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## Chapter One

### Whitehead, Biosemiotics and Value

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*'Tis all in pieces, all coherence gone,  
All just supply, and all relation ...*  
(John Donne, *An Anatomy of the World*, 1611)

#### *Introduction*

Donne was responding to something he saw at the core of the new philosophy of nature that was gaining ground in his time. He intuitively grasped that what was taking shape would utterly change the way people experienced their place in the cosmos. The earth and the souls on it would no longer be at the center of a universe where everything that existed and all that happened fitted into a wider web of meaning. The new worldview lacked any value-giving framework and would leave the universe devoid of purpose. Without a sense of what was “... just supply...” the cosmos would be open to plunder. His theological and visceral instincts rebelled.

What Donne feared has duly arrived. We can recognize it in something said by an indigenous inhabitant of the South American rainforest, *apropos* the men whose machines were destroying the life of his region. The remark, perhaps made as much in perplexity as in anger, was “Why don’t they *know* what they’re doing is wrong?” Here “wrong” doesn’t mean “They shouldn’t be wrecking our land.” but rather “How is it that these men no longer know the difference between wrong and right?”

This loss of the moral intelligence that makes people feel that destroying the natural world is wrong is one reason that human activity is doing so much damage to the world’s living systems. It reflects an alienation from nature that is increasing as more and more people live urbanized, technologized lives. The emotional appeal of TV programs celebrating the natural world is a

poignant signal that the sensibilities of natural habitation have not been entirely extinguished, even among the urbanized moderns. What Donne saw was that the loss of these sensibilities, the framework of unifying meaning, would lead to people ill-treating the world, as it were. Heidegger pointed to something very like this in his questioning of technology and what it does to human consciousness.<sup>1</sup> Once the web of the world is cut into manipulable pieces, it reveals itself differently to human consciousness. No longer is nature something whose value lies in interconnected wholeness, and hence has an intrinsic right to proper treatment. Instead it is approached as a standing resource whose value is its utility for human purposes. The result is that for well over a century now human beings in the technologized societies have been taking more than the world can afford to offer.

The impacts of human action on the living world now show all too clearly how destructive this change in consciousness is. Taking more from the living systems of the world, more than natural rates of re-growth can replace is eating into our natural capital and profoundly damaging the biosphere. Moreover, the effects of that damage are being born disproportionately by those who have not caused it and have not benefitted from the technological advances that lie behind the lifestyles of the more developed nations. The situation is not only an environmental tragedy but is also unjust.

Destructive over-consumption is a collective mental illness. A remedy is sorely needed that will help to find more sustainable ways for all people to live on the planet. Integral ecology is, or should be, a part of such a remedy since it appears to offer the unified worldview that Donne feared to lose. As the introduction to this section puts it, Integral Ecology is based on the view that “... everything in nature is constitutively interrelated and requires a systemic, holistic, and dynamic

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<sup>1</sup> M. Heidegger, *The Question Concerning Technology and Other Essays*, William Lovitt (trans.) (New York: Harper and Row, 1977). The original essay was published in 1954 as *Die Frage nach der Technik*.

approach – a process-relational ontology – to be properly understood.” These are brave words, but ones that might also be adopted by contemporary physical scientists since they too seek to create just such a worldview. However, the trouble with their efforts is that questions of value fall by the wayside. Their work is done in the long shadow of David Hume’s remark on the necessary separation of rational scientific facts and normative human values, often compressed into the slogan “You can’t get from is to ought.”

What is needed is to evade Hume’s objection and to make from integral ecology a rational worldview that is not only compatible with scientific findings but also with normative human values. A suggestion as to how to do this will be sketched in what follows, using ideas from A. N. Whitehead, C. S. Peirce and biosemiotics. It is not offered simply as an academic exercise but as something that might have some purchase on the geopolitical realities of our time.

To begin, the next section attempts to extract some ideas from Whitehead’s somewhat challenging conceptual vocabulary.

### *What Whitehead Does Not Offer to Integral Ecology*

Whitehead claims “Nobody can be a good reasoner unless by constant practice he has realized the importance of getting hold of the big ideas and of hanging on to them like grim death.”<sup>2</sup> His work shows that he tried to follow his own advice, but while that may have made for consistency, it did not help with accessibility. Whitehead’s influence is minor, though enduring and perhaps resurgent. This is in part because much of his writing, *Process and Reality* being the obvious example, can be notoriously obscure<sup>3</sup>. If Integral Ecology is to help remedy the

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<sup>2</sup> A.N. Whitehead, *The Aims of Education and Other Essays* (New York: New American Library, 1949), pg. 84. Originally published 1929.

<sup>3</sup> D. Nicholson & J. Dupre (Eds), *Everything Flows: Towards a Processual Philosophy of Biology*. (Oxford: Oxford University Press, 2018). Page 7.

geopolitical problems of our time, there is little in Whitehead's more advanced conceptual writings that is of much direct use.

But even so, it is worth hanging on to Whitehead's "big ideas". Perhaps one of his biggest, and one that is particularly relevant here, is that the ultimate constituents of nature are not objects but subjects. The essential property of a subject is the capacity for intentionality, that is, a qualitative link to what surrounds them which guides action, much as Merleau-Ponty proposed.<sup>4</sup> This subjective intentionality is what renders the cosmos open and intrinsically creative as Merleau-Ponty recognized in his later work, on which Whitehead had a clear influence.<sup>5</sup> While to claim that the ultimate constituents of nature are intentional subjects somewhat over-simplifies the vast sweep of Whitehead's work, it is accurate enough and points to a vital issue. This is that Whitehead gives to subjectivity the same ontological status given to the purely material particles, field, forces and the like that are dealt with by natural science. In passing, it is worth noting that pansychism is regaining ground in contemporary philosophy<sup>6</sup>.

