

Chapter 2

Academic Culture and the Science of Signs

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Abstract Today's academy culminates in universities, the central institution of education feeding the intellectual culture of humankind. In historical context, philosophy (science in the 'cenoscopic' sense of critical control of objectivity unaided by instruments), along with literature, preceded university life, but came to form an integral part of university curriculum. But modern science (in the 'ideoscopic' sense, knowledge that could never be attained without instruments) began its distinctive development in the dawning years of the 17th century, and its acceptance within the university was anything but smooth. Intellectual advance depends on logic, but old habits have to be overcome, and such displacement is seldom easy within culture. It took more than two centuries for modern science to gain its standing—a standing so firm that students now think of the university in terms of science above all, as evidenced in the acronym STEM (science, technology, engineering, mathematics) for early 21st century attempts at a core curriculum. Where is semiotics in such a scheme? The chapter presents semiosis as the subject matter of semiotic inquiry and elaborates on semiotics as a matrix of all sciences, social and natural notwithstanding. The chapter further specifies the features of semiotic consciousness and concludes by affirming the transdisciplinary as well as predisciplinary, rather than disciplinary, character of semiotics and edusemiotics.

Introduction

Semiotics today traces back to two contemporaneous pioneers, one in the field of linguistics and one in the field of philosophy. The first of these, Ferdinand de Saussure, envisioned the possible developments under the label of semiology, a term fashioned from the Greek *semeion*. The second, Charles S. Peirce, chose the

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name semiotics that, while also fashioned from the Greek, was not of Peirce's own coining. Peirce derived his vision from the text with which John Locke concludes his *Essay Concerning Human Understanding* of 1690. For Saussure, the science of signs was to be a branch of social psychology and linguistics as a subspecies within that branch. Of this 'possible science' Saussure himself did not say a great deal; however, he influenced a stream of future linguists and critical theorists centered exclusively on literary texts and other artifacts of culture, which were always treated on the patterns of language. Within this tradition, the possibilities of semiotic understanding have been largely restricted to glottocentrism or logocentrism. This perspective, from the philosophical viewpoint, was entangled in the Kantian critique, according to which there is no world known or knowable beyond the phenomena constructed by our own structures of understanding. Writing within this tradition, Terence Hawkes (1977) reminds us that: "It follows that the ultimate quarry of structuralist thinking will be the permanent structures into which individual human acts, perceptions, stances fit, and from which they derive their final nature. This will finally involve what Fredric Jameson has described as ... 'an explicit search for the permanent structures of the mind itself, the organizational categories and forms through which the mind is able to experience the world, or to organize a meaning in what is in itself essentially meaningless'" (p. 18).

Indeed, at the heart of semiotics is the realization that the whole of human experience, without exception, is an interpretive structure mediated and sustained by signs (Deely 1990). So it is perhaps not surprising that much of the original semiotic development in our time has taken place along the tracks and lines of a classical idealism in the modern sense, an environment and climate of thought within which the structuralist analysis of texts and narratives is particularly comfortable. However, the tradition of semiology has been superseded by the other semiotic tradition of Poinot–Locke–Peirce. This development, unlike that of Saussure, does not take its principal and almost exclusive inspiration from human language and speech. It sees in semiosis a broader and much more fundamental *process*, involving the physical universe itself in human semiosis, and making of semiosis in our species a part of semiosis in nature.

Abduction, the process whereby new ideas are seized upon—ideas further to be developed deductively and tested inductively, beginning again the cycle, or, rather, an evolutionary spiral of semiosis—is first of all a phenomenon of nature. As Peirce pointed out, "what is growth? Not mere increase" (Peirce, CP 1.174): a semiotic growth presupposes novelty and creativity. Abduction works with constructed signs, but not only with constructed signs, and not with constructed signs first of all.

Thus, the cornerstone of this tradition, first articulated by John Poinot in 1632 in his *Tractatus* (Poinot 1985) and developed by Peirce, Maritain, Morris, and Sebeok, is the coming together of 'real being' (awareness-independent) and 'being of reason' (awareness-dependent), thereby defying their opposition.

