From DV Realism
to a Universal Recording Machine

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Introduction

If Mike Figgis's remarkable *Timecode* (2000) exemplifies the difficult search of digital cinema for its own unique aesthetics, it equally demonstrates how these emerging aesthetics borrow from cinema's rich past, from other media, and from the conventions of computer software. The film splits the screen into the four quadrants to show us four different actions taking place at once. This is of course something that have been common in computer games for a while; we may also recall computer user's ability to open a new window into a document, which is the standard feature of all popular software programs. In tracking the characters in real time, *Timecode* follows the principle of unity of space and time that goes back to the seventeenth century classicism. At the same time, since we are presented with video images which appear in separate frames within the screen and which provide different viewpoints on the same building, the film also makes a strong reference to the aesthetics of video surveillance. At the end, we may ask if we are dealing with a film that is borrowing strategies from other media; or with a "reality TV" program that adopts the strategies of surveillance; or with a computer game that heavily relies on cinema. In short, is *Timecode* still *cinema* or is it already *new media*?

This essay will address one of the key themes which accompanies both the evolution of new media technologies during its four decade long history and the current ongoing shift of cinema towards being computer-based in all aspects of its production, post-production and distribution. This theme is "realism." The introduction of every new modern media technology, from photography in the 1840s to Virtual Reality in the 1980s, has always been accompanied by the

claims that the new technology allows to represent reality in a new way. Typically it is argued that the new representations are radically different from the ones made possible by older technologies; that they are superior to the old ones; and that they allow a more direct access to reality. Given this history, it is not surprising that the shift of all moving image industries (cinema, video, television) in the 1980s and 1990s towards computer-based technologies, and the introduction of new computer and network-based moving image technologies during the same decade (for instance, Web cams, digital compositing, motion rides) has been accompanied by similar claims. In this essay I will examine some of these claims by placing them within a historical perspective. How new is the "realism" made possible by DV cameras, digital special effects and computer-driven Web cams?

Instead of thinking of the evolution of modern media technology as a linear march towards more precise or more authentic representation of reality, we may want to think of a number of distinct aesthetics – particular techniques of representing reality – that keep re-emerging throughout the modern media history. I do not want to suggest that there is no change and that these aesthetics have some kind of metaphysic status. In fact, it would be an important project to trace the history of these aesthetics, to see which ones already appeared in the nineteenth century and which ones only made their appearance later. However, for my purposes here, it is sufficient to assume that the major technological shifts in media, such as the present shift towards computer and network based technologies, not only lead to the creation of new aesthetic techniques but also activate certain aesthetic impulses already present in the past.

I will focus on two different aesthetics that at first sight may appear to be unique to the current digital revolution but in fact accompany moving image media throughout the twentieth century. The two aesthetics are opposite of each other. The first treats a film as a sequence of big budget special effects, with may take years to craft during post-production stage. The second gives up all effects in favor of "authenticity" and "immediacy," achieved with the help of inexpensive DV equipment. I will trace these two aesthetics back to the very origins of

cinema. If Georges Méliès was the father of special effects filmmaking, then the Lumière brothers can be called the first *DV realists*. To use the contemporary terms, the Lumière brothers defined filmmaking as production (i.e., shooting), while Méliès defined it as post-production (editing, compositing, special effects).

The fact that it is not only the theme of "realism" itself but also particular stategies for making media represent reality "better" that keep reappering in the history of media should not blind us to the radical innovations of new media. I do believe that new media reconfigures a moving image in a number of very important ways. I trace some of them in *The Language of New Media*: the shift from montage to compositing; the slow historical transition from lens-based recording to 3-D image synthesis; the new identity of cinema as a hybrid of cinematography and animation. For me, pointing that some claims about the newness of new media are incorrect (such as tracing the historical heritage of certain realist aesthetics in this essay) is the best way of figuring which claims are correct, as well as discovering the new features of new media which we may have overlooked. In short, the best way to see what is new is to first get clear about what is old. In the case of my topic here, dismissing the originality of digital special effects and digital "immediacy" allows us to notice a truly unique capacity of digital media for representing real, which I will address in the last section of this essay.

