

What is wrong with Traditional Autopoietic Theory

AN ANSWER TO A QUESTION ON
THE AUTOPOIESIS-
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ELIST

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When I say that Maturana and Varela's Autopoietic Theory is wrong I am being provocative of course. All theories only have provisional truth anyway. But it is my way of drawing attention to the difference between my view of autopoiesis and theirs, i.e. the traditional view, which has now been labeled unnecessary anyway. If autopoiesis is unnecessary then perhaps it does not matter if it is wrong. But we will for the sake of argument pretend it does matter.

Now as everyone should know by now my focus has been this problem of whether autopoiesis applies to the social. I am a sociologist after all and I would tend to be concerned with such things. My answer is NO. Autopoiesis should not, ala Luhmann, be applied to the social, it is indeed a concept limited to the biological living cell and perhaps the organism. Rather we need another concept that is related to Autopoiesis but which has the necessary

emergent properties to be applied to the social. That theory is reflexivity. There was a whole spate of reflexive social theorists like Blum, O'Malley, and Silverman who developed a reflexive, i.e. philosophically sophisticated, view of the social based on the concept of reflexivity. But if we are going to add this level above the autopoietic level then we need to consider whether there is any theoretical level below the autopoietic level that is necessary as well, and we find that in the work of Prigogine and his dissipative ordering structures. So what I want is a theory that has three emergent levels covering what lies above and below the autopoietic level of theory. But I also want these to fit into my theory of the difference between systems and meta-systems (or openscapes as I now call them). In other words I want a theory that stands as an extension to General Systems Theory as propounded by George Klir who developed a structuralist view of Systems in his Architecture of Systems Problem Solving. His advanced General Systems Theory covers the relations between the pattern (structure), form, and systems schema. What I would like to do is extend it to cover the meta-system (openscape) schema as well and then consider the system/meta-systems as duals and then understand how the special systems fit into the gap between these two duals giving us the special systems that relate to negentropic special systems, living special systems, and social special systems. That means there are really five emergent levels here starting with the normal system as defined by Klir, then the dissipative special system, then the autopoietic symbiotic system, then the reflexive social system, and then the meta-system which is the dual of the normal system. I want to be able to move up these emergent levels in a very controlled way.

Right now autopoietic theory floats free and its relations with other emergent levels is not specified. But specifying the relations between the schemas involved is different from the specifying of the relations between the ontic emergent levels. In other words our theories are different from the phenomenal things. It is important to keep these two things separate in our minds. The emergent levels of the ontic phenomena are different from the ontological schemas that we project on the phenomena. If we don't keep this in mind then the result is an incredible amount of confusion. Ontological Schemas can be projected onto any ontic level.

Now once we realize that we really need a set of theories that address different emergent levels on the ontological side to describe things happening on the ontic side and that autopoiesis fits into this hierarchy as one of the emergent levels, then it is just a matter as they say of searching for the mathematical basis for these levels that will tell us their nature and how far apart they are. My theory identifies several mathematical anomalies that have this same structure of emergent levels. Then it goes on to relate these various anomalies to each other and to physical phenomena. Once you do that then the next step is to follow the mathematics and restructure the theories so that they reflect the structures encoded in the mathematical analogies. When you do that Prigogine's theory does not change, Klir's theory does not change, O'Malley and Sandywell's theory does not change, nor does my theory of meta-systems (openscapes). But lo and behold autopoietic theory must change. The mathematics forces a change on us at the autopoietic level, and that is what I have identified as the error in autopoietic theory. It is in error once you put it in this wider framework, and then find the math that describes that wider framework, and then

turn that math back on the theory and ask if the theory has the right structure to support the math. And in this case the autopoietic theory does not have the right structure to support the math.

Now the math is complex, literally, and the structure of autopoietic theory is not trivial, so explaining how the theory is wrong exactly is something that take some time. See my papers for that explanation. But in brief the problem is that Special Systems are built up through conjunction or juxtaposition, and the autopoietic system is not a unity, as Maturana and Varela claim, but instead a symbiosis of dissipative ordering structures. In fact, we see how Maturana and Varela are trapped within the Kantian Idealist framework in ways that they do not even realize by this analysis. If you look at Kantian Categories then you see there a dialectic between unity, multiplicity and totality. Autopoietic Theory tries to find a way to combine these different categorical moments with multiplicity being down at the structural level, Unity being at the organizational level, and totality being the boundary and all that is within it that is closed. Autopoietic Theory does not really address wholeness in the sense of organisms which Rescher in fact says is the root metaphor for the system schema. In order to get wholeness we need to add something. There needs to be something like the Hegelian *Aufhebung* to get to wholeness that brings together unity, totality and multiplicity but is different from these Kantian categories. In this synthesis there is something like synergy that allows the parts to form a whole that is not just a unity, totality or multiplicity in combination but something different from all of them while encompassing them. Autopoietic theory lacks this sense of wholeness of the organism, instead it is true to structuralism and attempts to understand the relation of

