

Life Part 1: A Universal Existence

A BRIEF SERIES ON LIFE AND BELIEF BY CHRIS SARA

Foreword

In this series of essays, I'm wanting to look at life as it has evolved on Earth and how it may have evolved elsewhere in the Universe. Is there more to life than science sees it; could there be a greater force in action? I will try to be objective about a subject that, from a human perspective, ranges from a pure biological study to one of complete faith. A faith in the unknown and unseen, and if there is a place for that within an otherwise physical Universe.

As a species we have managed to progress to this amazing level. The complexity of our species is a true wonder and we are now at a point where we can answer so much about the physical Universe but still have so many questions about our own place in a Universe that still holds many mysteries.

I have recently finished reading Carl Sagan's book, *Pale Blue Dot*. In the early chapters it reads as a story berating man (humanity) for having the arrogance to place ourselves at the centre of everything, to the point of excluding the possibility that life could exist beyond our planet, Earth. This book, combined with a lot of personal thinking since becoming an amateur astronomer, has driven me to develop my astronomy series of essays beyond the scientific imperatives that prescribe astronomy. There are no rights and wrongs when we debate a subject like faith. We all have our own views, but must note, some have views more extreme than others. To add a level of objectivity I will acknowledge the extremes but not let them stop me from questioning any one way of thinking.

I got a sense, from Carl, of a commentary pointing towards us consuming time in attempting to place reason around our beliefs. Beliefs that were at first based upon the assertions that something greater than us, a deity let's say, had somehow fashioned a Universe that was for us, and us alone. As our observations became more compelling towards science as an explanation, those who were in charge, or seen themselves as in charge to be more accurate, readily denied such folly, and indeed activity quashed (persecuted) the conceptions that would inevitably prevail.

As we grow more and more aware of the "truth", – and I use the word truth with the greatest respect to those who still hold true to a creator – the Universe, and our place within it becomes ever more fascinating. We are right to question our existence and ponder our future, our fate as it may well be.

The *Pale Blue Dot* warms as you reach the middle and starts to address the science and technical aspects that an astronomer would seek from a science book. I also have a book by Dr Maggie Aderin-Pocock titled, *"The Sky at Night, Book of the Moon"*, which also starts like a story and evolves as a great bit of technical writing.

The amazing process that allows life is worthy of a modicum of storytelling. Expanding our tools of explanation to engage more people as we try to explain human existence. The share odds that life exists, above not existing, deserves a little arrogance on our part. It is not

about denial of evidence, or a sense of privilege, but simply a conclusion that life is not the norm and therefore we owe it to nature to explore all possibilities of how and why.

I'm not about to argue that there was, or was not, a creator. We once placed religion above science, but I see nothing to be gained in elevating science above religion if it only angers and turns people away from discussion. I'm about to simply look at how science and faith relate when seeking possible answers about our past and future.

One of the most beautiful and recognisable images of deep space is the Eagle Nebula, and more specifically the region known as the Pillars of Creation. This image is a wonderful example of how science and faith can be associated. It is but a name, but in its naming, there is a tilt to the wonder of creation in an evolving Universe.



Pillars of Creation –

I uploaded this image from Wikipedia. It is a high-resolution Hubble Space Telescope (HST) image taken in 2014.

Introduction

Is life the natural evolution of matter? Could life be the ultimate complexity of matter, even in its most basic forms? We stare with earnest into the Universe these days. We observe beyond what we would have ever believed possible. The Universe is some 14+ billion years old, meaning our time as a complex lifeform is a very insignificant blip on the timeline of the Universe.

That said, in terms of time our existence may be insignificant, but in terms of evolution of matter it is incredible. How we got to this point aside, nobody can deny the miracle that we are within the Universe. The more you look into the science of life the more you realise but for a few different factors, we may not have been here, or anywhere, at all.

You can see why people looked for answers in places that today we may scoff at. The point is, we did contemplate our existence. It was not enough to just “*be*” but we needed to know “*how*”. When you think you know, *how*, you can push yourself to wonder “*why*”. The, *why*, may very well be simple; because that is how the Universe works, but that explanation surely, won't sate our desire for answers.

