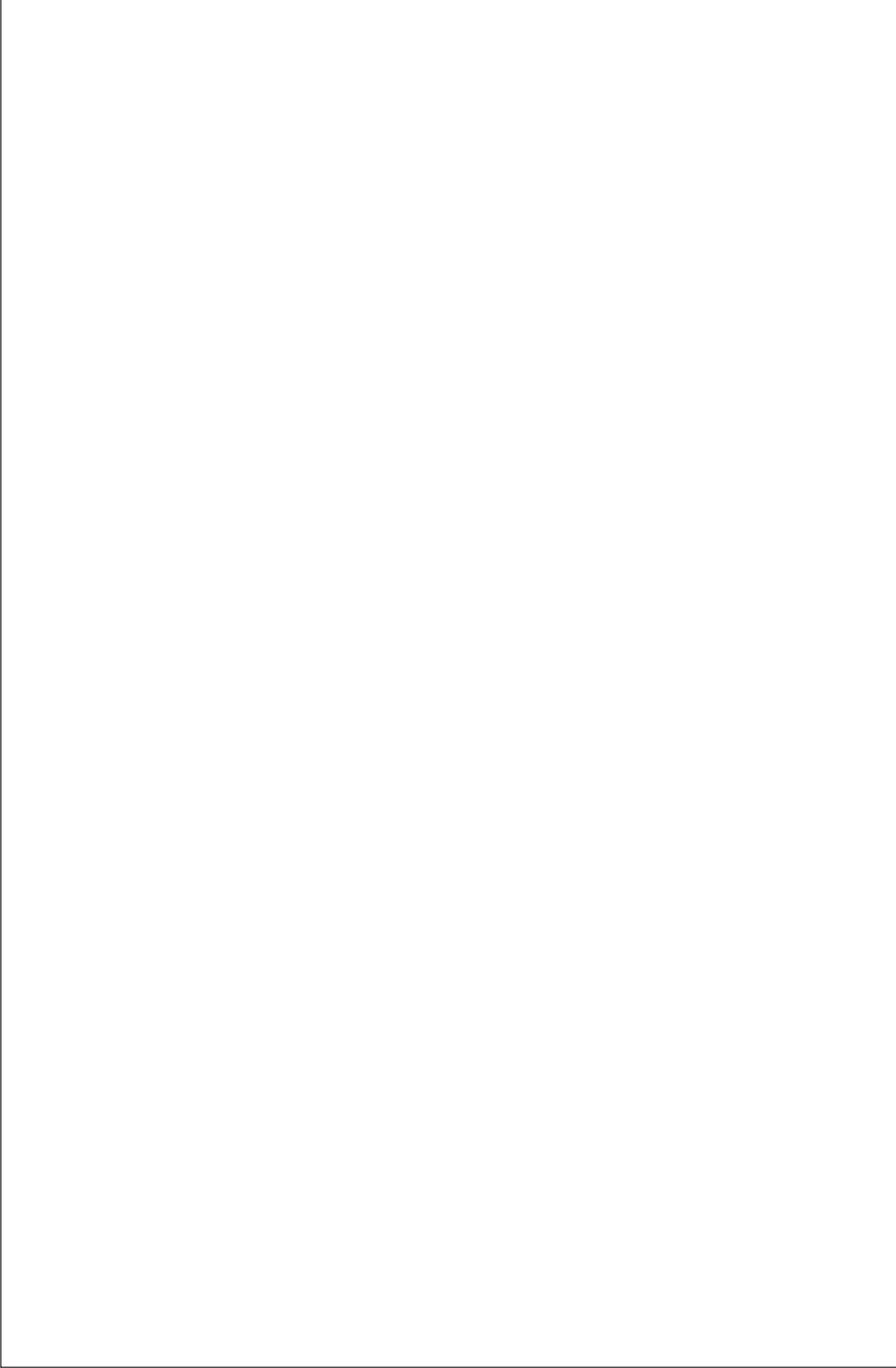


REVEALING THE GLORY OF GOD



# Revealing The Glory of God

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## *Foreword*

The number of books written on the theme of science and religion has been rather limited. The present book titled 'Revealing the Glory of God' and centred on the same theme is, however, a book with a difference. The author starts out by pointing out that before the advent of the modern scientific age, the atheistic philosophy which was held by many was based on a mechanistic view of the universe and hence had no place for a transcendent Creator. The rapid developments of science and technology based on quantum mechanics and the theory of relativity have greatly changed this world view. Within the short space of this book the author has attempted to analyse some of these developments both for physical and biological sciences. This analysis clearly demonstrates that there is a Grand Design in the making of the laws that govern inert and living matter. This Design is apparent from the infinite wisdom, order and proportion, beauty and harmony which are reflected in the organisation of matter both on a macroscopic and microscopic scale. Out of the numerous possible universes, only one universe namely ours seems to have been programmed by the Creator in such a manner that the physical laws and conditions prevalent there in are just about right for the creation and sustenance of life. This is the essence of what is presently known as the cosmological anthropic principle. The scientific study of matter and life forms indeed tends to reveal that even the minutest matter in the creation and sustenance of all forms of matter did not escape the attention of the Creator.

Although the author does not mention the stand of any particular religion on science, it is heartening to note that the Holy Book of Islam Al-Quran contains about 750 scientific verses which have a bearing on modern science.

Many of these verses urge man to ponder deeply over nature and appreciate the magnificence of God's creation. Verse 3 : 190-191 clearly asserts that nothing has been created for nothing. This assertion has now become an article of faith to the modern ecologists. Verse 25 : 2 of the Holy Quran asserts " it is He who created all things and ordered them in due proportion". Interestingly the issues of order and proportion are, in fact, linked to the question of survival of living things and also to their beauty of appearance. Thus, it is apparent that there is no conflict between science and religion. Rather, the studies of science help man understand the Mastermind of the Creator whose various attributes have been mentioned in all the religious scriptures which have been revealed from time to time.

