Heinz von Foerster †

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Heinz von Foerster's outstanding contribution to cybernetics was to consider the subject in its own terms, ie as a cybernetic system itself, subject to the insights, analyses and critiques that cybernetics had already discovered. In so doing he took the discoveries of cybernetics seriously and to an extreme in a manner than no one else had done previously. He also provided a model for the investigation of all systems in which the examiner (the observer) and the examination are part of that system, such a social systems and design.[1] He referred to this cybernetics as the »cybernetics of cybernetics,« or »second-order cybernetics.«

Heinz von Foerster's examination of cybernetics in cybernetic terms can be dated, officially, to this description, published in the mid 1970s: »first-order cybernetics is the cybernetics of observed systems, second-order cybernetics is the cybernetics of observing systems.« But long before this he had investigated related notions, particularly self-organisation. And before that, even, as editor of the proceedings of the Macy Conferences, he made sure that cybernetics (which he identified as the subject of the conferences) was intimately allied with the notion of circular causality that was in the title of all the conferences.[2] He also gave the title and theme to Margaret Mead's paper »The Cybernetics of Cybernetics.« in which she argued that cybernetics (in the form of the fledgling American Society for Cybernetics) ought to manage itself according to cybernetic principles.

Indeed, it is this notion of circular causality, and the formal circularity that it presumes, which is at the heart of cybernetics (as von Foerster's friend Gordon Pask showed in his early cybernetic self-adaptive machines). To recognise this is just another route by which to move towards von Foerster's achievement. In terms of cybernetics itself, the precedence of the (organisationally) circular unifies a plethora of new formulations of which perhaps the most famous are Maturana, Varela and Uribe's notion of »Autopoiesis,« since extended by these authors into the more general concept of »organisational closure« and much borrowed and generalised in its application by others; and Pask's »Conversation Theory,« the model of active and creative dialogical systems.

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1   Many would argue that this insight applies to all systems, regardless of their areas of application.
2   The original title of the conferences was: »Circular Causal and Feedback Mechanisms in Biological and Social Systems.«

Heinz von Foerster's own pursuit of the understanding of what happens when you consider a world of circularity led him to two major developments. Firstly, he examined recursion (implicit in the cybernetics of cybernetics), and found a formulation for an example of recursion that tended to stabilise at one value (an eigen-function generating an eigen-value, which he thought of as an object), thus providing a model for the appearance of stability. Secondly, he understood that, since each of us is our own observer, what we understand is unique to us. My understanding is my understanding, and not yours. This accords with Pask, whose Conversation Theory gives us the means of communicating when our understandings are different, which allows von Foerster's understanding of understanding to stand in the world in accord with our experience.

But von Foerster's interests were hardly limited to the mathematical niceties of technical understandings and formal systems. As he grew older, he became more interested in the philosophical consequences of his developments. He turned his intelligence towards arguments that he found more and more pointless or corrupt, and his clear thinking debunked many commonly held but rarely investigated notions. These included

the notion that science tells us the truth (it is a beautiful structure made by us to explain our observations). Attached to this is

the notion of information (meanings belong to each of us individually. Therefore, I cannot give you information). In parallel

the notion of the objective (and absent) observer, and hence, of objectivity; there is no observation without an observer (in the aphoristic words of his friend Humberto Maturana, co-inventor of Autopoiesis, »Everything said is said by an observer.« To which von Foerster wittily added his own aphorism »Everything said is said to an observer.«).

The interest in such debunkables was not new, but the fervour with which it was developed and stated was. He argued that, if we each see the world differently, then we are responsible for our views (and all our actions). Responsibility became his clarion call. At the same time, he came to detest labelling, for it petrifies understandings, trapping us. He developed two imperatives, an aesthetic and an ethical, first stated in 1973 in the seminal paper »On Constructing a Reality«:

aesthetic   *if you desire to see, learn how to act.*
ethical   *act always so as to increase the number of choices.*

These imperatives support us in the making of our own understandings, and in all the consequences that derive from making them.

These points are most distinctly made in a number of books developed from interviews between him and various young admirers, books that are both elegant and generous in the way they support these admirers who were his co-authors. But this way of working in support of others was nothing new. Throughout his working life von Foerster had found funding for others and had worked collaboratively with them. The most noteable mechanism for such support was his Biological Computer Laboratory at the University of Illinois, where he hosted Ashby, Beer, Pask, Maturana, Günther and Loefgren, amongst others. He also hosted many students who have gone on to current distinction. In this way, he was an impresario. Talking with him, it often felt as though the impresario role was the more important one to him, and he would often hide his own achievement behind the work of others who he had promoted.

Thus, he lived generously – a quality basic in second-order cybernetic systems – demonstrating in action what he preached, and thus entering further recursions.

Heinz von Foerster's influence was felt far afield, although this is often not well recognised. In the area of studies of society and sociology, the late Niklas Luhmann was deeply influenced, as was his circle of students and colleagues. However, there were disagreements, too. Von Foerster felt Luhmann was not stringent enough in how he applied his thinking (a comment others have also made about Luhmann's involvement with second-order cybernetics, where he seemed to want a compromise, a halfway house that would sustain older understandings by modifying them to seem to be nearer the new, yet radically different understandings). There is a constant battle between keeping the old (which some refer to as showing respect) and going with the new. Thus, where von Foerster said »We cannot see, that we cannot see«, Luhmann changed this – and in von Foerster's eyes weakened it – to read »We cannot see that we cannot see what we cannot see.«[3] Indeed, von Foerster questioned Luhmann's consideration of, for instance, recursivity, feeling that a sociologist (especially one interested in recursivity) might take the concept seriously anough to apply it to pressing problems of communication such as seem happen with the tribes of the former Yugoslavia. There was often something von Foerster disliked in Luhmann's work about trying to find the »other;« as separate, and almost objectively. Perhaps it's hard to theorise about society without doing this.

But Luhmann is not the only example. It seems that von Foerster was, in the end, too radical, too way out, for many of those who were impressed by him. The result was often compromise (on their part) and disappointment (on his).

3 See a comment on this issue in Dirk Baecker, Der Beobachter und die Soziologie. In: Sociologia Internationalis (forthcoming).

What he saw as subtleties and freedoms were lost to the habit of convention and the acceptance of consensus and the status quo.

Nevertheless, von Foerster often supported Luhmann (and wrote for his memorial volume »Gibt es eigentlich den Berliner Zoo noch?«). He was, too, a long term supporter of Maturana and Varela, whose world-wide audiences were introduced to von Foerster's thinking. Pask referred to von Foerster as his mentor, and there cannot be one of Pask's students who was not deeply impressed. The American Society for Cybernetics not only owed its existence to Heinz von Foerster, but its members are all indebted through his constant and caring involvement. So too are so many others who cannot be mentioned here.

When a youngster, von Foerster grew up in the culturally exhilarating conditions of early 20th century Vienna. His well connected family brought him into contact, as a child, with that remarkable collection of intellectuals and artists. He was a wonderfully cultured man. But as a youngster he was also easily bored. To cure his boredom he took up magic, with his cousin, gaining admittance to the Magic Circle. Many have remarked on what a magician Heinz von Foerster was. Fewer have noticed that what lies behind magic is the experience of wonder. For Heinz von Foerster, the greatest thing he had to offer was a sense of wonder. When some accused him of destroying certainty, he reposted that he was giving us back, instead, our sense of wonder. When I met him for the last time, a few days before his death, this is what we talked of. Wonder.

An example? We only have the freedom to decide for ourselves when matters are undecideable. Then we can fearlessly exercise our free choice.

That's wonderful, isn't it?

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