
Introduction: Vitalizing Thought

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“... keeping in mind [Claude] Bernard’s formula that ‘life is creation’, we will say that the knowledge of life must take place through unpredictable conversions, as it strives to grasp a becoming whose meaning is never so clearly revealed to our understanding as when it disconcerts us” (Canguilhem 2008: 22).

It’s around and through you. You see it in the gaudy colors of the rhododendron blossom, the repetitious pattern of zebra stripes, the twists and curls of the ram’s horn, or in the messy redundancy of genetic sequence. Through its very excessiveness, life is baroque. [1] A baroque emphasis on ornamentation allows organisms to attract and repel each other; the segmented construction of insects and mammals compose fugues of flesh, chitin, and seawater; and folds create complexity from simple sheets of cells during an organism’s development. [2]

In fact, one must wonder, given life’s incredible use of baroque formal strategies, why have we so often hoped to explain them within the limited epistemological palette of enlightenment physics? Most scientists and philosophers of science, for instance, argue that scientific reasoning is best accomplished through the application of clear and distinct thought [3]; and even continental and post-continental philosophers are taking heed from Alain Badiou’s set-theoretical ontology and reducing the messy contingency of the living world to the truth of post-Cantorian mathematical statements (Cf. Meillassoux 2008). The problems of this approach for biology are many. When scientists think of living processes

they have too often reduced the poetics of stammers, stutters, mistakes, and repetitions that mark the growth and development of organisms into the sleek modernism of the direct referentiality of genetic cyphers; or they hope to render the frenetic kinetics of molecular interactions into the machine-like efficiency of biochemical pathways; or they construe the constantly inventive tinkering and wandering of evolutionary stories into utilitarian adaptationist arguments. [4]

The project of *Animating Biophilosophy* begins with a different assumption: that contemplating life is best accomplished by making thought more like living processes, by somehow encouraging thought to move, sense, and respond. [5] Putting thought in motion means encouraging an especially restless brand of philosophy, a philosophy that is not completely comfortable with its starting premises and not ever finished when creation has reached its limits. This is a type of thought more often associated with the vagaries of baroque than the clarity of the enlightenment. Thought must create rhizomes, where there is “no beginning or end... always in the middle, between things, *intermezzo*” (Deleuze and Guattari 1987: 25). Thought needs to come and go, as Gilles Deleuze and Félix Guattari write, rather than start and finish; and it does so, not by finding the middle between two points, the “average,” but by creating a middle, “fabulating” it—rhizomes must be created, not found. Orientation in thought is not a question of exactitude, then; it is a question of “anexactitude,” where “anexactitude is in no way an approximation; on the contrary it is the exact passage of that which is under way” (1987: 20).

If we want to forge a new relation between thought and life, we need to animate thought, not paralyze life. This does not mean that one makes no distinctions, where the *anexact* is equivalent to the *inexact*. “Anexact and yet rigorous,” Deleuze and Guattari resound, echoing Edmund Husserl (1987: 407). Making rigorous distinctions is part and parcel of the much larger process of experimenting and encouraging change through speculation. Thus, it is not that distinction isn’t useful, just that by itself distinction is never sufficient and most certainly not the end, or even the goal, of thinking. What the metaphysics of

Alfred North Whitehead, Deleuze, and Isabelle Stengers, among others, have shown is that metaphysical generalization is itself a creative process. In her *Thinking with Whitehead*, Stengers explains that, for Whitehead, metaphysical concepts “do not designate a world that exists prior to them but, quite the contrary, they bring into existence what Deleuze and Guattari call an ‘image of thought’” (Stengers 2011a: 267). And so what we require is an image of thought, or “the image of thought gives itself of what it means to think” (Deleuze and Guattari 1994: 37), in which thought itself becomes more vital.

According to Henri Bergson, the type of intellectual approach outlined above is especially appropriate for the study of living beings. Since all things already actively participate in space and time, to conceive of them as material extended through an a priori space inverts the inherently creative relationship between mind and material, and renders it mechanistic. Conceiving of things as objects forces perception to “step out of duration” and separates mind from matter and things from percepts (Bergson 1911: 218). Although applying this type of inverted thought to inanimate things can be fruitful (as it is in some form of physics), it mischaracterizes vital processes as overtly mechanistic. What is important about Bergson’s insight for our argument is that he doesn’t directly distinguish living and non-living matter by two different types of qualities, such as an essential vital essence, what Georges Canguilhem would call animism (2008: 122), but by two different types of explanations of order, one of finality and ideal clarity (for example, those characterized by the enlightenment) and one of irreducibility and duration (what we’ve been calling the baroque).

