

Quo Vadis, Biosemiotics?

Review

Approaches to Biosemiotics, Biosocial World: Biosemiotics and Biosociology series, University of Valladolid Print, Claudio Rodríguez-Higuera, Juan R. Coca (eds.)

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Abstract: This is a review of the recently published collective monograph *Approaches to Biosemiotics* by Rodríguez and Coca (eds.). The publication can be used as a window into the current trends in the research area of biosemiotics, especially in the connection with the social sciences. We review briefly each of the chapters of the monograph and make some general conclusions about the significance and importance of the book by Rodríguez and Coca.

Key words: Biosemiotics, biosociology, genetic code, animal studies, code biology, biosocial world

INTRODUCTION

The first book from the *Biosocial World: Biosemiotics and Biosociology* collection, an editorial project of two scholars in biosemiotics, Claudio Rodríguez Higuera (Palacký University) and Juan R. Coca (University of Valladolid), brings a plethora of different multidisciplinary papers on the intersection between linguistics, philosophy, biology and semiotics. The book series has the ambition to report and review on the current progress in the field of biosemiotics from (not only) a social perspective. We identify three major thematic areas covered by the authors.

Firstly, the authors are interested in the theoretical basis for biosemiotics and the definitions of meaning and semiosis at the level of the biological. It seems that many authors (Zámečník, Rodríguez Higuera, Zolyan) are getting back to the initial relation between biosemiotics and Marcello Barbieri, the founder of the field of Code Biology. Indeed, the tendency between the micromolecular processes at the level of the cell or a gene have always been a common interest between Code Biology and biosemiotics, and the clear cut between the two fields at this level of semiosis seems unnatural or imposed. As already mentioned in (Lacková, Faltýnek 2021), we do not see a

particular reason for the division between these fields, or better, we see a possibility of merging them at least in certain areas of research.

Secondly, we observe that more and more authors in biosemiotics are leaning towards ecology and environmental studies. In parallel, many biosemioticians are solving the problems of animal cognition, interspecies communication and ethology. The monograph edited by Rodríguez Higuera and Coca only affirms this trend. It might be that, so far, purely theoretical biosemiotics can become more applied in the near future and it seems that the applications are going in the direction of ecology, ethology and environmental studies. As a consequence, biosemiotics is answering more and more the major problems of contemporary society.

Thirdly, the authors seem to be continuing the project by Paul Cobley, current president of IASS and secretary for the ISBS, about the cultural implications of biosemiotics, and has been followed by some, including Camilla Robuschi (2018), Tyler James Bennett (2021) and his co-workers from ISI (Bennett et al. 2022), and also Kalevi Kull, who recently published a target article in the journal *Biosemiotics* on the topic of biosemiotic aesthetics (Kull 2022). See also the commentary on this target article by

Bennett (2022). By these efforts, biosemioticians are proving that research in biosemiotics is relevant not only for natural science (biology), but also for cultural studies, aesthetics and the humanities or social sciences in general. This direction of biosemiotics research is also important for society, if we take into consideration that the service biosemiotics is doing, especially when applied to social studies, is the disproving of the “myth” of social darwinism, this latter being one of the many widely accepted distorted (from the original source) ideas of the modern synthesis of darwinism.

THEORETICAL ASSUMPTIONS: BIOSEMIOTICS IS GETTING CLOSER (AGAIN) TO CODE BIOLOGY

In the introductory chapter, Zámečník presents his somewhat impartial perspective on the current state of biosemiotics, not only as a discipline in itself but also in relation to the humanities and natural sciences. The author leans towards keeping biosemiotics as a humanities field with some overlap, or introducing it as a new branch within the philosophy of science. An intriguing moment arises when the author compares Barbieri’s approach based on code biology with Rodríguez’s perspective as an (analytical) philosopher. The author points out instances where both approaches intersect and complement each other, as well as where they differ significantly. It appears to be an attempt to overcome a certain barrier and propose ways in which these two disciplines could be integrated. However, throughout the chapter, it is emphasized that the author does not consider himself a biosemiotician; rather, they offer a third-party perspective. Therefore, no conclusions are drawn; the author simply highlights the possibilities for the future direction of biosemiotics as a cohesive discipline.

In the chapter titled “Biosemiotics and Evolution”, Rodríguez presents a new perspective on how biosemiotics can shed light on the concept of evolution. According to the author, biosemiotics provides us with tools to examine biological questions regarding meaning through the lens of semiotics, or rather, semiosis. It all stems from the author’s emphasis on the conception of the semiotic process, asserting that being a part of the living world does not necessarily imply cognition, but involves semiosis. The author also delves into the notion of meaning and the necessity to differentiate how meaning is perceived in different contexts. Particularly, the author strives to emphasize the importance of understanding meaning through signs. The author regards signs and the understanding of their role in semiotic processes and, by extension, evolution, as fundamental to both semiotic and biological perspectives on evolution. This is because evolution is based on the creation of meaning through individual signs. The significance of signs and their role in semiosis, and consequently in evolution, is the central theme of the entire chapter. Throughout the chapter Rodríguez demonstrates that semiosis occurs even at such a low threshold. The whole chapter offers a bit of a unique view on the importance of signs as a complex entity important for evolution.

