Is There a Hole in Your Parentheses, Or are You Wholly Parenthetical?

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The title of this paper represents a "trick question" of the sort an interlocutor might employ to solicit an answer which, if framed with specific regard to the question's implicatures, cannot fail to confirm that interlocutor's position or further his aims. The best-known query of this form is the cliched "Do you still beat your spouse?" To escape being trapped, the respondent must either (a) avoid answering or (b) point out and refute the implication(s) embedded in the question itself. In practice, both options typically entail risk. Option (a) may violate the procedural form of the "language game" (cf. Wittgenstein, 1963) within which the question occurs, while option (b) may violate the thematic or orientational focus presumed or enacted in that language game. This paper is intended to outline a "trick question" (that of the title) which has over the years been a recurrent challenge slung at adherents of the theories which have brought us together here in Belo Horizonte. If the following text accomplishes my intentions, it will explain the challenge, assess our response(s) to date, and offer suggestions about what (if any) further action it may prudently motivate.

The theoretical corpus developed over the last three decades by Humberto Maturana and Francisco Varela is most widely known (and narrowly cited) with regard to the construct of *autopoiesis* -- the basis for the first and only positive systemic definition of living systems. For this alone their work would be significant. Beyond that, principles generated in concert and in accord with this definitional landmark comprise a systematic explanation for the ontogenic trajectory enacted by such living systems (i.e., their respective courses of behavior and / or adaptation). This means Maturana and Varela's contributions (hereafter termed *autopoietic theory*) represent something even more important -- a coherent theoretical framework addressing the relationship(s) between a system's form and the mode(s) of behavior to which are attributed the character of "cognition." This makes autopoietic theory "...the first coherent scientific framework that really overcomes the Cartesian split" (Capra, 1996, p. 175) which has bedeviled attempts to develop a science of cognition (cf. Rorty, 1979).

Although Maturana and Varela's work has been published for over a quarter-century now, this does not mean scholars have uniformly grasped its basic thrust, much less its intriguing nuances. This has led to a variety of dismissive criticisms which do not evidence substantive comprehension of the theory being dismissed (e.g., Birch, 1991; Brå ten, 1984; Locker, 1981; Ivanov, 1991). Turnabout being fair play, I shall dismiss them from further consideration. Those critics who do evidence an understanding of the theory (e.g., Mingers, 1990) have

admittedly posed points worthy of comment, but which have gone largely unaddressed. Finally, there are those scholars who insist on recasting Maturana and Varela's work in the light of their own preferred sources or orientations (e.g., Mingers (1990) with regard to "critical realism"; Palmer (1996) with regard to his own taxonomy of "being").

Because these two latter categories of criticism typically derive from a working knowledge of the theory, they deserve some measure of response. In the space of this paper, I cannot discuss all criticisms from both categories. Therefore, I propose to further explore one persistent line of criticism, which is best exemplified in certain writings of Mingers (1990; 1994). This includes three accusations: (1) that Maturana is espousing solipsism; (2) that autopoietic theory (as a unitary explanation) is necessarily self-contradictory; and (3) that Maturana is inconsistent in presuming a world environing the observer on the way to concluding all the world is observer-dependent. The first two accusations may be disposed of with little (even trivial) effort. The third will lead to a broader discussion with ramifications for further elaboration of the theory.

The Accusation of Solipsism

From such a stance, Maturana and Varela's denial of causative linkages between a presumed dyad of external "reality" and the cognizing organism's internal state(s) conjures up visions of the *subjective idealism* of Berkeley (1710), for whom all reality was purportedly in the mind of the perceiver (or, more accurately, the imaginer) -- the hermetically sealed, always defensible, but suspiciously facile doctrine of *solipsism*. Mingers (1990) claims Maturana had migrated from acknowledgement of an external reality (in which an observer is embedded) to a Berkeleyan stance in which even the physical domain is constructed by the observer. He specifically cites Maturana's claim "...outside language nothing (no thing) exists..." (Maturana, 1988, p. 80) as final proof of solipsism.

