

**The Return of Vitalism:
Canguilhem, Bergson and the Project of Biophilosophy**

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Abstract

The eminent French biologist and historian of biology François Jacob once notoriously declared, “On n’interroge plus la vie dans les laboratoires” (Jacob, *La logique du vivant*, discussed in Canguilhem’s review, “Logique du vivant et histoire de la biologie,” *Sciences* 71 (1971): 20-25): laboratory research no longer inquires into the notion of ‘Life’. In the mid-twentieth century, from the immediate post-war period to the late 1960s, French philosophers of science such as Georges Canguilhem, Raymond Ruyer and Gilbert Simondon returned to Jacob’s statement with an odd kind of pathos: they were determined to reverse course. Not by imposing a different kind of research program in laboratories, but by an unusual combination of historical and philosophical inquiry into the foundations of the life sciences (particularly medicine, physiology and proto-‘biology’) – a project that at the time was termed ‘biophilosophy’, although this proved to be a short-lived term, as a kind of ‘alternate paradigm’ with respect to mainstream philosophy of biology, as Jean Gayon has noted. Even in as scholarly a work as *La formation du concept de réflexe aux XVII^e et XVIII^e siècles* (1955), Canguilhem speaks oddly of “defending vitalist biology,” and declares that “la vie déconcerte la logique.” Was all this historical and philosophical work merely a reassertion of some ‘magical’ vitalism? Indeed, Canguilhem credits Bergson’s ‘thinking of life’ as well. In order to answer this question we need to achieve some perspective on Canguilhem’s ‘vitalism’, notably with respect to its philosophical influences including a Bergsonian legacy, not least since Canguilhem was first an anti-vitalist, anti-Bergsonian, as Giuseppe Bianco has described, but then evolved into his own idiosyncratic brand of vitalism, in which life “is concept” (“Le concept et la vie,” 1968). Did this make Canguilhem more or less of a ‘biophilosopher’? A vitalist like Bergson, or differently? These are the issues addressed in this paper.

Keywords: vitalism, Canguilhem, Bergson, biophilosophy, metaphysics

Tout ce que j'ai écrit était vitaliste, du moins je l'espère . . .
(Gilles Deleuze)¹

1. *Biophilosophy and vitalism*

French biophilosophy in the 1950s-1960s means at least three names – Georges Canguilhem, Raymond Ruyer, and Gilbert Simondon; for reasons of space we focus on Canguilhem in this essay. Biophilosophy during its relatively brief tenure was a project distinctively different from Anglophone ‘philosophy of biology’.² Notably, it does not present philosophy as coming second in relation to a foundational or normative status of scientific practice. In this context we frequently encounter reference to Life, the thinking of Life, the meaning (*sens*) of Life, and of course the idea of a philosophy of Life, along with a focus on vitalism. Here, the influence of Bergson is non-negligible.

These thinkers blend the historical and the normative when dealing with vitalistic themes in the conceptual foundations of the life sciences (‘biology’, natural history, medicine, etc.). This appears vividly in Canguilhem, who presents himself at least to all but close readers as a scholar, with a *thèse d'État* on the origins of reflex physiology – yet declares quite bluntly that he *is* a vitalist. Canguilhem often refers to vitalism in his work, going as far as describing himself as one in the Foreword of the above-mentioned work on reflex action: “Il nous importe peu d'être ou tenu pour vitaliste...”; he presents the book itself as a “defense of vitalist biology.”³ Additionally, some years earlier, he had devoted an article to the topic, “Aspects du vitalisme” (originally lectures at the Collège Philosophique in Paris, in 1946-1947).⁴ Here, Canguilhem asserts from the outset that when the philosopher inquires into biological life, she has little to expect or gain from “a biology fascinated by the prestige of

¹ Gilles Deleuze, *Pourparlers, 1972-1990* (Paris: Minuit, 1990), 196.

² No less a resource than Wikipedia informs us that ‘biophilosophy’ is not guilty of the reductionist excesses of analytically oriented ‘philosophy of biology’. We shall ignore these kinds of valuative definitions as our aim is to understand what kind of claim was being made by Canguilhem in this context, with particular reference to the notion of vitalism. On the emergence of philosophy of biology as a discipline in contrast to ‘biophilosophy’ see Jean Gayon, “La philosophie et la biologie,” in *Encyclopédie philosophique universelle*, vol. IV, edited by J.-F. Mattéi (Paris: PUF, 1998), 2152-2171.

³ Canguilhem, *La formation du concept de réflexe aux XVII^e et XVIII^e siècles*, 2nd revised edition (Paris: Vrin, 1977; first published 1955), 1 (translations are ours unless otherwise indicated).