This unique capacity can be summed up as the shift from "sampling" to "complete recording." If both traditional arts and modern media are based on sampling reality, that is, representing/recording only small fragments of human experience, digital recording and storage technologies greatly expand how much can be represented/recorded. This applies to granularity of time, the granularity of visual experience, and also what can be called "social granularity" (i.e., representation of one's relationships with other human beings.)

In regards to time, it is now possible to record, store and index years of digital video. By this I don't mean simply video libraries of stock footage or movies on demand systems – I am thinking of recording/representing the experiences of the individuals: for instance, the POV of single person as she

goes through her life, the POVs of a number of people, etc. Although it presents combined experiences of many people rather than the detailed account of a single person's life, the work by Spielberg's Shoa Foundation is a relevant here as it shows what can be done with the new scale in video recording and indexing. The Shoa Foundation assembled and now makes accessible massive amount of video interviews with the Holocaust survivors: it would take one person forty years to watch all the video material, stored on Foundation's computer servers.

The examples of new finer visual granularity are provided by projects of Luc Courchesne and Jeffrey Shaw which both aim at continuous 360 ^{o} moving image recordings of reality.[1] One of Shaw's custom systems which he called Panosurround Camera uses 21 DV cameras mounted on a sphere. The recordings are stitched together using custom software resulting in a 360^{o} moving image with a resolution of 6000 x 4000 pixels.[2]

Finally, the example of new "social granularity" is provided by the popular *The Syms*. This game that is better referred to as "social simulator" models ongoing relationship dynamics between a number of characters. Although the relationship model itself can hardly compete with the modeling of human psychology in modern narrative fiction, since *The Syms* is not a static representation of selected moments in the characters' lives *but a dynamic simulation running in real time*, we can at any time choose to follow any of the characters. While the rest of the characters are off-screen, they continue to "live" and change. In short, just as with the new granularity of time and the new granularity of visual experience, the social universe no longer needs to be sampled but can be modeled as one continuum.

Together, these new abilities open up vast new vistas for aesthetic experimentation. They give us a wonderful opportunity to address one of the key

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[1] For Courchesne's Panoscope project, see http://www.din.umontreal.ca/courchesne/; For Jeffrey Shaw's projects, see http://www.jeffrey-shaw.net. Both discuss their projects in relation to previous strategies of "experience representation" in panorama, painting and cinema in *New Screen Media: Cinema/Art/Narrative*, edited by Martin Rieser and Andrea Zapp (London: BFI and Karlsruhe: ZKM, 2001).

[2] Private communication between Shaw and the author, July 4, 2002.

goals of art – a representation of reality and the human subjective experience of it – in new and fresh ways.

Digital Special Effects

By the middle of the 1990s, the producers and directors of feature and short films, television shows, music videos and other *visual fictions* have widely accepted digital tools, from digital compositing to CGI to DV cameras. According to the clichés used in Hollywood when discussing this digital revolution, filmmakers are now able to "to tell stories that were never possible to tell before", "achieve new level of realism," and "impress the audiences with previously unseen effects." But do these statements hold up under a closer scrutiny?

Lest begin by considering the first idea. Is it really true that Ridley Scott would not be able to make *Gladiator* without computers? Of course computer-generated shots of Roman Coliseum are quite impressive, but the story could have been told without them. After all, in his 1916 *Intolerance* Griffith showed the audiences the fall of Babylon, the latter days of Christ's life and the St. Bartholomew's Day Massacre – all without computers. Similarly, the 1959 classic *Ben-Hur* already took the viewers to the ancient Rome, again without computers.

Shall we then accept the second idea that armed with computers filmmakers can now get closer to reality than ever before? I don't accept this idea either. More often than not, when you watch special effects shots in films, you are seeing something you never saw before, either in reality or in cinema. You have never before seen prehistoric dinosaurs (*Jurassic Park*). You have never before seen T2 morphing into a tiled floor (*Terminator 2: Judgment Day*). You have never before seen a man gradually become invisible (*The Hollow Man*). So while in principle filmmakers can use computers to show the viewers ordinary, familiar reality, this almost never happens. Instead, they aim to show us something extra-ordinary: something we have never seen before.

