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# The future is plastic: refiguring Malabou's plasticity

Alexander Hope

## Abstract

*This article investigates Catherine Malabou's claims to have produced some form of beyond of deconstruction with her reworking of the Hegelian concept of "plasticity" (Plastizität). In the light of Malabou's critique of the unsuitability of the Derridean non-concept of "text" for being a suitable metaphor for neuronal functioning in her Plasticité, I turn this question back on Malabou's own work; that is to say, this article will examine what the implications of the metaphors of plasticity are for Malabou's own oeuvre and its relationship with neuroscience and her critique of connexionist capitalism. To this end, this article is particularly interested in the political claims made for plasticity and how some of the "everyday" meanings of plasticity, and Malabou's decision not to incorporate them into her conceptual working through, might threaten this enterprise.*

One never touches the thing itself but metaphorically. [...] This laterality is [...] that of the unconscious or of expression, which in the same movement offers and holds back all content. This laterality is difference, or depth.

Jean-François Lyotard, *Discourse, Figure*

I would like to dedicate this book to Jean-François Lyotard. [...] from his book *Le Différend* came the idea to oppose plasticity to what he called the "polymorphism" of the Hegelian subject. From visiting his unforgettable exhibition *Les Immatériaux*, I discovered a new meaning of materialism, and, consequently, a new meaning to the rapport between form and matter.

Catherine Malabou, *Plasticité*

## Introduction: a plastic history

This article begins with a question taken from Catherine Malabou's article on Jean-François Lyotard's masterly *Discourse, figure* – namely “what is it to *see* a thought?” (Malabou 2007a:16). This apparently simple question will be addressed to Malabou's own work – especially *Plasticité, What Should We Do with Our Brain?* and *The New Wounded* – with regard to how well the figures of neurobiology and plasticity, in Malabou's elaboration, manage to make “visible” thought or thinking. Before attempting such a reflexive reading, however, we must work through the relationship between discourse and figure in Malabou's primary conceptual tool: plasticity (Malabou 2010:7; Lyotard 2011).

In *Discourse, Figure* Lyotard sets himself against Merleau-Ponty, claiming that he intends to “yield to figural space, with Cezanne and Mallarmé, with Freud and Frege” (Lyotard 2011:14). The figural in Lyotard is something akin to his reworking of the classical concept of metaphor, in a manner that places “figural space” as:

no longer simply the image of presence or of representation, but form of the *mise en scène*, form of discourse itself, and, more profoundly still, phantasmatic matrix. (2011: 15)

To gloss Lyotard's very difficult treatment of the figure, for him the figure is bound up with form and laterality, a space in which there is the form of discourse itself, but not as something separate, not as representation. “One never touches the thing itself but metaphorically” (Lyotard 2011:14).<sup>1</sup> The aim of this article, then, is to examine how plasticity works as a metaphor or rather “figure” in Lyotard's terms, and how this conceptual tool is recursively affected by its relationship with the sensible. This question takes on additional political importance once we arrive at the realm of neurobiology and neuronal plasticity, and the links Malabou makes between these and post-Fordist capitalism. In Malabou's work there seems to be a certain slippage between the concept and the “materiality” of brain plasticity, and we will examine this in relation to her claims that plasticity offers a beyond of deconstruction and in relation to the claims for plasticity's liberatory potential.

Intriguingly, *pax* Derrida, Malabou highlights a “disaffection with the metaphor of text within the neurobiological lexicon”; however, when it comes to the precisely “metaphorical” character of philosophical or

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1 See issue 12 of *Parrhesia* (2011) for a more detailed examination of the importance, and contemporary relevance, of *Discourse, Figure*.

neuronal plasticity being a “better” metaphor than that of text, Malabou is strangely silent (2000:23).

## Hegelian Plasticity

Malabou’s elaboration of plasticity comes out of her first book, an evolution of her thesis, supervised by Jacques Derrida, *The Future of Hegel: Plasticity, Temporality and Dialectic*. She takes a concept, “*Plastizität*”, seemingly from the edge of Hegel’s discourse, and attempts to use it to “grasp the whole”, initially of the Hegelian corpus, and then in an extension of the concept – as well as an elaboration of existing work in neurobiology – she “applies” the concept to the neuronal functioning of the brain. Before we reach this argument, however, we need to work through “*plasticité*”, “*Plastizität*”, or “plasticity” in its etymological and figural formulation. Malabou provides the following definition in *The Future of Hegel*:

To elaborate (*travailler*) the concept of “plasticity” will, following Canguilhem’s usage, amount to “giving the function of a form” to a term which itself, in its first sense, describes or *designates the act of giving form*. The English and French substantives “plasticity” and *plasticité* and their German equivalent, *Plastizität*, entered the language in the eighteenth century. They joined two words already in use which had been formed from the same root: the substantive “plastics” (*die Plastik*), and the adjective “plastic” (*plastisch*). All three words are derived from the Greek *plassein* (πλάσσειν), which means “to model”, “to mould”. “Plastic”, as an adjective, means two things: on the one hand, to be “susceptible to changes of form” or malleable (clay is a “plastic” material); and on the other hand, “having the power to bestow form, the power to mould”, as in the expressions, “plastic surgeon” and “plastic arts”. This twofold signification is met again in the German adjective *plastisch*. Grimm’s dictionary defines it thus: “that which takes or gives shape, or figure, to bodies” (*körperlich ... gestaltend oder gestaltet*). *Plasticité*, or “plasticity”, just like *Plastizität*<sup>2</sup> in German, describes the nature of that which is “plastic”, being at once capable of receiving and of giving form. (Malabou 2005:8)

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2        Corrected from “*Plastizität*” in the translation cited. My thanks to the anonymous reviewer for highlighting this error.

Plasticity, then, is first and foremost a conceptual working through of *form*, designating the double capacity to give and receive form. In terms of the ability to give form, the “first” meaning of plasticity, Malabou cites several examples – the plastic art of sculpture, and also “architecture, drawing and painting” (2005:8). As a validation, *Le Grand Robert* quotes René Huyghe: “*la peinture peut, sans scrupule, partager avec la sculpture et l’architecture la dénomination d’art plastique, tant qu’elle s’attache à leur problème essentiel: la construction des formes*” (n.d.). So, in French, as well as German and English, one of the primary concerns of “*plasticité*” is “the construction of forms”. Huyghe’s list of examples makes clear that these forms are also the shape of ideas, perhaps even in the Kantian or Platonic sense, since to include painting with the more obviously “plastic” arts of sculpture and architecture puts greater emphasis on the *perceived* form than the “material” one.

As well as all the practitioners of the “plastic arts”, Malabou also cites a couple of specific examples of the operators or demiurges who are able to give form in this sense: “the plastic surgeon” and the “sculptor” (2007b:48). These two operators give form in slightly different ways, although Malabou does not analyse this conflation; the sculptor is traditionally seen to “find” form in the marble or wood, whereas the plastic surgeon produces a new form of a body, often by adding something “plastic” to provide additional material for the cosmetic reformulation of a body. This suggests an oscillation in plasticity between revealing a form that was already there and reforming something by supplementing or adding to an extant form. The *OED* gives us “the branch of surgery dealing with the construction and reconstruction of superficial parts of the body that are defective, injured, or absent, and also using such procedures for cosmetic purposes” (n.d.) for plastic surgery. This also suggests a possible oscillation between plasticity’s conceptual operation: between revealing extant form and adding something supplemental to pre-given forms.