We have here two paradigms, which have to a certain extent handicapped the contemporary development by existing within it under sociological conditions of opposition, an opposition not only uncalled for logically, but one which depends on

a perverse synecdoche where a part is mistaken for the whole. Semiotics forms in fact a unified whole of which semiology is but a part. According to Thomas Sebeok, semiosis as the process of the evolution of signs must be recognized as a pervasive fact of *both* nature *and* culture. This is the perspective of anti-dualism adopted by edusemiotics that as such elicits far-reaching implications for educational theory (Stables and Semetsky 2015) as well as pedagogical practice (Semetsky and Stables 2014).

Semiosis: The Subject Matter of Semiotic Inquiry

Semiotic studies, that now include edusemiotic studies as one of their main theoretical branches, investigate the action of signs. It was Peirce who saw that the full development of semiotics as a distinct body of knowledge required a *dynamic* view of signification as a *process*. Semiosis as a type of activity is distinctive in that it always involves three elements, but it is even more distinctive in that one of these three elements need not be an actual existent thing. In all other types of action, the actors are correlative; hence, the action between them, however many there may be, is essentially dyadic. Peirce calls the action as such between existent things ‘brute force’ or ‘dynamical interaction’ that may be physical or psychological. In either case, the action takes place between two subjects of physical existence and is, in a terminology we shall be obliged to both clarify and insist upon, always and irreducibly a subjective interaction. Subjective interactions, whether psychical or physical, are always involved in the action of signs, but they surround the semiosis as its context and condition, while always falling short of the action of signs proper. In other words, while the action of signs always involves dynamical interactions, dynamical interactions need not always involve the action of signs.

Peirce gives the example of the rise of the mercury in a thermometer, which is brought about ‘in a purely brute and dyadic way’ by the increase of ambient warmth. Yet for someone who happens to have a collateral knowledge of thermometers, this ‘brute fact’ will also produce the *idea* of such increasing warmth in the environment. This idea as a *mental* event nonetheless belongs to the order of *physical* existence, no more and no less than does the rising mercury and the ambient temperature in the environment. It is, as Peirce says, the ‘immediate object’ of the thermometer being a sign that *indicates* an environmental condition. The object of the thermometer as a sign is the relative warmth of the surroundings. The object of the *idea* of the thermometer as a sign is no different. The thermometer has produced a certain effect, the meaning of itself as the *interpretant*, a unique and important notion, the key to understanding the action of signs as a process or form of becoming *as well as* a kind of being, over and above the essential structure that nevertheless makes such signification possible in the first place.

The Medium of Semiosis

Dynamic processes are characterized by motion according to the classic definition of brute force that the Scholastics called ‘transitive action’, that is, action that passes from one thing to another through the production of change. In Aristotle’s categories of physical being, action and passion (say, punching and being punched) are dyadic and correlative, the one as initiating and the other as terminating. The resultant change is the action of the agent transpiring in the patient, that is, in the one undergoing the action, and its traces endure as part of the physical order itself (principally in the patient as outcome; but in the agent, too, as vestiges and clues). The action of *signs* is however entirely different. It is not productive of change *directly*. It is always *mediated*. It lacks the directness of punching and being punched. Even when the semiosis is involved with dyadic dynamicity, as it always is in varying degrees, what gives the action of signs its curiously detached and ethereal quality is precisely its indirection, what Peirce rightly characterized as its *irreducible triadicity*. The sign not only stands for something other than itself, but it does so for some third; and though these two relations—sign to signified, sign to interpretant—may be taken separately, when they are so taken, there is no longer a question of sign as a triadic entity but of direct cause to effect on the one hand and of object to knowing subject on the other. The reference to the *future* (or past) in a third element, the interpretant, is essential. Both points are recognized in edusemiotics that interrogates the very notion of the knowing subject and affirms the future-directed orientation as crucial for education.

