Co-Designing Social Systems by Designing Technical Artifacts

A Conceptual Approach

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Abstract Technical artifacts are embedded in social systems and, to some extent, even shape them. This chapter inquires, then, whether designing artifacts may be regarded as a contribution to social design. I explicate a concept of general design that conceives design as the type fixation of a complex entity. This allows for an analysis of different contributions to the design of social systems without favoring the intended effects of artifacts on a system over those effects that actually show up. First, the clear-cut case of socio-technical systems is considered. Here, functions of artifacts can be planned fairly precise. In societies, in contrast, the actual functions of an artifact can hardly be predicted, which is due to strong self-organizing processes. Nevertheless artifact design can be shown to contribute to the design of the system also in this case.

1 Introduction

Different bodies attempt to design social systems. Among them are governments, political parties, media, and economic enterprises, and at the level of individuals: politicians, journalists and businessmen, and also proponents and followers of theories of Social Systems Design (SSD). Besides being formed by such intentional influences, society shapes itself to a large extent via non-intended, self-organizing processes. So the design of social systems, as far as it exists, is probably best described as a hybrid, resulting in part from intentional and in part from non-intentional processes. The dichotomy of intentional and non-intentional design is well known from other areas, paradigmatically from the design of technical artifacts on the one hand, and from the design of biological organisms on the other. With respect to technical artifacts, the design process is an intentional one in which goals are followed. In contrast, there is no intentionality involved in the processes that shape the design of organisms: biological evolution is non-intentional. As outcomes of the different kinds of design processes, there are at least two different kinds of design: one of the kinds is intentional design, as the design of an artifact, which may be laid down in a construction plan,

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provided that conventions exist about how to interpret and to realize the plan, which again is an intentional process. Biological or natural design forms a second kind and should clearly not be understood as referring to intentions. According to neo-Darwinian biological theories, the design of an organism is laid down mainly in its DNA.[1] I take it that the term "design" is used correctly in both cases, despite the lack of intentionality on the side of organismic design.[2] This means that the different cases are assumed to have some important commonality. We seem to refer to a core meaning of "design" that is conserved in both uses of the term. To capture this core meaning, I will develop a concept of general design that includes both intentional and natural design. This will be done in the second section of my chapter.

The concept of general design shall be applied to social systems. It seems most workable to start with well-defined systems. In the third section of my chapter, I will therefore take a look at the design of socio-technical systems. These are systems like factories and similar enterprises that clearly have a prominent technological component. The paradigmatic example of such a system is a coalmine, which was investigated by members of the Tavistock Institute when they first introduced the concept of a socio-technical system. Such a system is made up of the machines, the workers, the administration, and their more or less institutionalized interactions (Trist and Bamford, 1951; Emery and Trist, 1960). The machines may serve functions in the system that would hardly be realizable without them; but the functions alone do not make up the system. Though many contemporary sociological approaches neglect the significance of the materiality of a system,[3] functions crucially depend on a bearer. To make my point, I must refer to early functionalists like Malinowski, Merton, and Parsons, who emphasized the role of the material components of social systems: "no organized system of activities is possible without a physical basis and without the equipment of artifacts" (Malinowski, 1941, 68).[4] However, talking about the functions of the components of a system requires an explication of the concept of function. Usually,

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[1] The neo-Darwinian research program relies on genetic determinism. The perspective had to be broadened by reference to epigenetic contributions to inheritance (cf., e.g., Jablonka and Lamb, 2005). In current biological research programs that integrate developmental with evolutionary processes, the focus is shifted from inherited design to developmental processes, which are now conceived as being at the center of the generation of biological form (Müller and Newman, 2003).

[2] Since biological design is to be conceived as non-intentional, the concept of design discussed here has no affinity at all to the notion of "intelligent design", which has been made the topic of many unfortunate political debates.

[3] Functionalist accounts of social systems that follow Luhmann consider systems as being constituted of communicative interactions only, not of material components (Ropohl (1999) develops a formalized version of an act-focused sociological approach). Likewise, Searle, in his intentionalist conception of society, does not count artifacts as components of societies, though speaking about the assignment of functions to them (1995, 13–23). His ontology of social reality embraces only the following three "elements", as he calls it: the assignment of function, of collective intentionality, and of constitutive rules (1995, 13, 29).

[4] The importance of function bearers is reconsidered in some recent approaches. Callon and Latour's Actor-Network-Theory and Pickering have a strong focus on material agency (e.g., Callon, 1986; Latour, 1988; Pickering, 1995), but their frameworks are hardly suitable for looking for similarities between social and other systems.