In this analysis, the ways in which these two examples of plasticity give form are actually diametrically opposed: the classical *idea* of sculpture is the liberation of a form from its marble prison; on the other hand, plastic surgery does not touch any more than the “superficial” or the “cosmetic”, it is decorative or a matter of surface rather than an explication or freeing of eidetic form. This already indicates some of the initial tensions in Malabou’s concept, between its relation to contemporary extensions of the meaning of plastic and the history of the word in its working through by Hegel.

This relation to the history of form in philosophy is very important for

Malabou's elaboration of plasticity, as she wants to relate it not just to the formation of the plastic arts, but also as the formation or giving of shape to an idea or concept, as articulated by Georges Canguilhem and cited in *The Future of Hegel*:

To elaborate (*travailler*) a concept is to vary both its extension and its intelligibility. It is to generalize it by incorporating its exceptions. It is to export it outside its original domain, *to use it as a model or conversely to find it a model*, [my emphasis] in short it is to give to it, bit by bit, through ordered transformations, the function of a *form*. (2005:7)

Malabou chooses this particular definition of "concept" to include in *The Future of Hegel*, so the emphasis on the elaboration and extension of form is evidently far from accidental. As Canguilhem's definition suggests, to give something the function of a *form*, creative or donational plasticity, is not to make it a form in the Platonic sense, but to give something the "function of a form": to make it the sensible elaboration of something in order to make it intelligible, or as Canguilhem suggests, to "vary [...] its intelligibility". Hence, the donation of form is also a *formation* of intelligibility.

Importantly, Canguilhem's suggestion that the concept should be generalized "by incorporating its exceptions" provides a method for analysing and evaluating Malabou's elaboration of the concept of plasticity. What we need to analyse is how successful she is in incorporating the exceptions into the general concept (Malabou 2005:7). In addition, since Malabou seems to want to make plasticity a "general" concept, we need to analyse that generality, especially given her claims for plasticity going beyond deconstruction (Malabou 2007c). It might be argued that Malabou is claiming a more "positive" status for plasticity than the deconstruction of her thesis supervisor. The key question, however, is the economy of dissemination in the concept of plasticity: How does the metaphorical proliferation of plasticity affect its conceptuality?

## **Sensible translation**

Malabou frequently associates the giving and receiving form of plasticity with the Kantian concepts of *schema* and *hypotyposis*: "the sensible translation", she writes, "of an economy of sensible translation – to

borrow the Kantian definition of “*hypotyposis*” – is itself represented by these Concepts [the donation and reception of form in plasticity]” (2005:7). This is itself a “translation” and elaboration of Kant’s definition in the third *Critique*: “all *hypotyposis* consists in making a concept sensuous, and is either schematic or symbolic” (Kant cited in Malabou 2005:202). As per Canguilhem’s instructions for the elaboration of a concept, Malabou associates plasticity with not just “making a concept sensuous” but a doubling of the gesture of giving form and making intelligible. She does this by making “plastic hypotyposis” both “sensible translation” and “the sensible translation of an economy”. Malabou’s elaboration of “plastic hypotyposis” gives form not just to a concept, but the *economy* of forming, making sensible, a concept. It is in this wider sense that plasticity’s power to donate form is to be understood: to give “through ordered transformations the function of a *form*”.

This brings us to the second function or meaning of plasticity, one which intrinsically comes out of the first, for, within this sensible schema, in order to give form one must have some sort of “material” that can accept it and be reformed by that donation of form. Interestingly, Malabou chooses as her example here clay rather than thermoplastic; clay is constantly mouldable at room temperature without any form of denaturing. This clay is in contrast to the thermoplastics that we commonly associate with the noun “plastic”, for instance polypropylene, one of the most common thermoplastics, becomes mouldable by compression only at temperatures at or exceeding 162° centigrade, something that we could associate with Malabou’s “destructive plasticity” following brain trauma or PTSD (Malabou 2012:60).<sup>3</sup> Thermoplastic would actually link in better, in some respects, to Malabou’s interest in the “plasticity” of dialectic and how it works as “the union of *resistance* (*Widerstand*) and fluidity (*Flüssigkeit*)” since, once moulded, thermoplastic has a resistance to being re-formed until further heat and pressure are applied (Malabou 2005:12).

Malabou extends this link between being available to be constantly moulded, and the powers of giving and receiving form to living beings:

Hence, by extension [from the plastic arts], plasticity signifies the general aptitude for development, the power to be moulded by one’s

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3 Malabou initially elaborates “destructive plasticity” in relation to “*plastique*”, French for plastic explosive, but later associates it with the destruction of brain structure by cerebral lesions in *The New Wounded*.

culture, by education. We speak of the plasticity of the newborn, of the child's plasticity of character. [...] Yet it also means the ability to evolve and adapt. It is this sense we invoke when we speak of a "plastic virtue" possessed by animals, plants, and, in general, all living things. (2005:8)

This further elaboration (*travailler*) by Malabou makes plasticity active, gives it a generative power rather than something that is merely the power to receive form from elsewhere. Thus, the ability to evolve and adapt, and for a child to be moulded by their culture both take on a positive virtue of reformulation, the ability to both reform the environment (sculpture) and to be reformed by it (taking on culture, adapting). One might be a little sceptical of the potential extension here, through which people are a plastic material to be endlessly remoulded. In the first of her extensions of the concept through Hegel she names the exemplary "plastic individuals" of Ancient Greece: "Pericles... , Phidias, Plato, and above all Sophocles, as well as Thucydides, Xenophon, Socrates" (2005:9). In these individuals the power to both give and receive form is held together dialectically: they both have the power to give form and to (re)form and be formed by themselves.

What it is important that we take from this is that Malabou wants to associate the concept of plasticity both with the birth of philosophy and with the self-determining power of those exemplary individuals to whom Hegel gives the honour of being called "plastic". Sophocles, of course, was both a great statesman, one of the generals of the Athenian assembly, and a dramatist: "plastic" both in his formation of the destiny of Athens and also in his "natural" ability to form his plays. In both these things, however, the "above all" of which Hegel speaks is the ability to work on himself, to adapt and improve, to make himself one of these individuals who are "works of art standing there" (Hegel cited in Malabou 2005:201). As with Malabou's reformulation of Kantian hypotyposis, there is a double gesture at work here: the exemplary individuals of Ancient Greece, in Hegel and Malabou's account, become plastic individuals (re-forming themselves) by giving form to discourse, to artistic works and to the state. This is also an attempt to make this continual plastic reformulation self-motive in general, to extend the self-forming power of those exemplary Ancient Greeks to the overall concept of plasticity.

## **Plastic Etymology**

That the etymology of "plasticity" is rather more complex than Malabou suggests in *The Future of Hegel* is something that we have already

touched upon. For the moment, I will note only that many of the words derived from that stem (*plasas*) in Greek relate to counterfeiting and forgery as much as to moulding. As an example, *plastographeō* means “counterfeit writing” and *plastologeō* “to tell fictions or lie” (Liddell and Scott 1979). This is clearly a form of the metaphysics being formed in Ancient Greece that is most evidently embodied in Plato, an extension of the concept, so to speak. While this clearly does not invalidate Malabou’s elaboration of plasticity any more than her selective etymology legitimates it, it does lead us to question how this exception might be incorporated into the concept, as Canguilhem’s definition suggests is necessary. What does this suggest about the relation of plasticity to giving form as artifice? What sort of theory of form is required to incorporate this into the concept in general? In short, what transformations are required in order to incorporate “neuronal” plasticity into the more general concept of plasticity? Furthermore, what legitimates this incorporation and allows the potential sublation of Hegelian and neuronal plasticity?

