

Whence life and consciousness.

We know that survival is a primal goal of living things. We are afraid of death. Fortunately, religion promises a way for us to survive after death. That is comforting. It is a Panacea for all pains and fears of inevitable death. But there isn't just one religion in the world, there is one universal death though. Societies in far-flung regions of the world invented religion, one each in their own ways. That was their answer to death.

Today Christianity in all its various forms, dominates the Western world. Hinduism does the same in the East. Islam dominates the Middle East and North Africa. Other religions of various forms fill up the void around the world. They all have their specific rituals in observing their holidays. Now, these religious ceremonies have another important role to play too.

No man is an island.

People are bound to live in groups. The first step beyond self is the family. That is the unit of society. Then community follows. Tribes and races come next. Countries and international organizations develop. One of the major tools used to bring people together under one umbrella or another is religion.

So religion, besides the faith and belief aspect of it, brings people together in ceremonies and festivities, People take pleasure in gathering together in ever larger groups, and to observe and take part in rituals and ceremonies. So even if the faith part gives way to scientific explanations, the ceremonial get-togetherness is very welcome. Just this week, India inaugurated with great fanfare the temple of Lord ram- one of the prophets worshipped since millennia, At an enormous cost (over \$200

million dollars). they built this temple. No metal is used in the construction; we are told. Now millions of people will go and gather there for worship. The sculpture of a black man standing is sanctified first by holy people; then it starts curing the sick when worshipped. That, of course, generates millions of dollars for the tourist industry of India. Much like Hajj pilgrimage does to serve the economy of Saudi Arabia. (\$20 billion per year). There is a psychological satisfaction for the adherents of the religions to come together, to participate in large groups. That creates a bond and that is pleasing.

This comes out clearly when watching soccer games, in Europe or South America. Fans and supporters of a team join on stage in the stadium and urge their team to outplay the other. They scream, roar, shout, or sing and wave their hands left and right. or sway in unison. It is an uplifting experience. Even after the game, many (strangers though they are) get together to drink and dance in a spirit of camaraderie. This is a sample of human brotherhood. The same goes for parades, funeral processions and wedding extravaganzas.

Cooperation is a necessity of life.

One man cannot do everything he needs to enable him to live. People join hands, and share in the task by specializing when necessary. Some of them farm. Others trade. Others weave clothing, and still others teach or entertain. To facilitate this, there has to be morality. So, love, friendship, courtesy. Integrity, honesty, trust and other moral virtues are developed and practiced. That is where prophets and visionaries come in. They sense these virtues, and they preach them. But they need to give it some authority. So, they claim that they received this message from God. It's now becoming

a religion. That is why all religions are similar. They teach to be kind, loving and good-mannered in all respects. We see people readily come to attend religious ceremonies like on Sundays. This fulfills three objectives: -

- A) To overcome the fear of death and pave the way to the afterlife or heaven.
- B) To satisfy the need for social gathering or brotherhood to overcome solitude.
- C) To break away from sustained boredom and the stifling environment of endless work and toil; and to seek entertainment of sorts or mob excitement. Even if the tenets of the religion are not quite valid, still the benefits of the social gatherings are worth the attendance. The downside of it is, of course, that crafty preachers skim off their small earnings in charity forms thus enriching themselves to become billionaires.

Animals too cooperate-- so do plants.

Animals too have realized that they need to cooperate to bring down larger prey. Wild dogs hunt in groups to run down buffaloes and zebras. Lions cooperate the same way. They even plot strategies to catch their prey. For example, one powerful lion is assigned to lie in wait behind some bush or cover while the rest round up behind the prey and drive it in the direction of the lion in wait. The job done, then they settle down around the catch and feast leisurely. Ants, bees and termites cooperate among themselves for food, travel, defense and other mutual needs.

It has now come to my attention that plants too cooperate. For example, if one plant finds itself attacked by worms, it emits gas in the form of misty cloud to extend to neighboring plants. Those then sense the coming danger and fold

their leaves onto their branches or stalks, thus denying access to the attackers.

Plants are also suspected of communicating with each other through their roots!

Researchers tagged the molecules of some useful protein that eventually got absorbed by a tree. But they deprived the neighboring tree of this type of food.

