MEDIATION AND MEANING

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ABSTRACT

In their co-authored work, Retrieving Realism*, Hubert Dreyfus and Charles Taylor argue that an unfortunate epistemological picture holds us captive. Thinkers enmeshed in this picture focus on what mediates our knowledge when an inner self is distinguished from the outer world. This stance, they say, encourages doubt about whether we really know what we perceive. In this essay I argue that mediation, properly understood, and the inner/outer distinction are crucial for understanding how we know. The stratified ontology of Michael Polanyi and the emphasis on interpretation in biosemiotics provide an approach, set in an evolutionary framework, for illuminating the richness of reality. This richer view examines how and what we can know, the unfolding nature of consciousness, and the embodied depth of existential meaning.*

Introduction: Mediation Critiqued

In their important co-authored book, *Retrieving Realism*, Hubert Dreyfus and Charles Taylor begin by stating that they will develop an epistemology and ontology that counters "a picture [that] held us captive" (a phrase they borrow from Wittgenstein). We are, they claim, subject to a fundamental background framework mistake that has distorted the way we understand the world and thus act within it. This mistake is "a kind of operative (mis)understanding of what it is to know, which has had dire effects on both theory and practice in a host of domains. To sum it up in a pithy formula, we might say that we (mis)understand knowledge as 'mediational.'"[1]

That Dreyfus and Taylor (henceforth D & T) choose the term "mediational" for the framework mistake they seek to correct strikes me as highly unfortunate. For, as I will seek to show in this essay, *all* significant actions of living beings, including thinking, are mediational in some sense. Mapping the various biochemical processes and pathways of signal transduction, for instance, is currently one of the most active areas of biological research, with new experimental results reported weekly in such on-line journals as *Science Signaling*.

So what do D & T mean to reject when they emphasize the unfortunate nature of "mediational" epistemology? They intend to replace a number of views originating in the Cartesian mind-matter dichotomy, a dualism in which reality is "outside," while our knowledge of that reality is "inside." They indicate that in this "problematic" view, "I have knowledge of things *only through*…these inner states, which we call 'ideas.' We want to call this picture 'mediational' because of the force of the claim which emerges in the crucial phrase 'only through'" (D & T, 2, my emphasis).

D & T believe that accepting an inner/outer structure is the first step toward ontological disaster. The disaster D & T foresee is rooted in skepticism: how are we "in our mind" really sure that we know what is "out there?" How do we know mediation grants us a true picture? When the inner/outer structure is unthinkingly presupposed, they say, the "mediating elements here are 'ideas,' inner representations; and so the picture in this variant could be called 'representational.' But this, as we shall see, is not the only variant. This particular version has been challenged, but what has often escaped attention is the deeper topology…" (D & T, 3). In the empiricist tradition exemplified by Locke, after a person passively receives impressions from outside, "the idea is the first effect that this process of impinging makes on the mind, prior to any combinations or connections which the mind itself sets up" (D & T, 9). This view is what Wilfrid Sellars called "The Myth of the Given." Kant shifted the epistemological framework to distinguish inner from outer sense, but D & T state that nevertheless the problematic mediational picture still remains unchallenged. The "linguistic turn" within analytical philosophy also retains the topology that is problematic for D & T. The mediating elements here are not ideas and images, but rather sentences held true. These can be seen as a collection of "beliefs." Finally, Quine in his approach of naturalized epistemology also assumes knowledge of reality is mediated, the mediating element he emphasizes being our receptors.

How do D & T suggest we escape the mediational picture so as to gain clearer purchase on the nature of reality? They claim a phenomenological understanding of human existence ought to take interpretive precedence over traditional epistemological approaches. This phenomenological approach allows them to speak of our experienced *contact* with the real. Hence they are suggesting that it is best to bypass epistemology and substitute experienced ontology as the most adequate way to understand reality.[2]

The authors turn to the thought of Heidegger, Merleau-Ponty, and Gadamer as redemptive resources for their phenomenological approach. Human engagement in the world, not the abstract categories of epistemology, illuminates the real, they claim. Engagement requires coping. Experience provides us with our needed coping skills based on a background of understanding which is holistic and non-propositional (D & T, 83). I have no problem with this way of stating things so far as it goes. But what I object to is the implied claim that this is a sufficient way of understanding reality. Moreover, what D & T claim to have accomplished by moving from mediation to contact is deeply problematic: "So far we have argued that, once freed from the mediational picture, we can see that we are in *unmediated touch* with everyday reality" (D & T, 131, my emphasis).

Rethinking Mediation

It makes no sense to say that unmediated contact with reality must replace a mediational view. To have any awareness that our embodied self is in contact with the material surroundings in which we cope, a mediational process must take place. For instance, in visual perception, light waves (already a mediating phenomenon connecting object with eye) enter our eyes and their embedded imagery is focused by the cornea and lens so that it strikes the rods and cones of our retina in an order that corresponds to the spatial order imbued by the objects seen from the viewer's particular perspective. In the retina a transductive process takes place whereby the impacting light is transformed into neuronal signals that travel to the brain. There a further form of transduction occurs. Networks of neurons transpose the input from the eye into vision. We are able to see and interpret the objects from which the light originally reflected.[3] So then, when perceiving an object are we in direct, "unmediated touch with everyday reality?" Hardly. Have we escaped an inner/outer relationship? Hardly.

Now I do not think D & T are oblivious to the above scientific understanding of how perception arises. Indeed, after we establish our primordial contact with the real, they think a scientific understanding of the world has a culturally ordained spot in Western ontology (D & T, 149). My concern is that they make a vocabulary mistake in labeling the view they reject as "mediational." In contrast to their approach, I believe recognizing the many sorts of mediated perspectives we can indwell is the royal path to comprehending the multi-dimensional richness of the real.