Malabou also makes an appeal to “ordinary speech” before moving on to this etymological definition (2008:5). The problem this presents was already hinted at in the discussion of the plastic surgeon, and also the other words which *plasas* is the stem of in Greek: in “ordinary speech” this element of plasticity as being counterfeit is also still very much in evidence, both in French and in English. In English we speak of “plastic bread” and “plastic cheese” for cheap “imitation” foodstuffs, the *OED* gives “artificial, unnatural; superficial, insincere” (n.d.) – both suggest an illegitimacy, but one that appears to be largely absent from Malabou’s elaboration of the concept. Thus, in order to properly elaborate (*travailler*) or work through plasticity, we need to incorporate these exceptions.

In Roland Barthes’s excellent essay “Plastic” in *Mythologies*, he says that plastic is “in essence [...] the stuff of alchemy” and that “plastic is the very idea of *its* infinite transformation” (2000:97; my emphasis). This suggests that plastic as a material is very much the locus of a complex set of relations between discourse and figure, that it is its own idea as a “constructed” material. It is worth citing a longer passage from Barthes on the socio-economic status of plastic and how this affects its reciprocal or perhaps even “transformational” relation with the idea of itself – to better understand how “plasticity” might relate to “ordinary speech”:

The fashion for plastic highlights an evolution in the myth of “imitation” materials [...] until now imitation materials have always indicated pretension, they belonged to the world of appearances, not to that of

actual use; they aimed at reproducing cheaply the rarest substances [...] Plastic has climbed down, it is a household material. It is the first magical substance which consents to be prosaic [...] this prosaic character is a triumphant reason for its existence: for the first time, artifice aims at something common, not rare. And as an immediate consequence, the age-old function of nature is modified: it is no longer the Idea, the pure Substance to be regained or imitated: an artificial Matter, more bountiful than all the natural deposits, is about to replace her, and to determine the very invention of forms. (2000:98)<sup>4</sup>

What this tells us is firstly that, in reviving plasticity, Malabou has to a certain extent captured “the spirit of the times” – if anything, plastic is today even more prosaic in its magical character; however, it also tells us that the dominant motif of plastic is in Barthes’s elaboration both material and concept, an artifice content to portray itself as artifice. While initially plastic was used in an attempt to imitate more expensive materials – the classical presentation of the Idea and the image – it has now become what Barthes calls “artificial Matter” in its own right. This determination of plastic as *artificial* matter is extremely interesting as it bears comparison to Gilles Deleuze’s reading of the simulacrum (1983:54–56); plastic as a synthesis of material and concept ceases to appeal to the Idea or nature, there is no longer anything in plastic to be “regained” from the ideal, it becomes only a copy of itself.

Deleuze argues that this state of being a copy only of itself, a simulacrum, has a liberating potential, that it can somehow free us of the Platonic dyad (1983:46). I am not entirely convinced by Deleuze’s idealism as regards the simulacrum; however, even if we take this as read, this leaves the question of how we legitimate a concept that is only a copy of itself. Plastic comes to determine the very “invention of forms” by virtue of its own plasticity; that is to say, that the material as a concept has come to be self-determining in the manner of the exemplary individuals of Ancient Greece. Implicit in Barthes’s analysis of plastic is also the question of the commodity: if Marx was writing today would the privileged figure of the commodity still be the wooden table that stands on its head and forms “grotesque ideas” (Marx 1981:163–4)? Or, would it be the figure of the plastic bottle top, magically reincarnated as the door skin of a Smart car? In order to make plasticity the liberatory tool that Malabou wants it to be, especially in her earlier work, it will be

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4        Derrida notes the citational and isolating use that Barthes frequently makes of capital letters, “Matter” and “Substance” here, for example (Derrida 2001a)

necessary to incorporate this quotidian sense of plasticity into the general concept.

This materiality of plastic, too, is a potential problem with Malabou's elaboration of plasticity. In *Plasticité* Malabou argues:

It is not possible to conceptualise plasticity without elaborating afresh a certain type of materialism; that is to say, without bringing to light a rapport or an ensemble of rapports determined between matter and the spirit. It seems difficult, on this point, to surpass Marx's masterful affirmation that all authentic materialism is dialectical materialism. (Malabou 2000:11; my translation)

However, we might also note the figural here relates to a certain mode of materialism, that to "put in play" and be "between matter and spirit" is to always-already have entered into the play of the materialism of the figure. As the epigraph to this article indicates "one can never touch the thing itself but metaphorically" (Lyotard 2011:14). This means a different form of materialism to the one which Malabou proposes here, and yet more distinct from the "primary materialism", dismissed by both Levi-Strauss and Lacan, defended by Malabou in *The New Wounded* (2012:211). In *Plasticité* there are traces of a very classical materialism that excludes the figure; while the "plasticity of the brain" is initially acknowledged as a "simple" metaphor, this characterisation quietly disappears from the textual scene as Malabou "reveals" the infelicities of Freud's (and by extension Derrida's) conception of neuronal writing and difference (Malabou 2000:11). Lyotard's elaboration of figural space would posit this touching of the "thing itself" not as Merleau-Ponty proposed it "as the possible movement to a point over there while remaining here" (Lyotard 2011:14), but as "depth", as something unmasterable by either dialectic or positivism. Following Lyotard, and the Derrida of "White Mythology" and "Freud and the Scene of Writing" (1982, 2001b), I would argue that this tendency to treat plasticity as if it were non-figural poses serious questions for Malabou's elaboration of it.

### **Plastic neurobiology — or, the ideological formation of the brain**

To explore how this relationship between discourse and figure in Malabou's later work might be informed by neurobiology, we need to look at her elaborations of "neuronal plasticity", a key term in contemporary neurobiology. It seems appropriate to start with her principal source for *What Should We Do with Our Brain?*, Jean-Pierre Changeux. Although rather than his seminal *Neuronal Man* (1983), we

will take the definition of “neuronal plasticity” from his more recent work *The Physiology of Truth* (2004):

The term “plasticity” designates the general capacity of the neuron and its synapses to change properties as a function of their state of activity. [...] Plasticity is already present during early stages of embryonic development: a significant fraction of the nerve cells produced by cell division die before becoming mature neurons. Cell death may be either retarded or accelerated by nervous activity. [...] synapses grow and divide during development; but they may also be eliminated and [...] regenerated through new outgrowths from the cell body or from existing dendritic arborizations (a phenomenon that persists, albeit to a lesser degree, in the adult). (Changeux 2004:26)

What this passage tells us is that, in Malabou’s words, “the brain is a work, and we do not know it” (2008:1); the structure of the brain is being constantly *moulded* and *formed* throughout our lifetimes. Neuronal connections and indeed neurons themselves that are not utilised consistently are allowed to die off; they are not renewed. Conversely, connections that are used more frequently are reinforced and speeded up (Changeux 2004:16).

