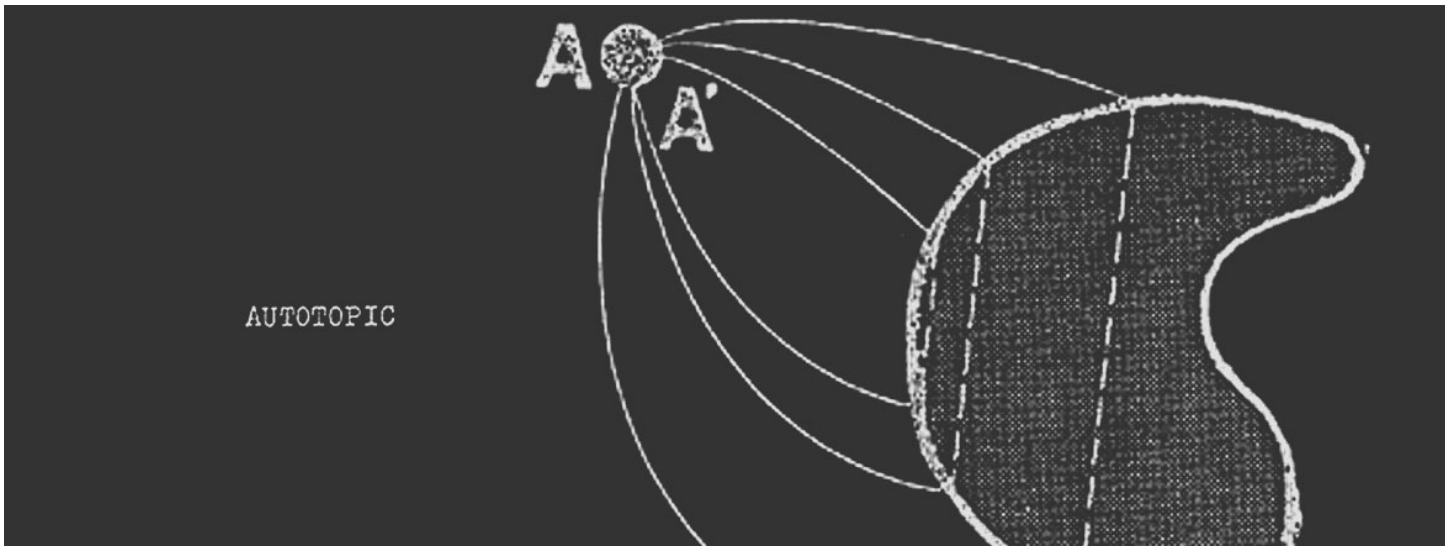


Paul Pangaro
Ph.D. (<http://www.pangaro.com/index.html>)

DEFINITION OF CYBERNETICS (<HTTP://WWW.PANGARO.COM/DEFINITION-CYBERNETICS.HTML>)

VIDEOS (<HTTP://WWW.PANGARO.COM/VIDEO/INDEX.HTML>)

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PRESENTATION

The Past-Future of Cybernetics

Vienna, 2003

A presentation that draws connections across the work of Heinz von Foerster, Gordon Pask, and Humberto Maturana. (<http://www.pangaro.com/HvF-Vienna2003-Pangaro-MS8c.pdf>)

Download (<http://www.pangaro.com/HvF-Vienna2003-Pangaro-MS8c.pdf>) (PDF) a version of the paper, now available in the book, *An Unfinished Revolution?* (<http://www.echoraum.at/edition/wisdomechoraum3.htm>)

An abstract and outline of the talk are given below, and there are a few video clips (<http://cyberneticians.com/index.html#hvf>) used during the presentation given at the symposium.

Abstract



To speak "Biological Computer Laboratory" (BCL) also speaks "Heinz von Foerster." To invoke von Foerster also invokes the BCL community that he gathered through his unerring identification of original thinkers and his unparalleled clarity about second-order cybernetics. Having chosen well his lab's collaborators, von Foerster contributed seminal thinking that became foundations and superstructures for theoreticians great and small of the generations that followed. What contributions to cybernetics were rooted in the BCL?

