

DELEUZE:

THE THINKING OF THE BRAIN¹

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After the publication of *The Time-Image*, Deleuze gave two interviews, one to *Cinéma* magazine in December 1985 (repeated in *Pourparlers*),² the other to *Cahiers du cinéma* in February 1986 (repeated in *Deux régimes de fous*).³

I am going to read two long passages from them.

The question by Gilbert Cabasso and Fabrice Revault d'Allones in the first interview had to do with the changes that affected the nature of images that Deleuze had just mentioned.

But what are the principles behind these changes? How can we assess them, aesthetically or otherwise? In short: on what basis can we assess films?

I think one particularly important principle is the biology of the brain, a micro-biology. It's going through a complete transformation, and coming up with extraordinary discoveries. It's not to psychoanalysis or linguistics but to the biology of the brain that we should look for principles, because it doesn't have the drawback, like the other two disciplines, of applying ready-made concepts. We can consider the brain as a relatively undifferentiated mass and ask what circuits, what kinds of circuit, the movement-image or time-image traces out, or invent, because the circuits aren't there to begin with.⁴

Deleuze added in conclusion:

Once again it's a cerebral matter: the brain's the hidden side of all circuits, and these can allow the most basic conditioned reflexes to prevail, as well as leaving room for more creative tracings, less "probable" links. The brain's a spatio-temporal volume:

it's up to art to trace through it the new paths open to us today. You might see continuities and false continuities as cinematic synapses — you get different links, and different circuits, in Godard and Resnais, for example. The overall importance or significance of cinema seems to me to depend on this sort of problem.⁵

Deleuze used these words, among others, to respond to the *Cahiers du cinéma* collective who came together around his book

The brain is unity. The brain is the screen. [This was the title given to the interview.] 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. As Michaux said, "*Man is a slow being, who is only made possible thanks to fantastic speeds*". The circuits and linkages of the brain don't preexist the stimuli, corpuscles, and particles [*grains*] that trace them. Cinema isn't theater; rather, it makes bodies out of grains. The linkages are often paradoxical and on all sides overflow simple associations of images. Cinema, precisely because it puts the image in motion, or rather endows the image with self-motion [*auto-mouvement*], never stops tracing the circuits of the brain. This characteristic can be manifested either positively or negatively. The screen, that is to say ourselves, can be the deficient brain of an idiot as easily as a creative brain. [...] Bad cinema always travels through circuits created by the lower brain: violence and sexuality in what is represented — a mix of a gratuitous cruelty and organized ineptitude. Real cinema achieves another violence, another sexuality, molecular rather than localized.⁶

These answers directly extend the central pages of the "Cinema, Body and Brain, Thought" section of *The Time-Image*. There, Deleuze invoked all the consequences of

the “general redistribution” resulting from progress in scientific knowledge of the brain. He based his arguments on a number of scientific works: Gilbert Simondon, to whom he had long been frequently referring, particularly to his book *L'individu et sa genèse physico-biologique*,⁷ Raymond Ruyer and his *Genèse des formes vivantes*,⁸ Steven Rose and his *The Conscious Brain*⁹ and especially *L'homme neuronal* just published by Jean-Pierre Changeux (1983).¹⁰ Deleuze was inspired by them to develop a conception of the “brain as an acentred system”. He focused particularly on the opposition between electric and chemical transmission from one neuron to another. The former produces breaks that can be called “rational”, while the latter produces “irrational” ones, assuming a random or semi-random factor.¹¹

We notice, and this is essential, that these two types of break between neurons are analogous to the comparison that Deleuze makes between *The Movement-Image* and *The Time-Image*, between the types of link belonging to each of these two main forms of image: the rational interval of the action image, the irrational interstice that makes the crystal-image.

While Deleuze recognised the cinema as a brain (or brain-body), it is essential for a neurobiologist to be able to recognise the brain (brain-body) as cinema.