This process has factors in common with both the sculptor and the plastic surgeon: regarding the former, neuronal activity itself determines which neurons are maintained and which atrophy; as regards the latter, Changeux mentions that neuronal connections can be regenerated or new connections formed in response to stimuli. Malabou emphasises this comparison with the sculptor, noting that the “sculptor’s chisel” is a phenomenon known as “apoptosis” or cell death (2008:19). In *Plasticité* she provides a fuller elaboration of this relationship between the figure of the sculptor and the conceptual apparatus of neuronal plasticity:

At bottom, plasticity is, following Hegel, that which unites sculpture and subjectivity. On the subject, sculpture confers its resistance; on sculpture, the subject confers her suppleness. The statues created by “living sculpture” (*la sculpture du vivant*) are an ensemble of flexible formations [...] they are perpetually becoming because of a continually dynamic relationship with what they are not. (2000:21–22; my translation)

It is in this manner that subjectivity is constituted for Malabou, similar to the movement between the speculative proposition and the relationship

between the subject and substance analysed in *The Future of Hegel* (2005:171–179). In this instance, however, we have an explicit invocation of the metaphors of sculpture in relation to the formation of the structure or architecture of the brain through cell death (apoptosis). Sadly, Malabou does not return to this figure in either *The New Wounded* or in *Self and Emotional Life* (Malabou 2012; Johnston and Malabou 2013).

The brain is continually in the process of giving itself form and being reformed, encompassing Malabou's initial definitions of plasticity. What really causes these reconstructions still appears to be a question neuroscience has not really succeeded in answering, but which Malabou's figure of the sculpture perhaps offers a way into thinking. While "strict genetic determinism" seems to be responsible for the initial form of the brain in an infant, the form of its development for "about 15 years" to its full mass is affected by neuronal activity, and to a lesser extent continues to be so into adult life (Changeux 2004:26; Malabou 2008:18–19).

Let us examine a little more closely Malabou's enthusiasm for "modulational plasticity" in neuroscience and why she finds in this some kind of liberatory potential. One would presume that the "brain" the question "what should we do with our brain?" asks us all to consider is that of the already largely formed adult brain:

Without a doubt, it is at this level that plasticity imposes itself with the greatest clarity and force in "opening" its meaning. In effect, there is a sort of neuronal creativity that depends on nothing but the individual's experience, his life, and his interactions with the surroundings. [...] According to [Donald] Hebb, we must postulate the existence of "plastic synapses" capable of adapting their transmission efficacy. Hebb formulated the hypothesis of neuronal circuits capable of self-organization, that is, of modifying their connections during the activity required for perception and learning. The synapse is the privileged locus where nerve activity can leave a trace that can displace itself, modify itself, and transform itself through repetition of a past function. (Malabou 2008:21–22)

These "plastic synapses" then give form to themselves through a "self-organization" in relation to other synapses. We will later fold back some of the questions Derrida addresses to Freud in "Freud and the Scene of Writing" to issues surrounding the status of representation in this account of neurobiology, and ask to what extent the material hypotyposis of the

concept of the synapse and neuron here affects how they can be understood (Derrida 2001b). Malabou herself notes that *frayage* (path-breaking) does not seem to be an adequate model of neuronal function; the structures proposed by neuroscience now owe nothing to the “pair permeability-resistance proposed by Freud” (Malabou 2000:19–20; my translation).

In summary, rather than altering the overall structure of the neuronal network, modulational plasticity works by attenuating the efficacy of neural pathways, that is to say, a “capacity for being permanently altered by a single occurrence” as Freud suggested in 1895, or as Malabou suggests “neurons somehow remember stimulation” (Freud in Derrida 2001b:251; Malabou 2008:24). The key difference is that for Malabou there is the “possibility of their effacement [...] in a word, they are not indelible”, a theme she explores further in *The New Wounded* in relation to the effacement of not just particular neuronal configurations or traces but of a given subject’s “autoaffection” following PTSD or Alzheimer’s (2000:19–20, 2012).

Malabou argues for the importance of this particular kind of neuronal plasticity in terms of how it relates the brain to “its history” (2008:21). The reader is largely left to infer what kind of history is being proposed by this comparison. Malabou begins *What Should We Do with Our Brain?* by suggesting a link between “we make our brains and we do not know it” and Marx’s famous aphorism that “humans make their own history, but they do not know that they make it” (2008:1). Seemingly, what Malabou wants to do is to awaken a consciousness of the brain as its own historicity, to awaken an understanding that the plastic structure of neuronal functioning means that the brain itself is constantly changing and its structure is the product of every previous neuronal activation. It is effectively, in this account, a plastic map of its own history, but a map more susceptible to damage than interpretations of Freud’s “mystic pad” generally envisage (Derrida 2001b). This mapping is both in terms of the development of the overall structure of the brain and in the interactions between billions of neurons that enable modulational plasticity. This theme is evidently one familiar to readers of Derrida on psychoanalysis; however, Malabou claims that what Derrida did not take into account is the fundamental restructuring of the brain in response to injury or cruelty (Malabou 2007b:275).

In a slight shift away from Changeux’s position – who largely ignores plasticity in the adult brain – Malabou cites an article entitled “The Curious Partition of New Neurons” to help argue that

[a]dult neurogenesis, being the final mechanism of plasticity and one strongly controlled by a subject's personal experience and environmental interactions, very likely constitutes an additional mechanism of individuation – with the major difference that it is operational throughout life. (Pierre-Marie Lledo *et al.* in Malabou 2008:27)

While “new” neurons that increase the number of neurons overall may not occur to a great extent in the adult brain, certain areas, especially those apparently concerned with learning, may substantially change their structure in response to continued neuronal stimulation during “neuronal renewal”, the repair and replacement of extant neurons (Malabou 2008:25). For Malabou this is important because it exposes the “dogma of the stable brain”, that “the brain can of course acquire new information but can know no great change in its capacity to learn [...] except in the direction of decline or degeneracy” (2008:25).

What is there to suggest that this level of restructuring is necessary for such a change in the capacity to learn? There is a tendency to confuse the model with the thing-in-itself in this kind of evaluation of neuronal data. As Changeux aptly observes,

[t]here is always an implicit theoretical context underlying this scientific activity, preserved in long-term memories, that tacitly organizes the conscious play of conjecture and hypothesis. An important part of the scientific process, in my view, consists in making this context explicit. (2004:241)

The implicit ideological “theoretical context” in this instance is that the adult *as a subject* cannot possibly be plastic, self-determining without the support of a scientifically accepted model of how that plasticity might be made possible on a neuronal level. The possible self-determination of the subject is made possible in this account by treating the model, or rather the figure, as if it was the thing-in-itself. Of course, I exaggerate for the purposes of emphasis; however, it is this fuzziness as regards the status of the model which seems to prevent Malabou from going further in her argument for the necessity of critiquing “neuronal ideology” (Malabou 2008:11).

