

Foreword: The Ages of Francisco Varela

Jeanette Bopry and Søren Brier

The present issue is a memorial issue for Francisco Varela both as a scholar and as a colleague. Varela passed away in his home in Paris on May 28 2001. He was part of the editorial board of this journal and thus in this memorial issue we would like to look into his heritage. Most of the papers we present have authors that have known and worked with Varela in some period of their and his life: Ranulph Glanville, Louis Kauffman, Andreas Weber.

Weber makes the case that Varela's thinking can provide a foundation for biosemiotics and as such it provides a further foundation for the cybersemiotic project. Most interesting and promising is his comparison with Varela's concept of the organism and Bruno Latour's concept of quasi-objects. The other articles all have some relationship to Varela's elaboration on the work of Spencer-Brown. Using the metaphor of the Uroboros, Marks-Tarlow, Robertson, and Combs explore the notion of re-entry in Varela's 'A Calculus for Self-Reference' and his contribution to a theory of consciousness. In their articles, Glanville and Kauffman reflect upon their experience working with Varela on joint papers. Glanville's paper is focused on self-reference and the Möbius metaphor, Kauffman's on Spencer-Brown's *Laws of Form*. The ASC column is by Søren Brier, who makes the case that Varela contributed to the bridge between second order cybernetics, autopoiesis theory and the triadic semiotics of C. S. Peirce. The issue concludes with a multi-authored historically-reflected review of *The Embodied Mind* (Varela, Thompson and Rosch) and its influences, followed by an afterword from Klaus Krippendorff.

Francisco's widow, Amy Cohen, tells us that his favourite poet was the 2nd century Buddhist monk, Nagarjuna. We are delighted therefore to include Stephen Batchelor's translation of Nagarjuna's poem 'Self'. This is particularly apt since Francisco was present at the first public reading of Batchelor's translation, at Dartington, Devon, in the UK. The other poems are contributed by Pille Bunnell and the artwork by Bruno Kjær.

From an ASC point of view Varela's contribution to the theory of autopoiesis with his teacher and mentor Humberto Maturana is one of the most important parts of his work. Heinz von Foerster supported Varela's development of Spencer-Brown's work in his article 'A Calculus for Self-Reference'. But Varela's intellectual history and influence goes both much deeper and broader than this. A self-described epistemologist, he was concerned with basic problems. The first of these was developing a definition of life. In his work with Humberto

Maturana, 'Autopoiesis' (in the book *Autopoiesis and Cognition*), they define the living system as an organizationally closed system of self-production, and cognition as the operation of that system. This theory has been fundamental to developments in the fields of biology, neuroscience and immunology. Further, autopoiesis theory and Varela's extension of it into autonomous systems theory (*Principles of Biological Autonomy*) has inspired many to reconsider their perspectives on their own fields; those in fields as disparate as family counseling, sociology, and law have been influenced by this work.

The idea of enaction theory, that we bring forth the world in the process of interaction, is an attempt to solve another basic problem: the subject/object dualism that plagues cognitive science. No doubt his development of the enaction theory has to be considered the crowning achievement of his career. It has had tremendous influence in the cognitive biology area. Jeanette Bopry in Vol.8 no. 4 of this journal used it most recently. The concept of embodied cognition provides, among other things, a means of accounting for common sense, something not easily dealt with in information processing approaches to cognitive science. The implications of these ideas are important for educators as well as cognitive scientists.

As an epistemologist Varela was concerned not only with forwarding our understanding of knowing, but also with the ethical consequences of knowing, as he expresses in the concluding paragraph of 'Whence Perceptual Meaning':

In this essay, I have argue[d] that, if the kingpin of cognition is its capacity for bringing forth meaning, then information is not pre-established as a given order, but it amounts to regularities that emerge from the cognitive activities themselves. It is this re-framing that has multiple ethical consequences....to the extent that we move from an abstract to a fully embodied view of knowledge, facts and values become *inseparable*. To know is to evaluate through our living, in a creative circularity. (In Varela & Dupuy, 1992, *Understanding Origins*, p. 260)

