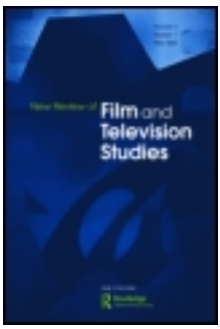

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The neurothriller

Patricia Pisters[a]

[a] Media Studies, University of Amsterdam, Amsterdam, the Netherlands

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The neurothriller

Patricia Pisters*

Media Studies, University of Amsterdam, Amsterdam, the Netherlands

This paper argues that if one compares the classic Hitchcockian suspense thriller to the ways in which suspense works in contemporary cinema, there has been a remarkable shift. From a narrative technique that leads to feelings of suspense, suspense is now primarily an affective technique that only gradually settles on a story. Principles from affective neuroscience are drawn in to enable an assessment of this primacy of the affective in what can be called the neurothriller.[1]

Keywords: suspense; surveillance apparatus; haptic voyeurism; affective neuroscience; *Red Road*

Nobody knew as well as Hitchcock that filmmakers have the power to manipulate their audience emotionally. During the shooting of *North by Northwest* (1959) the director even famously confessed to his scriptwriter Ernest Lehman:

> Ernie, do you realize what we're doing in this picture? The audience is like a giant organ that you and I are playing. At one moment we play *this* note, and get *this* reaction, and then we play *that* chord and they react *that* way. And someday we won't even have to make a movie – there'll be electrodes implanted in their brains, as we'll just press different buttons and they'll go 'oooh' and 'aaah' and we'll frighten them, and make them laugh. Won't that be wonderful? (Hitchcock in Spoto 1984, 440)

Of course, Hitchcock did not really think that he could reach all these effects without the 'detour' of a narrative. Most of his techniques as master of the cinematographic thriller concern narration: giving the audience more knowledge than its characters, delaying story time by crosscutting the plot, emphasizing details in the *mise-en-scène*, and adding mood music to narrative situations are the classic means to create suspense in the image and on the spectator's brain-screen. To Truffaut, Hitchcock explains the difference between surprise and suspense by giving the often-recalled example of a scene where two people are having a conversation, sitting at a table. When we see them just talking and suddenly a bomb explodes, the effect is surprise. If we have the same scene but the audience is now given a shot of the bomb hidden under the table, Hitchcock explains, the effect will be different: suspense. The audience is now included in the narrative and will want to warn the characters before the explosive detonates

*Email: P.P.R.W.Pisters@uva.nl

(Truffaut 1967, 52). In any case, suspense in its classic sense always concerns the dramatization of the story material.

Fifty years after his most famous films, Hitchcock's fantasy of direct brain stimulation has not come true. Even if neuroscientists can now directly stimulate the brain, and some of their findings are very relevant for assessing the effects of image, as will be analyzed below, spectators are not hooked up to brain machines to experience the emotions Hitchcock describes. Contemporary cinema still needs stories and is largely narrative. Nevertheless, this paper will argue that if one compares the classic Hitchcockian suspense thriller to the ways in which suspense works in contemporary cinema, there has been a shift that can be described as a different connection to the affective brain. More generally, contemporary cinema gives us increasing access to its characters' mental landscape. We no longer see through a character's eyes, but we experience the world from characters' brain worlds. *Eternal Sunshine of the Spotless Mind* (2004), *Avatar* (2009), and *Inception* (2010) are but the most famous examples. In these films, characters *are* hooked up to a machine. However, this is not a necessary condition to see that cinema has become a more 'neural' signaling system. In this paper, I will trace these 'neuronal changes' in looking at the affective dimensions of the thriller and its consequences for narration and new ways of complex storytelling in contemporary cinema that Warren Buckland (2009) has called puzzle films. Andrea Arnold's film *Red Road* (2007), an unusual contemporary surveillance thriller, invites thoughts about the affective dimensions of our contemporary screen culture that resonate with principles from affective neuroscience. Its main character is a CCTV operator, and as such a contemporary Peeping Tom, comparable to but also different from Hitchcock's hero in *Rear Window* (1954). Both films can be considered as paradigmatic indicators for changes in the role of the affective in contemporary cinema and the larger media landscape.