To be sure, both the Lockean empiricist and D & T make valid phenomenological observations as well as employ misleading language. In stating that ideas organize phenomenal impressions directly given to us in conscious form, Locke correctly recognizes that we are generally unaware of any mediating processes that deliver these impressions. The problem with Locke is that he seems unaware of or at least ignores the shaping impact of the many environmental, biological, and cultural factors influencing

what we see and what we think. In dismissing the Myth of the Given, D & T correctly recognize that there are many tacit processes that do in fact shape how we select and assess what we perceive. The problem with D & T is that their expulsion of "mediation" as an explanatory term suggests, counter to their intentions, that the mediating influences of environmental, cultural, and psychological factors are unimportant or even non-existent. Their intended exclusion of the term "representation" from epistemological discussion is also, as we shall see, unfortunate.

Michael Polanyi's theory of epistemology, which claims that often unidentifiable subsidiary factors must be integrated to form focal knowledge, in effect supports the view that knowing always requires an "only through" process. C. S. Peirce's theory of signs, so important for biosemiotics, is in its triadic form thoroughly mediational in its epistemology. If D & T had relied on Polanyi's or Peirce's epistemology, rather than depending so much on Heidegger, their misuse of "mediation" would not have been so likely.

Three reasons for seeing the importance of mediational epistemology may be all too briefly given. First, the inner/outer view, or comparable dualities, the subject-object or mind-matter distinctions, are only a problem when subject and object, etc. are regarded as Cartesian substances, entities which by definition are ultimate realities that depend on nothing else. There is thus a problem of seeing how such ultimate entities are related when no greater ground exists that can be referred to in order to explain their connection (unless it be God, as Descartes argued). But since, beginning with Hume, the idea that mind and matter are substances has been strongly called into question, thinking in terms of substances has died out. This leads to the second point, basic within biology: subjects (the "inner") must have some reliable knowledge of the "external" world or else they would not have survived. And, thirdly, biological research has successfully described and explained many of the mediating processes that allow for that reliability.

Agreed, there is a phenomenological aspect of knowing that the language of mediation may tend to obscure. In our experience we *seem* to be connected directly with the object known. To facilitate survival, we (or any animal) must deal directly with objects at our level of perception in order to find sources of nutrition or avoid dangers. No doubt D & T understand this, but it is Dale Cannon who illuminates how properly to accommodate the reality of both the underlying reality and phenomenal experience. After describing how Polanyi makes use of the idea that with a probe we can experience the shape of a cavity which we cannot directly perceive, Cannon notes that "we have incorporated the probe into our embodied being and are there at the tip of the probe, inside the cavity; the probe has become an extension of our perceiving fingers, an extension of our embodied self."[4] Cannon then makes the crucial point:

> In this case it is in an important respect misleading to speak of our knowing of the cavity as *mediated by* the probe (or by the impact of the probe upon our hand and fingers) in the sense that there is something (a mediating *object*) coming between us and the cavity, separating us from it. So also, on Polanyi's account, anything serving in the same capacity as a probe, extending the reach of our body's perceptual acquaintance, should not be conceived to *mediate* that acquaintance—at least not in the sense that we would be directly acquainted only with the "mediating" probe and not the thing itself.[5]

The problem with much talk of our *representation of reality* in imagery or language is that these mediating representations when focused upon do exactly what Cannon warns against: they come between the knower and what is known and undermine performance success, create unwarranted division between reality and appearance, or when put into metaphysical terms, sunder realism from idealism. This, of course, relates to the pianist in Polanyi's account who thinks about her finger placement while playing a sonata. Concentration upon a component part or mediating process dissolves the whole performance.[6] When we attend to what mediates in ontological theory, reality is divided up into perceptual object, mediating process, and subjective knower. If in relation to this triad one emphasizes the ontological priority of the real object, one becomes a realist of some sort. If one emphasizes that it seems meaningless to speak of an object apart from our cognitive grasp of it, one becomes an idealist of some sort. So an important aspect of the great twentieth century obsession with overcoming dualisms has been to stake out a mediating position between but also inclusive of subject and object. Peircean semiotics, Deweyan experience, Husserlian phenomenology and Heideggerian Dasein are representative illustrations of approaches that emphasize mediational middle ground in some sense.

How then does one adjudicate between the various candidates for mediational superiority? That very question seems to presuppose that the candidates occupy the same ontological level so that one might choose between them like one might pick out the beauty queen from a lineup of aspirants or observe which horse wins a derby race. Here, however, Polanyi's notion of stratified reality offers a better alternative. Object, complexly stratified mediational process, and subject are each real, but are perspectively known at different levels and consequently with different contextual relationships influencing each. That is, rather than seeking some interstitial common ground (a subtle new form of foundationalism?) like "Dasein" to interpret human experience, better it is to see how subject, mediational process, and object all have merit as perspectival interpretations of one aspect of many-layered reality. No one of these approaches is appropriately designated as primary: "There is no privileged level in biological systems

that 'dictates' the rest."[7] This systemic view that has emerged in biology applies also to ontology in its interface with epistemology.

Grounding Epistemology in Biology

To better formulate a biologically informed, philosophically apt theory of knowing and the nature of reality that is not subject to the flaws of D & T's model, I will seek to further embed mediation and the inner/outer distinction in a system that draws upon the insights of biosemiotics and thinkers such as Polanyi and Langer. In addition to "knowing," the notions of interpretation, emergence, understanding and meaning will be shown to be essential to the comprehensive vision I shall sketch.

Let us begin with a metaphysical claim that provides an ontological framework for the ensuing discussion. Kant's much debated distinction between phenomena and noumena (and the related distinction between inside and outside) still seems to me to be not only useful but essential. In ordinary experience, noumena, or things as they are in themselves, cannot be identical with (reduced to) phenomena, things as we perceive them. Things as we know them are known through the mediation of the physiological processes of perceiving and through language. These allow a person to transcend the physical boundaries of the self and gain a perspective upon the many forms of independent otherness. To think that we can know all there is to know about the many layered complex things of the world is a form of megalomania. Polanyi is on track in noting that reality manifests itself inexhaustibly and often surprisingly. This awareness of our inability to completely grasp the "otherness" of reality and define it is what is indicated by the term "noumenon." Heisenberg's uncertainty principle showing that we cannot know simultaneously the position and momentum of a particle is a physical expression of the limits of knowing at a quantum level. But surely it is intuitively obvious that there is a meaningful distinction between what we can know about a thing or process, even using advanced technology, and how it is or behaves at each of its many complex levels of being, including its potential interactions with other things in differing environments.

