

Entities beyond Necessity: A Review of Rupert Sheldrake's A New Science of Life (Revised edition, 2009)¹

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This is the third edition of Sheldrake's 1981 volume. The topic is revealed in the subtitle, "The Hypothesis of Formative Causation." Sheldrake's hypothesis belongs to an earlier trend in biological thinking that views organic life in terms of whole systems. Such views include *holism* and *organicism*,² in contrast to *mechanism* (e.g., reduction of biology to physics and chemistry), and *vitalism*.

"Vitalism" is a somewhat ambiguous term. Generally it is thought of as the view that a non-physical factor causes the development and behavior of organisms. This may refer to the Cartesian concept of a substantive non-physical soul inhabiting the physical body;³ or it may invoke a Bergsonian *elan vital* or "vital essence;" or in its most generous form, it is simply the view that living things exhibit a distinctive organization which cannot be entirely accounted for by reducing the organism to its parts.

Sheldrake's view would appear to be in sync with (at least) this latter sense of "vitalism." Indeed, the problem may not be merely one of terminology. It turns out on close scrutiny that Sheldrake's hypothetical construction seems to vacillate between certain characteristics of vitalism and others of the mechanical-reductionist viewpoint. To explore this possibility it will be appropriate first to introduce a general view of his hypothesis, the problems it seeks to address, and its historical background. It is against this background that an appraisal of Sheldrake's theory is best undertaken.

I

The issues that concern Sheldrake are (1) How do new forms come into being? (2) How do developing organic systems "regulate" so as to persist in reaching a specific outcome even if the normal course of development is obstructed? (3) How does regeneration, or restoration of damaged structures, work? (4) How is it that reproduction, in which "a detached part of the parent becomes a new organism," can take place? Sheldrake holds that reductionistic explanations fail (pp. 85-93). His hypothesis is intended to provide an organismic explanation.

The preface states the hypothesis in a simple way. It is the claim that *nature is habitual*. Although the full theory goes beyond this simple statement, Sheldrake clearly means to distill the theory within this provocative concept. If by "habitual" he means merely that nature exhibits regularities, the hypothesis is empty. Sheldrake explains however that to call nature "habitual" is to deny that natural processes take place according to fixed immutable laws. The laws of nature arise not from some unchangeable realm of certainties (e.g. ideas in the Mind of God), but from the orderliness of biological phenomena: behavioral regularities subject to evolution. This argues for a *reversal* of the role of biological nature from a peripheral or emergent phenomenon to a fundamental governing principle within the cosmos as a whole. Thus Sheldrake goes on to assert that "crystals and molecules...follow the habits of their kind," just as "all animals and plants draw upon and contribute to a collective memory of their species."

Here at the outset a question arises. Are molecules, crystals, plants and animals on a universal continuum, or not? If habit is a result of something called collective memory, do crystals and molecules thereby "remember?" If so, then the suggestion is that some rudiment of what we might call "consciousness" (remembering) is present at the most fundamental level of physical existence. Indeed this is the view

Sheldrake embraces. Not only is organic behavior not reducible to physics and chemistry, but the reverse is true: physics and chemistry involve some principle or principles that are continuous with those governing organic behavior (p. 26, p. 78). Minimally this is “habit” or “collective memory.”

Sheldrake’s proposal may be compared with the views of the paleontologist-philosopher Pierre Teilhard, who as early as 1928 held that the evolutionary context of change and development must be extended to all of science, including physics. In addition to *tangential energy*, the subject of traditional physics, Teilhard held that there is also *radial energy*. This is an energy continuous with all of physical nature, drawing matter toward complexity of functions and therefore toward “interiority.” “Interiority” embraces not just human self-awareness but also the generalized teleological nature of organisms, or “psychism.”⁴

In 1955 botanist Edmund W. Sinnott described this defining characteristic of organic life and behavior as “the insistent tendency of living things for bodily development to reach and maintain, as a norm or goal, an organized living system of a definite kind.”⁵ This teleological character, which Sinnott believed is continuous throughout the spectrum from organic development to behavior, is what Teilhard wishes to extend all the way to the matter of physics; and Sheldrake appears to adopt the same position when he says that “habit” or “collective memory” is the dynamic behind not only organic development but the formation of crystals and molecules.

