

THE PROBLEMS OF SOCIAL AUTOPOIESIS

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Zelený and Hufford apply the concept of autopoiesis to three different classes of systems—biological, chemical, and social. My response is concerned with the latter and in particular with Zelený and Hufford's claims that social systems are autopoietic and that autopoietic systems are inherently social. I argue that these claims are quite ill-founded. There are a number of general weaknesses with Zelený and Hufford's paper, but, most importantly, the authors fail to see major problems in the ascription of autopoiesis to social systems. These problems are outlined, and the responses of other writers such as Maturana, Varela, and Luhmann are explored. Finally, the importance of and problems with Maturana's and Varela's work is assessed.

INDEX TERMS: Autopoiesis, Cognition, Family, Language, Law, Psychotherapy, Social systems.

1. INTRODUCTION

Zelený and Hufford's paper¹ aims to demonstrate the usefulness of autopoiesis in systems analysis. This it does by attempting to apply autopoiesis to three substantively different classes of system—biological, chemical, and social. The paper also claims not only that social systems are autopoietic, but that all autopoietic systems are social systems. In this response, I shall be primarily concerned with the latter claims—i.e., whether social systems are autopoietic and *vice versa*.

Section 2 outlines some general weaknesses of the Zelený-Hufford paper—it lacks adequate definition or explanation of crucial terms, especially as these are sometimes used idiosyncratically; there is a lack of reference to, or even awareness of, more recent developments within autopoiesis; there is a similar lack of awareness of social theory so the arguments are therefore somewhat naive; and there is an implicit political orientation which clouds the intellectual arguments. Section 3 discusses the authors' specific contentions and argues that there are major difficulties with the notion of social autopoiesis which their paper does little to overcome. Moving from this recognition of the problem, Section 4 evaluates a number of different responses, including those of Maturana, Varela, and Luhmann. Finally, Section 5 concludes by assessing both the importance of and the debates concerning Maturana's and Varela's work.

2. GENERAL WEAKNESSES

First, crucial contentious terms are not clearly defined, in particular the terms 'social system' and 'human family'. The exact nature of social systems or society is a matter

of dispute, not only amongst autopoieticists, as we shall see later, but also amongst social theorists. Given the authors' aim, it is therefore vital that they make clear the precise connotations of their usage. This they do not do, simply stating that "the human family is an example of a *spontaneous social order*" (p. 155) and that "spontaneous social orders and systems are undoubtedly autopoietic" (p. 156). Equally, the nature of "family" differs tremendously among societies and over time. It too is a term which is not agreed on, even by those such as family therapists who specialize in studying families. This will be discussed below.

The second general weakness is that the work is based almost entirely on a paper from 1974,² ignoring developments since then which have modified or even contradicted early ideas. In particular, Maturana's analysis of language and societies,^{3,4,5} Varela's arguments against social autopoiesis,^{6,7} Luhmann's view of societies as communication,⁸ the use of autopoiesis within family therapy^{9,10} and the law,¹¹ and various other commentaries^{12,13,14,15} are all highly relevant. Equally, the authors do not acknowledge the variety of views concerning the nature of the social world and the complex relations between social structure and individual action,^{16,17} quoting only von Hayek whose theories would be disputed by many. Indeed, the authors appear to subscribe to a very functionalist view, quite against Maturana's own prescriptions.

Finally, Zelený and Hufford draw a strong distinction between "natural" social systems and "engineered" social systems, continually denigrating the latter—for example, "there are many man-made and man-designed 'wonders' of social engineering . . . (e.g., military hierarchies, concentration camps of national socialism, and assorted 'Berlin Walls')" (p. 156). There are two problems. First, it is difficult to sustain such a distinction between natural and non-natural systems. Much that we consider natural appears so only because it is well established for us; in reality it is the result of historical engineering. As Foucault shows,^{18,19} even our basic beliefs about sexuality and mental illness are human constructions which have in the past been different. Second, the authors' language and examples betray an almost obsessive belief that purposeful social design must be bad. Within the space of three pages concentration camps are mentioned five times, and the Berlin Wall three times! Are there no beneficial institutions such as hospitals, sports teams, or schools, that result from social engineering?

