Cinema and Technology

Cultures, Theories, Practices

Edited by
Bruce Bennett, Marc Furstenau and Adrian Mackenzie

14
Afterword – Digital Cinema and the Apparatus: Archaeologies, Epistemologies, Ontologies

Thomas Elsaesser

Can film history go digital?

The spectre stalking film history is that of its own obsolescence. It is widely assumed that the digital convergence between image, audio and print media – and thus the practice of multimedia – must inevitably modify and eventually overturn our traditional notions of film history. Even if we concede that this assumption rests on several unstated premises, both about this convergence and about film history, it is evident that the electronic media do not fit neatly into a linear or chronologically conceived film history, focussed on film as text, autonomous work or artefact. However, it is not at all obvious that digitization is the reason why the new media present such a challenge, historically as well as theoretically, to cinema studies. Perhaps it merely forces into the open inherent flaws and contradictions, shortcomings and misconceptions in our current picture? Does the digital image constitute a radical break in the practice of imaging, or is it merely a logical-technological continuation of a long and complex history of mechanical vision, which traditional film theory has never fully tried to encompass? Is film history vulnerable because it has operated with notions of origins and teleology that even on their own terms are untenable in the light of what we know, for instance, about early cinema? This chapter takes the latter question as its working hypothesis, and in order to do so, I want to start with identifying a number of what I take to be typical attitudes among film scholars when it comes to responding to the new media or multimedia.

We have to draw a line in the silicon sand

To some of my generation, the electronic media (TV and digital media) do not belong to the history of cinema at all. On this side of the divide

are above all those for whom the photographic image is sacred, and for whom celluloid is the baseline of a 150-year visual heritage that must not be plundered, devalued, faked or forged. Jean Douchet, a respected critic in the tradition of André Bazin, thinks the loss of the indexical link with the real in the digital image presents a major threat to mankind's pictorial patrimony, as well as to a cinéphile universe, of which he feels himself to be the guardian:

> The shift towards virtual reality is a shift from one type of thinking to another, a shift in purpose, which modifies, disturbs, perhaps even perverts man's relation to what is real. All good films, we used to say in the 1960s, when the cover of *Cahiers du cinéma* was still yellow, are documentaries, . . . and filmmakers deserved to be called 'great' precisely because of their near obsessive focus on capturing reality and respecting it, respectfully embarking on the way of knowledge. [Today, on the other hand], cinema has given up the purpose and the thinking behind individual shots, in favour of images – rootless, textureless images – designed to violently impress by constantly inflating their spectacular qualities.[1]

At the limit, multimedia for Douchet is a revival of the old futurist and fascist obsession with speed and kinetics, the most superficial kind of activism, kinetic avant-gardism and sensationalism, making digital effects a childish toy, a grimace disfiguring the face of the seventh art.

On the other side of the silicone divide stand those for whom, with the promise of 'virtual reality', Bazin's prediction of an age-old dream is finally fulfilling itself, that of man creating his own immortal double. According to this argument, all previous audio-visual media, and especially the cinema, are but poor cousins and incomplete sketches of such an aspiration. Now, in the digital domain, thanks to virtual reality, we can really 'break through' the screen: 'no more actors, no more story, no more sets, which is to say that in the perfect aesthetic illusion of reality, there is no more cinema.' (Bazin, 1971, p. 60).[2]

It's business as usual

For those holding the view that it is business as usual, the argument might go as follows: The film industry, for nearly a hundred years, has been delivering the same basic product, the full-length feature film, as the core of the cinematic spectacle and the institution cinema. Technological innovations there have been all along, but they have

always been absorbed and accommodated, possibly reconfiguring the economics of production, but they have left intact the context of reception and the manner of programming. Digitization does not appear to have changed this state of affairs. On the contrary, the contemporary industry standard – the star- and spectacle-driven blockbuster – dominates the audio-visual landscape more visibly than ever, attracting vast global audiences, incorporating digital effects in live action and perfecting computer-generated graphics for fully animated narrative films. As one of the blockbuster's most successful practitioners ever, George Lucas, has opined, 'Digital is like saying: are you going to use a Panavision or an Arriflex [camera]? Are you going to write with a pen or on your little laptop? I mean, it doesn't change a thing' (Quoted in Kelly and Parisi, 1997, p. 164).