A sign always represents, but not every representative is a sign. Things can represent themselves within experience. To the extent that they do so, they are objects and nothing more, even though in their becoming objects signs and semiosis are already invisibly at work. To be a sign, it is necessary to represent *something other than itself*. Being a sign is a form of irrevocable bondage to another, to the object that the sign is *not* but that the sign nevertheless stands for, thus represents. This is the most important fact about the sign, because it is what is most decisive for it: the quality of relativity. There are signs that are also objects in their own right, just as there are objects that are also things. But there are no signs that are not relative to some object *other than themselves*, and that object or those objects to which the sign is relative we call the signified or significate, the essential content of the sign insofar as it is a sign. Because the essential content or being of the sign is relative, the key to understanding what is proper to the sign is the notion of relativity, relation. Sign is perforce a *relative being* suprasubjectively, an *other-representation* not a *self-representation*.

The action of signs, which provides the general subject matter of semiotic inquiry, extends well beyond what we call language (that is, what is limited to verbal signs) even though it is only through linguistic communication that this range can be brought into light for us as inquirers. Linguistic signs are only one subspecies of signs properly understood. Verbal language has come to be called in Eastern European semiotic circles the ‘primary modeling system’ while the rest of human

culture and civilization is thus a series of ‘secondary modeling systems’. Sebeok, however, showed that the primary modeling system is rather the human *Innenwelt* as biologically underdetermined (see *Afterword* in Deely and Danesi 2012). There are many kinds of signs—for example, signs embodying connections that are physical before becoming also objective and social (such as the connections between clouds and rain or smoke and fire); or signs formed of connections that are objective associatively rather than physically (such as the connections between candlelight and lovers, napkins and meals); or of connections that are manipulative (such as pressing a lever and receiving a pellet of food) rather than stipulative; or social signs subsequent to language embodying connections which are only objective and cultural (such as the connection between flag and country).

The ability to grasp the actual stipulation of linguistic signs, in contrast to making associations based on their perceptible aspects, is just what is meant by ‘intelligence’ in the species-specific sense of linguistic competence, which is only a subspecies of the fully fledged *semiotic competence* that edusemiotics is designed to elucidate in the field of educational philosophy and practice. This perspective is important to edusemiotics with its attention also to such ‘languages’ as images, diagrams, graphic symbols, hieroglyphs, as well as signs portending in the world. Such broad understanding of the semiotic systems makes it clear that the notion of ‘text’ is not limited to literary. They can be of any physical structure made to embody ideas as signs. The whole of culture, in such radical sense, is a text; and so is the ‘book of nature’. In short, semiosis, as providing the subject matter of semiotic investigation, would establish nothing less than a new framework and foundation for the whole of human knowledge. This new framework and foundation would embrace not only the so-called human and social sciences (drawing mainly from Saussure) but also the so-called ‘hard’ or natural sciences because they too arise from within and depend on their development upon experience and the processes of anthroposemiosis in the holistic tradition of semiotics after Peirce. Anthroposemiosis pertains to the human use of signs and represents (see Deely 1994) a new paradigm for anthropology.

Semiotics as a Matrix of All Sciences

Semiotics was forced underground in the modern interval, called after Sebeok (1976/1985, 1979/1989) the ‘cryptosemiotic interlude’, for the very ‘epistemology’ upon which the leading modern philosophers all agreed as the starting point of human knowledge already presupposed that the Way of Signs did not exist in its own right. The Way of Signs is a path that categorically rejects the view that only mental representations of whatever sort are the immediate final terminus of knowledge. It is a path that “leads everywhere in nature, including those domains where humans have never set foot” (Emmeche 1994, p. 126). That idea did not sit well within modern theories of knowledge united in the common assumption that subjective representation is somehow the heart and essence of human knowing. The

problem with epistemology is not the existence of things in themselves. The problem rather is the theory which makes things ‘unknowable’. That is a thesis the *science* of modernity never fully bought into, unlike the philosophers. The doctors studying cancer want to know precisely what this deformation of cells is as it occurs, whether we understand it or not, precisely because only by our coming to know that can we then come to do something about it, namely, cure the cancer.

