Toward a Logic of Mutual Affection

Introduction

To begin this lecture I shall review and summarize some of the themes and ideas of the previous seven lectures. Afterwards, it will be time to stand back, engage in some inter-generational applause for Mr. Peirce, and then look to the future, asking: what's next? How do we build on what we have been bequeathed. I take the output of the mind of this thinker as a datum of science; I do not see him as a creature of his time, as a chapter in the history of ideas. Perhaps because I am so close to him in time and culture, I flirt with the idea that his fifty driven years of thinking manifests the pressure of one or more truths that chose him to make themselves known. We must wonder about the origin of this sort of philosophic passion when we see someone nearly destroyed by it. In the words of Joseph Brent: "Peirce sacrificed everything to his lifelong and all-consuming passion to solve "the Riddle of the Sphynx": health, inheritance, family, profession, and, on more than one occasion, sanity. He paid a terrible price in mental and physical agony, poverty, ostracism, and the corrosive effects of an evil reputation." ((Joseph Brent, *Charles Sanders Peirce: A Life* Revised and Enlarged Edition (Bloomington: Indiana University Press, 1998) p. 285.)) His wife, Juliette, also suffered from the discomfort of poverty and this caused Peirce to suffer even more. Brent ties Peirce's misfortune to his philosophic passion for metaphysics: "Inspired by his mystical experience, Peirce's obsessive development of his categories continued essentially unbroken throughout the mounting follies and misadventures chronicled in this biography." (Brent, p. 341) How much truth there is to this brutal resume I cannot say. We live in a time when nearly all philosophers are teachers in universities and colleges. We cannot say how many have

chosen to profess philosophy because it afforded just the kind of comfortable and predictable life Peirce never had. How many would choose to continue under any other circumstance? On the other hand, Peirce's example raises the question of how far one should go to harm oneself and one's loved ones and family in order to clarify and express a vision. I am not sure that this is a clear choice for someone who is a creative thinker. The risk of imbalance is very high in the mental economy of a creator. Any one who has had an opportunity, as have I, to handle the vast bulk of physical manuscripts of Peirce's life work, must realize that Peirce was no lazy scholar but an hard worker at his writing desk day in and day out. The ability to function productively and task commitment were not his problems. Today he could have easily been a Silicon Valley start up genius with all the worldly success imaginable. I am not convinced that Peirce lack's of social success was the result of obstacles he struggled with, such as his life long medial problems or his need to out do his famous father. The young philosophic Peirce was a happy innocent, a lover of the philosophic tradition. If there were baseball cards of philosophers he would have had the best collection in America. Rather, I think that Peirce could not stay away from philosophy because he was on to something, but wasn't sure just what it was he was, except to say that it was to be a 'theory of everything'. Although in the biographical volume of the Century Dictionary (Vol. IX) Peirce does not mention philosophy, preferring to be described first as a physicist, and last as a logician, it was the vast landscape of the recursive theory of categories that held Peirce in its grip, requiring him to continually return to the topic for more and more refinement and exploration over his entire life. In these lectures I have posited the thesis that Peirce was in search of a logic of mutual affection, a description of another kind of physical process or force, another branch of science that subsumed Newtonian mechanics and reinvented the biological sciences. This blurry vision, whether mystical or otherwise, kept him on task and was too much for several lifetimes of work to flesh out. And I think it was the constant

frustration of the task that sparked his belief in the success of a community of inquirers.

On our way toward something of a clarification of the various notions of mutual affection, it might serve us well to first fly over the terrain of the previous seven lectures, identifying some of the high points, persistent formations, and some hidden crevices.

Themes from the First Seven Lectures.

In the first lecture we learned that Peirce had a good philosophical library, and we have reason to assume that he not only read many of the books in it, but thought about what was in them and wanted to go beyond them. Many works called for a new synthesis of rationalism and empiricism. In *Guesses at Truth,* by the "Two Brothers" Augustus J. Hare and Julius C. Hare we were introduced to the notions of the *I* and *Thou,* as "indispensable complements, each to the other; so that neither idea could have been called forth in man without the help of its mate… Hence it is only by the reciprocal action of these two ideas, the continual play and weaving of them one into the other, that a true system of philosophy can be constructed." From Sir William Hamilton, *Lectures on Logic* (1860) Peirce read: "We cannot, therefore, have a consciousness of the affirmation of any quality, without having at the same time the correlative consciousness of its negation." He no doubt also thought about Hamilton's relational theory of cognition, that all all cognition involves comparison and that there is no comparison without representation as a tertium quid; as well as Hamilton's theory of language as cognitive *sign*-activity:

[T]hought and language are reciprocally dependent; each bears all the imperfections and perfections of the other; but without language there could be no knowledge of the essential properties of things, and of the connection of their accidental states… Language is the attribution of signs to our cognitions of things. But as a cognition must have been already there, before it could receive a sign; consequently, that knowledge which is denoted by the formation and application of a word, must have preceded the symbol which denotes it. Speech is thus not the mother, but the grandmother, of knowledge. But though, in general, we must hold that language, as the product and correlative of thought, must be viewed as posterior to the act of thinking itself; on the other hand, it must be admitted, that we could never have arisen above the very lowest degrees in the scale of thought, without the aid of signs.

Hamilton described how our concepts are reciprocally related to each other in general terms: through exclusion, co-extension, subordination, coordination, and intersection. There is a logic to reasoning that cannot be explained by a reduction to sense impressions. In his *Lectures on Metaphysics* (1860) Hamilton sought a rational harmony between the analytic/reductive and synthetic/transcendental approaches to philosophizing in Britain and the Continent. He had entered into the Schellingian/Hegelian terrain enough to believe that there is an internal logic in all relations, generating at the same time a synthesis and antithesis: the "Doctrine of Relation" is that "Every relation is a unifying act,– a synthesis; but it is likewise an antithesis… The Relative and the Correlative are mutually referred, and can always be reciprocated or converted."

From his library Peirce also got a dose of the synthesis of Victor Cousin in *Epitome of the History of Philosophy, being the work adopted by the University of France for instruction in the Colleges and High Schools,* by C. S. Henry (1842). The synthesis again involves a triadic view of intelligence,

that all thought involves a primitive synthesis of three elements, the infinite (unity, substance, absolute cause), the finite (plurality, phenomenon, relative cause), and the relation between these, "not simply of inseparable coexistence, but of cause and effect," a relation that is 'reciprocally correlative'. Henry presents a evolutionary scenario that is supposed to manifest the growth of intelligence as a triadic process. A general theory of evolution as a rational and logical process was the order of the day in the young Peirce's time. Schelling's "World-System" was given a dynamic twist by Hegel and then popularized by imitators. The *Rational Cosmology; or The Eternal Principles and the Necessary Laws of the Universe,* by Laurens P. Hickok is an example of this trend. Hickok's "true natural philosophy," based upon a universal "bi-polar agency" that drives natural energy and evolution, is supposed to be an empirical law based upon scientific knowledge, and not the abstract speculations of the German Idealists. Hickok's principle of antagonism, in the style of Kant's dynamic theory of matter, bears repeating: "two simple activities meeting each other and reciprocally holding back, or resting against each other, and thus of the two making a third thing at the limit of meeting which is unlike the other… at the point of antagonism force is generated." Then as these forces struggle against each other they create temporary states of equilibria that give the appearance of a "concrete unity."

Peirce, of course, loved Kant the most, even more than he loved Scotus. He did not find in Kant the imprisonment of Reason, as Schiller believed. Kant's was the way beyond Humean scepticism and sensationalism, in its recognition that if "pure mathematics" is possible, which Hume seems to admit, then "pure philosophy" is also possible, which Hume denies. (*Critique of Pure Reason,* p. B20) After he read Kant Peirce became a seeker of philosophic transcendence, which is simply to say that he became a believer that the recasting of the world of experience into increasingly abstract symbols, and the study of how those symbols may be

re-symbolized, generalized, and interrelated, could transform that 'given' world of experience into knowledge of the truths behind it.

