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K. William Kapp's theory of social costs: A Luhmannian interpretation

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ABSTRACT

In developing his famous theory of social costs, K. William Kapp claimed to draw inspiration from the theory of open systems. The present paper reconstructs the notion of social costs from the perspective of the Luhmannian theory of autopoietic social systems, an alternative systems-theoretic paradigm. According to Luhmann, these systems build up their internal complexity at the cost of lowering their sensitivity to the complexity of their environment, both societal and ecological. From the Luhmannian perspective, social costs can be understood as those segments of environmental feedback that are thus ignored by social systems. This perspective is not only consistent with Kapp's own vision of social costs as a systematic outcome of private business enterprise, but also even more radical as it traces these costs back to the regime of functional differentiation of society, and thus to human civilization generally. It follows from the Luhmannian perspective that social costs can be reduced by improving the coordination between the individual functional systems, such as economy, law, politics, and science.

1. Introduction

K. William Kapp's theory of social costs, a widely acknowledged source of inspiration for modern ecological economics, continues to attract lively scholarly interest until today (Berger, 2008a,b; Berger and Elsner, 2007; Elsner et al., 2007a,b; Ramazotti et al., 2012). There seems to be a consensus among ecological economists that business firms indeed tend to "leave out of account important social costs of production borne by third persons and future generations" (Kapp, 1975, p. vii), thus bringing about a "serious deterioration of man's natural and cultural environment" (Kapp, 1975, p. vii). Kapp insightfully discerned cost shifting as an endemic feature of the modern institutional system of business enterprise, a feature generating the systematic divergence "between exchange/market value and social value" (Vatn, 2012, p. 36). Empirically, social costs can be identified through the introduction of benchmarks such as social minima, maximum tolerance levels, and socio-ecological indicators (cf. Berger, 2008a).

At the root of Kapp's concept of social costs is his understanding of the "open system character of the economy" (Kapp, 1985). It is indeed a central tenet of Kapp's theory that social costs arise precisely because the economy is embedded into the broader societal and ecological systems. He located the "key problem of the open-system character of the economy" (Kapp, 1985, p. 152) in the fact that "production derives material inputs from the physical and decisive impulses from the social system which, in turn, may be disrupted and disorganized by the emission of residual wastes up to a point where social reproduction itself may be threatened" (cf. e.g. Kapp, 1970). What is remarkable about this statement is that Kapp referred to the open-system character of the economy as a source of problems. While the concept of open systems evidently originates from von Bertalanffy's (1968) work on the general systems theory, von Bertalanffy did not accentuate the problematic nature of system–environment relations. Rather, he advanced the open systems perspective as an explanation of the way "organized complexity" can exist in the universe which is subject to the second law of thermodynamics (von Bertalanffy, 1968; cf. Adkisson, 2009; Constanza et al., 2001, p. 63). By elaborating on the concept of steady state, von Bertalanffy was able to show how open systems "can avoid the increase of entropy, and may even develop toward states of increased order and organization" (von Bertalanffy, 1968, p. 41).

Today, many ecological economists follow Kapp's identification of the open systems perspective with the problematic nature of system–environment relations. In this line, they contrast the open-systems character of the economy with the persisting tendency of neoclassical economists to assume the opposite, i.e., to see the ecosystem as a subsystem of the economy rather than the other way around (cf. Daly, 1999, p. 12). In fact, it is only when the economy is seen as embedded into the encompassing systems that the economic growth may appear as an anti-economic one in view of its tendency to overstrain the ecological and societal limits (Daly, 2013; Kool, 2013). For example, in acknowledging that we live "in a profoundly unsafe, interdependent and uncertain world", Nelson (2013, p. 145) refers to the connection between the open systems concept of interdependence and the problem of lacking safety. In a positive way, this connection is put forward by Ingebrigtsen and Jakobsen's (2012) argument that ecological economics embraces an organic world view framed by the ethical values of sustainability, sufficiency, equity, as well as efficiency.

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Given that von Bertalanffy himself did not link the concept of open systems to the problematic nature of system–environment relations, the field of ecological economics is in need of a systems-theoretic underpinning that would make this linkage clear (Valentinov and Chatalova, 2013; Valentinov, 2012a; Valentinov, 2012b). The contribution of the present paper is in calling the attention of ecological economists to Niklas Luhmann's theory of autopoietic social systems as an alternative systems-theoretic paradigm that does postulate an essentially precarious nature of system–environment interaction. Having applied this theory to explaining the evolution of every functional system of modern society, Luhmann (1989) devoted a book to explaining the way in which the regime of functional differentiation of society results in the decoupling of the economy from the embedding societal and ecological systems and thus in the society's ecological degradation. This makes the Luhmannian theory a valuable tool in explaining why social costs arise at the interface of the economy's interaction with the embedding societal and ecological systems (cf. Beckmann, 2009; Pies, 2012), particularly given that a number of typical Luhmannian concepts, such as those of autopoiesis and self-referentiality, seem to be already finding their way into the ecological economics literature (cf. Cangiani, 2007, p. 23; Jejano and Stokols, 2013, p. 3). The following sections outline the key arguments of the Luhmannian theory of autopoietic social systems, reconstruct the concept of social costs from this theory's standpoint, and discuss policy implications.