Crucially, this is also a question of intelligibility, both of the structure of the brain and of how we might “see” a thought, if indeed that is what

neuroimaging technology actually allows. The question here, to follow Derrida's analysis in "Freud and the Scene of Writing", is not whether the present model of neuronal functioning is an accurate representation of the psyche but what sorts of questions these models impose upon us, and to this end Malabou notes that the neuronal "traces" of which Changeux and other neuroscientists speak "are before all images" (2000:17; my translation). Malabou argues that we need to engage in a critique of "*neuronal ideology*":

It is thus not just a matter of uncovering, in the name of brain plasticity, a certain freedom of the brain but rather, starting from as precise a study as possible of the functioning of this plasticity, to free this freedom, to disengage it from a certain number of ideological presuppositions that implicitly govern the entire neuroscientific field and, by a mirror effect, the entire field of politics – and in this way to rescue philosophy from its irresponsible torpor. (2008:11)

There are a number of extremely questionable claims in this exceptionally provocative passage from the introduction to *What Should We Do with Our Brain?* not least the power accorded to neuroscience in this "ideological" analysis and the reference ahead to the conflation of mental illnesses, neuronal illnesses, and social ills in *What Should We Do with Our Brain?* and *The New Wounded*, a potentially totalizing discourse that is one of the significant problems with Malabou's conception of plasticity; the attempt to "grasp the whole" with a single conceptual apparatus ends up producing epistemological and indeed conceptual difficulties.<sup>5</sup> However, at the same time there are also a number of significant exclusions – as we have noted, for example, the artificiality or falseness that is present both etymologically and in current usage.

Malabou is, however, more than justified in calling for a rigorous and informed analysis of the ideological precepts of neuroscientific discourse and the moments when it unthinkingly reasserts a metaphysics of presence (2010:6). The freedom of which Malabou speaks is effectively that of modulational plasticity and adult neurogenesis, the ability of the

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5 See for instance, Malabou's claim that "plasticity refers to the spontaneous organization of fragments" (2010:7). This could perhaps be explained by the explication of Hegelian plasticity in relation to the statue and subjectivity, as outlined in *Plasticité*; this link and how it relates to Malabou's interest in split temporalities, however, is not made clear in *Plasticity at the Dusk of Writing*.

brain to form complex new organisations based on the facilitation and depression of existing neuronal pathways, what Malabou calls the “open” meaning of plasticity, the “malleability of form”, in contrast to its “closed” meaning, “the definitive character of form”. As Changeux also insists, this necessitates doing away with any kind of concept of a machine brain and attempting to think not only the development of the child’s brain, but also that of the adult as plastic, self-forming like the exemplary individuals of Ancient Greece.

One might wonder why we need the trappings of neuroscience to give legitimation to such an understanding of our psyche. Perhaps it is an indication of how much the ideologies embodied by neuroscience are already embedded within Malabou’s thinking; as Paul Ricoeur suggests, “it is always the other who stoops to ideology” (2006:82). This is not to say that there is some place outside of ideology where we might analyse Malabou’s own neuronal ideology with perfect clarity, but that the gesture of calling on neural structure, “to uncover this freedom” “in the name of brain plasticity”, to legitimate something that can be easily observed in everyday life (particularly adult education) needs careful attention. Does neurobiology perhaps tell us the answer to the question posed to Hegel about the “plastic individuals” of Ancient Greece? That a combination of genetic and epigenetic factors allowed for the development of brains with greater capacity for modulational plasticity in those individuals; that their continual self-moulding was the real secret of their self-determination (Changeux 2004:184–210; 220–23)?<sup>6</sup>

The freedom granted by this knowledge would seem to be of a very strange sort, a freedom granted by the reinterpretation or discrediting of the work of some scientists who naively clung to the idea of a stable brain; against Malabou’s repeated affirmation that “our brains are a work and we do not know it”, we need to ask what difference this knowledge really makes (2008:1). It seems to be a freedom from the “machine brain” granted by an empiricism that never really succeeded in supplanting the Enlightenment’s self-knowing subject in the popular imagination.

### **Is the brain “adequate to the world”? If so, how?**

Malabou’s argument is that “the biological and social mirror in each other” in a decentralisation of command and control both in terms of

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6 An interesting recent development suggests that even the genetic structure of the brain’s individual cells is changed through our experiences. See J.K. Baillie, M.W. Barnett, *et al.*, (2011).

neuronal functioning and in terms of politics and economics (2008:33). In a double move, she argues that plasticity is both “precisely the form of our world” and the potential (in the form of a consciousness of the plasticity of our brains) to change and emancipate ourselves from this form (2008:38). Malabou does not really demonstrate how this emancipation might take place, although the link with Deleuze’s reading of the simulacrum and plasticity’s artificiality might be one possibility.

As we can see through Malabou drawing upon Luc Boltanski and Eve Chiapello’s *The New Spirit of Capitalism*, there is certainly evidence for a mirroring of the structures of network analysis and thinking, of managerialism, in neuroscience, and in the logic and rhetoric of neoliberal capitalism in its present form (Boltanski and Chiapello 2007:101–156; Malabou 2008:40–46); however, it is rather less clear whether this “neuronal ideology”, more accurately described by Boltanski and Chiapello as “connexionist”, is the mirror of neoliberal capitalism or neoliberal capitalism is its mirror, and indeed whether this relationship constitutes a cause rather than a mere correlation in either direction.

This is not to suggest that Malabou is unaware of this problem; in a reading of Deleuze’s *Cinema 2: The Time-Image*, and his claim – in a footnote – that “the brain is adequate to the world”, she suggests that it is the naturalness of this adequation that blinds us to its actuality and that

[t]he screen that separates us from our brain is an ideological screen. [...] “Screen” also applies to the scientific descriptions themselves, which, pretending to lift the screen, really just reinforce it by producing no critical analysis of the worldview they implicitly drive. (2008:40)

One of the problems with *What Should We Do with Our Brain?* is that Malabou correctly identifies these symptoms, but does not proceed towards a thorough diagnosis of the condition. To identify the symptom is not sufficient to free the patient from it. What is necessary is a thorough examination of this “ideological screen”, of how it functions as a screen, and – to further extend the analogy with the analysand – to work out what form of transference might reduce the resistance of the “worldview” implicitly driven by neuroscience to being deconstructed.<sup>7</sup> While Malabou insists on the necessity of this task, her very insistence on the liberatory power of brain plasticity demonstrates the prevalence of an

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7 See Derrida (1987:339)

ideological construct that takes the scientific model for scientific truth. The problems with the Freudian-Derridean account of neuronal function as writing or inscription are taken into account, but not what disseminative challenges the figure of plasticity might present. This is particularly clear in *Plasticité*, where Malabou argues against the model of neuronal inscription or *frayage* but does not question the technical effects of these new neuronal “traces” being conceived of as “images” (2000:17). Given the primacy of the image in the history of metaphysics, this seems an odd omission. If, as Lyotard asserts, one may only touch the thing itself “but metaphorically”, the prevalence of images as an “ideological screen”, rather than the metaphor of text or writing, will have significant effects on the manner of that touching.

Malabou evidently knows that the model is not truth, but acts at times (inasmuch as *What Should We Do with Our Brain?* constitutes an act) as if it is. In an essay in *The Post Card* aptly titled “Paralysis” Derrida explains the failure of a “purely interpretative psychoanalysis”:

It is through the “transference” (*Übertragung*) that one will attempt to reduce the resistances of the patient, who cannot be reached simply by becoming conscious of a *Deutung*. Transference itself displaces, but it only displaces the resistance. It operates a resistance, *as* a resistance. (1987:339)

This analogy highlights the difficulty that Malabou’s analysis presents – in order to know what effect a consciousness of brain plasticity might actually have we first need to understand how the “resistances” of the apparent complicity between network or connexionist ideology and neuroscience might be displaced as resistances. It is this question of transference and resistance that is absent from most neuroscientific accounts and from Malabou’s own discussions. This is not to say that Freud’s model should be elevated to the level of truth when much evidence from neuroimaging would suggest a different model of neuronal function; however, Freud’s theory is important because it tries to take into account, to negotiate the difficulty of the split between neural function and how we might try to represent that functioning to ourselves.

