

vitalism, individuation, and an image for life: bergson contra driesch

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Vitalism is a controversy in a word, rarely if ever invoked without polemical intent. By the time of *Creative Evolution*, the controversy had more or less come to settle around the experimental embryology of Hans Driesch. Bergson mentioned Driesch in a footnote to *Creative Evolution*'s brief critical discussion of vitalism; Driesch referred to Bergson repeatedly and wrote a positive review of Bergson's book; and the two have been considered together under the banner of "neo-vitalism" ever since.

The idea that Bergson is a neo-vitalist is a mistake. To demonstrate it, I present a brief overview of Driesch's vitalism. Then I show that Bergson had already provided a sophisticated criticism of it. I do that by reconstructing Bergson's critique of internal finality, or what Kant called inner purposiveness, and locating in it a

criticism of vital principles of the Drieschian variety as well. As a consequence, Bergson's own so-called vital principle—the *élan vital*—should be conceived in a different way.

In particular it should be thought of as an “image” instead of a force, property, substance, or principle. It is, Bergson says, *only an image for life*. He draws it from the psychological register, from his study of effort in particular. By tracing it back to that context, I suggest that the *élan* can be conceived as an image for a form of effort that is de-subjectivized and generalized across the evolutionary process. In *Creative Evolution*, Bergson conceives this form of effort as tendency. Tendency is almost nothing like a vital principle in Driesch's sense. I conclude by examining the extent to which this interpretation clarifies Bergson's view of evolutionary convergence, which remains key for his relevance to the study of evolution today.

I. DRIESCH, OR ENTELECHY

Driesch's first major theoretical work in English, *The Science and Philosophy of Organism*, appeared in 1908. It offered a defense of vitalism on the novel basis of the experimental facts of regulation and regeneration. Driesch's idea was that only if undisturbed development was possible could everything about organisms be explained mechanistically. What he set out to prove was that development could be interrupted without the individuality of the developing organism being compromised. Cases of regulation and regeneration seemed to evince the point. Driesch argued that they could not be understood mechanistically, and that they testified to the non-mechanical action of an immaterial force.

By compressing early sea urchin embryos between glass plates, Driesch was able to reconfigure the divisions in their eggs, reshuffling their nuclei so that some nuclei that would normally have produced dorsal structures were found in ventral cells instead. According to mechanistic (or preformationist) principles, the embryos should have developed in a disordered and unviable fashion. Yet Driesch obtained normal larvae from them, which meant for him that the early embryo was composed of pluripotent cells, and that the developmental processes through which they gave rise to differentiated organs must be self-regulating. He drew the same conclusion from his separation of sea urchin embryos into two and four, at the two and four-cell stages of development. Each individuated cell developed into a normal larva of its own. And, again, the same conclusion from transplantation.

Driesch linked these phenomena of what he called “regulation” or self-regulation to the already-established facts of regeneration such as regeneration occurred

in his own experiments on salamanders, which are capable of regenerating the lenses of their eyes after they are removed.

He argued that regulation and regeneration indicate the existence of an individualizing agency at work in the organism, distinguishing the organism from a mechanical assemblage of parts and securing its autonomy as an organized whole over and above changes in its constituent elements. Driesch's word for this agency was "entelechy," an Aristotelian term with its roots in the Greek *enteles* [complete], *telos* [end], and *echein* [to have]. Leibniz later defined entelechy as "something analogous to soul, whose nature consists in a certain eternal law of the same series of changes, a series which it traverses unhindered."¹ Driesch's entelechy is an immaterial force, acting to bring about the unified development of an organic individual from out of initially pluripotent cells. As a result of entelechy, "a sum (of possibilities of happening) is transformed into a unity (of real results of happening) without any spatial or material preformation of this unity."²

Entelechy explains the way pluripotent cells are guided towards their final forms, the differentiated structures of the adult organism, since cellular pluripotency seems like evidence that no physical or chemical structures exist in order to determine development in advance. Driesch thought that cases of regeneration also supported the existence of entelechy, since they demonstrate the way the individuality of the organism could be safeguarded against changes to its composition. The special force that brings about the individual whole from out of a pluripotent field also secures the integrity of that whole once it is constituted. Regulation is regeneration for the adult organism. Driesch supposed both to be impossibilities for mechanical systems. He concluded that "embryological becoming is 'vitalistic' . . . it is impossible to comprehend it by the laws of physics and chemistry."³ This is vitalism in its popular form: physics and chemistry are inadequate to the explanation of biological phenomena, and biology therefore requires the addition of a supplemental principle.

II. BERGSON, OR INDIVIDUATION

As Driesch demonstrated, vitalisms typically consist in both critical and constructive elements. Their criticisms target some scientific conception of matter, reductive or mechanistic, and argue that it is insufficient to the explanation of what is distinct about biological phenomena. The constructive arguments advance varying positions regarding the new and irreducible principle, property, or force that has to be introduced to capture the specificity of life. Vitalism's critics purport

to attack both, but it is only really a succession of variants of vitalism's positive aspect that have been consistently discredited.

