

The Internal and the External Semiotic Properties of Reality

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Abstract

This paper explores semiosis as a process that transforms inaccessible energy into accessible energy. On this view, semiosis is a process enabling energy to stabilize itself in an 'informed' state by means of increasingly complex codification processes. Accessible energy is thus understood as 'information' and/or 'knowledge'. Codification constitutes a dynamic evolution of networks of relations by which information develops within a maturing interpretive architecture. This architectural network is examined within three categories of relations, Peircean Firstness, Secondness and Thirdness. This leads us, first, into an examination of different modes of the evolution of knowledge. The second part of the paper examines the semiotic action in more detail as a process establishing relationships within five nodal sites, moving energy from the sensate to the interpreted, from the uninformed and unformed to the informed and formed.

Keywords: Semiosis, energy transformation, information, codification, interpretation.

This paper will explore the evolutionary process of semiosis by means of which inaccessible energy is transformed into information or accessible energy. Basically, I am understanding semiosis as a process enabling energy, understood as 'effete matter' or 'the potentiality-to-be', to stabilize itself on our planet in a form which we can consider as 'information' by means of increasingly complex codification processes—whether this information operates as a chemical molecule or a biological cell or even, an entire society.

Standard definitions define energy as the measure of a system's ability to do work – a definition that provides us only with the result of this energy but provides no clarification of its inherent nature. Specifying that energy can operate in two states, as potential and as actual or kinetic, refers to the phenomenological states of existence of energy but again, provides no clarification of its nature. Penrose's statement, in his examination of the nature of and the relation between mind and mass, that "mass being the measure of actual material substance, whereas energy seems to be a more nebulous abstract quantity describing a potentiality for doing work" (1995:214), confirms our amorphous understanding of the nature of energy. Is energy a discrete substance that is locked within mass, and when released from this mass, it can then 'do work'? Is energy a modern version of vitalism? Or, is it that "somehow, Nature contrives to build a consistent world in which *particles and field-oscillations are the same thing!*" (Penrose 1990:299; italics in original). That is, mass or particles, and motion or work activities, are entangled to such an extent that we cannot say that each has a separate nature. They are 'one and the same'. Can we say that mass is energy in its conserved or potential state and that motion or field oscillations is energy in its kinetic state? That

would, for the moment, put us back to an understanding of energy in its phenomenological states but with the additional perspective that these two states are versions of the same thing. Perhaps such a picture, of a dyadic or two-state entity is as far as we can go. This view of energy denies that it could ever exist in a primal or pure monadic state. What this perspective sets up is an image of a basic force of our cosmos that exists in varying degrees within a reduced or confined state and at the same time in an expansionist or 'free-to-interact' state. It is this image of energy that is addressed in this paper. In an effort to explore the nature of these two basic states of energy, I am proposing that energy in all its states exists only by means of the on-going and evolutionary actions of measurement or codification. That is, energy – which we can at the moment only picture as a potential or actual force – exists in these two phenomenological states only within processes of 'being measured'. This puts us into a cosmos where codification or organization is an integral process of reality. That is, energy is not simply mass, but mass is organized energy.

Organization of energy-as-mass is accomplished by codification. Codification is the development of closures of energy and of relations between these closures. We should not view codification only as a process that sets up formal secondary references. A common understanding of a codal system is that it is a 'systematic sign repertoire' (Buysens, in Noth 1995:205), where the code is perceived as a metareference, usually linguistic, which sets up an external formal system of signs that are related to material or non-linguistic 'things' in a one-to-one correlation or a system of substitution of the one for the other. I consider such a metareferential system to be a secondary process of interpretation, something that I discuss within this paper as falling under the category of the Dynamic Interpretant. A referential system of interpretation is indeed vital for the historic and evolutionary transformation of energy/mass, but I am trying to show that codification includes a more elementary syntactic process of organization. What I mean by codification is the basic organization of energy, which moves that energy from a kinetic state into a potential state of conserved mass or vice versa, from a potential to a kinetic state of activity. It achieves this transformation between the two states of energy by the establishment of differentiations of organization. That is, an atom of oxygen exists as such because of the particular organization of its nucleus and electrons, which are differently organized from an atom of, for example, hydrogen. Codification can be understood therefore as the development of systemic differences and the development of systemic relations between these differences. These can be as basic as the difference between the neutrons, protons and electrons, as the differences between atoms and molecules, and we can proceed to more complex differential states such as those between organic cells and even, social forms of organization. Relations are linked couplings of these differentiations. We cannot have a differential closure without relations; an atomic particle cannot exist unless it is separated, in the sense of its distinct organization, from that which it is not – and this separation is itself a relation between the one and the other. Therefore these differentiations can be viewed as closures-of-energy that are 'closed', even if only for a nanosecond, by virtue of their internal and external relations with other closures of energy. These differentiations are, in themselves, signs. We do not require a secondary referential system that states that this closure-of-energy, this electron, is 'called' an electron, in order for it to exist as a sign-unit. It exists as a sign-unit because it signals its identity to other sign-units, merely by its own state-of-being, its own manifestation of a differentiated syntactic existence.

Energy becomes conserved or stabilized within these vast networks of differentiated closures and their relations. These codal actions, both the internal and the external organized entanglements, can range from the spurious to the intentional, from the contact of seconds to the bonds of centuries, but

in their operations as a whole, we must understand them as a process of organization that is based on regular laws of both matter and mind. Matter exists only because it is organized, which is to say, it is mind-dependent. I am here understanding 'mind' not as the human, but as the cosmic law of order. Therefore "this theory of reality is instantly fatal to the idea of a thing in itself, - a thing existing independent of all relation to the mind' s conception of it" (Peirce CP: 8.13). This view is denying a separate existence to mind and a separate existence to matter. Instead, what we are establishing here is an understanding that both mind and matter operate as a holistic synergy, that reality exists as an ongoing process of the organization or semiosis, i.e., sign-producing codification of energy. The organization of energy results in 'mass' or what I would prefer to call 'information' or a 'sign'. Information or signs are organized energy and the process of organization is by means of 'logically ordered relations', which process is actually - semiosis.