the form of the cell to the underlying patterns in flux via the structuralist model. It extends this up to the system level by the way the theory talks about the boundary and organization. Autopoietic theory is very much like Klir's general systems theory in the way it combines system, form and pattern with an emphasis on the organization of the system and the structures of the pattern level fluxes. In that way it is a lot like what Klir calls an architectural theory where form comes out of the interaction of system and structure. (Cf A. Wilden on System and Structure).

If you understand the math of special systems theory which is based on hyper-complex algebras, then what you realize is that the theory has to be completely different to incorporate this notion of wholeness. The theory has to have what I call a non-dual aspect. This is what Maturana and Varela's theory is missing that is demanded by the mathematics that allows us to define the relations between these hierarchical levels of emergence between the schemas. The wrongness of the theory is in effect a narrow mindedness. The mathematics causes us to open our minds wider and see that something different from what we had expected is going on at the autopoietic level of the special systems, and that level is intimately intertwined with the structures of the adjacent levels.

In a nutshell, Autopoietic Special Systems are not "unities." They are in fact conjunctions or juxtapositions of dissipative ordering structures in a very peculiar fashion which is intrinsically anomalous. The anomalous math allows for anomalous physical structures in what ever medium that an autopoietic system is realized. There is a strange possibility built into the structure of the world because the world is based on math in some odd way that underlies the

structural possibilities of the physics. This oddity at the level of physics gives rise to the anomaly of life, and then consciousness, and then the social all as anomalies with this peculiar structural basis. Once we realize that there is a structural basis for autopoiesis that is inbuilt in the math and the physics then we see that even though life is odd it is inevitable because starting with the math there are these anomalies, that then effect anomalies in the physics, that then give rise to biological, consciousness and social anomalies. So in a way the necessity of life starts with the anomalies in math, then spreads to anomalies at the physical level, and that gives rise to these other anomalies of which autopoietic special systems describe one aspect.

So in my broader theory, the meaning of autopoiesis changes, because this change is forced on us by the mathematics. It is no longer a question of autopoietic unities of organization floating on structural fluxes that produce their boundaries with closure. Rather, we see autopoietic systems as symbiotic conjunctions of dissipative negatively entropic structures. They have wholeness based on non-duality rather than unity, totality, or multiplicity or some combination of those elements. They form a new synthesis that is emergent through this conjunction of the structural dissipative ordering flows. And the same thing happens again between autopoietic systems at the reflexive level. Exactly how this happens is hard to explain in a short space. Please refer to my various papers for longer explanations.

Suffice it to say that the revolution in this way of looking at things is felt primarily at the level of autopoietic theory, considered as a special kind of systems theory aimed at explaining life. We don't have to modify the theory of reflexive systems, or dissipative

ordering structures in the same way we have to modify the autopoietic theory. These other theories were already approximating the mathematical basis of special systems theory. Autopoietic theory itself was close in as much as all the elements that were necessary were already present. But what was needed was a different philosophical way of looking at the theory that allows us to see it in a new light.

Part of that new philosophical way of looking at the theory is provided by Deleuze and Guattari in *Anti-Oedipus*. There they describe three ontological levels, the socius, the individual, and the desiring machines. These correspond nicely to the reflexive, autopoietic, and dissipative ordering structures. Deleuze and Guattari allow us to see the assumptions that have driven autopoietic theory down the wrong structural path, in other words they allow us to see that not paying enough attention to the role of difference when we use concepts like identity and unity can cause problems that are not obvious at first. By understanding the various ontological levels of the special schemas in terms of Deleuze and Guattari's work it is possible to reconceptualize autopoiesis in a new way that is more fruitful within the context of the other schematic emergent layers. The connection with Deleuze and Guattari's work gives us a broad philosophical approach to many subjects that autopoietic theory in its modified form might play a role, especially when we realize the odd properties of autopoietic special systems and other special systems. I talk extensively about these odd properties in my papers.