatial quality to purely psychological states which for Bergson only endure as a non measurable time quality.

needs of the present moment beyond the mere needs of our body which includes
affections and sensations[209]. Bergson suggests:

> A man is so much the more a 'man of action' as he can embrace in a glance a
> greater number of events: he who perceives successive events one by one will
> allow himself to be led by them; he who grasps them as a whole will dominate
> them. (Bergson, 1983, pp. 301-2)

The 'spiritual' dimension in Bergson is consequently not simply determined by the realm
of the 'virtual', but by its actualisation through embodied action in the present and by its
degree of creative potential through which it enables to mould matter. Spirituality, in this
sense, is characterised by action. One of the more advanced developments Bergson sees
for example is the ability to wait before reacting, and of: '... putting the excitation
received into relation with an ever richer variety of motor mechanisms.' (1991, p. 222)
For Bergson, the nervous system is:

> ... only the symbol of the inner energy which allows the being to free itself from
> the rhythm of the flow of things and to retain in an ever higher degree the past in
> order to influence ever more deeply the future — the symbol, in the special sense
> which we give to the work, of its memory. Thus between brute matter and the
> mind most capable of reflection there are all possible intensities of memory or,
> what comes to the same thing, all the degrees of freedom. (1991, p. 222)

In Bergson's view, more generally speaking then, any vital organism *endures*. Matter is
not inert but part of an undivided whole, and life is considered as a flux rather than a
succession of instances. (1998, p. 186) What has mostly been overlooked, according to
Bergson — and here lies his most original intervention — is the 'growing and
accompanying tension of consciousness in time.' (1991, p. 248) He suggests:

> Not only by its memory of former experience, does this consciousness retain the
> past better and better, so as to organise it with the present in a newer and richer
> decision; but, living with an intenser life, contracting, by its memory of the
> immediate experience, a growing number of external moments in its present
> duration, it becomes more capable of creating acts of which the inner
> indetermination, spread over as large a multiplicity of the moments of matter as

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[209] This is not in the scope of this thesis, but it becomes clear that at this point altruism could be
situated in Bergson's thesis of perception which he elaborates in *The Two Sources of Morality
and Religion* (1935), see for example pp. 36-37.

you please, will pass the more easily through the meshes of necessity. (1991, pp. 238-9)

This citation most explicitly shows how spirit manifests itself through a conscious engagement with matter by allowing *memory-images* to pass through the restraints of necessities in order to achieve a fuller perception beyond the requirements of the body preparing to act. In Bergson's elaboration on the function of the body in the life of the spirit, '[i]t is in very truth within matter that pure perception places us, and it is really into spirit that we penetrate by means of memory.' (1991, p. 180) Peters, who called the profound irreducible qualities of communication 'touch' and 'time', seems to have tapped into a Bergsonian understanding of perception in that he attempts to dismantle spiritist connections with technology from their mysticism and invests matter with subjectivity in order to: '... identify it [this middle position] with a pragmatism open to both the uncanny and the practical.' (Peters, 1999, pp. 21-2) According to Bergson, spirit can:

> ... rest upon matter and, consequently, unite with it in the act of pure perception, yet nevertheless be radically distinct from it. It is distinct from matter in that it is, even then, memory, that is to say, a synthesis of past and present with a view to the future, in that it contracts the moments of this matter in order to use them and to manifest itself by actions which are the final aim of its union with the body. (1991, p. 220)

Bergson's view on perception insists that it remains always partial in the way that it captures matter through our sensory apparatus, a condition to which his philosophy offers a pathway by which a fuller *image* can be perceived through an introspective movement of our intellect; a process that he called 'intuition.' Intuition for Bergson is the gesture of our intellect that grasps our memory and imports *memory-images* into the present moment of perception and recollection, preparing for an outgoing action. In his view it constitutes a: '... more or less high degree of tension in consciousness, which goes to fetch pure recollections in pure memory in order to materialise them progressively by contact with the present perception.' (1991, p. 238) Hence intuition enforces the influence of spirit on our action upon matter; as Bergson says:

> By allowing us to grasp in a single intuition multiple moments of duration, it frees us from the movement of the flow of things, that is to say, from the rhythm of necessity. The more of these moments memory can contract into one, the

firmer is the hold which it gives to us on matter: so the memory of a living being appears indeed to measure, above all, its powers of action upon things and to be only the intellectual reverberation of this power. (1991, p. 228)

The more sophisticated these processes are developed in a conscious being, the more differentiation in this function and the more complex the nervous system and its sensori-motor paths. For Bergson a: '... growing intensity of life, corresponds to a higher tension of duration and is made manifest externally by a greater development of the sensori-motor system'. (1991, p. 221) Hence the spiritual dimension is expressed by the degree to which an action is being fed by *memory-images* steered by conscious choice and free will.

The relevance of Bergson's system of thought extends into many disciplines and areas of contemporary research. The increasing return to his work and commentaries along with a renewed interest in the spiritual is timely in the light of a burgeoning relativism in the Sciences and the Letters. His conception of spirit, as the virtual realm of memory that is pushing into the present moment of action and accessible through the processes of consciousness is key to this thesis. It is understood as a domain distinct from matter, resting on experience and activity rather than belief, and in this sense it gives substance to Kardec's definition of spiritualism, as cited earlier (at the beginning of this chapter).

Having established a brief overview on Bergson's system of thought as elaborated in his early works, especially in *Matter and Memory* ([1896] 1991), the following chapter examines his particular insights into the issues of time and space in relation to consciousness within a broader intellectual framework of the late 19th century. The momentum established in this chapter will be further elaborated and applied specifically to the cinematic experience in chapters 6 and 7.

Chapter 4

The Analysis and Synthesis of Time and Movement

This chapter builds on the previous discussion in relation to the connotations of a spiritual dimension associated with the emerging cinema as elaborated in chapters 1 and 2, and situates them within a discussion on Bergson's philosophy in relation to the wider contemporary intellectual framework and a history of ideas. It will show that his interests were not isolated, but that his intervention was unique. It examines where a discussion of the spirit in the framework of Bergson's philosophy can be situated within the contemporary context of science, art and popular culture at the end of the 19th century.

As discussed in the previous chapter, at the foundation of Henri Bergson's philosophy, lies his distinction of matter from spirit, and the interaction between them as constituted by the faculty of memory transmuting between the virtual (past) and the actual (present). Bergson defines the underlying drive for this motion, the most profound principle of life, as the *élan vital* (life-force), which he defines as the vital impetus of life: the storage and release of energy that allows the creation of ever new forms; for Bergson: '... a living being is a center of action.' (1998, p. 262) This philosophical framework is important to bear in mind in this thesis, as it further will be discussed in relation to the intellectual context of the emerging cinema. In order to achieve this objective, this chapter first situates Bergson's work in the context of some contemporary thinkers at the end of the 19th century, who were concerned especially with the concepts of movement and time — aspects of which scientists, instrument-makers and entrepreneurs involved in the development of cinematic projection devices reconstructed and interpreted according to their interests and research purposes.

The discussion commences with an introduction to the aspects of movement, space and time in Bergson's philosophy in particular as he elaborated on them in his first crucial publications *Essai Sur les Données Immédiates de la Conscience* from 1889 (*Time and Free Will*, 2001) and in *L'Evolution Créatrice* from 1907 (*Creative Evolution*, 1998). These references will then be woven into a wider discussion of some contemporary

speculative scientific interests and concerns during the 1880s and 1890s that dealt with the analysis and synthesis of movement versus the experience of time, dynamism and simultaneity, and which had a crucial bearing on the various developments of the cinematographic apparatus.

In this context two key innovative thinkers have been selected to be brought into relation with Bergson's philosophy and with one another: the French physiologist Étienne-Jules Marey (1830-1904) who is discussed with some introductory references to the British experimental photographer, Eadweard James Muybridge (1830-1904); and the German art-historian, Aby Warburg (1866-1929). Their interconnections will be examined from the vantage point of the period, before and around the turn of the century, in order to establish a network of forces and ideas that proves useful when examining the metaphysical implications of the emerging presence and popularity of the cinema. All three of them have been involved in and engaged with groundbreaking intellectual developments with regard to the concepts of time, space and movement through their backgrounds and interests, which happen to be coincidentally — in some cases intentionally — interrelated with one another. Their interventions retrospectively reveal certain processes and trends that help the understanding of the complex network of interactions regarding science, technology, art and popular culture — a convergence of factors and forces that also resonated with major trends in spiritualist practises around the turn of the century. By discussing this network of individuals this chapter looks back at Bergson's philosophy from an assumed vantage point of the historical moment rather than from some of the teleologically informed histories and situates it within the context of this intellectual environment. In order to do this we need to look more closely and with some detail at the research conducted by these key figures, some of who have often been misleadingly appropriated in teleological histories of the cinema driven by hindsight. In this regard the main historical accounts within film and cinema studies have had the tendency to create somewhat distorted views on the body of some of their work due to the perspective of the current understanding of cinema, projected back into the past as a given. This is especially true to the work of Étienne-Jules Marey, which has repeatedly been reduced and limited to his chronophotography in order to situate it as a predecessor

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of the cinema. Many historical accounts fall into this trap of a teleological perspective, and, as Lisa Gitelman has pointed out, the term 'history' commonly: '... denotes both the thing we are doing to the past and the past we are doing it to' (Gitelman, 2006, p. 4); '... that is to make a medium both evidence and cause of its own history.' (Gitelman, 2006, p. 10)

Bergson appears to have given little attention to cinema but through a discussion of some core aspects of a history of ideas, it will become apparent why he did not consider it as central to his thought. By contextualising Bergson's metaphorical use of the Cinématographe and other visual technologies of the time within the wider intellectual framework at the end of the 19th century, it will be argued that new insights emerge into how his understandings of time, image and memory better facilitate the approach to the spiritual dimension of cinema. It was not until the publication of L'Evolution Créatrice in 1907 (Creative Evolution, 1998) that Bergson relates explicitly to the novel technology of the cinematograph in his work, however, as Marta Braun confirms, even his first major works are: '... riddled with references to his chronophotographic analysis' without explicitly referring to Marey. (Braun, 1992, p. 280) Aside from this, what makes Marey key to this discussion, evident from revisiting him alongside with Bergson's early works, is that he was occupied with similar questions with regard to the perception of time, space, movement and what he called the true nature of vital activity; issues that also occupied some of those scientists and thinkers who were involved in the development of technological, mechanically based audio-visual media. The following section on Marey is wilfully selective and does not account for his complete oeuvre but only on those aspects that are crucial within the framework of this thesis. However, Marey himself gave a good account of his own investigations with reference to other contemporary technological developments, to which the following discussion will at times refer using at its best source his 1894 publication Le Movement (Movement, 1895), which gives a good summary of his research interests around the 1880s and 1890s. Apart from Marey's own writings this section also considers Marta Braun's extensive research on Marey (1983, 1992, 2006), which is taken up as the most extensive and reliable source, since it includes many first-hand archival references.

Étienne-Jules Marey was of course not the only scientist studying movement using technological instrumentation. Others include Jansen, Regnault and Muybridge. It is, however, Marey's work that is most relevant and needs a closer examination in relation to Bergson's interests, in particular his concern with the aspects of duration, energy and activity in the course of movement, and his distinct separation of the analysis of movement from its synthesis from a scientific point of view. Marey's and Muybridge's works have very often become compacted into a single narrative, partly due to bad historicisation and teleologically driven accounts of the cinema, and partly due to certain parallelisms of their interests in instantaneous photography even though their concerns, approach and methods differed greatly, as did their techniques and the images they produced. Marta Braun has pointed to the misconception that Muybridge is often understood as having had scientific interests[210]. She reminds us that he was a businessman with artistic ambitions in photography who found a 'product' to market, whilst conversely for Marey, photography was of central interest for his scientific research, although he only adopted it very late in his career. Braun rectifies these fallacies (1992, p. 229) and elaborates on the two men's different approaches, and concludes that Muybridge appears more as an editor of time-lapse collages into sequential narratives with an apparent aesthetic emphasis, whilst attempting to retain the interest of scientists in his work. (1992, p. 237ff) Marey on the other hand used a single camera only and superimposed images on a photographic plate concurring with the scientific understanding of a fixed 'objective' position of the observer. Through this comparison, Braun comes to the conclusion that Muybridge is more concerned with narrative than with a study of movement, in contrast to Marey's 'disinterested, accurate analytic and systematic' research[211]. (1992, p. 254)

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[210] When Muybridge finally found sponsoring from the University of Pennsylvania in 1883, he was assisted by scientists in his work; he states himself: 'I am neither a physiologist nor an anatomist... [therefore they] are assisting in the work to give it additional weight and value.' (Braun, 1992, p. 232)

[211] It is in this interest, in the force and the effects of bodily movements, that Marey's work comes closer to Bergson's philosophy than Muybridge's commercial, narrative and artistic interest in photography. While Marey's search for the principles of life is commonly regarded within a strictly scientific context in which he situated his work, the fact that he believed that all life processes were driven by an intelligible causality does not necessarily contradict metaphysical or

In contrast to Muybridge, Marey worked with composite chronophotography, a difference that is significant to the following discussion, since it prepares the way for Bergson's distinction of the two possible movements of our intellect that will be elaborated in the following chapters. In this sense, Marey's initial work can be regarded as exemplary for Bergson's analysis of the workings of our intellect consistent with the way the scientific method was understood within the rationalist paradigm since Marey approached the human body from a mechanistic point of view. He called it 'animal mechanism', and this became the title of one of his first publications in 1874[212]. By the end of the 19th century, however, the body was no longer regarded as an inanimate static machine but rather as a convergence of matter and energy, a field of energies expressed in laws that could be explained better by science. In this shared context both Marey and Bergson attempted to study the vital principles of life: Bergson was very much aware of the neo-vitalism of his time, although he opposed both extreme vitalism as well as pure mechanism and finalism; the doctrine of teleology. (Bergson, 1998, p. 42)

According to Bergson rational science could not grasp the profound principles of life, only metaphysics could provide these methods, while at the same time he attempted to introduce scientific rigour into philosophy: '... philosophers can not to-day content themselves with vague generalities, but must follow the scientists in experimental detail and discuss the results with them[213].' (1998, p. 78) In this sense Bergson's oeuvre has to be regarded as distinct from the prevailing vitalist traditions, since he claimed certain aspects of materialism as well as of vitalism and idealism as integral to how he conceived

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even spiritual systems of thought. However, his investigations departed from a common basis in his belief that all these forces could be measured and explained by scientific methods. He recognised the insufficiency of our sensory system and language, which he sought to be removed by science. Consequently, he turned to technology as an improved means in order to overcome these insufficiencies.

[212] The title 'Animal mechanism' is reminiscent of Franz Anton Mesmer's term 'Animal magnetism', a kind of universal magnetism both referring to physical attraction (gravity) and social attraction (love), but which is different from physical magnetism in its reference to the Latin term *animus* or spirit. (Peters, 1999, p. 90)

[213] Bergson on the other hand refers to the liberty that philosophy undertakes in contrast to science: 'But the reality of which each of these theories [scientific] takes a partial view must transcend them all. And this reality is the special object of philosophy, which is not constrained to scientific precision because it contemplates no practical application.' (1998, pp. 84-5)

of the principles of human life and perception. Marey on the other hand proceeded from the scientific framework of rationalism and, as Braun argues, from the conceptualisation of the body as a machine with underlying dynamic processes of intelligible forces. While he appears to be interested in similar phenomena as Bergson, his scientific method did not allow him to venture beyond the surface of material appearances. As Bergson puts it in the first chapter of *Creative Evolution* (1998) in which he critiques the mechanistic thinking regarding the evolution of life and teleology as expressed with radical finalism: the mechanist treatment of life makes it: '... shrink to the form of a certain human activity which is only a partial and local manifestation of life, a result or by-product of the vital process.' (1998, p. xii) Later on he claims in a critique of finalism:

> It is to believe that life, in its movement and in its entirety, goes to work like our intellect, which is only a motionless and fragmentary view of life, and which naturally takes its stand outside of time. Life, on the contrary, progresses and *endures* in time. (1998, p. 51)

In his theory of evolution Bergson contrasts the capacities of instinct with the limited, discontinuous processes of the intellect. From this perspective it could be said that Marey touched upon the vital forces merely in their visible effect, both in the graphic as well as chronophotographic method, while Bergson attempted to tackle them in their origin and through the very dynamics of their activities and creative force.

So far this seems a rather obvious comparative study; however, Marey's work was riven by inherent contradictions between the scientifically driven objectives evident in Marey's publications and intellectual framework, and the somewhat contrasting traits in his work that touch upon rather ephemeral aspects and notions regarding the dimensions of the mind. While Marey was more interested in understanding the world rather than the human mind, this emerging undercurrent in his work towards the dimension of the spirit and the rather philosophical implications of his study of movement in this way sanction aspects of Bergson's philosophy, or at least pave the way for a thicker reading of the contemporary interrelation of Bergson's thinking with the wider intellectual framework regarding the developing audio-visual media. This undercurrent especially concerns Marey's intrinsic occupation with the aesthetic and artistic dimensions of his work, which

will be elaborated in the second section of this chapter. However, there would be no point in comparing Marey's work with Bergson's philosophy for the sheer differentiation of their goals and interests, were it not for the points of reference concerning movement and time that thicken the framework for the discussion of Bergson's metaphorical use of the Cinématographe. This is why the main interest in the following discussion lies in the aspect of projection constituting the synthesis of movement, and Marey's references to art, which form the pivot where the focus shifts to the perceptive processes of the beholders — the core concern of this thesis.

Rethinking certain aspects of Marey's work beyond the canon of teleological cinema history, will bring some of his scientific research interests, especially those beyond the visual capture of movement, into the context of this discussion. By situating Marey's work within the wider view of science, the arts and popular culture of the time, Marey's oeuvre will appear as enriched and thickened by this contextual reading, with the attempt to more closely distinguish between the various interpretations of his work from his own ambitions and objectives[214].

4.1 Bergson's Conception of Time and the Analysis of Movement through Instantaneous Photography

In *Essai Sur les Données Immédiates de la Conscience* from 1889 (*Time and Free Will*, 2001) Bergson foregrounds the fact that 'real time' as we perceive it in action as duration, is elusive to mathematical, scientific and intellectual treatment. (1992a, p. 12) He draws attention to the awareness of our own perception and deconstructs these processes with a particular focus on time and space. His particular interest in time is reported to go back to

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[214] This expresses a contrary perception as expressed by Braun, who sees the contextualisation and reinterpretations of Marey's work as limitations for the 'evaluation of his achievements' – an opinion that is clearly shaped by the objectives of her publication which sets out to rectify the misconceptions and general neglect of Marey's work. (1992, p. xx) For the following sections Braun's publication *Picturing Time* (1992) provides an invaluable source from which to understand Marey's in a close encounter with his own archival documentations and in the very complexities that the historisation of his oeuvre challenges.

his studies in mathematics and his particular interest in the term 't' in equations of mechanics[215]. (Guerlac, 2006, p. 29) Bergson himself refers to Spencer's *First Principles*[216] as the starting point of his philosophical investigation that led him to consider the idea of time. (1992a, p. 12) As mentioned in chapter 3, Bergson's novel conception of a distinction between two concepts of time, one as externalised quantity (science) and the other as internalised quality (metaphysics) constitutes the core insight and foundation of his intervention. By introducing time as a quality in his concept of *durée*, Bergson argues against what he called the 'strange timelessness of the Newtonian world.' (Guerlac, 2006, p. 28) Through his analysis Bergson points out a major mistake that has often been made, both in philosophy and in science, which is an overemphasis on and a misunderstanding of movement and the subordination of time[217] as a consequence of an overinvestment in realism at the expense of experience. Bergson subsequently critiques the commonly confused concept of time. He states that we can only measure the space traversed — in other words simultaneities. While in our experiences we internally conceive continuous movement and time as *durée*, as a quality rather than a measurable quantity:

> When I follow with my eyes on the dial of a clock the movement of the hand which corresponds to the oscillations of the pendulum, I do not measure duration, as seems to be thought; I merely count simultaneities, which is very different. Outside of me, in space, there is never more than a single position of the hand and the pendulum, for nothing is left of the past positions. Within myself a process of organization of interpenetration of conscious states is going on, which constitutes true duration. It is because I *endure* in this way that I picture to myself what I call the past oscillations of the pendulum at the same time as I perceive the present oscillation. (Bergson, 2001, pp. 107-8)

For Bergson these internal states of consciousness, even though experienced in succession, permeate each other, hence there is a sense of *durée*. Only when we start measuring our internal states and interpreting them, do we project time into space and the whole splits up into single units. Bergson states:

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[215] Bergson refers to the axiom *t* in his introduction to *The Creative Mind* (1992, p. 13)

[216] See some elaborations on Spencer in relation to Bergson in the beginning of chapter 3.

[217] Gilles Deleuze has based his cinema theory on this core of Bergson's intervention by distinguishing the movement *image* (and cinema) from the time *image* (cinema). (Deleuze, 1986, 1989)

In a word, there are two elements to be distinguished in motion, the space traversed and the act by which we traverse it, the successive positions and the synthesis of these positions. The first of these elements is a homogeneous quantity: the second has no reality except in a consciousness: it is a quality or an intensity, whichever you prefer. (2001, p. 112)

Through this Bergson demonstrates that the externally oriented lives of our social self require this necessary tendency of splitting the whole of matter into single sets of movements in space, since: '... life does not proceed by the association and addition of elements, but by dissociation and division...' (Bergson, 1998, p. 89); while in reality the abstract concept of a homogenous space and an abstract time as chronology stand in contrast with the internal experiences of perception:

Thus in consciousness we find states which succeed, without being distinguished from one another; and in space simultaneities which, without succeeding, are distinguished from one another, in the sense that one has ceased to exist when the other appears. Outside us, mutual externality without succession; within us, succession without mutual externality[218]. (Bergson, 2001, p. 227)

At the time when Bergson wrote his *Essai Sur les Données Immédiates de la Conscience* (1889) there was widespread interest in science as well as in the arts to study locomotion and the physiology of movement in relation to the issues of space and time. The work of the British photographer Eadweard James Muybridge[219], who was located in San Francisco, has for a long time been considered as the most famous example, often cited in teleological cinema histories as one of the 'predecessors' of the moving image technology[220]. (Mannoni, 2000) Muybridge's horizontal and vertical instantaneous

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[218] It needs to be remembered that for Bergson, the outside and the inside are not dichotomies in terms of an orthodox duality, but they constitute necessary processes of our consciousness, as elaborated in the previous chapter, which merge in the moment of perception through the extension of consciousness – the moment when matter and spirit converge.

[219] Muybridge's major publication describes his approach neatly: *Animal Locomotion: An Electro-Photographic Investigation of Consecutive Phases of Animal Movements, 1872-1885.* (Muybridge, 1887)

[220] The common teleological and determinist approaches to the history of cinema have already been critically discussed in the literature review regarding the emerging cinema in chapter 1; this issue, however, is worth bearing in mind as a critical framework of reference. This teleological view has been repeatedly illustrated with regard to the study of movement, as for example Ramsaye concludes in the chapter on Muybridge as to having traced the 'art of living pictures'

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photographic narratives illustrate the previously mentioned analysis of Bergson concerning external movement in space, constituted by never more than single positions of the moving body in space, like the hand of the clock at a particular point. In Muybridge's work, scrutinised through a Bergsonian filter, the movement of animals and humans is reduced to single, distinct units in space; it is not really movement at all, but instantaneity and a rupture in the flow of time. Needless to say that cinema in its material shape on the celluloid strips exemplifies this at its best, as the whole of a film exists of single still frames joined through montage techniques.

Muybridge's interest lay foremost in the commercial exploitation of photography, he did not pursue a profound scientific interest in his instantaneous photography, although he sought acceptance through the scientific community. Lefebvre provides the clearest description, amongst other rather ambiguous accounts, that it was Marey's publication, *The Animal Machine* from 1874 that caught Leland Stanford's interest. Stanford commissioned Muybridge to collaborate on capturing the movement of horses through the photographic method[221]. (Lefebvre, 2005; Braun, p. 47) Muybridge engaged in developing a technological set-up that allowed him to take the snapshots not merely from one and the same point of view, but from multiple points of view, and therefore employed five, then twelve and later up to fourty-eight cameras in sequence (Mannoni, 2000, p. 317, Ramsaye, 1926, p. 37) and edited the instantaneous moments acquired through stop-motion technique into long strips of sequential movements in space. Muybridge marketed his photographic sequences by selling the photographic prints as

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from Leonardo, Athanassius Kircher to scientists and inventors: 'The hour of the film was coming, almost on the next tick of the clock.' (1926, p. 49)

[221] Muybridge acknowledges Marey's influence on his work in a letter to Gaston Tissandier, editor of the French journal *La Nature* (Mannoni, 2000, p. 305, Lefebvre, 2005). Stanford's ambition lay in intending to prove his conviction that a galloping horse lifts all four feet off the ground (Larsen, 1947, pp. 19-20, Mannoni, 2000, p. 304, Ramsaye, 1926, p. 22ff). Marey likewise refers to Muybridge's work in instantaneous photography and their exchange on the use of Janssen's Photographic Revolver in *Le Movement,* (Marey, 1895, pp. 105-110). Mannoni also cites a letter from Marey to Muybridge in which he asks for his assistance to develop a photographic rifle to capture birds in flight, which in the end he reconstructed himself since he was disappointed with Muybridge's photographic results. (Mannoni, 2000, p. 331)

well as by developing magic lantern slide shows and Zoopraxiscope discs[222], while his work also was published in scientific journals such as the *Scientific American* in the USA and *La Nature* in France. (Mannoni, 2000, pp. 309-310) Muybridge, however, was not the only explorer in this area; images of galloping horses or the human body in motion had already appeared in the 1860s and 70s since faster exposure times had became possible, for example in the work of the American engineer Henry Renno Heyl and his Phasmatrope (Mannoni, 2000, pp. 261-262) or the French astronomer Pierre-Jules-César Janssen's Photographic Revolver[223]. (Larsen, 1947, p. 20, Mannoni, 2000, pp. 299-303) However, it is generally claimed that it was Muybridge's development of extremely fast shutter speeds[224] with an electrically controlled release mechanism[225], and possibly the exposure of his private life, which made his photographs internationally famous following various publications from 1878 onwards.

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[222] While the 'lone-scholar' approach is out of date and criticised by new historicist research, Mannoni (2000) does not mention the influence of Jean Louis Meissonier, a French painter with a strong scientific interest, in his account of Muybridge's image projections. Ramsaye (1926) does give the credit for the projection side of the process to Meissonier who had an interest in creating a synthesis of the movement analysis through projection with the zoetropic apparatus and the Praxinoscope. (Ramsaye, 1926, pp. 38-40) Ramsaye to his credit calls the investigation the Stanford-Isaacs-Muybridge pictures and states that: 'Muybridge had nothing to do with the evolution of this device' (Ramsaye, 1926, p. 41). His final conclusion is even more devastating: 'A horseman's argument had made Muybridge a photographer of motion. An artist's argument had shown him synthesis of motion.' (Ramsaye, 1926, p. 41) Since Ramsaye's work is commonly criticised as an example of the classic great-man-histories, it is surprising that Mannoni still reflects this orthodox approach in 2000. Amongst historians now it is generally recognised to be more valuable to consider an actor-network theory. See for example Kessler's critique of the histories of inventions, Fickers and Kessler (2005) or Punt's case study of Edison, the Lumières and Paul. (2000, 1995b)

[223] Even Fox Talbot claimed in 1844 the he could photograph galloping horses and birds in flight, which shows that even at a time when the exposure time did not allow for any movement to take place in order to gain a sharp image, the vision of photographing movement was already pursued. (Chanan, 1980, p. 70)

[224] The acclaimed aperture ranges from 1/1000th (Chanan, 1980), 1/2000th of a second (Mannoni, 2000, p. 309) to 1/5000th of a second (Larsen, 1947, p. 20). It is possible that some account for the shutter speed before Isaac implemented the electro-magnetic mechanism to control the shutter speed (see the following footnote). However, since a reconstruction or verification of historical data is not the purpose of this thesis, this detail is not of particular concern, except that this disparity of the facts as reported in classical cinema histories points to the necessary awareness of the incompleteness or even falsification of historical accounts. This is mentioned here also with regard to the brief reflections on 'history' in the last chapter.

[225] A detailed technical description on the application of electro-magnets by the engineer John D. Isaacs can be found in Ramsaye, 1926, p. 36ff.

4.2 Étienne-Jules Marey's Work and its Cinematic Set-Up: Introduction and Context

Muybridge's publication of his instantaneous photography in *La Nature* (Muybridge, 1878) attracted the attention of the French physiologist Étienne-Jules Marey who had previously worked with various graphing technologies but not yet with photography. Marey is reported to have been a technophile from a young age and first studied Engineering at the *École Polytechnique* in Paris. He then pursued the studies of medicine and completed a thesis on the dicrotic pulse, which followed on his earlier discovery of the influence of vascular elasticity on the circulation of blood. Braun emphasises the perfect convergence of his mechanical gifts and engineering skills in the field of cardiology where Marey's command on mechanical principles such as hydraulics and hydrodynamics provided an application, which was invaluable at the time. (1992, p. 3) After the failing of a medical career, Marey established himself as a *physiologiste en chambre*, giving private tutorials whilst concentrating on his research that initially dealt with the measurement of movement, contractions, rhythms, pulses and forces within the body (the heart, muscles, blood flow, etc.). Later around 1870 he started to specialise in the study of movement and measurements of the forces at work in their execution, such as the shift in gravity or time and space relations in different body parts, which he regarded as the primary function of life. (Braun, 1992, p. xvii, 4) Marey applied and constructed many kinds of novel instruments and apparatuses for his movement studies and it was only in 1878 at the peak of his career that he started to use photography. (Lefebvre, 2005) He was a key figure and a well established scientist in the intellectual context of the French academia. He was friends with key scientific innovators of the time, for example Gabriel Jonas Lippmann[226], the electro-physiologist Jacques-Arsène

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[226] Marey refers to Lippmann as his colleague and friend from whom he took over the Electrometer in 1877 to connect it to a photographic camera in order to study slightest electrical variation in living tissues. (Marey, 1895, p. 49)

d'Arsonval, and Pierre and Marie Curie[227], and the Lumières (who provided his *Station Physiologique* with photographic plates).

As Braun points out, physiology was a new discipline in the mid-19th century. This needs to be briefly contextualised in the case of France. In the aftermath of the defeat from the Prussian war, France was energetically rebuilding its self-confidence and self-image as a nation. Alongside efficient training of soldiers through physical exercise and gymnastic education, civilians suffering the enfeeblement of sedentary work, were provided the means to recover their strengths through a national health policy of exercise[228]. This movement was not limited to France but became a general concern in Western industrial nations. Through these initiatives Marey's physiological research became part of the national policy of military training that adopted his and especially Demenÿ's ideas about physical education in their training programmes.

When physiology developed as a discipline, it was quickly applied to anthropometry as part of physical anthropology. The measurements of the body became aligned with culture and race, and consequently in the scientific study of indigenous peoples, the biologically deterministic evolutionist framework could be used to define the supremacy of the white Western race. This field found the emerging photographic technologies particularly relevant as a research resource. Within this theoretical framework, organic functions were regarded as reducible to physics and chemistry, and from this reductionist perspective they could be transformed into visual and mathematical data, in which a mechanical apparatus substituted for the senses of the observer. Bergson obviously took the opposite position in his critique of biological determinism that also was to later enter modern cultural anthropology in the first half of the 20th century through for example Franz Boas' cultural relativism. Bergson suggests:

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[227] Pierre and Marie Curie also were involved with the research group at the Psychologcial Institute of Paris to study psychic phenomena; Marta Braun mentions that they attempted to measure amongst other the radioactivity and electrical discharge produced by hysterics, and Marey's various graphing instruments were incremental for their investigations. (1992, p. 279)
[228] See Anson Rabinbach's *The Human Motor: Energy, Fatigue, and the Origins of Modernity.* (1992)

Physics and chemistry study only inert matter; biology, when it treats the living being physically and chemically, considers only the inert side of the living: hence the mechanistic explanations, in spite of their development, include only a small part of the real. (1998, p. 354)

Anthropometry was also part of Marey's *Station Physiologique*; Mathias Duval and Paul Richer[229] engaged with physical anthropology, as did the physician Félix-Louis Regnault, who started to work in Marey's institute from 1893 onwards[230]. Regnault, as Marey, regarded observation on film as superior to the best descriptions. (Rony, 1996, p. 47) As mentioned in chapter 1, he promoted the idea of two different kinds of cinema, the Cinématographe as the cinema of science and the Cinématoscope as the cinema of entertainment. Regnault is most famous for his chronophotographic movement studies of ethnic groups, who were photographed in the *Station Physiologique*, as Braun points out in her article *Marey, Muybridge, le sport et la race*[231]. (Braun, 2006) His practice was inflected by the evolutionary, imperial and colonial position that regarded so-called 'primitive people' as predecessors of Western civilisation with assigned lower status, rights and value. They were thought of as not having proper language and therefore spoke through the body, through *le langage par gestes*[232]. (Rony, 1996, p. 57)

While the nascent discipline of physiology, of which Marey was a supporter, based its observation on individual members of a species (human and animals), it was the related discipline of social physics that was concerned with race. When physiology was used in comparative research making wider generalised claims concerning character or race, it became entangled with social physics. These studies were strongly based on biology since its introduction by Auguste Compte following his proclamation that the: '... whole social evolution of the race must proceed in entire accordance with biological laws.' (Stocking, 1987, pp. 29) It also needs to be remembered that the strand of physical

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[229] Richer was Charcot's student and later became professor of anatomy at the *École des Beaux-Arts*. (Braun, 1992, p. 85)

[230] Marey relates to his work in a foreword he wrote for Regnault's publication on the study of modes of walking movements (Regnault, 1897), which Regnault studied across a variety of ethnic groups to mark racial differences.

[231] For more information on Regnault's ethnographic motion photography see Rony (1996), and on anthropometry see Spencer (1992).

[232] 'The language by gestures' (translation by the author)

anthropology in the late 19th century was strongly identified with the medical sciences[233].
Braun, however, argues that Marey's own research complies with the national politics
through his collaborations with the military to pursue the study of physical health,
exercise among solders and athletes as well as ordinary men in order to build a strong
French workforce in all sectors of the State. Physiology became recognised as a
significant scientific discipline in France in particular through a focus on comparative
anatomy, whereas elsewhere, as Stocking reminds us, the issues of civilisation were dealt
with through comparative philology in Germany and through political economy in
Britain. (Stocking, 1987, p. 30)

Marey became one of the staunchest defenders of the discipline of physiology, and like
other scientists in this field, such as the famous physiologist Claude Bernard (Braun,
1992, p. 4), he had to build his own research laboratory[234] and equipment from scratch,
modifying existing apparatus through creative collaboration with instrument-makers and
scientists from related disciplines[235]. Marey, in this sense, was an innovator who
continuously engaged with technological recording/ graphing devices and pursued his
studies of diverse forms of movement in the vital functions. His investigations would
today be located in the field of biophysics, and as Braun points out, Marey worked at the
fringes of what was to be established as the canon of physiology and was a contentious
figure. Bernard for example, the authority in the field in France, was initially highly
critical of Marey's dependence on and fidelity in instrumentation, while Marey critiqued
Bernard's method of vivisection. (Braun, 1992, pp. 37-8) When Marey was finally
accepted and received a chair at the *Collège de France*, he also entered Duruy's

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[233] Barbara Larson discusses this connection and points to the fact that the *École d'Anthropologie*
in Paris was part of the Faculty of Medicine. (2005, p. 53)

[234] Marey first worked in his private laboratory after his doctorate in 1859 and later on in the
laboratories of the *Collège de France*, however, mostly restricted to an indoor space which made
certain set-ups for his movement studies very difficult. It was only later from 1881 onward that
Marey was granted funding from the City of Paris for a *Station Physiologique* in the outskirts of
Paris where he collaborated with his chief assistant Georges Demenÿ, a specialist in structured
physical education. (Mannoni, 2000, pp. 333-4)

[235] This has been the typical set-up for inventors and innovators, also those dealing with audio-
visual media and other technological advancements and has been elaborated in various historical
accounts, also addressed as actor-network theory. See for example Fickers and Kessler (2005, p.
2) or Punt (2000).

experimental physiology laboratory at the *École Pratique des Hautes Études* and was admitted to the *Académie de Médecine* in 1872.

Not surprisingly given his technophile background, one of the first technological devices that Marey constructed was when he was a student. This was the Sphygmographe, a pulse-writer recording movements of the arm's arteries and its pressure changes (Braun, 1992, p. 2, 17). He subsequently developed or modified devices such as the Myographe, recording muscular contractions; the Pneumograph for the study of respiration; the Cardiographe; stereoscopic chronophotography (Marey, 1895, p. 63ff); Lippmann's Electrometer (Marey, 1895, pp. 49-50); and the 'experimental shoe' equipped with pneumatic tubes recording the weight and pressure on the feet and the relationship between bodyweight and walking action[236]. (Marey, 1895, pp. 6-8, Braun, 1992, pp. 26-7) These early experiences and experiments shaped his approach to physiology.

As a physiologist Marey was especially occupied with movement in the body (such as muscles and organs) and the recording of very small time intervals and invisible movements. This research was coextensive with the contemporary interest of science with images of the so-called 'infinitely small', such as microscopy, micro-chronophotography and microcinematography[237]. Mary Ann Doane (2002) has outlined some of the issues of representability versus legibility of time inscribed in visual media that this interest presented by among other things examining Marey's chronophotography relative to his graphing methods and emphasises both the continuity and discontinuity of the inscription of time in his work. Marey addresses these topics in the preface to his publication *Le Movement* in 1894 (*Movement*, 1895):

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[236] Marta Braun gives a good overview on Marey's graphic methods in the chapter 'The Writing of Life: The Graphic Method.' (1992, pp. 8-41)

[237] Hannah Landecker relates the interest in the very small and very slow to the shift in the understanding and representations of time and space in the early 20th century. (2006, p. 130) This fascination has also been addressed in entertainment forms, such as in the case of Gustavus Katterfelto, a Prussian performer, who projected microscopic imagery onto a big screen using his Solar Microscope; as Milbourne reports he showed for example 500 insects in a single drop of water of the size of a pinhead. (1973, p. 84) This example illustrates Landecker's argument that early scientific films taught the audiences how scientists saw things. (2006, p. 127)

> Laborious statistics have been replaced by diagrams in which the variations of a curve express in a most striking manner the several phases of a patiently observed phenomenon, and, further, a recording apparatus which works automatically can trace the curve of a physical or physiological event, which by reason of its slowness, its feebleness, or its rapidity, is otherwise inaccessible to observation[238]. (1895, p. vii)

He is clearly aware of studies concerning the limits of human visual perception. He emphasised the superiority of 'technological vision' over human observation in the preface of *Movement* (1895) in which he addresses the particular value of chronophotography for a broad constituency of scientists, 'geometricians, hydraulic engineers, naval and military men as well as artists' and naturalists:

> It is more especially to this latter class that we dedicate our work, since it appeals to their particular ambition, namely that of discovering among the phenomena of life something that has hitherto escaped the most attentive observation. (Marey, 1895, p. viii)

For Marey physiology constituted a basis that he saw as linking all other sciences both in their methods and laws. He saw this as even extending to the fringes of the natural sciences: 'The naturalist who is not content with observing the forms, however varied, of organization in animals and plants, must proceed like the physicist and chemist, if he desires to discover the conditions of life.' (Braun, 1992, p. 15) As a response to this imperative he deployed technological mechanisms for observation and constructed them to replicate the phenomena under investigation. In this sense Marey was a technophile in the spirit of the time reflecting an understanding of technology as progress. He preceded from the limits of human vision and sensory perception, which were subject to error and deception, and believed that eventually technology would be able to equip humans with a more advanced eye and sensors and allow a more detailed and quicker perception of *kinema*[239] (Greek for 'movement'). Marey explains:

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[238] This recalls the shift in science from mathematical statistics and geometry toward an increasing application of audio-visual media for recording purposes.

[239] In this context it could be said that from a conceptual point of view Marey anticipated Vertov's kino-eye of his *kinoki* movement from the 1920's. Vertov speaks of 'kino-truth' [literally 'truth of movement'], not meaning the truth of what is shown in the film but how it is shown and the relativity of any naïve empiricist idea that a camera records 'the' truth. A notion that later Jean Rouch transferred into his conception of *Cinema-Vérité* as exemplified most

Not only are these instruments sometimes destined to replace the observer, and in such circumstances to carry out their role with an incontestable superiority, but they also have their own domain where nothing can replace them. When the eye ceases to see, the ear to hear, touch to feel, or indeed when our senses give deceptive appearances, these instruments are like new senses of astonishing precision. (Braun, 1992, p. 40)

The great challenge for Marey lay in his attempts to gain smaller time intervals in his analysis of movement. In this respect Muybridge's use of instanteneous photography to capture animal movements, most famously the gait of the horse, attracted his attention. He began a correspondence with Muybridge and eventually commissioned him for some experiments using Janssen's Photographic Revolver; however, Marey was not satisfied with the results. (Braun, 1992, p. 43ff, p. 53) They were not accurate enough for his purposes of a scientific study, and he could not use the apparatus developed for Stanford's horse study, which triggered the sensors through the horse's movement, for the capture of the movement of birds[240]. (Marey, 1895, pp. 108-110) To rectify this Marey developed together with his chief assistant and collaborator, Georges Demenÿ a Photographic Gun based on Janssen's Photographic Revolver and his chronophotographic camera, which he finally patented in 1890[241]. (Rossell, 1995, p. 121) The technical solution of his Photographic Gun, deployed a slotted-disk shutter that masked the plate while it moved and exposed the plate when it stopped. This allowed Marey to take more than one picture on the plate, and he carried this mechanism forward into his chronophotographic camera to produce his well known images of various superimpositions of single postures in one frame. (Braun, 1992, p. 64)

Marey is mostly referenced for this particular technique of instantaneous photography, which he called chronophotography, a term referring to the inscription of time by light, deriving from the Greek term *chronos* (time) and *grapho* (I write). However, the

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notably in *Chronique d'un été* with Edgar Morin, 1960. For a brief account on experimental films in relation to Marey's oeuvre see Nicole Brenez. (2006, pp. 121-138)

[240] At the time his studies into flight of birds and insects had a major impact on research into Aerodynamics of which Marey was very well aware of and he even became vice-president of the *Société de Navigation Aérienne* in 1874.