Semiotics pertains to a renewal of the foundations of our understanding of knowledge and experience and hence to a transformation of the disciplinary superstructures culturally distributing that understanding (the traditional disciplines as currently founded). In this respect the present arrival of edusemiotics on the semiotic scene as a novel theoretical foundation for education is timely. Semiotics pertains to the renewal of any single currently established discipline by way of achieving a proper understanding of the semiosis that discipline depends on. This does not mean that semiotics is usurping all of science or philosophy. It is more a question of *recovering from* the imperialism of the natural sciences, physics in particular, as the distinct heritage of positivism, and of seeing the subsets of semiosis within anthroposemiosis for what they are in relation to the whole.

Furthermore, the semiotic understanding of reality—the reality of signs—recognizes that the boundary between what is dependent upon and what is independent of human interpretive activity can never be finally fixed from within experience because the boundary itself fluctuates—being the function of the development of understanding and the evolution of knowledge whether speculative or practical, scientific or literary. The object of semiotic inquiry is not just signs but the *action* of signs or semiosis. Semiotics, therefore, contrasts with semiosis as knowledge *per se* contrasts with that which is known. Semiotics is knowledge about semiosis; it is the theoretical accounting for signs and what they do.

Demise of ‘Common Sense’ as an Unresolved Problem

In the context of intellectual culture, no revolution had greater importance than the one that took place in the early 17th century, dramatically marked by the 1633 trial and condemnation of Galileo for teaching the twin heresies that the Earth is not the universe’s center and that the Sun does not revolve around the Earth. It was a bad day—but not only for religious authorities, students of scripture, and theologians. Among the hardest hit victims of this fiasco was ‘common sense’, which still has not managed to regain a serious semblance of credibility in learned circles. The 18th century attempt by Thomas Reid to identify common sense as the test of the truth of knowledge and the morality of actions fell by the wayside, and the Enlightenment view that scientific knowledge based on systematic observation, experiment, and mathematization could ultimately replace all of prescientific opinions, became the accepted view.

Yet, there remains at the heart of human knowledge an unresolved problem that the rise of modern science serves to underscore rather than resolve: the inescapable

conundrum that unless human awareness as preceding all scientific training and refinement has some validity in its own right, then nothing even of science can truly be knowledge. For to begin study of science presupposes the common awareness of human animals out of which the development even of modern science as species-specific human becomes possible in the first place. Stjernfelt puts the matter in semiotic terms: in order for it to be true that the Way of Signs leads everywhere in nature, it must also be true that “science is continuous with everyday knowledge which is, in turn, continuous with animal cognition and so on indefinitely down the scale of evolution” (Stjernfelt 2007, p. 8).

Among the early modern philosophers this problem never came to be recognized as such. Instead, they assumed that mental representation was the beginning of all awareness, an assumption that led to the famous ‘problem of the external world’; for even though empiricists followed by preference Locke rather than Descartes, they failed to observe or comment upon the fatal assumption shared by Locke with Descartes: that the direct objects of our apprehension are mental representations formed by our own minds. The ‘problem of the external world’ arose in modernity from just this assumption: that the mind itself makes whatever is a direct and immediate object of awareness. Locke and Descartes identified this immediate object with ideas. Kant rejected this as too subjective, as ‘subjectivism’; and in proposing his alternate solution of the senses as giving rise to phenomena distinct from the things provoking sensation, he thought to preserve the universality of scientific knowledge: it is to the phenomena that reason then by its *a priori* forms contributes objective necessary structure.

Yet Kantian ‘objectivism’ proved no less idealistic than the criticized subjectivism of Descartes and Locke, inasmuch as Kant’s own view was no less divorced from an awareness ‘scientific’ in the sense of giving us an actual knowledge of the ‘way things are’ in their subjective constitution and inter-subjective relations obtaining independently of whether we are aware of them or not (Deely 2001). By way of epistemological warning of ‘roadblock ahead’, it followed that ontology and epistemology in modern parlance mean, in fact, the unknowable because unattainable (what was termed in Latin times *ens reale*) versus the knowable (termed in Latin times *ens rationis*). On this point, between Descartes and Kant there is only this difference: for Descartes *ens rationis* was conceived subjectively, whereas for Kant it was definitively objective, yet wholly determined in its knowability by human subjects.

