How the Other Half-Lives: Life as Identity and Difference in Bennett and Schrödinger

Jonathan Basile
Emory University
jbasile@emory.edu

Abstract: This essay deconstructs Jane Bennett’s and Erwin Schrödinger’s theories of life to demonstrate the untenability of defining life on the basis of either identity (relation to self) or difference (relation to other). Because the living thing is undecidably self and other, its traditional bond to the self-relation of teleology is untenable. Yet relinquishing this trait leaves life indistinguishable from its many inorganic and technical others. Bioconstruction treats organism, organ, and parasite (part and whole, self and other) as undecidable. Finally, it critiques as metaphysical humanism Bernard Stiegler’s attempt to define a negentropy specific to humanity.

As though this discourse were a living thing, its members animated by a common purpose, an end present here at the beginning that realizes itself throughout. This vitality is other than figural—there can be no life without this relation-to-self and relation-to-alterity of generalized textuality. The phenomenology of life is and requires the life of phenomenology; only the Sache toward which we direct ourselves—that essence which is never or rarely the words themselves but rather what they ask us to see—could be the animating principle of this discourse, the theme and the engine of our investigation, yet it is never present as such; it can only leave its trace here.
Life, then, governs nothing. It can only expropriate itself or be arrogated, summoning the other who can read into or out of it any duplicity or heteronomy, treating its members as organs of the other or as so many parasites.

Asking after life threatens the self-certainty of the biological and philosophical discourses that seek it. Inevitably, the question draws to itself the most fundamental terms of philosophical thinking. Life implies a certain relationship to time, not of repetition but of invention; it is thought to orient, understand, even create the future. This necessary reference to what is beyond the present, beyond immediate perception, implies an internality constructed by the relationship to self, something already resembling consciousness. But where is this temporality, interiority, and conscious quality of life? Who would feel comfortable pointing to some aspect of their world or their thinking and saying, “there it is: not a vital effect, but life itself”? What could life feel like if it were the ground of all feeling? How can we think life if it is the very form of self-relation that undergirds consciousness? Is it any easier to locate it in ourselves than in the other? We understand life both as a self-contained, self-regulating, and self-reproducing whole, and as a ceaseless self-transcendence or transgression, an openness on the outside. Without the life of the other, the shock of arrival or heteronomous invention, there would be no life of the same, no life at all. This undecidability will be what develops itself through this discourse, what preserves itself through difference and historical upheaval—do we live, or does the other live through us?

We have learned to be wary of the form of the question “What is?” Being is not a being, time is nothing temporal; the presumption that we are searching for an essence when we ask after them is unjustified. Similarly, life is nothing vital, not a living thing. It cannot be any of its accomplished forms because it exists only as an ability to preserve yet transcend the given. Nonetheless, natura naturans is sometimes imagined as a great metabolic process, a vital force
that realizes itself and its ends through the constant upheaval of inorganic and organic matter, perhaps even through the instability of space, the transformation of nothingness into subatomic particles, and the unfolding of cosmic time. Once we suspend our confidence in the direction of time and call into question the empirico-scientific status of the new, of invention and creativity, then we can understand life as a name for differance and dissemination, a fragmentation that can only be regathered or cathected into an organic unity by a fundamental violence. My attempt here will be to show that this dis-organic force destabilizes attempts by theorists and scientists to make life the stable object of an empirico-positivistic discourse—that life is deconstruction.

New Materialist studies such as Jane Bennett’s *Vibrant Matter* represent life as a positivistic phenomenon, an empirically available substance. The field of New Materialism is defined by opposing the purported tendencies of past thinkers to grant agency, activity, and self-possession to cultural, linguistic, or human actors while understanding matter as passive and inert. Yet merely reversing these binaries risks transferring the most oppressive and logocentric notion of the sovereignty of the autonomous subject onto a new agent. Jane Bennett goes as far as possible in this direction in her *Vibrant Matter*, the fundamental premise of which is that all matter, organic and inorganic, is living, inventive, and free. By declaring all matter to be living, the very possibility of recognizing life differentially disappears in Bennett’s work; nonetheless, she claims that science can offer empirical verification of its existence:

The machine model of nature, with its figure of inert matter, is no longer even scientific. It has been challenged by systems theory, complexity theory, chaos theory, fluid dynamics, as well as by the many earlier biophilosophies of flow that Michel Serres has chronicled in *The Birth of Physics*. . . . Yet the popular image of materialism as mechanistic endures, perhaps because the scientific community
tends to emphasize how human ingenuity can result in greater control over nature
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more than the element of freedom in matter. (91)

This appeal to chaos theory (to prove that all matter is contingent and therefore free, creative, and living) misrepresents its fundamental discoveries. The study of chaotic systems could never prove that they are contingent in themselves; mathematicians of chaos have shown that completely unpredictable behavior can emerge from purely deterministic interactions, and that what is completely predictable for us can nonetheless result from stochastic processes. Chaos is a science of the undecidability of necessity and contingency, a reminder that the laws we ascribe to nature are never the laws of nature itself—we will never know if a violation of any such law is a miracle or our mistake. If we accept the undecidability of contingency and problematize its relationship to freedom and life, we can no longer look out at the world and “see” life as a simple phenomenal occurrence. The subjection of inorganic matter to the deterministic laws of Newtonian mechanics and the tendency toward indifference of thermodynamics allow for the appearance of life as a challenge to those constraints. Declaring all matter to be free does not place it in the immediate, phenomenal light of vitality, but rather destroys the ground from which anything resembling life could have emerged. While I agree with Bennett that matter cannot be reduced to necessity and determinism, the reversal she attempts by equating it with contingency and freedom is untenable. Rather, matter is undecidably necessitated or contingent, free or constrained, heteronomous or autonomous—and life is one of the names for this self-contradiction.