Therefore we must conclude that there is no such thing as 'pure primal energy'. Instead, "everything that changes must be divisible" (Aristotle *Physics*. 234b15). The establishment of differentiation by means of divisibility is the first semiotic action, achieved within our primordial world millenia ago, by the separation of energy interactions into two codal processes—that which is operating within Newton' s first law of inertia or continuity and that which is operating within the second law of entropy or discontinuity.

The interactions between these two primordial forces, the potential and the kinetic, can be examined within three models. In order to compare the monadic or essential and the dyadic or mechanical with the complex or triadic semiosis, I am going to introduce a number of terms and processes. We can explore these basic models by examining the processes of differentiation of codification into the internal and external spatial frames or the Self and Not-Self; the division of spatiality into the local and the global relational frames; the division of time into the potential and actual relational frames; and the division of the realm of contact into the universal and particular modes of operation. Then, we can examine these four binarisms within three categories of relations which develop to mediate those differences: Firstness, Secondness and Thirdness. Finally, and more specifically, we can examine the movement of semiosis, or the codification of energy into information, through this set of basic binarisms within five nodal sites; the dynamic object, immediate object, immediate interpretant, dynamic interpretant and final interpretant. This is the architectural frame of my semiotic analysis of the transformation of energy into information.

Realism and Binarisms

The most basic binary differentiation is that between the self and the not-self, which is also a division into the internal and the external worlds. "That is, there is an outward and an inward experience" (Peirce CP:7.440) and "in the action and reaction of bodies, each body is affected by the other body' s motion, not as participating in it but as being opposite to it" (6.84). This separation permits relations to develop between that self and that other, and as noted, codification, or the stabilization of energy into information, takes place only within relationships.

This first binary relation, that differentiation between the self and not-self has to be understood as a primal necessity for the continuity of energy and for its transformation into information. Peirce' s definition of the real, which we can understand as the other to the Self, is "The real is that which insists upon forcing its way to recognition as something other than the mind' s creation" (CP.325).

And "the real is that which is not whatever we happen to think it, but is unaffected by what we may think of it" (CP:8.12). The external world, therefore, is "any object whose attributes...will...remain exactly what they are despite what one thinks of them" (CP:6.327). The relation between these two zones of reality is not uniform but can fall into one of three categories: monadic, dyadic or triadic, which is to say, mimetic, mechanical or transformative.

A second binarism inserts more detail into this self/not-self or internal/external division and refers to spatial differentiation. Are these relations confined to the local zone of immediate energy contacts or do they expand contact to include the non-local or global zone? That is, are the relations that an entity is capable of confined to a local and limited horizon, its immediate zone of material contact, or can the entity expand its interactions?

A third binarism refers to time and considers the temporal distinction between the potential and the actual mode of existence. Potentiality refers to the future but insists on an indefiniteness and openness in the nature of future codification. Potentiality must not be understood as mere ignorance. Peirce criticizes "the modern philosophers [who] recognize but one mode of being, the being of an individual thing or fact...I call that existence. Aristotle, on the other hand, whose system, like all the greatest systems, was evolutionary, recognized besides an embryonic kind of being...like the being of a future contingent event" (CP: 1.21-22). Energy cannot exist only within the finite closures of individual particulars; neither can it exist only within the fuzzy chaos of the forever-potential. Energy exists within a mediated dialogue between these binarisms.

The fourth binarism refers to the differentiation of relations into the universal and the particular realms of contact. Interactions with a particular external world are serial and unique, with "only one of each series being present" [while] interactions with the universal Not-Self, on the other hand, belong to every phenomenon" (Peirce CP:5.43). How does a universal or common relationship develop? By virtue of a generalization, a blending of distinctions of behaviour. We must be careful not to fall into the nominalism of denying the reality of the universal and the act of generalization, for this relation of the universal is as real as the singular material object.

We cannot deny or reduce these sets of binarisms and must accept this architecture as a necessary means by which energy maintains itself. Now—that we have our basic architecture—we can consider the specific nodes or sites of energy activity.

The Nature of Codification

The differentiation of reality into this architecture of binary codal processes inserts a requirement for relations to deal with these differences. A relation is a form of measurement. It is the development of a set of codes or measurements by which energy is bonded together and then, links or strings of measurements are set up to link these closures. The development of a link or relational action means that one codal process or measurement can refer to another process by using a shared codal order or normative rule. This secondary or external codification is a referential codification, by means of which the internal semiotic codification can establish the capacity to link up with the other coded closures of energy, to link up its 'this' with 'that'. Referential codification, the zone of universal, global, not-self, and potential codification operates in opposition to unique codification, the zone of the particular, local, self and actual codification. Referential codification operates as a

macrolevel of reality and mediates the unique closures of energy to move them into relationships with each other. Therefore, a necessary second step after the shock of the first separation into different codifications and the establishment of the four binary zones of these codal differences, is the movement of one set of these binarisms into a macrolevel, a more stable codal zone and the movement of the other set into a microlevel of the unique and once-only existence. The battle between these two levels to be accepted as 'the real' has been with us since time began.