Haptic voyeurism and the primacy of the affective

Red Road is the first film of a Dogma project initiated by Lars von Trier's Zentropa films entitled *The Advance Party*. The project prescribes a set of fixed characters, actors, and technical conditions for three different filmmakers from different countries. *Red Road* is a typical film of the digital age, both in terms of its Dogma-conditioned production and in its transnational character (Martin-Jones 2009). Moreover, the film explicitly addresses the reality of contemporary surveillance culture. As Andrea Arnold explains in an interview, she wanted to address the fact that Britain has about 20% of the world's surveillance cameras on its tiny island. When she was given the assignment and the character description of her main character, who was separated from life, she decided to make her a CCTV operator and address in this way contemporary CCTV culture (Rowin 2007, 1). In the film, we often see Jackie (Kate Dickie) behind her multiple screen video wall with images of the city of Glasgow. Although Arnold did use one real

CCTV camera across the city during production, most images on the wall are shot by handheld digital video cameras and precisely choreographed, distributed, and edited across the multiple screens to give them their typical real-time aesthetics of continuity and simultaneity. In its voyeuristic setup, *Red Road* is very similar to *Rear Window*: both Jackie and Jeff (James Stewart) are looking from a safe place at others that are captured on multiple screens or in framed windows. If *Rear Window* has been considered a meta-film about the voyeurism of the classical cinematographic apparatus, it is possible to see *Red Road* as a meta-film about the current media landscape which has turned into a surveillance apparatus (Truffaut 1988, 7).[2] This surveillance apparatus is not simply an extension of cinematographic voyeurism, as there are noticeable differences to be taken into account.

One salient difference between the two films is situated on an aesthetic level and concerns the quality of the image. While Jeff, looking through his spyglasses in *Rear Window*, does not see everything because the window frames hide large parts of the room, the images he sees are quite sharp: he can clearly distinguish who is living in his backyard and observe the kind of life his neighbors lead. In *Red Road*, however, the images on Jackie's screen are rather fuzzy and grainy. This is characteristic of surveillance images. In contrast to the suggestions of panoptic discourse, the discourse of power and control that surveillance is often associated with (Chun 2006; Foucault 1979; Levin, Frohne, Weibel 2002; Lyon 2006), the eye is not the most important or even most useful tool for distinguishing, deciphering, and assessing the 'flecks of identities' caught up in surveillance media (Fuller 2005, 148). These images, because of their diffused and blurry quality, are better described as affection-images (Deleuze 1986, 87–122). They have, as paradoxical as this may seem for panoptic surveillance technology, mostly haptic or tactile qualities, in which the eye is less engaged with mastering the image and more often searching, questioning, 'touching' the surface of it (Marks 2000, 170–193). Here, the grainy qualities of both the images in *Red Road*'s surveillance screens and the style of the film as a whole, in which affection-images dominate, indicate that we have to read the surveillance discourse perhaps along this different, affective scale.

The first images of *Red Road* emphasize the tactile qualities of surveillance images. We see several blurred CCTV images on TV monitors in close-up (accompanied by an equally blurry soundtrack), then a medium shot that reveals the multiple screens from a distance. Then we see a close-up of a pair of rubbing hands and another close-up of eyes looking at the screens. Before we see the main character Jackie, and associate these hands and eyes as belonging to her, we watch just those hands, rubbing, touching a display, and wrestling a joystick to zoom in on particular images. A smile is thrown into the mix of this screens–hand–eye assemblage when on one of the screens Jackie sees a man taking his old dog for a walk and on another screen a cleaning lady dancing to her iPod music. This is a haptic kind of voyeurism. We also can see this is habitual recognition, the daily routine of a police officer observing the city to protect its

people. Jackie's smile indicates also that she feels somehow connected to these people on the screens, a friendly though aloof engagement. Jeff's observations of his neighbors from his rear window are more borne out of pure curiosity, but he, too, has developed a routine of looking at his neighbors without any personal involvement.

