

Biosemiotica¹

Winfried Nöth²

With this special issue on biosemiotics, the general editor of *Semiotica*, Thomas A. Sebeok, pursues once more his editorial guideline “to encourage the growth of emerging sub-domains of semiotics” (p.1). The volume consists of two parts, *Biosemiotica I* (pp. 5-131), edited by Sebeok himself, and *Biosemiotica II* (pp. 133-655), with the Copenhagen biologists Jesper Hoffmeyer and Claus Emmeche as guest editors. The first part contains five papers on biological aspects of sign processing according to some classics of modern semiotics; the second assembles 25 papers on topics at various interfaces between biology and semiotics.

The classics studied in *Biosemiotica I* are Charles S. Peirce, Victoria Welby, Charles Morris, Roman Jakobson, and Yuri Lotman. Sebeok, who might himself have been included in this genealogy, suggests that Susanne K. Langer and Ernst Cassirer are 20th century philosophers who also belong to the prehistory of biosemiotics. The special relevance of Jakob von Uexküll’s theoretical biology to biosemiotics is the topic of another special issue of *Semiotica* to appear in 2001. There are three papers in *Biosemiotica II* which also deal with the (pre)history of biosemiotics: K. Kull’s account of “Biosemiotics in the 20th century” (385-413), B.O. Brogaard’s “Aristotelian approach to animal behavior” (199-213), and a paper by F. Stjernfelt on Kant’s philosophy of biology and nature (537-566).

C. S. Peirce is undoubtedly the semiotician whose name is most frequently quoted (although not without misspellings: pp. 106, 213) by the authors of this volume. Peirce’s specific contributions to the interface between semiotics and biology is the focus of two papers by Lucia Santaella. In “Peirce and biology” (5-21), she gives an outline of the locus of biology within Peirce’s system of the sciences and of Peirce’s research in the biochemical properties of protoplasm. Her second paper (497-519) deals with Peirce’s theory of final causation in life, semiosis, biological, and cosmic evolution. Peirce’s theory of evolution as ‘habit taking,’ his synechistic thesis of the continuity between matter and mind, his theory of the three categories, his definition of semiosis, and his typology of signs serve as a theoretical basis of many other papers, e.g., the ones by J. Hoffmeyer on “Order out of indeterminacy” (321-343) and by F. Merrell on “Living signs” (453-479).

[1] *Biosemiotica*, edited by Thomas A. Sebeok, Jesper Hoffmeyer and Claus Emmeche, Mouton de Gruyter, Berlin (= *Semiotica* 127.1/4 [Special Issue]), 1999, 658 pages.

[2] Winfried Nöth is the Director of the Research Center for Cultural Studies of the University of Kassel, Germany, and Visiting Professor at the Postgraduate Program in Semiotics and Communication Studies of the Catholic University of São Paulo, Brazil.

Not all contributors to this volume are equally familiar with the Peircean foundations of semiotics. One of them takes the hair-raising liberty of using Peirce to arrive at the following conclusion: “*Dyadic relationships*: The sign is the artifactual result of semiosis codification. By this I mean that it exists in the Peircean state of Secondness, which, as ‘the mode of being of one thing which consists in how a second object is’ (CP 1.224 [*recte*: CP 1.24, W.N.]) moves that energy into a distinct state-of-existence. This ‘artifactual sign’ is real as an encoded spatiotemporally unique entity” (599-600). – Nothing could be more against the semiotic spirit here evoked: the Peircean sign is certainly not constituted by a “dyadic,” but only by a triadic relationship; it is not a phenomenon of Secondness, but only one of Thirdness; it is not a result of codification (see also p. 524 on evolution *without* coding), but of habit taking; it does not have its origin in energy (which in fact belongs to the category of secondness, of ‘brute force,’ of necessary, or efficient, causality), but it originates in final causation, which cannot be reduced to mere effects of energy. Last but not least, the Peircean sign is not necessarily artifactual at all, since it can also be manifested in the form of a mere thought or even a living human being; nor is the sign necessarily ‘spatiotemporally unique,’ which it is only when it functions as a sinsign (but not when it is a qualisign or a legisign).