We have seen that D & T feel that the distinction between inside and outside leads to harmful skepticism about what we can know: "In whatever form, mediational theories posit something which can be defined as inner, as our contribution to knowing, and which can be distinguished from what is out there" (D & T, 46). In opposition to such a view, D & T argue for an enactional view of knowing based on Merleau-Ponty's discussion of the embodied agency of a person coping with the demands of everyday life. But doesn't knowing how to cope in everyday activity exist on a different level than theoretical knowledge that explores the nature of things? Of course, one kicking a football or choosing what to wear for a party or trying to figure out which bus line to take is not concerned with inner/outer or phenomenal-noumenal distinctions. The latter

is theoretical, the former practical, and both have their uses. But wholly to substitute the practical for the theoretical is analogous to substituting the moral for the scientific. One blurs a difference in kind to the detriment of each.

When we take the type of reflective, exploratory stance found in science, in contrast to a coping stance, the inner/outer distinction and mediation seem imperative. Polanyi would insist that both stances make use of personal judgments, but the committed, reflective stance of science is oriented toward determining truth, expressed with universal intent, whereas in the coping stance one seeks to get by as best one can. Such an approach, it seems to me, may encourage a relaxed attitude toward observing moral, aesthetic, epistemological, religious, and even practical standards if such do not help one cope. That would lead to a world in which painful striving and sacrifice have no standing. D & T need to articulate a richer model of coping to show how and why their model does not facilitate such consequences they surely do not support.

What makes the inner/outer distinction so important for epistemology—for life? To answer this question, I advert not only to my notion of the three orders of emergence,[8] but also to biosemiotics, especially as interpreted by Jesper Hoffmeyer,[9] the emphasis on structure and morphology found in the article by Bárdos and Zemplén in this issue of *Tradition & Discovery*, and the evolutionary account in Part IV of Polanyi's *Personal Knowledge*. I claim that the biological world (second-order emergence) arises from the dynamo-physical world (first-order emergence) precisely because it ushers in an inner/outer relationship between a living being and its environment. The dynamo-physical world has no center, no meaning-laden inner/outer distinction, and no purpose; it is governed by the indifferent laws of physics and chemistry. With the emergence of life, however, individual centers with purposes conducive to survival come into being. Living organisms are examples of autopoietic (self-organizing rather than externally controlled) systems.[10]

> According to the biologist-philosopher Gail Fleischaker, all autopoietic systems share three traits: they are self-bounded, self-generating and self-perpetuating. They are self-bounded in that autopoietic systems are surrounded by a cell membrane, skin or shell that simultaneously encloses the system while allowing it continuity with energy and materials from the outside world. They are self-generating, such that the entire system, including the boundary, is produced by the system itself.[11]

Because living beings have purposes, their ontology cannot be completely or adequately understood through the purposeless deterministic laws of physics and chemistry, even though these laws are never violated. The inert objects of the dynamo-physical world *react* to impinging forces, whereas living beings can also *act*. The

difference between "incoming" forces and "outgoing" actions presupposes the inner/outer distinction, as does the existence of enclosing membranes or skins. Action is ultimately powered by metabolism: "Metabolism can very well be considered as the defining quality of life: every living being has it, no nonliving being has it."[12] And the actions funded by metabolism are telic in nature; they are intimately bound up with life's many-faceted meanings.

Mediation in biology takes place within the boundaries of living beings (sign processes which Hoffmeyer, following Sebeok, calls "endosemiotics")[13] but also in relation to that which exists outside those boundaries. Yet this description may not fully reveal the extent and importance of mediation in biology and indeed in all the orders of emergence. For example, skin should not be thought of simply as a barrier limiting mediation, although it is indeed a constraint. Hoffmeyer gets at how skin is involved in rich layers of information exchange, sign processing, and meaning creation in these comments:

> *The skin keeps the world away in a physical sense but present in a psychological sense.* It is the skin that gives us the experience of belonging—it allows us to feel the world. But the very fact that the world can be felt is already a complex phenomenon that doesn't just presuppose that there are receptors (sensory cells) in the skin that register touch, pressure, pain, cold, warmth, pH, and various chemical influences, but also that biological *meanings* are assigned to these sensations. It is not enough to sense; organisms must also create functional interpretations of the myriad of sensory stimulations so that these do not become isolated incoming impulses but are integrated into a form that the body understands and can act upon appropriately.[14]

This passage from Hoffmeyer gets directly or indirectly at a number of the keys concepts needed for understanding mediation and meaning in biology. The living entity can be regarded as a systemic whole (a centered being) responsive via receptors to environmental inputs (sensory stimulations) and able to integrate these stimuli into functional interpretations that have *biological* meaning issuing in purposeful behavior. Michael Polanyi uses the terms "achievement" and "rules of rightness" to describe the purposeful processes and goals of biological meaning.

To be somewhat less abstract, let us examine a particular animal to see what overall characteristics must be accounted for in any relatively comprehensive biological description. Take a dog. Fido exhibits the same basic structure over many years. This is so even though Fido undergoes a continual process of cell death and replacement and constant movement of fluids within its body. The structure of cells, organs, bones, nerves, arteries, ligaments, etc. functions to constrain and control processes so that

the energy provided by food is distributed in a way that maintains Fido's health. The importance of Fido's bodily structure must not be forgotten in haste to examine the biosemiotic processes going on within that structure. The fact that basically a duplicate structure, a junior Fido, is produced through Fido's reproductive activity reminds us that some quite specific rules must guide the morphogenesis and maintenance of Fido's species-specific structure.

Polanyi on Biotic Emergence

In relatively simple terms, Polanyi identifies the basic functions of biological performance to be carried out according to *operational principles* and *regulative actions*.