Like many others, Bergson considers the critical moment worth taking seriously. "The vital principle may indeed not explain much, but it is at least a sort of label affixed to our ignorance, so as to remind us of this occasionally, while mechanism invites us to ignore that ignorance" (CE 44-45).⁴ Vitalism may serve a heuristic function, regulating against mechanism's tendency towards the reduction of biological complexity. That should not go unnoticed. But the more relevant question is whether Bergson advances his own positive position as well, of the sort that would put him in line with Driesch.

Bergson does of course advance a positive theory of his own, but it is not one that puts him in line with vitalists of the traditional variety. Bergson was in fact a critic of them. Vital principles share on his account an important deficiency with mechanistic models: both are human contributions and do not exist in nature independently. According to this criticism, Driesch's entelechy is an intellectual abstraction, a projection of the manufacture model of organization onto the biological world. It understands organisms as if they were built artifacts and attempts to explain their composition on that basis.

When we think of the infinity of infinitesimal elements and of infinitesimal causes that concur in the genesis of a living being . . . the first impulse of the mind is to consider this army of little workers as watched over by a skilled foreman, the 'vital principle,' which is ever repairing faults, correcting effects of neglect or absentmindedness, putting things back in place. (CE 238)

This is a default intellectual tendency, a product of our adaptation to acting on matter. It consists in treating the organism as if it were an object, its organization as if it were designed, and concluding that there must be a principle to account for that design, just as artifacts are constructed and repaired by external agents. The mistake is in thinking that organisms are complex in the same way that made things are complex. The appearance of that "complexity is the work of the understanding" (CE 264). It is not a fact, but a projection, and so does not require a superadded principle that would act as a designer in order to explain how it is brought about or maintained.

That is the first problem with any vitalism that accounts for organization,

regulation, and regeneration through the postulation of an organizing principle: anthropocentric artifactualism. The second is the supposition that determinate individuality is a biological reality. It, too, is merely conceptual. Bergson delivers a critique of this position in service of his rejection of the theory of inner purposiveness. I think the argument against biological individuality can be redeployed in the context of Bergson's engagement with Driesch.

One way to think about vitalism is in terms of finality or purposive organization. Driesch thought that organisms evidenced a kind of developmental and self-regulating finality that distinguished them from mechanical assemblages. Entelechy was his word for it. Bergson thinks there are broadly two forms of finalism in the philosophy of life: external and internal. He understands internal finalism, or the theory of inner purposiveness, to consist in the attribution of finality or purposiveness to the organization of individual organisms as an explanation for the division of labour among their parts and their integration in service of the end of each individual whole.

When Bergson declares this "the notion of finality which has long been classic," he probably has Kant in mind (CE 43). Kant endorsed a similar category distinction in theories of finality. By external purposiveness, he meant the finality of artifactual manufacture, since the particular end served by the artifact lies outside of itself in its use; by internal purposiveness, he meant the kind of finality that qualifies living beings, as the ends served by the organization of their parts are *internal* to the wholes that those parts compose.⁵ Kant conceived the living being through itself, as self-organizing: it is, as a whole, the final cause of the efficient-causal relations among its parts, even as it is constituted by them recursively.

Bergson's contention that "finality is external or it is nothing at all" may have the German Idealist philosophy of nature as its foil (CE 43). His argument for this conclusion is mostly implicit. I reconstruct it in four steps. Here they are in schematic form.

1. Inner purposiveness requires determinate individuality
2. There is no such individuality in the organic domain
 - 2.1 Relative autonomy of organic parts from the individual whole
 - 2.2. The individual is derivative on its germ line
3. Thus, there is no way to locate finality *internal* to any organic individual
4. Thus, if there is to be finality, it must be *external* to all organic individuals

First, notice that the theory of internal finality depends on a conception of the organism as a rigorously bounded individual. If its parts are to be subordinated to the organismal whole as the final cause of their organization, then there must be a determinate distinction between the whole and what is not part of it; the whole must have a definite shape. Purposiveness can only be internal with respect to a limit—a bounded individuality—that would differentiate that internality from what is external to it.

The second step to the argument is a criticism of this conception of organism. It is motivated by two considerations: the relative autonomy of the parts, patterns, and processes that constitute the organism; and the continuity of the germ cells through their temporary instantiation in the soma. Each of the elements of the organismal whole “may itself be an organism in certain cases,” that “the cells of which the tissues are made,” for instance, “have also a certain independence,” and that, in sum, there is to be attributed to the organism’s parts a relative autonomy from the whole (CE 44). The unified individuality of the organism is more like the coordination of a set of self-organizing living systems that are each conceivable as biological individuals in their own right. The inner purposiveness of the organism is *external* to the inner purposiveness of each one of its parts when they are understood as self-organizing systems themselves. This is what Bergson means when he says that “the idea of a finality that is *always* internal is therefore a self-destructive notion” (CE 44).