The author has been successful in establishing that the scientific studies reveal the glory of the Creator and that this glory is also manifested in man's struggle against Evil and in keeping the balance of order over disorder on this Earth. Understanding the purpose and glory of God's Creation will certainly enable people to direct their activities towards a meaningful existence on this planet. I am confident that the book will stir the hearts of many who have still not been able to decide on the issues of faith in the -Creator-.

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## *Introduction*

People of all cultures throughout the ages of their history generally believed in the existence of a Spirit or Spirits of some Transcendent Being whom we call God. The Transcendent Being has been understood as different from man and superior to and governing and controlling man and things. This belief for them was as obvious as a logical truth or an observed phenomenon.

Belief in God was based on the fact that there was something in the nature of the world which points to a Transcendent Creator whom we should worship. This belief was, however, spontaneous and inherent in the nature of man and taken as an axiom of truth. This belief had been reinforced from time to time by the revelation and preachings of religious leaders known as Messengers of God or Prophets.

Of course, different cultural groups differed about the nature of the Creator and about the appropriate attitude people would have towards Him. Thus, the Semite religious streams believed in a Transcendent God, different from His Creatures, even though He seeks a personal relation with them. On the other hand, the Eastern Religious streams believed that God was none other than the Deeper Self in

the last analysis. Primitive people believed in many gods and goddesses. These gods and goddesses were adored, abhorred and propitiated in various ways by appropriate rites and rituals, ceremonies and sacrifices.

Prior to the modern age very few people disputed the existence of God as the Creator of this world. But this belief in God as already mentioned was spontaneous and taken as an axiom of truth; no rational basis was established for that. So in the early period of the modern scientific era some philosophers became very sceptical about the existence of the Transcendent Creator. The new thinking was the view that the world was in every respect a closed system which cannot therefore point to anything outside itself. The first step was perhaps Descartes mechanistic conception of the world which claimed that it was possible to explain natural phenomena by reference to matter and motion and their laws. Hume claimed that the causal principles by which natural phenomena were explained were nothing but observed regular succession. God could not, therefore, be the cause since He lied outside the world of experience. The world could not be His creation or effect since it is not observed to occur after Him. Kant took the final step by arguing that the concept of causation could not apply to anything outside the world of our experience.