What exactly are the questions that this model of neuronal functioning imposes upon us, if it is not the question of whether this is a good representation of the psyche? The first is evident from Malabou’s own “mission statement” – namely, what is the symbolic and graphic “component of thought” in this model, and what kinds of thinking does it

suggest (Malabou 2010:3)? How does thinking as “plasticity” change our conception of thought from Derridean thought as writing and difference? Following on from this, how do we define this model? Malabou wants to extend the philosophical concept of plasticity to incorporate that of neuroscience. The question of what legitimates or does not legitimate this extension, then, takes on an important epistemological and political dimension: what is the relationship between discourse and figure, or between writing and figure in this account? What does it mean to ask if plasticity is a metaphor here?

The question of whether plasticity falls on the side of writing (Derrida) or figure (Lyotard), or how it might negotiate this gap has already taken on considerable political significance;<sup>8</sup> this is both as the “naturalisation” of a connexionist ideology, in both the social sciences and in neuroscience, and, if plasticity is indeed “the form of our world”, then has it always been plastic, in the way Malabou elaborates it, or is this a recent phenomenon?

In Derrida’s analysis of Freud’s “Mystic Writing Pad,” he shows how Freud searches for a hypotypotic “representation” of the psyche to demonstrate his understanding of its structure; the models of neuroscience ostensibly work the other way, the “material” structure of the neural network, or rather its representation via technical prostheses, informs the way in which consciousness might be “implicated”, to borrow, as does Malabou, Dennett’s term (Malabou 2008:11).

So, what example can we use to work through the “neuronal ideology” – and its figural relation to plasticity – Malabou asks us to analyse and challenge in *What Should We Do with Our Brain?* The argument for an ideological complicity between the models or screens of neurobiology and late (neoliberal) capitalism is an interesting one. However, to work through this apparent complicity, “between neuroscientific discourse and the discourse of management, between the functioning of the brain and the functioning of a company” (Malabou 2008:40), we need an example that can be carefully examined as model, screen or metaphor. In addition, in this analysis we need to ask whether plasticity, and in particular the concept of brain plasticity (or plasticities), is really the cultural panacea Malabou seems to be suggesting at times in *What Should We Do with Our Brain?* To this end, a suitable choice seems to be Changeux’s concept of the “neuronal workspace” from his provocatively titled *The*

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8 Malabou, for her part, claims that she “seeks to understand [...] the *transformational relations* between *figure and writing* and the reason why the dialogue between *form and writing* presents itself as structure” (Malabou 2010:3).

*Physiology of Truth.* How, then, does Changeux characterise this “workspace”?

The theory that Stanislas Dehaene, Michel Kerszberg, and I have proposed [...] does not aim at solving the problem of consciousness. [...] Instead it constitutes a modest attempt, using a very simple network architecture, to model the independent processing of a great variety of signals passing through distinct parallel pathways as well as their integration in a “unified field” (in John Searle’s phrase) or a common “workspace” (Bernard Baars’s term). (2004:87)

While Changeux insists that this model is not an attempt to solve the problem of consciousness, he does then go on to claim that “workspace neurons [...] unify conscious representations” (2004:96). We can glean from this introductory description that the mode of modelling the brain’s architecture is conflated with terminology (e.g. “network architecture”) more usually found in the construction of computer networks and cloud computing. There is clearly a notion of communication in this way of modelling the “neuronal workspace”: “signals” are “processed” as they pass through “parallel pathways”. Indeed, little explanation is given for why this “simple” model should prove ‘adequate’ to the brain’s architecture of billions of neurons, save for its apparent ability to explain a number of relatively simple cognitive tests; the structure of the tests implicitly determines the model (2004:11). Nonetheless, the architecture of the “neuronal workspace” presented by Changeux is interesting because of the way it attempts to model part of what is clearly an incredibly complex system by a relatively simple three-dimensional network. This model is ostensibly only supposed to account for the functioning of “effortful cognitive tasks” – in this instance the famous Stroop test, a colour naming task with “interference” factors (Dehaene *et al.* 1998; Changeux 2004:87–98). These interference factors involved in the task involve naming colours as displayed by the written word with the lettering in an alternative colour, and naming the colour of the lettering when the word denotes another colour (Changeux 2004:87–98). In the terms of Lyotard’s version of language games, this is a game where the “correct” assent of the participant to a denotative utterance has effectively been decided in advance (Lyotard 1984:9). The model is continually striving to take over reality, that the technics of the test have effectively delimited in advance the “forms” that consciousness might take.

However, to critique the epistemology of this model is not my primary

aim here, but rather to examine how this suggests we might “see a thought” and whether this model (or rather *figure*) of neuronal function has some sort of complicity with the ideologies of neoliberal capitalism. So, let us examine the “workspace” hypothesis itself in greater detail:

The central proposition of the already quite venerable workspace hypothesis, recently revived and modified by Baars, is that two main computational spaces can be distinguished in the brain. The first is a processing network composed of parallel, distributed, and functionally specific processors. These processors are in competition with one another and exhibit a great diversity, operating upon primary sensory and motor stimuli, the contents of long-term memory [...], the self and subjective personal experience, and systems of attention and evaluation involving motivation, rewards, and, in a general way, the emotions. (Changeux 2004:89)

One might ask what these “processors” are exactly in competition for, and what “the self” and “subjective personal experience” are in this model; the language here is, indeed, akin to that of managerialism. The conflation of mental and neuronal here is very striking, neurons link together structures of other neurons but the latter set of neurons are treated as if they are already “adequate” to subjective experience (of memory, sensation, knowledge of self, etc.), in the sense that Malabou adapts from Deleuze of the brain being “adequate to the world” (Deleuze 1989:210–15; Malabou 2008:38–40). The “processors” are treated as little black boxes that “process” information in some way, again linking to a mathematical model of communication; the metaphor or model of the computer brain has been replaced by a model that oscillates between cloud computing and managerialism. Built upon this first hypothesis, then, and clearly contingent upon it, we have a second “computational space”:

The second computational space corresponds to a global workspace consisting of a distributed set of excitatory cortical neurons that are very richly interconnected. These neurons, with their long axonal processes, establish horizontal connections within the same cerebral hemisphere and, through the corpus callosum, between hemispheres. [...]

The model suggests, moreover, that [...], during a task requiring conscious effort and sustained attention, the workspace neurons are spontaneously and jointly activated, forming discrete but variable

spatiotemporal patterns. These global prerepresentations [...] create mutual interconnections between multiple cerebral processors throughout the workspace that are modulated by attention and vigilance signals, and selected as representations by reward signals. (2004:88–89)

The rhetoric of the analogies that Changeux makes here, “global workspaces” and interconnected “processing centres”, does again suggest the language of connexionist managerialism. The neurons are almost characterised as workers in the great office block of the brain. Indeed, the language of “rewards” and “selection” further emphasises this comparison: the worker neurons are clearly somehow “rewarded” for selecting the “correct” neuronal pre-representation to be a representation. As ever, the pertinent question would be: how do our “worker” neurons decide what is a “good” representation? We are once more only a step away from the truth as being a good resemblance, *economimesis* (Derrida 1981).