Organic individuation is always incomplete for germinal reasons as well. Here Bergson is thinking of the “Weismann barrier,” the theoretically inviolable division between germinal and somatic cells (CE 44-46). On Weismann’s account, it is only germinal cells, or gametes, that have heritability functions: they pass information along their own line only. The somatic cells are a product of the totipotent zygote, which is a product of the fusion of haploid gametes or germ cells. The germ cells are formed on the basis of what Weismann called the germ-plasm, which remains continuous through each iteration of this process. The causal line runs in one direction: the germ cells give rise both to themselves as well as to the somatic cells, while the somatic cells produce only cells that develop into the body of an organism. This internal split rends the organic world in two, subtracting evolutionary significance from constituted organisms and relocating it in the pre-individual germ line that runs through them. This means that somatic mutations cannot be inherited; neither can habits, acquired characteristics, or associations. The germ line is deathless; individual organisms are its temporary excrescences, epiphenomenal byproducts deposited along the course of the germinal flow.

This view is probably what Bergson has in mind when he claims that in the attempt to determine the principle of the beginning of an organism “gradually we shall be carried further and further back, up to the individual’s remotest ancestors: we shall find him solidary with each of them, solidary with that little mass of protoplasmic jelly which is probably at the root of the genealogical tree of life” (CE 45). The principle of closure that would secure the determinacy of the organism as a distinct individual is deferred backwards through each of its generations, arriving finally at the last common ancestor shared by all extant forms of life, Bergson’s “little mass of protoplasmic jelly” (CE 45). The implication is that if there is to be a vital principle, it cannot be indexed to individual organisms, because—if for no other reason—*organisms are never completely individual*. “The individual is not sufficiently independent, not sufficiently cut off from other things, for us to allow it a ‘vital principle’ of its own” (CE 45).

Thus, there is no way to locate finality *internal* to any organic individual. That is the argument’s third step. If “each individual may be said to remain united with the totality of living beings by invisible bonds,” “where, then, does the vital principle of the individual begin or end?” (CE 45). The vital principle, if it is an individuating agency, seems to collapse back onto the entire history of evolution, encompassing “the whole of life in a single indivisible embrace” (CE 46). If there is finality or purposiveness in the organic domain, it will therefore have to be *external* to any ostensibly individuated biological form. That is the argument’s fourth step and conclusion.

If by vitalism we understand the postulation of a specific *x* internal to the purposive organization of living things in order to explain their irreducible distinction from inorganic matter, then Bergson is no vitalist. There are no autonomous individuals in the organic domain. For what it’s worth, the idea of inert matter, exhaustible by mechanist explanation, is an abstraction as well, a tendency and not a thing. But Bergson does not conclude by rejecting the idea of finality; he affirms instead that if it is to be attributed to the organic domain, then it has to be predicated of life as a whole. He reconceives the idea of this whole, life or evolution as a unified event, according to a psychological image, the *élan vital*.

III. THE PSYCHOLOGY OF EFFORT

If there is a vital principle in Bergson’s thinking, it is obviously the *élan vital*. I think its status as an image is too often overlooked. Life—organization and evolution—is supposed to elude the alternative between efficient and final

causality—mechanism and finalism—which means that it cannot be determined in the causal terms of either. Bergson suggests that it is better thought through what he calls an “image,” and of an impetus or an “*élan*” in particular (CE 257). He explains why in a letter to Floris Delattre.

The image intervenes most often because it is indispensable, none of the other existing concepts being able to *express* the author’s thought; the author is then obliged to present it *suggestively*. ... To give just one example: when I relate the phenomena of life and of evolution to an “*élan vital*,” it is in no way an ornament of style. It is even less meant to mask in images our ignorance of the deepest causes, as when the vitalist in general invokes a “vital principle.” ...The truth is that philosophy only offers philosophers two principles of explanation in this matter: mechanism and finalism. ... Now ... the place to be is somewhere in between these two concepts. How should we determine that place? I have to point to it, to indicate it since no concept between mechanism and finality exists. The image of an *élan* is only this indication.⁶

There is of course a lot to be said about Bergson’s philosophy of images, especially as it’s developed in *Matter and Memory*. What I want to note here is that images serve as tools for the expression and communication of thoughts that frustrate or escape the delimited boundaries of available concepts. Images point to something outside of those concepts. Yet images are also necessarily circumscriptions of thinking; and so with them “you can no more reconstitute thinking than with positions you can make movement” (ME 55).⁷ Images occupy a middle position between the two, functioning as intermediaries between the intuition of something beyond the domain of pre-existing concepts and the concepts beyond which the thought is directed.

To say that the *élan vital* is an image is to say that it is a way of pointing beyond any of the concepts already available to the philosophy and sciences of nature of the time. It should not be understood as a concept of its own, with an identifiable object—like a substance or force—to which it would correspond. When Bergson describes the operation of the *élan vital* as the driving impetus of the evolutionary process he is not speaking conceptually, but imagistically, indicating that there is something about the patterning of evolution that cannot be adequately captured in terms of efficient or final causality.

To be sure, the distinction I am marking here between concepts and images is

by no means clear or uncomplicated. On Bergson's epistemology, concepts are practically oriented intellectual tools, strategically fashioned to fix and stabilize—that is, spatialize—the dynamic reality of their objects. Concepts do not pick out and correspond to objects that preexist conceptual articulation. In some sense, concepts produce the objects that they purport to capture; at the very least, they isolate and immobilize them, rendering them artificial. In order to so, conceptual language often employs images as well, images that mediate between concepts and their purported objects, facilitating the reference. It is for this reason that philosophy is always laden with images. Language, the very medium of the concept and of its communication, is always ineradicably metaphorical or figurative as well, at least to some degree.

