

All Religions lead the same way

Introduction

There are several varieties of beliefs in the world---starting with worships of fire, tree, river and mountain to Spirits, gods & goddesses all the way to monolith religions. Along the way, wars resulting in deaths in their thousands, sufferings, enslavements and tortures. There is more than enough history of religious wars extending all the way to the modern age. ISIS is the latest phenomenon that sprouted regional branches and caused deaths in various parts of the Northern Hemisphere.

It is human nature that we fear death and need beliefs in the possibility of after-life. Because we need both security and protection in this life and happiness in the future.

Now, all societies—big or small—have some sort of such beliefs. But the problem here is that we want or demand others to endorse and embrace our beliefs. Therein comes friction and quarrel. That is the mother of the miseries and sufferings that reign in the world.

Welcome Science

The only way to tackle this problem inherent in human nature is to learn the sciences—especially astronomy. That is what can reveal to us our true place in the universe and the measure of the self-esteem we should have of our own being.

Here is a rough outline of the progress we made in astronomy in a few hundred years.

As we know, people from ancient times have been gazing at the stars above and wondered what they are and how they work. It is believed that the earth is flat and that the Sun revolved around it. The stars moved too. Not individually though. The whole firmament moved as a whole—east to west—with the stars keeping their relative positions. True, there were a few ‘stars’ that kept changing

their relative positions and moved around across the heavens. These were called 'wanderers'; which we now know as planets.

As time went on and civilization progressed, trade expanded. Ships were sailing the seas and were able to go further and further afield. Now people noticed when the ships came back sailing, it is only the mast that appears first. Then follows the deck and the rest of the ship. So, the question arose that since the Earth is flat, why doesn't the ship come into view all at once? The suspicion grew that the Earth is curved and is overall round.

Incidentally, it is this realization that the Earth is round that prompted Christopher Columbus to sail directly Westward to get around to India from Europe. The customary route was to sail down to Africa, get around Cape of Good Hope (which we now call "Cape Town") and head back north to India. Columbus figured it should be shorter to go straight west. That he did in 1492. When he finally reached ground, he thought it was India. But the natives were red. So, he called them 'Red Indians'. Today, as we know, they are Native Americans.

A new epoch was opened in 1543 when Copernicus declared that the Earth is round, or globe and it is the one rotating around the Sun and not vice versa. People held their breath unbelieving.

Then Galileo in 1615 unequivocally declared that Copernicus was right. He aimed his telescope at planet Jupiter and observed it closely and found 4 moons rotating around it.

That convinced him that the earth is an ordinary planet like all the other planets, and the other too have their own moons rotating around them. These all revolved around the Sun in their own predetermined orbits.

That suddenly deflated our self-importance. We had thought that we were unique and the Earth was the center of the Universe and everything else rotated around it. Now the thinking changed. Geo-centric system gave way to helio-centric system.

Science kept advancing; and we learnt that even our Sun is a star like all the rest in the sky. Those stars appeared small only because they are far far away, but otherwise they are just as big, and some even bigger than our Sun.

The whole collection of stars we see when we gaze up to the sky in clear night is called a galaxy. There are many galaxies as we will see; and this one of ours is called The Milky Way. Our galaxy contains 250 billion stars, of which our Sun, as mentioned above, is only just one among them.



Looking up to the sky in a clear night reveals a white (milky) path---hence the name 'milky way'.

It seems that the ancient Persians were the ones who first noticed a small smudge that was cloud-like in the sky. All the stars were distinctly clear whereas this one was a fussy little patch—and that was a puzzle. Then in 1929 when telescopes got better and better, Edwin Hubble directed one to this patch and examined it closely. It was revealed that it contained stars! When he calculated their distances, he was totally flabbergasted. These stars were, as he put it, 10 times further than even the furthest star in the Milky Way. Alas! This was yet another galaxy by itself!

Ferdinand Magellan—that adventurous sea-man who explored the Southern Hemisphere—may have noticed 2 other similar patches of cloud in the skies of the southern hemisphere, and so, I guess, that is why they are named ‘Magellan Clouds’. Now they too are each a galaxy on its own.

Our status kept diminishing as we realized that even our Sun is comparatively a tiny insignificant dot in the scheme of things.

Science kept marching. Satellites were built and launched. Observation of the skies continued.

Today we know that Andromeda galaxy consists of a trillion stars (and is thus even bigger than our own Milky Way).



The Andromeda galaxy seen through a powerful telescope.

As we observed deeper and deeper into Space, more and more galaxies were discovered. At present, it is estimated that two trillion galaxies exist just in the observable universe alone! Imagine that!!



Each and every dot of light in this picture (shot through a narrow lens of The Hubble Telescope) is a galaxy! It is in a small patch of the sky that is approximately equal to the area covered by a Quarter coin when held at arm's length against the sky!