This is, for example, the case of António Damásio, by continuous references in his three major books published between 1994 and 2003: *Descartes' Error: Emotions, Reason and the Human Brain*; *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*; *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*.¹²

In *Descartes' Error*, even before the word cinema had been spoken, it is the metaphor of the film conveyed by the image of the train that imposes itself: “I conceptualize the essence of feelings as something you and I can see through a window that opens directly onto a continuously updated image of the structure and

state of our body.”¹³ There is thus a constantly invoked “movie-in-the-brain,” in which everything suggests that the real film can produce an image because it was itself based on the more or less virtual model according to which the brain-body develops so that it can project itself in the world and as a world.

Movies are the closest external representation of the prevailing storytelling that goes on in our minds. What goes on within each shot, the different framing of a subject that the movement of the camera can accomplish, what goes in the transition of shots achieved by editing, and what goes on in the narrative constructed by a particular juxtaposition of shots is comparable, in some respects to what is going on in the mind, thanks to the machinery in charge of making visual and auditory images, and to devices such as the many levels of attention and working memory.¹⁴

On the other hand, it is as an emblem of the functioning of memory that the idea of film acquires its breadth. Twice, in two of his books Damásio used the example of *Brigadoon* (1954), Vincente Minnelli’s musical comedy, recalling the argument by which this village whose name does not figure on any map only wakes up every 100 years, just as the cinema and brain keep doing in relation to each other.

We would like to quote a recent article in the catalogue of an exhibition held last autumn at the FilmMuseum in Berlin, *Kino im Kopf (Cinema in the Head)*: “Film, Mind and Emotion: The Brain Perspective”. Here, Damásio furthers a comparison, the force of which can be summarised in these words:

It is apparent that the brilliant people who developed film techniques decades ago were inspired, sometimes consciously and sometimes unconsciously, by the workings of the human mind as produced by the greatest and most byzantine of film studios: the human brain.¹⁵

It is in this way of thinking, and focusing more specifically on the question of the emotions produced from the very body of films taken in their detail that I based my arguments on the works of Daniel Stern, the famous American infant development specialist (and particularly his great book of 1985, *The Interpersonal World of the Infant*).¹⁶

I remember that in his last book, *Chaosmosis*, Félix Guattari wrote crucial pages to show to what extent Stern's conceptions were in harmony with his own constructions, both in an "ontology" of subjectivisation and an "aesthetic paradigm."

There is also a very clear articulation that both recognised between the works of Stern and Damásio, for example between Stern's fundamental concept of vitality affects and Damásio's concept of background emotions. In his latest book, *The Present Moment in Psychotherapy and Everyday Life*,¹⁷ Stern brings his research closer and closer to the neurobiology of the brain.

If the concept of vitality affects is so important to thought on art in general and the cinema in particular, it is because vitality affects are irreducible to discreet or Darwinian affects, assuming psychological contents like fear, sadness, shame, etc. On the contrary, we are talking about affects associated with the force, intensity, quality, form or rhythm of an experience, which touch it in the detail of its material reality. These vitality affects are the expression of so-called amodal perception, which ensures circulation between the different levels of sensorial reality from the first months of life. These are all the modalities that, in the words of Deleuze and Guattari, form part of a non-signifying semiotics and of a logic of flows.

By using Stern's concepts and descriptions, I was able to constitute a reality of the film spectator's experience conceived from the body of the films themselves, analysed at multiple levels of detail.¹⁸ This is not an application but rather an isomorphic or analogical construction of the cinema spectator from the "infant's interpersonal world." This hypothetical construction of a body of cinema articulates

directly with the concept of a cinema-body-brain as it is used in Deleuze's two books on the cinema. But it also articulates with his vision of "perception in the folds," developed in *The Fold*, his book about Leibniz, i.e., with his formulation of a redoubling molecular unconscious, which he called "cinema in itself" in his books on the cinema, after Bergson.