The concept/image distinction is not a clear one because just as concepts do not refer to objects without the mediation of images, concepts can at the same time be taken as images in their own right as well. The concept of mechanism, as Bergson demonstrates, does not so much refer to an objective state of affairs as it provides a kind of model or regulative ideal that allows a given scientific programme to stabilize and partition its research domain. It could be said that the idea of universal mechanism is a kind of image for nature, not a concept of it.

In what sense, then, are images distinct from concepts? The two are distinct in that concepts—at least what Bergson calls “readymade” concepts—*purport to function* in the traditional sense. They purport to function referentially, referring to, corresponding with, and capturing a set of objects that are supposed to preexist the concepts in question. Now, as I mentioned, this is not—according to Bergson—in fact how concepts work. But this is how they circulate and what distinguishes them as concepts. The concept of mechanism is supposed to correspond to a mechanistic system, a system describable in mechanistic terms. When mechanism is understood in this form, it is a concept that corresponds to an identifiable object. When mechanism does not purport to function in this way, when it purports to organize some domain of a world that ultimately eludes conceptual capture by providing a heuristic or model that affords practical action without pretending to exhaust the dynamic reality of that domain, then mechanism can be considered as an image. The concept/image distinction is a functional one, perhaps even a provisional one, but not an essential one.

Though there is no doubt more to be said on the subject, we should at least be able to better understand Bergson's claim that “since no concept between mechanism and finality exists” (mechanism and finalism being understood as concepts here),

the place between them has to be pointed to or indicated with an *image*. “The image of an *élan* is only this indication.”⁸

Though there may be a number of sources for this image, I want to consider the idea that Bergson drew the *élan* forward into *Creative Evolution* from the psychology of effort, whose details he elaborated five years earlier in 1902’s “Intellectual Effort.” “Intellectual Effort” represents Bergson’s attempt at a phenomenology of psychological contraction, or the actualization and individuation of psychological images. He begins his analysis with the dynamic scheme (ME 196). All the elements that are to become determinate images first exist in the scheme “in the estate of reciprocal implication” (ME 199). Determinate images actualize the scheme by evolving it “into parts external to one another” (ME 199). Bergson locates the operator of that actualization process in the feeling of effort that marks concentrated thinking.

Bergson begins with memory and concludes with the effort of invention. He examines two cases of the former. From the first, a study of the skillful chess-player, he establishes the particular mereology of effort (that is, the way in which effort dissociates determinate images from their implication in a unified whole); and in the second, the experience of trying to recall a forgotten name (or trying to follow an ill-understood language), he locates the feeling of a “direction” in which the scheme is to be developed in order to arrive at its determination in images. Invention presents a domain in which actual images can be seen to turn back on their dynamic schemes, modifying and opening them to novel development.

The real difference between an amateur and a master, according to Binet’s 1984 study of the psychology of chess, is whether one can play multiple games simultaneously while blindfolded. The blindfolded player has the moves of her opponents indicated to her; she plays a piece in response, moving from one game to the next, while apparently keeping in mind the distribution of pieces on each board. Before Binet, the most popular explanation for the ability to play blind belonged to Taine, who argued that the blindfolded player employs a heightened visual memory in order to maintain a pictorial representation of each game as it is played.⁹ Bergson sees in Binet’s response – according to which the player does not maintain a representation but instead has to make “an effort of reconstruction” at every move – the suggestion that what is held in mind is not a set of distinct images but rather their interpenetration in an abstract whole (ME 197).

The abstraction isolates what the pieces can do, in what way their powers interact, conflict, compose or decompose. On the basis of an abstract grasp of these powers, the blinded player is supposed to be able to visually reconstruct each element of the whole, the pieces and their positions on the board, without having to maintain the image of any one individually. This is what Bergson calls a dynamic schema. It is as complete as any of the definite images through which it is actualized, but it does not contain those images in itself; it suggests them, implicates and implies them. Here is the mereology that “Intellectual Effort” elaborates. The dynamic schema can be developed into a set of determinate images that stand to the schema as parts to whole. But the dynamic whole is not made up of the sum of its parts in advance. They are derivative, as parts, on the psychological act, the effort, through which they are developed from out of the whole.

The feeling of this kind of effort is supposed to consist in the push to dissociate distinct parts from out of their implication in the unity of an abstract idea; it has as its essence “the evolving of a scheme, if not simple at least concentrated, into an image with distinct elements more or less independent of one another” (ME 201). From an analysis of the struggle to recall a forgotten name, Bergson concludes that we would never be able to accomplish such a feat were it not for the indication of a direction in which effort is to be expended in order to arrive at the determination of the image, like an impulse common across a set of distinct elements (ME 208). It is this “directive” quality to the scheme that allows it to unify a multiplicity of elements without effacing their distinctions entirely (ME 225). It unifies by traversing and organizing its elements, like a melody across its notes. While the scheme is simple (or unified), and therefore distinct from the images to be elaborated out of it, it still *tends* into that elaboration, suggesting those images without for that reason resembling them.

