

Plasticity and the Neuro-Image

on 13 November 2011

A Response to Catherine Malabou's *What Should We Do with Our Brain?*

On 28 and 29 October 2011 Catherine Malabou gave a masterclass and lecture in Amsterdam for the Netherlands Institute of Cultural Analysis (NICA). Below the text of the presentation I gave in response to her important work on continental philosophy's uneasy relation to (neuro)biology. To be continued.

I would like to thank the organizers, Adam Chambers, Thijs Witty, Gianluca Turricchia, and Baylee Brits for taking the initiative to invite Catherine Malabou to Amsterdam and organizing yesterday's masterclass and today's lecture. I feel honored to be asked to give a response to this important work. Before I start doing that, I would like to say that I did not read the lecture beforehand but I agreed with Catherine Malabou that I would reflect on some ideas from the book *What Should We Do with Our Brain?* and try to make some connections to my own work that deals with the brain in a more cultural analytical way. Therefore my apologies if I repeat some things that have already been addressed by Catherine Malabou herself, or if I do not address directly some issues raised in her lecture but I hope nevertheless to be able to make some remarks for further discussion.

Catherine Malabou's work makes a strong and important intervention in (re)connecting the materiality of physics and the immateriality of metaphysics through the concept of plasticity. In the first part of my response I would like to sketch a trajectory of this concept – as it is a “plastic” concept in itself. In doing this I hope to do justice to the radical moves which Malabou's investigations entail, even if I will only be able to look at the developments of the concept in big steps. The implications of this radical turn might be even bigger than Malabou herself suggests, but that is something for the discussion. In the second part of my response I would like to look at a concrete example of what I call a “neuro-image,” contemporary cinema's response to, resonance with and reflections on neurological and digital plasticity.

Malabou's Concept of Plasticity

What Should We Do With Our Brain (WSDWOB) introduces the concept of plasticity by defining it as the capacity to receive form (clay), to give form (sculpture or plastic surgeon), and to explode form (plastic explosives). The concept, that Malabou introduced philosophically in her earlier work on Hegel, is redefined in this book by looking at the different forms of neural plasticity: developmental plasticity (the initial formation of different neurons and neural networks), modulating plasticity (the development of the brain during a life time/history) and reparative plasticity (the regenerative powers of the brain after lesions). So by creating this 6 point map of characteristics and forms of plasticity, the concept is put forward to investigate further.

WSDWOB then sets out to map the relationship between the plasticity of the brain and its correlation with the world: the flex-economy of high capitalism: “neuronal man” corresponds to the spirit of capitalism in terms of its demands for flexibility but this flex-worker is the ideologically problematic avatar of the neuronal man. In *WSDWOB* there seems to be a dialectical opposition between plasticity (which is active and capable of resistance, neuronal

reality) and flexibility (which is the docile acceptance of the demands of capitalism, the neuronal ideology). Now jumping immediately to the book's conclusion, Malabou argues that "creating resistance to neuronal ideology is what our brain wants, and what we want for it" (77) suggesting that the main task of critical theory and continental philosophy is to conceptualize this resistance. This critical attitude of a humanities perspective remains important and cannot be underestimated.

However, in the new introduction to the Dutch edition of *WSDWOB* Malabou indicates that in the seven years that passed since the initial writing of the book her thoughts on the brain and the world through the concept of plasticity and flexibility have become more complex: the relationship between "indocile plasticity" and "docile flexibility", for instance, has become more ambiguous, more entangled, and they are perhaps even impossible to separate. So the main question now is: how to resist while being completely part of the system, how to be critical when there is no way out, no Outside from which it is possible to speak as if we are not part and parcel of the same system we try to criticize? In order to understand this development of the concept of plasticity and its consequences for resistance, I first would like to highlight some moments in the development of the concept of plasticity in the work of Malabou which she put forward between the original publication of *What Should We Do with Our Brain?* in 2004 and the new introduction to the Dutch edition, *Wat te doen met ons brein?* in 2011.