In Lecture One we also noted how the *Critique* was a workshop in triadic analysis for Peirce. In the development of the categories, Kant had discovered that some categories are the triadic products of other categories: "for example, the predicables of force, action, passion; to that of community, those of presence and resistance; to the categories of modality, those of origination, extinction, change; and so with the rest." Once the logic of combination is mastered, it would be possible to generate "a complete system" of them. In reality these combinations are not so obvious, as Kant makes out in this aside, but they must have sent the mind of the young Peirce buzzing to find a clear statement of the logic to the combination.

From Schiller's *On the Aesthetic Education of Man* Peirce came to appreciate the need to recognize a non-rational action that reciprocally interacts with the subjects of rational contemplations, the element of secondness. Schiller described a primal condition of estrangement that made possible the habit of judging and thinking. We may wonder whether this analysis caused Peirce to think about the origins of our capacity to create representations and ask about what purpose or purposes are served by them. As I have described it, the 'problem of representation' is the problem of explaining how representations arise in a closed system that does not initially contain them. In traditional Judeo-Christian theism representations are primeval; in the beginning was the word or logos. In the nineteenth century, philosophers sought to derive the representational world, often described as the world of reflection, from a non-representational precondition. This issue is a unifying theme in nineteenth-century theoretical work in the natural sciences, and in philosophy. There is also something of a unifying 'answer' to the problem: the positing of an

interaction among unrelated things that sets them into a reciprocal relationship. The answer, however, is suspect. It required an explanation of what has kept things apart in the first place, and why rational evolution had not long since come to completion. In contrast to the thoroughgoing rationalists, Schiller raises the possibility that it is an essential indestructible ingredient in the universe that there be slippage among its parts, and that this slippage gives rise to the opportunity for the mind to act playfully. Out of the spontaneity of play — recognized consciously in artistic creation and less so in sport–comes an opportunity for new relations.

Schiller's influence was early and long lasting. Peirce could not shake himself from the view that chance or tychism was an essential ingredient in nature at every level, though he seemed to think of it as a facticity rather than as generative in some orderly fashion. What Peirce valued in Schiller was the notion that the appreciation of beauty was a state of " 'infinite determinableness'" so that it can turn in any direction and is in perfect freedom." This too is a suspect answer, which we should forgive from a teenage philosopher. It does not answer the question of how random determinations differ from regulated or determined ones. Infinite determinableness is indeterminateness in some respect, like a reference to or judgment about the absolute or infinite. It had something in common with Hamilton's view of the action of mind as involving 'indissoluble affinities'. However, Peirce would make a start on this problem by trying to isolate all of the essential elements of a judgment in the "New List" essay.

We noted in the first lecture the possibility that Peirce may have absorbed Emerson's scalar view of nature, that there is a logical structure of progression between any two events in the universe, whether those events be thoughts or the interactions of physical things, and that the process of representation has something to do with the process of moving along the scalar matrix. This notion fit nicely with Kant's that a complete system of

categories, relating to our experienced world, could be generated by use of a logic of relations, if such a logic could be discovered.

As stated previously, Max Fisch has noted that although brought up as a Unitarian Peirce converted to Episcopalianism early in his life because of its Trinitarian tenets; and that it was his exposure to philosophical arguments that brought him there. (W1, pp. xxx-xxxii) Peirce was looking for a solution to the problem of the emergence of polarity and reciprocity in nature and mind, and he suspected that the study of triadic relations would clarify the problem.

Peirce's reaction to the problem set described in the first lecture was his attempt to develop a long list of categories according to a recursive logic, even before he had clarified the contents of any short list. As I have suggested throughout, this problem-set gave Peirce something of a philosophic agenda that was lifelong in its implementation, and was never beyond the horizon of his philosophic interests. It was subject to disruption and digression, but never abandoned. In other words, Peirce's was not an arriviste on the subject of evolutionary metaphysics in the 1880s and 1890s, when he was discussing Abbott's evolutionary theism; he was not responding to fashionable popular cravings on the topic during the Century of Optimism.

Peirce's long list of categories turned out to be a nested series of triads governed by operations, whose clues he had gotten from Kant and Hamilton and others, such as 'coordination' and 'subordination', together making out a recursive process. He had come to the conclusion that "our primary conceptions are not simple but complex; that our elementary conceptions are not independent but linked complexedly together…" He had embraced a scalar view of nature that since there was a minute logic at work in every event in nature, far more refined than Newtonian mechanics,

natura naturata and natura naturans were in constant interaction, so that: "All forms are also powers, since to affect is to effect, and are therefore spiritual manifestations. If this is so every form must have a meaning. But since all phenomena are forms, all things must have meanings. The transparency of the drop of water must actually convey a meaning to our conscious *affections* as truly as the Whole Sea itself." Peirce does not say how much meaning is conveyed, but only that some meaning must be conveyed. This may be taken to mean that to be is to be a representation to something in some respect. Furthermore, reality does not divide neatly between things and representations in themselves. An I, IT, or THOU has its character by virtue of what the others may be to it:

Though they cannot be expressed in terms of each other, yet they have a relation to each other, for THOU is an IT in which there is another I. I looks in. It looks out, Thou looks through, out and in again. I outwells, It inflows, Thou commingles. I is self-supported, IT leans on a staff, THOU leans on what it supports.

But abstractly considered they are "1. that whose heaven is a speck, or the manifold of sense, 2 that whose heaven is of extensive manifestation or the world of consciousness, 3 that whose heaven is of immense manifestation or the world of abstraction." I think that one of Peirce's most important ideas at this stage of his life was the notion of the THOU as leaning on what it supports. Clearly Peirce is attemptings to describe something that is mutual and reciprocal, and perhaps even homeostatic.. But there is also a notion of a unidirectional sequence here, the support making possible the leaning, but not vice versa. I believe that this is one of the first, if not the first, attempt by Peirce to capture the idea of mutual affection in a germinal, picturesque way.

In the second lecture I schematized the levels of Peirce's 'heavens' as follows:

I then characterized the structure of these nine levels in terms of eight categories of being: Abstract One, Abstract Universals, Concrete Universals, Abstract Relations, Concrete Relations, Abstract Shapes, Concrete Shapes, Concrete One., where Abstraction becomes Heaven through differentiation, and Heaven becomes Abstraction through generalization. These eight categories I then reduced to a short list of three: Abstract Unity, Concrete Plurality, Concrete Unity. On a personal note: In the 1970s I was sorting through the Peirce juvenilia at the Houghton Library at Harvard as a member of a small team of scholars starting to organize the manuscripts for the new edition. I found that many of the pages that contained drafts and fragments of his early long-list categories were scattered throughout the thousands of manuscript pages and notebooks. ((Some of these drafts are found in Joseph L. Esposito, *Evolutionary Metaphysics: The Development of Peirce's Theory of Categories* (Athens, Ohio: Ohio University Press, 1980). Appendix 1.)) How did they get that way, I wondered. When the boxes where in Professor Royce's office, did he place them in some order other than how they were sent to Harvard by Peirce's widow? Had they been scattered over the years while at Houghton? None of these explanations seem as likely as that Peirce himself over his lifetime took out some of this metaphysical charts, that may have originally been together, in order to use them for reference and reflect upon them. In this way they may have ended up in the papers of his then current projects. Having gathered together the charts and other papers from that period, I sought to generalize, in manner that Peirce had not done explicitly, the underlying "modus" of their structure and relationships. Thus, I came to Abstract Unity, Concrete Plurality, Concrete

Unity. Further, since his stated project was supposed to be a theory of the "Whole Sea" and an "Analysis of Creation" I had always thought of those meta-triads as setting forth some sort of evolutionary schema. In recent years those suppositions were given some credence when I came across what appears to be a late fragmentary page, with no subsequent or later page, in MS 280, Peirce's essay, "The Basis of Pragmatism," written at or about 1905. The fragment reads in its entirety:

evolution according to the formula

Indefinite	Individual
Definite	"
"	General

A proper name has no signification. Its function is to identify an object and distinguish it from all others. A proposition has two parts; the one, its predicate, signifying something; the other, its set of subjects, furnishing the means, of identifying the set of objects to which that signification is to apply. (MS 280 p. 41(Basis))

What sort of evolution is Peirce speaking of here? Around this time he was writing that the proof of pragmaticism would require the establishment of the truth of synechism. (CP 4.415) Synechism was both a regulative scientific principle — always assume the existence of an intermediary condition, and then conceive of an experiment using the pragmatic maxim

to isolate and identify the traits of that condition — and a metaphysical theory of the growth of reasonableness in nature.

