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The Epic of Genesis: Catherine Malabou and the *gêne* of Epigenetics

ABSTRACT

This article examines the conflicting representations of plasticity and epigenetics in the work of philosopher Catherine Malabou and evolutionary theorists Mary Jane West-Eberhard and Eva Jablonka. Malabou effaces the unsettled debates within the life sciences in order to speak of a new biological 'paradigm' and to attribute values of novelty or inventiveness to life itself. The aporias of evolutionary narrative and causality reveal a necessary differentiality and textuality that belongs neither to life nor science *itself*, but leaves a haunting remanence within every corpus. New materialism resists this necessity of life-science, which calls for a deconstructive reading.

KEYWORDS
plasticity, epigenesis, biology, deconstruction, materialism, life science

It would be a curious experiment to measure and classify the usage and usages of the term 'science' across academic disciplines today. My hypothesis would be that the term occurs with greater frequency in published research from the humanities than it does in those disciplines we sometimes collectively call 'the natural sciences.' My reasons for anticipating this result are not especially counterintuitive: it is, for the most part, from the apparent *outside* of a given formation that one thematizes it as an object, calls to it enticingly or forbiddingly, or attempts to secure its confinement. Those we call scientists, precisely because they unhesitatingly recognize themselves under that name, have no need to invoke it unless their credentials are challenged, their funding is threatened, they are introducing themselves to an outsider (whether to invite them in or keep them at bay) – where the scientificity of science and the smooth functioning of its machine are threatened or the limits of practice and self-identity are in question. When writing as a specialist for other specialists, one might distinguish oneself from another subdiscipline or school of thought, with finer-grained distinctions implicitly understood as internal to the 'sciences.' I introduce this thought experiment because it seems to me, in the theoretical humanities today, especially in those discourses that mark themselves as 'materialist,' as part of a 'material turn,' wherever the authority and importance of science or the sciences are invoked, this name is wielded as a talisman, apotropaically, to ward off the object of desire.

Here, I will look at how the terms 'epigenetics' and 'plasticity' circulate in Catherine Malabou's texts, as an example of this apotropaic tendency. Malabou's project involves re-thinking philosophy starting from a necessary contingency or general mutability that comes to pass as the transformation or metamorphosis of forms. She often criticizes philosophers for failing to learn from what she frames as contemporary 'revolutions' in the life sciences, which reveal the contingency of prior models of thought while, Malabou argues, attesting to a plasticity of the living themselves. There is an undecidability within her turn to neuroscience and evolutionary theory – she seems simultaneously to take their contemporary 'revolutions' as evidence of the contingency of scientific modelling, and to treat the sciences as if they gave access to matter or life *themselves*. What Malabou resists, what she often declares the present to be over and done with is, in a word, *writing,* a certain differentiality or textuality which would belong no more to life than to science, because it belongs to nothing *itself*.

In what follows, I will turn to two texts that offer theories of 'plasticity' and 'epigenetics' from the life sciences today, by Mary Jane West-Eberhard and Eva Jablonka, in order to demonstrate the necessary aporetics that take place within and between every such attempt at scientific knowledge. Each tries to form a coherent narrative of evolutionary history and causality, and each accuses the other of faults that can be found in their own systems. Moreover, each tries to displace the fundamental power once granted to the gene, to be the repository of the law of life, but only by relocating it elsewhere in their system. I take these mutually and internally conflicting theories as examples of a certain necessity, that even when one can observe and demonstrate the fictionality of originary power, one must nonetheless reinscribe it within any attempt at scientific knowledge. One can only write or speak of life or anything else, as a scientist or anyone else, by inscribing it within an epic, a fabulative text. For this reason, a deconstructive reading is *closer* to life 'itself' than any 'materialism' that effaces the textuality of its objects. This fictionality and textuality, the epic of genesis, unsettles the claims made by Malabou, and by many other texts that are of the 'materialist' moment today, to take science as a witness when speaking of life or matter themselves, or even of the *itself* itself.