Accepting this means to accept that intentionality is *ubiquitous* in nature. Whitehead goes further, proposing that the simple intentionality of nature's ultimate constituents can coalesce into the more complex intentionality of what he calls societies, collectives with an enduring self-identity and a shared project, that would more generally be called organisms. This led Whitehead to the view that "Biology is the study of the larger organisms; whereas physics is the study of the smaller organisms."<sup>7</sup> This claim must have seemed strange in 1926, but at the present time perhaps

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<sup>4</sup> M. Merleau-Ponty, *The Phenomenology of Perception*. (London: Routledge & Kegan Paul, 1962).

<sup>5</sup> M. Merleau-Ponty, *M. Nature: Course Notes from the Collège de France*. Translated by R. Vallier (Evanston, Ill.: Northwestern University Press, 2000).

<sup>6</sup> P. Goff, *Galileo's Error: Foundations for a New Science of Consciousness* (New York: Pantheon Books, 2019).

<sup>7</sup> A.N. Whitehead, *Science and the Modern World* (London: Pelican Books, 1926), ch. 4. (pg. 125)

it is less so, particularly in the light of some recent discussions of panpsychism<sup>8</sup> and of panprotopsychism which is “... roughly, the view that fundamental entities are proto-conscious, that is, that they have certain special properties that are precursors to consciousness and that can collectively constitute consciousness in larger systems.”<sup>9</sup>

Here are big ideas that seems worth clinging on to. Especially, as they complement another enduring feature of Whitehead’s philosophy. This is that it’s a mistake to consider any aspect of reality apart from the whole of it. Thus: “The misconception which has haunted philosophic literature throughout centuries is the notion of independent existence. There is no such mode of existence. Every entity is only to be understood in terms of the way in which it is interwoven with the rest of the universe.”<sup>10</sup> Here there is a clear echo of a principal feature of Integral Ecology noted above, namely, that “... everything in nature is constitutively interrelated ...”.

These two ideas, the *ubiquity of subjectivity* and the *interrrelated continuity* of the natural order, taken together, hint at how the findings of science might be more fully integrated with questions of value and hence with human norms. If subjectivity, which is intrinsically value-laden, is ubiquitous, and if everything that exists is in some way linked, then values are as ubiquitous as subjectivity. More will be said on this later, but presently, the task is how to see past Whitehead’s often challenging terminology to the bigger ideas and to see how they might help to find more sustainable ways for human beings to live.

Examples of his more specific terminology might be, among many others, “Aim,” “Prehension,” “Causal Efficacy,” or “Actual entity.” Searching through his writings, one discovers

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<sup>8</sup> G. Strawson, Realistic Monism: Why Physicalism Entails Panpsychism, *Journal of Consciousness Studies*, 13/10-11 (2006), 3-31; D. Skrbina, *Panpsychism in the West* (Massachusetts: MIT Press, 2005); D. Skrbina (ed.), *Mind That Abides: Panpsychism in the New Millennium* (Amsterdam: John Benjamins, 2009).

<sup>9</sup> D. Chalmers, Panpsychism and Panprotopsychism, *The Amherst Lecture in Philosophy* 8 (2013): 1–35, also available at <http://www.amherstlecture.org/chalmers2013/>.

<sup>10</sup> A.N. Whitehead, *Essays in Science and Philosophy* (London: Philosophical Library, 1947 [1925]), pg. 64.

few illustrative examples that would allow these ideas to be applied more easily. Furthermore, this terminology is often somewhat circular. For example, “Aim” is defined as an aspect of “Prehension” while “Prehension” is something akin to an action with a purpose directed “at that complex of feelings which is the enjoyment of those data in that way.” Thus defined, both “Aim” and “Prehension” seem to require each other to be understood, with “Aim” being more of a mental event and “Prehension” refer to both mental and physical levels. Rarely are these terms made any more explicit with examples. Both “Aim” and “Prehension” seem to be critically related to “intentionality,” as used by Husserl and Merleau-Ponty. But in Whitehead their definition is multi-layered and, in many places, becomes bound up with other equally crucial terms such as “actual entity.” But once again, trying to clarify what those terms mean in turn leads into ever-denser terminology, as here: “Thus an actual entity has a three-fold character: 1) it has the character ‘given’ for it by the past; 2) it has the subjective character aimed at it in its process of concrescence; 3) it has the superjective character, which is the pragmatic value of its specific satisfaction qualifying the transcendent creativity.”<sup>11</sup>

But what do “concrecence” and “superjective character” mean? With steady application and scholarly resources, these terms do in fact come together to provide the organic process worldview for which Whitehead is justly celebrated. But for the more immediate business of finding some remedy for our present geopolitical problems, the exercise is of little help. What might help would be to combine Whitehead’s big ideas with others that would make them more applicable, which is what the next section tries to do, using the conceptual resources of biosemiotics.

### *How to Make Whiteheads Ideas More Applicable*

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<sup>11</sup> A.N. Whitehead, *Process and Reality: An Essay in Cosmology* (New York: Cambridge University Press, 1929), pg. 87.