What insights did von Foerster himself offer, such that his collaborators could stand tall on his shoulders and see more? With the benefit of twenty-five years' hindsight, the speaker will analyze the published outcomes of the BCL and conjure a picture of von Foerster's influence on collaborators such as Gordon Pask and Humberto Maturana. A *post hoc* construction drawn from personal relationships with the protagonists, the talk will offer a unification of major threads of

cybernetics, its concepts of memory, organizational closure and circularity, and show how von Foerster is inextricably woven in.

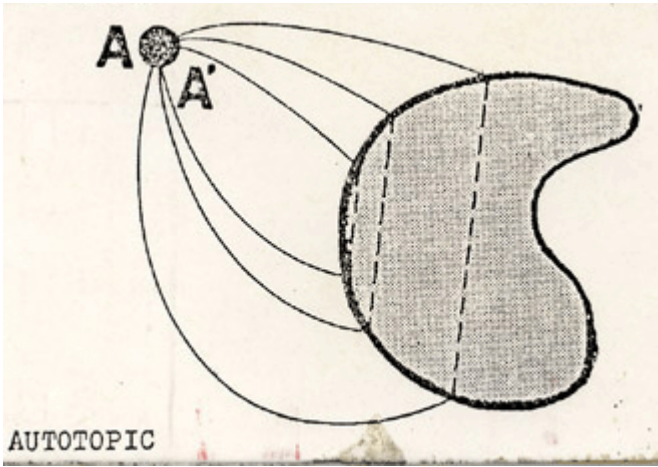
—Paul Pangaro, Vienna, November 2003

Outline

- Disciplines
- Difficulty with memorization

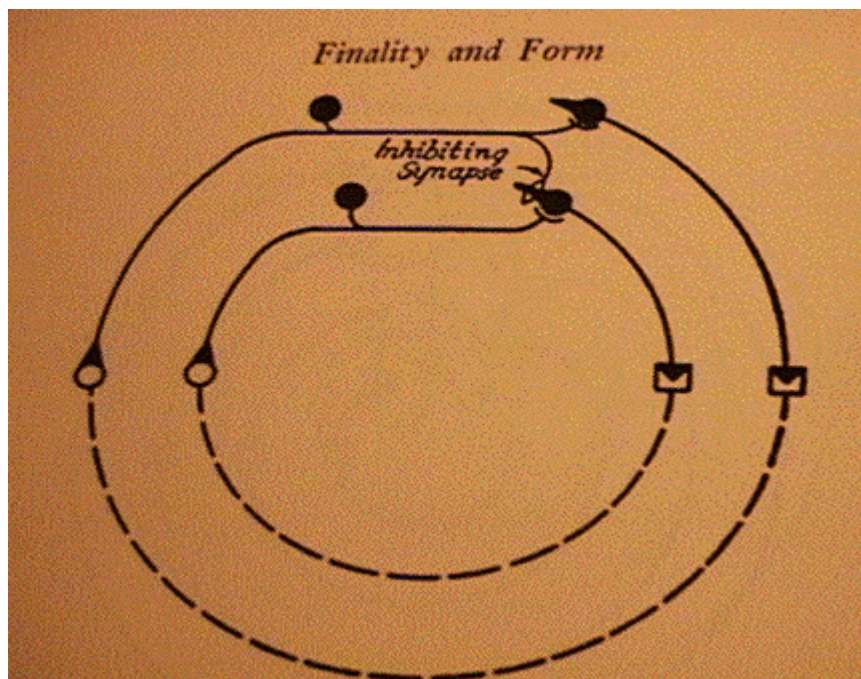
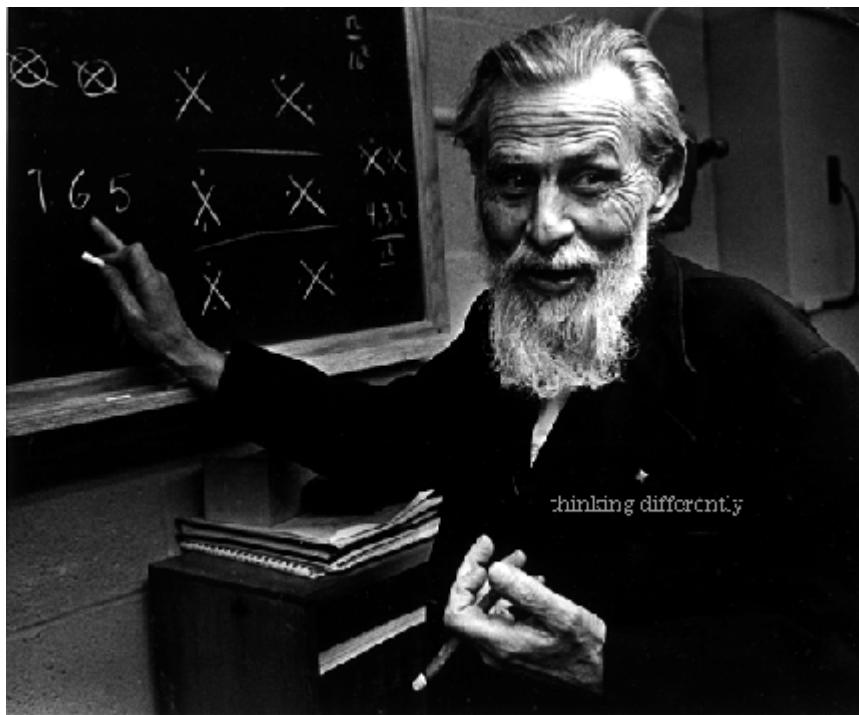
shuffle VON FOERSTER AND CYBERNETICS			