While in *WSDWOB* plasticity is discussed in terms of neurobiology and capitalism, in *Plasticity at the Dusk of Writing* (2005) Malabou sets out to "paint the portrait of the concept of plasticity" (1) further by going back to its transformations in philosophy. Plasticity is here investigated as the contemporary metamorphosis of the concepts of the dialectic (Hegel), of destruction (Heidegger) and of deconstruction (Derrida), the intellectual lineage from which Malabou's thinking evolved. Convincingly, she argues that plasticity is a concept that conforms to the new organization of the world, which is no longer the case for (deconstructive) writing:

The Dusk of Writing. Dusk is a time of reprieve, Dusk is a time of mourning. Dusk is a time of melancholy. Dusk is a time of separation. Dusk is a time of metamorphosis. I translate: Plasticity is the reprieve of writing; plasticity is the mourning of writing; plasticity is the melancholy of writing; plasticity is the separation from writing; plasticity is the metamorphosis of writing. (61)

Or, as she puts it differently and even more strongly, neurology replaces grammatology. But what does this mean? While painting the conceptual trajectory of plasticity in philosophy, the afterword of this book presents an important coda. Here Malabou discusses more explicitly than in *WSDWOB* "the impossibility of fleeing plasticity" (65): there is no escape, no safe position from which to speak or write. The philosophical necessity of thinking within (not against) a new materialism involves a "changed concept of difference" (78).

In *Changing Difference* (2009) Malabou elaborates on this idea of a changed concept of difference. In the essay "The Phoenix, the Spider and the Salamander" she reflects on Derrida's reaction to her PhD which was on plasticity and Hegel. Derrida's text was later published as "A Time for Farewells." The conceptual metaphorical animals of the phoenix, the spider and the salamander allow Malabou to discuss paradigms of plasticity (and concepts of difference) through the notion of "recovery".

To cut this beautiful text short, I'd just summarize that the phoenix stands for Hegel's phoenix that always rises from its own ashes to the presence, to new youth. Plasticity of the phoenix is dialectical plasticity as 'the constant reconstitution of presence that finds the resources of its youth or health each time in a higher form of life.'(75). So the phoenix stands for dialectical difference. The spider is like the Derridean web of the text, and plasticity is now seen as the constant deconstruction and rediscovering of concepts lost in language, in which "the remedy may create another lesion, the sewing of the text can fray, opening other crates, other holes." (79). Here we have difference as difference / differance.

Malabou introduces a third conceptual "plastic animal", the salamander. Relating no longer to the presence of history as does the phoenix, nor to the tissue of the text as does the spider, but to the materiality of biology and medicine, the regenerative possibility of stem cells that can "trans-differentiate" into many different types of cells, she proposes the salamander and its regenerative, self-repairing capacity as the conceptual (or paradigmatic) animal for our times. Reflecting on its philosophical implications, Malabou argues:

It seems to me that this phenomenon of recovery is not readable in terms of the dialectic reinterpreted through the difference or the logic of the text. It is not about a sublation or about a sewing back. This regeneration is neither resurrection nor a graft; it is without a pharmakon and without an intruder. (...) There is no scar but there is difference (81, 82)

The salamander (as do stem cells) reminds us that there is an ability to modify the programme ("as an un-writing", 86) and to change – or decode - the text. Although dialectical opposition can still be present, and traces of deconstruction can still be found, the new materialism of contemporary biology and neurology invites to think difference in a changed way, as immanent differences without an outside to judge from.

The fact that that regeneration does not leave any scars does not mean that thanks to plasticity we have now become invulnerable. On the contrary, because of the complexity and self-generative (to certain extent uncontrollable) potentiality of the plastic systems we are made of, and that we can make, we are more fragile than ever. After having focused mainly on the giving form and form receiving characteristics of plasticity in *Dusk of Writing* and *Changing Difference*, in the last book that I want to mention here, *Les Nouveaux Blessés* (2007, soon available in translation as *The New Wounded*) Catherine Malabou takes the third general characteristic of plasticity, its explosiveness, as a starting point. In *The New Wounded* she investigated contemporary brain diseases that have changed the field of psychology, arguing that this asks a changed attitude of philosophy as well. Alzheimer, Schizophrenia, Parkinson, Depression, but also war trauma's (Post Traumatic Stress Disorders, PTSD), are all "brain lesion" that can completely degenerate or explode a personality. And they cannot be understood from a classic Freudian psychoanalytic framework. Malabou sets out to demonstrate how the Freudian unconscious (as the field of repressed sexual desires) has moved (or has to move) to an understanding of the complexities of the brain and its conscious and non-conscious processes, especially in relation to a renewed concept of trauma as brain lesion and its exploding effects for personality and identity. *The New Wounded* makes another extremely important contribution to understanding philosophically how plasticity has changed in conjunction to developments in neuroscience. Neuropathological cases demonstrate the end of plasticity (where everything 'explodes') but I'd say they can also be considered as our new ontological ungroundedness that questions all physical and metaphysical certainty.