3. THE PROBLEMS OF SOCIAL AUTOPOIESIS

The specific arguments of the paper are that the family, as an example of a "natural social system," is autopoietic; that all natural social systems are autopoietic; and, finally, that all autopoietic systems are social. I shall deal with the last contention first as it is the least sustainable even if it were the case that the first two were correct.

Zelený and Hufford conjecture that "autopoietic systems, both 'organic' and possibly 'inorganic', are necessarily social." Thus, by their own earlier demonstrations, not only are (biological) cells social, but so too are (chemical) osmotic growths. What are we to make of this transference of the social to the realms of physics and chemistry? Is it not so great a distortion of the underlying idea of "social" that the term becomes meaningless?

I would argue that there are at least two connotations that must be common to all definitions of social: first, it relates to the activity of *groups* of entities rather than

single individuals; second, it concerns *rule-based* behavior rather than physical cause and effect. Thus the behavior of billiard balls on a table could not in any sense be termed social. The authors would appear to agree since they say "Components and participants in autopoiesis *must follow rules, interact and communicate*—they form a community of components, a society, a social system" (p. 157, my emphasis). Whilst physical systems do consist of groups of components, it cannot be said that they follow rules. The essence of rule-governed as opposed to cause-and-effect behavior is that a rule can be broken, or performed in right or wrong ways.^{20,21} This is clearly not the case for physico-chemical interactions—molecules cannot choose to interact or not: their behavior is determined. Indeed, Zelený and Hufford implicitly recognize this when they refer to "social systems *proper* (i.e., human systems)" (p. 157, my emphasis). Thus to extend the term "social" to all autopoietic systems is to lose its essential distinction.

We now move to consider social autopoiesis. As mentioned in Section 2, there has been considerable debate about this question. Maturana and Varela themselves have considered the problem extensively and concluded, in different ways, that social institutions cannot be construed as autopoietic. Indeed, they do not even feel confident that second-order systems such as multi-cellular organisms are themselves autopoietic unities.²² The main problem is that autopoiesis has been precisely and clearly specified for a particular domain—the physical. Social systems are not physical systems and so the question is whether the concept can be transferred directly and, if not, whether it can be modified without losing its essence.

The two essential characteristics of the definition of autopoiesis are¹³ first, that it involves processes of production (the production of those components which themselves constitute the system), and second, that it is characterized by temporal and spatial relations, including the creation of a boundary by the components involved, which define the entity as a system. Determining whether or not a system is autopoietic is a difficult problem for the observer as Maturana and Varela explain,²³ yet they are clear that autopoiesis must involve processes of production and a self-created boundary:

"if such a system is not defined by relations of production of components . . . , but by other relations, either between components or processes, it is not an autopoietic system Since it is a defining feature of an autopoietic system that it should specify its own boundaries, a proper recognition of an autopoietic system as a unity requires that the observer . . . defines the limits of the system in the same domain in which it specifies them."²⁴

Zelený and Hufford use Varela *et al.*'s six-point key²⁵ to identify autopoietic systems. It is not clear that this heuristic device actually captures the full richness of autopoiesis, but I shall restrict myself to criticizing Zelený and Hufford's application of it. It does, in any case, clearly embody the above definitions: points 1, 4 and 5 deal with the boundary, and points 2, 3 and 6 deal with components and their production. We must now examine whether Zelený and Hufford's application of these points to the family can be justified without distorting the concept of either the family or autopoiesis.

i) *The boundary.* For Varela *et al.*, the boundary is clearly identifiable, consists of particular components which define themselves as boundary components through their neighborhood interactions and which are produced by the system, and contributes by its presence to autopoiesis. Zelený and Hufford's supposed boundary of the family does not correspond to this at all. There are no boundary components as such,

and the boundary is said to be of quite a different type—akin to that defining a set. Thus it is a purely conceptual distinction between members and non-members. This is highly problematic.