Both levels, the referential and the unique, can be understood as separate levels of reality. With regard to the referential, we can read that "a proposition is a sign separately indicating what it is a sign of" (Peirce CP: 7.203) "...this amounts to saying that it represents that an image is similar to something to which actual experience forces the attention" (7.203). The unique is the actual experience, the 'hic et nunc', the 'nowness' of our immediate experience. However, semiosis requires both levels and insists on a constant filiation of their differences. The codal referential systems by which energy is measured within relationships serve to preserve and stabilize energy. Energy is organized at a basic primal level by means of codification into unique existences, and then, a second level, a referential codal level develops, which 'unlocks' that uniqueness and binds that energy to the global, the future, the common, by the development of shared signification.

The result of this marriage of primal opposite forces is not the obliteration of energy, but the actual increase of the potentiality of energy to survive.

Three Categories of Relations

Within this increasingly complex architecture, we can examine three categories or modes of being-in-relation. They are "the being of positive qualitative possibility, the being of actual fact, and the being of law that will govern facts in the future" (Peirce CP: 1.23). These three types of relations, from the simple to the complex, each permit a particular mode of semiotic interaction. This triad is also known as "feeling, volition, cognition" (1.332) and 'quality, relation, and synthesis or mediation' (1.378) and 'chance, law and habit taking" (1.409) or Firstness, Secondness and Thirdness. "Firstness is the mode of being of that which is such as it is, positively and without reference to anything else. Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third. Thirdness is the mode of being of that which is such as it is, in bringing a second and third into relation to each other" (8.328). Again, "First is the conception of being or existing independent of anything else. Second is the conception of being relative to, the conception of reaction with, something else. Third is the conception of mediation, whereby a first and second are brought into relation" (6.32). Again, if we refer to the types of relations possible within each category, we can state "firstness, or spontaneity; secondness, or dependence; thirdness, or mediation" (3.422). We can even refer to them as three elements of consciousness—"immediate feeling is the consciousness of the first; the polar sense is the consciousness of the second; and synthetical consciousness is the consciousness of a third or medium" (1.382).

Let us consider how these three types of relations operate within the four basic binarisms.

The Relation of Firstness

"Firstness is the mode of being which consists in its subject's being positively such as it is regardless of aught else" (Peirce CP:1.25). That is, a relation of Firstness operates within an unawareness of anything else and provides an intensity of feeling of that relation, indeed, it provides only for this intense state-of-feelingness. "The idea of First is predominant in the ideas of freshness, life, freedom...Freedom can only manifest itself in unlimited and uncontrolled variety and multiplicity; and thus the first becomes predominant in the ideas of measureless variety and multiplicity" (1.302). "The first is predominant in feeling, as distinct from objective perception, will, and thought" (1.302), and, "By a feeling, I mean an instance of that kind of consciousness which involves no analysis, comparison or any process whatsoever, nor consists in whole or in part of any act by which one stretch of consciousness is distinguished from another, which has its own positive quality which consists in nothing else, and which is of itself all that it is, however it may have been brought about; so that if this feeling is present during a lapse of time, it is wholly and equally present at every moment of that time...by a feeling I mean an instance of that sort of element of consciousness which is all that it is positively, in itself, regardless of anything else" (1.306). This is a state of immediacy and necessarily operative only within the internal, the local, the actual current and particular 'now'.

To move into an awareness of this sensation requires the capacity to refer to that state; this requires a metareference, an awareness of being other to that feeling, a usage of a secondary metalevel of codification that operates as a reference by means of which this intense internal state can be, in a sense, located, and referred to, for "although a feeling is immediate consciousness...yet there is no consciousness in it because it is instantaneous" (Peirce CP:1.310). This first state of being is not non-relational, but is rather, the state of being-in-a-relation without the capacity to refer to that relation. It is completely internal and is "the present, being such as it is while utterly ignoring everything else, is positively such as it is" (5.44). Now—what kind of world operates in this category of relations—solipsistic and unaware of any other reality? Could our cosmos survive using only this category of relationships?

The Evolution of Knowledge Using Only Firstness: Monadic Evolution

A theistic or essentialist relation is based on a mimetic or isomorphic style of relationship. This would mean that an understanding that the binary separations would require differentiation would be considered an error, and the goal of evolution would be to deny and dissolve these differences. This is the utopian goal of all monadic architectures that seek to return our world back to its primal Eden of pure non-relational existence. Would it work? Monadic models usually consider diversifying actions as mutations, errors, ignorance or, in their most metaphoric, the work of the devil. However, in actual physical reality, a monadic system reproducing only itself would gradually devolve to a lower or more simple organization of energy, leading to an inevitable heat-death. Energy could not maintain itself on this planet within a monadic model. It remains a fictional world of utopian idealism.

The Relation of Secondness

A more complex category of relationships is dyadic and involves "a mode of being of one thing which consists in how a second object is" (Peirce CP: 1.24). This basic dyad provides for "a double consciousness. We become aware of our self in becoming aware of the not-self. This style of relations admits and indeed, insists on differentiation.

The category of Secondness is predominant "in the ideas of causation and of statical force" (1.325), for "constraint is a Secondness" (1.325) and therefore the "principles of contradiction and excluded middle...imply that whatever exists consists of individuals" (3.612), or particular finite realities. Secondness is a state-of-being a particular entity; Secondness, therefore, is "not a conception, nor is it a peculiar quality. It is an experience. It comes out most fully in the shock of reaction between ego and non-ego. It is there the double consciousness of effort and resistance. That is something that cannot properly be conceived. For to conceive it is to generalize it; and to generalize it is to miss altogether the hereness and nowness which is its essence" (8.267). The relations of Secondness are local, actual and particular.