We must, of course, elaborate upon what is meant by “collective memory” but before doing so it is essential to understand how “interiority” is manifest in a living body. Here we may cite Aristotle: “The parts of plants are in spite of their extreme simplicity ‘organs:’ e.g. the leaf serves to shelter the pericarp, the pericarp to shelter the fruit, while the roots of plants are analogous to the mouths of animals, both serving for the absorption of food.”⁶ What Aristotle here describes is a system of *cooperating functions*. The expression “serves” indicates a functional relationship among the parts of the system. In such a relationship, the function of an organ supports the whole, which at the same time supports the functioning organ. Because this constitutes a system of mutual “purpose,” the system *as a whole* necessarily exhibits a teleological character.⁷

In Sheldrake’s theory what roughly corresponds to Teilhard’s *radial energy*, the energy of self-centered organization, is Sheldrake’s idea of whatever it is that drives habit, or “collective memory.” So we come to the crux of the matter. What establishes or creates “collective memory” are *fields* called “morphic fields” whose influence on matter causes material substances to take on specific forms. The term “morphic fields” refers to an overarching category that includes all forms of organized interrelationships, starting with *morphogenetic fields*, which “influence” development of forms such as the forms of crystals, molecules, and biological structures, to *behavioral fields* and *social fields* (pp. 12-13).

Morphic fields are “physical entities that can have physical effects” (p. 78). It is through their physical effects that the fields “influence” both the development and continuance of organized interrelationships. Morphic fields at all levels, therefore, are the physical causes of the existence of form in the universe. “Each kind of system...must have a specific kind of morphogenetic field: thus there must be one kind of morphogenetic field for protons; another for nitrogen atoms; ...another for the kidneys of sheep; another for elephants...and so on” (p. 95).

The role played by morphic fields in creating “habit” or “collective memory” is that forms existing in the past exert a causal influence on the development and maintenance of subsequently existing forms. The means by which this influence from past to future is enabled is through similarity. A form will be repeated “because the form of the first system would...determine the form taken up by subsequent similar systems.” This happens “because of a trans-spatial and trans-temporal influence from the first such system.” The attraction of form-to-similar-form across time and space is called “morphic resonance.”

Finally, the issues of morphology such as regulation, regeneration, and reproduction are resolved by reference to the morphogenetic fields that impinge upon each living or developing system. If accident interferes with the development of an organism, its associated morphogenetic field makes the necessary corrections. This takes place because of two factors: First, the morphogenetic field has a causal relationship to the developing form; second, the field exercises a teleological effect: it “contains” the “virtual form of the final system” (p. 97). Thus the morphogenetic field (and presumably all morphic fields at whatever level) acts much as would an Aristotelian “final cause.”

Sheldrake explains the causal relationship between morphic fields and the organic forms they bring into being by postulating a previously unrecognized type of causation which he calls *formative causation*. This mode of causation is not the same as energetic causation, which is that studied by traditional physical science. There is, then, a parallel of intent, if not of detail, between Teilhard’s two energies, tangential and radial, and Sheldrake’s two forms of causation, energetic and formative. Teilhard, however, insisted that in the final analysis, there exists only a single energy in the universe which has two aspects, radial and tangential, while Sheldrake does not appear to take this route. Formative and energetic causation are two separate kinds of causality, not expressions of a single universal energy.

II

When I first encountered Sheldrake’s ideas back in the 1980s, I was quite interested in them. There is a seductive character to the concept of morphic fields existing in a kind of subspace or invisible modification of space-time, able to leap across from past to future, and exerting the necessary teleological influence which explains the inherent directiveness of organic life. This theory is especially attractive to those who find a mechanistic universe repugnant, and a dualistic universe that severs consciousness from matter equally repugnant. Sheldrake’s theory seems on the surface to satisfy the need for a non-dualistic, non-mechanistic reality. Unfortunately, on this 2009 re-reading of the text, I must conclude that Sheldrake himself has been mesmerized by the seductive character of his theory to the point where he has lost track of, or does not wish to carry out, the degree of analysis necessary to test the coherence of his own argument.