⁴ “Aspects du vitalisme,” in Canguilhem, *La connaissance de la vie*, revised edition (Paris: Vrin, 1965; first published 1952), 83-100.

the physicochemical sciences, reduced to the role of a satellite of these sciences.”⁵ In other words, the philosopher in this position is almost inexorably led to a vitalist *positionnement*.

We are not the first to note that there is an unusual combination here of the historical and the normative, or the scholarly and the speculative. In a little-known but interesting book entitled *La notion d'organisation dans l'histoire de la biologie* (1978), which is marred by frequent polemical outbursts (these also contribute to rendering it interesting), Joseph Schiller targeted the historian of the life sciences Jacques Roger, Foucault, and Canguilhem as anti-Cartesians who attempted a ‘vitalist’ revision of the history of science, so as to deemphasize the key role of Descartes in particular and the mechanistic ‘paradigm’ in general. Schiller opposes ‘good’ history of science, which he understands as being in agreement with what the scientists say, and thereby mechanistic, from Descartes to Bernard and beyond, to ‘bad’ history of science, which obeys certain philosophical imperatives, in this case vitalistic ones.

As it turns out, Canguilhem explicitly reflects on the dual nature of vitalism as both historical object and conceptual stance, thus mirroring Schiller’s critique but also becoming a moving, self-aware target. Our main focus will be this dual nature of vitalism, as presented ‘by’ but also ‘in’ Canguilhem, i.e., both according to his analyses and to his own philosophical performance. The historical side is unique to him, whereas the conceptual argument for thinking Life on particular terms – with the primacy of activity, and the devalorization of the paradigm of the machine – bears a strong Bergsonian imprint.

Canguilhem shared the idea with Bergson of pursuing a biological philosophy in which life and knowledge would be united.⁶ In fact, there is a continuity from Bergson to Canguilhem in their shared emphasis on the “meaning” (*sens*) of life. But it is also “the meaning of life” that distinguishes Canguilhem from Bergson. For Bergson, metaphysics and science comprise two different types of knowledge of reality and they have developed respectively with their particular approaches, namely intuition and intelligence. Intuition is a method to enter into the duration of life, while intelligence is an approach to the science of matter. In metaphysics the meaning of life is found by intuition, while in science it is found

⁵ “Aspects du vitalisme,” 83.

⁶ For instance, for Keith Ansell-Pearson, although Canguilhem is definitely not a Bergsonian philosopher, his works share the common Bergsonian idea that “the project of knowledge is one with thinking life” (“Bergson’s Encounter with Biology: Thinking Life,” *Angelaki* 10, no.2 (2005): 69). Also, Jean Gayon notes that “Bergson’s reflection on biological facts closely resembles Canguilhem’s notion of normativity of the living [being]” (“Bergson’s Spiritualist Metaphysics and the Sciences,” in *Continental Philosophy of Science*, edited by Gary Gutting (Oxford: Blackwell, 2005), 57). These biological facts are facts “intended” by nature, and therefore norms are posited by the living being. For Guillaume le Blanc, the common theme connecting Bergson and Canguilhem is the affirmation of life’s creative character (“Le problème de la création: Bergson et Canguilhem,” in *Annales bergsoniennes II : Bergson, Deleuze, la phénoménologie*, edited by Frédéric Worms (Paris: PUF, 2004), 489-506).

by intelligence. For Canguilhem, the meaning of life is a “counterintuitive” knowledge which has nothing to do with the constitution of knowledge by means of philosophical intuition.⁷ The point is not to attribute the meaning of life to metaphysics rather than to science. Instead, in Canguilhem’s words, “Philosophy should not begin at the place where science terminates, because science in its own manner is already a philosophy.”⁸

Canguilhem carried on the Bergsonian objective in his project of a biophilosophy: “philosophy should create a new perspective, faced with the vital fact.”⁹ The project aims to introduce a philosophical, “vital perspective” on life, instead of the reductionist project of reducing life to matter. Since the tradition of biological philosophy had been totally neglected from Descartes to Sartre,¹⁰ Bergson’s philosophy of life, with *L’évolution créatrice* in 1907, was a challenge to the French philosophical tradition.¹¹ In fact, “the oblivion of life” in French philosophy existed for a long time. Firstly, it can be traced back to the rationalism of Cartesian mechanism and its “mistrust and hostility” towards life (whether or not this is a fair assessment of Cartesian physiology), by assimilating living beings to mechanical and material objects.¹² The nature of life is not granted any metaphysical originality when life is completely analyzed by reason and in matter. Secondly, existentialism eliminated the biological aspect of human life from the notion of existence. Life is defined there in a rational form, as a pure “existence” attributed to the condition of human beings alone, not to all living beings. In Descartes, “in the philosophies of Alain, Brunschvicg and Sartre, life is not recognized as a proper metaphysical object.”¹³ Canguilhem makes use of the same opposition in a later essay on ‘environment’ in biology, where he opposes the restrictive, Cartesian view

⁷ As Jean Gayon writes, “Such a conception of ‘meaning’ or ‘concept’ inscribed in matter is of course counterintuitive” (“The Concept of Individuality in Canguilhem’s Philosophy of Biology,” *Journal of the History of Biology* 31 (1998): 323).