Even though Lucas, as owner of the most innovative and lucrative special effects factory (Industrial Light & Magic), may have changed his mind since, there is, among film scholars, a sizeable and respected group who would concur with such a downgrading of the importance of the digital revolution for feature film-making. They maintain that the formal system that has underpinned Hollywood and other mainstream commercial cinema practices for the past 80 years, based as it is on the three- or five-act model of Western drama, which is itself more than 2500 years old, namely 'classical narrative', is alive and well in the digital age. Against all comers and all odds, David Bordwell and Kristin Thompson, for instance, never tire to point out how the classical model has adapted itself to different media and technologies, adjusting to the introduction of sound as well as to other technical innovations, be it colour, widescreen, animation or electronic imaging techniques, by what they call the principle of 'functional equivalence'.[3]

Another section of the film-studies community, notably those familiar with Early Cinema, might go further, but also change direction, by refusing to make 'classical narrative' the gold standard. When you know the trick and animation work of Georges Méliès, Segundo de Chomon, Emile Cohl, or the experiments of Oskar Messter with three-dimensional (3-D) projection and synchronized sound (all before 1910!), there is little that can be called fundamentally new about the effects achieved by digital images, or the spectacle attractions generated by contemporary multimedia. One could even argue that our present state of the art of visual magic and virtual imaging is a throwback to the beginnings of the cinema and before. To spectators at the turn of the twentieth century, the Lumières, too, were magicians. In their 50-second films, the spectacle of curling smoke, moving clouds or leaves shaking in the breeze was more

enchanting and did more to amaze them than Méliès' conjuring tricks, many of which were already familiar from magic theatre, circus and vaudeville. This would be the stance of Tom Gunning, and his 'cinema of attractions' (Gunning, 1989; 1990).

Finally, scholars of especially the Russian avant-garde of the 1920s would argue that you can fold film history around the 1950s and see how the two ends overlap, that is, the '20s with the '80s. This is Lev Manovich's position, who argues that Vertov's *Man with a Movie Camera* very much converges with the work now done by digital artists experimenting with new kinds of graphics: his film-within-film is not unlike certain computer generated images (CGI)-techniques, his split screen and superimpositions are similar to video overlay and morphing and his form of montage is close to today's compositing (Manovich, 2001, pp. xiv–xxiv). The futurist and constructivist ideas of how both art and everyday reality would be transformed with the help of new technologies of sight and sound, of bodily prosthetics and precision engineering, seem to be coming true in the computer age. Also, the priority of good design for objects of every-day use, first pioneered by international modernism, has become the default value of practically every computer software application, as well as of hardware, interfaces or new technological gadgets.

As usual, it's business

A slightly longer view, not necessarily confined to our field, would hold that both the technologically determinist and the formalist-modernist case are misconceived: what gives the digital image its uncertain status is that the search for a 'killer application' has not yet produced a deci-sive winner. Digital storage and delivery may have exponentially increased the production and circulation of images both in quantity and accessibility, but digitization has yet to transform the way people use these images. Except for computer games, admittedly a very lucra-tive market, where digital imaging has opened up innovative and chal-lenging possibilities above all for 3-D graphics, the vast majority of digital images produced today still serve traditional aims: besides live-action feature films, they have taken over the home. Domestic use of the camcorder and digital cameras are the instantly recognizable and thus profitable products in the mass market, but they serve very tradi-tional ends. By contrast, when in the 1980s the video recorder and the remote control were introduced, they not only powered a new con-sumer industry and changed people's entertainment habits, they also transformed the television industry (programming, advertising needed

to take note of zapping), along with the film industry (opening the secondary market for video rentals and purchase). In the 1990s, the economic-technological basis for a vast industrial and infrastructural expansion did not turn out to be the digital image, but the mobile phone. With its universal popularity, its wildfire penetration of everyday life, its mythology of mobility, ubiquity and interactive instantaneousness, it is probably the more likely candidate for also redefining the use and function of images in our culture. The DVD, despite its economic impact, its extras and bonuses, is nonetheless only a digital clone of the gramophone disc (cross-breeding it with the videotape), while it actually encourages a form of cinephilia and collector's mania that everyone thought was passé in the 1970s. In the meantime, the iPod, a music-based device seems more likely to transform our way of interacting digitally with the environment than game-boys, data-gloves or VR helmets, as well as with the cultural image databanks, which are films, television programmes and museums – assuming that very soon, our iPod will be permanently online, allowing us to download not just music and audio information, but also images of any kind, both still and moving. The technology of telephony and wireless Internet access is moulding the sociocultural dimension of a new killer application, one that might well make the DVD as obsolete as the videotape and the CD already are.