What Sheldrake actually has done is to create a *secondary pseudo-reality* dwelling in a debatable realm of its own, to account for what happens in primary reality. For all of his efforts to insist that morphic fields are “physical entities” that exist as “spatial structures” having “physical effects,” he is simply unable to make this stick because (a) eventually the concept of a morphic field turns out to be hopelessly confused, and (b) he defines morphic fields into a physical limbo from which there is no return.

A critical point in Sheldrake’s theory is his separation of morphic fields from known fields of science such as gravitic and electromagnetic fields, by asserting that morphic fields achieve their effects by means of a different order of causality, which he calls “formative causation” in contrast to “energetic causation.” It is not clear just why Sheldrake chooses to separate morphic fields from known fields of science; but it may be because of significant differences in the way the fields achieve their claimed effects. Whatever the reason, he does separate the action of morphic fields from the action of gravitic and electromagnetic fields by means of his distinction between formative and energetic causation.⁸

He then has two problems. The first is to explain what “formative causation” is, and the second is to explain how this mode of causation “enlists” energetic causation in order to create and maintain physical systems. He attempts first to justify the concept of formative causation by arguing that there are other types of causation than energetic causation. To support this he uses an example taken from architecture (pp. 93-94).

“In order to construct a house, bricks and other building materials are necessary. So are the builders...and so is the architectural plan that determines the form of the house...Thus the plan can be regarded as a cause of the specific form of the house...similarly, a specific morphogenetic field is a cause of the specific form taken up by a system, although it cannot act without...the energy necessary to move [materials] into place.”

The problem with this is that the plan of a house is not a cause at all. Sheldrake seems to have been thinking of the idea of “formal cause” attributed to Aristotle. But this use of “cause” was due to a mistaken translation. The plan of a house is rather an example of what Aristotle called one of the *aitia*, or “explanatory factors” involved in defining the nature of something. Unfortunately the Greek term *aiton* was translated as “cause” and so the plan of a building, or a statue, or anything else, was called a “formal cause.” Calling the plan of a house a “cause” in the sense of its being an *aiton* does not establish that there are more kinds of *causes* than the causality investigated by scientists by means of statistical methods and correlations.

Sheldrake stresses the analogy between the plan of a house and the causal efficacy of the morphic field by claiming that the field contains *information*, the way the plan of a house provides information necessary for the building of a particular house. In so doing he reveals that he is not citing the alleged causality of the house plan merely to illustrate that there can be different kinds of causes, but rather that his comparison is precise: the information-content of the morphic field guides the form of an organism in essentially the same way that the house plan guides the construction of a house.

But if the morphic field is to affect the development or continuance of a system, there must be some sort of intermediary apparatus that can access the information presumed to be carried somehow within the field and put into action the required “energetic” causes. As far as I can tell Sheldrake is unable to explain how the connection between the information supplied by the morphic field and the necessary material energies can be accomplished. He has separated morphic fields from known fields by defining them as “non-energetic” (p. 94). Sheldrake submits that the only way to detect these non-energetic fields lies in the phenomena they are claimed to cause (p. 99). This makes the idea of morphic fields as causes teeter very close to being an *ad hoc* explanation.

It is true, as Sheldrake points out, that electromagnetic and gravitic fields are, in a sense, only detectable by their effects. However, in the case of these known fields there are two significant differences. The first is that they can be described with mathematical precision from which predictions may follow. It could be argued that there is no precise predictive mathematical formulation for morphic fields because organic phenomena are not susceptible to such precision, but this is what we know already without reference to morphic fields.

The second difference is that known physical fields are brought into existence by the presence of some generating physical structure: In the case of gravity, the presence of mass; in the case of magnetism, a current flowing through a wire, or an existing magnetized metallic object. Sheldrake argues that similarly a morphic field is generated by the presence of an organically structured physical form. To make this argument he introduces the idea of a “morphogenetic germ.” A morphogenetic “germ” is an “already organized system” which then “becomes surrounded by a particular morphogenetic field because of its characteristic form” (p. 97).