It is both necessary and impossible to think life as identity and life as difference—a paradox we can investigate by turning to Erwin Schrödinger’s foundational attempt to articulate the differential view. Schrödinger is not a straightforward interlocutor for New Materialism; he
espouses some notions that New Materialists would consider conservative (such as the necessary legislation of the gene), while anticipating other New Materialist ideas (such as the indeterminacy of matter and a certain value placed on novelty). He is neither a precursor to nor a target of New Materialist critique, but I juxtapose him with Bennett’s project to allow these ideas to communicate, and to arrive at a better understanding of life’s aporias. Schrödinger’s attempt to treat life differentially does not make it any easier to answer the what-question. His 1943 lectures, What is Life?, take life to be a local violation of the second law of thermodynamics, a differential reduction of entropy. That is, the living thing is a pocket in which the world becomes more ordered rather than more disordered. He names this tendency negative entropy or negentropy.

The deconstructability of Schrödinger’s premises can help us to understand a broad range of attempts scientists have since made to create mathematico-quantitative approaches to the question of life. Often, these hypotheses come from theoretical physicists or chemists, as they necessarily equate the organism with the mechanical operations of its chemical substrate. These approaches include mathematical descriptions of life as a complex system, structuralist descriptions of organic form, and the chemical description of life as an out-of-equilibrium dissipative system. These representations necessarily eliminate from our conception of life any reference to final causality or purposiveness, its traditional essence. If these formulae defined life, we would be mistaken every time we related to a living thing, including ourselves, as though it had a will or desire (a capacity for ends). This lack of teleology remains true even in the case of the sciences of complexity or chaos, where it has become commonplace to speak of the “self-organization” of the described elements. While it may be accurate that chemicals aggregate to form highly structured patterns (say, the designs on certain seashells) without the need for a
blueprint residing in some master molecule, this merely gives expression to a necessity of mechanistic thought; it is always the case, in mechanism, that the principle of motion and the mind that intuits it are external to the interaction being described or known—consciousness of the law is not represented as causal, and so an impetus of scientific inquiry is satisfied, in that we are describing an interaction as if it took place whether we know it or not. If, for example, the spots of a cow are drawn according to a genetic blueprint (the reductionist, as opposed to the emergent, self-organizing view of a reaction-diffusion system), this still does not mean that the gene is conscious of the pattern it brings about. And it is not the case that eliminating the blueprint brings about anything like a self-originating causality, let alone a consciousness or purposiveness, but merely suggests that the other who elicits this behavior from the subject is another like itself (e.g. activator and inhibitor chemicals). Though scientists and theorists often speak as though consciousness and life will ultimately be explained by emergence—as if teleology were itself the telos of a mechanism without end—it is rather the case that they form a fundamental logical and phenomenological contradiction.

We can understand the failures of these approaches to arrive at a coherent concept of life by examining the contradictions of Schrödinger’s attempt to quantify vitality. Despite offering a differential definition of life, he devotes the bulk of his What is Life? lectures to identifying the material substrate of life. In addition to the contradiction inherent in this method (if difference is the essence of life, it cannot reside in a stable and self-identical substance), it defers the question of essence. Most of Schrödinger’s work is focused on the question of how—imagining a physico-chemical basis that could ground what are assumed to be the manifestations of life (whose whatness is presupposed). The first half of his lectures, which describe why “the material carrier of life” must be an “aperiodic crystal” (5), take for granted that life is a relative stability
or permanence, and that it is a substance. This procedure simply adopts a commonsense or pseudo-scientific idea of the properties of life and transfers them to its assumed material basis. What is it that makes these properties be, and makes them the properties of life? As long as self-determination and self-organization define the organism, life must be a force outside any and all of its material instantiations. Schrödinger’s theory is no exception to this rule, and his presuppositions about knowledge share this prejudice toward permanence and stability. He begins by describing the Brownian motion of atoms or small molecules, tossed about unpredictably by their collisions. From this he derives the necessity that the brain and the living thing must be larger than this frame of reference: “what we call thought (1) is itself an orderly thing, and (2) can only be applied to material, i.e. to perceptions or experiences, which have a certain degree of orderliness” (9). This desire for adequation perhaps defines the scientist: the idea that if thought is orderly unto itself, and life and matter are orderly unto themselves, then the two will comprehend each other perfectly. On the other hand, imagine an impassive God for whom 1,000 of our years are but a day. Imagine this god says to itself, “Those humans, their minuscule interactions are so unpredictable, but they always tend toward mutual destruction. Think of the chaos if one were to witness existence from their perspective. Surely consciousness and thought of any kind, at least any stable kind, is impossible for them.” We should not conclude from this that particles are conscious, but only that their consciousness is no more impossible than our own. At the very least, we should recognize that relative stability is insufficient to produce the manifestations of life, among them the self-relation of consciousness, even if such relativity is our only access to the phenomenon.