Epic Genetics

For Malabou, epigenetics means that the power of the origin is placed in question.[1] Both the origin of science and the origin of life: the theory of epigenetics has challenged certain particulars of twentieth-century genetics, and seems to attest to a greater suppleness of life itself. Epigenetic mechanisms can change their state in the course of an individual lifetime, directly or indirectly affecting the functioning of the genome, and in some cases have a degree of heritability. Thus, epigenetics can be taken as a refutation of the biological doxa that forbade the inheritance of acquired traits; events understood as deriving from the environment, experience, or learning can have intergenerational effects. Heredity can no longer be attributed exclusively to the DNA sequence received at conception. Even if this changes how we conceptualize the gene, the unit of inheritance, it can only do so by redistributing the value of originary power, of geneticity.

Still, much of the interpretation of epigenetics is *up in the air*. Not simply, I would argue, because its interpretation has yet to be decided (to reach consensus), but because it is *undecidable*. That it remains haunted by the genetic figurations it displaces, that it is highly contested in contemporary biology, that it has no single definition and that its 'revolutionary' status is debated, such differentiality must be suppressed in Malabou's incorporation of it. For example: '*Are we facing a revolution in contemporary biology with the postgenomic era and the shift from the genetic to the epigenetic paradigm?* My essay advocates for such a revolutionary turn' (Malabou 2022b, 238). By treating 'epigenetics' as a single and coherent 'paradigm,' representative of an 'era' or 'epoch' (Malabou 2022b, 239), and bringing about a 'revolution' supplanting former powers, its unity and self-possessed power is feigned. Such gestures secure the apotropaic perspective:

> One of the main tasks for critical theory and continental philosophy today is, I believe, to inscribe within their own fields the resources provided by current cellular, molecular, and neurobiology. We are witnessing the birth of the epigenetic paradigm, which again, is not pregnant only in biology but is an invaluable resource for the humanities. (Malabou 2022b, 164)

This traditional form of interdisciplinary encounter, which maintains the boundaries of the disciplines it touches on, is the apotropaic view-from-outside. (This is not to say that there is a simple or easily delimitable *inside* to 'biology' or anything else, but rather that such gestures try to

impose linear boundaries, to ward off generalized haunting.) The 'resource' Malabou claims to find in biology, as if it were not the product of her active selection or reading, her *legein*, is precisely the principle of paradigm shift or scientific revolution, the dethroning of a former power.

'Epigenetics,' at least on this reading, displaces the origin of life and life science. As a 'resource for the humanities,' Malabou translates this by bringing it together with the philosophical tradition of epigenesis: 'Epigenesis takes place at the moving contact point between origin and the present state of affairs, until their difference disappears right into their contact' (Malabou 2022a, 165). There is an undecidability in this incorporation of the originality of secondarity – in order to secure one's knowledge of being outside the origin, one must fix and know the origin. One can demonstrate, both in the scientific literature that attempts to systematize or put into practice this theory, and in Malabou's philosophical appropriations of it, that it depends on the geneticity it nonetheless undermines.

This undecidability haunts philosophical epigenesis as well as biological epigenetics. Malabou brings these traditions together to locate what she calls their unified 'theoretical space,' one she traces back as far as Aristotle.[2] She locates this in the notion of a '*founding at the point of contact and not by the root or focus'* (Malabou 2022a, 160). Yet, one must fix what will count as root (for example, the gene and genetics) in order to claim that it no longer holds sway. In its traditional formulation, epigenesis would be contrasted to preformation, the theory that the germ or embryo is the mature organism in miniature, present in all of its parts and complexity but merely growing in size as it develops. Epigenesis is the counterargument that development involved qualitative differentiation, the growth of parts not prefigured in the seed, rather than merely quantitative increase. Whatever the intuitive differences between these positions, they are possessed by an undecidability that is not circumventable for any thought that would remain philosophical or scientific, that would obey the principle of reason; anything understood to grow by epigenesis, whatever its phenomenal novelty, must be anticipated by a possibility or power that preceded it. Whatever will come to pass must have preexisted or been preformed as possibility, unless we are to claim that the impossible has happened. Epigenesis is preformation in the form of possibility, of a power principle. This follows analytically or tautologically from the idea of growth or development, as soon as this is understood as growth *of* something, a substance whose effects follow from a cause. There can be no logic or biology that does not posit such causes beneath appearances; a 'life' that could be overtaken by the absolutely unanticipatable other would jeopardize the closure of any science or philosophy, nor could one say with any confidence that what would befall it or overcome it was its *own* development, that of a self or autos, one which would still merit the familiar name 'life.'