In the cited article, Maturana outlines two fundamental "explanatory paths" -- general orientations to addressing the world and generating explanations of it. In the path of *objectivity-without-parenthesis* an observer "...implicitly or explicitly assumes that existence takes place independently of what he or she does [and] that things exist independently of whether he or she knows them..." (p. 28). In the path of *objectivity-in-parenthesis* the observer must accept the biological basis for herself and her experiences, and she "...cannot use an object assumed to exist as an independent entity as an argument to support his or her explaining..." (p. 30). Taken literally and in isolation, the passages cited by Mingers can be easily seen as espousing solipsism. However, Maturana is careful to state in which of the explanatory paths he is operating during the course of this paper, and he specifies (p. 27) the passages Mingers challenges are offered within the explanatory path of objectivity-in-parenthesis. The apparently solipsistic statements are explicitly grounded with respect to the biological nature of the observer and not to any absolutely real world independent of her. In this specific case, Mingers' criticism falls apart.

The Accusation that Autopoietic Theory (as a Theory) is Self-Contradictory

The second accusation concerns autopoietic theory as a theory. As Mingers (1994, p. 112) puts it, all "strong relativist theories" such as Maturana's "...make an epistemological claim that all knowledge is relative to the knower ..., that is, that no theory can claim objective truth. However, since such a theory is self-referential, it must equally apply to itself." He poses a dilemma in which either (a) the (self-referential) theory, lacking objective truth, may be dismissed; or (b) the accepted (hence presumably objectively truthful) theory is inconsistent for having thus obtained a claim to objective truth. The only recourse is that Maturana "...must either accept that his whole theory has no special claim to validity or exempt his own particular theory from his stipulations" (*Ibid*., p. 113).

As to the first option for recourse, Maturana (1978, p. 55) acknowledges that "... all scientific statements are necessarily subject-dependent, even these that I am making now as a scientist writing about the problem of objectivity." As to the second option, it is effectively nonsensical for the same reason that the cited dilemma is nonsensical -- i.e., a confusion of objects and domains of explanation (the observer's epistemology versus the theory which explains it). Self-referentiality is ascribed to autopoietic systems. No such ascription is to be found in the literature regarding "self-referentiality" of autopoietic theory itself. Furthermore, Maturana's formulation of scientific method (1990, p. 18) is not dependent on a notion of "objective truth" for its purported validity. Refutation of this particular criticism is therefore made moot by the accusation's incoherence.

The Accusation of Inconsistency about Observer vs. the 'World'

The third accusation is more serious, and it has ramifications for autopoietic theory's integrity as a cohesive explanatory framework, whether or not one accepts it at face value. In making his charge of solipsism (cf. the first accusation above), Mingers claims (1990, p. 579) Maturana is blatantly inconsistent -- simultaneously mandating an observer's existence while denying any existence outside the experience of the observer herself. This accusation can be clearly laid out for inspection. Autopoietic theory's explanations are grounded in elements independent of the phenomenon (living systems) being explained. Mingers (1994, p. 113) specifically cites medium, environment, other observers (for languaging), and a community of scientists (for Maturana's scientific methodology). Autopoietic theory's conclusions state there is no "reality" independent of the observer's descriptions. As a result, there is an inconsistency in dismissing any ontological validity for the elements upon which the explanation dismissing them is based. Held and Pols (1987) make the same criticism, but phrase the inconsistency in terms of Maturana's having made a reality claim in explaining the observer, while ending up denying such reality claims.

It is difficult to dismiss this third accusation as readily as the first two, especially given that Held

and Pols' characterization of the inconsistency would seem to follow from statements such as: "[r]eality, therefore, is the domain of things, and, in this sense, that which can be distinguished is real. Thus stated, there is no question about what reality is: It is a domain specified by the operations of the observer" (Maturana, 1978, p. 55). In the remainder of this paper, I shall respond to this third accusation, although I cannot dismiss or dispel it. I claim that this issue cannot be conclusively resolved at this time, owing to problems relating to each of the two sides (the critics and the autopoiesis adherents). These perceived problems are such that both sides must share some measure of blame for the original appearance of inconsistency. To the extent that I see a viable response (or the opportunity for one), I shall now address it in the light of the critics and autopoietic theory, respectively.