Bergson sees in the experience of invention a final aspect of the psychology of effort (ME 211). To invent—following Ribot’s account in *L’Imagination créatrice*—is to solve a problem creatively, without supposing a determinate solution in advance. Effort in invention consists in the work through which the gap between the problem and a possible solution is filled in, bringing a real solution about. The solution, if it is to be the object of invention, can be known at first only schematically; and so “invention consists precisely in converting the scheme into image” (ME 211).

What is special about inventive effort is the fact that it is opened onto an uncertain horizon in view of which the inventor experiments within a range of potentialities disclosed (as images) by the invention's dynamic schema. This is how we are to understand Bergson's term, the "unforeseen," as a necessary epistemic concomitant of novelty (ME 213). The novelty of invention resides in the retroaction of images on the schema from out of which they are drawn, "the movement by which the image turns around toward the scheme in order to modify or transform it" (ME 213). The inventive scheme is altered through the process of its dissociation into the images that represent its actual products. Those images are tested in the course of the inventive process, postulated provisionally, experimentally modulated, combined, revoked. But they "are always reacting on the idea or the feeling which they are intending to express" (ME 213). The movement is bidirectional as the two evolve in tandem: changes in the scheme imply differences in its images, and changes in those images retroact on the scheme they are meant to realize.

Psychological effort is supposed to elide the binary causal alternative between compulsion and attraction, revealing each—at least in the intellectual register—to be an opposite and extreme limit of a more fundamental intermediate activity. The causality operative in this form of activity should be understood mereologically. The movement between the scheme and its images is a movement between the qualitative multiplicity of the whole and the determinate actuality of its parts. It consists "in the gradual passage from the less realized to the more realized, from the intensive to the extensive, from a reciprocal implication of parts to their juxtaposition" (ME 230). Bergson concludes the essay with the claim that the operation of effort—this form of activity intermediate between two poles—is to be taken as emblematic of "the very operation of life" (1920: 230). This is what, five years later, he will call the psychological interpretation of life. It is the idea that life is to be understood psychologically, that the *élan vital*, the so-called impetus behind evolution, is to be conceived as a kind of "psychological cause" (CE 91).

IV. PSYCHOLOGICAL VITALISM, OR; ÉLAN VITAL AS IMAGE FOR EFFORT DEPERSONALIZED

Bergson describes *élan vital* as an image for life (CE 257). The appropriate image for life is psychological, he says, because "no image borrowed from the physical world can give more nearly the idea of it" (CE 257). This is supposed to be because "the essence of the psychical is to enfold a confused plurality of interpenetrating terms," something it shares in common with life, which marks life off from the possibility of a fully spatialized determination. It is in this sense that it should be

said that “life is of the psychological order” (CE 257).

There are a number of ways to interpret this view. I parse it in three parts. (1) When Bergson says that life is of the psychological order, he has effort in mind, i.e., the psychological interpretation of life is the interpretation of life according to the qualities of effort. (2) The difference marked by the transformation of psychological effort into *élan vital* can be understood in terms of the de-subjectivization of effort, its detachment from personal psychology and its relocation at the level of evolution as a continuously unfolding process. Finally, (3) the idea of tendency is supposed to help us to grasp that for which “*élan vital*” is only an image. Tendency is to life what effort is to mind, and the *élan vital* is an image for mental effort in the evolutionary domain.

1. In “Intellectual Effort,” Bergson intimated that psychological effort and life operate in the same way. The description of the way mental images are drawn from a unified idea receives its vital correlate in *Creative Evolution’s* account of life as a process of divergence and dissociation. Speciation operates through ramification. One line of descent divides into two, each of which eventually branches again. Every lineage shares a common ancestor, reaching all the way back to the emergence of the first living being—supposing, of course, that life originated on earth just once. All extant life forms are ultimately unified in the history of life. Unity is a point away from which life diverges, as it realizes across an increasing number of extended parts an originally intensive multiplicity. We find the same formula for the explication of images from out of their implication in the dynamic schema of an abstract idea repeated in evolutionary terms.

Evolution proceeds not like a “solid ball shot from a cannon,” but “rather like a shell, which suddenly bursts into fragments, which fragments, being themselves shells, burst in their turn into fragments destined to burst again, and so on for a time incommensurably long” (CE 98). Bergson favours this image for what it suggests about the ramifying evolution of life. “When a shell bursts, the particular way it breaks is explained both by the explosive force of the powder it contains and by the resistance of the metal” (CE 98). There are two series of causes at work in shaping the trajectories taken by the fragments of exploded shell: one internal and expansive, the powder’s own explosive force, and the other external and restricting, the constraint of the metal shell. The powder is what accounts for the shell’s outward movement, while the metal is what accounts for its fragmentation. Life carries its own explosive force within itself due to “an unstable balance of tendencies,” an intensive multiplicity that serves as evolution’s “motor principle”

(CE 98 and 101). This “intensive multiplicity” or “unstable balance of tendencies” is the evolutionary analogue of the dynamic scheme of “Intellectual Effort.” In both domains, the vital and the psychological, effort consists in an originally indistinct push, progressively realized across the extant parts (or images) into which it resolves itself.