152. Von Foerster, H., A. Inzelberg & P. Westin: "Memory and Inductive Inference" in <i>Bionics Symposium 1966: Cybernetic Problems in Bionics</i> , H. Gestreiter & D. Moore (eds.), Gordon and Breach Science Publishers: New York, 31-68 (1968).	215. Peterson, L. and H. Von Foerster: "Cybernetics of Taxation: The Optimization of Economic Participation", <i>Journal of Cybernetics</i> , 1, (2), 5-22 (1971).	223. Von Foerster, H.: "Responsibilities of Competence", <i>Journal of Cybernetics</i> , 2 (2) 1-6 (1972).	241. Von Foerster, H.: <i>Giving with a Purpose: The Cybernetics of Philanthropy</i> , Occasional Paper No. 5, Center for a Voluntary Society, Washington, D.C., 19 pp. (1974).
Von Foerster - 53/191	Von Foerster - 53/191	Von Foerster - 53/191	Von Foerster - 53/191

- Eigen functions
- Computing a stable state



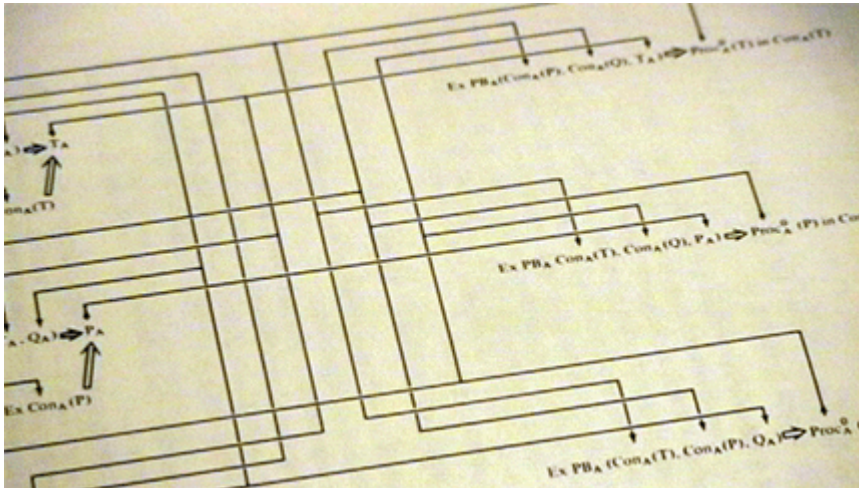
- Calculations of a physicist
- Looping physiology

