

## Extensions of Charles S. Peirce: An Interview with Ahti-Veikko Pietarinen

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**Introduction:** Ahti-Veikko Pietarinen is a world-known scholar on Peirce's philosophy. He is Professor of Semiotics, University of Helsinki, Finland, Professor and Head of Chair in Philosophy, Tallinn University of Technology, Estonia and Head of the Helsinki Peirce Research Centre. As the member of executive committee of the Charles S. Peirce Society Professor Pietarinen has made important contributions on Peircean semiotics, notably his book *Signs of Logic: Peircean Themes on the Philosophy of Language, Games, and Communication* (Springer Synthese Library, 2006). Recently we (Dai Weiwei and Zhao Xingzhi) had the honour of interviewing him. Professor Pietarinen patiently conversed with us on various questions relating to Peircean semiotics as well as cognitive communications.

### 延伸皮尔斯：阿赫提—维科·皮塔里宁教授访谈

阿赫提—维科·皮塔里宁，代炜炜，赵星植

**简介：**阿赫提—维科·皮塔里宁教授是世界知名的皮尔斯哲学学者。他是芬兰赫尔辛基大学符号学教授、皮尔斯研究中心主任，爱沙尼亚塔林科技大学哲学系主任。作为美国皮尔斯学会执行委员会成员，皮塔里宁教授在皮尔斯符号学理论及其相关方面建树颇丰，具体可参见其代表作《逻辑的符号学：皮尔斯的语言哲学、博弈与交流》(2006)。近日，我们有幸书面采访到了皮

塔里宁教授，并与他就皮尔斯符号与认知传播学的相关问题，展开了深度对话。

**Q:** C. S. Peirce's semiotic theory is characterized by triadism, that is to say, his classification of signs are all based on trichotomies. Does this, in your opinion, involve a risk of oversimplification, since signs and semiosis are of great diversity and complexity, especially in the contemporary context, when the development of semiotics goes far beyond anthroposemiotics and extends to biosemiotics, even "cosmosemiotics"?

**A:** Peirce's semiotics is open-ended just as about any theory about intellectual pursuits and scientific research will inevitably have to be. We do not as yet have a definite answer to how his investigations are going to turn out in the context of contemporary inquiry, or which of the central elements and concepts will be retained as the right or fruitful conceptualisations of a multiplicity of sign—theoretical and representational phenomena.

The question here is really about the possible worry that Peirce was, after all, a triadomaniac, that he saw triads even where there may be none. Or further, that it just has not been shown convincingly, by some other and independent means, that everything can be neatly classified into three parts, or into three fundamental categories, or into endless types of triadic sign relations, and so on. First of all, it has to be stated that not everything that we get from the triadic sign divides into three classes. And not all that Peirce presents in his architectonic classifies things into three groups. The case in point of the former is the notion of the object; later in his life Peirce suggests that there are two kinds of objects, immediate objects (objects as the sign/representamen represents it, and in a sense are internal to the representations), and dynamic objects, which are external to the signs. Unlike the trichotomies from the meaning-category side, such as the immediate/dynamical/final interpretants, the notion of final objects makes no sense here: we cannot even begin to conceive the idea of having knowledge of things-in-themselves.

Hence, not everything comes in threes, although trichotomies are indeed a natural or facile manner of pursuit for Peirce when working out the

classifications. But the reason why they are such has to be, in fact, discovered from the logical analysis of things. I cannot go into the details of what such analysis is, but after a fashion, the centrality of triads falls from Peirce's reduction thesis, which has both its positive and negative parts. The positive part states that all relationships can be constituted from triadic relationships ("teridentities"). The negative part states that the one and the two-place relationships alone cannot constitute genuine (non-degenerate) triadic relationships. The proof would require terminology and techniques that go beyond this reply but the conclusion follows from the topological facts of the system of logical diagrams in Peirce's theory of analysis.

As an aside, I find it interesting that *Daodejing* states how the three, or the plurality (*san*), gives birth to (*sheng*) whatever there is, the manifold of everything that is happening, or the habits (*wanwu*), which in a sense is a statement of the positive part of Peirce's thesis. The triadic relations as the primitives are the indecomposable elements out of which other systems of relationships of arbitrary complexity can be procreated. The idea of the three-place systems of relationships seems indeed to be of particular cogency in biology, and also in interpretations of evolutionary theory, as there the units of selection, for instance, are the population-environments pairs in their context. Allied relational structures might even be found in evolutionary theories of cosmology, too (see e. g. Lee Smolin's recent work on multi-verses in which laws of nature are subject to cosmological natural selection).

