Look at this egg: with it you can overthrow all the schools of theology and all churches in the world. What is this egg? [1]

The dense prose in Signs Grow by the distinguished semiotician Floyd Merrell draws on and connects multiform sources and repeatedly demands extremely careful reflection and interpretation by the reader, and so it illustrates a point often taken to be a hermeneutic truism, that the incipient meaning created by the reader is most probably very different from the meaning intended by the author. Fortunately not totally different, however. Shared meanings may increase by expanded access to common background knowledge, which is always a challenge in interdisciplinary discourse, where the presuppositions and styles of reasoning are only partly shared. Even the most polymathic semiotician must, as any of his readers, face the constraints of background knowledge and special education, limits that can only be completely transcended by gods, demons, or some ultimate interpretant of the semiotic web itself.

Merrell's book reminded me of my meeting with semiotics. Coming from the fields of biology, and with interests in philosophy, my encounter some years ago with general semiotics was an astonishing experience, with dual elements of revelation and bewilderment. Suddenly a lot of disparate phenomena could be seen under one single seemingly coherent picture -- man, the political animal, is at the same time a semiotic knot in a huge network of signs on different levels of complexity and intentionality, a network rooted in a living world with a natural history, that has, at the same time, a quite cultural character inasmuch as signification is the very stuff created and processed by man and other living beings, and semiosis is an essential aspect of this world, and indeed an essential aspect of science itself. Yet at the same time, the semiotic viewpoint -- or was it an approach or theory? -- was so different in intellectual style from what I was used to consider as inquiry; with no clear paradigmatic consensus about what counted as the field's scope and subject matter, interesting problems, methods, or established results -- except perhaps the subfield of Peircean scholarship, that for an outsider looked like mere exegesis, but where at least the 'empirical material' was well defined, namely the master's manuscripts. Where was the unity in semiotic studies? How to test its hypotheses? Slowly I came to realize that even though contemporary general semiotics in the Peircean tradition eventually may be characterized as only a viewpoint or perspective, it is a very encompassing one with strong conceptual foundations, and it is often both possible and fruitful, though not easy, to relate this framework to specific areas of empirical research, such as biology or physics. I do not think that the possibility of bringing general semiotics (whatever that specifically may include) into close contact with modern science and the humanities should be the only criterion for its value and intellectual relevance -- one would never demand such things of mathematics, which is similar in its formal aspect to general semiotics. But it is that pragmatic aspect of semiotics, its power of amplifying the detection significant relations in empirical research, that I find particularly interesting, basically because I take general semiotics to be a field of research continuous with other sciences, and I would like to see how far one can go in extracting from all fields of inquiry some general understanding, insight, or comprehensive knowledge of the world we happen to live in. Hopefully semiotics contributes to increase this understanding. When I encountered Floyd Merrell's book Signs Grow, with the somewhat misleading subtitle Semiosis and Life Processes, I was struck by a similar dual feeling of enlightenment and mystification, which endured throughout the whole process of reading the book, even from the first sight of the iconography of its front cover (showing a greytone digital picture of an enlarged parcel of a leaf as a background for the green 'Signs Grow'-letters) and reading the quotation on its back (taken from p. 4 of the text), saying

"Indeed, signs and consciousness cannot be but inextricably linked -- however problematic the very idea remains. All signs strive for fulfillment by way of other signs, though for each and every particular semiotic agent the trail can never reach its end-point. As a sign passes over into its other, into what it is not, it has already begun the process of giving rise to something other than the other. That is, neither signs nor consciousness-as-sign can stand alone."

Some of my bewilderment came from the very Hegelian style of many passages such as the one cited, where Merrell puts semiotic agency more on the part of the signs themselves than as on their interpreters. I have often had hard times trying to imagine what we mean by saying that signs do this or that, or signs strive for fulfillment, etc. I came to remember an exclamation by the Peirce-scholar Thomas Short, when commenting on this point he referred to Peirce who is somewhere saying that "symbols grow" and Short added, "but for crissake, he does not mean like rutabagas"! I guess he did not.