An architecture operating solely within the confinement of Secondness works within a concept that reality is completely and only made up of discrete particles whose normalities and accidental discrepancies can be fully known, with the addendum that any incomplete knowledge is merely due to our ignorance. This is the world of mechanism and positivism, the dyadic frame of operations that has formed the basis of western science for hundreds of years.¹ It is a powerful means of exact inductive description, but, as a process, can it evolve or does it merely describe 'what-is'?

Evolution of Knowledge Using Only Secondness: Mechanical Evolution

Rosen's synthetic model describes a mechanical world as "built up out of disjoint, separate pieces" (Rosen 1991:166). There is no differentiation of codal properties. All relations, both external and internal are understood as particular, local, actual and focused on the individual particle, operating within proximate causality "in the entailment of next state by present state" (229), for a "mechanism is a system in which syntactics and semantics coincide"(241). Therefore "the largest model...is the direct sum of the smallest ones" (217) and "the essence of a synthetic model is precisely that it is built up out of disjoint, separate pieces. Hence it can be 'unbuilt' the same way" (1991:166). The basic differential binarism of the two realities of the self and not-self, internal and external, local and global, actual and potential, universal and particular is denied in favour of an arithmetic summation of parts of a homogenous world. Because of this homogeneity, as Peirce notes, "mechanical law can never produce diversification" (1.174) or develop new emergent properties, because its relations are always and only between existent particulars. As such, they interact within either a mimetic reiteration or survival-based conflict. In the Cartesian architecture, "the only force is the force of impact, which clearly belongs to the category of Reaction" (Peirce CP:5.63). Therefore, the machine, by itself, as a dyadic architecture of separate bits, has no capacity to evolve because all its properties and relations operate within closures.

¹ Within our nodal diagram, it goes as far as the Dynamic Interpretant - IF need be - for it sees this Dynamic Interpretant merely as the formal or descriptive articulation of the Immediate Interpretant. It goes no further. It ignores the reflexive transformation of the Dynamic Interpretant that takes place within the nodal site of the Final Interpretant.

The Relation of Thirdness

Generative or evolutionary knowledge is based around an additional category of relations, a relation that can acknowledge and yet 'cut across' the unique closures, mediate their isolation and establish, indeed generate, common properties. Thirdness, as an action of mediation, can never be reified into the particular actualities of mechanical Secondness. Therefore "the third category—the category of thought, representation, triadic relation, mediation, genuine thirdness, thirdness as such—is an essential ingredient of reality, but does not by itself constitute reality, since this category (which in that cosmology appears as the element of habit) can have no concrete being without action, as a separate object on which to work its government, just as action cannot exist without the immediate being of feeling on which to act" (Peirce CP:5.426). This means that this process must remain a process, it can only exist within the act of relations, and can never be reified into an idolatrous actual and local entity.

The analytic (rather than the mechanical-synthetic) model of Rosen permits a world as "built from observables that, in effect, see the system whole" (1991:166) and their parts "generally overlap and cannot be regarded as direct summands" (166). The result is that every doctrine and conception of logic is wonderfully generalized, enriched, beautified and completed in the logic of relatives" (Peirce CP: 4.5). Ideas or actualities spread continuously, and "in this spreading, they lose intensity, and especially the power of affecting others, but gain generality and become welded with other ideas" (6.104). Root-Bernstein and Dillon suggest that the DNA and protein sequences do not operate totally independently of one another, but are, instead, operating in a complementary process. "Complementary systems do not permit alterations of one component without making compensating alterations in its complement(s) as well" ...[Therefore] "DNA, RNA, and protein sequences do not arise randomly, but in what should appear to be a 'directed' or very limited fashion" (1997:463). Thirdness operates as an ongoing mediative process of co-ordination and control. And therefore "it follows that statistical analysis of DNA, RNA, and protein sequences assuming the possibility of any sequence variation are providing grossly inaccurate results" (Root-Bernstein and Dillon 1997:463); that is, research operating only within the cumulative particularities of the mechanistic frame is ignoring the generative properties that emerge within the mediative relations of Thirdness.

Thirdness is a process, and as such, is not decomposable or composable, into discrete units. That is the error made, again and again, by all formalist methodology. Rosen's outline of this level of generality, sees it as a scaffold, where "sequences are held together, not by any direct intersymbol bonds, but by being suspended in a larger structure" (1991:274). Rosen continues, "if we perchance interpret the elements of such configurations to be atoms, or chemical groups, or even bits and pieces of chemical groups, then such scaffolded configurations may themselves act like conventional chemical species. If so, they are in fact much more general than conventional molecules; there may be no way of holding them together through internal chemical bonds at all. They can only 'exist' when scaffolded together"...If the scaffolding as a whole is perturbed, or disrupted, they disappear, they cease to exist, they denature. But they do not 'decompose' in any conventional sense, and they reappear when the scaffolding is restored" (272). This scaffolding is Thirdness, the process of generalization, of developing relationships "of parts drawn from residues remote from each other" and permitting the development of 'entirely new chemical entities' and

completely new emergent properties. This active process cannot be fractionated because it is not a 'thing-in-itself' but a mediation" (275).

As Peirce confirms, the involvement of Thirdness "involves a complete rupture with nominalism. Even Duns Scotus is too nominalistic when he says that universals are contracted to the mode of individuality in singulars, meaning, as he does, by singulars, ordinary existing things" (Peirce CP: 8.208). It is important to understand that this category of relations, based as it is within the universal, the global, the potential and the external Not-Self, is a vital factor within the evolution of the overall complexity of energy and is not a special property of the most complex level, the socioconceptual. All forms of reality, physico-chemical, biological and conceptual operate within this category of codification. It is only the ideological and the mechanical which operate, respectively, within a monadic or dyadic relationship.

