Threat is that of an excess of designation, an excess of sensation that excludes meaning and control. The developing classical conventions structure time and contingency in ways consonant with the broader rationalization and abstraction of time in an industrialized modernity. Efficiency becomes a crucial value, and time is filled with meaning. Nevertheless, contingency is by no means banished. The structuring of time also involves its (structure's) denigration. Cinema comprises simultaneously the rationalization of time and an homage to contingency. Classical cinematic form involves the strict regulation of a mode that never ceases to strike the spectator as open, fluid, malleable—the site of newness and difference itself.

2

Temporality, Storage, Legibility:
Freud, Marey, and the Cinema

The advent of mechanical reproduction inaugurated a discursive thematics of excess and oversaturation that is still with us. The sheer quantity of images and sounds is perceived as the threat of overwhelming or suffocating the subject. In his 1927 essay on photography, Siegfried Kracauer appeals to figures of natural disaster to capture the anxiety attendant upon the accelerated diffusion of photographic images; he refers to “the blizzard of photographs” and the “flood of photos” that “sweep away the dams of memory.” Excess is embodied in the form of the photograph itself to the extent that it represents a spatial continuum, without the gaps or lacks conducive to the production of historical significance. This continuum of the photograph becomes, in Kracauer’s argument, the continuum of a practice of photography that supports an overwhelming and ultimately meaningless historicism. Hence we have the crucial and yet puzzling problem of the development and maintenance of a photographic archive, as so provocatively delineated by Allan Sekula. What taxonomic principle can govern the breakdown and ordering of a “flood” or a “blizzard”?

The excess and unrelenting continuum of mechanical reproduction are not, however, limited to the consideration of space (and Kracauer himself is insistent upon historicism’s dependence upon the fullness of a temporal continuum). The emergence of mechanical reproduction is accompanied by modernity’s increasing understanding of temporality as assault, acceleration, speed. There is too much, too fast. From Georg Simmel to Walter Benjamin, modernity is conceptualized as an increase in the speed and intensity of stimuli. Time emerges as a problem intimately linked to the theorization of modernity as trauma or shock. Time is no longer the benign phenomenon most easily grasped by the notion of flow but a troublesome and anxiety-
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producing entity that must be thought in relation to management, regulation, storage, and representation. One of the most important apparatuses for regulating and storing time was the cinema. As Friedrich Kittler has pointed out, the cinema and phonography held out the promise of storing time even as they posed a potential threat to an entire symbolic system.

What was new about the storage capability of the phonograph and cinematograph—and both names refer, not accidentally, to writing—was their ability to store time: as a mixture of audio frequencies in the acoustic realm, as a movement of single picture sequences in the optic realm. Time, however, is what determines the limits of all art. The quotidian data flow must be arrested before it can become image or sign . . . whatever runs as time on a physical or . . . real level, blindly and unpredictably, could by no means be encoded. Therefore all data flows, if they were real streams of data, had to pass through the defile of the signifier.¹

Before the invention of phonography and cinema, written texts and musical scores were the only means of preserving time. Each was clearly dependent upon writing as a symbolic system and eschewed the apparent fullness, presence, and unrelenting continuum of the forms of imagistic mechanical reproduction.

Time hence became very insistently a problem of representation. Accompanying the cinema as a new technology of temporality was a sustained discourse on time in the philosophical, psychoanalytic, and scientific realms. This chapter explores two very disparate, if not diametrically opposed, attempts to analyze time that nevertheless converge in their specification of the framework of terms in which time can be understood—a framework crucial to the representational/historical trajectory of the cinema. In Freud's work, time is an undertheorized concept that seems to operate as a symptom whose effects are intensified by the excessive trauma of modernity, so that modernity becomes, in part, a pathology of temporality. The impasse of his spatial model of memory forces him to produce a theory of temporality as the discontinuous mode of operation of the psyche itself. Time is not "out there," to be measured, but is instead the effect of a protective configuration of the psyche. Freud chose for his exemplary machine and model not the cinema, photography, or phonography, but the comparatively old-fashioned Mystic Writing-Pad. In contrast, Étienne-Jules Marey marshaled the latest technologies of sequential photography (and, in most historical accounts, anticipated the cinema) in order to capture and measure an objective temporality that nevertheless always seemed to elude representation. Together, Freud and Marey figure the limits of the representational problematic within which the cinema developed as a specific mode of organizing and regulating time. Both theorists conceptualized time as a problem of storage or representation and its failure.

Freud and Marey do not simply overlap chronologically but share a certain conceptual rubric within which the question of temporality is raised. Freud, particularly in his early work, which is still infused with terminology drawn from physiology (for instance, The Project for a Scientific Psychology, 1895), is obsessed with the issues of traces and recording, of a space of psychical representation and the problem of its limits. For a subject who is in some sense molded by time, what keeps the space of memory from becoming oversaturated, disallowing fresh impressions? Physiology provides Freud with some of the terms crucial to thinking the work of memory, whose traces are intimately linked with the phenomenon of resistance. Marey, whose field is physiology, is more directly concerned with the representation of time as it is incarnated in physical movement. But his fascination with the technologies required for that inscription forces him to confront issues of material resistance and the limits of space as well. For both theorists, these difficulties are figured in relation to the opposition between continuity and discontinuity, a critical opposition of the period with which Henri Bergson and Charles Sanders Peirce also grapple and whose insistence is indicated by the resuscitation of the questions posed by Zeno's paradoxes. Marey's work is undergirded by an investment in time as continuum, a fact attested to by his continuing nostalgia for the graphic method despite his later embrace of the intermittent method of chronophotography. Freud, on the other hand, in the process of constructing a theory of subjectivity based on loss and lack, produces an understanding of time as the very work of discontinuity. Both approaches hinge on the question of whether time is located inside or outside the apparatus—whether time is an effect of the operation of the appa-
Indeed, it is the unconscious processes that are at work in the formation of meaning. The concept of the unconscious is central to Freud's theory, and it is through the unconscious that we gain access to our deepest desires and fears.

Freud believed that the unconscious mind operates according to different principles than the conscious mind. For example, the unconscious mind is driven by desires and impulses, while the conscious mind is driven by rational thoughts and logic. The unconscious mind also operates according to a different set of rules, such as the principle of the pleasure-seeking instinct, which drives the unconscious to seek pleasure and avoid pain.

Moreover, the unconscious mind is most active during periods of rest, such as sleep, when the conscious mind is not in control. During sleep, the unconscious mind is free to express itself through dreams, which are often filled with symbols and images that can be interpreted to gain insight into the unconscious psyche.

In conclusion, the unconscious mind is a complex and fascinating aspect of human psychology. By understanding the workings of the unconscious, we can gain a deeper understanding of ourselves and our behavior.
two upper sheets are raised, the writing is erased from them, and they are free to receive new impressions. In Freud’s analogy, the two upper sheets correspond to the system perception-consciousness, while the wax slab is comparable to the unconscious—a storehouse of traces. The “appearance and disappearance of the writing” is analogous to the “flickering-up and passing-away of consciousness in the process of perception.” Freud is particularly interested in the working of the system. Because the layers continually break contact, discontinuity and periodicity are the basis of the pad’s operation. He ends the short essay with a speculation: “I further had a suspicion that this discontinuous method of functioning of the system Pept.-Cs. [Perception-Consciousness] lies at the bottom of the origin of the concept of time.” This tantalizing theoretical proposition is simply left dangling, and it is nowhere followed through or elaborated. Time appears here as the afterthought of an attempt to deal with memory.

