4 Elements of the Design of a Society

When considering well-defined socio-technical systems, we may be dealing with almost completely designed entities. The matter changes when the scope is widened to encompass larger sociological entities such as whole societies. Again, artifacts are important components of these systems; but we need to determine how far the design of technical artifacts co-designs a society. The concept of general design singles out two ways in which design determines a complex system: type fixation of its components; and determining the construction or assembly of the system. Only the first way of determination by design obviously applies in the considered case: A machine is a type-fixed component of a society in which it fulfills a role since it is (i) type-fixed by the machine design and (ii) conceived as a component of the society according to any approach that allows for the materiality of at least some components of social systems. In this way, the design of technical artifacts could contribute to the design of a society if the latter can be defined at all, something which still has to be determined. However, the second way in which a design specifies a complex entity is related to its assembly and the mutual relationships of its parts. This determination of the assembly usually works well in the case of intentional design, where it is laid down in the construction plan. In societies, in contrast, assembly is governed largely by processes of self-organization. Although this shows that the assembly is not governed by intentional design, it may still be based on non-intentional design.

Therefore we need a criterion for judging whether the assembly process of a system is governed by a design. Such a criterion can be found in the set of the systemic roles that are realized by the components of the system: The assembly can be regarded as the result of design only if the actual roles of the components are derived from a design and therefore may count as functions. In this respect, we can say quite clearly that many technical artifacts assume roles in societies that were never laid down in any design. Let me consider the new Airbus A380 as an example of the influence of artifact design on the design of society. It was designed to transport large numbers of people on a limited number of fixed routes. Availability of airport facilities, airline policies, and the preferences of prospective passengers will or will not result in the realization of this intended function; but in any case, designing the A380 has contributed to the design of societies. It opens not only new possibilities of mass transportation but provides jobs, induces activities in building larger runways, requires intervention into nature in order to build these runways, raises social opposition against these interventions and against taking long term risks with respect to environmental issues and to possible human and technical errors and perhaps against the influences of this kind of mass transportation on everyday life, etc. But the role of the A380 in society as it will be realized after delivery of a number of units is not yet known and cannot be planned completely. Designing such an artifact co-designs society, but does not necessarily end up with the intended result. Not roles of artifacts, but only the material components may be directly designed. The same holds for the design of institutions. Therefore, actual

roles may not be conceived as functions of an artifact, which would require that they are determined by a design. But no instance can be singled out that fixes the roles that actually show up; there are important interactions in societies that are not designed.

Social Systems Design (SSD) nevertheless tries to determine a social system exactly on the level of such interactions and mutual relationships between components, and to institutionalize all acceptable interactions within the system. This seems only to work in small systems of cooperative individuals, e.g., in educational systems in a benevolent environment, where, in addition, the number of involved artifacts is very limited and interactions are almost completely social (e.g., Banathy, 1998). With systems that have a strong material basis it also seems to work in cases where the technical component of an organization can be factored out for other reasons so that the isolated "soft system" can be addressed (e.g., Checkland, 1981); SSD does not seem to work with respect to large systems such as whole societies (Laszlo, 2001). One of the reasons is the unpredictability of material agency. Pickering states that "[n]o one knows in advance the shape of future machines and what they will do" (Pickering, 1995, 15). Pickering's statement must be interpreted in the wide sense, which includes that one even can hardly know what present machines will do in the future. We may say that the less strictly an assembly of a component-wise type-fixed entity is determined by a design, the more incomplete is the design. Social systems, even in cases where their components are type-fixed, are thus less completely designed the more they are shaped by processes of self-organization as long as these processes are not already taken into account in the design.

"Design", in the case of societies, obviously does not refer to a single and coherent plan that rigidly determines the system, but merely to an inhomogeneous set of possibly isolated design elements. There are type-fixed components – among them artifacts, like cars, computers, and buildings. These artifacts assume certain roles in societies. Humans are also components, serving roles as family members, as professionals and as volunteers for different tasks. As in the case of socio-technical systems, we have to take into account many but not all of the places that humans occupy as places for individuals as components of the society. The places themselves are partly fixing the type of their occupants, which here means their profession. This type fixation contributes to the design of a society. Governments and administrations are type-fixed by their constitutions, as is the interaction with and among them using more or less rigid official channels. This list could be expanded almost without limits, but as many components as we might wish to add to this list, we will never end up with an account of a design that determines society to a degree comparable to the determination of a technical artifact or a socio-technical system by its particular design. There are at least four major differences:

1. The design of a society will always be incomplete. Not all components of the social system will be type-fixed and presumably only a small fraction of them is. Humans do not only exert type-fixed positions (instead, they will engage in