Now, the neighboring tree sent its own protein through the roots across to the other tree! They have to look out for each other to protect their community of trees against strong winds, soil erosion and the like adverse effects.

Thus, unbeknownst to us, other living things do cooperate among themselves and maintain information exchange.

What and where is consciousness?

Consciousness is being aware of ourselves. We argue that stones and mountains are not self-aware. That is true. But are other living things not aware of their own self-existence? I think that is absurd. They are aware of themselves though at different level or degree. Some more so than others. Humans are at the highest level in the Evolutionary ladder. But it does not mean that only we humans can think.

The other day I watched a video of a dog running to a policeman. It was then barking with its front paws held up like in the form of begging. The police suspected something and followed the dog. It led them to a fence where part of it has fallen onto a hollow ground. When they lifted away the fence, they found small puppies trapped in there and succumbing to death. They were rescued in good time! Are we claiming that dog does not think? Or is not conscious of what is going on around it?

Our forefathers of long ago thought only we humans have souls and possess consciousness. We don't blame them. Some even fashioned God in their own image (like having a face with two eyes, two ears, a nose, a mouth etc.) and claimed all other creatures are created for the benefit of humans. We now know better. There are thousands of other species—big and small—deep in the oceans that live their own cycle of life unconcerned with us. Everyone has their own life to take care of. Everyone has their own level of consciousness. And it is everyone's duty to sustain its life and support the members of its community.

Is there life elsewhere?

We do not know. Just like our forefathers did not know much about the environment beyond their immediate surroundings, we don't as well know about the environment on other stars and galaxies.

But the relentless march of Science we pursue is bound to gain us more understanding on that. As we know, Science started from almost zero before the Stone Age. As close as a few hundred years ago, all puzzling questions got their answer --“God did it”.

Natural phenomena, like disease, drought, famine etc. were all God's will.

“How does the Sun go East to West and then return unnoticed?” “It is God's way of doing it”. I was, once in my youth, told that the Sun labors all day long shining on us, and when it sets, God will reward it by allowing to slay a fat bull for its dinner. I figured a bull a day and every day should be costly to Him. But there it is. Nobody knew any better.

Later on, the Greeks and Romans created gods to explain away various phenomena. There were gods to handle wars, storms, pestilences, love and hatred etc. Apollo was god of love. There were Artemis, Aphrodite, Uranus, Neptune etc. There was Zeus—god of all gods—to create a fair, uniform and harmonious relationship. I once read a tale of one god who turned up disobedient. He rode high on his winged horse up and beyond the clouds and dared Zeus to catch him. But Zeus simply sent up a stinging fly. It flew up and stung the horse under the belly. The unsuspecting horse twitched hard thus causing the god to be thrown off its back; and the god hurled down to the ground. Zeus has his way of enforcing his will easily.

Time went on and Science marched unceasingly. But it did not reach every country evenly.

As a youth, I and all my community were terrorized when lightning fell. Even the trees dried up if hit by lightning. Houses caught fire; cattle-herders died when sheltered under tall trees or piles of stone stricken by lightning. “What is happening?” was everybody’s question. Our neighborhood priest, regarded knowledgeable because he was a person of God, provided the answer: -“St. Gabriel was chasing the devil as it ran along the river bank with its tail tucked between the legs. Now, when the angel spotted it, he threw the lightning to kill it.

Good enough answer for the time. That was why the lightning was falling on things like trees and taller objects under which the devil tried to shelter. It was a convincing answer.

But eventually Science began providing the definitive answers to these questions as well. Day and night were explained by the round earth rotating. Lightning is due to

electric charge coming from turbulent Cloud masses. Disease was caused by bacteria and viruses. The list goes on. Copernicus, Galileo, Darwin, Fleming, Newton took on the stage in their own times to explain Nature's workings. Enlightenment dawned on Humanity. Later the Industrial Revolution arrived. Cars, trains and ships moved people around. Communication facilitated mass movement that stimulated growth even more. The age of computers is an entirely different revolutionary movement. Now we are in the artificial intelligence (AI) epoch, where information technology (IT) is playing the decisive role.