“A Note upon the ‘Mystic Writing-Pad,’” which, after all, is extremely brief and speculative, is not the only place where Freud confronts the concept of time yet manages to make it marginal within his own discourse as well as theoretically a by-product or aftereffect of some other process. In his investigation of the hypothetical life processes of the simplest living organism in Beyond the Pleasure Principle, Freud takes a discursive detour to consider the question of time: “our abstract idea of time seems to be wholly derived from the method of working of the system Pept.-Cs. and to correspond to a perception on its own part of that method of working. This mode of functioning may perhaps constitute another way of providing a shield against stimuli. I know that these remarks must sound very obscure, but I must limit myself to these hints.” It is not clear why Freud has to limit himself to “these hints” in a work as highly speculative, wide-ranging, and ambitious as Beyond the Pleasure Principle. But certainly time’s alliance with consciousness determines its displacement as a category. For within psychoanalysis it is the familiar, everyday concept of consciousness that becomes strange (Freud refers to the “inexplicable phenomenon of consciousness”).

Given the obscurity or even opaqueness of Freud’s direct references to temporality, it might be useful to take a detour through his theorization of memory before returning to the concept of time. A close examination of Freud’s treatment of memory and temporality reveals the continual recurrence of three themes: (1) the insistence upon inscription as a metaphor for the processes of memory; (2) the retention of a notion of storage and the corresponding problem of localization; (3) the close association established between time and protection of the organism from external stimuli. All these motifs—inscription or trace as representation, storage, and protection from an overload of stimuli—have been activated in an attempt to theorize the nascent cinema. My discussion of the psychoanalytic texts is preparatory to an analysis of the conceptual encounters and intersections between the two institutions in their formulation of a relation to time in modernity.

Although time is a concept that is marginalized in Freud’s work, it is clear that he was obsessed throughout his career, at both the clinical and the metapsychological levels, with the problem of memory. He invoked a plethora of apparatuses (the camera, the telescope, the microscope), metaphors, analogies, and mythologies in an attempt to find its proper theoretical representation. But the metaphorical complex that insistently returns, from the 1895 Project to “A Note upon the ‘Mystic Writing-Pad,’” where Freud believes he has finally found what he is looking for, is that of inscription, mark or trace, pathway. This vocabulary is most persistent in the construction of the elaborate neurological fable begun and quickly abandoned by Freud in the unpublished “Project.” Searching for a scientific basis for the study of the psyche, he here appropriates the terminology and theoretical paradigms of late nineteenth-century neurophysiology and even utilizes its concept of the neurone as the material particle or minimal unit in question. He makes a distinction, roughly equivalent to that between consciousness and the unconscious, between permeable and impermeable neurones. The impermeable neurones are the “vehicles of memory and so probably of psychical processes in general” precisely because they offer difficulty or resistance to the passage of quantity. Retention of traces is a direct result of resistance, and the permeable neurones retain nothing. The impermeable neurones, the vehicles of memory, are “permanently altered by the passage of an excitation.”

“Facilitation” is the Standard Edition’s translation of Bahnhung, which is derived from “road” and means “pathbreaking.” The translator of Derrida’s “Freud and the Scene of Writing” uses the term breaching (for Derrida’s “frayage”) and claims that “it is crucial to maintain the sense of the force that breaks open a pathway, and the space opened by the force.” A metaphorics of pathbreaking is certainly appropriate, for Freud understands the process of
facilitation as one that makes the neurones more capable of conduction—less impermeable. Facilitation opens up a space, engraves a course, eases a movement. But the initial resistance is absolutely crucial. As Derrida points out, "If there were only perception, pure permeability to breaching, there would be no breaches. We would be written, but nothing would be recorded; no writing would be produced, retained, repeated as legibility." Recording and legibility are precisely the stakes.

Although Freud abandons quite quickly the neurophysiological framework of the Project, its terms and descriptions persistently infect his discourse and leave their mark on his attempts to find a new way of representing psychical processes. As late as Beyond the Pleasure Principle, in the course of constructing the fantasy of a simple organism and its relations with the external world, Freud invokes the same terminology and the same scenario as in the Project: "It may be supposed that, in passing from one element to another, an excitation has to overcome a resistance, and that the diminution of resistance thus effected is what lays down a permanent trace of the excitation, that is, a facilitation. In the system Cs, then, resistance of this kind to passage from one element to another would no longer exist." He continues to theorize memory in terms of resistance and engraving. In "A Note upon the 'Mystic Writing-Pad,'" a stylus will do, rather than a pen, since only an instrument whose pressure will leave its mark is required. The wax slab is cut into, its material permanently altered or displaced. Derrida predictably celebrates Freud's choice of a writing apparatus as the culminating analogy in his theory of memory, but it is crucial to remember that the Mystic Writing-Pad will accept any type of mark or engraving. The traces on the pad are not necessarily phonetic writing. It is enough that they are retained without disallowing further receptivity to fresh impressions. Indeed, given the fact that the Mystic Writing-Pad is, after all, a child's toy (and as Derrida himself points out, more sophisticated technologies of recording were readily available at this time), it might be more likely to receive iconic representations or nonsense.

What is noteworthy about Freud's vocabulary and complex metaphors in his search for an adequate means of representing memory is not their relation to any concept of writing but their resolute materialism. Memory is the effect of a blockage, the resistance of some unthinkable material, and its ultimate failure. A barrier is breached and a certain violence is suggested in the notion of "breaking a path." Memory traces are conceptualized as an actual etching into a material. Long after Freud relinquishes the neurophysiological model, he retains its dream of a material ground that would support a true "scientific" endeavor.

Such a resolute materialism in the description of memory demands a corresponding notion of storage, location, place. It is difficult to conceive of an etching or a trace that is not located somewhere. One of the aspects of neurophysiology first and most adamantly rejected by Freud, however, was precisely the idea of physiological localization. In "The Unconscious," he states,

Research has given irrefutable proof that mental activity is bound up with the function of the brain as it is with no other organ. We are taken a step further—we do not know how much—by the discovery of the unequal importance of the different parts of the brain and their special relations to particular parts of the body and to particular mental activities. But every attempt to go on from there to discover a localization of mental processes, every endeavor to think of ideas as stored up in nerve cells and of excitations as travelling along nerve fibres, has miscarried completely.

Nevertheless, Freud retains the idea of a "psychical topography" and "regions in the mental apparatus." Figures of space and place are pervasive in much of his writing, and the topographic point of view continues to compete successfully with the dynamic and economic points of view. The very terms in which Freud describes his quandary in the attempt to represent memory are indicative of the critical need for a concept of space. The difficulty in thinking about memory has to do with two seemingly incompatible needs: unlimited receptive capacity (a "clean" or "open" space) and the retention of permanent traces (a space of storage). A notepad is an impossible metaphor because it will soon "fill up"; it constitutes a finite space. Similarly, a chalkboard is infinitely receptive but can retain no traces. The dilemma posed by a spatial conceptualization leads Freud to the notion of layering and depths as well as that of a periodic contact between the layers. But the terms are clearly posed as those of space, room for inscription, emptiness, and fullness. And, ultimately, Freud's desire is to think of both the re-
ceptive layer and the retentive layer as infinite spaces. For the unconscious, the site of memory, is in a sense a truly ideal space of unlimited storage, a perfect library in which nothing is ever lost. Perhaps this is why, in the context of elaborating an earlier analogy—that of the compound microscope or photographic apparatus—Freud emphasizes the ideality of place (location): “psychical locality will correspond to a point inside the apparatus at which one of the preliminary stages of an image comes into being. In the microscope and telescope, as we know, these occur in part at ideal points, regions in which no tangible component of the apparatus is situated.” What Freud requires is a virtual space—a space that is thinkable but not localizable.