While modern philosophy began with the universal doubt whereby Descartes had made being a function of his thinking, Peirce’s philosophy begins rather from a belief in the reality of what is more than thought. Then it proceeds by continually putting to test the contrast between thought and what is more than thought, between merely objective being and objective being which reveals also something of the physical universe. Semiotic inquiry starts at the intersection where physical universe ceases to be merely physical because it is at this point that the realm of brute force and physical interaction as such becomes caught up in the semiotic web, and the universe, as Peirce noticed, becomes perfused with signs.

Semiotic Consciousness

Semiotic consciousness is the explicit awareness of the role of the sign. The actual field of semiotic investigations exists as a demand of the *future* put on present thought—that is, on the development of the semiotic consciousness of the community of inquirers. Since, however, the whole of experience is constituted by signs it follows that the history of semiotics will be first of all a tracing of the lines which lead to that moment when role of the sign in the constituting of this very experience came to be realized. After that, the history of semiotics will be the working out of the implications of this realization both synchronically and diachronically. Diachrony, in this case, is not just a matter of retrospect, or of a sequence of discrete synchronic sections arranged as prior and posterior. The diachrony of semiotic consciousness, its historical dimension, is the formation of *future* thought as well as the transmission and comparison of *past* thought. It involves becoming aware of the demands the future makes on our present thinking. The axes of diachrony and synchrony in semiotic consciousness mark the labile intersection where the criticism of *objectivity* is exercised through human *subjectivity*. The future of thought, as well as its past, will be different as a result of the achievement of a semiotic consciousness, different in unpredictable ways because of the factor of chance present in semiosis in contrast to the determinism of classical mechanistic science with its concept of *direct* causality.

Based on Aristotle's fourfold scheme, the Latins in the later times refined the concept of causality to account for the objective order of physical phenomena thus abolishing, in a sense, the dualism between cause and reason. The external, ideal, causality—a type of blueprint, or plan, or design—is introduced from without, in contrast to the natural Aristotelian formal cause that organizes its material from within. One more causal type, however, pertains to the role of observer who exercises a type of objective causality. On the subjective side, a thinker may try to turn attention toward or away from the object; but the measure of success lies not in the subjective effort but in the objective content surviving the effort. And since presenting objects is exactly the function of signs, the action of signs is a species of such extrinsic formal causality, called 'specificative' which is irreducible to either ideal or intrinsic formal cause but is retaining, as embedded in the total system of signs, the *objective* significance for the human *subject*.

Semiotics began with the general proposal by St. Augustine that the difference between nature and culture is irrelevant to the action of signs, for whenever one thing comes to make something other than itself present in our awareness, signs are already at work. Whether the one thing or the other has its origin inside or outside of our minds and bodies, from nature or from culture, is irrelevant to the action of signs. Material objects which are also themselves signs existing outside of us presuppose cognitive qualities inside of us which are themselves already signs as manifesting something other than themselves, something they themselves are not. The wife is not the idea of wife; yet when the idea of wife fails, the woman sensed cannot be recognized as wife. So there are objects external to our bodies which can

be signs only when perceived in conjunction with concepts internal to us and which relate us to those very material objects recognized as this or that—wife, mother, lover, or whatever. But still we are not at the heart of the matter, given that sensation is a vehicle of semiosis prior to concept formation. For human beings are semiotic animals, and all animal awareness begins with sensations—not with ideas of sensations, à la Locke, but with *sensations* as that incipient experience of objectivity brought about by the action of some sensible thing upon an animal's organs of sense. Light reflects off different bodies differently, and when this differently reflected light strikes some animal's organ of sight, what the animal will 'see' depends not only upon the surface reflecting light but also upon the constitution of the animal's eye. The result will be some color. How does this color exist? Neither 'in the thing stimulating' as some medievals thought, nor 'in the eye of the beholder', as the early moderns postulated. It exists precisely *between* the two as a relation connecting one to the other, arising from the action of stimulation here and now.