Whitehead's somewhat complex terminology is actually about two very fundamental questions which, once properly understood, are quite simple ones. The first is: What is the world made of? The second is: How do things happen and why? Whitehead's answer to the first has already been sketched above, in caricature as it were. It is the claim that the ultimate constituents of nature are not objects, that is, substances, but rather *events*. Moreover, these are said to have a subjective, purposive aspect. Here "purposive" has to be treated with caution to avoid a homunculus like regress. Whitehead does not propose that the ultimate constituents of the universe have human-like abilities to, for example, plan actions and make choices. The idea is that all events, even at the smallest dimensions, retain some vestigial aspects of intentionality, and hence, of purpose.

The second question goes to the heart of what is meant by "organic." It is ironic that the oxymoron "Organic Mechanism" is occasionally used to describe Whitehead's system. Mechanistic is exactly what it is not. Interpreted mechanistically, things happen as they must, just as classical physics describes the movements of planets or of billiard balls on the table. But billiard balls go where they are driven by the actions of the players and, apart from a diminishing number of diehard mechanists, few believe those actions are determined in the same way as the movements of the planets in their orbits. Newtonian mechanics may determine the movements in the solar system, but on the billiard table, things happen as the players intend, as they exercise their skills with foresight and pleasure.

The actions of billiard players, people in general, animals and even plants when seen in the right time frame, are patently *intentional*, both in the more precise sense as used by philosophers in the line of Husserl and Merleau-Ponty, and in the more everyday sense referring to an act carried out for some purpose, something the actor *means to do*. Here "means" is of more than usual

significance. Used in human terms, the word is janus-like; it faces both towards and away from the human subject. It stands for the interpretation given to the sensory impressions received from the world around us, such as the words we hear, what we read, and the signs we see around us. Of all these things it can be asked: “What do they mean?” It also stands for *purposiveness*. When we act with an aim in mind, we say of that action that it is something we “mean” to do. In *meaning* an action we own it, which is something that even quite young children know. A child who realizes that something they’ve done has got them in to trouble will probably try to disown the act by saying “I didn’t *mean* it.”

Thus, “meaning” brackets subjectivity, since it is used to stand for what the world does to the subject and what the subject does to the world. Now, meaning in these senses, is bound up with signs. What a sign “means” is what it *stands for*. As C. S. Peirce put it, with uncharacteristic simplicity, a sign is “something that stands for something, to someone in some capacity.”<sup>12</sup> This triadic definition is a productive advance on Saussure’s distinction between a sign and what is signified. Although Saussure helped to lay the foundations of modern semiotics, the application of his system is limited by its being dyadic and, consequently, synchronic. That is, it offers a rich vocabulary with which to capture the structure of the sign world at a given moment, especially that part which involves language. But unless extended by the resources of transformational grammars, for example, it fails to capture the way signs function in systems that change over time, or to extend the use of semiotic ideas to embrace all of nature.

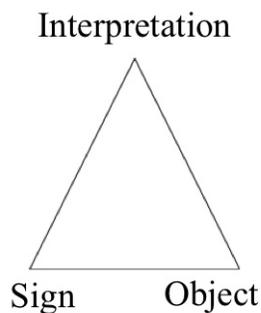
Remarkably, a treatment of semiosis that does just that had been put forward by a contemporary of Donne’s, the Portuguese scholar John Poinot, a Dominican Thomist. Poinot’s semiotics, was in fact an ontological system, and signs were not merely human conventions but

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<sup>12</sup> See J. Buchler, J. (Ed.), *The Philosophy of Peirce: Selected Writings* (London: Routledge and Kegan Paul, 1940), pg. 99.

were fundamental to the dynamics and the coherence of his worldview. It was just this worldview that Donne feared to lose. As John Deely puts it in his magisterial survey of Western philosophy, Poinot showed that “... the story even of the sign begins with the discovery of nature as a reality prior to and in various ways escaping human purposes.”<sup>13</sup> This is very like what is being put forward here, with the help of Peirce’s triadic semiotic system.

Peirce, working independently of Saussure and in the tradition of American Pragmatism, developed a semiotic system that, like Poinot’s, was intended to be a complete ontology. For that to be possible he recognized that as well as distinguishing signs from what they signify, his system also had to include the actual act of interpreting the sign, as below:



