

THE NEURO-IMAGE



*Cultural Memory*

*in*

*the*

*Present*



*Mieke Bal and Hent de Vries, Editors*



THE NEURO-IMAGE

*A Deleuzian Film-Philosophy  
of Digital Screen Culture*

*Patricia Pisters*

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## *Contents*

<i>Acknowledgments</i>	<i>ix</i>
Introduction. Schizoanalysis, Digital Screens, and New Brain Circuits	I
PART I NEUROSCREENS: PRINCIPLES OF THE BRAIN	35
1 Schizoid Minds, Delirium Cinema, and Powers of the Machines of the Invisible	37
2 Illusionary Perception and Powers of the False	73
3 Surveillance Screens and Powers of Affect	98
PART 2 NEUROPHILOSOPHY: TURNING MADNESS INTO METAPHYSICS	125
4 Signs of Time: Metaphysics of the Brain-Screen	127
5 Degrees of Belief: Epistemology of Probabilities	156
6 Expressions of Creation: Aesthetics of Material-Forces	186
PART 3: NEUROPOLITICS: TRANSNATIONAL SCREEN CONNECTIONS	215
7 The Open Archive: Cinema as World-Memory	217
8 Divine In(ter)vention: Micropolitics and Resistance	243
9 Logistics of Perception 2.0: Multiple Screens as Affective Weapons	271

VIII *Contents*

Conclusion. The Neuro-Image: Brain-Screens from the Future	299
<i>Notes</i>	307
<i>Index</i>	357



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## Introduction

SCHIZOANALYSIS, DIGITAL SCREENS, AND NEW  
BRAIN CIRCUITS

The film *Michael Clayton* (Tony Gilroy, 2007) opens with a delirious monologue.<sup>1</sup> We see first the lights, windows, and screens of New York City by night; then the camera moves slowly to an inside view of one of many office buildings, as a voice, later identified as Arthur Edens (Tom Wilkinson), speaks of a moment of clarity he experienced while exiting the “vast and powerful law firm” for which he works. “The time is now,” he stutters, signaling his having “been reborn” away from his career at the firm, which “excrete[s] poison” into humanity. He has been defending a company called U/North from a three billion dollar class action lawsuit for biopollution. During a meeting with the victims of U/North, Edens snaps. His encounter with one particular young female victim, Anna (Merritt Wever), who lost her parents to U/North soil pollution, flicks a kind of synaptic switch in his mind. His ordinary way of thinking—in support of the multinationals he is supposed to defend—abruptly changes, and he begins to see things anew. He stops taking his medication for manic depression, and his own mad revolution against his habituated behavior is finally enabled to foment. As a protest on behalf of the victims whose claims he is supposed to ignore, he undresses in the middle of a U/North hearing, embarrassing both his own firm and U/North. His friend Michael Clayton (George Clooney), who is the law firm’s fixer, is called in

to talk Edens back into medication and normative professional behavior. Edens refuses. In a key scene in the middle of the film we see Edens in the center of a New York City street, traffic assaulting him from all sides and, more important, hundreds of city screens surrounding him, with ads for “TV on your phone” and food technology for U/North. While the camera circles Edens, showing the vortical stream of images, lights, and sounds that surround him, he remains frozen. In the midst of all this insanity we watch as Edens realizes something in this moment (flagged by the opening monologue): that the time (to change) is now.

Arthur Edens, delirious and intelligent, caught up in the vortex of the contemporary urban cityscape full of networked electronic and digital screens—screens that are themselves always already connected to assemblages of power, capital, and transnational movements of peoples, goods, and information—is a typical character in a new type of cinema belonging to twenty-first-century globalized screen culture that I want to explore in this book and that I will describe as “the neuro-image.” For several reasons the film *Michael Clayton* brings us to the heart of what this book is about. Edens’s insanity points to the first aspect of the neuro-image that I want to take into account: it carries inside it some form of schizoanalysis or collective analytics and is therefore particularly indebted to the work of Gilles Deleuze and Félix Guattari on capitalism and schizophrenia.<sup>2</sup> Many of the questions that I address in this book pertain to the schizoanalytic nature of the neuro-image: What does this image type entail? How does schizoanalysis, as defined by Deleuze and Guattari, relate to pathological schizophrenia and screen culture? What are its (cultural) symptoms? What are its philosophical dimensions and its political and ethical implications?

A second important aspect of the neuro-image we find in *Michael Clayton* is the omnipresence of media screens. Not only is this scene showing Edens in the streets of New York quite typical for contemporary screen culture, but throughout the film, small and large screens appear everywhere: navigation displays, computer screens, cell phones, television sets, urban screens, and surveillance technology; they are the markers of both a typical twenty-first-century media city and the practices of everyday media use.<sup>3</sup> The neuro-image is part of this networked media practice, related to digital technology’s ubiquity, and engages with these technologies

in “an internal struggle with informatics.”<sup>4</sup> This struggle, according to Deleuze, is fundamental to cinema’s very survival as a “will to art”: “An original will to art has already been defined by us in the change affecting the intelligible content of cinema itself: the substitution of the time-image for the movement-image. So that electronic images will have to be based on still another will to art, or on as yet unknown aspects of the time-image.”<sup>5</sup> This book will make sense of the neuro-image’s relation to the digital, through reference to current debates and research in contemporary screen culture. Indeed, (how) does the neuro-image relate to a “will to art” in the context of this electronic image culture, especially of contemporary information overload? Might it lead us to discover as-yet-unknown aspects of the time-image? If so, is the neuro-image a special type of time-image, or should we speak of a third image type? A return to Deleuze’s cinema books but also to *Difference and Repetition* will be necessary to propose some answers to these questions.<sup>6</sup>

In *Michael Clayton* Arthur Edens’s madness is repeatedly (but partially) referred to in terms of a chemical unbalance in his neurological system. “Part of it is chemical, part of it is insanity, but for part of it you are also right,” Clayton tells him. This insistence on brain processes introduces a third important aspect of the neuro-image. Deleuze has famously argued with regard to the ongoing development of cinema that “the brain is the screen”:

The brain is unity. The brain is the screen. I don’t believe that linguistics and psychoanalysis offer a great deal to the cinema. On the contrary, the biology of the brain—molecular biology—does. Thought is molecular. Molecular speeds make up the slow beings that we are. . . . The circuits and linkages of the brain don’t pre-exist the stimuli, corpuscles and particles that trace them. . . . Cinema, precisely because it puts the image in motion, or rather endows the image with self-motion, never stops tracing the circuits of the brain.<sup>7</sup>

If the movement-image and the time-image are related to certain circuits in the brain, is it then possible to distinguish yet other aspects of the brain-screen that are typical for the neuro-image? To answer this question, I will consider biological aspects and principles of the brain alongside recent findings in neuroscience and relate these to the emerged features of the neuro-image. Deleuzian (schizoanalytic) philosophy, cinema in digital networked screen culture, and neuroscientific findings are thus the three

domains this book brings together to comprehend this new image type, its form, and significance.

### Schizoanalysis: Delirious Insights, Illusionary Realities, Affective Truths

As Arthur Edens insists in *Michael Clayton*, it is important to see his delirium not as “just madness.” Rather, Edens’s symptoms, and schizophrenia more generally, can be considered as a sign of time. In his introduction to Deleuze’s *Essays Critical and Clinical*, Daniel Smith explains: “Authors and artists, like doctors and clinicians, can themselves be seen as profound symptomatologists, . . . ‘physicians of culture’ for whom phenomena are signs or symptoms that reflect a certain state of forces.”<sup>8</sup> Smith articulates several themes in Deleuze’s writings on literature that are important for understanding the ways in which schizoanalysis relates the “clinical” and the “critical”<sup>9</sup>—through the destruction of the world (singularities and events), the dissolution of the subject (affects and percepts), the disintegration of the body (intensities and becomings), the “minoritization” of politics (speech acts and fabulation), and the stuttering of language (syntax and style). Without going into Smith’s brilliant level of detail on each, I would like to consider these “themes” as accordant with schizoanalytical powers. Insofar as they relate to general contours of the neuro-image,<sup>10</sup> they mark out a Deleuzian symptomatology that I will develop in detail in each chapter, in relation to contemporary media culture and neurobiology. At this point I will return to *Michael Clayton* and Arthur Edens’s monologue to briefly introduce certain characteristics of these powers of schizoanalysis.