It may be true that Freud, given his pre-Saussurean relation to linguistic phenomena, was unable to think what much of his own theory suggests quite palpably—that the unconscious is structured like a language. But he was able to think of the unconscious as a space, a storehouse, a place outside of time, infinitely accommodating, where nothing is ever lost or destroyed. It is also a place where processes occur, where thing-representations are cathetered to a greater or lesser degree. But there is no contradiction between its elements, which are all simply there. The link between the unconscious and the idea of storage or a reservoir is elaborated by Jean Laplanche in an essay on psychoanalysis, time, and translation: “It is the inexhaustible store of material that each human being in the course of his existence strives as a last resort to translate into his acts, his speech, and the manner in which he represents himself to himself—it is this untranslatable that I term the unconscious.” It is only at the cost of a serious distortion of Freud’s work that one could see the unconscious as only or even primarily a place of storage. But it is also problematic to ignore completely this vein of his thought.

The first two thematic motifs—the insistence upon a metaphysics of inscription or engraving, and the resultant requirement for some kind of notion of locality or storage—are elaborated in the course of developing a theory of memory. The third motif—the close connection Freud established between the concept of time and the need for protection from external stimuli—brings memory back into relation with temporality.

Freud claims, in Beyond the Pleasure Principle, that “Protection against stimuli is an almost more important function for the living organism than reception of stimuli.” His understanding of the “external world” does not change much from the 1895 Project to the 1920 speculative tract. It is consistently envisioned as a surplus of stimulations, an overwhelming mass of energies perpetually assaulting the subject and liable to break through its defenses. In the Project he states: “there is no question but that the external world is the origin of all major quantities of energy, since, according to the discoveries of physics, it consists of powerful masses which are in violent motion and which transmit their motion.” This same thermodynamic conception reemerges in Beyond the Pleasure Principle in the speculative hypothesis of the “simplest organism.” “This little fragment of living substance is suspended in the middle of an external world charged with the most powerful energies; and it would be killed by the stimulation emanating from these if it were not provided with a protective shield against stimuli.” The intensity of the concern in this text for external energies and the phenomena of shock and trauma has been linked directly to the extensive shellshock resulting from a highly technologized World War I, but it is also an expression of generalized anxieties about modernity and its assault on the senses. It is not surprising that Walter Benjamin fastens on Beyond the Pleasure Principle in his attempt to theorize the relation of Proust and Baudelaire to the concepts of shock, memory, and modernity.

The top layer of the Mystic Writing-Pad—the transparent celluloid sheet—is conceived of entirely in terms of protection—it functions “to keep off injurious effects from without” and is “a protective shield against stimuli.” The celluloid and the waxed paper together are analogous to the system perception-consciousness and its protective shield, and the intermittent and discontinuous operation of these two layers together is directly linked to Freud’s enigmatic reference to time. The reference is immediately preceded by a discussion of a notion that Freud says he has “long had” but “hitherto kept to” himself—a notion about the perceptual apparatus’s method of operation. The unconscious sends out cathetic innervations in “rapid periodic impulses” into the system perception-consciousness. When this system is cathected, it can receive perceptions that are then transmitted as impressions to the unconscious system of memory; when the cathexis is rapidly and periodically withdrawn, consciousness is “extinguished” (remember the previous reference to the “flickering-up and passing-away” of consciousness), and the system cannot function. The description of this process is strikingly similar to that of intermittent motion in the cinema (Freud refers to the “periodic non-excitability of the perceptual system”). Freud claims:
"It is as though the unconscious stretches out feelers, through the medium of the system Pcp.-Cs., towards the external world and hastily withdraws them as soon as they have sampled the excitations coming from it." This entire discussion ushered in the tantalizingly brief reference to time—"I further had a suspicion that this discontinuous method of functioning of the system Pcp.-Cs. lies at the bottom of the origin of the concept of time." Time as discontinuity emerges as a secondary effect of the organism’s need to protect itself from the stimuli of the outer world. And since modernity is perceived as an astonishing increase in the stimuli bombarding the subject, it follows that time would become a particularly acute problem in modernity.

In "A Note upon the ‘Mystic Writing-Pad,’” perception-consciousness is a transparent protective sheet and a layer of waxed paper; in *Beyond the Pleasure Principle*, it is a hardened shell, resistant to the massive energies of the external world. But nowhere is it a surface that is capable of retaining traces. Indeed, consciousness in Freud’s view is absolutely antithetical to the notion of storage or retention—"excitatory processes do not leave behind any permanent change in its elements but expire, as it were, in the phenomenon of becoming conscious." The dilemma of memory and its relation to storage assigns to consciousness the function of pure receptivity. Consciousness is the site of all that is transitory, in flux, impermanent. The retention or representation of memory traces is reserved for the unconscious.

In some respects, this theoretical construction might appear excessive or radically impractical in relation to Freud’s own psychoanalytic practice. For it might seem at first glance that his therapeutic approach demands the recall or retrieval by consciousness of ancient unconscious memories, hence requiring some form of compatibility between consciousness and memory. However, Freud struggled with the question of therapy’s relation to memory throughout his career. Essays like "Constructions in Analysis" and "Remembering Repeating and Working-Through" trace the difficulties Freud encountered with the idea of a simple "recall" of childhood memories and elaborate how he favored, instead, a belief that a laborious process of construction was required in the course of the analysis. Memories are quite "real" and reside in the unconscious, continually producing effects. But they are not simply and transparently accessible to consciousness. In this respect, Freud’s therapeutic practice is consistent with the more apparent radicalness of his highly speculative and often literally incredible metapsycho-

logical texts. For instance, in *Beyond the Pleasure Principle*, Freud claims that "becoming conscious and leaving behind a memory-trace are processes incompatible with each other within one and the same system," and "consciousness arises instead of a memory-trace." What can “instead of” mean here? “In place of”? “In order to block (memory)?” “At the expense of”? What remains clear is the incompatibility of memory and consciousness. And because consciousness is so fully bound up with the concept of time—through the periodicity or discontinuity of its functioning—it would seem inevitable that in Freud’s system, time and memory are absolutely incompatible as well. Time is that which leaves no record—it emerges from the failure of representation. This scenario produces the unconscious as the dream of a memory uncorrupted by time. Time is not an inert process, external to the subject, weighing down on memories, contributing to their weakening and diminishment. Instead, it is an effect, a kind of mirroring of the operation of the psychical system. Within psychoanalysis, the commonly held view that memory is the residue of time is an impossible one.