A similar undecidability haunts 'epigenetics.' It only places in question the power of *the* origin to the extent that that origin remains figured as a genetic substance received at conception. Epigenetic mechanisms are often figured merely as on/off switches for those genes, or relays within a program that is no less pre-formed or innate.

I'll draw just two consequences from this undecidability, one of which has to do with how we speak of science, one with how we speak of life. Malabou often emphasizes the contingency of 'epigenetics,' as well as 'plasticity,' meaning that these terms are only circumstantially taken to represent the nature of life today, and that they will certainly be replaced in the future. This is the plasticity of plasticity, its own mutability. Yet, certain of the gestures she uses to take these terms as representative of a contemporary epoch and a theoretical paradigm suppress this alterity. On the one hand, she justifies taking 'plasticity,' for example, as representative of the contemporary, of an epoch, era, paradigm, and revolution, simply because it is 'in the air' (Malabou 2016b, 63). This invocation of a kind of radical empiricism obscures, as any pretense of empiricism does, operations of a metaphysical type that undergird it. 'Plasticity' or 'epigenetics' are undoubtedly not the only things 'in the air' at present – there are countless other terms circulating, including the persisting

language and ways of thinking of the genetics she takes to have been dethroned or decapitated in a revolution. Even when one claims to merely pick up the closest thing at hand, we are necessarily already reading, selecting from among the circulation of models and even among particular interpretations of them.

This selection and its denegations can be interpreted symptomatically: these terms lend the authority of science or biology to Malabou's discourse, and with it a certain proximity to life and matter, to a 'new materialism' (Malabou 2022b, 235). At the same time, they displace representations of life that shared the airspace of an 'epoch' Malabou would like to advance beyond. She argues that plasticity and epigenetics replace images of writing and thus eclipse the language of deconstruction:

> Derrida announces that *différance* will one day be replaced by something else, though such a replacement never occurred in Derrida's writing. […] Writing, or the trace, in Derrida, is paradoxically permanent, always acting in the same way. Plasticity, by contrast, is absolutely finite. I know that, very soon, plasticity will no longer be adequate. It functions at a certain moment of our culture; […] But at some point, another model, another paradigm, will replace it. (Malabou 2022b, 310)

Dominant representations of genetics pictured life and heredity as a cybernetic *program*, and the prevalence of cybernetic models was something Derrida took as representative of the moment in which he was writing *Of Grammatology* (1976, 9). Still, Malabou's reference to the 'permanence' of writing or the trace, as thought by Derrida, fails to acknowledge that this was never a master term for deconstruction – even as he posited or deposited *différance,* he emphasized the chain of 'nonsynonomous substitutions' it took place in, alongside terms and germs that Derrida found or which found him in every text he invented or discovered (Derrida 1982, 12). Thus, it is only by reading while denying she is reading, by restoring certain values of substantiality and self-presence, that Malabou can stabilize 'epochs' in order to claim to have done with a certain scientific paradigm, and with the time of deconstruction.

