



# Keeping our options open

Frantic human activity has reduced both cultural and biological diversity. Now we must protect the dwindling alternatives

This is the point where biosemiotics can illuminate some fundamental, and disconcerting, aspects of the contemporary world. The pioneering biosemiotician [Jesper Hoffmeyer \(1942-2019\)](#) fashioned some useful concepts. He was inspired by the philosopher [Charles Sanders Peirce](#), a founder of semiotics, as well as by Bateson. Hoffmeyer had a degree in biochemistry, worked as a biologist at the University of Copenhagen, and collaborated with philosophers, literary scholars and social scientists. His first book in English, *Signs of Meaning in the Universe* (1996), explains biosemiotics as a scientific approach to living systems that interprets relations in nature as systems of signs. The method is the same as that employed by the Italian author and semiotician Umberto Eco in his celebrated [essay](#) ‘Lumbar Thought’ (1986),

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# On the origin of minds

Cognition did not appear out of nowhere in 'higher' animals but goes back millions, perhaps billions, of years

My first theoretical guides, recommended by an unconventional Australian biologist, were the zoologist [Jakob von Uexküll](#) and the neuroscientist [Humberto Maturana](#). Von Uexküll's *Umwelt* concept (popularised in English in 1934) made me appreciate the particularity of the world constructed by an organism's unique complement of senses and the value the organism imputes to elements of that construction, evolved in dependence upon how the organism makes a living. Elevated carbon dioxide is an attractant for a mosquito seeking a blood meal, but induces transient breathlessness, dizziness and minor anxiety in many people (as the COVID-19 experience with masking has shown). Maturana's *Biology of Cognition* (1970) made me realise just how weird the living state is compared with any other physical system on Earth.

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# The American Aristotle

Charles Sanders Peirce was a brilliant philosopher, mathematician and scientist. His polymathic work should be better known

## Peirce's definitions were clear, precise and interesting. For him, semiotics was the basis of all cognition

But how are we humans capable of reasoning about weighty items such as truth in the first place? Because we generate and interpret *signs*. Peirce was always concerned to understand how we know things. He argued that cognition, language and indeed the entire functioning of nature derives from signs – each sign being a triad of *object, form and interpretation*. Consider a Stop sign. It is a red octagon on a post with the letters 'S-T-O-P' printed on it. It has a particular interpretation (the active interpretation is applying the

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