Time is therefore conceptualized within the problematic of determining what is storable, what is representable. Memory is representation itself; time, its inconceivability. Time is antithetical to the notions of storage and retention of traces. This is a rare point of contact between Freud and Bergson, who condemns the pervasive attempt to spatialize time (particularly in a positivist science) and argues the indivisibility of movement and the impossibility of real instants. However, for Bergson, time is unrepresentable because it is flux, absolute unity, indivisibility. For Freud, time is intimately linked with the very phenomena of discontinuity and difference. Furthermore, for Bergson time is a crucial and central concept in the delineation of subjectivity, whereas for Freud it is a by-product of more significant psychical processes. It could almost be said that for Freud time is a symptom of the subject’s agonistic relationship with its environment.

The psychoanalysis of time, which produces through negation an image of its operation in its association with an inexplicable consciousness, needs to be seen in the context of another endeavor at the turn of the century to analyze time. Whereas time was for Freud what is, above all, unrepresentable, there was a widespread and concerted, if not obsessive, attempt in a number of fields, including physiology, to isolate and analyze the instant, to make an invisible time optically legible—in other words, to represent ade-
quately the phenomenon that Freud opposes to the trace. What determines the direction of much of this research is the overwhelming desire to know what happens within the duration of a fraction of a second, that is, to know that aspect of time which is not accessible to ordinary vision. In an essay on photography, Benjamin reiterates this impulse to dissect time: “While it is possible to give an account of how people walk, if only in the most inexact way, all the same we know nothing definite of the positions involved in the fraction of a second when the step is taken.”

The best-known proponent of this endeavor, and the figure who is most frequently isolated as a primary scientific precursor of the cinema, is Etienne-Jules Marey, who spent his life generating careful and detailed depictions of bodies in movement, first through graphic inscriptors and, later, through photographic apparatuses. Marey’s photographic technique was labeled “chronophotography,” literally, the photography of time.

Marey participated in a general movement in physiology in the latter half of the nineteenth century that involved the production of a concept of life adequate to modernity—a concept of life as movement, process, change. As Lisa Cartwright has eloquently argued, instruments and techniques were developed as the support of a “vivifying physiological gaze.” Autopsy and vivisection interfered with or annihilated life processes and were therefore antithetical to the aims of physiology. Physiologists could have no interest in the “dead instant.” Marey proclaimed that “motion is the most apparent characteristic of life; it manifests itself in all the functions; it is even the essence of several of them.”

Thus, Marey’s ostensible object was movement, that is, the correlation of space and time as a body successively changes its position. It is therefore arguable that his interest in time was merely secondary, a by-product of the obsessive concern—more proper to a physiologist—with the analysis of bodies in motion. Nevertheless, the trajectory of Marey’s own career, his incessant struggle with the development of newer, more readable modes of representation of his object, and his explicit awareness of the tension between spatial and temporal categories in his work all suggest the ultimate privileging of temporality and its scientific representation and measurement. Marey’s dream, whether acknowledged or not, was that of cutting into time, slicing it in such a way that it could become representable. Movement remained the clearest and most accessible expression of duration. Initially and apparently adhering to a body, movement was progressively disengaged from that body first through the techniques of geometric chronophotography and later through Marey’s growing interest in the more apparently abstract and bodiless realms of fluid dynamics and the flow of air currents.

Marey’s obsessive concern with the measurement and graphing of movement across time emerged from the problems involved in understanding physiological time, a project he inherited from Hermann von Helmholtz, one of the figures most closely connected with the “discovery” of the laws of thermodynamics. Initially at stake was internal physiological time, a time inaccessible to the naked eye. Helmholtz was the first to investigate the speed of the transference of a shock along the extension of a nerve to the point of muscular contraction. Marey was particularly interested in the concept of “lost time” invoked by Helmholtz to label the time during which nothing seems to happen—the time between the reception of the nervous shock or impulse by the muscle and the muscle’s contraction: “Now, it results from the experiments of Helmholtz, that all the time which elapses between the excitement and the motion is not occupied by the transference of the nervous agent; but that the muscle, when it has received the order carried by the nerve, remains an instant before acting.” Marey disputes the reigning hypothesis that the speed of the “nervous agent” varies under certain influences, and instead proposes that the variable duration is attributable to “those still unknown phenomena which are produced in the muscle during the lost time of Helmholtz.” According to Anson Rabinbach, in his study of energy and fatigue, “This lost time, which consists of the relationship between duration and energy expenditure, is for Marey a basic component of the economy of the body.”

In his early work, Marey constructed a series of instruments (the sphygmo- graph, the myograph) designed to expand or replace the deficient human senses in the measurement of internal processes. He later applied this refined and altered instrumentation to the production of graphic inscriptions capable of representing the movement of horses cantering, trotting, or galloping, the movement of insect wings, and the flight of birds. From the start, iconicity was the major stake of Marey’s representational practices. It was crucial that the body whose movement was being measured be the direct source for the tracing. This process required a complex apparatus of wires,
India-rubber tubing, and other connectors between body and recording instrument. Marey repeatedly refers to this type of tracing as "automatic." The phenomenon is the author of its own record: "In experiments . . . which deal with time measurements, it is of immense importance that the graphic record should be automatically registered, in fact, that the phenomenon should give on paper its own record of duration, and of the moment of production. This method, in the cases in which it is applicable, is almost perfect."\(^3\) Marey was not unaware of the resistant properties of the conducting material itself and diligently searched for the most "immaterial," the most self-effacing, link between the body and the recording instrument, tending ultimately to favor air pressure. Photography was, in this respect, ideal, since its means of connecting object and representation—light waves—were literally intangible and greatly reduced the potentially corrosive effects of mediation. It is telling that François Dagognet subtitled his study of Marey "A Passion for the Trace" and that this work is an extended celebration of indexicality. "Marey's brilliance lay in the discovery of how to make recordings without recourse to the hidden hand or eye. Nature had to testify to itself, to translate itself through the inflection of curves and subtle trajectories that were truly representative . . . The 'trace' . . . was to be considered nature's own expression, without screen, echo or interference: it was faithful, clear and, above all, universal."\(^4\) Attempting to disengage entirely the notion of human authorship from Marey's graphic method, Dagognet repeatedly refers to it as "direct writing" or "direct inscription."

Nextrically linked, for Marey, with the obsession with indexicality was the attribute of the clarity or lucidity of the representation—its legibility. The curve of a graph tracing the path of a moving object was eminently readable, assimilable in little more than a glance. Marey consistently contrasted the graphic method favorably to phonetic language and statistics, heavily mediated forms of representation that were potentially obscure and unappealing (as well as slow)—instantaneity was an aspiration: "Language is as slow and obscure a method of expressing the duration and sequence of events as the graphic method is lucid and easy to understand. As a matter of fact, it is the only natural mode of expressing such events; and, further, the information which this kind of record conveys is that which appeals to the eyes, usually the most reliable form in which it can be expressed."\(^5\) All the positive attributes Marey associates with the graphic method—indexicality, instantaneity, readability—illuminate his later predilection for photography as a privileged mode of scientific representation.