What about situations when the special effects shots do not show a new kind of character, set or environment? In this case, the novelty involves showing familiar reality *in a new way* (rather than simply "getting closer to it"). Take, for instance, a special effects shot of a mountain climber who, high up in the mountains, loses his balance and plummets to the ground. Before computers, such a sequence would probably involve cutting between a close-up of the climber and a wide of mountain footage. Now the audience can follow the character as he flies down, positioned several inches from his face. In doing so it creates a new reality, a new visual fiction: imagining what it would be like to fall down together with the character, flying just a few inches from his face. The chances of somebody actually having this experience are pretty much the same as seeing a prehistoric dinosaur come to life. Both are visual fictions, achieved through special effects.

DV Realism

A special effects spectacle has not been the only result of digital revolution in cinema. Not surprisingly, the over-reliance of big budget filmmaking on lavish effects has led to a reality check. The filmmakers who belong to what I will call *DV realism* school on purpose avoid special effects and other post-production tricks. Instead, they use multiple, often handhold, inexpensive digital cameras to create films characterized by a documentary style. The examples would be such American films as Mike Figgis's *Timecode* and *Blair Witch Project* and the European films made by the Dogma 95 group (*Celebration*, *Mifune*). Rather than treating live action as a raw material to be later re-arranged in post-production, these filmmakers place premier importance on the authenticity of the actors' performances. On the one hand, DV equipment allows a filmmaker to be very close to the actors, to literally be inside the action as it unfolds. In addition to a more intimate filmic approach, a filmmaker can keep shooting for a whole duration of a 60 or 120 minute DV tape as opposed to the standard ten-minute

film roll. This increased quantity of (cheaper!) material gives the filmmaker and the actors more freedom to improvise around a theme, rather than being shackled to the tightly scripted short shots of traditional filmmaking. (In fact the length of *Time Code* exactly corresponds to the length of a standard DV tape.)

DV realism has a predecessor in an international filmmaking movement that begun in the late 1950s and unfolded throughout the 1960s. Called “direct cinema,” “candid” cinema, “uncontrolled” cinema, “observational” cinema, or *cinéma vérité* (“cinema truth”), it also involved filmmakers using lighter and more mobile (in comparison to what was available before) equipment. Like today’s DV realists, the 1960s “direct cinema” proponents avoided tight staging and scripting, preferring to let events unfold naturally. Both then and now, the filmmakers used new filmmaking technology to revolt against the existing cinema conventions that were perceived as being too artificial. Both then and now, the key word of this revolt was the same: “immediacy.”

Interestingly, during the same period in the ‘60s, Hollywood also underwent a special effects revolution: widescreen cinema. In order to compete with the new television medium, filmmakers created lavish widescreen spectacles such as the above-mentioned *Ben-Hur.* In fact, the relationship between television, Hollywood and “direct” cinema looks remarkably like what is happening today. Then, in order to compete with a low-res television screen, Hollywood turned to a wide screen format and lavish historical dramas. As a reaction, “direct” cinema filmmakers used new mobile and lightweight equipment to create more “immediacy.” Today, the increasing reliance on special effects in Hollywood can be perceived as a reaction to the new competition of the Internet. And this new cycle of special effects filmmaking has found its own reaction: *DV realism*.

Digital Special Effects and *DV Realism*, Historicized

The two ways in which filmmakers use digital technology today to arrive at two opposing aesthetics – special effects driven spectacle and documentary-style realism striving for "immediacy" – can be traced back to the origins of cinema. Film scholars often discuss history of cinema in terms of two complimentary creative impulses. Both originate at the turn of the twentieth century in France. The Lumière brothers established the idea of cinema as reportage. The camera covers events as they occur. The Lumières first film, *Workers Leaving the Lumière Factory*, is a single shot that records the movements of people outside of their photographic factory. Another of Lumières's early films, the famous *Arrival of a Train at a Station*, shows another simple event: the arrival of the train in the Paris train station.

The second idea of cinema equates it with special effects, designed to surprise and even shock the viewer. According to this idea, the goal of cinema is not to record the ordinary but to catch (or construct) the extraordinary. Georges Méliès was a magician in Paris who owned his own film theater. After seeing the Lumières film presentation in 1895, Méliès started to produce his own films. His hundreds of short films established the idea of cinema as special effects. In his films, devils burst out of cloud of smoke, pretty woman vanish, a space ships flies to the moon, a woman transforms into a skeleton (a predecessor to *Hollow Man*?). Méliès used stop motion, special sets, miniatures and other special effects to extend the aesthetics of the magician's performance into a longer narrative form.