⁸ Canguilhem, “Commentaire au troisième chapitre de *L’évolution créatrice*,” in *Annales bergsoniennes III : Bergson et la science*, edited by Frédéric Worms (Paris: PUF, 2007), 135.

⁹ Canguilhem, “Commentaire,” 120. Cf. Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (New York: Dover, 1998), 194-199.

¹⁰ Canguilhem, “Note sur la situation faite en France à la philosophie biologique,” *Revue de métaphysique et de morale* 52, no. 3 (1947): 324.

¹¹ Canguilhem, “Note sur la situation,” 323. Canguilhem emphasized the importance of Bergson’s 1907 *Creative Evolution* at the beginning of this article. Bergson and Ruyer had provided “an interpretation of the fundamental biological phenomena, such as embryonic development, starting from psychological models, to trace back the Platonic theory of ideas in the relations of individuals to species, to revive in reinventing these relations, not to dust off them, the Aristotelian concepts of power and form” (323).

¹² “Note sur la situation,” 324, 326.

¹³ “Note sur la situation,” 324. Cf. Giuseppe Bianco, “At the origins of Canguilhem’s ‘vitalism’. Against the Anthropology of Irritation,” in *Vitalism and the scientific image in post-Enlightenment life science*, edited by S. Normandin and C.T. Wolfe, 243-267 (Dordrecht: Springer, 2013). Another core influence on Canguilhem here besides Bergson and Alain is Kurt Goldstein (for more on this relation cf. Charles Wolfe, “Was Canguilhem a biochauvinist? Goldstein, Canguilhem and the project of biophilosophy,” in *Medicine and Society, New Continental Perspectives*, edited by Darian Meacham (Dordrecht: Springer, forthcoming)).

of animal motion (this time as presented in behaviorism) to a richer understanding of motion and perception, in Gestalt theory and von Uexküll's ethology.¹⁴ Canguilhem's desire to present a unified picture of life and knowledge sometimes has surprisingly humanist overtones, as when he opposes Life to technology and the various forms of the "mechanization of life," and speaks of human biology and medicine as belonging to an "anthropology"; by extension, "medical vitalism" is the expression of an "instinctive suspicion toward the power of technology over life."¹⁵

In his desire to 'roll back' some of this denial of a metaphysics of life, Canguilhem is then a vitalist, indeed, a self-proclaimed one. But what sort of vitalist was he, and what role did Bergson play in this evolution in his thought?¹⁶

2. *Historical epistemology of life or metaphysical vitalism?*

Unlike Bergson, Canguilhem does not begin with a metaphysical assertion of the uniqueness of Life. He often acts as the historical epistemologist, seeking to defuse some of the reductionist challenges to vitalism by problematizing it as an historical object. Yet at the same time, even if he wears the mask of the scholar, looking at the construction of a concept (say, the cell theory), Canguilhem the philosopher asks highly 'motivated' questions of science, in a manner which probably owes a great deal to Bachelard, precisely in the context of a historical epistemology: "A philosophy which looks to science for the clarification of concepts cannot disregard the construction of science"; "Truth is not constituted in a history of truth but in a history of science, in the experience of science"; "the pursuit of truth is the effect of a choice which does not exclude its opposite."¹⁷ The history of science has to study possible conceptual developments rather than just invalidate the past (the error of 'presentism'). What this entails for vitalism is that it has a specifically *philosophical* place, whether it is scientifically 'validated' or 'refuted', and apart from its status as a scientific 'construction'.

In this sense, as Canguilhem suggests, *vitalism is not like geocentrism or phlogiston: it is not refutable in quite the same way.*¹⁸ Vitalism is generally considered to have been

¹⁴ Canguilhem, "Le vivant et son milieu," in Canguilhem, *La connaissance de la vie*, 144.

¹⁵ "Aspects du vitalisme," 86, 99; vitalism is "life seeking to put mechanism back in its place, in life" (99); the same idea appears decades later, in his entry "Vie" for the *Encyclopedia Universalis*. The comment on "anthropology" can be found in "Le normal et le pathologique," in *La connaissance de la vie*, 169.

¹⁶ We do not seek to provide an exhaustive biographical reconstruction of Canguilhem's thought here, including for reasons of space; see the discussion in Bianco, "At the origins of Canguilhem's 'vitalism'."

¹⁷ Respectively Canguilhem, "Aspects du vitalisme," 84, and "De la science et de la contre-science," in *Hommage à Jean Hyppolite*, 173-180 (Paris: PUF, 1971).

