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**Editorial**

# What is Biosemiotics?

The discovery of the genetic code took place between 1961 and 1966, and almost immediately inspired the idea of a deep link between biology and semiotics. The manifesto of this new synthesis was written by George and Muriel Beagle in 1966 with a single simple sentence: *"The deciphering of the genetic code has revealed our possession of a language much older than hieroglyphics, a language as old as life itself, a language that is the most living language of all – even if its letters are invisible and its words are buried in the cells of our bodies"*. In 1974, Marcel Florkin coined the term 'biosemiotics' for the study of this molecular language, or, more precisely, for the study of *semiosis* (the production of signs) at the molecular level.

At about the same time, a parallel development was taking place in linguistics. The idea that animals have feelings, psychologies and even minds has been entertained in various ways throughout the centuries, but for a long time is has been taken almost for granted that only man is a semiotic animal, i.e. that only man makes use of signs. That idea was explicitly challenged for the first time in 1963, when Thomas Sebeok suggested that animal communication is also based on signs, and proposed the term 'zoosemiotics' for the new science of animal semiosis.

That proposal set Sebeok out on a long search for evidence of semiosis in the various fields of the life sciences, and apparently he found the decisive proof by reading the original German edition of Jakob von Uexküll's *Theoretische Biologie* (1928). That book convinced Sebeok that von Uexküll had already provided abundant evidence of semiosis in the animal world, and had been in fact the unintentional founding father of zoosemiotics. In 1977, Sebeok started a life-long collaboration with Thure von Uexküll (Jacob's son), who was arguing that medicine has been a semiotic discipline ever since antiquity, because it has always been concerned with the interpretation of clues. In 1979, Sebeok invited Giorgio Prodi to join in the discussions with Thure von Uexküll and that set in motion a further expansion of their field. Prodi suggested that a primitive form of semiosis exists also at the molecular level, and gave it the name of *protosemiosis*, or *natural semiosis*. The extension of semiosis beyond the animal world gained further momentum in 1981, when Martin Krampen argued that plants too engage in vegetable semiosis (phytosemiosis), and in 1988, when Sorin Sonea proposed that semiosis goes on even in the bacterial world. The word *zoosemiotics* became increasingly inadequate, and Sebeok decided to replace it with *biosemiotics*, a term that had already been proposed by Juri Stepanov in 1971, but which had appeared for the first time in 1962, when Friederich Rothschild used it to illustrate a new approach to psychology.

Biosemiotics, in short, has been the object of at least two distinct lines of research that started in the 1960s, one in biology and the other in semiotics, plus a third line of research that was developed in physics by Howard Pattee. Those approaches evolved in parallel and independently for at least three decades until they finally converged, in the early 2000s, into a unified discipline. The differences between the initial approaches, however, have not completely disappeared and survive to this day in the form of different 'schools' of biosemiotics. There is therefore a genuine pluralism in the field, but also a common goal. What all schools of biosemiotics have in common is the idea that semiosis is fundamental to life, that all living systems are semiotic systems.

Today, there are at least two basic principles, or postulates, that are accepted by most biosemioticians and that represent a sort of 'minimal unity' in biosemiotics.

(1) The first postulate is the idea that semiosis is unique to life, i.e. that it does not exist in inanimate matter. This sharply differentiates biosemiotics from *pansemiotics*, the doctrine that accepts the existence of semiosis even in the physical world. And it also differentiates it from *physicalism*, the doctrine that denies the existence of semiosis both in the physical world *and* in the organic world.

(2) The second postulate is the idea that semiosis and meaning are *natural* entities. This sharply divides biosemiotics from the doctrine of 'intelligent design', and from all other doctrines that maintain that the origin of life on Earth was necessarily the product of a supernatural agency.

Today, the main challenge of biosemiotics is the attempt to naturalize not only *biological information* but also *biological meaning*, in the belief that *codes* are fundamental components of the living world. This implies, among other things, that the history of life has been shaped by the appearance of new codes, from the genetic code, that marked its origin, all the way up to the codes of language that made us human. This in turn suggests that the great events of macroevolution were associated with the appearance of new organic codes, and that it was new codes that brought absolute novelties into existence.

Biosemiotics has become in this way the leading edge of the research on the fundamentals of life, and is a young exciting field on the move. Our Journal will try to be an instrument of its development and will publish papers in all relevant areas of the sciences and the humanities, with the ultimate goal of bringing about a real unity of nature and culture.

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