Just as the effort to individuate a scheme is negotiated against the images that resist it but through which it is expressed, so is the vital *élan* constrained and contoured by the resistant force of adaptation exerted through environmental pressure and manifested in selection. The interaction between the two forces is what explains life’s ongoing differentiation over evolutionary time, in a manner analogous to the creative elaboration of a novel idea through an open-ended set of images.

The kind of causality that Bergson discerned in effort is supposed to exist somewhere between impulsion and attraction. He conceives the *élan vital* in just the same way. It is, on the one hand, a *vis a tergo*, an originating impulsion (CE 109). But it is not for this reason to be reduced to the mechanism of an efficient cause. Life “takes directions,” even if “without arriving at ends” (CE 108). Its causal nature is directional, purposive. In this sense there is something finalistic about it. Yet it is not oriented in the direction of distinct purposes specifiable in advance. In this respect, Bergson’s conception of life repeats one of the central features of his conception of time, its retention-protection structure, or the idea that concrete duration always retains its past history of development while opening that history onto a contingent set of future directions. Life is purposive because it is directional, which means that its shape is not entirely the result of a series of accidents pressed into form via the mechanical force of circumstance. But the cause of life’s directionality is not teleological; it does not pre-exist or reside outside of the trajectories taken by evolutionary history over the course of its own unfolding. External causes shape, divert, and constrain it, but they do not explain it. This is the idea behind Bergson’s claim that it is the “movement” through which novel forms are generated that “constitutes the unity of the organized world,” and that the external force of “adaptation explains the sinuosities of the movement of evolution, but not its general directions, still less the movement itself” (CE 110, 107).

The idea of a directional movement unifying the individuals that are its products recalls the directive nature of the dynamic scheme. Invention was supposed to show us that though the scheme tends towards its elaboration through images,

it cannot be said to resemble those images in advance. Effort in creation consists in the reciprocal adjustment between the two, and in the production of a set of images that could not have been foreseen. The complex causality at work in the effort of evolving distinct images from out of a dynamic scheme (or determinate memory-images from out of the past, for that matter) is the same kind of causality that Bergson identifies with the image of the *élan vital*.

2. Though the *élan vital* seems to operate analogously to psychological effort, one of the differences between the two resides in the way they are individuated. The idea of individual effort reappears in *Creative Evolution* in Bergson's discussion of Neo-Lamarckism. Though Bergson is critical of Neo-Lamarckism, he considers the idea of goal-directed variation to be an improvement over the directionless accidentality of the Neo-Darwinian account. According to Neo-Lamarckism, variation does not occur entirely at random, but partly as the result of the way individual's behaviours modify its physical structure (CE 81-82). This theory was based on Lamarck's postulation of "internal nervous fluids" whose concentration relative to the use and disuse of parts in each individual was supposed to be conserved and transmitted across generations.¹⁰ By re-concentrating these fluids through the habit of stretching its neck to reach higher food, as in the famous example, a giraffe could make heritable changes and transmit a strengthened and elongated neck to its offspring. A habit-based physical adaptation becomes an evolutionarily salient difference.

The mistake of Neo-Lamarckism, on Bergson's assessment, is its individuation of effort, the location of variation's directional source in the individual organism (CE 91-92). That there is a directional movement to variation, Bergson affirms. But that it is individual effort that directs it, Bergson denies. On the latter point, he sides with Neo-Darwinism and ultimately with Weismann.

It is Weismann who provides Bergson with the conceptual resources for the idea of impersonal effort. Bergson accepts that "the essential causes of variation are the differences inherent in the germ borne by the individual, and not the experiences or behavior of the individual in the course of his career" (CE 90). This is the Weismann barrier, the idea of an inviolable causal independence of genetic line from individual activity. It is not the only idea that Bergson recommends from germ theory. As much as he insists on the instantiation of variations in the germ, he tempers the mechanism of that claim with its opposite number: "where we fail to follow these biologists [i.e., the mechanists]," he writes, "is in regarding the differences inherent in the germ as purely accidental and individual" (CE

90). They are rather to be regarded as embodied in each individual germ while passing over and between them. Individual differences are better thought as “the development of an impulsion” that is continuous across the germ-line and trans-individual with respect to each particular germ.

Bergson evidently understands germinal *continuity*—alongside the individuality of germinal *difference*—to be a feature equally available to the reconstruction of Weismann’s germ-theory. He finds in Weismann both a principle of transmission that is individual and hence mechanistically determinable, as well as a continuity or current of energy, an impulsion, that “indefinitely” pursues “an invisible progress” and thereby organizes the otherwise accidental individual variations of each germ along certain lines (CE 28-29). “Regarded from this point of view,” Bergson concludes, “*life is like a current passing from germ to germ through the medium of a developed organism*” (CE 28). Thus, “life is a continually growing action,” modeled on the effort to recall and create (implicating both the past and the future respectively) but de-subjectivized and extrapolated to the evolutionary process in general (CE: 135).

