

# Re: Minimization principal for evolution

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"Don" <[Don.Steiger@xxxxxxxxxx](mailto:Don.Steiger@xxxxxxxxxx)> wrote in message  
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I should have been more explicit in my original question. By a minimization principal I mean in the sense of calculus; i.e. given a function  $f$  the local minima occur when the derivative of the function is zero. The specific minimization principal that I was thinking about is potential energy minimization. This is physically very fundamental, and applies to all physical processes. You can think of the potential energy function, of a physical system, as a hyperdimensional surface composed of hills (unstable states), valleys (stable states), and mountain passes that connect the valleys. Evolution, to me, is a process that moves a physical system from one valley (stable state) to another valley by finding the mountain passes. Is this a perspective that has been taken by anybody?

Don,

While just about every evolutionary stone has been turned over by at least somebody, my own view of evolution is one whereby the process is a hit or miss one and not one with directionality being a factor.

Some processes (and hence systems) ARE directional. If, for example, we wanted to study underground water movements and tables, we would be able to rely upon some consistency as constrained by what water tends to do in respect to gravity. (It usually goes from a higher elevation above Earth's center to a lower one, unless acted upon by gas pressures, heat, osmosis, or some other secondary and perhaps even negligibly strong influence to the contrary.

In biological evolution (at which I am not expert in the slightest) I perceive no such persistent "attractor" to be at play but, rather, a random process (not unlike random migration of gas molecules in a container, such that they tend to become distributed ratably throughout). The "container" would be Earth, insofar as referring to biology as an Earth science (and omitting to include the extension of what we know of that in the current

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interplanetary search for possible biological forms and processes).

Many biologists seem to me to attribute the diversity of life on Earth to geographical determinations (envisioning most species variations over time as being a result of something they call "adaptation" to differences horizontal (i.e., existing at different places with different climate and other parameters different) and vertical (i.e., differing in a single Earth location, over the course of history).

My own view is that species simply are unable to maintain a consistent morphology (by which I mean not only their outer mechanisms for interfacing with externalities local to them but, also, that their mechanisms for dealing with their internal ecologies change). The changes, per my view, are a result of random mutations in gametes leading up to or during fertilization. This is not purely theoretical. Genetics research can observe genes that have happened. The causes of some gene copying errors are known, and more are suspected. However, there is no evidence I know of, that they are anything but random -- as opposed to being interactive with environment or in pursuit of means of availing their hosts to any new advantage, such as changing to exploit a new ecological niche, such as a new food source, in a particular geographical location, or any such things.

Some of the "causes" of mutations are known. None of these causes, so far, has demonstrated any pattern that is "guided" or "directed" toward adaptation... at least, not to my knowledge. There are some mutations that are INTERPRETED by some biological evolutionary theorists to do so, but no mechanism whereby that might be achieved is known, I do not believe.

At to the causes of mutations, many are known. Certain electromagnetic phenomena can cause them. (Clinically originated X-rays, for example..., which is why operators of nuclear medicine hardware wear lead aprons and leave the room when they "zap" patients with them for imaging purposes, or to treat malignant tumors, and such things." There are electromagnetic frequencies zipping through gametes all the time from 'natural' sources. A right collision at the right time, and a coding sequence in a sperm or ovum has a chance of coming up with a "good" gene that enhances survival of future successions of progeny but a FAR GREATER chance of coming up with one that will do more harm than good. (Hence, my claim that the greatest irony in all of bio-evo is that all the "good" genes are equivalent to winnings of the evolutionary lottery.

What causes mutations in germline cells or during fertilizations, if not deliberate interactive adaption? There are some notorious ones: Certain toxins in the environment are mutagenic and can impact germline cells as well as somatic ones. Certain other electromagnetic frequencies can, and do, penetrate bodies and impact germline cells and embryos. I once read of a research study the results of which indicated overheating (as in a male's taking hot soaking bath prior to sex) can result in mutations. Chromosomes can get scrambled here and there by use of marijuana and other pharmaceuticals... thalidomide, among them.

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As you can see, these "agents of gene splicing changes, or errors" are NOT in any way a part of a process of adaptation. And, if anyone knows of any "agent of gene splicing errors" that CAN be associated with an adaptation "directed" concatenation, I SINCERELY HOPE THEY WILL TELL YOU AND ME ABOUT IT ! My purpose is to try to understand, and get new information, and not to impress anyone.

(To anybody who knows of any mechanism that influences gene changes IN RESPONSE to any stimulus in an external or internal ecology, or the presence of a new niche in a food chain or some such thing by all means LAY IT ON US.)

Meantime — if gene copying errors are just made for no reason at all or, as I am inclined to suspect, happen as a result of something impacting a gamete randomly — then, as you can see, there would be no prevailing force — such as in the studying of underground water tables and reservoirs, where gravity persists perpetually.