> Machine-like functions operate ideally by fixed structures; the ideal case of regulation is an equipotential integration of all parts in a joint performance. Both kinds of performances are defined by rules of rightness and these refer in either case to a comprehensive biotic entity. But there is this difference. Machine-like functions are ideally defined by precise operational principles, while the rightness of a regulative achievement can be expressed only in gestalt-like terms. One's comprehension of a machine is, accordingly, analytical, while one's appraisal of regulation is a purely skillful knowing, a connoisseurship. Yet both kinds of performances have it in common that their rightness cannot be specified in the more impersonal terms of physics and chemistry (*PK*, 342-343).

In this selection from Part IV of *Personal Knowledge*, Polanyi applies to anatomy and physiology the two types of order (corporate and dynamic) he articulated in his 1941 article, "The Growth of Thought in Society." In his above analysis of biology, genetic influence (or in more current terms, genetic-environmental integrated influence) would supply operational principles to the body regarded as a machine (for instance, in morphogenesis) in a way that is analogous to the corporate order that a CEO imposes on subordinates. Whereas in stating that biotic regulation involves an equipotential integration of all relevant internal and external factors, Polanyi makes use of the notion of dynamic order, such as is found in economic activity. He illustrates the forming of such spontaneous order by speaking of water settling down in a jug: "In this type of order no constraint is applied specifically to the individual particles; the forces from outside, like the resistance of the vessels and the forces of gravitation, take effect in an entirely indiscriminate fashion."[15] Animals and plants likewise regulate their activity as they seek to be in equilibrium with environmental forces. Even Polanyi's biological notions of achievement and rules of rightness have an equivalent in his description

of dynamic order in society: The elected "influentials" in religion, law, science, art, and other cultural circles act as referees, "assessing values according to the standards accepted and publicly acknowledged as the basis of all activity in their own field."[16] These judgments of influentials, ideally acting in accordance with the highest values of their tradition, are comparable to the genetically embedded (e.g., traditional) rules of rightness functioning to maintain the health of the biotic being. Polanyi's biological rules of rightness grant form and structure a status that is not reducible to the laws of physics and chemistry, as the article by Bárdos and Zemplén emphasizes.

Polanyi's notion that rules of rightness—types of *value* requiring *interpretation*—are inherent in biological processes may seem inappropriate within scientific discourse. But hear what Daniel Kahneman has to say about this point. "When something does not fit into the current context of activated ideas cement, the system detects an abnormality, as you just experienced. You had no idea of what was coming after *ideas*, but you knew when the word *cement* came that it was abnormal in that sentence. Studies of brain responses have shown that violations of normality are detected with astonishing speed and subtlety."[17] Grammatical rules of rightness are illustrated in this example, but note that studies have shown that brains are sensitive to what is right and normal in many domains.

Presumably operational principles with their rules of rightness occur at many levels of a biotic being—wherever machine-like operations can produce beneficial outcomes. Polanyi is less clear about how regulative functions are carried out other than saying they are the inventive powers "of an active centre operating unspecifiably in all animals" (*PK*, 336). Regulation is a self-directed assessment of the overall welfare of the animal. "I believe that the unformalizable regulative functions, linked to an animal's mental processes, are the predominant, comprehensive agency of animal life" (*PK*, 401).[18]

Polanyi does not extend his discussion of rules of rightness beyond their inherence in biological operational principles. However, it is intriguing to speculate on the extent to which rules of rightness play a serious role in human social and cultural thought and behavior, as suggested by Kahneman's grammatical example. "What is the proper thing to wear for this special dinner?" "Does the PET scan reveal coronary artery disease?" "How ought I to live?" The rules of rightness illustrated are not simply individualistic, although they may be expressed in individual choice and evaluation. They are contextual, responsive to different "levels" of existence: social pressure, medical knowledge of health, existential ideal respectively. The notions of rightness extend from the trivial to the summit of meaning. Even at the level of the bacterium, there is a responsiveness to what is nourishing in contrast to what is not; what is nourishing therefore has value for the bacterium. Thus selection between alternatives, which requires interpretation according to value sought, is present throughout the whole panoply of life. Values to strive for imply purposes imply many types of meaning.

Some Biosemiotic Claims

Can biosemiotics augment Polanyi's "unformalizable" understanding of regulation? Eliseo Fernández argues that the most basic form of semiotic action is in fact found in the phenomenon of regulation, by which he means an action that compels an energetic process to follow a semiotic rule.

> Biosemiotics is especially concerned with the interrelation of physical (energetic) causation and semiotic causation. These different forms of causation interlock in the regulation process. The most general form of regulation is modulation, in which two dynamical, temporally extended processes are so related that one continuously regulates the other. *Instances of modulation are ubiquitous in organisms…*[19]

Fernández refers to Nancy Cartwright's notion of a "nomological machine" to provide a framework for his notion of modulation. The nomological machine turns out to behave very much like Polanyi's notion of machine-like functions with the slight modification that the components of the nomological machine are said to exhibit dispositional causality (like the disposition of a match to light when struck in a certain way). More consequentially, Fernández in effect seeks to give greater clarity to Polanyi's vague notion of regulation by elucidating how in regulation "physical and semiotic causation cooperate in an orchestrated fashion, giving rise to an ever-expanding profusion of scaffolding structures and processes."[20] Scaffolding canalizes energy flow in "a process that extracts a dispositional form from its object and conveys it through a suitable vehicle to a receptive structure capable of enacting its interpretation."[21] This language suggests what is the essential point of biosemiotics: that the regulation of organisms requires an interpretive process that operates at a higher level than efficient causation. Polanyi knew as much, but did not develop the language of signaling that biosemiotics uses, a language based on the semiotics of C. S. Peirce. Phil Mullins's fine article in this issue of *Tradition & Discovery* describes biosemiotics and its relation to Polanyi's thought in some detail, and consequently I do not feel the need to make more than occasional reference to how it is helpful.