The natural objection that arises is that since organized living systems are said, in effect, to be caused by morphic fields, and morphic fields are now said to originate as a result of the existence of “already organized” living systems (serving as “germs”), we have been led into a circular causality. Sheldrake cannot avoid this issue by proposing that morphic fields for every possible form in the universe exist prior to their physical embodiments, because this would be to adopt an essentially Platonic view. If Sheldrake were to

admit to a Teilhardian radial energy, then the emergence of the first organized form would be accounted for; but then there would be no need for adding his secondary level, the realm of morphic fields.

Sheldrake dismisses this issue by saying that his theory does not address the question of origins. That, he says, is a metaphysical question that goes beyond science (p. 237). This is a faulty argument, because the question is not about ultimate origins, but rather about causality. In his effort to make morphic fields analogous to gravitic and electromagnetic fields, he needs some originative agent. The only thing that might be appealed to for giving rise to a morphogenetic field is a developing organism itself. But it cannot be a developing organism without a morphogenetic field. The circularity here is a logical flaw, not something to be cast off as a metaphysical question.

This difficulty is brought into sharp focus by the factor of teleology. A morphogenetic field must “contain” the “virtual form of the final system,” that is, it must bear within it the teleological directionality that is the mark of organic being. Whence, we must ask, is the newly generated morphogenetic field to receive this telic impulse? It can only be derived from the originating agent, i.e. a pre-existing organized system that may serve as the “germ.” But if the pre-existing system already is possessed of the telic impulse, there is no need for a morphogenetic field to explain its developmental characteristics. If it is not, then the morphogenetic field to which it gives rise cannot possess the “virtual form” and so is a useless superfluity.

What we are encountering here is a simply unacceptable degree of conceptual confusion. It compounds itself as Sheldrake proceeds to modify the character of morphic fields to match whatever is needed. Among the many cases where he makes such adjustments is this: “If a system were associated with a different morphogenetic field, it would develop differently” (p. 94). This is an empty tautology, whose implied reverse highlights the emptiness, e.g. *if a system develops differently, it is associated with a different morphogenetic field*. On the surface this may appear informative, but upon reflection one realizes that no matter what variations in organic development may occur, the morphic fields in their parallelism will be modified accordingly; and this without end, because at the level of empirical investigation, organic existence is *not* a matter of mathematical precision, and the concept of *form* is itself not absolute but dependent on context.⁹

In pursuing this course Sheldrake has to give morphic fields puzzling and contradictory properties. On one hand he continually uses spatial terminology to describe them: they “contain” the virtual form; they “surround” and “embed” the physical form; they have *sizes* and are capable of changing their sizes to match the sizes of one or another physical system. On the other hand, with respect to their causal efficacy (by formative causation), they are essentially “information.” in which case it would seem that they might have no size, or at least would not have to match the sizes of their physical counterparts.

On yet another account, they are “probability structures” (p. 105). Furthermore, they must *vibrate*, because the way in which past morphic fields attach themselves to present or future physical systems (in order to engineer “collective memory”) is through their resonance with the vibratory characteristics of the systems they control. Aside from the peculiar question as to how a “probability structure” might come to vibrate, there is also the question of how a present system can develop a form sufficiently similar to the form of a past system without having its own *present* morphic field, obviating the necessity for attracting a past morphic field by means of resonance. Here the chicken-and-egg problem of circular causality re-asserts itself.

Thus the picture is that “probability structures,” carrying information and containing “virtual forms” have sizes, change sizes as required, occupy space, cause causes, travel through time, and vibrate in resonance with vibrating physical systems. Moreover, their origin is a logical impossibility because they are engendered by the things they engender.

Now this conceptual morass testifies, in my opinion, to the likelihood that because the general idea of controlling fields in mysterious regions of space has such a mesmerizing effect, these issues are simply set aside. Instead Sheldrake takes up the major part of his text by re-describing known systems with an overlay

of his hypothetical construction. This move becomes extremely elaborate and does not constitute any sort of proof of the existence of morphic fields. Nevertheless the phenomena of morphogenesis do lend themselves to his descriptions in terms of fields, which gives these re-descriptions an aura of significance.

One reason for this is that the concept of *field* is at once unclear and ambiguous. One application of the term which does not postulate the existence of a spatiotemporal modification such as that of a gravitational field, is in a phrase like “field phenomenon” as applied to any system which is not susceptible to description in terms solely of the operation of its individual parts. An ecosystem, for example, is appropriately described as a field phenomenon.