What external and internal ecologies DO influence is... who gets to reproduce. Obviously, if a baby does not live to reach the age of puberty and find a member of the opposite sex to mate with, no pregnancy results, and/or the new baby (whether or not it has a mutation) does not live long enough to do likewise, then — the chain of reproduction for that individual and all others encountering such obstacles — ends.

Dead organisms do not fertilize or get fertilized, so — assuming that babies usually resemble their parents somewhat — the non-parents of a non-child do not pass anything along.

Do you see any way, in such a scenario, that anything comparable to a prevailing "attractor" such as gravity would come to play and create a situation in which it makes any difference whatsoever is the shortest distance between two points?

I do not.

Where there is a "fixed route" for something, such as when an electric current (electrons) travel through an insulated wire, the course of a current is along the wire.

Where there is a prevailing force, such as gravity, water, flowing downhill, would seek out the shortest AVAILABLE route from a higher elevation above Earth's center to a lower one.

Where there is only random variance — only SUBSEQUENT TO THE RANDOM CHANGE, OR ERROR, externalities would, indeed, FILTER the random change events. That is, if a baby is born headless, it is not likely to play a role in perpetuation of its species. If, on the other hand, if were to happen to get extraordinarily good night vision, by way of a genetic mutation, that might be very handy.

Hence, as I see it, random mutations get filtered NOT as a consequence of a need to adapt, nor as a consequence of an opportunity to avail of a new niche opportunity, but they just happened. And, once they happen, they TEND

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to get filtered by both SUBSEQUENT sink or swim in a consistent set of externalities, or to have added advantage, or increased disadvantage... as things turn out, in even of a perpendicular externality change (over time in a single Earth location as, say, elevation of the vicinity is pushed upward by tectonic action below, and many successions follow).

To say that anything of the nature of "seeking out and availing of the shortest distance between two conglomerations of genetic significance, however, there is no prevailing "force" such as the channel through which an electric current passes. Electrons traveling down an insulated wire (channel), if there is a short to ground DO accessed the shortest distance between two points. Repeat — they DO, but only because electrons are seeking equilibrium between polarities (positive flows to negative, as a rule). By the same token, water flowing in a river, if an oxbow be cut through at its bottom (like a narrowing neck of a bell shaped curve whereby the bottom on each side becomes narrower until the current flows across and leaves what is called an "oxbow lake," ... THESE ARE EXAMPLES OF SOMETHING SEEKING EQUILIBRIUM and, hence, taking the path of least resistance.

But there is ZERO EVIDENCE in biological evolution that there is any seeking of equilibrium in morphology.

Don't misunderstand. I did not say that there are not equilibria in biology — such as an equilibrium between the amount of food of a given type available and the number of animals in a restricted area relying upon that food source. That is a matter of supply and demand.

But if you will think about it, there is no supply and demand relationship between random change and externalities. In their operative scenario what works just works and what does not work does not work. Hence there are NO GUARANTEES... such that mutations will have a directionality whereby they seek to provide a "trait" to meet an ecological demand. It is precisely because there is NOT any such "directing" of genetic mutations that some species go extinct. (Most biologists would refer to this as "fail to adapt." I would not.)

If elephants could "adapt" in the Darwinian sense, they would be doing so this very moment. They would, for example, be experimenting by, say, ceasing to grow tusks (so that poachers would stop killing them to get ivory), or by having smaller babies that can get by on less and less food and stay out of agricultural crop areas (where the farmers have guns and can get very unhappy). Elephants are NOT "experimenting" with ways to "adapt." And unless the externalities themselves change, the elephants are going to have to get lucky really soon, by some chance mutations that will "adapt" to current conditions.

My prediction is that they cannot, will not, and are not even aware of a NEED to experiment by coming up with genetic variations aimed at doing anything to bring about any new morphologies among their offspring. If they were going to do that, they are out of time. And their fate is just a

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matter of time now.

For the elephants, the shortest distance between two evolutionary points would be to start IMMEDIATELY, if not sooner, "adapting." And if that were the way bio-evolution works, they would have "caught on" by now and kick started their genes into doing what genes are supposed by SOME biologists to do.

So... bottom line is... NO. I do not believe there is any capacity of biological organisms -- individually nor collectively -- to AVAIL themselves of any minimization... any cutting to the chase... any accelerating and directing of a process of "adaptation," nor or choosing the direction their genes (and subsequently the successive morphologies of their offspring-to-come).

If I am wrong, I shall be MORE than glad to be corrected and provided so much as even one shred of evidence that adaptation is directional, responsive to environment (as opposed to simply filtered by it after the genetic fact), or any other new twist on this issue.

In fact I would be delighted. But until then, my take is that there IS NOT ANY prevailing minima-seeking (or equilibrium seeking) genetics-guiding attractor nor eliminator at work whereby it might be possible.

(If you do not know this already, let me disclose that I type very, very fast, and make many errors, and do not proofread; so if my words are gibberish in spots, this is from carelessness. But, hopefully I have made some sense between the lines, if not in them.)

g

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