



Following Developments of Biosemiotics

Alexei A. Sharov¹

Published online: 20 November 2024
© The Author(s), under exclusive licence to Springer Nature B.V. 2024

The journal *Biosemiotics* (Springer) was established by the Founding Editor - Marcello Barbieri in 2008 as a major periodical for publishing papers covering various aspects of integration of biology with semiotics. Many prominent scientists and philosophers in biosemiotics, such as Kalevi Kull, Jesper Hoffmeyer, Donald Favareau, Howard Pattee, Karel Kleisner, Prisca Augustyn, Morten Tønnessen, Anton Markoš, Stanley Salthe, Bruce Weber, Frederik Stjernfelt, Pail Cobley and others, supported the journal and published their articles in the initial years. The journal became affiliated with the International Society for Biosemiotics Studies, which was important for maintaining the focus on the most important problems in biosemiotics. In this editorial I follow the developments of biosemiotics through my ten-year term as Editor-in-Chief of the journal as I prepare to leave my position at the end of 2024.

In 2014, Marcello Barbieri transferred most of editorial duties to a new team of editors, that included me, Timo Maran, and Morten Tønnessen, and we took full charge as Editors-in-Chief in 2015. Our first joint editorial titled “Towards Synthesis of Biology and Semiotics” outlined our vision of the state and future of biosemiotics and its representation in this journal. We wrote:

The main idea of biosemiotics is that life and semiosis are coextensive. Here semiosis is understood as a sign process or sign exchange, where signs stand for something else in some respect or capacity. In particular, life has a semiotic nature because it is based on endless interpretation of environmental cues and transfer of life-related functional meanings vertically across generations and horizontally to neighboring organisms. Semiotic processes help organisms to perform their functions, preserve their habits and pursue their agendas through generations (Sharov et al., 2015): 1–2).

✉ Alexei A. Sharov
sharov@comcast.net

¹ Elixirgen Scientific, Baltimore, USA

It follows from this view that not just animals, but all organisms have some “mind-like properties” that support meaningful interpretation of signs— both internal and external. Our editorial team wanted to focus on the general semiotic properties of all organisms, and at the same time, specify qualitative differences of sign processes at major levels of complexity and integrity separated by transition zones (Kull et al., 2009). Semiotic terminology helps to avoid gridlocks in biological discussions. For example, it may be difficult to argue whether or not bacteria have consciousness and learning because of term vagueness. But it is easier to agree that bacteria are capable of semiosis (using sign processes) and semiogenesis (establishing new sign relations). An example of transition zone is between physical non-living systems not capable of semiosis and not goal-directed, and living organisms, which use semiosis to reach their meaningful goals. Another transition zone separates different levels of semiosis: protosemiosis (processing of signals without perception of objects) and eusemiosis¹ (capacity to perceive and categorize objects) (Sharov & Vehkavaara, 2015). Eusemiosis emerged in the form of heritable instincts, and then evolved into cognition (or consciousness) characterized by representational memory and learning, followed by a higher form of abstract symbolic thinking (Sharov, 2022). Biosemiotics uses the notion of semiotic agency for all organism-like entities. Besides organisms, it includes autonomous organism parts (organs, cells), super-organisms (colonies, species, consortia), autonomous products of cells (ribosomes, protein complexes, viruses) and human artifacts (computers, robots). Agents of the latter two categories are not alive and have a lower degree of autonomy because they depend on parental agents, which are organisms.

Our editorial team continued practices established by our predecessors, such as regular meetings with the Editorial Board and publishing of special issues by guest editors. Special issues included “Biosemiotics of chance” edited by Victoria Alexander, “Semiotic scaffolding” by Jesper Hoffmeyer, “Semiosis of evolution” (no guest editors), “Multi-level semiosis” by Luis Bruni and Franco Giorgi, “Constructive aspects of biosemiosis” by Tommi Vehkavaara and me, “Semiotic aspects of the extended synthesis” by Andrew Winters, “Signs and Communication in Mimicry” by Karel Kleisner and Timo Maran, and “The semiotics of hybrid natures” by Nelly Mäekivi and Riin Magnus.

