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The Virtuality of Time: Memory in Science Fiction Films

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To say that memory has a privileged place in contemporary cinema requires little demonstration; it is as ubiquitous as it is banal. In contemporary science fiction films, however, memory – both as a theme and as a structural element – has become the site of a full-scale interrogation and re-evaluation of traditional accounts of human subjectivity. The cult film *Blade Runner* (1982) initiated this trend by making digital memory a prominent feature of the Sci-Fi genre. Recent Sci-Fi films such as *Minority Report* (2002), *Final Cut* (2004), *The Butterfly Effect* (2004 and its sequel in 2006), the manga film *The Ghost in the Shell* (1995), and the British television series *Life on Mars* (2006–7), represent fantasies about the possibilities and impossibilities of digital technology to register and delete individual memories. Films on memory that skirt the borders of the science fiction genre include *The Bourne Trilogy* (2002, 2004, 2007), *Eternal Sunshine of the Spotless Mind* (2004), and the Chinese film *2046* (2004).

In this essay, I will investigate the role of digitalization in cinema as a technology that literalizes memory, by exploring the way in which science fiction films feature what one could call a *materiality of representation*. 'Representation', however, no longer seems the appropriate term in an era where digital aesthetics take contemporary films beyond the boundaries of classic structures of visual and narrative pleasure (Rodowick, 2001; Flaxman, 2000). I therefore prefer to use the term *mediation* (Hirsch, Kirshenblatt-Gimblett and Taylor, 2005), for the science fiction film *mediates* memory from the inner 'medium' of the subjective mind to the outer medium of digital images.¹ My argument is based on the premise that films mediate visual and narrative forms, thereby forging a new aesthetics, which can be described in terms of the sensation of spectacle and affect arousal.

The science fiction films that I will discuss mediate the individual memories of characters. Memory in these films is persistently individual, functioning as an index for subjectivity, but bereft of any historical or social moorings. Sci-Fi movies convey the futuristic fantasy that private memory can be captive of technology in such a way that it becomes transparent and visible, for example, by projecting it as images on a screen. Individual memory can digitally be retrieved, represented, remediated, transformed or deleted. The films suggest that private memory is a prison that keeps the subject chained to the past. Technology offers the character liberation from his or her memories, and thus from the past, opening up new vistas for the future.

The science fiction dream of exercising total control over memory fits perfectly with what Radstone calls the 'memory boom' of our time (2000, p. 5).² The persistent fantasy of uploading or downloading, registering or manipulating personal memories stands in stark contrast, however, to the ways in which the human mind actually works. Personal memory is highly subjective and frequently unreliable; in real life, remembering and forgetting are often beyond our control, or are subject to a control that is all too human (as in selective remembering or forgetting). As contemporary culture puts emphasis on history, heritage and remembrance (Huyssen, 1995), science fiction films focus on retaining every bit of personal memory through digital technology in a desire for 'total recall' – as the title of one of the Sci-Fi films has it. It would seem that remembering is 'the radiant hero in the limelight' and forgetting 'the shady villain ... lurking behind the scenes' (Brockmeier, 2002, p. 15). Such films thus offer the fantasy of mastery over that which so often escapes our grasp: our private memories. In this way, the Sci-Fi fantasy seems to respond to cultural anxieties around digital technologies as pervading contemporary culture and transforming our relation to personal and archival memory.

The technological digitalization of memory in contemporary science fiction films results in two different trajectories: 1) the material visualization of memories; and 2) a fragmented narrative in which past, present and future become confused. In either case, individual memory of the characters is highly infused with affect. If we accept the assumption that what one remembers is always important (the rest one simply forgets), then one could say that memory is overdetermined by complex desires and emotions. I am using affect in its Deleuzian sense as a moment of intensive quality (Deleuze, 1986), or as a bloc of sensations waiting to be activated by a spectator (Deleuze and Guattari, 1994). Affect is an experience for the spectator that comes prior to meaning. It is, according to

Colebrook, 'a sensible or sensibility not organised into meaning' (2002, p. 34). Drawing on Deleuze's notion of cinematic time, I will argue that these Sci-Fi films are not only concerned with the characters' affects, but also have an affective impact on the spectator. In this manner, I will suggest a shift from mediated to affective memories.