This atheist philosophy then became, as it were, the official philosophy of science. And since ordinary people and even many scientists did not see the distinction between the facts which science established and the philosophies which scientists adopted, especially when such philosophies became popular among the great scientists, this atheistic philosophy was believed to be the philosophy which science demanded.

However, the believers maintained their faith in God hoping to find a place for Him in the realm which science could not yet conquer. In any case they contented that those who denied the existence of God could not support their claim by any scientific fact. Fortunately the recent advances in science have given us enough facts for a rational approach and surer path to God and His attributes.

The atheist philosophy asserted that the world was a closed system and self-sufficient and did not need a transcendent-creator. But modern scientific thinking indicates that our Universe was created some 15 billion years ago and our planet earth came into existence about 5 billion years ago. Thus, it had a beginning and pointed to something beyond itself for its creation!

The creation of our Universe and its constituents was indicated a long time ago in some religious books and the believers did not have to wait for modern scientific theory to accept this truth.

Modern science, however, helps us to set up a system of logic whereby all things can be considered to have been generated from an absolute Existence and developed into more complex and higher beings, This makes our belief in the Absolute Existence, the unique God, quite rational. This also indicates His Attributes He must be an Eternal Prime source of Energy, He must have Absolute Power, Absolute wisdom, Absolute Command over everything and above all Absolute love, care and kindness for His creation.

Thus, science leads us in an unique path to reach God and realise His Attributes; God does not reveal Himself to His Creatures in any physical sense, but He establishes Personal relations with them through His love, care and kindness for them. He propagates His Divine Guidances

for conduct of their lives through His chosen persons called Prophets in the Semite Stream and Avatar in the Eastern Stream.

Science reveals the Glory of God in His creation which makes our belief in Him and His Attributes rational.

God is eternal, so is His Cosmos. But the Constituents of the Cosmos, the individual Universes undergo the process of creation, evolution and destruction. Our own universe was created about 15 billion years ago; it is destined to go out of existence in due course of time.

The planet Earth came into existence about 5 billion years ago and man arrived there only about two million years ago. Man was created after the creation of everything else in this Universe. In the whole Cosmos man is undoubtedly very special. He has been given self-consciousness, a free will and mind and the power of independent thinking, reasoning and judgement as well as an upright body of unique biological, chemical and physical composition; creation of all animals on this earth has been culminated in man and it appears that man is the ultimate purpose of God's creation, God is the origin of love and God's motive of creating man is to realise His ideal of love, making man live in happiness and harmony with His love as the source of happiness.

Man and man alone is capable of acquiring knowledge about God's creation and realising His Glory in it. This book has been written to give a brief account of the acquisition of such knowledge by man which reveals the Glory of God.

Topics discussed are. Revealing the Glory of God in:

1. The creation and maintenance of order and Harmony of the Universe;

2. The creation, of life on Earth;
3. The quality and achievement of man;
4. Maintaining the Balance of Good over Evil and of Order over Disorder in Man's life.



## *Chapter 1*

### ***Revealing the Glory of God in the Creation and Maintenance of Order and Harmony of Our Universe***

It is now believed by the scientists that the Cosmos as a whole has infinite dimension and contains an infinite number of Universes like our own Universe. In addition it has also an infinite number of so-called Black Hole Stars that have collapsed inward due to strong gravitational attraction forming the ultimate bottomless pits, into which anything could fall but from which nothing can ever come out. The Black Holes are thought to have a gravitational pull so strong that nothing can escape from them, not even light travelling at a speed of about 300000 kilo-metres per second (hence the adjective Black). A Black Hole goes on shrinking; it can also throw off energetic particles generated in its intense gravitational field.