And, indeed, after Marey's contact with the work of Eadward Muybridge, published in a French journal in 1878, he replaced some of his graphic inscriptors with photographic ones and developed the technique that finally lodged his name in histories of the cinema—chronophotography. The photographic method did not necessarily increase the precision or the accuracy of the graphic method of inscription. But it did allow for greater detail and ease in specifying the successive spatial positions of the subject. Unlike Muybridge, Marey used a single camera and photographic plate to register these successive positions. As a result, and in contrast to Muybridge's separately framed images (Figure 2.1), the chronophotograph included all the recorded successive positions of a single subject in the same frame (Figure 2.2). As Marta Braun points out, this technique compromised an entire tradition of Western representation:

Their [the chronographs'] novelty would certainly have been disconcerting to the untutored viewer, because the traditional Western pictorial delineation of time and space would make them hard to read. Since the advent of linear perspective in the Renaissance, the frame of an image has, with rare exceptions, been understood to enclose a temporal and spatial unity. We read what occurs within the frame as happening at a single instant in time and in a single space. Marey's photographs shattered that unity; viewers now had to unravel the successive parts of the work in order to understand that they were looking at several men moving in single file, but at a single figure successively occupying a series of positions in space.\(^6\)

Given Marey's desire to decrease the intervals between the successive positions of the subject in order to clarify the movement's temporal progression, these positions were inevitably superimposed and blurred, figures overlapped, and outlines became indistinct (Figures 2.3, 2.4). There was an overcrowding of detail in the photographic method.

In Movement, Marey illustrates this confusion with the image of an "Arab horse at a gallop" in which he claims that "the large surface covered by each image cause[s] almost complete superposition." He concludes that "the ap-
plications of chronophotography are, as we have seen, limited by interference from superposition and consequent confusion. This is a spatial difficulty—a finite space (on a fixed plate) must accommodate a minimum number of images. As a consequence of the resulting superimposition, the legibility of time is seriously impaired, since it requires the distinct separation of legible units and Marey has already stipulated that a pronounced advantage of photography is that it "would permit the exact measurement of time intervals." Problems of legibility linked to the overlapping, blurring, and superimposition of figures were due, in a sense, to the fact that there was too much detail in the photographic method.

Marey attempted to solve that problem by gradually excising details that might be distracting and using blacker backgrounds. This tendency in his work ultimately resulted in some amazingly abstract representations. Marey clothed his subjects completely in black, attaching luminous dots to their joints and connecting them with luminous striping, and then he photographed them against a black background (Figures 2.5, 2.6, and 2.7). The outcome was a series of chronophotographs consisting only of lines and curves in space ("geometric chronophotography"). Marey's trajectory here is quite astonishing. He moves from the graphic method to the photographic method only to defamiliarize, de-realize, even de-iconize the photographic image. Why, then, did Marey use photography at all? Pragmatically speaking, photography, and not the graphic method, worked when it was difficult or impossible to maintain a physical connection between the moving object and the recording instrument. The flight of birds would be an exemplary instance of this problem, and Marey's first attempts, in the realm of photographic methods, involved the development of a "photographic gun" inspired by a similar instrument employed by the astronomer Jules Janssen. But Marey was also drawn to the wealth of detail automatically made available by photography and was excited about the possibilities the new medium harbored of making visible the previously hidden secrets of movement. "When it is a matter of registering all the details of a man's movements, both as regards change of position and attitude of the body and limbs, mechanical registration is out of the question. It is at this point that chronophotography comes to the rescue."
Chronophotography is much more suited to the representation of space than is the graphic method. And Marey in fact viewed the antagonistic relationship between space and time as a potential obstruction to his project, which, because it was explicitly concerned with movement, required references to both spatial and temporal coordinates. He referred to the difficulty of “harmonizing two such incompatible notions.” In fixed-plate chronophotography, a moving object that covers only a small surface area will allow the registration of a large number of images, enhancing the representation of time while restricting that of space. A large animal or human being, on the other hand, uses up so much space in its movements that it is difficult to get the necessary quantity of images without superimposition and confusion. With a very small number of different positions, the legibility of time is diminished. Marey himself was intensely aware of the tension between the two categories:

In this method of photographic analysis the two elements of movement, time and space, cannot both be estimated in a perfect manner. Knowledge of the positions the body occupies in space presumes that complete and distinct images are possessed; yet to have such images, a relatively long temporal interval must be had between two successive photographs. But if it is the notion of time one desires to bring to perfection [my emphasis], the only way of doing so is to greatly augment the frequency of images, and this forces each of them to be reduced to lines.40

The legibility of the image is directly affected by the desire to perfect a representation of time. In fixed-plate chronophotography, this is true even if the figures are reduced to lines, for the finite surface area of the plate will eventually limit the number of lines that can be recorded without superimposition and consequent illegibility.

Geometric chronophotography and increasing the number of openings (windows) in the disk shutter were two strategies Marey adopted for dealing with the dilemma. Marey, however, never embraced wholeheartedly the most obvious resolution of the problem—the substitution of moving film for the fixed plates, which would theoretically increase almost limitless the surface area of the recording medium. Although his experiments with moving film were crucial to arguments that Marey was deeply involved in the “invention of cinematography,”41 he had serious difficulties with the problem of stabilizing a fast-moving strip of film for an adequate (unblurred) registration of the image. Furthermore, Marey had little interest in the synthesis of movement, which was the goal of cinematography, and, in an extraordinary move, he would attempt to rearrange the images taken with moving film so that they embodied the characteristics of fixed-plate chronophotography. In other words, he would laboriously cut out the individual images from a strip of film, place them next to one another so that they slightly overlapped, and rephotograph them. Or he would project the images and trace their outlines onto another image that would then resemble those of his geometric chronophotography (Figures 2.8 and 2.9). This drive toward horizontality worked to suppress the separation between individual film frames (the site of loss, discontinuity in film). It is as though Marey were obsessed by a graphic aspiration so that he devised ever more ingenious methods, through geometric chronophotography and his manipulation of the images of moving film, to transform photographic modes of representation into graphic ones.

For the graphic method hid one distinct advantage over the photo-


graphic: its record of a movement left no temporal gaps, and its inscription therefore allowed complete continuity. Chronophotography, on the other hand, was based on intermittency, and, despite Marey’s strategy of increasing the number of windows in the disk shutter, it would always entail a necessary temporal elision. Marey was haunted by this lost time. With respect to the chronophotography of a tortoise’s cardiac cycle, Marey maintains:

these [temporal] measurements do not pretend to rival in exactness those derived from the graphic method, which are almost infinitely accurate. When the commencement and termination of a phenomenon is measured by means of a discontinuous series of images, there may be an error as regards both stages. The commencement and termination may occur between two exposures of the photographic plate, and it is impossible to say exactly when they occur.

By the nature of the technique, something is invariably lost. Marey consistently compares this unavoidable temporal loss with the fullness, the “almost infinite accuracy,” the “perfection” of the graphic method. Chronophotography “only gives an approximate idea of the sequence of the various phases of movement, because its record is one of intermittent indications, instead of the continuous record of a curve.” The points, lines, and curves of geometric chronophotography not only reduce the overwhelming and excessive detail of the photographic image but also allow chronophotography to
mimic the graphic method. Indeed, the points traced by the movement of a joint on the body can be readily connected to form a graph. Marey claims with delight, “In geometrical photographs, thanks to the great number of the images, the discontinuity of the phases almost entirely disappears, and the actual path followed by each point of the body can be seen represented almost as a continuous curve.” In a roundabout way, Marey returns to the goal of producing a pure graph of time.

