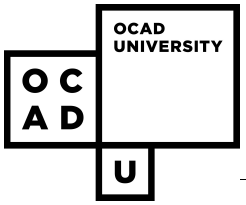

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What is systemic design? Practices beyond analyses and modelling

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What is Systemic Design? Practices Beyond Analyses and Modelling

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This working paper intends to set the stage for drawing the landscape of systemic design. This large task can neither be completed in one working paper nor accomplished by one individual. In systemic design, authority is intentionally distributed, and variety and pluralism are central. Therefore, the intention is to seed a discourse to develop a dialogic environment. What follows is the first stumbling attempt at rendering the rich landscape of systemic design. It is a draft of the current landscape, which is (at this stage) coloured by the author's own perspectives and point of departure, but it will hopefully will be expanded and nuanced through dialogue with other individuals during the field-building process.

Let us start by discussing what systemic design is not. Some people who are knowledgeable about systems theories tend to look at systemic design as the application of one or another systems theory or particular methodology to design. However, this is not the case. While systemic design draws from systems theories, our main position is that both domains—design and systems—have something to contribute to each other, and relating the two will (or at least should) result in novel perspectives, processes, ideas and even theories. Systemic design intends to develop multiple new practices based on intersections between multiple perspectives.

Systemic design was defined by its founding members as a pluralistic and open field with a variety of approaches, which is a normative strategic position. Despite this, there are fundamental principles that form the bases of systemic design that should be re-expressed and further crystallised. This is neither being done to navigate towards less pluralism and variety nor to stop dynamic development. However, to avoid bleeding outside the discourse into themes that have been discussed at length and to let its nature develop organically, we need to establish an *a priori* platform from which we can launch a discussion instead of spending energy on repetitions, misconceptions, misunderstandings and straw arguments.

Systemic design is an emergent approach that contributes to something that is, if not entirely new, well described and defined. It is the organic meshing of systems perspectives with design. Organic means that it is not based on theory and reasoning alone; rather, it relies heavily on the development of a variety of practices. Comparing, discussing and competing between those practices comprise the core dynamics that help develop the field. In this endeavour, several points must be considered. We understand systemic design as processes that induce change on four levels: the design (a) of change, (b)

as change, (c) for change and (d) into change[1]. This implies the conception of design as an inherently systemic activity (Nelson & Stolterman, 2012).

This article intends to steer the discourse towards the central issues; it is time to demarcate and clarify the core intention and to step towards and encourage the next developments in the field.
The issues are described below via eight points to address what systemic design is and what it is not, as well as describe its characteristics.

1. Systems thinking is not purely analyses.

The conception of systems approaches as being exclusively analytical is widespread yet a misunderstanding. If we look at modern systems theories, this position was abandoned many years ago. However, systemic analyses have been vital in many areas, such as in the simulation of climate models. With the introduction of big data, the importance of hard systems modelling, such as that of Randers (2012), should increase in the future. Analytical modelling, big data and simulations will increase in importance in the future, and it remains to be seen how these might be seamlessly integrated into systemic design.

2. Modern systems thinking is neither solely based on hard data nor on pure logic.

This is made clear in for example in systems architecting (systems engineering), which has been regarded as a form of art rather than logic project management (Maier & Rechtin, 2000). Meadows (2002) softened the field of systems dynamics by introducing the notion of dancing with systems, which indicates an interactive and generative position to systems. Soft systems methodology is based on understanding systems through action rather than gathering information and drawing conclusions from that information (Burns, 2007; Checkland, 2000b).

3. Systems thinking is not reducible to problem solving.

Many systems theorists have challenged the notion of problem solving. Systems approaches should rather be seen as a critique of the problem-solving paradigm. Rittel (1972) and Rittel and Webber (1973) introduced the notion of wicked problems and the lesser known notion of problematiques. These notions indicate a different conception of what we call problems. They are often illusive and difficult to capture, and their root causes are often hard to grasp and define. Problems appear not in a vacuum but rather in networks of interrelated problems or intertwined systems of systems (Lurås, 2016). Solving one problem will cause others, and many authors talk of situations rather than problems.

The issue of counter-intuitiveness has long been defined in systems dynamics, which renders the problem-solving paradigm obsolete (Forrester, 1971).

[1] This is based on a design for democracy principles by Manzini and Margolin (2017) and Margolin, as cited in CMU (2012).

4. There is extensive systems literature on change and design.

Many authors from the systems field are discussing change processes. It is a misunderstanding that systems theories are solely descriptive. When we start to change systems, we then leave the systems field and enter the realm of design, but the relation is far from a sharp boundary. This is evident in the systems thinking literature on change processes (Beisser, 1970; Chadwik, 1978; Checkland & Poulter, 2006; Liedtka & Ogilvie, 2011; Reigeluth & Garfinkle, 1994), the systems literature directly addressing the issue of design (Ackoff, 1974; Banathy, 1988, 1997; Churchman, 1971), the design literature addressing systems (Alexander, 1964; Nelson & Stolterman, 2012; Rittel & Webber, 1973) and in its crystallisation in the systemic design initiative as one of its core values.

5. Systemic design in general and systems-oriented design (SOD) in particular are inspired by modern conceptions from systems thinking.

The central systems sources for SOD include General Systems Theory (Bertalanffy, 1969; Boulding, 1956), Soft Systems Methodology (Checkland, 2000a), Systems Architecting (Maier & Rechtin, 2000) and Critical Systems Thinking (Flood & Ulrich, 1990; Midgley, 2000). See Figure 1 for more details on this complex system of thoughts. Notably, a similar mapping of the entire field of systemic design is one of the intended outputs from the process, starting with this abstract.