His attention to values and ethics is explicated further in the text *Ethical Know-How*. In the past decade it became apparent that Varela's work had converged with his practice of Buddhist meditation and study of Buddhist philosophy. The importance of this orientation for him is especially apparent in the texts *The Embodied Mind*, co-authored with Evan Thompson and Eleanor Rosch, and *Sleeping, Dreaming, and Dying*, an account of a meeting between the Dalai Lama and prominent western cognitive scientists in 1992. In recent publications relating to neurophenomenology he proposes that Buddhist meditation practice provides one of the three methodological keys to a reliable phenomenological approach for accessing experience. His exploration of the connections between Buddhist practice and cognitive science directs us toward a future in which another basic problem will likely be solved: understanding consciousness. The question of particular importance to him in consciousness studies is how cognitive entities experience temporality. For him, this is a question that can be explored both phenomenologically and experimentally. It is a

hallmark of his career that he considered it important to engage in both experimental and reflective practice.

In John Brockman's book *The Third Culture* Varela is identified as a contributor to the Third Culture. He is among those scientists that philosophize over the meaning of new findings in the natural sciences and the transdisciplinary significance of the paradigm of complexity, self-organization and evolution. Stuart Kauffman points out in this book how amazingly inventive, freewheeling and creative Varela was combined with his smart, charming and graceful style. Kauffman also points out the connection between the autopoiesis theory and his own autocatalytic-polymer-set story. He sees a connection between Varela's work on immune networks and the Santa Fe Institute's results on emergent collective phenomena. Kauffman has some of the same beliefs about deep biological laws as Varela and discusses why these views have had so little impact on mainstream biology. Unlike physics and chemistry, biology is still not theory- and concept-driven. Biology is basically experiment-driven, as organisms, since Darwin, are mostly seen as ad hoc solutions to complicated design problems. Most biologists see Maturana and Varela as philosophers. As Danny Hillis points out in the same book most biologists, along with artificial intelligence and artificial life researchers, tend to view philosophy as a black hole that many a good scientist has fallen into – lost to real science forever! Some, like Christopher Langton, view autopoiesis theory as another way to map the same problems in biology that the mainstream is working with, without adding anything really new. Lynn Margulis acknowledges that the theory of autopiesis is useful as a means of distinguishing between living and non-living systems but, with many other experimental biologists, has problems following the more philosophical aspects of Varela's ideas. Daniel Dennett comments that he has been inspired by Varela but finds him too revolutionary and confusingly Buddhist. From the mid-seventies Varela practiced Tibetan Buddhist meditation combined with studies of Buddhist psychology and philosophy. He hoped that this spiritual and existential tradition and Western cognitive science could benefit from each other. In *The Third Culture*, the more philosophical biologist Brian Goodwin actually praises Varela's ability to funnel his theories into high quality experimental research.

This discussion says something about the difficulties that even the most gifted among researchers have in embracing other views of their field. They are able to take in the more concrete aspects of Varela's thinking, but the whole picture is too much to embrace – too revolutionary to be broadly accepted in his own generation. But time and the advent of new generations brought up in more philosophically reflective forms of science will work for the acceptance of his grand vision, including Western phenomenology, as we can see in the articles in the present issue.

Francisco Varela was not only a pathfinder, but also someone who saw and inspired others to see how seemingly disparate paths could be connected. Those of us interested in interdisciplinary fields like cybernetics, cognitive science and semiotics celebrate this contribution. We can only imagine what other paths this

creative intellect might have illuminated for us, and this amplifies the loss we feel. Below we provide a few selected references. For more details about Varela's life and work see Thompson (2001).

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Total publication list: <http://www.ccr.jussieu.fr/varela/index.html>

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The president of the ASC, Pille Bunnell, has donated the poem on the facing page with the following dedication: "To Francisco Varela, who I never met in person, but whose touch I see in many friends and thus I know him. May his goodness live on!"

questions

Someone asks
and I see
what I did not see before.

Did I know that?
Did I simply omit to look?

No.
My understanding arose
with the question.

A true question does not
demand an answer.
It is not a hypocrisy
with the nature of the answer
preconceived.
A true question
is an honest question.

An honest question
arises in love,
in the acceptance of a world
where what appears
is legitimate.

An honest question is a request
for an expansion of understanding.
In this desire illumination happens
and I see
what I could not see before.

This is a gift
from the one
who asks.