The technical problems that continually confronted Marey and drove him to refine and laboriously perfect his equipment all emerge from the conflict between legibility and illegibility in sequential photography. Because the various positions of Muybridge’s figures were separated in distinct frames, he did not experience this difficulty. But this aspect of his work was also a cause of Marey’s criticism of it. Not only did Muybridge have no way of measuring the time of the movements he recorded; the positions of the figures were too far apart—it was often impossible to determine how the figure moved from one position to the next. Too much time was lost. Since Marey had always been primarily interested in “a technical apparatus that could make visible minute changes over time”—“les infiniment petits du temps”—his search led him to desire smaller and smaller units of a continuum that he himself conceptualized as “infinitely divisible.” If, in his photographic work, Marey respected the integrity of time and attempted to register its smallest displacements, he produced an unreadable record (as a result of excessive overlapping and superimposition). If he strove for legibility in his documents, he betrayed his object (time) and compromised his attempt to represent it adequately. Marey’s oscillation between the graphic and the photographic is symptomatic of the extent to which he constantly grappled with the problems of legibility and recording. It is significant that the limit or failure of Marey’s scientific endeavor—the blurred image—was subsequently taken up by modernism (especially Italian Futurism) as evidence that the perfect representation of time (particularly its more “modern” aspects of speed and dynamism) was precisely illegibility (nondifferentiation).

The quandary emerges, of course, from the very technology of the photographic apparatus—the need for a hiatus between exposures of the photographic plate or plates to ensure an unblurred image. As deficient as Muybridge’s technique was, his series produced a representation of that hiatus in the form of the frames separating images. Most of Marey’s chronophotography did not. Such an absence, together with the subjection of photography to the graphic aspiration as outlined above, points to a desire to represent all time—to a dream of representation without loss.

In his theory of the psychical apparatus, Freud acknowledged the necessity of intervals of nonreceptivity in the registration/inscription of mnemic traces. Recording (of memory) is not continuous; there must be gaps, lacks, losses in order to protect against overwhelming energies. And it is the discontinuous functioning of the system perception-consciousness that produces those gaps and in this way produces the notion of time. For Marey, on the other hand, time is “out there”—a continuum that, though infinitely divisible, is divisible nevertheless. He is faced with the dilemma, however, that pure and direct recording of time would result only in noise. Freud’s theory of the unconscious exhibits an aspiration for perfect storage that is antithetical to the concept of time (the unconscious is “timeless”); Marey’s chronophotography evinces a desire for a pure representation of time that would ultimately, if it were attainable, be antithetical to the notion of the legible trace (which was the support and goal of his endeavor). Although both of these discourses are imbued with contradictions, they put into play in decisively important ways concepts of temporality and storage that are crucial to much thinking about the cinema as the medium, par excellence, of time.

It is well known that both Freud and Marey resisted the cinema. In addition to his refusal to contemplate or authorize a film about psychoanalysis, Freud also systematically avoided using cinema and photography as analogies for the psyche in favor of other, optical but nonphotographic technologies (such as the microscope and telescope). As we have seen, in 1925 Freud insisted upon using the Mystic Writing-Pad, a fairly antiquated technology, as an analogy for memory. Marey, in his turn, condemned the cinema’s collaboration with defective senses: “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.” Cinema presents the illusion—and the commercially successful illusion—of what Marey could only dream about, the possibility of a continuous and nonselective recording of real time. In concealing
the division between frames, it refuses to acknowledge the loss of time on which it is based. From Māry’s point of view there is a double deception at work here: the lie that truth resides in visibility, in what the eye can see, and the pretense that the cinema replicates time perfectly, without loss.

Nevertheless, the cinema has been conceptualized in ways that reinscribe the terms of Freud’s and Māry’s attempts to correlate storage and time. The early cinema was quickly embraced as the site of an ideal storage, a medium capable of recording images that would then be impervious to the passage of time. Hence the recurrent motif of the cinema as a machine that conquers death. Nől Burch cites, in this context, two journalistic reviews of the Lumière’s first screening, both of which contain references to the conquest of death—Le Radical: “Speech has already been collected and reproduced, now life is collected and reproduced. For example, it will be possible to see one’s loved ones active long after they have passed away”; and La Poste: “When these cameras are made available to the public, when everyone can photograph their dear ones, no longer in a motionless form but in their movements, their activity, their familiar gestures, with words on their lips, death will have ceased to be absolute.” Even Māry’s assistant, Georges Demeny, whose conflicts with Māry were partially fueled by his avid interest in cinematography, invoked the rhetoric of a conquest over death when referring to the potential of moving and speaking images:

How many people would be happy if they could for a moment see again the living features of someone who had passed away? The future will replace the still photograph, locked in its frame, with the moving portrait, which can be given life at the turn of a wheel! The expression of the physiognomy will be preserved as the voice is by the phonograph. The latter could even be added to the phonooscope to complete the illusion . . . We shall do more than analyze [the face]; we shall bring it to life again.

Death, the most corrosive effect of time, is vanquished by an apparatus understood to contain the potential for flawless storage.

On the other hand, both the cinema’s novelty and its decisive difference from photography were linked to its ability not to resist time but to store or represent it. The first films could easily risk banality in their subject matter, since their fascination was indissociably linked with their sheer representation of movement through time. The more familiar, everyday, and recognizable the activity, the more appreciable the pure act of its re-presentation. The Lumière’s filmed such subjects as the demolition of a wall, a snowball fight, workers leaving the factory, the arrival of a train, children clamouring and jumping off a pier into the sea. Perhaps this fascination with the technologically supported ability to inscribe time helps to explain the dominance of the actuality, the presentation of an unstaged incident, during the first ten or so years of the cinema. But these tendencies to exploit the familiar and the recognizable would seem to remove the cinema decisively from the problematic confronting both Freud and Māry—that of the difficult relations among time, representability, and legibility. The early cinema would seem to be, above all, eminently readable.

Yet one characteristic of the cinema set it apart from earlier processes of representing time, such as writing and music, and associated it with the ever-present and consistently disturbing potential of meaningfulness, of providing the spectator with nothing to read. And that is the camera’s capacity to record indiscriminately. Beyond the inevitable selectivity of framing and angle, the camera always seems to evade the issues of subjectivity, agency, and intentionality in the process of an unthought and mechanical recording. In reception, this lack can readily be transformed into the question What does it mean? and What is it for? In his attempt to differentiate the “discourse network of 1900” from the “discourse network of 1800,” Friedrich Kittler specifies the former, at least partly, as the generating, recording, and collecting of nonsense, an endeavor in which the new technological media were particularly determinant. Whereas the discourse network of 1800 stressed the mother’s voice as the anchor of meaning and understanding, the discourse network of 1900 dissociated memory and meaning and stressed the materialism of signs—to the extent of excluding subjectivity. For Kittler, the master science of this discourse network is psychophysics, whose experiments transformed memory into pure registration or inscription at the physiological level. In 1879–80 and 1883–84 Hermann Ebbinghaus, its founder, conducted experiments in which he measured the amount of repetitions necessary to memorize strings of varying lengths of nonsense syllables. Because the individual syllabic combinations were deliberately chosen for their meaningless, their inability to be associated with
any significant context, the purity of memory as a physiological function was allegedly guaranteed. For Kittler, this is evidence that around 1900 “memory is taken from people and delegated to a material organization of discourse.”