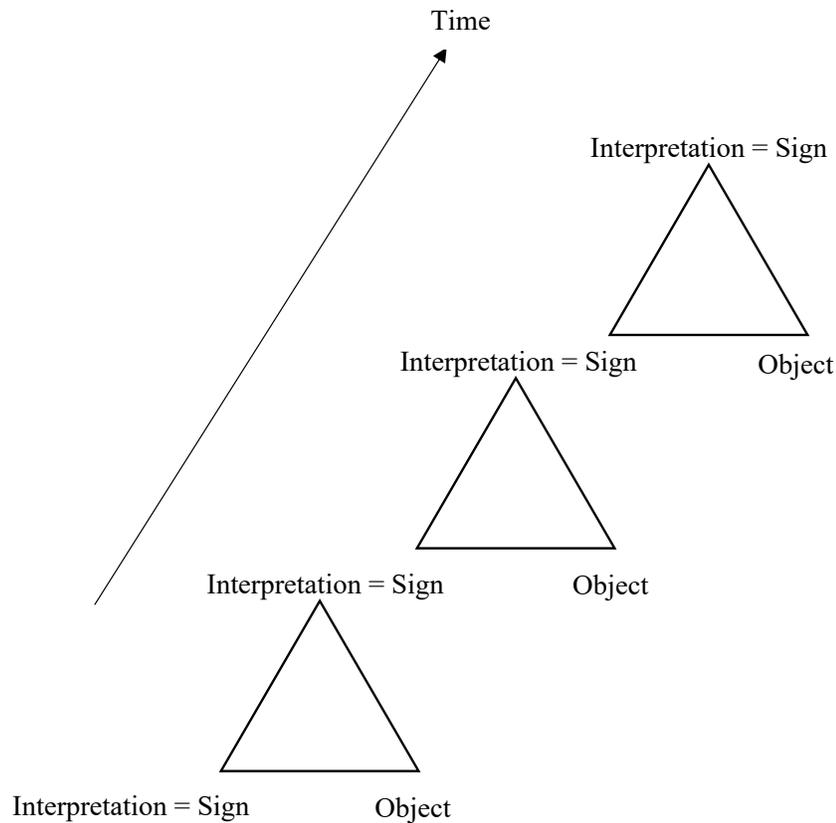
**Diagram 1.**

Legend: Peirce’s triadic model of signification.

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<sup>13</sup> J. Deely, *Four Ages of Understanding: The First Postmodern Survey of Philosophy From Ancient Times to the Turn of the Twenty-First Century*. (Toronto: University of Toronto Press, 2001).

Moreover, and crucially, the act of interpretation may in turn become a sign for further interpretation, as below:



**Diagram 2.**

Legend: Peirce's diachronic model of signification.

It is this chaining of signification that renders Peirce's system diachronic in critical contrast to the essential synchronicity of Saussure's. The contrast is crucial for what is being proposed here. It takes semiotic understanding beyond Saussure's relatively static description of language to deal

with the dynamics of change in any system whether natural or human made. Diachronicity captures the essence of organic action, which is progressive cumulative change.

This is the essence too of the flow of human reflexive consciousness. As an illustration of what's meant here, imagine a reader deeply engaged in her book. As her eyes flick over the pages, the words are read without much conscious effort. In skilled readers this interpretation of signs with conventional meanings is automatic, in its initial stages at least. It's also likely to be much the same for all readers in a particular linguistic community. But it will prompt a flow of thoughts and images which will be unique to the individual reader. These in turn will be further interpreted in light of her feelings about what she's reading and the associations she makes with other things she's read, and with what she knows and feels more generally. All this will shape her interpretation of words and phrases subsequently encountered, much as Peirce conceived chained signification to work.

Let us now imagine that a faint but persistent sound appears in the background. If the reader is deeply engaged with the book, she may pre-consciously reject it, that is, in some sense, choose not to hear the sound, or dimly to hear, but ignore it. If it persists, she may gradually allow it, or it may force its way, into consciousness. At this point, once it makes it over some threshold of significance, she recognizes that it's her cell phone that she's left in another room; a sudden re-orientation of consciousness occurs, and she jumps up to get it. The sound is a sign whose initial interpretation may simply have been as just another background noise of no particular significance. But as it persisted and commanded more and more interpretive attention, it gained meaning and prompted action.

The flow of events here is bound up in many layers of conventional signs that perfuse the human world. But it's reasonable to suppose that similar sequences of perception and action occur

in the prehuman world. Grazing animals, for example, are probably aware of various sounds and sights around them, but although they monitor them at a low level of attention, they remain unconcerned until something makes it over a threshold of significance and prompts action of some sort.

In the middle of the twentieth century heroic attempts were made by Behaviorists to reduce the actions of animals to mere chains of stimuli and responses. A recognition of the many limitations of such an approach was surprisingly long in coming, considering that far richer and realistic ones had been available well before the behaviorist era. For example, naturalists and ethologists, especially those who, like Konrad Lorenz, were influenced by the seminal work of Jacob von Uexküll, approached animals, plants and all levels of the living world as active organic beings whose relationship to the world around them was based on action and meaning, not mere stimulation and response. For them, animals and plants were essentially interrelated, that is, co-evolved, and for von Uexküll, the basis of the interrelation was essentially semiotic.<sup>14</sup>

Biosemiotics, originating in the middle part of the twentieth century, takes von Uexküll project on.<sup>15</sup> In doing so, it broadens the treatment of meaning to cover a spectrum of phenomena ranging from the dynamics of human personalities, at the most culturally-bound end<sup>16</sup> to cellular process at the purely biological end.<sup>17</sup>

Contemporary Biosemiotics has developed this project substantially and now combines elements from Peirce, von Uexküll with cultural studies and systems thinking more generally. It offers a unified view of the interrelatedness of the natural world. Once interrelatedness is

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<sup>14</sup> T. von Uexküll, Jacob von Uexküll's Theory of Meaning, *Semiotica*, 42 (1982): 1-88.

<sup>15</sup> T. Sebeok & J. Umiker-Sebeok, (Eds.), *Biosemiotics: The Semiotic Web* (Berlin: Mouton de Gruyter, 1992).

<sup>16</sup> F. Rothschild, Laws of symbolic mediation in the dynamics of self and personality, *Annals of New York Academy of Sciences*. 96 (1962): 774–784.

<sup>17</sup> K. Kull, An introduction to phytosemiotics: Semiotic botany and vegetative sign systems. *Sign Systems Studies*, 28 (2000): 326-350; J. Hoffmeyer, *Biosemiotics: an Examination Into the Signs of Life and the Life of Signs* (University of Scranton Press, 2008).

understood in semiotic terms, it opens the way to a deeper understanding of the origins of the cultural world, which is the domain of meanings created by human beings and, at a simpler level, by some social animals.