¹⁸ Canguilhem, "Aspects du vitalisme," 84.

‘refuted’ twice. First, according to a celebrated scientific tale, with Friedrich Wöhler’s synthesis of urea in 1828, which showed that organic substances can be produced out of inorganic compounds, thus rendering the claim that the chemistry of the living body is categorically distinct from that of inanimate bodies, invalid. Second, a century later, this time because of physics, in early twentieth-century Vienna Circle arguments against Hans Driesch and Bergson, in the name of the causal closure of the space-time world (given the causal closure that physics reveals in the world, how could there be an immaterial vital impulse force, *entelechy* or *élan vital* which causes events in this world without itself being caused?)¹⁹ In both cases, a form of vitalism may be refuted, but not what Canguilhem has in mind. The undead character of vitalism appears in the first case, with Wöhler’s synthesis of urea, when people start to describe the purported refutation as a “chemical legend” (including because the synthesis was actually only performed by Berthelot later on, and chemists like Berzelius continued to speak of vital forces afterwards²⁰); in the second case, substantial vitalism is refuted, not what we might call *explanatory* or *heuristic* vitalism.

So not only is vitalism a unique kind of historical object; much more metaphysically, it is *Life itself* which dictates a certain kind of attitude on the part of the inquirer. There is something about Life that places the knower in a special relation to it. Indeed Canguilhem frequently makes an overtly metaphysical, ahistorical claim that the living animal is necessarily a knower, so that conversely, the nature of Life itself forces the knower to approach it in a certain way (with echoes of the beginning of Aristotle’s *Metaphysics*). In the 1966 essay “Le concept et la vie,” one of Canguilhem’s most difficult and ambitious pieces, which deliberately indulges in high metaphysics, he begins by reflecting on Aristotle, declaring that the thinker is interested in Life insofar as it is “the form and potential of the living.”²¹ Foucault emphasizes the same point in his fine essay on Canguilhem: “To form concepts is a way of living, not of killing life.”²² This is also true at the historical level, for Canguilhem describes Life itself as transcending the oppositions familiar to historians of science: “The opposition between Mechanism and Vitalism, or Preformationism and

¹⁹ See Phillip Frank, *The law of causality and its limits* [1932], ed. & trans. M. Neurath & R.S. Cohen (Dordrecht: Kluwer, 1998), especially chapter 4; M. Wolsky and A.A. Wolsky, “Bergson’s vitalism in the light of modern biology,” in *The crisis in modernism. Bergson and the vitalist controversy*, edited by F. Burwick & P. Douglass (Cambridge: Cambridge University Press, 1992).

²⁰ Douglas McKie, “Wöhler’s ‘Synthetic’ Urea and the Rejection of Vitalism: a Chemical Legend,” *Nature*, 153 (1944): 608-610; Peter Ramberg, “The death of vitalism and the birth of organic chemistry,” *Ambix* 47, No 3 (2000): 170-195.

²¹ Canguilhem “Le concept et la vie,” in *Études d’histoire et de philosophie des sciences* (Paris: Vrin, 1968), 335.

²² Foucault, “La vie: l’expérience et la science,” *Revue de métaphysique et de morale* 90, no 1 (1985), 13.

Epigenesis, is transcended by life itself, extending itself [*se prolongeant*] as a theory of life” (“Aspects du vitalisme,” 85). Of course, if vitalism and mechanism are simply the two poles of the activity of Life and its interpretation, why should vitalism be any better than mechanism? We will not attempt to answer this question now, as we mainly want to emphasize that Canguilhem is operating with an extremely robust, one might even say overdetermined concept of Life.

3. *Organology, mechanism and Life*

Reflecting on the “situation of biological philosophy in France” in 1947,²³ Canguilhem speaks of “the value of Bergsonian philosophy” in its contribution to French philosophy:

for understanding the true relationship of organism and that of mechanism, for being a biological philosophy of machinism, treating machines as the organs of life, and laying down the foundations of a general organology.²⁴

This “biological philosophy of machinism” aims to integrate machine and organism, biology and technology. In other words, this biological philosophy or organology should be more fundamental than the world of machines or technology itself, again in a ‘push-back’ against the sovereignty of Cartesian mechanism, in which the organism was understood on the model of the automaton, explaining its structure and function “on the basis of the structure and function of an already-constructed machine.”²⁵ The ideal type of the machine has become a proof of the self-sufficiency of mechanism. By contrast, Canguilhem reverses the priority of machine over organism in mechanism: “biological organization must necessarily precede the existence and meaning of mechanical constructions.”²⁶

Bergson criticizes mechanism in *Creative Evolution* for its construction of an artificial system in which life is treated as no different from inert matter. But life is also a sort of mechanics, in its technical character, which is irreducible to anything else. There is “a mechanics of transformation” in organic activity that cannot be mathematically developed as a mechanism articulated with the theme of geometrical and spatialized modes of thought.²⁷

Canguilhem writes,

²³ “Note sur la situation,” *op. cit.*

²⁴ “Note sur la situation,” 332. Guillaume Le Blanc gives a detailed account of Canguilhem’s appropriation of Bergsonian organology in *Canguilhem et la vie humaine* (Paris: PUF, 2002), 188-205.