What Peirce really meant is what Merrell's exciting but often hard to follow tour-de-force in the 'the on-going semiosis' is all about, including such topics as Prigogine's philosophy of nature in general and non-equilibrium thermodynamics in particular; the epistemological thoughts of Schrödinger, Bohr, Wheeler, and Bohm on law, observation, participation and causality; the ontology of time and continuity; paradoxes in logic and mathematics; theoretical biology and the ideas of Varela, Maturana, Pattee, and Löfgren; and of course the central themes about meaning, signification and interpretation in Peircean semiotics (with some comparison with the Saussurean tradition); plus a wealth of detours to ideas from other thinkers from the sciences and humanities as for instance Eddington, Eigen, Monod, Jacob, von Glaserfeld, Deleuze, Baudrillard, and Derrida. A general problem with the material, or the way Merrell brings
"I trust that I have remained quite faithful to the fundamentals of Peircean semiotic, availing myself to the best of my ability of logical, mathematical, and scientific, philosophical, and psychological studies, the human sciences, the humanities, and the arts. If the yield breeds nightmares of uncertainty, oceans of ambiguity, and an apparent promiscuity of paradoxes threatening to dissolve all dreams of reason, harmony and stability, I see no call for despair. Rather, it opens the door, if not exactly to Nietzschean-Derridean joyous play of free-wheeling signifiers, most certainly to a vision of open, creative, self-organizing dialogue with one's self, with the other of one's community, and with the other of nature at large, engaged in the process of its own self-organizing project."

The visionary devotion of such a treatise is admirable, but one should not forget to ask more specific and critical questions about the concrete instances of self-organization. And not forget to ask in general: Do signs grow? Pragmatically: What work does this notion do in our theory of semiosis? To a modern ear it may sound a bit strange. Perhaps I am here tainted by a behaviorist or biologic tendency to allow only the organism as interpreter (including the human being) to be responsible for the creation and ascription of meaning to the sign -- for who else could be a locus of semiosis? But, of course, as mentioned, Peirce's and Merrell's vision is broader. For them, there are no definite lower limits for semiosis, signs and life processes are coextensive, and 'life' should not be restricted to the biologists' definition of life as something related to cells, metabolism, self-reproduction, autopoietic autocatalysis, open-ended evolution based on variation, heredity and differential reproduction, or whatever one takes to be a definition of life. There is a sort of quasi-vitalism in this pansemiotic stance, which is related to the idea that signs grow, whether like rutabagas or like my uncontrollably growing sympathy for clarity while reading Merrell's book.

Nevertheless I can imagine something like the growth and action of signs, though not with the mind-set of modern neo-Darwinian biology, but by making an analogy between a sign and an organism, an analogy I can see is highly problematic, however. The problem is that we would normally say that this kind of speaking is based on an 'as if' ascription of agency to the sign, not what we may call real intrinsic agency. However, when I say 'normally' I guess that it is at this crucial metaphysical point that people's intuitions diverge. One stance is to say that we may allow for such analogies in semiotic reflections (cf. Emmeche 1991), but as scientists (or as materialists, like the philosopher John Searle) we are traditionally constrained by a metaphysical framework that dictates us to draw sharp distinctions between nature as it is intrinsically, and nature as it appears when we as observers ascribe qualitative properties such as meaning to its entities, such properties being observer-dependent. The real challenge is the alternative stance -- that Merrell's present treatise is a dazzling, comprehensive, often well-argued and very engaging exposition of -- that encourages us to break radically with more 'conventional' ideas. These latter are, e.g., the idea that some properties, such as meaning, intentionality and semiosis, is not present in the universe as such but only ascribed by 'the observer' (as the classical mechanical world picture would have it), or the idea that these properties are only present in nature in spatially restricted regions within living beings with a highly developed nervous system (as for instance Searle and most biologists would think) or, eventually, even the less conventional idea that signs of meaning are indeed present in the whole realm of living systems, but not in inorganic nature (as many biosemioticians would be inclined to say).