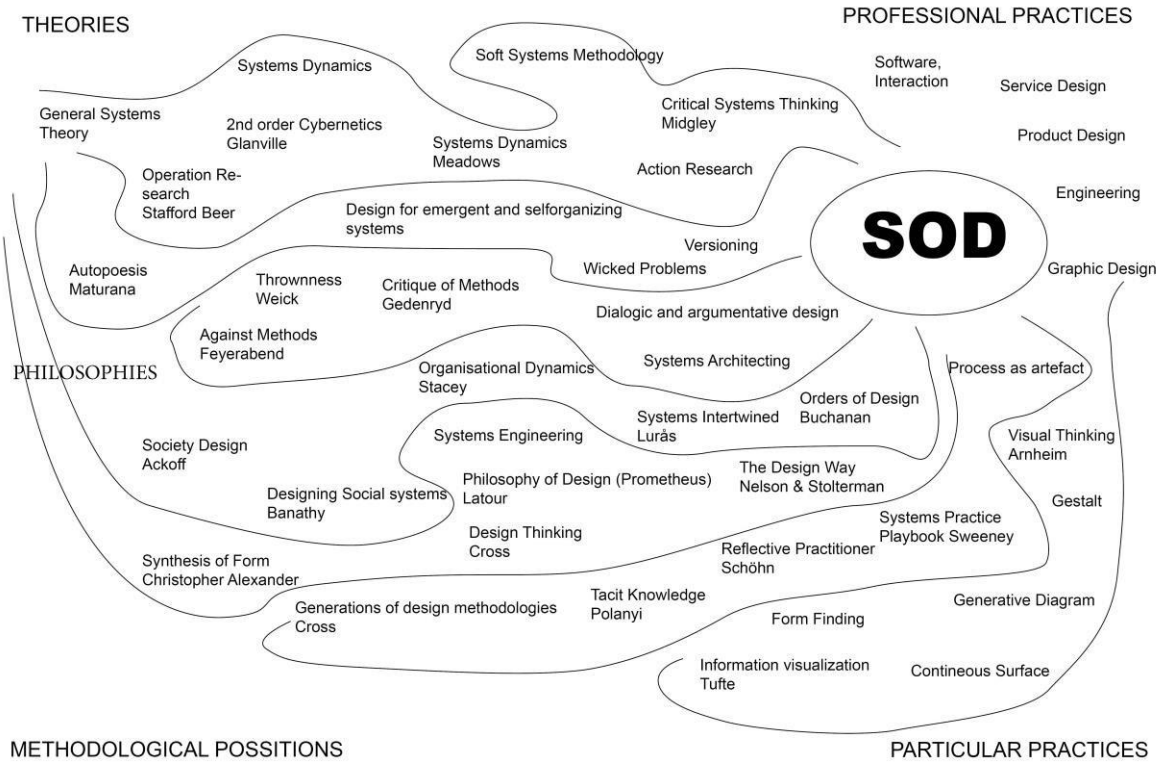

Figure 1. A draft of the theoretical/practical landscape of SOD. This might look different for other 'dialects' within systemic design and for systemic design as a whole (Author, 2018).

6. Systemic design is a practice.

Practice can be reduced to methods, but it is better described as praxeology, which is the systematic and continuous study and analysis and pragmatic development of skills, explicit and tacit knowledge, approaches, libraries of concepts, technical methods, conventions, heuristics and strategies in advanced practices (Cross, 1999, 2007; Dubberly, 2014; W. Gasparski, 1990; W. W. Gasparski, 1979; Sevaldson, 2018) as well as reflection in action (Schön, 1983).

7. Systemic design adds a systemic perspective in its own right.

There is the perspective of design practice and design thinking as an inherently systemic activity to consider. Here, we can mention Nelson and Stolterman (2012), Ryan (2014), Jones (2014) as well as Jones and Bowes (2016), Barbero (2017), Bistagnino and Campagnaro (2014), Sevaldson (2014) and Manzini, Vezzoli, and Clark (2001).

The design approach to systems thinking also includes discussions on visual thinking and visual systemic practice (Arnheim, 1969; Jones & Bowes, 2016; Sevaldson, 2011, 2015).

The same goes for research in the field, where research through design (Zimmerman, Stolterman, & Forlizzi, 2010) and research by design are regarded as systemic activities (Sevaldson, 2010).

The systemic approach to systems is concluded in the realisation that systemic design, with its management of complex data through visualisation, reaches beyond the sharing of data, information and factual knowledge, leading to analyses and modelling. It is about another level of reasoning that reaches into sensemaking and team sensemaking (Kolko, 2010; Weick, 1995) as well as sense sharing (Sevaldson, 2015) to create the basis of co-design (Aguirre-Ulloa & Paulsen, 2017; Bødker, Ehn, Sjögren, & Sundblad, 2000).

8. Systemic design is questioning the divide between planning and execution.

Systemic design is moving towards a state where continuous systems change will be a main strategy; it will be clear that one intervention will not do; and there will be the understanding that interventions should be orchestrated over time in processes in which there is no way to tell when one has finalised a project (Rittel & Webber, 1973). Systems are dynamic and living, and they change while we plan. The continuous systemic design process is a natural conclusion, and it connects to the issues of versioning (Pasquarelli, 2002) and the notion of dancing with systems over time (Meadows, 2002).

To read more about systemic design, go to www.systemic-design.net

To read more about SOD, go to www.systemsorienteddesign.net

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