First of all, the fundamental delirious character of Edens’s opening monologue is most powerfully expressed in his intense description of becoming-other: from reborn, to near-dead, to emerging from the “asshole of a powerful organism,” he creates a body without organs that resists and refuses the normal organization of his corporate body, and all of the institutionalized power structures that it involves. It is as if inorganic life traverses his body, turning the architecture of his corporation into a body and his own body into something inorganic. Smith explains that “according to Deleuze and Guattari, what we call a ‘delirium’ is the general

matrix by which the intensities and becomings of the body without organs directly invest the sociopolitical field.”<sup>11</sup> So this power of the delirium is not just the product of the mad but also a particular form of resistance (to ways of life) in reality, as well as in art. Arthur Edens, in his delirious perception, all of a sudden sees the “madness” of contemporary capitalist culture and refuses to continue playing this infernal game that relies on the cynical abuse of human and natural resources. The film quite literally asks us to consider Deleuze’s rhetorical question regarding cinema’s situation: “Surely a true cinema can contribute to giving us back reasons to believe in the world and in vanished bodies. The price to be paid, in cinema as elsewhere, was always a confrontation with madness.”<sup>12</sup>

So the first power of schizoanalysis inherent to the neuro-image is the power of the delirium, a dangerous, intense, and resisting force of schizoflows and overabundance. It must be noted, too, that the devilish difficulty we have with these schizoforms of resistance is to see that they are an immanent form of resistance, which means that the system against which such forms struggle functions according to the same schizophrenic logic. Capitalism and schizophrenia, as Deleuze and Guattari have shown so powerfully, belong together. Capitalism follows a schizophrenic logic that at the same time calls forth its own resistance. The delirium of the schizo gives us insight into this double logic of contemporary culture: Edens is part of the maddening system; only in confronting his madness can he resist the inhuman madness of the system. In his schizoid delirium he gains sense of a minority position—in this case that of the victims of U/North—and in this way tries to tell a different story, one that potentially shatters the majoritarian forces of capitalism. More generally put, the neuro-image acknowledges that there is no safe or morally transcendental position from which we can resist. Instead, we discover the need to develop multiple forms of resistance from within the system, while always running the risk of being even more fully captured or overwhelmed by its logic.

The schizophrenic confrontation with madness can be related to two important “schizophrenic symptoms” that contemporary culture must confront more than ever before: the powers of the false and the powers of affect. These are the second and third powers of schizoanalysis at stake in the neuro-image. In the cinema books Deleuze discusses the powers of the

false with respect to the Nietzschean cinema of Orson Welles. As Welles's characters show, the false can be "base" and deadly, but it can also be "noble" and creative.<sup>13</sup> In *Michael Clayton* the powers of the false play out in different ways. Clayton's job is to "adjust the truth" (one of the taglines of the film). He has to make sure that rich clients who run into trouble, such as U/North, get away with the damage they have done in the least disabling way. Clayton has to put the manipulating powers of the false to work in favor of the capitalist machine. The powers of the false play quite a different role when Edens apparently hallucinates in his delirium, but these hallucinations, the film suggests, are more real than what Edens formerly took for reality. Through them, Edens is able to really see how the corporate system works against humanity. Here, then, the powers of the false (as hallucinations on Edens's brain-screen) work against the system. I will argue that contemporary culture has moved from considering images as "illusions of reality" to considering them as "realities of illusions" that operate directly on our brains and therefore as real agents in the world. While recognizing the truth of his corporate life in his hallucinations, Edens also very strongly believes in the affirmative powers of this apparent fiction. Differently again, the powers of the false play out in Michael Clayton's son Henry's (Austin Williams) obsession with the multiplayer game *Realm and Conquest*. As a contemporary transmedial narrative (a characteristic form of digital screen culture, as we will see), this game appears in the film itself on computer screens, in Henry's stories, and in a book that Edens reads avidly—underlining, highlighting, and taking important clues from it as he attempts to prove that his hallucinatory visions are real. Here, the powers of the false become more generally defined as a belief in fiction, an aspect of the neuro-image that I will explore in greater detail in Chapter 2.

The power of affect is equally important, relating to a radical rephrasing of the question of the subject in Deleuze and in contemporary culture. Edens is engulfed with overwhelming sensations and suddenly sees with stunning clarity the affective truth of his actual situation. His office building becomes a filthy body, and he becomes the excrement of this body, covered by the dirt of what is going on inside the building. These feelings and visions go beyond his own individual affections and perceptions. As sensations of becoming-other, they can only be felt. This is a confrontation with the virtual where individual identities are lost. Smith recalls Deleuze's reframing of the question of the subject—"How



can the individual transcend its form and its syntactical link with a world in order to attain the universal communication with events?”—and explains Deleuze’s contribution toward an answer in this way:

What he calls “schizophrenization” is a limit-process in which the identity of the individual is dissolved and passes entirely into the virtual chaosmos of included disjunctions. . . . The self is a threshold, a door, a becoming between two multiplicities, as in Rimbaud’s “I is another.” . . . In a becoming, one term does not become the other; rather, each term encounters the other, and the becoming is something between the two, outside the two. This “something” is what Deleuze calls a pure affect or percept, which is irreducible to the affections or perceptions of a subject.<sup>14</sup>

The autonomous power of affects and percepts (and their principles of relation to feelings and perceptions) is thus the third great schizoanalytic power that I will investigate in relation to a possible definition of the neuro-image.

If schizophrenia and schizoanalysis are part of an immanent system, one of the key questions that keeps imposing itself is this: Where in the immanent system can “schizo-resistance” occur? Although it is possible to argue that only art can create these forms of resistance (as Deleuze seems to argue in his preference for European art cinema in *The Time-Image*), I would like to propose that it is much more logical that resistance (perhaps only moments of resistance), and also the “will to art” that Deleuze emphasizes, can be found in many different places in contemporary audiovisual culture, including dominant and popular art forms. (This is not to say, of course, that all forms of screen or media culture are artistic.) I will show, accordingly, that the delirious powers of the false and powers of affect are related to a “becoming-minoritarian” of (cinematographic) language that indicates its political dimensions. As Smith explains, actual conditions of immigration, for instance, create minorizations of languages that affect both minority and hegemonic languages:

For the more a language acquires the characteristics of a major language, the more it tends to be affected by internal variations that transpose it into a “minor” language. English, because of its very hegemony, is constantly being worked on from within by the minorities of the world, who nibble away at that hegemony and create the possibility of new mythic functions, new cultural references, new vernacular languages with their own uses.<sup>15</sup>

In cinematographic language the language of Hollywood is the hegemonic language. Yet it is possible still to consider *Michael Clayton* as a

minoritarian Hollywood film, even if it uses big stars. Produced by a small company, Samuels Media, it was not exactly a blockbuster; at the same time, however, its thrilling form, political content, and the presence of George Clooney, known for his political commitments, and Sydney Pollack (who plays his boss), recall the powerful political thrillers of the 1970s such as *The Parallax View* (Alan J. Pakula, 1974), *Three Days of the Condor* (Sydney Pollack, 1975), and *All the President's Men* (Alan J. Pakula, 1976). If we can consider that in *Anti-Oedipus* Deleuze and Guattari refer to schizophrenization as a process for understanding the ways in which capitalism produces its own immanent “antiproduction,”<sup>16</sup> then we can understand the contemporary media culture in which this film plays a part as a schizoid system full of abstract and experimenting machines that produce both art (creation of the new) and its opposites (manipulation, control, mediocrity). The neuro-image is part and parcel of these variegating media machines. How to define art and resistance in the contemporary media culture, and indeed decipher boundaries for the neuro-image, remains an important question that will return in this book. But let me first introduce in more detail some aspects of contemporary media culture that are important as the “natural” milieu for the neuro-image.