²⁵ Canguilhem, “Machine and organism,” in *Knowledge of Life*, edited by Paola Marrati & Todd Meyers, trans. Stefanos Geroulanos & Daniela Ginsburg (New York: Fordham University Press, 2008), 76.

²⁶ “Machine and organism,” 91.

²⁷ Bergson, *Creative Evolution*, 31-32.

The philosophy of *Creative Evolution* appears to us like the most clairvoyant (if not totally successful) attempt to complete the explanation of the mechanisms, including the mechanisms of life – which belongs to science – with a comprehension of the construction of machines taken as cultural rather than just physical facts, which requires the reinsertion of mechanisms in living organization as a necessary condition of anteriority.²⁸

For Canguilhem, all of mechanics essentially retains a vital origin which is irreducible to any rational forms. This vital dimension is, additionally, part of a broader embeddedness of mechanisms in cultural and organic activity (here Canguilhem echoes much of contemporary cognitive archaeology): the machine is “a fact of culture.”²⁹ If mechanical invention is derived from the origin of life, the machine is a cultural exemplar which is inseparable from the organization of life.³⁰

This is where the Bergsonian motif of an “organology” comes in: the project “to inscribe the mechanical within the organic,”³¹ “to return mechanism to its place in life and for life” and “to reinsert the history of mechanism into the history of life.”³² The organization of matter is attributed to an act of the *élan vital* insofar as the act of intelligence on matter also belongs to an organic activity. Recall Canguilhem’s Bergson-nourished attitude towards the Cartesian notion of animal-machines: he views them on the one hand as inadequate representations of organisms, but on the other hand, as the ruse of reason (!), as a form of skill, referring back to the original term μηχανή. As such, he considers that mechanistic representations are subsumable once again under the category of Life and its productions, i.e., as modalities of the organic world.³³

What troubles Bergson in mechanism is a “mechanistic idea of matter” that treats life as inert matter in a closed and artificial system. To this repetitive picture of matter he opposes its transformation by the *élan vital* in organization, generating the distinction between organized matter and unorganized matter. The *élan vital* distinguishes Bergsonian from classical vitalism.³⁴ The latter is nothing other than “a sort of label affixed to our ignorance”

²⁸ Canguilhem, “Note sur la situation,” 332.

²⁹ Canguilhem, “Machine and organism,” 92, 93.

³⁰ Le Blanc, *Canguilhem*, 201.

³¹ Canguilhem, “Machine and organism,” 96.

³² Canguilhem, “Note sur la situation,” 332. See Bergson, *Creative Evolution*, 139-140, 161.

³³ Canguilhem is thus closer to a biologicistic, anti-computational position (like Ruyer’s) than to a philosophy of technology (like Simondon’s); cf. Henning Schmidgen, “Thinking technological and biological beings: Simondon’s philosophy of machines.” *Revista do Departamento de Psicologia UFF* 17, no 2 (2005), 12.

³⁴ Although Bergson is not a vitalist in a traditional sense, his philosophy of life is vitalistic in inspiration. Notably, Bergson’s vitalism is contingent upon the *élan vital* not being reified as a thing or a substance, as its reality is a tendency acting on matter that is tied up with the temporal experience of duration: Bergsonian vitalism is a durational vitalism (cf. Bergson, *Creative Evolution*, 96). For a distinction between substantial,

about the irreducibility of life, while mechanism “invites us to ignore that ignorance.”³⁵ In fact, the debate between vitalism and mechanism ultimately becomes a question of the compatibility between life and knowledge. Mechanism is a rationalistic idea according to which “there exists a fundamental conflict between knowledge and life, such that their reciprocal aversion can lead only to the destruction of life by knowledge or to the derision of knowledge by life.”³⁶ By contrast, for Bergson and Canguilhem, there is an interaction between life and knowledge.