In both *Rear Window* and *Red Road* this observation routine is interrupted. Moreover, here we can notice another difference between the two films. In *Rear Window*, Jeff notices the suspicious behavior of one of his neighbors and suspects a murder mystery he starts to investigate with the help of his girlfriend Lisa (Grace Kelly) and his nurse Stella (Thelma Ritter) with whom he discusses the situation. Jackie's routine is interrupted in a different way. One evening at her surveillance workstation, she reports a lone girl in the streets that might need protection. On another screen she sees a woman running away, chased by a man. She makes another phone call, performing her standard protocols for interpreting the 'flecks of identity' on her screens. However, just when she moves to report the incident, she realizes she was falsely alarmed: it was just a game; the man and woman make out against a wall. At this point, Jackie's body language becomes pronounced. As she leans backwards in her chair, her left hand is tensely stretched on her desk, while her right hand caresses the joystick that operates the cameras. When the man throws his head backward at his climactic moment, she catches a glimpse of his face. Jackie's eyes dilate; her body freezes. She zooms in on his face. Overwhelmed, she leaves her station, asks one of her colleagues for a smoke ('I thought you'd quit', he says in surprise) and runs outside to light up. From this moment onward, *Red Road* explores an extremely rich array of affects that range from the most basic emotions to the most complex social and ethical feelings. Jackie is first and foremost intensely affected by the image of this one man on her multiple screens, while the narrative level of the film leaves open any possible qualification or explanation of the affects at stake which will develop only gradually. Where Jeff, Grace, and Thelma in *Rear Window* first look for narrative explanations for the disappearance of the wife of the neighbor, in *Red Road* both the performance and body language of the actor in fragmented close-ups and the haptic quality of the unsharp CCTV images evoke an intense level of primary affect. To understand how *Red Road* can be seen to deliver manifold encounters between unqualified affects and their gradual qualifications in Jackie's story, it is useful to make a move into affective neuroscience to see how specific neuroscientific principles offer further insights into the powers of affect that seem to prevail in contemporary cinema.

Principles of affective neuroscience: *Red Road* as 'neurothriller'

Neurological research of emotions has developed into an important subfield of cognitive neuroscience known as 'affective neuroscience'. Affective neuroscience studies not only which regions of the brain are involved in emotional experiences (such as the prefrontal cortex and amygdala, or the difference

between left or right hemisphere activity) but also the relations between emotions and learning, memory, social responses, vigilance, decision-making, emotional communication (prosody), and affective styles (Gazzaniga, Ivry, and Mangun 2002, 537–576). Affective neuroscientists usually make a distinction between emotion (which takes place within the immediate materiality of body and brain) and feeling (which is related to memories and other resonating feedback systems in the brain). Antonio Damasio (2003), for instance, argues from an evolutionary perspective that:

> The first device, emotion, enabled organisms to respond effectively but not creatively to a number of circumstances conductive or threatening to life. [. . .] The second device, feeling, introduced a mental alert for the good or bad circumstances and prolonged the impact of emotions by affecting attention and memory lastingly. This happens in both animals and humans. Eventually, in a fruitful combination with past memories, imagination, and reasoning, feelings led to the emergence of foresight and the possibility of creating novel, non-stereotypical responses. (80)

Emotion and feeling form a bound circuit, but they are distinguishable processes. Damasio (2010, 109) adds that emotions are largely actions carried out in the body (facial expression, postures, gut feelings) and feelings are more the perception and awareness of these emotions (the feeling of emotions). What is especially important for the analysis of film is the irreducibility of the connection between emotions and feelings that allow a dual-level analysis of affective powers, between a largely unconscious intensive bodily response and resonating feelings that can be described as the conscious narrativization and capturing of affects in qualified feelings (see also Massumi 2002). These connections are manifold, dynamic, and parallel but often asymmetric: 'The relationship between the levels of intensity and qualification is not one of conformity or correspondence but rather of resonation or interference, amplification or dampening' (Massumi 2002, 25).