### Digital Screens: Networked Software Cultures, Deep Remixability, and Database Logic

The digital turn in culture at large, and in media culture specifically, is the context in which the development of the neuro-image must be situated. Much has been written about this turn. Therefore, without proposing an exhaustive description of the complexity and heterogeneity of digital culture, I simply want to mention three elements that are most important for the framing of my analyses of the neuro-image: networked software cultures, deep remixability, and database logic. Contemporary culture is increasingly generated by software. According to new media theorist, practitioner, and historian Lev Manovich, software permeates all areas of contemporary societies: “The school and the hospital, the military base and the scientific laboratory, the airport and the city—all social, economic, and cultural systems of modern society—run on software.”<sup>17</sup> Particularly in media theory, extensive recognition is now given to both

“the role of software in forming contemporary culture, and cultural, social and economic forces that are shaping development of software itself.”<sup>18</sup> Software, as Manovich has argued most prominently, enables creation, publishing, accessing, sharing, and remixing images, moving image sequences, 3D designs, texts, maps, and other interactive elements—as well as various combinations of these elements—in websites, motion graphics, video games, commercial and artistic installations, and virtually every niche of our increasingly technocratic culture. Software also provides tools for social communications and the sharing of information, experience, and knowledge, such as web browsers, email, wikis, virtual worlds, and other Web 2.0 platforms such as Facebook, MySpace, Flickr, and YouTube.<sup>19</sup>

The ubiquity and diversity of cameras and screens is a particularly prominent aspect of this networked, “softwarized,” digital culture. Film cameras have long since entertained or rallied against the contributions of many other camera types, including television cameras and surveillance cameras and more recent proliferating consumer cameras on mobile phones and other portable devices. Screens have multiplied everywhere, are more and more linked to all kinds of software, and, despite retaining their media-specific differences, are connected in vast distributed networks. As Alexander Galloway points out in his book *Protocol*, such networks are not limitless but work increasingly as complex diagrammatics. And as these more elaborate kinds of systems (of relations), networked systems are neither open nor closed. A network, according to Galloway, is “a set of nodes and edges, dots and lines. The dots may be computers (server, client, or both), human users, communities, LANs, corporations, even countries. The lines can be any practice, action, or event effectuated by the dots (downloading, emailing, connecting, encrypting, buying, logging on, port scanning).”<sup>20</sup> To comprehend difference or change within networks, you can do a number of things with such a diagram, Galloway indicates. You can connect the dots, disconnect them, or even delete them. You can filter out which dots are connected or create portals for the creation of future dots. “In short, a network-as-diagram offers all sorts of possibilities for organization, regulation and management,” he suggests. “The Internet is not simply ‘open’ or ‘closed’ but above all a form that is modulated,” which means “information does flow, but it does so in a

highly regulated manner” more accurately described as “regulated flow.”<sup>21</sup> Many others have commented on the network paradigms of contemporary culture. The specific inherencies of the neuro-image to network culture will return in some of the case studies in this book.

Another characteristic of digital software culture is that social software—software that has enabled the emergence of Web 2.0—has transformed the cultural logics of the Internet itself from a hypertext environment of interactive applications into a “participatory culture” populated by so-called prosumers (active content-producing consumers). Citizen journalism, YouTube (and other online file-sharing cultures), blogging, and transmedial storytelling all incorporate audiences across different media forms while gathering them in closer interrelation. These combinations of (digital) cultural shifts are what Henry Jenkins has characterized as “convergence cultures.”<sup>22</sup> How does the neuro-image relate to the spirit of Web 2.0? And in what specific ways? Connected to participatory culture is the fact that software has made culture “deeply remixable.” This means that, as Manovich explains in *Software Takes Command*, not only can content be remixed and recombined, but also different technologies (such as design, animation, and live action) can be recombined.<sup>23</sup> Mash-ups, remakes, samplings: contemporary culture is profoundly fragmented and constantly recreated. What were once avant-garde strategies have now become everyday practices. Professional filmmakers increasingly use cheap digital cameras and are interested in creating low-tech DIY-aesthetics, as exemplified par excellence in the Dogme 95 movement initiated by Lars von Trier and Thomas Vinterberg.<sup>24</sup> At the complete other end of such digitally shifted aesthetics are the ever more sophisticated “high-tech” special effects and the latest generation of 3D cinema. So how do we define a will to art in this context, when we can observe a democratization of low-cost artistic strategies on the one hand and a high-cost form of new artisanal computer work on the other?

The deep remixability of contemporary digital culture is also a result of the database becoming a basic unit of organization, creation, and control. In *The Language of New Media* Lev Manovich has called this the database logic of contemporary culture. After the arrival of the World Wide Web, Manovich argues, “the world appears to us as an endless and unstructured collection of images, texts, and other data records,” so “it is

only appropriate that we will be moved to model it as a database. But it is also appropriate that we would want to develop a poetics, aesthetics, and ethics of this database.”<sup>25</sup> This prominence of database form impacts contemporary culture to perpetuate “archival intensity,” a term introduced by Jacques Derrida in his seminal book *Archive Fever*.<sup>26</sup> We have moved into an era where so much material previously hidden in closed archives is becoming increasingly available, often through online databases, which, because of their organization and coding, are able to give fragments or snippets of historical data and images that can be recalled in nonchronological order. This abundance of historical audiovisual material, available in new but quite specifically ordered ways, affects our prior understanding of history and memory. Combined with the fact that the traditional (and scholarly) notion of media objects as “texts” seem to be replaced by the notion of media operating as “dynamic software performances,” memory and history are consequently (and increasingly) seen as dynamic, as well, and are continually transforming in an open archive.<sup>27</sup> Although the (media) text in itself has certainly not disappeared, it could be argued that contemporary media in general is more fluid than the more or less stable text of the book and the classical film. So what does this mean in relation to our definitions of a new image type? Does the neuro-image testify to this contemporary database logic? And is it possible that this open and dynamic logic can trickle back to previous more stable image forms, destabilizing older media objects or allowing different readings of them in a database logical perspective?

Several art and media historians have analyzed changes to cinema in the digital age along these lines. Anne Friedberg demonstrates how the screen has multiplied in computer culture, yet the figure of the window as frame has remained prominent in today’s screen culture “from Alberti to Microsoft,” albeit with different characteristics, such as simultaneity and the multiplication of perspectives.<sup>28</sup> Nicholas Rombes has written about the aesthetic changes of cinema and cinematic experience in terms of mobile, remixed, fragmented, and nonlinear viewing in his book *Cinema in the Digital Age*.<sup>29</sup> Lev Manovich has ventured into a practice of “database filmmaking,” which he calls “soft cinema,” characterized by multiple screens, automatized selection parameters, and combinations of different media (animation, motion picture, graphics), the result of which is a work

of unlimited possible combinations and never the exact same film.<sup>30</sup> Matthew Fuller suggests that we see media culture in terms of ecologies of dynamic systems “in which any one part is always multiply connected, acting by the virtue of those connections, and always variable, such that it can be regarded as a pattern rather than simply as an object.”<sup>31</sup> David Rodowick similarly recognizes that the new virtual life of cinema is driven by software but emphasizes that “concepts of image, screen, time, space, and movement are as relevant to contemporary moving image theory as they were to classical film theory.”<sup>32</sup> According to Rodowick, the virtual life of film will continue in two forms: as information and as art. Film as film, Rodowick suggests, is dead. I will argue differently, proposing that the neuro-image is a continuation of film as film, even if, or indeed precisely because, it can be encountered transmedially. Rodowick’s insistence, however, on the importance of film theory’s ability to offer up critically relevant tools for understanding the digital turn in contemporary culture will be supported at several instances in this book, with special emphasis on the film-philosophy of Gilles Deleuze. These general aspects and theoretical positions on digital culture serve as my main references and will return in the subsequent chapters. However, the core premise of this book is that in order to really come to terms with what is happening in contemporary audiovisual culture, it is not only film and media theory and (Deleuzian) philosophy that can provide useful insights, but the contemporary neurosciences as well.