Considering this trajectory of the concept of plasticity and its implication for the concept of difference, it seems to me that the consequence has to be that also dialectics is exploding. Yet, at other moments in Malabou's texts there remains a strong resistance to letting go of dialectics. In any case, one can wonder if difference as internal, immanent difference, and as Salamander-like plasticity, is still a dialectical one. Here seems to be something of a radical consequence we might want to come back to.

The Neuro-Image of the “New Wounded” and Temporal Plasticity

But before we do that, I would like to try making some connections to the field of cultural analysis. Having had my own training in literary and film theory, so not speaking from the heart of philosophical tradition, nor from a neuroscientific background for that matter, I came to the brain in an encounter with cinema. Taking Deleuze's adagium “the brain is the screen” literally by bringing neuroscience, philosophy and cinema together, I have been trying to describe contemporary cinema in the digital age as “the neuro-image”.

In short the premise of this concept is that, following Deleuze's categories of classical and modern cinema, the movement-image and the time-image, we now have to speak of a third type of images, the neuro-image. The neuro-image resonates with new insights of neuroscience, and addresses the “spirit of capitalism”, albeit with a focus on its overabundance of screens and “plastic” (re-programmable) digital media technologies more than on its command for flexibility. Here I see parallels between the concept of plasticity and the neuro-image in that both attempt to address the challenges of our contemporary brain-world.

Because of its regenerative capacities (largely due to contemporary cinema's digital ontology and its afterlives online), the neuro-image is perhaps the “salamander-image” of audiovisual culture. Another and perhaps more concrete connection that I can make to Malabou's work is that the neuro-image is actually an image of “the new wounded”. Or at least neuropathological plasticity is at its zero-degree. Contemporary cinema no longer represents the world as seen through the eyes of a character, but they are direct expressions of character's mental worlds. Even if there are elements of representation left, we very often quite literally walk around character's brain worlds, experiencing their thoughts, memories and emotions (*Eternal Sunshine of the Spotless Mind* and *Inception* are all but the most obvious examples). Its main characters are often amnesiac (*Memento*, *The Machinist*), depressed (*Melancholia*), psychic (*Premonition*), schizophrenic (*Tierra*, *Donnie Darko*, *Clean Shaven*, *Julian Donkey Boy*), dead (*The Sixth Sense*) or suffer from PTSD (*Stop Loss*, *Source Code*). In any case they are no longer the action heroes of classical cinema nor the wondering wandering characters of the modern time-image. And as such they ask questions about our contemporary neuroplasticity.

Let me give you just one example of a film that embodies explicitly issues of the brain that are explored in many different and also less direct ways in the neuro-image. This is a clip from *The Butterfly Effect* (Eric Bress & J. Mackye Gruber, 200), a film whose main character Evan (Ashton Kutcher) suffers from black outs and epileptic seizures that allow him to travel through time. At least he seems to be able to “recover” lost memories (around a traumatic event in the past), change one thing in the past (grow new memories) and wake up in changed presents. But of course, as is the case in complex systems, each little change has unpredictable effects that cannot be controlled to get a desired future outcome. A temporal butterfly effect, so to speak.

Evan suffers from an inherited neurological pathology that is connected to abnormal plasticity and the creation of “40 years of memory in one year, like an overloaded city.” Besides the obvious neuro/discourse that the film relates to (nevermind the accuracy of what is depicted), more interesting are the “neuropsychological” or, as I would argue “schizoanalytical” implications in which (contrary to the Freudian neurosis) the reality principle is no longer intact. The internal affective reality of the brain takes over, to the point that we no longer know in which reality we have to believe. There is a lot to say about this film and the neuro-image more in general. But there is one aspect that I would like to highlight because they may perhaps be relevant to the concept of plasticity, which is the temporal dimension of the neuro-image.

The Butterfly Effect's tagline is “Change one thing, change everything” obviously refers to chaos theory. The film's emblematic title image is a brain scan that suggests the flapping wings of a butterfly. The film plays with the idea that chaos theory in physics and modern insights in the brain have changed psychology. Instead of looking for a linear cause and effect between past and present, chaos theory has learned that a very small difference (such as a slightly different position in space) can create enormous effects that are hard to trace back to its initial cause. This is an insight that seems to be shared by neuropathological perspectives according to which “the temporal architecture of schizophrenia is characterized by bursts of complex, nonlinear phenomena alternating with truly random events” (discussed in Paulus and Braff, ‘Chaos and Schizophrenia: Does the Method fit the Madness?’, 3).