What is also important to recognize is that there is a time lapse between unconscious emotion and conscious feeling. The embodied brain knows before we are conscious of its knowing. Damasio has demonstrated specifically that the bodily skin responses and corresponding brain activity of experimental subjects to stimuli are registered before subjects process these stimuli at a conscious level. Damasio has called this and similar mechanisms the 'somatic markers' of our emotions, which he has measured through skin conductance response (SCR) experiments (Gazzaniga, Ivry, and Mangun 2002, 551–553).[3] The neurological materiality of the brain in relation to unconscious emotions and conscious feelings is also discussed by Damasio in reference to a range of research studies into forms of neurological disease treatments (including for Parkinson's Disease) that involve placing electrodes in the patient's brain. It is worth quoting one of the illuminating cases he describes:

> The doctors found one electrode contact that greatly relieved the woman's symptoms. But the unexpected happened when the electric current passed through one of the four contact sites of the patient's left side, precisely two millimeters

> below the contact that improved her condition. The patient stopped her ongoing conversation quite abruptly, cast her eyes down and to her right side, then leaned slightly to the right and her emotional expression became one of sadness. After a few seconds she suddenly began to cry. Tears flowed and her entire demeanor became one of profound sadness. [. . .] Asked about what was happening, her words were quite telling: . . . *I'm falling down in my head, I no longer wish to live, to see anything, hear anything, feel anything. . . . I'm fed up with life, I've had enough. . . . I'm scared in this world. I want to hide in a corner. . . . I'm hopeless, why am I bothering you?* The physician in charge of the treatment realized that this unusual event was due to the current and aborted the procedure. About 90 seconds after the current was interrupted the patient's behavior returned to normal. The sobbing stopped as abruptly as it had begun. The sadness vanished from the patient's face. The verbal reports of sadness also terminated. Very rapidly, she smiled, appeared relaxed, and for the next five minutes she was quite playful, even jocular. *What was that all about?* she asked. She was as puzzled as her observers were. (Damasio 2003, 68)

This case does come close to Hitchcock's fantasy. However, Damasio shows that the scientific explanation for this woman's unprecedented, switched emotions was that the electrical current had passed into one of the brain stem nuclei that control actions that produce the emotion of sadness, the production (and elimination) of tears, including the facial musculature and the movements of the mouth, pharynx, larynx, and diaphragm necessary for crying and sobbing. The most remarkable finding here, Damasio argues, was that emotion-laden thoughts only came after the emotion itself was activated. Affect-related forces, unconscious bodily responses seem to arrive before conscious feelings or thoughts.

Damasio refers to Spinoza, who proposed this insight already in *The Ethics*, arguing at several instances that 'the human mind is the very idea or knowledge of the human body' and 'the mind does not have the capacity to perceive . . . except in so far as it perceives the ideas of the modifications (affections) of the body' (Spinoza in Damasio 2003, 211). In the scene from *Red Road* that upsets Jackie, it is equally noticeable how Jackie's body seems to 'know something' before she appears conscious of the powerful emotions and feelings she is about to experience. Her hands are particularly strong indicators of the force and ambiguity of her triggered emotions – one seems tense and anxious, the other caressing and sexually aroused. Quite viscerally, there is incredible sexual tension announced in her body between her and this man who simultaneously arouses fear, disgust, and anger. This tension of ambiguous emotions (indicating mixed feelings) is intensely expressed and spread over the tactile images without yet making sense. This will return at several other key moments in the film. Sexual arousal, fear, disgust, and anger – all the emotions we can feel running through Jackie's body in this film – are the basic emotions related to our most basic (and universal) biological 'striving to persist' (and it is not coincidental that Spinoza's *conatus* resonates here as well).[4] What makes this film so very powerful is that it plays on these parallel – but paradoxically resonating affective levels – between emotion and feeling. Its mechanisms of suspense work

precisely through the asymmetrical and potentially manifold levels of activation and connection, between emotions and feelings.