The Problem Regarding the Critics

Let me first address the stance which biases the critics into discerning the apparent inconsistency. Mingers' critique is representative of reactions from scholars committed to the mainstream Western stance variously labeled *objectivism* (cf. Lakoff, 1987), *logical-empirical tradition* (Radnitzky, 1970) or *rationalistic tradition* (cf. Winograd & Flores, 1986). He is seeking to pinpoint Maturana's stance on ontology (what is, what is real...) by sifting through remarks which can only be characterized as dealing with epistemology (what can be known). Mingers' insistence on mapping Maturana's theories onto long-established Western philosophical compartmentalizations is itself part of the problem, as it constrains the "domain of interactions" within which he can engage autopoietic theory and determines the "domain of possibilities" for his conclusions. This can be illustrated with regard to two specific points.

The first concerns the prioritization of impersonal validation criteria over personal experience. A fundamental uniformitarianism underlies the Western logical-empirical tradition -- the faith that a correct model is subject to absolute validation by either an objectively specifiable logic (the rationalists) or objective demonstration (the empiricists) (cf. Maturana, 1988 on *transcendental ontologies*). This has engendered explanations for perception and cognition constructed without regard to their being processes -- a persistent blindness to the fact that knowing the world via formalisms, contrived and contained solely within the mind, is nonetheless an act involving the knower's embodiment (cf. Varela, Thompson & Rosch, 1991). As the necessary result of removing the act of knowing from knowledge, mechanisms for epistemology could only be (a) addressed as wholly distinct from ontology (e.g., dualism) and/or (b) subordinated to ontology by being characterized in terms of extracting "truth" from the world (e.g., objectivism).

The second is taxonomic, and concerns the historically-developed categorizations within which Western philosophical tradition operates. Analogous to the manner in which a system's realization determines its domain of interactions, Western philosophical tradition's taxonomic structure determines the range and presumptive categories of phenomena it can engage. The division of philosophy into specialized subareas (and schools of thought within and across these subareas) is a historical development which has predetermined the scope of subsequent enquiry.

Epistemology is maximally separable from ontology in the case of a realist ontology combined with a dualistic disjunction presumed between mind and world -- the background underlying rationalist philosophy since Descartes (cf. Rorty, 1979), Radnitzky's logical empiricism, and the position(s) specifically critiqued by Maturana and Varela.

The foregoing explains how the critics may (or even must) espy a paradox in a relativistic epistemology being generated from a foundation which includes objective elements. This does not mean that I agree with the accusation -- only that I can understand why autopoietic theory stands so accused. The *real* problem (no pun intended) is that those explanations labeled "biology of cognition" and "ontology of the observer" are intrinsically vulnerable to this accusation. In the next section, I shall outline this vulnerability in more detail.

The Problem Regarding Autopoietic Theory

It is at this point that I can begin to explain the connotations of the question comprising this paper's title: "Is there a hole in your parentheses, or are you wholly parenthetical?" The parentheses are, of course, those invoked by Maturana (1988) to "bracket" his analyses with specific and exclusive regard to the observer's biological basis. (NOTE: Yes, I know Maturana wrote "parenthesis" rather than "parentheses", but I need objects to populate my metaphors!) This type of maneuver (in the form of the phenomenological epoché) had been employed earlier by Husserl so as to "...'parenthesize' (put into brackets, put to one side) the existential assumptions made in everyday life and the sciences" (Hammond, Howarth & Keat, 1991, p. 25). Husserl eventually suffered a sort of conceptual imprisonment within these brackets and the transcendental ego they circumscribed as the extent of his referential firmament.

Phrased another way, Husserl ended up being "hermetically sealed" within the brackets he invoked. This, I believe, is not the problem we face; instead, our parentheses are "leaky". Mingers' third accusation can be rephrased as pointing to a figurative "hole" in Maturana's parentheses -- one through which reference to objects of or in a world independent of the subject organism (and the observer) corrupts the purely biological basis of explanation intended in pursuing a constitutive ontology. Moreover, to the extent such referents are construable (in the context of explanation) as precedent to the organism/observer being explained, that which was intended to be a constitutive ontology is tainted with the transcendental (as these terms are used by Maturana, 1988). This naturally calls into question the methodological stance claimed for the theory.