[241] Marey re-patented it in 1893 when his relationship with Demenÿ had become very difficult and rather competitive. (Mannoni, 2000, p. 360)

photographic devices that Marey developed together with Demenÿ, incorporated complex systems of sensors, and wearable instruments for diverse measurements for example Dynamometers. Hence for Marey the visualisation technology serving the analysis of movement was merely a part of much more complex systems for capturing data from various kinds of kinetic processes, which in some ways anticipated contemporary techniques of wearable technologies[242]. They comprised for example: '... hydraulics, aerodynamics, the fall of bodies, the resistance of the air, and the vibrations of rods and strings.' (Braun, 1992, p. 215) These wearables were seen as integrated into the body's activity, as much as the mechanical engineering of the time allowed; this is particularly expressed through a statement by Marey in which he describes the recorded graphs as music produced by the measured subject itself: 'He called these bar drawings "synoptical notations": they were notations of the "sort of music" produced by the succession of the horse's movements and the different tones of each hoof, "written by the horse himself." (Braun, 1992, p. 28)

The complex set-up that Marey used suggests that he understood movement as an activity expressed through a variety of parameters and of a particular duration (in the mathematical sense not the Bergsonian *durée*). He combined a number of these parameters, for example the relationship between the: '... frequency and the length of stride, the extent of the vertical head displacements and the various inclinations of the body', or between bodyweight and pressure on the foot, the effect of muscle force on body mass, etc. (Marey, 1895, p. 127) Towards the later part of his life Marey turned his focus from the moving subjects to the media or the elements in which they moved and in a number of experiments he attempted to make the ephemeral movements of water and air visible[243]. Font-Réaulx comments on this interest of Marey with regard to the capture

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[242] The inventive technologies Marey developed could be called wearables by drawing a parallel with for example contemporary motion capture techniques, which deploy rather strikingly similar suits and principles as those that Marey had developed already in the late 19th century. They also remotely evoke some reminiscence with artistic interactive work such as Stelarc's Third arm and other multi-sensorial interactive artworks. See for example *Sensorium. Embodied Experience, Technology, and Contemporary Art.* (Jones, 2006).

[243] Braun reports that it was following funding from the Smithsonian Institute for which Marey was persuaded to apply by the third secretary Samuel Pierpont Langley which made Marey return to his earlier studies with smoke fillets and wind tunnels. (1992, pp. 214-5)

of the wave at the shore of Napels (*La Vague*); and the way that he developed a passion for transformations of the ungraspable, metamorphosis of the intangible, fluid movements such as air, water and smoke. (Font-Réaulx, 2006, p. 53) Marey's interest in the effort involved, and also the energy and dynamics of the movements that he studied especially in these more abstract elementary investigations provides two converging strands of, one could say material and immaterial subject areas in his oeuvre.

In his attempts to render the invisible visible, Marey shifted away from physiology and more into the terrain of physics as he created wind tunnels for visualising airflow, and where he had previously studied the movement of water animals modified the tanks to trace the movement of water itself.[244] (Braun, 1992, p. 215, Marey, 1895, pp. 211-225) In 1886 he mentioned in a letter to Demenÿ: 'The author has made the air visible by means of smoke fillets of phosophorous vapors, a method for seeing the invisible which quite seduces me.' (Braun, 1992, p. 217) One of the most extraordinary graphic examples of this are his studies of smoke trails, produced by obstacles attached to his *Machine à Fumée* — a construction which by 1901 allowed 48 different trails of smoke to be processed. But for all its visual drama Marey was especially interested in the observation of small air currents around plain figures of different shapes, which relayed back to his earlier studies of aerodynamics[245], and his research into aquatic locomotion[246] reported to have inspired the Wright brothers in their aeronautic investigations. (Braun, 1992, p. 222)

Marey's interest in energy considered as life-force was concurrent with the scientific context of the period which was centred around the discovery of the two laws of thermodynamics and came forth from the older tradition that pursued an interest in the study of ether as well as electricity as fundamental forces in the body. These new discoveries regarding electro-magnetic forces were scientifically investigated by Michael

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[244] Braun's description of the construction of such a tank can be compared to that of the elaboration of conjurer's equipment and techniques, which were largely based on the most novel scientific findings, whereby the processes were hidden and the results presented as magic.
[245] For a good overview on Marey's aerodynamic studies see Braun (1992), Egan (2006), Marey (1901).
[246] For more specifics on these studies, see Braun (1992, pp. 214-221), Marey (1895, pp. 211-225).

Faraday among others, and most notably applied in medical practice by Franz Anton Mesmer in his telepathic healing methods[247]. They also contributed to the new understanding of the nervous body[248] with direct references to electricity and electric telegraphy[249]. It almost seems as if Marey merely shifted the perception of fluid forces, such as magnetism, from 'animal magnetism' into a conception of mechanical forces which he called 'animal mechanism' in one of his first major publications *La machine animale* from 1873 (*Animal Mechanism*, 1874); and which was later transformed by Muybridge into 'animal locomotion[250].' (Muybridge, 1887) It becomes evident that a distinction between Marey's scientific research into energy and psychical research dealing with forces can be regarded as being marked by a small step; both investigations attempted to record the physical expressions of their mediums/ subjects, while they greatly differed in their understanding of what caused these movements to happen.

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[247] As mentioned earlier, the physician Franz Mesmer applied a force which he called *animal magnetism* in medical healings and also methods that later were referred to as telepathy. (Inglis, 1992, pp. 141-151) His method, in its popular reception called *mesmerism* exemplifies the close interrelation between 'cult entertainment and alternative medicine'. (Princenthal, 2006, p. 106) For a reference of mesmerism with medical mediums see Ann Braude. (1989, pp. 145-151) Mesmerism, under the scientific name of *animal magnetism* has in the following also been pursued and studied by the French physician, anatomist and gynecologist François Deleuze (1753-1835). (Inglis, 1992, pp. 145-9)

[248] Ann Braude discusses the phenomenon of spiritualism and allied causes of nervous derangements in particular in female mediumship who were considered by orthodox medicine as prime examples of pathology associated with hysteria and therefore it was regarded as a disease of the female reproductive organs, also called 'womb-disease'. (1898, pp. 157-161)

[249] Iwan Rhys Morus elaborates a historical account on electrical science in England in which he points to the homology between the electric telegraph and electricity in general and the nervous system. (1998) Ann Braude refers to the incorporation of technical language concerning electricity into spiritist séances; she elaborates especially on gender connotations, such as the notion of women being 'negative', men being 'positive'; so that it was crucial for spiritist séances to mix women and men equally in order to achieve the best transmission of electrical currents through spirit manifestation. (1989, pp. 23-4) Luckhurst also mentions Tunzelmann's *Electricity in Modern Life* (1889), which attempted to explain the unknown mystery of electricity, for example the relation between the telegraph and the ouija boards with sympathetic magnets used in medieval times. (Luckhurst, 2002, p. 83ff) These ideas converged in the scientific research by Crookes and Cox psychic force, Barrett's nervous induction and Carpenter's nerve-force. (Luckhurst, 2002, p. 85)

[250] This shift in terminology in the study of the life-force signifies the shift in the scientific pursuit from fluids and chemistry in the 18th century to mechanics and physics in the course of the 19th century.

In this regard it seems appropriate to make a small detour at this point to discuss Marey's scientific investigations in relation to the widespread practices exemplified in the Modern Spiritualist Movement and the popular engagement with conjuring practices. Especially in relation to the cinematic *dispositif*, in particular in the way his research laboratory resembles the studio and set-up of the emerging cinema. A photograph of Albert Londe's outdoor stage where he used his twelve-lens camera at the photographic laboratory of the *Hospice de la Salpêtière* for example resembles a theatre stage including a great number of props[251]. This can be compared to the black screen in the background, in Londe's, Muybridge's and Marey's work, that served to optimise the contrast with the performing figure, also figures in Edison's Black Maria as well as Georges Méliès studio background on which the brightly light actors and objects appear in this non-defined space almost like ghostly apparitions. Méliès also materialised white skeletons, which refer directly to Marey's motion capture technique and his geometrical chronophotography. (Marey, 1895, pp. 60-1) In regard to Marey's complex set-ups and mise-en-scènes of his experiments, it is especially the *Station Physiologique* that is reminiscent of the elaborate set-ups of the cinema sets, where days and weeks of preparation led to a few seconds of photographic or filmic capture[252]. The subjects performing in these experiments were carefully dressed to obtain optimal contrast in the images and were often wired up or attached to the apparatus that would record their movements. These concerned for example arrangements of sensors tracking a runners passage via telegraph relay poles back to an indoor Odograph (Braun, 1992, p. 74), an electrical harness or wired sensors loosely attached to certain specific points along the side of the body for geometrical motion studies, a hangar for three-dimensional studies, bodysuits and wired bicycles, and various constructions for experiments with rods or falling objects. There is also an extraordinary description by Braun of a water-tank that Marey built for his chronophotographic study of the movement of eels in water, which recalls the way

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[251] Londe was an expert in chronophotography and director of the photographic service at the Clinic for Nervous Disorders at the *Hospice de la Salpêtière*, who constructed his own camera used for medical photography, see also the brief discussion in chapter 2, section 2.1.

[252] Nicole Brenez refers to Marey as initiator of a *dispositif* regarding his *Station Physiologique* in relation to the term 'expanded cinema'. (2006, p. 127)

conjurers would apply novel scientific findings and construct elaborate set-ups on stage to show their tricks:

> In that year [1888] he [Marey] had built a special aquarium to help him capture the sinuous horizontal progression of the eel. He had outfitted the usual glass-sided tank with a black backdrop and a transparent bottom and put a mirror at a forty-five-degree angle underneath the tank, which directed the rays of the sun onto the swimming animal. He then constructed a large opaque box, enclosing the whole aquarium in one end of it and his oscillating-mirror camera at the other. This arrangement eliminated all other light and rendered the water invisible; it turned the eel into a silhouette and made its movements dramatically clear. (1992, p. 215)

In this respect there are two connections to be made with the non-rational dimensions in the work of Marey; one the similarities and elaboration of the set-ups by conjurers for their stage acts which had a significant influence on the emergence of the cinema, the other is an apparent link with certain formal characteristics of spiritist practices, as discussed in chapter 2. Similarly to Marey's notion on his investigation into the invisible realms, spiritualist mediums as well as conjurers applied certain techniques to make the invisible visible, such as ghosts or voices and apparitions of the departed, or other invisible forces such as the movement of objects through the room through telekinesis and without any visible touch or physical connection between the object and the medium, as elaborated in chapter 1.

There is, however, a stronger and more immediate connection with the non-rational that can be understood through a connection with Bergson. Marey was one of those scientists who was involved in a serious and rigorous, scientific study of psychic phenomena in the research group of Psychological Institute of Paris where Bergson amongst others also participated. When Bergson was appointed as Chair of Philosophy at the *Collège de France* in 1900, he joined Marey in this institution, who occupied the 'Chair of Natural History of Organized Bodies' (Braun, 1992, p. 5) until his death in 1904. They collaborated in a research group at the *Institut Général Psychologique* (General Psychological Institute) that investigated extraordinary and psychic phenomena[253]. Braun reports that Marey's various instrumentations were used to measure for example

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[253] See also chapter 1, section 1.1.

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radioactivity and electrical discharge during séances, and engaged in the study of the behaviour of hysterics, of 'mental suggestion, telepathy, levitation and so forth.' (1992, p. 279) Gustave Geley, as mentioned in chapter 2, included some original reports of the experiments at the General Institute of Psychology with Eusapia Paladino that took place from 1905-1907 in his publication *Clairvoyance and Materialisation: A Record of Experiments* from 1927 (pp. 360-372), where Henri Bergson was acting as one of the controllers of Eusapia's movements. In one experiment Eusapia was standing on one of Marey's weighing-machines (1927, p. 364), in another experiment again with telekinesis: '... an arrangement was made with a stylus touching blackened paper on a Marey recorder, so that all horizontal movements [of the moving object] could be automatically recorded.' (1927, p. 365) These collaborations suggest an optimal convergence of various perspectives and expertise that merged in this research group, making it a truly interdisciplinary investigation. The fact that Marey, who is commonly regarded as a pure rationalist and orthodox scientist, participated in the study of psychic phenomena anticipates the following section that treats the more immaterial dimensions of Marey's research interests and opens a pathway with reference to Bergson's philosophy to situate the spiritual dimension within the perception of the beholder.

Marey's few excursions in his remarks addressing rather metaphysical issues appear as curiosities and exceptions in his work, which is classified and situated within a positivist agenda, and as will be discussed in the following sections, can be regarded as a diversion into a discourse on art and aesthetics. Obviously Marey could not have accommodated these more speculative concerns and certain sensitivities in the position that he held as a recognised member of academia and various scientific committees. However, the implicit metaphysical or at least philosophical appeal of his work becomes most evident when looking at some examples of the many interpretations of his work in the early 20th century that reached a variety of domains, scientific as well as artistic, from ergonomics, medical instrumentation, aeronautics, photography, sculpture, rapid- and slow-motion cinema. It is evident through the vast reception of his work by the avant-garde at the beginning of the 20th century, that even if it had not been his intention at all, his work clearly allows for metaphysical readings, as it has for example served to epitomise the

subjective dynamic sensation of felt time in art. An example for this is the way Marey's early experiments in pathological movements and his development of the Chronocyclegraph have been imitated by Frank Bunker Gilbreth and produced composite chronophotographs that are reminiscent of certain types of spirit photography[254]. This connection with spirit photography is also evident in the work of Anton Giulio Bragalia, who had an interest in para-psychological phenomena and later became a leading avant-garde set designer and theatre and film director. (Braun, 1992, p. 296) Bragaglia discusses his interests in the occult in relation to photography, to make the invisible visible, and which included spirit manifestation (so-called doubles) of mediums in trance, in his articles *I fantasmi dei vivi e dei morti*[255] and *La fotografia dell'invisibile*[256], published in 1913. (Braun, 1996, p. 51)

Bragaglia was part of the Italian Futurist movement. However, the Futurists strictly distinguished their arts movement from Bragaglia's photodynamism in a manifesto in 1913[257]. (Braun, 1992, p. 309) Braun points out that some aspects of Bergson's philosophy around movement and time together with Marey's scientific analysis of images provided an ambiguous synthesis for the Futurists, which was: '... sorely tested by the different directions taken.' (1992, p. 292) Bragaglia was concerned with the dynamics of motion, speed, energy, and their urban manifestations, in which he was influenced by Bergson, Spencer, and James, and also by the popular concept of the fourth dimension[258]. (Braun, 1992, p. 291ff) The widely adopted synthesis of art and science expresses the profound curiosity into the realms beyond the visible, the interior essence of things, the dynamic sensation of life, or as Bragaglia expressed it: '... the pulsing rhythm of the blood, the unceasing breath, the vibrant energy of gestures, for actions' (Braun, 1992, p. 299) — notions that are reminiscent of Marey's own research interests.

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[254] For illustrations of Gilbreth's photograph see Braun. (1992, pp. 340-8) Gilbreth's work, however, concerned foremost the capturing of time and economic movement in the process of mechanisation. See also Doane. (2002, p. 6)

[255] 'The phantasms of the living and the dead' (translation by the author)

[256] 'Photography of the invisible' (translation by the author)

[257] Braun has elaborated on the interrelation of Marey's work with Bragaglia's in *Fantasmes des vivants et des morts. Anton Giulio Bragaglia et la figuration de l'invisible.* (1996)

[258] For literature on the fourth dimension, see for example Hinton (1912), Philmus (1969), Ouspensky ([1909] 2005), Henderson (1983).

This conception of an underlying invisible spiritual principle of nature was a common theme at the end of the 19th century along with a revival of Goethe's, Schelling's and Hegel's *Naturphilosophie* in which spirit and physical nature were conceived as deriving from the same source, recalling Spinoza's philosophy of a universal substance. (Larson, 2005, p. 183)

Against this background of a history of ideas and cosmology, it becomes more obvious how Marey's objective to make the invisible visible has been strategically transferred into a metaphysical/ spiritist context in art to find sanction in positivism for the popular fascination with other dimensions. However, Marey would have been strictly opposed to such interpretations, but in the following section we will see that there is an apparent undercurrent in some of his own comments and the reception of his chronophotography that addresses the rather ephemeral dimensions in his work by references to the processes of the perception in the perceiver.

4.3 Marey's Chronophotography and the Analysis and Synthesis of Movement in Relation to Time

Considering the complexity of Marey's research interests, it would be unjustified to reduce Marey's work to the mere visual outcomes of his chronophotography as is suggested in most historical accounts, they promote him as a predecessor of the cinema[259]. A suggestion reinforced by the fact that Marey also started to use paper negative strips and later celluloid to produce film strips from 1888 onwards[260]. These visual outcomes merely formed part of the wider investigation into the synthesis of his movement analysis, which Marey had already started to conduct early on through the construction of artificial mechanisms such as organs like the heart and lungs, or

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[259] Throughout the 20th century it was a major issue in France as to who invented the cinema first, for this controversy see for example Braun. (1992, pp. 258-262)

[260] The publication by Font-Réaulx, et al. (2006) comprises a DVD with samples of Marey's filmstrips.

ornithopters[261], mechanical insects and birds. (Braun, 1992, p. 22) These mechanisms that served to synthesise Marey's movement analysis further led him to the application of first the Zoëtrope[262] and later the cinematographic mechanism of image projection. This method of synthesis is what interests us here.

Marey summarises the developments of his later work up to 1894 in *Le Movement* (*Movement*, 1895), where he elaborates in an exemplary fashion on a wide spectrum of his research from graphic records to photography, chronophotography on fixed plates, and on moving plates and its application to human and animal movement, experimental physiology and microscopic chronophotography and a concluding chapter on the: '... synthetic reconstruction of the elements of an analyzed movement.' (1895, pp. 304-318) Marey had developed his fixed-plate chronophotographic camera into a mobile-band Chronophotograph in 1888 using first paper ribbon, coated with a silver bromide emulsion, and later celluloid. (Lefebvre, 2005) He gives a summarised account of various apparatuses of image projection that were available at the time, and he scrutinises these various technologies from the perspective of both technological and aesthetic qualities in terms of brightness, focus and illusion of continuous movement. Marey believed in the progression of a technical solution for the acknowledged deficiencies and limitations of the human perceptual apparatus, and emphasises the need for projection in order to achieve an accurate movement synthesis. He elaborates in particular on the technological problems for a successful projection with specific details as to the difference of an extremely short exposure time in the analysis process (for example 1/25.000 of a second for an insect's wing) and the need for extended exposures during the projection. Marey, as with many others involved in this kind of research, had a clear understanding of the requirements for projection. He gives a critical self-reflexive account of the developments

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[261] Marey even had his assistant Tatin - who took over the aeronautic research - construct a model aircraft (ornithopter) in 1879 (see illustrations in Braun, 1992, p. 50; or Egan, 2006), which they tested at the military aerostation at Chalais-Meudon, anticipating significant results that would become integral to aeronautics much later on. (Braun, 1992, p. 51) For further illustrations of artificial mechanisms see the illustrations in Braun (1992, pp. 33-34, 36, 38)

[262] The Zoëtrope was invented by William George Horner of Bristol in 1834 under the name Daedelum (Rickards, 2000, p. 365) and not marketed until 1867. (Mannoni, 2000, p. 218)

of his Chronophotographic Projector, which he also proposed to present to the *Académie des Sciences* in 1892[263] (1992, p. 173):

> We have therefore constructed a special apparatus, in which an endless length of film containing forty or sixty figures, or even more, is allowed to pass without cessation under the field of the objective. The illumination, which is from behind, and consists either of the electric light or the sun itself, projects these figures upon a screen. This instrument produces very bright images, but it is noisy, and the projected figures do not appear as absolutely motionless as one could wish[264]. (Marey, 1895, p. 318)

Marey, however, had no interest in the commercial exploitation of the image projection system, contrary to his assistant Demenÿ who split from Marey in 1893 to set up his own business[265]. It is reported that Marey had been contacted by the *Musée Grévin* in 1891, famous for hosting Charles-Émile Reynaud's *Théâtre Optique*[266], but nothing appears to have come from this invitation. (Mannoni, 2000, p. 353) Although there is no record of Marey's reply, it is assumed from his body of work and utterances that he would not have

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[263] Braun reports that no actual demonstration resulted from the correspondence with the *Académie des Sciences* in that year. (1992, p. 173)

[264] It was not until June 29th in 1894 that Marey got his Chronophotographic Projector patented (Rossell, 1995), and not until 1896 that he achieved a satisfactory method of projecting. (Braun, 1992, p. 173)

[265] Georges Demenÿ who was Marey's laboratory chief and assistant from 1881-1893 attempted to set up his own company, the *Société Générale du Phonoscope*, in December 1893 to exploit his Phonoscope which he had developed in the Marey laboratory and patented in March 1892. Originally developed as a tool to study the mechanics of speech and a speaking aid for the education of deaf mute children he intended to eventually exploit is as a technology to replace family albums – an enterprise that failed. (Rossell, p. 123-125, Braun, 1992, p. 180) Demenÿ patented Marey's Chronophotograph in 1893 under his own name, which led amongst other things to their separation. Marey, however, continued engaging with further developments of his Chronophotographic Projector, as is evident from the last paragraph in *Movement* (1895): 'Having arrived at this point in our researches, we learned that our mechanic had discovered an immediate solution of this problem, and by quite a different method; we shall therefore desist from our present account pending further investigations.' (Marey, 1895, p. 318) Rossell reminds us that the commercial exploitation, however, was too expensive (1998, p. 48) and Marey tried only very briefly and unsuccessfully to sell his chronophotographic camera for scientific purposes.
For more detailed accounts of the relationship between Marey and Demenÿ see Marta Braun (1992, pp. 66ff, 173ff).

[266] Charles-Émile Reynaud had projected his animated views of his *Théâtre Optique* in approximately 12.800 performances from 1892-1900 for over 500,000 viewers. (Abel, 1994, p. 466, Rossell, 1998, p. 21)

been interested in showing his chronophotographs to the general public[267]. Marey makes his interest in projection explicit in a statement from 1899, wherein he refers to the popularity of the emerging cinema:

> The absolutely perfect projections that naturally arouse the enthusiasm of the public are not those, speaking personally, that captivate me the most. The most appealing chronophotography is not the most useful. Chronophotography provides greater assistance, perhaps, in its simple analytic form than in its synthetic, however satisfying and astonishing that resurrection of movement may be. I make an exception for those cases when, in projecting the representative images of a movement's phases, we modify the conditions of speed in which the movement was produced... It is only there that, facilitating human observation and making it more acute, [chronophotography] is the instrument of scientific knowledge. (Braun, 1992, p. 196)

As is clearly expressed in this statement, Marey's projection remained a project for entirely scientific purposes. This reflects similar pursuits by other scientists at the time[268], such as Albert Londe, director of the photographic service at the Clinic for Nervous Disorders at the *Hospice de la Salpêtière* who confirms in a publication in *Le Chasseur Français* in 1896:

> ... from a scientific point of view, it is the photographic analysis of movement which has much greater importance; by this we can discover laws which have been unknown until our times, we enhance our investigative methods; synthesis, on the other hand, if it can serve as a control or verification, if need be, cannot extend the sum of our knowledge. (Mannoni, 2000, p. 352)

Bergson disagreed, however — for him the quality of the underlying life-force could not be measured by scientific means, since: '... the function of science is to scan the rhythm of the flow of things and not to fit itself into that flow.' (1998, p. 346) This view is reminiscent of Marey's work in his original motivation but not in the execution of his research. In this sense Bergson argues that philosophy goes further than science, it reaches beyond the studies of phenomena apprehended by our senses, to which substances like the ether, or a force like electricity can also be counted. In Bergson's

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[267] The *Musée Grévin* though did eventually show chronophotographs but with Demeny's Phonoscope.

[268] For the wider applications and inventions of chronophotography in Europe see for example Mannoni. (2000, pp. 346-350)

view the division and re-composition of matter will never reveal the principle of its evolution. He rather suggests:

> Making a clean sweep of everything that is only an imaginative symbol, he will see the material world melt back into a simple flux, a continuity of flowing, a becoming. And he will thus be prepared to discover real duration there where it is still more useful to find it, in the realm of life and of consciousness. (Bergson, 1998, p. 369)

However complex and accurate Marey's research components and set-ups may have been, in terms of the relationship between space and time, according to Bergson, Marey like Muybridge, merely takes the external passage of a body moving through space into account as they are viewed from an outsiders' perspective, externalised in space. Marey opens the first chapter in *Movement* (1895) with the following lines:

> Time, like other magnitudes, can be represented in a graphic form by straight lines of various lengths. In this way the respective duration of several events can be gauged by the various lengths of parallel straight lines placed side by side... With regard to the exact order and duration of the events, they can be indicated by means of a scale, subdivided into divisions which represents years, days, fractions of seconds. (1895, pp. 1-2)

Instantaneous photography in Marey's work displays the simultaneous appearances of singular instances of movement superimposed in one frame, like several instances of the hand of a clock next to each other, exactly as Bergson exemplified in a statement cited in section 4.1, using the analogy of the fingers on the clock measured as simultaneities in reference to Zeno's paradox[269]. These instances according to Bergson signify: '... the space traversed, the only thing, in fact, which is really measurable. Hence there is no question here of duration, but only of space and simultaneities.' (2001, p. 116) Braun points out that since the camera was not able to measure time as duration, Marey attempted to combine the analysis of photographic images with his other graphing instruments in order to measure the time interval as a whole uninterrupted momentum (Braun, 1992, p. xviii): as a single and legible representation of these various forces at work; an aspect that has also been elaborated by Mary Ann Doane (2002). Marey's

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[269] Doane discusses Zeno's paradox in view to Bergson's philosophy in relation to the recording and legibility of time in chronophotography. (2002, pp. 172-205)

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approach essentially concerned a measurement of the body state as a whole, which is an aspect unavoidably overlooked when interpreting his chronophotography in terms of single heterogeneous states, to which Marey refers in a publication in *Science* in 1883 as: '... the momentum of the opposing forces which represent the power and the resistance in the animal machinery.' (Braun, 1992, p. 66) This objective is most explicitly expressed through Marey's composite images that superimposed the single instantaneous attitudes and made them appear as if merging into one whole — in other words, they appeared as if representing simultaneity. It could be argued that while the analysis of the movement in the images did not allow for a movement to appear as duration, these composite images revealed the process of synthesis in a symbolic way — how separate instances from spatial configurations in the internal perception of the beholder can turn into a whole of intersecting conscious states — returning us to that which Bergson has defined as *durée*.

The perception aspects of the process as exemplified by Bergson, mostly remained hidden and obscured in the scientific accounts of movement analysis of the time. Instead the focus has been on the textual analysis of the images themselves; what was achieved through this measurement of movement, however, concerned merely moments in space, single instances, and was unsatisfactory for Bergson who claimed:

> We involuntarily fix at a point in space each of the moments which we count, and it is only on this condition that the abstract units come to form a sum. No doubt it is possible ... to conceive the successive moments of time independently of space; but when we add to the present moment those which have preceded it, as is the case when we are adding up units, we are not dealing with these moments themselves, since they have vanished for ever, but with the lasting traces which they seem to have left in space on their passage through it. (2001, p. 79)

These insights led Bergson to his famous postulate of multiplicity that differentiated two kinds of multiplicity that are significant to mention in the context of Marey's work:

> ... that of material objects, to which the conception of number is immediately applicable; and the multiplicity of states of consciousness, which cannot be regarded as numerical without the help of some symbolical representation, in which a necessary element is space. (Bergson, 2001, p. 87)

This suggests that Marey's work, especially his composite chronophotographies, could be read as not merely representing simultaneities of movements in space, but as multipliticities, which in the moment of the perception of a movement are perceived internally as an undivided whole, but as soon as the whole splits up into single units Marey's single images of his chronophotography are merely symbolical representations in space of a duration that can only be perceived through consciousness. When Marey describes his method as: '... the process which thus serves to register the duration and sequence of events' (1895, p. 3), he understands duration here in terms of spatial time measurements, hence in a different way than Bergson refers to it: '... for the interval of duration exists only for us and on accounts of the interpenetration of our conscious states' (Bergson, 2001, p. 116), which according to Bergson constitute an 'entirely qualitative multiplicity, an absolute heterogeneity of elements' which melt into one another. (Guerlac, 2004, p. 41) Bergson elaborates on this aspect:

> The measuring of time never deals with duration as duration; what is counted is only a certain number of extremities of intervals, or moments, in short, virtual halts in time. To state that an incident will occur at the end of a certain time t, is simply to say that one will have counted, from now until then, a number t of simultaneities of a certain kind. (1992a, pp. 12-3)

Thus contrary to Marey for whom duration can be described as a mathematical, measurable and homogeneous entity, for Bergson, the experience of time as a quality of *durée* can not be visualised as sequences in still frames, as Marey attempted with his chronography, chronophotography and later in his chrono-cinematography; but can only be perceived by the observer internally in the heterogeneity of states of consciousness. The geometrical basis of Marey's conception of time is exemplified in his chapter on the 'Applications of Chronophotography to Mechanics' (Marey, 1895, pp. 84-102) and in the motion capture technique called 'Geometrical Chronophotography', also referred to as *trajectoires squelettiques* or *l'homme squelette* (Mannoni, 2006, p. 30). In this method, the surface of the object under observation has been reduced to a fine thin white line or points, consisting of shiny metal, placed along the side of a black body suit[270]. The images obtained merely reflect the movement exercised in thin white lines against the

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[270] For illustrations and context see Marey (1895, p. 60), Braun (1992, pp. 83-4, 94-5, 98-103).

black background, which according to Marey subordinated space to a more precise graphing of the aspect of time:

> In the diagram thus obtained, the number of images may be considerable, and the notion of time very complete, while that of space has been voluntarily limited to what was strictly necessary. (Marey, 1895, p. 60-61)

The method Marey deploys here is particularly interesting from a philosophical perspective. He expresses clearly his main interest in time and attempts to eliminate space as much as possible. Bergson illuminates a similar attempt from a different perspective drawing on his own experience from his previous scientific training:

> Ever since my university days I had been aware that duration is measured by the trajectory of a body in motion and that mathematical time is a line; but I had not yet observed that this operation contracts radically with all other processes of measurement, for it is not carried out on an aspect or an effect representative of what one wishes to measure, but on something which excludes it. The line one measures it immobile, time is mobility. The line is made, it is complete; time is what is happening, and more than that, it is what causes everything to happen. (Bergson, 1992a, p. 12)

Marey's efforts are clearly driving towards an understanding of duration, as far as he is able to within the constraints and limits of the scientific rational paradigm. He shares with Bergson an insistence on rigour, fact and reason to support his claims. But while Bergson gives credit to science, he also announces its limits in relation to understanding the very forces and principles of life:

> Reality is global and undivided growth, progressive invention, duration: it resembles a gradually expanding rubber balloon assuming at each moment unexpected forms. But our intelligence imagines its origin and evolution as an arrangement and rearrangement of parts which supposedly merely shift from one place to another... (Bergson, 1992a, p. 96)

As we have seen according to Bergson it is only through intuition that reality could be grasped in its fullness which he expressed as a continuously changing whole and 'swelling out' (1992a, p. 96). In his view it has extension as well as duration:

> ... but this concrete extent is not the infinite and infinitely divisible space the intellect takes as a place in which to build. Concrete space has been extracted

from things. They are not in it; it is space which is in them. Only, as soon as our thought reasons about reality, it makes space a receptacle. (1992a, p. 96)

Contrary to Bergson's view of space being contained by consciousness, Marey conceived of technology as an extension of the intellect; he regarded it as an extension and improvement of our psycho-physiological perceptual abilities, while for Bergson, technology in this sense fell under the same betrayal of physiological and scientific determinism, which he saw closely bound up with mechanistic theories of matter. In his view science reduced psychic states to molecular movements in the brain, by which it followed Auguste Compte's essential biologism that proceeded from the 'positive theory of cerebral function.' (Stocking, 1987, p. 29) Bergson instead argues: '... for in movement we may find the reason of another movement, but not the reason of a conscious state[271].' (2001, p. 148)

Marey's view on the mechanism of chronophotography was that: '... the illusion of the senses has faded but it has made way for the satisfaction of the intellect.' (Braun, 1992, p. 254) This statement is consistent with the confinement of his scientific investigations to the abilities and functions of the intellect, through which he attempted to study the very principles of life in the expression of movement. When looking at Marey's research from a Bergsonian perspective, it sheds light on his intrinsic philosophical interests in energy and force, while at the same time it reveals the pitfalls of rationalist science in the way it cannot accommodate the very profound creative processes of the psychic life. Marey was struggling to diminish the interstices between moments of stability, which he was able to capture in his analysis of movement, instances that our ordinary human perception was not able to detect. Mary Ann Doane has pointed out that Marey's graphing methods in this sense provided a more perfect way to inscribe time as (measured) duration, since it did not leave any gaps as instantaneous photography did. (2002, p. 59ff) In her view Marey attempted to represent 'all time' without loss. (2002, p. 61) The methods Marey chose, however, all appear to have been dealing with time as quantitative expression, and

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[271] For Bergson certain cerebral substrata are necessary for psychical states, but that is all that the interdependence of the mental and the physical shows in the pure experience: 'From the fact that two things are mutually dependent, it does not follow that they are equivalent.' (1998, p. 354)

not with the actual experience of time as duration in a qualitative sense of an experience of an internal state. From a Bergsonian perspective Marey merely touched the surface of symptoms and actions of a life-force that lay much deeper within the internal processes of the psychic life. In his view the intellect is unable to grasp this very activity and creative force.

This insufficiency led Bergson to search for a solution in metaphysics and concretely within psychic life. His approach stood in contrast to the defenders of positivism who in France were strongly influenced by Auguste Compte's *Positive Philosophy* from 1842, which: '... offered the most systematic and influential model for an ostensibly *scientific* study of human progress in civilization.' (Stockings, 1987, p. 29) Comte defined the three main stages of human development through evolution as a shift from the *theological*, to the *metaphysical* and finally the *positive* phase[272]. (Braun, 1992, p. 13) Marey's work followed this tradition, through which he understood psychic processes according to the same laws as the material world. Bergson on the other hand recognised that time as duration fell through the meshes of the scientific method and describes his necessary move to philosophy and the study of psychic life:

> But this duration which science eliminates, and which is so difficult to conceive and express, is what one feels and lives. Suppose we try to find out what it is? – How would it appear to a consciousness which desired only to see it without measuring it, which would then grasp it without stopping it, which in short, would take itself as object, and which, spectator and actor alike, at once spontaneous and reflective, would bring ever closer together – to the point where they would coincide – the attention which is fixed, and time which passes? Such was the question; and through it I delved deep into the domain of the inner life, which until then had held no interest for me. (Bergson, 1992a, p. 13)

According to Bergson it was only through the processes of intuition that time as duration could be grasped. He understood intuition as a profound introspective action that puts the perceptual process within the flux of psychic states of the deep-seated self. (Bergson,

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[272] Bergson instead countered this view: '... [t]he cardinal error which, from Aristotle onwards, has vitiated most of the philosophies of nature, is to see in vegetative, instinctive and rational life, three successive degrees of the development of one and the same tendency, whereas they are three divergent directions of an activity that has split up as it grew. The difference between them is not a difference of intensity, nor, more generally, of degree, but of kind.' (1998, p. 135 — emphasis in the original)

1998, p. 125) Intuition for Bergson consisted of more than a simple feeling or impulse (as often commonly understood)[273] or as a 'vision', but it requires almost a reversal of the normal direction of consciousness, a counter movement to the 'natural bent of the intellect' (1998, p. 30), '... turning thought upon itself in order that it may seize this ability and catch this impulse' that constitutes the very creative activity of our becoming. (1992a, p. 94) This continuous activity of a 'seizing upon itself' in intuition Bergson calls the 'ZigZags' of his doctrine. Guerlac reminds us that: '... [f]rom these departures and these returns are made the zigzags of a doctrine which "develops", that is to say which loses itself, finds itself again and corrects itself indefinitely.' (Guerlac, 2004, p. 45) For Bergson it is a question of making direct contact again: '... with this even more subtle thing which is intuition itself.' (Guerlac, 2004, p. 46) In contrast to a transcendental experience beyond the material, intuition instead constitutes a plunge into the depths of time within matter. The contact that is created as a consequence drives an impulse which develops into movement, implying an 'actualization as invention[274].' (Guerlac, 2004, p. 52) It also needs to be remembered that Bergson makes a distinction between instinct and intuition, since in his view intuition can be understood as a further developed capacity of instinct: '... by intuition I mean instinct that has become disinterested, self-conscious, capable of reflecting upon its object and of enlarging it indefinitely.' (Bergson, 1998, p. 176) Bergson describes intuition further as 'divining sympathy' (1998, p. 175) and relates it to the intrinsic creative processes, which in his view are specifically expressed in the creative processes of artists. Some of these references to art and the artistic processes of creativity in both Marey's and Bergson's work will be discussed in the following section.

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[273] This kind of common notion of intuition is frequently reported in relation to the origins of certain scientific ideas and inventions in science, however, they have mostly been obscured. When applying Bergson's concept of intuition it would seem that during the process of analysis by the intellect, for example in scientific experiments, the scientist continuously would go back and forth to this initial intuition to remember the quality he had grasped. This profound part of the processes of our mind is usually obscured, because, precisely as Bergson has pointed out, it is almost impossible to transfer this experience, to express it, because as soon as we take it out from our internal flux of duration, it turns into mere fragmentation, characterised by language and intellectual and social habitus.

[274] This understanding of the process of intuition according to Guerlac (2004) runs counter to Deleuze's notion of intuition as 'method.'

4.4 Synthesis of Movement and Convergence of Science and Art in Marey and Bergson

The following discussion attempts to illuminate some commonly underexplored aspects of Étienne-Jules Marey's work, especially his engagement in the study of the depiction of movement in art, and his apparent explicit concern with aesthetics with regard to chronophotography, from which the idea of another dimension to the quotidian emerges. When Kracauer discusses the transient character of the cinema with an emphasis on Jean Epstein's notion of a 'reality of another dimension', it is notable that he considered the scientific and the artistic biases of film as complementary[275]. (1960, p. 53) These aspects will be examined in what follows relation to the intrinsic convergence of science, technology and the arts in Marey's oeuvre and which will once more put his work in a dialogue with Bergson's system of thought.