Our drive to survive and progress is the unquantifiable factor that life exudes. Life can master its environment, whereas all other matter is destined to comply to its environment. It has taken around 5 billion years for Earth to get to where it is today. That is about a third of all time so it may not be unexpected for there to be very little (other, intelligent) life in the Universe. We have only been looking for other life for decades and the vast majority of the stars are thousands of light years away, therefore, even the signals we have sent into the cosmos are still to reach other stars, or potentially planets, and never mind possible lifeforms.

However, if nothing else, we have ourselves to study. The answers await our discovery and what ever they may be, they will be full of surprise and wonder.

In the Beginning

... or more accurately, six days later, God created man. What a much simpler prospect to fathom than quantum physics. The main ingredient for life must be time, as everything else is pretty abundant throughout the Universe. We are looking for carbon, oxygen, nitrogen and a few other bits and pieces to create the building blocks for life, as we know it that is. We will need a place for life to exist and so on. I have written about this before so we won't dwell on the how, as that has been covered many times.

What is important is that life has started and the process of evolving has begun. If life follows a nature progression, as with the formation of the planets given the right set of conditions, then surely life must be abundant throughout the Universe. Life is bound to follow the rules of physics and chemistry; where physics fixes matter to the planet by gravity, and chemistry prescribes its composition. Even our movements and thoughts are electrical patterns that science can measure.

However, we have taken things to a new level, a level that allows us to manipulate our very being and through our knowledge and physical abilities we can influence and revise nature itself. We have opened the door to contemplation of self; and this sits outside the physics and chemistry we traditionally look to for our answers. We wanted answers well before we even knew what questions to ask, and today we know very much more but are far from having all the answers. A number of intangibles may always remain unanswered; a mystery of life.

When we face our own demise, we look to the heavens for solace. Our loved ones celebrate our lives and desire our souls to live on, amount the stars. This to me, is the basis of faith. A sense that something greater than "us", exists. Where science looks to quantify, religion merely requires one to qualify. By following a doctrine one can surpass Earthly physics and find a place "beyond". The language surrounding religion offers many interpretations, something science appals as it seeks absolutes.

Ground is being asked of religious leaders. The abundance of evidence evermore casting doubt over much of their belief; people who once shaped the world having to watch their ways being cast aside. We now have so much science that the traditional ideologies of religion have been shaken to their very foundations. However, many people still place stock in the word of God. One could argue that they have been denied access to knowledge, they are oppressed, but this is not universal, and many, including scientists, still relate to faith in many forms.

A Needle in a Haystack

How we evolved to be here is probably answered, but the question remains, does it exist elsewhere? If it does then we aren't responsible for carrying the burden of the Universe's greatest achievement. If it doesn't then that highlights how special we are, if we needed further proof of that.

Looking for life beyond Earth is very much the preverbal game of needle in a haystack. To put context around it; we are talking about billions of haystacks and a number significantly fewer of needles. Of those needles we require them to be of a reasonable intelligence. An intelligence that allows it to transmit - by design or unknowingly - a signal that announces its existence. Add in the distances and time factors and you see very quickly how difficult a problem we have. This is not a conclusion that life is not everywhere, it is just hard to find, but so is winning the lottery, and people keep buying tickets nonetheless.

We will for now, have to work on the premise that human life is unique. We could be evolving in parallel across the galaxies, and still never encounter ourselves – ever. Science points to an abundance of life but we will need to have faith that one day we cross paths. We have plenty of examples to study on our world regardless, but given enough time the evidence will be forthcoming.

ET arrives by UFO

The presence of extra-terrestrial life among us is oft pondered. Stories of UFOs (unidentified flying objects) visiting us in the dead of night to conduct surveys, observations or maybe snatchings, also pop up from time to time. I'm of the thinking that we don't get visits from outer space. That is not to dismiss other life. It is just that if thinking we are the only life in the Universe is arrogant, then surely giving other life human characteristics is as equally arrogant; unless of course, the evolution of life ultimately involves the visiting of other worlds, as we happen to do ourselves.