At this point I must make a confession. While in theory I find Peirce's semiotic vision of the world "profused in signs" to be a brilliant accomplishment, in practice I find myself frequently unsure how to interpret the phenomena about me in semiotic language. Moreover, biosemiotic language, such as the notion of scaffolding structures, can still be vague; the biological details of the various proteins involved in cascades of signal transduction and similar biochemical explanations seem to be where specificity is properly located.[22] Yet further, it sometimes seems forced to reduce all events, in their complexity, to the triadic form that semiotics takes. Some examples of efficient

causality in physics seem simply dualistic, and as I shall show shortly, some basic forms of human thought and action seem best analyzed through four or five coterminous components. I want to affirm the vision of biosemiotics that the processes of living instantiate—require—some type or degree of interpretation and meaning, but I find I need to augment biosemiotics with the insights of the philosophical tradition to gain a clearer grasp of life in its broader context, dependent upon but extending beyond biology, the kind of understanding of the real world that D & T seek.

Five Emergent Levels of Meaning

Let me therefore turn to an exploration of *meaning* insofar as it arises in evolutionary history and comes to expression in human consciousness. I will begin by suggesting a schematic way of understanding meaning in living organisms. Meaning first occurs wherever some function arises that is related to the ongoing welfare of a living being. At the simplest level, one may speak of *proto-meanings* that occur within or between a cell and its surroundings. The bacterium ingesting food or a protein in a cellular wall admitting to the interior of the cell properly shaped messengers would be examples of actions having proto-meaning. Insofar as one looks simply at the relation between a receptor and an accepted message transgressing a membrane, one may observe a meaningless biochemical reaction. But when one observes this reaction from the perspective of the centered (in this case one-celled) being, the action becomes a proto-meaning. It has a function: it is to be understood in terms of the welfare of its centered self. From this perspective the action represents an interpretation, a choice between the received message and rejected other possible messages in the environment. It is this difference between a chemical event and an interpreted event that biosemiotics stresses and that justifies seeing life as an emergent order beyond the parameters of the dynamo-physical world.

When one moves from a one-celled prokaryotic or eukaryotic cell to a many-celled form of life, one moves to a slightly more encompassing form of meaning than is indicated by the term proto-meaning. The presence of organs or other specialized biological features requires several higher levels of integration to ensure these parts serve the centered being. I will group both the machine-like aspects of organs and their regulation under the same term: they exhibit *biological meaning*.[23] Much biological meaning is innate; it is physiological in nature. As I am using the term, biological meaning is roughly equivalent to what Aristotle means in speaking of the accomplishments of the vegetative soul. Biological meaning has not yet become conscious.

More complex yet is the meaning accomplished through an animal's pre-linguistic learning. Polanyi speaks of this level of inarticulate understanding as coming to expression in three modes: trick, sign, and latent learning (*PK*, 71-77). The first two of these types of learning "are more primitive and are rooted respectively in the *motility* and the

sentience of the animal, while the third handles both of these functions of animal life in an *implicit operation of intelligence*" (*PK*, 71). Trick learning occurs when physical means are developed to accomplish useful ends. It involves skill-based contriving. Sign learning is based on perception; it is "primarily the achievement of strained *attention*" (*PK*, 73) that presumably grasps the recurring forms and patterns encountered in the world. Latent learning occurs when an animal's experience is consolidated in a mental network or map of the animal's world. The animal achieves a "true understanding of a situation" (*PK*, 74), an interpretive framework. Taken together, the character of an animal's internalized trick, sign, and latent learning establish its competence in the world, the base for its coping skills.

If I were to label the meaning evident in this sort of competence "inarticulate meaning," the crucial significance of this level of intelligence might well be missed. Instead I will refer to the meaning resident in this unself-conscious, prereflective form of awareness as *understanding*. I recognize that in ordinary parlance "understanding" frequently also refers to focally conscious comprehension. When the difference between pre-linguistic and linguistic understanding is significant, context should indicate which meaning of "understanding" is implied.

Together, Polanyi's three forms of learning comprise a large component of what D & T label "the background," the unexpressed understanding and skills that allow humans to cope with life's challenges successfully. The understanding embedded in long-term memory serves as the baseline in terms of which the adequacy of our linguistic expression is often judged. When a person says, "I know what I want to say, but I can't quite put it into words," that person is indicating the gap that exists between the inarticulate and articulate levels of meaning. The important point is this: the animal's inarticulate learned meaning is also of crucial importance to the human animal, even though the most developed level of meaning, linguistic meaning, is much more prominently observable in consciousness.

The human world of self-consciousness, of language usage, constitutes what I term the third *order* of emergence. The *discursive meaning* made possible by language is all too often taken to be the definitive form of meaning. To be sure, humans, the sole possessors of language, have an almost insatiable need to cloak experience and the world as a whole with networks of words.[24] Even in sleep, words (and images) visit us in our dreams. To communicate clearly with one another, we do need to employ language. It is useful to distinguish between the way language operates in inner thought and how it may be used publicly in linguistic behavior. Besides being descriptive, language may be used to generate jokes, underwrite irony, utilize metaphor, etc.[25]

In addition to such language-based forms of meaning, there is another dimension of meaning, which I term existential meaning, that is primarily felt and arises out of our basic concerns, interests, and purposes.[26] It is in terms of this dimension of meaning

that our acts as agents must be understood, not in such overly rationalistic terms as consistency or implication. It is in terms of this dimension that we can properly analyze meaning in life or even for some "the meaning of life." Existential meaning is the most comprehensive form of meaning, for as felt it is embodied, as tacitly connecting our various concerns, it exists at the level of understanding, and as expressible in language and the various arts, it gets articulated in our words and actions.

Some thinkers, perhaps obsessed with the need for clarity of communication, but also seemingly oblivious to their bodies, their feelings, and the physical impact of the world, suggest that we are trapped within language. For them, the limits of language become the limits of the world. To any description of the evolutionary development of human meaning from non-language speaking ancestors, as I have attempted, the panlinguist could easily retort that the very language I am using to convince him refutes the ability to escape language. It is as if to him words do not denote a world beyond themselves, as if a person does not have a body that feels things, as if one cannot respond to the world reflexively, as if, one cannot read body language, as if, as if…

I have described five levels of meaning: proto-meaning, biological meaning, understanding, discursive (or linguistic) meaning, and existential meaning. The functioning of each subsequent "higher" level of meaning depends upon the meaning achieved at the previously developed "lower" types in the evolutionary development of increasingly complex forms of life. Humans rely upon all five types. However, the nature and importance of meaning in human existence is not fully disclosed by thinking of meaning only in terms of this fivefold hierarchy.