Through his investigations Marey shows the quotidian in a dimension we normally do not perceive consciously, which the apparatus makes visible or rather translates into visible forms. This in some respect gave scientific stature to metaphysics at a time when science disposed itself of these dimensions. At least it accounts for a certain sensitivity in Marey's work that must have been difficult or even impossible to accommodate within the discipline of positivist science. It almost seems as if he diverted these aspects to a discussion of art and aesthetics in order to sanction this dimension. His work, seen in this complexity of ideas, can be regarded as a paradigm that provides insight into a constituent part of the critical mass from which the cinema emerged, but which in the way it finally took form, had no direct relevance at all, and Marey is not an exceptional case in this regard. Punt has reminded us that:

> ... not only did many of them [scientists, entrepreneurs, etc.] use moving pictures to represent different mental models, but they also functioned publicly in a prevailing cult of personality which placed a burden of representation on their patents that had little to do with making pictures move. (2000, p. 147)

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[275] Landecker discusses the significance of the connection Kracauer establishes between the origins of film and the scientific practice, in that it does not merely refer to an objective realism, but to a reality of another dimension in Epstein's sense, but rather a comparison between the artistic film and the scientific film. (2005, pp. 904-5)

Notwithstanding his position as a renowned physiologist, for which Marey had to wait with forbearance as his engineering solutions were initially not commonly regarded as reliable scientific instruments, his comments on his own work reveal a serious concern with the artistic quality of photographic images[276]. In a letter during his yearly winter retreat in Napels he writes to his Chief Laboratory Assistent Demenÿ, commenting on some films that he received from him for examination: '*C'est laid... Les ombres portées sont grotesques ou obscènes... Au point de vue artistique, il y a bien du déche. La question de l'éclairage me semble domineer tout et je voudrais bien en parler avec vous*[277].' (Mannoni, 2006, p. 26)

When Marey saw a series of facial close-ups of movements of speaking persons that Demenÿ produced in 1892 in response to a commission by the National Deaf-Mute Institute, he suggested that he should only use good looking women to adequately demonstrate the facial expressions from a smile to anger. (Mannoni, 2006, p. 27; Braun, 1992, p. 176) Mannoni further reports on Marey's comments on Demenÿ's capture of the concierge of the *Station Physiologique*: '*Le parleur Paul est bien affreux ... Quelle horrible grimace! Est-ce un éternuement*[278]?' Marey, however, commented positively on them from a technical point of view with regard to the amount of detail in the movements. (Mannoni, 2006, p. 27) Later Marey refers to Demenÿ's chronophotographic studies of facial expressions in his publication *Movement* (1895) in a more neutrally assimilated tone and mentions Paul's expressions again appearing as an ugly grimace, in his view caused by the 'gradual transitions' of 'exceeding fleeting expressions.' (Marey,

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[276] Marey elaborates on the art of lighting, depth and contrast especially in the chapter 'Locomotion in Man from an Artists Point of View'. (1895, p. 185)

[277] 'This is ugly... The shadows are either grotesque or obscene... From an artistic point of view, they are a waste. The issue of flashlight seems to dominate everything in my view and I would like to talk to you about this.' (translation by the author)

[278] 'The speaker Paul is dreadful... What a horrible grimace! Is this supposed to be a sneeze?' (Translation by the author). This recalls Thomas Alva Edison's depiction of a sneeze from January 1894 recorded by his chief collaborator W.K.L. Dickson. (The clip is online at http://memory.loc.gov) *Fred Ott's Sneeze* was commissioned by the journalist Barnet Phillips, to illustrate an article devoted to the kinetoscope in *Harper's Weekly* on March 24, 1894. In Philippe-Alain Michaud's comment referring to an intercultural comparison of the sneeze, the subject appears as stripped of self-mastery, expressing the vital energy of the emerging cinema as an ecstatic convulsion. (2004, p. 56)

1895, pp. 182-3) He explains the strangeness of the instantaneous photographs as a matter of the unknown, the unfamiliarity of single positions of the movement in space, which according to him completely disappears when watching the single frames in sequence in a Zoëtrope. (Marey, 1895, pp. 182-3)

Marey attributes his sensibility for aesthetics to the way that chronophotography has changed the familiarity of our visual perception; a statement that anticipates the future influence of his own works on early 20th century modern art as elaborated in Braun. (1992) Marey comments:

> These positions, as revealed by Muybridge, at first appeared unnatural, and the painters who first dared to imitate them astonished rather than charmed the public... How will this education of the eye end, and what will be the effect on Art? (1895, p. 183)

In this context Braun argues that Marey went against the realist approach to photography that merely attempted to align the photographic image with the visual perception of the eye (Braun, 1992, p. 254), while at the same time he was very particular about the 'natural look' of the models and movements. (Marey, 1895) One would be forgiven for reading the following statement by Marey as a (film) casting instruction:

> The great difficulty is to find a subject capable of giving these various expressions in a perfectly natural manner. Most people would only produce a grin or a grimace. Clever actors would no doubt succeed better in assuming the various emotional expressions; and the method might even be useful to them in their own studies. But that which is rendered to perfection by chronophotography is the movement which accompanies the act of articulation. M. Demeny has paid special attention to this extension of our method, and he has met with immense success[279]. (1895, p. 180)

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[279] Marey further welcomes the well-directed light in the photographs and the value they have from a phonetic point of view to the service of the teaching of deaf mutes and reports on the positive results obtained from a successful reading of a conversation via chronophotographies by deaf mutes. (1895, pp. 181-2)

This observation recalls a critical review in a British magazine that was published following a presentation of instantaneous photographs by Eadweard James Muybridge at the Royal Institution in London in 1882[280]:

> The first [the paintings] are all movement, activity and elegance; the second [Muybridge's images] are of an unbelievable rigidity and ugliness. ... Perhaps you ask from where this certainty comes? Why, from common sense: the drawings present us with *movement*, the photographs represent still animals, fixed in more or less ghastly positions![281] (Mannoni, 2000, p. 316)

While Mannoni interprets this comment from the vantage of the present and reads in this citation merely 'insincerity', this reception of Muybridge's stop-motion photography is of particular contemporary interest, especially in relation to Bergson's theory of time as duration, since the proof of the scientific validity of the photographs seems not to have been received as convincing due to a lack of aesthetics. It could be argued from a Bergsonian point of view — and this is no more than an interpretive hypothesis in the context of this thesis — that the aesthetic quality, which the beholder of the series of photographs missed, concerns the very process when motion turns into a qualitative experience of time within the interpenetrating states of consciousness — which involves the active engagement of the perceiver.

Marey implicitly refers to the process of perception in his comment on the appearances of attitudes in space which proceed from a particular instantaneous posture in the past: '... it might be said that the modelling of a limb could not only express the action of the time being, but could suggest to a certain extent its immediate successor.' (Marey, 1895, p. 173) Bergson reveals the limitations of this method of science, and simultaneously posits the indeterminacy of the future:

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[280] This was after Muybridge's successful and widely celebrated visit to Paris where he had been welcomed by scientists and artists alike in a private demonstration at Marey's home. Braun quotes a review of the event in the Paris *Globe* which names some of the eminent scientists and artists present at this presentation. (1992, pp. 52-3)

[281] Marey offers the following explanation to this impression of ugliness: 'What does this fact imply? Is it not that the ugly is only the unknown, and that truth seen for the first time offends the eye? We are often faced by this question while examining instantaneous chronophotographs of horses moving at a great pace.' (1895, p. 183)

This is, in fact, quite natural; the role of science is to foresee. It extracts and retains from the material world that which can be repeated and calculated, and consequently that which is not in a state of flow. (1992a, p. 13)

In this example Bergson's notion of flow refers to his concept of *durée*, consisting here of the intrinsic pleasure of the conscious engagement with an aesthetic experience in the perception of the present moment, rather than a fixed posture of the past as exemplified by Marey. According to Bergson the indivisibility of the qualitative experience of time, *durée*, is related to the indeterminacy of the future:

... our intelligence images its origin and evolution as an arrangement and rearrangement of parts which supposedly merely shift from one place to another; in theory therefore, it should be able to foresee any one state of the whole: by positing a definite number of stable elements one has, predetermined, all their possible combinations. (1992a, p. 96)

In relation to this Bergson gives an example of the experience of the quality of grace in *Time and Free Will* (2001, pp. 11-13):

If curves are more graceful than broken lines, the reason is that, while a curved line changes its direction at every moment, every new direction is indicated in the preceding one. Thus the perception of ease in motion passes over into the pleasure of mastering the flow of time and of holding the future in the present. (2001, p. 12)

Rodin's sculptures contemporary with Marey's and Bergson's works express a similar attitude as elaborated by Bergson — the progressive unfolding of a gesture, as Pisano summarises: '*En bref, le glissement de l'avant dans l'après*[282].' (Pisano, 2006, p. 97) Georges Didi-Hubermann exemplifies:

En réalité, puisque nous ne connaisson pas le nombre d'intervalles possibles d'une position à une autre – l'œuil nous restitue un mouvement dans sa continuité – l'artiste ne peut penser le mouvement qu'en termes de métamorphose et de "perpétuelles indiscernabilités entre le bientôt et l'encore"[283]. (Pisano, 2006, p. 97)

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[282] 'In short, the passing of the future in the past'. (Translation by the author)

[283] 'In reality, since we do not know the number of possible intervals from one position to the next – the eye restores to us a movement in its continuity – the artist can conceive movement only in terms of metamorphosis and "perpetual indiscernibilities between the near future and the persisting"'. (Translation by the author)

In this regard it could be said that Rodin's concept of time incorporated in sculpture, is

one that also allows us to perceive in Marey's *La Vague* the three important movements

as analysed by Pisano: the approach, the breaking and the retrieval. From Rodin's and

Bergson's understandings of time as duration, in which they share a similar view in

relation to art, it seems that Marey, despite all his artistic sensitivities and interests,

profoundly misunderstood the conception of motion in art beyond the material

appearance of the figure, which could be relayed back to his misconception of duration as

durée. It is notably Demenÿ's chronophotography with blurred intervals that comes

somewhat closer to a reading of the figure in a transposition of intermediate states, which

on a photographic level is also expressed by the grainy low contrast photographs by

Edward Steichen of Rodin's Balzac, of which Rodin claimed that this is how he wanted

his Balzac to be seen[284]. It appears as curious parallelism that Balzac had proposed a

Theory of Specters, on which Nadar (Gaspard-Félix Tournachon) comments:

> According to Balzac's theory, all physical bodies are made up entirely of layers
> of ghostlike images, an infinite number of leaflike skins laid one on top of the
> other. Since Balzac believed man was incapable of making something material
> from an apparition, from something impalpable — that is, creating something
> from nothing — he concluded that every time someone had his photograph taken,
> one of the spectral layers was removed from the body and transferred to the
> photograph. Repeated exposures entailed the unavoidable loss of subsequent
> ghostly layers, that is, the very essence of life. (Krauss, 1978, pp. 31-2)

It is a curious coincidence that through Steicher's photograph Rodin's Balzac appears to

move as though alive; similarly a certain ephemeral character appears in Bragalia's

photographs, especially in his portraits from 1911[285]. These attempts can be characterised

as capturing time as duration beyond the moment of the presence as an instant. The

perception of the near future in the present was one of these concerns, also discussed by

Marey or Rodin, and reminiscent of divining practises. Bergson situates this sensation of

'precognition' or 'presentiment' — as we would call it nowadays — within the conscious

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[284] The photograph can be found online at:
http://www.cc.ncu.edu.tw/~sctseng/ArtandGender/06_passion/11.jpg
[285] Braun included some of Bragaglia's photographs in *Picturing Time* (1992, pp. 297-8, 303)

states and internal flux of time. He articulates aesthetic pleasure as a conscious process into which an affinity with sympathy infiltrates:

> But the truth is that in anything which we call very graceful we imagine ourselves able to detect, besides the lightness which is a sign of mobility, some suggestions of a possible movement towards ourselves, of a virtual and even nascent sympathy[286]. (Bergson, 2001, p. 13)

One would go too far to compare Marey's concern with good-looking models with Bergson's notion of sympathy — even though it raises an intriguing point of intersection — as a closer examination of theories regarding taste and aesthetics especially in the context of the late 19th century falls outside the scope of this thesis. However, what emerges from the previous discussion is that Marey not only influenced early 20th century modern art such as Cubism, as Braun has elaborated (1992, pp. 228-318), but he himself had an interest in the aesthetic representation and expression of movement in art. This interest according to Rollet was consistent with traditional academic art, such as ancient paintings of Italian and Napoletanian origins, as well as those by some contemporary artists, Gaetano Esposito and Mariano Fortuny, who were acquainted with Marey. (Rollet, 2006, pp. 106-7) In this respect Marey saw his contribution to the arts in the application of scientific studies of movement for artists' training, which for him was aligned with the scientific quest for truth: 'Art and Science join hands in searching after truth.' (Marey, 1895, p. 205)

Marey dedicated a whole chapter in *Movement* (1895, pp. 169-185) to the 'Locomotion in Man From an Artistic Point of View' in which he refers to artworks from Antiquity and the way the movement of horses and human locomotion have been drawn and painted in

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[286] Bergson uses the French term *sympathie*; it is questionable if in its conception it recalls the term 'empathy', which was a term used in psychology at the time, as for example originally expressed in Robert Visher's influential work *On the Optical Sense of Form* from 1873. This question would need further examination, especially since Bergson in his oeuvre relates to 'intellectual sympathy'; the main question is: does this conception involve an empathic or even emotional, affective relationship or is it to be understood rather somewhere between such an intimate entanglement and a conception of a Brechtian intellectual, externalisation of emotions. For further studies it could be suggested that research into consciousness and performance/ theatre might possibly provide a context to study these notions further; see Daniel Meyer-Dinkgräfe for example on intercultural and philosophical approaches to acting styles (2001) or the elaborations of a discourse on consciousness within theatre and performance art (2005).

various media. He even illustrated this chapter with monochrome reproductions of some artworks contrasting with his chronophotography[287]. He admitted modestly that he felt unqualified to speak of Aesthetics (Marey, 1895, p. 167), notwithstanding emphasising the exactness as well as the distortions of certain representations by movements in the arts from a point of view that seems to bring together paradigms of science with the interests of art. Marey further suggests that modern techniques such as chronophotography may be useful as a tool to apply these exact studies of movement to the artist's training. Marey clearly sees the advancements in physiological studies not only as a direct link to, but also as a modern version of, the anatomic studies of life-model drawing; as an exemplification Marey and Demenÿ published the portfolio *Etudes de physiologie artistique faites au moyen de la chronophotographie* in 1893 (Braun, 1992, p. 268)[288].

To suggest that Marey might have taken inspiration from art for his physiological studies, may be too far-fetched but probably not entirely implausible, considering that the aesthetic quality of his chronophotographs is certainly not an accident, but appears from his correspondence with Demenÿ and certain references in *Movement* (1895) as a very sophisticated and elaborate process of an intentional characteristic of his investigations. Font-Réaulx emphasises for example the sophisticated chosen frame of Marey's film *La Vague* (the wave) from 1891: the village in the background forming a filmic décor, and a threefold structure in the framing — the triple arrangement of the rocks, and the triple passage of the wave arriving, breaking and retreating, and the well chosen temper of the sea — not too calm but with substantial waves. (Font-Réaulx, 2006, p. 56) Font-Réaulx further comments on the way knowledge emerges from the beauty of the images revealed by Marey's scientific experiments: '*L'intuition de Marey étaye toute son enterprise*

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[287] Marey for example points to the exact position of an instantaneous photograph of a runner with the position of a runner on a Greek vase (1895, Fig. 110 and 111, pp. 170-1)

[288] Marey did not follow up this first volume after Demenÿ's departure from the *Station Physiologique*, however, Albert Londe and Paul Richer published their *Atlas d'anatomie artistique* and *Physiologie artistique de l'homme en mouvement* in 1895, drawing on the popularity of Marey's and Demenÿ's previous port-folio. (Braun, 1992, p. 269)

scientifique. Mais il laisse aussi se developer, au cours de son travail de savant, son émerveillement pour la beauté des formes qu'il observe.[289] (Font-Réaulx, 2006, p. 56)

In the late 1890s Marey applied his proclivity for the artistic use of the scientific studies of locomotion in chronophotography to the modelling of birds in flight sequences to verify his analysis. (Braun, 1992, pp. 141-2, 267) These bronze models not only show his considerable artistic talent, but also refer to the serious consideration of art in his work, since bronze was a professional sculptor's material, and Marey for his scientific purposes could have simply used clay models or plaster casts[290]. This also relates to the academic tradition of the 'Beaux-Arts', which in the 19th century regarded sculpture the most difficult material to manifest movement as a consequence of the apparent immobility its presence suggested. (Pisano, 2006, p. 95) This is exactly why Rodin's artistic intervention is claimed to be so radical, as in the example of his Balzac or '*L'homme qui marche*' in which movement supervenes posture, and time crystallises in form. It can only be suggested that Marey may have chosen bronze in order to make an intervention within the arts establishment by showing how bronze could capture the movements of birds and transform its appearance of materiality.

Bergson is, however, emphatic when relating 'lived' *durée* to any kind of material form:

> But in reality the body is changing form at every moment; or rather, there is no form, since form is immobile and the reality is movement. What is real is the continual *change of* form: *form is only a snapshot view of a transition.* (1998, p. 302 — emphasis in the original)

In relating Marey's artistic considerations to Bergson, it could be said that the reportedly unfamiliar appearance of the interrupted movements of animal and human locomotion in

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[289] 'Marey's intuition supports his entire scientific enterprise. But it also lets develop its amazement, during his work as a scientist, for the beauty of the forms he observes.' (translation by the autor) – Font-Réaulx furthermore elaborates on the artistic connotations and references to the theme of the wave in 19th and 20th century art, from symbolism to connotations with the sublime and the soul.

[290] Another sculpture of a runner in a specific posture according to the chronophotographs was made in plaster by the academic sculpture Georges Engrand, (Braun, pp. 137, 144) and Véronique Rollet also reports of a plaster bust by Marey of Noël Bouton, his son in law and a painter (Rollet, 2006, p. 106) which shows Marey's artistic talent.

their instantaneous positions — a reception which is here merely used to forward a philosophical argument and not to make any general claim — can be compared to Bergson's observation of instantaneous photography from a philosophical perspective as 'jerky movements' for which he sees the reason, in: '... that each of them is self-sufficient and does not announce those which are to follow.' (Bergson, 2001, p. 12) While Bergson contradicts Marey in the statement that each position allows the perception of the following one, they are both explicit about the spaces in between and the effort that is needed by the perceiver to connect them to one another. Bergson clarifies how the part stands in relation the whole:

> But it is movement which is anterior to immobility, and the relation between positions and a displacement is not that of parts to a whole, but that of the diversity of possible points of view to the real indivisibility of the object. (1999a, p. 44)

Hence from a Bergsonian perspective the 'ugliness' the reviewer speaks about and to which Marey also refers in his publication *Movement* (1895) as cited earlier, lies in the inability to master the flow of time in terms of internalised, qualitative conscious states, in the way we experience movement as *durée*. What Marey does not explicitly articulate, but to which Bergson's almost poetic description of the pleasure of an aesthetic experience refers, foreshadows in a more interesting way the popular fascination with the emerging cinema than is usually accredited in historical accounts. It accounts not merely for a 'cinema of attractions' (Gunning, 1986, 1990), an 'aesthetic of astonishment' (Gunning, 1989, 1994) or similarly for the 'frenzy of the visible' (Comolli, 1996, p. 109) but more profoundly for the awareness and pleasure of the spectators' conscious engagement with their own perceptual apparatus[291]. In this regard, in the last chapter of *Movement* (1895) Marey rather exceptionally refers explicitly to the faculty of perception; more than that, he admits the agency of imagination and in this way sanctions

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[291] This conceptualisation, as will be discussed more elaborately in the next chapter, took until the 1960s to appear in the canon of cinema theory through Metz's intervention regarding the 'imaginary signifier' (Metz, 1975), apart from few exceptions such as Edgar Morin ([1956] 2005) or in a scientific investigation on the psychology and aesthetics of the cinematic perception by Hugo Münsterberg who suggested in 1916 that movement is produced by the spectator's mind and not excited from without: '...the motion which he sees appears to be a true motion, and yet is created by his own mind.' ([1916] 2001, p. 30)

some aspects of Bergson's philosophy and also describes how chronophotography in his view supersedes ordinary perception:

> Although chronophotography represents the successive attitudes of a moving object, it affords a very different picture from that which is actually seen by the eye when looking at the object itself. In each attitude the object appears to be motionless, and movements, which are successively executed, are associated in a series of images, as if they were all being executed at the same moment[292]. The images, therefore, appeal rather to the imagination [*l'esprit*] than to the senses[293]. (Marey, 1895, p. 304)

This citation will be discussed more specifically in the next chapter; interestingly Marey seems to foreshadow here how his chronophotography inspired artists in the early 20th century, contrary to his own ambitions for positivist scientific precision; but rather in regard to the realm of imagination, as will be elaborated later. The citation illustrates how in Marey's view, his chronophotography and the chronophotographic projection technique seemed to provide a scientific tool to improve the human visual perception in both the analysis and synthesis of movement, and in his opinion, as mentioned earlier, it lends itself to the service of artists' movement studies. Marey explains:

> The difficulty artists find in representing men or animals in action is explained when we realize that the most skilled observers declare themselves incapable of seizing the successive emphases of locomotive movements. To this end, photochronography seems called to render services to art as it does to science, since it analyzes the most rapid and most complicated movements[294]. (Braun, 1992, p. 268)

Marey and in particular the perception of his work seems to anticipate Deleuze's statement that the cinema was regarded as 'neither an art nor a science' (Deleuze, 1986, p. 7); however, it now becomes apparent that this only makes sense if we regard the

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[292] It is interesting that Marey seems to be suggesting here that there occurs a complete collapsing of time in the sense of chronology, pertinent with the period's interests in simultaneity. (See for example Kern, 1983, pp. 86-88, pp. 314-315)

[293] Braun cites Marey's remark in the French original elsewhere: '*Ces images s'adressent donc plus à l'esprit qu'aux sens.*' (1996, p. 45) Significantly Marey uses the same term, *esprit*, as Bergson does in regard to the dimensions beyond matter in *Matter and Memory* (1991).

[294] This quote derives from Marey in 1888 — he called his instantaneous photography at first 'photochronography' which seems to emphasise the aspect of time (*chronos*), as the sometimes applied term 'time photography'. The term chronophotography became the standard term in 1889 decided by the International Congress of Photography headed by Janssen. (Braun, 1992, p. 396n)

cinema in the way we understand it today — as a public entertainment form. However, looking at projection among other technologies developed by Marey, this convergence of art and science for him stood apart from the popular enthousiasm that surrounded the apparatuses.

Marey's interest in the projection process was merely driven by a confirmation of the synthesis of movement for scientific demonstration purposes and he disapproved of an engagement with the general public through the exhibition of projection. This was not untypical, although the general public was well informed through scientific journals which had become established as the main source of knowledge transfer and communication. In France journals such as *Les Mondes* edited by Abbé Moigno or *La Nature* edited by Gaston Tissandier, were used by scientists such as Marey to publish new scientific findings[295]. Quite soon the cinema also became a medium of knowledge transfer as it was applied in the popular screenings of scientific film; a practice that became known as 'the cinema of scientific vernacularization.' (Landecker, 2006, p. 130)

The intersection of entertainment and science in the distribution of film, as for example also noted in the case of the French surgeon Doyen in chapter 1, constituted a common characteristic in the complex convergence of various interests and forces that shaped the cinema in the late 19th century[296]. In this respect Marey's work provides an excellent example of this convergence since he takes up on the one hand, the rigorous perspective of science in the exact measurements of bodies in space during activities of movement, and on the other, he makes certain claims on the aesthetic quality of the images and is interested in movement as activity, energy and force. Furthermore Marey is also outstanding due to his specific distinction of chronophotography against, in his view, the 'realist' representations of the cinema, which gained predominance through the course of the 20th century, pertinent with the rationalist paradigm of the scientific mainstream community. Marey writes in a preface (Trutat, 1899):

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[295] It needs to be remembered that it was in the popular scientific journal *La Nature* that Marey saw Muybridge's instantaneous photography that led to his interest in photography.

[296] Thierry Lefebvre has published numerous articles on related subjects. See for example Lefebvre 2004, and also Hannah Landecker's work on microcinematography (2005, 2006).

> Cinema produces only what the eye can see in any case. It adds nothing to the power of our sight, nor does it remove its illusions, and the real character of a scientific method is to supplant the insufficiency of our senses and correct their errors. To get to this point, chronophotography should renounce the representation of phenomena as they are seen by the eye. (Braun, 1992, p. 255)

From the vantage of the present we would say that Marey, as other inventors at the time, did not understand the full potential of the cinema; however, it is striking how his scientific view despite — Bergson would say exactly because of — the positivist paradigm produces a meta-discourse of 'another reality' beyond ordinary human perception. Marey's belief in a technological accessibility of an amplified or heightened reality beyond the quotidian was not uncommon in the scientific arena. Landecker reminds us that early scientific films were regarded as revealing the basis of life as: '... experiments in seeing and perceiving life, not just living things', but their 'previously imperceptible processes of their autonomous lives[297].' (2006, pp. 2-3) This was particularly true in time-lapse microcinematography, as Landecker discusses in the work of Alexis Carrel and Jean-Louis Comandon; Landecker comments:

> This complex response included not just wonderment at the sight itself but shock at the amount of movement hidden in apparently still things, the amount of heterogenous (sic.) structure hidden in apparently solid things, appreciation of the ability of audiences to see things as scientists do, commentary on the automation of scientific seeing, and a sense of visceral proximity of life, disease, and immortality. (2005, p. 929)

The early experiments with cinematography in science reveal a fascination with the replacement of the technology with the human observer and, as Marey has expressed it, is a perception of reality which the human senses usually are not able to perceive. However, Bergson's philosophy argues from a perspective which does not allude to any extra-ordinary, supra-ordinary, altered or fictitious dimension; his system of thought is in this sense significant and persistently contemporary, since he situates the dimension of the spirit within the ordinary processes of the human mind while at the same time depriving

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[297] In her article *Cellular Features: Microcinematography and Film Theory* (2005) Landecker elaborates on the interrelation between the understanding of film to principles of scientific microscopy and visualisation.

science of its involuntary mysticism and embodying a spiritual perspective as immanent in matter.

Marey's criticism of cinema cited above (Braun, 1992, p. 255) is picked up by Chanan who points out that Marey's: '... vulgar positivistic attitude eliminates the truth of direct experience, and in particular ignores aesthetic experience as a form of knowledge.' (Chanan, 1980, p. 116) This statement may be suitable when reducing Marey's work within the canon of science and his common reception within the canon of film and cinema studies. However, as the previous discussion has shown, Marey did pursue an interest in movement as experience, even though, according to Bergson, with his method he was not able to grasp this experience as a whole (except to some extent in his own perception). Marey furthermore, had an explicit interest in the aesthetic experience, which in his comments appears to have some bearing on the way we know the world, since the aesthetic character did inform the transmitted knowledge in its precision and appeal in the chronophotographic images. However, what Chanan also seems to be referring to is the direct experience of the beholder's engagement with the images, the core issue that is going to be discussed in the next chapter with reference to Bergson's philosophy. Chanan's concern touches upon Bergson's point of departure; which is that science is not able to explain certain dimensions of our psychic life through the rationalist, materialist paradigm. Marey's work in this sense appears as somewhat contradictory or at least inconsistent from an either restricted scientific or assumed artistic point of view.

Alternatively this thesis suggests that Marey's work gains a different dimension when looked at from a perspective that allows discussion of a metaphysical dimension without eliminating either the scientific purpose or the artistic connotations. This refers to the two tendencies of the intellect by which Bergson describes a diverging movement — the one directed externally which constitutes our social lives, our expression through language and a grasping of reality according to the scientific method in a spatialised dimension, following the movement of matter; the other directed inwardly, as an effort to grasp the life-force in its very quality and essence through intuition. The latter is what Bergson

called *durée*, constituting the enduring subject in a constant flux of becoming, a tendency that according to him, certain artists have attempted to express through their works. In Bergson's view human beings are born both artisans as well as geometricians in a metaphorical sense; as geometricians we reject the unforeseeable, as artists we accept indeterminacy since art draws on creation and spontaneity[298]. Long before that, however, Bergson states, human beings are artisans: 'artisans of our life' (1992a, p. 93), in the sense that they are continuous creators and inventors. In this context we need to recall that the main motivation and drive that Bergson sees in life is aimed towards activity[299]:

> Thus the human intellect, inasmuch as it is fashioned for the needs of human action, is an intellect which proceeds at the same time by intention and by calculation, by adapting means to ends and by thinking out mechanisms of more and more geometrical form. Whether nature be conceived as an immense machine regulated by mathematical laws, or as the realization of a plan[300], these two ways of regarding it are only the consummation of two tendencies of mind which are complementary to each other, and which have their origin in the same vital necessities. (Bergson, 1998, pp. 44-5)

Braun, however, confirms Chanan's view, when she refers to Marey's: '... positivist belief in objective quantification as the sole determinant of our knowledge of reality' (1992, p. 254), which was consistent within the epistemology predominant within the scientific framework of positivism at the end of the 19th century. She particularly refers to his consequent mise-en-scène which was designed to eliminate perspective, as well as the impression of depth and the illusion of a three dimensional space. In order to achieve this, Marey applied a black background and destroyed the single frame in favour of the single time/space continuum in his superimpositions. The seeming elimination of space in Marey's set up could also be interpreted as an implicit tendency to enhance the experience of movement as activity rather than a mere shift of a body in spatial coordinates. The connection to Bergson's thought becomes apparent here in Marey's

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[298] Bergson refers in *Creative Evolution* to that: '... unforeseeable nothing which is everything in a work of art.' (1998, p. 341)

[299] Even vision according to Bergson is: '... an effective vision, limited to objects on which the being can act.' (1998, p. 93)

[300] By 'plan' Bergson does not understand a predetermined destiny but a decision of free will which sets the action going to realised this 'plan' previously thought out and decided upon.

interest in the perception of reality beyond what is visible to our eyes and perceivable by our senses.

This opens a critical review of the notion of 'reality' by which Marey's work is often distinguished from the Lumière films. Braun situates Marey's work that went against the realist photographic model, in contrast to the Lumière films which in her view, similar to most historical accounts, simply pointed at 'reality' as seen by the human eye. (Braun, 1992, p. 255) This 'realist' argument of the emerging cinema and especially the Lumière films has been critically revisited, as already discussed in chapter 1. (Vaughan, 1990; Deutelbaum, 1979; Gaudreault, 1990) The realist paradigm and especially photography as realist medium had an ambivalent reception since the beginnings of photography in the early 19th century, and became ever more severely criticised during the avant-garde movements of the early 20th century and provoked a crisis of subjectivity. The Italian Futurist Bragaglia criticised photography as a whole and is very outspoken about the insufficiency of 'instant chronophotography':

> With photodynamism we have freed photography from the indecency of its brutal realism, and from the craziness of instantaneity, which, considered to be a scientific fact only because it was a mechanical product, was accepted as absolutely correct. (Braun, 1992, p. 299)

Bragalia's critique especially of Marey's composite chronophotographs stands apart from the wide appropriation of Marey's work in the Futurist and Cubist avant-garde movements of the early 20th century, which used his movement analysis techniques to illustrate an intellectual challenge in order to accommodate ideas like simultaneity or the fourth dimension. Similarly Marey's work was also incorporated in the work of the film avant-garde, for example in Eisenstein's montage technique, which deployed repetition and successive short sequences. This was also used by other experimental filmmakers in order to achieve a sublimation and transformation of a mere 'representation' of reality. (Brenez, 1992) Others rejected it, Bragaglia for example found that chronophotography in his view: '... ridiculously kills live gestures: in its desire to grasp the whole gesture it

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blocks and immobilizes only one of its hundred thousand fleeting *states*[301].' (Braun, 1992, p. 299 — emphasis in the original)

In relation to emerging cinema and Braun's interpretation of the divergence of science and art, there seems to emerge a number of perspectives that have been hidden or at least underexplored. One is that the scientific characteristic of Marey's work played a much more important role in the popular perception of the emerging cinema, as apparent in the example of the illegal exhibition of the early medical films by Doyen (see chapter 1), and the other is that the popular fascination and engagement with the cinema technology once again opened an interface for the public to engage with science by way of the immersion in the technological *dispositif*. From the perspective of Marey's own references to art and his interest in the aesthetic quality of his images, it could be suggested that cinema not merely took on Marey's technological base into cinematography, as Braun argues, in combination with Muybridge's narrative fantasies[302] (1992, p. 255), but also some of the inherent aesthetic aspects of Marey's scientific images and the spaces for interpretation and imagination that found a great resonance in the popular perception of the cinema, such as in the oeuvre of Georges Méliès[303]. In some ways, Marey's excursions into the arts could be interpreted as diverting attempts to accommodate those dimensions in his research that exceeded the scientific framework. Marey himself noted in 1868:

> I do not recognize vital phenomena, I find that there are only two kinds of
> manifestations of life: those that are intelligible to us – these are physical and
> chemical – and those that are not intelligible. As to the latter, it is better to
> confess our ignorance than to disguise it with a pretense of explanation. (Braun,
> 1992, p. 12)

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[301] Braun points out that Bragaglia saw chronophotography as an intermediary state between instantaneous photography and his photodynamic expression of duration in the blurring of the moving postures (1992, p. 299), of which Demenÿ's sword sequence is exemplary.

[302] Braun is very precise in distinguishing the scientific aim of Marey and the artistic character of Muybridge's work, as elaborated earlier in this chapter, from the perspective of the established scientific and artistic institutionalised paradigms and disciplines. (1992, p. 229)

[303] Méliès oeuvre in particular could be interpreted as a synthesis of Marey's and Muybridge's work that combines some of Marey's sophisticated techniques of superimpositions and transformations of single states taken from a single camera point of view, while it also is reminiscent of Muybridge's interest in narration and the reconstruction of events within a personalised framework of characters and plot-lines, as Braun has argued generally for the cinema.

In this statement Marey takes the position of the current canon of the scientific community that gave priority to positivism. As he suggests, science got rid of dimensions beyond the rationally conceivable and scientifically measurable from their curriculum with full awareness of certain inexplicable phenomena. Joseph Maxwell, famous French physician and psychic investigator, however, pointed out that: "Illusion' could not be used to discredit psychical research in general... without undermining the whole foundations of science.' (Inglis, 1992, p. 420) He did not believe in the supernatural, but assumed that psychic phenomena were based on some kind of natural force, possibly produced within the perceivers' minds. (Inglis, 1992, p. 420) This view could have provided an extended vision of Marey's scientific framework; Bergson more radically embraced the full spectrum of these dimensions and formulates a much more positive and explorative approach:

> Let us confess our ignorance, but let us not resign ourselves to the belief that we can never know. If there be a beyond for conscious beings, I cannot see why we should not be able to discover the means to explore it. (1920, p. 28)

The convergence of science, art and philosophy in the emerging cinema, which is manifest in the previous discussion of both Marey's work and interest in aesthetics, has commonly been discussed in various divisions of the theoretical discourses around the technological, scientific, economic and aesthetic, artistic determinants. This convergence has sometimes been expressed in the term of a 'technological art' (Heath, 1980, p. 8) or 'industrial art.' (Deleuze, 1986, p. 7) Jonathan Crary has also pointed to this convergence and meshing of art and science and suggested: 'Rather than stressing the separation between art and science in the nineteenth century, it is important to see how they were both part of a single interlocking field of knowledge and practice.' (1900, p. 9) Regarding the transformation of various efforts in these fields at the end of the 19th century, a complex network of forces has been identified, which ranges from economics, social frameworks, the arts, economic determinants, spiritualist practices to popular culture. The emerging cinema in this sense may not have formed the 'seventh art' as Lenin suggested, or an 'industrial art'; but rather, from the perspective of a meta-discourse it underwent certain transformations through a recognition of the threshold where the spectators could

engage actively with the dimension of *l'esprit* (spirit). Hence it is not so much the distinction between science and art, neither the 'real' and artificially arranged nor the 'transcendental' that interests us for this thesis, but it is exactly this amplified dimension of the self-conscious perception that constitutes the focal point for the following discussions of the spiritual dimension in the cinema.

From a pure Bergsonian reading, one could state that the notion of cinema as an 'industrial art' expresses the underlying persistence of the dualism of realism and idealism throughout the 20th century. A Bergsonian reading of film and cinema history suggests that the cinema enables us to supersede the realist and idealist argument by creating a 'third' form, something oscillating 'in between' these aspects, which this thesis proposes to be consistent with Bergson's conception of the *image* in respect of the *dispositif* of the human perceptual apparatus. As argued earlier, the emerging cinema in this sense was not so novel in the context of the time[304], but did have some novel 'extras' compared to previous technologies, and was able to merge the extremes of both competing strands of thought in one apparatus: the idealists' metaphysical aspirations as well as the rationalist scientific paradigms by allowing a broad spectrum of conscious engagement of the mind, as will be exemplified more specifically in the following chapters. Through this apparent stabilisation, the cinema was able to provide a conduit for the conduct of this dispute which was able to serve and suit both constituencies — the believers in technological, economic, scientific progress as well as those who continued to seek alternative models to understand the world. As we have seen, Marey transposed certain discussions on aesthetics into art and was very much aware of the artistic implications of his work. This dimension to his work and his particular treatment of movement in relation to time bears an intrinsic relationship to an art discourse as it was conceptualised by a key contemporary thinker, the art-historian Aby Warburg. It could almost be suggested that Marey's work in a certain sense has set out and anticipated some aspects of Warburg's concerns. However, most importantly Warburg's approach to

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[304] A report published in *La Nature*, 31, August-September 1895 after a presentation of the Lumière Cinématographe in July mentions a 'new system of chronophotography' (Elsaesser, 1998, p. 187, footnote 10), and as mentioned earlier, the Lumières themselves first called their apparatus Chronophotographic Projector.

movement beyond the physical appearance is taken up in the following chapter in support for the discussion on Marey's work in relation to the immaterial dimensions in order to thicken the intellectual framework that shaped and impinged on the emerging cinema.

Chapter 5

Aby Warburg's 'Image in Motion': Resituating Étienne-Jules Marey through the Philosophy of Henri Bergson

As has been argued in the previous chapter, if Marey's work is viewed in conjunction with the wider intellectual framework of the period, which includes Henri Bergson, then we can see more clearly how his enquiry into movement is fundamentally an inquiry into the issue of time and underlying forces in conjunction with a particular view of art. This chapter extends this trajectory and brings Aby Warburg's treatment of movement beyond time and the interconnection with the emerging cinema into the discussion of Marey's research interests. This is intended to underpin the claim that Marey's interests in the immaterial dimensions of movement lay not in their physical appearance but in their very dynamisms of the underlying forces. Philippe-Alain Michaud's (2004) commentary will be used since he argues a close synergy of Warburg's approach to art with the emerging cinema, driven by the underlying dynamic forces of motion beyond the movement as expressed in the displacement of the figure. While his understanding of the discourse on the emerging cinema may in some ways be restricted and reductive, his intervention marks a starting point for a crucial interconnection between the exploration of methodologies to study the immaterial dimensions in art and the practices of the emerging cinema. Some aspects of Michaud's study will be discussed in the following in relation to Marey's oeuvre in order to support and reinforce the perspective that this thesis takes, which is to resituate Marey within a wider intellectual framework and his interests in the underlying dynamic processes that produce movement and time as duration rather than the common emphasis on his chronophotographic movement studies of bodies moving in space. This perspective, strongly supported by Henri Bergson's philosophy, will allow us to resituate the significance of Marey's intervention for film and cinema studies not exclusively in the technological pursuit of image projection, but rather in the widespread acknowledgement and investigations into the immaterial dimensions considered as the very forces that constitute life.

Bergson, Marey and Warburg were visionaries and all trained in more than one discipline; Bergson in mathematics and philosophy, Marey in medicine and engineering with an interest in art, Warburg in art history and first hand experience in cultural anthropology. Although they embraced an interdisciplinary perspective in their work, at the time the various disciplines in themselves were clearly marked by institutions and in published outcomes[305]. In order to credit them with an acknowledgement of their fascination with aesthetics and the convergence of certain aspects of science, art and popular culture in their oeuvre, the opening of this chapter takes the liberty to start with an apparent parallelism, one which following a closer reading will reveal some intrinsic philosophical interconnections relevant to this discussion.

Through their occupation with time and space, and especially the smallest intervals, at the time called the 'infinitely small', and the dimensions in between these spaces, all three scholars refer to movement and perceptions which lie at the fringes of the spectrum of the capacities of the human sensory perception. Henri Bergson discussed for example the issue of instinct in polymorphic organisations of species such as bees or other insects, in relation to the evolution of consciousness and intuition. Étienne-Jules Marey studied and analysed the movements of insects' wings indistinguishable by our human vision and the movements they provoke in the air. Aby Warburg was intrigued by the movement of butterflies, which for Michaud (2004) symbolises the very meaning of images with reference to the term 'imago' that designates the last stage of the development of an insect in complete metamorphosis. In a curious collection of associative assemblage, Marey's graphic notations of the movement of insect's wings describing irregular geometrical movements of the number eight — he called them 'three-dimensional materialisations of geometrical conceptions[306]' — are expressed in a water-colour

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[305] This becomes for example apparent in the dispute between Albert Einstein and Henri Bergson regarding the issue of time in Relativity Theory, whereby Bergson's critique was directed toward certain extensions of Einstein's theory into philosophy and pointed to the issue of authority. (Canales, 2005, p. 1178; see also Bergson, 1999c) Canales furthermore states that this lively debate contributed to the fact that Einstein was not awarded the Nobel Prize for his mathematical proof of Relativity Theory but for his contributions to theoretical physics and specifically his discovery of the law of the photoelectric effect. (2005, p. 1177)

[306] Translation by the author, French original: '*matérialisation en trios dimensions des conceptions géométriques.*' (Mannoni, 2006, p. 21)

drawing by E. Valton with the title, '*Aspect d'une guêpe volant captive*', to which the *Musée Marey* ascribes the imaginative dimensions of Marey's work[307].

A very similar movement, it almost seems a direct translation, appears in the movements performed by the famous dancer and actress Loie (Marie Louise) Fuller, captured in the astonishing hand-painted Lumière film of 1896 featuring the performance *Danse Serpentine*. Fuller performed in the Paris theatre *Folies-Bergère* and brought her performance to the attention of artists, Toulouse-Lautrec, Jules Cheret and Auguste Rodin who featured Fuller as a model in their work. The Serpentine dance reappears in Michaud's publication on Warburg in an imitation of Fuller by Anabella in a W.K.L. Dickson film from 1894 entitled *Anabella Serpentine Dance* (I and II), again simulating these similar movements of insects' wings[308]. This little introductory collage of coincidences does not lead, as may be expected, merely to Warburg's fascination with the butterflies in flight, but situates his study of the serpentine ritual among the Hopi Indians that for him revealed the ancient connection with the rhythm of time, describing a zig-zag path between life and art, and the shift from the Dionysian to the Apollonian principle in Renaissance art. The movement of the figure eight in this collage has become the zig-zag lines, which symbolise for the Hopi Indians the untamed energies of lightening[309] or the snake[310]. (Michaud, 2004, pp. 285-6) It also draws us inevitably into Bergson's

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[307] Marey has printed an illustration of the insects wing movements while the body is fixed in *Movement* (1895, p. 243); a print of the water-color drawing can also be found in Mannoni (2006, p. 21) and at the *Musées de Bourgogne*: http://www.musees-bourgogne.org/les_musees/musees_bourgogne_gallerie.php?id=62&theme=&id_ville=

[308] An excerpt of this dance filmed in the Edison studio Black Maria can be found on YouTube at http://www.youtube.com/watch?v=fZquSnvqygk or at http://www.youtube.com/watch?v=fZquSnvqygk&mode=related&search=

[309] Warburg made an interesting remark in his fieldnotes from his travel in North-America on the perception of natural forces by Indian peoples and Western civilisation: 'The attempt at magical effects is thus first of all an attempt to appropriate a natural event in the living likeness of its form and contours: lightening is attracted through mimetic appropriation, unlike in modern culture, where it is drawn into the ground by an inorganic instrument and eliminated. What distinguishes such an attitude toward the environment from ours is that the mimetic image is supposed to bring about a relation by force, whereas we strive for spiritual and material distance.' (Michaud, 2004, p. 306) This evokes earlier scientific investigations into electricity and lighting such as by Nikolas Tesla (1993) and his wireless technologies.