The Phaneron of the Sign

In order to exist, energy must be semiotic, it must be in a relation—monadic, dyadic or triadic—with some other form of energy. This relation, both in its process and its results, is a codified action and therefore, is a sign. "Every thought, or cognitive representation, is of the nature of a sign. 'Representation' and 'sign' are synonyms. The whole purpose of a sign is that it shall be interpreted in another sign...when a sign determines an interpretation of itself in another sign, it produces an effect external to itself, a physical effect, though the sign producing the effect may itself be not an existent object but merely a type" (Peirce CP: 8.191). Codification is a relational process and "a sign stands for something to the idea which it produces, or modifies. Or, it is a vehicle conveying into the mind something from without. That for which it stands is called its object; that to which it conveys, its meaning; and the idea to which it gives rise, its interpretant" (1.339).

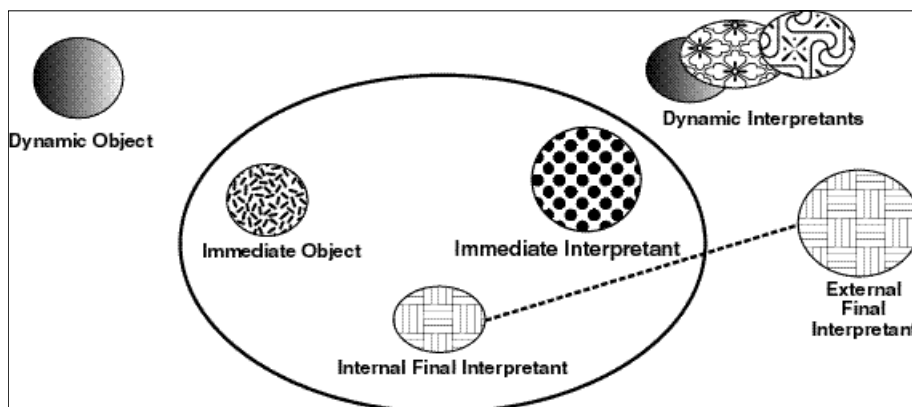


Figure 1: Nodal Sites of Semiosis

Peirce later called the sign a 'representamen', and stated that "a representation is that character of a thing by virtue of which, for the production of a certain mental effect, it may stand in place of another thing. The thing having this character I term a representamen, the mental effect, or thought, its interpretant, the thing for which it stands, its object" (1.564). I will examine the semiotic action as a process establishing relationships of states-of-energy within these three states-of-being or closures (the object, representamen and interpretant), a process which may include five or more

nodal sites. These sites act as locations for the transference and/or transformation of energy and codification between the basic binarisms of the modal architecture. It should be clear that these semiotic processes relate the two realities, the two worlds of the internal and external and in so doing, they provide increasingly complex and sophisticated processes for both the continuity of codification and the flexibility of entropy.

Peirce outlines the five nodal steps of semiosis (1892, 1893:7:276-278), where the Dynamic Object of the external reality is understood as an 'interesting phenomenon'; then, using a means of measurement, this 'phenomenon' moves from the external reality of the Not-Self to the internal codal zone of operations of the Self and becomes the Immediate Object. It is then further codified within the interpretant phase, which "has three interpretants, its interpretant as represented or meant to be understood, its interpretant as it is produced, and its interpretant in itself" (8.333). As such, this coded energy, first existing within the Self as the Immediate Object, is subject to specific codal processes which redefine it within a new set of relations, culled first from the local historic experiences of the Self, which transforms the Immediate Object into the Immediate Interpretant. Then, this Immediate Interpretant is further measured/codified by the insertion of a more formal external measurement; that is, energy moves back out of the safe internal enclosure within the Self into a relation with the external Not-Self. These are the non-local or 'communal' formal systems of measurement of the Dynamic Interpretants. Finally, but not necessarily, the energy will be moved even further from the its isolate safety within the local horizons of the Self, and into a relation with the more universal and global Not-Self, within the stages of the Final Interpretant. This Final Interpretant phase is vital, for it links the local internal Self and the global external Not-Self into a mediated and generalizing relationship.

This is the basic architecture, and it is worth noting that simple semiotic processes will not include all nodes, and that more complex ones will even add metalevels to the Interpretants, particularly to the Dynamic Interpretant. I will now provide a more detailed analysis of the five nodal points of codification.

Dynamic or External Object

We may begin with the two objects, that which is external to the self and that which is internal to the self. The reality of the external energy, which we may term the Dynamic Object, is indeed our first stimuli, our first contact. The codal internalization of that external reality takes place within the Immediate Object nodal site, which is located within the internal semiotic field of the Self. Is the one a direct reflection of the other? Such a mimetic relation is the view of nominalists, whether idealistic or empirical, where the one form, to be 'true', must be an icon of the other. However, "A sign has two objects, its object as it is represented and its object in itself" (Peirce CP: 8.333). "The Mediate Object is the Object outside of the Sign; I call it the Dynamoid Object. The Sign must indicate it by a hint; and this hint, or its substance, is the Immediate Object...the Dynamoid Object may be a Possible; when I term the Sign an Abstractive" (Peirce LW: 83). The Dynamic Object is that which "the Sign cannot express, which it can only indicate and leave the interpreter to find out by collateral experience" (Peirce CP:8.314). Therefore, we should understand the Dynamic Object as the external codal force "of the actual or real;" while the Immediate Object is the internal codification of that stimuli within the semiotic codal capacities of the Self. Because of this basic

binary differentiation between the Self and Not-Self, and the requirement for a relation between these two worlds, we must already assume that, dependent on the semiotic capacities of the Self, there has already been a transformation of energy codification in the movement from Not-Self to Self. That is, the external and internal realities cannot be mimetic versions of each other.