Memory and morality

Digital technology has provoked some significant transformations in science fiction cinema. Firstly, the image of the cyborg changes, from the hardware cyborg of the 1980s to the software and wetware cyborgs of the 1990s.³ The *hardware* cyborg combines a human body with technology in the form of implantations or prostheses: for example, the metallic figures of the Terminator (Arnold Schwarzenegger) and RoboCop (Peter Weller). In contrast, the *software* cyborg is a human who can hook up to a computer. For example, Johnny Mnemonic (Keanu Reeves) in the eponymous film can upload data into his brain by plugging in, while the mercurial T-1000 (Robert Patrick) in *Terminator 2* (1991) can take on any form whatsoever because he consists of a computer program, and thus his substance is malleable. Finally, the *wetware* cyborg is a mixture of digital technology and a 'wet' humanoid inside, like Cash (Wynona Ryder) in *Alien Resurrection* (1997).⁴

Secondly, the technologies of memory shift to other grounds. Early cyborg movies, such as *Blade Runner* (Silverman, 1991), *RoboCop*, *Total Recall* and the *Terminator* films (Penley, 1991), tell stories about prosthetic memory and the concomitant crisis of identity. Prosthetic memory is typical of the cyborg movies of the 1980s and 1990s, where implantations complicate the relation between memory, experience and identity (Landsberg, 2004). The films focus on anxieties aroused by the paradoxical experience of remembering events that the character has not lived through (Radstone, 2000, p. 8). Landsberg (2004) has shown that the identity crisis of the cyborg is often visualized by surrounding the characters with reflective surfaces such as a video monitor or computer screen. The mirroring surface allows for a moment of uncanny (because implanted) self-recognition and even self-reflection, in a scene that is reminiscent of the Lacanian mirror phase (Landsberg, 1995).

In science fiction films of the twenty-first century, the story centres more on the relation between the superior memory of the computer and the failing memory of the human being. Science fiction writer William Gibson has claimed that for him, computers are no more than a metaphor for human memory (Cavallaro, 2000). Digital media have

created new ways of saving, retrieving and archiving personal and collective memories (van Dijck, 2007), grafting onto the original memory system developed by Vannevar Bush, the Memex machine, and its later application, Xanadu, by Ted Nelson, technologies that can be characterized by their perfect storage capacity (Locke, 2000). In contemporary science fiction, the fantasy has undoubtedly become one of control. Therefore, with digital technology the concern is no longer with the implantation of false memories, since the characters remember lived experiences. Rather, the *utopian* fantasy now centres on total recall that is enabled by the continuous enhancement of computer memory, while the *dystopian* fantasy focuses on digitalized memories that can be manipulated.

One of the first films in this genre is *Johnny Mnemonic* (1995), based on a few short stories by Gibson. The hero uploads certified data into his brain in order to bring them to people on the other side of the world. To make space for the data, Johnny (Keanu Reeves) has to temporarily download (and thus be deprived of) his personal memories of his deceased mother (as in *Blade Runner*, the mother functions as the Oedipal sign of human identity and memory [see Silverman, 1991]). If he is unable to download the computer data within 24 hours, he will die of 'information overload'. Only when he can discharge the data is he able to reload the personal memories. Of course, Johnny is saved just in time to retrieve his early memories of his mother.

The contemporary fascination with memory in Western society is accompanied by developments in media technology that have a simultaneously fossilizing and virtualizing effect (Sobchack, 1996; Radstone, 2000). The fossilizing effect of the media lies in the fact that both individual and cultural memory are more and more mediated by technology. This means that memories are not only collected and saved by media, but are also reproduced and represented by them (Huysen, 2000; Hirsch and Smith, 2002). While this particular power of media has been deplored as atrophying or debasing memory, Radstone and Hodgkin call attention to the fast-growing debate on the ways in which particular media may actually sustain and protect memory (2006, p. 12). Obviously, science fiction films promote the fantasy that media technology is not only helpful but also indispensable in the struggle for control over the human mind.

The virtualizing effect lies in what Baudrillard (1983) has termed a society of simulacra and Žižek (2002) has called the derealization effect of the media: anything that is filmed with a camera becomes more show and less reality. Something that you can watch again at

any time by endless replay eventually becomes unreal, as if it were set apart from reality. This derealization effect also occurs with respect to images from one's own life, in repeatedly poring over old photos, Photoshopping them, or in replaying or remixing home movies. Science fiction films show images from personal memory as if they were indeed home movies that can be endlessly remixed and re-viewed. Media technologies thus play an important role in the derealization of personal memory.