It is in this cultural world that the example of interrupted reading above is set. While it is intended to illustrate the richness of Peirce's treatment of unfolding signification, it also raises a critical question. Is Peirce's chain-like picture of semiosis rich enough? Chained events are necessarily sequential. But semiosis, both in nature and in the human sphere, is more often net-like, that is, it is necessarily parallel. William James recognized this when dealing with consciousness and selective attention, proposing that "...the mind is at every stage a theatre of simultaneous possibilities. ..."<sup>18</sup>

Within the sphere of human psychology there is substantial evidence to back this up. Subliminal presentation of a word with multiple meanings appears to activate all its meanings. Freudian slips show that, in addition to what someone consciously intends to say, there may be other streams of thought that are denied entry to consciousness. The unique talent of the mathematician Ramanujan seemed to involve a parallel search through a space of possibilities that was driven by aesthetics as much as logic. These and many more examples suggest that, in the human case, the flow of mental experience is parallel rather than sequential. In which case, the semiotic chains suggested by Peirce are better seen as a linear slice through a vast parallel network. In it, patterns of activity form and reform. In keeping with Peirce's pragmatism, it may be taken that those patterns that are compatible with the patterns around them persist, and that those that are not, fade.

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<sup>18</sup> W. James, *The Principles of Psychology, Volumes I and II* (Cambridge, MA: Harvard University Press, 1983), pg. 288.

David Bohm's hypothesis of semiotic continuity<sup>19</sup> is an understanding of the causal structure of Nature that has much in common with Peirce's view. In its simpler form he presents his system as a chain much like Peirce's. In more extended treatments, he put forward a view of the world comprising two ontological orders enfolded in each other without boundaries. These orders are the material or "somatic" order and the order of meaning or "signification." The two orders are in a continual process of enfolding into and unfolding out from each other. Enfolding renders one order implicit in the other, whilst the complementary process of unfolding makes the emerging order explicit. What appear to be material objects or events emerge from the order of signification while, in complementary fashion, what we take to be mental events emerge from and are inseparable from the somatic order that produces or supports them.<sup>20</sup> Bohm and Hiley refer to the "unbroken wholeness of nature," which moves from the chain-like slice to an interrelated plenum of semiotic causation and is thus boundary free.<sup>21</sup> It might be possible to express Bohm's world picture in terms of Peirce's triadic ontology of first-, second- and thirdness. The somatic order is a first, mere existence. The order of signification is a second, being intrinsically relational. The process of unfolding/enfolding is a third, since in its relations are interpreted.

These ideas help to enrich our understanding of Whitehead's terminology. For example, in the excerpt from *Process and Reality* quoted above, we encounter the terms "superjective character" and "actual entity." The latter is a semiotic event in which a sign transmits activity from one level of reality to another. The former is transmission of aim from one semiotic event to another.

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<sup>19</sup> D. Bohm, *Unfolding Meaning* (London: Routledge, 1985), pg.s 72-99.

<sup>20</sup> Ibid.

<sup>21</sup> D. Bohm and B. Hiley, *The Undivided Universe* (London: Routledge, 1993), 381-388.

This re-shaping of metaphysics is more than just an academic exercise. It helps to promote a worldview that covers both scientific findings and normative human values, which is also one of the aims of integral ecology. A metaphysic of process and signification evades the boundary between “is” and “ought” that David Hume saw as unavoidable. Science has moved on from his time and we now have richer conceptual tools with which to conduct research and apply its results. If, as Whitehead’s “big idea” suggests, the ultimate constituents of reality are *prehensive events*, they will by definition express some degree of intentionality. Even though this may be vestigial, it serves to repair the damaging exclusion of subjectivity from our world picture.

Proposing that the ultimate constituents of the universe are event-like and that these events have some degree of intention about them, has to be done with caution. It is not a claim that these elementary events have the richness of intentionality of found in human mental life, or prehuman mental life for that matter. But it is to claim that there is always an intentional element to them, albeit one so small that it ceases to have any resemblance to intentionality as experienced. There is a precedent, or analogy, here with physical science. Popular accounts of contemporary physics, especially of quantum gravity, stress that the objective components of reality, matter, space and time are minutely divisible, but not without limit.<sup>22</sup> Once physics had developed to the point of dealing with micro events at the Planck length, space time and matter cease to have much resemblance to the macro world of objects and events encountered in everyday experience. Nevertheless, the micro world must be the basis of the macro world. Given Whitehead’s big idea about what the micro events really are, why shouldn’t what goes for the objective aspects of reality also be true for the subjective ones? Vestigial elements of intentionality will have very little about them that resembles the sort of intentionality that concerned Husserl, but they will provide the

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<sup>22</sup> C. Rovelli, *Reality Is Not What It Seems: The Journey to Quantum Gravity*, Simon Carnell and Erica Segre (trans.) (New York: Penguin Books, 2017).

basis for it nonetheless. Husserl's phenomenological methods depended on reflexive consciousness to investigate intentionality, but they would be irrelevant to the investigation of intentionality at the vestigial level. In a similar way, although one can learn a great deal about the physical world through careful observation and experiment with macro objects, much as Galileo did, those methods cannot by themselves show the deeper structure of reality.<sup>23</sup>

Intentionality and, with it, subjectivity, which is intrinsically value-laden, are in the cosmos. It does not need the human mind, or any form of mind for that matter, to exist. The reflexive form of consciousness, which appears to be a human monopoly, is required for examining subjectivity, but examined or not, it is there *a priori*. If we accept that value-laden subjectivity is ubiquitous and if everything that exists is linked through networks of semiotic causation, then *values are as ubiquitous as subjectivity*. This is a very different world view to that regnant at the end of the nineteenth century. Then, it seemed that mechanism had triumphed and Ernst Haeckel declared "The great abstract law of mechanical causality rules the entire universe, as it does the mind of man."<sup>24</sup> This heroic expression of confidence in the universality of scientific understanding set an agenda that has lasted until today. It gives us a mechanistic world picture in which efficient causation is supreme and in which subjective experience, Husserl's *Lebenswelt*, has no place. By and large, and despite the opposition of scholars like Whitehead and Peirce, that world picture persists, rendering the normative world of human values an alien anomaly in a world that is in reality nothing but a vast machine.