Of course, any scientist will tell us that entropy—the disorder in a system—is rigorously quantifiable. Even if it is impossible to declare a framework (for instance, motion of particles or
motion in the human world) ordered or disordered in absolute terms, Schrödinger is at least mathematically justified in describing the living being as a local violation of the principle that entropy always increases. This second law of thermodynamics is true only outside the organism, in the world into which it expels its waste—or, as Schrödinger puts it, expels disorder.

After taking for granted the nature of the living thing and deriving the properties of its material substrate from its assumed characteristics, he finally poses the question, “What is the characteristic feature of life? When is a piece of matter said to be alive?” (69). He answers: “When it goes on ‘doing something’, moving, exchanging material with its environment . . . for a much longer period than we would expect an inanimate piece of matter to ‘keep going’ under similar circumstances” (69). Even granting that Schrödinger uses an admirably accessible, everyday language throughout these lectures, we cannot accept this definition as thorough enough. The recourse to relativism here is not grounded in an observable quantity (such as entropy) but in our expectations (who, “we?”). His plain speaking effaces the difference between mechanical and final causality, which is still at the foundation of the epistemology of life. What we observe is an effect of life only when we posit its end as its origin, which is fundamentally different from a mere endurance of something according to mechanical causes. According to the definition Schrödinger puts forward, we would have to grant life to the atomic dance, a growing stalactite (a “periodic solid”), a river, weather patterns, and to the motion of the planets, as well as to all technology. Faced with this need to refine his definition, Schrödinger would likely invoke something like a difference between heteronomy and autonomy, outer and inner. In our examples, an external energy such as gravity acts on matter that offers nothing but its inertia and momentum, so we think. On the other hand, the living thing turns this external energy into its “own,” to be used for its own purposes (finality). Ultimately, I do not think one can rigorously
identify the phenomenon of life without eventually invoking qualitative difference, internality, and futurity, even if this positivity stands in a relationship of contradiction or aporia with our merely differential access to life. The emphasis on difference is honest in one sense: life never appears as such. But difference alone can never answer the question why or respond to the claim that there are living things at all—what gives life?

Crystal formations and other solids pose a problem for Schrödinger’s theory, because they are highly ordered but not, by most accounts, living. To differentiate life and matter, he invokes the concept essential to Bennett’s theory, the concept of novelty. There are two ways, he says, of building large associations of molecules:

One is the comparatively dull way of repeating the same structure. . . . The other way is that of building up a more and more extended aggregate without the dull device of repetition. That is the case of the more and more complicated organic molecule in which every atom, and every group of atoms, plays an individual role.

(60)

The former describes the “periodic,” the latter the “aperiodic” solid. The emphasis on division of labor and individuality is a classic topos of vitality, the part dependent on the whole and working to its benefit. It illustrates perfectly what Derrida would tell us about iterability: that repetition depends on difference and vice versa. Too much repetition and one feels that the sort of self-guided activity thought to govern the living is absent. Nevertheless, the “individuality” Schrödinger praises only functions as a ground for life if its operations return to a central identity, a repetition of the living. Too much difference would be entropic dissemination. Because there is no essential separability of difference and repetition, life and its others,
Schrödinger must lash out at the one, attacking “dull” repetition to feign the purity of what nonetheless depends on it. In a less guarded passage, he describes the abyssal difference thus:

The difference in structure [between periodic and aperiodic crystals] is of the same kind as that between an ordinary wallpaper in which the same pattern is repeated again and again in regular periodicity and a masterpiece of embroidery, say a Raphael tapestry, which shows no dull repetition, but an elaborate, coherent, meaningful design traced by the great master. (5)

This is not the only place where Schrödinger’s discourse is “less becoming of a scientist than a poet” (79). Here the recourse to the self-gathering of consciousness is most explicit—what is composed of diversity can only be woven together by the intentions of a “great master,” a figure whose spiritual connotations (and the link thus formed with vitalism) should not be overlooked.

Why could a great mind not realize its will through mechanism and “dull” repetition? Why is contingency or novelty a sign of agency, consciousness, the return to the same of the voluntaristic subject? Bennett makes the same assumption when she identifies vitality with contingency. The necessary relation of difference and repetition, that life must transcend itself to return to itself, is a structure Derrida calls ex-appropriation. We find the need for repetition in Schrödinger’s insistence that life be orderly, stable, and permanent, that it have a stable, material substrate—a gene—“unperturbed . . . for centuries” (47). In fact, his confidence that the chromosome is both “law-code and executive power,” “architect’s plan and builder’s craft” (22), that it is “fateful,” determining the development of an individual with Laplacean necessity, shows the full extent of his desire for a repetition of the same. It is “the code-script determining all future developments of the organism” (61). We cannot chastise him, in 1943, for failing to foresee the discoveries of epigenetics,9 but we should at least remind ourselves that what it
means to have the “same” gene is no more certain than the identification of the “same” phenotype.\textsuperscript{10} And what exactly counts as a “development” here? It is not trivial to point out that the future of the organism depends on nutrition, damage, and death—the living thing is only a certain relationship with its outside.\textsuperscript{11} To acknowledge fully the relationship of the living to its others would undo our certainty of anything like organic unity, as well as its agency or activity.