Two scenes are particularly interesting to mention with respect to Jackie's multilayered emotions and mixed feelings. At the beginning of her search for Clyde Henderson (Tony Curran), Jackie is in the Red Road neighborhood where she follows some of Clyde's friends into Clyde's shabby apartment where a party is going on. The lighting in the small and crowded living room is hazy, dark, and red, and in that sense aesthetically they are affection-images. She is standing against a wall when Clyde sees her and, clearly interested in this unknown guest, walks toward her. Approaching her closely, he tells her that he has the feeling he has seen her before. He moves closer, touches her face. The fear in her eyes is sensible, the soundtrack indicates her heart is pounding, but at the same time, an erotic desire is spreading in every grain of the haptic images, in every fiber of Jackie's body. In an incredibly intense way the *mise-en-scène*, soundscape, and cinematography express here how Jackie is aroused in two opposite ways: torn between her emotions and feelings. They almost kiss; she escapes into the elevator, literally throwing up fear, desire, anger, and disgust. We still have no narrative frame or explanations for these events at this stage, except that we by now know that Clyde has been released from prison. However, the not-yet-attributed affective suspense means we connect to these subpersonal affects (fear, desire, anger, and disgust) and hold our breath. When Jackie continues her investigations, we gradually discover the story can be attributed to these affects.

Jackie visits Clyde's apartment again (which he shares with a friend and his girlfriend) when he is not home. She follows him on her surveillance screens to discover more about his (quite suspicious) whereabouts. She eventually enters a bar at midnight to encounter him in a second scene that is also very strong in its ambiguous mix of emotions and feelings. Before entering this bar, we observed Jackie pick up a sharp stone, for reasons unknown. At the bar, Clyde tells Jackie how much he desires her and after some conversation and a few drinks, he carries her to his sleazy apartment. Jackie finds out Clyde has a daughter who does not know him. The bedroom is again lit in dark colors, and the sex scene that follows is once more intensely erotically charged, suspenseful, and suggestive of danger – permeated with ambiguous emotions and mixed feelings. When Jackie runs away this time, however, she has a much more conscious plan: revenge. She abuses herself with the rock she picked up earlier, runs outside, and makes sure she is seen on the surveillance cameras so the police will be informed. She files a complaint resulting in the capture of Clyde, who is sent back to prison. On her surveillance screens, Jackie watches him being taken into custody. From this moment onward, more cognitive emotions and feelings are addressed.

In the final part of the film, Jackie discovers her own interest in redemption after traversing of a whole range of complex emotions and feelings. As affective neuroscientific research has indicated, basic emotions can develop into more complex social and ethical emotions, like shame, guilt, and other more cognitive evaluations that help us in decision-making, learning, value judgments, or ethical

behavior.[5] While emotion and cognition have on the one hand independent neural systems, it is generally acknowledged these systems are also interdependent (Gazzaniga, Ivry, and Mangun 2002, 545; Greene and Haidt 2002; Moll et al. 2002). As indicated previously, Spinoza already pointed to this biological dimension of the body's *conatus*, which he developed into a philosophy of basic and complex emotions in *The Ethics*. In his book, *Looking for Spinoza*, Damasio acknowledges this common ground between affective neuroscience and philosophy, and pleas for an integrated field of study on emotion. From Spinoza we can also consider an ethics of affects might have at its basis the transformation of passive sad affects into active joyful affects. In *Red Road*, we see that Jackie's agency in revenge may feel like poetic justice, but it does not lead to more active affects, let alone any element of redemption. After a confrontation with Clyde's roommate, who is furious with her because her false complaint will send Clyde to prison for life, she finally acknowledges her own deep sorrow over losing her husband and child, and in the end she drops the charges. When Clyde is released, he and Jackie have one more encounter in the streets of Red Road. It becomes clear at this point he was driving drunk and hit Jackie's husband and little girl while they were waiting for a bus (Jackie having stayed home after a quarrel with them). Guilt, a cry for empathy, forgiveness, and redemption are the complex emotions that play through the last scenes of *Red Road*. These cognitive and social feelings are more highly constructed in the film's late narrative developments, and through coalescing explanations the end of the film wraps up.