While contemporary science fiction films may not be concerned with the kind of effects of media technology that worry cultural studies scholars, they nonetheless do raise ethical questions about the use of technology. How are saved memories to be used? Do they tie people to their past, imprisoning them, as it were? How are we to deal with traumatic memories? Is the manipulation of memories legitimate? *Strange Days* (1995) is one of the first films to raise such issues. In this story, life experiences can be recorded on a so-called 'squid'. Anyone can plug into such a squid and undergo the experiences as 'real'. Characters can thus relive their own experiences and so keep their personal memory alive. Alternatively, they can plug into the experiences of someone else. Perhaps unsurprisingly, squids with experiences of violence, sex and drugs form a lively black market. The main character, Lenny Nero (Ralph Fiennes), is addicted to squids, reliving a happy relationship with a girlfriend who left him years ago. His friends reproach him for being a hostage to his past and refusing to live in the here and now. *Strange Days* suggests that squids have a drugging effect and keep people imprisoned in a fossilized past. By questioning the negative effects of the mediating role of technology in memory, the film addresses the loss of real and authentic experiences.

Minority Report raises a similar moral issue: unable to process the trauma of loss, a father relives repeatedly the memories of his dead little son (projected on a screen), thus keeping himself tied to a lost past. Since he is also addicted to certain drugs, there is a suggestion that addiction to mediated memories or to drugs is not really that different.⁵ Both *Strange Days* and *Minority Report* show examples of male characters who are unable to come to terms with the loss of a girlfriend or a son, and hence fall back on melancholy memories (Freud, 2001). In *Final Cut*, the ethical question revolves around which registered memories should be kept after somebody's death. Should everything be saved, including bad experiences, or should the negative parts be cut, so that the bereaved can be comforted or cured by a smooth and seamless collection of pleasurable images?

The consequences of manipulating memory also play a central role in *Eternal Sunshine of the Spotless Mind*, but here it concerns the living and not the dead. The film poses the moral question of whether people should have bad memories removed from their brain, with the implication that they would no longer be able to learn from their mistakes and experiences. The film suggests that, if their memory is deleted, people will repeat the same mistakes, like falling in love all over again with the wrong person. In general, science fiction films tend to warn about the inappropriate or potentially catastrophic uses of science and technology – a moral ending typical of Hollywood. Some of the films I have mentioned express an anxiety about the fossilizing and even addictive effects of technologies of memory, imprisoning people in a past to which they remain forever bound by the endless replay of digital images. In contrast, others focus rather on the derealizing effect of these technologies, where the remixing or deleting of negative aspects of someone's life results in a cleaned-up version of the mind, untainted by unwanted memories.

The frenzy of the spectacle

Science fiction cinema is, of course, a genre known for its spectacular special effects. This is also the case with the visualization of memories. For a long time now, cinema has used flashbacks to visualize memories; this cinematic term has even entered our daily language. Postmodern films on memory upset conventional linear narrative structures by making abundant use of flashbacks, as in *21 Grams* (2003), *Memento* (2000) or *Kill Bill* (2003 and 2004).⁶ In the science fiction movies *Minority Report* and *Final Cut*, however, memories are not presented as flashbacks, but as digital films that the character can put into a computer to project onto a screen or wall. In both cases, the diskettes are made of transparent glass, turning the material medium of the memories into a transparent and reflective surface. When John Anderton (Tom Cruise), in *Minority Report*, calls forth his personal memories and projects them onto the wall, there is both a spectacular display of futurist technology and a literal mediation of his memories. The memories are registered in an audiovisual medium, as if the personal experiences had been recorded with a camera. Certain visual elements indicate that it is a memory of the past: colours are more saturated; the edges of the frame are frayed, and the image radiates light from the middle. These almost mystical rays of light suggest that we are looking at the past, but they also enhance the derealization effect. The images have a strongly emotional value for

John, because they are his personal memories of his deceased little son. His endless replaying of the scene also turns the cinematic scene into a psychoanalytic scene of repetitive melancholy.

This kind of literal visualization of memories can also be found in the film *The Butterfly Effect* or the television series *Life on Mars*. In both cases, the memories are saturated with colour and are more vivid than the drudgery of daily life. In *The Butterfly Effect*, moreover, the memories of the past are introduced by a waving, digitally manipulated image moving up and down, and finally disappearing into a vortex that sucks the character into the past (it is a time-travel story).

Elsewhere, I have argued that in contemporary visual culture, and particularly in science fiction films, different kinds of space collapse (Smelik, 2008). Real space, virtual space, inner and outer space overflow into one another, confusing the storyline and, more often than not, confusing the characters. As memories belong to the inner space of the mind, they are by nature virtual. It is important to realize that the films externalize and materialize memories by mediating them through technology. They show, indeed, a fantasy of registering and projecting the internal, personal memory of a character outwards, thus collapsing inside and outside, internal and external space.