At the centre of every Black Hole there is a singularity. (essentially a point of infinite density and Zero size), where the ordinary laws of physics break down. Due to shrinkage and emission of energetic particles the Hole shrinks in size and gets hotter and hotter, until finally it bursts apart, the singularity inside the hole exploding in a fire ball of high

energy radiations, a Big Bang, This might produce Cosmic Dusts out of which a Universe could be created. Quantum Cosmology theory allows the possibility of creating, not just one Universe but infinite number of them,

As individual Universes can be created, they can also go out of existence in due courses of time, but the Cosmos as a whole remains steady.

The Cosmos as a whole is, therefore, believed to be unchanging having an eternal existence.

Our Universe is one of the infinite number of Universes contained by the Cosmos. This concept of the Cosmos is very recent and has come out of man's eternal quest to understand the origin of our own Universe.

Strangely, however, until the 20th Century, Science did not really contemplate the idea of a beginning (creation) of our Universe. It was perceived as eternal and unchanging with stars hanging fixed in space. Even until the 1960's the scientists accepted the "Steady State" theory of the Universe, maintaining -that it has always existed looking much the same as it is now.

But 20th Century science discovered that our Universe contains billions of galaxies and these galaxies are getting further apart, that is, every galaxy is receding away from every other galaxy with a high speed which increases as the distance between the galaxies increases. This observation suggested that all the galaxies long ago, must have been closer together. What happened when they were touching one another and before then?

In 1965 Radio-Telescope observations discovered a mysterious weak hiss of radiation in the micro-wave range, that fills the Universes. This was postulated as the dying echo of the creation of the universe. In 1969 it was

mathematically proved that there really had been a Big Bang. The Universe must have been created out of a singularity some 15 billion years -ago. This suggested that all the parts of the Universe were once packed into an ultra-small, ultra-dense, ultra-hot clump forming a singularity which started expansion with violent explosion, the Big Bang and brought into being, space-time continuum, matter and energy.

But the Big Bang was not .an explosion in the conventional sense. In April 1992 the Cosmic Back-ground Explorer (COBE) launched by NASA reported distant ripples or fluctuation of the Cosmic radiation indicating that there was irregular distribution of matter and energy at the time of the Big Bang. This was necessary for clouds of cosmic gas to form which would then contract, cool and be clamped together by gravity into galaxies.

So from the cosmic dust produced by the Big Bang our Universe has to-day billions of galaxies, each galaxy having billions of stars (like our sun) with billions of planets around them. With galaxies hurling outward through space like fragments of burst balloons, space is expanding taking the galaxies along for a ride.

The Big Bang produced Cosmic dusts and energy out of which matters, of all. varieties have been created. Only about one percent of this bulk matter is visible to-day in the form of luminous stars, planets and gaseous matters. The rest is invisible or dark matter. Since its birth the Universe has been expanding forming billions of galaxies with billions of stars .and planets in each of them. The estimated diameter of the existing Universe is about five billion light years, (one light year is the distance travelled by light in one year with a speed of  $10^8$  meter per second). The galaxies are

uniformly distributed in space. We cannot locate the centre of space holding the Universe. But we assume the centre of time as the instant of occurrence of the Big-Bang. Inside the Universe lies Past and outside its edges lies the Future.

Our galaxy, the Milky Way was formed about five billions years ago and it contains billions of stars and planets.

Scientists in modern times have been deeply moved by the perfectly regular order existing in the universe. They have discovered that the "Whole" is composed by Parts' through purposeful union and harmony among them. This undoubtedly, reveals the Glory of God : We shall discuss the scientific processes occurring in nature which reveals this glory.