Schrödinger shows us, if nothing else, that life as difference is no less aporetic than life as identity. As with Saussure’s structuralism, a scientist who attempts to isolate synchronic stability by means of a differential definition of his subject will be forced to suppress the onto-phenomenological question of genesis. One finds the same deconstructible tension between Schrödinger’s acknowledgment that life is a differential form (not a substance), and his insistence that it be identified with a certain material substrate (as language was tied to the phonic substance by Saussure). It is not enough to offer a differential definition while clinging to received notions of essence. One must see life not as what differs phenomenally from the inorganic, but as what differs from itself, in a manner that could be called internal only to the extent that it is never manifest as life, as itself, as such. The living thing must be capable of difference-from-self in space and time, drawing together multiform types and arrangements of matter and metamorphosing throughout its lifespan. This fragmentary foundation guarantees that it will never be simply identifiable with matter, phenomenality, or quality—nor will consciousness provide a ground or any supposed internality or unity, which could only express itself as life by means of the intrusion of alterity. That is to say, the origin of the living thing or life in general, which we imagine as a unity, is always already differentiated.

The structuralist resonances of Schrödinger’s project are anything but idiosyncratic. Michel Morange, historian and philosopher of science and a cell biologist who worked under
François Jacob, displays a similar pattern throughout *Life Explained*, his 2003 investigation of the essence of life. He draws on recent biological research to problematize the traditional predicates of life; what was thought to be a property of an individual living organism proves to be interdependent on adventitious contributions from sources that may or may not qualify as themselves organismic. In a chapter entitled “Life as a Living System,” Morange considers endosymbiosis, lateral gene transfer, and programmed cell death among monacellular organisms as evidence that life is not a property of an autonomous individual but a product of the interaction of components that problematize our notion of the self-related organism. He concludes,

> Nor are the interactions between organisms merely the product of preexisting life forms; they are part of the very possibility that these organisms should be alive at all. This dialectical relation between autonomy and totality is therefore a key characteristic of life, *for life was a system from the moment of its inception*. (109; emphasis added)

In this proclamation we can hear the echoes of Lévi-Strauss’s structuralist assertion that “language can only have arisen all at once. Things cannot have begun to signify gradually” (59). All of the consequences that follow for structural linguistics will then appear in the field of vital phenomena: a) no individual thing can be considered the substantial representative of life, but life will emerge from their differences; b) the relations of life’s traditional representatives are no more its exclusive domain than the relations of molecular structures, information, or technology; c) the question of genesis is foreclosed—there is no more place for a speaker’s intentions in linguistic structure than there is for the purpose or purposiveness of an individual in the life-system; d) despite being sutured to these living signifiers, life exists only in the spectral doubling
of their differences by a similarly differential system of signified concepts, in this case those grounding a biological taxonomy; e) a truly scientific understanding of the life-system would define these taxonomic concepts without reference to any particular synchronic tranche of the life-system; and f) these ideal interrelationships can only be permuted to form any particular life-system—the structural system of idealities is itself total from its inception; no more and no less life can come to be, no novelty and no invention. The field of structuralist biology moves in the direction indicated by these premises.¹³ We can expect that problems akin to those Derrida uncovered in Saussure’s structuralist linguistics and Lévi-Strauss’s structuralist anthropology will reappear in any structuralist biology (and in Schrödinger’s approach).

If it is not possible, by such means, to define the essence of life, it will be no more possible to deploy a theory of negentropy to capture what is proper to humanity, nor to deliver us unto our salvation, which would be our proper end. Bernard Stiegler has taken up Schrödinger’s theory in service of such a goal, by suturing it to a messianic discourse befitting the new newisms. Stiegler claims to identify a form of negentropy unique to human beings, which he terms a “neganthropology.” He distinguishes humanity from animals on the classic but long defunct theory that we are the only tool-using animal: “It is not only the biological structure of humankind that, as is the case for all living beings, is negentropic. Cultural structures are too, in principle” (“To Love” 43). He explains in a note that this is a departure from Schrödinger: “human time exceeds the process of negative entropy by which Schrödinger and Brillouin characterized the living, by inscribing negentropy outside of this living” (“To Love” 85, n. 10). It would be enough to point to ants, bees, and beavers (among other orderers of the external world) to dismiss Stiegler’s anthropocentric exceptionalism. But a more essential criticism would problematize his ideas of inside and outside, which are fundamental to any theory of the living,
as we have seen. Stiegler’s attempt to place negentropy outside the living is in one sense a departure from Schrödinger, who creates a definition of life capacious enough to include all technology, even if this could have proven problematic for his theses. From Schrödinger’s perspective, we might be forced to say not that humans (and all other tool-using, nest- or warren-building, etc. animals) create order outside themselves (i.e., outside the living), but that they create technological life. In fact, precisely because Schrödinger’s differential definition effaces the question of origins, it also effaces any difference between technology and nature, technē and phusis (the latter being that which supposedly has its origin in itself). So the living being would create life wherever it placed things in relative order, and individuation would occur wherever a border with disorder was manifest (which would mean, of course, that life was relativistic—that from one perspective an organism is a living unit, and from another its vital brain is surrounded by a dead disarray of tissues, its living nuclei by relatively disordered, unliving cytoplasm, and so on). Furthermore, life only comes to be by allowing for passage across this border. There is no sense in saying that only one animal operates on its outside. We may find differences of degree (a human city creates a greater quantity of negentropy than an ant colony, for example), but life exists as life only when it is open onto and can transform its exterior. It lives by making its exterior interior, that is, by bringing it to life.