If we compare the suspense in *Red Road* to the suspense in *Rear Window*, it is possible to define *Red Road* as a 'neurothriller'. Suspense as an affective neurothriller is not so much situated on a narrative level where the audience knows more than the character does, as Hitchcock played with narrative information and the knowledge of the audience. Obviously, this does not mean emotions and feelings are not important in a classic thriller, but in the classic thriller they always follow from a story.[6] It also does not mean that narrative development is of no importance in the neurothriller. Part of the suspense in *Red Road* is narratively motivated, for instance, when Jackie starts following Clyde and we know she could endanger herself. Just like in *Rear Window*, we know Lisa is in danger when she enters the neighbor's apartment. However, in *Rear Window* the suspense mounts when we see (from Jeff's Peeping Tom perspective) the neighbor has returned home and Lisa hasn't noticed yet. In *Red Road*, it is important to observe that in (asymmetric and largely unconscious, or perhaps intuitive) correspondence with scientific developments about the brain, the neural bases of our emotions and feelings are addressed more directly, allowing images to play out the tensions between emotions and feelings more directly, before they are 'contained' in a story.

The intensity we experience in *Red Road* is a tension we grasp at its incipience in the embodiment of Jackie's reactions to what she sees on her screens and in the haptic affective qualities of the images themselves. In the first instance, she does not own these emotions, and we do not necessarily identify with her as a character. We simply co-feel on this subpersonal level, and then start

to connect those emotions to more qualified feelings. It is precisely in these unqualified and ambiguous moments when suspense arises more strongly than in clearly defined dangerous dramatic situations. Neuroscientific experiments on suspense have indicated that the amygdala is aroused more strongly in such ambiguous situations than in obvious fearful situations (Willems, Clevis, and Hagoort 2011). It is important to note that the difference between the classic thriller and the neurothriller is not simply the difference between a narrative-driven plot and a character-driven plot. As indicated before, it is absolutely not necessary, and even not possible, to identify or engage with the character because it is in that first instance the asubjective emotional layer is expressed and addressed in the neurothriller. Narrative and character development follows gradually and will dampen or amplify the affective intensity.

Both sides of the camera: from Peeping Tom to Sensing Alice

While in the classic thriller suspense is derived from narrative information or is at the service of narrative development, suspense in contemporary cinema operates more directly on an impersonal affective level addressed before any character or narrative situation can own these affects. If we consider *Rear Window* and *Red Road* as meta-films that indicate a shift in the cinematographic apparatus into a surveillance apparatus (which says something about changes in the media landscape and our changed relationship to the screen), one last point has to be observed. In both films, there is a moment where the characters exchange a safe position from behind the cameras to the other side. Here, again, there is a significant difference to observe. If Jeff in *Rear Window* can be compared to the classic spectator/filmmaker, it is evident that most of the time he remains in the position of the voyeur (Mulvey 1986). He oversees the situation, knows when there is danger, and is frustrated (like the film viewer) that he cannot warn his girlfriend when she is in danger on the other side of his apartment. It is only at the end of the film, when the neighbor looks back and spots him, that his voyeuristic position is challenged. Perhaps, still on a meta-level, Hitchcock did have a presentiment about the ways in which his fantasy would come true, at least to a certain degree. The abandonment of the safety of the screen as a protection for voyeuristic desires is actually announced at the end of *Rear Window*.