Out of the Cosmic dusts and energy released by the Big-Bang very short-lived particles, called "Quarks" were produced. The combination of quarks formed the stable nuclear particles, protons and neutrons; commonly called "nucleons". The process of formation of quarks, protons and neutrons started instantaneously with production of the cosmic dusts and has continued ever since. Protons are positively charged and neutrons are neutral. They have mass of the order of  $10^{-28}$  gm. and size about  $10^{-13}$  cm in diameter. Protons and neutrons attract each other with a strong force, called the "strong nuclear force" when they come very close together (less than  $10^{-13}$  cm from each other). This strong nuclear force is mainly responsible for the formation of nuclei of all elements holding neutrons and protons close together in small spaces of the order of  $10^{-12}$  cm in diameter. Different nuclei of different elements are combinations of protons and neutrons in different proportions. Thus the nucleus of the lightest element,

hydrogen has only one proton, heavy hydrogen has one proton and one neutron, helium has two protons and two neutrons. In this way the number of protons and neutrons in nuclei of elements increase as their atomic weights increase. The proportions of neutrons, also increase. Thus the heaviest element found on earth uranium has 92 protons and 146 neutrons in its nucleus. The electron is another stable elementary particle which is produced in nuclear interactions. The electron has a negative charge of the same magnitude ( $10^{-10}$  e.s.u.) as that of the positive charge of the proton. The mass of the electron is about  $\frac{1}{2000}$  times that of the proton.

The electron cannot stay in the nucleus. They move in orbits around the nucleus to form atoms of elements. The number of electrons in a normal atom is equal to the number of protons in its nucleus. Thus, the number of electrons orbiting round the hydrogen nucleus to form the hydrogen atom is just one, and that in Uranium atom is 92.

The atoms are the smallest particles in elements that take part in chemical reactions between elements and form compounds of different elements. The smallest parts of compounds are called molecules. A molecule is a combination of atoms of different elements and has the properties of the compound of which it is a part, compounds of different elements differing in their numbers, and varieties of atoms and in structures make innumerable varieties of matter that are observed in the universe.

Thus, a nucleon (proton or neutron) is produced by combination of quarks, a nucleus by combination of nucleons, and an atom by the combination of a nucleus and electrons, a molecule by the combination of atoms and

matter is composed by the combination of molecules. In this way all things are composed by stepped structural parts or building blocks. The structural parts are members of the whole. They serve their own individual purposes as well as that of the whole concurrently. So the processes that link structural parts together to constitute a system one step higher are naturally purposeful actions. They have the purpose to construct the physical universe. This reveals the Glory, power, wisdom, love and care of God for His creation.

The Construction of the physical universe from elementary particles and energy is based on natural laws and processes governing their dynamics Everything in this universe is in motion and motion in modern times is characterised by the theory of relativity and quantum mechanics. The theory, of relatively has shown that matter, space and time are closely related and are not mutually independent. This theory has also established that matter and energy are essentially same. This mass energy equivalence is expressed by Einstein's mass energy relation,  $E = mc^2$ , where E is the energy produced by conversion of mass m; and c is the speed of light.

Matter is converted into energy and energy into matter in reactions of sub-atomic particles. Two important examples of conversion of mass into energy are the Fission and Fusion Processes. In the fission process matter is converted into energy by the fission or breaking up of nuclei of heavy Elements like uranium, plutonium etc. Fission energy is now being produced in nuclear power Reactors on commercial basis. About 25% of the total electrical energy needs of the world to-day are met by Nuclear Energy. In the Fusion Process mass is converted into energy by fusion of

elements like hydrogen, deuterium, tritium and helium into heavier elements.

Fusion of hydrogen, deuterium, tritium and helium into higher atomic weight elements has been produced experimentally in the Laboratory. The Fusion process however requires millions of degrees in temperatures to produce the fourth state of matter, the plasma state. To produce commercial energy from this process the Plasma has to be contained steadily at such high temperature. The advanced countries have undertaken many projects in Fusion energy development and it is expected that this energy may be available commercially by the middle of the next century.