In addition, the films introduce a fundamental time loop in which past and present collapse. In *Minority Report*, Anderton can communicate with the images projected on the wall: he talks to his dead son who in turn reacts to him. In *The Butterfly Effect*, the traumatized main character, Evan Treborn (Ashton Kutcher), discovers that he has the special ability to time travel, which allows him to remake his unhappy past (an endeavour that does not succeed because something goes dramatically wrong each time). We thus see how mediated memories introduce uncertain parameters and produce a fundamental ambiguity about space and time.

Visual technologies help to sustain the fantasy of reliving the past – of making the past present. In Radstone's words, the memory boom of the late twentieth century is informed 'by the experiences of immediacy, instantaneity and simultaneity' (2000, p. 7). Science fiction films insist on the presentness of past experiences: memories are always there for us to view at any given moment. The effects of electronic technologies have been noted before: Sobchack (1996) pointed to the collapse of the distance between event and representation, while Huyssen (1995) indicated the collapse of the boundaries between past and present. Contemporary science fiction movies testify to those developments while pushing them further in the direction of fusion. Whereas in video

culture, images can be endlessly replayed, in DVD and Internet culture, it is possible to remix and redesign them as well. Representation gives way to mediation. These films thus proceed in the direction of the manipulation of memories. Yet they also struggle with technological restraints.

A closer look at *Final Cut* will illustrate this. A selected group of people receives at birth a brain implant that registers all their experiences and thus functions as a repertoire for their memory. When one such person dies, a 'cutter' (the cinematic term for the person who does the editing of a film) can edit all the memories into one short film, the so-called 'memorial film'. Alan Hakman (Robin Williams), the best cutter in town, presents the memories of the deceased as a linear story. The short film, of about one minute in duration, simulates the narrative line of a documentary or nature film by imposing on it the traditional linear structure of birth, childhood, adolescence, marriage, career, decay and death.

Since all the seconds and minutes of somebody's life are registered, the computer program has first to process vast amounts of information. This is represented as uncontrollable information overload. In a speedy montage, we see images flash by the year, month, day and hour as shown at the bottom of the shots. This information overload is visualized as a split screen. At first it is a simple double screen, but it quickly explodes into twelve, twenty-four, and finally to sixty-four images on the screen. The unrepresentability of a lifetime collapses the time onto the space of the screen. The registration and documentation of memories is literally unmanageable, unless it is severely edited and reduced to the definitive one-minute version – the 'final cut' of the title of the film. This exercise also reduces the emotions of a full life into an easily digestible piece, with a clear beginning, middle and end.

In addition to the information overload, there is yet another technological problem in *Final Cut*. The implantation device in the brain registers the experiences as if a camera were filming everything through the eyes of that person. The spectator of the memorial film thus sees the images of the deceased's life from a sustained subjective point of view; both the characters in the film and the spectators in the movie theatre literally look through the eyes of the character. They can thus never see the character himself. Such images pose a problem for the memorial film, made for the benefit of the surviving relatives: they never get to see the deceased person on screen, but are instead watching themselves through the eyes of their beloved. This problem is sometimes solved by having the character look into the mirror: for example, in a montage shot of a man in pyjamas brushing his teeth in front of a

mirror, in ten-year intervals, thereby showing the relentless process of ageing. The point-of-view camera perspective is thus necessarily narrow and exclusive, as well as downright incomplete.

The fantasy of total control over memory by a technology that can register, retrieve and project recollections inevitably leads to questions about the truth-value of images. The images are supposed to be the registration of somebody's personal and highly subjective memories. In both *Minority Report* and *Final Cut*, the visual recollections function as the source of truth about somebody's life. Where personal memories 'in real life' are characterized by subjectivity, and especially by what is forgotten, repressed, or distorted, the films show an allegedly 'factual' version of the past, because it is documented by an objective camera. Science fiction films thus create a binary opposition between the subjective, failing memory of the individual and the objective and reliable memory of technology. Whereas the personal memory is immaterial, technology transforms it into a medium that materializes memories. The memories become tangible and, in the logic of science fiction, real and true, doing away with any possible ambiguity or complexity. Paradoxically, the genre of science fiction reveals a naïve and old-fashioned idea of media technology as objective, factual and truthful. It reinforces an idea of the immediacy and transparency of media that became obsolete with the advent of digital technology. No contemporary user of the Internet, of digital cameras, or player of computer games still adheres to that outdated view.