This brings us to an inevitable confrontation between art and science and between science and philosophy, the same one made by Deleuze and Guattari in *What Is Philosophy?*

Before going there, I would like to quote the example of a relatively recent scientific discovery, which raises the problem of this confrontation in its acuity.

It has to do with mirror neurons, the "crucial" discovery of which Daniel Stern hailed in *The Present Moment in Psychotherapy and Everyday Life*.¹⁹

We first learn in depth that these pre-motor neurons adjacent to the motor neurons, which they complement, were discovered recently in the brain of macaques and then found in humans. The name chosen for them comes from the fact that they are activated in the brain both when a subject performs an action and when another subject merely observes that action. It is not exactly a question of imitation, because the same movement actually made by a subject is, in fact, simulated by another. Proven results are still limited (they mainly address movements of the hand, foot and mouth and also sounds accompanying these actions). However, they have already prompted an impressive number of hypotheses on human intersubjectivity and communication.²⁰

Vittorio Gallese, one of the discoverers of mirror neurons, also suggested the general term "shared manifold of intersubjectivity" to measure the extent of a phenomenon that he sees occurring at three levels.²¹

a) a sub-personal level, based on the activity of a series of mirror neural circuits closely linked to multiple changes in states of the body and appropriate for creating shared spaces of sensations and emotions;

b) a functional level of “embodied simulation,” an “automatic, unconscious, and pre-reflexive functional mechanism, whose function is the modeling of objects, agents, and events,” in which embodied simulation is regarded as “basic functional mechanism of our brain”;²²

c) a phenomenological or empathetic level that returns, from a neuro-biological perspective, to the intuitions of Theodor Lipps, the great theoretician of empathy of the early 20th century, and of Edith Stein, Husserl’s student, and even Merleau-Ponty. It is therefore a concept extended to the socially and neurobiologically based exchange of empathy that makes it possible to project mirror neurons.

It is easy to understand how someone like Stern would be interested in these mirror neurons, as they become a living, proven incarnation of the functioning of the “intersubjective matrix” that is at the heart of his latest book through the reality of what he calls present moments, when developing the knowledge acquired in his *The Interpersonal World of the Infant*.²³ We also discern the virtuality with which mirror neurons seem to be able to fuel an intellection of the cinema. The more or less unconscious exchange established in the reality between two brain-bodies, one acting and the other simulating the act in thought, irresistibly evokes a parallel exchange that seems to take place between the active body of an actor-character and that of an apparently passive observer-receptor, the spectator. This vision immediately raises the delicate question of distances between the effects caused by a real movement and a recorded movement made into an image and belonging to a body of illusion.

But above all, the essential thing is that all action of the body in the cinema belongs to the forms and forces of image in the framework in which it is produced. Therefore a film stripped of all human bodies, attached only to the body of the earth viewed by the mechanical eye of a camera, is all together and perhaps more purely a film, as Michael Snow clearly showed in *La région centrale* (1971). It is thus in the eyes of the reality of the body of the film in its entire unreality that we should conceive the effects of sensitive transfers like those that mirror neurons invite us to conceive.²⁴

We also see the abyss that opens up here between a scientific vision and an aesthetic or philosophical conception, even though the latter is willing to be inspired by the former. Let us, for example, envisage the distinction that Stern makes between vitality affects peculiar to the intensity, rhythm and form of stimulation, and the corresponding temporal contours in the development of the present moment.²⁵ First and foremost, vitality affects are subjective experiences. On the other hand, their temporal contours, which are “polyphonic and polyrhythmic,” according to Stern, are theoretically objectifiable, i.e., calculable.