Importantly, Peirce distinguishes degenerate from non-degenerate (genuine) triadic relationships. Degenerate triads consist of dyadic pairs; those that we encounter in ordinary contexts, such as mind-world and language-world relationships. But when we investigate the questions of what it is that mediates those relationships, we do not have degenerate triads, we have the non-degenerate, triadic relationships that the notion of the sign, not the sign as the representamen but the sign as the triad or as a process, brings to the fore. An idea that is not so dissimilar to Peirce's is found in Wittgenstein's late philosophy, for example, in which he takes the language games to be the activities that mediate the crucial relationships between language (and other kinds of representations) and the world.

**Q:** Peirce made great contributions to semiotics by introducing the “object” and “interpretant”, which makes unlimited semiosis possible. In “Esthetic Interpretants: Pragmaticism, Semiotics, and the Meaning of Art”, which takes an insightful look into Peirce’s theory of esthetics, you talk about the “esthetic interpretant” and Peirce’s semiotics of art. Could you please elaborate your main points on this? How does Peirce explain the semiosis of artistic experience, or, “esthetic experience”?

**A:** Yes, the introduction of the “interpretant” is really the groundbreaking innovation in Peirce’s theory. But here a misinterpretation has to be corrected. The term “unlimited semiosis” comes from the much later and very unreliable literature that did not pay any attention to Peirce’s own and exact words, let alone his overall thought. First of all, the term “semiosis” as such appears just once, or perhaps at most twice, in Peirce’s 100,000 manuscript pages, without any very precise meaning or definition. We do not know what Peirce’s idea about it was. It is quite odd that it became so widespread in secondary literature. And whatever the processes of interpretation or semiosis is, they are *not* unlimited precisely because interpretants come in several varieties-grouped in three—the third one of which is the final (or some take the relevant third one to be the “ultimate”, or “logical”) interpretant. It is here, at this third stage of rendering signs effective, that the process of interpretation, or semiosis, may come to a halt, perhaps temporarily, but in any case the process ceases and is laid to rest. At that stage some mutual and common agreement on the meaning of the representation has been reached, or it may be that some natural, perhaps biological or chemical, process will be completed, or a reaction saturated, or whatever the reason there may be for the final stage of the interpretants to have been arrived at.

The other part of the given set of questions concerns Peirce’s esthetics. First of all, there is no Peirce’s esthetics. He never described it or investigated it beyond a few short sentences or passages that hint at something like a possibility. He was not really interested in developing that part of the architectonic, since he was preoccupied with the third part of the normative sciences, logic as semeiotic. But he saw well enough that esthetics

is the first and an important stage of the normative sciences, ethics being the second and logic (semeiotic) being the third. So in a sense, the latter two depend on, or repose on, or draw their motivation from, esthetics. So it has a certain importance in the overall theoretical classification of various areas of investigation. But what I wanted to point out is that his esthetics is not about esthetic *experience*. Dewey wrote about experience in pragmatistic senses, but not Peirce. Experience and habits are not signs in Peirce's theory. I found it to be a plausible thought, however, that there may be something like "esthetic interpretants" in the meaning category side of the sign triad. It is not a term that Peirce ever used. But then again, he just did not say much about esthetics or the meaning or interpretation of the arts at all. Esthetics and semiotics are two very different sciences, just as, say, high-energy physics and analytic chemistry are. We can try to make interpretations of what his theory might amount to in those related realms. But notice that, whatever the esthetic kinds of interpretants may be, they have a certain level of generality in them. They are not singular things. Thus they do not articulate our experiences. They are what give rise to what Peirce did describe as the "habits of feeling". These habits of feeling are not subjective but intersubjective. I find this idea of his a rather beautiful one because it allows us to theorize about what the various degrees of shared feelings could mean when investigating anything that possesses certain ideals as such, irrespective of what those ideals are. It is like what happens in communication. And artworks, as signs, are media of communication. Maybe art is also something that is able to be part of such esthetic ideals. And this is what esthetics seems to amount to in Peirce's overall scheme; the study of ideals in themselves, but not yet necessarily fully connected with action, not even with meaning.

**Q:** According to Peirce, there are different types of signs in terms of their relation to object; icon, index, and symbol. Iconic signs employ the principle of iconicity in representing the objects. However, Eco argues that iconicity is regulated by convention, thus drawing his conclusion that iconicity as motivation of signs is just "iconic fallacy". What is your opinion on Eco's criticism of iconicity?