In fact, something akin to Haeckel's declaration can be accepted so long as the "nothing but" is fundamentally changed. Rather than dead matter and mechanical causality, it is organic

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<sup>23</sup> P. Goff, Op. cit.. in footnote 6.

<sup>24</sup> E. Haeckel, *The Riddle of the Universe at the Close of the Nineteenth Century*, J. McCabe (trans.) (New York: Harper Books, 1906 [1895]). These words are attributed to Haeckel in O. Barfield, *History in English Words* (London: Faber & Faber, 1926), pg.188.

patterns of biosemiotic causation that constitute the universe and all beings in it. This shift from mechanism to organism and a biosemiotic view of causation is advanced here as a way of putting subjectivity, and especially human subjectivity back into the natural order of things. It opens the way to tracing how the world of human values and norms arose within the prehuman world. It will re-establish some of the harmony expressed in Aristotle's geocentric universe that Donne feared to lose, but with a richer view of causation that includes Aristotle's unjustly overlooked category of formal causation. The world will no longer be "... all in pieces, all coherence gone ..." and it will also offer a more harmonious picture than the geocentric one since in it there will be a qualitative continuity of cause rather than the variety of causes said to be at play in the Aristotelian universe.

This effort after a more harmonious picture is also a way to start on the task outlined above, namely, making process-relational metaphysics a more commonly understandable and hence applicable worldview that will have some traction in the geopolitics of our time. In effect, what is being attempted here is a recreation of the harmony of Donne's geocentric worldview using Whitehead, Peirce and Biosemiotics to create a new one with a new center. For Donne the earth was literally at the center of everything. Now we realize that that is not physically the case, but there is still a conceptual center, namely, subjectivity.

### *Putting the Pieces Back Together*

One of the founders of contemporary Biosemiotics wrote: "The world is full of subjects and something must have created them. ... Subjectivity has its roots in the cosmos and, at the end of the day, repression of this aspect of our world is not a viable proposition."<sup>25</sup> Indeed, tracing subjectivity to its roots might be one way to describe the projects of both Whitehead and Peirce.

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<sup>25</sup> J. Hoffmeyer, *Signs of Meaning in the Universe* (Bloomington: Indiana University Press, 1996), pg.s 57-58.

Accepting fully the statement that “ ... something must have created them ... ” points to some form of panpsychism, that is, a view that subjectivity is, and always has been, present at all levels of existence. This is a variety of speculative metaphysics that avoids both a homunculus like regress and a lapse in supernaturalism, and provides Integral Ecology with an accessible worldview that can help stop and hopefully repair the damage being done to the living systems of the world.

The causes of the damage emerge from a dense web of political, economic and technological forces. But close to the center of the web and in some sense driving it, is alienated human consciousness and the actions stemming from it. As Ernst Schumacher put it over fifty years ago: “It is no longer possible to believe that any political or economic reform, or scientific advance, or technological progress could solve the life-and-death problems of industrial society. They lie too deep, in the heart and soul of every one of us. It is there that the main work of reform has to be done.”<sup>26</sup> Alienated, urbanized, technologized ways of living lead directly to over-consumptive flows in systems that link human beings, animals and the living world. The results are all too clear: “Our data indicate that beyond global species extinctions Earth is experiencing a huge episode of population declines and extirpations ... ‘biological annihilation’ ... All signs point to ever more powerful assaults on biodiversity in the next two decades, painting a dismal picture of the future of life, including human life.”<sup>27</sup>

This global impact arises from networks of local actions too many of which are detached from the moral intelligence referred to at the start of this chapter. As a mundane example, consider the way in which pigs used to be, and, sadly, may still be intensively reared in Europe. The animals

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<sup>26</sup> F. Schumacher, *Good Work*. (London: Jonathan Cape, 1979), pg. 25.

<sup>27</sup> G. Ceballos et al., Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines, *Proceedings of the New York Academy of Sciences*, 2017, 114 (30); available at <https://doi.org/10.1073/pnas.1704949114>

were kept in steel pens with concrete floors, conditions that could hardly have been more alien from those of their evolutionary ancestors. When it was the cheapest feed, cassava was imported from the Far East to which hormones and antibiotics were routinely added. Waste from the pigs was then exported back to the Far East as cassava fertilizer. The end result was neatly packaged bacon on supermarket shelves. The suffering, environmental damage and health risks packaged with it were invisible to the people buying it. Most of them would probably never have seen a live pig or given much thought to where cheap bacon comes from. Various campaigns have improved things a bit, but their effects are small, given the gigantic force of global mass markets.

Metaphysics does not often figure in making bacon, but here the link is direct enough. If we lose awareness of the environment and the way our everyday lives relate to it, we are disconnected from the source of the moral intelligence which tells us that mistreating living beings is wrong. This sensitivity, which is practical rather than romantic, is still retained by peoples who live in a way that is more directly related to what the world around them can provide. They know what is valuable and hence what should not be destroyed.