On this subject, Stern highlights the extent to which progress in the field of cerebral imaging and neurophysiological recording techniques have today placed the neurosciences in a position to clarify these questions. He distinguishes between two types of necessary data: an exact timing of brain activity correlated to phenomenal experiences; and timing of analogical changes in intensity or magnitude of neuron discharges during these same experiences. “With just that much, one could propose a scientific correlate to the subjective experience of vitality affects. More important, a typology of time-shapes of neural activity related to various experiences would merge.”²⁶

Thus, between the phenomenology of the experience and the possibility of calculating it, we find the perspective of an exact science of behaviour and effects, as

well as of works of art in their effects. Stern is careful not to project it as such, even when he highlights the contribution of mirror neurons to a greater understanding of intersubjectivity. But, even so, that is what one might infer.

We have reached a limit here, the same one that Deleuze and Guattari described in *What Is Philosophy?* Philosophy, art and science are defined there respectively by their concepts, sensations and functions. If the word chaos is certainly the most active in this book, it is because these three forms of thought have three different ways of “confronting chaos, laying out a plane, throwing a plane over chaos.”²⁷ But while the forms of interference between these three forms of thought all have to face chaos, the differences between the three systems are just as clear.

The terms finite and infinite are the ones that best express them. There where philosophy “wants to save the infinity,” brings events or concepts to the infinite, “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.” In turn, art “wants to create the finite that restores the infinite.” This is why we can think of art by linking its finite-infinite to the infinity of philosophy. On the other hand, there is always a risk, whatever the light in which we receive it, of submitting art to the endless redefined finitudes peculiar to the state of affairs and the functions of science.

There is a risk of a standardisation of application, in which the rule becomes fatally reductive of the exception that all works of art naturally constitute in spite of the regularities within which it is found. Because these regularities are always secondary or at least insufficient in expressing the singularity from which all works emerge, in line with the “composite sensations” that it builds. This is why, inspired

particularly by Stern's extraordinary, precise visions of the world of infants as micro-elementary experiences of what he calls the present moment, I felt I had to insist on the dimension of analogy or isomorphism that these visions offer to the intelligence of films. This, rather than seeking to conform instants and moments in films too precisely to Stern's descriptions to try and produce some kind of transfer from them.

We see it in the astonishing example of the mirror neurons. The more groundbreaking, increasingly unprecedented advances of science seemed able to provide models capable of clarifying the functioning of material thought of imagination peculiar to all works of art, the more the thought attached to these works should be distinguished from it, as if in proportion to the suggestions that it receives.

This takes us back to endeavouring to understand the final pages of *What Is Philosophy?* They are devoted to the brain as a junction and not as unity, of the three planes of thought. Two formulas outline the problem. "If the mental objects of philosophy, art and science [...] have a place, it will be in the deepest of the synaptic fissures, in the hiatuses, intervals, and meantimes of a non-objectifiable brain, in a place where to go in search of them will be to create." "Philosophy, art and science are not the mental objects of an objectified brain but the three aspects under which the brain becomes subject."²⁸

This insistence therefore supposes for science, through its models of objectification and recognition, "to make evident the chaos into which the brain itself, as subject of knowledge, plunges."²⁹ The probabilistic and risky nature of synaptic, electrical and chemical connections is thus determinable beyond all links, the guarantee of "the free effect that varies according to the creation of concepts, sensations, or functions themselves." Hence, through the irreducibility that remains between the three planes of thought, analogies between the problems

facing each one in accordance with its own level and the interferences to which they are prey.

We can now go back to that opposition that Deleuze expressed in one of his two interviews, if you remember, between a “deficient brain of an idiot” and “a creative brain,” between “the lower brain” of bad cinema and that of “real cinema.”

This opposition is obviously controversial. Deleuze borrows these terms in *The Time-Image* from the great Russian writer Andrei Bely in his novel *Petersburg*.³⁰ In part he only recovers the tension between the non-objectifiable brain and the objectified brain in *What Is Philosophy?* But this part is essential. It makes it possible for the future-subject of the brain to agree with the invention of art as the virtualities of science rather than the regulatory standards of scientific objectivism. Because we know, and neurobiologists insist, that each brain is a singular individual brain, just as, in another way, any work of art is.