The basic meaning of the term “field” is that it refers to a region whose boundaries are characterized by some common structures or activities, e.g. a playing-field or a field of wheat. In the case of a “field phenomenon” the reference is to a region of forms and activities which demands a transactional rather than an interactional description. By a transaction is meant the sort of relation a buyer has to a seller, or a yucca-moth to a yucca flower: neither can be fully described without describing the other.¹⁰

Such a transactional system of functional relationships, or a *field*, exists in its own right and calls for a field-specific description. There is no warrant for proposing that this kind of activity requires an additional factor, a “field” like a gravitational field, to account for its existence. Sheldrake notes in his text that biologist Waddington understood the concept of a morphogenetic field as “essentially a descriptive convenience” (p. 69). But Sheldrake evidently feels that he must establish an external cause for the relational characteristics of a system on the grounds that such a system cannot exist on its own. Sheldrake reveals this tendency when he complains that an approach like Waddington’s does not “explain” morphogenesis. Sheldrake appears to identify explanation with some sort of mechanistic causal account, so he supplies morphic fields as causes.

The postulation of a morphic field which is a separate physical entity from that of the transactional system proper has another role to play in Sheldrake’s theory. The morphic field is the means by which Sheldrake believes he can account for habit, or the procreation and behavior of similar forms throughout time. He needs something that “contains” the form of a given system but can separate itself from the original system in order to transit time and space and associate itself with a future system. For example, He proposes as evidence for the existence of morphic fields a number of cases where some new form proliferates over time in ways that would be explained, perhaps, if there were morphic fields. However, since the very concept of morphic fields is *ad hoc* and conceptually faulty, it must be discarded as an explanation. That may leave the question of proliferation of similar forms simply unexplained, as part of a larger problem, which I shall discuss briefly below.

III

What Sheldrake is really wrestling with, unsuccessfully in my opinion, is the deep problem of *the nature of time*, particularly as time is experienced through the existence of memory. Another formulation of this problem is that it is the problem of what accounts for continuity of consciousness, or by extension, the continuity of organic life over time. It is a problem that was important for Kant in his *Critique of Pure Reason* and which, with respect to human consciousness, prompted Kant’s theory of the “synthesis of reproduction in imagination.”¹¹ However the problem extends beyond the sphere addressed by Kant to include biological continuity as well. Sheldrake’s theory is, at its center, a response to this issue, although in my view it fails for reasons I have outlined above and for other significant problems I have not taken up in detail.¹²

It is with respect to this deep problem that Sheldrake’s account stands out as having some features of a mechanistic explanation, and some features of a vitalistic one. His account is a mechanistic one because

what he is looking for is some mechanism to *cause* organic behavior, and has proposed morphic fields acting through “formative causation” as this mechanism. Regarding this particular aspect, Sheldrake’s hypothesis is strikingly analogous to Aristotle’s view regarding the existence of motion in the universe.¹³

Everything that moves, Aristotle reasons, must be moved by something else. But there cannot be an infinite regress of movers. Therefore there is a first, unmoved mover that is the cause of all motion in the universe. Similarly, Sheldrake requires an exterior cause for the continuity of development in organic life. Such life cannot, apparently, manage to develop, adapt, and procreate over time on its own, so there must be a kind of “unmoved mover” in the form of the morphic field that causes this behavior. The analogy with Aristotle’s view is very close. Because the unmoved mover does not move, its only possible action is thought, or “perfect contemplation.” This would be analogous to the “information” present within a morphic field, which affects movement in a developing system without actually engaging in energetic causality. “Formative causation” is a kind of conceptual causality like the thinking of the unmoved mover. Echoing the question of how an unmoved mover can move anything, Sheldrake has the problem of how formative causation can translate into energetic causation, or how the plan of a house can “cause” a house.