[310] While in a film context this conception symbolised for Sergei Eisenstein the dynamic impetus of his concept of the montage-collision, in a 19th century context it also can be related to the

philosophy where the zig-zag features as a metaphor for the improbabilities and contingencies of the mechanistic cause-and-effect principle when applied to the dimensions of life. (Bergson, 1998, p. 57) Based on this reference to the zig-zag in *Creative Evolution* (1998), as well as metaphor for his doctrine (Guerlac, 2004, p. 45), there is a suggested line from a mechanistic study of the movement of an insect's wing, via the artistic expressions of similar 'movements' or motions through a Warburgian transformation and anthropological inspiration into the very domains of *l'esprit* (spirit) in the oeuvre of Bergson.

It is the resonance of this collage that provides the impetus for the more systematic connections that this chapter now explores. Aby Warburg's interventions will be addressed in the following discussion not only because he was concerned with the interconnection of single still frames, which in his *Mnemosyne* method differed in form or content and even period or medium, recalling the cinematographic method and arrangement of montage; but more importantly because of his successful attempt to address the immaterial dimensions of art within the canon of the discipline and the conceptual space between the subject and the object in the context of a discourse relating to the 'image'. It is this underexplored dimension in Warburg's work that is significant for this discussion, which according to Rampley provides more than the more common application of his work to 'an exercise in art historiographical archaeology.' (1997, p. 14) While Warburg's approach to movement and 'spirit' is conceptualised here at a meta-level and is very different in all respects from the mere sequential compositions of instantaneous photography as in the work of Muybridge or Marey, it does, however, allow for some interconnections with Marey's wider research interests in the activity of movement beyond the mere appearances. It also resonates with certain aspects of Bergson's philosophy which, it could be suggested, functions as a bridge and reconciliation almost by way of a meta-discourse in support of Warburg's method.

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initially conceived 'untamed' force of electricity, which once domesticated was kept securely under human (technological) control.

To start with, it is worth pointing out that there is a significant, although indirect connection in relation to a philanthropic, philosophical approach to images, between Aby Warburg and Albert Kahn (1860-1940) who was a friend and colleague of Henri Bergson[311]. A banker and philanthropist, like Warburg, he dedicated his interests to the foundation of the *Archives de la Planète[312]*, a vast collection of 183,000 meters of filmed-footage and 72,000 autochromes captured between 1909 and 1930 from around the world. (Gusejnova, 2006; Rohdie, 2001, p. 9) While Kahn established himself in the banking business, he commissioned others to contribute to his archives and financed a chair at the *Collège de France* for Social Geography that was awarded to Jean Bruhnes who directed the commissions for the *Archives de la Planète*. Among those Kahn commissioned were camera operators, production companies such as Gaumont, as well as scientists such as the physician and biologist Jean Comandon who, like Marey, produced a series of experimental microcinematography[313] for the *Institut Pasteur[314]*. (Opinel, 2006, p. 175; Winter, 2006, pp. 19-20). Kahn was convinced of the transformative power of knowledge and considered his archive to be a significant resource for philosophy, social studies and in particular geography; a project that stood as the background of France's national reform and modernisation especially in the fields of physical mapping in geography, physiology and movement studies. (Rohdie, 2001, p. 6) Aby Warburg also

[311] Albert Kahn and Henri Bergson shared a friendship since Bergson became Kahn's private tutor in philosophy when he was a student at the Sorbonne. Sam Rohdie refers to them as 'liberal internationalists' regarding their shared philanthropic activities in their pursuit of international affairs in politics, finance and economics. (2001, p. 7) Sophie Cœuré and Frédéric Worms (2003) have published the correspondence between Kahn and Bergson between 1879 and 1893.

[312] Kahn's attempt to produce a 'photographic inventory of the earth surface' as a scientific, intellectual and humanist research project appears more contemporary to the 21th century than the historical period of his time. When compared with the non-linear, heterogenous emphasis in contemporary media projects or contemporary commercial projects such as google-earth (http://earth.google.com), or the Earth-from-the-Air photography project (http://www.wecommunic8.com/earthfromtheair/) it is astonishing to realise the gap between these contemporary popular expressions and the inherent intellectual and conceptual depth embedded in the *Zeitgeist* of the late 19th and early 20th century in Kahn's or Warburg's investigations.

[313] This was not an uncommon practise at the time but is rarely mentioned in cinema studies, and Marey had already in 1891 conducted experiments linking his chronophotographic camera to a microscopic apparatus. (Mannoni, 1999, p. 254-258) See also Landecker (2005, 2006)

[314] It is worth mentioning Louis Pasteur's claims on vital phenomena in special reactions in living organisms, which he did not reduce to mere chemical reactions as some of his contemporaries. (Opinel, 2006)

decided to dedicate his entire life to research, although he was financed through his family's banking business that was run by one of his brothers. In the later part of his life, during the 1920's he started to create a *Bilderatlas*, an 'atlas' of images, from around the world, although of a different kind, as will be elaborated upon later. It is, however, on a philanthropic level that both Kahn and Warburg most closely link with the interests and intellectual project of Bergson, since as Cœuré and Worms (2003) suggested they all shared an interest in travel, art, technology, in cultural, psychological, the philosophical concerns of humanity, and the transformative power of knowledge.

What interests us here in particular with regard to the discussion of the emerging cinema, is as Aby Warburg suggested, art should be understood as an impulse and activity rather than a collection of icons. Warburg criticised the categorisation and periodisation of the art-historical practise:

> ... I had developed a downright disgust with aestheticizing art history. The formal contemplation of images — not conceived as a biologically necessary product situated between the practises of religion and art (which I understood only later) — seemed to me to give rise to such as sterile trafficking in words that after my trip to Berlin in the summer of 1896 I tried to switch over to medicine. (Michaud, 2004, pp. 177-8)

Instead of pursuing his medicine studies, Warburg revitalised art history by opening it up to insights through cultural anthropology by incorporating insight from his experiences during a trip to New Mexico and Arizona undertaken in 1895. By the 1920s he was able to situate the meaning of the Hopi serpent ritual (Warburg, 2002) and the Pueblo Kachina dance ritual in his work on Renaissance art, which he recognised as the transformative period from the pre-modern to the modern, from the symbolic to the allegorical[315]. Michaud points out how in Warburg's view the transitory states of the dancers are

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[315] One of Warburg's inspirations is reported to have been the German philologist Hermann Usener who traced a parallel between the Hopi Indians and the peoples of Antiquity. (Michaud, 2004, p. 265) In a letter that Warburg wrote to the American anthropologist, James Mooney in 1907, he stated: 'I have continually felt indebted to your Indians. Without the study of their primitive culture, I would never have been in a position to find a broader foundation for the psychology of the Renaissance. Sometime I will give you a sample of my methods, which, I may say, are quite new and possibly for that reason not as widely recognized as I might in fact expected.' (Michaud, 2004, pp. 186-7)

metamorphosed into the images of the nymphs and Intermedi figures of Renaisssance paintings, in which Warburg saw the "universal pathetic form" of the representation of movement in the crucial symbol of the serpent[316].' (Michaud, 2004, p. 222) According to Rampley for Warburg: '... the Renaissance constitutes a period of conflict between magical-associative (symbolic) and logical-dissociative (allegorical-semiotic) modes of representation.' (1997, p. 9) Warburg traced the transition from the symbolic to the allegorical in art history, and the Renaissance became the focal point of his interest as a period of conflict and tension acting as a pivot for this transition. (Rampley, 1997) In an analogous comparison it could be said that Warburg reiterated Marey's complex set-up of his investigations to analyse and measure movement and forces with newly invented methods within his own discipline, reminiscent with the way he attempted to reconstitute energy and force through observations of movement in art. Warburg's interdisciplinary approach is emphasised in a statement in which he refers to his life's journey in his function as a: '... seismograph of the soul, to be placed along the dividing lines between different cultural atmospheres and systems.' (Michaud, 2004, p. 332) Warburg critiqued the canonic categorisations of historical periods in art history based on style since his main interest lay in the recovery of 'spirit' that he saw as a foundation of cultural expressions of a particular period. In this regard Rampely cites a statement by Warburg from his unpublished notes: 'We attempt to grasp the spirit of the age in its impact on style by comparing the same subject as it is treated in various periods and various countries...' (1997, p. 13) Like Bergson, Warburg sees in this notion of 'spirit' the driving force beyond cultural manifestation. Both had a grounding in 19th century science (psychology) but where Bergson used philosophy to advance this notion, Warburg invented a unique method in the *Mnemosyne* which will be discussed later.

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[316] Warburg's methodology has become well established in art history, following on from his doctorial thesis in which he uncovered a Dionysian component in interpretations of Antiquity in Quattrocento artists' works, especially through his students Fritz Saxl and Erwin Panovsky, or Ernst Hans Josef Gombrich. Georges Didi-Huberman, however, points to the incomplete application of Warburg's concerns in their work and in his own studies of Warburg's oeuvre. He attempts to recover a more profound strand that Warburg called 'dynamic symbolism'. (Didi-Huberman, 2002, p. 180)

Michaud has put Warburg's work and life in a dialogue with some of the developments of the period of the emerging cinema, and compared his *Mnemosyne* method with the 1920s' artistic photomontage, experimental filmmaking, and Jean-Luc Godard's *Histoire(s) du cinema* (1988-98), in that it is a collage that incorporates collective and personal memories. In doing so he has opened a new interconnection that asks for more elaboration and a more sophisticated engagement with the corpus of film and cinema studies, especially from a new historicist critical perspective on the emerging cinema. However, Michaud's significant contribution lies in the way he tracks the cinema more as a form of thought than as a spectacle (2004, p. 56)[317], and he sees the emerging cinema as energy and force rather than figures or narratives. (2004, p. 40) This view on the emerging cinema as an expression of a vital force rather than a representation is consistent with the impulse behind early attempts at image projection, and recalls Thomas Alva Edison's vitalist interest in creating a simulacrum of the living. For him the preservation of life and the survival of the 'body' were more relevant than the straight-forward recording of movement.

Michaud points to an unsung characteristic of the emerging cinema, which stands in contrast to an understanding of movement departing as it does from a mechanistic understanding of cause-and-effect. He compares Warburg's intentions with Marey's in the discovery of movement as a force or energy, and refers in particular to Marey's geometrical movement studies that show merely the abstracted white lines reflected from the motion capture suit, as well as his stereoscopic trajectory of bright points describing abstract curves on a black background; he notes that: '... instead of representing the body devoid of movement, he [Marey] represented movement through an eclipse of the body.' (2004, pp. 88-89) Michaud sees further continuity in Marey's description of an optical exercise to create a stereoscopic image without the optical apparatus, simply by placing the focus in the distance between the two images and letting the two inner images of the

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[317] Michaud also refers to a lecture by Warburg where he projected colour slides in 1912, very unusual at the time, and a reference he has made to the 'cinematographic spotlight'; Michaud exemplifies that: '... the use of slides is not enough to explain the term *kinematographisch*, which seems to designate not a material apparatus of projection but a mental apparatus, a dynamic manner in which to apprehend the works. (Michaud, 2004, p. 38)

four visible ones melt and appear as relief. As Michaud point out, this is consistent with the counter-argument against the substantialist prejudice that ties photography: '... in its mechanical association of the being with immobility' and to Warburg's intuition regarding the underlying motions in relation to Antiquity which he classified as a Dionysian principle in the Renaissance arts. As he says:

> The undulating figure that Goethe saw in the *Laocoön* by rapidly blinking his eyes is related to the experiences of both Warburg and Marey: the man's body with the shining button [Marey's motion capture suit] disappeared on the photographic plate, just as the nymph disappeared from the study sheet to yield another figure, that of energy in motion, which draws in its wake, in the guise of a persistent trail of light, the silhouette of a snake. (Michaud, 2004, p. 90)

In this citation he reminds us that Warburg's study of motion beyond the surface of appearances liberates a consideration of movement from the materialist constraints that dominated, and it could be added that to some extent from Marey's emphasis on chronophotography in the later part of his life as well as the common misconception of his significance in regard to traditional interpretations of the emerging cinema[318]. A revision of this misconception — one of the backbones of this thesis essential in liberating the dimension of the spirit, by focusing on the very emergence of the cinema as a philosophical *dispositif* rather than a form of expression as an audio-visual medium — reveals some resemblance to Warburg's intervention.

The convergence between Marey and Warburg's interest in underlying life forces and dynamisms beyond the appearance of movement in the displacement of the figure is also expressed in Warburg's notion of the *Dynamogramm* which rather than a means of signification expresses a morphology or aesthetic of forces; it is a dynamic symbolism, as Didi-Huberman emphasises. (2002, pp. 176ff) Warburg's later metapsychological approach led him to inscribe an understanding of the image with an oscillating polarity between an interiorised and exteriorised vibration; Didi-Huberman's interpretation of this later bias of Warburg's work (2002, p. 190) is reminiscent of Bergson's two distinct

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[318] This misconception has been carried forward into contemporary cinema theory and film history, and even Deleuze departs from this canonic understanding of the emerging cinema in which he sees mainly a cinema of the movement image in the sense of a rationally driven sensori-motor schemata as its basic matrix.

movements of the mind, not as they manifest in the *image* itself, but in the perception of *images* at the moment of contact between matter and spirit in the perception of the beholder. In this there appears to lie the most significant difference in Bergson's approach, in contrast to Marey's and Warburg's as he shifts the focus entirely from a discourse on images to the perceptual faculty of the human mind. His philosophy at the same time provides a lever for closing the gap (common in visual studies) relating to the dualism of the material and the immaterial, the subject and the object relation.

From Michaud's and Didi-Huberman's reading of Warburg's work, however, it can be suggested that it is to some extent consistent with Bergson's concept of intuition, since for Warburg the production and perception of art was constituted by a creative (e)motion, guided by empathy, grasping the qualitative intensity of life or spirit. According to Michaud he sought an image's significance in its difference from the original narration by which it was inspired. (2004, p. 77) This interconnection becomes evident in Warburg's account of images from the region of the Pueblo Indians in which he touches explicitly upon intuition. Michaud summarises Warburg's description of the Kachina dance ritual from his fieldnotes:

> In dressing like the doll representing him, the dancer produced an intermediate being between the body and the image and transformed himself into a representation. This intuition, directly inspired by Burckhardt, who discovered in Renaissance festivities a path leading from life to art, was reversed by Warburg, who saw in the Oraibi ceremony the opening of a path leading from art to life. (2004, p. 203)

To exemplify his method, Warburg created, what Didi-Hubermann calls, an 'aphasic and anachronistic montage.' (Michaud, 2004, pp. 17-8) Between 1924 and his death in 1929 in this *Mnemosyne* image gallery in his library in Hamburg (today the Warburg Institute in London)[319] Warburg arranged images of disparate origins on large panels covered in

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[319] Warburg's library, containing around 60.000 volumes of books and 20.000 photographs, was organised according to ideas instead of categories or subjects, and therefore underwent a continuous process of rearrangement according to new insights and emerging ideas – again the synergy with Bergson's thinking is evident. One of Warburg's main purposes in the library's organization was, as he notes in his fieldnotes 'a primary collection for studying the psychology of human expression'. (Michaud, 2004, p. 313) For a good summary on Warburg's oeuvre online see Bruhn (undated), or for a biography see Gombrich (1970).

black cloth: '... art reproductions, advertisements, newspaper clippings, geographical maps, and personal photographs.' (Michaud, 2004, p. 277) Warburg conceived these image panels as an iconology of intervals[320], involving not objects but the tensions, anachronisms, analogies, contrasts or contradictions among them. (Michaud, 2004, p. 244) They are comparable to mental operations such as associations, memories, repetitions, or focalisations. This atlas is commonly regarded as: '... an instrument of orientation designed to follow the migration of figures in the history of representation through the different areas of knowledge and in the most prosaic strata of modern culture[321].' (Michaud, 2004, p. 277)

Warburg favoured displacements and ruptures over the transmission of forms in his uncovering of the underlying Dionysian principle and dynamics in art, which were to be found beyond the visible appearance of art forms and content, in the apparent motion between still images. According to his insights, an artwork constitutes not a closed totality but a juxtaposition of elements in tension, an intellectual, cultural and philosophical *dispositif*[322], he consequently defines art as a persistence of intermediary states in the displacements of the figure. This recalls Rodin's notion of movement as a transition of one attitude to another (Pisano, 2006, p. 92), and his conception of movement in art as flowing mobility and fluidity. (Rohdie, 2001, p. 8) It is worth remembering that Steicher's photographs of the Balzac brought forth an animate dimension that even Rodin himself, whilst opposed to photography as an artistic medium, declared that it exactly expressed how the Balzac according to his aspirations should be seen. The medium of photographic reproduction as used in Warburg's image panels, in Michaud's view: '... is not merely illustrative but a general plastic medium to which all

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[320] Warburg called this 'iconology of intervals' ('*Ikonologie des Zwischenraumes*') in his 1929 journal. (Michaud, 2004, p. 244)

[321] Advertising images are very prominent in one of the later image panels which incorporates the front page of a cooking book entitled 'Eat Fish' featuring two women striding along; an advertisement for a crème from the famous Eau de Cologne branch 4711 featuring a woman half running and half in flight; an advertisement of tea called '*Haustee*' with an angel figure in flight; an advert for the Northsea featuring a woman waiting, etc. (Michaud, 2004, p. 263, fig. 97)

[322] This insight recalls the observation of the 'movement in paintings' rather than in instantaneous photography, as it is mentioned in the review on Muybridge's presentation at the Royal Institute in chapter 4.

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the figures are reduced before being arranged in the space of the panel.' (2004, p. 278) From the panel itself another image is being produced in order to create a unique whole, which according to Michaud recalls the cinematographic method of an arrangement in thoughts. This, seen in the context of this thesis, puts the focus on the interpretation and activity of the perceiver. It is of particular interest with reference to Bergson's thinking in this context that Warburg transferred movement to an inner principle and saw it no longer as an external force (Michaud, 2004, p. 93), but rather as constituting a transition from representation of movement, from an embodiment of life in motion, to the psychology of the interior[323]. (Michaud, 2004, p. 132) Georges Didi-Huberman (2002) recognises in particular in Warburg's later work this bias toward meta-psychology and Warburg's oeuvre as an intervention in the historical study of the human psyche.

The *Mnemosyne* methodology also shows certain similarities to the analysis of the intellect in Bergson's philosophy of consciousness and memory, as it recalls a cinematic arrangement by concentrating on the process of the projection in the viewer's mind, demanding a 'mental montage' and trajectories of meaning. Michaud reminds us that Warburg assembled images as discontinuous sequences in such as way that they would only find an expressive significance when they were considered as an arrangement of complex interconnections (2004, p. 258). This cinematographic layout against the black background in the *Mnemosyne* atlas follows Marey's, Méliès, and Edison's studio set-up and also of the mise-en-scène of spiritist séances, in which space became isolated in favour of the representation and above all the experiential perception of movement and apparitions[324]. Michaud suggests:

> Warburg's construction also reflects the process of projection in which the sequencing, fusion, and contradiction among the images take place; it has simply lost its diachronic aspect and demands active intervention from the viewer. (2004, p. 244)

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[323] This notion also anticipates Edgar Morin's anthropological/ psychological approach to cinema studies in the 1950s as mentioned in chapter 2.

[324] Michaud refers in this regard in particular to Marey's geometrical chronophotography where the elimination of space is most explicitly expressed. (2004, pp. 86-90)

Perception and the issue of memory arise as a crucial faculty and pivot in Warburg's conception of the *Mnemosyne*. Michaud reminds us of Warburg's reference to the German psychologist, Richard Semon's notion of memory as the function that is: '... charged with preserving and transmitting energy temporally, allowing someone to react to something in the past from a distance'. (2004, p. 255) For Semon every event affecting a living being leaves a trace in memory, which he called an *engram*; that is the reproduction of an original event. This trace, as Pinotti (2003) points out, leaves a material effect. According to Semon (1904), this *ecphoric stimulus* constitutes the cue or pattern that helps in retrieving a specific memory[325]. Semon's approach clearly differs from Bergson's understanding of memory, since for Bergson it is memory that extends into the present and does not reversely consist of a reaction to something past; neither is it to be situated in a material form or space[326]. According to Michaud, however, Warburg's *Mnemosyne*: '... externalizes and redeploys in culture the phenomenon described by Semon within the psyche'. (2004, p. 255) It is in this sense that Michaud regards the images of the *Mnemosyne* as *engrams*, to which Warburg himself refers in his notes, as reproductions, or photograms, capable of re-creating an experience of the past in a spatial configuration. In his opinion they constitute a revival of an original energy in a contemporary context, (2004, p. 254) reconstituting a new kind of a subject in Warburg's work: '... the author is less the master of his words than he is a receptive surface, a photosensitive plate on which texts or images surging up from the past reveal themselves.' (2004, p. 260) Pinotti, however, places his emphasis on Warburg's second main source in his conceptualisation of memory; the understanding of memory as biological inheritance and a general function of organised matter following the theories of physiologist Ewald Hering (1834-1918), teacher of Richard Semon. While Pinotti's discussion lies in an emphasis on the individual and collective heredity of memory as they are manifest in the cultural translation of Warburg's approach to images, and a distinction between the original and originary, there appears an underlying strand of the

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[325] The original German title of *The Mneme* in its literary translation means: 'The Mneme as a basic principle of organic becoming' (translation by the author).

[326] Bergson also rejected any theories that regarded memory as contained by the brain, such as the consideration of imprints, using analogies such as phonograms, the phonographic disk or sensitive plates (1920, pp. 50-53), since for Bergson all that the brain stored were motor habits. (1920, p. 73)

issue of consciousness and a more fluid conception of memory in Hering's description in contrast to Semon's fixed term *engram*. But his concept of memory is also consistent with Bergson's idea of intuition, it can be read as an effort beyond language into the deep realms of *durée* where from this flux of pure duration *memory-images* emerge that allow new meanings and connections to be made — in a conscious way. This contrasts with the unconscious process as it appears in Hering's or Semon's theories, and finally also in Warburg's thinking, which relates the archaic symbolism closely to the unconscious. Edgar Morin's notion of the psychic flux into which the perception of the film enters seems pertinent to Warburg's psychological approach and recalls Michaud's elaboration on Antonin Artaud's term of the 'secret psychic impulse' (Michaud, 2004, p. 273), a view that situates Warburg's revival of art history beyond language and text. As Michaud points out, Warburg refers to a symbolic form of thought prior to language in his notes:

> ... an attitude toward memory images may be designated ontogenetically as prior and primitive, while it nevertheless remains secondary. In the later stage, the memory image does not release an immediate practical reflex movement — whether combative or religious — rather, memory images are consciously accumulated in images or signs. Between these two stages stands the treatment undergone by the original impression, which can be designated as a symbolic form of thought. (2004, p. 314)

Michaud's interpretation of Warburg's method in this citation is more reminiscent of Freud's unconscious. Alternatively a Bergsonian perspective would drive the discussion beyond the image as material form in its constitution of a representation or signifier. But Warburg's thinking is closer to Bergson's philosophy in how far it acknowledges the accessibility of memories beyond a direct indexical relationship with the present moment and this should be recognised.

It seems that Warburg's treatment of memory, at least in how far it is consistent with Semon's and Hering's conceptions, reveals an understanding of memory from a rather mechanistic and materially based perspective, which stands in contrast to Bergson's conception of memory as spirit, and his understanding of spirit as being independent from matter. According to Bergson *memories* impinge on the present moment of perception and in this way recreate *memory-images* into new forms of thought and consequently into

new forms of material manifestations. Warburg in comparison, according to Pinotti (2006), understood the *Pathos-formeln*, pathic or pathetic formulas, which emerged through the method of the *Mnemosyne*, as incorporation of the tensions between the Apollonian and Dionysian principle embedded within the image. This survival of the past in the present in Warburg's thought, in Pinotti's view, has to be understood in Nietzsche's sense of a 'becoming'[327], they can only be perceived within the very processes of transformations and embodiment in the perception of the viewer in the present. (2006, pp. 10-11) Here again it seems that once taking the perspective of forces as embedded experience, the discourse shifts from a textual analysis to a study of the cognitive processes of the beholder; a dimension not explicitly addressed in the work of Marey and Warburg, but implicitly present and the crucial lever to liberate the dimension of the spirit beyond the material form.

Considering that Warburg's intellectual concern in his *Mnemosyne* was to articulate a new approach to the function of the human image memory, there seems to be a promising field of study to apply Bergson's philosophy to Warburg. This would possibly suggest the liberation of the underlying spirit (*l'esprit*) which Warburg sought in his work. Pinotti discusses this as the problematic of the material inscription of memory versus the immaterial transfer through collective and individual consciousness. It seems that Bergson's philosophy applied at this nexus might offer a reconciliation of these evolutionary processes in regard to Warburg's work, which deals with the immaterial never visible forces from the past, not merely as an individual experience but as a collective cultural history. This re-examination of Warburg's conception of memory in his *Mnemosyne* method through a Bergsonian perspective does, however, not fall within the scope of this thesis. However, what we have seen in this section is a connection between Marey, Warburg and Bergson, which is more than mere parallelism and could possibly yield a fuller understanding of Warburg's ideas.

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[327] Pinotti reminds us that Warburg's thinking was informed by his reading of Nietzsche (2006).

5.1 The Problem of Time and the Convergence of Science and Art

Consistent with Bergson's elaboration on time and space, Warburg critiques the mechanistic understanding of movement in its material form and promotes the emergence of motion, dynamics and the underlying energy of the creative process of art, which according to him occur when single postures and frames are juxtaposed, as he demonstrated in his image panels of the *Mmenosyne* Atlas. Warburg's notion of movement or motion in this sense relates to Marey's deeper aspirations to study the very principles of life; however, they differ in the way Marey exemplified his research through the scientific methods of physiology by which he merely measured single instances in a spatial configuration, as discussed earlier. Warburg seems to have extended Marey's project and in this way seems to meet those objectives which Marey could not accommodate within the scientific rationale.

As we have seen in the earlier discussion, Marey's and Warburg's point of interconnection[328] lies in their interest in uncovering the underlying dynamics of movement, which Marey transposed from the mere figurative to a technological solution of implementing a complex network of technological apparatuses to measure these various effects. What concerns us in the following discussion, however, is how we might understand how Marey transposed some of these underlying issues in his work as art. In this dimension Warburg's and Marey's interests appear to intersect, albeit from diverging perspectives. Warburg made explicit what Marey only exceptionally expressed (in his quote on 'imagination' for example as cited chapter 4, section 4.3 (Marey, 1895, p. 304): that a consideration of movement in art as a dynamic motion needs to be situated beyond the mere appearance but rather in the beholder's mind. In this way, it allows for a consideration of time as duration; let us recall how Bergson has put it:

> Finally, let us free ourselves from the space which underlies the movement in
> order to consider only the movement itself, the act of tension or extension; in

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[328] George Didi-Huberman mentions in the foreword of Michaud's publication that the Warburg Institute published the first studies on the history of chronophotography. (Michaud, 2004, p. 341, footnote 33)

short, pure mobility. We shall have this time a more faithful image of the development of our self in duration. (1999a, p. 27)

From a Bergsonian perspective, Marey's intention to deconstruct movement in order to uncover the dynamic principle of motion can be understood in terms of the two distinguished principles of time by Bergson: time as an externalised measurable quantity in space, and time as an internal qualitative experience of duration: *durée*. In the following quotation Bergson refers directly to the chronophotographic analysis of movement of the horse's gallop and criticises science in that it only sees 'forms replacing forms':

> Of the gallop of a horse our eye perceives chiefly a characteristic, essential or rather schematic attitude, a form that appears to radiate over a whole period and so fill up a time of gallop. It is this attitude that sculpture has fixed on the frieze of the Parthenon. But instantaneous photography isolates any moment; it puts them all in the same rank, and thus the gallop of a horse spreads out, into as many successive attitudes as it wishes, instead of massing into a single attitude, which is supposed to flash out in a privileged moment and illuminate a whole period. (1998, p. 332)

It is not coincidental that both Bergson and Marey refer to art in the most crucial moments of their thinking[329]; that very discipline which over centuries had secured a serious consideration of the internal states and psyche of the human mind. Bergson's contrasting of the quality of time in sculpture with the instantaneity of quantitative time in chronophotography is also reiterated in a statement by Auguste Rodin regarding the reality of time in sculpture as duration versus the instantaneous freeze frames of photography:

> It is the artist who is truthful and it is photography which lies, for in reality time does not stop, and if the artist succeeds in producing the impression of a movement which takes several moments of accomplishment, his work is certainly much less conventional than the scientific image, where time is abruptly suspended[330]. (Braun, 1992, p. 413, footnote 31)

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[329] Marey refers to the depiction of the horses gaits on the Parthenon too in *Movement* in the chapter on the 'Locomotion of Quadrupeds'; while Bergson saw a certain duration of time inscribed in these sculptures, Marey mentions how even in gallop they do not seem to be moving: '... if they appear to move at all, at nothing more than a processional pace.' (1895, p. 204)

[330] This quote is cited in French in Giusy Pisano's article discussing Rodin's and Bergson's references to Marey's oeuvre: '*C'est l'artiste qui est véridique et c'est la photographie qui est*

Pisano reminds us that Rodin was very occupied with contrasting and critiquing Marey's chronophotography with sculpture, which for him petrified time and revealed interior dynamisms and sentiments through the mobility of muscles. In a side-remark Pisano also refers in this context to the notion of movement in Aby Warburg (2006, p. 93), who, as discussed in the previous section, understood the underlying dynamism in art as archaic forms of thought that endure throughout the cultural history of humankind. Rodin similarly gives art a particular status in its preservation of psychic states through the inscription of time in their material form. His critique against photography, in his view incapable of reproducing a similar effect, was a very wide spread opinion at the time, as Marta Braun has pointed out. (1992, p. 272) Pisano discusses the specific instant chosen in art that stretches over time and undergoes a metamorphosis in its transfer into matter, in contrast to the 'instant quelconque' ('instant whatsoever') that is expressed through photography, as the title of his article also suggests.

As mentioned earlier, Warburg understood the notion of movement beyond the figurative surface as a: '... recording of motion as a persistence of intermediary states in the displacement of the figure...' (Michaud, 2004, p. 84) This view can also be related to a microscopic aspect in Marey's conception of the representations of runners in contemporary art; Marey reminds us that we: '... seem to forget that one of the characteristics of running, and even of walking, is to maintain a continuous position of unstable equilibrium.' (1895, pp. 171-2) Marey's intermediary states in the figure's displacement were generally characterised by very precise, sharp and distinct postures, while Demeny's in contrast, were blurred and emphasise the speed in terms of time intervals more obviously than Marey's. (Braun, 1992, p. 268) Marey emphasises the differences of these various time intervals between the resting and the moving positions and he moves in his argument from the singular positions in space to the differentiation of time intervals. This concern with time becomes most explicit in a statement in the chapter 'Locomotion in Man from an Artistis Point of View' (Marey, 1895, pp. 169-185)

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menteuse; car dans le réalité le temps ne s'arrête pas: et si l'artiste réussit à produire l'impression d'un geste qui s'exécute en plusieurs instants, son œuvre est certes beaucoup moins conventionelle que l'image scientifique où le temps est brusqueent suspendu.' (2006, p. 93)

in which he refers to Georges Demeny's chronophotographic study of 'A Sword Thrust' in a composite photograph. (1895, p. 178) Marey describes how the most extended positions in terms of duration (measured time interval) are the best visible ones and the most 'expressive attitudes' with regard to the exposure time, while the instances in between are blurred relating to the velocity of the movement: '... there are some attitudes which last longer than others, and which may be called "positions of visibility." Chronophotography would determine these with the greatest precision.' (Marey, 1895, p. 179) Marey refers to these differentiations as potentials of variable expressive attitudes in the captured instantaneous positions on which the artist could base his individual choices. Michaud compares these expressive instants with the expressiveness of frozen moments in the Japanese Kabuki theatre in which the actors stop in a frozen pose, the *mié*, from the height of one tension to the next. Michaud relates this to the *Mnemosyne* in which:

> ... Warburg sought to juxtapose figures caught at the culminating point of their expressivity by using the black spaces between them as visual ruptures, disjunctions in which diminution of slackening energy was annulled. Thus if one were to express *Pathosformeln* [pathos formulas] in Japanese, one might translate it as "mié", a movement frozen in the instant of its greatest intensity. (2004, p. 272)

Marey saw great benefit for the arts in the opportunity to select from the broad spectrum of attitudes of the moving body according to physiological/ scientific data in order to interpret them through their individual choice, which he called a 'judicious use of photographs.' (Braun, 1992, p. 268) Contrary to the controversy in the arts in the refusal to accept the camera as a truthful instrument to represent the reality that the human 'eye' sees[331], the aesthetician Paul Souriau picked up Marey's suggestion very positively and clarified the 'judicious use' of chronophotography in terms of a choice of attitudes rather than a blurring of objects. He thereby suggested not to literally translate Marey's images into paintings — but this, however, is exactly what happened with the advent of modern art largely based on Marey's movement studies. (Braun, 1992, p. 276) When Marey referred to this fact in his elaboration on the artistic implications and applications of chronophotography; it could be said that he implicitly stated that the individuality of an

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[331] Note the retinal centered position of vision at the time.

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artist's expression can be found in the aspect of time, as it is expressed through the speed of a particular movement and the time interval that is chosen.

Marey's decision to superimpose single instances in one frame is significant because he confirmed analytically Rodin's intuition to incorporate various instances of a movement into sculpture. The problem arises, however, when Marey attempts to translate his chronophotographic images one-to-one into sculpture in order to show the accuracy of physical movement — Marey's solutions do not express what Rodin or Warburg understood by movement as an inner principle and dynamism. Marey writes to the *Académie des Sciences* to explain his view on the use of chronophotography for art to study and analyse a more precise presentation of movement and 'animated beings':

> Certain artistic representations of walkers or runners are sometimes bothersome to the physiologist familiar with the succession of movement in human locomotion. The impression is somewhat analogous to what we feel in front of those landscapes painted when the laws of perspective were observed less than they are today. The difficulty artists find in representing men or animals in action is explained when we realize that the most skilled observers declare themselves incapable of seizing the successive phases of locomotive movements. To this end, photochronography seems called to render services to art as it does to science, since it analyzes the most rapid and most complicated movements. (Braun, 1992, pp. 267-7)

Nonetheless, as mentioned earlier, Marey was not interested in a 'realistic' representation of objects and things, but he understood chronophotography as superseding ordinary perception in that in his view it allowed for greater details and precision, which normally gets lost in the speed of movement. It can only be assumed that he saw a similar elevation or improvement happening in the expression of Engrand's sculpture of the runner[332], while one might argue that Marey fell into the trap of a realist orthodoxy by attempting to represent the very instant that he had captured with the photographic camera. As a consequence the sculpture does not express the succession of movements as Marey's composite photographs seem to suggest. However, Marey may have been well aware of the way Engrand's sculpture arrests time and movement while Rodin's work in contrast

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[332] The academic sculpture Georges Engrand made bas-reliefs of a runner following Marey's chronophotographic analysis. See Braun (1992, p. 137, 267; Fig. 81 p. 144)

brings time and movement into flow, as is most explicit in his Balzac or the Gates of Hell. Bergson describes this with reference to the Parthénon to which Pisano also alludes when he claims that it: '... dissolves duration in a fiction of the eternal.' (2006, p. 95)

Like Warburg, Bergson suggests that the very processes of the creative activity — which according to him constitute the very ordinary workings and proceedings of our consciousness — are expressed most tangibly through the aesthetic faculty as a constituent part of intuition in the production (and it could be added, in the perception) of the artwork. This aesthetic perception of art is, however, also to be found in ordinary perception; in the following statement Bergson refers to art and the active engagement with the world through sympathy to exemplify intuition as a creative process with the aim of understanding life as immanent in matter — a statement that could also be extended to the perception of art:

> That an effort of this kind is not impossible, is proved by the existence in man of an aesthetic faculty along with normal perception. Our eye perceives the features of the living being, merely as assembled, not as mutually organized. The intention of life, the simple movement that runs through the lines, that binds them together and gives them significance, escapes it. This intention is just what the artist tries to regain, in placing himself back within the object by a kind of sympathy, in breaking down, by an effort of intuition, the barrier that space puts up between him and his model. (1998, pp. 176-7)

Bergson's conception of sympathy and an aesthetic faculty coincides with Robert Vischer's notion of empathetic symbolism and imagination in relation to the experience of aesthetics, which according to Rampley constituted a significant influence on Warburg's work. Rampley (1997) reminds us that in Vischer's view: '... through the artistic imagination the mimetic assimilation of the subject to the object occurs in its most intense form[333].' A discussion on aesthetic perception of art cannot be fully addressed in this context. It should be noted, however, that art as an aesthetic experience, as well as the cinema, as it is argued here, in this sense constitute a paradigm for the contact between subject and object, matter and spirit, and exemplify Bergson's philosophy of

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[333] Rampley (1997) argues that Warburg has extended Vischer's concept of empathy in two ways, one in giving it a greater role of symbolism in the rooting of identification in the unconscious, the other in historicising the phenomenon of empathy.

perception. This also reveals another crucial point in Bergson's philosophy that has often been misinterpreted: consciousness according to Bergson had to split up its momentum in the course of evolution into instinct and intelligence as two contingent faculties, and while intelligence is directed towards inert matter, instinct and intuition are directed towards life. Bergson states:

> If, as I have tried to show in a previous work [*Creative Evolution*], matter is the inverse of consciousness, if consciousness is action unceasingly creating and enriching itself, whilst matter is action continually unmaking itself or using itself up, then neither matter nor consciousness can be explained apart form one another. (1920, p. 18)

It is clear that Bergson does not posit intuition as more important than intelligence, and consequently metaphysics as privileged over science, but as he sees them they are not opposed to each other but rather complementary. However, he does assert that it is this conscious activity based on free will that pushes the life of the spirit (the virtual, the past) constantly into the present and in this way enables the human spirit to liberate itself from the constraints of the material form. Through the way they constitute our quotidian occupations, they complement each other as two necessary tendencies of our consciousness; in Bergson's view intuition supplements the intellect in that it may enable us to grasp what intelligence fails to give us. (1998, p. 177) As Bergson says:

> ... it must be understood that the further it [science] penetrates the depths of *life*, the more symbolic, the more relative to the contingencies of action, the knowledge it supplies to us becomes. On this new ground philosophy ought then to follow science, in order to superpose on scientific truth a knowledge of another kind, which may be called metaphysical. (1998, p. 199)

However, even though intuition transcends intelligence by the way it introduces us into what Bergson calls 'life's own domain', by which he understands the continuous flux of creation and *durée* (1998, p. 178), he finds that:

> ... it is from intelligence that has come the push that has made it rise to the point it has reached. Without intelligence, it would have remained in the form of instinct, riveted to the special object of its practical interest, and turned outward by it into movements of locomotion. (1998, p. 178)

Warburg to some extent seems to go along with Bergson's understanding of perception which takes place in the object to be perceived by way of an extended consciousness, or as Bergson calls it above 'reciprocal interpenetration.' (1998, p. 178) He conceptualises the subject-object relationship in view of a development from a magical-associative to a logical-dissociative progression exemplified in arts practise. (Rampely, 1997) This is expressed in a note by Warburg from his field-trip to the Hopi and Pueblo Indians in New Mexico and Arizona in 1895:

> Incorporation is a logical act of primitive culture...
> Incorporation is a process that occurs between a human being and a foreign being, animate and inanimate...
> ... Communion rites...
> 2. Appropriation through incorporation. Parts of the object remain as associated foreign bodies, thus inorganically extending the ego-feeling. Manipulating and carrying.
> 3. The subject is lost in the object in an intermediary state between manipulating and carrying, loss and affirmation. The human being is there kinetically but is completely subsumed by an inorganic extension of his ego. The most perfect form of the loss of the subject in the object is manifest in sacrifice, which incorporates some parts into the object. Mimetic and imitative transformation: example; the mask dance cult.
> The scientific worldview presupposes that an actual transformation of a human into a plant, animal, or mineral is, by the laws of nature, impossible. The magical worldview, however, is based on the belief in the fluid borders between human, animal, plant, and mineral, such that man can influence becoming by means of a voluntary connection with the organically foreign being. (Michaud, 2004, p. 325)

Bergson suggested an understanding or the essence of life as a force (*élan vital*), a continuous flux that endures, a constant becoming; in this view Marey's studies of movement appear as merely the graphical traces of an effect whose origin remains undiscovered, which nevertheless lay at the core of his interests. His investigation remained on the surface of an exteriorisation of a motion that for Bergson derives from a decisive action based on free will; since in his view: '... real time, regarded as a flux, or, in other words, as the very mobility of being, escapes the hold of scientific knowledge.' (1998, p. 337) In this view Marey studied the very activity of movement in its physical expression and effect, while Bergson regarded the physical movement as a mere sensori-motor effect of a decisive action formed by the intrinsic processes of consciousness, in a

continuous flow of *memory-images* overlapping with our perception, continuously performing a creative activity where free will emerges:

> ... there is no state of mind, however simple, which does not change every moment, since there is no consciousness without memory, and no continuation of a state without the addition, to the present feeling, of the memory of past moments. It is this which constitutes duration. (Bergson, 1999a, p. 40)

Memory-images, according to Bergson, are being formed in the processes of recollection and the activity of attentive recognition, at the outer end or depth of our conscious states. However, in pure memory, there are no *images* to be distinguished, it precedes images, it is unconscious: 'The inner life is all this at once: variety of qualities, continuity of progress, and unity of direction. It cannot be represented by images[334].' (Bergson, 1999a, p. 27) In this Bergson goes much deeper and more abstract than Warburg in his conception of memory as a flow of images beyond language. Nonetheless Marey, Bergson and Warburg seem to be reconciled in their acknowledgement that activity is the very threshold of physical life. For science, however, the investigation ends at the material surface of this exploration, as it is the case in Marey's major works considered from the limitations of the scientific framework. Bergson and Warburg furthermore recognised the very driving force that precedes the actual material form and its manifestation, a perspective that is revealed in Marey's oeuvre once a discussion is extended into a broader intellectual context.