3. The *élan vital* serves as an image for a form of effort that Bergson considered to be beyond the concepts not only of efficient and final causality, but of psychological effort as well. In de-subjectivizing effort, Bergson relinquishes the ability to determine it conceptually. Whereas he was able to outline the details of the experience of the effort involved in playing blindfolded chess, for instance, he is able to do no such thing with respect to the form of effort at work in evolution. Vital effort is analogous to psychological effort in many of its details, but if the key difference is in the fact that the former is no longer to be thought through its operation within an individual (according to Bergson’s rejection of Neo-Lamarckism), then Bergson has deprived himself of the ability to think it on that basis (according to the individual psychology of effort). This, I think, is among the most important reasons why he insists on the status of the *élan vital* as an image. It is an image for a form of effort that cannot be directly conceived, for it is a form of effort whose distinctive quality bars us from conceiving it.

Alongside the qualification of the *élan vital* as an image, Bergson does however offer a concept for life: “life,” he says, “is tendency” (CE 104). Sinclair says of tendency that it is “the most essential concept that Bergson advances in order to understand something of the impulse” of life.¹¹ Tendency is indeed—unlike the *élan vital*—a concept. It has already received some attention in the literature, from Paul-Antoine Miquel, Ansell-Pearson, Matthias Vollet, and, perhaps most

influentially, Jankélévitch, who has argued that a “dualism of tendencies” underlies the duration-monism of Bergson’s philosophy of life. I’ve attempted to develop it further in my own work as well.¹²

I have only a few things to say about it here. First, I think it should be understood finalistically, as a form of final cause. There are two errors to avoid in thinking about final causes. Kant names both. One is anthropomorphic artifactualism, what he calls external finality, the idea that the final cause of a thing lies outside it, in its maker, or ahead of it, in the pre-existent aim that orients its development. The other is holism, what Kant calls inner purposiveness, the idea that the organism is a bounded individual, whose organization as a whole is the final cause of the arrangement of its parts. Bergson’s criticism of the internal view doubles as a rejection of Drieschian vitalism as well, as I’ve shown. Bergson considers the internal and external two sides of the same coin, as we would not be moved to posit vital principles to explain organization if we did not conceive organization on the model of technical production in the first place.

So what is tendency, then? It is neither internal nor external to organisms, but rather immanent to life in general, the evolutionary process as a single event. Tendencies are not oriented towards pre-existent ends, and in this sense their finality is irreducible to the finality of artifactual manufacture. The finality of tendency is of an immanent variety, a particular tendency’s end being the limit towards which it tends. What a tendency will become is unforeseeable, which is what distinguishes tendencies from potentialities in the Aristotelian sense. When Bergson says that life is tendency, he does not mean some particular tendency to do or become some particular thing, but tendency in its essence, which is to press into the future, tending toward a limit after which it divides instead of terminating, ramifying across a series of divergent directions, each with new limits of their own. Tendencies pattern the evolutionary movement as an unfolding event, and are in this sense irreducible to the organization of individual organisms. For this reason tendency cannot be assimilated to the holist conception of organisms as their own self-organizing final causes. Organisms are the medium and products of the evolutionary movement; they do not exhaust what is active about life. This idea of tendency is supposed to capture something crucial about life without lapsing into the pitfalls of internal or external finalism, what the *élan vital* can only indicate.

I would like to conclude by bringing some things together with the following suggestion: that if the *élan* can be understood as an image for life based on the psychology of effort, then it may be worth importing the details of that psychology

into the conception of tendency as well. Including the features of inventive effort in the concept of tendency may help illuminate the way Bergson deploys the concept in his explanation of evolutionary convergence in particular.

Evolutionary convergence refers to the appearance of like forms or functions—such as the eye or vision—across lineages without a recently shared history. Bergson considers mechanistic and finalistic explanations for convergence to be insufficient. Mechanism is supposed to be unable to account for the patterned regularity with which like solutions reappear, on the basis of unlike causes and in unlike environmental situations. Finalism, by setting out convergent traits as possibilities prior to their realization, deprives evolution of the novelty that Bergson considers to be one of its ineliminable features. The idea of evolutionary tendency is supposed to work as an alternative “hypothesis” in this measure, one that serves an explanatory function that succeeds where the others do not (CE 57).

Bergson’s examination of invention may supply an important part of the argument. Recall that in the effort to invent, the actualization of images reorganizes the scheme for the generation of new images in turn. The *élan vital*, as an image for effort, dissociates and divides a qualitative multiplicity into ever more particular tendencies over time. These tendencies exist in a state of interpenetration prior to their dissociation across extant history, which means that they are internally related to each other (CE 272). Internal relations are relations that constitute their terms. Changes in internal relations imply correlative changes in each term so related. The act of individuating tendencies from the interpenetrating whole rebounds on the whole as an internally related nexus of other tendencies. As Pete Gunter has it, if life is this kind of whole, a dynamic scheme, then “expressions of one aspect of the impetus would have impacts on the others.”¹³ Understood on the model of invention, the vital tendency would then be reconfigured through each of its particularizations, evolving as a tendency in general in tandem with the evolution of each of its dissociated tendencies in particular.

Each expression of life in the form of a set of tendencies would recreate the conditions for future expressions. In this way, evolution acquires a directional patterning as it unfolds, which is why we find the same solutions—such as the eye—arise time and again, even in lineages as distant as bird from cephalopod. Another way to put the point would be to say that every particularization of a tendency in one form increases the probability that it will be particularized in a like form again. By tending towards the same solutions more often than to

others, evolution regularizes itself over time, converging upon the same small set of biological forms such as the eye wherever a channel and opportunity exist, provided by environmental pressure and species anatomy, like a memory that makes itself increasingly available across a widening set of circumstances.

