Cybernetics and Spatial Experience

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One of the ways in which cybernetics can contribute to design is in how we understand spatial experience. This is especially relevant to architecture and urbanism but also to other design fields, given that spatial questions intersect with many of the systemic crises we face (Ruttonsha, 2018; Sweeting, 2018). Incorporating spatial considerations can complement the recent work on design within cybernetics and systems thinking, which has primarily focused on epistemological, methodological and technological concerns (Fischer & Herr, 2019; Herr & Fischer, 2019; Jones & Kijima, 2018; Werner, 2017).

Within architectural discourse, cybernetics is closely associated with interactive and digital technologies (Spiller, 2006, 2002; Steenson, 2017). Notable examples include Gordon Pask's collaboration with architect Cedric Price and theatre director Joan Littlewood on the influential Fun Palace project during the 1960s, which can be understood as the embedding of design processes into the life and organisation of a building (Hardingham, 2016; Sweeting, 2016). It is important, however, not to conflate cybernetics with technology. In Pask's most prominent text on architecture, it is Gaudi's Parc Guell that is picked out as "one of the most cybernetic structures in existence" (Pask, 1969, p. 495). Here the cybernetic quality is within the dynamism of spatial experience, while the architecture itself remains passive. Similarly, in introducing his projects for technologically enhanced artworks and theatre performances, Pask begins by describing the interactivity of artwork and theatre in general (Pask, 1971, n.d.). Thus, while Pask's contribution to architecture largely concerns the spatial possibilities of technology, his framework is more widely applicable.

As well as Pask's work, there are a number of other ways in which spatial experience can be understood in cybernetic terms. One is through cognitive science, where the enactive approach is connected to both cybernetics and to phenomenology, the latter being a common point of reference for spatial and material experience within architectural theory. This connection is explored in the work of Andrea Jelić (Jelić, 2015, 2016; Jelić, Tieri, De Matteis, Babiloni, & Vecchiato, 2016). Another is the performative and material qualities of cybernetics that have been emphasized by Andrew Pickering (2010). While these are most present where cybernetic processes are embodied through interactive technology (such as in the work of Pask), Pickering's related idea of the "mangle" has also been applied in more general situations (e.g. Coppin, 2008; Guzik, 2008).

In this paper I develop one further point of connection via Ranulph Glanville's understanding of design as a foundational human activity, which I interpret in spatial terms. One of the most important contributions that cybernetics has made to design is Glanville's (1999, 2014b) account of scientific research as a form of design activity. He later generalised this argument, drawing on Jean Piaget's notion of equilibration to understand design as an essential part of thinking (Glanville, 2014a). Glanville's principle intention is to articulate what is so special about design activity, and, in so doing, to support its disciplinary status and ability to inform other fields. It is possible to develop his argument in spatial terms, through his references to Piaget: the process of equilibration is applicable to spatial experience (Piaget & Inhelder, 1956) and has had some influence in architectural theory (Norberg-Schulz, 1971). A consequence of Glanville's argument is, therefore, that spatial experience can be understood as a design activity *on behalf of the experiencer*, as well as something with which professional designers are concerned. When architects design spaces, they can thus be understood as designing frameworks for others to design with, with projects such as the Fun Palace being particularly radical versions of this.

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