Key-Point #1

Is the boundary distinction actually well defined? Zelený and Hufford begin by claiming it is “rarely ambiguous,” but how would one classify the following: the cousin who lives abroad and is never seen? the in-laws? the au pair here for three months? the live-in nanny? the girl/boy friend (live-in or not)? the divorced wife? the run-away father? What about other cultures where families can take quite different forms (Zelený and Hufford explicitly have the Western nuclear family as their model)? Is there any reason to suppose that everyone would agree on what constitutes membership? Possibly recognizing this, Zelený and Hufford then admit that membership may be fuzzy, but if this is the case then there can be no self-defined autopoietic unity.

Key-Point #4

Zelený and Hufford simply state that the boundary is maintained through “preferential neighborhood relations and interactions between components,” but what could this mean? First there are no boundary components, and second what does “preferential” mean here? It could mean “more frequent” in which case a neighbor may be more a member than a distant relative, or it could mean “preferred” but again friends may be preferred to relatives.

Key-Point #5

There clearly cannot be any production of boundary components since none exist, nor is it clear that Zelený and Hufford’s boundary could contribute to autopoiesis. A physical boundary has a spatial dimension forming a barrier between inside and outside. This is not the case for a membership type boundary—some members are not nearer the outside than others. It may be argued that this can be associated with different degrees of membership, but this has been dealt with in discussing key-point #1.

ii) *Components and processes of production.* Varela *et al.* specify that there must be identifiable components which participate in and result from processes and relations of production that define an autopoietic organization. For Zelený and Hufford the components of a family are its members—“fathers, mothers, children, wage-earners, home-makers, . . .” (p. 155); they have specialized and distinct roles; and they are produced through interactions within the family.

Key-Point #2 and #3

This is the central problem of the paper, a complete confusion of the biological domain with the social domain. In describing components as “mother,” “father,” Zelený and Hufford continually confuse the biological individuals with the social roles that may be attributed to them. The difference between the two should be clear

with a role like "wage-earner" which may apply to a number of members, but it is equally true of, say, "father" which could apply to the biological father, an adoptive father, a foster father, a step father, or a single-parent woman. Moreover, these roles are not objective features of the world but social constructs, developed within a particular (patriarchal) culture at a particular point in time and continually negotiated, defined, and enacted in everyday life.

Key-Point #5 and #6

This confusion carries over into the authors' notion of production where it is not clear if the processes are biological, social, or both. As examples of production processes we are given sons being "transformed" into fathers, "head of the family" as a social production, and men and women biologically producing children. As numerous authors argue,^{4,6,11,13} the actual production of biological organisms is a biological process quite independent of whether such organisms then participate in a social family. As Maturana suggests,³ social systems are the medium within which organisms realize their structural coupling, not the domain of production of such organisms. It is clear therefore that any attempt to describe social autopoiesis must locate it entirely within the social domain.

Enough has now been said to demonstrate the incoherence of Zelený and Hufford's attempt to demonstrate social autopoiesis.

4. DIFFERENT APPROACHES TO DEVELOPING SOCIAL AUTOPOIESIS

Moving away from the focal paper, this section briefly outlines different responses to the problems raised above.

Maturana⁴ does not argue that social systems are autopoietic, but that they are the medium in which living (i.e., autopoietic) systems recurrently interact and realize their structural coupling (by which Maturana means organisms developing their structure to display a mutual adaptability). A social system is thus a network of behavior, or rather consensual co-ordinations of action, through which its members realize their (biological) autopoiesis. In the case of human beings this occurs largely through languaging—coordinated activity involving language, emotion, and the physical body. A social system is a domain of mutual acceptance, and membership is determined by implicit acceptance or rejection: becoming a member involves the organism's acquiring the behaviors and conversations that are appropriate to that domain. Social systems are conservative in that every occurrence of an acceptable behavior is also a confirmation of the status quo. But they are not unchangeable. There is no specification of a social system's organization other than the actual behavior of its members, so if behavior changes so does the system.