Jackie leaves her place behind the camera quite soon and she enters the space in front of it, where the affective qualities of Arnold's camera take over (and, as I have detailed above, she even uses the cameras as a performer, to attain her revenge). Occupying both camera screens, changing positions between observing and being observed, the film problematizes the complex and confusing affects of surveillance, and arguably of contemporary images culture at large. Admitting our affective relationship to the surveillance system is what Jackie, as a new aesthetic figure, pursues. She is no longer a purely voyeuristic Peeping Tom, exploiting (or being exploited by) the panoptic power of the gaze. Inhabiting both sides of the camera, embodying and expressing the ambiguous neurothrills and

affective powers of the surveillance apparatus, we might instead call her a 'Sensing Alice', who can guide us through the surveillance adventures of contemporary multiple screen culture. She will not overturn the whole system, but may give you the (micropolitical) urge to confront a surveillance camera with a smile, or to (literally) re-view simplistic interpretations of flecks of identity, simply because she has offered us alternative experiences, touching our brain-screens imperceptibly, directly.

Notes

1. This paper is based on a chapter in *The Neuro-Image*, in which cinema in the digital age is read in close connection to principles of cognitive neuroscience. 'The neuro-image' is conceived as a third type of image, after the movement-image and the time-image, as developed by Gilles Deleuze (1986, 1989). The neuro-image is characterized by a new temporal organization (based in the future), by the real powers of illusionary perception, and by the primary powers of affect. In this sense of the primacy of affect, *Red Road* is a neuro-image (Pisters 2012).
2. Truffaut, for instance, expresses his amazement about the fact that in the 1960s Americans did not like *Rear Window* because it did not realistically portray Greenwich Village. To Truffaut, this was nonsense, because *Rear Window* is not about Greenwich Village but about film.
3. Another experiment frequently mentioned in this respect is the famous experiment by Benjamin Libet, which indicated, 'brain potentials are firing three hundred and 50 milliseconds before you have the conscious intention to act. So before you are aware that you're thinking about moving your arm, your brain is at work preparing to make that movement' (Gazzaniga 1998, 73). This experiment is often raised to discuss the (im)possibility of free will. However, the only sure thing this experiment indicates is that consciousness takes time.
4. Basic emotions in facial expression are anger, fear, disgust, happiness, sadness, and surprise (Adolphs et al. 1996). Joseph Le Doux indicates how basic emotions help to respond to environmental challenges, taking care of 'defense against danger, sexual behavior, maternal behavior, eating and other things like this' (Gazzaniga, Ivry, and Mangun 2002, 543). See also Panksepp 1992.
5. Damasio (2003, 159–160) rightfully warns that this does not mean that ethics (and laws and politics and other sociopolitical phenomena) solely depend on neurobiological factors.
6. It is possible to develop this point by connecting the longer response time that is allowed in a more logic, narrative development in the classic thriller (compared to the shorter response time in 'the neurothriller') to a recent neuroscientific study to temporal hierarchies in brain responses to narrated stories (Lerner et al. 2011).

References

Adolphs, Ralph, Hanna Damasio, Daniel Tranel, and Antonio Damasio. 1996. 'Cortical Systems for the Recognition of Emotion in Facial Expressions.' *The Journal of Neuroscience* 16 (23): 7678–7687.

Buckland, Warren, ed. 2009. *Puzzle Films: Complex Storytelling in Contemporary Cinema*. West Sussex: Wiley-Blackwell.

Chun, Wendy Hui Kyong. 2006. *Control and Freedom: Power and Paranoia in the Age of Fiber Optics*. Cambridge, MA: MIT Press.

