

Review of: "Evolution, Through the Lens of a Physicist"

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Potential competing interests: No potential competing interests to declare.

[Commentary] Evolution, Through the Lens of a Physicist

The topics of this commentary are interesting.

The introduction has to better clarify the concept of evolution in complex adaptive systems and proposed ideas and hypotheses.

I would also suggest inserting in this discussion about: "about chance and the formation of new organisms in biological evolution", and also the role of evolutionary radiation for supporting adaptation in systems.

The concept that "in physics, even relatively simple systems cannot be understood in terms of the laws and properties of the constituent parts. New properties emerge in the higher system; for details, see [Butterfield 2011] and [Driessen 2016]."

This aspect can also be supported with the concept of Symbiosis in evolution by Lynn Margulis.

The suggested ideas of the author can be better systematized in a flow chart to show the relations between variables.

The conclusion should support clear theoretical implications based on clear postulates with suggested predictions based on proposed concepts.

Suggested papers:

Margulis, L (1976). "Genetic and evolutionary consequences of symbiosis". *Experimental Parasitology*. 39 (2): 277–349.

Margulis, L; Bermudes, D (1985). "Symbiosis as a mechanism of evolution: status of cell symbiosis theory". *Symbiosis*. 1: 101–124

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Lazcano, A; Guerrero, R; Margulis, L; Oró, J (1988). "The evolutionary transition from RNA to DNA in early cells" *Journal of Molecular Evolution*. 27 (4): 283–290.

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Artmann, Stefan. "Four Principles of Evolutionary Pragmatics in Jacob's Philosophy of Modern Biology." *Axiomathes* 14 (2004): 381–395.

Carroll, Sean B. *Endless Forms Most Beautiful*. New York & London: W.W. Norton & Co., 2005.

Jacob, François. "Evolution and Tinkering." *Science* 196 (1977): 1161–1166.

Lieberman, Daniel E., and Brian K. Hall. "The evolutionary developmental biology of tinkering: an introduction to the challenge." In *Tinkering: The Microevolution of Development*, Novartis Foundation Symposium 284. New York: John Wiley, 2007: 1–19.