As witness to the surpassing of writing, Malabou emphasizes that many biologists no longer speak of 'program:' 'the idea of a program is exactly what is in question today as a result of the importance of epigenetic factors' (2022a, 162). If we thought the *-gram* or *gramme* of program was all that tied this figure to the value of writing, then such a substitution might be definitive. That it is necessary to *read* anything that functions as a figure, that it is haunted by internal differentiation and does not simply wear its identity on a surface exposed to an empirical and deterministic gaze, is precisely its writtenness. Thus, whatever else it changes, we must take precautions when recognizing, for instance, that the neuroscientist who is Malabou's most frequent reference with respect to neurobiological epigenesis, Jean-Pierre Changeux, writes of replacing the notion of 'genetic program' with von Bertalanffy's concept of 'system.'[3] Malabou emphasizes that this concept is one of *self-*organization, and it is precisely a value of ipseity that her engagement with the sciences, as a turn away from deconstruction, hopes to restore (Malabou 2016b, 58).

It is true that the genetic program is a figure of difference, of heteronomy. It suggests that a patronymic law stands above life, of which the organism is the subject or instance. This is no less the case for any model that a systems theorist calls 'self-organizing.' Its programmaticity is just this heteronomy; like a machine, it requires an external power source, the force of the other, to get going. This alterity is what Derrida recognized, for example, in the mystic writing pad and Freud's other models for memory – that it still required the hands to operate it, that it did not run all on its own (Derrida 1978, 226; Cf. Malabou 2016b, 59–62). If Malabou figures the contemporary as a new and revolutionary epoch, era, and paradigm, in which *différance*, trace, and writing have been

surpassed, because the living are now known to transform *themselves*, it seems as if the *inner* heteronomy of modelling is being resisted.

The surest signs of this resistance are the powers Malabou grants to the living being *itself*. Here, an authority is granted to science, that of being the witness to matter itself and life itself. She represents the plastic and epigenetic paradigm not as a certain representation of life posited by scientists, or a new kind of law said to govern the living, but rather as an age in which the living prove their *own* self-determination: 'Epigenetic mechanisms structure the *auto*-differentiation *of the living*. One essential aspect of the meaning of "traditional" epigenesis is thus found also in "contemporary" epigenetics. It is still a matter of defining individual development as an *autonomous*, *self*-formed, and formative growth" (Malabou 2022a, 159; emphasis added). One suppresses the differentiality of life-science by attributing powers to a self-identical subject, an autos and ipseity, in this case 'the living.'[4] I am not arguing that one should attribute any and every power to the scientist, as if that role was any more secure, or any less a part of vitality 'itself.' Rather, one must recognize that anything one could treat as the substance and subject of transformation, *within* which it operates and to which it returns, such as 'life' or 'matter,' any term one places in that position belongs itself to the ungrounded transformability of life-science. What becomes, what sur-vives of the living may not be anything we could recognize under that name. Derrida emphasized this possibility when he wrote a preface to Malabou's first book: 'What is the *ipseity* of this self who sees itself come, and hence, constitutes itself *at the same time* in the teleological development of itself and in absolute surprise?' (Derrida 2005, xiii).

This tendency in Malabou's writing is reflected in what calls itself 'materialism' or 'realism' today, which resists the iterability of life-science to restore the self-presence of 'agency.' As if life had redeemed itself of a finitude or fall from the *arbor scientiae*, achieving a true science, recovering a power that would be its own, its own self-identity.

The Ingenuous Gene

Within the field or fields of the life sciences, the revolutionary status of 'epigenetics' and 'plasticity' varies depending on who one asks.[5] it is easier to take 'epigenetics' or 'plasticity' as the definitive name of an 'epoch' from a certain *outside*, as I have said already, when one is not close enough to hear them rather as the placeholders for one or several debates. 'Epigenetics' does not mean the same as 'plasticity,' certainly not in all contexts, nor are evolutionary epigenetics or plasticity the same as neural epigenesis or plasticity, nor are any of these terms wielded univocally even by those who take the same side in their contested fields of contemporary biological theory.[6] By treating such names as unified representatives of the present, one necessarily suppresses the differences *within* a given corpus, the extent to which the dissensus haunting a term like 'epigenetics' is not simply a matter of stable though opposed position taking, but of necessary undecidabilities within both the 'subject' and 'object' of any vantage taken on the phenomena summoned under this heading.