Signals and Symbols

Susanne Langer helpfully adds a functional dimension to my fivefold hierarchy of meanings. Her notion of *signals*, while closely aligned with Polanyi's sign learning and Peirce's indices, can functionally be seen to be involved in all four levels of meaning. Signals announce a past, present or future state of affairs.[27] Sometimes signals act like Claude Shannon's notion of information: they indicate an abrupt change from the status quo.[28] A sudden clap of thunder is an example. Sometimes, however, they are present in the environment as Gibsonian affordances and only function as signals when noticed in relation to a personal interest.[29] I may suddenly notice the dark clouds that have been rolling in for a while, and the clouds only then serve as signals that rain may be expected.

As my examples suggest, Langer emphasizes the role of signals in human responses to their environments: "A signal is comprehended if it serves to make us notice the object or situation it bespeaks."[30] A subject comprehends both the signal and the state of affairs it indicates. What makes a perceived object a signal rather than just another unnoticed or background range of objects or events has to do with a subject's range

of interests that bear on potential action. Thus the sound of thunder or sight of black clouds may be a signal that one should wear a jacket. Signals may be internal (e.g., a stomach ache), or external. They may be either natural or culturally created. They are functional in nature, not simply a type of object. The lessons learned from a person's signal-laden experiences are internalized in latent learning and constitute our understanding of the world. Further experiences of signals make use of that internalized knowledge—that background that D & T refer to. The interpretation of natural signs is "the most elementary and most tangible sort of intellection; the kind of knowledge that we share with animals, that we acquire entirely by experience, that has obvious biological uses, and equally obvious criteria of truth and falsehood."[31]

While signals have the function of announcing objects to awareness, symbols have the function of constituting objects of thought. For Langer, symbols come in two forms, presentational and discursive, both of which are expressed in conceptions. I will first deal with presentational symbols. Their "primary function, that of conceptualizing the flux of sensations, and giving us concrete *things* in place of kaleidoscopic colors or noises, is itself an office that no language-born thought can replace."[32] While the discursive symbolism of language has a general interpersonal intelligibility, presentational symbolism's fundamental meaning is contextual. It *presents* one object to vision, hearing, and the senses in general. Thus the move from subjective sensation, as reported by receptors, to the conscious objectivity of perception traverses territory Polanyi covers in the from-to relation of indication (see *M*, 70). Frequently the intelligible forms that are identified in perception have a kind of common law marriage to particular words, a form-word bonding maintained by habit. Whenever words contribute to experience, I find it important to move from Polanyi's from-to formula to a from-via-to formulation. In the case of thoughtfully recognizing objects in perception, one moves *from* sensation *via* words *to* focal meaning. Mediation again.

What is valuable in Langer's notion of presentational symbols, and what seems lacking or problematic? It would appear that presentational symbols make up the bulk of an animal's understanding, the third layer of meaning. Some presentational symbols take on the function of signaling, highlighting aspects of perception that reveal information relevant to the animal's interests. The theory of presentational symbolism thus contributes to the view that animals have a kind of conception that can allow for intention and the possibility of choosing between alternative *images*, which is different from human reflective choosing through linguistically based alternatives. Presentational symbols also play an important role in the workings of imagination. In humans, images working together with language in imagination and dreams. However, perceptual objects can take on additional, evocative meanings beyond their presentational aspect. A picture is said to be "the most familiar sort of non-discursive symbol."[33] Pictures can denote objects in the world. They can evoke emotional reactions. They have lines,

patterns, rhythms and other contributing parts. Some of these elements are suggested by Langer, but not put into systematic form.

This brings us back again to the strictly human realm of discursive or linguistic symbols. Here Langer contrasts them with presentational symbols:

> Language in the strict sense is essentially discursive; it has permanent units of meaning which are combinable into larger units; it has fixed equivalences that make definition and translation possible; its connotations are general, so that it requires non-verbal acts, like pointing, looking, or emphatic voice-inflections, to assign specific denotations to its terms. In all these salient characters it differs from wordless symbolism, which is non-discursive and untranslatable, does not allow of definitions within its own system, and cannot directly convey generalities.[34]

Linguistic symbols are bearers of two further types of meaning: connotation and denotation. All words and sentences have connotations, mental conceptions evoked by the words and sentences used. These may be looked at as conventionally delimited, for instance by referring to a dictionary. But in practice each person grants the use of language a meaning reflective of that person's experience. One's connotations may also be applied to specific objects, an act of denotation. Four components are simultaneously present in denotational meaning: subject, symbol, conception, and denoted object.[35] This is a common situation in which the Peircean triad does not comfortably fit: either the subject or the conception gets left out. For that matter, the contexts (personal and environmental) influencing the connotation and denotation are also missing from the Peircean triad.[36]

To this point I have described five levels of increasingly rich meaning as one ascends the evolutionary path of life. In animal life we have seen how at the third level presentational symbols anchor an experientially based comprehension of reality within which signals indicate things and events of interest. For human consciousness (the fourth level), language provides connotational and denotational meanings that fund rational choice and immerse us in a cultural sea. Polanyi and Prosch in *Meaning* suggest how we may further shape meanings into metaphors and works of art depending on how we arrange our interests. Yet it is existential meaning, deeply rooted in the body and presumably incorporating yet transcending all four lower levels of meaning, that is what most deeply motivates human behavior, most deeply reveals what aspects of reality matter.

Conclusion

It is time to take stock. Has the forgoing discussion provided a better basis for retrieving an understanding of reality than Dreyfus and Taylor present? It would be presumptuous to think that in the short compass of an essay a very thorough or compelling alternative vision has been or even can be presented. But I do think a good foundation has been provided to demonstrate that both mediation and the inner/outer distinction have a significant place in the way we can both comprehend and celebrate what is real. That foundation has a scientific base. It relies upon biosemiotics and philosophical psychology to thematize the interpretive activity that is originates in biology but can culminate in existential feelings of consummation and joy in life.