Lowering the unit price and increasing availability of previously scarce commodities is the chief parameter that wins a new 'hardware' the sort of users who encourage the development of demand-driven mass-market products. According to this 'as usual, it's business' perspective, only consumer acceptance can impose a medium, not a technology, however superior it may be: witness the victory of the (technically) inferior VHS standard over the BETA system, or Apple's astonishing comeback from personal computer limbo, thanks to the iPod.

But if we take the longer view, we may have to be even more sceptical regarding the digital image. A few years back, even before the high-tech bubble burst, *The Economist* ran a sobering survey about the IT revolution. While it was true that the computer and modern telephony had brought a massive fall in the cost of communication and thus had increased the flow of information through the economy, it was not yet proven whether the 'new economy' will be remembered as a revolution, in the same way as the invention of the steam engine had been a revolution, which – via the railways – created the modern city and mass-market consumer society. Or that of electricity, which – via the assembly line, artificial lighting, the extension of the working day, the invention of leisure and entertainment – brought about not only new and more

efficient ways of making things, but led to the creation of new things altogether. The cinema, as we know, is very much a consequence of both these revolutions, that of urbanization and electrification. According to *The Economist*, besides the cost of information, it is the cost of energy that is the real variable in a major, epochal social transformation, which is why it suggests that the development of new fuel cells may well be a bigger breakthrough on a global scale than either the computer or the mobile phone: a prediction that seems hard to believe from our present vantage point, not to mention for those of us interested in film and digital media. But as we also know, genetic engineering and nanotechnology are just waiting in the wings as the true transforming technologies of the twenty-first century (*Economist*, 1999).

The digital: Technological standard or epistemological rupture?

Where, in these different stances towards the digital, does one locate oneself as a film historian? What about the optico-chemical image's unique value as a record with its evidentiary as well as its enunciative status of authenticity? Take film archivists, the guardians of this heritage. Admittedly they are finally agreed that celluloid (or its polymer successor) is still a more durable and reliable material support of audio-visual data than digital storage media. Yet when it comes to restoration and preservation, they now rely on digital intermediaries, only then to reintroduce the analogue artefacts, like grain or soft focus, the natural 'special effects' typical of celluloid. Others, such as Lev Manovich, look at the photographic mode from the vantage point of the post-photographic age and see the photographic image as merely a historically special instance of the graphic mode, much older than the cinema and the photograph, and destined to outlive it (1999, p. 309ff). But Manovich was not the first to argue that the photographic mode (so heavily fetishized in our culture) is merely one of the graphic mode's possible articulations. At the height of the semiological turn and well before digitization, it was Umberto Eco who deconstructed the so-called indexical level of the photographic image into a dozen or so iconic and symbolic codes (1972, pp. 195–292, esp. 214–30). The Czech media historian Vilem Flusser also pointed out, some 30 years ago, that in any photograph, the distribution of the grain already prefigures both the dots of the video image and the numerical grid of the digital image (2000).[4] Other scholars and film-makers have likewise drawn analogies between the mechanized loom of Jacquard in the eighteenth century, the Hollerith

cards that made the fortune of IBM in the late nineteenth century and the television image of the de Forester cathode ray tube in the early twentieth century.[5]

All this to say that, with regard to the indexical nature of the photographic image and its place in our cultural episteme, one may be well advised to regard digitization less as a technical standard (important though this is, of course) and more like a zero degree that allows one to reflect upon one's present understanding of both film history and cinema theory. And as a zero degree, it is, necessarily, an imaginary or impossible place from which one speaks. From this impossible place, digitization can serve as a heuristic device, helping me as historian to displace myself in relation to a number of habitual ways of thinking. For instance, it allows me to suspend judgment on the usual range of options. I need not decide whether digitization is, technically speaking, a moment of progress, but aesthetically speaking a step backward; whether it is, economically speaking, a risky business-bubble, and politically speaking the tool of a new totalitarianism of ubiquitous surveillance and relentless data mining. But neither do I need to mourn the death of cinema.