Immediate Object or Phenomenal Consciousness

The codified energy is now operative within the semiotic rules of the internal, actual, immediate, particular closures of the Self. These sensations now "belong to the particular situation of the observer, and the particular instant of time" (Peirce CP: 7.331). The sole function of this basic movement of the external to the internal zone of codification, I suggest, is the stabilization of energy by means of a narrowing of spatiotemporal horizons. It cannot be said, at this stage, to do anything more than prevent entropic dispersion of energy by codifying that energy within local and particular horizons.

Operating in a state of Firstness, a state of immediate relational bonds, this codification of energy is basic and simple and "an incomplex thought can...be nothing but a sensation or emotion, having no rational character" (Peirce CP:5.294). The error of understanding this phase within a nominalist signification, is to consider that this sensual data is an iconic representation of the external object. In reality, this direct contact is the least informative, as we find in the most basic chemical bonds. This conclusion "is very different from the ordinary doctrine, according to which the very highest and most metaphysical conceptions are absolutely simple" (Peirce CP:5.294), and we all know of various ideologies which insist that the immediate emotive experience is the 'most pure' and the 'most truthful'.

This simple semiosis merely protects energy from entropic decay by its enfolding an energy-organization (the Dynamic Object) within a more controlled or specific zone of organization, the Self as differentiated from the Not-Selves. However, the very action of this reorganization will provide energy not only with a more secure means of inertia but will also, in that process, cause a loss of some of that energy from stable codification. Therefore, energy, in its totality, within the two realities of the Self and Not-Self, will require a more complex means of stabilizing itself than the process of basic enclosure. For this, we must move into a phase that provides a secondary form of measurement or codification that provides a more stable codal reference to the codes within the enclosure. Referential interpretations codify energy, already codified within an internal closure, into an even tighter bond because they operate within the restrictions of Secondness, where "the sense of reaction is thus a sense of connection or comparison" (Peirce CP:6.19). These connections and comparisons can be understood as closed couplings or inert electromagnetic bonds between one code, the internal, and an external referential code. These referential codes are called 'Interpretants'.

The Interpretant

There are three basic interpretants. "The Immediate Interpretant is what the Question expresses, all that it immediately expresses...The Dynamical Interpretant is the actual effect that it has upon me,

its interpreter. But the Significance of it, the Ultimate or Final, Interpretant, is [the] purpose in asking it" (Peirce CP:8.314). Not all interactions will involve all three interpretants and we should not insist on such a 'fullness' of referentiality, which will operate only within the most complex semiotic processes.

All forms of Interpretant codification operate within a basic dyadic state of Secondness, where one codification is referred to and directly linked to another codification, which thereby increases the operational stability of both referents. We can further clarify their nature by considering that we can have an Interpretant, a relation of Secondness, operative within states of Firstness, Secondness or Thirdness. The codal relations can therefore be immediate, formal and/or final, which is to say, they can be iconically, indexically or symbolically referential. The point is, all Interpretant codal forms are linked to secondary codes, which, by virtue of that focused intentionality, that direct coupling of one code with another, restrict entropic dispersion of codal energy and increase the informational forces of that energy. It is this action of comparative measurement that permits consciousness of reality and provides the internal Self with an ability to interact with and manipulate that external reality.

Immediate Interpretant or Access/Sensate Consciousness

In the Immediate Interpretant state, energy is codified within a local, actual, particular and internal state as relevant to the internal semiotic or codal history of that unique and particular individual organism. That is, the referential code against which the sensations of the Immediate Object are measured, are those which are internal to this particular organism and its life-history. This is the "unanalyzed effect" of a sign, 'the effect the sign first produces or may produce upon a mind, without any reflection upon it" (Peirce LW:110). Reflection would be impossible, for there is no provision of an external and non-local codal referentiality. I will consider this phase a primary or access consciousness, a state of Secondness operating in Firstness. Peirce goes on to call the "Secondness in which one of the seconds is only a Firstness" a 'degenerate Secondness'(CP:1.528) and it "really amounts to nothing but this, that a subject, in its being a second, has a Firstness, or quality" (1.528). There is no possibility of a reflexive or critical analysis, for this phase "is the result of a process, although of a process not sufficiently conscious to be controlled, or, to state it more truly, not controllable and therefore not fully conscious" (1.181). This phase lacks the means of self-measurement that is supplied by the genuine external and therefore oppositional force of Secondness and it lacks the comparative generality supplied by means of Thirdness.

The phase of the Immediate Interpretant, then, is a basic codification and provides us with a first perception or awareness of the immediate sensations of the Immediate Object. These "perceptual judgments are the first premises of all our reasonings and ... they cannot be called into question" (Peirce CP:5.116). It is the zone of our immediate opinions. As such, "uncontrolled inference from contiguity, or experiential connection, is the most rudimentary of all reasoning" (7.444) and is the level of consciousness of most of the biological world—and often, of our own so-called 'rational' world. Despite its non-capacity for analysis, it is a vital phase of energy retention, for it establishes normative holding patterns within an internal closure, and permits the development of more precise relations, within more specific externally located actions of Secondness—all of which contribute to the continuity of energy.

The Immediate Interpretant, as an idea, if "left to itself does not retain its vividness but sinks more and more into dimness" (7.500). If the action of semiotic codification were to end at this site of a simple qualitative codification, (secondness as firstness), then entropic dissipation would rapidly dissolve this interaction and these energy formations. Therefore, this phase is inherently vague, imprecise and unstable, and evolution must necessarily provide a more complex and closed means of interpretant codification. I do not believe that codification into the distinct spatiotemporal reality that is evident at the site of the Immediate Interpretant, that is, energy within a state of primary Secondness, a Secondness in a state of Firstness or loose short-term codification, is viable for more than a brief spatiotemporal phase, without the added development of a secondary and more stable referential system that is separate and external from this immediate action of codification of the Immediate Interpretant. This stable referential system is the development of a Dynamic or formal Interpretant.

