

The World of Codes: An Interview with Marcello Barbieri

Interview

M.A. Claudio Rodríguez Higuera, Ph.D.

Department of General Linguistics, Palacký University Olomouc, Czech Republic
claudio.rodriguez@upol.cz (ORCID: 0000-0003-3778-5369)

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On the occasion of the Code Biology annual conference being hosted by Palacký University in Olomouc, we asked Marcello Barbieri—the founder of the discipline and a man concerned with biological signification for decades—some essential questions on the theory and practice of code biology, its philosophical foundations, prospects and avenues of research.

Claudio Rodríguez: How would you characterize the scientific practice of code biology? Is biology incomplete?

Marcello Barbieri: Modern biology is incomplete because it is ignoring “the other side of life”. It is like physics at the time of Newton when it was thought that “gravitation” is the sole universal force of nature. The discovery of electromagnetism proved that there are two universal forces – gravitation and electromagnetism – and not just one. In a similar way, life is based on two fundamental molecular mechanisms, copying and coding: the copying of the genes and the coding of proteins. Modern Biology claims that evolution took place by natural selection, and natural selection is the long-term result of molecular copying. Code Biology claims instead that evolution took place by natural selection and by natural conventions, and this is why it is adding to biology a new mechanism of evolution, a mechanism which reveals “the other side of life”

C.R.: What is the role of science? What characterizes it?

M.B.: Karl Popper (2002) has already addressed this problem and on the whole I find that his answer is still the best one. There may be other points that need to be taken into account, but Popper’s approach is the best theoretical framework that we have for the study of the relationships that exist between philosophy and science.

C.R.: Is linguistics a science or does it lie at a crossroads between the sciences and the humanities?

M.B.: Language is a natural phenomenon and the “origin

of language” is therefore a scientific problem. This, however, does not make of linguistics a science because there are so many different linguistic schools and most of them are based on dogmatic statements. As a matter of fact many linguists take pride in saying that language cannot be “reduced” to science, as if science was a dirty word.

C.R.: Deacon (2015) believes that a scientific future for biosemiotics depends on letting go of analogies to human-level semiotics. Can, however, biosemiotics be scientific if it believes the sign and semiosis to be general and apply across different levels of biosocial complexity? In other words, can the same mechanisms of signification apply to things as different as cells and societies?

M.B.: The mechanism of signification (or semiosis) is the mechanism that gives meaning to signs, and the most elementary form of semiosis is a code, a set of rules that do precisely that. So yes, semiosis, or signification, exists both in cells and in societies, because there are codes in the cell (the genetic code, for example) and there are codes in societies (most cultural conventions are codes). There is however an important difference between them, because the “adaptors” of the genetic code are molecules of transfer-RNAs, whereas the “adaptors” of the cultural codes are human beings. It is true that Biosemiotics states that sign and semiosis apply to cells and societies, but this is not enough to make of it a scientific discipline, because Biosemiotics also claims that semiosis always requires interpretation and

there is no evidence whatsoever that the ribosomes are “interpreting” the messenger-RNAs.

C.R.: Could you explain why codes are semiosis?

M.B.: Semiosis is the process that gives meaning to signs, and this is what codes do, so it is true “by definition” that codes are semiosis. Actually codes are the “most elementary” form of semiosis, because there is no simpler process that creates a bridge between signs and meanings. The idea that “codes are not semiosis” or that “codes are necessary but not sufficient for semiosis” is one of the most irrational statements that have become part of biosemiotics.

C.R.: Is Peircean philosophy a necessity or a hindrance for research on biological meaning? In the past you've stated that Peircean theory seems to apply to animal communication (Barbieri, 2013). Do you still believe this to hold or has your opinion changed on this matter?

M.B.: The Peircean concept of “abduction” is probably the most important mechanism that allows the brain to interpret the world, and this is why Peirce’s philosophy has an outstanding biological potential – I have always believed this and I have not changed my mind. What is wrong is the extension of the Peirce mechanism of interpretation to “all” living creatures. The problem is not with Peirce, but with those who abused of his concepts in the first place (see for instance Barbieri, 2018).

C.R.: You have corrected me in the past when I have stated that code biology is an offshoot of biosemiotics (Rodríguez Higuera, 2019) because, as a scientific perspective, it predates the existence of a unified or institutional biosemiotics so to speak. How would you characterize the relation of code biology to current biosemiotics?

M.B.: The most important concept of code biology is the idea that evolution took place by natural selection and by natural conventions, and that idea was published in 1985, long before the birth of biosemiotics as promoted by Thomas Sebeok et al. That original idea from 1985, however, was published as “Semantic Biology” (“Biology with meaning”) because at that time most organic codes had not yet been discovered.

C.R.: The separation between code biology and biosemiotics happened both for theoretical and institutional reasons. The former because of a seemingly common view that 'codes are not semiosis,' and the latter because of the direction the ISBS took. Looking back, do you believe there is theoretical compatibility between biosemiotics and code biology?

M.B.: In 2008 I became the founder and the first editor-in-chief of the journal “Biosemiotics” precisely because I believed that there is a compatibility between biosemiotics and semantic biology (now code biology). In 2012, however, the general assembly of biosemiotics at the meeting in Tartu expelled me from the direction of

the International Society for Biosemiotic Studies and at that point I had to face reality and accept that in practice there is no such compatibility.

C.R.: What do you think general biosemiotic practice has set aside in terms of what is necessary to actually understand biological meaning?

M.B.: Biosemiotics has completely given up the scientific method in the study of biological meaning.

C.R.: What do you think will be the future findings of code biology?

M.B.: The future of code biology is to explore “the other side of life”, that vast continent populated by all codes that exist in living systems and that in the past have generated virtually all the absolute novelties that have appeared in the history of life. But Code Biology is not only the study of codes, it is the study of all processes that gave origin to the great events of macroevolution, and in particular it is the study of the origin of life, of the origin of mind and of the origin of language.

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