The cinema: An invention that has no origins

Instead, we can look at digital multimedia through the lens of early cinema and judge early cinema from a media-archaeological perspective, rather than a chronological or a genealogical one. One can even go a step further, and displace the cinematic apparatus (as we know it from the theories of Christian Metz, Jean Louis Baudry or Stephen Heath)[6] by adding to it its four S/M practices or perversions, depending on one's point of view. These are, to list them briefly, the *scientific and medical* cinematic apparatus (on which there are some excellent books, notably by Lisa Cartwright (1995)); the *surveillance and military* apparatus (theorized by, among others, Paul Virilio (1989) and Friedrich Kittler (1999)); the *sensory-motor-schema* apparatus (of Gilles Deleuze's (1986; 1989) philosophy); and the *sensoring and monitoring* apparatus (celebrated by Kevin Kelly (1999)), which speaks of feedback loops, pull technologies, searchability and augmented reality. In other words, by going back to early and pre-cinema, and by duly noting the non-entertainment uses of the cinematic apparatus, I am advancing the proposition that the cinema has many histories, only some of which belong to the movies, in order to – if not to answer – then at least to approach the question whether digital media constitute a new apparatus, whether they are

parasitic on the pre-existing ones or whether in the case of digital media it is altogether inappropriate to speak of a cinematic apparatus?

A brief word about such a media-archaeological perspective: Among film historians it is now generally accepted that the cinema has too many origins, none of which adds up to a chronology, but also makes for doubtful genealogies. For instance, if one goes back to the genealogies of the cinema printed in the textbooks of only 20 years ago, one can observe the kind of self-evidence that today seems startling for its blind spots. There, the history of photography, the history of projection and the 'discovery' of persistence of vision are listed as the triple pillars that sustain the temple of the Seventh Art. Or, to change the metaphor, they appear as the three major tributaries that finally – miraculously but also inevitably – join up around 1895 to become the mighty river we know as the cinema. But as we also know, archaeology is the opposite of genealogy: the latter tries to trace back a continuous line of descent from the present to the past; the former knows that only the presumption of discontinuity and the *pars-pro-toto* of the fragment can hope to give a present access to a past.

A media archaeologist would therefore notice above all what is missing or has been suppressed and left out in our genealogical chart. Sound, for instance, since we now know the silent cinema was rarely if ever silent, in which case, why is the history of phonograph not listed as another tributary? Or what about the telephone as an indispensable element of what we would now understand by the cinema in the multimedia environment? Radio waves? Einstein's wave and particle theories of light? Electromagnetic fields? The history of aviation? Do we not need Babbage's difference engine ranged parallel to his friend Henry Fox-Talbot's Calotypes, combined with Ada Lovelace's first attempts at programming? (Batchen, 1997).

Or take the so-called 'delay of cinema'. If we were to time-travel, and place ourselves at the end of the nineteenth century, we could see the cinematograph in 1895 as both a sleepy latecomer and a perilously premature birth – a latecomer, because the technology of moving images had been known for almost 50 years, and also that the Lumières' invention was in some respects no more than a mechanized slide-show, whose special effects for a brief time were inferior to any twin or triple-turret magic lantern, worked by a singer-lecturer assisting the skilled lanternist-operator, which could supply sound and image, verbal commentary and colour, abstractly moving designs and representations from life. But the cinema was also premature or (some would say) an irrelevant detour altogether, because the late nineteenth century might have been poised on

the brink of a quite different imaging technology, which the popularity of the cinema in some ways 'delayed'. There is even a sense in which the cinema was not only a bastard, but an unwanted child altogether. According to television scholars, both Edison's peep show and Lumière's public projection was not what the nineteenth century had been waiting for. What it was imagining for its techno-topic future was domestic television, and preferably two-way television. The Victorians not only dreamt of television. They were as hungry for mobility, instantaneity, for simultaneity and interactivity as we are today, and they also had a good idea of what it would mean to be connected to an Internet: after all, they had developed the telegraph-system! (Standage, 1999).