Any text one opens on evolutionary theory would give evidence of an aporetics of causality that leaves traces of heteronomy within its own formations and formulations. The many incongruities one finds among authors in these fields are redistributions and reinscriptions of this intrinsic non-self-identity, which is no more *of* life, life *itself*, than it is *of* science. Representing the sciences as a unified source of knowledge about matter or life, rather than a site of contestation, is only possible to the extent that the epic of genesis or genetics is suppressed. Genetics as what returns, spectral *revenant,* the uncanny, haunting and haunted.

I will elaborate an example here that I have selected because it passes within and between the two most central terms of Malabou's work, plasticity and epigenetics. It concerns a debate that took place between Eva Jablonka and Mary Jane West-Eberhard, about the nature and narrative of

evolutionary causality. Jablonka and West-Eberhard have offered systematic theorizations of epigenetics and plasticity respectively, and both are cited by Malabou as representatives of the contemporary 'paradigm.' However, they arrive at a fundamental disagreement, that I would argue is a symptom of the fictiveness haunting any paradigmatic unity.

West-Eberhard's *Developmental Plasticity and Evolution* displaces many presuppositions of genetics that remain intact in most 'epigenetic' thought. She uses 'plasticity' to refer to the differing forms, functions, or behaviors that a single organism may achieve as developmental outcomes, in response to differences of the internal or external environment. These sometimes radically different developmental fates need not originate as genetic mutations, but rather place in question the grounding role of what has been called the gene. Unlike most theorists of 'epigenetics,' she sees the genes as *inputs* (often *interchangeable* with environmental differences) into a system of plastic responsiveness that preconditions their efficacy. West-Eberhard notes several respects in which this plastic potentiality makes the genes 'followers' in the evolutionary process, thus placing the 'flexible phenotype first' (2003, 3, 157–58). For example: environmentally induced changes are more likely to initiate evolutionary transformation than are random genetic mutations (which are typically maladaptive). An environmental change could alter the development of an entire population, which would then expose a new set of genetically inflected differences to selection. West-Eberhard suggests that changing gene frequencies would play a secondary role in this environmentally triggered evolutionary process, 'fine-tuning' the plastic potentials that overdetermine their effects (West-Eberhard 2003, 158).

Despite these radical displacements of genetic agency, West-Eberhard makes a curious concession to the otherwise diminished gene. She maintains population genetics' definition of 'evolution' as shifts in gene frequencies, arguing that, 'genetic variation is required for selection to have a cross-generational effect – an effect on evolution' (West-Eberhard 2003, 141). In other words, only when selection acts on *genetically mediated* differences can its effects persist beyond a single generation. I do not think this is a coherent position to take, given the radical priority West-Eberhard already attributed to 'plasticity,' but it exposes a necessary aporia of causality.

Take the following example: a single organism has a range of possible developmental outcomes, of which its accomplished phenotype is only a single example – how do we as scientists identify the range of its plastic potential? If a second organism develops differently, did it have the same plastic program, exposed to different environmental triggers, or a different program altogether? There is no way to set the limits of plasticity without making a decision about the basis that will be used to assume shared plastic potential, and a typical way of *grounding* plasticity is to compare *genetically similar or identical organisms* (Watkins 2021). Explicitly or implicitly, this is to treat 'plasticity' as a property or power *of the genome*. It is precisely because such a ground is *necessary yet impossible* that it is necessarily *fictive* or phantasmatic – it must be posited, yet every positing is immediately caught up in or carried away by the secondarity we have found haunting the 'gene.' There is no way to begin to explore 'plasticity,' to make it an object of possible scientific knowledge, without positing in the position of ground or cause (what we mean by 'gene') something that can only have a provisional status.