**A:** Firstly, some terminological clarification; this objectual classification

referred to in the question, although perhaps the most famous one, is one among the three main types of classifications. The first is the qualisign (tone) - legisign (token) - sinsign (type) and the third the rhema-dicisign-argument one. Especially the latter one, which comes from the meaning classification side, is equally or even more significant than the other two, but only became better studied and understood much later. The reason is that it relates to the kinds of logical conceptualizations that need to be grasped first. Secondly, Peirce, I believe, hardly ever used the term “iconicity”. Iconic signs are characterized in terms of structural similarity or resemblance with their objects, and this notion of similarity or resemblance in turn has some further and fairly technical elaborations. What is important is that it is not any naïve or simple similarity in looks or in visual qualities or anything like those that are the distinguishing characteristics of icons; the fundamental features of icons have to do with certain mathematical structure-preserving mappings, with intellectual and artistic qualities, multi-modal representations (such as auditory, tactile or olfactory senses—the smell of a rose may be the icon of a pink rosebud), with analogical and diagrammatic types of reasoning, and so on.

Eco's argument about the meaning of icons being regulated by conventions was conclusively discredited a long time ago, and notably by Eco himself, among many others. It was simply a mistaken conception of what the icons are, and what their function and interpretation amounts to. Only if you think, somewhat naïvely, or perhaps in a sort of a Goodmanian way, that anything can be similar to anything else in some respect or quality; that the similarity or resemblance is a *reflexive* and *symmetric* relation, or that what goes into interpretations of similarity is fundamentally a cultural and relative issue; if you think in any of these obsolete ways about the properties that fall from the narrow conception of iconic representations, only then might you draw such skeptical conclusions about the consistency or the self-standing status of the category of icons. On the other hand, Peirce made it quite clear how multi-faceted an iconic sign and its interpretations can be. Yet the skeptical accounts kept on basing their claims on the literal reading of similarity; predominantly a similarity by visual perception which assumed

these properties of reflexivity and symmetry to hold for iconic representative relations defined by resemblance or similarity. Neither of these is a necessary or sufficient property in Peirce's theory of icons, however. The resulting so-called problem or crisis of representation, and the ignorance of the true nature of Peirce's icons, seems to have made it nearly impossible to reach the kinds of overarching perspectives that could have connected various fields from the philosophy of art and aesthetics all the way to the philosophy of science, and to the contemporary debate on models and simulations. Instead, the result was a disappointing cocktail of skeptical error theories of misrepresentation. A caricature of Eco fails to represent, or it misrepresents, it was claimed, since the caricature is at the same time different in some respects from its object yet fails to be dissimilar to it. Here again, the claim that icons would reduce to conventional signs is just one of those pernicious myths that have already been buried, multiple times. The attempted arguments just did not hold. The fallacy that resulted in the "crisis of representation" was at bottom the *fallacy of composition*: all signs are more or less symbolic (conventional); icons are signs; therefore, icons are symbolic (conventional). And notice that it is not the premises that are at fault here, since according to Peirce, all signs are more or less symbolic: "Take a picture, for example. Here are a lot of colors doubled on a canvas. But I know that they are intended to represent something unlike the canvas in having three dimensions, and the colors represent quite different colors in the object, to which they are proportionate by a scale of values. This is one of the reasons why I must be a connoisseur in order to judge of a painting. The object represented may not exist in the world of sense-experience; but it has an existence in the creation of the artist. It forces itself upon my apprehension much as an object of outward experience would do. Thus, the picture has an indexical nature, and as representing that its indicated object has steady and general characters it is symbolic." (MS 484, 1898)

What needs to be noted, thus, is that none of these objectual classes of signs are meant to be strictly separated from one another. Most signs for Peirce are indeed *mixed signs*, and in actual fact they are perhaps predominantly symbolic but also share the qualities of indices and icons. But

all these are empirical observations. Peirce made many such observations himself, to find further ideas and to provide good examples of different kinds of signs. But such examples have no bearing on the validity of the theory as such. Moreover, Peirce subdivided icons (hypoicons) further into *images*, *diagrams* and *metaphors*. None of these are straightforwardly the kinds of things that we think of as pictures or visual representations. They concern imaginative aspects of our intellect and may or may not be visualisable, let alone verbalisable. There seems to be considerable variation here whether people can perform the latter or the former better than the other, but whatever the interest and the conclusions about such issues may be, all of them pertain to the cognitive, psychological and neuropsychological side of research and observations, not to the validity of the theoretical status of the systems of signs.