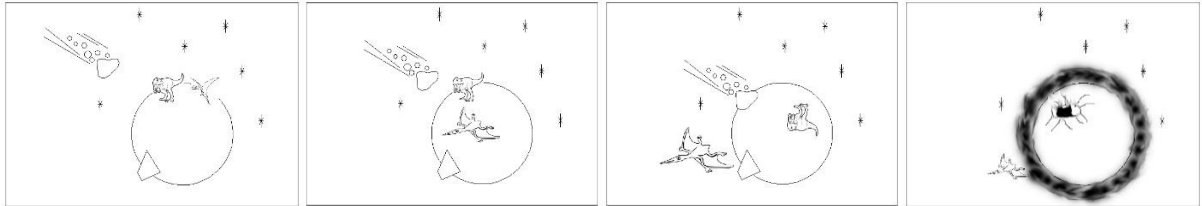
Timing is a very important component of evolution. Alien civilisations could have already completed their life cycle. Maybe they even ventured nearby just before Earth became a life affirming planet. We may have been passed by and the book of us was closed from an alien perspective. Perhaps we could make a parallel argument that; what alien visitors are to conspiracy theorists; religion is to people of extreme faith. I observe this as looking for answers in something corrupted by our own perceptions. I love a good story as much as the next person, but really. Species with such great technology as to reach us from so far away simply coming and going without notice, and in so many different forms, I simply don't buy it, and frankly aren't even shopping where those ideas are sold.

Alien encounters will need to be considered from a wholly different perspective, not a human one, but a science one. To travel about the Universe will surely require a different form of transport than we currently have, or even conceive. The distance and time that is to be spanned is so incredibly large that when we do, or if something else does, travel from planet to planet it could likely be done at an inter-dimensional level, not a physical level. The folding of time and high-end astrophysical concepts of that ilk are well beyond most of us, but at least we are capable of considering them.

Amazingly, we still keep discovering new species on Earth. On our studies of the deep sea and outer regions of land, we encounter things never before seen. With each discovery we

gleam greater insight towards the possibilities of life outside our world. Microbes that survive within the frozen water of glaciers offer up the possible existence of life on frozen worlds within our very solar system. There is even a chance that the building blocks of life on Earth were deposited here after hitching a ride on an asteroid.

If life on Earth does (directly) stem from off world, then the chances of other life in the Universe are very much increased, in fact, it implies it is a given. It is the shape life follows from its earliest seeds that defines it. We can see how far we have come, but that did require a life altering incident, in the form of a mass extinction event 65 million years ago.



When One Door Closes

We are testament to the strength of life to survive, and adapt. Life was travelling along quite happily, if you were a dinosaur that is, until an asteroid happened along and smashed into us and caused a massive change in the environment. A change that ended the pathway of the dinosaurs but opened the door to our species to rise from the preverbal ashes.

It is this type of event that we now watch for with the numerous objects that race around our space. It is merely a matter of time before something comes our way that threatens our very existence. Sadly, we are potentially doing a good job at changing our own environment to the point where our existence on the planet could become untenable, regardless!

It was only about 2 million years ago that human-type life emerged. That was a good deal of time between the dinosaur's demise and our rise. We have also come a long way in those millions of years. We are even accelerating our learning and now have the ability to outpace evolution itself. We no longer, completely, answer to nature regarding our future, but we will suffer if we don't keep nature in mind as we progress.

The Future of Life on Earth

I should qualify the title of this section – The future of Human Life on Earth. It is very easy to only think of ourselves in the equation of life. Life did survive the extinction of the dinosaurs and will survive human life. However, what life ultimately cannot survive, is the end of the Earth itself.

Life is intimately bound to our Sun. Without our Sun there would be no life – period. We have no control (at this point) over the Sun and estimates place it at midlife. That means that within the next 5 billion years or so it will stop being what it is today and become a red giant, so large it could be on our doorstep. Life will be extinguished by the searing heat and our planet may not even survive this transformation. The shape of our solar system will be forever changed. We can't say we weren't warned.