We differ from Bergson in two regards. Firstly, we encourage a proliferation of explanatory methods for biological thought, whereas Bergson appealed to intuition as the ultimate method. We feel that it’s not so much that life resists intellection and thus needs to be intuited, but that coming to terms with the complexity of living processes requires, perhaps even breeds, multiple theoretical frameworks. Secondly, we are less interested in creating a distinction between what is “inert” and what is “vital.” In fact, this is why we think the

study of biology is so important. Biology should be viewed as an exemplary practice because it offers important lessons for studying all types of phenomenon, organic and nonorganic, as participants in and through duration. Drawing a hard and fast line between vital and non-vital processes only ends up contributing to the understanding of biology as a special, less rigorous, form of scientific knowledge. Finally – and this is not so much a difference from Bergson, but an emphatic extension of his idea of “intellect” and its relationship to instinct—we believe that thought takes many forms, few of them intrinsically human, and each of these forms offers own ways of engaging with and processing the world. [6]

One of the most important lessons that biology can offer all forms of thinking (whether scientific, philosophical, or artistic) is the usefulness of “robustness” and not “clarity” as an explanatory strategy. Despite the enthusiastic claims of some [7], biology has always cobbled together its epistemology. In biology we find room for diagrams, stories, quantification, tables of data, codes, schema, films, models, and animations. Understanding a cellular process often requires a researcher to move from biochemical formulas, to diagrams, to tabulated data, to space filling animations, to narratives of evolution and development. If physics aspires to be the science of enlightenment thinking based on clear and distinct thought [8], then biology best aspires to be the science demonstrating the baroque value of the *robustness* of multiple explanatory frameworks. Because of this, biological explanations produce nomadic spaces where distinctions such as inside and outside are often less privileged than identifying points of inflection, creative in-betweens—in-between the cell and its environment, the natural and the artificial, the living and nonliving, the plant and the animal, the experimental and the explanatory.

The variety of experiments offered here does not mean that there are no consistencies across the creations; specific refrains do emerge, resonate, and morph. One such refrain is the importance of thinking difference beyond compossibility. Whether it is Richard Doyle’s plant intelligence, A.J. Nocek’s

biochemical architecture, Henning Schmidgen's life of concepts, Deborah Leavitt's media-ethology of animation, Phillip Thurtle's investigation into the use of layers in animation, or Eugene Thacker's challenge to the very concept of life, each project finds a way to problematize the impossibility of worlds in order to set thought into continuous variation. Here we find inspiration in Deleuze's use of Jorge Luis Borges's story "The Garden of Forking Paths" to radicalize Gottfried Leibniz's theory of compossibility beyond its theological restraints. For Leibniz, all universes are possible in and through God as long as there are no contradictory elements between them that make them "impossible." It is God then that assures we live in *this* world, the best of all possible worlds, as opposed to any other world. The Borges story allows Deleuze to change Leibniz's notion of difference away from specific differences to differences of singularities. In Leibniz's formulation, difference is seen as the contradiction between specific identities. Deleuze, however, builds his model of difference on singularities and not identities: "[Singularities] are not generalities," writes Deleuze, "but events, or droplets of an event" (2006: 73). This allows for the unfolding of series of events as contingent branching chains, where robust intersections resonate. [9] This is important as models of difference based on general identity uphold the principle of non-contradiction as the dominant principle of "clear and distinct" reasoning. These models prove insufficient when thinking in terms of dynamic processes because they embrace compossible models of difference. Change, at some point, recognizes the importance of thinking difference as repetition and not contradiction in order to express a world in process.

Once one recognizes the baroque qualities of biological thought, one quickly comes to appreciate that biology also promotes gothic qualities as well. Elements of biological thinking force us to confront the unexpected and provisional nature of the explanations themselves, requiring what Canguilhem termed "unpredictable conversions" as quoted in the epigraph. Although these conversions often appear as a novelty of insight, the fact that their occurrence was a surprise is a constant reminder that insight does not occur by the increased rationalization of space and time, but by seeking out gothic spaces and times that

promise unforeseen consequences. Biological explanations can be haunted in a similar way, where the unpredictability of life promotes gothic spaces haunted by the feeling that something else, something unplanned, can happen. The horror of biological thought often comes through the multiple hauntings of what could happen as opposed to more abstract horror of nothingness. [10] “It is less a question of evolution than of passage, bridges and tunnels,” writes Deleuze and Guattari (1987: 322).