It is on precisely this point, the role of genetics in the evolutionary process, that a strange debate takes place between West-Eberhard and Jablonka. It is almost a non-debate, as if they said the same thing in different languages. Jablonka writes a review of West-Eberhard's magnum opus suggesting that West-Eberhard has privileged genetic mechanisms at the expense of the more fundamental role of epigenetics:

> As far as evolution is concerned, W-E believes that for evolutionary change to occur the transmissible variation must be genetic […] [this] leads to a lack of clarity and to an

> unnecessary and indeed harmful narrowing of her synthesis […] The inheritance of induced variations in phenotypes can be stable, and can lead to various evolutionary changes that do not involve changes in DNA base sequence. The attempt to ignore and trivialize such hereditary changes is unwarranted, and leads to mistaken interpretations not only of hereditary phenomena, but also of the relationship between genetic and non-genetic heredity and evolution. (Jablonka 2006, 151–52)

Yet, West-Eberhard both privileged genetics and displaced it, perhaps more fundamentally than Jablonka's epigenetic theory. Jablonka suggests that every effect of developmental plasticity could be mediated by epigenetic mechanisms (Jablonka and Lamb 2005, 273–76), which West-Eberhard sees as subordinating *phenotype-first* plasticity and the role of the environment to something innate, gene-like. This leads to further dissensus when West-Eberhard writes a review of Jablonka's (2005) co-authored *Evolution in Four Dimensions*:

> I thought that the strong focus on inherited variation actually limited the authors' ability to apply their insights more broadly, to environmentally influenced development in general, in order to show the broader significance of environmentally induced phenotypes in evolution. (West-Eberhard 2007, 446)

What is this circle in which we turn, this epic that returns without return, in which everything that comes second is more originary than what came before it? This is what I mean by referring to genetics and all genesis as an epic, occurring its first time as a return, thus with a necessary fictiveness to its structure.

We do not come closer to a true event by suppressing what appears fictive or nominal in the struggle between these texts (which cannot properly be treated as theories or paradigms, *a* theory or *one* theory). Their textuality is the condition of possibility and impossibility of anything that could come to pass, from them or upon them, unforeseeably yet programmatically. That the suspense of the origin is the origin of the origin, life-science is the effect of this afterwardsness.

The Matter that you Read

Obscuring the aporias within scientific knowledge, so that the sciences might serve as authorities on the truth of matter or life itself, is one of the gestures that has shaped the 'material turn.'[7] This apotropaic keeping-at-arm's-length can be read as a direct effect of the ethical and political imperatives that are said to necessitate our turn toward matter, nature, or the nonhuman, a turn sometimes effected by gleaning from the natural sciences. That is to say, it is because of a great trust placed in this turn, a sort of salvation that is expected from it, that one wants its objects and objectifying authorities enthroned, ensconced, embraced with the proximity and distance, desire and fear, of a fetish, close enough to venerate it without coming so close its awkwardly sutured seams might become visible. Or worse still, that one would feel the opening of the yawning abyss it was meant to fill.

This fetishization follows from something like a generational shift that has taken place in continental science studies – or, a shift of science studies from a subdiscipline or subspecialty to a dominant motif of the theoretical humanities – a shift we could describe as moving from a science and technology studies that was expected to question the authority and autonomy of the sciences to a 'materialism' that enshrines it. I invoke this distinction without pretending that it purely divides historical periods or genres of research, or even that a rigorous distinction is possible between the affirmation or denial of the integrity of authority. What stands out to me is not an attitude or a

position taken *on* 'science,' but the relative suppression of the necessity of *reading*, which divides any corpus and any authority from itself. It is as if, today, certain 'materialists' expected revolution or redemption, in the face of the most urgent demands of social and ecological justice, to arrive simply by means of skimming the froth that churns at the surface of scientific knowledge production. In order to claim that one is closer to matter or the nonhuman, one suppresses inquiry into the all-too-human processes by which certain of their representations gain currency.