This brings us back to the question of evaluation of films that Deleuze was trying to answer by opposing the two ideas of the brain. How does one evaluate a good film, the good films in the cinema? One might answer, as Deleuze does in his books, that it is by the capacity that these films give him to think of them philosophically, to produce concepts from them. But it is also thanks to the opportunity they provide for true analyses of detail at levels that are not yet glimpsed enough, with a view to what we can call their molecular unconscious. We can also say that this analysis is conducted more or less by audio-visual media or just in words, which they allow us to develop as a commentary, writing, their “writability” if you like.

Thus, from one side of the brain to the other, we can say, where film is concerned, that only the analysis that we can make of it is authentic. An analysis

that is both finite and infinite. In itself, in one sense, it has only the endurance of its reading, as Barthes said at the beginning of *S/Z*, before giving in to the starrings of the text, to the myriad effects of its unbridled structuralism. He wrote for example: "There is no other *proof* of a reading than the quality and endurance of its systematic."³¹

In this sense, there is no science of the cinema. There is no science of the viewer; there are only the spectator's thoughts and experiences. Advances in science enable us, as far as possible, to pinpoint the spectator's thoughts; though they cannot compensate for them. If we accept that the day will come (soon or in the distant future?) when it will be possible to have an exhaustive super-scanner of all a spectator's cerebral and corporal information while watching a film, we will still have to know how to read and interpret this huge score. After that, we have to know that it will be valid, in spite of all it might imply, for only one film and even for only one spectator. There is always the fear that the film and the spectator are all the more average, standardised, attuned to the dominant cinema, that one wants to address a supposed truth of the film and its spectator in a sort of monstrous, targeted freeze-frame. This is why, in their dogmatic application of knowledge of the cognitive sciences, most cognitive theoreticians of the cinema are, for example, inevitably attracted by Steven Spielberg's films and Hollywood blockbusters.

On the contrary, this is forever the priceless lesson of Chris Marker's *La Jetée* (1962) (and that of *Je t'aime, Je t'aime* [1968] by Alain Resnais, who repeats the attempt in a different way): we understand that the experience of the subject in search of a truth that is peculiar to the production of images turns back on itself in accordance with a specific subjective time, in order to fulfil a man's individual destiny, even if this man is also testifying for the species. All science of art therefore lives in the tension between real science and the impossible science of the single being reached by Barthes at the turning point of *Camera Lucida*, when confronted

with the photograph of his mother as a child, the so-called winter garden photograph.³² He said: “a new science for each object,”³³ to take to the limit the paradox whose terms must be kept alive.