What characterizes biology is that gothic and baroque moments may be generated from within the spaces and times of biological thinking. They do not pre-exist, as if the discipline itself articulated the means for such thinking, but they must be intensively created as an order of the intermingling of mind and material. When Deleuze and Guattari write about nomadic science in *A Thousand Plateaus*, this is not in order to isolate it as a stable end or goal that opposes state science. Nomad science is an ambulant procedure for setting variables in continuous variation that can never be absolutely separated from its royal formalization. The former is not an identifiable thing, but a process, never localizable; always in the process of being created, never fully started, never fully finished—it is virtual. As such, the essays collected here all generate nomadic moments within biological thinking about life. But in so doing, they don’t simply destabilize pre-established categories, but create virtual dimensions within biological thinking that are themselves living and can be felt through the gothic nature of their presence. To animate biophilosophy, then, is to produce vital thinking through biological thought that can then suggest possible new strategies for understanding the relationship of mind to all materials.

Notes

[1] Our use of the lowercase term “baroque” engages and enlarges theories on the neo-Baroque, such as those put forward by Gilles Deleuze (Deleuze 2006), Omar Calabrese (Calabrese 1992), Mario Perniola (Perniola 1995), Gregg Lambert

(Lambert 2004), Angela Ndalianis (Ndalianis 2005) and others. Most of these authors are indebted to the formal strategy developed in Henri Focillon's *The Life of Forms*, which looks at forms of thought and creation as dynamic and changing (Focillon 1947). As Deleuze emphatically notes, "The Baroque refers not to an essence but rather to an operative function" (2006: 3). It is also important to point out here that much of the explicit or implicit argument is that the values that mark much enlightenment thought were special cases in a history overall marked by the baroque. This is possible because the Baroque, through its embrace of heterogeneity, can accommodate the enlightenment as a special case of Baroque thought.

[2] An extended elucidation of the baroque qualities inherent in development and evolution is Sean Carroll's *Endless Forms most Beautiful* (Carroll 2006).

[3] Despite the surge of interest in notions of emergence, complexity, and process among certain cultural and philosophical theorists of science and technology indebted to Deleuze and Félix Guattari, Isabelle Stengers, Donna Haraway, et al., this still remains far indeed from the dominant discourse of professional philosophers of science. So for example, while life as an emergent phenomena has become a popular discourse in Anglo-American philosophies of science, Mark A. Bedau notes that strong theories of emergence, in which the cause of the emergent property cannot be identified, is "uncomfortably like magic," and is an unacceptable explanation for life scientists (cf. Bedau 1997). Emergent phenomena – such as "life" – cannot be irreducible to the more basic phenomena. For a discussion of analytical notions of emergence and their relation to theories of life in speculative sciences of life, see Nocek, "Imaginative Chemistry: Synthetic Ecologies and the Construction of Life" (Nocek 2014). There are of course exceptions to this rule, Francisco Varela, Stuart Kauffman, Richard Lewontin, and Susan Oyama come to mind, but even here there is a kind of conservatism that undergirds each of their theories: life is self-maintenance (cf. Shaviro 2009).

[4] A good place to begin exploring the differences amongst adaptationist arguments is Godfrey-Smith 2001.

[5] For an interesting discussion of “biophilosophy” and how it differs from the philosophy of biology, see Eugene Thacker, “Biophilosophy for the 21st Century” (Thacker 2005).

[6] We disagree with Bergson when he posits that consciousness is the result of intelligence as a “sudden leap from animal to man” (1911: 185).

[7] The history of biology is riddled with these claims, such as Jacques Loeb’s concentration on mechanism, Herman Muller’s emphasis on the gene, or Watson and Crick’s contention that the structure of DNA holds the “secret of life.”

[8] It is important to see that even some of the dilemmas generated by quantum mechanics, such as wave particle duality, can be seen as an outcome of the impossibility to apply a clear and distinct explanations to aspects of the world and not the inherently baroque embrace of multiple explanatory strategies that mark modern biology.

[9] Essentially, Deleuze challenges Leibniz’s insistence that the law of non-contradiction governs what is possible in this world, and argues, instead, that diverging series based on a theory of pure difference— beyond opposition and contradiction – belong to the same motley world (Deleuze 1994: 123). In this view, impossibilities co-exist and are the condition for compossibility.

[10] For a more extended theory of novelty and affect see Thurtle and Mitchell, 2007.

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