Yet there are some exceptions to this science fiction perspective. The BBC television series *Life on Mars*, for example, dares to retain the ambiguity until the very end of the series. The main character, Sam Tyler (John Simm), continually wonders whether he is mad, in a coma, suffers from amnesia, or has travelled in time and landed in the 1970s. Until the very end of the sixteenth and final episode, the series keeps all options open and leaves the spectator in uncertainty.⁷

In this context, it is interesting to note that many science fiction films feature an element of ambiguity: the spectator does not really know whether the main character is paranoid or schizophrenic, or whether to give credence to plot elements involving time travel or manipulated memories.⁸ These films often play on this ambiguity by having the character visit a psychiatrist. At the end of the second series of *Life on Mars*, it is suggested that Sam Tyler's psychological problems were due to his amnesia (which was caused by a car accident while on police duty). His recurring pain, fear and insecurity stretching over the entire television series are quite moving, and when he finally overcomes his problems

and chooses 'reality', it registers as redemption for both him and the viewer.

Most Hollywood films, however, are keen to substantiate the science fiction part of the story. In the last minute, the image of the hero has to be saved. Since it is impossible to present the hero as mad, his sanity is proved by showing that he was a victim of an unreliable State or of evil people abusing technology. Such closure is, however, not only less moving; it is also less convincing. The spectators cannot be completely persuaded by the happy conclusion because they may see it as contrived. For instance, in *The Butterfly Effect*, the viewer has watched so many versions of the past where something repeatedly goes horribly wrong that the rather sudden happy ending seems plainly incredible.

In contemporary visual culture, to see something implies its existence. This is, in the words of Linda Williams (1989), a 'frenzy of the visible', a Foucauldian will to knowledge: to see is to believe and also to know. Radstone and Hodgkin argue that the process of remembrance, (the will to know the past) is driven by the fantasy of omnipotence (2006, p. 133). Indeed, many science fiction films portray a fantasy of omnipotence. They make something visible that in real life remains completely outside the perception of others or beyond a reality check: memory. By visualizing virtual and ephemeral memories, the films make them real and concrete. The first trajectory of the digital technologies of memory that I trace in this article is thus the ruthlessly material visualization of memories, which I call the 'frenzy of the spectacle'.

Science fiction cinema petrifies memory through visual representation, thus immobilizing memories and stripping them of their essentially elusive quality. Where digital culture as a whole is characterized by virtuality (Rodowick, 2001), science fiction films, on the contrary, explore digital technology as a means of rendering the most virtual and fleeting aspects of the human mind as material, solid and unambiguous. The films fit in with a material culture that allows not so much for an unmediated but rather a mediated relation to the past, memory and lived experience. They present memory as something that can be known, retrieved and changed. With a little help from technology, nothing of the mind gets lost.

Yet, something disappears in the frenzy of the spectacle. What gets lost in the visual materialization is the acknowledgement of the fundamental instability of memory; that is to say, the notion that memory is by nature fleeting, ephemeral, virtual. In the second part of this essay,

I turn to the independent films *2046* and *Eternal Sunshine of the Spotless Mind*, which, like *Life on Mars*, are more radical in exploring the transitory or capricious nature of memory.

Confusing narratives

The second trajectory that science fiction films pursue in the digitalization of memory is a fragmented narrative line in which past, present and future become thoroughly confused. The films in fact undo the linearity of the narrative structure. This narrative fragmentation allows for the affect of the past to be processed. As was observed above, the ambiguous affect of memories is considered problematic in Hollywood science fiction movies unless they are smoothed by narrative closure. Independent films such as *2046* and *Eternal Sunshine* allow for the ambiguity of affect by foregrounding the ambiguity of memory, which results in a non-linear, fragmented narrative structure.

To understand affect, it is helpful to turn to Deleuze's ideas on cinema (1986; 1989). Deleuze calls for a productive analysis of film in terms of affect rather than in terms of representation. This implies an attempt to get beyond the critique of representation as it has been dominant in film studies until recently. There have been several attempts to understand the experiential relation to cinema, for example, the notion of 'haptic visuality' introduced by Laura Marks (2000; 2002) or of affective experience by Simon O'Sullivan (2006).⁹ For Deleuze, cinema, like any art, is never just representation but instigates always a process of affect and transformation – which is another reason for preferring the term *mediation* to representation. Deleuze prompts us to view cinema (or art) as a creative production of both affect and thought (Bennett, 2006, p. 32). As Colebrook puts it: 'Art may well have meanings or messages but what makes it *art* is not its content but its *affect*' (2002, p. 24; emphasis in original).

In the films that I am discussing, the affects are directly related to memories. In her discussion of the writings of the cognitive psychologist Silvan Tomkins on affect, Armstrong writes that memory and affect are contingent on one another because of their relation to time: as memory looks forwards and backwards, 'the original affect becomes remembered affect and remembered affect can evoke new affect' (2000, p. 135). Bennett (2006) uses the term 'affective memories' (p. 28) as an aesthetic category in art that produces an experience that is no longer framed by representation (p. 27).