The effort to invent introduces the idea of retroaction into the mereology of dissociation. Retroaction should be considered a feature of tendency. It testifies to the ongoing interaction between the whole and its parts, evolution as a single unfolding tendency, retaining a total past, and the various tendencies into which it divides itself. If events that take place on particular lineages can impact the unfolding of evolution in general, then it might be easier to explain how traits occurring on one line can reoccur on others as if independently.

CONCLUSION

There is still more to be said about the *élan vital*, but I think a few things should be clear. One is that the *élan* is not a vital principle of the traditional variety. The problem with vitalism, for Bergson, is not that it insists on a difference between life and matter, but that it incorrectly individuates the difference-maker between the two. Bergson's difference-maker is something like Driesch's entelechy, though it is not an actual force—whether material or immaterial—but rather a virtual tendency. More importantly, its position is external to the ostensible individuality of any given biological form. Driesch's entelechy safeguards biological individuality; Bergson's *élan* explodes it. Being irreducible both to individual forms and to pre-existent ends, life eludes the mechanism/finalism alternative that continues to obstruct the ability to think it. This is why the *élan* should be grasped as an image, in particular as an image for or indication of something that eludes conceptual capture. I have tried to demonstrate the extent to which this image is drawn forward into *Creative Evolution* from Bergson's study of psychological effort. Many if not all of the qualities of psychological effort appear to obtain of the *élan*. It is an image for effort of a particular sort, one that is impersonal, qualifying life as a whole over and above any of its particular manifestations. This is one reason why it has to remain an image: the *élan vital* eludes not only the concepts against which Bergson worked out his understanding of psychological effort, but ultimately psychological effort as well. Since I think that Bergson's idea of tendency is best understood as a concept intended to capture the reality for which the *élan vital* is only an image, it too is profitably interpreted on the model of psychological effort. This interpretive strategy may help to illuminate Bergson's tendency-based explanation for evolutionary convergence. Since convergence is crucial both to

Bergson's own argument in *Creative Evolution* and to how we can make use of that argument with respect to the state of evolutionary science today, it is probably the most important context in which to work out an understanding of Bergson's theory of life.

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NOTES

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2. Hans Driesch, *The Science and Philosophy of the Organism*. 2nd Ed. London: Adam and Charles Black, 1929, 215.
3. Driesch, *The History and Theory of Vitalism*. Trans. C. K. Ogden. London: Mac-Millan, 1914, 226.
4. Parenthetical references to CE refer to Henri Bergson, *Creative Evolution*. Trans. A. Mitchell. London: Macmillan., 1911.
5. Immanuel Kant, 2000. *Critique of the Power of Judgment*. Trans. Paul Guyer. Ed. Allen Wood. Cambridge: Cambridge UP, 2000, §82; 5: 425
6. Henri Bergson and Floris Delattre, “Samuel Butler et le bergsonisme. Avec deux lettres inédites d’Henri Bergson.” *Revue anglo-américaine*. Vol. 8, Issue 5, 1936, 399.
7. Parenthetical references to ME refer to Bergson, Henri. 1920. *Mind-Energy*. Trans. H. Wildon Carr. New York: Henry Holt and Co.
8. Bergson and Delattre, “Samuel Butler et le bergsonisme.” 399.
9. Hippolyte Taine, *On Intelligence*. Trans. T. D. Haye. London: L. Reeve and Co, 1871, 38.
10. Jean-Baptiste Lamarck, *Recherches sur l’organisation des corps vivants*. Maillard: Paris, 1802, 9.
11. Mark Sinclair, *Bergson*. New York: Routledge, 2020, 215.
12. See Keith Ansell-Pearson, *Philosophy and the Adventure of the Virtual: Bergson and the Time of Life*. London: Routledge, 2000, 109-111; Matthias Vollet, “La vitalisation de la tendance: de Leibniz à Bergson.” *Annales bergsoniennes IV: L’Évolution créatrice 1907-2007: épistémologie et métaphysique*. Eds. Frédéric Worms, Anne Fagot-Largeault, and Jean-Luc Marion. Paris: PUF, 2998, 285-292; and “Creativité comme tendancialité.” *Bergson*. Ed. Camille Riquier. Paris: Cerf, 2012, 359-373; Paul-Antoine Miquel, “Bergson and Darwin: From an Immanentist to an Emergentist Approach to Evolution.” *SubStance*. Vol. 36, No. 3, Issue 114, 2007, 42-56; Vladimir Jankélévitch, *Henri Bergson*. Trans. Nils F. Schott. Eds. Alexandre Lefebvre and Nils F. Schott. Durham: Duke UP, 2015, 143-145; Tano Posteraro, *Bergson’s Philosophy of Biology: Virtuality, Tendency, and Time*. Edinburgh: Edinburgh UP, forthcoming 2022.
13. Pete Gunter, “Bergson’s Creation of the Possible.” *SubStance*. Vol. 36, Issue 3, 2007, 39.