Posted by u/kiwi0fruit 16 hours ago

On natural selection of the laws of nature, Artificial life and Open-ended evolution, Universal Darwinism, Occam's razor

Greetings,

I seek advice or any other help available regarding creating a specific mathematical model. It's origin is at the intersection of the following areas:

- fundamental physics (a bit),
- the theory of evolution (a lot),
- metaphysics (a lot),
- foundations of mathematics and computability (should be a lot).

The problem I'm trying to solve can be described as to ***create the simplest model possible in which the evolution of the laws of nature arises from the natural selection of structures***. This approach implies indeterminism and postulates random and spontaneous nature of some events. It is also assumed that the universe had the beginning (the first moment of existence). This task is meant to provide the tychism doctrine by Charles Peirce with a mathematically accurate dynamic model.

The mathematical model is intended to describe the process of changing of a discrete structure (like graph, consisting of interconnected atomic parts). Moreover, it should be the process of development and complication of the structure (it should be capable of producing even complex "intelligent" agents after some presumably great time). And this discrete structure is a medium on which the natural selection works on (there can be selected individuals and environment, natural selection postulates hold).

The idea is attractive because it assumes that the beginning of the Universe was simple and self-justifying and can be described by the mathematical model that is obvious in the retrospective: just like Darwin's idea of evolution and natural selection: they are obvious, but until they were formulated it was really hard to assume them. This research program is a special case of the *Artificial life / Open-ended evolution* problem (OEE) that has extra constraints that come from metaphysics (I also hope they may help to solve OEE problem).

P.S. (on computability)

The only connection to computability is that in the model to build individuals presumably should incorporate recursive algorithms that change the environment (that is presumably the other individuals). I tried to imagine lambda functions or primitive recursive functions as basic ontological atoms (to incorporate to graph-like space) but failed miserably.

...

There is the article with complete description of the research problem: https://kiwi0fruit.github.io/ultimate-question

GitHub repository of the article: https://github.com/kiwi0fruit/ultimate-question

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WildZontar 3 points · 13 hours ago

So... I'm going to be blunt in expressing my opinion; you're being *way* too ambitious by trying to map this all out at such a high level before starting any actual work. You need to break this up into much smaller components, "solve" them, learn from your solutions, and try to figure out a way to combine those components into something larger.

If you just want to be philosophical and wax poetic about reality and write about your ideas, then that's one thing and keep doing what you enjoy. But if you want results, you need to scale back most of your expectations dramatically.

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kiwi0fruit 1 point · 2 minutes ago

But you've got the point that breaking into smaller components can be useful - it would provide intuitions and habits of how to deal with that small parts. With these intuitions and habits the task would be easier. But this aside: I do not see how this can be slit up. Not a single idea. As I said **here** the hardest part is to formulate what are the individuals in the model and how they work (they are weakly constrained by expectations of open-endedness and some occam's-razor-like metaphysics). How to split that?

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kiwi0fruit 0 points · 12 hours ago

The name of the article is not mentioned here but it's "The Ultimate Question of Life, the Universe, and Everything". And there is a reason for it. Well enough justified (from philosophical point of view) model of open ended evolution would be a very good candidate to answer The Question. And I have no hope that such a question can be solved by splitting to smaller parts. I also can tell that all that I know about this problem suggests that it cannot be split to smaller components. But it's only my intuition so it's not an argument...

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WildZontar 1 point · 11 hours ago

As I said, this is just my opinion based on my own experience and intuition. Best of luck.

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SirPolymorph 4 points · 11 hours ago

I don't comprehend where you're going with this. I just want to comment that your unit of natural selection should probably be more on the replicator level, not individual level.

Good luck!

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kiwi0fruit 1 point · 2 hours ago

Thanks! That's an important thing not to forget when creating the model.

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