Pisano confirms this view when he relates Rodin, Muybridge, Marey, and Bergson (and even Warburg very briefly) to one another in the convergence of their shared interest in the simultaneous progressions of the future in the present and the notion of time crystallising in form or matter that escapes its continuity, while their approaches are differentiated by the means and methods they employ to transform or transfer this idea. (Pisano, 2006, p. 98) Pisano, however, assumes the vantage point of the observer or

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[334] Bergson does not understand progress as a uni-linear forward development, but in the context of his evolutionary theory he states that 'Evolution is not only a movement forward; in many cases we observe a marking-time, and still more often a deviation or turning back... No doubt there is progress, if progress mean [sic.] a continual advance in the general direction determined by a first impulsion.' (1998, p. 104)

beholder without distinguishing it from the intentions that lie in the making of the works or an analysis of the chronophotographs themselves, and without specifying the inherent contradictions and differing objectives that for example distinguish the work of Marey from Bergson's philosophy as well as from Warburg's understanding of motion beyond visible appearance.

What this section has tried to establish, almost in the form of a conceptual *Mnemosyne* or a zig-zag doctrine to use Bergson's expression (Guerlac, 2004, p. 45), consists of key ideas around movement and time relating to these three thinkers, rather than developing a consistent argument or commonality. It attempted to show the inherent contradictions as well as points of reference that weave a complex network of ideas and forces to which in some pivotal crossings the emerging cinema is connected, without being it's key agency or a straight-forward consequence. Rather this network seems like an ever-changing whole, continuously allowing new connections depending on the perspective of the observer; possibly a paradigm of relativity, or like Bergson's analogy with a rubber balloon: 'Reality is global and undivided growth, progressive invention, duration: it resembles a gradually expanding rubber balloon assuming at each moment unexpected forms.' (1992a, p. 96)

5.2 Projection and Perception — the Subordination of Time to Movement

What this account so far proposes is an initial interconnection of parallel ideas and investigations beyond the mere capture and representation of movement around the turn of the 19th to the 20th century. In a contextualised reading of some of these innovative thinkers it becomes evident that Étienne-Jules Marey's interest lay in the study of force and energy related to movement, which was situated within the intellectual climate of his time. Within the scientific framework his work was guided by the discoveries of the two laws of conservation of energy in thermodynamics and the application of these laws to the human body. In this way his investigations were rooted beyond the visual evidence of the captured instances of postures of the moving body. The critical remarks of Marey on

the aesthetic character of chronophotography and on the visualisation of movement more generally, may merely be marginal in his overly positivist comments on his work, and in a wider context they may appear as exclusively part of Marey's personal approach to his chronophotography. However, they provide a good example to illustrate how, not only for Marey but for other scientists involved in the capture of images as well (see for example the statement from Albert Londe, cited in chapter 4, section 4.3), the commercial exploitation of the emerging cinema must have seemed an affront and rather frivolous, or at the very least not in their interest, as is also apparent in the ambivalent approach of Louis and Auguste Lumière[335]. Despite all these efforts to keep their inventions within their scientific interest, the 'basic cinema apparatus', developed within the scientific community, turned into something else, quite contrary to the intentions and interests of the inventors, when it took off as entertainment, as Chanan (1980, pp. 115-6), Nye (2006) and Punt (2000), have argued. However, at the same time it becomes apparent that the scientific visualisation of research into physiology, microscopy, astronomy, etc., constituted a crucial ingredient in the audience's early fascination with the emerging cinema and through which it has been argued in chapter 1 they maintained close contact with the scientific community.

As a consequence of the shift from science to the popular domain, the emerging cinema *dispositif* abandoned the peepshow model for the cinematograph, and found itself in an ambiguous position. At the very beginning, projection in the public domain (what was to become the cinema as we know it today) was regarded as neither entirely science nor art. As has been discussed earlier, for science it constituted first and foremost the synthesis of

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[335] The Lumières attempted to highlight the scientific values of their Cinématographe by showing it first to the scientific communities and by a tendency to diminish its entertainment value, while at the same time profiting from the prestige of the scientific establishment with which they had close ties through their own scientific research interests. It is notable that they were at first not included in a jury of the *Musée Centennal de la Classe 12*, which was headed by Marey, and part of the Universal Exposition in Paris in 1900; Braun reminds us that the Lumières were the 'most highly visible representatives of the interests of cinema at a time when it was a low form of fairground entertainment, the heir of popular entertainments like the music hall, variety theatre, and the circus. (1992, p. 197) It was only through a very diplomatic letter from Marey to the ministery that got them into the Jury. (Braun quotes the letter, 1992, p. 198) For more information on Marey's engagement with the Classe 12 and the painter N. Bouton see Rollet (2006, pp. 105-117).

an analytical process consistent with the scientific methods of division, dissection, and the privileging of singularities. In the history of visual culture this became possible after the establishment of photography as a viable, reliable 'representation' of reality by the mid 19th century[336].

The recognised use of photography in scientific research went hand in hand with developments in the psycho-physiological studies of perception, in particular the study of the visual perception of movement. Scientific experiments with visual media include for example Gaston Contremoulin's radiochronophotography (using X-Ray)[337], and Jean Comandon's ultramicroscopy or the *Institut Pasteur*, a laboratory for scientific cinematography. (Lefebvre, 2006, pp. 159-177). Beyond the scientific context, these experiments were also distributed and exhibited publicly as a form of entertainment, by among others Charles Urban. Urban collaborated with the natural scientist, Francis Martin Duncan (and later with Frank Percy Smith) with whom he produced the Urban-Duncan Micro-Bioscope which exhibited microcinematography. Likewise Gaumont productions included scientific films that were overtly oriented toward a popular audience, as was Jean Comandon's scientific microcinematography, whose laboratory was supported by the *Pathé Frères* film production enterprise[338]. Hannah Landecker has emphasised the novelty of the emerging cinema as a time-based medium and related its emergence with a scientific mode of looking. She makes a crucial distinction between the manipulation of time for observation relative to the time of experimentation. (2006, 2005)

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[336] Étienne-Jules Marey's work has already been highlighted as exemplary for his interest in photographic analysis of movement; in terms of the early applications of photography to the scientific study of movement he refers to Onimus and Martin in 1865 who achieved to capture movement through long exposure. (Marey, 1895, p. 59).

[337] The Belgian artist Wim Delvoye is famous today for his use of X-Ray imaging in his work that crosses boundaries in provocative ways between science and art, religious and pornographic iconography, between human and animal, sacred and profane. His X-Rays seem to illuminate the discrepancy discussed in this thesis between the experience and the representation of these internal states, exemplified by an application of the scientific method of X-Ray photography. For some examples of his works incorporating X-Ray see:
http://www.longmarchspace.com/images/o-site11/yszp/dew/e-index.htm

[338] Landecker emphasises the multi-disciplinary scope of Comandon's films which: '... were simultaneously scientific investigations of biological phenomena, money-making features of the Pathé Frères salons and catalogue, and teaching films for students of science and medicine.' (2006, p. 128)

Mary Ann Doane has also pointed to the significance in the relationship between the cinema and science not in terms of the recording of objective truth but in regard to the: '... overlapping concepts and technical practices of seeing the physical world, including the important problem of the representability of time.' (Landecker, 2005, p. 907)

Landecker discusses the transition from chronophotography to cinematography and how the film camera was perceived as a tool to enhance the temporal dimension of perception — as has already been discussed in the case of Marey — she used the example of Jean Comandon who stated: '... the cinematograph is, like the microscope itself, an instrument of research, while the one concerns visual space, the other concerns time.' (2006, p. 125) In this context Alexis Carrel coined the term 'physiological duration' (Landecker, 2005, p. 923), and considered immortality and duration as operational scientific concepts for which he sought to develop new sets of instruments and practices. Carrel, Nobel-Prize winning surgeon at the Rockefeller Institute for Medical Research, drew on Bergson's philosophy of time in his attempts to transfer his thinking on time as duration into an "operationalized' philosophy' in growing cell tissues to maintain and regulate their lives. (Landecker, 2005, p. 923) He remarked regarding the experience of time in his experiments with cinematography:

> ... the present of a living organism does not pass into nothingness. It never ceases to be, because it remains in the memory and is entered in the tissues. Bergson has clearly shown how the past persists in the present. The body is obviously made up of the past. (1931, p. 620)

Landecker remarks that Carrel's experiments with the cinematographic study of living cells as they grew as: '... perhaps the most hands-on interpretation Bergson's work has ever received; it was a science of duration complete with its own glassware, instrumentation, choreography, outfits, and lighting... With cinematography Carrel thought he could see duration.' (2005, p. 924) Needless to say Carrel's duration refers again to a spatialisation of time which differs from Bergson's *durée* as internalised quality, nevertheless Carrel does point to time as experience in his remark that the: '... actual slowness of "the concrete event that a tissue is" fell away immediately from the

experience of watching the films[339].' (Landecker, 20005, p. 924) Landecker's approach is particularly significant since it emphasises the aspect of *time* versus *movement* (emphasis by the author) in the close connection of the emerging cinema with scientific visual experimentation[340]. This insight ties in with Bergson's emphasis on time beyond movement as well as with Warburg's and Marey's understanding of motion beyond the actual appearance of form, as discussed in the previous sections. It appears from a scientific and philosophical context that the canon of cinema history has for a long time misread the interpretation of the novelty of cinema in terms of movement instead of time along with an underestimation of the significance of the role of the application of cinematography by the scientific community[341].

The misconception of an overvaluation of movement in the understanding of the emerging cinema has been supported by a misunderstanding of the significance of the so-called 'persistence of vision' in the way movement is being perceived. At the very start of Marey's overview on the technological developments of projection in *Movement* (1895, pp. 304-5), he refers to Plateau's study of Stroboscopy, also called 'persistence of vision' or 'retinal persistence'. It was at the time incorrectly believed to constitute the effect that causes us to perceive movement. The fascination with visual deception is commonly traced back to Antiquity; however, this concept, often called retinal or positive after-image-effect, referring to the persistence of a perceived image in time, was scientifically studied most vigorously during the 19th century — most notably by the Belgian physicist and mathematician, Joseph Plateau (1801-1883), who built on previous studies by the English-Swiss physician, Peter Mark Roget (1779-1869). For these studies a variety of rotating discs were developed to illustrate this effect. These include Michael Faraday's Wheel consisting of two discs that spun in opposite directions from each other, and the well-known Phenakistiscope by Joseph Plateau which is similar to the Stroboscopic Disc

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[339] Carrel's films, however, were never publicly distributed, as Comandon's films were. (Landecker, 2005, p. 925)

[340] Landecker reminds us of the chronometer that was frequently shown in the right hand corner of scientific film to indicate the 'real time' passage of the filmed experiment. (2005, p. 919)

[341] Siegfried Kracauer has suggested that the origins of film lie in scientific practice; he relates the emphasis on detail, the decomposition into smallest particles to the very nature of film that reveals characteristics of the scientific method. (Landecker, 2005, p. 904)

developed by Simon Stampfer[342]. (Mannoni, 2000, p. 201) This misconception that 'persistence of vision' constitutes our perception of movement has haunted the understanding of perception for a long time and has persisted especially in the literature of cinema and film studies. This has been pointed out and critiqued by Bill Nichols and Susan J. Ledermann (1980) as well as by Joseph and Barbara Anderson. (Anderson, 1980, Anderson and Fisher, 1978) The persistence of this myth is particularly significant in this discussion since it exemplifies the unresolved problematic of a materialist perspective, in that it attempted to accommodate the perception of movement by insisting on an assumed materialist retinal phenomena; a phenomena that in itself exists but not as the factor that constitutes the perception of movement, neither does it relate to the effect of the visual flicker[343] which disappears through so-called 'flicker-fusion' (fusion masking) nor does it refer to 'apparent motion', the two distinct perceptual phenomena currently accepted as constituting the perception of movement in the cinema. (Nichols and Lederman, 1980, p. 99, Greenaway, 2004) The current understanding suggests, as David Parkinson summarises:

> Flicker fusion prevents us from seeing the lines between each frame, while the phi phenomenon or stroboscopic effect... provides a mental bridge between the frames to permit us to see a series of static images as a single continuous movement. (Greenaway, 2004, p. 3)

Today the illusion involved in the perception of movement, so-called 'apparent movement' distinguishes between the perception of form and the perception of motion (or still and moving objects)[344]. The evidence in recent perceptual psychology studies also points to the fact that we perceive apparent motion in the same way as we perceive real motion — similar to the evidence that the same mirror neurons are triggered when perceiving a real life situation as when we see the same situation acted by somebody else,

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[342] The latter ones led to commercial production and exploitation, which were hugely popular, joining a long history of popular fascination with toys of optical illusions. See for example the Hayword Gallery's publication exhibiting items from the famous private collection by Werner Nekes. (Mannoni, et al., 2004)

[343] The point when the flicker of single frames becomes indistinguishable is today referred to as CFF (critical fusion frequency). (Nichols and Lederman, 1980, p. 98)

[344] Nichols and Lederman as well as Greenaway give a lucid account of the various forms of the perception of apparent motion. (1980, pp. 100-101) See also Mannoni (2000, p. 201), Anderson (1980), Aumont (1991), Nichols and Lederman (1980, p. 100), Greenaway (2004, p. 3).

or on the screen[345]. From a cultural perspective the persistence of the understanding 'persistence of vision' causing the perception of movement also reflects the deep crisis that the acknowledgement of the limitations of vision has caused. This shift shattered the stability of a materialist universe that based its premises on cause-and-effect and simultaneity. As Jonathan Crary (1990) has pointed out, this was part of a much wider discourse in the 19th century that detached sensory perception from the material world and shifted the focus in science to the acknowledgement of subjectivity in relation to the phenomenon of vision. While the scientific understanding of the perception of movement in the 19th century was still focused on the retina, this shift had a significant impact on research in psychophysiology.

Marey, however, argued from the perspective of the traditional contemporary scientific understanding of visual perception, in accordance with Talbot's insights into the 'deficiency' of the human eye. (Talbot, 1912) The dominant theory of 'persistence of vision' was also used in vigorous debates around visual perception in the art discourse. (Braun, 1992, p. 275) The novel photographic technologies played a crucial role in this debate and supported, it seems, the split between science and the arts and anticipated the ambiguous position that the emerging cinema took in between these fields. Similar to the statement by Auguste Rodin cited above, Robert de la Sizeranne argued, consistent with Bergson's system of thought, that only art perceives movement as it is perceived by the human eye, based on the theory of 'persistence of vision' it cannot distinguish single instantaneous postures:

> The truth of science is a truth of detail; the truth of art is a truth of ensemble. When chronophotography brings us a print noting one of the thousand phases of which a movement is composed, we respond: That is a part of movement, it is not movement. It is true that one can find the attitude you discovered in a movement, but it is no less true that there are hundreds of others and that it is the result of all

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[345] 'The activity of the mirror system was first discovered by G. Rizzolatti and V. Gallese in non-human primates; mirror neurons are special neurons in the premotor cortex that represent visually registered movements. It has been discovered that they show activity both when a subject performs an action and when it observes the same action performed by another. For an interdisciplinary approach with relevance to film and cinema studies, see philoctetes.org, a roundtable discussion on empathetic response in acting in relation to mirror neurons. (Philoctetes, 2007) See also Lohmar (2006), and for a reference to mirror neurons applied specifically to a film and cinema studies context see Pisters (2006), Khalili-Mahani (2005).

these attitudes - each one immobile during an instant of reason - that forms what we call movement. My eyes perceive only the ensemble; your camera perceives only a part. (Braun, 1992, p. 275)

With regard to this 'ensemble' that Sizeranne suggests we perceive, the theory of 'persistence of vision' stimulates exactly what its firm defenders in the artistic circles of the time tried to prevent: namely that the perceived images multiply the impressions of movement as by superimpositions through the supposed retention of an image on the retina even after the eye takes in another image. Souriau suggested:

> For the watching eye, the flying bird does not have two wings, it has at least four; the trotting hose does not have four legs, it has at least eight, since, in any rapid alternative movement, the eyes conserve at the same time the image of both extreme phases of the oscillation. (Braun, 1992, p. 276)

The theory of 'persistence of vision' seems to have supported the transposition of Marey's chronophotography into the favour of modern art, such as Futurism or Cubism (Braun, 1992), while at the same time the very same principle, according to Braun, was used to argue against instantaneous photography, as the human eye in comparison would only see blurred images and not single positions. Again the disparity lies in the problematic of time, since to perceive a horse with eight legs, the single chronophotographs have to be perceived as simultaneities, which the measurement of movement through the intellect and the scientific method according to Bergson precisely comprises. The misunderstanding of time that Bergson so consistently criticised, reveals the deadlock of materialism and the dominance that this rationalist paradigm gained also in the arts at the beginning of the 20th century[346]. This tendency was at the same time put into crisis through emerging ideas around relativity and the introduction of new dimensions in psychology, which in the 19th century had turned from a focus on the physical sensory faculties to the activities of the mind, and most prominently the unconscious as elaborated by Freud. It also initiated a shift anticipated in the arts from the

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[346] Futurism in this perspective appears as prolongation and further development of the scientific trajectory of measured time intervals in space, an assemblage of simultaneities, which provoke a recognition of the inherent mental processes that account for the perception of movement, while their inspiration also derived from ideas around the 4th dimension, spiritualism and metaphysics. (Braun, 1992, p. 291)

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objective to the subjective, and Braun reminds us that Souriau was instrumental in promoting this tendency and also in his recognition of the aesthetic pleasure of perception; she states:

> This shift, propelled by an artistic notion that reality might be more than something apprehended by the senses and reason — that it might be discovered by the imagination — echoes shifting philosophical assumptions about the nature of reality and time; it culminates in the emergence of abstract art in the early twentieth century. (1992, p. 277)

During the 1910s it became more widely recognised that the theory of 'persistence of vision' was insufficient to account for movement in visual perception, through the experimental studies of Max Wertheimer amongst others and his discovery of B and *phi* movement (Wertheimer, 1912). The German psychologist Hugo Münsterberg, a pioneer in the fields of industrial, experimental, and clinical psychology[347], criticised the insufficiency of the concept of 'persistence of vision' based on his research in experimental psychology, which he considered as too simplified to do justice to the actual experience[348]. ([1916] 2001, p. 26) He explicates further:

> One result of them came quickly into the foreground of the newer view: the perception of movement is an independent experience which cannot be reduced to a simple seeing of a series of different positions. A characteristic content of consciousness must be added to such a series of visual impressions. (2001, p. 26)

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[347] Münsterberg was trained in medicine and psychology and got invited by William James in 1892 to run the psychological laboratory at Harvard. While this position made Münsterberg a forerunner of behaviourism, in the way he saw mental phenomena necessarily correlated with psychological processes, he did nevertheless acknowledge the human agency of freedom in relation to values. He was also involved in research of parapsychological phenomena; he studied, as other scientists mentioned earlier in chapter 1, one of the most famous mediums of the time, Eusapia Palladino. (Münsterberg, [1916] 2001)

[348] Münsterberg refers to scientific research from the last thirty years, such as by Stricker, Exner, Hall, James, Fischer, Stern, Marbe, Lincke, Wertheimer, and Korte, who according to him 'have thrown new light on the problem by carefully divised experiments'. ([1916] 2001, p. 26) Both Marey and Bergson were aware of the contemporary psycho-physiological research and cite some of these authors in their own work.

This is contextualised with Bergson's assertion that: '...motion, in so far as it is a passage from one point to another, is a mental synthesis, a psychic and therefore unextended process[349].' (Bergson, 2001, p. 111) As Münsterberg puts it:

> ... the apparent movement is in no way the mere result of an afterimage and [that] the impression of motion is surely more than the mere perception of successive phases of movement. The movement is in these cases not really seen from without, but is superadded, by the action of the mind, to motionless pictures. ([1916] 2001, p. 29)

In response to Münsterberg's intervention that: '... the motion which he [the spectator] sees appears to be a true motion, and yet is created by his own mind' ([1916] 2001, p. 30), Ramsaye replaced the concept of 'persistence of vision' in the cinema context with his notion of a 'persistence of optical imagination.' (1926, p. 170)

It is undeniable that the issue of movement and motion perception has been historically regarded as intrinsic to the workings, the reception and the persistent popularity of the cinema. The conception of movement on the surface of a textual analysis, as well as the intrinsic mechanisms of the apparatus, however, appear as superficial readings when considering that some of the diverging scientific interests in the background were also familiar and followed by the general public, especially those that sanctioned alternative understandings of reality, time and related issues. This observation is also in harmony with Bergson's critical argument confronting the subordination of time to movement, and of the internal, subjective experiences contrasting with the dominant paradigm of realism and materialism. This can be safely regarded as having contributed to Bergson's popularity, making him one of the most popular philosophers of his time in France, and an internationally renowned cult-figure.

In Braun's account, the reinterpretation of Marey in the context of metaphysical issues in early 20th century art, in contrast to his scientific paradigms appears as a contradiction or illogical leap, but only when the intrinsic undervalued dimensions of the immaterial in Marey's work are either neglected or marginalised. These dimensions anticipated the

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[349] Bergson cited some earlier works from Münsterberg *Beiträge zur experimentellen Psychologie* (1889–92; 'Contributions to Experimental Psychology') in *Matter and Memory* (1991, p. 103)

shift to the subjective perception of the beholder, and most explicitly appear in his statement that the: '... images, therefore, appeal rather to the imagination than to the senses.' (1895, p. 304) This convergence of science, the arts and metaphysics in Marey's work has largely been ignored but becomes more transparent when considering a fuller perspective beyond the reductionism of the institutionalised rationalist paradigm or a teleological reading of his work limited to a technological or mechanistic perspective. Braun, however, does mention that wherever Marey's work has been reread as an exemplification of another dimension or reality expressing duration (as mentioned earlier a different understanding of duration than Bergson's *durée*): '... this reading necessitated however obscuring the analytic component of the pictures as the experience of time changed from a linear atomistic abstraction to a web of personal sensations.' (1992, p. 277) Hannah Landecker has pointed out that this 'retrospective and artificially stark distinction' between scientific cinema and entertainment due to Marey's own declared disinterest in the projection of movement as it is perceived by the eye has also been increasingly challenged in research into the history of scientific imaging[350]. (2006, pp. 123-4)

To relay this discussion back to the previous issues around the investigations of motion beyond the appearance of movement, it seems that Aby Warburg takes off where Marey's investigation stopped with regard to the former's interest in force and energy as a life principle, since he was interested in motion in art beyond the surface of iconography and forms. Marey hints at this fact where his investigations exceeded the intellectual framework of science and he started to relay them into a discourse of art and aesthetics. Henri Bergson at the same time, was working at the root of this problematic to investigate the very principles of life. He saw the reasons for the unresolved problem in dualism and the thereby caused assumption of a mysterious relationship between matter and spirit, the body and the mind, in a misunderstanding of time as solely externalised in space. Besides the significance of the issue of time, the recurring theme of life-force, energy and life

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[350] This close connection between science and entertainment, as for example in the case of the Lumières, has also been emphasised in a broader context by Punt (2000), Gunning (1994), Tsivian (1996), Doane (2002).

dynamism is evident in the works of all three thinkers as an underlying principle beyond the image as text, which figured merely as a symptom of a deeper relation or dimension.

5.3 Bergson's Conception of the 'Cinématographical Tendency of our Intellect' versus Time and Intuition

It is clear from his earliest publications that Bergson was informed about cutting edge research of his time regarding groundbreaking studies in psychophysiology, dealing with the issues of perception, consciousness and memory. When he published *Matter and Memory* in 1889, he was well aware of the profound mental processes involved in the perception of vision and the occurrences with memory functions as facilitated by the brain, especially since he based his system of thought on scientific empirical data. 'Persistence of vision' to him must have appeared as an antiquated concept since in his own system of thought he shifted the attention from the eye (and that would include in an extended reading the camera as an extension of the eye) to the mind and the processes of consciousness.

Given the accounts in the previous discussion, it should have become more obvious why Bergson, like Marey and Warburg, was not interested in the visual representation of movement since the technology itself, from a scientific point of view, in his view only concerned the exteriorisation of time in space. Bergson referred to the technology of the cinematograph merely as a metaphor and model relative to understanding it as a model of consciousness rather than an apparatus that represented the world or actual movement. Consequently in *Creative Evolution* (1998) he writes about the: '... cinematographical tendency of our perception and thought' (1998, p. 326), '... the cinematographical mechanism of our thought' (1998, p. 313) or the 'cinematographical habits of our intellect' (Bergson, 1998, p. 312) and states that: '... the mechanism of our ordinary knowledge is of a cinematographical kind.' (1998, p. 306) These statements in relation to the discussion in the previous chapter reveal why the cinema interested Bergson purely in its technological mechanism pertinent to the perspective of science and his elaboration of

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the function of our intellect. Hence for Bergson, in contrast to Marey's conception of projection, the succession of single frames moving through the projector merely produces an illusion of movement, an imitation of 'real' movement in: '... the cinematographical film, a movement hidden in the apparatus and whose function it is to superpose the successive pictures on one another in order to imitate the movement of the real object.' (1998, p. 313). He elaborates on the projection mechanism and the reconstitution of a lacking movement in the single freeze frames through the mechanism of the projector, and compares the cinematograph to the way our intellect obtains knowledge:

> Instead of attaching ourselves to the inner becoming of things, we place ourselves outside them in order to recompose their becoming artificially. We take snapshots, as it were, of the passing reality, and, as these are characteristic of the reality, we have only to string them on a becoming, abstract, uniform and invisible, situated at the back of the apparatus of knowledge, in order to imitate what there is that is characteristic in this becoming itself. Perception, intellection, language so proceed in general. Whether we would think becoming, or express it, or even perceive, it, we hardly do anything else than set going a kind of cinematograph inside us. We may therefore sum up what we have been saying in the conclusion that the *mechanism of our ordinary knowledge is of a cinematographical kind.* (Bergson, 1998, p. 306 — emphasis in the original)

In the following Bergson exemplifies with another optical metaphor that the way we take these snapshots of objects around us is similar to the shaking of a kaleidoscope that produces ever new compositions; in his view our intellect is not interested in the shakes themselves, but merely in the outcome of the new pictures:

> In this sense we may say, if we are not abusing this kind of illustration, *that the cinematographical character of our knowledge of things is due to the kaleidoscopic character of our adaptation to them.* The cinematographical method is therefore the only practical method, since it consist in making the general character of knowledge form itself on that of action, while expecting that the detail of each act should depend in its turn on that of knowledge. (Bergson, 1998, p. 306 — emphasis in the original)

From this we can see that Bergson's view on the function of the intellect was very much in accordance with the scientific principle of observation and with Marey's project of chronophotography in its attempts to extend the visible spectrum of the eye's perception via technology, which in this perspective simply prolonged the mechanistic process of the visual apparatus, but did not account for the mental processes taking place internally

where time is perceived as real duration, as *durée*. Bergson, however, does not set intuition against the intellect, as mentioned earlier, but establishes a dualism of both these two tendencies as complementary constituents of the human mind. He elaborates on this topic in *Creative Evolution* in which he proposes the concept of the *élan vital* as the driving creative impulse of consciousness, based on free will and accessible via intuition, within the framework of our body's necessity towards action steered by the intellect directed toward the manipulation of matter. In order to grasp the complexity of Bergson's system of thought, the following, exceptionally long quotation, summarises these main strands of his thinking with regard to intuition and the intellect:

> Our own consciousness is the consciousness of a certain living being, placed in a certain point of space; and though it does indeed move in the same direction as its principle, it is continually drawn the opposite way, obliged, though it goes forward, to look behind. This retrospective vision is, as we have shown, the natural function of the intellect, and consequently of distinct consciousness. In order that our consciousness shall coincide with something of its principle, it must detach itself from the *already-made* and attach itself to the *being-made*. It needs that, turning back on itself and twisting on itself, the faculty of *seeing* should be made to be one with the act of *willing* — a painful effort which we can make suddenly, doing violence to our nature, but cannot sustain more than a few moments. In free action, when we contract our whole being in order to thrust it forward, we have the more or less clear consciousness of motives and of impelling forces, and even, at rare moments, of the becoming by which they are organized into an act: but the pure willing, the current that runs through this matter, communicating life to it, is a thing which we hardly feel, which at most we brush lightly as it passes. (Bergson, 1998, p. 237 — emphasis in the original)

> Consciousness, in man, is pre-eminently intellect. It might have been, it ought, so it seems, to have been also intuition. Intuition and intellect represent two opposite directions of the work of consciousness: intuition goes in the very direction of life, intellect goes in the inverse direction, and thus finds itself naturally in accordance with the movement of matter... In the humanity of which we are a part, intuition is, in fact, almost completely sacrificed to intellect. It seems that to conquer matter, and to reconquer its own self, consciousness has had to exhaust the best part of its power. This conquest, in the particular conditions in which it has been accomplished, has required that consciousness should adapt itself to the habits of matter and concentrate all its attention on them, in fact determine itself more especially as intellect. Intuition is there, however, but vague and above all discontinuous... These fleeting intuitions, which light up their object only at distant intervals, philosophy ought to seize, first to sustain them, then to expand them and so unite them together. The more it advances in this work, the more will it perceive that intuition is mind itself, and, in a certain sense, life itself: the intellect has been cut out of it by a process resembling that which has generated matter. Thus is revealed the unity of the spiritual life. We recognize it only when

we place ourselves in intuition in order to go from intuition to the intellect, for from the intellect we shall never pass to intuition.

Philosophy introduces us thus into the spiritual life. And it shows us at the same time the relation of the life of the spirit to that of the body. The great error of the doctrines on the spirit has been the idea that by isolating the spiritual life from all the rest, by suspending it in space as high as possible above the earth, they were placing it beyond attack, as if they were not thereby simply exposing it to be taken as an effect of mirage! ... but if there exist "souls" capable of an independent life, whence do they come? When, how and why do they enter into this body which we see arise, quite naturally, from a mixed cell derived from the bodies of its two parents? All these questions will remain unanswered, a philosophy of intuition will be a negation of science, will be sooner or later swept away by science, if it does not resolve to see the life of the body just where it really is, on the road that leads to the life of the spirit. But it will no longer have to do with definite living beings. Life as a whole, from the initial impulsion that thrust in into the world, will appear as a wave which rises, and which is opposed by the descending movement of matter. On the greater part of its surface, at different heights, the current is converted by matter into a vortex. At one point alone it passes freely, dragging with it the obstacle which will weigh on its progress but will not stop it. At this point is humanity: it is our privileged situation. (Bergson, 1998, pp. 267-271)

Bergson's system of thought, summarised at length in his own words, provides the basis for the crucial move within the context of the emerging cinema that constitutes the main intervention in this thesis. It consists of a shift from the focus on the 'spiritual' as 'belief', an essential quality of 'apparitions' or other paranormal phenomena, as well as a shift from the focus on the film as content and the screen as metaphor of our mind, to a refiguring of the 'spiritual' within matter, as 'spirit in action'. Bergson suggests: '... to see the life of the body just where it really is, on the road that leads to the life of the spirit.' (1998, p. 269) This view resituates 'spirit' within our *durée*, appearing through the internal processes of recollections and *memory-images* that according to Bergson drive our actions based on our conscious decisions:

It is natural to our intellect, whose function is essentially practical, made to present to us things and states rather than changes and acts. But things and states are only views, taken by our mind, of becoming. There are no things, there are only actions. (Bergson, 1998, p. 248)

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Bergson proposes an understanding of spirit and the *élan vital* beyond the dominance of our intellect[351] and our corporeal sensing including visual appearances, and paves the way to open a discussion of the spirit as an intrinsic constituent of our ordinary perception. This view resonates with Warburg's attempt to uncover the 'spirit' as a Dionysian principle, opposed to the cultural and religious context of the period he studied. He saw this underlying force as a fundamental activity embedded within the processes of creativity, beyond the surface of visual representation and the forms of appearances. These views in some way also relate to the way clairvoyants communicate their experiences of a sensing that happens rather from within in contrast to a mere external corporeal sensing and intellectual understanding. Bergson suggests:

> Let us try to see, no longer with the eyes of the intellect alone, which grasps only the already made and which looks from the outside, but with the spirit, I mean with that faculty of seeing which is immanent in the faculty of acting and which springs up, somehow, by the twisting of the will on itself, when action is turned into knowledge, like heat, so to say, into light. To movement, then everything will be restored, and into movement everything will be resolved. (1998, p. 250)

What Bergson here terms movement is thus not the movement of things or objects external to us in space, but he refers here to the movement as a quality of time as it is experienced from within, intrinsic to our internal states of consciousness, which he calls *durée*. Bergson's philosophy in this way constitutes a bridge between Marey and Warburg, through his investigation into the temporality of movement as an internal quality of *durée* by connecting the intellectual grasping of movement external in space and the internal qualitative experience of consciousness. The apparent discontinuity that our intellect perceives of our conscious states is, in Bergson's view, caused by our shifting awareness that appears in seemingly separate acts, and consequently makes these states appear as divided:

> ... each of them is borne by the fluid mass of our whole psychical existence. Each is only the best illuminated point of a moving zone which comprises all that we feel or think or will – all, in short, that we are at any given moment. It is this entire zone which in reality makes up our state. Now, states thus defined cannot

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[351] Bergson is very clear in his terminology that when he aligns the workings of our intellect to that of science he does not talk about the 'mind' nor 'thought', but the very processes of our intellect: 'I say intelligence, I do not say thought, I do not say mind.' (1992a, p. 93)

be regarded as distinct elements. They continue each other in an endless flow. (Bergson, 1998, p. 3)

This movement of an ever-changing fluid whole could be compared to what Warburg called 'motion', and Michaud's title *Warburg and the Image in Motion* gains a slightly different interpretation when it is read from a Bergsonian perspective: the 'image in motion' in this sense is not the visual representation and perception of an object in various historical, cultural contexts, instead it could be read as the very motion itself as it is perceived through a time quality in our internalised conscious processes. In the same way the *image* in a Bergsonian sense neither constitutes the thing or object in itself, nor its representation, but 'something in between', a qualitative differentiation, something of a different kind once it is incorporated through the processes of perception, of a 'becoming'.

Michaud, like Bergson, points to the significance of the faculty of action, when he refers to the Warburgian perception of images as a certain detachment, which is replaced with a form of active intervention in the process of understanding and interpreting of works. In Bergson's view the perceived *images* are always already *memory-images* as soon as we become aware of them, since *memory-images* from the past overlap with the pure perception of the present moment. While Michaud's reading of the emerging cinema may ask for some revision and sophistication, his and in particular Rampley's reading of Warburg's oeuvre beyond the concerns of art history appears consistent with Bergson's focus on the present moment of action. In this regard Marey pursued the same interests, and it can be suggested that he not only touched upon the effects of this very action expressed in the visible movement of bodies, but understood from this wider intellectual and conceptual framework, his work appears to be pertinent to Warburg's understanding of motion. Michaud interprets this perspective as elaborated by Warburg as being directed less to a knowledge of the past than towards its reproduction (Michaud, 2004, p. 40). This notion of 'reproduction' in a Bergsonian context could be read as a recollection, an actualisation of a *memory-image* triggered, mediated or amplified by the art-work (or similarly in the cinema), evoked by the tension of our consciousness towards the requirements of the present moment of perception (and the desires and imagination of the

spectators). Michaud, however, points to Warburg's view on the perception of the beholder as a:

> ... recording of motion as a persistence of intermediary states in the displacement of the figure: for the onlooker, its perception requires an identificatory attention – of an almost hypnotic type – through which an exchange takes place between the subject and the object. (2004, p. 84)

This notion recalls Marey's statement that chronophotography appeals rather to imagination than to sensory perception (1895, p. 304), Hugo Münsterberg's studies into the psychological perception of vision ([1916] 2001), Christian Metz' notion of the 'imaginary signifier' (1975) and the active participation of the audiences in the process of cinematographic perception. Aby Warburg has elaborated this interrelationship in his notes[352] entitled, 'Spectator and Movement' and 'Movement and Spectator':

> To attribute motion to a figure that is not moving, it is necessary to reawaken in oneself a series of experienced images following one from the other – not a single image: a loss of calm contemplation. (Michaud, 2004, p. 83)

This quotation from Warburg almost contains the discussion of this chapter in a nutshell, so to speak, when he refers to the composition of movement as taking place in the beholder, the reawakening of experienced images reminiscent with Bergson's notion of the actualisation of *memory-images*, and the 'loss of a calm contemplation.' Through Bergson's philosophy in this context the spectators can be interpreted as empowered agents in their subjective interpretations of the perceived films. Bergson summarises:

> Finally, consciousness is essentially free; it is freedom itself; but it cannot pass through matter without settling on it, without adapting itself to it: this adaptation is what we call intellectuality; and the intellect, turning itself back toward active, that is to say free, consciousness, naturally makes it enter into the conceptual forms into which it is accustomed to see matter fit. It will therefore always perceive freedom in the form of necessity; it will always neglect the part of novelty or of creation inherent in the free act; it will always substitute for action itself an imitation artificial, approximative, obtained by compounding the old with the old and the same with the same. Thus, to the eyes of a philosophy that attempts to reabsorb intellect in intuition, many difficulties vanish or become

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[352] Warburg's writings are preserved in the Warburg Institute, London, in the form of notes that would fill up to seventy books if they were published.

light. But such a doctrine does not only facilitate speculation; it gives us also more power to live. (Bergson, 1998, pp. 267-271)

These insights are going to provide the material for the final elaborations in this thesis in order to situate this discussion within the framework of cinema studies, in particular in the way the immaterial dimensions within the cinema *dispositif* have been addressed and can be accommodated from a Bergsonian perspective.

Chapter 6

Time, Spirit and the Cinema: Resituating the Spiritual Dimension in the Perceptual Processes of the Spectators

Having established a connection between the interdisciplinary scholars Bergson, Marey and Warburg, and their shared concern with the issues of time and movement, there emerges continuity if not agreement in the relationship between time and memory, and movement and energy. Although connecting at different points, as we have seen, they find common ground for their various approaches in rethinking and remediating the concept of the image in its fullness. The aim of this chapter is to build upon this consensus and resituate the spiritual dimension in relation to the cinema experience by applying Bergson's system of thought to the perceptual processes within the spectator's mind. One significant thread that runs as an undercurrent through this thesis is the apparent paradox that an apparatus, developed within a positivist scientific framework became interpreted and connoted with vitalist, spiritist attributes, as some of the early names of the apparatus recall, such as the Vitaphone or the Animatograph, and the general notion of 'living' pictures. Drawing on previous chapters, the following discussion will speculate if and how Bergson's philosophy can provide us with insights into this paradox by resituating the domain of the spirit within the perceptual processes of the spectators with regard to the cinema experience. It will furthermore address some implications of this approach to an understanding of cinema spectatorship in a contemporary context. In the following discussion some concepts of metaphysics in philosophy are brought together in a critical dialogue with theories around the cinema *dispositif*, in particular apparatus theory. As such it can provide some purchase on understanding the effect of the cinematic image on the individual viewer, opening the way to an ontological/ anthropological perspective. Through connecting some strands of Bergson's philosophy with a discussion on the cinema experience, this thesis is moving towards an account of how some of his ideas can be liberated and exemplified especially in the way they allow us to address the subject of 'spirit' from the perspective of an immanent and embodied participatory perspective. What follows is merely a first attempt to apply Bergson's philosophy to a fuller account of cinema perception in order to

resituate the discussion of the 'spiritual' dimension in a philosophical-anthropological meta-discourse as well as a historical perspective.

According to Bergson's arguments against determinism with regard to both the issues of form and movement, it is the philosopher and the artist (and the artist philosopher) that remind us of the temporality of duration that cannot be found in space, as elucidated in the previous chapter. When Bergson enters a discussion of art he applies it to distinguish between the creative force at work manifest in the process of the making of an object and the object as a final outcome in its material form. This aspect reflects Bergson's principles in his evolutionary theory in which life's basic creative force, the *élan vital* continuously moulds the matter that is at its disposal. It is also reminiscent of the way Aby Warburg defined the recording of motion as a persistence of intermediary states in the displacement of the figure. (Michaud, 2004, p. 84) Each material form derives from a previous form in a continuous flow of changing states by adding, each time something new; this is how Bergson asks us to understand *durée* as 'reality'. In this regard Bergson makes a distinction from Spinoza (perhaps the closest of his philosophical allies)[353] in that in his view there is no previous given, neither a Platonean 'idea' or concept, nor a general substance. This is in contrast to the view of Spinoza for whom form, according to Bergson, is deduced to a manifestation of one complete Being, what Spinoza called the One — against which Bergson has placed a radical plurality of durations, understood as qualitative multiplicity. (1998, p. 362) For Bergson everything is truly in motion, but in terms of time not space, and this internal flow that is the realm of the spirit is immanent within matter and not detached on a transcendental plane. This ever-changing reality in constant flux and vibration is 'knowable' and accessible in the two familiar ways of our mind; on the surface and its material form through our intellect, and in its duration and profound vital force and being through intuition. This view on reality together with Bergson's elaboration on his theory of perception in *Matter and Memory* as discussed in Chapter 3, form the basis for the following elaborations of an application of his philosophy to the perception of cinema. It takes almost a reversed view on the agency of

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[353] For an introduction to Spinoza's work see Scruton (2002), for his complete works see for example Morgan (2002).

the subject: it is no longer constituted as an interface between the conscious engagement with the world and an underlying unconscious beyond conscious control, but instead a creative agency accessing the 'unconscious', in Bergson's words 'pure memory', the realm of the virtual, of spirit, in order to drive forward the creative impulse towards actualisation in every present moment of action.

