

# Review of: "Provisional Definition of the Living State: Delineation of an Empirical Criterion that Defines a System as Alive"

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Potential competing interests: No potential competing interests to declare.

*The article has several parts that are unclear. For example, here:*

1. Note that the definition of a living system does not include anything about the specific constitution of the system, such as a requirement that it be composed of organic molecules, or any requirement for demonstrating the capacity for growth, reproduction, functional activity, or continual change preceding death. While being highly similar to organic life in terms of energy requirements, a living system is a more general state of matter and energy, differentiable from organic lifeforms by the fact that it does not necessitate the inclusion of organic molecules within the ordered system. Put another way, **while all organisms are living systems, not all living systems are organisms.**

***Especially the last sentence seems to me to contradict the scientific way of thinking. Every living organism is a system. The author here is playing with the words which makes not much sense.***

1. An artificial system can be sufficiently programmed to be indistinguishable from the behavior of a human. But programmed responses are the opposite of a system with agency. The true test of whether a system is conscious is if it can be ascertained that the system gives *non-programmed responses*. In addition to serving as a test for assessing whether an artificial, or natural system like an animal, possesses consciousness the following criterion also demonstrates a key characteristic of consciousness—that it is non-computable and non-programmable.

***This sentence above is weak from the phenomenological point of view. The non-programmed response is not the only property of consciousness. We know today that AI can also give non-programmed responses in the sense that is capable of complex thinking processes. Some companies have AI as a CEO. The cognitive power of consciousness is watching and witnessing the mental process. This will never be achieved by AI, but humans can step out of the mind and observe the stream of thoughts.***

***One of the main characteristics of living organisms is to keep lower entropy as is the entropy of the environment. And the second characteristic is the possibility of replication. This I think should be pointed out.***

***The author discusses in this article life from the perspective of consciousness. Ant is alive but is not self-conscious. Only humans can reach the state of self-consciousness which means the observer is aware of its source which is consciousness. Ant is alive but it is not aware of consciousness. So, we cannot define life strictly by being aware of the life source which is consciousness which is the fundamental substratum of the***

*universe.*

*You cannot write an article on this subject and use only three references. A minimum of 30 references are needed. I see this article as more as a personal philosophy not as a rigorous science. I would suggest the author rewrite the article, using available literature, and understanding that the entire universe exists in consciousness. From this perspective, everything is alive, also stone. From the perspective of thermodynamics, life is syntropic. This should be mentioned. In the universe, only atoms (matter) increase entropy, photon, electron, and proton are syntropy-type particles, but we do not define them as alive. Life means the complexity which keeps lower entropy as it is in the environment. Here Prof. Fritz Popp needs to be mentioned (biophotons).*

1. From this, we can see that in theory it is possible for artificial (man-made) systems to be engineered and constructed in such a way that they are coupled to the spacememory network such that the basal awareness and natural sentience is operational within the artificial system's functionality. This will most likely have to be done at the nanoscale, with nanomolecular engineering to achieve a level of information coupling with the nonlocal neuromorphic network of the universe that the artificial system contains scale-free cognition and intrinsic awareness. This raises the question; how will we know whether such an artificial system is really conscious?

*AI will never develop consciousness, AI operates on the basis of electromagnetism, and consciousness is far beyond AI is a kind of artificial mind, it is intelligent, and it has creative thinking because it has such a waste information basis and capability of self-programming. But AI will never develop consciousness because consciousness has a much higher ontological order than the mind. See this reference*

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