Synechism is founded on the notion that the coalescence, the becoming continuous, the becoming governed by laws, the becoming instinct with general ideas, are but phases of one and the same process of the growth of reasonableness. This is first shown to be true with mathematical exactitude in the field of logic, and is thence inferred to hold good metaphysically. It is not opposed to pragmatism in the manner in which C.S. Peirce applied it, but includes that procedure as a step.

(CP 5.4) This process is teleological:

Synechism, even in its less stalwart forms, can never abide dualism, properly so called. It does not wish to exterminate the conception of twoness, nor can any of these philosophic cranks who preach crusades against this or that fundamental conception find the slightest comfort in this doctrine. But dualism in its broadest legitimate meaning as the philosophy which performs its analyses with an axe, leaving as the ultimate elements, unrelated chunks of being, this is most hostile to synechism. In particular, the synechist will not admit that physical and psychical phenomena are entirely distinct, — whether as belonging to different categories of substance, or as entirely separate sides of one shield, — but will insist that all phenomena are of one character, though some are more mental and spontaneous, others more material and regular. Still, all alike present that mixture of freedom and constraint, which allows them to be, nay, makes them to be teleological, or purposive.

(CP 7.571) It is possible that the "evolution" Peirce refers to in MS 280 is a synechistic evolution whereby indefinite individuals are transformed into definite individuals and then into definite generals, not in the sense in which

an isolated individual may become general, for there are no isolated beings, but in the sense that the "becoming continuous" and coalescence is an essential trait of the universe as a whole and that even portions of the universe reveal increasing generality, as in the form of instinct, thought, and habit, for example. We do not know if this is the case, but we may infer it "to hold good metaphysically" if we are the sophisticated metaphysicians Peirce wants us to be.

The transition from Abstract Unity (Abstraction) to Concrete Unity (Heaven) involves the creation of a representational world. A Shape is "that subsidiary form which a thing takes up for the sake of being itself form and which though not its true form *exactly coincides* with that." In other words, Peirce is saying that evolution involves a process of self reflection through some sort of creation of a *subsidiary form,* as a replication or duplication process. The subsidiary form is not the thing itself, though it "exactly coincides" with it. Along with the synechistic maxim — look for intermediary states — there is the maxim 'Look for methods and structures of replication!' (e.g., DNA, fractals, linear motion) as a factor in any explanation of a process under study.

In the third lecture we looked at Peirce's elaboration of the 'subsidiary form' hypothesis, in the form of the question of how signs signify. Again we identified a recognition of a dialectical relation between a sign and its object. Signs must refer to an object and also contain some general information about the object. They cannot be identical to the object but they cannot be completely representational since they must have some reality or character of their own. So a sign has a dual relation with the signified, a representational relation and a self relation in terms of the particular manner in which the signs represents. The elemental analysis of this topic

is the "New List" argument. Here Peirce showed that every judgment involved a recognition of what is present in the subject of predication through an act of attention and therefore creates a subsidiary form of the subject as a representation of itself. This recognition is that the subject is a 'substance'; it is more than merely present; it is a determined subject limited by the predicate. So Peirce says: "Thus substance and being are the beginning and end of all conception. Substance is inapplicable to a predicate, and being is equally so to a subject." The predicate is not limited as a quality of the subject; it contains generality through its reference to a *ground.* But reference to a ground — reference to the quality 'this actual red' while reflecting on the proposition 'This apple is (this actual) red' — is simultaneously a reference to a *correlate,* as something that the ground, illustrated by the correlate, *is not.* Thus, from the simple relation between subject and predicate Peirce has identified additional relationships that contain substance-like and relation-like correlations. And since every comparison is an interpretation, there is no predication without interpretation and a "mediating representation." or Interpretant. But interpretation requires a kind of mediation that is not reducible to identity; it must be a form of equivalence and simultaneity and must contain a mutual connection, reciprocity. So, for example, a definition must be restricted to what it defines, and not be too broad or narrow; the act of defining must utilize a language that remains invariant; and the definition and the defined mutually define one another. The same must be true for all forms of representation. A *representamen* has the capacity of creating a tight bond because it contains the rule for monitoring the process of mediation between subject and object.. Thinking is a process that utilizes *representama* as monitors. Insanity, cancer, and chaos have traditionally, and probably incorrectly, been regarded as devoid of monitoring, as glitches instead of regular processes.

Peirce's "New List" argument also highlights what I have called the problem of representation. Again, how is it possible for the universe to create representations without the supposition that God breathes language into our minds at birth or teaches us what a language or symbol is. Peirce's answer is that nature contains the capacity to create simple 'subsidiary forms' which grow into complex ones. Predicates become properties and then class members. Properties become relations, and relations take on substantive characteristics. It is a long road from paleolithic copulation to Fatherhood.

In the third lecture our discussion of the speculative grammar of Thomas of Erfurt revealed why Peirce was so attracted to the realism of Scotus. Not only did realism allow the derivation of the thirdness of a representamen, it provided an explanation of the genesis of signification. When Thomas explained the origin of signifying, and the mind's ability to transform a process (to signify) into a subject (a sign) in terms of the active and passive intellect he was in fact describing something like a THOU that leans on what it supports. This was revealed in Thomas' analysis of signification in terms of final causation, an obligatory treatment for any Medieval philosopher:

The active mode of signifying, since it may be a property of the significative expression, is materially existent within the significative expression even as it is empirically valable[ut in subiecto]; moreover, it is materially existent in the property of the thing even as some effect is materially existent in the original and abstract cause which effects it in the first place; and it is materially existent in the intellect even as an effect is materially existent in the most immediate cause that effects it; and it is materially existent in the construction [constructione], even as a cause capable of being effective is materially existent in its own particular effect. One way to look at what is said here is that it describes a kind of 'backward causation', the influence of

the future on the past through a latency of a future condition in the past. Peirce called it a being *in futuro* or a form of real generality. The effect is "materially existent" in the "original and abstract cause." The cause is 'original and abstract' prior to producing its effect. Once the effect is caused the cause is changed by the actualization of the effect; it is the effect that makes the cause an actual cause, realizing its potency. Analogously, the signified object is present in the active mode of signifying because it is the *character* of the object that causes the active mode of signifying to make it into a sign. This is clearly true in the case of iconic signs but it is true in all cases, because no matter how arbitrary a sign may be posited to be it is not utterly arbitrary because there are some features in the sign that are selected by the active mode of signifying to carry out the signifying purpose or final cause.

In the fourth lecture we examined the ideas of Scotus that influenced Peirce in the development of his semiotic theory of cognition. Scotus's theory of knowledge contained the notion of the action of 'intelligible beings' (e.g., a triangle, but not any particular triangle) upon sensory experience to convert that experience into a propositional form needed for the production of knowledge. Peirce, of course, entertained this as a hypothesis, not as a theological truth. The hypothesis is necessary because, in his view, scientific knowledge is possible and that even probabilistic inference is a form of rational inference. Starting from that standpoint, a "mediate simplicity" must be created in our particularized experience through the action of some process that Scotus had identified as the influence of an intelligible being:

Now, it is a known law of mind, that when phenomena of an extreme complexity are presented, which yet would be reduced to order or mediate simplicity by the application of a certain conception, that conception sooner or later arises in application to those phenomena. In the case under

consideration, the conception of extension would reduce the phenomena to unity, and, therefore, its genesis is fully accounted for.

Now this "known law of the mind" could not be known under any theory of knowledge that does not admit that knowledge of relations is both real and general. An utterly particularized mind could not achieve such knowledge or form such a hypothesis without an external influence through which the unifying conception "arises." Thus, cognition as we know it requires the acceptance of Scholastic realism.

We also noted that Scotus developed a theory of knowledge as an ascendency of abstractions driven by a continued longing to achieve "knowledge of Being." All knowledge pursuits led us closer to knowledge of God; and all knowledge was inescapably a normative endeavor, involving notions of good and beauty. In lecture four I suggested that the Scotistic ascent of knowledge mirrored the hierarchy of categories achieving a state of perfect reality, or heaven, out of empty abstractions and concrete existents.