This is far from the only vestige of metaphysical humanism in Stiegler’s neganthropology. In *Automatic Society, The Neganthropocene, “Escaping the Anthropocene,”* and “The Anthropocene and Neganthropology,” he reserves an entire chain of classical predicates for the anthropos (including art, language, and freedom), grounded in its assumed self-consciousness, and made the basis of a messianic, soteriological promise. The technological capacity that Stiegler identifies uniquely with humanity creates a hyperbolic form of both
entropy and negentropy. In “Escaping the Anthropocene,” he has to play a bit fast and loose with the risk posed by the “anthropocene” to make it fit this framework—the “consumption of fossil fuels” threatens life on earth with a different sort of heat death than the one that refers to a maximization of entropy (3). Regardless, he seems more concerned with the ideal side of the equation: whether our work produces or obliterates knowledge. That other classical bulwark of humanism, the hand, plays an important in this one-sided account of manual labor:

Manual work that produces negentropy and knowledge . . . was replaced in the nineteenth century by . . . machinery that was entropic not just because of its consumption of fossil fuels, but because of its standardization of operating sequences and the resultant loss of knowledge on the side of the employee. (3)

Obviously, manual work also uses energy, and machine labor also creates order; one could circumscribe Stiegler’s whole discourse by pointing out that he treats differences of degree as though they were differences in kind.15 He then affirms that “technical life is an amplified and hyperbolic form of negentropy” (10): that where the danger is, there grows the saving power also. It is worth pointing out, if we hope that our production of negative entropy will be our salvation, that more contemporary thermodynamic understandings of life represent life as a dissipative system, which creates local order only to speed the ultimate dissolution of an energy gradient into maximum entropy.

According to Stiegler, technology creates entropy and ignorance, but human consciousness and freedom can place it in the service of salvific negentropy. Perhaps he has in mind the theory of information entropy when he invokes an entropy of knowledge, though he never makes this clear or develops it.16 Regardless, he posits that our current economy threatens to make entropic exhaustion an ineluctable fate that excludes any possibility of a future or
promise. That future is replaced by a calculable (machinic) becoming of repetition in which we lose our humanity in ignorance and mere life (he uses the phrase “purely organic” (10)). The alternative lies in a self-conscious decision; “Freedom is here a question of knowledge” (5), and even if all work creates both entropy and negentropy regardless of its degree of technicity, he makes saving humanity seem as simple as knowing the difference between the two. Our work is “pharmacological,” by which he means undecidable, but seems to be easily sorted out by self-consciousness: “[the organological dimension] requires continual arbitration — negotiations that are operations of knowledge as therapies and therapeutics” (8). The messianic anthropos can bring about its own salvation if its “arts,” “works,” and “science” “project an infinite protention of a promise always yet to come” (11; emphasis added), and if a consciousness of our negentropic production “will allow us, in a literal sense, to save time” (12). Our salvation depends on the same force that has oriented metaphysico-humanist messianisms from Aristotle to Marx, the “noetic work” (16), oriented to a good beyond pleasure and creating value through its labor because it exists in the logos, or in the head of the architect before it is constructed. If the opposite of fateful ignorance for information entropy is salvific knowledge, what is the opposite of heat death in physical entropy? As always, Stiegler correctly addresses undecidability before taking refuge in a one-sided solution. He acknowledges that “life in general . . . as negentropy is always produced from entropy, and invariably leads back there: it is a detour” (10). The condition he identifies as uniquely neganthropological—the artificial manipulation of negentropy—actually holds for life in general. Nonetheless, if we are to prove to be “unlike purely organic beings,”17 how could this come to pass unless we truly “infinitize” ourselves (10-11)? If we follow this thread to the conclusion he doesn’t dare utter, but which fits with every metaphysical turn of his discourse, then we would no longer be a mere detour
between two disorders but could achieve an unending order, an infinite and eternal life. Otherwise, what’s the difference?

Given that Stiegler’s discourse posits an undecidability (for example, all life produces both entropy and negentropy) followed by its one-sided overcoming (self-conscious human life can cultivate negentropy alone), it seems worthwhile to examine his strange appropriation of Derridean terminology. He offers a curious derivation for the “pharmacological”: “the organological dimension (that is, the technical and artificial dimension) of the negentropy characteristic of anthropos” means that the human being is “pharmacological, that is, both entropic and negentropic” (8). Strangely, though he has already acknowledged this neg/entropy as the condition of all life, he derives its human form from our metaphysical essence as the unique artificers. Of course, for Derrida, no aspect of undecidability or deconstructibility depends on human consciousness, as though things were straightforwardly self-identical in themselves and became undecidable once a thinking substance attempted to grasp their self-sufficiency. Rather, consciousness and unconsciousness, matter and idea, human and nonhuman are themselves subject to the sway of undecidability and are produced out of a différence they cannot reappropriate. The dream of seizing control of the archē leads Stiegler to create this strange origin story for “pharmacology.” Once undecidability depends on human thinking, that thinking can easily dispose of it; Stiegler speaks of a “pharmacological knowledge constituting a neganthropology in the service of the Neganthropocene” and of “passing from anthropization to neganthropization by cultivating a positive pharmacology” (13; emphasis added). Perhaps he has in mind Derrida’s reference to an affirmative deconstruction when he names a “positive pharmacology.” But Derrida refers to the possibilities opened by the deconstruction of traditional binaries and a thought that moves otherwise, not to the one-sided, positional reinstatement of
those same binaries. Stiegler’s dalliance with undecidability, and with Derrida, is always comfortably superseded by an enduring metaphysics of presence.