Kalevi Kull focuses on the question of where semiosis can be observed at the lowest possible level, suggesting the possibility of discussing semiosis based on the semiotic triad. He poses questions about when and where precisely the code emerges and what the nature of meaning actually is. Kull addresses this issue in the context of vegetative semiotics. Building on previously published works related to vegetative semiotics and biosemiotics, the author provides readers with an outline of the development of these disciplines, indicating a long-standing and evolving interest in this issue. He systematically explores essential concepts in biosemiotics, and the entire chapter is designed to help the reader grasp the overall context hidden behind the issues of semiosis and vegetative semiotics. The author also presents all possible approaches and tools available for the critical analysis of minimal conditions for the semiotic triad and for proposing a minimal model of semiosis in complex organic systems. As the author notes in the conclusion, the precise mechanisms still need to be discovered, but he has managed to demonstrate that the existence of semiosis can be confirmed in at least some organisms that lack a nervous system. This points to another potential path that biosemiotics may take.

In the chapter by Suren Zolyan the categorial grammar of the genetic code is presented. The author focuses on the intersections between biology and linguistics. Concretely the author proposes his own grammar of the genetic code. Jakobson apart, there have not been many linguists since the deciphering of the genetic code who genuinely propose a “serious” grammar of the genetic code in the sense of proper linguistic insights and methods. Professor Zolyan represents an exception, and in this chapter he only elaborates in more detail a long-term project on the grammars of the genetic code (2021, 2022, 2023). His proposal is first of all to differentiate between language and speech in the Saussurean sense (*langue-parole* hypothesis) and second of all to focus on the very grammatical level of distinctive features. Zolyan defines distinctive features of the genetic code as parts or characteristics of nucleic acids, more precisely the number of bonds and type of the base—purine or pyrimidine constitutes the very distinctive features of the genetic code. Then positions within triplets (first, second, or third) are considered as grammatical categories and each of them is endowed with its codon-forming functions. The work on the level of distinctive features in genetic studies is almost a pioneering work. Very little research has been done in this direction (for example see Faltýnek, Matlach and Lacková 2019).

Zolyan proposes a categorial grammar of the genetic code, that is, a context dependent grammar, in contrast with some precedent grammars of the genetic code which have always been context-free grammars. Zolyan combines the newest trends in linguistics with the genetic code description which can be beneficial for both linguistics and biology.

BIOSEMIOTICS FOR ECOLOGY, ETHOLOGY AND ENVIRONMENTAL STUDIES

In the chapter “Ecosemiotics: Signs in Nature, Signs of Nature”, Riin Magnus presents the history of ecosemiotics and the role of this discipline in the dialogue between the environment and us. Ecosemiotics is a relatively new discipline derived from semiotics and biosemiotics. According to the author, it currently provides probably the best tools for addressing the relationship between the human population and its *umwelt*, i.e., the planet and the environment. In the first part, the author primarily focuses on the development of this discipline and documents it through important articles published in the 1990s, such as Kull 1998 and Nöth 1998. However, she emphasizes that significant progress in ecosemiotics occurs with the development of other humanities dealing with the environment. She points out the so-called “curse of symbols,” into which humanity has fallen by applying its own interpretation and narrative to its environment. Ecosemiotics should strive to break down this barrier between us and the rest of the semiotic community. For this, the role of dialogue between us and our *umwelt* is crucial, along with an effort to understand that there is another sign system than the one we apply. The author applies the work of Mikhail Bakhtin to this issue, who focused on the literary analysis of Dostoevsky’s works, emphasizing the role of dialogue not only within a literary work but also in the relationship between the author and characters. By applying this purely literary method, the author highlights the significant role that ecosemiotics could play not only in the humanities but especially in addressing ecological crises.

Hendlin presents a biosemiotic perspective on global issues, not just related to human health. In the chapter “Biosemiotics & Environmental Health” the author applies theories and concepts traditionally used to analyze lower levels, as seen in other chapters of this publication. A key concept the author addresses is the *umwelt*. In contrast to the traditional concept, the author relates it to the entire planet, the so-called holobiont, and considers it crucial for understanding the pandemic affecting both the physical and partially psychological health of humanity. The concept of semicide and ecocide is related to this issue as a consequence of the pandemic. The author suggests that biosemiotics has taken a “human turn,” focusing exclusively on humans as organisms living on this planet. However, there is a tendency to overlook planetary health and its connection to all individuals. This implies the need to address all symptoms and causes, affecting not only the sick but also the *umwelt* around them. The author points out inequalities in healthcare, which is gradually becoming a luxury that not everyone can afford. This goes beyond an individual’s social status or financial situation, involving factors such as gender and age. The fact that most symptoms can only be applied to specific groups complicates diagnosis for others, where illnesses or health issues may manifest differently. These problems are fundamental to the planetary *umwelt* and health. Overall, the chapter serves as

an overview of issues that can be examined through biosemiotic methods and tools, offering new possibilities to understand and approach the entire problem. It also demonstrates the potential for applying biosemiotics on a large scale.