If we recall, in Bergson's analysis of perception, in the moment of perception the mind, or consciousness — which he understands as process rather than as ontological entity — reaches out into the object to be perceived, hence in this sense with all our senses we touch the screen and briefly become one with the object. For the cinema experience this means that commonly the perception of the film always intertwines with the sensations and affections called upon by the *images* the spectators perceive *in* the screen. This outreaching of our mind and perceiving through our sensory system immediately is impinged upon by certain memories from the past (arising from the virtual realm) to actualise in the present moment enabling us to recognise through recollections. Along with memories related to the perceived moment, associative and imaginative virtual *images* are created and recreated through the agency of free will, wherever the meshes of necessity for our actions allow some space to innovate and intervene. The cinema perception in this sense, as any other kind of ordinary perception, is an action of extended consciousness reaching out to the screen, which in itself is nothing but an *image* on to which other *images* are being projected. While from a psychoanalytic point of view the cinema experiences remain one of loss, since the 'object of desire' always escapes the subject's control, Bergson's philosophy departs from a subjectivity of fullness which places itself within the object to be perceived, whereby memory merges with the pure perception of the film. Any meaning or interpretation that derives from this experience can never be assigned to the film as text alone, but necessarily needs to be addressed from this inclusion of the 'spiritual' dimension of the human perceptual apparatus. This asks for some further elaboration.

According to Bergson the human mind processes two opposing movements: that of the intellect and that of intuition. The intellect is directed towards the outside and examines

the external world and splits the *Whole* into segments and instantaneities. Bergson compared this process to the single instantaneous frame of the filmstrip, as the very mechanism of our thought or cinematographic method of our intellect. The intellect in this way processes the most adequate action in the present situation with a tendency towards the material manifestation[354]. Hence all knowledge, which the intellect is able to grasp is purpose- and action-driven, and remains on the surface of things, creating ever more sophisticated perspectives and views. This is the way science, ancient as well as modern, operates according to Bergson; and it could be added that contemporary science still proceeds according to a very similar method. However, the intellect according to Bergson, is never able to grasp the profound essence of a thing or an event, as it only works with concepts and language but does not merge with the thing to be perceived in order to gain an inside view. This identifies intuition as the second movement of our mind, which is a movement contrary to the natural flow and bent of the intellect. In intuition we place our mind through an act of extended consciousness into the object to be perceived and in this way, accompanied by a certain kind of sympathy (or empathetic interest), if only very briefly, we coincide ('co-inside') with the object. This action takes effort and in the best case our mind usually oscillates between these two states, between these two movements.

What does this mean for understanding in the cinema? As we have seen in the previous chapter, Bergson regards the Cinématographe as a simulation of the mechanisms that split the *Whole* (of movement) into single instantaneities; which are then synthesised in the projector through an illusion of movement. This is, as Bergson calls it, the cinematographical method of our mind, and through this, the intellect is never able to gain the 'real experience', as it only constructs instantaneities, which are concepts but not the actual parts of the whole. If we take this comparison literally, this refers to the known

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[354] Bergson regards: '... the intellect as a special function of the mind, essentially turned toward inert matter; then in saying that neither does matter determine the form of the intellect, nor does the intellect impose its form on matter, nor have matter and intellect been regulated in regard to one another by we know not what pre-established harmony, but that intellect and matter have progressively adapted themselves one to the other in order to attain at last a common form. *This adaptation has, moreover, been brought about quite naturally, because it is the same inversion of the same movement, which creates at once the intellectuality of mind and the materiality of things.*' (Bergson, 1998, pp. 205-6 — emphasis in the original)

fact, that the movement in cinema is an illusion or simulation to which the spectators deliberately give themselves over and indulge in the pleasure of their own deception. At this point a straightforward analysis of Bergson's philosophy with regard to the cinema could stop, particularly since it falls into step with dominant psychoanalytic and ideological accounts.

However, if we take Bergson's analysis further, could it not be said that because cinema takes over the process of analysis and synthesis of these single states of movements, that through the gaps it leaves in between, it not only enables but also stimulates our mind to make the movement into the opposite direction called intuition in order to actively create new meaning? It could be suggested that the cinema allows for both — it illustrates our intellect as well as our intuition at work. Our intellect makes sense of the montage, the visible structure of the film, wherever the film deals with movement; this is where our intellect feels at home, according to Bergson's analysis[355]. However, the spectators always engage with their personal memories, and since perception takes place in the object to be perceived, in Bergson's view, the spectator merges with the content on the screen. This contact should be distinguished from identification, since identification in a psychological understanding, for example posited by Edgar Morin (2005), is a process of projection of our self-image, our desires and wishes into the screen, as an act of externalisation. For Bergson, to coincide with the object instead concerns an extension of consciousness that never leaves the characteristics of an internalised process. This process assigns new qualities to pure perception, which derive from the underlying psychic qualitative states that *memory-images* in the perceptual processes create.

It follows that in order to enter 'real' movement and becoming, understood by Bergson as 'sensible reality' in contrast to 'intelligible reality', we need to give up the

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[355] Deleuze has elaborated on these aspects in relation to the film content, which he has classified as the 'movement-image', in which time is subordinated and the action is driven by the sensory-motor schemata, and the 'time-image', in which time takes over the drive in the action in the direction of film form, which leads our intellect astray. When this happens, the spectator directly enters a dimension of time and the dimension of the spirit opens up. (Deleuze, 1986, 1988)

'cinematographical mechanism of thought[356].' (1998, pp. 313-4) We only perceive movement if we place ourselves *in* the movement itself, similarly as in the perception process we place ourselves within the object to be perceived with a kind of sympathy. Bergson suggests: 'Install yourself within change, and you will grasp at once both change itself and the successive states in which *it might* at any instant be immobilized.' (1998, p. 308 — emphasis in the original) He further elaborates on how perception turns into concepts when we intellectually attempt to grasp movement and the processes of change:

> He who installs himself in becoming sees in duration the very life of things, the fundamental reality. The Forms, which the mind isolates and stores up in concepts, are then only snapshots of the changing reality. (Bergson, 1998, p. 317)

These possible stops are happening, according to Bergson, when we step outside the process of movement itself and intellectually conceptualise it, since: '... [i]nfancy, adolescence, maturity, old age, are mere views of the mind, possible stops imagined by us, from without, along the continuity of a process.' (1998, p. 312) These concepts belong to the realm of forms that are independent of time since they consist of isolated singularities. As Bergson clarifies: '... for us, conscious beings, it is the units that matter, for we do not count extremities of intervals, we feel and live the intervals themselves.' (1998, p. 339) He elaborates further:

> This second kind of knowledge would have set the cinematographical method aside. It would have called upon the mind to renounce its most cherished habits. It is within becoming that it would have transported us by an effort of sympathy. We should no longer be asking where a moving body will be, what shape a system will take, through what state a change will pass at a given moment: the moments of time, which are only arrests of our attention, would no longer exist; it

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[356] Bergson compares the 'cinematographical method' to Greek philosophy and states the similarity with 'modern science' that subordinates 'sensible reality': 'Finally, it will have on the one hand the system of ideas, logically coordinated together or concentrated into one only, on the other a quasi-nought, the Platonic "non-being" or the Aristotelian "matter". — But having cut your cloth, you must sew it. With supra-sensible Ideas and an infra-sensible non-being, you now have to reconstruct the sensible world' (1998, p. 327) The difference in 'ancient and modern science' according to Bergson lies in that: '... ancient science thinks it knows its object sufficiently when it has noted of it some privileged moments, whereas modern science considers the object at any moment whatever'. (1998, p. 330) Bergson elaborates on these differences further on in greater detail in the following pages and points out how modern science does not rely on concepts any longer but seeks universal laws relying on measurement and considering time as an independent variable.

is the flow of time, it is the very flux of the real that we should be trying to follow. (Bergson, 1998, p. 342)

As we have seen earlier, the most crucial move that Bergson makes is that he distinguishes between the body (matter) and the mind in terms of time, not in terms of space. Dualism commonly starts from the spatial point of view regarding matter in space, and unextended sensations in consciousness. Bergson instead establishes a psychology of memory and a metaphysics of matter through his treatment of the issue of time that he lays out in *Time and Free Will* (1991). The common mistake that is made, he claims, lies in the perception of movement as instances across space. Consequently he introduced the term *durée* as a qualitative experience of time, a heterogeneity, which melts these interiorised states of mind into one another. They only become distinguished again through analysis by our intellect and hence reintroduced into space through recollection and actualisation in the present moment.

Since the medium of film itself consists of arrangements between parts edited together, both on a micro-level of single frames as exemplified also for example in Marey's work, and on a macro-level of edited scenes and sequences, it can only be within the perceptual processes of the spectator's mind that a temporal qualitative experience of the film's reception can be sought. When Bergson introduces experience[357] into his philosophical system of immanence, he talks about a 'purified' experience: '... released... from the molds [sic.] that our intellect has formed in the degree and proportion of the progress of our action on things.' (1998, p. 363) This experience according to Bergson: '... seeks, beyond the spatialized time in which we believe we see continual rearrangements between the parts, that concrete duration in which a radical recasting of the whole is always going on.' (1998, p. 363) Suzanne Guerlac reminds us that Bergson understands experience as related to a conscious act of free will, an action that brings us in contact with duration: '... with *faits internes*[358], with the concrete self in action'. (2004, p. 37) Reminiscent of Warburg's *Mnemosyne* methodology, Bergson discusses experiences in

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[357] Suzanne Guerlac has undergone a revision of the question of 'experience' in Bergson's philosophy emphasising its undervaluation as for example in Deleuze's Bergsonism. (Guerlac, 2004)

[358] ... 'internal states' (translation by the author)

terms of qualitative intensities, tensions, contractions and expansions within the processes of a constant becoming.

Hence for Bergson, science and metaphysics in this way constitute two opposed although complementary systems of epistemology. The cinema in a contemporary understanding could be interpreted as incorporating both tendencies of our mind. From a reception point of view, extending Bergson's conception of the Cinématographe as technology to the cinema as philosophical *dispositif*, it is an apparatus that through our conscious engagement makes us aware of the usually concealed processes of our ordinary consciousness in a creative act. In this the spectators place themselves within the processes of projecting *images* onto other *images*; with regard to the cinema this concerns the projection of personal *memory-images in* the screen. In Bergson's conception of perception, our memory overlaps with actual and pure perception:

> With the immediate and present data of our senses, we mingle a thousand details out of our past experience. In most cases these memories supplant our actual perceptions, of which we then retain only a few hints, thus using them merely as "signs" that recall to us former images. The convenience and the rapidity of perception are bought at this price; but hence also springs every kind of illusion. (1991, p. 33)

According to Bergson the sensible qualities of matter are differentiated by their rhythm of duration, and can be regarded as differences of internal tension (1991, p. 247) that can be grasped, if we are able to momentarily interrupt the flow of duration in our consciousness. Here again it becomes apparent how Bergson in his references to the Cinématographe (see section 5.3) sees the cinema as an apparatus similar to the mechanisms of our mind as exemplified in *Creative Evolution.* (1998) The flow of single frames running through the projector is momentarily put at rest in the projector in order to make us perceive an instant in our perception without blurring into the sequential flow of projected images. In the cinema this moment is too brief to recognise, the rapidly passing *images* enter a flux in which the past *images* of the spectator's memory through their recollections make us understand each new instant on the screen. Hence with regard to the cinema it could be stated that the activity of the spectator is doubled with two repositories to draw upon — the past *images* deriving from the screen as well as the

recollections from the spectator's personal life both intermingle and intersect as a double stream that impinges on the ongoing perception of the film. Personal recollections are stimulated additionally by gaps in the flow of the film, when ruptures occur and the stream of film memories is not sufficient to create the necessary 'utility' in order to make sense of what we see. This is, it could be suggested, where the dimension of the spirit in the cinema experience can be situated in order to understand the cinema perception beyond the mechanistic analysis of the technological apparatus.

Through a direct application of Bergson's philosophy to the perceptual processes of the spectator regardless of the content of the film, this thesis suggests that the process of intuition in the cinema consists of grasping a pure moment of duration within the spectator through touching the objects/ action in the screen during the processes of perception. This is where the cinema experience becomes 'spiritual', where matter is able to touch 'spirit' through a sensible interaction with often so-called 'phantoms' on the screen. This interpretation necessarily remains speculative, as it cannot be ruled out that Bergson may have disagreed with this approach and possibly could have regarded it as a distortion or diversion of his philosophy. However, a post-Deleuzean understanding of cinema seems to have prepared for this move and what this thesis suggests is that this application of Bergson's philosophy to an ontology of the cinema experience opens a different and reconstructed way to address the issue of 'spirit' not only in cinema studies, but in a wider context of thematic interests.

The activity of intuition, in Bergson's view, enables the subject to enter into a deeper contact with itself and other living beings; instead of escaping time and place, it enables an immersion in time, in duration itself, in 'concrete duration.' (1998, p. 363) As Bergson suggests:

> Restore, on the contrary, the true character of perception; recognize in pure perception a system of nascent acts which plunges roots deep into the real; and at once perception is seen to be radically distinct from recollection; the reality of things is no more constructed or reconstructed, but touches, penetrated, lived, and the problem at issue between realism and idealism, instead of giving rise to interminable metaphysical discussions, is solved, or rather, dissolved, by intuition. (1991, p. 69)

If we apply this citation to the cinema perception, it could be said that the cinema experience then should not be understood so much in terms of escapism from time or place — which it does of course in some respects when viewed through the filter of mechanical philosophy — but rather as a particular relation to a deep immersion within time, as an experience of *durée*. The treatment of the 'spiritual dimension' in cinema theory and technology studies have often focused on teleportation and telepresence; on the simultaneity and synchronicity in terms of place; but rarely explicitly in time. This is where Bergson's ontological, immanent approach can be distinguished from mechanistic methods and systems of thought that relate to a finalist cause-and-effect logic of the predominant scientific paradigms, through which he established a critique of 19th century scientific epistemology. While film content exemplifies time travel mostly in terms of moving the body/ mind into the future and back to the past, in Bergson's view it is the crystallisation of the future and the past in the present that allows for the intuitive grasping of *durée*. Bergson's conception of time as *durée*, which Deleuze has developed into his notions of the time-image and the crystal-image, is being treated in this thesis instead as an ontological dimension of the cinema experience independent of film form and content[359].

Through the focus on the perception of the audiences, this thesis further suggests that the fascination and popularity with the realm of the 'spirit', from a Bergsonian perspective, can be resituated in the very workings of the cinema spectator's consciousness. The cinema *dispositif* constitutes a paradigm for this controversial double movement of our intellect, and exemplifies Bergson's conception of the *image*. It could be posed as a hypothesis that processes of intuition are almost automatically, certainly spontaneously, stimulated in the cinema experience in order to grasp 'life' or *durée* beyond the mere

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[359] What Deleuze placed at the 'high' end of film culture as a form of art, this thesis discusses as a common experience of popular culture in terms of an ontological perspective of an individual sensory experience. Guerlac points to the tendency of interpreting Deleuze's Bergsonism toward disembodiment and a post-humanism (Guerlac, 2004, p. 50), however, some Deleuzean scholars especially within the field of cinema studies do emphasise the embodied experiential dimension of the affect, in which according to Guerlac Mark B.N. Hansen (2004) sees a return to Bergson; see in particular the work of Bogue (2003), Flaxman (2000), Massumi (2002), Pisters (1998, 2003), etc.

appearances of form in the film's content. On a less profound level, the perceiver's mind is continually stimulated to draw *memory-images* from the depth of pure memory in order to recollect and make sense of the film. These processes occur on deeper layers than a mere emotional, affective treatment in relation to the film content. The emotional and affective responses, according to Bergson, are sensations linked to the sensori-motor reactions of the body. From a Bergsonian perspective, where there appear gaps and spaces between the sensori-motor reactions, and the habitual mechanisms, the dimensions of the spirit become more fully activated and applied to the present moment. By applying Bergson's philosophy of perception to a meta-discourse on the perception of the cinema, it allows the transfer of the obvious into a contextual, theoretical framework: that no cinema spectator ever sees the same film in the same way, nor does any group of spectators share identical experiences.

Hugo Münsterberg came to a similar conclusion when he applied experimental psychology to his study of the cinema in his famous work *The Photoplay* ([1916] 2001), and, as mentioned earlier, he recognised the insufficiency of the concept of 'persistence of vision.' According to Ramsaye it was the first serious attempt to explain the motion picture from a scientific point of view. (1926, pp. 633-4) Münsterberg refers to the particular viewing position of the spectator in the following statement: 'Depth and movement alike come to us in the moving picture world, not as hard facts but as a mixture of fact and symbol. They are present and yet they are not in the things. We invest the impressions with them.' ([1916] 2001, p. 30) This statement foreshadows what Christian Metz (1975) expressed through his notion of the 'imaginary signifier':

> At the cinema, it is always the other who is on the screen; as for me, I am there to look at him. I take no part in the perceived [film]; on the contrary, I am *all-perceiving*. All-perceiving as one says all-powerful (this is the famous gift of 'ubiquity' the film makes its spectator); all-perceiving, too, because I am entirely on the side of the perceiving instance: absent from the screen, but entirely present in the auditorium, a great eye and ear without which the perceived would have no one to perceive it, the *constitutive* instance, in other words, of the cinema signifier (it is I who make the film). (1975, p. 51 — emphasis in the original)

Metz has been generally acknowledged to having established the ground for a consideration of the mutual interactive relationship between the projected film and the

spectators in their subject position. Reception theory in film and cinema studies was preceded by earlier attempts to address spectatorship, for example by Münsterberg's scientific approach to the cognitive faculties of perception in relation to the cinema experience, and Edgar Morin's psycho-anthropological study of the cinema experience. Morin anticipated the introduction of psychoanalysis into film and cinema studies in the 1960s. He focused on the cinema *dispositif* rather than the content of films and addressed the issue of aesthetics in the cinema not as an original human given, but as 'the evolutionary product of the decline of magic and religion.' (2005, p. 211) In his view the cinema constitutes a historical mirror and, at the same time, a vanguard of mechanisation. As a 'personality factory' (2005, p. 213) it has externalised the psychic processes of the human mind. According to Morin, cinematic (affective): '... participation equally constructs magic and reason, ... that finally, magic, sentiment, and reason can be syncretically associated with one another.' (2005, pp. 181-2) Morin's attempt to situate both the rational and the 'irrational' in the viewing experience, in some aspects referring to Bergson's philosophy, has remained by and large unexplored from an anthropological perspective of the cinema experience in the context of a predominantly semiotic, structuralist and psychoanalytic approach in the following decades. As Philip Rosen summarises these have focused on the theorisation of cinema as narrative, as 'apparatus' and as ideology. (1986)

Christian Metz, who had contributed to cinema studies in the 1960s through semiotic film theory as a distinct encoded system from literature and other art forms, in his later work focussed on the particular viewing position of the spectator. He introduced issues of psychoanalysis and the individual psychological perspective of a transcendent 'self' into cinema studies. It was around the same time when against the background of a strong Marxist influence on materialist, economically-driven approaches to cinema studies, there was considerable attention to the technology and the apparatus as an institutionalised set-up. It became apparent at that time that a materialist approach alone was not sufficient to explain certain dimensions of the cinema, especially the perspective of the spectatorship.

Frank Kessler has pointed to the shift in cinema theory regarding the discourse of film perception during the mid-20th century from a focus on the perceptual phenomena and predispositions, to the meta-psychological functions of the *dispositif* through Baudry, and the specific viewing position of the spectator in relation to the semiotic characteristics of film through Christian Metz' work in the 1960s and 70s. (Kessler, 2004) These approaches broadened into a wider spectrum of post-structuralist, historical materialist, neo-Formalist theories, as it has for example been contextualised by Philip Rosen (1986).

Following Metz' early work on semiotics in film theory, Jean-Louis Baudry (1975, 1986) and Jean-Louis Comolli (1980, 1986) questioned traditional film analysis based on the film text and shifted the focus to a discussion of the cinematic 'apparatus[360]' as a nexus of non-linear open accounts of ideological, economic, technical forces and viewing practices. They both formulated a critique that set the 'basic cinematic apparatus' (*l'appareil de base*) alongside the economic determinism of a classical Marxist perspective and argued that the dominant ideology that forms our social relations is always *a priori* inherent in the cinema apparatus, in what became known as apparatus theory.

A mere semiotic encoding of the film as text has been transferred into a decoding of the technological mechanisms by apparatus theory through which the audiences engage with the film. The focus on the decoding of the technological implications centred again around spatial aspects, such as the analysis of the complexity of the reproduction of movement and the consideration of the photogramme as the smallest unit of a technological code — back to Marey's investigations it seems — but now transposed into the 'mental machinery' of the spectator's psychological constitution in relation to dream states, the unconscious or the Lacanian mirror phase. The focus here has been set to a historical and ideological understanding of the cinema *dispositif* including the socio-cultural context. Furthermore, a critical reflection on the discussions on the history of cinema as technology as elaborated in chapter 1, also emerges from Heath's suggestion:

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[360] The term 'apparatus' has been introduced by Baudry (1975, 1986) to emphasise the ambiguous meaning and complexity of the cinema 'institution' including the whole complexity of intersecting agents, forces and products.

> Hence the necessity to engage not a history of the technology of cinema, but a history of the cinema-machine that can include its developments, adaptations, transformations, realignments, the practices it derives, holding together the instrumental and the symbolic, the technological and the ideological, the current ambiguity of the term *apparatus*. (1980, p. 7)

The concept of the 'basic cinematic apparatus' according to Baudry comprised both, the actual technology involved, from the making to the screening of films, and the institutionalised relations and meanings, which Heath summarises as the '... apparatus as instruments, mechanisms, devices, *and* of the subject...[361]' (1980, p. 12) This 'basic cinematic apparatus' in recent cinema theory is understood, as Heath proposed in 1980, in a wide framework of the technology as well as the techniques employed, including the relatively underexplored domains of: '... the psychology of the spectator, "the social regulation of spectatorial metapsychology", the industry of the "mental machinery" of cinema, "cinema as technique of the imaginary" in Metz' term.' (1980, p. 2) The more adequate term for the complexity of this network is *dispositif*, also introduced at the time. Frank Kessler has pointed out that the translation of the French term *dispositif* into the English term 'apparatus' is an unfortunate one since it does not address the full meaning in French of an 'arrangement' of heterogeneous elements and a certain 'tendency' that the connections between the elements bring forth — as the term is also applied in this thesis — but it merely focuses on the 'mechanical side' of the term[362]. (2004, p. 1) It could be suggested that the term *dispositif* is reminiscent of Aby Warburg's concept of the *Mnemosyne* as a *dispositif* of 'homo faber' — or Bergson's notion of the human as 'artisan' — in its arrangement of heterogeneous elements, assembled images deriving from various institutionalised, personal and shared domains, fields and even periods. Warburg was, as much as Foucault who defined the term *dispositif* in the context of his study of sexuality, especially interested in bringing all these heterogeneous elements in

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[361] It is worth remembering that at the beginnings of the cinema, it was not the product of films that were sold but the experience of the apparatus: technology on display.

[362] As pointed out in the introduction, Baudry's application of the term 'apparatus' is rather confusing for the overall conception of the cinema that comprises both the technology, as well as the cinema *dispositif*, which in itself merely refers to the projection situation including the spectators' engagement. (Kessler, 2004, pp. 3-4) The French term *dispositif*, however, needs to be borne in mind in the following discussion of apparatus theory, since it is more transparent and suitable for this discussion in its broad spectrum of meaning.

connection with one another and to use this *dispositif* as an epistemological system. Kessler summarises the function of the *dispositif* based on Foucault's definition as follows:

> According to this definition, the methodological, or strategic, function of the term *dispositif* in Foucault's analysis is to allow him to bind together very heterogeneous elements and to look at how their interplay results in a specific historical formation producing both power structures and knowledge. (2004, p. 2)

While apparatus theory acknowledged the immaterial dimensions of psychological and ideological engagements with the cinema, their argument was situated within a materialist paradigm informed by classical Marxist theory. The focus lay on the ideology of the visible; how the cinematographic apparatus participates in the psychic and social construction of spectators whose subjectivity is reconfirmed by an engagement with the image. However, apparatus theory does not give the reader/ spectator self-determination. For one, they are always regarded as subservient to the prevailing ideology, since the film as constructed text, the ideology is always inherent in the technological apparatus; for another Baudry regarded the cinema set-up as a primary condition of a state of passivity with reference to Plato's cave (1975). This bias did not allow for any subversion and resistance within the cinema *dispositif*, it was in this sense a pessimistic assessment on the restrictions of the political and economic power relations.

While previously Bazin (1967) had regarded the transcendental quality of the cinema as inherent in film form, Metz' later interventions (1975) can be regarded as a significant attempt to address the immaterial/ imaginary dimensions of cinema by the acknowledgement of a transcendental dimension in the audiences awareness through the pleasure of their own perceptual apparatus and an active engagement in the interpretation of the cinematic technology as a two way process[363]. Metz suggested:

> In other words, the spectator *identifies with himself*, with himself as a pure act of perception (as wakefulness, alertness): as the condition of possibility of the perceived and hence as a kind of transcendental subject, anterior to every *there is*. (1975, p. 51 — emphasis in the original)

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[363] Metz referred to the interpretive implication as the process of connotation versus the denotation that described the literal meaning of the spectacle. (Cook, 1987, p. 230)

In his later work in the 1970s, Metz opened his semiotic focus on the film as text to a double system of denotation and connotation which created space and agency again for the subjectivity of the spectators and their own interpretation and intervention. The main focus shifted from the aim to establish a semi-scientifically grounded system to analyse film as an object, to discourses around the relationship between film and the spectators, and in particular the spectator's viewing position. These approaches were situated either within a framework of psychoanalysis in relation to the viewing experience or in critical discussions concerning ideology which followed the interventions by Baudry, Comolli, Mitry, Kristeva, Barthes, et al. The shift brought forth many engagements, with cultural and ethnic redefinitions of the cinema spectatorship, film form and semiotics, especially an intense engagement with psychoanalysis and feminist film theory.

These attempts opened a platform for discursive approaches to an active spectatorship and for more sophisticated studies of the perceptual side of spectatorship. However, the rather immaterial or spiritual dimensions were excluded from these materialist, and rationalist driven discourses as anathema. Moreover the viewing position of the spectator has almost without exception been analysed in relation to the film as text, as discursive systems of representations of the dominant ideology. This has by and large produced a conception of disempowered audiences regarding their subject-position constrained by ideological frameworks and processes of social interpellation as introduced by Althusser; for example disempowered female spectators, as feminist film theorists during the 1980s have argued, due to the positioning of their representations on the screen directed by and aimed at the male gaze; or the discrimination of ethnic minorities through their representations in the film text — views that are today understood as much more complex than binary gender- or class-oppositions.

What transferred into a 'meta-psychological' level in cinema theory could in more general terms be referred to what Siegfried Zielinski coined as the 'individual wish-machine' (1994a, p. 8), or to a 'meta-physical' dimension of the cinema; however, the latter term in a contemporary understanding reinforces thinking in dichotomies, while

Bergson's approach instead lies in between matter and spirit and embraces both dimensions. He approaches the immaterial through and by the way of the body, through matter, as an immanent dimension embedded in our quotidian experience. This is crucial, since in Baudry's definition of the cinema *dispositif* refers to a passive spectatorship, one that proliferates a subject position that is led to: '... produce mechanisms mimicking, simulating the apparatus which is no other than himself', a subject, '... unaware of the fact that he is representing to himself the very scene of the unconscious where he is.' (1975, p. 123)

Kessler suggests instead a pragmatic re-interpretation of the term *dispositif* in order to avoid trans-historical and teleological perspectives and to embed the concept in the historical particularities of a specific moment in time, as Gunning, cited by Kessler, has shown in his particular notion of the 'early cinema' *dispositif* as a 'cinema of attractions.' (Gunning, 1986) Kessler proposes:

> At different moments in history, a medium can produce a specific and (temporarily) dominating configuration of technology, text, and spectatorship. An analysis of these configurations could thus serve as a heuristic tool for the study of how the function and the functioning of media undergo historical changes. Presupposing, for instance, different intentionalities ("to display spectacular views" or "to absorb into narrative") one can analyse film form and filmic devices with regard to their mode of address in a given historical context... (2004, p. 9)

This proposition again is focussed on the film as text and representation with its inherent functions and proposed meanings, and it may allow a comparison of certain materialist-based studies or generalising facts of external characteristics of audiences such as class, race, culture, etc. However, the heterogeneous states of consciousness within the perceptual processes of the cinema experience cannot be homogenised in a generalising category. At least, the level on which Bergson's philosophy of perception operates, is profoundly ontological and operates beyond or before the point where experience becomes transferred and expressed through the intellect and language, and interpreted according to external imperatives. This dimension that belongs to the spirit is the one that has by and large been ignored and needs to be factored in when addressing spectatorship and the 'spiritual' dimensions of the cinema experience.

Alternative models to the application of psychoanalysis were provided by an emerging focus on cognition in the late 1980s and culminated in among others, David Bordwell's and Noël Carroll's initiation of cognitive film studies borrowing from the discipline of neuroscience and philosophy (1996), and from a very different angle the recent broad reception within film and cinema studies of Gilles Deleuze's cinema theory (1986, 1989), largely based on Bergson's philosophy. But again a sophisticated discussion of a spiritual dimension beyond the film text and form has remained incidental and marginal (Schrader, 1972; Tarkovsky, 1994; Pisters, 2006). This concerns the ability of cinema to engage its audiences by enhancing or extending the spectator's perception and experience, which sometimes is claimed to occur in the cinema more than when interacting with other artforms.

As Deleuze has already pointed out in his cinema studies (1986, 1989), an application of Bergson's philosophy liberates the subject position of the spectators in that it acknowledges beyond the notions of ideology, language, culture, etc., a realm of free will and a continuous creative process that gives sovereignty to the spectators in their perceptual processes of choice and action. From the perspective of Henri Bergson's philosophy, the *image* can never be fully embraced by conscious awareness. This has been pointed out in regard to the sign, which can never accommodate the fullness of perception, as Comolli stated: 'The cinematic image grasps only a small part of the visible; and it is a grasp which – provisional, contracted, fragmentary – bears in it its impossibility.' (1980, p. 141)

From a Bergsonian perspective the focus shifts from a discussion of the relationship between the film and the 'real' to the relationship between the spectators and the screen. Images perceived on the screen are understood as the same kind as those perceived in the 'natural' environment. According to Bergson the 'real' can only be grasped through intuition from deeper layers of pure *memory-images*, since the *images* contain a qualitative fullness that is accessible to our recollection. In this 'surplus-activity' where additional and complementary interpretation occurs, as this thesis argues, lies a space for

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the spiritual dimension, within the domain of the spectator beyond the imperatives of ideology. In this sense perception always precedes description.

In order to synthesise some of the aspects of Bergson's philosophy in the context of the cinema perception discussed previously, we need to remember that Bergson regarded spirit as independent but connected with matter through the experiential dimension of our body that is expressed through activity. In the quotation cited in the previous chapter he recalls the 'great error of the doctrines on the spirit', which were: '... isolating the spiritual life from all the rest, by suspending it in space.' (1998, p. 268) Bergson instead proposes to: '... see the life of the body just where it really is, on the road that leads to the life of the spirit.' (1998, p. 268) This view takes a different approach to Metz' or Baudry's notion of the transcendental subject (Metz, 1978; Baudry, 1986a), since Bergson's ontological discourse allows and favours the dimension of subjective experience *within* the framework, necessities and utilities of material reality and not *beyond* or through an alteration, but rather through an awareness of the very embedded transformative processes.

The difference between our perception of matter and matter itself is, in Bergson's view, merely that of a difference in degree not of kind; our perception of matter relates to matter as the part does to the whole, since conscious perception signifies choice and consists in a partial discernment:

> The diverse perceptions of the same object, given by my different senses, will not, then, when put together, reconstruct the complete image of the object; they will remain separated from each other by intervals which measure, so to speak, the gaps in my needs. (1991, p. 49)

This is reminiscent of the way Bergson has related the cinematographic apparatus (at the time perceived as the technology) to the mechanism of our thought, as cited in the previous chapter, since it merely runs single images through the gate of the projector, comparable to the singularised impressions of our sensory perception when put together by our consciousness. This assemblage in his view will never provide us with a complete *image* of the objects we perceive or of the depiction of a 'real-life' action captured by the

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camera and projected on to the screen. It follows that in the cinema there seems to be a double process at work. Our perception will always remain a partial perception depending on the selective choices by our consciousness following the complex network of previous choices during the film's production. As we saw earlier, according to Bergson we perceive virtually many more qualities and dimensions than we actually become aware of through our consciousness, which shuts everything out that does not contribute to our momentary interests for action. (1920, p. 77) The intervals between the *images* could be interpreted in this context to measure the gaps in the interests or needs of the spectators' minds. In order to construct stable appearances in our perception of objects, a reassemblage of the sensory data is necessary, to which Bergson also refers to as 'education of the senses':

> ... we must bring together all sensible qualities, restore their relationship, and reestablish among them the continuity broken by our needs. Our perception of matter is, then, no longer either relative or subjective, at least in principle, and apart, as we shall see presently, from affection and especially from memory; it is merely dissevered by the multiplicity of our needs. (1991, p. 49-50)

This could be interpreted as an anticipation of the function of editing and the specific way in which spectators make sense of the film sequences based on their conscious engagement by allowing them to perceive an apparent continuity of separate perceptual entities. In this citation Bergson establishes an understanding of 'consciousness as virtual action' (1991, p. 50), since he understands perception as being an action of extended consciousness, as an exteriorisation of internal states. In this activity, Bergson situates the threshold of 'spirit' as creative activity, or it could be said that, when the gaps between the *images*, which refer to the sensory data perceived, are too big to allow assemblage, these spaces in between open up the dimension of the spirit.

The cinema in this sense manifests an ambiguous or double-bind condition; on the one hand it eludes choice due to the cognitively impenetrable effects of its apparatus and the given content of the film, on the other hand, it restores choice in that it offers a conscious engagement of the spectators' minds — choices that do not immediately lead into actions, but choices that are driven by the desires, needs and necessities of the present moment

within the internal processes of recognition and recollection. It could be said in other words that the cinema offers both: states of consciousness and of 'non-consciousness', with all possible variations of psychological/ spiritual conditions in between — from illusion to dream, from automatism to creative imagination. The spiritual in this sense is as vast a domain as so-called positivist 'reality' in its material manifestations. These common associations with the cinema experience with regard to the realms of illusion, dreams and imagination, in a Bergsonian reading, form scales within the spectrum of our conscious interaction with memories from the past pushing into an actualisation of the present moment.
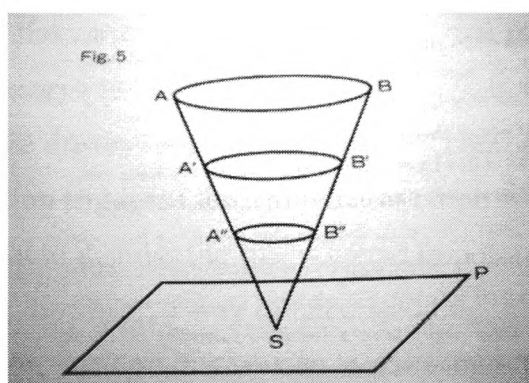

Fig. 2 Bergson's inverted cone

If we visualise Bergson's inverted cone again, it schematises on the one extreme end automatism, the focal point (S), pointing to the moment of the present; on the other dream-states, at the points (A-B), the extreme end of our pure memory. It could be said that the cinema perception does not have any direct impact on the immediate future of our external lives since we are not expected to act according to the perceptions received. But it has an inevitable and immediate impact on our internal, virtual lives, possibly an impact profound as our processes of becoming in duration; each *image* perceived in the cinema is added to our memory, to the whole that constitutes our past. Consequently in our future engagement with the present moment (S), it is possible that some of those *images* turn into *memory-images* that actualise in the present as an action, if they either show a great contiguity with the present moment or certain similarities in their inherent processes of remembering. The *images* in themselves are 'neutral' it could be said;

however, they become re-interpreted when they actualise and when by our conscious choice they steer our sensations and possible actions of future moments. Finally it can be repeated that 'realism' is not to be found in neither the 'things' in our environment nor on the projected images on the screen, but in the way both in our virtual memory and in the actualisation in the present moment as *images* perceived they turn into an action, or they merely remain a lived experience in the past, an internalised quality of becoming, spiritualised into consciousness. Bergson states with reference to ordinary perception: 'It might be imagined that the impression received, instead of expanding into more movements, spiritualizes itself into consciousness.' (1991, p. 29) The cinema in this view accommodates the uninterested body and the curious mind, and allows for a conscious engagement and enjoyment of the various stages of the perceptual process that Bergson exemplifies in *Matter and Memory* (1991): from pure perception in the mode of an automata to the dwellings of the dream-state; *memory-images* constantly conjured up in the present moment of perception triggered through identification with the characters and events on the screen. This is not to dismiss the function and importance of narrative and the film content and form. It is, however, a way of understanding the *image* consistent with Bergson, and Warburg's proposition that we can look beyond the surface to uncover underlying processes which are also intrinsic to the cinema independent of the content on the screen.

However, it would be a very reductive reading of Bergson's philosophy if we see the cinema merely as catapulting us into a dream-state, into a dwelling of memories without any relation to sensori-motor links, without any context to prefer one *memory-image* over the other. We are in a fully aware state, fully aware of the way the cinema works and the implicit contract between the audiences and the cinema performance, the sensori-motor links are intact and linked to the present moment in which we find ourselves in our conscious awareness in order to make choices in relation to the interpretation of the perceived present. Nonetheless in the cinema situation we are liberated from the necessity to take an action and can allow those virtual images to become actualised that suit the present moment of our desires, imaginations and choices both conscious and unconscious.

The cinema experience in this way provides an amplification of the quotidian processes of our mind that stimulate an awareness of the introspective movement that is required for our mind to understand the meaning of a film, which is exemplified almost like an externalised introspection. It allows the spectator to experience not necessarily pure memory and intuition itself, but at least an awareness of the tendency of our mind and the motion of intuition in the way that we make sense of the film in relation to our own virtual lives; memories and the past. Films in this sense can be regarded as a simulation of introspection while at the same time they are to our perception not different in kind from any other perception we receive in actual life situations. But through the way film is structured, the spectators undergo an experience as if experiencing intuition to grasp pure perception. This pure perception, as Bergson has shown, remains unobtainable for the ordinary tendency of our intellect, which is directed outwards, much in the same way as the content and the characters in the film remain 'unobtainable' in the sense of a 'real' situation which in normal circumstances may require us to act. In this sense it could be stated, as Deleuze has suggested, that the cinema is spiritual. Similarly, a requirement of intuition is that it is a contrary movement to our intellect that breaks with the sensori-motor, cause-and-effect chain and moves in the opposite direction. In the cinema our sensori-motor links are still active (hence this differs from the dream-state in sleep condition) but they are restricted to a passive mode since the incoming perception does not lead into an immediate action in our bodies — except on an internalised level of emotions, or sometimes in horror movies, through screams, muscular reactions, tears or other forms of physical expressions.

As the body-memory is not required, the perceptual processes are enabled through this particular cinematic *dispositif* to touch upon deeper layers of *memory-images*, which Bergson classified as the realm of the spirit. The relief and liberation that this perspective offers lies in the previously elaborated conception of Bergson's system of thought in which consciousness functions as the agent acting between the material and the immaterial:

For consciousness corresponds exactly to the living being's power of choice; it is co-extensive with the fringe of possible action that surrounds the real action: consciousness is synonymous with invention and with freedom. (1998, pp. 263-4)

Bergson elaborates further: 'But this consciousness, which is a *need of creation*, is made manifest to itself only where creation is possible. It lies dormant when life is condemned to automatism; it wakens as soon as the possibility of a choice is restored.' (1998, p. 261) It needs to be remembered that according to Bergson every *image* in the moment in which it is consciously perceived, has already turned into memory. Consequently film in its projected condition provides an analogy with a model of memory and the perceptual processes of recollection. Bergson states:

> Your perception, however instantaneous, consists then in an incalculable multitude of remembered elements; in truth, every perception is already memory. *Practically, we perceive only the past*, the pure present being the invisible progress of the past gnawing into the future. (1991, p. 150)

Personal memories are called up during the film perception and function as recollection and recognition, their intensity depending on the degree to which the viewer engages with the film. The more the spectator's consciousness is driven towards curiosity to engage with and know the world (the universe of the film in this case), the more this engagement stimulates unconscious, associative or even entirely imaginative *memory-images*. The cinema in this way provides situations for our consciousness to trigger recollections and sensations from our unconscious past that would otherwise go unnoticed.

As pointed out earlier, in the cinema there is no need for sensori-motor actions, but as contemporary studies of perception in neuroscience reveal: the same mirror neurons are triggered when acting in a real life situation as when perceiving the same action in a simulation. Hence we perceive in the cinema as if we were expected to act upon the situation we perceive; but since the spectator is aware that there is no need to act: '... the more we detach ourselves from action, real or possible, the more association by contiguity tends merely to reproduce the consecutive images of our past life.' (Bergson, 1991, p. 171) It can be suggested that the active choice of *memory-images* remains in the free will of our conscious engagement with the film and the intensity involved depends

on the degree of our engagement with the perception process. The intensity of these processes not only concern both the intellect in the way the single images and scenes are assembled, but also the affective engagement with the film content and the intuitive impulse through which *memory-images* actualise and a deeper layer of duration can be touched — depending on the conscious engagement of the spectator.

As a consequence, cinema, it could be said is in a certain sense synonymous with memory. Cinema constitutes acceleration: we see virtual images passing in front of our eyes in 90 minutes or so, as if remembering a life time[364] — or sometimes several life-times in an instant. During these 90 minutes our mind creates and enters a flux of becoming through the extension of consciousness — it could be said we recreate ourselves in each film, and this may constitute one of the intrinsic pleasures of cinema: a moment of transformation and introspection to get in touch with a profound experience of being. This could be called the fascination with the spiritual in its very source within our own conscious capacities.