Kittler, in an astonishing gesture, goes so far as to make psychoanalysis subordinate to (and in league with) the positivist science of psychophysics: “This is the reason for psychoanalysis. Material discarded by psychophysics can be restored and then decoded. Freud’s discourse was a response not to individual miseries but to a discourse network that exhaustively records nonsense, its purpose being to inscribe people with the network’s logic of the signifier.” This would explain Freud’s peculiar attentiveness to slips of the tongue, errors, and symptoms, which he organized into the material phenomena of psychical life. Kittler analyzes the extent to which the case histories deal with submeaningful elements, such as letters (“S.P.” or “Espe” in the Wolf-Man case): “All of Freud’s case histories demonstrate that the romanticism of the soul has yielded to a materialism of written signs.”

Similarly, film deals with the idiosyncratic, the detail, the element that cannot automatically be integrated into an immediately meaningful context: “Technology makes it possible for the first time to record single and accidental messages... The entire discourse network of 1900 is fed by the return of an opaque thinness.” Such a “thinness” is indisputable—it is simply there, while the sheer act of recording it transforms it into an archival moment that cannot be ignored. Kittler makes film, as well as psychoanalysis, subordinate to the master discourse of psychophysics—“In the discourse network of 1900, discourse is produced by RANDOM GENERATORS. Psychophysics constructed such sources of noise; the new technological media stored their output.”

Kittler takes the term noise from information theory, and computer technology, in fact, infuses his analysis of both discourse networks. He activates the term noise as the polar opposite of information in order to stress the resistance to meaning that characterizes the contemporary discourse network. Nevertheless, the idea that the new technological media “store noise” is a paradoxical one at best. For noise is defined as “an unwanted signal or a disturbance” or “a disturbance interfering with the operation of a mechanical device or system.” In information theory, it refers to “irrelevant or meaningless bits or words occurring along with desired information (as in a computer output).” In the language of technicians, the

term noise often refers to an interference generated by the apparatus itself, and from that point of view the idea of “storing noise” suggests that the sharpness of the distinction between what is “out there” to be recorded and what is traced by the machine is lost.

In any event, the concept of an archive of noise is a difficult one. But it does speak to the enormity of the changes introduced by mechanical reproduction. Certainly the capacity to record the singular and the opacity of the “thinness” captured and presented by the machine that Kittler describes are linked to the promise of an ability to represent the unforeseen, the unintended. Dai Vaughan’s homage to the Lumière is based on the notion that both the principal promise and the principal effect of the early cinema were of spontaneity, of unwilled communication. He points to the unexpected and disturbing wave (a wave that appears suddenly and seems to interrupt the smooth progress of the boat being rowed) in A Boat Leaving Harbour (Barque sortant du port, 1897) as evidence of the force of contingency in the new medium:

such an invasion of the spontaneous into the human arts, being unprecedented, must have assumed the character of a threat not only to the “performers” but to the whole idea of controlled, willed, obedient communication. And conversely, since the idea of communication had in the past been inseparable from the assumption of willed control, this invasion must have seemed a veritable doubling-back of the world into its own imagery, a denial of the order of a coded system: an escape of the represented from the representational act... [A Boat Leaving Harbour] survives as a reminder of that moment when the question of spontaneity was posed and not yet found to be insoluble: when the cinema seemed free, not only of its proper connotations, but of the threat of its absorption into meanings beyond it.

Vaughan perceives this spontaneity, the capacity to represent the unforeseen, as an exhilarating potential of the cinema that was subsequently annihilated in the management and control exerted over filmic significations. But the ability to represent everything—both the planned and the unplanned—also constituted, as Vaughan suggests, a threat. The anxiety generated would be that of sheer undivided extension, of a “real time” without significant mo-
ments, of a confusion about where or why to look. If everything is recordable, nothing matters except the act of recording itself.

Something of the overwhelming effect of this recording process is visible in the very bulk of the archives left by Muybridge and Marey—thousands of stills of the sequential gestures of animals, men, women, and children performing everyday movements. Although he never mentioned Marey by name, Bergson was quite critical of the leveling of temporal moments that was an inevitable effect of sequential photography. And he did not acknowledge the distinction Marey himself saw between his own enterprise and that of cinematography, because both were based on dividing time into a series of static images. When Bergson claims that the mechanism of our ordinary knowledge is of a cinematographical kind, it is in defiance of the concept of “ordinary knowledge” and its ability to apprehend time. Both the ancients and the moderns, according to Bergson, were guilty of spatializing time and hence of a “cinematographical mechanism,” but at least the ancients were capable of isolating moments and lending them an aesthetic significance:

Of the gallop of a horse our eye perceives chiefly a characteristic, essential or rather schematic 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 for it into as many successive attitudes as it wishes, instead of massing itself into a single attitude, which is supposed to flash out in a privileged moment to illuminate a whole period.

Time, in effect, becomes banal and meaningless. Any moment is as “exemplary” as any other and hence none provides that privileged “flash” or spark of knowledge.

The problem of the early cinema’s relation to time hence becomes one of generating difference. The actuality’s embodiment of “real time” very quickly becomes only an aspiration (actualities contain cuts), and the cinema avoids the representational difficulties posed by the notion of a “globe on the scale of the earth.” According to Bergson, the Greeks could isolate the exemplary moment and compel it to signify, whereas Marey and the cinema level all moments until each is the same as the other—producing an overwhelming sameness and banality. The problem the cinema must address early in the century is precisely its ability to recoll singular. The cinema confronts the difficult task of endowing the singular with significance, of manufacturing an event in a medium designed to record, without predilection, all moments. It is not surprising, from this point of view, that the cinema embraces narrative as its primary means of making time legible. Despite the dominance of the actuality in the first decade of the cinema, despite the extensive fascination with the camera’s relation to “real time” and movement, narrative very quickly becomes its dominant method of structuring time. Born of the aspiration to represent or store time, the cinema must content itself with producing time as an effect.

Freud, Marey, and the cinema all grapple, in quite different ways, with the relations among the concepts of time, storage, representation, and legibility. For Marey, the desire to represent a time that he conceives of as objective and measurable inevitably produces dilemmas of legibility. In Freud, the very concept of time emerges from the failure of storage or representation, the discontinuous functioning of a psychical apparatus designed to protect the subject from overwhelming energies. For Marey time is infinitely divisible; for Freud, time is division itself. What both theorists disallow, however, is a notion of time as degradation, degeneration, wearing down. For Marey, time is the support of movement and hence of life—it enables them. For Freud, the unconscious is a site of perfect storage characterized by its timelessness. Time, instead of gnawing away at memories, is the effect of a system that protects them. The unconscious is a haven, the pure space of representation, and the subject becomes the site of a perfect reading, without loss. Such a scenario guarantees legibility for the psychanalyst, since no memory, no detail, no minute clue to the working of the psyche can be irrevocably lost. But it also helps to explain Freud’s resistance to technology. If the unconscious provides us with a perfect record, the cinema as a prosthetic memory is simply unnecessary.

In the work of Freud and Marey, time seems to be continually at odds with legibility. For Freud, temporality is indissociably linked with a consciousness that is opaque or “obscure”—it is the unconscious which is readable. For Marey, time is an entity that resists his instruments, his scientific technology for the production of readability. Time as homogeneous and continuous is antithetical to the differential mapping of photographic tech-
technology. For both, time disallows its own record. What temporality eschews is representation. Freud and Marey, in different ways, stake out the terms of the impossibility of cinema as far as it strives to be a legible record of time.