**Q:** When elaborating his theory of iconicity, Peirce uses the term “diagrammatic icon” to describe the structural resemblance between representamen and its object. Diagrammatic iconic representations, according to Peirce, widely exist in our thinking activities. Does this help us to achieve a better understanding of cognitive processes, as you mentioned in “Peirce and Husserl in Professor Stjernfelt’s *Diagrammatology*”, that diagrammatic features are the characteristics of human cognition and thought?

**A:** This is a very interesting question that covers much of what our current research projects at the University of Helsinki and Tallinn University of Technology are concerned with. The project is termed *The Diagrammatic Mind: Logical and Communicative Aspects of Iconicity* (DiaMind), and its goal is to find out what the nature and properties of diagrammatic and iconic signs are that represent the cognitive and intellectual processes and reasoning. DiaMind investigates the information these signs convey and the semantics and pragmatics of iconicity. Perhaps in the future, we may even be able to base possible future communication methods on the new kinds of iconic signs (see the answers below). A comprehensive theory on the logic of the images in the mind may be the missing link between meaning and expression, thought and language. It cannot be achieved by studying natural language alone. An example is: a metaphor and its special iconicity build upon



diagrammatic logic. And so we want to understand the diagrammatic nature of thinking and thought processes. Assuming that thinking is diagrammatic in nature, communicating the content of cognition may be achieved without the mediation of conventional linguistic symbols. We can then, for instance, investigate new conceptual and logical integrations at the crossroads of the philosophy of language, mind and cognitive sciences, and to develop new formal cum semeiotic methods for the study and analysis of future and emerging forms of communication and cognition.

These issues give rise to a multiplicity of questions, many of which do not yet have quite clear answers, but we already have many excellent people working on these issues. What are the exact structures of thought and action here? How to find the best method to analyze different types of reasoning? Did Peirce have a solution to the quest for the method of inventing methods? Are diagrams that? But exactly what are they and where? Is there a general diagram concept? Is this a non-empirical question? What else can such a diagram be but what his theory of logical diagrams was expected to provide? What is an icon? Can we communicate, beyond self-communion, with icons or diagrams? What would the next major transition in the evolution of human language and communication look like? Can Peirce's theory provide some illumination to those sets of issues? Are what Peirce termed the existential graphs the true logic of our cognitive processes?

Alternatively, and to take an example of metaphoric content of non-literal meaning, such content is propositional in the wide sense of the term and can arise from diagrammatic representations. Our emerging systems of diagrams are thus special kinds of languages, though we cannot read or speak them in any ordinary sense. Note that diagrammatic representations, too, have a kind of propositional content (Peirce's "dicisigns") and can thus also have different kinds of non-literal meanings, at least in principle. Since metaphors can be true or false, or better or worse, the mental-model and conceptual-space theories seem dispensable as they fail to explain crucial meaning phenomena, given these wider contexts and goals.

**Q:** In Peirce's classification of sciences, esthetics, ethics, and logic (i. e. semiotic) belong to the same category, that is, normative science.

Besides, both esthetics and ethics aim to achieve, or determine, the ultimate good, “the summum bonum”, as termed by Peirce. He contemplates logic as “the theory of self-controlled, or deliberate, thought”, thus of great interest to ethics “for its principles”. Therefore, can logic be identified with semiotics? Such a classification may cause a lot of confusion. Besides, logic, or/and semiotics, are often considered as descriptive theories. How are they associated with “the summum bonum”, as Peirce says? Could you please clarify this point for us?

**A:** The idea of “logic”, conceived as semiotics, is an old and venerable one. It derives from Aristotle and from the Stoics in Greece, and from the ideas of Leibniz, Locke, and very many others in the long tradition of semiotics and philosophy. Already for Aristotle, premises are the signs of their conclusions. Language, in its various manifestations, is a sign of affections of the soul. Leibniz set out to construct all kinds of symbolic systems of signs for the betterment of human reason. And Peirce investigates this entire history and its heritage up until his own day and gives full yet never uncritical credit to the great contributions of the past. He states that nothing as such of what he has to say about the topic in general is in fact entirely new. He would investigate and analyze the tradition in depth and then produce his own articulation of what he took to be the outcome those painstaking investigations.