Biosemiotica, as the Latin morphology of the term suggests, is an open field of research, without fixed boundaries, in which a plurality of approaches converge in the common interdisciplinary endeavor to explore the interfaces between biology and semiotics. Since the general editor refrains from *defining* the term and the research field of ‘biosemiotics’ (although such definitions can be found elsewhere, e.g., in Kull’s paper, pp. 386, 388) and the guest editors resist the temptation of *structuring* this field by presenting the contributions in some kind of a systematic (instead of a merely alphabetical) order, the reader is free to discover the major and minor branches of biosemiotic tree of knowledge on his or her own. Topics which most probably constitute the major branches are: the role of semiosis in biological evolution in general (133-150, 481-496) and in human evolution in particular (227-238, 631-646), the relationship between meaning and information (237-284, 521-536, 599-612), the biological roots of intentionality (567-598), the material substratum of signs and semiosis (369-384), and finally cellular or genetic information, codification, and ‘communication’ (151-168, 273-284). Among the minor branches we find cultural theory and philosophy and of nature (345-368, 537-566) or such surprising newcomers to the semiotic field as ‘literary biosemiotics’ (239-272) and ‘biohermeneutics’ (215-226). The neighboring disciplines whose relevance to biosemiotics has been explored in this volume range from cybernetics (169-199) to linguistics (345-368) and psychoanalysis (613-630).

In this rhizomatic growth of biosemiotic research, it is not surprising that the plurality of approaches occasionally results in an astounding multiplication of semiotic or quasi-semiotic terminology. As long as these terms are duly defined, even neologisms such as *autokatakinetics* (a synonym of ‘self-organization,’ p.

584), *physicobiology* and *semiobiology* (the latter used as a synonym of 'biosemiotics,' p. 370), or even *intropy* and *enformation* (sic!, p. 489) must be tolerated, but incompatible with the ethics of terminology is the invention of the term *semetic* on the basis of its etymological explanation as "from Greek: semeion = sign, ethos = habit" (p. 342). If *ethos* is really to serve as the etymological root of this neologism, the form of this term must be *semethic*, but if the affix *-etic* is meant (in analogy to *phonetic* and the semiotic distinction between *etic* and *emic*), the root of this form is a mere adjectival derivative suffix, and it cannot be the Greek word *ethos*.

Readers of *Cybernetics & Human Knowing* will be especially interested in the papers dealing with aspects of the interfaces between cybernetics, dynamic systems theory, and biosemiotics. The most general panorama of these interrelationships is outlined in Søren Brier's paper with the baroque, but telling title "Biosemiotics and the foundation of cybersemiotics: Reconceptualizing the insights of ethology, second-order cybernetics, and Peirce's semiotics in biosemiotics to create a non-Cartesian information science" (169-198). Other papers deal with more specific topics of systems theoretical interest, such as self-reference (295-320, 524), autopoiesis (626), autocatalysis, and self-organization (523-25, 584), or semiotic (semantic, psychological) closure (524, 613-630).

The most innovative insights (or at least problems to think about) which biosemioticians will find in this volume seem to be those that pertain to the interface between biological and machine semiotics. Traditional biosemioticians used to determine the origins of semiosis at the threshold between matter and mind, physical and life sciences and emphasized that organisms "do *not* interact like mechanical bodies" (p. 386). Now, there is the challenge of machine semioticians who believe in the possibility of artificial semiosis and machine life, e.g., in cellular automata (295-320). Today there seems to be a generation conflict among the biosemioticians: whereas Thure von Uexküll, the senior scholar in the field of biosemiotics (b. 1908), writes against "mechanical models of explanation in the life sciences" (647-655) and "mechanistic ways of looking at things" (p. 647), younger contributors to *Biosemiotica II* are beginning to investigate the similarities between life and machines. With reference to Stuart Kauffman, Y. Kawade even predicts that in the foreseeable future, self-reproducing molecular systems will be created by humans so that "the traditional view that machines belong to the inanimate world no longer seems to be tenable" (p. 372-73).

However that may be, physical biology seems to provide an unexpected bridge between the tradition of theoretical semiotics and the avant-garde of machine semioticians. If "semiotic control" is a key concept in machine semiotics according to Howard Pattee (as quoted by Kull, p. 387) and such control is "local and conditional" in contrast to physical laws which are "global and inexorable" (ibid.), such an account of the threshold between physics and machine semiotics is in fact not incompatible with Peirce's theory of the difference between (physical) Secondness and (semiotic) Thirdness, efficient and final causation, or 'brute action' and the agency of the sign.