Freud and Marey resisted the cinema because it adhered to the senses and was not amenable to the abstraction required either to illustrate the basic concepts of psychoanalysis or to produce scientific knowledge. In its hyper-rindexicality it could not dissociate itself from the realm of the contingent or the material. It is clear, as Vaughan suggests, that cinema posed a threat to an entire system of representation. But for Freud and Marey the danger lay not so much in the loss of control and agency in willed communication as in the implicit refusal of limit or limitation. The threat was one of over-presence, of excessive coverage, of a refusal of the distinction or differentiation that would ensure legibility. To the extent that cinema strove for the status of total record, strove to confirm the senses and their potential apprehension of anything and everything, it constituted itself as a failure of representation. Such a logic anticipates Kracauer’s anxieties about photography’s and film’s inscriptions of a spatial and temporal continuum without gap, of a “blizzard” or “flood” of images. The historical transition in the early cinema from a focus on actualities to an insistence upon narrative would be one way of ameliorating such fears. From this point of view, I do not think it is too far-fetched to suggest that in the cinema, as in psychoanalysis, time is produced as an effect, at least in part to protect the subject from the anxieties of total representation generated by the new technological media.

Yet Freud’s and Marey’s conscious rejection of the cinema was accompanied by an unconscious complicity with its very aspirations—the desire to store or represent time, the rejection of mortality (especially in the case of Freud, who continually attempted to demonstrate that death was accidental, contingent rather than inevitable). Freud, Marey, and the early cinema collaborate in a tendency to perceive time as a persistent and troubling problem that holds in tension two different understandings of representation: representation as the record, trace, or inscription of that which is outside itself (for instance, time, as elusive as it may be); and representation as the production of temporalities with no referent other than that of the representational system itself (the psyche, the cinema). The latter understanding of representation persists and is strengthened in modernity, but only at the cost of harboring within itself the dream of the first.

The Afterimage, the Index, and the Accessibility of the Present

The nineteenth century witnessed the emergence of two theories of the temporal trace that have had an enormous impact on attempts to explain the effects of the cinema. In the realm of optics and physiology, investigations of vision focused on illusions, or “tricks” of the eye, central among these the afterimage. Goethe, Joseph Plateau, David Brewster, Charles Wheatstone, and Helmholtz all studied the phenomena associated with the posited retention of an image on the retina for varied durations after the removal of a stimulus (usually a bright light or color). The theory was based on the assumption that the image persists in time, that it has a substantive duration, and hence that vision is not instantaneous. Later in the century Charles Sanders Peirce, an American scientist and philosopher, elaborated an extraordinarily complex theory of signs that rested on the tripartite division of icon, index, and symbol. Of these, it is the indexical sign that acts as a temporal trace and has an existential relation to its object; it “takes hold of our eyes, as it were, and forcibly directs them to a particular object.” A pointing finger is the “type of the class,” but Peirce gives a number of other examples: a footprint, a weathercock, demonstrative pronouns such as this, here, now, and, most relevant here, the photographic image (which the viewer knows has a direct, physical connection to its object). Both the afterimage and the index posit vision as subject to compulsion, to an irresistible force—one by stressing the inescapable temporal effects of imaging processes, the other by the imperative to “Look here, see this.” Furthermore, the theory of the afterimage in one sense inscribes the indexical image within it by assuming the analogy between the eye and a camera, in which the retina acts as a kind of photographic plate, registering and retaining, if only momentarily, an image.

Nevertheless, the two concepts stake out markedly different relations to
ology. For both, time disallows its own record. What temporality eschews is representation. Freud and Marey, in different ways, stake out the terms of the impossibility of cinema insofar as it strives to be a legible record of time.

Freud and Marey resisted the cinema because it adhered to the senses and was not amenable to the abstraction required either to illustrate the basic concepts of psychoanalysis or to produce scientific knowledge. In its hyper-rindexicality it could not dissociate itself from the realm of the contingent or the material. It is clear, as Vaughan suggests, that cinema posed a threat to an entire system of representation. But for Freud and Marey the danger lay not so much in the loss of control and agency in willed communication as in the implicit refusal of limit or limitation. The threat was one of over-presence, of excessive coverage, of a refusal of the distinction or differentiation that would ensure legibility. To the extent that cinema strove for the status of total record, strove to confirm the senses and their potential apprehension of anything and everything, it constituted itself as a failure of representation. Such a logic anticipates Kracauer’s anxieties about photography’s and film’s inscriptions of a spatial and temporal continuum without gap, of a “blizzard” or “flood” of images. The historical transition in the early cinema from a focus on actualities to an insistence upon narrative would be one way of ameliorating such fears. From this point of view, I do not think it is too far-fetched to suggest that in the cinema, as in psychoanalysis, time is produced as an effect, at least in part to protect the subject from the anxieties of total representation generated by the new technological media.

Yet Freud’s and Marey’s conscious rejection of the cinema was accompanied by an unconscious complicity with its very aspirations—the desire to store or represent time, the rejection of mortality (especially in the case of Freud, who continually attempted to demonstrate that death was accidental, contingent rather than inevitable). Freud, Marey, and the early cinema collaborate in a tendency to perceive time as a persistent and troubling problem that holds in tension two different understandings of representation: representation as the record, trace, or inscription of that which is outside itself (for instance, time, as elusive as it may be); and representation as the production of temporalities with no referent other than that of the representational system itself (the psyche, the cinema). The latter understanding of representation persists and is strengthened in modernity, but only at the cost of harboring within itself the dream of the first.

3

The Afterimage, the Index, and the Accessibility of the Present

The nineteenth century witnessed the emergence of two theories of the temporal trace that have had an enormous impact on attempts to explain the effects of the cinema. In the realm of optics and physiology, investigations of vision focused on illusions, or “tricks” of the eye, central among these the afterimage. Goethe, Joseph Plateau, David Brewster, Charles Wheatstone, and Helmholtz all studied the phenomena associated with the posted retention of an image on the retina for varied durations after the removal of a stimulus (usually a bright light or color). The theory was based on the assumption that the image persists in time, that it has a substantive duration, and hence that vision is not instantaneous. Later in the century Charles Sanders Peirce, an American scientist and philosopher, elaborated an extraordinarily complex theory of signs that rested on the tripartite division of icon, index, and symbol. Of these, it is the indexical sign that acts as a temporal trace and has an existential relation to its object; it “takes hold of our eyes, as it were, and forcibly directs them to a particular object.” A pointing finger is the “type of the class,” but Peirce gives a number of other examples: a footprint, a weathercock, demonstrative pronouns such as this, here, now; and, most relevant here, the photographic image (which the viewer knows has a direct, physical connection to its object). Both the afterimage and the index posit vision as subject to compulsion, to an irresistible force—one by stressing the inescapable temporal effects of imaging processes, the other by the imperative to “Look here, see this.” Furthermore, the theory of the afterimage in one sense inscribes the indexical image within it by assuming the analogy between the eye and a camera, in which the retina acts as a kind of photographic plate, registering and retaining, if only momentarily, an image. Nevertheless, the two concepts stake out markedly different relations to