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1. This article is the result of two presentations, one at the Sorbonne at a workshop devoted to Gilles Deleuze and the other a more complex lecture in Istanbul on 4 April 2007 as part of a cycle on Deleuze and the cinema organised by Ali Akai. [Originally published as “Une pensée du cerveau”, in *Gilles Deleuze et les images*, ed. François Dosse et al. (Paris: Cahiers du cinéma, 2008), 187-95.] (E.N.)
 2. Repeated in Gilles Deleuze, *Negotiations 1972-1990*, trans. Martin Joughin (New York: Columbia University Press, 1995), 60-66. (E.N.)
 3. Repeated in Deleuze, “The Brain Is the Screen: An Interview with Gilles Deleuze”, trans. Marie Therese Guirgis, in *The Brain Is the Screen: Deleuze and the Philosophy of Cinema*, ed. Gregory Flaxman (Minneapolis: University of Minnesota Press, 2000), 366-67. (E.N.)
 4. Deleuze, *Negotiations 1972-1990*, 60.
 5. *Ibid.*, 61.
 6. Deleuze, “The Brain Is the Screen,” 366-67.
 7. Gilbert Simondon, *L'Individu et sa genèse physico-biologique* (Paris, Presses Universitaires de France, 1964). Not translated into English, except the Introduction which appears in Jonathan Crary and Sanford Kwinter, eds., *Incorporations* (New York: Zone Books, 1992), 297-319. (E.N.)
 8. Raymond Ruyer, *Genèse des formes vivantes* (Paris: Flammarion, 1958). Not translated into English. (E.N.)
 9. Steven Rose, *The Conscious Brain* (London: Weidenfeld and Nicolson, 1973). (E.N.)
 10. Jean-Pierre Changeux, *Neuronal Man: The Biology of Mind*, trans. Laurence Garey (Princeton, NJ: Princeton University Press, 1997). (E.N.)
 11. Gilles Deleuze, *The Time-Image*, trans. Hugh Tomlinson and Robert Galeta (London and New York: Continuum, 2000), 203-05.
 12. António Damásio, *Descartes' Error: Emotions, Reason and the Human Brain* (New York: G. P. Putnam's Sons, 1994); *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (New York: Harcourt Brace & Company, 1999); *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain* (Orlando: Harcourt, 2003).
 13. Damásio, *Descartes' Error*, xiv.
 14. Damásio, *The Feeling of What Happens*, 188.
 15. Damásio, “Film, Conscience and Emotion: From the Perspective of the Brain.” This article was originally published in German in the catalogue *Kino im Kopf. Psychologie und Film seit Sigmund Freud* on the occasion of an exhibition concerning Freud in Berlin organised by Filmmuseum and Stiftung Deutsche Kinemathek, Verlag Bertz+Fischer, Berlin, 2006.
 16. Daniel Stern, *The Interpersonal World of the Infant* (New York: Basic Books, 1985).
 17. Stern, *The Present Moment in Psychotherapy and Everyday Life* (New York: W. W. Norton & Company, 2004).
 18. See “Le dépli des émotions,” *Trafic* 43 (Autumn 2002).
 19. Stern, *The Present Moment*, 75ff.
 20. G. Rizzolatti, L. Folgassi, and V. Gallese, “Les neurones miroirs,” *Pour la Science* (January 2007): 44-49; V. Ramachandran and L. Oberman, “Les miroirs brisés de l'autisme,” *Pour la Science* (January 2007): 50-57.
 21. Vittorio Gallese, “The ‘Shared Manifold’ Hypothesis. From Mirror Neurons to Empathy,” *Journal of Consciousness Studies* 8, nos. 5-7 (2001): 33-50; “The Roots of Empathy: The Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity,” *Psychopathology* 36 (2003): 171-80.
 22. Gallese, “Intentional Attunement. The Mirror Neuron System and Its Role in Interpersonal Relations” (paper published in an online conference about the mirror-neurons, 2005), accessed 20 October 2010, <http://66.201.40.136/mirror/papers/1>.
 23. This is why Gallese refers to Stern's founding book in the second of the articles quoted (175).
 24. A problematic evaluation was presented by Robin Curtis, “Expanded Empathy: Movement, Mirror Neurons and Einfühlung” (paper presented at the colloquy *Narration and Spectatorship in Moving Images: Perception, Imagination, Emotion*, Academy for Film and Television, Potsdam, 20-23 July 2006).

25. Stern, *The Present Moment*, 35-58.
26. *Ibid.*, 28.
27. Gilles Deleuze and Félix Guattari, *What Is Philosophy?*, trans. Hugh Tomlinson and Graham Burchell (New York: Columbia University Press, 1994), 197.
28. *Ibid.*, 209-10.
29. *Ibid.*, 215-16.
30. Deleuze, *The Time-Image*, 205. Bely wrote "everything that has flickered by — was only an irritation of the cerebral membrane, if not an indisposition of the cerebellum." (Andrei Bely, *Petersburg*, trans. Robert A. Maguire and John E. Malmstad [Bloomington: Indiana University Press, 1979], 21).
31. Roland Barthes, *S/Z*, trans. Richard Miller (Oxford: Blackwell, 1990), 11.
32. Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Miller (New York: Hill and Wang, 2010), 67.
33. *Ibid.*, 8.