These notions were used to frame Peirce's anti-Cartesian essays, establishing that all thought was in signs and derived from inference. In the "Questions" and "Four Incapacities" papers Peirce presented arguments based upon the inherent instability of the active and passive intellect, ceaselessly shuttling back and forth, attempting to capture an unmediated cognition as if a dog trying to catch its tale. But we cannot end the matter by saying that a thought is a sign, and even that the 'I' is a collection of signs; we must recognize the perpetual process of interpretation that is required for something to be and to remain being a sign. At the end of the "Four Incapacities" essay Peirce reveals his radical view of man's glassy essence, that we exist within a stream of thought-signs and not that signs exist within us, that "men and words reciprocally educate each other." Of

course, not the same men. We come into the world of existing signs, and if we invent signs we may do so only to serve signs we have not invented. Peirce rejects the common-sense view that signs are created and exist exclusively within individual minds and that if all human life were extinguished so would all semiosis. Instead, he has described an atmosphere or environment of semiosis that has its own weather patterns. Signs appear to fly at us; they force a focus on what is unfolding and incomplete through an energy coming from outside the individual mind. The active individual mind resists and reinterprets; but it cannot create a world of its own. The flow of energy is from the future to the past; future signs are the condition for existence of present signs:

… So thought is what it is, only by virtue of its addressing a future thought which it is in its value as thought identical with it, though more developed. In this way, the existence of thought now, depends on what it is to be hereafter; so that it has only a potential existence, dependent on the future thought of the community.

How is it possible for the existence of thought to *depend* on what it is to be hereafter? We may understand how the analysis of something may depend on its being understood it is development by the thought of a future community. It is far less clear how the existence of a particular thought could depend on a future thought. An acorn does not depend on the tree it becomes. It does not lean on what it supports. Perhaps thoughts are different from acorns in a way analogous to the difference between acorns and rocks; thoughts operate in a yet wider sphere of connections and influence than acorns and produce a wider variety of products.

In Lecture Five, on Peirce's Objective Logic, we began by looking at his idea of 'dual consciousness' as an explanation of how even our sensations attain the status of generality and referentiality. Thus, Peirce has told us

that there is not such thing as an isolated and unique experience. To be conscious is not just to be conscious of, as Husserl maintained, but to be conscious about something as having a certain character within a spectrum of characters. Now this movement of attention from a bare subject to its content has the character of fate, Peirce noted, calling this view a "strange and paradoxical" one. Mental action was "an extraordinary exception to the ordinary laws of mechanics." In Ms. 215 Peirce described how the effect of an idea was "part of the idea which produces it. In other words, it is really a reproduction of a part of that idea" so that effects are contained within causes when it comes to the production of ideas.

We also considered that mental action had an inherent capacity to create paired combinations of actual and virtual objects, that is, not sooner than an object is actually in thought a virtual or subsidiary form of it comes into existence without any conscious effort. Consciousness is effortless or it is not at all. This is another property of dual consciousness. In his 1896 paper, "The Logic of Mathematics; An Attempt to Develop My Categories from Within," one of his most seminal papers, Peirce sets out how the process of virtual pairings — [quality, quality posited] — can be built into a formal system that improved upon those of Kemp and Hegel. Another noteworthy feature of this paper is Peirce's view of time as embedded in the complex from monad to triad, a view that anticipates some recent views of time in quantum physics. This means that it is not an objection to Peirce's system that time can only advance forward and that causation cannot be backward, since time is a function of events, not vice versa.

In the fifth lecture we looked at Peirce's plans for a great work of scientific metaphysics that would be a 'guess at the riddle'. As conceived the project would rival Hegel's Encyclopedia in breadth but with much greater depth. We compared Hegel's dialectical categories and detected in them Peirce's short list of categories at work. In *The Monist* series we identified the

suggestion of a great theory proposed by Peirce that would sweep away the incorrect assumptions of Newtonian dynamics and reverse the established scala natura by regarding matter as static mind. We must looked for "the influence of another kind of causation" instead. And, perhaps, as a kind of mind, matter too must be subject to backward causation, in some "degraded or undeveloped" form. In the third paper of the *The Monist* series, Peirce gives an "abridged statement" of the law of the mind, viz., "that ideas tend to spread continuously and to affect certain others which stand to them in a peculiar relation of affectibility. In this spreading they lose intensity, and especially the power of affecting others, but gain generality and become welded with other ideas." In that paper Peirce also speaks of the "affections of ideas" as a process we summarized as: *Affectibility involves the marking of the affected by the affector in such a manner that the affected receives a generalized character of the affector.* This marking process, according to Peirce, requires that processes be continuous and overlap, in other words that synechism be accepted. Peirce also stated that although there was no "general formula" for the action of mental affection due to "a certain amount of arbitrary spontaneity in its action," there was a certain "teleological harmony" to the process. Harkening back to you youthful interest in Schiller, Peirce also considered 'affection' to be manifested as a normative force, an affectionate bonding with a circular movement: "The movement of love is circular, at one and the same impulse projecting creations into independency and drawing them into harmony." This, again, is the THOU that leans on what it supports. In the characterization of mutual affection we shall give below, the circle is completed by the affect made upon the affector by its affect upon the affected.

In Lecture Six we traced the transition in Peirce's theory of signs from sign classification to semiosic causation, where the status of an entity in the sign

process depended on its 'tri-relative' connection with the other entities in the process, rather than on inherent characteristics of its own.

Semiosis is "an action, or influence, which is, or involves, a coöperation of three subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs." We also noted that sign action required a form of simulation of the sign in the interpretant, a form of virtual creation. But the sign did not fully produce the interpretant; for this would be contrary to 'tri-relative' influence. A sign ultimately was "a sign, not because it has any real connection with its object, or because it resembles it but simply because it may be understood to be a sign."

We noted further how the theory of signs in Peirce's late work increasingly became embedded in the theory of categories, with the relations between signs reflecting the same structure as the relations between the categories, so that the fullest embodiment of sign-thirdness, the 'representative interpretant' "is that which correctly Represents the Sign to be a Sign of its Object."

Since Peirce believed that signs originally do not come into being by being made signs by a sign creator, for that explanation would simply shift the problem to another domain, he looked to various models of how signs emerge in nature, probably being unsatisfied with any of them: (1) *Quasi-minds* are systems of entities which by their arrangement give rise to sign activity and the semblance of thought: "Not only is thought in the organic world, but it develops there." (2) *Dual consciousness* is the dialogical connection between an object of thought and the influence of the object thought of upon the thinker. This process is not made possible by consciousness; consciousness is made possible by it, and it is contradictory to assert that objects *of thought* make the thought itself, but

there is nothing in our experience to refute this hypothesis. (3) Signs may emerge through an action of *percussivity,* which is not a mere reflex but a reaction to a provoked effort that keeps occurring, giving a percussive effect. In other words, a vibration is an example of a physical process that is sign action. At each polarity a physical shape is formed as a sign of the shape of the other polarity, forming a reciprocal or circular process. This is rudimentary sign creation. (4) And finally, Peirce, speaks of a *Community of Interpretation* as the environment that is necessary before signs can be 'uttered'. This explanation sets aside the problem of the emergence of signs out of a non-semiotic world, since it is founded on the view that there was never a time when there were no signs.

In Lecture Seven we looked at Peirce's proof of pragmatism as his effort to synthesize his scholastic realism, pragmatism, and theory of categories into an enriched form of pragmatism, pragmaticism, as a theory that would lead to an enlightened philosophy and science. Cultivating a pragmatic outlook would produce a habit of thinking about the consequences of accepting a state of affairs as true. From this it is but a step to design experimental conditions that could actualize a set of conceivable consequences. But to design an experiment is to practice diagrammatic thinking (semiotics) and to stimulate the revelation of real general active powers of nature (Realism). Thus, a well-conceived experiment carried out properly to achieve a 'eureka' effect represents the unity of abstract unity (the schema or design) and concrete plurality (the apparatus) to produce a concrete unity or 'universal' (the experimental result) manifesting "the unity of essence of the experiment" as the successful outcome desired. By carrying out experiments, the pragmatist extracts the precious essence from metaphysics in order to give "life and light to cosmology and physics."

