

Reflection

Introduction

I have always wondered about the meaning and purpose of life. When we review the way we got here and how long it took us to get here, I wonder if it is deemed worthwhile to go this way and take this long just to arrive at the state we are in, especially when we are—as we are—liable to be sniffed out of existence by a mere collision from extra-terrestrial objects like asteroids.

I will here take up three cases (astronomy, evolution and religion) and treat them in some detail to illustrate what I mean.

The Universe and us

The Universe is said to have started in a Big Bang. Some 13.8 billion years ago, a gigantic burst of energy radiated out of a small point, some of which coalesced into matter, and is still travelling outwards. The temperature at the start was in the order of billion degrees, but it rapidly cooled down as it expanded.

Physicists have been able to reproduce experimentally what took place after 10^{-43} second after the Big Bang: -times when some of the energy coalesced into matter ($E=mc^2$) at 10^{-32} second; and protons and neutrons formed at $\sim 10^{-6}$ second. At 200 seconds after the Big Bang, temperature cooled down to a billion degrees, and protons and neutrons came together to form nuclei. That formed hydrogen (75%) and helium (25%). But heavier nuclei had no time to form as the temperature fell too low in the next 20 minutes. These so had to wait some 200 million years until fusion process was to start. This was to be an important milestone in the history of the Universe.

Later, cosmic gases that occupied the Space began to be pulled to each other by mutual gravitational attraction; dense patches of them started to come together and form a bigger mass. As this mass attracted more and more of the gas around it, it got even bigger and denser. Eventually the atoms therein, under extreme gravitational pull and the ensuing pressure, started fusing together. That produced heat and light, and the new bodies, we now call stars, began to shine.

That is the theory behind the formation of the original stars, and that took place 200 million years after the Big Bang! The Universe up until then was dark.

How did our Earth come into being?

Our Sun and Earth were not among the first generation of stars to be formed.

As the cloud of gas coalesced to form stars, some attracted more matter than others thus creating different sizes of stars. The bigger they were, the more intense their gravitational pull becomes. This will compress the core of the star into incredible pressure that will collapse on itself. This results in explosion of the star, throwing out its outer mantle and leaving behind a dense core called neutron star. This explosion results in dispersing into Space the elements created by fusion therein during the intense heat and pressure. These are the heavy elements of the Periodic Table—Fe, Ca, Mg, Iodine etc.

These dispersed clouds of gas (now containing the heavy elements) in Space pull at each other because of gravity, and start coming closer together. As this gathers mass its gravitational attraction increases thus pulling in even more gas clouds until it formed a 2nd generation of stars at various locations. These new stars now have heavy elements incorporated in them. This is the stuff our Sun and Earth are made of.

As the Sun gathered mass from the giant cloud of gas and dust and lighted up in fusion process, the outlying cloud of gas and dust rotating around it, also formed into small objects that became the planets.

This formation of our Sun and earth took place 9 billion years after the Big Bang. A very long process indeed! So, that fixes the age of the Earth at a mere 4.8 billion years. That was when the Sun and Earth were created.

When and how did life start?

As the Earth cooled and water formed, erosion started. The rivers carried minerals from the rocks and took them down to the seas.

Eventually the seas became like soup where different minerals combined at random. After some 2 billion years of random combination, it hit on the right combination of chemicals to produce the self-replicating DNA molecule. That, as we know, can assemble protein molecules from the chemicals around and form organism. Microbial organisms (like bacteria) thus started to appear 2.7 billion years ago. Cellular organisms (with nucleus at the center) took another 700 million years to appear (i.e. 2 billion years ago).

Eventually complex types of cells developed from these cellular organisms (1.2 billion years ago). The most fertile period of time in terms of diversification of life forms (Cambrian epoch) was ushered in half a billion years ago. That is known as the Cambrian explosion. Then 260 million years later, the dinosaurs appeared. That is 230 million years ago. These huge creatures

(some 60 meters long) ruled the world for some 165 million years. It took a couple of hundred million years for humans to appear. That was 600,000 years ago. That is nearly 65 million years after the dinosaurs last walked the Earth!

The human evolution

It is textbook knowledge that life started with microorganisms and evolved into different branches of evolutionary tree, which for now culminates in human beings.