The ways in which filmmakers today use digital technology fits quite well with the two basic ideas of what cinema is, which begun more than a century ago. The Lumières idea of film as a record of reality, as a witness to events as they unfold, survives with *DV realism*. It also animates currently popular "reality TV" shows (*Cops*, *Survivor*, *Big Brother*) where omnipresent cameras report on events as they unfold. Méliès's idea of cinema as a sequence of magician's tricks

arranged as a narrative receives a new realization in Hollywood's digital special effects spectacles, from *The Abyss* to *Star Wars: Episode 1*.

. Therefore it would be incorrect to think that the two aesthetics of computer-driven special effects and *DV realism* somehow are results of digital technology. Rather, they are the new realizations of two basic creative impulses that have accompanied cinema from the beginning.

Such an analysis makes for a neat and simple scheme – in fact, too simple to be true. Things are actually more complicated. More recently film scholars such as Thomas Elsaesser revised their take on the Lumières.[3] They realized that even their first films were far from simple documentaries. The Lumières planned and scripting the events, and staged actions both in space in time. For instance, one of the films shown at the Lumières's first public screening in 1895, *The Waterer Watered*, was a staged comedy: a boy stepping on a hose causes a gardener to squirt himself. And even such supposedly pure example of "reality filmmaking" as *Arrival of a Train at a Station* turned out to be "tainted" with advanced planning. Rather than being a direct recording of reality, *Arrival of the Train* was carefully put together, with the Lumières choosing and positioning passer-bys seen in the shot.

Arrival of the Train can be even thought as a quintessential special effects film. After all, it supposedly shocked the audiences so much they run out of the café where the screening was taking place. Indeed, they have never before seen a moving train presented with photographic fidelity – just as contemporary viewers have never before seen a man gradually being stripped of skin and then skeleton until he vanishes into the air (*The Hollow Man*), or thousands of robot soldiers engaged in battle (*Star Wars: Episode 1*).

If the Lumières were not first documentarists but rather the directors of *visual fictions*, what about their ancestors – the directors of *DV realism* films and "reality TV" shows? They do not simply record reality either. According to the

[3] This section relies on the analysis of The Lumières by Thomas Elsaesser in his *Cain, Abel or Cable* (Amsterdam and Ann Arbor: Amsterdam University Press / Michigan University Press, 1998).

statement found on the official Big Brother Web site, "'Big Brother is not scripted, but a result of the participants reactions to their environments and interactions with each other on a day-to-day basis." Yet even the fact that we are watching is not a continuous 24 hours a day recording but short episodes, each episode having a definite end (elimination of one of the house guests from the shows) testifies that the show is not just a window into life as it happens. Instead, it follows well-established conventions of film and television fictions: a narrative that unfolds within a specified period of time and results in a well-defined conclusion.

In the case of *DV realism* films, a number of them follow a distinct narrative style. Let us compare it with a traditional film narrative. A traditional film narrative usually takes place over months, years or even decades (for instance, *Sunshine*). We take it for granted that the filmmaker chooses to show us the key events selected from this period, thus compressing many months, or years, or even decades, into a film which runs just for ninety or one hundred and twenty minutes. In contrast, *DV realism* films often take place in close to real time (in the case of *Time Code*, exactly in real time). Consequently, filmmakers construct special narratives where lots of dramatic events happen in a short period. It is as though they are trying to compensate for the real time of a narrative.

So the time that we see is the real time, rather than artificially compressed time of traditional film narrative. However, the narrative that unfolds during this time period is highly artificial, both by the standards of traditional film and TV narrative, and our normal lives. Both in *Celebration* and in *Time Code*, for instance, we witness people betraying each other, falling in love, having sex, breaking up, revealing incest, making important deals, shooting at each other, and dying – all in the course of two hours.

The Art of Surveillance

The real time aspect of what can be called *reality filmmaking* (film and television narratives which take place in real time or close to it, including “reality TV”) has in itself an important historical precedent. Although television as a mass medium became established only in the middle of the twentieth century, television research begins already in the 1870s. During the first decades of this research, television was thought as the technology that would allow people to remotely see what is happening in a distant place – thus its name, television (literally, “distance seeing”). The television experiments were part of the whole set of other inventions which all took place in the nineteenth century around the idea of *telecommunication*: real time transmission of information over a distance. Telegraph was to transmit text over a distance, telephone was to transmit speech over a distance, and television was to transmit images over a distance. It was not until the 1920s when television was redefined as the *broadcasting* medium, that is, as a technology for transmitting specially prepared programs to a number of people at the same time. In other words, television became a means to *distribute content* (very much as the Internet today, as opposed to the Internet before mid 1990s) rather than the *telecommunication* technology.