In the seventh lecture we also looked at semiosis and pragmatism as complementary and reciprocally related. Pragmatism is a theory about the

operation of the imagination that equates general conceptions with particular physical effects. Semiosis is a real physical activity that produces a generalized effect on the object that is acting semiotically. (The knife that leaves a mark is itself marked, and the manner in which it marks it is also marked. The mind that uses language is used by it.) The full explanation of this reciprocity amounts to a proof of pragmaticism. I shall not review the facets of the proof again, except to note its similarity with themes from earlier lectures. In the Harvard "Lectures on Pragmatism" Peirce placed emphasis on the repetitive process of semiosis, that signs must be "capable of repetition" through the formation of interpretants. There are no signs that signify only once, since they require interpretation for them to signify at all, and interpretation must be a continual process. This process of interpretation is always present when thought or perception occur, but it occurs in a heightened form when inference is abductive. Pragmatism is the practice of a form of abductive inference that tries to delineate a universal force or process in a concrete context. The proof of the success of such an enterprise involves showing that the universe is designed to promote such success in the first place. The simplest inference must still require "a perception of the world of ideas." This 'perception' contains the germinal triads — character, otherness, and inference proper. In current jargon, we would say that the perception of an object is immediately 'unzipped' to reveal a more complicated triadic structure. Interpretants are products of this process. These interpretants become variants of the previous object and more complicated inferences result. Intelligence becomes more theoretical, thereby manifesting a greater influence of real generality upon the mind. Then pragmatism emerges as a better method of generating interpretants on demand than serendipity.

Before expanding on the some of the above philosophic themes, I want to return to the theme of 'disappointment' in Peirce's later philosophy. I took these expressions of disappointment as empirical evidence of his

frustration to assemble his ideas in such a manner as to reveal his "new metaphysical light." (Ms. 319) In other words, I believe that Peirce suffered because he stood between the world language could describe for the users of his day and the world that was seeking to break through into language through his person. In Ms. 318 he wrote, in reference to our use of terms such as 'predicate', 'class', 'plural', 'quantity', 'form':

I have, off and on, with long halts due to my inability to discern any traces of the proper road, been engaged for fifty years in the endeavor to reduce these entia rationis to their categories and to bring them into a clear light;-a work which was simply impossible in the state of logic and of mathematics at the time that Hegel wrote. I have now hopes of at least succeeding in setting up useful landmarks for the next traveller over this dark road, so that he may be able to give a pretty good account of what Hegel called 'objective logic'…

These unpublished words were meant to convey real disappointment, but also some hope for a project that would be continued beyond his death. What could possibly motivate such an expression of disappointment except a strong awareness of being near or just upon the "proper road" but with a sense of a long journey yet ahead.

It is, of course, possible that there may be another source of this disappointment. Peirce may have simply embraced fundamentally conflicting propositions. Perhaps tychism and synechism are irreconcilable. Perhaps Secondness and Thirdness could never exist in the same universe. Perhaps Peirce was of several minds, went off in different directions, and could not find his way back to his founding insights. We may only speculate about such matters. I do not accept this view, though debatable it is. And in a sense it does not matter whether Peirce's life work is not a coherent tapestry. Since all views were adopted by him in the spirit

in which a hypothesis is entertained, it is hardly surprising that he ventured in different directions. Still, unifying threads in his work may be identified, in the areas of metaphysics and philosophy generally, in the rejection of atomism and mechanism and the belief in forms of interaction that could not be explained in terms of Newton's laws of motion. The above survey of some of the ideas in the previous lectures suggests to me that he wanted to formulate a theory of interaction that would encompass physical and psychical reality, while explicitly unifying pragmatism and semiotics.

What is the Scope of the Semiotic Realm?

As we have seen, throughout his life Peirce turned to the notions of mutuality, mediation, and reciprocity in a variety of ways, depending on the project before him. When he worked on his long list of categories as a youth he displayed the relations among the category-stages, and showed their triadic interrelations, but he did not go the question of how each stage got to the next. He simply said in effect: ' … and *A* and *B* turn into *C'*. Then and later he embraced the notion of teleological causation as a explanation of how the existence of *C* somehow compelled the combination of *A* and *B* in the first place. Thus when he studied the mechanism of sign action he was led to the view that signs only represent if interpretants are formed, and interpretants are formed only if they are part of a process that moves toward a final interpretant. Or, Thirdness was shown to give rise to Firstness and Secondness, and is not built up out of them; and mediation is prior to what is mediated. What is prior in the order of a philosopher's discovery, analysis, and exposition tracking that discovery is not always what is prior in the order of reality. Sometimes, paradoxically, the philosopher needs to discover just a bit more. Umberto Eco got his priorities right when he asked the question "What is that something that

induces us to produce signs?" with the emphasis placed on the condition that makes sign product possible. Eco is interested in identifying "the elementary condition of semiosis" as "a physical state whereby one structure is willing to interact with another." ((Umberto Eco, *Kant and the Platypus: Essays on Language and Cognition.* Trans. Alastair McEwen (New York: Harcourt Brace, 1999), pp. 12, 107.)) He describes *being* as "something that, at its own periphery (or at its own center, or here and there in its mesh), secretes a part of itself that tends to interpret itself." (p. 38) Eco and others have described semiosis as occurring in 'semiosic space' that consists of a network of interrelated intersections, where any intersection may be linked to any other, with no truly fixed points, and without hierarchy. ((Umberto Eco, *Semiotics and the Philosophy of Language* (Bloomington: Indiana University Press, 1984). Travel throughout the grid is not unlimited or without purpose, however. See Eco's "Unlimited Semeiosis and Drift: Pragmaticism vs. "Pragmatism." in Kenneth Laine Ketner, ed. *Peirce and Contemporary Thought* (New York: Fordham University Press, 1995) Also, Robin Allott, "Language and the Origin of Semiosis," in *Origins of Semiosis: Sign Evolution in Nature and Culture,* ed. Winfried Noth (New York: Mouton de Gruyter, 1994), p. 267.))

Peirce challenges us to think about physical reality in a radically different way. We cannot take seriously his view of semiosis and still accept a world composed of exclusively of mass and motion. "This universe is perfused with signs, if it is not composed exclusively of signs," he wrote. We are challenged to decide which is true. If the universe is only *partly* semiosic, we must explain how signs and sign structures arise. To explain sign activity in terms of the emergence of biological development and evolution may, at a certain point in the analysis, beg the question. The real difficulty is in explaining the emergence of mediation. It is possible to explain semiosic-like activity in terms of stimulus and reaction when linked with a mechanism of natural selection. And it is possible to observe mimicking mediation in

nature where there may not be real mediation. The motion of a particle orbiting around a fixed center may be described by three separate vectors even though the motion is uniform. At each position the vectors change in a uniform manner. This diagrammatic description contains a spurious mediation in that it may be made to appear that what one vector gives up one or both of the others receive. Such a case may be one of degenerate Thirdness, but is it genuine mediation? It would be if each resultant force were to be capable of separate degrees of freedom before achieving the uniform circular motion and angular momentum through a process of exchanges of energy and/or information. Semiosic activity requires some form of sharing. If difference or contrast is made a marker for semiosis it must be because a mind or quasi-mind takes note of the contrast and holds that contrast in a steady state, if only for nanoseconds. Winfried Noth has identified real opposition rather than 'mere differences' as a condition for semiosis: ((Winfried Noth, "Opposition at the Roots of Semiosis," in *Origins of Semiosis: Sign Evolution in Nature and Culture,* ed. Winfried Noth (New York: Mouton de Gruyter, 1994), p. 40.))

The "necessary and reciprocal implication," which Jakobson postulates for the two terms forming an opposition, can only come about by the mediation of a third term, a tertium, specifying the kind of relation by which the terms of the dyad are more closely associated than terms of a mere contingent duality. This relation is one of sameness or "equivalence in difference."… In the light of this third term specifying the sameness in difference, the oppositional dyad turns out to be a triadic relation.