In brief, the alliance of logic and semeiotic cannot be otherwise, they are inseparable, and have always been taken to be such in the history of thought. Below, towards the end of the answers to Question 6, I have a little bit more to say as to the reasons why this natural alliance may have created confusion and uneasiness. But note that it did not create any confusion to the great thinkers of the past.

Part of the answer to the second question here of how logic, conceived as semeiotic, can then be associated with the ideal of the summum bonum, derives, in turn, from the answer to the second question above. Logic as semeiotic is a normative science, the laws and the basic nature and properties of which would be what they are no matter what we think about them or whether there be any human beings at all in this universe to contemplate those

things. Maybe logic, or the general nature of meaning and reasoning, arrived on the earth like water first arrived on this planet, with comets and asteroids.

The other part of the answer is to recall that Peirce's conception of logic comes in two parts (another example that is not a trichotomy!) —the logic in use (*logica utens*) and the logic as theorized and educated (*logica docens*). The former is instinctive and evolutionary; the latter explicit and schooled. *Utens* is uncontrollable; *docens* admits of meta-theories and works by way of finding out the truth or assertability or relevance-conditions, including how habits are self-controlled. Think of these as general and practical rationality (perhaps something that is implicit, unconscious, imperfect or hidden) on the one hand, and meta-descriptions of the rationality of such practices on the other. So there is that part of logic that inevitably seems to be about rational pursuits, and thus about the *summum bonum*, independently of what we make of it. Again, I do not think there is anything very special about these ideas with Peirce. Rather, I am inclined to think that this is one of those timeless thoughts that one would find not only in Aristotle, but also in Kongzi, Laozi, Xunzi, Mengzi, and so on, in the age-old traditions and systems of thought, but also and importantly including modern sciences, specifically areas such as the extended synthesis in the theory of evolution, the phenomena of implicit cognition or the accessible but unconscious as investigated in the cognitive neurosciences, the contemporary theories of bounded and procedural rationality in decision making, creative scientific discovery, and so on. But I have never attempted to undertake any lengthy study of teleologic or teleonomic aspects of Peirce's semeiotic. Some may well claim that the *summum bonum* is only an accidental outcome or an unintended side effect of semiosical processes that only seem purposeful. It is hard to settle such issues one way or another, unless someone first manages to formulate sufficiently precise research questions that could be meaningfully tackled in relation to these problems.

**Q:** As we all know, Peirce's studies are of fundamental importance to pragmatism as well as semiotics. As one of the founders of pragmatism as well as semiotics, Peirce establishes the basic principles of the two sciences. In your paper "Abductive Issues in Peirce's Proof of Pragmaticism", you

pointed out that “Peirce believed his pragmatism to incorporate the notion of abduction”. Does this mean that abduction is the basic method used both for Peirce’s semiotics and pragmatism? Can we trace the development of his semiotic theory in his studies of pragmatism, or, in other words, are there any interconnections between his studies of the two fields?

**A:** A good deal, if not nearly everything, in Peirce’s thought and in his writings is strongly interconnected, continuous, and overlapping. This also presents a formidable challenge. He is not only erecting a theory of signs, or semeiotic, but also a general theory of meaning and action, call it then pragmatism or pragmatism, the general theory of the logic of science, the three-pronged theory of reasoning, and so on. All of these interlock. A specialist in the philosophy of mathematics may be able to evaluate many of his claims about mathematics, another specialist may be able to do the same for logic, and yet another one for ethics, and another one for esthetics, and so on. But how about someone who could master all these areas in a sufficient depth? Will the one, unifying thought “to rule them all” ever be possible? I do not know, but here is an encouraging thought: It may not matter so much whether we want to phrase the underlying issues in terms of his semiotic, or in terms of pragmatism, and so on, as long as we know what we are talking about. Abduction is a good case in point: the kind of reasoning, or a phase or a stage of reasoning, which is able to germinate a new idea. But how do the new ideas emerge? Where do they come from? If you ask some good questions of the right kind, then new answers may be possible, or there may be some unforeseen implications or helpful unintended consequences or even something that is in fact necessitated by the earlier questions and answers. Thus the nature and meaning of questions is so important. And abduction is the process of creation amidst these question-answer cycles. And the questions here should not be taken to be entirely linguistic ones but those schemata and representations that take place in cognition. Cognition seems to work with icons and especially with diagrammatic representations as its signifying material, for example, as numerous scientists have testified over the years. Now it occurred to me while I was working out Peirce’s so-called “proof” or pragmatism that a couple of steps in that argument are about procedures