In one paper,³ Maturana argues that even multicellular organisms can be social systems. However, the prescription that "relations and interactions that do not entail *mutual acceptance* . . . are not social relations"²⁶ seems to preclude that possibility as it is not appropriate to consider cells being able to "choose" to accept or not.

Varela's response^{6,7} is to assert that notions of production are not applicable to all domains and to develop a definition of organizational closure which is similar to that of autopoiesis but does not specify processes of production. Autopoiesis becomes therefore a special case of closure. Such systems with unspecified production pro-

cesses (e.g., the immune systems and the nervous system) still exhibit autonomy, and their activity is still structurally (rather than environmentally) determined. Varela suggests that social systems such as corporations may develop organizational closure but he does not develop the details of such an extension.

Luhmann has developed a view of society as autopoietic without confusing the domains of the biological and the social.⁸ For Luhmann, the social consists only of communication, that is, communicative activity. A communicative action has three elements—utterance, information, and understanding—which conjointly generate meaning. Such communicative acts always stem from and lead to other such acts. This leads to the essential closure of autopoiesis—a system of recurrent, self-referring communicative acts. This has been interestingly applied to the law, although the theory has remained at a rather abstract level.

5. CONCLUSION

In this paper I have argued that the attempt to apply autopoiesis to social systems is far from straightforward, although I have not ruled out the possibility. In recognizing physical autopoiesis, Maturana and Varela undertook three steps: to describe the phenomena to be explained (the autonomy of living entities), to postulate a generating mechanism (autopoiesis), and to show in detail how the components and processes in the cell realized autopoiesis. In terms of social autopoiesis, it is the third step which has yet to be achieved—that is, the detailed description, in a coherent and consistent way, of the components and processes which realize an actually-existing autopoietic social system.

Whether or not societies are autopoietic, Maturana's theories concerning the nature of language and the human social domain are of profound importance. They reveal the way in which language, self-consciousness, and cognition emerged as new domains of recurrent actions in the course of biological development; that language is not a domain of pure description but essentially an *activity* no different from, and entwined with, our physical and emotional dispositions; and that the social world is constituted by networks of conversations in which the braiding of language and action realizes the structural coupling of members rather than pointing to an objective world. These ideas are being applied in family therapy, computer systems design, and law.²⁷

In conclusion, it is important to mention two significant problems posed by Maturana's work. First are the philosophical implications of his particular epistemological position. Maturana argues⁴ that, not only can we have no objective access to an external world, but also that we cannot even claim such a world exists. The objects to which we refer are brought forth by us, in our language, and from this we can never escape. The reality that we experience is our own subject-dependent creation. This is a position with radical implications, but I have argued elsewhere¹⁴ that Maturana's philosophy is ultimately inconsistent in several ways: the theory of autopoiesis itself requires that there be an independently existing world; Maturana's scientific methodology makes sense only if there are stable causal structures having similar effects on different observers; and Maturana's argument reduces ontology to epistemology—that is, he answers questions about what *exists* in the world with theories about our *knowledge* of the world.

Second is a concern as to whether the emphasis in his work on individuals and small groups leads to an inability to consider wider social phenomena such as power,

and inequalities based on sex, race, and class. For Maturana, the largest unit of analysis is a group of individuals structurally coupled within a consensual linguistic domain; society is merely the medium within which such groups exist. Thus each group constructs and validates its own constitutive world and these are all equally valid. It is difficult, therefore to analyze structures encompassing and constraining such groups, and, furthermore, there are no privileged positions for outside observers to generate such analyses: there are merely alternative explanatory domains.

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