Dynamic Interpretant or Self-Consciousness

The Dynamic Interpretant is external to the Self; that is, its codes are the property of the non-immediate experience, of the external Not-Self, of the population, the genotype, the species of which the individual Self is merely a unique representative. Its codes are directly linked to the Immediate Interpretant within a relation of direct bonding. It therefore operates within a state of active volition, force, will and necessity—all characteristics of Secondness.

This nodal site functions as the second half of the dyad of Secondness—with the Immediate Interpretant providing the first half—and provides an external referential formal or non-local, impersonal code against which the codal forces operating in the internal nodal site of the Immediate Interpretant are measured. This nodal site is located beyond the semiotic membrane of the Self and within the semiotic field of that Self's community. The Dynamic Interpretant, as a referential system, operating in a more global and less local, a more universal and less particular, a more external and less internal realm of codification, than the operations of the other half of this dyad, a metareference, an authoritative communal legitimacy and stabilization of codification. Therefore, "reasoning unconsciously can hardly be called reasoning" (Peirce CP:7.458), which is to say, reasoning within the operations of the Immediate Interpretant, located within the subjective domain of the internal Self can be differentiated from the "reasoning proper [which] begins when I am conscious that the judgment I reach is the effect in my mind of a certain judgment which I had formed before" (7.459). This means that referential reasoning begins with the capacity to differentiate the sensation of experience into the now and the not-now, such that non-individual or communal history—located within the external not-Self—can be included within the interpretation. That is, the Dynamic Interpretant operates within a formal referentiality that has moved beyond the horizons and organizational capacity of the local, the internal, the current and the actual, and has added an external global, external, potential and universal referentiality. The codal restrictions of a larger history—whether genetic or conceptual—has been added. The external system of codification therefore operates as "a sign separately indicating what it is a sign of" (Peirce CP:7.203). This vital dyadic linking of the internal local and the external less-local provides a referential system against which the internal Immediate Interpretant can be measured.

This dyad provides horizons to the entropic expansion inherent in the nature of the Immediate Interpretant. This action reintroduces the external world into the semiotic field of the individual, but it is a reintroduction via a formal and organized communally-bound codification operative within the restrictions of Secondness rather than via a primal flush of energy operative within the openness of Firstness. The dyadic bonding of the Dynamic with the Immediate Interpretant provides a nominalist and deductive codification, a whole made up of synthetic parts, each and all divisible and accountable—and therefore, as such a mechanism, provides a superb system of stable bonds. The Dynamic Interpretant, operating within these formal codes, permits multiple and increasingly redundant associations, which are all, as states of Secondness, closely linked and anti-entropic. "Attention is a matter of continuous quantity; ...Attention is the power by which thought at one time is connected with and made to relate to thought at another time" (Peirce CP:5.295). "Attention is an act of induction, but it is an induction which does not increase our knowledge" (5.296). As a formal process, the Dynamic Interpretant provides a key means of conserving energy. Its problem is that the relation between the two realities—the internal, particular, local and actual Self and the external, universal, global and potential Not-Self become locked into this dyadic bond. This bond itself becomes imagized as a closed sign or necessary formal property. The relation, rather than acting as a mediative action, becomes a 'thing-in-itself'. Secondness does not mediate, it bonds, it operates "in the shock of reaction" and "cannot properly be conceived. For to conceive it is to generalize it; and to generalize it is to miss altogether the hereness and nowness which is its essence" (Peirce CP:8.267). It should be emphasized, however, that an individual version of this external referential mode moves into the system, operating as an Internal Dynamic Interpretant. The individual sets up within itself an 'interpretation' of the communal external metareference. It does this by itself acting as a genetically imbued version or, with more flexibility, developing its own interpretation by means of learning. Thus, the individual acts as a 'carrier' of the communally based Dynamic Interpretant. Such a method gives that Interpretant its ability not only to store itself but provides it with measures of flexibility.

This interpretive node provides a mechanical frame of reference –and its strengths and its limitations are all too clear to us. What is missing in this dyadic frame, important as it is in our cosmos, is what should be missing by the very nature of its mechanical authoritarianism. This is the exploratory processes of a final causality, of a future-based and hypothetical perspective, a perspective that is the leading principle of generalization and pragmatic analysis –a process found only within the mediative actions of the Final Interpretant. Mechanism is a non-evolutionary and non-analytic process. "Ancient mechanics recognized forces as causes ...looking no further than the essentially dual relation of cause and effect. That was why it could make no progress with dynamics" (Peirce CP:1.359). In order to permit an emergent and evolutionary and above all a pragmatic reality, semiosis must move energy into the Final Interpretant nodal site, which is 'outside the internal consciousness', and acts as a mediation between the internal and external, local and global, particular and universal.

Final Interpretant or Communal Pragmatism

Is the goal of evolution the survival of a particular group-based codification? Or does evolution refer to a more general and less specific agenda, namely the survival of energy, in any codification whatsoever.

Darwin's origin of species "merely extends politico-economical views of progress to the entire realm of animal and vegetable life" (Peirce CP:6.293) and it is "a widespread error to think that a 'final cause' is necessarily a purpose" (1.211), which is to say, to consider that it has a purpose within a particular form of reality—such as the continuity of a species or an ideal state. Therefore "we must understand by final causation that mode of bringing facts about according to which a general description of result is made to come about, quite irrespective of any compulsion for it to come about in this or that particular way" (1.211). The key term is a 'general result' and the ultimate goal of the final cause is this return of energy from its restrictive unique closures within the particularities of Secondness, the domain of the individual, the particular, the local, to its availability within the openness of Firstness, via the generalization of Thirdness, the domain of the communal, the non-local, the global. The Final Interpretant can be understood as the means by which local and particular codification is returned from its self-absorbed and isolate current state-of-being to a location within the future of the global and external whole.