This, then, is the dilemma facing autopoietic theory. So long as this hole in our parentheses is evident, we cannot be confident that the theory comprises a truly coherent cosmology, much less a complete one (cf. Simon, 1985). Conversely, removing the problematical references which comprise this hole would seemingly divorce the theory from the world entirely, making it "wholly parenthetical" in the sense of "irrelevant" -- at least in the sense of forfeiting the expository leverage expected (even using Maturana's version of method) for a scientific

explanation.

Mingers' third accusation can be refuted if (and, I would claim, *only if*) autopoietic theory's mode of explanation could accomplish either of two adjustments. The first is dispensing with all reference to the organism's medium (the fundament of its realization) from the beginning, including all reference to the organism as a distinguishable unity within that medium. Reference to the medium in itself lingers in the form of (e.g.) a tacit acceptance of the ordinary physical realm (e.g., the invocation of the "physical space" within which autopoietic machines are labeled 'living'). Reference to a distinguishable organism/unity presupposes distinction, which in turn presupposes an observer. For a number of reasons (not the least of which is its entailing a complete re-framing of the theory's root definitions), I see this alternative as intractable.

The second possible adjustment would be achieving an eventual *explanatory closure* by "circling back around" to offer a cogent (re-)explanation of the originally-cited fundament framed with respect to (e.g.) operational coherences of and/or by an observer. This approach would treat autopoietic theory (as developed so far) as a "bootstrapping exercise", in which one complete explanatory pass is required before we can disengage our explanations from their launchpad scaffolding. That initial pass would be completed at the point we re-frame the problematical elements which evidence our figurative hole. Because (among other things) this approach can conceivably be attempted without backing up to overhaul three decades' worth of work, I see this as the way forward.

Let me close this section by outlining what I mean by such an "explanatory pass." The most basic elements employed by the theory are constructs such as 'organism', 'medium', 'environment', and 'entity' ('unity') (cf. Maturana & Varela, p. 8). Analysis of these root referents (e.g., of composite unities or 'systems') yields the constructs of (e.g.) 'organization', 'structure', 'closure', and the like. These in turn are leveraged to generate further constructs such as 'autopoiesis' itself, and so on. The explanatory pinnacle of this progression is 'the observer', of which the narrator / explicator is one. Simplistically put, we listen all along to this narrator / explicator, but it is not until the end (or thereabouts) that we find out who / what he may be. To the extent that the theory ties together the constructs progressively generated from the fundamental elements, there is already some degree of explanatory closure. In effect, I am claiming that critics such as Mingers will continue to pester us until we can extend this partial explanatory closure to subsume the fundamental elements themselves. In the next and final section, I will briefly outline what I see as one way to achieve this end.

Achieving Explanatory Closure

I must begin this final section with that cliched phrase: "I have some good news.... and some bad news." The bad news is that there is a second "hole" in our cherished parentheses -- a perforation which undermines our heretofore presumptive uniformity of referential style, just as the first hole undermined our heretofore presumptive circumscription of object(s) referenced.

The good news is that this second hole may prove to be a way out of the explanatory dilemma explored above.

Objectivity-in-parenthesis focuses on the observer (that which is to be explained) as a biological entity. If we presume that the canon of autopoietic theory is an instance of objectivity-in-parenthesis, then we must concede that we have parenthesized the object of interest with substantial regard to biology-as-structure. Phrased more simply, our mode of explanation to date has emphasized "stuff" or "things". This is evident in the apparently exclusive orientation to structure (the "stuff" / "things" realizing a composite unity in a space), structural determination, structural coupling, etc. Taken to the extreme, this would imply that autopoietic theory embraces materialism as well as mechanism (in the sense of anti-vitalism). Such a conclusion is not disproved by *Autopoiesis and Cognition* (Maturana & Varela, 1980), in which we read: (a) "...it seems now apparent that any biological phenomenon, once properly defined, can be described as arising from the interplay of physicochemical processes..." (p. 74) and (b) "[o]ur approach will be mechanistic: no forces or principle will be adduced which are not found in the physical universe." (p. 75)