2. Elements of Luhmann's Theory of Autopoietic Social Systems

2.1. Systems

Luhmann grounds his understanding of social systems in the concept of autopoiesis proposed by natural scientists Maturana and Varela (1980) who were seeking to capture the ultimate biological meaning of life. These scholars understood autopoiesis as the self-reproduction of systems by means of continuous regeneration of their own components. Drawing inspiration from their work, Luhmann (1997, p. 65) understood autopoietic systems as "systems that produce not only their structures, but also the elements of which they consist, within the network of these very elements. The elements … have no independent existence. They do not just come together … They are rather produced within the system itself".

Following Maturana and Varela, Luhmann advances an apparently paradoxical argument that autopoietic systems are operationally closed in the sense of having no input–output contacts with the environment. It is essential, however, to distinguish this argument from von Bertalanffy's theory of open systems which do maintain such contacts. In the Luhmannian theory of autopoietic systems, operational closure is the way in which systems maintain their identity in their environment. It simply means that systemic operations are just that, i.e., systemic operations and not environmental ones. Luhmann (2009, p. 93) argues that a system cannot operate in the environment in the sense that operations always occur within the system. If systemic operations would occur in the environment, they would sabotage the system–environment distinction (Luhmann, 2009).

The importance of the concept of operational closure warrants an extended quote explaining this concept in detail: "'operational closure' means that the system distinguishes itself from the environment by connecting its system-internal operations with other system-internal operations. Elements and structures of the system are thus produced solely within the system itself. The system cannot import elements or structures from its environment or operate in its environment by directly connecting to environmental events. With every new operation the system refers to its own previous operations and thus to itself; it works self-referentially. This does not mean however that the system is blind toward its environment. The opposite is the case. The operational closure enables openness toward the environment in a specific form. The system reacts to environmental events only through itself, through its internal operations. Put briefly, continuous self-reference (=reference of the system to itself) becomes a precondition for other-reference (=reference to whatever is perceived as outside the system) … The difference between self-reference and other-reference is inscribed in every operation" (Schneider, 2009, p. 273 ff.). Thus, "other-reference inscribed in every operation" is a way in which operationally closed systems refer to their environment.

Luhmann is at pains to emphasize that the phenomenon of operational closure does not at all interfere with the metabolic conceptualization of the system–environment relationship in the von Bertalaffyian setting: "the insight gained with the theory of open systems, that independence and dependence can reinforce each other, remains fully preserved. One uses a different wording today and says that all the openness of the system is based on its closure. More precisely it means that operationally closed systems can develop high internal complexity that in turn specifies the aspects in which the system reacts on its environment, while in all other aspects it remains indifferent by virtue of its autopoiesis" (Luhmann, 1997, p. 68).

"Remaining indifferent to environment in all other respects" is an important property of autopoietic systems which in doing so ignores (ausblenden) the complexity of the environment. Indeed, Luhmann (cf. 2009, p. 121) argued that such systems can increase their internal complexity in no other way than by ignoring the environmental complexity, or by being insensitive to it. A subtle parallel to this argument can be discerned in Howard Pattee's (1972) analysis of the way in which hierarchical constraints enable the substantial complexity of hierarchically organized systems. Similar to Luhmann, Pattee (1972) referred to the systemic ignoring of environmental complexity in the form of the "selective loss of detail"; he furthermore assumed the functional equivalence of systemic structures with respect to this ignoring.

Assuming communication to be the basic operation of social systems, Luhmann saw social systems coming "into being whenever an autopoietic connection of communications occurs and distinguishes itself against an environment" (Luhmann, 2009). An advantage of this understanding of social systems is that it "postulates clear boundaries between system and environment. The reproduction of communications from communications takes place in the society. All further physical, chemical, organic, neurophysiological and mental conditions are those of the environment" (Luhmann, 1997, p. 13). Luhmann (1989, p. 22) points out that the environment understood in this way cannot be defined as a system: "the environment is the total horizon of information processing that refers beyond the system. [The environment] is an internal premise for the system's own operations constituted within the system when the latter uses the difference of self-reference and other-reference (or 'internal' and 'external') to order its own operations". In communicative operations, self-reference and other-reference respectively refer to what Luhmann calls message and information (Schneider, 2009, p. 277).

The phenomenon of communication presents a particularly helpful example of the contrast between the concepts of autopoietic and open systems. Communication can be, and traditionally has been, understood in terms of physical transfer of information, in line with the von Bertalaffyian open systems paradigm. Luhmann (1997, p. 104) himself notes that classical systems scientists, such as von Bertalanffy, Wiener, and Forrester, understood communication in precisely this way. However, as an operation of the operationally closed social systems, communication means merely the ongoing reproduction of the system–environment distinction, or in Luhmann's (1997, p. 77) idiosyncratic terminology, "the self-produced difference of self-reference and other-reference". If communication is understood in this way, then it is fully reasonable to argue that "the environment of the social system cannot communicate with society. Communication is an exclusively social operation. On the level of this exclusively social mode of operation there is neither input nor output" (Luhmann, 1989, p. 29).

Examples of autopoietic systems include nonhuman biological organisms, human organisms ("psychic systems"), and social systems