What is the different between saying that during cosmological evolution, signs grow (semiotic processes develop, differentiate, proliferate) and saying that under a semiotic description of these natural evolutionary processes, it appears to be the case that signs grow? The first mode is metaphysical, the second more epistemic. The first thesis is that of semiotic realism, i.e., signs are real phenomena, and by the semiotic descriptions we have a good tool to grasp some truths about these real processes in nature. (I think this form of realism should be seen as a combination of a form of epistemological non-dualist critical realism semiotized and an ontology that is rich enough to include signs in the set of the basic furniture of the world). The second thesis is of a more moderate form (that could, with an ugly designation, be called semiotic instrumentalism), saying that by using this or that descriptive tool, we can say something relevant, useful or even give a specific semiotic model of some chosen phenomena, but whether the phenomena themselves, apart from any description, are semiotic or not, cannot be decided by the usual methods of enquiry. As always, general semiotics seems to fluctuate between these two modes of making claims about the evolution of signs. There is little doubt that Peirce's cosmological metaphysics and objective idealism is a form of semiotic realism, and that Merrell by and large follows this stance (although he does not argue specifically for it against the alternative instrumentalist interpretation). Another form of semiotic realism (which is usually not pansemiotic) is the growing field of biosemiotics, studying the natural history of signification as being close to coextensive with the natural history of living systems, and critical towards traditional neo-Darwinism for only focusing on the material aspects of life. Within the biosemiotic framework, life is basically a sign-based phenomenon. This is both because of the presence of a basic universal code-duality (consisting of two complementary modes in living systems, the informational aspect based on the cell's interpretation of the genetic code, and the dynamic mode of the physical and chemical activity within the cell), and because of the presence of a wealth of other signalling, informational, and 'cognitive' phenomena, even at lower levels of integration, as manifested for instance by the macromolecular selectivity and specificity, the basic process known as 'molecular recognition' that make these processes prone to a semiotic, or quasi-semiotic vocabulary. Thus, in one sense, biosemiotics is a semiotics of life (life as studied by biology), and in another sense, by including a focus on the combined process of origin of life and origin of semiosis, biosemiotics is not simply a special candidate for a contestant scientific paradigm of theoretical biology or a new philosophy of nature, but also a possible contribution to lay a ground for general semiotics in the scientific study of the origin and natural history of life.
This coextensiveness is challenged at least if `life' is defined in a way where biosemiotics meets the active field of theoretical biology. That is, defined (or rather, understood) in terms of something like semantic closure, which means, informally speaking, that life is a whole of organized processes realized by a system based on an entangled hierarchy of informational or `symbolic' constraints (on the one hand), controlling the specification of the system's material components (on the other hand), that energetically interact so as to maintain and duplicate the informational constraints. (Given this informal definition, it is perhaps close to a truism that such a self-organizing system has to have a complexity that at least corresponds to a biological cell with a genetic code, see Joslyn 1998, and also the papers by L. Rocha and J. Umerez in the same volume).

For Merrell however, life cannot possibly be equated with some special biological definition of life, and I can follow him in this insofar as `life' as an essential pre-scientific notion with a wealth of everyday meanings cannot simply be reduced to a single concept, not to even the most general biological understanding of life (Emmeche 1998). Nevertheless the book is exactly stimulating because it brings together reflections on processes in nature as investigated in such fields as non-equilibrium thermodynamics, quantum physics, molecular biology and so on, and therefore, one could expect the volume to end up with a broader and more definite concept of life processes than the very specific concepts of life characteristic to individual disciplines of research. But this is not the case, at least not on the explicit level.

Basically what Merrell has made topical is a much broader, scientifically informed concept, not of life, but of signs and sign-action in nature. Merrell's central idea -- as mentioned, that the universe is a creative unfolding of semiotic processes that in sense can be regarded as living -- suggests that, at the same stroke, both concepts, life and signs, become metaphorically extended, or generalized when coupled to the new versions of systems thinking informed by non-linear dynamics, non-equilibrium thermodynamics and similar complexity research that is discussed.

As any good contribution to inquiry, Merrell's treatise raises more questions than it answers, and our ignorance has been raised to a higher level. Take again the notion of growing signs. In facts, Merrell succeeds in developing a kind of theory, a systematication of Peirce's triadic-`dialectics' of sign categories fuelled and updated with recent ideas from theories of self-organization, autocatalysis and autopoiesis (and much more), and emphasizing its basis in process philosophy. On one level, the theory is depicted by a set of clear schemes and figures, very illustrative, that diagrammatically capture the idea of `sign development' and its opposite' (p.28). On another level, it remains a little mysterious "how, precisely, do signs evolve"? (ibid.), even though we are told that "signs possess the capacity to grow into symbols, from raw sensation to volition, to cognition, from sentiment to desire to intellection" etc. (ibid.). What is needed is a more specific treatment of the causal powers of signs, and some better explanation of the very mode of existence of signs. Perhaps it is the very idealism (or vitalism?) of Peirce that is so strange to embrace, as when Merrell (p. 29) assures that "the essence of the problem rests at the very initial lurch of the life process itself: mind constantly perpetuates life processes, and life processes constantly exude mind sublimes as a necessary act of semiosis."

