

Re: Stephen Wolfram vs. Charles Darwin on natural selection

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- *From:* dkomo <dkomo871@xxxxxxxxxxxxx>
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John Edser wrote:

dkomo <dkomo871@xxxxxxxxxxxxx> wrote:-

>> JE:-

Complexity is equated with an decrease of entropy mostly because increasing complexity can be equated with increasing levels of order.

When discussing complexity it's best to stay as far away from mentioning entropy as possible. When it comes to entropy, hardly anyone knows what they're talking about.

JE:-

Entropy is a concept of physics which can be usefully incorporated into falsifiable theories of biology. Like complexity, entropy remains almost entirely subjective, so indeed, "hardly anyone knows what they're talking about" with regards to either term. This does not render either to be invalid or useless, _as long as both remain a part of a falsifiable theory_.

I would agree with this. After all, sciences like geology and biology were largely qualitative (I wouldn't say subjective here) rather than quantitative throughout their early periods and yet were still scientific and produced significant results.

However, crystals are well ordered while displaying a
higher level of
entropy compared to the same substance uncrystallized. I
think what we
may need is a better definition of complexity.

Why? Complexity is like pornography -- you know it when you see it.

JE:-

If it looks like a duck and quacks like a duck it may not be a duck. Verification/non verification remains critically insufficient without refutation within all of the sciences. The problem is, mathematics is a not a science so all it has going for it is verification/non verification. In today's regrettably Post Modern world mathematics attempts to replace the sciences (e.g. Hamilton's Rule) rendering subjective concepts of entropy and complexity as (mostly) misused. An example is the recent discussion here about entropy within which some contributors failed to comprehend that it, like complexity, has to be totaled per fertile organism providing an entirely biological concept of entropy "inside" and "outside" of a biologically critical fertile organism boundary. Their error is not dissimilar to the ongoing gene centric proposition of simply ignoring within what fertile organism each gene finds itself (via the deletion of gene fitness epistasis within population genetics).

I have yet to see a good quantitative measure of complexity. I don't think the essence of complexity can be captured quantitatively.

JE:-

I did propose such a definition. Complexity is: the number of _nested subsets of fitness_(proper subsets of fitness) within one Darwinian, falsifiable unit of selection.

The trouble with this definition is that it applies only to biological entities. Organisms are not the only complex systems in the known universe.

[sinp]

Re: Stephen Wolfram vs. Charles Darwin on natural selection

JE:–

Natural selection may only appear to reduce complexity e.g. cave fish can be observed to be selected to cover their (now useless) eyes with skin in order to avoid damage and therefore infection while losing most of their body pigmentation. However, other body systems may increase in complexity.

Not in the case of parasites. In general, I don't think complexity is correlated to organismic fitness.

JE:–

I am not saying that it is. I am saying that complexity could be measured as the number of _nested sets of dependent fitness within each independent Darwinian mono-centric unit of selection_.

Describe in some detail how you would go about computing your complexity measure for two organisms at different ends of the spectrum: a bacterium and your favorite mammal. Show all your work. That is, for each organism label all the "nested sets of dependent fitness" and how each fits into "each independent Darwinian mono-centric unit of selection." And define all your technical terms clearly.

--dkomo@xxxxxxxx

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