

Interactive comment on “GAIA 5.0 – A five-dimensional geometry for the 3D visualization of Earth’ climate complexity” by Renate C.-Z.-Quehenberger et al.

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Dear Renate Quehenberger: It is my pleasure to discuss this article with you. With regard to my response, I would also recommend your soliciting the advice of your co-author and Gaia theory specialist, Sergio Rubin.

I want to make sure I follow your sense here: you write, “Thank you for encouraging us to strike out the aspect of Gaia as a ‘cognitive system.’” In English, the verb phrase “strike out” typically means, “eliminate.” But I take you to mean, “emphasize” or “underline”: “Thank you for encouraging us to emphasize the aspect of Gaia as a ‘cognitive system.’” I certainly do not mean that you should eliminate this aspect, but rather, that

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you should take it farther.

Now, I need to clarify that my use of the term “cognitive” in no way means or implies “conscious.” I would not think of asking you to grapple with the “origin of consciousness”! Rather, my usage stems from autopoietic theory (Maturana and Varela, as adapted by Margulis), in which context “cognitive” means “sentient,” “responsive to its environment,” or more poetically, “able to bring forth a world.” In this sense, a living cell - say, a bacterium - is cognitive, and so, too, is “autopoietic Gaia.”

For “autopoietic Gaia,” then, such (arguably) responsive or compensatory (self-regulatory) behavior as generating hurricanes to diminish heat gradients is no more “deliberate” than any other manifestation of the second law of thermodynamics in a complex dynamical system. Nonetheless, the effect is to produce what the system “wants” - to cool itself!

So, what I mean by “planetary cognition” is just this registration by the Gaian system of its forcing by solar and terrestrial events by producing an “anticipatory” response. I dilate on this matter in my blog post “Cognition Not Consciousness”: <https://www.gaian.systems/research/cognition-not-consciousness>. My question for you, then, is whether you might also see a way to invoke the hyper-geometrical “formal gradients” that your art-science project explores in support of this autopoietic model of planetary sentience, or sensitivity.

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