Few of us now recall that many of the so-called pioneers – among them Pierre Jules César Janssen, Ottomar Anschütz, Edweard Muybridge and even the Lumière Brothers – were either not at all or not primarily interested in the entertainment uses and storytelling possibilities of the cinematograph, thinking of it in the first instance as a scientific instrument. Were they blind to the economic potential of entertainment and its social role in the late nineteenth century, or had they something in mind that only the emergence of an entirely different set of needs and uses nearly a hundred years later could bring to light? It seems the 'losers' of yesterday may turn out to have predicted the winners of today. Whenever historians have begun to think in these terms, their findings are producing at times dramatic shifts in our conception of early cinema, but also of the cinema in general. So much so that, today, near-forgotten figures such as Étienne-Jules Marey or his assistant Georges Demenÿ look more interesting than the Lumière Brothers (as in the books of Mannoni (1995), Marta Braun (1992) and Mary Ann Doane (2003)), and to those historians interested in German cinema, Oskar Messter seems as emblematic for an archaeology of multimedia as Thomas Alva Edison used to be for the history of the cinema and the origins of the film industry.[7] Never very well known outside Germany, Messter's Alabastra 3-D projections of 1900, his synchronized sound pictures from 1902, his medical films from 1904 or his airborne surveillance cameras from 1914 nonetheless strike one as more fantastic than Jules Verne's novels, but just as prescient and a lot more practical. Messter's indefatigable search for applications of the moving image parallel to its entertainment uses testify to such a pragmatic understanding of the different potentials of the cinematic apparatus that he stands at the intersection of several histories, many of which we are only now beginning to recognize as being histories – precisely those configurations and applications of the basic apparatus I just listed as its S/M practices.

We have come to know a good deal more about the complex War and Cinema – or 'surveillance and the military' – than even two decades ago (Virilio, 1989; Kittler, 1999). But it is the practical impact of satellite technology, space exploration and airborne or terrestrial surveillance that have sensitized us to a continuous, if submerged, alternative history of cinema, which is gradually being recovered in the form of an 'archaeology' of the present (Levin et al., 2002). Yet it is worth recalling that much else that we are now beginning to consider as belonging to early cinema was not initially intended or indeed suited to performance in a movie theatre: scientific films, medical films, training films, for instance. The pioneer of nervous diseases, Jean-Martin Charcot at the Salpêtrière Hospital in Paris had very sophisticated photographic equipment, and his successors used the moving image alongside still photography, to document the symptoms of his patients (Didi-Huberman, 2003). Many prominent surgeons also belonged among early users of the cinematograph. On the other hand, even such classics of early cinema programming as the tourist view, the actualities and many other types of films or genres initially relied on techniques of vision and on a habitus of observation that had to be 'adjusted', in order to fit into the movie theatre. Think of the landscape view, or the painted panorama: prior to the cinema, they relied on the mobile observer, optimizing his varying point of view. Think of the stereoscope (so important in Jonathan Crary's (1990) techniques of the observer), or the so-called 'Claude glass' and the *camera lucida*, both recently revived by David Hockney as precursors of the digital camera (Hockney, 2001). Think of the phantasmagorias or fog pictures: they and a multitude of other devices were in everyday or specialized use, and besides serving public spectacles they were also handled in private or, like the Mutoscope, by a solitary spectator. Yet the cinema borrowed from all these genres and practices, adapting them and significantly transforming their cultural meaning. In the process, both the mode of presentation and the audiences had to be 'disciplined' – 'disciplined through pleasure' one might call it – in order to become suitable for collective, public reception (Elsaesser, 2006).

What this suggests is that the different ways in which the moving image in its multi-medial electronic form is today 'breaking the frame' and exceeding, if not altogether exiting, the movie theatre (giant display screens in airport lounges or railway stations, monitors in all walks of life, from gallery spaces to museum video art, from installation pieces to football stadiums, from tiny mobile screens to IMAX theatres), we may be 'returning' to early cinema practice, remembering Lumière's giant

screen for the 1900 Paris World Exhibition, Pathé's Baby projector for living room use, or W.K. Dickson's experiments with 68mm film stock to capture the grandeur of Niagara Falls.

On the other hand, as I suggested with my iPod example, we may be on the threshold of another powerful surge of 'disciplining' and normatively prioritizing one particular standard of the multimedia image over others. What can be said is that the instability of the current configuration is by no means unique in the history of the moving image. In fact we seem to have been there before, even if less dramatically – when, for instance, the drive-in cinema was competing with the television screen, converting the automobile into a living room, or trying to combine the erotic intimacy of home with a giant outdoor screen, not to mention the better-remembered 3-D and Vistavision experiments.