I want to conclude by addressing two important implications of this evolutionary-based study of interpretive mediation. I believe the foregoing study lends support to an interesting interpretation of consciousness and to a better understanding of existential meaning.

Recall that the receptors of one-celled organisms are selective. They allow specific beneficial substances to pass through their gates, but deny entry to most things. This process could be seen as a primitive kind of interpretation bearing proto-meaning. In its selective apprehension of outer entities, it could also be seen as involving the simplest sort of consciousness. The receptors at this most basic level of centered being are in any case foundational for ensuring that the newly formed inner has life-giving relation to the outer. In other words, the receptors seed the subsequent development of more robust forms of interpretation, consciousness, and meaning at higher levels of development.

Biological meaning, the next more complicated form of meaning, arises with the advent of many-celled organisms. Principles of coordination (operational principles with instantiated rules of rightness) are needed both to ensure that organs function properly (a mini-level) and that the ensemble of cells and organs carry out functions that can thrive in some available environmental niche (a higher mini-level). Such principles of physiology are, in effect, interpretations of interpretations. That is, their regulative activity, largely autonomic at this level, can turn on and off internal responses to the opportunities and threats of the external environment. A primitive form of judgment has arisen. Perhaps the quality of centered alertness to environmental signals is akin to what humans experience as feeling.

In order for signal responsiveness to become adaptable to changing circumstances—so that what we call learning might occur—a centralized brain with the capacity to remember significant spatial and temporal patterns is needed. At some point in animal development, memory of action-guiding intentions, recent experience, and alternative possible actions must have emerged. Presentational symbols would be needed for the generation of imagined alternatives and perhaps for intention as well.

The indwelt learning grants animals a flexible understanding of the world that is in effect an interpretation of second-level interpretation with an interpretation of first level interpretation.

Up to this point, the three *levels* of emergence just discussed arise within the one *order* of emergence, the biological world. Beyond the consciousness inherent in understanding, fully human consciousness emerges under the guidance of language and its discursive meaning, a new order of emergence. With language one's self can be named and retained in memory even as one thinks about other things. Self-consciousness is one of the (sometimes dubious) gifts of language. While use of presentational symbols allows non-human animals some ability to transcend the power of signals to imprison them in the material present, with the advent of language, thought can soar away into the past and future, the possible and impossible, the true and the false. The human mind is home to what Terrence Deacon calls "ententional" phenomena, i.e., thought about what is not present in the dynamo-physical world, things like meaning and purpose.[37] The power and scope of communication and technological construction is vastly increased through language. What was formerly implicit in animal life can be made explicit through from-via-to mediation, language being the mediational factor leading humans into the third order of emergence. The third level of meaning, understanding, can function as a *resource* in human consciousness for coping—yes—but also for scientific comprehension, technological invention, artistic creation, and meaningful flourishing that seem peripheral or missing in Dreyfus and Taylor's account of reality.

Some far-reaching implications concerning consciousness and existential meaning are derivative from our study. The evolutionary account of the increasing scope and subtlety of consciousness as new epistemological layers have unfolded is a process intimately joined to the emergence of greater depth of purpose and meaning in living beings. This diachronic analysis stands in contrast to the usual synchronic attempts to explain consciousness. The synchronic attempt is mired in what has been called the "hard problem of consciousness," which boils down to how do the neurons of the brain function so as to create the phenomenal reality of consciousness? The diachronic vision articulated in this essay does not answer the hard problem in its own analytical form. Rather it appreciates how each level of new purpose and meaning takes on new and unexpected characteristics. Hence thinking about consciousness in a diachronic way offers an approach to consciousness that does not "deny its existence, or ...redefine the phenomena in need of explanation as something it is not."[38] Nor is it crucified on the cross of analytic philosophy. The difference between the level of awareness of the world we share with other animals and the unique language-infused consciousness of humans is not so profound as to be utterly mysterious. For we can see *in our own experience* the various sorts of consciousness that have emerged during our evolutionary trajectory:

feelings, the awareness of subsidiary contributors to focal perception, and language-based focal awareness itself.

The focal level of human thought is driven by the "via" of language, but we dwell in a tacit background of feeling and subsidiary awareness that, as an understanding shaped by empirical signals of the real, external world, has the power to serve as the standard by which our accounts of physical reality must be judged. And yet language opens up new levels of reality. Through language we necessarily dwell in an axiological world. We can be aware of the rules of rightness inherent in aesthetics and morality, and which in logic guide our processes of inquiry. Thus in addition to learning how to cope, we can be aware of many dimensions of meaning and purpose. All are real. And that gives us a clue to what it means to experience existential meaning in life. It is to experience the many sorts of satisfaction that an embodied immersion in purpose at its many levels of reality can grace us with.[39]

Endnotes

[1]Hubert Dreyfus and Charles Taylor, *Retrieving Realism* (Cambridge, MA: Harvard University Press, 2015), 2. Hereafter this work will be cited in the text as D & T.

[2]This view was set forth in much the same terms in Charles Taylor's article, "Overcoming Epistemology" published in Kenneth Baynes, et al., eds. *After Philosophy: End or Transformation?* (Cambridge, MA: MIT Press, 1987), 464-488. I deeply appreciate Taylor as a philosopher who is widely read in the history of philosophy and who reflects upon the several different approaches to philosophy now current. Thus it is somewhat ironic that my major complaint about the book under question is that Taylor (and Dreyfus) need to include more in their analysis of reality. They need to deal with the biological and biosemiotic issues that influence the embodied processes whose significance they acknowledge. They need to acknowledge the rich (and sometimes painful) reality of human experience beyond coping.

[3]See Jesper Hoffmeyer, *Signs of Meaning in the Universe* (Bloomington: Indiana University Press, 1996), 71, for a more detailed description of the complex neural processes involved in seeing, a procedure he shows to be "heavily processed."

[4]Dale Cannon, "Construing Polanyi's Tacit Knowing as Knowing by Acquaintance Rather than Knowing by Representation: Some Implications." *Tradition & Discovery* 29/2 (2002-2003):39.

[5]Ibid.