There is another angle, especially decisive from the semiotic point of view. The animal sensing color simultaneously senses a shape and a position or movement: shape is not color, but is revealed dependently upon color; so the relation of color to shape and position or movement, etc., is already a sign-relation—color is the vehicle on the basis of which shape and position are revealed in sensation. There is no moment of awareness in which this action of signs is not at work, for all objects are signifiates, and all concepts are vehicles supporting interpretive sign-relations: from the very beginning of sensation, prescissively (analytically and not experimentally) distinguished from perceptions and intellections, our awareness depends also upon signs that precede concept formation. This action of signs within sensation is different from the perception of a woman as wife. Whereas perception of material objects requires and presupposes concepts formed within the perceiver, sensation of basic qualities logically precedes formation of concepts and provides the very material which concepts are formed to interpret.

All animals interpret what is sensed according to a certain status: something to be sought, something to be shunned, or something safe to ignore. The human animal further creates concepts that make it possible to discover what these objects of perception are (correctly or incorrectly interpreted by the animal, as the case may be), whether awareness-dependent or awareness-independent, apart from their specific status in relation to the animal. So, intellectual concepts can make objects knowable according to what they are in themselves. But the signs of sensation, considered as prior to objects perceived and/or objects understood, objectify something of the animal's surroundings wholly and solely on the basis of the interaction of the animal's body with the surrounding bodies of the immediate physical environment. Accordingly, even though we do not experience sensations wholly separated from our perceptions, sense experience, analytically considered, differs both from sense-perception and from understanding, in that the latter two require and presuppose those psychological qualities or states that we call concepts or ideas, while sensations are prior to concept formations and presuppose only the

action of the physical surroundings upon the external sense organs of the animal body.

There are, as Poinset showed, no grounds for holding that external sense, prescissively distinguished as such within perception and understanding, attains directly as its proper object only an image produced by the mind itself. The semiosis of sensations gives rise to an awareness (as a nascent objectivity), which simply cannot be classified as epistemological or ontological in any modern sense, because the relations upon which objectification depends at this level are prior to any such differentiation. Thus, semiotics takes us to the very heart of the problem of knowledge, namely, how it is that signs are able to lead us everywhere in nature.

Facing the Problem of Specialization Vis-à-Vis the Modern Fragmentation of University Culture

Within the universities, in the 17th century when science in the modern sense began to take hold, specialization presented itself as a *sine qua non*, as a necessity for scientific advance in this modern or ideoscopic sense (contrasting with the principally cenoscopic medieval science) dependent upon the instrumental extensions of the environmental awareness as species-specific to human animals. As specializations required for scientific advance in knowledge took hold, general opinions of previous philosophy fragmented. By the late 19th century, diversity of specializations threatened the very notion of any unity of knowledge, and the teachers and administrators within universities began to cast about for some ways of gaining an overview, some ways of restoring, or at least minimally preserving, the intellectual development of humankind as a common heritage in which each of us shares and has a stake. The two main avenues of attempt were an introduction of so-called interdisciplinary or 'team-taught' courses, as well as programs of study based on reading 'great books'. Both approaches had their merits and limited success, but neither cut to the heart of the matter.

Interdisciplinary programs are designed to put together two or more specialists in the same classroom, offering students the dialectic of professors making sense first to one another and then, hopefully, also to the students from within specialized perspectives, while also accommodating themselves to the other perspective of specialization represented by their colleague(s) in the given classroom. Thus, 20th century interdisciplinary programs proved invariably to be personalities-dependent, gerrymandered affairs, more or less valuable depending upon the talents of the professors involved, but 'interdisciplinary' in no more than a *de facto* fashion rather than intrinsically interdisciplinary.

The 'great books' as a recrudescence of Scholasticism approach fared no better as learning was determined as based on opinions of 'authorities' back to the tradition of the Latin scholastic universities, even if a plurality of sources was replacing the centrality of Aristotle. Since the 'great books', which have shaped the

modern world within which the university today exists, come from a variety of specialists, from Chaucer and Shakespeare among the humanists to Newton and Einstein among the scientists, a great-book-based education indeed broadened students' minds and opened them to an understanding apparently beyond specialization. Yet, this approach in the end tended to feed into the split between what C. P. Snow characterized as 'the two cultures': sciences on one side, rooted in specializations aimed to interpret the book of nature, and humanities on the other side, rooted in broad reading interpreting the books written by men. Again 'interdisciplinarity' was achieved more *de facto* than *de jure*. Neither the interdisciplinary nor the 'great books' approach achieved in principle the unification of the two cultures.