The chapter by Delahaye aims to globally map the field of zoosemiotics. The author focuses on multicultural research groups impacted by the current fragmentation of the field and asks questions about the origin of zoosemiotics and its relationships with other disciplines. That zoosemiotics is a young discipline is considered an advantage, making the mapping of its development and its current state considerably easier. The corpus used in the mapping comprises works from biosemiotics, zoosemiotics, cultural semiotics, and ecosemiotics, published in English and French. To make the mapping as comprehensible as possible, the author uses the analogy of a genealogical tree to describe connections between related subfields, branches, and subbranches. The author assumes that due to the youth of the field, these connections may be further developed and strengthened over time or disappear, with some branches possibly becoming divided or combined according to current topics of interest, diversity, and the number of active researchers. The author points out potential problems brought about by isolated development of the same discipline in different countries and considers both the standardization of its terminology and diversification of the field important in terms of its interdisciplinarity. Therefore, the main goal for zoosemiotics to take is not to separate individual disciplines and hold the research within strictly set boundaries, but rather to focus on what the author calls a methodological imperative, i.e., understanding mutual interactions and congruities within the field to enable rigorous research in the future. Moreover, the precise mapping of the field provides knowledge of methods and tools suitable for studying the discipline. The author relies on the classification of zoosemiotic branches set by A. Guillaume and closes the article by appealing to the reader to consider this work only as a summary of the current state of zoosemiotics.

CULTURAL AND SOCIO- IMPLICATIONS OF BIOSEMIOTICS

In the chapter by Olteanu and Campbell the authors present a new contribution to the biosemiotic approach to culture as introduced originally by Paul Copley (2010, 2016). The authors borrow the terminology from cognitive and biosemiotics and they mostly center their theory upon the notion of cultural agents as embodied and biological organisms. The chapter represents a great contribution to the field of biosemiotics in that it points the current trends but (hopefully) also the future direction to use biosemiotics even more as a bridge between natural sciences and humanities, especially in cultural studies. What is even more important is that the authors bring together the criticism of glottocentrism not only from the perspective of bio and cognitive theories of embodied and embedded language, but also from the perspective

of the communication technology and posthumanism: in authors' perspective, verbal language is not the primary modeling system for either the indexical and iconic parts of communication and cognition on one hand, or the indexical and iconic nature of the multimodal, visual aspect of internet communication (digital communication) on the other hand. In this way, the authors make it clear that probably in the near future the biosphere and the technosphere will merge and biosemiotics can approach closer to cybersemiotics (Brier 2008) or technosemiotics (Viidalepp 2022) with important implications for translation studies.

The chapter by Coca et. al explores the notion of sociality as related to biosemiotics, evolution and non-genetic inheritance. The notion of sociality is defined as an essential part of human and non-human animals while it is very closely related to the concept of agency by Sharov (2017) and to the concept of *umwelt*. This last concept is used by the authors as a synonym for the concept of niche. Biosocial signs or biosocial symbols are the basic units of the biosocial non-genetic inheritance leading to social or biosocial evolution. The concept of biosocial evolution rooted in biosemiotic theory can be the future replacement of the dangerous theory of social darwinism. Thus, this chapter can be seen as one of the possibly most influential and important chapters of the book. In this context the choice of the authors to embrace the memetics theory by Dawkins (1976) and the notion of meme as such is also extremely important because on one hand the authors clarify the ambiguously perceived memetics (especially in biosemiotics) and the impossibility to avoid this theory in a larger account of social evolution, and on the other hand they also explain its limits. There has been the trend to associate cultural signs with the notion of symbol (Deacon 1997) to which the authors seem to contribute with the notion of biosocial symbol. The notion of meme in the context of the symbolic has also been developed by Bennett within his quasi-sign doctrine where the meme corresponds to so-called tardo-sign (Bennett 2021, 194–205).

CONCLUSIONS

Even if very scope of the book series is to mirror current trends in biosemiotics, especially in relation to social sciences and humanities, some of the chapters of the first volume rarely even use (or barely mention) the term "biosemiotics" (Zolyan's and Hendlin's chapters for example). This is probably the very purpose of the volume, and it would mean that current trends in biosemiotics seem to diverge from biosemiotics itself, which can be interpreted positively for the discipline in that it reaches out to more traditional or more established areas or research, such as environmental studies (Hendlin's chapter), ethology (Delahaye's chapter) or genetics (Zolyan's chapter). Biosemiotics is becoming even more interdisciplinary – if this is even possible – and going beyond the marriage between semiotics and biology. The established authors with biosemiotics background are bringing biosemiotics into their "home" disciplines,

to environmental studies, to zoology, to genetics, and the social sciences. This volume is a great achievement of reflecting the current state of art of the discipline of biosemiotics in all its divergent tendencies, in all its plurality and non-exclusive approach.

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