

Life Part 2: A Biological Universe

A BRIEF SERIES ON LIFE AND BELIEF BY CHRIS SARA

Foreword

I never studied biology at school. I much preferred the math-based subjects because there was a logic to the answers. When you understand a formula, you can go about solving any problem, but with biology you can't derive the answers from first principles; there are none, not in an absolute way. We can't predict where biology will lead us.

In this essay I want to delve into the biological aspect of the Universe. As I stated, I didn't study biology, but now that I have lived a while, and experienced life, I can see how biology defines the Universe of living things. The levels of complexity that biological structures can reach far outstrips the elemental, mineral, chemical and organic structures that comprise the other 99.9999+%* of the Universe.

Biological structures are not limited by their physical definitions like other structures. They have thought and control; they can react to, or before, being acted upon. It can even model where it will go or how it will get there. This is the fascinating thing about biological matter, and a reason to seek it so eagerly throughout the Universe; could we find meaning for ourselves if we observe it in another context?



My artistic representation of how our DNA structure could be likened to our own Milky Way Galaxy; as if the structure of life mirrors that of the formation of the Universe. Everything we are is contained in life's Nebula, anything is possible and how it evolves is yet to be defined.

*This statistic is not factual, but merely an indication that life atoms are vastly outnumbered by non-life atoms

Introduction

I'm inspired to write this series of essays about life because humans are possibly the greatest thing in the Universe, followed by other lifeforms on Earth, until somewhere off Earth, at maybe number 100 million, we can observe the next greatest things in the Universe.

That statement effectively puts us back into a geocentric way of describing the Universe. But I'm not referring to a pure physical Universe, one of lumps of rock and balls of gas, but one of sensual matter. Matter that turns energy not into motion, but into emotion. Energy that is absorbed as memories and knowledge. The questions I look to address in my series on life is how is this energy part of the Universe, and could it survive outside a living form – transcend?

There is no denying that there is wonder and beauty throughout the Universe but life must be the crowning achievement for matter. From the first embryo of the Universe that was the Big Bang we have now reached the epoch of "Us". The random chaos of the Universe where everything was born from fate, matter prescribed by gravitation forces, forces that acted upon matter to create simply, larger bits of matter. There are formulae to describe all this action, and visual remnants of it actually happening. It is nothing more than what it is.

But life, the same elements that exist in a lump of coal, submerged in a pool of water, with a few organic compounds thrown in, have no predictable pathway. They will evolve, as we have, to the point where we can reverse the process, deconstructing ourselves until we are once more – the elements – we sprung from.

It is not hard to see why people considered a "creator" to be the architect of life. People lived in relative isolation, their only knowledge coming from limited observations, but most likely from doctrines enforced by those controlling their lives. This would remain the case for what has been the majority of human existence.

As our evolution progressed so did our technology and hence our knowledge of our past and possible futures. We changed the norms of creation, the doctrines that set the rules, and allowed ourselves to self-determine our lives. This wasn't that long ago, but still a sad reality for many who find their rights limited.

We can safely say that the world was not created in 6 days and human life added to ice the cake, but neither, can we say that the essence of life doesn't represent a force, unquantifiable by science. We should, and must, consider what this essence has to contribute to our future and therefore the evolution of the Universe. It is part of our motivation to explore, improve, and survive.

From Humble Beginning

A quick recap of time. The Earth sprung from a swirling disk of dust and gas some 5 billion years ago. The Universe was already twice that age and well-structured and populated with many suns and planets. It was a very violent start and something life was not capable of emerging from.

Our solar system was far from stable as Jupiter roamed about vacuuming up what ever got in its path. The Sun burned on, already owning most of the solar systems mass. Jupiter moved back beyond the asteroid belt and three candidates for life orbited the Sun and but for a few factors could have all been a home for life.

That is all history now and we know how that tale ended. A single perfect planet, so soft in comparison to its brothers and sisters. But even the failure of life on the others was not in veil. The equilibrium of them all is important, each playing a role in keeping Earth as she is, just in that right spot, as if life was an experiment being undertaken on a planetary scale. The life-failed planets being analogic of discarded beakers on the scientist's workbench.

It would be millions of years before the first seeds of life would emerge. In a small area with little control over their existence, a pool somewhere on the surface of a planet newly minted, and ripe for that next step. There, a form moved not in reaction to the physics of the Universe, but by taking the energy around it and creating a life force that was then perhaps, already, the most complex matter ever formed.

Most probably this process was, and is, happening throughout the Universe. The most basic of life, reacting to the environment it has to base itself within. Step by step for the next millions of years evolving. Always vulnerable to any small changes that would halt its progress. This was an issue that was not to eventuate for life on Earth, so evolution continued, as it continues stills.