The original idea of television has survived, however. It came to define one of the key uses of video technology in modern society: video surveillance. Today, for every TV monitor receiving content one can find a video camera which transmits surveillance images: from parking lots, banks, elevators, street corners, supermarkets, office buildings, etc. Along with having being realized in video surveillance, usually limited to companies, the original meaning of television as seeing over distance in real time received another realization in computer culture – the Web cams, accessible to everybody. Like normal video surveillance cameras that are tracking us everywhere, Web cams rarely show anything of interest. They simply show what is there: the waves on the beach, somebody starring in a computer terminal, an empty office or street. Web cams are the

opposites of special effects films: feeding us the banality of the ordinary rather than the excitement of the extra-ordinary.

Today's *reality media* – films that are taking place in real time (such as *Timecode*), "reality TV," and Web cams – return us to television origins in the nineteenth century. Yet while history repeats itself, it never does it in the same way. The new omnipresence and availability of cheap telecommunication technologies, from Web cams to online chat programs to cell phones has the promise for a new aesthetics which does not have any precursors: the aesthetics which will combine fiction and telecommunication. How can telecommunication and fictional narrative go together? Is it possible to make art out of video surveillance, out of real-time – rather than pre-scripted – signal?

Timecode can be seen as an experiment in this direction. In *Timecode* the screen is broken into four frames, each frame corresponding to a separate camera. All four cameras are tracking the events that are happening in different parts of the same location (a production studio on Sunset Boulevard in Hollywood), which is the typical video surveillance setup. It is to the credit of Mike Figgis that he was able to take such a setup and turn it into a new way to present a fictional narrative. Here, telecommunication becomes a narrative art. Television in its original sense of telecommunication – seeing over distance in real time - becomes the means to present human experience in a new way.

Of course, as I already noted, *Timecode* is not exactly a bare-bones telecommunication. It is not just a real-time recording of whatever happens to be in front of the cameras. The film is tightly scripted. We may think of it as an edited surveillance video: the parts where nothing happens have been taken out; the parts with actions in them have been preserved. But it is more accurate to think of *Timecode* as a conventional film that adopts visual and spatial strategies of video surveillance (multiple cameras tracking one location) while following traditional dramatic conventions of narrative construction. In other words, the film uses telecommunication-type interface to a traditional narrative. Which means that it does not yet deal with the deeper implications of computer-based

surveillance (we can also use other terms which have less negative connotations: “monitoring,” “recording.”)

Computer as a Universal Recording Machine[4]

What would it mean for cinema, and narrative arts in general, to address these implications? One of the most basic principles of narrative arts is what in computer culture called “compression.” A drama, a novel, a film, a narrative painting or a photograph compresses weeks, years, decades, and even centuries of human existence into a number of essential scenes (or, in the case of narrative images, even a single scene). Non-essential is stripped away; essential is recorded. Why? Narrative arts have been always limited by the capacities of the receiver (i.e., a human being) and of storage media. Throughout history, the first capacity remained more or less the same: today the time we will devote to the reception of a single narrative may range from 15 seconds (a TV commercial) to two hours (a feature film) to a number of short segments distributed over a large period of time (following a TV series or reading a novel). But the capacity of storage media recently changed dramatically. Instead of 10 minutes that can fit on a standard film roll or two hours that can fit on a DV tape, a digital server can hold practically unlimited amount of audio-visual recordings. The same applies for audio only, or for text.