However, the apparent thrust of these isolated passages is mitigated by attention to something non-material. Passage (a) above continues to clarify that the cited "interplay" refers to processes "...whose relations are specified by the context of [the biological phenomenon's] definition." (p. 74) The seemingly blunt materialism of passage (b) above is immediately followed by the statement that "...our interest will not be in properties of components, but in processes and relations between processes realized through components." (p. 75) Farther along we read "...in our explanation of the organization of living systems, we shall be dealing with the relations which the actual physical components must satisfy to constitute one, not with the identification of these components." (p. 76) ... Even later, Maturana and Varela declare, "... a living system is defined by its organization and, hence, that it can be explained as any organization is explained, that is, *in terms of relations*, not of component properties." (p. 76, emphasis added) On the next page they define organization as "[t]he *relations that define a machine as a unity*, and determine the dynamics of interactions and transformations which it may undergo as such a unity..." (p. 77, emphasis added).

Cognitive processes are contingent upon living systems' autopoiesis. Autopoiesis entails only one invariant -- the organization of the system exhibiting this character. This organization is defined in terms of relation, not qualities or properties of the structure which realizes it. The paradigmatic "explanatory syntax" of autopoietic theory is therefore denotative of relationship and not substance at all. All the literature's emphases on "structural" this or that has tended to mask its status as something secondary to relational regularity. The classical formulations of ontology have addressed what is "real" in terms of the tangible, whereas the relational motif of autopoietic theory circumscribes actuality in terms of what may be termed the tenable. This is well-evidenced by the theory's persistent reliance on the construct of *domain* -- the ubiquitous term connoting a 'realm' or 'sphere' circumscribing: (1) the relations among observed systems and the unities (medium) with which they can be observed to engage (e.g., phenomenological

domain) or (2) the foregoing plus all potential states of relation and/or activity among the given unities (e.g., domain of interactions).

The distinction between matters of substance and matters of relational regularity link to another distinction of direct relevance. With the possible exception of Merleau-Ponty, no philosopher is cited or recommended in our community more often than Martin Heidegger, for whom ontology was the entire focus of his monumental *Being and Time* (1962). However, Heidegger identified and adhered to a differentiation between two modes of essential orientation. The first (the *ontic*) pertains to "beings" (i.e., "things"), and the other (*ontological*) pertains to what lies behind beings (e.g., that status or conduct via which beings are manifest). This differentiation allows us to finally describe the state of our preferred theory with respect to the question of "what is real", and how we address reality as an explanatory necessity. To the extent the biology of cognition and the ontology of the observer reference structure, they are categorizable as instances of an ontic (and not ontological) stance. Heidegger claimed that an ontic stance could not lead to the goal of all philosophy -- a "fundamental ontology" (i.e., a perspective grounded so essentially as to leverage the primordial). Only an ontological stance (one addressing the mode of "being" and not any unitary "beings") could achieve this end.

Conclusion

We cannot escape the risk of being "wholly parenthetical" until and unless we "plug the hole" in our parentheses (i.e, the first one discussed). We can do this by achieving an explanatory closure such that the starting elements for our explanations are either supplanted or redefined by the theory's generated constructs. The elements which have been turned upon us as evidence of our inconsistency have pertained to the ontic (i.e., they denote beings in the sense of "things"). If Heidegger is to be believed, we can obtain the full power of a fundamental ontology only by proceeding with an ontological stance -- i.e., one which precedes or underlies the beings we seemed trapped by language to prioritize. The essential defining features of autopoietic theory entail relations and not substance. Based on these premises, I recommend to you three conclusions: (1) such an ontological stance can be realized by embracing the relational character of the theory's core; (2) explanatory closure can be pursued by recasting the static / ontic elements lying "outside our parentheses" in terms of this relational character; and (3) the abstract construct of "domain" and its concrete capacity for circumscription and constraint may prove to be the "focus of invariance" which can serve as our conceptual fulcrum in eradicating allusions to material existence and freeing ourselves from the sort of inconsistency Mingers decries.

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