Evolution and God

In the course of civilization, nothing shook Society more than the theory of Evolution. I was introduced to the subject at elementary school. The teacher said point-blank that we descended from the monkeys. He didn't believe in it himself but authorities, away in the capital city, ordered that it be taught that way. I did not tell that to my parents. They knew too well who created them. Even today, millions of people can't be moved to accept the theory. On the contrary, mega-churches have taken the stage with pastors lining their own pockets with billions of dollars by preaching the holy books. But science is marching on though grudgingly. Unfortunately, The Evolutionary Tree has branches too many, and there are links missing (or not yet discovered). They take time to locate them. Religiously-oriented people pick on these missing links to deride the theory:--" why then don't you see monkeys come out of the Jungle and become people?" they sneer. Nobody pauses to teach or learn that there was a common ancestor for us a long way down the path and it is not that we came directly from the monkeys.

“What good is half an eye?” they charge. “Since Evolution developed gradually step by step, whereas the eye is constructed whole to function right ---lens, Cornea, nerves and fluids, it must have been designed and constructed as a whole. So there is a creator for that”. Nobody pauses to explain that there were cells sensitive to light; and seeing the advantage of it to help perceive food or danger, the cells joined together to maximize the advantage. The process continued until the full eye got to its present stage. “How can inanimate material beget life? God must have done it.” they argue. But microbiologists have managed to connect up some millions of molecules to build the DNA that in turn built the synthetic bacteria! The scientist Dr J. Craig Venter achieved that goal. His team took chemicals straight out of bottles sitting on shelves in the chemistry labs and joined them up in a specific manner. Lo and Behold!! That formed the DNA molecule that in turn, when placed in the right nutrient, reproduced itself! First, it built the essential proteins that gradually constructed the cell. That is life!! A whole new thing. From then on, the cell began duplicating itself. The process involves the DNA duplicating itself, and then, the two DNAs separating away from each other; then constricting the cell in the middle and finally becoming two cells. From then on, Evolution took over and the cells began building up into tissues, organs, organisms and on and on. They adopted into different forms: - Animal Kingdom, plant kingdom and the fungi groups; each pursued their own respective Paths of development and specialization. This random ‘stop and go’ process, being blind and undirected, ended up 99% of the time in false starts and failures; but the few successes achieved, kept going and experimenting; and today after some three or four billion years of persistent trial, we have reached this stage of development.

But of course, there still are missing links in the chain of development. They need to be discovered by fossil study and other means. We are seriously searching to complete the picture and that takes time. That, however, does in no way discredit the theory of evolution. Just because a few bridges are broken or are invisible, does not deny that a “Silk Road” existed and that you should deny the clear outline of the pattern of ‘Road’ we are seeing from afar. True, there are people stubbornly adhering to their religious books. But please bear in mind that those books were written by desert herdsman, who for no fault of their own, were unaware of what science has revealed since then. They can quote their books and claim that the Earth is flat and that the Sun goes around the earth, Etc. But they cannot change Reality by faith. It only makes it harder to change.

Just where and when did Consciousness emerge?

That question is in vogue these days. Where and how did it start? Who has it? And who doesn't? The amazing thing is that even astrophysicists and Noble Laureates have dipped their finger in it in amazing ways. Even quantum mechanical concepts have been put forward. Many people, especially the religious- oriented ones claim Consciousness is the domain of human beings and is bestowed by the Creator. On the other hand, people argue that it is embedded in all things’ material --in stars and generally in the universe. Even Max Planck is reported to have said “Consciousness is

fundamental, and matter is derived from consciousness". Imagine stones and boulders having consciousness!

It was mentioned earlier in this writing that dogs are very much aware of things and of themselves and so have consciousness. So do lions, monkeys and other animals.

They have their own social lives and work as teams to hunt for food or protect themselves from impending danger. Now, as was mentioned earlier, even plants communicate with each other through their leaves and even roots. They work in tandem to protect their neighborhood against pests, storms, erosion and drought.

Where then is the boundary delineating consciousness? It comes with being alive!