There is 'reality' in the cinema in so far, it could be said, as we allow it to become 'actual' in our perceptual process. According to Bergson, 'reality' in its most basic function of our body as a centre for action, is measured by its 'degree of utility' (1991, p. 66), it constitutes 'undivided growth, progressive invention, duration.' (1992a, pp. 95-6) Bergson suggests further: 'Reality, as immediately perceived, is fullness constantly swelling out, to which emptiness is unknown. It has extension just as it has duration.' (1992a, p. 96) A debate on 'reality' in film theory in this sense could possibly be situated in these 'spiritual' processes; in as much as our memory overlaps with the perceived film content, it becomes a 'reality' or in Bergson's words an 'actuality'. Hence it could be

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[364] It may seem a far-fetched analogy recalling the reports of near-death-experiences as accounted in the research of Dr. Raymond Moody (2001), however, Bergson himself refers to this phenomenon in *Matter and Memory* (1991), when he mentions scientific research into cases of sudden suffocation when visions of forgotten events of life pass before the subject with great rapidity. Bergson refers to this phenomenon in the context of his argument for the existence of forgotten, unconscious memories (on the plane AB) and their reappearance in dreams or somnambulistic states. (1991, p. 155-6)

suggested that the more the spectator recognises and engages with the film, the more 'real' or 'actual' the perception of a film may become.

Bergson's relational model of the cinema perception places the very qualities that constitute the cinematic experience in the mind of the audiences. The cinema perception empowers its audiences, since it is through their active engagement that the content of the film actualises in their perception. By his notion of: '... spiritualizing perception into consciousness' it could be said that this constitutes one of the strengths of the cinema, in that it creates 'possibles' without an actual action taking place in the moment of perception. Bergson's definition of the 'possible' is significant in this context: in his view, the possible does not precede reality, on the contrary: '... it is the real which makes itself possible [in the reflection in the past], and not the possible which becomes real.' (1992a, p. 104)

The body of the spectator in the cinema is not merely in a passive state, as is commonly considered when observed merely from the outside, since internally, our perceptual apparatus is highly stimulated and our nervous system, etc. is active. The spectators' minds/ bodies are in a constant modus of 'virtual action', and the more the perceived object is considered as diminishing the distance to our bodies (and hence a certain danger of intruding or colliding with it occurs), in Bergson's view, the more the: '... virtual action tend[s] to pass into *real* action.' (1991, p. 57) Hence for example jumping out of the seat, screaming or other reactions to horror or action movies which, it could be said in a Bergsonian sense, are intended to decrease the distance between the perceived object and the subject position, in contrast to other genres which act upon an interiorised decreasing of emotional distance between the object-subject relationship. Bergson states:

> Suppose the distance reduced to zero, that is to say that the object to be perceived coincides with our body, that is to say again, that our body is the object to be perceived. Then it is no longer virtual action, but real action, that this specialized perception will express, and this is exactly what affection is. (1991, p. 57)

When memories overlap and supplant the film's content, the 'affect' becomes possible, because the spectator recognises, and empathises or relates in other ways to the incoming

perception through sensori-motor reactions. Bergson considers that: '... the sensations here spoken of are not images perceived by us outside our body, but rather affections localized within the body.' (1991, p. 52) The 'affect' as Bergson defines it, lies between the incoming perception and the outgoing action — the action in the cinema perception being suspended until the moment when the memories of the perceived film are recalled as *memory-images* in order to serve a present moment of action. Consequently, without leading to an immediate action, the perception in the cinema 'spiritualizes' into consciousness, as well as manifesting as affective states. It is worth remembering that for Bergson memory is always complete and whole, comprising as it does all details of our past experiences. Our character in his view is the synthesis of all our past states, of all memories. When Edgar Morin suggested that the film becomes integrated into the psychic flux of the spectator, it can be understood from this perspective that there is no distinction in kind, but possibly only in degree in our memory between an actually lived experience or perceptions integrated from the cinematic experience. This also refers to the triggering of mirror neurons as mentioned earlier in this chapter and to Edgar Morin's notion of a 'personality factory'. (2005, p. 213) In Bergson's view our psychical life exists for us even more than the external world, since in our external perception we never: '... perceive more than a very small part, whereas, on the contrary, we use the whole of our lived experience.' (1991, p. 146)

The re-enactment of our perception process in this context then is not just as Metz suggested an 'imaginary signifier', but in the Bergsonian sense a realisation that the *image*, understood as perceived through the sensory system, is always fuller than we can ever be consciously aware of. We know that conscious recognition is constructed, a process that does not distinguish between events perceived from the screen or from real-life enactments. The spectators are aware of the partial perception of what is originally fully there; and this does not differ from constructed images such as in the case of computer-generated images (CGI), which in the perception may differ in kind but not in degree. The cinema experience can be considered among other things as an amplified intuitive experience where a direct contact with duration (*durée*) is enabled under certain circumstances and relating to an awareness that the virtual *images*, constitute and allow

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for reinterpretations in between the possible conditions of pure perception and pure memory. The constructedness of the 'actual' within an embodied perceptual process in a Bergsonian sense is amplified and made transparent through the cinema *dispositif*. It could be said that the 'basic cinematic apparatus' to use Baudry's notion, stimulates a re-enactment of our *memory-images*; and as this thesis suggests, by conscious activity, intuition can provide that which is lost through the partial character of the cinematic technological process. Some aspects of the popular fascination with the cinema might lie in precisely this momentum, through which the dimension of the spirit is evoked. As mentioned earlier, the cinema enables a double action, a double tension; it produces both, re-enacted perception in the spectators' minds through a creative process, and also provides a 'forced' or 'suggested' perception directed by the film content — an aspect that lies outside of the scope of this thesis, but which most notably Gilles Deleuze has elaborated extensively in his cinema theory. (1986, 1988)

What is now commonly acknowledged in contemporary consciousness studies, Bergson discussed in 1896, namely how what we perceive consciously is only a very small part of our whole perception. Bergson gives the example of the perception of one second of red light, the frequency with the longest wavelength and the least frequent vibrations of 400 billion successive vibrations a second. If we were able to conceive this frequency in our conscious perception, according to Exner's smallest interval of perceived time of 0.002 seconds at the time, it would take more than 25,000 years in order to perceive 1 second of red light laid out in a succession of instantaneously perceived vibrations. (Bergson, 1991, pp. 205-6) According to Bergson it is only a tiny part of perception that is consciously distinguished, but a greater part of what we perceive are qualitative states in our duration (*durée*) — the qualities that are felt rather than consciously grasped. This is the point where intuition comes into a discussion, since in Bergson's view, it is only intuition that enables inherent qualities of the perceived objects to be grasped and engage with the deeper layers of our conscious states.

If we now look at the cinema *dispositif*, we see that it applies a kind of reverse process: it has divided perception via the camera into a small amount of instances: a 90 minutes film

is constituted by 24 single still frames per second, which means, if we do a calculation, because of the interruption of the frame in the projector twice by the shutter, we only perceive each image 1/500 *samples* of a second — by taking an average of light intensity as Ramsaye suggested. (1926, pp. 170-172) Therefore in a film of 90 minutes we only perceive in all 172.8 seconds of *samples* of actual time-duration (in the common 'spatial', measurable sense), which makes in total merely 2.88 minutes of actual screen time out of a 90 minutes film[365]. Hence what the cinema allows us is an amplified process of daily perception, are spaces in between the perceived images to fill them in with our own *durée*, with our own memories or associations and affections — if, as spectators, we choose to engage with it.

In its production and projection process, as Bergson has suggested in *Creative Evolution* (1998), the film as a process of technologically capturing and projecting images exemplifies the processes of our intellect that divides the perceived into distinguished sections in the course of reflection and interpretation. Furthermore an application of his system of thought to the cinematic perception, as this thesis suggests, opens up those dimensions through which our spirit is enabled to get in touch with 'matter' in the present moment of perception (in a Bergsonian sense in the screen): a process that in our ordinary perception is limited in order to achieve the most economic way to act upon the present moment of perception:

> ... the body, always turned toward action, has for its essential function to limit, with a view to action, the life of the spirit. (Bergson, 1991, p. 179)

In the cinema, as this thesis suggests, this process is reversed and amplified and consequently allows, the most abundant and fullest engagement with spirit — if the

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[365] This is reminiscent of Comandon's and Carrel's microcinematography where cell life was observed over a long period of time and compressed into a couple of minutes screen time. Dr. Green, professor of Chemistry at Leeds University commented in 1925 on his experience of Carrel's films: 'It was one of the most amazing things I ever saw... The film of the growth of the tissue was taken during twenty-four hours and must have involved a vast amount of reel. What takes place in the twenty-four hours is reduced in it to a comparatively few minutes... Dr. Carrel introduces immortality in a physicall (sic.) sense.' (Landecker, 2005) Landecker comments: 'Thus a very specific form of cinematic life was produced out of the materialized philosophy of Bergson's duration.' (2005, pp. 927-8)

spectator chooses to; however, almost inevitably, the cinematic experience unavoidably stimulates and necessitates at least some of these processes if we are willing to understand the construction of a film opening to a spectrum of ever deeper and more complex layers. This is an individually differing experience since as Bergson reminds us:

> ... our past experience is an individual and no longer a common experience, because we have always many different recollections equally capable of squaring with the same actual situation... (1991, p. 179)

Hence Bergson affirms the absolute subjectivity of the individual perception of a film, as well as the particularity of each perception of the same film on different occasions.

Even though Bergson states that the orientation of our perceptive process and psychic life is fundamentally oriented towards action, he does accommodate the space for 'fancy and imagination':

> A certain margin is, therefore, necessarily left in this case to fancy; though animals scarcely profit by it, bound as they are to material needs, it would seem that the human mind ceaselessly presses with the totality of its memory against the door which the body may half open to it: hence the play of fancy and the work of imagination — so many liberties which the mind takes with nature. (1991, p. 180)

The cinema in this view can be interpreted as a technology for fancy and imagination to open that door to our psychic life that takes a liberty with human nature and liberates the spirit from the material necessities. Bergson states further with regard to the focus of our action on utility and needs:

> The impotence of speculative reason, as Kant has demonstrated it, is perhaps at bottom only the impotence of an intellect enslaved to certain necessities of bodily life and concerned with a matter which man has had to disorganize for the satisfaction of his wants. (1991, p. 184)

The cinema in this sense could be seen as a liberation of just this necessity and constraint of our intellect, since no action is expected or at stake: it is a paradigmatic platform to transcend the workings of our ordinary consciousness and to liberate the flow of duration (the virtual, memories, the past) into new shapes and imaginary worlds. Consequently

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Deleuze's notion that cinema restores our belief in the world[366] (1989, p. 172) could be read in the context that it brings back our internalised memories in their potential to be actualised without the usual necessary utilitarian context of the present interaction with our environment or social lives. This constant flux of our becoming, *durée,* according to Bergson, is pressing into the present moment, and in the quotidian processes, our consciousness is filtering it out in order to facilitate the most economic actions — this process constitutes a residue of our evolutionary past as Bergson elaborates in *Creative Evolution* (1998). He explains:

> The activity of spirit has indeed a material concomitant, but one which corresponds only to part of it; the rest lies buried in the unconscious. The body is indeed for us a means of action, but it is also an obstacle to perception. Its role is to perform the appropriate action on any and every occasion; for this very reason it must keep consciousness clear both of such memories as would not throw any light on the present situation, and also of the perception of objects over which we have no control. It is, as you like to take it, a filter or a screen. (1935, p. 314)

Intuition is the contrary movement in order to expand the tension of our planes of consciousness and to recollect ever richer and fuller memories, which do not always necessarily lead to useful or necessary actions and can constitute a certain surplus — hence the relevance for the context of entertainment and specifically the cinema. When transferring this reading to technology more generally, it should be said that most technologies are commonly thought of being designed as functional mechanisms, as extensions to our body, which in itself incorporates similar functionalities. However, there have also been expressed views on the immaterial implications of technology (Noble, 1997; Peters, 1999; Nye, 2006), and in this regard it could be said that certainly in the modus of a surplus or entertainment situation, we are constantly looking for a liberation of spirit.

When looking into certain spiritual practices and considering for example clairvoyance as an intuitively grasped pure perception, as will be elaborated in the next chapter, it becomes clear from this discussion why the perceptive process can cause difficulty for

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[366] Deleuze stated: 'Restoring our belief in the world — this is the power of modern cinema [when it stops being bad].' (1989, p. 172)

the clairvoyant. It is in a way a surplus that the faculty of consciousness allows, a door that opens and lets the virtual actualise without the necessity of a sensori-motor driven action[367]. Hence it could be summarised that the spectrum of spiritual dimensions lies at the very core of an ontological understanding of what it means to be human, or more pragmatically, how human perceptual processes operate. Cinema and technology more generally, can in this view be seen both as practices, which in their perception and engagement with a user facilitate a liberation of spirit (*esprit*) by the way of a surplus, actualised as a creative intervention or 'entertainment', while at the same time being embodied and immanent within the quotidian perceptual processes.

The cinema within this context provides not merely a platform for various beliefs in other dimensions, such as life after death, spirit worlds, and so forth; the fascination with 'spiritual' dimensions can rather be located in the cinematic experience itself in which, as Bergson proposed, matter and spirit meet. During these processes time as duration (*durée*) can be experienced in an amplified way through an awareness of the activated internal psychic states, in which memory extends into the present as a continuous flux. This flow from the past into the future, converging at the present moment in the cinema experience may give some relief in the questionable framework of an exclusive materialism, which gives matter a definite finality and does not allow for spaces or alternative models of immaterial dimensions. Most importantly of all it provides for an active and creative engagement of the spectators with the film experience. In this sense the cinema experience can be located within the framework of an intrinsic quotidian experience of duration and serves as a paradigmatic platform where these conscious processes become exemplified and amplified, and can furthermore also be interpreted as a subversion of the rationalist paradigm. While the screen time stops after about 90 minutes, the film images have already turned into *memory-images* and some may continue to endure through other vital impulses in the spectator's mind. What media-technologies more generally have created are not in themselves 'databases' of images and

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[367] By transferring clairvoyance into a therapeutic practice, as it is the case in many alternative medicine circles, this abundant perception becomes contextualised in an agreed set of actions between the subject and the clairvoyant consultant and can offer a solution to situate these perceptions in an actual and useful context, again driven towards action.

sounds, what Peters calls 'archives of consciousness' (1999, p. 144), but *images* of shared consciousness personalised through the processes of individual perceptions, recognitions and recollections, as will be discussed in the next chapter.

In addition, the next chapter will also draw attention to possible implications of this discussion for further studies of spiritual phenomena in a broader context. It attempts to establish a referential network with the discipline of visual anthropology thus drawing upon rich discussions and contributions regarding the inter-relational complexity of the cinema apparatus and a conception of an 'anthropology of consciousness.' (MacDougall, 1998, pp. 271-8) It will also pick up some aspects of Edgar Morin's anthropological cinema study and suggest possible future research, in particular in relation to the subject of consciousness and studies of perceptual processes. It will also discuss possible applications of the outcomes of this thesis by elaborating on the relationship between cinema and extra-sensory dimensions in the way they converge in a sophisticated understanding of time, space, memory and consciousness.

Chapter 7

Suggested Interdisciplinary Significance of the Refiguring of Spirit

This chapter will finally consider the cinema experience as an epistemology within the empirical-ontological framework established in this thesis and suggests an application of Bergson's philosophy through an interdisciplinary cross-fertilisation between cinema studies, visual anthropology and consciousness studies. It briefly touches upon some aspects that emerge from the previous discussions in order to indicate the potential this thesis offers for further research, in particular addressing the issues of consciousness, intuition and research into psychic phenomena drawing it into the orbit of a contemporary research context. It will outline how the inclusion of certain methods of cultural anthropology will allow us to consider the cinema experience as epistemology, which treats the spiritual dimension within quotidian processes of the mind and not as extraordinary or altered state. In what follows, a contemporary reading of Bergson's philosophy drawing on the discussions in this thesis, will be brought together with some concepts discussed in cultural and visual anthropology, such as Clifford Geertz' notion of an 'interpretive anthropology' (Geertz, 1983), the concept of the participant observer, and MacDougall's notion of 'shared consciousness' (MacDougall, 1998), as well as Francisco Varela's and Humberto Maturana's approach to the study of consciousness (1980) and a treatment of the phenomenon of clairvoyance, in order to enable a more sustainable approach to understanding the cinematic experience.

An early attempt to develop an anthropological approach to the cinema was undertaken by Edgar Morin in 1956 with his *Le Cinema ou l'Homme Imaginaire* (*The Cinema or The Imaginary Man*, 2005). Morin introduced an understanding of cinema and its audiences, drawing on a variety of fields such as sociology, philosophy, psychology and cinema studies and brought them together through an interdisciplinary approach informed by anthropology. As elaborated in chapter 2, Morin reintroduced the faculty of the imaginary as a fundamental human condition, exemplified in the processes of the cinema perception. He departed from an understanding of cinema as the product of a dialectic in

which the image on the screen and the subjective participation of the spectator merge with each other. In this way Morin proposed a combination of psychoanalytical and anthropological approaches as a way to understand the cinema experience as a fulfilment of unrealisable desires through constituting, what he calls, an internalised 'magic' experience. In his study the cinema screen becomes an analogy with the human mind searching for expressions of imagination and a fluctuation between internal and external reflection. Morin postulates an anthropological approach to the cinema experience in addition to a psychological perspective, by incorporating both, the technological imaginary and the magical qualities of mythological and animated worldviews. His perspective derives from a phenomenological position, which suggests some interconnections with Bergson's system of thought. Morin refers directly to Bergson's notion of duration to define the cinema experience:

> ... where past, present and future oscillate as in a state of osmosis just as in the human brain, memories, the imaginary future and the experienced moment merge. This Bergsonian duration, the perceivable indefinite, it is the cinema that defines it. (Morin, 1956, p. 69)

He also reiterated Münsterberg and anticipated Metz in his comment that: '... the cinema offers us the reflection no longer only of the world but the human mind.' (2005, p. 201) He goes even further, when he claims:

> The cinema makes us understand not only theatre, poetry, and music, but also the internal theatre of the mind: dreams, imaginings, representations: this little cinema that we have in our head. (2005, p. 203)

In this he anticipated Deleuze's comparison of the screen with the brain, and also incorporated some conceptions of Bergson when he claimed the cinema to be an affective-magic flux. Morin, however, took his position in psychology and cultural anthropology and introduced the concept of 'homo demens[368]', producer of fantasies, myths, ideologies and magic; understanding 'anthropos' as a complex spiritual, rational and emotional being. The attraction of the cinematic projection for him lies in the

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[368] *Demens* derives from Latin meaning mad, senseless, insane, foolish, crazy. *Dementia* refers to foolishness, insanity, madness. (Stowasser, 1994) Translation from German by the author.

heightened affective reality it produces, through what he called the 'charm of the image' (2005, p. 93) — a concept reminiscent of Jean Epstein's notion of 'photogenie'. (1981) This aesthetic experience, in Morin's view, converges with psychological processes of the human mind in the cinematic perception. In these moves Morin transposed the idea of magic, which has traditionally been regarded as an external force, to an interiorised and subjective condition of an affective flux. When he talks of cosmomorphism and anthropo-morphism expressed through the underlying principles of projection and identification, he applies an animistic worldview (he would call it a 'magic' one) where all beings and things are interrelated with each other and orthodox dualism dissolves. This perspective differs greatly from Bergson's in many aspects, most obviously in that it defers to the ephemeral notion of magic, even though this concept is treated in a much more complex way than is commonly applied in contexts of cultural analysis. Like Morin, Rachel Moore (2000) also proceeds from a cultural anthropological perspective and has proposed an analogy between the cinema experience and the experience of magic in ritualistic practices, which she finds particularly in Benjamin's concept of the dialectical character of the images, and the 'primitive' form of the 'early cinema[369].' Through this approach, Moore regards the cinema as a new form of magic arising against the uncertainties and destabilisations of modernity.

While Morin in 1956 introduced a cultural-anthropological perspective into the treatment of cinema spectatorship, his postulation, that the cinema needs the spectators to become alive, points to a latent ontology in his work, which he has diverted into a psychological study of the perceptual processes, before psychoanalysis actually became incorporated into film and cinema theory. Moore (2000) instead attempted to leave the model of psychoanalysis, the unconscious, as a dominant constituent of cinema spectatorship and reintroduced an animistic worldview as symptom of modernity, as a cosmology of modern magic. Morin's and Moore's applications of the concept of 'magic' to cinema perception are two examples where certain aspects from the field of cultural anthropology have been applied to an understanding of the cinema experience. These attempts partially recognise the spectators as empowered agents in an active engagement with the cinema

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[369] In this regard Moore references Noël Burch (1986).

experience, while at the same time, through the notion of 'magic', there remains a mystified power or ephemeral, phenomenological dimension, which is commonly conceived as lying beyond the perception of the beholder. Consequently the notion of 'magic' remains attached to connotations with traditional animated worldviews as well as with notions of 'alter states of consciousness', the 'extra-ordinary' or 'paranormal.' Alternatively what this thesis has suggested through an application of Bergson's system of thought to its treatment of cinema and 'magic' is, that further studies might proceed from a view of the cinema as an arena where certain quotidian perceptual processes become enhanced and amplified but not necessarily transcended into another 'state.'

Arnold van Gennep's study of religious ceremonies in 1909, *Rites de Passage* (1960 [*Les Rites de Passage*, 1909]) is suggestive of another way to think about mental states. Van Gennep considers the transistory states in between defined phases of rituals in which the initiated participants undergo individual experiences and transformations. When looking at Bergson's conception of the mind's operations, driven by two major tendencies in a constant oscillation of consciousness, it could be said that they are situated between states of liminality[370] (Van Gennep, 1960 [1909]) and stability, between the internal and the external. According to van Gennep the phase of transition, also called the phase of liminality, is characterised by ambiguity, uncertainty and indeterminacy, and could be related to Bergson's concept of 'becoming' as a continuous flux of ever-changing states. While in van Gennep's theory the liminal phase is a temporary state of an extreme amplification and disorientation — where the rational, social determinants are temporarily broken — Bergson regarded these processes of 'becoming' and continuous transformation as a permanent drive constituting our being, which can only be grasped through intuition. In relation to the cinema it could be argued that the cinema experience constitutes a liminal phase within the quotidian conscious experience, that amplifies our

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[370] Van Gennep proposed to study ritualistic ceremonies in their *esemble* of elements — it could perhaps also be called *dispositif*— and their underlying dynamic processes, which he divided into three major schemes: separation (*séparation*), transition (*marge*), and incorporation (*agrégation*). (1960, p. 11, 21) This concept has been widely applied not only to research into ritualistic practise in traditional, ethnical contexts, but also in contemporary culture and the arts, especially in the strand of theatre anthropology, as for example by Victor Turner (1969, 1982) in his study of the theatre as ritual, also called theatre anthropology.

perceptual processes, and in this way provides a symptomatic platform for certain transformative states to take place. Through a more or less conscious act of free will these processes allow the spectators to creatively engage with the film's content by entering the flux of the film and intertwining the perceived with the personal memories that overlap with the perception of the present moment — the very domain that for Bergson constitutes the dimension of the spirit.

Perception, as it is discussed in this thesis, also calls for some reflections on David MacDougall's notion of 'shared consciousness' (1998), in relation to the specific genre of documentary film. He departs from the undercurrent in recent anthropological writing, which suggests that just as the anthropologist must insert him- or herself experientially in the process of fieldwork[371], so must the audiences be inserted into the production of the work. He suggests in his conclusion of *Transcultural Cinema* (1998) that the future of visual anthropology should lie in the study of human consciousness and the complex relationships between the film's subjects, the filmmaker (anthropologist) and the spectators: 'We can conceive of visual media contributing to a new field of experiential studies in anthropology — studies of the actualization of social knowledge — what might be considered a more broadly defined "anthropology of consciousness." (1998, p. 272) MacDougall makes clear that this would not involve, consciousness of so-called 'altered states', but instead 'consciousness as an aspect of everyday social experience'. An 'anthropology of consciousness' according to MacDougall: '... would study the passing flow of consciousness in everyday life, that mixture of sensory and cognitive experience that consciousness perceives as an integrated field.' (1998, p. 272)

MacDougall highlights what is at stake in our everyday perception as Bergson saw it, not a recognition of 'reality' rather the folding and unfolding of the 'actual' (the perceived) and the 'virtual' (memory, past). This conception has been exemplified in the self-reflexive style of cultural anthropology, which as one of its aims practises cultural critique in regard to the observer's own background and involvement. This self-

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[371] This trend is commonly referred to as having started most notably with the British anthropologist Bronislaw Malinowski who introduced ethnographic fieldwork as an empirical methodology to social and cultural anthropology.

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reflexivity, along with multivocaltiy and dialogical approaches, have become crucial interrogative moduses addressing the subject positions in particular within visual anthropology[372], a discipline that has developed a sophisticated discourse that has always recognised cinema audiences as active participants through their subjective engagement[373]. These conceptions have much in common with radical constructivism which advocates that knowledge is a self-organised and a constructed, cognitive-emotive process based on the very experience of the perceptive faculties, which chimes with MacDougall's assertion that perception as participant process has 'a close affinity [with] the cinema.' (1998, p. 79) As MacDougall is interested in cinema as a method to convey knowledge, he emphasises cinema's particularity of transferring relational knowledge, which is based on experience and characterised by the fact that meaning, as Bergson suggests, exists in the sum, not in the parts. (1998, p. 80) MacDougall explores further:

> Film is less a communicative act than a form of commensal engagement with the world, and one that implicates subject, spectator, and filmmaker alike. This is a process that favors experience over explanation, and which proceeds more by implication than demonstration. (1998, p. 11)

This flow of consciousness between the participants, according to MacDougall, can be shared through audio-visual media by the very implications of the affective qualities of the image, and in doing so he refers to Deleuze's cinema theory. (1998, p. 82) He proposes this specific quality as invaluable epistemology for anthropology, which reveals the very qualities and intensities of lived and shared experience itself — in short qualities and degrees of experiences that include ideas and mental images from touch, vision,

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[372] The critical tool of self-reflexivity as developed in the discipline of cultural anthropology by now has been incorporated in the wider field of Documentary Filmmaking, often, however, as an element of style rather than a method and tool for a critical interrogation of the observer. MacDougall remarks on exaggerated self-reflexivity: 'There was always the danger, though, that the self-reflexive stance would be taken as a stamp of authenticity - that because we acknowledged the constraints upon our view, that view would be more completely believed. In effect, self-reflexivity tended to be crudely interpreted as erecting a structure of explanation around one's work to legitimate it. This nurtured the naïve positivist view that science really could describe external reality accurately if all the filters of subjectivity were identified and done away with. It completely missed the point that we know things through ourselves, and that you can't simply eliminate the self in the pursuit of knowledge.' (MacDougall, 1997)

[373] An overview on discussions of reception theory in anthropology can be found in Crawford and Hafsteinsson (1996), in this edition Morley (pp. 11-27) in particular reflects critically on theories on the active participation of the audiences.

sound, and smell and reveal the sometimes indistinguishable subject-object interrelationships as processes of change or in Kristeva's terms 'continual states of self-becoming.' (MacDougall, 1998, p. 274)

MacDougall's insights from a theoretical and practice-based perspective of visual anthropology and the references to Deleuze and Kristeva point towards the philosophy of Bergson as it has been discussed in this thesis. As such it proposes further avenues of research for visual anthropology and documentary film theory more generally. For example it could begin by engaging with MacDougall's suggested project of an 'anthropology of consciousness.' This would take the cinema (and anthropological film) as a paradigm and exemplification of this very same method beyond the conception of the film image as cultural and social signifier. Cinema in its broadest sense in this way could constitute a tool to study the relational networks involved in human interaction in the context of audio-visual media beyond (and necessarily in addition to) descriptive, textual, structural or narrative accounts. MacDougall refers to these underlying dimensions in an interview with Ilisa Barbash and Lucien Taylor and invokes the 'invisible' qualities of film:

> I've always felt that documentary and ethnographic film are 'principally' about the nonvisible, and that it's only a very narrow conception of documentary that assumes it stops at the visible record. But there is a significant difference in how one proceeds from the visible to the nonvisible. It seems to me there are two directions one can take. One can either treat documentary as a medium that registers the visible surface of life and produces an artifact in which it's then possible to see the signs of a whole cosmos of underlying beliefs and cultural patterns, or one can treat it as a medium that engages with the experience and imagination of the viewer through the evocative power of the visible. One attitude treats the film as an object which the viewer is able to inspect in a disinterested way from a distance. The other treats the film as an event in the life of the viewer, a work created in time and space, acting upon our intelligence and emotions. It's this performative aspect of cinema that is often ignored when film as film is taken out of its viewing context. And unfortunately many social scientists have a tendency to consider film simply as text. This has the effect of stripping the film of its internal logic, of making the film no more than the sum of its parts, whereas in fact the importance of many films lies not in the parts but in the network of resonances set up between them. — In this sense, films are extended metaphors of the invisible. (MacDougall, 1997)

This view strongly resonates with the earlier discussion of Marey's research interests and Warburg's approach to visual artifacts and his epistemological methodologies in art history. MacDougall reiterates: 'Much of the film experience has little to do with what one sees: it is what is constructed in the mind and body of the viewer. Films create a new reality in which the viewer plays a central role, or at least is invited to do so.' (1998, p. 71) He uses the term 'artifact' to describe the particular quality of the perceived image as an intermediary state between the material and the immaterial:

> Rather, it would perhaps be more accurate to say that a film registers or traces the process of looking itself, not as a line drawn between the subject and object of viewing, but as an artifact in which the two are inseparably fused. What appears in the film is not so much a translation of vision as [it is] a form of visual quotation, or visual communion. This engages the viewer in a second act of looking, closely bound up with the actions of the filmmaker. (MacDougall, 1998, p. 265)

This 'visual communion' follows Bergson's suggestion that perception takes place in the thing or object to be perceived, while internally (within the subject), memories imbricate with the processes of perception and shift from virtual into actual qualities. Bergson understands perception as action, and the affect as the interval between incoming perception and outgoing action. (1991, pp. 233-4) In this oscillation, pure perception as 'becoming' is revealed as the continuous flux of change understood as duration, which is only accessible through introspection. This duration, according to Bergson is what needs to be grasped in order to more fully and deeply understand our human condition. It is a pure quality, a pure perception which cannot be translated or transferred into language but only be grasped by intuition. This duration is situated within the flux of time in the form of virtual images consisting of our memories pushing constantly into the present moment through recollection and recognition. This is the very movement of 'becoming' driven by the *élan vital* (life-force); Bergson suggests:

> We must accustom ourselves to think being directly, without first appealing to the phantom of the nought which interposes itself between it and us. We must strive to see in order to see, and no longer to see in order to act. Then the Absolute is revealed very near us and, in a certain measure, in us. It is of psychological and not of mathematical nor logical essence. It lives with us. Like us, but in certain aspects infinitely more concentrated and more gathered up in itself, it endures. (1998, pp. 298-9)

MacDougall phrases a similar thought when he mentions introspection: 'The anthropological exploration of consciousness must begin with an exploration of our own conscious experience, for that is the only source directly available to us', (1998, p. 273) while at the same time, he claims, it is always connected to the consciousness of others we engage with. Through this communion between the audiences, the filmed subjects and the filmmakers — often invisible but nevertheless perceivable presences in the film — there occurs an exchange of shared consciousness which is interpreted individually by heterogeneous audiences and does at the same time distinguish the distance and closeness (in space and time) between these agencies. Filmmaking appears as an attempt to reduce the distance between these various constituencies, as it is for example particularly evident in Jean Rouch's concept of 'cine-trance' in which the active engagement of all participants in the cinema apparatus appears to merge time and space through a tactile and performative approach[374].

In the context of the discussions in this thesis it could be said that the abstract concept of a homogenous space and an abstract time as chronology stand in contrast to the internal experiences of perception, comparable to the experiences during field research which are coeval with their object of enquiry. Johannes Fabian has acknowledged this discrepancy in time in the notion of the denial of coevalness[375] as it occurs according to him in ethnography[376]. As with ethnography, the cinema likewise displaces time and space from the actual event. In its mechanisms and technological processes it denies coevalness and replaces it with the illusion of synchronicity (of the acting or actual events) at the

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[374] In relation to his concept of 'cine-trance' Rouch elaborates on an analogy between possession rituals among the Songhay and the cinema (1989).

[375] In *Time and the Other* (1983), Fabian has criticised anthropology for its object, in the written accounts, as being distanced in space and time, revealing a denial of coevalness, of contemporaneity and equality of events. He remarks: 'When written about (or otherwise represented according to conventions of scientific literacy), anthropology's object, the Other, has consistently been placed in a time other (usually earlier) than that in which the writing anthropologist places himself, or herself.' (1991, p. 226)

[376] The method of ethnography concerns the: '... research process in which the anthropologist closely observes, records, and engages in the daily life of another culture – an experience labelled as the fieldwork method – and the writes accounts of this culture, emphasizing descriptive detail.' (Marcus and Fischer, 1986, p. 18)

moment of projection. In this sense the cinema performance has much in common with the written accounts of anthropologists, which at the point of their inscription are always based on past observations, memory, and reflections. The graph of the Cinématographe is one that 'writes' in sound and images, and as Derrida has reminded us, writing inscribes temporality as difference (Guerlac, 2004, p. 185). The agency that restores meaning to these 'graphies' is the viewer (the 'reader') who in the very moment of cinematic projection makes sense through the intersection of sensory perception, recollection of memories and recognition. The apparent illusion of an absence in this denial of coevalness in the cinematic screening situation creates the opportunity for the spectators to put themselves into the place of the action; the actualisation of the present moment of perception. Viewed in this way, ethnographic film (in fact any film) constitutes a medium that enables the audiences to displace themselves in time and space, which is commonly referred to assuming the position of the ethnographer or camera, a claim well established in film theory in its discussion of subject positions.

While Derrida referred to the processes of the camera, Deleuze has shifted the attention to the second major process constituted by projection. His insight that the screen functions as a brain, in the sense that Bergson has understood the brain as a mere organ to channel the processes of intermediation, also points to an understanding of the cinema as philosophical *dispositif*. This insight can be taken further in regarding the cinema as a paradigm for the processes of consciousness, which this thesis has identified in a study of the spectators' perception as an ontological enquiry. While this thesis has focused on the perception in the cinema, the processes of consciousness involved in the cinema *dispositif* are of a much wider scope, which can be understood as 'shared consciousness'. They involve manifold processes far beyond the production and projection process, in which, however, the cinema perception constitutes one, certainly most significant part.

With regard to the cinema perception this thesis has emphasised the need to recognise that the internal subjectivity of the spectator is in constant communion with the object it perceives, which Bergson conceptualised as the spirit that extends into the objects to be perceived. The cinema as a Bergsonian 'time-machine', a notion discussed in chapter 2,

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can be interpreted as a platform that facilitates the liberation of *l'esprit* (spirit) from the material constraints during the cinematic experience, by amplifying an awareness of the continuous flux of qualitative duration (*durée*) and the multiplicity of internalised heterogeneous states. Consequently it could be proposed that through the application of Bergson's system of thought in relation to MacDougall's conception of 'shared consciousness', an experience of 'coevalness' can possibly be achieved through the spectators' engagement with this inner duration during the cinema experience. In this sense, the 'time' of a film manifests quantitatively, as David Bordwell (1985) has schematised in the concepts of story time, plot time and projection time, or as Mary Ann Doane has suggested, the time of the apparatus in a mechanical sense, as the temporality of the diegesis and the temporality of reception. (2002, p. 30) As this thesis has argued, the time of reception needs also to be understood as a qualitative dimension of the perceptual process, in which the actualisation of memories from the past that entangle with the perceptive moments of the present in the spectators' minds, create an individually heterogeneous internalised flow of time experience.

As this thesis has claimed, Henri Bergson's philosophy of perception and system of thought offers an invaluable approach to the multi-sensorial cinema experience from the perspective of a condition of extended yet embodied consciousness without mystifying the technology or misrepresenting the audiences. As a consequence it offers a way to liberate the theorisation of the cinema spectators from the limiting interpretation related to the ideological constraints of the cinematic apparatus. It also offers some relief from a necessarily unsatisfactory deferral of agency to supernatural powers in the hope of finding communication between self and other[377]. Instead it invests the spectator with agency through the incorporation of individual interpretative experiences beyond the limitations of the predominately materialist (audio-visual) concepts of the image through the acknowledgement of the spiritual domain as internal faculty. Perception, in Bergson's view, always means immersion in the object to be perceived, and the apparent physical immobility of the cinema setting could be regarded as reinforcing the amplification of the engagement of the mind, since in his conception, all incoming perception 'spiritualizes'

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[377] See also the discussion of John Durham Peters (1999) referenced in chapter 2 in section 2.2.

into consciousness instead of leading toward an immediate action. In this way, the cinematic experience is incorporated within the psyche of the viewer, as Münsterberg (2001 [1916]), Morin (2005 [1956]) and Metz (1975) have suggested. In this sense the spectators can be regarded as 'observing participants' and interpretive agents of their own perceptual processes.

By applying the notion of the participant observer[378], as developed in the field of cultural anthropology, to a study of the cinema spectators, the screen can be regarded as the interface where insider's (emic) and outsider's (etic)[379] perspectives meet and exchange in a continuous, subjective flux. It is not necessarily in the screen that they meet, but it is through the screen that this mediation and communion can happen. It could be said that in Bergson's formulation of intuition he anticipated what in cultural anthropology is exemplified in the conception of the emic as an intrinsic part of an introspective experience of the participant observer. An application of Bergson's philosophy could suggest that by taking the intuitive qualitative experiences into account in the self-reflexive processes of the participant observer, there is an enrichment and extension of the emic point of view in terms of an embedded knowledge and experience transfer, exemplified by his philosophy of immanence. Images are no longer considered as 'representations of reality', as is commonly emphasised in the documentary film genre, but rather in a Bergsonian sense as fully embodied relational networks through which in the perceptual processes matter and spirit meet, outside (etic) and inside (emic) touch upon each other. In the view of Bergson's understanding of intuition, the subject's mind merges with the objects' through what he defines as 'intellectual sympathy.' (1999, p. 23)

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[378] The method of participant observation has been developed and introduced into the discipline of cultural anthropology through among others Bronislaw Malinowski's and Franz Boas in their fieldwork methodology whereby the observer immerses her-/ himself in the lives and activities of the subjects of study. This method has been widely applied to other disciplines in the Humanities, most frequently for qualitative research; see for example Spradley (1980). The influence of this approach among other disciplines can partially be accredited to the influence of anthropologist Clifford Geertz whose work was also influential on the method of new historicism, in that he proposed to acknowledge the subjective perspective of the participating observer in any scientific enquiry. (Geertz, 1983)

[379] The emic is considered in cultural anthropology as the 'insiders' point of view, the etic as the 'outsiders' point of view; commonly any ethnographic account constitutes a dialogue between these two points of views, comparable to contemporary first, second and third person methodologies with an emphasis on the emic perspective.

This constitutes not merely an inside point of view, but a being and empathy with the object of study. When Bergson talks about the 'coincidence with the person' the term coincidence reveals its etymological connections with co-incide or co-inside: a co-being-inside another person, or living thing, a merging or morphing — or possibly 'coevalness'?

In spiritual rituals, séances, etc. this 'co-inside' is often called 'being in resonance with' something, such as a spiritual entity or other kinds of energy forces taking possession of an object, a subject or a space. From this it could follow that consciousness is able to extend (if it is supposed to have any limits in the first place) and contain a space, an object, or an 'other.' Reminiscent with Jean Rouch's use of the term 'possession' in his filming process, Bergson uses the word 'possess' when he talks about the process of intuition as absolute knowledge (in contrast to scientific knowledge as relative since it merely moves around the object of study by positing external perspectives). He explains:

> (But) when I speak of an *absolute* movement, I am attributing to the moving object an interior and, so to speak, states of mind; I also imply that I am in sympathy with those states, and that I insert myself in them by an effort of imagination. Then according as the object is moving or stationary, according as it adopts one movement or another, what I experience will vary. And what I experience will depend neither on the point of view I may take up in regard to the object, since I am inside the object itself, nor on the symbols by which I may translate the motion, since I have rejected all translations in order to possess the original. In short, I shall no longer grasp the movement from without, remaining where I am, but from where it is, from within, as it is in itself. I shall possess an absolute. (1999a, pp. 21-2)

Here he seems to suggest a distinction between an emotional interrelation or affection and an intellectual sympathy that could be called impersonal yet affectionate, much as Francisco Varela also has pointed to in his support for the acknowledgement of first person methodologies. (1999a) Bergson also describes the activity of extended consciousness in the perceptual process as 'aesthetic intuition':

> It is true that this aesthetic intuition, like external perception, only attains the individual. But we can conceive an inquiry turned in the same direction as art, which would take life in general for its object, just as physical science, in following to the end the direction pointed out by external perception, prolongs the individual facts into general laws. (1998, p. 177)

MacDougall discusses this exchange in a similar way and in the following also recalls Bergson's remark on 'intellectual sympathy' in relation to Marey's engagement with aesthetics, cited in chapter 4, section 4.3. MacDougall writes:

> [But] how well we perceive the experience of others depends upon fields of consciousness we share with them. This involves a transcultural process and a willingness to enter into a sympathetic contract with others, including the filmmaker or writer as intermediary. Consciousness includes the domain of tacit knowledge, evoked only in the interstices and disjunctions of what can physically be shown. (1998, pp. 272-3)

Likewise, Marcus and Fischer remind us that Clifford Geertz has pointed out that the 'native point of view' does not require 'intuitive empathy', even though empathy can constitute a useful aid: '... but communication depends upon an exchange.' (1986, pp. 30-1) What Bergson's philosophy offers is not merely an intuitive way to approach field-research and its mediation through audio-visual media, but a system to critically reflect on the observer's (both the anthropologist's and the cinema spectators') perceptual processes. During the 1960s in a variety of disciplines the subject position was profoundly scrutinised along with the historicity of the object of enquiry. It was most notably Geertz's interventions in anthropology (1973, 1983) that led to a critical engagement with the current accounts on social and cultural systems of interpretation. His approach became known as interpretive anthropology after its emergence during the same decade[380]. Interpretive anthropology signified a shift from social structures and systems to mental or cultural phenomena and fostered an inside point of view as well as a critical reflection on the epistemological groundings of the research accounts; hence it

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[380] Marcus and Fischer account for interpretive anthropology as the shift that took place from the focus on behaviour and social structure to an acknowledgement that meaning is constructed through negotiation, with an emphasis on meaning, symbols and language, and the view that ethnography consists of a process of knowledge. (1986, p. 26) They regard interpretive anthropology as one major factor in a shift in the 1960s which most significantly influenced and changed the practice of anthropologists, next to two other significant critical interventions, one 'of fieldwork as the distinctive method of ethnographic research, and of the ahistoric and apolitical nature of ethnographic writing', which in their view turned merely into controversies and manifestos. (1986, p. 33)

concerned: '... the explicit discourse that reflects on the doing and writing of ethnography itself[381].' (Marcus and Fischer, 1986, p. 16)

Geertz' conception of an interpretative anthropology relates closely to the subject position in Bergson's philosophy, which not only proceeds from a subjective point of view, but also offers a perspective that incorporates impressions and intuition that overlap with the externalised processes of pure perception. This 'grasping' of life in its activity rather than in its forms is clearly distinguished from the external expressions of language, analysis or writing[382]. It seems as if the notions of the unconscious, magic or imaginary, when applied to the human mind can be regarded as an attempt to unravel these internalised processes; none of them, however, have succeeded in overcoming the orthodox dualism of the body-mind concept. In an application of a Bergsonian perspective, his relational understanding of perception — for which the conception of the participant observer, or as suggested here: the 'observing participant', provides a useful model — enables the recovery of time as quality and duration within the consciousness of the viewer. In this way the condition of consciousness is revealed in the perception of the spectator, within the 'matter-flow' or 'image-movement'. This approach does not reinstate the material, nor deny the notion of reality or enforce a dialectical position, but it creates a framework to situate an oscillation between a realist and idealist perspective as fundamental process of the *conditio humana*.