Looking closely at the recent history of human evolution, it is now agreed that the genus *Australopithecus afarensis* (whose famous member is Lucy from Ethiopia) walked upright on two legs, and is regarded as the first ancestor of mankind. That was about 3 million years ago. That genus had developed into *Australopithecus africanus* that further evolved into *Homo erectus* and finally into *Homo sapiens*. Along the way, many branches have gone to dead-end. The most recent of our cousins that even coexisted with humans, but nevertheless went extinct is the Neanderthal man. *Homo erectus* and earlier *Homo habilis* all went extinct!

The precariousness of life

Life is not easy. This saying is very true especially when we look back at our evolutionary history. We have noted above that neighboring branches of our evolutionary tree went extinct. In the first place, it is not easy to evolve. It takes millions of years and many random events (like mutation by radiation) to happen to develop a new species.

But a new species evolved does not mean that it can be sustained thereafter. The dinosaurs, as we know, are one example of extinct species. The woolly mammoth of Siberia (with its huge curved teeth) and the pigeon-like little bird—the dodo—are my favorite examples of extinct species. That way some 5 billion species (99.9% of all species that ever existed) are estimated to have died off.

According to fossil studies, there have happened major Extinction epochs that nearly wiped out the entire living species altogether.

The first major extinction was when plants learnt the ability to photosynthesize their food thereby releasing oxygen into the air. The living things of the time—the microbes—could not handle the new poison—oxygen—and thus died out. That was 2.4 billion years ago; and it almost snuffed out life.

2nd extinction occurred when Earth suddenly cooled and was covered in ice sheets. That was 440 million years ago and it wiped out 86% of all life on Earth.

3rd extinction (called Permian Extinction) cleared a whopping 96% of all species. It is recorded as the worst extinction period ever and was 250 million years ago.

4th extinction took place some 200 million years ago and killed off 80%.

5th extinction killed the dinosaurs along with 76% of all the other species. That was 65 million years ago.

These are thus major extinctions where life was almost snuffed out, but pulled back from the brink. Had it gone over the cliff at any of these periods, we would not be here today.

But aside from these major extinctions, there has always been going on a steady stream of minor extinctions that continues even today. Experts estimate that over the 3.5 billion years since life appeared on this planet, 99.9 % of the total species created have been wiped out of existence!

Thus, we see that species, so arduously created, are readily exterminated. That has been and still is the way of life.

The question begs itself—“is there any purpose in that?”

The question revisited

Let me now go back and reiterate the question that has been pestering me.

Let us start with the premise that there is a purpose for creating human beings.

- A) We note that the Big Bang happened 13.8 billion years ago. The Sun and the Earth (and later the moon) were created 4.5 billion years ago. The interval is 9 billion years! That is not a small number! It is a million years repeated 9 thousand times! That is the time One waited for the Earth to show up. What a great patience it requires to sit waiting for that long when it is within One's power to do it right away.
- B) Once the Earth was formed, it took ~2 billion years for it to cool down, form water and take a stable shape to make it possible for chemical compounds to join together to form the microorganisms.
- C) These microorganisms took another 700 million years to band together (probably by a process of symbiosis) to build cellular organisms.
- D) These cells in turn took 500 million years to get to be multicellular organisms.
- E) The genus *Australopithecus Afarensis* (Luci) lived about 3 million years ago. It means that it took over 4 billion years after the Earth was formed for us to get to this stage of being. All this set of time intervals was sat out waiting for man-kind to appear!

But even this journey was not straight forward. There were many extinctions of species as we have seen. Many a time, there was near- extinction of all life. As I noted earlier, had one

extinction gone over the cliff, it was the end of all living things. In other words, life would have been sniffed out altogether. Even at the last stage, homo sapiens just survived when all the homo erectus and the homo habilis perished. That was a high improbability that conscious being would hang on among all these perils.

What would be the purpose of all these obstacles in the process?

There does not seem to be an easy answer short of saying it was a game.

The start of religions

All societies have their own religions. There is no society without some sort of belief. It could be belief in mountain, fire, river or gods of every power and specialty (as in Greek gods and goddesses); or the recent monotheist beliefs (Judaism, Islam etc.). Man has, for the most part, believed in after-life. The reason seems to me to be biological. Life hates death. All living things inherently want to live and so struggle and fight to keep their lives. None agree voluntarily to be killed or eaten.

Now when human beings developed consciousness, they knew that death is inevitable—that someday they will die. So they constructed a scheme whereby they will continue to live hereafter.

Since doing good is beneficial to society and so should be rewarded whereas actions harmful to society are detrimental to its existence and so should be punished, they carried this judgement over to the after-life and devised Heaven and Hell. This though is a later development. The Hindu religion, which I think is the oldest religion scripted, arranged for sinners to face their punishment here on Earth (by a mechanism of reincarnation) and join Nirvana when purified of all sins. This religion existed since 3000—2000 B.C.