### Principles of the Brain: Disciplinary Interferences, Rhizomes, and Fractal Patterns

Deleuze proposes extremely rich and fundamental relationships in culture between (continental) philosophy, neurology, and the (film) screen: “There is a special relation between philosophy and neurology. . . . Something that’s interested me in cinema is the way in which the screen can work as a brain.”<sup>33</sup> I will take Deleuze’s suggestion literally and will depart on a transdisciplinary adventure of encounter with recent neuroscience. But before I address specific neuroscientific practices and findings, some general remarks are in order. In *What Is Philosophy?* Deleuze and Guattari foster necessary enthusiasm for disciplinary encounters when they argue

that philosophy, art, and science are fundamentally related, since they are the three large domains of thinking: thinking in concepts, thinking in percepts and affects, and thinking in functions. Philosophy, art, and science further share a struggle against opinion and against chaos, but each does so in specific ways:

What defines thought in its three great forms—art, science, and philosophy—is always confronting chaos, laying out a plane, throwing a plane over chaos. But philosophy wants to save the infinite by giving it consistency: it lays out a plane of immanence that, through the action of conceptual personae, takes events or consistent concepts to infinity. Science on the other hand, relinquishes the infinite in order to gain reference: it lays out a plane of simply undefined coordinates that each time, through the action of partial observers, defines states of affairs, functions, or referential propositions. Art wants to create the finite that restores the infinite: it lays out a plane of composition that, in turn, through the action of aesthetic figures, bears monuments of composite sensations.<sup>34</sup>

Deleuze and Guattari reflect on encounters among these great domains of thinking, which begin “when one discipline realizes that it has to resolve, for itself and by its own means, a problem similar to one confronted by the other.”<sup>35</sup> In *Negotiations* Deleuze explains how the biology of the brain discovers a material likeness to philosophical thought: “New connections, new pathways, new synapses, that’s what philosophy calls into play as it creates concepts, but this whole image is something of which the biology of the brain, in its own way, is discovering an objective material likeness, or the material working.”<sup>36</sup> Although this book is not focused on exploring exact correlates between the material brain and its immaterial effects, it does explore neurology and philosophy as productive partners in an important dialogue that is capable of generating great insight. I will return to this point shortly after some general remarks about interdisciplinarity.

Deleuze and Guattari distinguish different ways in which disciplines can meet and interfere with each other. Extrinsic interference occurs when each discipline remains on its own plane and utilizes its own methodological elements—for instance when philosophy creates concepts of sensation (think of Deleuze’s own cinema books), science creates functions of sensations or of concepts (such as scientific theories of color or of beauty), and art creates sensations of concepts or of functions (such as art based on scientific models like DNA or brain images). Intrinsic interference happens

when concepts or conceptual personae, affects or aesthetic figures, functions or partial observers leave their own plane and slip (most subtly) onto other planes.<sup>37</sup> Deleuze and Guattari give the example of Zarathustra, who, as a conceptual persona, is almost an aesthetic figure in Nietzsche's work. We can also think of Hume's Philo, Cleanthes, and Demea discussing the question of belief in *Dialogues Concerning Natural Religion*. But perhaps we can also think of an aesthetic figure that behaves philosophically, such as the strange Visitor in Pasolini's *Teorema* (1968), who confronts the other characters in the film with the ungroundedness of their being (albeit in a very sensual way). More general inferences have to do with the unavoidable relation of each field to its own negative: "Philosophy needs a nonphilosophy that comprehends it; just as art needs nonart and science needs nonscience."<sup>38</sup> As Eric Alliez has shown in his book *The Signature of the World*, to understand the contemporary world, we need to set a "solidarity" in motion between the different fields of thinking.<sup>39</sup> In *The Neuro-Image* all three forms of disciplinary interferences will alternate in various degrees. I will return to specific methodological implications of this approach at the end of this introduction.

In *What Is Philosophy?* the brain plays an important role, as it is presented as the junction of the three domains of thinking. Since Deleuze argues that the brain is also the screen, and the screen can work as a brain, it is useful to first establish how exactly the brain and the (film) screen can work as a meeting place for art, science, and philosophy. The opening sequence of *Fight Club* (David Fincher, 1998) is a relevant and interesting metaplace at which we can begin looking for connections. The sequence presents literally a ride through the brain. In this, the film exemplifies the fact that with the neuro-image we quite literally have moved into characters' brain spaces. We no longer see through characters' eyes, as in the movement-image and the time-image; we are most often instead in their mental worlds. On the DVD of Fincher's film two audio-track commentaries explain how this sequence was made: by synergizing the visual effects of a cinematographic immersive ride and a neuroscientific brain mapping process.<sup>40</sup> The idea for the shot was that it would start in the amygdala and then backtrack to the frontal lobes and to the outside of the forehead. The artists of the visual effects department and the neuroscientists consulted for the sequence discovered they had actually quite similar



(digital) visualization techniques and were able to work together very well. Using Deleuze and Guattari's typology of interdisciplinary interferences, we could say that they worked together extrinsically. The visual artists wanted to create a sensation of a function, the feel of a ride from the amygdala to the frontal lobes as "dark, scary, wet and very visceral," while the neuroscientists focused on the function of a sensation, in which different parts and chambers of the ride are correct in their neurological detail. The sequence is thus also emblematic for the neuro-image, given how it invites further investigations into the various implications of such encounters at the same junctions this book also hopes to contribute to.

Additionally, the rhizomatic and fractal qualities of these opening-sequence images from *Fight Club*, produced with a digital technique called "nested instancing," are also important. In "nested instancing," a technique used to simulate the complexity of actual brain dynamics, model neurons are loaded into digital software one at a time, repeatedly, into different chambers of the (model) brain. It is well known that Deleuze and Guattari give such rhizomatic form incredible attention and prominence across their writings. In *A Thousand Plateaus* they indicate that "rhizomatics" is another name for their entire philosophy, which operates by following the heterogeneous and multiple connections that are also characteristic of brain processes; and as they indicate, too, it is interchangeable with the concept of schizoanalysis. When they introduce rhizomatic thinking, they refer very specifically to neuroscientific studies of the brain:

Thought is not arborescent, and the brain is not a rooted or ramified matter. What are wrongly called "dendrites" do not assure the connection of neurons in a continuous fabric. The discontinuity between cells, the role of the axons, the functioning of the synapses, the existence of synaptic microfissures, the leap each message makes across these fissures, make the brain a multiplicity immersed in its place of consistency or neuroglia, a whole uncertain probabilistic system ("the uncertain nervous system"). Many people have a tree growing in their heads, but the brain itself is much more a grass than a tree. "The axon and the dendrite twist around each other like bindweed around brambles, with synapses at each of the thorns."<sup>41</sup>

In this same outline of rhizomatic thinking, or schizoanalysis, Deleuze and Guattari also make important conceptual distinctions between

short-term memory and long-term memory. Rhizomatic thinking is led by short-term memory and works under the conditions of the multiple, the collective, the discontinuous process that includes forgetting. Tree thinking operates in long-term memory (family, race, society, civilization). Deleuze and Guattari clearly prefer the strategies of rhizomatic short-term memory, but they acknowledge that long-term and short-term, rhizome and tree, can never be seen in strict opposition. Rhizomes and trees can be both good and bad, “for there is no dualism, no ontological dualism between here and there, no axiological dualism between good and bad, no blend or American synthesis. There are knots of arborescence in rhizomes, and rhizomatic offshoots in roots. Moreover, there are despotic formations of immanence and channelization specific to rhizomes, just as there are anarchic deformations in transcendent systems of trees, aerial roots, and subterranean systems.”<sup>42</sup> Furthermore, they indicate that they do not wish to present two different and opposed models but that relations between the tree and the rhizome are continuously forming, breaking, and reconnecting. Because of its complexity and probabilistic character as an uncertain system, the brain similarly functions in dynamic processes that can never be entirely fixed. This is why it can never function as a deterministic model (even if it can be taken up in all kinds of deterministic discourses). The brain is instead a continuously changing process and therefore fundamentally connected to movement and time. For Deleuze this is also the basic connection between the brain and cinema; and insofar as the contemporary neuro-image also asks questions about the future of cinema, this continuous transforming nature of the brain will be a rich recurring reference. When we finally come to assess the neuro-image’s dynamic and multifaceted political dimensions, we will see how rhizomatic structures are involved in the neuro-image’s paradoxical status: able to be incorporated by “capturing machines” and controlling powers (any brain, film, movement, device), it can also offer powerful possibilities for resistance.