This point of impasse is the entry point for the doctrine of signs, the 'one undivided science' which, as Peirce points out (CP 8.342; CP 2.227), does not depend upon new special observations, yet directly addresses that upon which all special observations and common observations alike depend, namely, the action of signs, semiosis. STEM education—education in science, technology, engineering, and mathematics—contrasts with liberal arts education as yet a further extension of C. P. Snow's two cultures. But an individual, student or faculty, who comes to understand the standpoint and perspective that semiotics engenders, can and should transcend precisely this very division.

At Indiana University, when Thomas A. Sebeok became Director of the Research Center for Language Studies in the early 1970s, among his first official actions was to change the name to the Research Center for Language and Semiotic Studies, and everyone expected him to launch an M.A. and Ph.D. program in semiotics. He did not. Instead, he introduced what he called a Certificate in Semiotics, which students could acquire only after, or in conjunction with, graduate study in an established discipline, be it linguistics, anthropology, biology, English, physics, sociology, or whatever. His argument was that semiotics is not so much a discipline in its own right as it is a field including all the disciplines, inasmuch as 'all thought is in signs'. As a consequence, Sebeok considered that semiotics as an area of study within the academy ought not to be treated as one more specialization but rather needs to be seen as that which makes specialization in the first place possible, because it establishes the experiential ground from which—first in sensation and then also in conception—the whole of human knowledge springs! Thus, someone on their way to mastering a given subject matter—physics, chemistry, literature, or sociology—would discover on turning to semiotics that their chosen specialization already depends upon (albeit is not reducible to) the action of signs as revealing and distinguishing the very subject matter which is the object studied by the specialization.

Hence, students of semiotics are made to realize that in seeing signs at work within a given academic discipline, they are seeing something that is true of all specialized disciplines, because true of the whole of human knowledge, namely, that underlying all else in awareness and in the background always is the action of signs, thanks to which it becomes possible to know objects in the first place, let alone differences between objects which define different disciplines as still fragmented areas of specialization.

Conclusion

Once it is understood that the subject-object dichotomy prevalent in classical science is rendered nugatory within the perspective of a doctrine of signs, new possibilities of understanding are opened up that require a comprehensive theoretical foundation. That foundation can be provided only by an understanding of the being with its consequent causality and action proper to signs in their universal role. It is thus that the *history* of semiotics and the *theory* of semiotics are only virtually distinct, forming together the actual whole of human understanding as an achievement, a *prise de conscience*, in process and in community. For if the *anthropos* as semiotic animal is an interpretant of semiosis in nature and culture alike—that can only be because the ideas of this *subject* that itself functions as a sign have the universe in its totality as the *object* of a semiotic inquiry.

Semiotics thus is maximally postmodern in a double sense. It shows the way beyond the epistemology of modern philosophy and, at the same time, enables us to see the unity of human understanding beneath and within development of specializations essential to the establishment of modern science. It “investigates what all the other disciplines seem to take for granted” (Taylor 2008, p. 6). Semiotics, as knowledge that results from the thematic study of the action of signs, is not only interdisciplinary but transdisciplinary (cf. Nicolescu 2002; Semetsky 2009) while also being predisciplinary in providing the common ground of animal awareness out of which humans as semiotic animals come to realize within the biosphere a unique ethical responsibility that includes education in semiotics. Sebeok, in reference to the 20th century achievements in semiotics, used to say that the movement toward the definition of semiotic thinking in the biological and anthropological framework of a theory of evolution represents the only genuinely novel and significantly holistic trend in the development in this field. The 21st century, I hope, will bear this out, and we will see an end to the unfortunate and sad fact, referred to by Sebeok, that the contemporary teaching of semiotics is severely, perhaps cripplingly, impoverished by the utter, frightening innocence, to say the least, of most practitioners of semiotics about the natural order in which they and it are embedded. What edusemiotics intends to do is to bring the natural order as such to the attention of the global community of inquiry.

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