One thing still worries me (more than the metaphysics), a characteristic of Merrell's treatise though pertinent for a whole kind of semiotics, its abstract form of generality. As almost anything can be considered in its aspect of being a system, and perhaps the failure of general systems theory could be a lesson for a general semiotics? A critic once noted that "We can ask what systems theory has given us except a new vocabulary, that we did not have before. (...) what science -- new or old, theoretical or applied -- can point to as a substantive new findings and say they are the result of systems theory? There are none to be found" (Lilienfeld 1978, p. 256), and though the background and aspirations of general semiotics were very different, it may at least be asked if some of the same problems (methodological, epistemic, and ideological) of relating very specific and substantial research to such general schemes of thought are found with respect to the schools and churches of semiotics too. My own hunch is that though semiotics indeed is a far more robust, sophisticated, coherent, well founded, fruitful and comprehensive scheme of thought than general systems theory, in the long run, just like GST, it cannot escape being judged by its fruits, and we do not yet know the historical result of that judgement. I guess the sign is here to stay, though there are limits to its growth.

The book has some strange deficiencies, perhaps related to its frequent associative style, where one has the feeling that a closer inspection and exposition of the subject in question would have provided other and more definite hypotheses. The subheading of one of the paragraphs, "So on it goes, and where it ends nobody knows" (p. 170) could be a label for the style of the whole text. Considering Merrell's fascination with mathematical paradoxes and general epistemological lessons from mathematics about concepts such as continuity and infinity (that Merrell convincingly shows must be an important issue for a general theory of semiosis), it is strange to read, as an excuse for "the route [Merrell] have chosen through Cantor-Dedekind", that "complete avoidance of the mathematical import of Peircean semiotics could not but produce a diluted picture" (p. 218), when one does not find a comment on Peirce's own reactions and writings about the same problems (Peirce claimed to have anticipated Dedekind), including his quite interesting and, of course, genuinely semiotical ideas about continuity. In the paper on "Infinitesimals", he discussed the contributions of Cantor and Dedekind. Referring to the points on a line, Peirce proposed that "all the possible points are not distinct from one another; although any possible multitude of points, once determined, become so distinct by the act of determination" (CP 3.568), and indicated that this view "forms a basis for the differential calculus preferable, perhaps, at any rate, quite as clear, as the doctrine of limits" (CP 3.569). It is interesting to compare this to his ideas about time and consciousness in "Evolutionary Love", where he says that time consists of infinitesimal intervals as opposed to points or instants (CP 6.111). With respect to this topic we are indeed close to a diluted picture, and instead of the scattered remarks on Dedekind and Cantor, a coherent chapter on the theory, its implications and Peirce's own version would have been preferred.
"The problem -- if we follow the Copenhagen interpretation of quantum mechanics -- is that if the physicist's measuring device cannot exist as such outside its interaction with it's immediate environment, and that environment with some more encompassing environment, and so on. The physicist must take account not only of her pointer reading but also of herself, the chair she sits in, the laboratory, the buildings, the grounds, the city, the surrounding countryside, and so on. An infinite regress appears to be the only logical by-product."

These worries lead Merrell to consider the 'many-world-interpretation' of quantum mechanics which he rightly dismisses as incompatible with Peirce's cosmological view, but thereafter the reader is left with the trouble and gets no true answer to the claimed infinite regress problem. This is mentioned here as example of the occasionally too hasty discourse that brings in several topics to the discussion while omitting in-depth treatment. Fortunately, Merrell's interpretation of the Copenhagen interpretation is stretched and far-fetched; the 'interaction' problem is not about the very existence of the measuring device but about the interaction involved when quantum level events are being measured by macro-level instruments. Thus, the complications allured to by the necessity to take into account the macroscopic environment in the description of the quantum phenomenon does not give rise to any infinite regress at all, but simply to an increased critical awareness about the meaninglessness of talking about measured quantum entities apart from the specific conditions of the particular experiment that is used to measure an aspect of the phenomenon. The point of bringing this up is not simply to say that at this specific point an insight (about complementarity) is used incorrectly, but rather to emphasize the general difficulty of bringing together theories and understandings that are context-bound to very specific kinds of problems and situations in order to extract some truly general learning (about signs, etc.) from them.[9]

