

Abstract:

AUTOPOIESIS IN ARCHITECTURE AND URBANISM: A DISCOURSE ANALYSIS

Language use in architectural discourse extends along a gradient from the vague and ambiguous (designedly informal) to the precise and formally clear (scientifically formal). For different purposes, architectural designers and researchers find value anywhere on this gradient. Discourses within natural sciences, however, use language as “merely an instrument, which it chooses to make [discourses] as transparent, as neutral as possible” (Barthes, 1989, p. 4) – avoiding vagueness and ambiguity seeking for clarity and accuracy (Schur, 1998). This project examines the adoptions of natural-scientific terminologies in (digital) architectural theories. Relevant examples of such adoptions include: *catalysis* (Oswalt et al., 2013), *growth, development, evolution* (Frazer, 1995), *metabolism* (Kurokawa, 1977; Armstrong, 2016), *homeostasis* (Lee, 2008), *symbiosis* (Aghaei Meibodi and Aghaiemeybodi, 2012), and *autopoiesis* (Schumacher 2011a; 2012). With a focus on the term *autopoiesis*, this study aims to explain different degrees of formality of the described terminology adoptions in order to explain their mode of productiveness in relation to (understanding) the city. To this end, this project is situated in, and illustrated with, contemporary urban Chinese processes.

The concept of autopoiesis was developed by Chilean neuro-biologists Humberto Maturana, Francisco Varela and Ricardo Uribe in the early 1970s to describe the capability of living systems to perform processes of self-reproduction and self-maintenance while their constituent elements are subject to disintegration (Varela, Maturana and Uribe, 1974). Hitherto, this concept has been applied to phenomena not only within, but also beyond the scope of biology, including, recently, (digital) architecture (Schumacher, 2011/12). A chronology of autopoiesis-related discourses shows that not only each interpretation is a re-appropriation of the earlier one, but also the potential that the molecular autopoiesis theory holds to be scalable. Sociologist Niklas Luhmann applied the concept of autopoiesis to social systems, explaining them as self-referential systems of communication (Luhmann, 1990). Architect Patrik Schumacher builds upon Luhmann’s system theory and uses the concept of autopoiesis to describe architecture as a closed self-referential system of communication between society and the environment. Schumacher describes historical transformations of architecture – brought about by changes in architectural style – as autopoietic. In this view, design research programmes may initiate new styles, or formalise already emerging ones (such as Schumacher’s proposed *Parametricism*) as a way of propagating design and architecture autopoietically (Schumacher, 2011, 2012).

The theory of autopoiesis has been applied in a broad range of fields since its initial formulation, with disagreement from some of its originators about later interpretations of the theory. Furthermore, autopoiesis is but one of several natural-scientific theories that have been adopted in architectural discourse. With natural-scientific discourse unfolding within a relatively narrow band of precise and formally clear language and architectural discourse unfolding within a relatively broad band of language that extends from the precise

and formally clear to the vague and ambiguous, two questions arise; How is autopoiesis relevant and productive in describing/understanding the city? How shall architectural/design researchers – especially those who are aiming for clarity and precision – discern between adoptions of natural-scientific terminology that are rigorous, those that are informal? (See Figure 1).

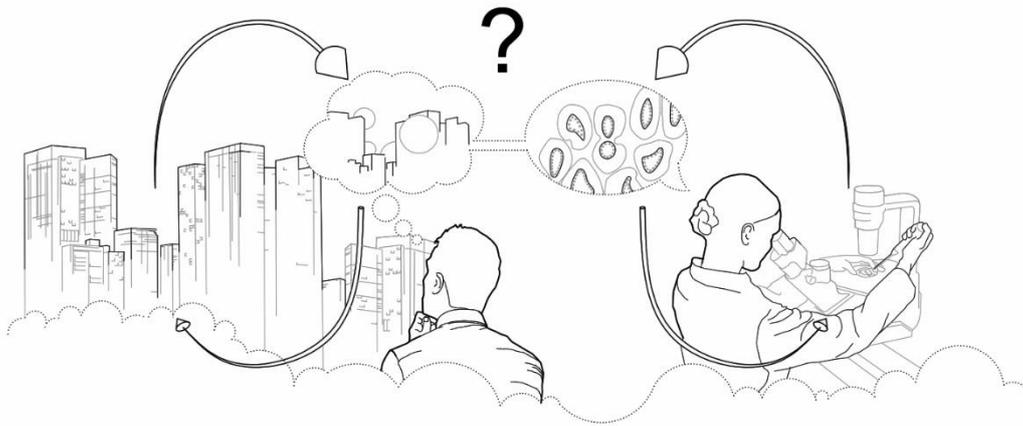


Figure 1. Relation between the city, our understanding of the city and the objective science (drawings by the author).

This research shed light on different modes in which adoptions of natural-scientific theory in general, and autopoiesis in particular, may inform our understanding of urbanism and architecture. To this end, I employ *discourse analysis* as a primary method to analyse Patrick Schumacher’s discourse as it is the most well-known and wide-spread work pertaining to autopoiesis in the design and the CAAD arena. Discourse analysts consider language, not as a mere description of the world, but instead, a social activity in and of itself, that constructs and constitutes “our social and mental realities” (Karlberg, 2012, p.1). Within this methodological approach, the research builds upon *inference to the best explanation* model to critically tests the use of the term autopoiesis against several “rhetoric devices” (metaphor, metonymy, synecdoche, simile and analogy) by which concepts can be adopted, re-applied and used as explanatory bridges. This research provides design researchers ground for a renewed adoption of the terminology that reflects upon Maturana, Varela and Uribe’s efforts to define the autonomy of living systems.

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