In the film the temporal plasticity is emphasized in extreme ways: the character's brain lesion makes him time travel through the brain. But this plastic temporal architecture of schizophrenia is a more general characteristic of the neuro-image that I try to understand by referring to Deleuze's philosophy of time in *Difference and Repetition*, which is a book that offers a changed concept of difference that does not follow the melancholic line of dialectics and deconstruction. Again this is something we might talk about later. For now I would very simply suggest that Deleuze's idea of the passive syntheses of time offers interesting points of reflection. With the idea of the syntheses of time, Deleuze conceptualizes time as a mental process. On the basis of what we perceive repeatedly in the present, we recall or anticipate, adapt our expectations in a synthesis of time. This synthesis is a passive (unconscious) synthesis, since “it is not carried out by the mind, but occurs in the mind.” (D&R, 71)

The first synthesis that Deleuze distinguishes is that of habit, the truly foundation of time, occupied by the passing present. But this passing present is grounded by a second synthesis of memory: “Habit is the originary synthesis of time, which constitutes the life of the passing present. Memory is the fundamental synthesis of time which constitutes the being of the past (that which causes the present to pass).” The conception of the syntheses of time is incredibly sophisticated and complicated and I cannot do justice to the richness of Deleuze's arguments. Nevertheless I think it is possible to argue that the first synthesis of time, habitual contraction, can be recognized as movement-images that Deleuze describes as the sensory-motor aspects of the brain screen; images that take the present as its dominant form. And that the second synthesis of time can be related to the principle form of time in the time-image, where the past becomes more important and the ground of time and manifest itself more directly as “pure past”.

Deleuze also distinguishes a third synthesis of time. The third series of time is the future as such. The future as death, rebirth and eternal return. In this third synthesis, the foundation of habit in the present and the ground of the past are “superseded by a groundlessness, a

universal ungrounding which turns upon itself and causes only the yet-to-come to return.” This ungrounding potential of the third synthesis of time has “explosive” qualities. It is related to death (as death is the future for all of us). But it is also the condition for the new. In this third synthesis the present and the past are dimensions of the future. The third synthesis is complicated since it does not simply repeat the past and the present but cuts, assembles and (re-)orders from them, to select the eternal return of difference (regeneration). The three synthesis of time together form Deleuze’s original philosophy of time that he develops in *Difference and Repetition*. What I suggest is that this third synthesis of time is the sign of time under which neuro-images are formed. The neuro-image speaks “from the future” and as such it is speculative and a highly plastic conception of time that recuts, reassembles the present and the past with different speeds and intensities, all from a speculative future of its explosive end.

There is no time to discuss the way *The Butterfly Effect* is based upon this third synthesis of time. Clearly the film is obsessed with time. I suggest, the past and the present are dimensions of the (always speculative) future imagined on Evan’s schizoid brain screen. Each moment Evan changes something in the past, the present changes (in unpredictable ways) accordingly. After Evan has revisited “all of the past” and “all of the present,” like a database of options, and all from the point of view of different futures, we return to the beginning of the film where Evan is in the psychiatric hospital and is told that the diaries (that give him entrance into his pasts) are nothing but fantasies to cope with his guilt (of having killed Keighleigh in what is most likely to be the “real” version of the past and the present). *The Butterfly Effect* shows the pathological (zero degree) dimensions of this Time of the Future that is Now.

The Plasticity of Dialectics

Returning now to Catherine Malabou’s work and summing up, I think that the concept of plasticity as introduced in relation to neurosciences and the spirit of capitalism in *WSDWOB* has evolved in extremely important ways. Plasticity and flexibility are no longer dialectically opposed, the brain and the world are too ambiguously entangled to keep this dialectical position. So the question now becomes: how to resist from within (the brain, the world). Because the basic characteristic of plasticity (to receive and to give form) continues to allow for critical resistance; even though we have to redefine resistance. This is our basic freedom. But its potential and often unpredictable, explosiveness, forces us to look at the insights of neuropsychiatry and neuropsychology to develop a new theory of trauma and take into consideration to extreme fragility of our plastic brains, plastic world. I have suggested that contemporary image culture is full of neuro-images that in their own expressive ways, beg similar questions that concern our future and show an extremely constructable and explosive conception of time.

Speaking from the heart of philosophy, and daring to ask such pertinent, honest and important questions, Catherine Malabou presents us with a strong conceptualization of plasticity that has far reaching consequences for understanding ourselves, our world, our freedom and our fragility, in short our future. But I would love to hear from her if the plasticity of this trajectory means an explosion of dialectics as well, or if a regenerated dialectics does not bring us to *Difference and Repetition*?