As I have pointed out, Deleuze and Guattari take the rhizomatic structure of the brain as the guiding principle of their entire philosophy, the composure of which is itself demonstrated in a fractal way. In this sense the brain’s dynamic structure operates as a fractal figure in their thought, much like the “nested instancing” technology used to create the brain ride of *Fight Club*’s title sequence.<sup>43</sup> It is amazing to see how, from one book to

the next, Deleuze (on his own or with Guattari) develops a vast network of complex, multiple, and heterogeneous topics through which consistent and similar patterns and concerns reemerge like fractal thoughts. In his article “Schizoanalysis and the Phenomenology of Cinema” Joe Hughes has demonstrated, for instance, how the concept of “passive syntheses” (defined as operations that occur in the mind, as unconscious sensorimotor neurological actions) reemerges with variation in *Anti-Oedipus*, *The Logic of Sense*, and *The Movement-Image*: “In all three books subjectivity is founded on a material field which is described in the same way: material fragments communicate with one another independent of any subject.”<sup>44</sup> The concept of passive synthesis developed in *Difference and Repetition* in relation to time is also important for the neuro-image, as will become clear in the middle part of this book. At this point, however, it is necessary to acknowledge how my bringing together of these three domains—schizoanalysis, neuroscience, and contemporary cinema practice—raises some serious methodological questions.

### Methodological Challenges

Because the work of Deleuze and Guattari draws on a multitude of disciplinary sources, many intelligent and far-ranging commentaries and analyses have been written on the relationships between Deleuze and science and between Deleuze and different forms of art. Bringing all three domains of thought together, however, as I intend to do in this book, poses many challenges and risks. Therefore, from the beginning I want to explicitly indicate some of the positions and limits I am assuming when taking on this work. It is important to note that I do not imply any hierarchical order between the different domains of thought. I am not claiming, for instance, that philosophy or cinema is now (or increasingly) determined by discoveries in neuroscience or that software is now really taking command and controlling actions and thoughts. Rather, I want to bring recent developments in these different fields together to see how they resonate with each other to perhaps give us a more complete understanding of the complexities and political realities of life in the twenty-first century. My home discipline is media theory and film-philosophy, and this discipline forms my (pragmatic) grounding. I very much sympathize with

Daniel Frampton's filmosophical approach, in which he considers films as thinking entities, or so called "filminds."<sup>45</sup> Frampton does not suggest a perfect analogy between the human mind and the filmind, but he does point out that we could speak of the filmgoer's experience in terms of a (Deleuzian-sounding) "becoming with" the film characters, film idea, or film style: "The filmgoer experiences film more intuitively, not via technology or external authorship, but directly, as a thinking thing. . . . Film form is always there, and thus necessarily part of the actions and events, and filmosophy simply, holistically, bonds film's actions to dramatically thoughtful motives and intentions. Film style is now seen to be the dramatic intention of the film itself."<sup>46</sup>

In each chapter of this book a case study of a film, or a specific set of films, provides either the starting point or focal point of my elaborations and reflections. Rather than working as illustrations, films are instead acknowledged as actual seeds of thought: important encounters that create new brain circuits (new perceptions, new feelings, new thoughts) and that connect to or resonate with philosophical reflections and scientific findings. My speaking position is therefore not as a neuroscientist or a philosopher *pur sang* but as a film scholar, or rather film philosopher, extrinsically related to the fields of neuroscience and cinema practice. Additionally, I will take note of intrinsic slippages of aesthetic figures, conceptual personae, and partial observers.

I will introduce neuroscientific findings into the analysis of specific films to see what they can bring to the other fields of thought. Since modern neuroscience is by and large cognitive neuroscience, this has led me to a reconsideration of the difficult relationship between Deleuze and the cognitive sciences. Questions of the mind have traditionally been studied in the cognitive sciences and in analytical philosophy. Deleuzian thought seems far removed from these two already connected fields. However, as John Protevi has argued, recent shifts in cognitive science toward more ecologically embedded and bodily affective models makes the potential connection of Deleuze's work to the cognitive sciences less odd (in an epistemological sense) and more accessible for further development.<sup>47</sup> In the chapters that follow, my analyses will shift among a "holistic" approach to filmosophical thoughts, general resonances between the three domains of thought, and more small-scale analyses that draw from a neurocognitivist

approach. In other words, methodologically, my analyses will shift and slip between the conceptual level of infinity, the finite level of referentiality, and the compositional level of sensations. This approach is in accordance with that distinguished by Deleuze and Guattari in *What Is Philosophy?*

Interdisciplinary encounters between neuroscience and other disciplines and domains of thought are, of course, not new. Recently, neuroscientist Antonio Damasio has argued in *Looking for Spinoza* for the profound connections between Spinozan philosophy and affective neuroscience. Considering Spinoza as a “protobiologist” (“the biological thinker concealed behind countless propositions, axioms, proofs, lemmas, and scholia”),<sup>48</sup> he establishes Spinoza as a relevant thinker to neurobiologists. Spinoza’s notion of the correspondence between body and mind (specifically in the direction of body *to* mind) matches modern neurobiological findings. Still, Damasio’s open-minded search for an encounter with a philosopher is relatively rare within neuroscientific publications.

Jonah Lehrer’s *Proust Was a Neuroscientist* provides another exception to singular-disciplined models of scholarship. In the introduction to his book Lehrer recalls the starting point of his interdisciplinary reflections. While waiting for the results of scientific experiments in a neuroscience lab, Lehrer began to read Proust’s *Remembrance of Things Past*. Expecting to be perhaps merely entertained by a fictional story, in opposition to all the scientific facts involved in his work, he slowly began to discover a surprising convergence: the novelist had predicted many of the experiments neuroscientists have been conducting over the last two decades! Lehrer discusses the work of several writers, painters, and composers (Proust, Woolf, Cézanne, Stravinsky, and others) who seem to predict many scientific discoveries. He notices the deep schism between scientists and artists that perpetuate their description(s) of the world in incommensurable languages: “Thus, in our current culture, we have two epistemological extremes reflexively attacking the other. Postmodernists have ignorantly written off science as nothing but another text, and many scientists have written off the humanities as hopelessly false.”<sup>49</sup> Lehrer calls for a constructive dialogue through which the mutual suspicion between scientists on the one hand and artists and philosophers on the other might be overcome. Referring to Ian McEwan’s novel *Saturday*, which presents a single day in the life of a neurosurgeon, Lehrer argues that this novel

shows how even “on intimate terms with the cortex’s material workings,” we are confronted with “the only reality we will ever know: our experience. The feeling of consciousness. The feeling of feeling.”<sup>50</sup> Lehrer sees McEwan’s novel as a potent demonstration that even in this age of dizzying scientific detail, the artist remains a necessary voice.

Here I hope to contribute to the building of a bridge, called for by Lehrer and others, between the hard sciences and the humanities. Filmic fictions (art) and philosophical reflections aim to provide us with powerful truths about the experiences and metaphysical depths of contemporary media culture, while findings in neuroscience seek to describe and illuminate material aspects and functions of these experiences and depths. Although each discipline is replete with its own insights, it is only when film (or art), philosophy, and science are taken up together that we can truly comprehend the richness, layeredness, and immense complexity of human experience in contemporary digital media culture.

### Neuroscreens—Neurophilosophy—Neuropolitics

This book is divided into three parts, representing three dimensions of exploration for the neuro-image: neuroscreens, neurophilosophy, and neuropolitics, with three chapters dedicated to each part. Although the aspects of the neuro-image that I have laid out above (schizo powers of delirious overflow, powers of illusion, and powers of affect) play a role in each part and every chapter (another case of nested instances perhaps), they unfold with different emphases throughout the book. In Part 1, Neuroscreens: Principles of the Brain (Chapters 1–3), I present an initial investigation of contemporary neuroscreens. Modern film theory in the 1960s and 1970s, as it developed as Apparatus Theory, considered cinema as a “machine of the visible” that gave us illusions of reality. In contrast, contemporary media culture and its brain-screens present us with the reality of illusions and in this sense might be better considered as machines of the invisible. It is not so much the redeeming representation of reality that cinema presents us today. Rather, as we have just seen in my discussion of the opening sequence of *Fight Club*, we have moved literally into the minds of our characters, into the realm of the chaotic virtual, in which we are shown often directly and without warning the inner world of our

brains. Deleuze cites Paul Klee when he says that art is not meant to reproduce the visible but to present the invisible.<sup>51</sup> The invisible can be described as the virtual; the time-image makes the virtual visible; the neuro-image does this, too, but in a somewhat different way.<sup>52</sup> Taking “the brain as screen” in a nonmetaphorical sense, I hope to demonstrate how the neuro-image presents its own versions of the invisible as a “brain ride.”<sup>53</sup> In the three chapters of this first part the screen is thus read in accordance with principles of the brain, in an attempt to ground our contemporary screens in the physical materiality of the brain.