Although, Noth calls *oppositions* the true building blocks of semiotic systems, he also notes, citing Peirce, that dyads cannot form themselves into triads without some form of mediation. (p. 41) Our previous account of "The Logic of Mathematics" confirmed this. Yet, as Noth observes, many theories of semiogenesis include the contention that dyadic opposition may

be transformed into triads in a shift from structure to process. He states: "The most striking feature of our physical universe is its totally dyadic division into particles and antiparticles, matter and antimatter." (p. 46) At the Big Bang a perfect symmetry existed; dyads emerge when the initial symmetry is broken, and more asymmetrical oppositions are subsequently created. This model is a modern form of Schelling's 'world-system' as a system of proliferating broken identities:

In Schelling's case he understood the importance of including a description of reciprocal interactions at all levels of the world system. Noth conceives the emergence of semiosis from a "presemiotic physical universe" at the level of biosemiotics. (p. 47) If 'semiosis' is regarded as something that cannot be explained entirely by means of the three categories, then this statement may not conflict with Peirce. Clearly, however, Peirce was interested in using the categories as the primary tool of analysis for his planned comprehensive works to recast both the physical and psychical sciences, and considered that from the categories we could derive and explain the processes and products of sign action in all of its forms. From this perspective there is reason to doubt that Peirce would have accepted as a methodological principle the traditional paradigm that divides nature into semiotic and presemiotic realms. Within this paradigm semiotics is first and foremost the study of a circumscribed realm that is essentially human and linguistic, and that extensions into other areas of study may be made, but only with great caution. Peirce's challenge to us is to develop new ways of looking at, speaking about, and explaining the *scala natura.* But doing so implies a de-centering of the human theoretician in a manner that dwarfs that accomplished by the Copernican revolution. Such a theoretician is left with a semiocentric predicament to explain in symbolic form a point of view that does not make human language and expression the foundation of all

semiotic systems. This is a particular problem for semiotics. It is generally not seen to be a problem for physics to describe and explain physical phenomena in terms of diagrams and words. ((But see Steven Weinberg, "A Unified Physics by 2050?" *Scientific American,* Vol 281, No. 6 (Dec. 1999) pp. 68-75. ("How can we get the ideas we need to describe a realm where all intuitions derived from life in space-time become inapplicable?"))) But it appears to be an acute problem for semiotics to develop a theoretical apparatus of great breath by using signs and diagrams to explain the emergence of signs. I think Peirce's maneuver was to try to develop an unfamiliar theoretical language to explain signs and semiosis in a effort to minimize connotation and confusion and create fresh insight.

Thus, it is tempting to begin a study of semiogenesis with biogenesis, as Walter A. Koch proposed years ago in "Semiogenesis: Some Perspectives for its Analysis."That way the theoretician has available for study relatively complex systems that even in their simple forms appear to be information processing systems. Koch suggests that a general systems theory approach to semiosis, utilizing concepts of entropy and negentropy, might prove useful in the future to explain "ambigenetic patterns" of reciprocal interaction manifested by biological systems in relation to their environment and among their subsystems. ((In Walter A. Koch, ed. *Semiogenesis: Essays on the Analysis of the Genesis of Language, Art, and Literature,* (Frankfurt am Main, Peter Lang Verlag, 1982), pp. 15-104. For an earlier work along similar lines, see Joseph L. Esposito, "Remarks Toward a General Theory of Organization," *International Journal of General Systems,* Vol. II, No. 3 (1975), pp. 133-43.))

By contrast Mario Bunge has restricted semiotic systems entirely to artificial creations: "The basic unit of a semiotic system is of course the artificial sign. 'Natural signs', such as dark clouds, and 'social signs', such as winks, are such only by way of inference." ((Mario Bunge, "Semiotic Systems,"

in *Systems: New Paradigms for the Human Sciences,* Gabriel Altmann and Walter A. Koch, eds., (Berlin: Walter de Gruyter, 1998), p. 341.)) From this perspective much of Peirce's writings about the philosophical importance of the study of signs, aside from his empirical classification of them, is off track. Persons cannot be signs and nature cannot be perfused with signs, in this view.

A somewhat less restrictive view, relative to Peirce, is found in David Lidov's *Element's of Semiotics.* Lidov identifies the fruitful use of semiotics in the study of language, artistic expression, reasoning, and deliberation. The idea that the physical universe contains sign-like properties or that Peirce's notion of semiosis could be used to support a neo-Medieval view of nature as containing real signs to be revealed or comprehended may be to unreasonably stretch the domain of semiotics. He writes: "Regarding natural processes as signlike in themselves adds nothing at all to what chemistry and physics tell us about tides or erosion or atomic particles. At best, it gives us another way of visualizing facts we already knew." ((David Lidov, *Elements of Semiotics,* (New York: St. Martin's Press, 1999), p. 38. (Recall here Peirce's remark about erosion as a sign of the process producing it.))) Again, we know that Peirce *would* want us to make such a stretch, but whether semiotics will amalgamate with scientific theory in the future to help better explain physical reality and the evolution of mind itself is a question we cannot yet answer even almost a century after Peirce's work was completed. Such a lack of progress may say more about the way our disciplines are structured than about the boundaries of semiotics or some conceptual peculiarity with that discipline itself.

I do not think that it is incoherent to suggest that sign-like or even true semiosic activity may be attributed to processes on the atomic or sub-atomic level. Our question of the origins of semiosis in a purely physical world has been asked in another form: "How could systems capable of

responding to differences in their surroundings arise in the middle of that which knows no difference?" ((Jesper Hoffmeyer and Claus Emmeche, "Code-duality and the Semiotics of Nature," in *On Semiotic Modeling,* Myrdene Anderson and Floyd Merrell, eds. (Berlin: Mouton de Gruyter, 1991), p.125. In *A Sign is Just a Sign,* (Bloomington: Indiana University Press, 1991) Thomas A. Sebeok suggests that certain physical processes may manifest semiosic activity, but that such activity is generally to be found on the biological level and above.)) Hoffmeyer and Emmeche answer the question in the following way: For discriminating systems to exist they must be capable a self-reference through a capacity to describe or encode and redescribe what has been encoded; and the system must be able to know something about the boundary between what it is and what is extraneous to it. They then argue that the ability to achieve self-reference requires code-duality, the capacity to represent in digital and analog form. Digital coding stores the information to generate the system so that analog coding make take over, allowing the system to interact with the world and pass along the digital memory by a "back-translation." (p. 127) The question of how code-duality emerges is a question "of how *form* became *sign.*" (p. 128) The author's propose to answer the question by changing the assumptions we make about our at one time 'lifeless' universe, substituting instead a "semiotic paradigm … that biological form is understood primarily as sign." (p. 138) The authors analogize the emergence of signs in the prebiotic world from their emergence in the hominid world, through the emergence of *community,* based initially on cooperation and food sharing, and giving rise to the development of efficient (i.e., digital) forms of communication. (Something other primates did not develop because their social development was more limited.) On the prebiotic level aggregates of large molecular chains could bifurcate into functional and informational (e.g., RNA) molecules that could produce catalytic effects on other aggregates through a process of "reciprocal emission of RNA molecules." Thus,

complexity is not a property of development of individual systems but of exchanges that have as their outcome the formation of complex systems. Thus, to explain the sense in which this process can be looked upon as semiotic, Hoffmeyer and Emmeche use Peirce's idea of the triadic relation of object, sign, and interpretant as a schema for epigenetic development, based on the digital code contained in the DNA of the genome as a sign, the fertilized egg that interprets the code as the interpretant, and the maturing organism as the object. Once the organism is formed it carries the instincts that make habit development possible and allow the organism to live in a 'world ' *(Umwelt)* its capabilities (via its digital codes) will allow it to experience through its sensory organs (its analog codes). The organism, then, engages in further semiosic exchanges among the population of its *Unwelt,* within its biological niche, and contributes toward the production of further zygotes; and since the organism stands temporarily between its genome of origin and a future zygote the real object of biosemiosis is the "genomorph," the set of shifting rules that govern the semiosic process over time.