Damasio, Antonio. 2003. *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. Orlando, FL: Harcourt.
Damasio, Antonio. 2010. *Self Comes to Mind: Constructing the Conscious Brain*. New York, NY: Pantheon.
Deleuze, Gilles. 1986. *Cinema 1: The Movement-image*, Trans. Hugh Tomlinson and Barbara Habberjam. London: Athlone Press.
Deleuze, Gilles. 1989. *Cinema 2: The Time-image*, Trans. Hugh Tomlinson and Robert Galeta. London: Athlone Press.
Foucault, Michel. 1979. *Discipline and Punish: The Birth of the Prison*, Trans. Alan Sheridan. New York, NY: Vintage.
Fuller, Matthew. 2005. *Media Ecologies: Materialist Energies in Art and Culture*. Cambridge, MA: MIT Press.
Gazzaniga, Michael. 1998. *The Mind's Past*. Berkeley, CA: University of California Press.
Gazzaniga, Michael, Richard Ivry, and George Mangun. 2002. *Cognitive Neuroscience: The Biology of the Mind*. New York, NY: W.W. Norton & Company.
Greene, Joshua, and Jonathan Haidt. 2002. 'How (and Where) Does Moral Judgment Work?" *Trends in Cognitive Science* 6 (12): 517–523.
Lerner, Yulia, Christopher J. Honey, Lauren J. Silbert, and Uri Hasson. 2011. 'Topographic Mapping of a Hierarchy of Temporal Receptive Windows Using a Narrated Story.' *The Journal of Neurosience* 31 (8): 2906–2915.
Levin, Thomas, Ursula Frohne, and Peter Weibel, eds. 2002. *Ctrl Space: Rhetorics of Surveillance from Bentham to Big Brother*. Cambridge, MA: MIT Press.
Lyon, David, ed. 2006. *Theorizing Surveillance: The Panopticon and Beyond*. Devon: Willan Publishing.
Marks, Laura. 2000. *The Skin of Film: Intercultural Cinema, Embodiment, and the Senses*. Durham: Duke University Press.
Martin-Jones, David. 2009. *Scotland: Global Cinema, Genres, Modes and Identities*. Edinburgh: Edinburgh University Press.
Massumi, Brian. 2002. 'The Autonomy of Affect.' In *Parables for the Virtual: Movement, Affect, Sensation*, 23–45. Durham: Duke University Press.
Moll, Jorge, R. de Oliveira-Souza, P. J. Eslinger, I. E. Bramati, J. Mourão-Miranda, P. A. Andreiuolo, and L. Pessoa. 2002. 'The Neural Correlates of Moral Sensitivity: A Functional Magnetic Resonance Imaging Investigation of Basic Moral Emotions.' *The Journal of Neuroscience* 22 (7): 2730–2736.
Mulvey, Laura. 1986. 'Visual Pleasure and Narrative Cinema.' In *Narrative, Apparatus, Ideology: A Film Theory Reader*, edited by Philip Rosen, 198–209. New York, NY: Columbia University Press.
Panksepp, Jaak. 1992. 'A Critical Role for "Affective Neuroscience" in Resolving What is Basic About Basic Emotions.' *Psychological Review* 99 (3): 554–560.
Pisters, Patricia. 2012. *The Neuro-image. A Film-philosophy of Digital Screen Culture*. Stanford, CA: Stanford University Press.
Rowin, Michael Joshua. 2007. 'Interview with Andrea Arnold.' Reverse Shot 19: Accessed April 22, 2011. http://www.reverseshot.com/article/interview_andrea_arnold
Spoto, Donald. 1984. *The Dark Side of the Genius: The Life of Alfred Hitchcock*. New York, NY: Ballentine.
Truffaut, François. 1967. *Hitchcock/Truffaut*. New York, NY: Simon and Schuster.
Truffaut, François. 1988. *Hitckcock/Truffaut*, Translation Loes Goedbloed. Amsterdam: Theater Bookshop.
Willems, Roel, Krien Clevis, and Peter Hagoort. 2011. 'Add Picture for Suspense: Neural Correlates of the Interaction between Language and Visual Information in the Perception of Fear.' *Social Cognitive and Affective Neuroscience* 6 (4): 404–416.