I argue that the affective memories of the main characters in both *2046* and *Eternal Sunshine* are enacted in a fragmented narrative, thus intensifying an affective experience for the spectator. It is not always easy to keep the narrative layers straight in those two films, because present, past and future are continually confounded. As the films are 'the kind of text which is disengaged from the linear sequence of memory' (Braidotti, 2002, p. 126), they could be seen as part of a minoritarian cinema that unhinges the role of memory in subjectivity. The title *2046* refers both to the future, the year 2046, and to a specific location, a hotel room with that number. The characters move in and out of the hotel room, which functions as a time portal. Without a conventional narrative structure, time and space collapse, bringing the vicissitudes of desires, memories and affects to the fore.

Eternal Sunshine tells the story of a failed love relationship, after which the former lovers proceed to delete one another from their memory. The film focuses on the moment when the male character seeks to erase his memories. In the process of deleting them, Joel Barisch (Jim Carrey) finds himself transported back to the time of his memories. Realizing that he is quite attached to those memories, he struggles to stop the process of erasure, but to no avail. The middle part of the film becomes a complicated mental journey in which past, present and future get thoroughly confused, confusing not only the characters but also the spectators. As in *2046*, the dense narrative structure gets quite intricate because of the reorganization of linear time. This is digitally visualized as follows: while Joel and his girlfriend, Clementine (Kate Winslet), run through the sets of their own past, the setting around them is literally deleted; it disappears. As in the other science fiction films, we see a literal materialization of inner space. However, unlike those Sci-Fi movies, *Eternal Sunshine* does not foreground narrative pleasure or visual spectacle, but rather the disconcerting affect of a past that is being undone while one is still in it.

In both films, the science fiction element is represented somewhat awkwardly. In *2046*, surrealist colours suggest the future, and in *Eternal Sunshine* Joel is fitted with some kind of strainer on his head to erase the memories of Clementine from his mind. Obviously, these films are not concerned with producing a convincing futuristic image. Rather, as mentioned above, the films are concerned with the portrayal of emotions of loss and longing. Affect is what matters in these films – an affective register that is directly related to remembering. In both films, memory is a source of suffering; the loss of a loved one is still poignantly experienced in the present. In *2046*, the main character,

Chow Mo Wan (Tony Leung), revolves endlessly in a perplexing carousel of present, past and future, thus never escaping from the emotions that he passively and passionately endures. In *Eternal Sunshine*, the characters hope to be delivered from their emotional pain by deleting the agonizing memories, but that also blocks any possibility of learning from failures and of preventing them in the future. Upon reflection, Joel prefers not to lose his memories of Clementine because he recognizes that the memories are part of what he has become. But he is too late, and he can no longer stop the erasure of his memories of the doomed love affair.

In the cultural and social sciences, memory is generally considered to be the core of identity. Both *2046* and *Eternal Sunshine* suggest that memory is what makes the subject: lived experience and its preservation in memory are the source of one's personality and inform one's subjectivity. Some critics, however, think that memory can be separated from who we are. As Cardullo puts it in his analysis of *Eternal Sunshine*, the film suggests that 'our memories, even if (or precisely because) they are malleable or erasable, may somehow exist apart from our deeper impulses, urges, instincts, or desires – which cannot be purged' (2007, n.p.). Such an essentialist view divides our memories from our subjectivity and forecloses on any notion of the unconscious as a reservoir of affects, impulses and desires that include memories. Radstone and Hodgkin are afraid that contemporary conceptions of memory tend to neglect the psychoanalytic notion of the unconscious, where so many of our memories are stored. They believe that our understanding of memory should still be informed by the psychoanalytic insight that: 'the subject is radically other to itself, driven by fantasies and desires of which it has only the most limited awareness' (2006, p. 19). Thus, we should not turn our 'backs on unruliness, on desire, on an otherness within' (p. 95), with regard to our understanding of memory.

In my view, the layered complexity of memory in the fragmented narratives of both *Eternal Sunshine* and *2046* presents a heterogeneous enactment of memory, which is highly affective and intensive. Remembering and forgetting are two sides of the same coin. The films show that the science fiction fantasy of total control over memory is unrealistic and ought to give way to an insight into the ungraspable virtuality of memory. In the words of Rosi Braidotti this view takes into account that memory is stored 'throughout the physical and experiential density of the embodied self and not only in the "black box" of the psyche' (2006, p. 165). In focusing on the affective register, both films show the intricacies of memory and the impossibility of disentangling reminiscence

from desire and affect, even though technology can erase memories (in *Eternal Sunshine*) or project them into the future (in *2046*).