that concern questioning and answering. Thus they are about abductive reasoning. And thus abductive reasoning becomes, in late Peirce, part of what pragmatism is. In his 1903 Harvard lectures he had even attempted the “proof” by effectively assimilating abduction and pragmatism. But his semeiotic attempt from 1907 is more successful and admits of a somewhat more precise reconstruction, as I have attempted to present in some works of mine. But it is not quite right to state that abduction is the basic method, as there are three types of methods of reasoning, which also form a complex and partially interlocking system, the nature of which has dawned on me only recently, in collaboration with others. For example, the validity or justification of abduction for Peirce draws from deductive reasoning and in certain senses the deductive form of reasoning is the more basic one over the others. But at the same time, there are further justifications, including some abductive and inductive ones (the latter drawing from the history of science). And deduction itself is not free from its abductive moments, and has to involve non-trivial and creative aspects, including what Peirce called the highly important “theorematic” types of reasoning, as well as abstraction. The true nature of abduction, or even that of deduction, is not yet clear of mist.

The relationship between semiotics and pragmatism is thus a very rich one. In a way, Peirce wanted pragmatism to be a theory of meaning, and so it is located within his attempts to develop the methodetic or speculative rhetoric part of his semiotic theory. It is here that we find some further explanations of what his ideas may have been concerning the nature of meanings (in some senses of what the final, ultimate or logical interpretants may give rise to), such as the habits of acting in certain ways in certain kinds of circumstances. But that development was by no means finalized, and pragmatism may indeed be conceived in a wider sense as amounting to a theory of intellectual action, behavior, and conduct, including collective and social intentional action. I think the latter could become a very interesting direction that could revitalize the research that is taking place on collective intentionality and team reasoning, for instance. Peirce’s principle according to which “a person is not absolutely an individual” (CP 5. 421) suggests that

stark contrasts between the intrapersonal, multiple-minds perspective on conversational dialogues and the evolution of thought, on the one hand, and the interpersonal, social communication, on the other hand, assume much less importance than is typically supposed in recent research on social action and reasoning in the social sciences, permeated with methodological individualism and the allied notions of instrumental rationality and reason.

It is also clear that no loose talk about Peirce, about various and potentially endless classifications of signs, or what pragmatism or meanings in the broad sense may amount to, suffices to address the fundamental issues. Conceptualizations that neatly slot object representations into icons, indices, and symbols may provide fine aide but they can only cater the prelude to the actual work, or merely an elucidation of existing concepts.

Equally misleading would be to think that Peirce's explicitly logical investigations are somehow more difficult than his semeiotic or pragmatism; for Peirce, as we saw above, logic *is* semeiotic. What I find really difficult is to decide how pragmatism could apply to ethical or religious or political or managerial questions and so on. I do not see how one could even begin to address such questions in non-trivial ways before pragmatism (in Peirce's sense) is laboured into some other, relevant, rich and detailed theory other than what it was in the classical pragmatists' works. And I do not think that anyone has done that job yet.

Having said all this, I do recognize what the spirit of the question is, namely that the alliance of logic and semeiotic may strike one as somewhat surprising or even misleading. But it only appears surprising or misleading from the point of view of the deceptive status that semiotics may be enjoying these days: a general humanistic study that nonetheless broke off from its roots in the long tradition in the history of philosophy or of language; a study that attempted to radicalize its own doctrines; a study, rather than a science really, that endeavoured to break off the wedlock between thought and cognition, language and the world, or art and reality, and to create barriers between them. But the real surprise is that such radicalized versions actually are studies or exercises in formalisation. And there is the formalistic current in logic, too, that dominated the field of symbolic logic, at least in the first