Returning to the model of the “workspace”, based on the first hypothesis, which is partially supported by neuroimaging techniques that show increased activity in particular areas of the brain depending on the specific task, we have a second by which a set of black box “processing” centres are interconnected through the various levels and differing structures of the brain by long “richly connected” “workspace neurons”. In this hypothesis, routine tasks are carried out by these “functionally specific processors”. However, in a task that requires conscious attention, new pathways and interconnections need to be generated to adequate the brain with novel data. The workspace neurons consequently link numerous different “processing centres” in the brain in a way that generates new “pre-representations”, which are sorted by another neuronal “circuit” concerned with the continued activation of the “workspace”. Evidently, whilst the idea of the machine brain may have been refuted by evidence of neuronal plasticity, the rhetoric of circuits and processing is maintained in the “logic” of modelling the brain’s activity.<sup>9</sup> These activities, furthermore, could also be regarded as analogous to those of a manager or coordinator in our aforementioned office block. The problem of the logic of “processing” has not been resolved, merely displaced.

A pre-representation that is selected as a full “representation within

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9 Evidently, the traditional distinction between logic and rhetoric, or between *logos* and *muthos* is being called into question here. See Derrida (1995) and Jean-Pierre Vernant (1990).

the workspace” remains active as long as positive signals maintain it (Changeux 2004:93). “If, however, signals are negative or attention is no longer sustained, this pre-representation can be revised or replaced, through a process of trial and error, by another discrete combination of workspace neurons” (2004:93). Again, there is a mysterious prime mover by which some form of selection takes place in a manner we might call “conscious”. The double role played by representation here is quite fascinating; on the one hand the “representation” is the pattern of workspace neurons activated, on the other the pattern is a representation either of the task at hand or the external stimulus. That is to say, this model posits the pattern of activated workspace neurons as the neural image of a “mental object”: the literal “adequation” of brain and world. The key point here is that this model effectively posits a mappability of the mental as well as the neuronal in relation to the presentation of this model. While it is evidently a very simplistic model, it presents a “representation” of workspace neuron activation that is ostensibly adequate or at least analogous to the mental activity being modelled, but this model is shot through with connexionist rhetoric. One would suspect, however, that this complicity has as much to do with the historical construction of discourses surrounding both neuroscience and post-Fordist managerialism through cognitive psychology as it does to the mirroring effect Malabou posits. The future of neuroscience as a biopolitical tool, however, is very likely to involve a conflagration of neuroscientific knowledge and post-Fordist capitalism (Dillon and Lobo-Guerrero 2008).

Malabou, as we have seen, actually makes a more radical argument, making a claim, via Deleuze, for the “adequation of brain and world” (2008:38–40). Malabou interprets this phrase of Deleuze “the brain is adequate to the modern world” in very direct terms, claiming that “the plasticity of the brain is the real image of the world” (2008:39–40). This is a significant flattening of the complex argument put forward by Deleuze in *Cinema 2*, which is less about the specifics of brain structure’s relation to the world at large than a question of detranscendentalizing the mind without privileging either body or brain (Deleuze 1989:189–224). In contrast, in the terms of Changeux’s venerable “workspace hypothesis”, the adequation of brain and world would seem to be relatively straightforward: the brain’s structural activation, in the form of the workspace neurons, selects those pre-representations that are properly adequate to “the world”, and modulational plasticity should privilege those representations that are most “adequate to the world”.

This, consequently, returns us to the question lurking on the margins

of this paper – namely, how does the relationship between neuronal plasticity, materiality and neuroscience actually manifest itself? This claim for the adequation of brain and world through the functioning of neuronal plasticity is clearly one of the ways in which Malabou wants to try to think through this relationship, and as a “new materialism” (2012:212). In many ways neuronal plasticity is a material form of understanding the adequation between brain and world, for all that it seems rather more complex than Malabou initially suggests in *What Should We Do with Our Brain?* What is clear is that this materiality is mediated by a form of rhetoric, metaphor or figure; even should Changeux’s “workspace model” prove accurate in the manner in which the mental might be mapped onto the neuronal, this still does not give us access to the thing itself, in this case the brain.

Malabou identifies this question as the central one for contemporary philosophy in *The New Wounded*:

Such coincidence between symbolic structure and cerebral structure would be the sign of what Lacan calls “primary materialism.”

It is precisely such “primary materialism” — which is Lacan’s expression of contempt for the cerebral localization of the symbolic — that I have attempted to assume and to uphold throughout my discussion. Extending the closing argument of *What Should We Do with Our Brain?* I continue to defend the thesis that the only valid philosophical path today lies in the elaboration of a new materialism that would precisely refuse to envisage the least separation, not only between the brain and thought but also between the brain and the unconscious.

It is thus such a materialism, as the basis for a *new philosophy of spirit*, that determined my definition of cerebrality as an axiological principle entirely articulated in terms of the formation and deformation of neuronal connections. (Malabou 2012:211–12; emphasis in original)

In Malabou’s elaboration, Lacan is criticising Lévi-Strauss and other forms of structuralism for “for confusing “structure” with the form of the brain. [...] in accordance with the form called materialist in the eighteenth-century sense, the doublet, and not even the inner lining (*doublure*)” (2007b:341; my translation). Malabou argues that “a certain coincidence between symbolic structure and cerebral structure would be the sign, according to Lacan, of a ‘primary materialism’” (2007b:342; my translation). She goes on to adumbrate that her project has been to try to

come to terms with the disdain of psychoanalysis for the location of the symbolic in the cerebral.<sup>10</sup>

As regards how this new materialism relates to the symbolic, Malabou says that

The “symbolic” is obviously not far away, since the elementary form of the brain is the emotional and logical core where the processes of auto-affectation constitute all identity and all history. (2012:212)

In this argument there is a certain slippage, which Freud or even Lacan would doubtless identify as the system Perception-Consciousness or in transference; that is to say, while Malabou goes on to elaborate this fundamental question of the history and identity of the subject being constructed through its cerebrality, and the radical possibility of the destruction of this history and identity through damage or major restructuring of the cerebrum (what Malabou calls destructive plasticity).<sup>11</sup> This does not answer the question that Malabou has effectively raised: how does one access this new materiality, and how is it different to previous conceptions of materiality? Furthermore, if the symbolic is not absent from this scene, where is it, how did it get there and how does it stay there? The answer to the last of these questions is evidently, for Malabou, the structure of the brain itself comes to be adequate to the symbolic, and thus this would also account for the first.

### **Conclusion: the return of metaphor and the plasticity of the world**

Thus, we return to the question of the symbolic split between the plastic and graphic components of thought. There is a danger here that Malabou falls into the same trap that Lacan accuses Lévi-Strauss of blindly stumbling into – namely, confusing structure with the structure of the

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10        Lacan’s contempt for this materialism in *Seminar X* is expressed through the pun on “*doublet*”, either a waistcoat or empirico-transcendental double, and “*doublure*”, the lining. If I am reading this section correctly, Lacan is by no means denying the *location* of the psyche (and perhaps partly the symbolic) in the brain, but rather that the material structure of the brain *determines* it.