Even if certain of Malabou's formations acknowledge something like this inextricable non-self-identity, she nonetheless invokes 'epigenetics' as if it were the end, not just of the 'genetic program,' but of programmaticity altogether. In this, her work mirrors that of many recent appropriations of contemporary evolutionary theory, for example by Donna Haraway (2016), Bruno Latour (2017, 98–107), and Anna Tsing (2015), which, in addition to epigenetics and plasticity, incorporate development, symbiosis, and Gaia into a mode of theorizing that is at once ontological and ethico-political. Even where these terms are recognized as models and reductions themselves, each of these authors negotiates with the differentiality of life-science, the epic of genesis, in a fashion that resists undecidability. They limit or ontologize alterity in order to claim a greater proximity to the other. In turn, these scientific innovations are held up as if they could promise something politically progressive in themselves, as if signaling a commitment to these names placed one on the right side of history and politics. Malabou puts this continuity between science or matter and politics in a word: 'it seems like the meaning of plasticity is anarchism' (Malabou 2022b, 317).

This desire for the return to a simple presence and a secure reality certainly follows from the ethico-political urgencies overwhelmingly reflected in academic labor today – though perhaps not just as we think or say. It may be the case that unprecedented ecological risks and hauntingly precedented political conflicts animate contemporary 'materialism,' – but this urgent urging is precisely what drives us to suppress questions of our own responsibility for the 'nature' of 'matter' in favor of representing something, anything, as a pure outside that could absolve us of responsibility, guilt, or sin. A virgin *mater*. Moreover, the staking out of such positions, the emphasis on their novelty and urgency, may respond more to, so to speak, *internal* necessities of academic labor, a precarity or haste that makes secure theoretical identities all the more appealing. Nor is it necessarily irrelevant that a theoretical 'turn' in the direction of the natural sciences takes place at the same time these disciplines are highly esteemed by the keepers of our academic institutions. Those who pluck the fruits of the *arbor scientiae* as though they were life *itself* or matter *itself*, as though there were such things, are perhaps responding to all of these imperatives at once.

No word or term can anchor us in the beyond of undecidability or complicity. Rather, it is only from a *reading*, as what opens every corpus and its seemingly simple or constitutive elements to unheard of differences, that our responsibility and its inexhaustibility begin.

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Endnotes

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[1] See Malabou 2014; 2016a; 2016c; 2016d; 2018; 2019; Ruda and Hamza 2018; Miller et al. 2021.

[2] Malabou writes that, 'Aristotle uses the term "*epigenesis*" for the first time' (Malabou 2016a, 16), but the word never appears in Aristotle's writing. He is often cited as a precursor of the epigenesist position, but the applicability of this modern framework to his thought remains debated (Nicoglou and Wolfe 2018; Goy 2018).

[3] See Malabou 2009, 233; Changeux 2012b, 251–53. Elsewhere, Changeux explicitly describes epigenesis as an interaction of experience with a 'genetic program' (1973, 2974; Cf. 'genetically determined' 2022, 27).

[4] I am grateful to Thomas Clément Mercier and Eszter Timár, whose careful reading of this essay has improved it immensely. Mercier's deconstructive readings of Malabou have particularly informed my understanding of how ipseity functions in her work. See Mercier 2019; 2021.

[5] At least one biologist has raised this issue as a direct response to Malabou. See MacLeod 2016.

[6] Malabou moves seamlessly between neural epigenesis and evolutionary epigenetics, even though her reference for the former, Jean-Pierre Changeux (2012a), explicitly distinguishes them. Malabou also tends to equate evolutionary epigenetics and plasticity, citing Eva Jablonka and Mary Jane West-Eberhard as examples (Malabou 2016a, 82; 2017; 2019, 62). I will return below to the irreconcilabilities designated under these names.

[7] This essay builds on the work of biodeconstruction that has placed in question many of the dominant motifs of contemporary 'materialism.' See Vitale 2018; Kirby, Schrader, and Timár 2018; Mercier 2019. In previous essays, I have also attempted deconstructive readings of new materialist and speculative realist position-taking, in authors such as Jane Bennett and Karen Barad. See Basile 2018b; 2018a; 2019; 2020.