part of the 20<sup>th</sup> century, and gave rise to Chomskyan formal theories of grammar; emphasizing the purely formal relationships over the material or the natural, language over thought; endorsing the closed and self-supporting nature of structures, disjointed cultures and culturalism, autopoietic communication, incommensurable theories of science, crises of representation... All of these are progenies of the misguided radicalization of thought, an expression of societal or existential anxiety, or anthropocentrism, or ethnocentrism, or carbon chauvinism. That is, it is the formalistic semiotics, or semiology, or meta-semiology, or varieties of structuralism, or anything that comes with the prefix “post-”, that were in fact much closer to logic, in the narrower and closed formalistic sense of logic, than Peirce’s semeiotic ever was. Now *this* is what ought to be surprising or worrying to those that need some soul-searching about the fundamental presuppositions of their thought. Perhaps we could describe the situation by supposing that Peirce’s semiotics (semeiotic) could be conceived *as logic of the future*, which is not quite here as yet though maybe it will, while the semiotics in the sense of the semiological or structuralist threads, sought alliance—often unconsciously—with the kind of formalistic and universalist logic as that research happened to, largely uninfluenced by Peirce, in the past when modern symbolic and formal logic was just emerging. These points merely continue the line of thought that I outlined above in answer to Question 5 concerning the copulation of logic and semiotic, in light of what was stated in relation to Question 6.

**Q:** We are delighted to see that you have made tremendous efforts to minutely introduce Peirce’s theory of communication and its probing contacts with new technologies, especially for cognitive communications. And we know you have done lots of work on the Diagrammatic Mind project, which is at the frontier of interdisciplinary research. In your opinion, why is it necessary and urgent to turn to the cognitive aspects of communication?

**A:** Look at the origins of natural-language first. Communication seems to have had its roots in gestures. Today we are witnessing a phenomenal expansion in visual and multi-modal communication. Since the mind processes information and reasons by some kinds of images, it is conceivable, although

by no means certain, that future communication need not be based on linguistic symbols. While some earlier proposals may have been on the right track in emphasizing the importance of mental imagery (the idea is not new, “thinking in images” was already clear to Aristotle), the accounts that base their claims on mental or conceptual models suffer from the fundamental problem that the models and schemas cannot distinguish between true and false or better and worse assertions, and so their predictions are not appropriately falsifiable. Their concern is about actual thinking and reasoning in particular cases and instances, not about what reasoning in general is, and thus their project is not related to semeiotic as a normative science, which is not predominantly concerned about those issues of psychology of human reasoning. In the framework of our Diagrammatic Mind project, we are attempting to clarify what has been going on in the long-lasting mental imagery debate, which had its roots in classical philosophy, though it later and maybe erroneously was appropriated by the realms of cognitive sciences and cognitive and developmental psychology, and to learn from those errors and dead ends.

Now, secondly, the characteristic feature of diagrams is their multimodality, not visuality. Multiple modes of perception are manifested in diagrammatic languages in terms of various colours, tinctures, shapes and contours that the expressions can have. We can even develop diagrams based on sounds and acoustic signals. Symbolic systems such as natural languages simply lack the representative mechanisms to accomplish anything like this. The significant question arising here is whether anything “worthy of asserting” in diagrams coincides with assertions having propositional content—or whether there is some non-propositional content not assertible in diagrams. A preliminary answer is that the entire notion of what is meant by “propositional content” may be subject to revision in the light of the possibility of expressing assertions in diagrammatic fashion (cf. Peirce’s notion of *dicisigns* as the “wide” propositional content, something about which Frederik Stjernfelt has written a recent book, *Natural Propositions*, 2014).

So it is plausible that, if humankind does not manage to annihilate itself



first, new and perhaps radically novel modes of communication loom large on the cognitive and technological horizon of humankind. This is not about yet another new smartphone model but about the great transitions in the evolution of the species *homo* that this time is subject to heavy technological influences and selection pressures. Before hominids were able to speak, they used gestures. Now that humans have mastered how to effectively use speech and to communicate in natural language, we are rapidly moving along the visual age of mobile communication. What will the next major transition in our evolution of communication be? Our conjecture is that we will learn to create and comprehend multi-modal diagrammatic assertions. They are not uttered in the sense natural languages are, however, but are observed, seen, perceived and comprehended directly in communion with our thought and cognition.

Maybe this is somehow related to how the brain could “speak”. This is where it gets speculative. Since our brains emit weak electromagnetic currents in their characteristic wavelengths, of which we already know a great deal how to utilize them in order to manipulate things, including our own body of course, but also external objects, it is conceivable that robust brain-to-brain connections could be achieved in the future. That will no longer be about manipulating things but to share content and coordinate, to be in more intimate communion with others than ever before and without any outward medium for expressions required to achieve it. But here we need to understand the conceptual situation much better before attempting anything like that. Suppose you could “read off” another person’s brain in this way, or know that others could equally read off yours. What you do not get is signs in the sense of familiar symbolic expressions. It is not that your brain can speak or read natural language in any ordinary sense of the term, like making assertions interpretable by other brains, such as “it is raining outside” or “aha, you are thinking about what my thoughts right now may be”. So an entirely new conceptual setting seems to be needed for all such possible phenomena to be explicable. We believe, in the context of the Diagrammatic Mind project, that it is the icons and, for instance, the diagrammatic forms of signs that are the vital representational mechanisms by means of which the relevant kinds of

new conceptual frameworks can succeed in their future technological tasks; even to make sense of the kinds of meanings that transpire in brain-to-brain communicational situations which languages fall short of achieving and for which there are not as yet any clear conventions for the meanings to function in those senses in which symbols function.