4. *Forms of vitalism: Bergson and Canguilhem*

Canguilhem’s identification of life with knowledge can be seen as echoing Bergson’s project of constituting knowledge in the reciprocal dynamic between “theory of life” and “theory of knowledge”; but in Bergson this reciprocity does not lead towards the concept of life, since there is a break that cannot be reconciled by the intellect between “life explained” and “life experienced”³⁷: this marks an important difference between the two thinkers, and their two forms of vitalism. Conceptual knowledge, which is dedicated “to thinking matter,” has a “natural inability to comprehend life.”³⁸ The concept is incompatible with life, and by extension, a philosophy of the concept is not united with a philosophy of life. Canguilhem comments,

It is evident that a philosophy of life conceived in this way cannot be a philosophy of the concept, since the genesis of living forms is not a completed development nor an integral derivation and therefore a replica.³⁹

Bergson sees concepts as tools employed by life in its relation to the environment. But these conceptual tools – unlike Canguilhem’s more ‘Aristotelian’ emphasis on a concept:life continuity, discussed below – are incapable of exploring the durational movement of life because it is molded by intelligence on an immobile matter. Nevertheless, intuition can renew the concept once the intellect attends to the creation of life without returning to the natural intellectual habit of generalization. The *intuitive* concept is vitalized by intuition, rendering it

functional and existential forms of vitalism, see Charles Wolfe, “From substantialist to functional vitalism and beyond, or from Stahlian animas to Canguilhemian attitudes,” *Eidos* 14 (2011): 212-235.

³⁵ Bergson, *Creative Evolution*, 42.

³⁶ Canguilhem, *Knowledge*, Introduction, xvii.

³⁷ Bergson, *Creative Evolution*, xiii, 10.

³⁸ *Creative Evolution*, ix, 165.

³⁹ Canguilhem, “Le concept et la vie,” 348.

susceptible to duration, and thereby articulating the meaning of life in relation to the experience of duration.⁴⁰ Intuition is always prior to the concept and generates it as such.

The intuition of life contradicts the pure intellectual practice of generalization of concepts: this is Bergsonian ‘intuitionism’.⁴¹ However, Bergson also attributes the origin and value of general ideas to “the fundamental requirements of life” that determine the vital significance of the faculty of generalization.⁴² As Canguilhem notes, Bergson grants “the essential resemblances or objective generalities which are inherent in reality itself.”⁴³ These natural general ideas are generated from all types of organisms, and are distinct from the artificial ones fabricated by the human mind:

every living being, perhaps even every organ, every tissue of a living being generalizes, I mean classifies, since it knows how to gather, in its environment, from the most widely differing substances or objects, the parts or elements which can satisfy this or that of its needs; the rest it disregards. Therefore it isolates the characteristic which interests it, going straight to a common property; in other words, it classifies, and consequently abstracts and generalizes.⁴⁴

Generalization is a biological function of the organism. All living beings generalize in their living world: their generalizing activities are biological in essence.

In Canguilhem’s view, the linkage of conceptual knowledge to life could be alternatively developed with a Bergsonian inspiration, since the conceptual activity of a living being in its living context is generated from the act of biological generalization. Bergson’s vitalism is less concept-friendly, more suspicious of the transformation of life that occurs in and through the intellect. In contrast, for Canguilhem “life is concept.”⁴⁵ This is so in at least three ways: in his focus on conceptual activity, on biological knowledge (“vitalism ultimately means the recognition of life as an original realm of phenomena, and thus the recognition of the specificity of biological knowledge”⁴⁶), and on vitalism as a kind of *fundamental existential attitude*, “immanent in living beings”:

Vitalism expresses a permanent requirement [*exigence*] of life in living beings, the self-identity of life which is immanent in living beings. This explains why mechanistic biologists and rationalist philosophers criticize vitalism for being

⁴⁰ Bergson, *An Introduction to Metaphysics*, trans. T.E. Hulme (New York: Palgrave Macmillan, 2007), 40.

⁴¹ Canguilhem, “Le concept et la vie,” 339.

⁴² Bergson, *The Creative Mind: An Introduction to Metaphysics*, trans. Mabelle L. Andison (New York: Citadel Press, 1946), 61.

⁴³ Canguilhem, “Le concept et la vie,” 348; Bergson, *The Creative Mind*, 56.

⁴⁴ Bergson, *The Creative Mind*, 54.

⁴⁵ “Le concept et la vie,” 364.

⁴⁶ Canguilhem, *La formation du concept de réflexe*, 113.

nebulous and vague. It is normal, if vitalism is primarily a requirement, that it is difficult to formulate it in a series of determinations.⁴⁷

He also calls it an “ethics,” again using the term “exigence”: vitalism is “more a requirement than a method, an ethics rather than a theory.”⁴⁸ For Canguilhem, the concept is an emanation or outgrowth of a more fundamental vital activity, neither abstract generalization nor mere “determination,” more an ethics than a theory. The living being is a “center of reference” radiating activity outwards, including conceptual activity:

The living is precisely a center of reference. It is not because I am thinking, it is not because I am a subject in a transcendental sense; it is because I am alive that I must look to life for the reference of life.⁴⁹