- Warren McCulloch

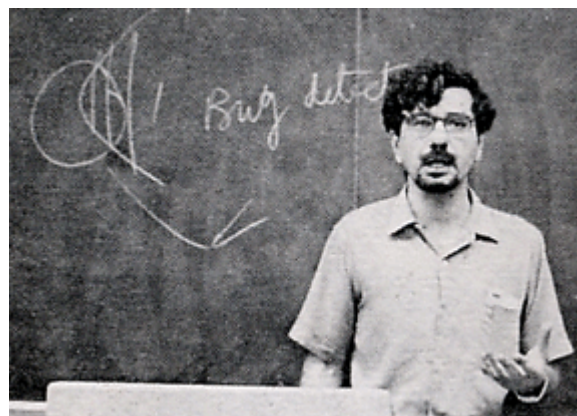


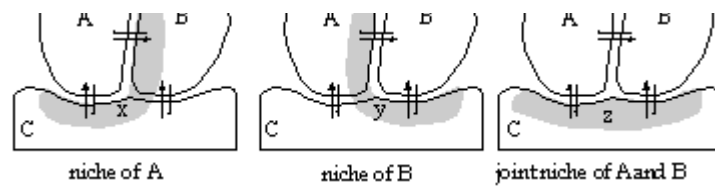
- Stability
- Concept repertoires
- Gordon Pask