The Stars produce their energy mainly by the Fusion process. When the temperature of a star falls below a certain level the fusion process slows down and ultimately stops. These stars then become dead and no longer visible in the universe. Many of them are, however, detected by invisible radiations received from them; our sun shall also die with the death of the entire solar system. So God has set the fusion process for sustaining life on this earth.

On the other hand energy by its reaction with matter can be converted into matter under certain circumstances. As for example, photons (electro magnetic energy) in high energy reactions can be converted into matter.

The dynamics of the elementary particles, electrons, protons and neutrons which are the fundamental constituents of matter are characterised by the quantum theory. This theory asserts that these particles in an atom are individually allowed only certain discrete energy states. The atom as a whole also is allowed certain discrete energy states depending on the energy states of the

individual electrons protons and neutrons. An individual particle can absorb or emit energy only by definite amounts or quanta. Either the particles will absorb or emit the whole quantum of energy or none at all. A particle can jump to a higher energy state by absorption of a definite quantum of energy or go to a lower energy state by emission of a quantum of energy. The atom as a whole is allowed different energy levels depending on the energy states of the individual particles. When all the particles in the atom stay in their lowest energy states the atom is said to be in its lowest energy state or normal state. The atom can go to a higher energy state by absorption of definite quanta of energy by the individual particles. The atom is then said to be excited to that state.

The elementary particles, electrons, protons and neutrons obey Paul's Exclusion Principle which asserts that more than two identical particles cannot occupy the same energy state. Thus, more than two electrons cannot occupy the same energy state in an atom. The same is true for protons or neutrons.

Both energy and particles, have dual properties, wave properties and particle properties. When energy spreads in space and propagates rhythmically it bears wave properties. If the energy concentrates in a small volume to have a certain form it realises the properties of a particle. The quantum of electromagnetic energy called the photon behaves as a particle.

Similarly elementary particles like electrons, protons and neutrons have also dual properties, properties of waves and properties of particles. If we characterise the particle property by its momentum 'P' and energy 'E' and wave properties by wave-length  $\lambda$  and  $\nu$  frequency we have the

relation between wave and particles properties  $P = \frac{h}{\lambda}$  and  $E = hv$  where  $h$  is called the Plank constant ( $\hbar = 6.6 \times 10^{-34}$  joule/sec).

The dual properties of particle and wave co-exist without any inconsistency.

Wave properties clearly appear at some times and particle properties at other times but both do not distinctly appear at the same time.

Another important principle is the Heisenberg's uncertainly Principle which follows from the dual properties of energy and particle mentioned above. A particle is characterised by existing in a specific position in space. On the other hand a wave spreads in space and it is characterised by its wave length  $\lambda$ .

If at a certain time the particle acquires wave properties its wavelength can be measured correctly at that time but it will loose particle property at the same time and hence its position cannot be defined or determined at that time. Again, when the particle shows particle property its position can be determined correctly, but its wavelength then becomes completely uncertain. In other words the position and wavelength of an elementary particle-cannot be measured correctly at the same time. The wave length  $\lambda$ , however, is related to the momentum,  $P$ , by the relation  $P = \frac{h}{\lambda}$  Therefore, the uncertainly of the wave length means the uncertainly of momentum 'p' of the particles. That means, position 'x' and momentum, 'p' of an elementary particle cannot be correctly measured concurrently.

This is the content of the Heisenberg's uncertainty principle. He deduced the quantitative relation between

uncertainty of the position  $\Delta x$  and that of the momentum  $\Delta p$  as follows:  $\Delta x \cdot \Delta p \geq h$ .