Canguilhem also refers with a hint of irony to Hegel’s imprudent leap away from Kant – from a deliberately regulative, projective vision of life (organism) to a ‘rational metaphysics’ or, in Canguilhem’s terms, an explicit identification of concept and life: “Hegel accepted what Kant refused to accept. In the *Phenomenology* as well as in the *Jena Real-philosophie...* Concept and Life are identified with each other.”⁵⁰ And yet, at times Canguilhem appears to side with Aristotle (whom he enthusiastically describes as the first to understand concept and life together) and Hegel rather than with this regulative, non-metaphysical view. We should really distinguish between a Bergsonian, intuition-based vitalism – which as we have seen, Canguilhem credits for awakening French rationalism and existentialism from their combined dogmatic slumbers –, a more regulative, heuristic vitalism in which Life is more of a construct, and thirdly, a ‘conceptualist’ vitalism, in which concept and life are one, or at least unified.

Canguilhem’s identification of concept and life is indeed Bergsonian-tinted, yet it is, not just more intellectualist (‘concept-friendly’) but also more naturalistic in the sense that it does not seek to be more fundamental than the conceptual activity of biological science itself (although this naturalism has to be taken with a grain of salt, as we discuss in closing). Take the example of genetics: it is “an anti-Bergsonian science” because it clings to “the belief in the stability of the structures produced by generation” in contrast to the Bergsonian forms of living being produced by the *élan vital*. Life is *élan* and the biological heredity in the formation of living forms is “the transmission of the *élan*”: to overcome the obstacle of

⁴⁷ “Aspects du vitalisme,” 86.

⁴⁸ “Aspects du vitalisme,” 88. The word ‘exigence’ seems important here: Canguilhem uses it 7 times in the article.

⁴⁹ “Le concept et la vie,” 352.

⁵⁰ “Le concept et la vie,” 345.

matter which divides, diversifies, disperses and multiplies the *élan* of life for the individualization of living forms. Finally, the obstacle to the *élan* is the *élan* itself when the *élan* becomes a limit for its self-overcoming in its transmission.⁵¹

By contrast, the account given by genetics for “the formation of living forms by material presence” is “information.” It explains how the biological function of heredity is compared to a transmission of information in which the sense of life is identified as “a *logos*, inscribed, conserved and transmitted” in living matter. Canguilhem allows for “an *a priori* that is properly material and no longer just formal”⁵²: this is far removed from the Bergsonian hostility to matter as the obstacle to the *élan vital*.

5. Concluding remarks

Like Bergson, Canguilhem is not a substantival vitalist asserting the existence of special vital forces. Instead, he focuses on the relation between concept and life, additionally bringing out an ‘existential’, constructive dimension of vitalism as a requirement or demand (*exigence*) expressed by living beings.⁵³ Canguilhem is furthest from Bergson in the way he historicizes the issue. Recall his suggestion that vitalism is not like (the theory of) phlogiston or geocentrism. This can be the case for two different reasons:

- it’s not like phlogiston because it’s *true* and thus one’s ontology needs to include it (an ontological claim, which can be explicated in Aristotelian, Hegelian, Bergsonian or even Drieschian ways);
- it’s not like phlogiston because it has this *heuristic value*, or explanatory power (a heuristic claim: living phenomena need to be approached in a certain way in order to be understood).⁵⁴

In fact, it’s not entirely clear where Canguilhem falls in this divide. However, his comments on vitalism as an “orientation” (what we have called an attitude) tend towards the latter interpretation. Indeed, it is clear that as an *épistémologue* he is careful to distinguish his claims from the more inflated ones of substantival vitalism. We seem to be far from a

⁵¹ “Le concept et la vie,” 339, 353.

⁵² “Le concept et la vie,” 339, 362.

⁵³ “Aspects du vitalisme,” 86.

⁵⁴ One of Canguilhem’s students, Dominique Lecourt, confuses this heuristic dimension with ontological vitalism: “The assertion of ... ‘vitalism’ as an intellectual requirement which aims to acknowledge the originality of Life, entirely retains its significance today, when the combination of a type of biochemical materialism and a type of mathematical formalism tend to deny this originality of Life, the better to neuronalize thought” (“La question de l’individu d’après Canguilhem,” in *Georges Canguilhem. Philosophe, historien des sciences*, edited by E. Balibar, D. Lecourt *et al.* (Paris: Albin Michel, 1993), 269). In contrast, in his earlier work Lecourt had judged Canguilhem’s vitalist tendencies severely – they were the part of his thought that the Marxist interpreter should not keep (*Marxism and epistemology: Bachelard, Canguilhem and Foucault*, trans. B. Brewster (1972; London: NLB, 1975).

metaphysics of Life, then. Yet the concept-and-life side of Canguilhem (“life is concept”), but also the side in which historico-scientific formations like ‘mechanism’ express an aspect of a deeper level called ‘Life’, point to a different moral of the story – not a safe piece of historical epistemology.