Chapter 1, “Schizoid Minds, Delirium Cinema, and Powers of the Machines of the Invisible,” investigates the clinical and critical aspects of schizophrenia by looking at schizophrenia as a neurological disease alongside contemporary cinema that explicitly deals with schizophrenia. I treat these as equally important sources of information and observation: the clinical symptoms of schizophrenia as neurological disease (including positive and negative symptoms and gendered differences) are instructive and resonate with cinematographic expressions and truths of “delirium cinema.” An analysis of *The Butterfly Effect* will, moreover, point out another important “schizo” dimension of such cinema: our changed relation to time. This chapter will return to the 1970s’ cinema of Fassbinder and Cassavetes to contrast and connect their versions of deliria to the more recent work of Lars von Trier and David Lynch, whose films demonstrate how the image has explicitly become a brain-screen in the delirium of the “digital turn.” The final part of this chapter will map contemporary digital culture as a schizoid culture full of hallucinating realities and increasing affective qualities and will attempt to position and characterize the neuro-image within this culture.

Chapter 2, “Illusionary Perception and Powers of the False,” focuses on the hallucinatory schizoanalytic “symptom” of the powers of the false. First I map the possible connections between film theory and cognitive neuroscience that can assess the turn to considering the screen as “illusions of reality.” Moving from this holistic perspective to a more detailed approach, I draw connections between recent findings in perceptual neurosciences that address visual illusions and two recent films that deal with visual illusions and magic, namely *The Prestige* and *The Illusionist*. These films that appeared in the same year both go back to the threshold of the

twentieth century to investigate the beginnings of cinema (and the media age) to reinvent media history itself and give the digital age an appropriate past. The end of Chapter 2 zooms out again to look at another film by Christopher Nolan, *The Dark Knight*, and investigate the conceptual implications of the powers of the false that correspond with the neurological necessity for “fictional selves” as described by cognitive neuroscientist Michael Gazzaniga.

Chapter 3, “Surveillance Screens and Powers of Affect,” considers another important aspect of contemporary screen culture, namely, the omnipresence of surveillance cameras. The discourse on surveillance is most often considered in terms of control and paranoid affects. However, alternative theoretical engagements are possible as well, which I will argue by looking at the aesthetic figures in *Red Road* and the art project *Evidence Locker*. In this chapter I investigate the schizoanalytical powers of affect via findings in affective neurosciences most famously elaborated by Antonio Damasio and Joseph LeDoux. The film analysis on a neurological level allows us to acknowledge a tension between “emotion” and “feeling” that relates to a particular form of suspense film in contemporary cinema that could best be described as “affective neurothrillers.”

After this first mapping of aspects of the neuro-image as brain-screens, and in relation to schizoanalysis, digital culture, and neuroscience, Part 2, Neurophilosophy: Turning Madness into Metaphysics (Chapters 4–6), investigates the philosophical groundings and implications of the neuro-image. While returning to schizoid symptoms of overflow and temporal confusion, the powers of the false and the powers of affect, the chapters of Part 2 pay less attention to their neuroscientific bases and more to the ontological, epistemological, and aesthetic dimensions of the neuro-image.

Chapter 4, “Signs of Time: Metaphysics of the Brain-Screen,” will develop the specific problem of time that was introduced in Chapter 1 as one of the confusing aspects of the schizoid mind (and of overabundant media culture). Henri Bergson’s *Introduction to Metaphysics* and his essays in *Mind-Energy* allow a general reconsideration of the relationship between physics and metaphysics, and his concerns with neurology serve as a general investigation of the temporal ontological implications of neuroscience. In this chapter I will revisit the cinema of Alain Resnais, analyzing



Resnais's films as cerebral membranes that are marked by a schizophrenic database ontology *avant la lettre*. Cross-reading Deleuze's cinema books with his conception of time in *Difference and Repetition*, this chapter will develop the neuro-image as a new dimension of time. Suggesting that the movement-image is based in the first synthesis of time of the present, and the time-image in the second synthesis of time of the past, I demonstrate how the neuro-image is based in the third synthesis of time, the future. This type of image has its incipience in *The Time-Image* but has developed to become central to the digital age.

Chapter 5, "Degrees of Belief: Epistemology of Probabilities," returns to the powers of the false and the reality of illusions. It proposes that in a world where the powers of the false render everything uncertain, Hume's skeptical epistemology, based on degrees of belief, seems to regain contemporary importance. Hume's thought will be related to the trans-medial storytelling of the television series *Lost* and James Cameron's 3D spectacle *Avatar* and to these moving images' deliberative travels between knowledge and faith. Both of these popular media forms are concerned with the powerful mythical desire to rebegin, described by Deleuze as a fundamental myth of desert islands. Here the question of major and minoritarian languages in the neuro-image will be addressed explicitly. Hume's epistemology and the question of belief also leads us to consider the problems of providence and free will that haunt contemporary media culture as well. This is one of neuroscience's acknowledged "hard questions," addressed in this chapter through the philosophical problems raised by the case studies.

Chapter 6, "Powers of Creation: Aesthetics of Material-Forces," takes up the question of affective powers in an aesthetic sense. This chapter refers to Deleuze's work on Leibniz and the baroque "fold." I will argue that in contemporary cinema, often referred to as neobaroque or digital baroque, the neuro-image has particular aesthetic aspects that directly express material-force relations of the affective brain-screen. Following my investigation of how cinema in the movement-image and the time-image has proposed its relations to the brain, often through the figure of a mad (neuro)scientist, I will analyze two films by Darren Aronofsky, *Pi* and *The Fountain*, to show the aesthetic implications of the neuro-image in relation to the affective powers of creation in the brain.

Part 3, Neuropolitics: Transnational Screen Connections (Chapters 7–9), considers the political and ethical aspects of the neuro-image. Here I address the more explicit micropolitical implications of schizoanalysis. The schizoanalytic elements of changed temporal relations, the powers of the false, and powers of affect will return in the chapters forming this part but are here discussed in their specific political dimensions.

Chapter 7, “The Open Archive: Cinema as World-Memory,” returns to the question of time within the schizoid database ontologies of contemporary culture and looks at the ways in which historical images sometimes behave as “strange attractors” of history. I will look in particular at Gillo Pontecorvo’s *The Battle of Algiers* and its redistributions and digital remixes to analyze how this film becomes a slippery memory of historical reality. Grappling with the similar insights of Eyal Weisman, I will address how the strategies of *The Battle of Algiers* and of Deleuzian rhizomatic philosophy become slippery tools in the hands of majoritarian forces, such as (most prominently) the Israeli army. In this chapter the schizophrenic production and antiproduction of cultural memory and political strategy is related to the ever-growing and transnationally spreading viral archive of digital culture, revealing a growing tension between “hyperhistoricity” on the one hand and “posthistoricity” on the other that perhaps, I will argue, could better be described as “prehistoricity” in contemporary media culture.

Chapter 8, “Divine In(ter)vention: Micropolitics and Resistance,” investigates, through the minoritarian cinema of Palestinian filmmaker Elia Suleiman, the political aspects of the fabulating powers of the false. This chapter quite necessarily works through the renowned theoretical objections to Deleuze’s work voiced by postcolonial scholars and political philosophers by reinvestigating Deleuze’s key, yet largely misunderstood, concepts, such as nomadic thinking and becoming-minoritarian. Elia Suleiman’s trilogy—*Chronicle of a Disappearance*, *Divine Intervention*, and *The Time That Remains*—shows how art can contribute to politics via the creation of a people. Here, “violence” and “laughter” are discussed conceptually, as forms of resistance that “gain time” for the future in a neuro-image based in the third synthesis of time.