As time is related to space, and energy to momentum, he also deduced the relation between the uncertainty in time  $\Delta t$  and the uncertainty in energy  $\Delta E$  as follows:  $\Delta t \cdot \Delta E \geq \hbar$ . ( $\hbar = \frac{h}{2\pi}$ )

These principles in general support the formation of the micro-world. As an example we may mention the creation of a very short-lived particle called 'meson', the exchange of which between neutrons and protons bring about the strong nuclear force binding the neutrons and protons to form nuclei. The mass of the meson is about 300 times that of the electron and it may be positively or negatively charged or neutral. The maximum life time of this particle is about  $10^{-7}$  sec. The meson is created out of energy realised by a proton or neutron. A 300 electron mass particle requires a comparatively large amount of energy for its creation which is normally impossible to be possessed by a neutron or proton in the nucleus. But Heisenberg's uncertainty principle allows the neutron or proton to have instantaneously surprisingly large energy. In other words an elementary particle can borrow a huge amount of energy  $\Delta E$  if only it can pay it back within the passage of the moment of time  $\Delta t$ . Owing to the uncertainty principle a nucleon thus can borrow the energy necessary to form a meson, which is then exchanged between nucleons to generate the nuclear force.

We have so far discussed elementary particles like protons, neutrons and electrons whose combinations form matter. They may be termed "forming" particles. They are scientifically named as "Fermions". They have the properties mentioned above and obey both Heisenberg uncertainty principle and Pauli's Exclusion principle. For

these particles to combine together and form a system there must be forces to unite them. This force is generated by give and take action between the particles. In this give and take action one particle acts as a subject and the other as an object. The subject particle momentarily acquires excess energy and emits it in the form of a new particle which is absorbed by the object particle. This new particle may be termed an action particle. The interaction between the subject and object takes place through the exchange of this action particle. As already mentioned, the strong nuclear force between two nucleons is generated through the exchange of an action particle called "meson".

The interaction through the exchange of action particles is not limited to nuclear forces. There are four kinds of fundamental forces which exist in nature, namely, the strong nuclear force, the weak nuclear force, electromagnetic force and gravitational force. All are generated through exchanges of corresponding action particles. The action particles for the strong nuclear forces are called gluons for the weak nuclear force, weak bosons, for electromagnetic force, photons and for gravitational force, gravitons.

Of course these four kinds of fundamental forces have mutually different properties. There are still many difficult problems in explaining them by one unified theory. And yet, the clues to solving the problems in establishing a great unified theory might be secured through a deeper understanding.

The forming particles are given the scientific name, Fermions and the action particles, Bosons. The electrons, protons and neutrons are Fermions, whereas the photons, gluons and weak bosons are Bosons.

These two kinds of particle are formed for different purposes; they have largely different properties. Let us examine the properties of the forming-particles or Fermions through the example of an atom. The nucleus of the atom of an element is constituted by neutrons and protons by a strong bond between them. Almost all the mass of the atom is concentrated in the nucleus which has a very high density. The forming particles, neutrons and protons have definite energy states in the nucleus, but they obey the Pauli's Exclusion principle and not more than two identical nucleons can occupy the same energy state. In the normal (ground) state of the nucleus the nucleons stay in their respective lowest energy states. Atoms of each element have a certain, but definite number of electrons which is equal to the number of protons in the nucleus. The electrons move around the nucleus in orbits just like the planets orbiting round the sun, The centrifugal force which maintains this orbital motion is mainly the attractive force between the negative electrons outside the nucleus and the positive protons inside the nucleus. The electrons also obey the Pauli's Exclusion principle. They have definite energy states in the atom, but not more than two electrons can occupy the same energy state. In the normal (ground) state of the whole atom the electrons stay in their respective lowest energy states.

If the electrons and protons did not obey the Pauli's Exclusion principle then all the nucleons could be accommodated in the same ground state of the nucleus and hence they could unite in one body causing collapse of the nucleus. Similarly if all the electrons were allowed to occupy the same ground state in the atom outside the nucleus they would also unite and form one body causing

collapse of the atomic structures. Not only that; another serious problem might occur. Various chemical properties of different elements are largely determined by the states of the electrons in the outermost shell of the atoms. If all the electrons in all the different kinds of atoms were in the ground state (the inner-most shell), then different elements would cease to have different chemical properties. It would then be impossible to carry on the chemical reactions that are necessary to conduct life activities. The forming particles must have the above properties for the purpose of creation of matter, and orderly maintenance of the Universe.