Metaphysics, in the sense that has been advanced here, re-connects what David Hume disconnected, namely the investigation of what the world actually is and the values we come to adopt. The explicit values of the human world, those that can be critically examined and agreed on as norms within a community, are patent examples of what is meant by value. But there are implicit values too, that come from a sense of connection to a more-than-human world. The indigenous rainforest dweller referred to at the start of the chapter exhibited just this sense when he wondered why the men destroying the forest didn't know what they were doing was wrong. This sense is also shown in the great nature writers such as John Muir and Aldo Leopold. As Leopold puts it "A

thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”<sup>28</sup>

If we were to accept Hume’s dictum, such value statements would have to be taken as just normative conventions with no other basis than human agreement. But we no longer need to do that in the light of the metaphysic proposed here since it holds that value is intrinsic to the causal continuity of the cosmos. It is a metaphysic that evades conventional boundaries, including those that have previously been taken to separate the mental from the physical and the factual from the normative. Semiotic causation, which is formal causation in the Aristotelian sense, thus helps to restore that part of the worldview that Donne feared was under attack. With this metaphysic, perhaps we are in a better position to recover something of the unity of the Aristotelian worldview, and to use it to address the urgent geopolitical issue of our time, which is the severe degradation of the prehuman parts of the living world..

But how is it to be done? Bringing together Whitehead, Peirce, and biosemiotics is a worthwhile intellectual project, but it will remain little more than that unless it is used outside the academic world to help reveal and address the environmental dangers that face us. One way to do this would be to connect with the work of environmental activists like David Abram, Arne Naess and Johanna Macy.<sup>29</sup> They, along with many others, presently fulfil the role Shelley gave to poets, namely, to be the ‘unacknowledged legislators of the world.’ Indeed, it seems that the real causes of environmental degradation are more fully understood, and certainly more powerfully depicted,

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<sup>28</sup> A. Leopold, “The Land Ethic,” in *A Sand County Almanac* (New York: Oxford UP, 1949), pg.s 224-225.

<sup>29</sup> D. Abram, *The Spell Of The Sensuous: Perception And Language In A More-Than-Human World* (New York: Vintage Books, 1997); J. Macy, *Mutual Causality in Buddhism and General Systems Theory* (Albany: SUNY, 1991); J. Macy, *The Greening of the Self* in A. H. Badiner (Ed) *Dharma Gaia: A harvest of essays in Buddhism and Ecology*. Berkeley, Ca:Parallax Press, 1990, pg.s 53 - 63, this is also available as an eBook: <https://www.goodreads.com/book/show/19237630-greening-of-the-self> ; A. Naess in W. Fox, *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism* (Boston and London: Shambhala Publications, 1995, originally published by State University of New York Press, Albany, in 1990.

by poets than by politicians. The environmental activist and poet Gary Snyder writes: “The ‘free world’ has become economically dependent on a fantastic system of stimulation of greed which cannot be fulfilled ... The soil, the forests and all animal life are being consumed ...”<sup>30</sup> This stimulation is pervasive. Increasing proportions of people now grow up and live in urbanized surroundings which are saturated with media technology whose only purpose is to promote consumption by creating artificial needs.

Globalization, which is Westernization by and large, means pervasive signification. This was clear over thirty years ago, when it was observed that “In technocratic societies there is overwhelming propaganda and advertising which encourages false needs and destructive desires ... designed to foster increased production and consumption ...”<sup>31</sup> This is what creates the fake norms and distorted values of alienated consciousness. More than at any other time in human history, developing a sense of self is now bound up with powerful depictions of what to be, what to own and what to aim for. If a metaphysic of process and relation, of the sort that’s been outlined above, is to be of significance, it should be used to give a richer image of what selfhood actually consists in. A biosemiotic understanding of human selfhood will help recover norms with real ecological value. Such an understanding is that the essence of selfhood is a *semiotic process*, not the possession of something akin to the Cartesian soul.<sup>32</sup>

It has been suggested that the Western experience of people feeling that they are something exceptional, existing apart from the living world and hence entitled to use it for human ends,

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<sup>30</sup> G. Snyder, *Earth House Hold*. (New York: New Directions Publishing, 1969). This quotation comes from the section ‘Buddhism and the coming revolution’. It is also available online:

<http://www.bopsecrets.org/CF/garysnyder.htm>

<sup>31</sup> B. Devall and G. Sessions, *Deep Ecology: Living as if Nature Mattered* (Salt Lake City, UT: Peregrine Smith, 1985), pg.68.

<sup>32</sup> J. Pickering, Selfhood is a Semiotic Process, *Journal of Consciousness Studies*, 6/4 (1999): 31-47; also in J. Pickering, *The Authority of Experience* (London: Curzon Press, 1097), pg.s 149-169.

originated in Judeo-Christian teachings about the nature of the soul.<sup>33</sup> Changing this experience is seen by many environmentalists as a vital part of any response to the ecological crisis. Arne Naess, a philosopher who's position on what has come to be called the Deep Ecology movement, is sometimes identified with Eastern systems of thought, especially Buddhism. There we find a different view of selfhood. Naess puts it this way when discussing how to take more care not to harm the environment: "Care flows naturally if the 'self' is widened and deepened so that protection of free Nature is felt and conceived as protection of ourselves. Just as we need no morals to make us breathe ... (so) ... if your 'self' in the wide sense embraces another being, you need no moral exhortation to show care."<sup>34</sup>

Perhaps this broadening of the boundaries of the self is part of the reform of which Schumacher speaks. With care, it may be possible to approach Eastern traditions in this spirit, as helping human beings to experience their place in the world as part of a more inclusive and participatory cosmology.<sup>35</sup> These moves are towards a more modest image of the place of human experience in a as Abram implied when he gave his book *The Spell of the Sensuous* the subtitle, *Perception and Language in a More-Than-Human-World*. Some non-Western religions are occasionally cited as being environmentally sensitive in something like this sense. Hinduism, Jainism and some native American traditions are examples here. They are said to allow human beings to experience themselves as a part of, rather than apart from the living world, especially by recognizing the sentience of other living things.<sup>36</sup> This implies that the boundary between self and world may be set more widely and felt to be more permeable. This connection is well brought out

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<sup>33</sup> L. White, The Historical Roots of Our Ecological Crisis, *Science*, 155 (1967): 1203-1207.