*Différance* appears in a similarly de- or perhaps re-familiarized role in Stiegler’s text:

> And if it is also true that différance is an arrangement of retentions and protentions, as Derrida indicates in *Of Grammatology*, and if it is true that for those beings we call human, that is, technical and noetic beings, arrangements of retentions and protentions are trans-formed by tertiary retentions, then we should be able, on the basis of this concept of différance, to redefine economy and desire.

(10)

There is no such a definition of différance (“arrangement of retentions and protentions”) in *Of Grammatology*. Instead, a passage that discusses différance along with Husserlian time consciousness reads: “And deconstructing the simplicity of presence does not amount only to accounting for the horizons of potential presence, indeed of a ‘dialectic’ of protention and retention that one would install in the heart of the present instead of surrounding it with it [*l’en entourer*]” (67). If we allow for the deconstruction of the self-presence of the present, then we would lose the ground that distinguishes what Stiegler calls primary retentions (perceptions), secondary (living memory), and tertiary (which he refers to recording technology, and which Plato would call *hupomnēsis*). Similarly, if we recognize prosthesis at the origin, we lose our specific difference as “technical” beings, as well as the self-containedness of our “noetic” existence. Thus, the idea that our ability to manipulate time digitally allows us to control différance and all its traces is untenable. As with “pharmacology,” différance is here subordinated to a form of self-presence in order to claim that we—as uniquely self-conscious beings—have dominion over it.
Stiegler addresses his inheritance of Derrida in a footnote attached to a reference to Whitehead’s and Simondon’s concept of process: “It is this issue that the chorus of monkeys and parrots sung by little Derrideans ten years after the death of Jacques Derrida ignores, in the belief they can simply accuse me of having lost sight of différance within an anthropocentric perspective” (13 n. 13). The thrust of this passage is not counterargument but name-calling—though it is not, for all that, *ad hominem*. Rather, the “little Derrideans” are compared to animal-machines: the two animals known best for their mimicry, exemplifying the twin faults of animality and repetition. While other thinkers are derided for repetition, Stiegler is careful to herald the dubious originality of his own work. He claims that “philosophy since its inception has consisted in repressing the neganthropological dimension of the noetic soul . . . namely, *the passage from the organic to the organological*” (16), despite the fact that the conceptual framework of his thought can be found in Aristotle and in every philosopher since. Ultimately, the aim of his work is to capture the fetishistic value of novelty, which orients the chain of conceptuality that ties negentropy to our technological and noetic freedom. For example, he heralds “a new state of law that recognizes this pharmacological situation and that prescribes therapies and therapeutics so as to form *a new age of knowledge*” (16; emphasis added). Again consciousness conquers undecidability, and the telos of this action is revealed as the production of novelty.

Perhaps the value granted to novelty is the ground that Bennett, Schrödinger, and Stiegler share despite their many differences. Creativity, invention, the ability to break with a program or law, is imagined to be the surest sign of life. Yet deconstruction would remind us that the only true invention is the invention of the impossible, which also renders impossible the return to the same—the agency and activity of some matter, subject, or substrate—by an iterability that makes
repetition depend on difference, and difference on repetition. I would suggest that the theoretical value placed on novelty is complicit with the self-assured novelty and the academic and market value secured by theorists for themselves when they declare the advent of a “new” theory, for example a New Materialism. This field has been opened by the violent refusal of the past, by the dogmatic assertion that one can place the subject or the human on one side of history, and matter (and oneself) on the other. Deconstruction problematizes not only such simple binary distinctions, but also any attempt to articulate and delineate historical progress on their basis. The dogmatism of positivistic, inventive life shares an essence with the dogmatism of violently positional theory, which suppresses undecidability to herald its own novelty. It is by no means limited to Bennett or Stiegler. Elizabeth Grosz, in *The Nick of Time*, invokes the contemporaneity of her subject as a diffuse state of emergency requiring urgent thought (2). Her teleological, unified definition of time as “a single relentless movement forward” (5) drives or is driven by inventive life:

Matter is organized differently in its inorganic and organic forms; this organization is dependent on the degree of indeterminacy, the degree of freedom, that life exhibits relative to the inertia of matter, the capacity that all forms of life, in varying degrees, have to introduce something new. (167)

In *What Should We Do with Our Brain?,* Catherine Malabou pushes this messianic tone to its limits: “Brain plasticity constitutes a possible margin of improvisation with regard to genetic necessity. . . . We are living at the hour of neuronal liberation, and we do not know it” (8).

Is it not another relationship to time that we have been approaching through the practice of biodeconstruction, another relationship within time, of time to itself, or of time to its other? We, the living, can we live time differently, without surety of its forward direction or our own,
and certainly without being the agent or active force of its advance (which we should recast as its difference-from-self)? These discourses attempt to live the life of the self, claiming to have put the past to death in order to bring forward their own present, their own self-identity in and with the present. The life of the other, would it not be at the same time both less violent than this life that lives on sacrifice, and the greatest violence possible? Rather than facing forward, as a unity positing the end its members would confirm by reaching, it would turn its head, finding another vantage from which another play of forces uses it as a body, suggesting a point of origin that could only be differentiated in turn, riven by so many perspectives of force. Not a future born of the sacrifice of the past, but an impossible simultaneity, in which we are lived by what is always already not yet there. In this interiority we would find an outside or other (whether or not we found symbiosis, this outside would be symbiosis’s precondition), leaving us with the question in whose interior we are operating as an organ, doing violence as a parasite, or are being digested or incorporated. No quantity of novelty is sufficient to guarantee its presence; no quantity of repetition confirms its absence. It has no quality, a specter just as ready to haunt sloth-like solidity as frenetic dissemination. Its lack of consciousness is not a sign of a primitive stage of development, not a circumstantial failing to be corrected by evolution, but the condition of and for anything like time or novelty coming to be, while rendering them always insecure.

