This took place in the 1940s and the 1950s, mainly carried out by Norbert Wiener, Warren S. McCulloch and the Macy Group, and the British cyberneticians, including Ross Ashby. Since Stanislavski's major works were published in the 1930s, we need to wonder what kind of relationship Scholte tries to establish, for it cannot be a relationship of influence or mutual influence. Even though I am aware of the fact that Heinz von Foerster, Ernst von Glasersfeld and Gordon Pask as well (and probably others) read some of Stanislavski's books, I cannot assume that he had any influence on the development of early cybernetics for, as far as I know, there is no literature in early cybernetics making any reference to Stanislavski.

« 4 » Besides this (for a historian) obvious criticism, there are other issues one needs to look into. One of them is the question of intellectual economy (or, if you will, Occam's razor *sensu* Hahn 1980): Of course, there are obvious parallels between Stanislavski and cybernetics – and Scholte tells us very interesting details about that – but is it actually necessary to adopt (second-order) cybernetics in order to understand, to explain, let alone to develop his conception of theatre, i.e., Stanislavski's system?

« 5 » Another example in Scholte's article, depicted in Figure 6, is the reformulation of a quite conventional theatre situation (with "characters in play," "audience member" and "researcher") as nested black boxes in the sense of Glanville (2012: 447) but with an additional time variable. There is no doubt that the concept of the black box is a fundamental theoretical instrument in the history of cybernetics. While it would be possible to demonstrate that there were predecessors, it is clear that the first full description and discussion of this concept goes back to chapter 6 of Ashby's *An Introduction to Cybernetics* (Ashby 1956). In Ashby's handwritten *Journal*, http://www.rossashby.info, we find a first entry concerning this concept in the year 1951. Glanville (2012: 42) suggested it was possible to trace the general idea of the black box back to James Clerk Maxwell. A similar suggestion was made by Heinz von Foerster when he used Maxwell's demon in his thought experiments related to his work on "self-organizing systems and their environments" (Foerster 2003b). In any case, the black box

has been one of the traditional concepts of (first-order) cybernetics that has often been used innovatively in new contexts, Scholte's article being one of them.

« 6 » Glanville (2009c, 2012), in some ways, broke with the traditions of cyberneticians' black box thinking and went considerably beyond it. One of his central innovative ideas was to ascribe to the black box the quality of being "whitened." By being "whitened," the black box becomes a white box. This clearly transcended Ashby's conception of a black box, which would always remain a black box, never to be opened and only to be hypothetically ascribed a specific function by an observer (or the experimenter coupling himself to the box, in Ashby's 1956: 87 terminology). In Glanville's terms, "whitening" the black box refers to the building of a circular system as a new whole that includes the black box and the observer, who provides a functional description of the black box. Glanville's approach takes into account that different observers may come up with different functional descriptions. The whitening of the black box also whitens the observer but the circular system they are forming appears again as a black box for a second observer. With this reformulation of Ashby's "Problem of the Black Box" (Ashby 1956: 86), Glanville turned the originally first-order cybernetics concept of the black box into a second-order cybernetics concept and made it a universal *epistemological* tool. But was it meant to be applied beyond epistemological questions, questions of what we can or cannot know, questions that were also formulated in von Glasersfeld's radical constructivism (Glasersfeld 2007)? I do not think so. Was it meant to be used for applied research, including social and psychological, and for problems emerging and being studied in theatre studies of the type Tom Scholte is doing? I have my doubts. The view that a concept, a theory is beautiful does not necessarily mean that it matches certain problems better than other or older concepts and theories. However, this does not mean that concepts and theories from second-order cybernetics cannot be successfully used – it must be carefully decided in which context they can be applied.

« 7 » With his target article, Scholte announces a research program accompanying his theatre work that could last for years. In

particular, this ongoing work could influence both theatre and research and might very well lead to lasting changes in concepts and theories as well. We shall remain curious.

Albert Müller is historian and works at the Department of Contemporary History, University of Vienna. Among other things, he is responsible for archival collections concerning Warren M. Brodey, Heinz von Foerster, Ranulph Glanville, Richard Jung, Gordon Pask and Stuart Umpleby.

● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

A Theatre for Exploring the Cybernetic

Ben Sweeting
University of Brighton, UK
r.b.sweeting/at/brighton.ac.uk

> **Upshot** · The parallels that Scholte has drawn between cybernetics and theatre open up a new avenue for exploring cybernetic ideas. This complements the way that cybernetics has invoked design as a way of questioning the relationship between cybernetics and action.

« 1 » While Tom Scholte has concentrated on ways in which cybernetics can inform theatre, the connections that he has developed between the two fields are significant for being not ones of application but, rather, overlap, where cybernetic processes are seen to be being enacted within an already established set of practices. Scholte's bridge building is, therefore, suggestive of further possibilities, opening up a new avenue for exploring how cybernetics may be understood in terms of action rather than theory, and so as an active research tradition rather than one form of worldview amongst others. This is highly relevant to the context of this special issue and previous concerns in this journal with second-order science (Riegler & Müller 2014).