What we have entered here is the realm of metaphysics. As such, Sheldrake’s hypothesis also has some characteristics of vitalism, because an unmoved mover (a non-energetic cause) cannot be detected in the physical universe and it affects matter in a mysterious way from a realm of pure contemplation, i.e., it exists in a secondary reality whose connection with the empirical world is inexplicable, just as the connection between some *elan vital* or “ghost in the machine” and living beings is forever a mystery. To some, in fact, Sheldrake’s view “affirms the profoundly vitalistic idea that nature develops in harmony with invisible, immaterial, but powerful forces.”¹⁴

There is also a similarity, or resonance (if I may use the term) between Sheldrake’s ideas and the notion of sympathetic magic. One might consider “conceptual causality” as a power of thought to move objects or achieve results in the physical realm without resorting to energetic causality. Thus Uri Geller bends spoons apparently by thinking about bending them. Or voodoo, where whatever is done to a doll made to be similar to a person will affect the person in reality, because of the analogous relationship between the doll and the person.

The closeness of Sheldrake’s edifice to metaphysical theories may account for its high degree of fascination that seems to overwhelm recognition of the underlying conceptual problems. It is worth pointing out in this connection that Sheldrake appeals to an elaborate architectonic, which he attributes to organismic theory with connections to A. N. Whitehead and Arthur Koestler, that describes a hierarchical developmental process which is actually a form of certain widespread metaphysical architectures found in eastern and esoteric thought.

For example, the system of chakras and the development of enlightened consciousness through the progression of Kundalini (a type of energy) in sequence from the root chakra to the crown chakra is based on essentially the same architectural scheme. Development occurs through a series of stages. Each successive stage is integrated with the previous ones by means of analogy of form (the chakras are represented as unfolding flowers having an increasing number of petals), and yet each chakra represents a functional component of a whole system of consciousness. The chakras themselves, like morphic fields, are invisible to ordinary (non-spiritual) vision. And like morphic fields, they are sometimes given a physicalistic description by claiming they are made up of “very fine atoms” too fine to be seen, but by means of which one chakra can “interpenetrate” another.¹⁵

Thus the borderline between Sheldrake’s effort and metaphysical theories appears very thin. Sheldrake has in fact mounted an heroic effort to bring these essentially metaphysical and vitalistic ideas into the realm of physics. Some may think it unfortunate that he appears to have failed. Others may, on seeing this failure, realize that perhaps the phenomena of life and consciousness do not need exterior support for their existence,

but are rather features of a living universe that simply have to stand on their own and be dealt with at their own unique level of description.

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ENDNOTES

1. London, Icon Books, 2009.

2. The term "organicism" in biological theory is generally attributed to biologist Wm. E. Ritter in 1919.

3. "The Ghost in the Machine" as Gilbert Ryle called it in *The Concept of Mind* (Barnes & Noble, 1949).

4. Teilhard, Pierre (de Chardin), *The Phenomenon of Man.*, Harper Torchbooks 1961, pp 35-36, 57n., 60.

5. Sinnott, Edmund W., *Biology of the Spirit*, Compass books 1955, p. 84.

6. Aristotle, *De Anima*, Book II Chapter I.

7. The concepts of functional complementarity, complexity, teleology, and interiority, in this context, are all aspects of the idea of organic being.

8. Teilhard, in contrast, places gravitation on a continuum of development with biological and psychological emergence. Cf. Teilhard, Pierre, *Activation of Energy*, Harcourt Brace Jovanovich 1971, p. 168. Orig. pub. 1963.
9. Cf. Braude, Stephen, "Radical Provincialism in the Life Sciences: A Review of Sheldrake's *A New Science of Life*," *The Journal of the American Society for Psychical Research*, Vol. 77, January 1983.
10. Cf. Dewey, J. and Bentley, A., *Knowing and the Known*, Beacon Press 1960, pp. 69, 73, 89 etc.
11. Cf. Wolff, R. P., *Kant's Theory of Mental Activity*, Peter Smith 1973, p. 119. Orig. copyright 1963.
12. See Braude, op. cit., for a detailed analysis of other problems with Sheldrake's theory.
13. Aristotle, *Metaphysics*, 12.7, 12.8.
14. Cf. <http://www.bookrags.com/research/vitalism-wob/>
15. Cf. my paper on this topic, "Models of Development in Eastern and Western Thought," at <http://www.stanmcdaniel.com/pubs/development/development.html>