The greatest violence—Death. The borders that life shares are not only those shifting frames of reference within the world, the teeming activity within us or the expanses beyond. As Heidegger reminds us, death is not a dead thing here in our world, just as life was never a living thing present before us. Death crosses the border of no more borders; it is the point or line from which life draws back as does an animal from danger, by a motion we represent to ourselves as instinctual. A line that does not appear, for a line does not appear without being crossed and
crossable. But if it curved, by a force unidentifiable as our own attraction or a push from beyond, to embrace itself as a membrane? What passes then? Passes to life or for life, passes as life? Could we the living be an organ of death? Would we survive such a thought? No concept or purpose could orient our telos, as it would lie beyond representation. No parts could ever be in reciprocity with a whole; self-maintenance and self-repair would be self-destruction. Damage to the members would not be damage to the dis-organism; only by suffering, by damage done to the parts, would they become the whole. And they would become its parts only by doing violence to the whole, transgressing its pure outside. Our body there, where and when we are not.

Listen.

Such life as this, is it mute? Can it make of silence a voice or writing? It would be unable, as we so often do, to stifle the voice of the other to claim or declaim its own. Voices, scripts, like so many alien grafts and parasitic nurslings, found in the other or on the self, nurtured in or on the body proper.

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1 The exclusion of final causes allows Descartes to deny any consciousness or interiority of animals, which excludes life as well as time from the animal-machine.

2 This positivistic, self-identical representation of life asserts itself even in those New Materialist discourses that most seem to emphasize and celebrate difference. For example, in Karen Barad’s Meeting the Universe Halfway, the claim that relations precede relata stands in direct tension with the desire to celebrate the agency of matter in a one-sided fashion; her text alternates between formulations that emphasize the material over the discursive, and precautions that matter itself is ‘material-discursive.’ So she grants life as agency to all matter—“The physical phenomenon of diffraction makes manifest the extraordinary liveliness of the world” (91) and “It takes a radical rethinking of agency to appreciate how lively even ‘dead matter’ can be” (419 n. 27)—yet the deadly vitality of alterity does not receive a comparable emphasis.

3 One can critique Bennett’s conclusion from other perspectives as well. The connection between contingency and freedom overlooks a long tradition, including Spinoza and German idealism, which ties freedom to necessity. The relationship of freedom to necessity and contingency is undecidable.

4 Bennett’s thesis is true to life to the extent that life ought to be something positive, a purposive relationship to self rather than to the other. As we will see when we turn to Schrödinger, it is incoherent to treat life as a differential phenomenon without a ground or genesis in some positive essence. But she errs in attempting to make this positivity accessible to an immediate, empirical gaze. Life is found wherever a whole surmounts its internal divisions and acquires a relationship-to-self that is an object of faith rather than science. We do not know our own life, what ends
have been posited by or have emerged from the organism we already are, let alone those of a different species of animal or more obscurely of plants and Prokaryotes.

6 This is a classic example of the application of non-linear modeling to an organic structure. The reaction-diffusion model, described by Alan Turing in his 1952 paper “The Chemical Basis of Morphogenesis,” represents complicated patterns emerging from nothing more than the diffusion and reaction of one or more chemicals. It remains an open question whether such systems describe the underlying forces in biological pattern formation, but the patterns produced by these models resemble those seen, for example, in many animal coats. Theoretically speaking, the opposite model would be one that posited the resulting pattern as emerging from a pre-encoded blueprint such as might reside in a gene. One speaks of “self-organization” in the case of reaction-diffusion systems because patterns are represented as emerging without the necessity of any such blueprint.

7 More contemporary understandings of life’s thermodynamics describe the living as a dissipative system, that is, a formation that, while relatively ordered itself (like a tornado or whirlpool), is actually a more efficient means of dissipating an energy gradient. Far from contradicting the second law of thermodynamics, life as a whole, in this view, is only speeding our progress toward entropic indifference. See Lynn Margulis and Dorion Sagan, Acquiring Genomes, 42-50.

For a summary of these developments, see Evelyn Fox Keller’s The Century of the Gene. M. F. Perutz, in “Schrödinger’s What is Life? and Molecular Biology,” claims that Schrödinger should have known better even in 1943, because enzymes were already known to be the executive power. However, he grounds this accusation in the one gene-one enzyme hypothesis, which still maintains the creation of those enzymes by the genetic code. He finds little of original merit in Schrödinger, tracing the idea of negentropy (regardless of its untenability) to Boltzmann and the idea of the genetic carrier as an aperiodic solid to Delbrück. Furthermore, flaws with his theory of negentropy were quickly pointed out to Schrödinger, who added an incomprehensible footnote to later editions of his text, admitting that he should have discussed the concept of free energy rather than negentropy (74-5), though he left the body of the text unrevised. See Perutz’s On this footnote, see Francesco Vitale’s Biodeconstruction, 220-222 (notes 20 and 25 to Ch. 4).