[6]Michael Polanyi, *The Tacit Dimension* with a new foreward by Amartya Sen (1966; reprint, Chicago: University of Chicago Press, 2009), 18.

[7]Denis Nobel, *The Music of Life: Biology Beyond Genes* (New York: Oxford University Press, 2006), 80 (see also xii).

[8]Walter Gulick, "Polanyian Biosemiotics and the From-Via-To Dimensions of Meaning" *Tradition & Discovery* 39/1, (2012-2013):20-23 in particular.

[9]"Life is a surface activity…Life is fundamentally about insides and outsides." See Jesper Hoffmeyer, "The Biology of Signification." *Perspectives in Biology and Medicine* 43 (2), quoted in

Claus Emmeche, Kalevi Kull, and Frederik Stjernfelt, *Reading Hoffmeyer, Rethinking Biology* (Tartu, Estonia: Tartu University Press, 2002), 17.

[10]Alicia Juarrero, *Dynamics in Action: Intentional Behavior as a Complex System* (Cambridge, MA: MIT Press, 2002), 112.

[11]Lynn Margulis & Dorion Sagan, *What is Sex?* (New York: Simon & Schuster, 1997), 22.

[12]This quotation is from Hans Jonas, *Organismus und Freiheit: Ansätze zu einer philosophischen Biologie* (Göttingen: Vandenhoeck and Ruprecht, 1973), 83, quoted in Andreas Weber & Francisco J. Varela, "Life after Kant: Natural Purposes and the Autopoietic Foundations of Biological Individuality," *Phenomenology and the Cognitive Sciences* 1 (2002):112.

[13]Jesper Hoffmeyer, *Biosemiotics: An Examination into the Signs of Life and the Life of Signs* (Scranton: University of Scranton Press), 213.

[14]Hoffmeyer, *Biosemiotics*, 18-19.

[15]Michael Polanyi, "The Growth of Thought in Society," *Economica* 8 (November 1941), 431. The constraint of the water in this illustration was later described by Polanyi as a test-tube type of boundary condition—see his *Knowing and Being* (Chicago: University of Chicago Press, 1969), 226.

[16]"Growth of Thought," 441.

[17]Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus and Giroux, 2011), 74.

[18]Current research in signal transduction mechanisms that regulate biological systems is sharply reducing the "indeterminate" nature of regulation.

[19]Eliseo Fernández, "Evolution of Signs, Organisms and Artifacts as Phases of Concrete Generalization," *Biosemiotics* 8/1 (2015):101. On this point, Hoffmeyer paraphrases Kant in a pithy way: "*Semiotic causation without efficient causation is helpless, but efficient causation without semiotic causation is blind.*" See his "Semiotic Scaffolding of Living Systems" in Marcel Barbieri, ed., *Introduction to Biosemiotics* (Dordrecht, Netherlands: Springer, 2007), 153.

[20]Eliseo Fernández, "Nomological Machines and Semiotic Scaffolding," unpublished paper delivered at the Fifteenth Annual Gathering in Biosemiotics, Copenhagen, 2015, 1.

[21]Ibid., 6.

[22]Here is one sweeping definition of biosemiotic scaffolding: "an entity or process which supports another, primary process and thus enhances the stability, functioning, or space of possibilities of the latter; especially relevant is semiotic scaffolding by means of signs; genes may be seen as a scaffolding in relation to heredity; membranes in relation to the autocatalytic cycles of metabolites, language in relation to thought, written language to spoken." In Claus Emmeche, Kalevi Kull, and Frederik Stjernfelt, *Reading Hoffmeyer, Rethinking Biology* (Tartu, Estonia: Tartu University Press, 2002), 29.

[23]"Biological meaning" is the term Hoffmeyer uses in the passage cited by endnote 12.

[24]That humans are the sole possessors of language is still a somewhat debatable claim, but I take it that the experiments with primates, dolphins, etc. indicate that animals learn and respond to words as signals rather than as symbols that allow for discursive meaning construction. For support of the claim that primates and other animals lack human linguistic skills, see Dorothy L. Cheney and Robert M. Seyfarth, *Baboon Metaphysics: The Evolution of a Social Mind* (Chicago: University of

Chicago Press, 2007), 264-265. For a view that is more questioning of my claim, see Frans de Waal, *Our Inner Ape* (New York: Riverhead Books [Penguin], 2005), 188-189.

[25]Charles Taylor has just published *The Language Animal* at the time this article was completed. The promotional blurbs suggest that he will attend in some detail to the various sorts of insights, beyond description, that language can facilitate.

[26]Interestingly, it is Charles Taylor, more completely than any other thinker I know, who carefully describes existential meaning (which he calls experiential meaning) and distinguishes it from linguistic meaning. See his "Interpretation and the Sciences of Man," *Review of Metaphysics* 25/1 (September 1971):10-14.

[27]Chapters III and IV of Susanne Langer's *Philosophy in a New Key*, 3rd ed. (Cambridge, MA: Harvard University Press, 1957) inform my discussion of signals and symbols.

[28]James Gleick offers a helpful description of Shannon's understanding of information, so influential in the development of computers, at various points in his *The Information: A History, A Theory, A Flood* (New York: Vintage Book, 2012).

[29]"The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill." See James J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1986), 127.

[30]Langer, *Feeling and Form* (New York: Charles Scribner's Sons, 1953), 26.

[31]Langer, *Philosophy in a New Key*, 59-60.

[32]Ibid., 93.

[33]Ibid., 94.

[34]Ibid., 96-97.

[35]Ibid., 64.

[36]It would seem like this critique of Peirce's thought could be extended to a criticism of my from-via-to formula. Strictly speaking, however, my formula, like Polanyi's from-to version, applies only to the structure of consciousness. Subject and context must be assumed in cognitive processes at all levels.

[37]Terrence Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: Norton, 2012), 27.

[38]David Chalmers, *The Conscious Mind: In Search of a Fundamental Theory* (New York: Oxford University Press, 1996), xii.

[39]This essay has benefitted from the helpful critiques of Dale Cannon and Phil Mullins. Deep thanks to both.