Now, if each galaxy contains, on average, one trillion stars, the total number of stars adds up to $10^{11} \times (2 \times 10^{11}) = 2 \times 10^{22}$ stars!! The universe is indeed enormous.

Planets

How many planets will there be around these stars? Since it is likely that every star is the same as our Sun, so they could have planets around them the same way. Of course, it is not easy to spot them, since they don't emit light themselves like the stars do. They are also small in size compared to their stars to be observed by reflected light. In spite of that it has been possible to detect over a thousand planets already. It is estimated that in the Milky Way galaxy alone there are a hundred billion planets. Since there are, say, two trillion galaxies in the observable universe, the total number of planets will be of the order of $100 \times 10^9 \times (2 \times 10^{12}) = 2 \times 10^{23}$. That reads 200 billion trillion planets!!

Now the question arises "if there is life on this planet, couldn't there be life on the other planets as well?"

Let us see how life is understood by Science.

Building living things

There is a big barrier between animate and inanimate objects. One lives, breaths, feeds, moves and reproduces. The other is just inert. But there is connection between the two.

Scientists have been studying to get to the source of what makes life tick. How do cells reproduce themselves? This is a fundamental question. Because cars and airplanes, or for that matter, however sophisticated a device is, no inanimate object can reproduce itself. Only living things can. How do they do it? When cells reproduce, they start with the division of the chromosomes. Further study revealed that chromosomes have coils of strings called DNA that start to divide and that initiates the whole process of multiplication. How do the DNA molecules manage to do that? It was 50 or so years back that James Watson & co demonstrated how they divide. The DNA is in the shape of a helical ladder with two strands of molecules connected by rungs of molecules. When they divide, one strand detaches itself from the other and proceed to form its complement by

taking up chemicals from the solution around it. Thus, one DNA becomes two. These will be perfectly identical. This sets on the process of dividing the chromosome and then the nucleus and subsequently the cell itself divides into two. Now since we know the chemical composition of the DNA molecule, we can assemble these chemical components in the laboratory exactly as they are found in nature. There will be no difference in the molecules in nature. Now we see that when we build one, it too behaves exactly the same way and start to divide and multiply normally. That Alas! Is life! The inert chemicals, if connected the right way, can reproduce themselves. They have acquired a new attribute.

This is a case where the whole is more than the sum of the parts that constitute it. Certain combinations beget entirely new attributes.

I have always marveled at how water is formed. It is a byproduct of two ordinary gases—hydrogen and oxygen. One is the lightest gas known, and the other is the one we need to breath or inhale to sustain life. All animals inhale oxygen and exhale carbon dioxide. Now these are mere gases. But when chemically combined, they turn up to be liquid water! This can turn into steam to drive turbines, can turn into liquid to flow in pipes and can turn into solid ice even to form impregnable mountains as in the Antarctica region.

But now even more amazing is the result of the combination of DNA molecules to attain the property of self-multiplication! This process leads to building life.

This has been achieved by the scientist Craig Venter. He assembled a complete set of DNA molecules (genome) in the laboratory exactly as found in nature and injected it into an empty shell of a different bacteria (meaning whose own genome has been removed). The new DNA took over the empty shell and directed it to reproduce its own breed of bacteria. This is the first synthetic species of bacteria in the world and Craig named it Synthia. This species and the others like it can now self-replicate like any bacteria found in nature.



Craig Venter was the scientist who built the first synthetic (man-made) bacteria.

Further research is going on to advance this exercise of building ever more new species of life.

How did the first genome or its DNAs got connected up?

Here are two schools of thought.

One believes that, with enough time (i.e. billions of years) given for trial and error, a random combination can succeed to achieve the right combination to form the DNA. So, that is what happened. They argue that it is doable; it can be done, and it did.

Recently, new information has surfaced that it is not only our DNA configuration that has the capacity to store hereditary information and the attribute of consciousness, but there are hundreds or thousands of other molecular configurations that can attain this attribute. That now increases the possibility of building life elsewhere in the universe by several fold.

Coming to the other school of thought, it holds the view that there is no chance that it is a random act. They point out that Craig Venter spent 200 man-years laboring to complete and achieve the right sequence of molecules; and that cost him \$40 million. If with that top-notch expertise, it took him so long to do the job,

how can anyone imagine that a random combination of molecules can produce the right sequence?

There must have been a hand enabling it to connect up the right way. That is the Hand of God, or the Will of God. It is also termed “Intelligent Design” by some.