Let us finally recall how unstable, around 1895, were the definitions and minimal conditions that eventually led to exactly dating the 'birth' of cinema: why does chrono-photography not qualify as cinema? Why was Émile Raynaud's continuously moving strip of paper with painted images projected on to a screen not good enough as the birth of cinema? Why should only images taken with a camera and fixed on celluloid qualify? If photographic images, why not Edison's peep-hole kinetoscope, instead of the Lumières cinematograph (derivative from Edison's machine and reverse engineered in London, by Robert Paul) for projecting images on a screen? Did it make a difference whether these moving images were first shown to a scientific community or before a paying public? As we know, it was decided that only the paying audience 'really' counted, with the result that in the end it took four or five different (some would say, arbitrarily selected) qualifiers or limiting conditions, in order to make 28 December 1985 the date, and the Lumière Brothers the authors of the 'invention' of the cinema! (Rossell, 1998). In this sense, the history of the cinema responds not so much to the Bazinian enquiry 'what is cinema?', but has to start from the question, 'when is cinema?' And it is clear that for the first ten years of its life, the cinema did not, strictly speaking, 'exist' at all. As Bazin could not help wondering, after reading Georges Sadoul's history of the cinema, 'looking at all the technical possibilities [of moving images] that have appeared in the past, one can only conclude that the cinema still needs to be invented' (Bazin, 1967, p. 22).

Film in the expanded field

I hope I have been able to suggest that in film history, even before one gets to digitization, the case for a wider agenda, as well as a different

range of issues, is a compelling one. That it has not been an insight exclusively owed to the new media is proven by a century of avant-garde cinema, and what has been variously described and celebrated by historians such as Gene Youngblood as expanded cinema (1970). It was practiced by, among many others, Peter Weibel and Valie Export in Vienna and by Standish Lawder, Andrew McCall and Ken Jacobs in New York (Michalka, 2001).

But even here, we must beware, as an anecdote once told to me by Vivian Sobchack might illustrate. One day, when she was still teaching at Santa Cruz, she was driving on a San Francisco freeway behind a van with the words 'Pullman's Underground Film' written on the back. Being a film scholar with wide-ranging interests, she became curious, since in all her years of teaching the American avant-garde, she had never come across a film-maker or a collective by that name. As she accelerated and levelled with the van, in order to see whether she recognized anyone inside, she read, neatly stencilled across the driver's door: 'Pullman's Underground Film: The Bay Area's Specialists in Electronic Sewer Inspection'.[8]

Perhaps only in the city or the region that is home to the Pacific Film Archive could the industrial users of the cinematic apparatus salute the artistic film community with such a handsome tribute. But as the case of the so-called pioneers (as well as many examples discussed in the previous chapters) show, the non-entertainment and non-art uses of the cinematic apparatus at the turn of the nineteenth to the twentieth century did not disappear with the arrival of narrative cinema or the feature film around 1907; they merely went underground. But this underground was in many instances contiguous with the above ground, and in several cases it was the very condition of possibility for the developments of the entertainment uses, making the cinema as we know it no more than the visible tip of the proverbial iceberg – certainly when one recalls once more how many of the technical innovations in the fields of photography, the cinema and the new media were financed and first tested for warfare and military objectives. To name just a few of the best known: the powerful searchlights of World War I, the 16mm portable camera, radar, the Ampex (audio- and video-) recording tape, the television camera, the computer, the Internet.

As so often in the history of inventions, some of the most influential or momentous ones were the by-products of other discoveries, or turned out quite differently from what their makers intended with them: technological 'progress' rarely takes the form of a Eureka-experience and nothing seems more the result of *bricolage* than the cinema. Consider the film projector – to this day film technology's equivalent of the

platypus. Apart from being a mechanized magic lantern, it still shows quite clearly that what allowed this magic lantern to be mechanized were the treadle sewing machine, the perforated Morse telegraph tape and the Gatling machine gun. All three have disappeared in their respective areas of applications, but are miraculously preserved in the retrofitted adaptation still to be found in every projection room (though probably not for much longer).

Let me try and sum up what these brief forays into media archaeology might tell us about the electronic multimedia as part of the history of cinema. By positing the digital not only as a technology of signal conversion and data transmission, but as a moment of cultural rupture, I first wanted to disarticulate the cinematic apparatus in its historical dimension, and to re-articulate it across its many entertainment and non-entertainment practices. These practices in their diversity, but also our 'digital' perspective on them, suggest that the cinema may well have ceased to be important because of this particular cinematic apparatus of camera, projector, screen and auditorium, and instead, it has become digital culture's internal reference point. If we follow Friedrich Kittler, and take seriously the multimedia, multi-modal dimensions of our sound, image and text machines, we need to speak of discourse networks rather than an apparatus, with its suggestion of fixity, ocular alignment and rigid geometries of space (Kittler, 1990). If we follow Gilles Deleuze, we should forget about narrative, subjectivity and interpellation (that is, the psychic dispositiv) and instead start from the raw physiological given of movement, flow, folds, energies, intensities as they animate matter, memory and brain (Deleuze 1986; 1989). For Lev Manovich, the cinema constitutes the digital media's symbolic form, the way Erwin Panofsky talked about perspective as the Enlightenment's symbolic form, the way Michel Foucault described the *Order of Things* during the classical age by pointing to Velasquez' ingenious perversion of perspective in his *Las Meninas* painting or the way Martin Heidegger spoke about the Age of the World-Picture: 'the basic dynamic of modernity is the conquest of the world as image. The word image here means: the enframing of man's imagined production of the world' (Heidegger, 1977).