If Canguilhem’s vitalism is not an ontological commitment to the existence of vital forces, and at times explicitly recognizes the irreducibility of historico-instrumental forms of grasping ‘life science’, how can it be a metaphysics? What is “this vitalist confidence in the spontaneity of life”⁵⁵? In a very real sense one cannot distinguish between a historical claim and a philosophical claim in Canguilhem’s ‘history of vitalism’ or ‘vitalism’. To put it in the form of a slogan (which concludes “Le concept et la vie”): “Contemporary biology, read in a certain way, is somehow a philosophy of life.”⁵⁶ But the strongest claim of all is that Life itself is a positing of norms. Canguilhem’s recurring Nietzschean point, that what it is to be alive rather than a crystal or mineral is to be capable of error, or conversely, that life could be the result of an error, must be understood in support of his more general claim that norms are derived from vital activity itself. A vital error is something like an anomaly, which is why the history of biological thought always includes the problem of monsters: “If life has any meaning, we have to admit the possibility of a loss of meaning, of aberrations and misdeals.”⁵⁷ Hence, as Canguilhem often says, there are no monstrous crystals, nor monstrous machines.

Canguilhem’s revisionary project to put the life sciences at center stage in the history of science overall (traditionally dominated by the hard sciences) is bound up with strong ontological commitments, and a certain conceptual vagueness to boot. Namely, his project must amount to a claim regarding the specificity of its object, but it is not easy to make out exactly which claim he wants to make:

- Life itself as an object is ontologically unique, including in its anomalousness;
- living entities are meaningful and meaning-producing entities and thus have to be understood as such (this covers both the existential and the Goldsteinian aspects of his claim).

Of course, both of these can be coherently regrouped under the heading of a medical vitalism, in which “the problem of the specificity of disease and the threshold it marks among natural beings” marks a kind of challenge to the integration of the objects of the life sciences within

⁵⁵ “Aspects du vitalisme,” 89.

⁵⁶ “Le concept et la vie,” 364.

⁵⁷ “Le concept et la vie,” 364.

the sciences in general; “the possibility of disease, death, monstrosity, anomaly and error” (Foucault).⁵⁸ Yet Canguilhem’s vagueness appears, e.g., when he denies that vitalism is a metaphysics, and then adds immediately afterwards that it is “the recognition of the originality of the fact of life [*le fait vital*].”⁵⁹

We shall close with a brief consideration of a particularly difficult passage in “Aspects du vitalisme,” where Canguilhem rejects substantial vitalism more clearly than anywhere else:

the classical vitalist grants that living beings belong to a physical environment, yet asserts that they are an exception to physical laws. This is the inexcusable philosophical mistake, in my view. *There can be no kingdom within a kingdom [empire dans un empire]*, or else there is no kingdom at all. There can only be one philosophy of empire, that which rejects division and imperialism. ... One cannot defend the originality of biological phenomena and by extension, of biology, by delimiting a zone of indeterminacy, dissidence or heresy within an overall physicochemical environment of motion and inertia. *If we are to affirm the originality of the biological, it must be as a reign over the totality of experience, not over little islands of experience.* Ultimately, classical vitalism is (paradoxically) too modest, in its reluctance to universalize its conception of experience (95, emphasis ours).

‘Classical’ vitalism as described here is substantial vitalism. And Canguilhem’s diagnosis of an “inexcusable philosophical mistake” is clear enough. But what should we make then of his defense of the “originality of the biology,” i.e. the autonomy of biology, as a “reign over the totality of experience”? What looks at first glance like metaphysical holism might instead be an ‘attitudinal’ conception, that is, a *point of view* on experience.

Unlike the “classical vitalist,” Canguilhem insists, using Spinoza’s phrase, that we are *not an imperium in imperio!* That is, the laws of the physical world fully apply to all living beings, humans included, without exceptions. So all problems would appear to be solved ... yet this statement creates new problems. Granted, to the standard question, how can one be a vitalist and reject any *imperium in imperio?*, we can answer on Canguilhem’s behalf that one can be a constructivist or heuristic vitalist; but what do we do then with the talk of ‘Life itself’? Similarly, if we grant that the ‘Aristotelian’ dimension in his vitalism – the stress on how Life itself creates a certain attitude on the part of the knower – is not to be confused with an appeal to substantial vital forces, we are left with the rather opaque invocation in the above quotation of “experience.” This may sound mysterious, unless we recall both Canguilhem’s Bergsonian background, and his conceptually oriented nuance.

⁵⁸ Foucault, “La vie: l’expérience et la science,” 11.

⁵⁹ Canguilhem, “Le normal et le pathologique,” 156.

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