I am thankful to Morten Tønnessen for suggesting two new activities that helped to invigorate the relations between the journal and readers. First, it was the establishment of the Annual Biosemiotic Achievement Award in 2014 for the novelty and relevance to biosemiotics. And the second was the Biosemiotics Glossary Project, which started with the article on semiotic agency (Tønnessen, 2015), and then continued the discussion with the terms: *umwelt*, semiotic threshold, and intentionality. An important part of this project is answering questionnaires and statistical analysis of results which reflects the range of opinions within the biosemiotics field.

In 2020, Yogi Hendlin joined me as a new Editor-in-Chief, and took major responsibilities in managing the journal. To facilitate interactions between authors and readers we decided to start publishing target articles written by well-known scientists on fundamental theoretical problems of biosemiotics followed by commentary articles by specialists.

¹ Protosemiosis is typical for prokaryotes and for metabolism signaling in eukaryotic cells. Eusemiosis emerged for selected complex functions of eukaryotic cells (e.g., phagocytosis, mitosis, and symbiosis), and became more developed in multicellular organisms, especially in animals.

The first target article “The illusions of the Modern Synthesis” written by Denis Noble addresses four important misinterpretations of the Modern Synthesis of evolution: natural selection, Weismann’s barrier, rejection of Darwin’s gemmules, and the Central Dogma of molecular biology. The article was followed by 18 commentaries from scientists specializing in various branches of biology, behavioral science, and philosophy. Finally, Noble’s reply to commentaries was published in the following issue of the journal. These publications certainly attracted the attention of readers interested in the connections between evolutionary theory and biosemiotics. Other target articles included “The biosemiotics fundamentals of aesthetics” by Kalevi Kull, “Learning and the Evolution of Conscious Agents” by Eva Jablonka and Simona Ginsburg, and “How Molecules Became Signs” by Terrence Deacon. Also we published the special issues “Can quantitative approaches develop bio/semiotic theory?” edited by Dan Faltýnek and Ludmila Lacková, “Agency and (the Built) Environment” by Tim Ireland and Paul Cobley, “Biosemiotics of waste” by Yogi Hendlin, and “Umwelt Theory and Phenomenology” by Carlo Brentari and Morten Tønnessen.

I enjoyed my work as Editor-in-Chief of *Biosemiotics* for many reasons. First, biosemiotics has been my major interest and activity for 36 years, although I combined it with my regular jobs in ecology, molecular biology, and bioinformatics. Second, I like helping young authors to improve their manuscripts, as well as interacting with reviewers. And third, my editorial job stimulated reading related publications, and I learned about new discoveries and theories in various fields of biology and the humanities. This knowledge helped me to write a book together with Morten Tønnessen *Semiotic agency: Science beyond mechanism* (Sharov & Tønnessen, 2021). Considering that the impact factor (IF) of *Biosemiotics* has increased from 0.488 in 2014 to 2.1 in 2023, my work as an Editor was not in vain.

Acknowledgements I thank editors and technical personnel of Springer who help to resolve our problems and make publication of the journal possible; I thank all Editors-in-Chief and Associate Editors for their hard work and enthusiasm; I thank members of the Editorial Board and external reviewers for invaluable help in evaluating manuscripts, and the International Society for Biosemiotics Studies for continuing support.

References

- Kull, K., Deacon, T., Emmeche, C., Hoffmeyer, J., & Stjernfelt, F. (2009). Theses on biosemiotics: Prolegomena to a theoretical biology. *Biological Theory*, 4(2), 167–173.
- Sharov, A. A. (2022). Consciousness and learning from the biosemiotic perspective. *Biosemiotics*, 15(3), 483–490.
- Sharov, A. A., & Tønnessen, M. (2021). *Semiotic agency. Science beyond mechanism (Vol. 25, Biosemiotics)*. Springer.
- Sharov, A. A., & Vehkavaara, T. (2015). Protosemiosis: Agency with reduced representation capacity. *Biosemiotics*, 8(1), 103–123.
- Sharov, A. A., Maran, T., & Tønnessen, M. (2015). Towards synthesis of biology and semiotics. *Biosemiotics*, 8(1), 1–7.
- Tønnessen, M. (2015). The Biosemiotic Glossary Project: Agent, agency. *Biosemiotics*, 8(1), 125–143.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.