Evolution

Once life came on stage, then Evolution took over. This is a process whereby simple organisms develop into complex organism. To my mind, that is no-brainer. Simple cells can join together to cooperate to catch and digest food. They find it efficient to specialize—like some sweep in food, while others get around it and digest it. Then they share the nutrient. Further specialization to make it a permanent arrangement got them to join and form a hollow cylinder to take in food. The ones at the mouth formed into tentacles to more efficiently sweep in food and the others digested it and pushed the waste out the other end. That is the hydra. Then followed the worms who developed the cilia to help them move about in search of the food. The centipedes are a living example of this. Thus, unicellular organisms transited into multicellular ones as they found it advantageous to function as such. That development advanced through the stages of fish, amphibians, reptiles, mammals and primates to get to where we are today. The progress was gradual but slow. It took not a million years or a hundred million years, but billions of years to get here.

Further and further specialization produced organisms with specialized organs like limbs, fangs, wings and what have you. There is sufficient evidence in anthropology to prove this hypothesis. Scientists have built up the ‘tree of evolution’ which traces the path followed and where new species branched out from the ‘tree’ and formed new species. This has continued over a billion years until the present moment where we have all these different creatures on land, in the air and in the oceans. Very many species died out or gone extinct along the way. This situation came to pass by what is called ‘Natural selection’. When there comes environmental change like climate or food supply, those who adapt fast and adjust to the new challenge will survive, while those who couldn’t manage it simply get wiped out. This is the survival of the fittest.

It is the realization of this fact that opened our eyes to see the root causes of the riddles we see around us.

Why did all those species that went extinct had to face that fate? Thousands upon thousands of species of animals and plants (fauna & flora) have perished.

It is simply because they were not able to adapt fast enough to the vagaries of Nature. Only the fittest are able to adapt and survive. The weak are discarded mercilessly.



The extinct White Woolly Mammoth, seen here, went extinct 10,000 years ago; but it is now intended to be resurrected back to life by using the DNA recovered from fossils.

Again, take human species. Millions of children died of starvation or famine in poor countries, especially in Africa. It was because of drought. Other times, they died of malaria, cholera, yellow fever or other epidemics. That was no fault of the children to fall victim and succumb to death. They did not choose to be born into this; nor did any one subject them to it. Who can answer for their ill-fate? It is simply Nature's law.

In 2004 there appeared a tsunami in the Indian ocean. It swept over the islands of Indonesia and the surrounding countries. The result? Some 220,000 people, including children, died instantly! Whose fault or judgment was it that all those innocent people lost their precious lives? The answer is simply 'nature's working'. It was the consequence of tectonic movement of the earth's crust deep in the ocean. There is no satisfactory religious explanation for it to convince the adherents that those children deserved it.

Habitable planets

We have mentioned that there could be 200 billion trillion planets in the observable universe. Now, if there is life on this planet of ours, can't there be life on the other planets?

It is true that not all planets are hospitable to life. Of the Sun's eight planets, only one supports life. Now one of the conditions for flourishing life is the availability of water. If the planet is too close to its sun, it gets too scorching hot. So, water in liquid form cannot exist. On the other hand, if the planet is too far removed from its sun, it gets too cold, and water, if available, will be in the frozen state (ice). That means then there cannot be marine life there. Biological life, as we know it, is believed to have started in the waters. Now planet Earth is at a suitable distance from its sun; so we have the right temperature range to sustain life.

Other stars too have to have planets at a suitable distance to enable life to exist on them. That zone is called 'habitable zone'.

Now since the Sun has $1/8^{\text{th}}$ of its planets in the habitable zone, if we assume other stars probably have $1/10^{\text{th}}$ of their planets in a favorable position, that still gets 20 billion trillion planets in a likely position to beget life. Again, if there are toxic agents that are likely to inhibit life and that reduces the chance to $1/10^{\text{th}}$, we still will have two billion trillion planets on our hands.

Now, if life has started on earth, who is to say that life cannot start on any of those planets? So, the unavoidable conclusion is that either by Intelligent Design or by random combination, there is bound to be life there too. The route taken to achieve this state, is, of course, our individual right to decide upon. But our honorable fathers could not be blamed for thinking that we are the supreme beings in all creation. That state of feeling is understandable in the period where knowledge of astronomy is non-existent. Now, from the information available to us through astronomical observation, we find out that the possible number of planets in existence is staggering. So, to think that our planet alone sustains life among this multitude of planets is both egoistic and egotistic.

The essence of morality

If there are intelligent beings living on other planets, how do they organize their social life?

It is inevitable that they will need peace and cooperation to survive. There will be hurdles and challenges to face to overcome Nature's vagaries there as is here. Nature will run its own course whether the inhabitants like it or not. So they will have to struggle to survive. Therein comes the need to cooperate.