This thesis suggests that a treatment of Bergson's philosophy within cinema studies allows a repositioning of both the spiritual dimensions of the cinema experience as well as the equally underrated spiritual practices into the ordinary processes of our human mind by considering the human agency in a fuller dimensionality. This approach, in Bergson's spirit, brings two worldviews together; the realms of science and the realms of spirit (*l'esprit*). The cinema in this way constitutes a platform where spirit and matter

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[381] The inside point of view constitutes also a significant conception in Bertrand Russell's approach to epistemology, who distinguished in 1912 between knowledge by acquaintance (direct awareness of sense-data, memory, introspection; our awareness of being aware through thought and emotion) and knowledge by description. (MacDougall, 1998, p. 77-78)

[382] It is in this sense that it can be understood that Jean Rouch was 'performing' with his camera rather than 'writing', since he participated most explicitly in an intuitive communion.

meet, and the spectator's active engagement is unfolding the internalised and externalised processes of the mind in a constant oscillation. This fluctuation embraces various gradations that are shaped by individual and momentary interests, as Bergson has exemplified in his schematic illustration of the inverted cone. Along with this philosophical investigation, this thesis further suggests in the following, that an inclusion of extra-sensory experiences in relation to studies of the cinema perception can allow us to approach the 'spiritual' or 'transcendental' dimensions of cinema from a perspective that is grounded in a convergence of an empirical and philosophical framework.

As mentioned earlier, Bergson considers the workings of consciousness in the moment of perception as an extension into the very object that is being perceived. This activity is amplified during the cinema experience, through enhanced speed, time lapse, and other cinematic techniques through the editing process. These provoke similar sensations to those reported as extra-sensory experiences or clairvoyance. (The phenomenon of clairvoyance is here understood, as an amplification of the ordinary spectrum of the perceptual capacities, and as incorporating a broad spectrum of extended sensory perceptual capabilities[383]). Bergson himself was very modest and careful, nevertheless he was convinced of the significance of — what at the time was called — 'psychical research.' He formulated a positive perspective when he addressed the interrelationship between the body and the mind and the related question as to whether the soul (consciousness) survives the body, as he said: 'Let us confess our ignorance, but let us not resign ourselves to the belief that we can never know. If there be a beyond for conscious beings, I cannot see why we should not be able to discover the means to explore it[384].' (1920, p. 28) Following his serious and rigorous pursuit of investigations,

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[383] This conceptualisation goes back to research into clairvoyance conducted by the author during 1997 and 2000, which led to an MA thesis discussing the implications of the clairvoyant perception for the discourse on the spiritual dimension in film theory, in a comparative analysis of the spiritual in film content specifically in relation to the concept of angels. (Blassnigg, 2000)

[384] The elaborations in this thesis propose the following reflection: if we assume, as Bergson does through his system of thought, that spirit exists independent from matter, but linked through processes of our consciousness, then the idea of an eternal living spirit becomes not only plausible but a necessity, since the existence of pure memory is not directly bound to the existence of the body — a hypothesis that finds confirmation in Bergson's own elaborations in a lecture on 'The Soul and the Body' (1920, p. 78). Furthermore if we would extend this

even though in his own writings he merely touched remotely on psychical research, Bergson was elected President of the Society of Psychical Research. He remarked in his Presidential Address in London on May 28, 1913:

> I want to show that behind the prejudices of some, the mockery of others, there is, present and invisible, a certain metaphysic unconscious of itself, — unconscious and therefore inconsistent, unconscious and therefore incapable of continually remodelling itself on observation and experience as every philosophy worthy of the name must do, — that, moreover, this metaphysic is natural, due at any rate to a bent contracted long ago by the human mind, and this explains its persistence and popularity. (1920, p. 62)

When suggesting further study into the interrelationship between clairvoyance and the cinema perception, it is crucial to reiterate that Bergson understands the body as a centre of action, whereby spiritual activity — the pulsating *élan vital* driving memories forward into the present moment — is relayed into sensori-motor actions according to the needs of the present moment of perception. Bergson considered the nervous system as a network of conducting lines without any specific centres; a conception that is reminiscent of the way Deleuze and Guattari (1988) introduced their concept of the rhizome. The threads of the nervous system in Bergson's view stretch from periphery to periphery and conduct all the necessary actions for transferring received stimulations into movements and actions. The precision of this interweaving defines the sensori-motor equilibrium of the body; when disturbed, Bergson suggests, attention detaches itself from life: 'Dreams and insanity appear to be little else than this.' (1991, p. 174) Sleep in Bergson's terms is a functional interruption between stimulation and motor reaction; he considered it as:

> ... an interruption of the solidarity among the neurons... So dreams would always be the state of a mind of which the attention was not fixed by the sensori-motor equilibrium of the body. (1991, p. 174)

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conception even further and assume that this spirit undergoes cyclic incarnations, then the memory of the spirit not only carries the memories of one life-time, but that of several, possibly thousands of life times within it in ever deeper layers. This example shows how Bergson's system of thought stimulates further investigations into interconnections with related discourses from established spiritual practices, as for example Minoru Yamaguchi (1969) has exemplified in a comparative study with Zen-Buddhism.

In this sense, dreams, according to Bergson, imitate insanity. For him the psychological symptoms of madness can be found in dreams: '... but insanity appears also to have its origin in an exhaustion of the brain', accumulated by 'specific poisons in the elements of the nervous system.' (1991, p. 174) He sees insanity as an imbalance in the sensori-motor relations that creates a sort of: '... psychic vertigo and so causes memory and attention to lose contact with reality[385].' (1991, p. 174) Camille Flammarion similarly draws an analogy between psychic phenomena and psychiatry: '... they [mediums] possess real, undeniable psychic powers. Their case is nearly that of the hysterical folk under observation at the Salpêtrière or elsewhere.' (Flammarion, 2003, p. 3) These analogies are very common in the late 19th century, where there was a close connection between medicine, spiritualism, physical anthropology and the developing discipline of psychology. As Henri Ellenberger reminds us: 'Dreams, somnambulism, insanity, and other aspects of the unconscious were considered important clues to an understanding of the universe.' (1970, pp. 200-205)

The cinema experience has often been compared elsewhere to a dream state. From a Bergsonian perspective, however, the sensori-motor functions of the spectators are not inactive, but merely passive. It could be speculated that the cinema imitates a safe ride toward insanity which would suggest from the previous argument that the mind loosens its connection with the sensori-motor system, and its contact with the 'actual.' Alternatively it could be said that a shift in attention is taking place — from the general environment of the perceptual scope to the perceptual universe within the frame of the screen and the full attention toward action is set toward the perceptual processes within this micro-universe in a constant oscillation with the experiences within the self.

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[385] When Deleuze has suggested that the cinema restores our 'belief in the world', it could as a purely speculative reflection in this sense be traced to an almost 'therapeutic function' of the cinema. This function could address certain disturbances of the sensori-motor equilibrium that connects our mind and attention with the position of our bodily constitution in our present life situation, consciously or unconsciously acted upon and redefined (or possibly disturbed?). However, this reaches into a psychological/ psycho-pathological study of the cinema perception, which does not fall within the scope of this thesis.

The imbalance of the sensori-motor system that Bergson addresses, also invokes certain conditions of psychic states, which can be traced in studies of the perceptual experiences of clairvoyants. The brain itself, as elaborated earlier in relation to Bergson's system of thought, is the organ of attention to life. It does not contain any psychic states, such as memory, but merely executes the directions our will gives to sensori-motor movements; while our consciousness filters, canalises, limits and restrains the overflowing mind by focusing the attention towards the present moment. (Bergson, 1920, p. 77) An insane person, according to Bergson, is still able to reason logically, but: '... his reasoning is out of line with reality, outside reality, — as we reason in a dream.' (1920, p. 75) When our attention is focused on the present moment of perception and preparation for action, as Bergson puts it:

> The sense organs, the sensory nerves, the cerebral centres canalize, then, the influences from without, and thus mark the various directions in which our own influence can be exercised. But in doing so they narrow our vision of the present, just as the cerebral mechanisms of memory shut out our vision of the past. Now, just as certain useless memories, or "dream" memories, may slip into the field of consciousness, availing themselves of a moment of inattention to life, may there not be around our normal perception a fringe of perceptions, most often unconscious, but all ready to enter into consciousness, and which do in fact enter in exceptional cases or in predisposed subjects? If there are perceptions of this kind, it is not only psychology in the strict meaning of the term that they concern; they are facts with which "psychical research" can and should concern itself. (1920, pp. 77-78)

Bergson raises many more issues to be discussed in relation to other systems and theories of 'spiritual' dimensions and practices[386] than the scope of this thesis allows. It should be remembered, however, that the enormous popular engagement with paranormal phenomena by the public at the end of the 19th century, such as spirit photography or spiritist scéances, as elaborated in chapter 2, was generally met by the scientific community both with neglect or disavowal. However, it was also met by some with serious professional interest in studying these phenomena through an application of scientific methods. William James, Arthur Conan Doyle and William Crookes all

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[386] See for example Yamaguchi (1969).

employed scientific methods to research into psychic phenomena and mediumship[387] and of course Sigmund Freud's research into the unconscious and psychoanalysis can also be viewed in this context. Nonetheless there remained great scepticism even among those who witnessed such phenomena; Everard Feilding reflects on the common belief that the predisposition of the familiarity of what we know defines whether we believe in what we perceive:

> ... and although we saw them do so, we still refused to believe that they did. We preferred to believe that we had been deceived in some way unknown; that we had been hallucinated, or had wrongly observed. We doubted our senses rather than our experience; were guided, in fact, by our emotions rather than our observation. (Inglis, 1992, pp. 428-9)

This statement reflects other critical interventions by scientists during the period. William James for example published his findings on trance mediumship in 1886 (James, 1986), and more general concerns regarding the human spirit in his *The Principles of Psychology* in 1890 (1950)[388]. When James took the presidency of the SPR in England in 1896: '... his address denounced the "fixed general belief" of Science "that the deeper order of Nature is mechanical exclusively", appealing instead to as yet unexplained "ranges and orders of complexity." (Luckhurst, 2002, p. 237) With his publication *Varieties of Religious Experience* in 1902 (James, 1904) he abandoned cognitive and positivist psychology and in favour of philosophy. Amongst his research into psychic phenomena he described mystical experiences as: '... transient, fugitive, and ineffable but also imparting senses of cosmic connectedness.' (Luckhurst, 2002, p. 259) It is crucial to note in this respect the intrinsic empowering agency that Bergson as well as James ascribed to the human mind at the time, and in this regard Luckhurst points out that some investigators into spiritual phenomena such as Blavatsky and Gurdjieff abhorred spiritism, since in their view these practices trained: '... the Will to superhuman

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[387] Research into psychic phenomena today fall mostly into the field of parapsychology, however, there are still controversies as to the question if these investigations should be considered serious from a scientific point of view, as for example a recent upheaval during the annual Science Festival held by the British Association for the Advancement of Science in Norwich, where a number of scientists have proclaimed the significance of psychic research into paranormal phenomena. (Connor, 2006) See also the discussion in chapter 1 and 2.

[388] Roger Luckhurst gives a good account of this work. (2002, pp. 237f)

feats; trance-states and occupation by spirits were degenerative.' (Luckhurst, 2002, p. 258) This observation is particularly relevant to a discussion of clairvoyance and the contrast between the passive spectators in a trance and the active engagement of the cinema spectators, whose efforts of the human mind is driven to achieve intuition with the aim to action.

There was a similar discussion in the case of the phenomenon of spirit photography, briefly touched upon in chapter 1. It could be argued that it was marketed in two ways: one in which the technology did the trick, the other in which the photographer claimed his agency as a 'medium' and through which the manifestations would occur. In the latter view, some kind of human medial presence was necessary in order to manifest a spirit image on photographic plate. Hence in these accounts too, the agency of the 'spiritual', often referred to as 'magic', has been situated within the capacities of the human mind. Bergson's philosophy leaves no doubt that this is where science needed to resituate psychic research in order to eliminate both the lingering ghosts of technological determinism, or a 'mystification' of the unknown realms of the human brain. In his address to the SPR in 1913, Bergson reflected on what would have happened to science if the interest from the start had been on psychology rather than on mathematics and the objective truth of measurable quantities. He concluded that:

> ... science would have passed from pure mind to life: biology would have been constituted, but a vitalist biology, quite different from ours, which would have sought, behind the sensible forms of living beings, the inwards, invisible force of which the sensible forms are the manifestations. ... Together with this vitalist biology there would have arisen a medical practice which would have sought to remedy directly the insufficiencies of the vital force; it would have aimed at the cause and not at the effects, at the centre instead of at the periphery; healing by suggestion or, more generally, by the mind on mind might have taken forms and proportions of which it is impossible for us to form the least idea. So would have been founded, so would have been developed, the science of mind-energy. (1920, p. 80)

Bergson's vision seems reminiscent of Marey's core research interests into the underlying forces and activities of energy and dynamisms, and he continued his reflections to the point when this proposed science of the mind would have reached finally into the material world, it would have been been as perplexing as contemporary

science finds itself confronted by the issues of the mind at the present day. If this had been the case, it would have been matter, and not mind, that would have been regarded as 'the realm of mystery.' (1920, p. 81) However, Bergson concludes that this reversal would not have been desirable, since it is to the science of matter that psychical research owes the precision, rigour, exactness and certitude which provide a basis to distinguish: '... between what is simply plausible and what must be definitely accepted.' (1920, p. 83) If we had assumed this inverted order, it is possible that the cinema would not have been invented. There would possibly have been no need to create visible virtual images, since Dovzhenko's and Barjavel's later visions of a future cinema may have been realised simply by clairvoyant perceptions. Internal and external visualisations of our quotidian psychical processes would be projected without the aid of technology. In this sense the cinema becomes paradigmatic of our mental apparatus, or a Bergsonian universe of virtual images; the universe as a meta-cinema, as Deleuze coined Bergson's view. (2005, p. 61) Other speculative inventions and ideas such as Tesla's 'Thought Photography' Machine may have been redundant in the face of general telepathic abilities. (1993, pp. 276-7) This 'future vision projected into the past' poses fascinating questions with regard to technology and its relationship with the psychical realm, or the dimension of the spirit. Bergson, however, brought his thought-experiment back into the realms of contemporary science and concluded in his Presidential Address to the SPR: 'But to-day that, thanks to the sciences of matter, we know how to make the distinction and possess the qualities it implies, we can adventure without fear into the scarcely explored domain of psychical realities.' (1920, p. 83) A claim that still has resonance and significance today.

In regard to the cinema perception it needs to be remembered, however, that the beauty, trickery and ambiguity of the cinema is that it allows for the broadest spectrum of simultaneous interpretations. It embraces both idealist and realist perspectives, and a spectrum of psychic engagements with its perceptual processes: from dreams, illusions, automatisms, technological fancies to realist, materialist or indexical interpretations. It is no surprise, in this light, that the emerging cinema was received and welcomed so rapidly around the world; since it seemed to have succeeded in accommodating a great variety of spiritual engagements beyond mere cultural, social or ideological interests. Although it

surprised its inventors, the enthusiasm for cinema seems obvious when it is understood through an ontological approach to the experience itself, which is situated within a heterogeneous yet universal human perceptual faculty. From this point of view, the cinema can provide a valuable platform for research into the processes of consciousness. It not merely appears to activate our imaginary thoughts, dreams and illusions, but in a Bergsonian view it provides an interface where spirit and matter can meet, intrinsically bound up with the personal histories, drives and imaginary impulses of the spectators. The cinema experience in this sense is almost entirely spiritual, since no action is required. It may even allow that door to open slightly against which: '... the mind presses with the totality of its memory' (Bergson, 1991, p. 180) to engage not merely with fancy and imagination, but possibly with intuition. As Bergson said:

> Let us seek, in the depths of our experience, the point where we feel ourselves most intimately within our own life. It is into pure duration that we then plunge back, a duration in which the past, always moving on, is swelling unceasingly with a present that is absolutely new. (Bergson, 1998, pp. 199-200)

In an epistemological sense of a 'thick description[389]' of the cinema experience, as much as in anthropology, in which the observations and accounts are as much about the observer as about the observed, cinema reveals to us an awareness of our own perceptual apparatus and in this way we actively make meaning of the world. In this space between a perception and an action lies the realm where intuition is possible and pure memory becomes unencumbered by the awareness of the constructiveness of reality. As a consequence, the experience of the cinema on an ontological level beyond the film content constitutes a momentum through which the spectators get to know the 'other' by looking at themselves. This counterintuitive effect, often referred to as the magic' quality of cinema, or the magic or double quality of the image, on a closer inspection lies in the revelation of the very internalised processes of our consciousness and the relational connections we are able to establish through its interface with the world. What is suggested here for further investigations is an interdisciplinary engagement of cinema studies with the discipline of anthropology: an 'anthropology of consciousness' or in a

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[389] The term 'thick description' is borrowed from Clifford Geertz (1973, pp. 3-30)

Bergsonian framing an 'anthropology of spirit' in a close engagement with the established 'anthropology of the senses.'

In recent years, the senses themselves have gained increasing prominence in theoretical discussions[390]: while these usually adopt the common interpretation of an Aristotelian distinction of five separate perceptual experiences (analogous with the five elements: earth, air, fire, water and the quintessence), in the case of clairvoyance, the sensory perception is experienced in a rather transitive way pointing to an inner view rather than to ocular vision, to an inner voice rather than auditory perception and to touch as a virtual sensation, in the sense of feeling or being touched without physical contact[391]. In the expanded context of the clairvoyant's perception and affection of spiritual experiences, as well as the cinema perception, the orthodox scheme of the five senses proves to be a limited concept, which calls for a re-evaluation and possibly new definition of our sensory apparatus. Jojada Verrips has discussed this inadequacy extensively in his article "Haptic Screens' and Our 'Corporeal Eye" (2002) and offers an alternative by advocating a necessary epistemological shift from an 'anthropology of the senses' to an 'anthropology of the touch'. Touch, according to Verrips, is paramount since it involves an interplay of all the senses. By emphasising the importance of the body, he sets a materially biased argument in contrast to the tendency to regard the body as a redundancy as is frequently claimed in relation to the immateriality of contemporary technological environments. Although this is most obvious in relation to virtual reality, the argument can be extended to what is commonly understood as transcendent perception of spiritual experiences[392]. Verrips' emphasis on the sense of touch is consistent with the way

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[390] See for example Ackerman (1990), Bedichek (1960), Classen (1993, 1998, 2005), Classen et al (1994), Howes (1991, 2003, 2004), Seremetakis (1994), Sobchak (2004), Stoller (1986).

[391] In recent years film scholars have been working on the involvement of the whole range of the senses in the perception of the cinematographic experience, an approach that treats cinema as an event rather than as a pure representation. See for example Jennifer M. Barker (1998) and her work on the haptic and visceral effects of cinema or Gerwin van der Pol (1998) who describes the haptic sensation of touch in cinema as the intention to touch in a more subtle sense: 'Touch is not to hold, not to be in constant contact with something or someone else. Touch is a very momentary phase in a sequence of two subjects wanting to touch, touching, and having touched.'

[392] In his most recent article Verrips brings 'aisthesis' to attention, the concept of a perception through all our corporeal senses, which has lost its original meaning to an emphasis on vision.

Bergson acknowledges the faculty of touch in his theory of perception when he states that: '... there is nothing more in the visual perception of the order of things in space than suggestion of tactile perception.' (Bergson, 2002, p. 214) Another area of research to be suggested here is into specific topics of consciousness studies such as the effects of gamma synchrony and recent studies of the perceptual experience and 'stimulated synaesthesia' through projections in dome environments, along with general enquiries into the functioning of the perceptual processes in relation to a philosophical framework[393].

Since the 1960s Clifford Geertz has influenced a variety of disciplines with his revisionist work. Chapter 1 has briefly discussed his influence on new historicism, and in the sciences his work has led to a consideration of first-person methods particularly in research into the psychological, neurological and perceptual faculties of the human mind. He has shown that cultural anthropology offers useful methodologies to deal with qualitative data. For example the biologist Francisco Varela considers the perspective of 'first-person events', which he defines as: '... lived experience associated with cognitive and mental events.' (Varela, 1999b, p. 1[394]) Varela concludes:

> I hope I have seduced the reader to consider that we have in front of us the possibility of an open-ended quest for resonant passages between human experience and cognitive science. The price, however, is to take first-person accounts seriously as valid domain of phenomena. And beyond that, to build a sustained tradition of phenomenological examination that is almost entirely nonexistent today in our western science and culture at large. (1996, p.18)

'aisthesis' can be traced back to a less conventional interpretation of Aristotle's concept of the five senses in his *De Anima* in which they ultimately constitute an undividable whole; in this respect Verrips (2005) refers amongst others to the related 18th century term of 'aesthetica', originally the science of sensitive knowing, which appears to bear relevance to an understanding of the clairvoyant perception.

[393] These topics derive from initial research and participation at the Conference Toward a Science of Consciousness in Tucson in April 2006 (Center of Consciousness Studies, University of Arizona) and the development of the research project 'Biofeedback-Theatre' with Trans-technology Research at the University of Plymouth.

[394] This page reference refers to the website that contains an extract from the full article. (Varela, 1999b) For a bibliography of Varela's work see Whitaker (2001).

Varela's work introduced phenomenology[395] into neuroscience in ways that resonate with Bergson's philosophical system as it is proposed in this thesis. This is evident for example in Varela's consideration of consciousness as an embodied dynamic process embedded within the physical dimensions, and his attempts to introduce human experience in its changing, changeable and fluid characteristics into the very methodologies of scientific research. As is suggested in chapter 3, Bergson's philosophy has some relevance to the 'hard-problem' in consciousness studies, which also resonates with Varela's conception of neurophenomenology as a: '... natural solution that can allow us to move beyond the hard problem in the study of consciousness.' (1996) Rosenberg amplifies this in the following statement:

> In *The Embodied Mind*, Francisco Varela, Evan Thompson and Eleanor Rosch represent the mind as having two competing cognitive processes occurring simultaneously. Cognitive processes at the local level, from the senses, the organs of the body, and the operations of memory, self-organize or 'emerge' into a global state. That global state may be considered fictional, since it has no being; it does function, however, to constrain those lower order processes in order to act in the world as if it were unified and autonomous. These antithetical cognitive processes may serve to help inform Deleuze and Guattari's distinction in A Thousand Plateaus between various processes of 'becoming' associated with the senses, the bodily organs and even nomadic and rhizomatic thought and action, and their crucial concept, 'the body without organs', the operations of which they describe in terms of two interdependent concepts: striated and smooth spaces. (Rosenberg, 1996)

This description of the two competing cognitive processes reiterates Bergson, as Varela's and Maturana's concept of *autopoiesis* also recalls his system of thought. *Autopoeisis* refers to organisms that are understood as self-creating system whose self-organisation interacts with patterns from past experiences in dynamic self-reflective loops. (Maturana and Varela, 1980) This concept is germane to the pathway evoked in this thesis, in which a contemporary reading of Bergson draws cultural anthropology and consciousness studies into the discussion at the intersection with cinema studies.

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[395] Phenomenology in France is closely related to Bergson's system of thought even though Sartre, Camus et al. distanced themselves from his philosophy (which later was acknowledged again in some aspects by Merleau-Ponty (1968)), however, Varela (1996) mainly refers to the German and Anglosachsian tradition in the work of Edmund Husserl and William James and discusses a methodological way forward by applying phenomenology to neuroscience.

This thesis has brought together certain tendencies and attempts, in particular a dialogue between Bergson's philosophy and Marey's and Warburg's interventions. It has done this in order to draw attention to a specific area in relation to our understanding of the cinema which also proposes a more general discussion of conceptions of 'spirit' as a quality of mind, regarded as an underlying dynamic principle of life. This thesis also proposes a closer inspection of an interdisciplinary approach to the perception of the spectators in order to allow certain established categories (such as entertainment, scientific research, ethnographic research, arts practice) within discrete disciplines (science, cinema studies, art) to dissolve momentarily. This would allow new interconnections to emerge and which could also lay the ground for further investigations and revisions of the multi-dimensionality of the perceptual processes and engagement with spirit. In the spirit of Aby Warburg this thesis suggests that we re-organise our discursive routines of thought according to new insights and ideas, which may shift certain assumptions, provoke revision, reconsiderations and extensions and habitual categories. This thesis also suggests consistent with Deleuze's intervention that we proceed in this modus by incorporating historical specific research, rather than simply refashioning existing ideas[396]. As a consequence it undertook an intellectual journey by revisiting the historical context of the late 19th century from the vantage of the 21st in order to liberate those dimensions and ideas with the benefit of the scholarship of the intervening period. This strategy was adopted in order to stimulate new recollections, recognitions and engagements with a perspective of the future, enacted in the present moment of lived experience. This returns us to the citation at the very beginning of this thesis; to the very political implication of Bergson's philosophy in which not only action turns into memory, but thoughts are always already action, a virtual action implied in the plausibility of an action to become actualised. In Bergson's view since all lived experiences form the whole of the virtual of each individual consciousness, as a heterogeneous quality that endures, the function of memory is mainly to serve as a resource and profound flux of conscious states that continuously pushes into the future

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[396] This needs to be distinguished from the discipline of philosophy which always strives to further the hypothesis or underlying system of thought as for example in the case of Deleuze's way of reintroducing Bergson in his own system of thought to further develop certain aspects in a contemporary context.

and strives to actualise at any present moment of action. Remembering is understood as an active engagement of the past with the present. The 'histories' we create following these processes, then serve at the most basic level as a continuous reconstitution, redefinition and becoming of our selves. It is our past relived in any new form in the present.

Whenever memory is articulated in individually or collectively shared oral or written histories, time, according to Bergson, as a quality and lived experience becomes projected into space, and the intrinsic quality of internal conscious states get lost. It could be suggested that it is not so much a question of 'doing history', but of 'being history', in driving forward the selected experiences from the past into the future, crystallising in the present moment in which we all anticipate and desire to act. History then in its fullness of experience exists only in the now, where past and present merge, in the continuous processes of *becoming*.

Bergson does not address the possibility that conscious states form a collective whole, as it is suggested for example by the term 'collective consciousness' introduced by Émile Durkheim (1958-1917) and applied in his functionalist sociology (1965), or the concept of the 'collective unconscious' by Carl Gustav Jung (1981). Notwithstanding this, for Bergson every *image* (or object) is considered a part of the whole of the aggregate of existing *images*, in which certain *images* act upon each other. This inevitably recalls the issue of telepathy, which Bergson addressed in his Presidential Address to the Society of Psychic Research in London in 1913. In this lecture Bergson reminds us that it is our bodies that are distinct in space; a fact that cannot be claimed for the mind with any certainty. The mind, he suggests, is merely partially attached to our bodies through intervals of conscious interaction, and this consequently leaves space for 'reciprocal encroachment.' (1920, p. 78) Bergson suggests as hypothesis that:

> Between different minds there may be continually taking place changes analogous to the phenomena of endosmosis. If such intercommunication exists, nature will have taken precautions to render it harmless, and most likely certain mechanisms are specially charged with the duty of throwing back, into the unconscious, images so introduced, for they would be very embarrassing in

everyday life. Now and then, however, one of these images might pass through as contraband, especially if the inhibiting mechanisms were functioning badly; and with such a fact "psychical research" would be concerned. It may be that this is the way veridical hallucinations are produced and "phantasms of the living" arise[397]. (1920, p. 78)

This statement is consistent with contemporary claims in neuroscience that mirror neurons are fired in the same way regardless of whether an action is undertaken or observed. As Patricia Pisters (2006) has suggested, this has some bearing on our experience of the perception of films. This draws attention once again to the need for further discussion of the agency of the perceiver who is responsible for the conscious perceptive process at the moment of action (the point 'S' in Bergson's schematic inverted cone which ideally is constituted by an equilibrium between the extreme states of either the automaton or the dreamer)[398]. This engagement of the spectator reveals a broad spectrum of conscious states, as Bergson suggests:

> But if, in fact, the humblest function of spirit is to bind together the successive moments of the duration of things, if it is by this that it comes into contact with matter and by this also that it is first of all distinguished from matter, we can conceive an infinite number of degrees between matter and fully developed spirit — a spirit capable of action which is not only undetermined, but also reasonable and reflective. (1991, p. 221)

Bergson here expresses his view that the past shapes the indeterminate future, since he proposes that consciousness acts upon: '... memory with freedom, continuity of creation in a duration in which there is real growth; a duration which is drawn out, wherein the past is preserved indivisible.' (1920, p. 17) In his view, intuition is the creative act that brings us in touch with this duration (durée), the motion of the élan vital, the life-force that underlies every creative act and act of free will.

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[397] In order to avoid a mere reference to the 'visual', the term 'phantasms of the living' was coined by Frederic Myers, founder of the SPR, in 1886 relating to the increasing accounts of apparitions in the spiritist circuits of the period, which Mark Bennion Sandberg recognises as: '... part of a larger effort in modernity to reorganize representations of the human body.' (Peters, 1999, p. 141)

[398] It might be worth analysing media theory from this perspective, how certain positions oscillate between one extreme and the other. It also becomes clearer why Deleuze, who developed his very specific system of thought heavily building on his own Bergsonism, constitutes such a refreshing and liberating method in the way he refigures the agency of the subject (see for example Pisters, 1998; Trifonova, 2004).

To round off this brief excursion into a reflection on 'history' from a Bergsonian perspective, it remains to repeat that this thesis does not intend to make a contribution to cinema history, it merely builds its argument on a very selective choice of certain historical accounts of the period of the late-19th century, in order to virtually draw an *image* that exemplifies certain aspects relating to the concepts of time, space, memory and movement, that may open a new way into how we could discuss and approach the issue of the spirit in relation to the cinema experience today.

After*image*

It has been suggested that Bergson's system of thought opens a wider domain in which to consider aspects of the spirit including the spectrum of spiritual practices, populist ideas, as well as metaphysics. From a scientific perspective only the 'measurable', material effects of spiritual experiences have usually been accounted for. Consequently it remains the task of philosophy and anthropology to venture beyond the materialist constraints, as Bergson has suggested. In his philosophy Bergson made some speculative suggestions, as for example in his proposal that other forms of consciousness are plausible even though we may not be able to detect them. (1998, pp. 255-6) In *Creative Evolution* (1998) Bergson describes the processes of evolution based on his previous thesis of free will and consciousness, in which the *élan-vital*, or life-force, serves as a principle basis of every form of life that continuously pushes into further developments in any possible direction. Bergson's evolutionary theory is constituted by an activity of creativity without predetermination. In this view, this conceptual framework opens the plausibility of other forms of consciousness that may have developed alongside those known to us humans on earth. (1998, p. 266) William James came to a similar conclusion in *The Varieties of Religious Experience*: 'The whole drift of my education goes to persuade me that the world of our present consciousness is only one out of many worlds of consciousness that exist.' (James, 1982, p. 524) This returns us to the concept of the *angel* that opened this thesis.

Following the discussion of historical memories in this thesis, the concept of the *angel* can be regarded as a kind of collective *memory-image*, conjured up from a long history of accounts of mystical experiences and artistic expressions which have merged into a collective virtual heterogeneity. In these the *angelic* imaginary forms an analogy to the relationship between matter and memory as described by Bergson. In the moment of pure perception it is not merely the subject displacing itself into and merging with the object, but also spirit (pure recollection)[399] with matter (pure perception): 'When we pass from pure perception to memory, we definitely abandon matter for spirit.' (Bergson, 1991, 235) This very instant of pure perception in Bergson extends Walter Benjamin's concept of the 'Angel of History'[400], which has its face turned toward the past, recollecting, reconciling and restoring memories, while a storm is blowing from Paradise pushing its open wings into the future. This is analogous to Bergson's concept of *dureé*, continuously pushing from the past into the future:

> As a rule, when we desire to go back along the course of the past and discover the known, localized, personal memory-image which is related to the present, an effort is necessary, whereby we draw back from the act to which perception inclines us: the latter would urge us toward the future; we have to go backwards into the past. But even in him the past to which he returns is fugitive, ever on the point of escaping him, as though his backward turning memory were thwarted by the other, more natural, memory, of which the forward movement bears him on to action and to life. (Bergson, 1991, p. 83, 95)

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[399] '...pure memory is a spiritual manifestation. With memory we are, in truth, in the domain of the spirit'. (Bergson, 1991, p. 240)

[400] It may not be an entire coincidence that Benjamin used the conception of the *angel* to illustrate an impression of the historical moment in 1968 when he proposed the idea of the 'Angel of History' inspired by the painting *Angelus Novus* by Paul Klee which he had bought in 1921: 'A Klee painting named *Angelus Novus* shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the 'Angel of History'. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing in from Paradise; it has got caught in his wings with such a violence that the angel can no longer close them. The storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress'. (Benjamin, 1968)

The 'Angel of History' could be interpreted as a schematic interrupted moment, an instantaneous photograph in the analysis of the processes of consciousness, similar to Bergson's notion of the 'mechanism of our thought.' The very moment when the single frame of a film is held still in the gate of the projector to actually create the illusion of movement while the rotating cogs push the film relentlessly forward in its constant rattling movement. This very moment could also be referred to as the condition of Zazen in the Zen-Buddhist meditation where with half-open eyes, the perception is kept frozen while memories and thoughts are trained to cease in order to achieve the highest degree of awareness[401]. This can be seen as the very condition when the *élan vital* enfolds a creative motion from within the flux of the whole of our spirit (*l'esprit*), a movement which is impossible to dissect into a fragmentation; for in the quotidian perception as well as in the cinema it is continuously transforming and moving our own *becoming*. Similarly, it could be said, it is impossible to hold the transistory *angelic* apparition still or transform it into a material manifestation. The 'Angel of History' in this sense is an impossibility, a virtual imprint of a schematic instant, similar to the impressions of the single states of chronophotography, in Bergson's words 'virtual halts in time.' (1992a, p. 12) Since it is in the perception of the spectator that movement is experienced, the 'Angel of History' in a Bergsonian sense could be sketched as looking towards the future, but held still through the attention and awareness that our body requires in the present moment. A wind blows in the form of *memory-images* from the past (which at the same time constitutes the 'possible') and pushes it towards the future, while its attention is fixed on the present moment, where it only appears when it acts — the angel, as metaphor for consciousness?

Within the cinematic *dispositif* this experience can create an awareness of this flux through the spectator's own cognitive-affective processes. In these moments when the subjectivity merges with the whole (of the film), a condition of a 'spiritual' experience, at least a glimpse into the dimension of the spirit, an awareness of a continuous flux within the process of our consciousness reveals itself, a motion that in a Bergsonian

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[401] Yamaguchi (1969) has elaborated the interrelation between Zen Buddhism and Bergson's philosophy more fully.

understanding aims towards action and in the best case expresses a condition of awareness of our acting self in the world. In this sense, the phenomenon of clairvoyance, similar to the cinematic experience, can be considered as an amplified sensibility within the spectrum of conscious perception[402], or as Bergson expressed it:

> Perception, understood as we understand it, measures our possible action upon things, and thereby, inversely, the possible action of things upon us. The greater the body's power of action (symbolized by a higher degree of complexity in the nervous system), the wider is the field that perception embraces. (Bergson, 1991, p. 56)

Hence in this sense the 'spiritual' is not to be understood any longer to be founded on belief, but as an event, an action and a fully embodied experience, or as Bergson wrote: '... ever driven into the future by the weight of the past...' (Bergson, 1991, p. 243) *Angels*, as an adjunct to spirit, in this sense are not *images*, but can be conceived as pure force, in Bergson's words pure *élan vital*, or as intelligent force-fields as Fox and Sheldrake describe them (1996); they are pure presentness, pure action or activity — possibly pure consciousness? *Angelic* manifestations in an analogy with the cinema apparatus are not representations, but are best understood as the light beam falling through the celluloid. Light in Bergson's view is consciousness, which is not anymore the agency illuminating the dark, but is itself a constituent component of light. Here light is understood as an intelligent force, of which consciousness, in Bergson's view, is merely a constituent part. This is both the very stuff of *angels* and the very matter through which *images* in their pure perception can be conceived: light in this sense becomes the conduit for shared consciousness.

Consciousness for Bergson presides over action and enlightens choice but is not synonymous with the whole content of our conscious awareness, or past memories:

> But if consciousness is but the characteristic note of the *present*, that is to say, of the actually lived, in short, of the *active*, then that which does not act may cease to belong to consciousness without therefore ceasing to exist in some manner. In

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[402] It is important to point out that it is a conscious process of perception, as to be distinguished from trance states or other spiritual practises. See also the discussion in chapter 6.

other words, in the psychological domain, consciousness may not be the synonym of existence, but only a real action or of immediate efficacy...[403] (1991, p. 141)

Angels in so far as they can be regarded as consciousness are pure presentness and appear only when they act, as Thomas van Aquinas ([1265-1273] 1963) had noted. Fox and Sheldrake (1996) have likened them to photons, in a way that is consistent with Marey's observations that life-force or energy can be detected in movement. Warburg saw this underlying *élan vital* in art, which he replicated in the *Mnemosyne* that constituted a material manifestation of Bergson's intuitive method.

Cinema today may be more elaborate in its technological apparatus, techniques and production processes; nonetheless, in this thesis the emerging cinema of the 1890s already appears as particularly sophisticated in the way it explored and stimulated the vast spectrum of the spiritual dimensions intrinsic to the perceptual processes of the spectators. The *dispositif* alone with its multi-layered performances comprising images, inter-titles, live narration, music accompaniment, sound effects and in the case of the Hale's tours, a full immersive environment, demanded from the spectators an active engagement and participation, as well as an informed critical response. The intrinsic connection with spiritualist practices and connotations, as elaborated in chapter 2, should be regarded no longer as a mere coincidence or naïve gesture of an 'irrational' survival from an archaic worldview or an hysterical effect of modernism, but rather as the matrix for the sophisticated understanding of the virtual dimensions that the cinematic experience offered as novel 'extra' in its philosophical *dispositif*. The spiritual dimension can be regarded as the persistent force that can account for its popular appeal and enduring fascination.

In this sense it could be summarised that cinema in its material manifestation, despite the ephemeral quality of the projected image on the screen, has nothing to do with spirit in an ontological sense. As a specific *dispositif*, which includes the spectators' agency as a significant constituent, however, it produces the conditions that allow the spectators to engage with the dimension of the spirit and as such turn the purpose of the cinema to a

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[403] Bergson elaborates furthermore on consciousness in *Creative Evolution* (1998).

model of consciousness, rather than the world. This conceptualisation of cinema as a paradigm for consciousness stimulates thinking of events as in a state of constant change, of constant creation, fragmented in its mechanisms, yet thought of as a whole — comparable to the filmstrip running through the projector gate frame by frame, which can only be grasped through our conscious participation. Finally it could be suggested that the dancing beam of light between the frame held still in the gate of the projector and the screen becomes the pivot of Bergson's philosophy and this diverts our philosophical focus away from the screen. In such a shift of attention the agents, mediators and receptors involved become entangled and interrelated: the mind, the screen, the skin, the emulsion layer of celluloid, light and sound vibrations, screen characters and angels, they all become refracted in a sensorial kaleidoscope of our internal, crystallised perception.

I seem to find myself again and to recognize myself when I return to this universal water... to throw oneself into the mass and the movement, action to the extreme and from the neck to the toes... here the whole body gives itself, takes itself back, conceives of itself, expends itself and wants to exhaust all its possibilities... It become mad with life and with its free movement... my body becomes the direct instrument of my spirit... the author of all its ideas... Excess of the real. Caresses are knowledge. The lover's acts would be models of the artist's work.

Paul Valéry, poem 'Nage' in *La Crise de l'Esprit* (Guerlac, 2004, p. 49)

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