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Afterword

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This is the afterword to an issue devoted to the work of Francisco J. Varela.

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Afterword

Abstract

Francisco J. Varela was a student and collaborator of Humberto R. Maturana. Their pioneering collaboration on *Autopoiesis and Cognition* reestablished “processes of living” as the principle topic of biological explorations. This topic had dropped out of the discourse of biology after the work of Jacob von Uexküll. Autopoiesis brought a new framework to biology. I say framework because it was not a theory that predicted observable phenomena but a scaffold to pose and answer new kinds questions. In their *The Tree of Knowledge*, which connected the notion of autopoiesis to a variety of biological, evolutionary, cognitive, and, in a rudimentary way, linguistic and social phenomena, Francisco started to identify his contributions.

Disciplines

Communication

Comments

This is the afterword to an issue devoted to the work of Francisco J. Varela.

Afterword

Klaus Krippendorff¹

Francisco J. Varela was a student and collaborator of Humberto R. Maturana. Their pioneering collaboration on *Autopoiesis and Cognition* reestablished “processes of living” as the principle topic of biological explorations. This topic had dropped out of the discourse of biology after the work of Jacob von Uexküll. Autopoiesis brought a new framework to biology. I say framework because it was not a theory that predicted observable phenomena but a scaffold to pose and answer new kinds questions. In their *The Tree of Knowledge*, which connected the notion of autopoiesis to a variety of biological, evolutionary, cognitive, and, in a rudimentary way, linguistic and social phenomena, Francisco started to identify his contributions.

Francisco became well known for his *A Calculus for Self-Reference*, which took off from Spencer-Brown’s *Laws of Form*. This calculus did not produce a major breakthrough in biology, however, probably due to its mathematical nature, which was too far removed from the messy complexity of biological phenomena. But the ideas that underlie both autopoiesis and self-reference gave rise to Francisco’s *Principles of Biological Autonomy* in which he outlines a research program for biology that challenges many cherished concepts, perhaps too many to be widely embraced, perhaps too far ahead of its time. He saw autopoiesis as one manifestation of autonomy and looked for and found autonomous systems in many living systems.

For example, he investigated the pathways of visual perception in mammals, commonly theorized as sequentially transmitting information from the retina to the brain. He found that the lateral geniculate nucleus (LGN), thought to be some kind of converter of visual information, in fact receives only 20% of its information from the eye and 80% from inside the body, including from the brain. It would follow that the brain “sees” mainly its own activity, perturbed by what happens on the retina. For Francisco this finding puts the information processing model of cognition in serious doubt, questions the idea of a semiotic based on the signifier/signified distinction, and challenges the widespread belief that we could be instructed or informed by phenomena outside of us. He therefore abandoned the use of information as an explanatory concept in favor of a notion of in-formation, the transformation that an autonomous system undergoes on its own account.

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Francisco was led to the above from recognizing the connection between autonomy as a fundamental property of living systems and the circular organization necessary to maintain autonomy. This brought Francisco through cybernetics to cognitive science where he added another dimension to this discourse: embodiment, which is alien to mathematics, ignored by the computational theories of Artificial Intelligence, and invisible to the scientific observer as a Cartesian spectator or renaissance kind. Undoubtedly, taking this turn had much to do with his increasing interest in Buddhist meditation and its emphasis on practice rather than abstract theory.

He wrote a small book on *Cognitive Science; A Cartography of Current Ideas*, which gives a history of Artificial Intelligence, offers a decisive critique of the symbol manipulation model of cognition, and proposes emergence as a viable alternative. Finally, it weaves emergence, self-organization, and ontogenesis — the process of constructing reality — into a proposal for a new kind of cognitive science. Subsequently, he co-authored *The Embodied Mind* with Evan Thompson and Eleanor Rosch, extending his proposal to overcome representationalism, information processing, and symbol manipulation conceptions of the mind, bringing cognition closer to experiences.

I could mention several other paths that Francisco took, his reflections on know-how, for example, and on ethical knowledge, much of it must now be read as an invitation to others for to continue, but I will stop here.

Francisco started with the purest form of theory, with a mathematical calculus, and ended in a Herculean effort to recover the human body that abstract theory ignores. Along this path he provided us with numerous revolutionary concepts that changed our conversations. This path is not too different from Ludwig Wittgenstein's who started with a logical Tractatus purporting to solve all philosophical problems with what we now call a picture theory of language and ended in a concept of language as a multitude of games that we invent among ourselves as we go on in life, implicating our body at each turn.

Sadly, Francisco left us far too early, but this was the path he brought forth in walking. I am glad mine joined his on several occasions. I find his work inspiring even in different spaces.