The Final Interpretant operates within Thirdness, which is a mode of being that "cannot ever be completely fulfilled" (Peirce CP:1.26). It is an infinite ongoing mediate process of generalization, of breaking down closures and setting up relations, for "by the third, I mean the medium or connecting bond" [and] continuity represents Thirdness almost to perfection" (1.337). The function of the Final Interpretant is to deconstruct codal closures, to dissolve unique and singular local realities and their networks of specific relations and thereby return energy from these current formalizations to its availability to the future by means of the process of associative generalization. That is, the Final Interpretant must introduce or reintroduce large scale and global codifications into the semiotic process. As Peirce notes, in dealing with non conservative actions, or entropy, [he does not use this latter term] "the parts of the action which are non-conservative are two, first and most important the ruptures, by which the elastic potential is at once converted into heat, and second and less important, the contacts" (CP:7.472). The Dynamic Interpretant is focused around the closures of the individual and local within the formal codal mode of Secondness. The Final Interpretant is focused around the general, the communal, the global, the potential. Potentiality, despite its suggestive semantic implications, is without particular direction. In the potential phase, "the future determines the past in precisely the same way in which the past determines the future" (6.69), whereas, once semiosis moves into a restricted phase of Secondness, past/future and present time become utterly distinct and 'the relations of the present to the past and to the future, instead of being the same, as in the domain of the Law of Energy, are utterly unlike" (6.70). This mediate process is not an action of specific 'things' but "takes place in thought. I do not say in anybody's thinking, but in pure abstract thought; while the dyadic fact is existential" (6.324). Mind is global and not species-specific and mind is focused on the future. "The third category—the category of thought, representation, triadic relation, mediation, genuine thirdness, thirdness as such—is an essential ingredient of reality, but does not by itself constitute reality, since this category...can have no concrete being without action" (Peirce CP:5.426); that is, the Final Interpretant is not a formal codification, operating within a species, as is the Dynamic Interpretant, but is a codal action that dissolves rigid closures and links disparate codal processing within a force of global commonality. These processes are not, and must never be reified into discrete states of Secondness—the error made within nominalism—but must remain as future-focused actions.

The Final Interpretant reintroduces the potentiality for new relationships into the semiotic process—a phase of operation originally rejected when energy moved into the haven of the internal Self and the codal inhibitions of the Immediate and Dynamic Interpretations of Secondness. This process of reintroducing the diversity of the external within the closures of the internal operates within all forms of organization of matter. I refer to Rosen's outline of protein folding, where "folding serves to bring constituent residues that are remote in primary structure into close spatial proximity. Thus, in standard chemical terms, atoms and reactive residues are brought into , and held in, close spatial proximity, even though they seem far apart in terms of primary structure" (Rosen 1991:272). Referring to molecules, Peirce states that "in the quiescent state the molecules are in stationary motion, while in the active state they are partly broken up and the fragments are wandering...and every action is...purely causal and not conservative" (CP:7.503). These are the actions of an infinite and future-focused process, for "the rational meaning of every proposition lies in the future" (5.427). As this action of mediated and complementary generalization, this process "provides a general mechanism for capturing free energy fluxes...[and] underlies the process of self-organization, simultaneously producing homeostasis or buffering and bringing into being new, emergent properties associated with functional aggregates of components" (Root-Bernstein and Dillon 1997:476).

The Final Interpretant, as a final and analytic causality, is not found within all semiotic processes. Codification can end with the Immediate or the Dynamic Interpretants—but, these signs will operate within a restricted set of interactions and will provide a stability without any capacity for the development of new properties. As such, a codification that ends within such a Secondness will be unable to deal with the normative operations of entropy, will be unable to use free energy and will, in time, by the very nature of its mechanisms, lose its capacity for relations and codification. The Final Interpretant, then, seems to be a necessary but not universal process of mediating inertia and entropy and is found primarily within the more complex semiotic codifications.

Summary

Therefore, what we have within semiotic codification, is a process that mediates two realities—the internal and external, local and global, actual and potential, and particular and universal, by establishing an infrastructure that first ensures their separation and then mediates their interaction. By means of this seemingly contradictory set of processes, energy ensures its existentiality, both in a stable and importantly, in a generative and evolutionary sense.

Its stability of existence is ensured by first, moving it into an enclosed and protected spatial zone, the Self of the Immediate Object. This energy is further stabilized by increasing its codal reification within the actions of interpretation—a process inserting codes already stabilized within the genealogical typology of the subjective Self of the Immediate Interpretant. This coded energy is then further stabilized by the re-introduction of the external reality—which stabilizes the possibly aberrant self-codes of the individual Immediate Interpretant within the commonality of the group-based codes of the Dynamic Interpretant. There can be multiple reifications of this phase of codification—each of which add to the specifications and rigidity of codal closure. Finally, however, energy is moved out of these closures by being subject to entropic dissipation, via the generalizing

actions of the Final Interpretant phase, which moves energy, within a semiotic loop into the global population, back into its availability as free energy to the wider community of life.

This dyadic frame of semiosis, with its ongoing triadic mediative actions is the true poesis, the linkage of the particular with the universal, the current with the future, for "our section of time, is constrained within limits..but time itself "stretches on beyond those limits, infinite though they be, returns into itself, and begins again" (Peirce CP:6.210). We can conclude, therefore, that "the Universe as an argument is necessarily a great work of art, a great poem" (5.119).

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