The work of Hoffmeyer and Emmeche illustrates the attempt to extend semiotics to the proto-biological realm, but not below, by providing a general model for application from macromolecules to community and culture. (Their ideas are a nice illustration of Kant's connection of reciprocity and community that Peirce later utilized, and that currently is found in the notion of 'reciprocal altruism' in evolutionary biology.) However, they, like most semioticians of nature, are faced with a problem of demarcation: they study biological processes by interpreting modern molecular and evolutionary biology using *semiotic* concepts; but they do not explain how signs emerge in these processes. Instead, they seem to accept the received view, discussed above, that the stability of organization and organism results from progressive departures from thermodynamically undifferentiated states producing local irreversible processes and positive

feedback. ((Ilya Prigogine, *From Being to Becoming,* (San Francisco: W.H. Freeman, 1980), Floyd Merrell, *Semiosis in the Postmodern Age* (West Lafayette: Purdue University Press, 1995), Chs. 9-10. Floyd Merrell, *Signs Grow: Semiosis and Life Processes* (Toronto: University of Toronto Press, 1996), Chs. 1-2.)) Below the proto-biological realm semiotics, for such semioticians, seems to be without application.

John Deely is among those who maintain that semiotics must encompass *all* areas of knowledge because it transforms how we understand knowledge itself: "semiotics pertains to a renewal of the foundations of our understanding of knowledge and experience and a transformation of the disciplinary superstructures culturally distributing that understanding… even the natural sciences, no less than and in their very contrast with the human sciences, appear as specified derivatives from the larger process of semiosis, … " ((John Deely, "Modeling Anthroposemiosis," in *On Semiotic Modeling,* p.567.)) Deely points out further that semiotics forces us to think about the emergence of knowledge in general: "Semiotics appears thus not as a discipline or science among others, whether human or natural, but as a perspective concerned with the matrix of all the disciplines as giving the texture and pattern to experience whereby nature becomes fully aware of itself and achieves something of totality in the transcendence over physical being of the historical Umwelts …" (p. 568)

Peirce himself did not give a clear answer to the question of the scope of the domain of semiosis. Consider, again, the following passage from one of his papers on the foundation of pragmaticism:

… (It is important to understand what I mean by semiosis. All dynamical action, or action of brute force, physical or psychical, either takes place between two subjects [whether they react equally upon each other, or one is agent and the other patient, entirely or partially] or at any rate is a

resultant of such actions between pairs. But by "semiosis" I mean, on the contrary, an action, or influence, which is, or involves, a coöperation of three subjects, <u>such as</u> *a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs. {Sémeiösis} in Greek of the Roman period, as early as Cicero's time, if I remember rightly, meant the action of almost any kind of sign;* <u>and my definition confers on anything that so acts the title of a "sign."</u>*)*

Although the definition does not require the logical interpretant (or, for that matter, either of the other two interpretants) to be a modification of consciousness, yet our lack of experience of any semiosis in which this is not the case, leaves us no alternative to <u>beginning</u> *our inquiry into its* <u>general nature</u> *with a* <u>provisional assumption</u> *that the interpretant is, at least, in all cases, a sufficiently close analogue of a modification of consciousness to keep our conclusion pretty near to the general truth. We can only hope that, once that conclusion is reached, it may be susceptible of such a generalization as will eliminate any possible error due to the falsity of that assumption. The reader may well wonder why I do not simply confine my inquiry to psychical semiosis,* <u>since no other seems to be of much importance.</u>
(CP 5.484-485 Emphasis added.)

In this passage Peirce appears to be saying that semiosis is primarily a manifestation of the world of consciousness, and that if it applies to the non-conscious world its application is of little importance. Yet Peirce also says that semiosis is a tri-relative influence in contrast to dyadic dynamical action and a 'sign' is anything that participates in tri-relative influence. Thus, it seems that he is open to the possibility that some interpretants may be non-conscious. In other passages he tells us that he wants his semiotics to be as broad in application as possible, and I think we should favor his belief in its application wherever evidence of tri-relative influence may be found.

Since I believe that he accepted the view that what something was was determined by what sort of interactions it was capable of, he would not have wanted to demarcate a semiosic barrier based on the findings of scientists before semiotics became a coherent and routine theoretical tool at their disposal. Rather, he wanted us to use semiotics and the 'logic of mathematics' to recast the disciplines of science and then see how the terrain is changed by the application. On balance when considering how he linked semiotics with his triadic metaphysics and pragmaticism we may safely say that he wanted to use it as part of a research plan and should entertain any hypothesis using semiotic concepts until there were sound reasons to reject it. It is in this spirit that I submit the following discussion of mutual affection.

Toward a Logic of Mutual Affection.

Having reviewed and narrowed down some of the themes of these lectures, I want to distill them further. Peirce's lifelong work is unified through two visions. The first is the view that reality is a combination of the actual and the virtual *(the virtuality thesis).* The second is the view that the relation of the actual and virtual follows a non-linear, and in some sense cyclical, process of interaction, generally characterized through mutuality and reciprocity *(the mutuality thesis).* Another way of saying some of this is to say that if reality consisted only in what is actual no instances of Thirdness would be possible because Thirdness requires a condition of virtuality, involving some sort of mirroring, representing, or monitoring so that the tri-relative influence may stay on plan in its realization of a virtual into an actual being. It is logically possible for some thing or event to look like it is under the influence of Thirdness when in fact it is not. If we look out the window of our spaceship on a distant planet we will not be sure that what

we see are semiosic beings. Signs of life need to be confirmed through interaction and experimentation, that is, through pragmatic attempts to modify the actions or properties of what we observe in order to discover whether they manifest mutuality and engage us in some manner. Our semiotic investigation is a search for and discovery of mutuality.

The virtuality thesis says that we live in at least a part of the universe containing the property of self-reflection, the ability to create objects and their reflections as subsidiary forms, the ability of reality to 'secrete' itself out of itself as if an echo of itself. We found that Peirce's long-list of categories appeared to be governed by the algorithm — Abstract Unity to Concrete Plurality to Concrete Unity — and that his long list suggested that the algorithm repeats in a cyclical manner. Peirce, as Hegel before him, considered the sequence of integers as an illustration of this kind of transition:

1

abstract unity 1+1

concrete plurality

2

concrete unity The only basis for the distinction between the three forms is in the relationship between them. There is nothing inherent in 1 that makes it more concrete or abstract than 2. And a concrete plurality may be

regarded as an abstract plurality as well. On the other hand, it may be said that 2 is more negentropic and improbable than 1. Consider the poet's notion that the child is father of the man, coming into our world trailing clouds of glory. The common view is:

This smacks of destiny. And the non-concretized child would still be subject to birth defects, raising the question of what the 'indefinite individual' would consist of in an example like this., other than a figment of the parents' imagination. Does it make any sense to say that the virtual child choose its parents? Actual children seem to have no inking of such a choice. How really does a 'definite general' evolve from an indefinite individual? The difficulty of making any sense out of such questions is to achieve some clarity on how the virtual and actual elements may interact to create a triadic bond, the tri-relative influence.

We shall define a semiotic process (semiosis) as the generation of a paired relation (Thirdness) of actual (Secondness) and virtual (Firstness) elements. A *semiotic state* is the state in which a paired relation is conserved as a pair through the semiotic relation of mutuality. A *semiotic system* is a system with the capacity of achieving semiotic states. The crux of the matter is the nature of the paired relation, a relation of mutuality and influence. I use the least offensive term 'affection', used also by Peirce on occasion, to denote an influence that makes a difference on what is influenced.

Where 'X/Y' denotes 'X affects Y', then mutual affection may be characterized as:

where the arrow is the if-then relation. This is *weak mutuality* because it does not say whether the affect of *B* on *A* is explicitly because of *A*'s affect on *B* or simply after it. If '/' is taken, instead, to mean 'causes' then mutual affection appears to be paradoxical because something is thought not to cause what causes it. As Peirce said often, semiotic causation is not as brute as dynamic force, but force may also be considered just a form of affection. So why does the substitution of the causal relation create a paradox? Because it fails to distinguish causing a character in *B* from causing *B* itself. In a generative sense, if *A* causes *B,* then *B* cannot exist to cause *A*. Without *A, B* would not exist. So, perhaps we should say that in a semiotic universe nothing is caused ab initio; and that may very likely be true in our universe as well, although it seems to be refuted by the Big Bang theory.