Chapter 9, “Logistics of Perception 2.0: Multiple Screens as Affective Weapons,” finally investigates the ways in which the Iraq War has

seemingly multiplied on many different screens. While on the one hand this explosion of war images has led to what Nicholas Mirzoeff has called a “banality of images,” I want to consider the affective aspects of multiple war screens in terms of an infernal baroque *Gesamtkunstwerk*. Several Iraq War films, including Brian De Palma’s *Redacted*, Kathryn Bigelow’s *The Hurt Locker*, and Paul Haggis’s *In the Valley of Elah*, show in a reflective way how these multiple screens have quite literally entered our minds to present a “logistics of perception” completely different from the kind that Paul Virilio and Jean Baudrillard theorized in relation to the first Gulf War, when they implored the disappearance of reality behind extensive technological mediation. Here I will argue that in contemporary screen culture, understood through a Deleuzian schizoanalytic lens, reality returns with an affective vengeance—with positive and negative effects.

The films I chose for this book as my doorways of (mad, illusionary, affective) perception all share certain elements that shape (or prefigure) the neuro-image as a “genre,” in the sense of Rick Altman’s definition of syntactic and semantic elements of film genres.<sup>54</sup> Their characters are schizos, forgers, magicians, con artists, tricksters, (mad) scientists, affected surveillance operators, traumatized or paralyzed soldiers, and other persons evidencing “abnormal” behavior. Their preferred locations are psychiatric wards, desert islands, laboratories, cosmic space, surveillance rooms, battlefields, and crowded screen-covered cities. Their narrations are complex, extended or transmedial, and free indirect.<sup>55</sup> Stylistically they follow the abstract patterns of networks, mosaics, fractals, and other complex geometric (con)figurations. They may be part of mainstream Hollywood (majoritarian) but in one way or another relate to the powers of schizoanalysis. In almost every case these artistic expressions are the finite composite sensations that “restore the infinite.” As such they mediate between the philosophical concepts that reach out “to infinity” and the scientific state of affairs that give us “referential propositions.”<sup>56</sup>

At this point I should state my position in relation to certain debates that tend to arise in proximity to the territory that I traverse throughout the book. First, in taking schizophrenic pathological symptoms as the starting point for further investigation into salient aspects of digital screen culture, I mean to imply that contemporary culture is “schizophrenic”

in its changed relation to time, in its powers of the false, and in its powers of affect. I certainly do not want to romanticize schizophrenia as a disease; it is quite frightening and tremendously difficult to live in a state of engulfment, hallucination, paranoia, and fear. But these pathological symptoms do shed light on the processes of our own brains (or changed conception of the brain itself) and collective culture. As neuroscientist Marta Kutas has argued, we all have schizophrenic characteristics in our neurological system, but only in an intensified or multiplied form do they become a disease.<sup>57</sup> I also imply that schizophrenia is both a symptom of contemporary culture and a form resistance. This is in line with Deleuze and Guattari's rich conceptualizations of schizophrenia and capitalism in *Anti-Oedipus* and *A Thousand Plateaus*.

In respect to the possible future developments or death of cinema, a question so strongly conjured by the presence of the neuro-image itself, I suggest that cinema is not dead, is perhaps more undead, but could even be considered more alive than ever. Film as film is indeed profoundly marked by digital culture, but the internal changes in film aesthetics (from database logic, to changed relations to time, to the cinema's more illusionary and affective powers) were already present before the digital age and are thus not dependent on digital technology per se. In my engagement with neuroscience I have to emphasize that I am not suggesting any hierarchy between disciplines but look instead for productive encounters. Therefore I will not argue that neuroscience can dictate our inquiries in a deterministic way (the brain remains too probabilistic in any case, and the "experience of our brains" is difficult if not impossible to translate in purely neurological terms). Nor will I argue that the humanities disciplines should be called in to "tame" the wild and flexible materiality of our neural networks or the neuroscientific discourse about this. But neither does politics disappear; on the contrary, the micropolitics of our brains and the macropolitics of our institutions or political systems, economies, and ideologies have to be thought together.

If the brain is the screen, screens and brains have to be studied together. Calling this new type of image the "neuro-image" is to acknowledge the fact that images now quite literally show us the illusionary and affective realities of the brain. Obviously the movement-image and time-image also have a relation to the brain, albeit a different one, as I will show

more elaborately in the later chapters of this book. However, the fact that we now literally enter brain-worlds in cinema (the earlier mentioned *Fight Club*, James Cameron's *Avatar*, Christopher Nolan's *Inception*, and Duncan Jones's *Source Code* are just some of the most recent films of this type) means that a transdisciplinary encounter between film, philosophy, and neuroscience is not only important but also necessary to pursue. Perhaps other names could be given to this type of image too (the future-image, perhaps—numerous suggestions are possible), but any name has its own limitations.

The larger issue—one that has tended to drive disciplinary allegiances and standoffs throughout the history of (film) theory itself—is in fact where we should be situating the *screen* (in relation to the neuro-image). Should it be quite literally inside the brain or situated externally? In his article “Where Is the Screen?” Robert Pepperell takes up this question by referring to two dominant traditions: internalism, which locates the screen entirely in the mind (referring to neurological studies that see, for instance, vision as entirely depending on operations of the mind), and externalism, which sees the screen completely in the world (referring to equally important neurological studies that show, for instance, that perception depends completely on our continuing interactions with the world).<sup>58</sup> Pepperell proposes to look at the screen in a third way, as a “dialectic” relationship, acknowledging the simultaneous truths of both models. He explains:

Were the mind and world distinct we could more justifiably defend the internalist view that the screen is perceived somewhere inside the perceptual apparatus of the brain. Were the mind and the world unified we would tend towards the externalist position that the perception of the screen occurs as much in the world as it does inside the mind, since the two are continuous. But on the third count, that of simultaneous distinction and unity, we encounter a dialectic state—the screen is perceived “in here” and “out there” at the same time.<sup>59</sup>

This is exactly the position that Deleuze gives to the brain and the screen when he argues that “the brain’s precisely this boundary of a continuous two-way movement between Inside and Outside, this membrane between them.”<sup>60</sup> This is also the position of the screen that I will defend in this book.

The Power of Images, Mirror Neurons,  
and Creation of New Brain Circuits

In *L'Abécédaire de Gilles Deleuze* (*The ABC of Gilles Deleuze*) Claire Parnet proposes *zigzag* as the final corresponding term of a Deleuzian alphabet.<sup>61</sup> Deleuze loves ending with this word. “There is no word after zigzag,” Deleuze says to Parnet. “Zed is a great letter that establishes a return to A.” Zed as the movement of the fly, the movement of lightning, is perhaps the elementary movement that presides at the creation of the world. Deleuze even proposes half-jokingly to replace the Big Bang with “Le Zigzag.” For the creation of a universe, for any universe, for everything there is, he argues that the most elementary question is, How can a connection between singular points, between different fields of forces be created? It is possible to imagine a chaos of potential, but how is it that we can bring elements into real relation? According to Deleuze everything consists of connection, and these connections are rarely made in a linear or predictable fashion. Each connection is prepared, however, by a “somber precursor”—a kind of experience with a trajectory that is barely noticed but brings about a reaction between different points or forces. And then we have the lightning, *le zigzag*, that creates an insight (“l'éclair qui fait voir”), a flash-forward perhaps, a glimpse from (a speculative) future that imposes an affective thought.

In *Michael Clayton* Arthur Edens's moment standing frozen in the middle of the traffic and urban screens of New York City could be considered his somber precursor. His encounter with Anna, one of the victims of U/North, is the moment the lightning hits. But Michael Clayton, too, has an insight provoked by a special encounter. At the beginning of the film all we know of Clayton is that he probably works as a fixer (a “truth adjuster”) for his law firm and may be in financial trouble himself (just before seeing a client who was the cause of an accident and needs access to Clayton's truth-“fixing” skills, Clayton himself is shown in some underground gambling venue). However, in the scene that actually frames the film's intro (intercut with these limited other scenes), Clayton is shown driving along a country road. It is very early in the morning. The winter landscape is covered in mist. The music has a slightly threatening undertone and Clayton's expression is somber, and then he stops the car. The music stops

too. He looks through the car window and the branching structures of leafless trees are reflected in the glass screen. He opens the window to see more clearly and then gets out. The camera is behind him, and for a few seconds his body blocks the view of what he is actually looking at. The branches of the trees seem to grow out of his head, and a moment later, branches reflect on his car like neural patterns. The *mise-en-scène* here seems to emphasize the brain-screen. Then we see what attracted Clayton's attention: in the distance atop a hill, next to a few trees, three horses seem to summon him. Clayton walks toward them, uncertain, in doubt, questioning. The horses don't run away. In several close-ups we see how they look at Clayton, who can almost touch them now. The horses seem magical, as if they come from another temporal dimension and want to tell him something. In a long shot we see his car in the distance, the engine obviously still running, as steam escapes from the muffler. Then there is a sudden explosion . . . and the car goes up in flames. The horses run away. Clayton runs back to the car and realizes he has been saved by this strange encounter. After this glimpse at the future of the story line, the narrative moves four days back in time.