11        “If the brain designates the set of ‘cerebral functions,’ cerebrality would be the specific word for the causal value of the damage inflicted upon these functions—that is, upon their capacity to determine the course of psychic life” (Malabou 2012:2)

brain, although in this case the “structure” in question is the structure of Malabou’s reading of Hegelian plasticity. Indeed, this remains the post-Kantian problem *par excellence*: what do we do in the absence of a transcendental guarantor, if we cannot access the thing in itself? Malabou is accurate when she claims that we are in need of a new materialism, but this new philosophy of the spirit, that Malabou says is based on this new materialism, seems to – so far – fall short. Firstly, there does not appear to be a dialectical movement between cerebrality and the symbolic elaborated in any of her books on neuroscience; the relation of this “coincidence” between symbolic structure and cerebral structure seems to be missing. This affirmation of not the slightest gap between brain and thinking, between neuronal and unconscious, does not seem to admit the differentiation between different forms of knowledge. If this is a new philosophy of spirit, then how does the speculative content unfold to form this new materialism? Are we to presume that this co-incidence of symbolic and cerebral structure is merely coincidental? In the presentation of these models of neuronal functioning as images, or as the activation of discrete patterns of workspace neurons, does not the problem of representation remain?

The problem with this elaboration of plasticity is that Malabou attempts to “grasp the whole”, but whilst limiting the metaphorical and disseminative properties of plasticity itself. This material coincidence between symbolic structure and brain structure does not unfold dialectically but metaphorically, even *anametaphorically*; I use this neologism to denote a *dynamis* of the figure that acts recursively. That is to say, rather than a mirroring effect between the model and the psyche, there is a (re)turn or recursivity that precisely articulates the relation between symbolic and cerebral structure, but this is not a return of proportion or analogy. We can see this easily enough in the turns of the rhetoric that Lacan adopts in working through his “primary materialism” in relation to Lévi-Strauss. A materialism that does not take into account the laterality and depth of the figure (Lyotard 2011) is not a properly rigorous post-Kantian materialism but a plenitude. Akin to Douglas Hofstadter’s “strange loop” (1999; 2008), plasticity as the sensible translation of an *economy* of sensible translation (Malabou 2005:7) already includes a recursive definition. To give plasticity the critical force in relation to neuroscience that Malabou seemingly wishes, it would be beneficial to return to this earlier, more classically philosophical definition, and stage a confrontation with the modulational plasticity and the historicity of the brain. This, clearly, would also involve “*plasticities*”

rather than plasticity as a unified whole – to deconstruct plasticity by showing the internal tensions in the varying applications of the term.

This returns us to the question of the symbolic, which in Malabou's *What Should We Do with Our Brain?* effectively takes the form of post-Fordist capital and its mirroring in the brain. Evidently, in asking for a critique of “neuronal ideology” Malabou also implicitly asks for an ideological critique of the structure of plasticity itself, in all its forms – not just the figure of neuronal plasticity. As was implied when discussing Barthes's reading of “plastic” in *Mythologies*, in plasticity Malabou has highlighted “the spirit of the times”, and that the plasticity of plastic is the very idea of its own material; there remains a hypotypotic link between the sensory material of plastic and its adoption as the form of post-Fordist capital. How often have we heard politicians discussing the need to pay off our national credit cards (plastic money) with little regard for the form of the *plastoeconomics* they are practising? By plastoeconomics I mean to suggest the reality of the economic artifice. Could not this also be the form of post-Fordist capital, reliant on capital instruments, the perception that governs the yield of bonds and can bankrupt countries? Of course, we should also hear the echo of how *plasto-oiko-nomos* would sound to the Greek ear, something along the lines of counterfeit house management or stewardship, counterfeit like the word *plastoeconomics* itself. Is this not the sensible translation of an economy of sensible translation, as embodied by the apparently infinite possibility for the reformulation of thermoplastic?

How then might we elaborate plasticity further by incorporating these exceptions, as Malabou herself suggests we should do (with our brains)? I would suggest that the concept of plasticity wants to be more plural than Malabou seems to wish to allow it. The plasticity of the very concept of plasticity is its elaboration of a new materiality: there are many plasticities and they are contingent upon their transcendence by the figure; however, that transcendence is not that of a Platonic form but the excess of a relationship to the sensory that cannot be mastered.

What then of the question this article began with: how we might see a thought? We have seen that neuronal plasticity is by no means a literal adequation between brain and world, that there is a split between brain and thinking given by its very plasticity, the structure of the brain itself is made plastic by and as the very possibility of thought. This is the liberation promised to us by Malabou in *What Should We Do with Our Brain?* but which is denied by the argument that there is no separation between brain and thought in *The New Wounded*. The potential to rewrite and reconfigure itself must necessarily lie in a difference between brain

and thought; to adapt one of Malabou's favourite phrases from the *Future of Hegel*, this relation must always work in at least two times at once. That is to say, since by Malabou's own analysis thought restructures the brain, we must consider thought as promised to the future structure of the brain, rather than that of the present. Perhaps the future of plasticity lies more in *The Future of Hegel* than it does in Malabou's more recent work.

Returning to the relation of plasticity to post-Fordist capital, can plasticity be redeemed from this relationship? Evidently, capitalism has the inherent power to derealize, so we would be somewhat remiss to abandon the difficulties presented by Malabou's interesting and challenging elaboration merely because it also manifests itself as one of the dominant motifs of contemporary capital. Indeed, what is necessary is to complete the project suggested by *What Should We Do with Our Brain?* and which is at times approached by the analysis of PTSD and the psychic-cerebral effects of this dissociative (in the double sense of dislocation and the Thatcherite affirmation that there is no such thing as society) and derealizing power in *The New Wounded*. In order to do this, we must further interrogate the plasticity of our world, and how the plasticity of the figure and the figure of plasticity becomes neutered by the plasticity of capital – a task that requires returning to the figure and how the symbolic might become or be becoming cerebral. That is to say, acknowledging the “contamination” of plasticity by that which it seeks to act upon enables us to potentially challenge the form it takes. Its recursivity offers another possibility for future research – both in relation to the temporality and recursivity of neuronal plasticity and also as regards the flattening of Deleuze's assertion that “the brain is adequate to the world”. This would require a different reading of Deleuze in relation to neuroscience than the focus on “affect” Malabou presents in *Self and Emotional Life* (2013). This reading should examine Deleuze's attempts to deprive the brain as the sole site of thinking, and deconstruct the hierarchy between thinking and feeling that this focus on the brain entails – in the very chapter from *Cinema 2: The Time Image* (1989) that Malabou cites the footnote to as regards the “adequation” of brain and world:

There is as much thought in the body as there is shock and violence in the brain. *There is an equal amount of feeling in both of them.* The brain gives orders to the body which is just an outgrowth of it, but the body also gives orders to the brain which is just a part of it: in both cases, these will not be the same bodily attitudes nor the same cerebral gest. (Deleuze 1989:205)

Deleuze is trying to destabilize not only a mind-body split, but its carry-over into biology, with the brain taken as a mysterious ‘black box’ of consciousness, still displaced from the body – arguably a potential problem with Malabou’s focus on cerebrality and destructive plasticity. We could also note that John Protevi has already highlighted the interest for Deleuzian scholars of Mary Jane West-Eberhard’s *Developmental Plasticity and Evolution* and the same might be recommended for researchers investigating plasticity – there is not just plasticity in the brain but of the body too.

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