8 This stability is posited despite Schrödinger’s acknowledgement that when identifying a gene as the material substrate of a phenotype, “Difference of property, to my view, is really the fundamental concept rather than property itself, notwithstanding the apparent linguistic and logical contradiction” (29). Thus the gene, understood as the material ground of phenotypic difference, is no easier to identify than the living thing itself—it is only another differential relation that defers the search for identity or stability.

9 The search for a governing principle of life, whether it looks for a genetico-material substrate or a psychic, conscious one, must ignore that life is only a certain openness to its outside. No mind or matter will ever possess the sort of undivided sovereignty imagined by Schrödinger (“legislator and executive power”), but can only configure itself as another form of self-otherness and internal diversity.

10 In light of Morange’s nuanced problematizing of life’s traditional predicates, his own conclusion that life is defined by the “three pillars” of complex molecular structure, metabolism, and reproduction appears dogmatic. I introduce him here because he offers a glimpse of the structuralist account of life, not because I consider him a structuralist—perhaps no one is.

11 For a lucid introduction, see B. C. Goodwin’s “Structuralism in Biology.” For a more contemporary account of the influence of structuralist thinking on Evolutionary Developmental Biology see Günter Wagner’s Homology, Genes, and Evolutionary Innovation.

12 Karl Popper raises the objection to Schrödinger’s theory that all technology is negentropic in Unended Quest, pp. 157-8.

13 It is worth dwelling on this tendency of Stiegler for a moment, because it represents a formula for the avoidance of deconstruction and its suppression in favor of a dogmatic, positional discourse. Deconstruction happens wherever the border erected and enforced finds itself always already crossed. This does not take place in favor of or in order to bring about sameness or indifference; there are always differences of more or less, and one may find more order or negentropy on one side of the divide than the other. But it makes purity and the sort of advance or progress based on a pure rejection of the past impossible. Wherever someone denies contamination and heralds pure differences, a repression or denegation is taking place that harbors not only a potential deconstruction but an ideological motivation to be analyzed. In Stiegler’s case, as with the New Materialists’, a desire for novelty in the form of the sovereign invention of the self-consciousness present to itself undergirds his dissimulation of quantitative difference as qualitative.

14 On its surface, the theory of information entropy, which attempts to quantify the unpredictability of events (higher information entropy suggests more “new” information given by an event, less repetition or redundancy), can offer justification for those like Bennett and Stiegler in search of a science of novelty. Without being able to examine its
intricacies here, we should note at least that information entropy can be measured only of discrete quantities within a system, such as the series of letters in a text, and is unable to account for even the most basic act of reading. In other words, information entropy is a measure of the likelihood of a given letter following another, for example whether “th” will be followed by “e” (likely, low entropy) or “u” (less likely, higher entropy), but it could never tell us how much meaning is generated by a new letter, especially considering that the possibilities of meaning are nonfinite. See, for example, James Gleick’s The Information, especially chapters 7 and 9, and Katherine Hayles’ How We Became Posthuman, ch. 3.

17 There is no “purely organic” being, and one should be as skeptical of this concept as Derrida was of the “bare life” that justified a discourse of novelty in Agamben’s Homo Sacer (see The Beast and The Sovereign, Volume I, pp. 315-334). Everything in a discourse on negentropy that should tie life to difference requires us to recognize that life must relate to and be contaminated by the inorganic and the outside, that it exists in a tension with it. This is as true of the human as of the protozoan, and challenges both the philosopher’s notions of a pure, animal life devoid of consciousness, freedom, decision, culture, etc., and a pure human thinking and self-consciousness uncontaminated by its others.

18 It is worth reflecting also on the temporal marker Stiegler chooses to further disparage the “little” Derrideans. “Ten years after the death of Jacques Derrida” functions as a disparagement only if we are so immersed in the value of supposed self-presence that we imagine the time of an idea to be wedded to the lifespan of its author. Still, even according to the most traditional sense of chronology, Stiegler’s protestation ignores the fact that critiques of his work began long before the death of the master. See, for example, Geoffrey Bennington’s 1996 essay “Emergencies.”

19 He does not offer an explanation of how process theory shifts his discourse beyond either metaphysical anthropocentrism or deconstruction, and a look at the process theorists he mentions is of little help. See, for example, the metaphysical distinctions which remain in Simondon: “a crystal; rather, the physical individual . . . cannot be said to possess any genuine interiority. But the living individual does possess a genuine interiority, because individuation does indeed take place within it” (305).

20 The fear of repetition runs throughout his work. Again, though Stiegler admits that machinic work creates negentropy, he often pretends it does not: “the time saved by automatization must be invested in new capacities for dis-automatization, that is, for the production of negentropy” (Automatic Society). Machines repeat (bad), humans create the new (good), and these sides are arbitrarily associated with entropy and negentropy, respectively.

21 “Feminists, and all theorists interested in the relations between subjectivity, politics, and culture, need to have a more nuanced, intricate account of the body’s immersion and participation in the world . . . We need to understand not only how culture inscribes bodies—a preoccupation of much social and cultural theory in the past decade or more—but, more urgently, what these bodies are such that inscription is possible . . . We need to understand, with perhaps more urgency than in the past” (2).
Works Cited