The scene in itself is breathtaking. Without exactly explaining these events, the affective qualities of the images, the cold early morning mist, the trees, the horses, the expression on Clayton's face, and the explosion tell us that this is a decisive moment, a moment of insight. The subsequent narrative of the film will show us the events that led to this moment. Toward the end of the film this scene is repeated, like a feedback loop with slight variations. As spectators we now know how all of the characters are painted in moral gray tones, how inhuman decisions get made by people under extreme pressures (Tilda Swinton is brilliant in her role as top manager Karen Crowder of U/North), how Arthur Edens is murdered for his delirious and endangering transgressions, and how Clayton has realized that he has no choice (the choice of no choice) but to accept a check from his boss in order to pay his debts instead of pursuing the crimes of U/North (and the implication of his own firm) that he discovered through Edens. The horse scene is picked up for the second time when Clayton drives his car in the misty countryside. But now we also see that the contract killers who also murdered Edens are following Clayton. The same music now sounds hastier,

more threatening. We have seen, too, that Clayton found the book of his son's multiplayer fantasy game, *Realm and Conquest*, in Edens's apartment—one of the drawings in the book depicted horses standing next to a leafless tree. On the level of the narrative this sign could be seen as a superfluous explanation for Clayton's stopping of the car. It could also be considered a dark (opaque) precursor that leads to Clayton's flash of insight, or even an acknowledgment of the *question* of belief as being just that. We see how in the subsequent events Clayton finally acts upon his friend's summons for schizoid resistance and change.

At the same time, the affective qualities of this scene also work without narrative explanation. This has to do with the immanent power of images, described by Deleuze in his cinema books. When Deleuze argues that images are not representations and that they affect us directly, this has to be seen in terms of his cogent understanding of the brain. The fairly recent discovery of mirror neurons gives further material referentiality to Deleuze's conception of the power of cinematographic images. Mirror neurons are neurons that fire when we actually do something but that also fire when we see (or hear) somebody else doing something. For some parts of the cerebral mechanism, then, seeing is doing (the phenomenon is sometimes referred to as "Monkey see is monkey do"). Thus for these parts of the brain there is no difference between seeing someone or something in reality or seeing someone on film. Damasio describes this phenomenon, discovered by neuroscientist Vittorio Gallese and his team, in *Looking for Spinoza*.<sup>62</sup> Something we see literally touches areas in the brain that imitate the perceived actions or feelings. This means that in neurological terms images cannot (just) be considered representations of an objective reality but instead have an internal power that creates certain effects in the brain—which means images create new brain circuits in the spectator who receives and processes them. As Antonio Damasio argues, neural patterns and corresponding mental projections of objects and events outside the brain are creations of the brain that are related to the reality that causes these creations, not a passive reflection of this reality. Each brain will have a slightly different perception of reality (of images). Even the same brain, changing over time, will see the same image differently at a different moment. Moving between outside and inside, this is a dynamic and dialectic conception of the brain-screen.



Mirror neurons, and the way in which the brain is affected by images, can give insights into the implications of Deleuze's brain as screen. There is also specific compatibility between our knowledge of mirror neurons and Deleuze's taxonomy of images in his cinema books. In *The Movement-Image* Deleuze classifies image categories such as the action-image, the affection-image, the impulse-image, and the relation-image: they cause action, affection, impulses, or thoughts in the brain. They touch the brain directly, and they also modify our subjectivities; they are what Deleuze calls "material aspects" of our subjectivity in which the brain and the mind are one. So spectatorship, in terms of Deleuzian film-philosophy, can best be seen in terms of being affected by "signaletic material" that changes and forms our subjectivities in an ongoing process. Seeing *Michael Clayton* is, in fact, a neurological experience of becoming Michael Clayton (if only momentarily). And horses in the winter mist, we might consider, become potentially forever connected to Clayton's story of insight and change. In *Difference and Repetition* Deleuze discusses signs as our most important way of learning (which is nothing other than creating or enforcing new brain circuits): "Learning takes place not in the relation between a representation and an action (reproduction of the Same) but in the relation between a sign and a response (encounter with the Other). . . . To learn is indeed to constitute this space of an encounter with signs. . . . They testify to the spiritual and natural powers which act beneath the words, gestures, characters and objects represented."<sup>63</sup>

The film *Michael Clayton* makes clear that to take signs seriously is a matter of belief and choice and not of certain knowledge. Choice in Deleuzian terms is related to the vitalism that signs testify to, and it is usually provoked on an affective level; it can be sensed more than known. So how is sensation a kind of choice experience, or experience of choice, in the brain and in what ways does it relate to spirituality? In *What Is Philosophy?* Deleuze and Guattari discuss how sensation in art (cinema) responds to chaos by contracting "the vibrations of the stimulant on a nervous surface or in a cerebral volume: sensation itself vibrates because it contracts vibrations. It preserves itself because it preserves vibrations. Sensation is the contracted vibration that has become quality, variety. That is why the brain-subject is here called soul or force, since only the soul preserves

by contracting that which matter dissipates, or radiates, furthers, reflects, refracts, or converts.”<sup>64</sup>

A sensation is therefore a contraction, a passive synthesis, a contemplation of elements of matter that preserves the before in the after. Deleuze and Guattari relate this aspect of sensation not just to humans but to all kinds of organisms. Plants and rocks do not possess a nervous system, but they seem to share chemical affinities and physical causalities that constitute “microbrains” or an “inorganic life of things,” as they put it.<sup>65</sup> Further, this vitalistic conception of spirituality has nothing to do with dreams or fantasy, but it is rather “the domain of cold decision, of absolute obstinacy, of the choice of existence.”<sup>66</sup> The cold decision is somewhat how it sounds, seeming to contradict the sensations that go with it, but in fact it is completely logical from a vitalistic perspective that sees the universe full of microbrains that are constantly moving, acting and reacting, but that in sensations find a moment of pause, where all options are still open, and a decision has to be made. When in *The Movement-Image* Deleuze discusses the affection-image, the image category that creates sensations par excellence, he explains this idea of spiritual choice further: the alternatives are not between terms (such as *good* or *bad*) but between modes of existence of the one who chooses.<sup>67</sup> The true spiritual choice is choosing choice (choosing that you have a choice) or choosing that you have no choice. While Michael Clayton first assumed that he had no choice (but to accept the money from his boss), his spiritual choice, enforced by the encounter with a sign (the horses), is to choose choice. The question of the spiritual choice is of great importance, says Deleuze, because “choosing to choose is supposed to restore everything to us.”<sup>68</sup> What is regained is a belief in this world, because the modern fact is that the link between man and world is broken. Deleuze argues:

This link must become an object of belief: it is the impossible which can only be restored with a faith. . . . Only belief in the world can reconnect man to what he sees and hears. The cinema must film, not the world, but belief in this world, our only link. . . . Whether we are Christians or atheists, in our universal schizophrenia, we need reasons to believe in this world.<sup>69</sup>

So perhaps, against all odds, the multiple and heterogeneous screens that surround us with schizoid franticness, instead of removing us always further from reality, may come to our salvation. By investigating the

conditions, limits, and potential flashes of insight of neuro-images, this book endeavors to see how art, science, and philosophy can come together to turn our contemporary madness into metaphysics and into micropolitical forms of resistance that are at the basis of any change. The neuro-image testifies to how the brain has become our world and how the world has become a brain-city, a brain-world.