The virtual time of memory

We have seen that *Minority Report*, *Final Cut*, *The Butterfly Effect*, *Life on Mars*, *Eternal Sunshine* and *2046* all touch on the affective register of memory. However, whereas *Eternal Sunshine*, *Life on Mars*, and *2046* produce an elemental confusion within the story, *Minority Report* and *Final Cut* exorcize the uncontrollable emotions by conveying them in a unidirectional storyline. In all cases, time, memory and affect are inextricably linked. When narrative coherence is restored, the impact of affect is contained, as in *Minority Report* and *Final Cut*, but when the temporal organization implodes in the confusion between present, past and future, affect is intensified, as in *Eternal Sunshine* and *2046*.

I argued above that contemporary forms of cinematic and digital aesthetics have taken films beyond the confines of classic structures of representation and narrative, whether it is the frenzy of the spectacle in Hollywood movies, or the non-linear and complex narratives in independent films. *Eternal Sunshine* and *2046* are examples of the second trajectory where the notion of time does not imply a simple linear development from one point to the next. Instead, time is represented as a virtual process with the potential of being actualized.

Because cinema is a time-based medium, Deleuze devotes one of his two volumes on cinema to time.¹⁰ Inspired by the philosophy of Henri Bergson, Deleuze argues that the film image is connected to memory, for example in the flashback. Here we may bring together the notions of memory, time and affect. Colebrook explains that the experience of time is split in two: 'There is the past or impersonal memory which is virtual and the actual lines of lived time. The world or life we live is an actualisation of this pure or impersonal memory, but memory or time in its pure and whole state can also interrupt our world' (2002, p. 33). The disruptive power of memory is quite clear in both *2046* and *Eternal Sunshine*, where daily life is upset by an event from the past. In *2046*, Chow Mo Wan relives an unhappy love affair with every other woman that he meets and whom he tries (but fails) to love, because each new relation reawakens the memories of the lost woman. As Colebrook points out, the memory can disrupt the actual present, because it is real and exists virtually alongside the present (p. 33). The fact that in the film the women all look alike enhances the confusion of actual and virtual time.

Such an interference of actual and virtual time, of past and present, also takes place in *Eternal Sunshine* when, during the erasing procedure, part of Joel's memories of his former girlfriend reactivate the recollection of his early childhood and Oedipal love for his mother. Memories get mixed up to the extent that they produce an altogether new present and even future. This makes it quite a bewildering film to watch despite the attempt at narrative closure (near the end of the film Joel and Clementine meet and have to decide whether to start their relationship all over again – without their memories to guide them). Like in *2046*, the confusion of time is not resolved. *Eternal Sunshine* and *2046* both foreground the complexity of time, collapsing the actual and the virtual experience of time. While time turns inside out and outside in, the same happens to space. As I have argued above, different kinds of space are entangled in many science fiction films (but it is also the case for such diverse genres as medical documentaries, video clips and games): real and virtual space can no longer be distinguished, nor can inner and outer space.

Eternal Sunshine and *2046* push the representation of time to extremes. I want to argue that these two films show that the disruptive power of memory is related to its affective qualities. The complicated scenes where the present enters the past activate an affective force.

As memory has a temporal element that is irreducible, it seems to lead naturally to the disruption of time. The films mediate the disruptive power of time and memory by cutting up the narrative. In turn, the fragmented narrative produces affect in the spectator, for example, confusion, sadness or compassion.

The mediation of memory in the fragmentation of the narrative, but also in the scenes of spectacular visualization discussed earlier, creates moments of pure affect for the spectator. It is important to realize that in a Deleuzian framework, affect is a material experience of sensation that is corporeal in nature. We can understand such viewing experiences as moments of intensive quality (Deleuze, 1986). As such, affect helps us to move beyond the subjective confines of the ego or the psyche. The affective power of art lies in the fact that it is an event, generating a new experience in the spectator (O'Sullivan, 2006). The role of the spectator is crucial here, because as Deleuze and Guattari (1994) argue, affect needs to be activated by the viewer. Just as memory is an act of transforming the past, so is affect an act of active becoming. We can thus understand the science fiction films on memory as displaying the very image of time, that is, as its process of becoming. Here we may encounter the transformative power of cinematic affect, as it challenges spectatorial subjectivities.¹¹ Cinematic affect may help us to rethink the spectator position in terms of understanding and affinity. Such a

position is always located or situated rather than detached or voyeuristic. The spectator engages with the film affectively through empathy or identification, which in turn demands a reflexive recognition of memory as a precarious formation of subjectivity.