There were elaborate burial ceremonies practiced elsewhere in the world; which goes to show that people made arrangements for the after-life-- like burying slaves with their masters as in Egypt of the pyramid days (2560B.C.) or like Stonehenge(3000B.C.) in Britain.

Monotheistic religions (believing in one god) probably started with Judaism patronized by Abraham(2000—1850B.C.) who is the patriarch in Judeo-Christian-Islamic religions. Moses (1500-1350 B.C.) wrote the Torah (the five books of the Old testament) consolidating all the beliefs and practices of his times.

In China Confucius (551—479 B.C.) taught and wrote about the need to observe strict discipline and obedience to bring harmony here on Earth and reward in Heaven.

Buddhism was founded by Gautama Buddha (563—483 B.C.); followed by Zoroastrianism (400B.C.) in Persia. This religion was the first to teach that a savior will live and die to resurrect again to save the people.

It was Jesus of Nazareth (0-33 A.D.) who taught around 30 A.D. in places now called Israel and Palestine that dominated the thinking of the world for centuries thereafter.

Muhammed (570—632 A.D.) while accepting the Old Testament as well as the teachings of Jesus, nevertheless declined to accept that Jesus is a Divinity, and founded Islam (610A.D.)

Later Christianity itself split into two in 1054 to become Orthodox and Catholic.

Later still, Martin Luther broke from Catholicism and founded Protestantism (1517A.D.). That was soon to be followed by king Henry VIII, who broke away from Roman Catholicism to found Anglicanism (the church of England) in 1534A.D.

Thereafter Christianity continued to splinter into several denominations some among which are: - Baptist, Methodist, Presbyterian, Pentecostal, Congregational, Adventist and Mennonite. Some of these again developed their own splinter groups down the line.

Now the question arises as to why we have to have all these different religions Why are we faced with ambiguity resulting in different interpretations when the source is the Word of God. True, we are taught that these are as revealed to us through the prophets and Divine Beings.

Can all the religions be right? The answer must be “no”.

Let us take a mathematical example:- if students come up with, say, nine different answers to a given question, not all will be right. If one is the right answer, then it follows that all the rest are wrong in some way. It could also be that all the students got it wrong.

How then is it that one religion, if true, cannot prevail over the rest of them and establish itself; like by answering more prayers more often than the others, thus revealing the power of God more successfully than others?

Reconciling science & religion

Many attempts have been made to reinterpret the time-scale of Creation to fit that of astronomy. Genesis for example states that the world was created in a time span of one week. Does at least the sequence of creation resemble that of evolution and astronomy? The answer is “no”.

Of all the beliefs people hold, the one out front in embracing science is Atheism. That belief states quite flatly that it has no need of assuming God's presence. Everything went from Big Bang to the present age purely by the Laws of Nature. If the Earth's tectonic plates shifted bringing about Tsunami, the thousands of people who vanished thereof is not by design of God or Satan. Again, if volcano erupted somewhere and lava flowed out, it will follow the laws of gravitation to find its way down. If it happened that people had built their town in the wake of

its path, it is just too bad. It is nobody's fault or intent if thousands of people died as a result. It is Nature following its own course.

The same thing goes for children who perished in their thousands when famine struck Africa. Religion cannot explain that successfully; but Atheism does.

Now the problem with Atheism is that it cannot explain the Big Bang. This could not have come out from Nothing—all those galaxies and their billions of stars, the quasars, Black Holes, planets and moons! There must be some power behind it!

Here comes in Deism. This is a belief in the existence of Supreme Being (Deity) specifically of a creator who created the Universe and set it in motion. He does not intervene in the later development of the stars nor in evolution nor in the day-to-day activities of the creatures walking or crawling.

That puts to rest the claims on miracles, prayers and spiritual revelations as far as Deitists go.

According to them, God has created the Universe with all the forces and other properties inherent in matter. After that, the Universe unfolds and things happen. God has a better plan than following and intervening in day-to-day activities of creatures therein.

This belief thus embraces both the existence of a Supreme Being and the theories of astronomy and evolution without any conflict.

Now, as we adhere to our respective religions, it is incumbent on us to be cognizant of Nature's laws and workings as established by experimentally-proven scientific facts.

So the question arises: - if some of our religious beliefs on one hand and the scientific reality on the other hand come into conflict with each other, which one gives?

Glory to God!

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