The camera is in our head, even before it is in our hand, or its images on the screen. For Kittler, this is an epistemic problem: how do we know what we know in the discourse network of our age? It is a question of our modes of seeing no longer being our ways of knowing, our form of agency become mere performativity and our bodies the material residues, the 'wetware' of information processing. For Deleuze, on the other hand, the cinema stands for the promise of a new ontology: a mode of immanence without (the need for) transcendence.

Nonetheless, what is the ground that can ground the groundlessness that is the moving image, both might ask, Heidegger-fashion? Film theory over the last 50 years has answered them with a long list of metaphors: reality as God had intended to reveal it (Bazin), a natural language without a language system (Metz), the very logic of our subjectivity (Baudry, Heath via Lacan-Althusser), the tragic destiny of gendered identity (Mulvey), the nature of human consciousness (Michelson), the unsymbolizable real (Žižek), the figural (Lyotard), the body, the senses, touch and skin, the death drive, affect, attraction, time, the brain, the perceptual modelling of our hard-wired cognitivist schemata and so on. The digital as rupture thus leaves us with a paradox: just as it installs the cinema as episteme or ontology, it does away with cinema as a unique technology of imaging. Its vantage point or vanishing point, so to speak, is a cinematic apparatus no longer grounded in the eye, in vision or visuality. The digital inaugurates a cinema for the blind, or of the blind (*'ein Blindenkino'*), as Franz Kafka is supposed to have imagined it. And if we take my last S/M practice – of sensors and monitors – and think of the electronic traces and digital footprints we leave behind every time we go online or move through the circuits of computerized transaction, transport and exchange that make up our lives, then the corresponding 'cinematic' apparatus is indeed at the very threshold of the visible, or altogether beyond it. The visible would be, as it already is for the computer, a mere interface for our convenience, a sort of prosthetics of our data-doubles, since the digital machine needs neither time, motion, image, light or object. A spectre is indeed haunting film history – that of the disappearance of the cinema as a *machine of the visible* (Comolli, 1980). And here the digital may indeed come to our rescue: by not itself belonging to the order of the visible, the digital can close the gap between the visible and the invisible of the world, and thus be the 'ground' on which the cinema can indeed be reinvented, as it has been so many times. In this respect at least, it is neither business as usual, nor is it, as usual, business. At most, it is our business, and we have to make it so – to see the cinema anew, as archaeology, theoretical object, practice, epistemology, ontology, but above all as a philosophical *perpetuum mobile*, as an intellectual automaton and a source of self-renewing energy.

Notes

1. Jean Douchet, lecture given in Paris on 20 March 1995 at a symposium called 'Le Cinéma: vers son deuxième siècle'.
2. The link between the aesthetics of neorealism and immersive virtual reality is also made implicitly in the opening section ('The Logic of Transparent

Immediacy') of Jay David Bolter and Richard Grusin, *Remediation* (1999), pp. 21–31.
3. See a recent edition of Bordwell's and Thompson's *Film Art,* with the bullet-time effect from *The Matrix* on the cover, and Kristin Thompson, *Storytelling in the New Hollywood. Understanding Classical Narrative Technique* (1998).
4. Some of Flusser's key essays have been published posthumously as *Ins Universum der technischen Bilder* (Flusser, 2000).
5. Harun Farocki's *Wie man sieht/As you see* (Germany 1986, 16mm, col., 72 min) explores this 'archaeology' that links Jacquard, Hollerith, the television image and the computer.
6. See the essays by these authors in Rosen (1986).
7. On Messter's diverse activities, see Martin Loiperdinger (1994).
8. Vivian Sobchack, personal communication, June 1998.