Given the focus on sign action in general, a little peculiar is the lack of a focused discussion about specific causal factors in sign processes, and about various notions of semiotic and physical causality. This scarcity may be connected to another lack in the present book under review, namely of considering the semiotic research done by such Peirce-scholars as John Deely and Lucia Santaella Braga, both on various aspects of causality in Peirce and others, and Deely on the coextensiveness of life and signs. If that is because Merrell find that their approaches to the growth of signs are not in line with his own, we could perhaps have gained something by having presented the reasons why this might be so. If research within general semiotics 'in the long run' is to approach asymptotically a truer picture of its subject matter, as Peirce would have it (and so will Merrell), I guess it has to develop a higher interest for methods to attain consensus on the most adequate models of semiosis on various levels of complexity and so increase intertextual critical exchanges within the discipline. Furthermore it has to develop better ways to integrate findings from specific disciplines into a coherent framework, so that crossdisciplinarity (the mere application of concepts from one field to solve problems in another field) become real transdisciplinarity (involving reformulations of concepts from both fields interacting in various ways).

Contrary to the grim insinuation of the heading, the book's method is not theory-zapping, but deliberate hunting and gathering material to be interweaved into a fascinating all-embracing semio-net. It is not really eclecticist, as Merrell is firmly rooted in a Peircean world view, but the selective samplings of observations and ideas may nevertheless invoke a suspicion that not all this material may fit so easily together as it appears to do in Merrell's extensive survey of the world-spirits of twentieth century's science. More detailed critical inspection of the huge material under investigation of course demands a minimum of structured exposition of the theories and ideas under scrutiny, which would demand several other volumes, but also supplement the tendency to do excursions and tangential reflections. I am not saying that Signs Grow does not contain a lot of critical remarks, but academic critique is not its dominating strength.

In a sense this is also its force. Its growth is imaginative and wild, as a participant in its wanderings you're at risk of getting lost. Crawling through its jungle you wish someone had done a little pruning, but nobody will remain unaffected after the Merrellian cut through their mind: what significance was before will never remain the same after having encountered the growing labyrinths of reason.

Notes


[3] Merrell, p.64, cites Peirce on this: "every symbol is a living thing, in a very strict sense..." CP 2.222; and: "Symbols grow. They come into being by developing out of other signs ... it is only out of symbols that a new symbol can grow" (CP 2.302).

[4] The limits, to the extent they exist at all, are vague, and a condition for identifying them (within the Peircean frame) is using the triadic categories. Peirce's threshold is located much lower than the border between cultural/biological phenomena, and even lower than the biological/physical border -- these 'empirical' borders are not so important as the ontological borders between the genuine Thirdness of signs and Secondness and Firstness. The limits of semiosis thus begin with the phenomena of Thirdness, determined by law, generality, habit and final causation; below the semiotic threshold (a term Peirce as far as I know did not use) only phenomena determined by
chance or mere efficient causation; or phenomena of unreflected firstness (Santaella Braga 1994).

I have been very sympathetic to this distinction in relation to critiques of Artificial Intelligence and software Artificial Life models when these models are claimed to "realize" both all qualitative and quantitative aspects of properties like perception and cognition, beliefs and desires, etc., because I think such claims are naïvely overstating the cognitive power of algorithmic models and oversee some anthroposemiotic facts about the modeling relation, in which the model is only simulating a real system in so far as its formal part is given an interpretation in the form of properties ascribed to the conglomerate of symbols that work as input and output of the model, see Emmeche 1992.

Merrell's notion of the "semiotically real" tends to blur these two different aspects of semiotic realism, i.e., knowing the world via representations as a general condition for knowledge, and the existence of signs in nature independently of any human knower.

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On biosemiotics in the tradition of Jakob von Uexküll, T. A. Sebeok and others, see Hofmeyer 1996, and the special issue of Semiotica vol. 120 (3/4), 1998, devoted to a dozen reviews of this book, among them one by Merrell. There is also a website for biosemiotics; see http://www.gypsymoth.ento.vt.edu/~sharov/biosem/welcome.html


One needs here a more in-detail semiotical analysis of the situation in quantum physics, e.g., along the lines of Christiansen (1985, 1990).

References


Not just the theories in the narrow sense, also the disciplines themselves get pulled into the process of research and science â€” in a systematic manner. Keywords: disciplinarity, interdisciplinarity, transdisciplinarity, nanotechnology. DOI: 10.3176/tr.2011.4.01. 1.

Preliminary remark. The concept of transdisciplinarity â€” which in the context of the philosophy of science I introduced already 20 years ago, as a further development of the concept of interdisciplinarity (Mittelstrass 1987:152â€”158) â€” has found a foothold in science and may even be becoming fashionable. This is not just valid for the ever-increasing acceleration of the growth of knowledge, but also in organisational and institutional respects.