A stronger form of mutual affection is:

where the double arrow means 'if and only if'. *A* affects *B* if and only if *B* affects *A.* A yet stronger form of mutual affection exists when *A* is affected by its affect on *B.* Where 'X*' indicates the affect on *X* as a result of its affect upon *Y,* and 'Y**' indicates the affect on *Y* made by *X.*, the following set of relations is *strong mutuality,* and a stronger and more intimate form of mutual affection:

(1) indicates the affect of *A* due to its affect on *B.* (2) indicates that it is due to the affect on *B* that *A* is affected. (1) and (2) indicate that whether the

affect on *A* is simultaneous with or after the effect on *B,* it is the affect on *B* that 'causes' the affect on *A. A* would not affect *B* and would not be affected in the first place unless *B* is affected and affects *A,* as in (3). This illustrates the 'backward causation' of mutual affection. Consider a transmitter that will only send a signal if there is a device to receive it and send it back. There is, in this example, no way for the transmitter to know the location of the device and its capability to receive and send back the signal. If it sends out a probe it would have to travel faster than the speed of light, actually at a speed of perfect immediacy, or else the transmitter would have to have *perfect* immediate knowledge of the location and capability of the receiver, since any stored memory about the nature and location of a receiver would be hypothetic and need to be tested with a signal first to verify the information. The circumstance in which a transmitter only sends signals to devices that are able to receive and return them is a condition that conflicts with our general notions of space and time and physical interaction. This form of interaction or mutual affection is counter intuitive. So is the notion that a sign does not get to be a sign unless an interpretant of it is produced by it first. And a THOU cannot lean on what it supports, without collapsing unless it is in a relation of mutual affection with an I and IT.

From (1) through (6) we may derive:

Here (7) indicates that if *A* is affected by *B* it will be affected by its own affect upon *B.* Thus *B* creates in *A* an affect and a condition whereby *A* is placed in a state 'indicating' or 'representing' the affect it has on itself as a result of the affect it had on *B.* This again appears to be a circumstances at the limits of our common-sense views, because if the process from (1) to (6) takes time to complete then A^* in (7) appears to be a 'reflection' or

representation of *A** in (1) and (2). Perhaps, as noted above, mutual affection, by its very logic, requires a process of Eco-ing and re-presenting and the making of a subsidiary form as an element in its bonding. The echoing in this case is the self-reflection of *A,* such that if its is affected by *B* it 'recalls' the affect its affect on *B* had on itself. (8) indicates that once *A* is affected by its affect upon *B* it will act upon *B.* Then (8) and (1) combined indicates (9) that *A* will only act upon *B* if it will be affected by its affect upon *B.* It also follows (10) that *B* will only act upon *A* if *A* is affected by its affect upon *B.* So *biconditionality* and *self-reflection* are at the heart of mutual affection.

The above logical scheme, which is a mere exploration into the conditions required for mutual influence at the most basic logical level, may be useful in providing a meta-logic for expressions like 'X is a Third' or "X interprets Y' or "X represents Y'. For example, to say that "X is a First" is to say that X is incapable of affection. To say 'X is a second' is to say that X is capable of affection (A/B) but not mutual affection, i.e, no affection of *A* on *B* is accompanied by a *A** state. And to say that 'X is a Third' is to say that the affection of X follows the above logical sequence. Similarly, a semiosic relation may be characterized in terms of the logic of mutual affection. I think that one of the reasons for the frustration and impatience about the lack of progress of semiotics is that semiotics since Peirce and currently stands as a quasi-theoretic language set against our natural language. Our goal should be to establish an enriched teleo-logic based on some of the insights of Peirce's categories and semiotics, and then give the results a physical interpretation. At present semiotics lacks a formalism sufficient to make its stock highly desired in the market of inquirers.

I will close these lectures with a few remarks about the metaphysical implications of semiosic causation and its possible linkage to deep theoretical questions in the physical sciences. On various occasions I have

noted the opportunity for use of a transcendental argument in semiotics. The argument goes: A universe in which signs, representations, and reflections are possible, must also be governed on the most fundamental level conceivable by the sort of relations characterized by mutual affection. But such signs, representations, and reflections are genuine operative facts in the universe and not epiphenonena. Therefore, so is mutual affection a real process of nature that has become disclosed to observers and knowers in due course, and only after other knowledge had been acquired first. This argument by implication rejects all forms of emergence, as well as a monopolistic brute-force dynamism as commonly understood. (Though an enlightened dynamism, involving something more than 'attraction' or 'repulsion' or bond-by-particle-exchange, is not foreclosed.) This argument also suggests an affinity with the Anthropic Cosmological Principle and with the notion of backward causation in physics.

In recent decades scientists have become increasingly sensitive to the need for a 'theory of everything' to unify the subatomic and superatomic, and the inorganic and organic realms. John A. Wheeler, a theoretical physicist and an old-school style natural philosopher in our time, has distilled four principles from what we know about the universe today: (1) Einstein's general relativity theory requires a big bang or big crunch or both, but no periodicity, and so the laws of physics are defined by limiting factual conditions and are mutable; (2) Since the laws of physics are mutable they cannot rest on symmetry, and so symmetry-based principles hide a deeper structure; (3) Since the physical properties required to produce or allow the emergence of observers are of such a narrow, and highly improbable range, and since no explanation has been given for why the physical constants have the values they possess, it is not illegitimate to hypothesize that the universe could only have come into being if observers (not necessarily human) were to be produced to observe and know it (anthropic principle); and (4) the observer participates and does not stand

apart from what is observed; we live in a "participatory universe" — "If 'participation' is the strangest feature of the universe, is it possible that it is also the most important clue we have to the genesis of the universe?" ((John Archibald Wheeler, *At Home in the Universe* (Woodbury, N.Y.: AIP Press, 1994) p. 24-25.)) And he concludes:

However, pause here to ask if these four central points together suggest any still more central theme and question. If so, question though it were and must for long remain, it could bind the points together and bring a certain helpful unity to the discussion.

No other way has disclosed itself to bring the four assortments of evidence into tight connection except to ask, is the universe a "self-excited circuit"? Does the universe bring into being the observership, and the observership give useful meaning (substance, reality) to the universe?
(p. 26; emphasis added)

More than a century after Peirce developed some remarkably similar notions — the distinction between ground and substance, existence and reality, the variability of the laws of physics — contemporary physics and cosmology have yet to dispense with them, and in fact seem to need them more as knowledge grows.

With respect to backward causation, I do not contend that Peirce believed that later events caused earlier ones, or that the future could change the past. I only suggest that, as the lectures have tried to show, something *like* backward causation is just beneath the surface in Peirce's thought across his lifetime, and is required in order to create the necessary bond characteristic of Thirdness and mutual affection. At least at present, some scientists maintain that the concept of backward causation is not incoherent, though it may only be a fertile postulate, without any present

empirical support, that so-called advanced particles, that move backward in time, and tachyons that move in both directions at hyperlight speed may exist because they are theoretically needed. ((Jan Faye, *The Reality of the Future: An Essay on Time, Causation and Backward Causation* (Odense University Press, 1989).))

Another area of contemporary physics that is pregnant with suggestions about the physical applications of Thirdness and mutual affection on the sub-biotic and even sub-atomic world is the quantum geometry of space-time, on the Planck scale. On this level, which has been connected to Leibniz's relational theory of space, space is an emergent property like temperature that 'disappears' at the Planck level leaving a *network* of relations with edges and knotted fields. ((Lee Smolin, *The Life of the Cosmos ,*(New York: Oxford University Press, 1997) Ch. 22.)) If the subatomic world is not a miniature scale of the macroscopic world of seemingly discrete individuals, but is in reality a network of relations of spinning 'particles', where space and time as we understand the terms do not apply, then we cannot refute mutual affection by saying that it is contrary to our common-sense beliefs about space and time and material objects, or to the tenets of contemporary physics. What would refute mutual affection is a physical theory that ultimate reality is a collection of unrelated irreducible 'atoms' and all other properties of that world, such as qualities, thoughts, feelings, mathematics, organisms, and nations are but epiphenomena of that ultimate reality. In other words, the views of old-fashioned empiricism. Increasingly, the most theoretical of the natural sciences are pointing to answers that may lie elsewhere, perhaps back to Peirce and in a new light, as he had hoped.