Conclusion

In this essay, I have discussed the theme of mediated memory in the genre of science fiction cinema. The digital technology of memory has, on the one hand, resulted in a frenzy of the spectacle, as in *Minority Report*, *The Butterfly Effect* and *Final Cut* and, on the other hand, in fragmentary narratives in which past, present and future are intertwined, as in *Eternal Sunshine* and *2046*. In all these cases, time and space, inside and outside, the actual and the virtual, collapse. Memory affects the experience of time, which in turn opens up to spectatorial affect. In my view, we need to take into account the ways in which memories are bound up with affect if we are to understand the ways in which Sci-Fi films mediate and remediate memory.

To conclude, let me briefly draw out the implications of an analytic focus on affect. Firstly, as a moment of intensive quality, affect provokes a non-linear, dynamic vision of time. As we have seen, affect creates a time continuum that envelops past, present and future, undoing the authority of the past that so often ties subjects obsessively to their recollections. Secondly, the notion of affect as an impersonal intensity enables the establishment of a relation to the outside world, that is, beyond the merely subjective or personal. This leads, on the one hand, to an understanding of the dissolving boundaries between the human and the technological. For Deleuze, cinematic technology frees the human body, for example, in the camera and montage that establishes an impersonal observer: 'this is not a human eye – even an improved one' (Deleuze, 1986, p. 81). One could say that the affective experience of the image of time enhances this impersonal, perhaps post-human, view. On the other hand, the affective level requires the spectator to establish an experiential relation to the film. The regime of affect creates a different mode of creative spectatorship, pointing to its transformative power. Affect is therefore closely related to the Deleuzian notion of affirmation as a positive and joyful experience of cinema, even though the actual story may be sad or painful.

A recognition or reactivation of affect may lead to the transformative, and perhaps even affirmative, moment in cinema. This is the moment of resistance, of change, of escape from the memory that keeps the character imprisoned. For the spectator, it is the moment when he or she can

establish a different, that is, an affective relation to time. Some films may indeed offer the viewer the rare experience of an affective memory, embracing present, past and future as inextricably connected.¹²

Notes

1. See for an insightful discussion on mediation, the conversation of Hirsch with Kirstenblatt-Gimblett and Taylor (2005). Bolter and Grusin (1999) use the term 're-mediation' but that presupposes a shift from one medium to another, which is not the case here, and also a rather dichotomous view of original and copy.
2. This fantasy is in itself not new or unique to science fiction; as Douwe Draaisma argues in his book *Metaphors of Memory* (2000), human memory has been described throughout the ages in terms of an artificial memory and as influenced by technological developments.
3. See for the introduction of the term 'cyborg' into cultural studies, Haraway (1985). See for cyborg cinema, Kuhn (1990; 1999), Bukatman (1993), Dery (1996), and for cyborg theory, Gray (1995; 2002).
4. The change in the image of the cyborg also requires a different kind of actor: bodybuilders such as Schwarzenegger or Van Damme make room for the more androgynous Keanu Reeves or Jude Law, or for women such as Wynona Ryder and Angelina Jolie (as Lara Croft).
5. The term 'mediated memories' was introduced by Radstone and Hodgkin in *Memory Cultures* (2006).
6. Contemporary Hollywood films thus both continue and revise the avant-garde preoccupation with memory and narrative of high modernist cinema of the 1960s, as exemplified by Alain Resnais' *Hiroshima, mon amour* (1959) or *L'année dernière à Marienbad* (1961).
7. The BBC broadcast a sequel to *Life on Mars* in 2008: *Ashes to Ashes*, featuring a female detective from the twenty-first century, Alex Drake (Keeley Hawes), who wakes up in 1981 after being shot in 2008. As she is fully familiar with the case of Sam Tyler, Drake is convinced that she is hallucinating rather than experiencing memories of the 1980s.
8. It deserves a separate article to discuss the boom in traumatized, schizophrenic or paranoid men in recent films, from *Fight Club* (1999), *Memento* (2000), *Vanilla Sky* (2001) and *Donnie Darko* (2001) to the science fiction films I discuss here. It is interesting to note that this form of psychological suffering concerns only male characters.
9. See also Kennedy (2000) and Hemmings (2005).
10. For a clear introduction to Deleuze's rather difficult cinema books, see Bogue (2003).
11. I elaborate on the ethics of spectatorship and the affective powers of witnessing in an essay on 9/11: 'A Theme Park of Disaster: The Ethics of Post-9/11 Spectatorship', forthcoming in *Arcadia*, 2009.
12. I would like to thank Liedeke Plate and Robert Doran for their comments and suggestions on this essay.