« 2 » One point of comparison for Scholte's target article is with the development of similar connections between cy-

619

bernetics and design, such as in the work of Ranulph Glanville (e.g., 2007). This commentary is not the place to work through the various connections that can be made between design and theatre via cybernetics (a study that would be in the spirit of cybernetics' original trans-disciplinary agenda). However, reflecting on the parallels between Scholte's account and the invocation of design in cybernetic literature suggests ways in which the connections that Scholte has explored may be further developed.

« 3 » Scholte concentrates on the underpinning that cybernetics can offer to processes in theatre, for instance in moving beyond the theoretical impasse that he describes (§§5ff), and ways in which the use of ideas from cybernetics such as entailment meshes may enrich those processes (§§40f). There are several areas of design where, similarly, cybernetics can provide theoretical support, particularly as regards interactive technology (e.g., Spiller 2002) or the relation between design and research (e.g., Glanville 2015; Jonas 2007, 2015). Glanville's analogy between cybernetics and design is, however, notably two-way: "cybernetics is the theory of design and design is the action of cybernetics" (Glanville 2007: 1178). That is, design contributes back to cybernetics, such as where second-order cybernetics is understood in terms of the cybernetic practice of cybernetic ideas (Sweeting 2015), and where the overlaps between cybernetics and core aspects of design practice have allowed designers to contribute to cybernetics through their tacit understanding of such processes, rather than via theory (on this see also my contribution elsewhere in this issue; Sweeting 2016).

« 4 » Similarly, given the parallels that Scholte has suggested, and his quotation from Ashby (§4), we might expect ideas from theatre to inform or challenge ideas in cybernetics as much as vice versa – to provide a theatre, as it were, in which to explore the cybernetic. If the relations between cybernetics and theatre have not yet been explored in as much depth as those between cybernetics and design, there are, as with design, a number of clear parallels in existing work that can be drawn on. These include Heinz von Foerster's (2003c: 325ff) concerns with magic; the performance events that have long been part of the conferences of the American Society for Cybernetics (Richards 2015); and Andrew Pickering's (2010) interpretation of British cybernetics as what he refers to as "ontological theatre," where ideas are explored through their staging in experimental devices or other forms of practice. Central in Pickering's account is the work of Gordon Pask, who is also a key reference for Scholte. Scholte's concern with Pask stays close to the formal aspects of conversation theory, which he uses to make connections with the Stanislavski method (§§23ff). This is similar to the way that Glanville draws on Pask in building bridges between cybernetics and design (Glanville 2007, 2009b). Pask's oeuvre, however, suggests further possibilities for building the relationship between cybernetics and theatre. Pickering (2010) emphasizes the performative qualities of Pask's devices, through which he embodied his ideas in order to explore them in a way not unlike Scholte's (§§42ff) account of the stage as a modeling facility. Most explicitly, Pask was directly engaged in the theatrical, most notably with the development of the Musicolour device with Robin McKinnon-Wood (Pask 1971) and his substantial collaboration with avant-garde theatre director Joan Littlewood and architect Cedric Price on the Fun Palace project during the 1960s (Mathews 2007). By building on these connections, together with the analogies that Scholte has developed, theatre and cybernetics can offer each other mutual support in much the same way as cybernetics and design.

« 5 » Theatre provides a rich territory in which to explore epistemological and cybernetic ideas, and the laboratory that Scholte (§52) proposes is one such exploration. The varied ways of configuring the relationship between performers and those they perform to, and the possibility of interactive or self-reflexive arrangements, also offer a number of other possibilities. Even in conventional formats, theatre is a significantly interactive medium, compared to, say, film, because of the way that actors respond to the way that the audience responds to them (this is Pask's starting point in his collaboration with Littlewood[1]). Theatre therefore offers the potential for staging different epistemological relations that can be explored by participating in them from different observer positions: for instance, whereas Figure 6 shows a straightforward hierarchy, the audience or researchers may also find themselves within a play being observed by the characters, and so on.

« 6 » In this light, it is interesting that it is not clear where second-order cybernetics, with its concern with observer inclusion, would sit vis-à-vis the debate between naturalistic and anti-naturalistic approaches to the theatre that Scholte briefly mentions (§59). Both approaches are concerned with observer inclusion: on the one hand, an anti-naturalistic approach explicitly articulates our presence as observers and agents in the social setting of the theatre; on the other, it is in the naturalistic approach where we are caught up within the flow of the constructed world of the performance, identifying with characters and their situations. Whereas second-order cybernetics is often presented in simple opposition to first-order cybernetics, theatre's modeling of observer relations offers possibilities for exploring nuances of how our presence in our observing is configured.

Ben Sweeting is a senior lecturer at the University of Brighton. He studied architecture at the University of Cambridge and then at the Bartlett, UCL, where his PhD was supervised by Neil Spiller and Ranulph Glanville. In his research Ben explores epistemological and ethical questions in architecture, design and cybernetics.

---

1 | See Pask's unpublished report "Proposals for a Cybernetic Theatre" produced on behalf of Littlewood's Theatre Workshop & Pask's own System Research as part of the Fun Palace project. A copy of the document is archived in the Cedric Price Archive at the Canadian Centre for Architecture, Montreal, reference: DR1995:0188:525:001:009.