

## Re: Origin – the wrong word?

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From: TomHendricks...@xxxxxx

Now I'm wondering if in the phrase 'origin of life', we should omit origin. Dictionary says, "the point or source or cause from which a thing begins its existence."

Yet for me it is clear that life is not a beginning, its a response to what went before.

Per various abiogenesis speculations, what went before were nothing more than a chemical hodgepodge where high–energy sources activated chemicals which then interacted with each other in somewhat random ways. But then, suddenly in geological time, there was a single successful replicator, something which consumed several of those hodgepodge chemicals to produce more copies of itself, thereby growing exponentially in number–of–copies, until a limit on the available supply of one of its input chemicals began to slow the replication rate, but already at that point billions of copies of the replicator had already been fabricated. If we look back to the very first copy of that particular replicator, we can mark the creation of that first copy as the moment when life began. There's a fundamental difference between the kinds of mixmash chemistry that went before and the single–purpose replication that came after. That sudden change is only in a very loose sense a response to what went before.

I find it so strange that those who say they believe in natural selection see no response to the environment in the 'origin'. As if that was the one and only time that there was no selection pressure and life just popped up.

Although there is always selection pressure, without some replicator with fecundity greater than one (hence exponentially growing in number of copies) all that happens is that some chemical species last longer than others before they are destroyed, but not a single chemical species maintains its own copies to avoid extinction. So selection pressure before replication is essentially meaningless.

## Re: Origin – the wrong word?

We have discussed on this forum how difficult it is to set 'a moment in time when life began.'

At the point when there were already a billion copies of one replicator, I think we'd agree the life–began moment had already (previously) occurred. At the point when the first ten copies of that replicator had been generated from a single original copy, whereby statistically it's nigh impossible for it to go extinct before it reaches a billion copies, I'd say also the life–began moment had already occurred. Now whether you want to set that number of ten as the threshold, or backtrack to the very first copy of that replicator that we know eventually got to ten and later to a billion, isn't worth arguing over. You can make a precise definition of how far to backtrack to set the moment when life began, and somebody else can backtrack a different amount to get a different moment, and you have two moments per different definitions. Nothing difficult about that.

My def. of life =  
novel stabilizing responses to the environment  
or  
The most stable response of chemicals to that specific environment.

So you'd say the carbon dioxide atmosphere on Venus is life??

In response I'd say you're bonkers.

Oh wait, Venus wasn't the first planet to develop a stable carbon–dioxide atmosphere, so Venus's atmosphere isn't novel?

Well then you'd say the first planet to have a carbon dioxide atmosphere was life, and I'd still say you're bonkers.

The thing that most distinguishes life from non–life is that life converts other materials to make more like itself, thereby generating a \*statistical\* stability in lots of copies, \*not\* a direct stability of simply sitting tight resisting erosion such as what zircons do.

To illustrate the difference, do a simulation of some type of replicator, where in each time step there's a probability of making a copy, and a probability of being destroyed, which applies independently to each instance of the replicator in existence at the start of that time step. Start with a hundred instances of the replicator, enough "food" to support a thousand simultaneous instances, and let it run. After a while the total number of instances will be one thousand, and will remain one thousand forever after. But if you look at which instances are originals and which are copies, over time fewer and fewer of them will be of the hundred originals, until eventually not a single remaining instance will be one of the originals.

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