That is a pretty grim picture to paint. It is all based on physics and chemistry, and from observations of many red giants throughout the galaxy. So, the basic answer to the future of life on Earth is; there isn't one. There is every chance that other events will make life on Earth difficult well before the final day billions of years from now. These events include the Moon moving away from Earth, global climate changes, or perhaps another species superseding us altogether. These don't spell the end of human life as such, but do signal that finding a new home is something that will be required between then and now.

One thing we do need to focus on is the fact that we are all on the same rock, orbiting the same Sun, with the forces of nature acting on us all. We are still busy fighting other the control of the Earth. An Earth that we don't physically control at all. It is bad enough that the solar system will one day fail us, without adding in the extra hassles of human stupidity and greed. We were given the building blocks of life, and left to physics and chemistry became what we are today. Our evolution means humans have a unique ability to advance beyond chance. The power of how to use our resources is truly our own. The fact we choose to waste them on wars and personal advancement is sad; something no other life thus far encountered has the luxury of.

We actively seek out other worlds that could be our hosts and will need to start by proving our abilities on our nearby neighbours, namely the Moon and Mars. If we are able to carve out an existence on other bodies in our solar system we can then consider looking further afield. We have a lot of time before the major issues surrounding our Sun are a reality, but we are facing human impacts on the planet today. In all probability if we can't address these issues, we may never be able to rally our efforts to inhabit another world. Or maybe, like rats deserting a sinking ship it will speed the process up. The biggest problem I see in that scenario is we will basically take our human problems with us.

Living Beyond Earth

Now that I have proposed that the end game is not one that involves the Earth, where do we go? Finding a new home is much harder than looking after the one we have, so that puts the enormity of the problem into perspective.

We are starting to find other planets in orbits around very distant stars. None have yet offered us a real home, but we will continue the search and await the technologies to transport us there.

We could send life's building blocks out into the Universe and give nature the time to recreate us, or something better, but that does seem a very long shot. Life can follow so many paths, just look at the number of forms it takes, and has taken, here on Earth. Are we able to think beyond ourselves also comes into the equation? Do we have the grace to let something survive even if it means we don't? This could be the ultimate test of life in general. We may even have a higher level to reach as humans, one beyond the pure physical.

Maybe we were already shown this path, but chose to ignore it. Could our "souls" actually be a thing? Do they permeate the stars as an energy that the Universe sees as being no less relevant than a physical state?

These are the deep questions and concepts that challenge a "conventional" way of thinking for the science world. Many people have placed a belief in the afterlife, their future secured, and may never see the need for another Earth. This will always be a fallback position available to us all and I'm in no doubt will be among the last thoughts of all those facing the end of Earth. But fighting to survive has always been a great trait of humankind, and for that reason, or until a conclusion that Earth is our one and only option, we will continue to seek, move and survive.

Summary

We are a very complex arrangement of matter indeed. Humanity has come so far in many ways, and nowhere in others. We still struggle with cohesion as a species, fractured along so many lines. Science offers the answers of how; how we can survive beyond our planet's existence, how we can create a world that offers something for everyone. It is the whys that are the issue. Why are we special beyond ourselves? Why do we need to exist?

It is very base to simply see ourselves as nothing more than a cosmic coincidence. Our need to humanify everything, which by its very nature self-elevates us above nature, is possibility a natural phase of evolution. We created civilisations and cultures; we indulge ourselves with things of no purpose within the greater Universe. If we never existed, would it really matter? But if that is the case, then would it matter if the Universe itself had never come into existence?

We kind of owe it to nature to survive, after all, it has taken billions of years to get to this stage. We can separate ourselves from the basic mechanics that made us a home; stuff smashing about, dictated by gravity and a might is right hierarchy. In a Universe that sees a moment as millions of years, we can define a moment in history that spanned mere seconds. We are able to imagine the future and even have a say in what that will be. Life is more than matter influenced by physics as it processes intangible characteristics; thought, love, hate, pain and more.

Many things about life may never be answered by science, so the door will remain ajar to answers outside our understanding. It is not right to dismiss anything we don't understand, any more than it is right to ignore the obvious. I'm firmly in the science camp. I like to use reason and logic to address my curiosities, but sometimes it is okay to simply wonder, keep the faith, look up, and enjoy the beauty that is our Universe, and let the Universe keep the secret of, why?