Making the Most of a Good Thing

As the Universe expands in volume, life expands in complexity. Once the Earth was formed and the solar system stabilised, everything we would ever have to build a world upon is already here. There is no second building of the solar system, one that includes us anyway, so life had to create a future based upon those first steps.

Life was strong after billions of years and many forms were abundant over the planet. Humans were not on the radar at this point, but the building blocks of humanity were in place and evolution was rolling the dice and all bets were still on the table.

This strength was a critical aspect, as when you are talking about time spans of billions of years many things can go wrong. Evidence is nearby. With Mars and Venus, we can see how subtle changes can render a planet lifeless. We had damaging phases, but not terminal, witness ice ages and asteroid strikes, with the latter considered the path for human existence.

We individually consider a lifetime as a long period, but in terms of the Universe it constitutes but a blip, not even registering on a cosmic time line. But this is the beauty of life; it can change so fast in relation to the world about it. The higher the form it reaches, the more so this applies. As humans, we are now outpacing evolution, impatient even, we

crawled last night, walked this morning, by lunch we were running and by dinner we plan to fly into the Universe. Our coming and going will not even be noticed on a cosmic level.

Racing through Life

When we observe the stars, it is hard to believe they are travelling through the Universe at amazing speed. Amazing speed, over an amazing period of time, means even more amazing distances. Everything about space is vast and that is hard to reconcile within our lives.

We don't have the luxury of cosmic timetables. We at best will be able to continue a theme from generation to generation. We rely on the next lives to carry on where we left off. This takes great discipline, something ironically, better achieved by "lesser" evolved life. We have a much greater sense of self and therefore desire to see things in our own lifetimes. It will ultimately require a greater selflessness to advance life off of Earth, but we are not anywhere near that place yet.

In fact, we seem to be getting even worse at looking beyond the moment we currently occupy. We have always phased in and out of this way of being. Maybe when God gave us free will it wasn't her best idea. Luckily Jupiter, or any lifeless matter, doesn't have the *choice* to once more wander back into the inner solar system and throw its weight around, as it remains fixed by the predictable laws of physics.

Nature in the Rear View Mirror

We are now moving technology at a pace that has placed us in danger of being victims of our own success. Nature has a way of balancing out the elements of the Universe. We can't change the number of atoms that comprise the planet, but we can change the way they are arranged. We need a certain amount of CO₂ to keep us warm, but not so much that we cook ourselves. The planet has complex structures but not complex like us. Lifeless matter can't choose what to do, it can only react, and the laws of physics – which we cleverly derived – dictate certain reactions. We don't need to quantify the outcome but only acknowledge that we can have both positive and negative effects on the planet.

Our damaging ways are at this point limited to Earth, precluding, our time on the moon, our visits to Mars, and the few things we crashed into our solar system companions. We probably, rightfully, concluded life did not exist on these surfaces. But as we venture farther, we will need to be more mindful; like when we explored Earth and clumsily trampled all over nature, and fellow humans. Life is a much more tenuous prospect than all over use of matter. It might be that life is a phase that only starts when the violent phase ends, only to end when the violent phase restarts.

Summary

In what was a Universe of lifeless matter, Earth, at least, seen the beginning of the next phase of the Universes expansion. We now had physics, chemistry and biology. Biology is fully reliant on the former and showing itself as an apex predator. No part of the Universe relies upon its existence. We named it as we named everything, but in this case, it is about us, life.

Maybe we have not truly grasped how special life is. Everything in the Universe must one day end. End as it is now that is. It is really just a transformation in state. Only life contemplates the end of itself and others talk about the hole it leaves. If you want to talk about leaving a hole, consider the effects of spiralling stars colliding to form a black hole, that's a hole.

From the moment the first seeds of the Universe – happened – it has been on a chaotic course that offers up surprise after surprise. The numbers are large, where large is an understatement, and that allows for the possibility that many complex systems exist. Life would appear thus far to be the most complex of them all. We are limited in what we can observe, unfortunately, so must at this time, consider ourselves as alone. Life is rare at best, and unique at worst.

We have characteristics that transcend the physical that we have studied in depth. We have a reasonable grip of the maths and have accelerated our viewing into the unknown. We can reasonably expect that what we don't see acts like the stuff we do see. The principles of physics should be constant, with exceptions like black holes, possibility. We can't know it all, but know enough to be certain that learning more is vital to our future.

When we conquer our own world as "one people", when our efforts are all pushing in the same direction, then, we will be able to achieve the next step in our journey into the Universe. Only centuries have passed since the gaps between the attainable and the unattainable have been closed; and the once impossible has become possible.

I have pondered the physical Universe. Full of fun facts and absolutes. I have assumed that life as part of the evolution of the Universe. I want to take it beyond the physical. To a place that divides us at times, confuses our logic, and offers us more than we need, but it is our own fault. We had a question that stills precises, so it needs to be discussed; the role of life in the Universes future and how it relates to a faith structure that exists in humanity.