3.3 Autonomous Cooperation – A Way to Vitalize Organizations?  

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3.3.1 Complexity and dynamics of social systems – the problem of unlocking

In the age of information technology the rising amount and the permanent alteration of information will cause a rise of complexity and dynamics (Hülsmann and Berry 2004). The fast development and spreading of the internet and new communication services are well known examples of these technological changes, which imply new possibilities of interaction for organizations and customers (Pflüger 2002).

In terms of the complexity of a system, not the quantity of elements is decisive but the existence of multiple interrelations between the elements of the system as well as between the system and its environment (Dörner 2001; Malik 2000). According to Dörner (2001), a complex system can be understood as „the existence of many interdependent characteristics in a section of reality [...]“. When this definition is transferred to an example in the field of information technology, the amount of available information based on the innovations in those technologies represent the rising amount of elements in this section of reality.

The term dynamics describes the accelerated variation of the system’s status over time. Here, the internet can be quoted as a technological example: dynamics mean the permanent alteration of available information on the internet. In this case, the elements (pieces of information) themselves

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change and thus the relations between them and other systems (e.g. companies) alter.

This development in turn leads to a higher complexity of the firm’s environment. As a result, firms have to cope with this complex information to maintain their capacity of reacting to timely to changing demands. In order to handle complexity and dynamics, there is a need for a flexible adaptation of the system, which is realized through processes belonging to system theory: system openings and system closures.

Processes of system openings (Luhmann 1973) enable the system to communicate with the environment through mutual inter-relations. Thereby the system sustains the existential exchange process of resources (Staehle 1999; Böse and Schiepek 1989). During these system openings, the system absorbs a part of the environmental complexity (e.g. information) to incorporate necessary resources. In order to avoid the risk of an information overload, system openings have to go along with system closures. This means that the system does not absorb the entire complexity of the environment but only the portion that, in terms of the ability of solving specific problems, corresponds to the system's identity (Luhmann 1994) and ability to handle it. System closure therefore ensures that the system does not absorb more information than needed or than manageable by the system's capacity.

The challenging task of the management, keeping the best possible balance between those system processes, implies a dilemmatic decision-making situation. Since the degree of necessary information to solve specific problems rises along with the increased complexity and dynamics of the environment, the decision maker has to absorb more complexity (information) through system openings, while still possessing the same ability of handling this piece of information. At the same time, the management faces the difficult selection of information in terms of quality and quantity and has to take into account the dynamics of information and the risk of an information overload caused by system closure (e.g. Hülsmann 2005; Gebert and Boerner 1995; Gharajedaghi 1982).

A possible outcome of this dilemmatic situation is a limited ability of decision-making (Hülsmann and Berry 2004). In this state of being caught in its own complexity the organization is called a locked organization. The environmental complexity outgrows the organization's capability of handling it and the immanent lack of information of a decision called the problem of bounded rationality (Simon 1972: a manager cannot have the complete information about his problem of decision) renders the situation suboptimal.