Non- living things do not have it! living things do. This is where the concept of synergy comes in. It is a case where one plus one is more than two. In other words, adding two or more things together gives rise to the whole that is greater than the simple sum of the parts (dictionary definition). Take the case of water. It is a molecule made up of two types of gases-- oxygen and hydrogen. Both are gases. One cannot deduce from their respective gaseous properties what the combination will create---water! Its origin was gas but now it can freeze over lakes to enable even cars to ride on it. It liquefies to flow as water to turn turbines to produce electricity. It can form into steam and rise to turn into clouds to bring down rain to grow vegetation and sustain life on Earth. One cannot predict these characteristics from the properties of the two gases. This is synergistic effect of combination. It is in the same way that brain cells (whose roots can be traced back to the original living cell) achieved the ability of creating mind and consciousness. These are attributes of the brain! The day or time when those inanimate molecules bonded together to achieve a state of living bacteria, that was when life started! That

was the defining moment when we translated from the inanimate world of stones and stars to the state of life and consciousness! Take the case of amoeba. It is a single cell. If you shine a narrow but strong Light Beam at it, then it will move to turn away to avoid the lights. A stone particle cannot do that. It is inanimate. It is that self-awareness that came about when inert chemical molecules stringed together to form the synthetic bacteria. That is the line of demarcation between the animate and inanimate: - the line where the mind and Consciousness attributes of the brain came into play.

finally, we come to the ultimate question as follows: --

What then is our mission and Duty in this world?

Simple. It is to help along the progress of evolution! Who said Evolution stopped here?

Nobody. Do we know, though, the direction it goes? And the end result? No. What then do we do? We know Evolution started with simple living cells. It progressed in different directions sprouting all these kinds of plants and animals inhabiting the planet. The process has not stopped. It is spearheaded by human beings. Luckily, with the combination of the right diet and environment, our species developed the cortex part of our brain and we leaped and surged ahead, leaving even our closest members of the evolutionary tree far behind. Now, we have to keep marching ahead. We do not know the direction. So, we spread our tentacles in all possible directions: - that is to say, we develop in all possible ways we can. Our talents vary. Some are good at mathematics, others in music, arts, sports, literature, military etc. We are all different. It may be like we all have different fingerprints. But maybe not all that different. But we all have potential talents. We must strive to discover that. Then, go ahead and develop it! True,

the big potential is in developing the mind. We have to study that. Advances are being made to plant microchips in brains and bypass some defective circuit lines to cure paralyzed limbs or mechanisms. The study will continue until we learn all the workings of the brain. Then, we will start to understand the thoughts of other animals. Dogs think and understand some of our thoughts. Elephants, cats, monkeys, dolphins etc. do think. Sadly, we do not understand them. That is for now. Someday, though, we should be able to do that. When that is done, we then visit the plant world. Life will get more interesting.

Science has advanced much in the field of astronomy.

Where we once thought the Earth is flat and is the center of Creation, now we know there are roughly 10^{24} stars in the observable universe alone!

How did we arrive at this level of understanding? It was a gradual process involving hard work, persistence and patience. Let us start from where we learnt about the Earth's revolution around the Sun. The next achievement was discovering that there are eight other planets revolving the same way. That is the solar system. Later on we learnt that all the stars visible in the night sky travel together as a galaxy. We then observed that what we felt was a smudge of cloud in the sky is another galaxy two and half million light years away. It is the Andromeda galaxy which turned out to be even bigger than our Milky Way! Later still, we discovered other galaxies---big and small; near and far! Later still, we learnt that all galaxies are moving away from us and from each other. When we traced their paths of travel and extrapolated it backwards, we found that they all started from a central point! It was like an explosion that sent them

flying out in all directions. We call that “The Big Bang”. That was the point where and when Space and Time came into being. There was no space and no time before that. That is why we can’t ask “What was there before the Universe was created?” Because if there was no time, then there is no “when?” (One cannot ask “what were you doing yesterday?” If there was no “yesterday”)

Other phenomena observed later included Neutron stars, pulsars, Black Holes, Dark Matter, Dark Energy and so on. (There is a lot of literature for those interested in the subject.) That, in short, is the history of progress in astronomy. It is similar in other branches of Science as well. That is how we accumulate knowledge and advance in life.

Are there aliens?

We noted above that there are 10^{24} stars in the observable Universe alone. So if there is at least one habitable planet around each star, then there are that many planets around! Thanks to the builders of the Hubble Telescope, the James Webb Space Telescope and the European Euclid Telescope and those to follow, we continue to be amazed by the sheer size of the Universe and are humbled by our insignificance in it. Yet we are endowed with such brain that we can appreciate the glory of Nature---much much better than animals do.