Finally, nothing that I have said here has anything to do with the over-predictions of the so-called “radical enhancement” people. They merely continue propagating the mythical “post-”. I do not think that their arguments hold much water when subjected to close scrutiny.

**Q:** You have mentioned that the *common ground* and *the universe of discourse* are two all-important concepts in Peirce’s theory of communication. Could you please elaborate their relationship for us? And, in your opinion why did Peirce attach special importance to this pair of concepts in his communication theory?

**A:** I am happy to end with a reply to this important question, as it has some really significant repercussions to the overall ultimate nature of one’s thought. Peirce’s theory of communication is a theory of signs, and logic is that theory of signs, semeiotic. It is thus unavoidable that the key notions of communication are also the key notions of his theory of logic. And common ground and the universes of discourse are two such key notions, in both realms. They are highly important both systematically and historically. The centrality of common ground in linguistic pragmatics and theories of language and interpretation was noted only much later, in the 1960s, by Paul Grice and David Lewis, followed by Robert Stalnaker and others soon after. There were also some precursors. The works of Lewis and Stalnaker, among others, gave an account of it that is effectively a definition based on an iterative and possibly infinitary notion of common knowledge. Now Peirce did pretty much the same in a series of mostly unpublished manuscripts entitled “Common Ground” from around 1908. At that time, he was writing a wealth of material for a book project he had planned on Logic, and another one Studies in Meaning, and others. They were never finished or published, and so we never learned about his studies. But understanding the processes of how common ground comes to be established in linguistic communities is crucial

for understanding communicative meaning and assertions. Peirce saw clearly what it takes to precisely and accurately address the topic of what it means for someone to mean something. He suggested what the fundamental methodological principles are for the conventional aspects of language and its use to emerge: “The universe must be well known and mutually known to be known and agreed to exist, in some sense, between speaker and hearer, between the mind as appealing to its own further consideration and the mind as so appealed to, or there can be no communication, or ‘common ground’, at all.” (*Collected Papers* 3. 621)

The universe(s) of discourse is then the other major idea—even more important, one might say, though its viability hinges upon the possibility of the common ground—in the development of modern logic since De Morgan, which Peirce (with the help of his student O. H. Mitchell) managed to operationalise. For logic is not about any grand structure or the ultimate nature of the world, or logical thought, or the validity of reasoning, as such. It is about how signs give rise to other signs, by virtue of the methods in which propositions or assertions come to be linked with nature. These links, the interpretations, are mediated by various humanly accountable activities. The universes of discourse model the domains from which the values that are needed to interpret the constituents of one’s language or logic come. They are the pool of mutually known and known to be mutually known and mutually observed facts concerning aspects of language and grammar, participants’ linguistic competence, their coinciding traces of experience, and their self-awareness of such elements and values, including modalities, qualities, even ideas. But universes of discourse are not perfectly interpreted or closed totalities of such elements, but indefinitely extendible sources that offer latitude for the utterers and interpreters in the process of adjusting and modifying their acquaintance of them. The universe is different on different occasions. That universes are different on different occasions and for different purposes is the most crucial facet of Peirce’s scholastic realism, which, perhaps surprisingly enough, enables him thus to steer clear of any possibility of relativism. It is the contrasting view, the idea of one universe, one world, or one dialogue, that results in the impossibility or inconvenience of false

assertions, the world in which nothing is so very wrong at all, the world loaded with never-ending opinions and Rortyan discourse, the world with all-pervading skepticism about the values of true communication. Such stiff monotheistic ideas have resulted in an overemphasis of skeptical accounts of misunderstanding and error, and bizarre interest in the marginalia of meaning, at the expense of how real, ordinary, every-day understanding is possible. The notion of the universes of discourse is thus absolutely crucial, as it is an ignorance of that notion, or the denial of it, from which unsafe ideas about meaning have sprouted.

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