<sup>34</sup> A. Naess in M. Fox, *Toward a Transpersonal Ecology*, pg. 217.

<sup>35</sup> See for example, I. Harris, "Buddhist Environmental Ethics and Detraditionalization: The Case of EcoBuddhism," *Religion* 25/3 (1995): 199-211; S. James, *Zen Buddhism and Environmental Ethics* (Aldershot: Ashgate, 2004).

<sup>36</sup> R. Gottlieb (Ed.), *This Sacred Earth: Religion, Nature, Environment*, 2<sup>nd</sup>. Edition (New York: Routledge, 2004)

by Johanna Macy who takes from Buddhism the view that: “To be interdependent and reciprocally affecting is to be a process. In this fluid state of affairs, the self is no exception.”<sup>37</sup> From this view she concludes that: “If the self is a pattern ... or transformations of energy and information arising in interaction with the surrounding world, its nature is profoundly participatory in that of other beings. .... then this involves an extension of constructs of self-interest, in which the needs of other beings begin to emerge as covalent with one’s own.”<sup>38</sup> In a somewhat similar sense, Polly Yong-Eisendrath, a psychoanalyst strongly influenced by Buddhism, notes that this extension to our sense of self can be profoundly therapeutic: “If we conceive of the self as wholly interdependent and impermanent, as a function rather than as a thing, then we appreciate more deeply our true freedom in this world.”<sup>39</sup> Interdependence and impermanence are intrinsic to a semiotic understanding of selfhood.<sup>40</sup>

This revision of our sense of self touches directly on environmental issues. There is presently deep concern at the loss of diversity of habitats and species. Since human action is often a major cause of the loss itself, people may also feel that it is a human responsibility to do something about it. But such feelings depend on the degree to which people feel threatened and on how strongly they feel they belong to the natural order and have a duty of care towards it. Now, following Naess and Macy, it’s clear that experiencing selfhood as a thing apart from rather than a part of the natural world leaves people more open to feelings of alienation and meaninglessness. It diminishes the sense of experiential continuity, on which empathetic connection with the world

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<sup>37</sup> J. Macy, *Mutual Causality in Buddhism and General Systems Theory* (Albany: SUNY Press, 1991), pg. 107.

<sup>38</sup> *Ibid.*, pg. 194.

<sup>39</sup> P. Young-Eisendrath (2008) The Transformation of Human Suffering: A Perspective From Psychotherapy and Buddhism, *Psychoanalytic Inquiry*, 28:5, 541-549.

<sup>40</sup> J. Pickering, *op. cit.* in footnote 33.

depends. This is the internalized culmination of the “disenchantment of the world” that Max Weber saw as an experiential consequence of the shift from medieval to modern world views. Not only is the world divested of intrinsic meaning, but the self which encounters that world is also diminished.

However, shifts in the opposite direction, towards re-enchantment as it were, have been clear for decades now.<sup>41</sup> These shifts reflect the effort to repair a fundamental dislocation of our sense of belonging to the natural order and of kinship with other living beings, especially animals.<sup>42</sup> Paradoxically, although globalization has meant the spread of manipulative media technology, it has also raised awareness of the interconnectedness of human cultures and of the natural systems on which they depend. As Michel Serres puts it in setting out what he calls a “Natural Contract” between human beings and the world, this has “... to do with the recent passage from local to global and with our renewed relationship to the world, which was long ago our master and of late our slave, always and in all cases our host, and now our symbiont.”<sup>43</sup>

We are indeed symbionts, as are all living things. A metaphysics of process and relation, such as the one that has been sketched here, links all orders of existence into a living web of mutual, semiotic causation which includes the human phenomenon. Whitehead and Peirce have created the foundations for it, and biosemiotics builds on them a conceptual structure that gives a fresh perspective on how the world of human values arises from the prehuman world. The task now is to use these ideas, in combination with the many thinkers and activists who are doing

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<sup>41</sup> See for example, D.R. Griffin (ed.), *The Reenchantment of Science: Postmodern Proposals* (Albany: SUNY, 1988), introduction; D.R. Griffin, *Unsnarling the World Knot* (Berkeley: University of California Press, 1998).

<sup>42</sup> F. Matthews, *The Ecological Self* (London: Routledge, 1991); F. Matthews, *Without Animals Life is not Worth Living* (Adelaide: Ginninderra Press, 2016).

<sup>43</sup> M. Serres, *The Natural Contract*, Elizabeth MacArthur & William Paulson (trans.) (Ann Arbor: The University of Michigan Press, 1995), pg. 38.

Schumacher's "main work". That work is to recover the moral intelligence that arises from being aware of our interdependence with the living world and, hence, of the damage being done to it. The more that work succeeds, the more we'll be able to repair the damage to re-establish the *coherence and just supply* that Donne feared to lose.

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