

# Invitation to Recursioning: Heinz von Foerster and Cybernetic Praxis

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This short dedication to Heinz emphasizes the notions of recursion and learning, second-order cybernetics and ethics as expressed and embodied by von Foerster. These notions act as constant clarifiers in the daily efforts of the author to design software applications or to support others as they steer their own design processes.

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To *operate with* (or *in*, or *from*) the discipline of cybernetics is to engage with the concepts and guides-to-action elucidated by Heinz von Foerster. It is impossible for us to do otherwise, because his work “stands under” the praxis of circular-causal reasoning, second-order thinking-acting, and ethical viewpoints.

*Elucidate* is a fitting word because it comes from a root meaning to shine a light, and this is what von Foerster consistently did—in his writing, his teaching and his conversations, whether in conference halls or at dining-room tables. As his spouse, Mai von Foerster, once said during dinner, “Heinz has a mind like a crystal.”

To shine a light on oneself while focusing one’s own awareness is to embody his deepest gift, his reminder to observe our observing—that is, to recursively learn. *Cybernetics of cybernetics*, after all, was his coinage (von Foerster, 1979).

As expressed and embodied by von Foerster, recursion and learning, second-order cybernetics and ethics are constant clarifiers in my daily efforts to design software applications or to support others as they steer their own design processes. Let us call this “design of design,” another apt coinage in the context of Heinz.

Surely we are all better off when his insights are more widely recognized and applied, for they are too valuable not to be everywhere. Here I offer to bring his catalytic guides to light and to pay them, and him, homage, with and through further recursions.

## **Concrete**

Herbert Brün said about the great George Gershwin that there is no reason to improvise his music, because the notes that Gershwin wrote are enough (Brün, 1982). So it is with von Foerster’s ideas, there is no need to rephrase them. So let his words speak for themselves, even as I ask your indulgence to speak of their role in my own efforts, here in the realm of recursion, not repetition.

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Heinz himself would be frustrated at our losing the difference between repetition and recursion. In sum, the latter takes us somewhere, while the former does not. Loss of critical differences like this one bothered him because rigor is lost, and rigor equips us to communicate more clearly and deeply. (I think he kept a special ire for a “systems program” that failed to teach the scientific meaning of *bit of information* [von Foerster, 1998, personal communication].) Heinz understood how the concrete is our foundation, but (constructivist exponent that he was) of course he never meant the “real” or the “objectified.” He meant the stable, the reliable—as, where memory is operating, the persistent. He had the definitive insight that memory could be modeled as an eigenbehavior, a recursion-over-experience (von Foerster, 1976).

Trained as a physicist, he embodied the power of being rigorous. For example, he disliked the inescapable aphorism, “The whole is greater than the sum of the parts.” Widely claimed as a good thing about complex systems, this statement was dismissed by Heinz as meaningless. His revision—I can’t recall an instance when one of his dislikes was not followed by an alternative offering of originality and value—was to say: “The measure of the whole is greater than the sum of the measures of its parts” (von Foerster, 1998, personal communication). And there we have a microcosm of Heinz’s crystalline mind, comprising clarity, specificity, and even responsibility. For our responsibility lies in the measures we choose, by which our evaluation is made. We may choose measures that appear to make us “apart from the universe,” which brings the temptation of imposing our will upon it. Or, we may choose measures that acknowledge we are “a part of the universe” and admit, when we change ourselves, we change the universe as well (von Foerster, 1990). Through his word construction we become aware of the difference between morality and ethics: the moral stance of “Thou shalt... and thou shalt not...” is starkly different from the ethical “I shall... I shall not.” The difference lies in being responsible for our actions and being aware of that responsibility. From such awareness we may strive, at least, to reach a future we desire. Now we become responsible for consciously designing our design.

## **Design of our Design**

Showing design students how to model a product or service in terms of interactions and goals, information and conversation, helps them understand their designs as well as their designing (that is, the process they use to design). Formal models of nested feedback systems fit well (Dubberly & Pangaro, 2007, 2009a, 2009b).

To help students to uncloak the limits of their designs, Ashby’s concept of requisite variety is key (Ashby, 1964).

To show how a person learns and invents through conversation, and that software interfaces can either inhibit or propel it, Pask is unsurpassed (Pask, 1980).

And, to incorporate our responsibility in the future we wish to design, Maturana’s *metadesign* is always the reference (Maturana, 1997).

Each of these practitioners and each of these concepts connect to von Foerster through his published work or his in-life influence, blending Ashby, Pask, Maturana and so many others in a matrix of conversations, in part by his design.

But to reveal the constructivist soul of design, the functioning of the recursions we call *experience*, and the ethics of choice, only von Foerster will do.

His words pay off, every time. In student evaluations of graduate courses that use cybernetic models for understanding design, year-after-year it is von Foerster's "Ethics and Second-Order Cybernetics" (von Foerster, 1973) that is their favorite paper of all.

I feel this is because it is intellectually honest, without pretension, and because we sense it can give guidance to our methodology as designers. Consider the keystone concept of this most-favored paper, his Ethical Imperative:

Act always so as to increase the number of choices.

I've often seen this mis-quoted, as in "Act always to increase choice" or "... to increase the number of options." What does *increase choice* mean? It suffers the same vagueness as "The whole is greater than..." And Heinz specifically did not like the word *options* because it conjures a vision of a large number of arbitrary variations. What is desired is a thoughtful set of viable alternatives, each one a path to effective action in the context of our goals (von Foerster, 1998, personal communication).

So, can our design processes evolve to bear us products and services that offer more choices?

More so, can our designs enable individuals to design more of their own choices? This last question embraces another of Heinz's dictums:

A is better off when B is better off (von Foerster, 1972).

For designers, there is no greater call-to-action than this. Indeed, for any of us, everywhere. This is the ultimate catalyst from Heinz von Foerster, an incitement to recursion in the praxis of our daily living, from the father of second-order cybernetics.

## Acknowledgement

My perpetual gratitude to Mai von Foerster, who made our dinner-times always nourishing and elegant and who sometimes, after patiently listening to all involved, including Heinz, spoke a few short sentences, informed and perfectly pronounced, more clear and crisp in spirit than anything heard in the house since she had last spoken.

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