To achieve this, they will need to devise laws. For example, they will forbid killing. Children, even if they are unable to defend for themselves, should not be killed. There will be other laws as well. Even giving false witness, stealing, robbery and similar acts that undermine good relationship in the society will incur punishment or banishment. A fruitful relationship will embrace love, cooperation and helping the under-privileged members of the community will be the norm. That is the obvious way to gain security prosperity for all members.

So one can safely say that these laws will be universal for all intelligent beings wanting to live in peace and harmony. The necessity of peaceful coexistence dictates morality.

Anthropology reveals that even primitive societies on Earth have morality.

They have laws which forbid stealing, murdering, taking other's wife by force etc. Their system may be weak in implementing the laws; but they sure will frown on it (and some, if strong, may take the law into their hands to correct it).

When human beings invented scripts (like the Egyptian hieroglyphics and the alphabets) they began coding the laws and carving them on papyrus or stones.

Hammurabi of Babylon was among the first known in History to write code of laws. That was about 3700 years ago. Moses (the biblical prophet) lived around 3500 years ago, and he carved The Ten Commandments on two tablets of stone and presented it as God's Laws for his people to live by. (Incidentally, Moses was the one who wrote the first six books in the Old Testament including the narrative in the Book of Genesis. This eventually became the basis for the Abrahamic religions of Jews, Christians and Muslims.)

Following the four Commandments that refer to the worship of God and the Observance of Sabbath, the rest of Moses' laws refer to societal laws: -

Honor thy father and mother;

Thou shalt not kill (murder

Thou shalt not commit adultery;

Thou shalt not steal;

Thou shalt not bear false witness against your neighbor;

Thou shalt not covet thy neighbor's wife-----

Now these last commandments were not new to the society of his times, nor to those just before him. Remember that he lived at the times of the pharaohs, who already had a system of laws for their subjects.

Hammurabi's famous law "a tooth for a tooth and an eye for an eye" was meant, I think, to forbid any punishment more severe than the crime committed.

In the Orient too, they had their own philosophers like Confucius, who set down rules 2500 years back to achieve harmony with Nature and society. Further back (5000 years ago) Krishna of India and later Buddha too devised laws for their societies. These laws and the like all served societies to live in peace and harmony.

We see that even today, primitive societies in Amazon jungles and other places around the world have their own norms and culture. They may not have heard of the teachings of Buddha or Confucius, but they have their own moral codes. They know what is right and wrong for the society. This is a universal law that enables societies to live together.



An isolated tribe in the Amazon jungle

So, by this same reasoning, societies of intelligent beings anywhere else in the universe are bound to have similar laws.

Conclusion

The lesson here is clear: - peaceful coexistence requires to uphold morality and brotherhood. That is what societies learn from experience. That will remain true here on Earth as well as in other societies living on other planets in the universe. The law of morality will be universal, but the specific details or roads leading thereto could vary. The type of punishment for violation of the laws would also vary of course. But the ultimate goal is the same. That is the science of morality valid throughout the universe where intelligent beings exist on planets

So then, let each go his way. The ultimate destination or motto is the same—namely, the harmony and cooperation necessary for living. Why then does one group demand of others to follow his road when they can follow their own?

I visualize the situation like ships sailing in different parts of the ocean. They all aim to reach the lighthouse beaconing them on to the harbor. Now, they can head from their respective positions to reach there. But some fanatic self-righteous people rise to demand that others change their routes and sail towards

their ship, for their course, they claim, is the only correct route leading to the lighthouse. That is wrong. But that, in the past, had caused numerous religious wars where bitter fighting and destruction have devastated societies.

Now, I say: - let all ships sail along their own respective paths and they will all reach at the lighthouse. That is how I look at religions. Basically, religion teaches us to love each other, or at least to be kind to each other. The motto 'Do unto others as you would like them to do unto you' covers it all. That is the basic tenet and that is enough.

In conclusion, I would like to stress that officials responsible for education in their respective countries devise their curriculums to teach comparative religions in conjunction with this aspect of science and astronomy to better equip them to tolerate differences in religion. As it is now, the elites, who are in a position to lead the masses, come from law schools, financial institutions, political sciences or other liberal arts disciplines; but come off effectively ignorant of this law of the universe. Some of them turn out to be so fanatic that they even lead the masses to trouble.

Now, enough is enough. Henceforth, let science be our guide and tool for peaceful coexistence. It is science (the study of Nature's laws) that led us out of the Stone Age into the present. It is astronomy that revealed to us our place and position in the universe. It is geology that showed us what our past looked like. Our fathers and forefathers did not have the privilege to know all this. But they did their best with the limited knowledge at their disposal. Now, we carry the baton. We are grateful, but we will not be worthy of them and will have failed them if we did not properly utilize the knowledge gained since. So, let us build it into our culture to base our judgements on solid scientific evidences to lead our lives.

Amen.