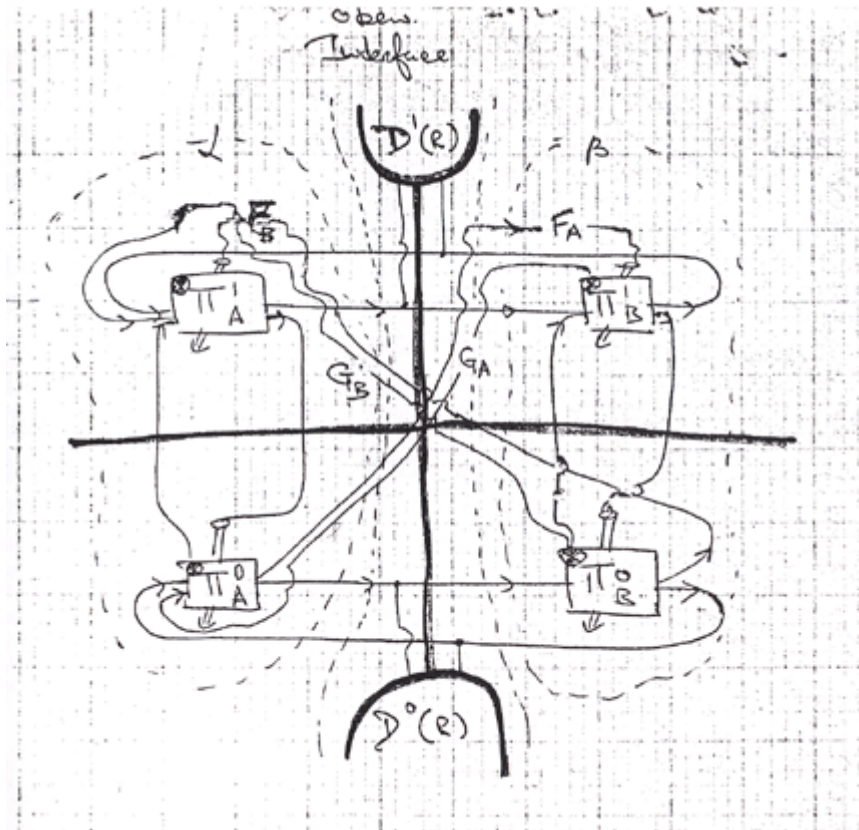


- Coherences
- Structural coupling
- Humberto Maturana

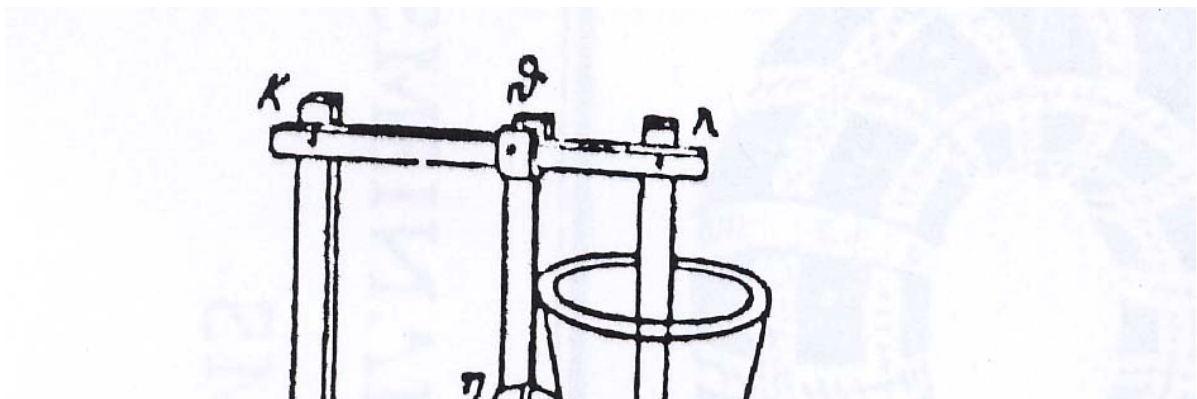


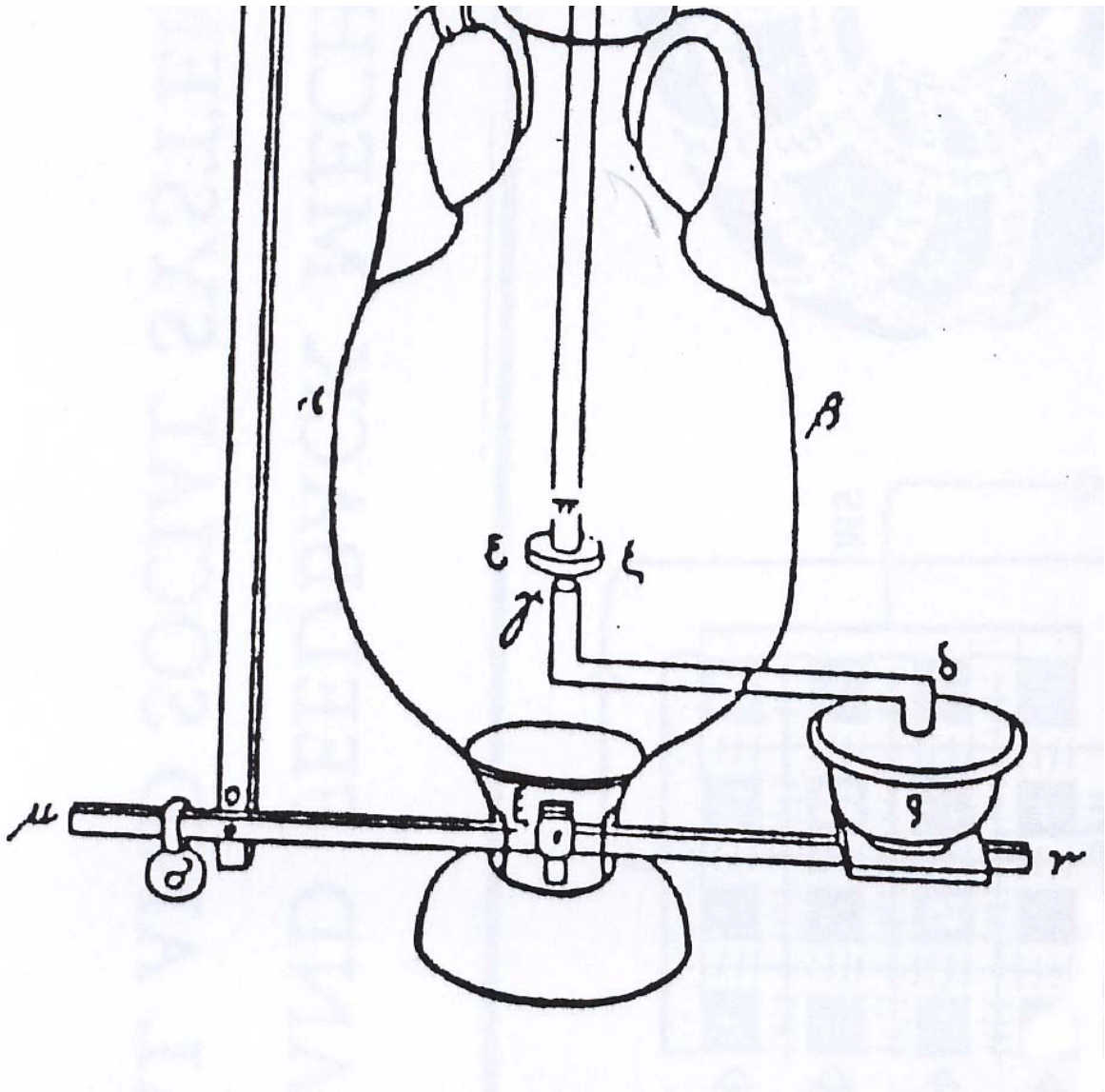


- Interaction
- Seeing ourselves through the eyes of the other

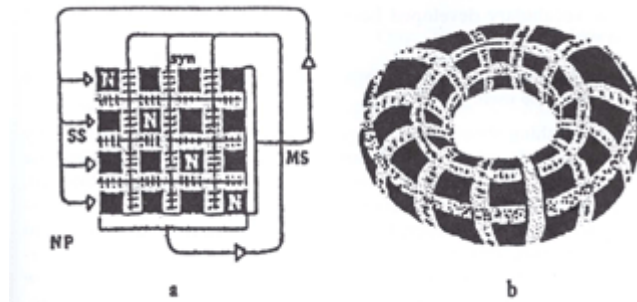


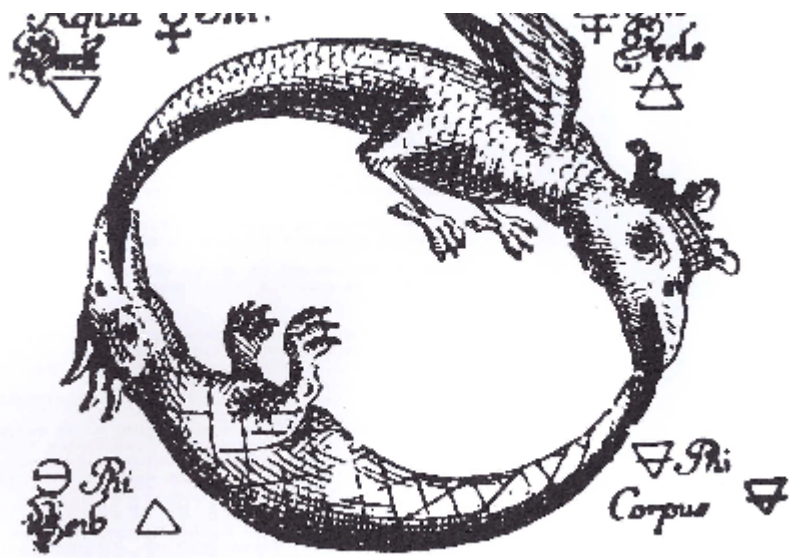
- *Question 1.* What may cybernetics offer in calculating systemic tradeoffs regarding the environment and our well-being?





- *Question 2.* How may we interpret computational engines as substrate for interacting with our selves and other humans such that we are not reduced to trivial machines?





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