There is still more to learn in that field as well. For example, where are exoplanets? And where and what type are aliens, if any? Recently a new planet was discovered just 137 light-years away (considered close in astronomical speak). It is reported to have hard rocky surface, water, atmosphere and suitable weather. It is nicknamed

“super Earth”. Any inhabitants in its fold? Nobody knows. But the search continues and our knowledge increases.

So our job is to learn and increase our knowledge in all fields, and to develop our talent. Evolution progresses in the direction of “survival of the fittest” paradigm. Thus, we try all possible avenues open to us.

To facilitate that, we have to help each other out. Together we grow. Thus, economic development, social justice and activities like agricultural, industrial and commercial services are the essential tools by which we govern ourselves and coordinate our activities to create a just and prosperous society.

Let me explain by analogy: -

A football (soccer) team has the ultimate goal to score. To survive as a team and get prosperous, it has to score goals. How to achieve this goal?

There are strikers or scorers lined up in front. But that is not enough. There needs to be wingers and midfielders. There are also defenders and importantly the goalkeeper to cover the back.

But again, are these all that the team requires? Let us see.

The team members need to be fed, clothed, lodged and transported; medicated and entertained. But, further back, these support groups too need a network of providers behind them. And so on. Each have their own role to play.

In the same manner, our society needs a vast network to enable us to achieve our goal. We should embrace the whole society of human beings (and indeed of animals and plants in our ecosystem) to sustain and advance our lives. We are all members in this monumental task of advancing the cause of progress.

So we should all fulfill our respective tasks the best way we can. This is our obligation.

This is the purpose we live for!

In conclusion, I would like to add that I have no objection at all if religiously- inclined people interpret this grand scheme of things to have been God's Will and intent.

Indeed, I will even embrace it! Because it will reconcile Science and religion!

His Will and Intent materialized in bringing the Universe into being means, by default, He has set in motion all the laws of physics, chemistry and biology (including life's contingencies) that now everything goes like clockwork. So, He does not need to intervene or interject Himself in the endgames, say, between predator and prey; between the hunter and the hunted or the strong and the weak. The laws will play out as set down by Him. That will be true in the outcomes in betting in sport, victory in battles, cure in sicknesses or pandemics and all other worrisome incidents in human life.

Further, if there are creatures in any of the billions of habitable planets in the Universe, the way of life will be the same there too! Because the laws of physics, chemistry and biology (including those of living creatures) will be the same universally. E.g. a hungry tiger, if strong, could manage to chase and catch the gazelle; or alternatively, the endangered gazelle, if fast, could manage to escape with its life. That is up to them.

The Creator has no need to intervene on this side or the other. The same goes for other types of struggles in human or other lives. Each species is on its own. For example, it has to feed, nurse and protect its chicks (for birds & poultry), its calves (for animals) or babies (for humans) to ensure the continuity of the species. So the saying "each for himself, but God for all" seems pertinent here and across the Universe. The

way to go about it is to have to learn to love our neighbors, cooperate among ourselves in solving tasks and generally to help each other out as the prophets and Scriptures tell us. That is the way to prosper and evolve. Our efforts should be directed to learning and understanding the laws of Nature and to use such knowledge to serve our needs in life. That kind of approach will, for example, explain away the puzzling and pestering questions (even for our religious leaders) as to why unbearable suffering is inflicted on innocent babies and toddlers (through no fault of their own), due to natural disasters like famines, pandemics, droughts, raging diseases, tsunamis and tornadoes-- even to the extent of condemning them in their thousands to untimely and cruel death. Equipped with knowledge, though, we get the chance to understand and control or at least get away from impending dangers in good time. That is all because of Science and Technology. Remember it got us out of the caves. We went from the Stone Age, through Bronze Age, Iron Age, The Middle Ages, Renaissance, Industrial Revolution, Transistor (computer) Age, Communication (Internet) Age and now are at The Machine-Learning Age! What a journey! We keep going. That is knowledge, and knowledge is power. So go forth and pursue it. Of course, this is a combined effort of the human race—directly or indirectly. (Remember the football example above). In unity lies strength. So let us pull together.