This revolution in the scale of available storage has been accompanied by the new ideas about how such media recording may function. Working within the paradigms of Computer Augmented Reality, Ubiquitous Computing, and Software Agents at places such as MIT Media Lab and Xerox Park, computers scientists advanced the notion of a computer as an unobtrusive but omni-present

[4] My term “Universal Recording Machine” is meant to refer to original model of a digital computer described in 1936 by Allen Turing that in his honor came to be called a Universal Turing Machine.

device which automatically records and indexes all inter-personal communications and other user's activities. A typical early scenario envisioned in the early 1990s involved microphones and video cameras situated in the business office which record everything taking place, along with indexing software which makes possible a quick search through the years worth of recordings. More recently the paradigm has expanded to include capturing and indexing all kinds of experiences of many people. For instance, a DARPA-sponsored research project at Carnegie-Mellon University called Experience-on-Demand which begun in 1997 aims to "developed tools, techniques, and systems that allow users to capture complete records of personal experience and to share them in collaborative settings."[5] A 2000 report on the project summarizes the new ideas being pursued as follows:

> Capture and abstraction of personal experience in audio and video as a form of personal memory.
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> Collaboration through shared composite views and information spanning location and time.
>
> Synthesis of personal experience data across multiple sources.
>
> Video and audio abstraction at variable information densities.
>
> Information visualizations from temporal and spatial perspectives.
>
> Visual and audio information filtering, "understanding," and event alerting.[6]

(Given that a regular email program already automatically keeps a copy of all send and received emails, and allows to sort and search through these emails,

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[5] http://www.informedia.cs.cmu.edu/. For more information on the project, see Howard D. Wactlar et al., "Experience-on-Demand: Capuring, Intergrating, and Communicating Experiences Across People, Time, and Space" (http://www.informedia.cs.cmu.edu/eod/); also Howard D. Wactlar et al., "Informedia Video Information Summarization and Demonstration Testbed Project Description" (http://www.informedia.cs.cmu.edu/arda-vace/). Both of these research projects were conducted at Carnegie-Mellon University; dozens of simiar projects are going on at Universities and industry research labs around the world.

[6] http://www.informedia.cs.cmu.edu/eod/EODforWeb/eodquad00d.pdf.

and that a typical mailing list archive Web site similarly allow to search through years of dialogs between many people, we can see that in the course of text communication this paradigm has already been realized). The difficulty of segmenting and indexing audio and visual media is what delays realization of these ideas in practice. However, the recording in mass itself is already can be easily achieved: all is takes is an inexpensive Web cam and a large hard drive.

What is important in this paradigm –- and this applies for computer media in general – is that storage media became active. That is, the operations of searching, sorting, filtering, indexing and classifying which before were the strict domain of human intelligence, become automated. A human viewer no longer needs to go through hundreds of hours of video surveillance to locate the part where something happens – a software program can do this automatically, and much more quickly. Similarly, a human listener no longer needs to go through years of audio recordings to locate the important conversation with a particular person – software can do this quickly. It can also locate all other conversations with the same person, or other conversations where his name was mentioned, and so on.

For me, the new aesthetic possibilities offered by computer recording are immense and unprecedented – in contrast to the aesthetics of special effects and *DV realism*, which as I have suggested are not new in cinema history. What maybe truly unique about new media's capacity to represent reality is the new scale of reality maps it makes possible. Instead of compressing reality to what the author considers the essential moments, very large chunks on everyday life can be recorded, and then put under the control of software. I imagine for instance a "novel" which consists from complete email archives of thousand of characters, plus a special interface that the reader will use to interact with this information. Or, a narrative "film" in which a computer programs assembles shot by shot in real time, pulling from the huge archive of surveillance video, old digitized films, Web cam transmissions, and other media sources. (From this perspective, Godard's *History of Cinema* represents an important step towards such *database cinema*. Godard treats the whole history of cinema as his source

material, traversing this database back and forth, as though a virtual camera flying over a landscape made from old media.)

In conclusion, let me once again evoke *Timecode*. Its very name reveals its allegiance to the logic of old media of video: a linear recording of reality on a very limited scale. The film is over than the time code on videotape reaches two hours. Although it adopts some of the visual conventions of computer culture, it does not yet deal with the underlying logic of a computer code.

Contemporary creators of digital *visual fictions* need to find new ways to reflect the particular reality of our own time, beyond embracing digital special effects or digital “immediacy.” As I have suggested, computer’s new capacities for automatically indexing massive scale recordings does offer one new direction beyond what cinema has explored so far. Rather than seeing reality in new ways, the trick maybe simply to pour all of it on a hard drive – and then figure out what kind of interface the user needs to work with all the recorded media. In short, a filmmaker needs to become an interface designer. Only then *cinema* will truly become *new media*.