On the other hand for the purpose of carrying out their respective actions the Action Particles or the Bosons are naturally allowed to occupy the same quantum state or energy state in any number so that they can be engaged in 'give and take' action for generating the necessary forces for binding the Forming particles to create matter and maintain the Universe.

Starting from the Cosmic Dusts we have elementary particles, atoms, molecules, compounds, matters, planets, stars, galaxies and cluster of galaxies. Each of these things is of different kinds and forms and has different properties to serve different purposes in the creation, maintenance and progress of the Universe. Each is given designated functions to perform, and is just like an Angel obeying the Command of God. There is perfect and purposeful harmony among them and none clashes with the other in the performance of its designated functions. They have harmonious relation among themselves and are closely connected with time and space. In other words, these things, time and space are inseparably related to each other.

But every being is an individual entity and at the same time a member of the whole (system). The whole and the individual entities are in complete harmony. The main purpose of the individual entities is to play a useful role in the process of the attainment of the whole, which in turn has the purpose of revealing the Glory, Love and Care of God for His creation..

The creation, maintenance and progress of the Universe follow a Grand Scheme revealing the Absolute Power and Wisdom of the Creator. There is perfect harmony and unity in His creation which sustains itself under His Grand Scheme, Command and Will.

The Human Being has been created to probe into His Grand Scheme and reveal His Glory.

The knowledge gathered by human beings is still very much limited (may be a drop of the ocean). I have discussed in this chapter some essence of His Grand Scheme and I believe that by treating nature as a purposeful existence created by God under His Grand Scheme human beings shall be able to make great strides towards a better understanding of nature.

## *Chapter II*

### ***Revealing the Glory of God in the Creation of Life***

The physical machinery of modern life consists of two types of Components, the chemical and biological (genetic) components. The chemical component consists of living cells containing protein and nucleic acid nucleotides. The basic chemical functions are reproduction of the cells and replication (construction of precise copy of itself) of nucleotide molecules inside the cells. Cells can reproduce, but only nucleotide molecules can replicate., Protein is the essential component for reproduction and nucleic acid is the essential component for replication. In modern life reproduction of cells is always accompanied by replication of molecules. Replication can be explained by the quantum-mechanical stability of molecular structure while reproduction is explained in terms of the laws of thermodynamics. For a complete self-reproducing system both functions are essential, Thus, reproduction and replication are intricately linked together in the living world as it now exists.

In addition to amino acids (Protein) and nucleic acids, modern cells contain ATP (adenosine tri-phosphate) and other related molecules such as AMP (adenosine mono

phosphate). The two molecules ATP and AMP, which have almost identical chemical structures, have totally different but equally essential functions in modern cells. ATP is the magic molecule which serves as the principal energy carrying intermediate. AMP is one of the molecules which, makes up RNA and function as bits of information in the genetic apparatus of the cell.

A modern living cell is like a computer controlled chemical factory in which the proteins are the hardwares (which process the information) and nuclei acids are the softwares (which embodies the information).

The essential characterises of modern living cells is that it is able to maintain a steady and more-or-less constant chemical balance in a changing environment. This is called homeostasis; it is the mechanism of chemical controls and feed-back cycles which makes sure that each molecular species in a cell is produced in the right proportion. Homeostasis maintains ordered reproduction and quasi-stationary equilibrium. Homeostasis however, requires a critical number of types of molecules in a cell. The number in a modern cell may have 2000 to 20000 monomer molecules combined with few hundred species of polymer molecules.

The genetic apparatus is the essential biological component of modern life. This is the organisation of ribosomes and transfer RNA molecules which enable a cell to translate a nuclei acid gene into a protein. In a modern cell the gene is transcribed into a molecule of messenger RNA before being translated. The forms of messenger RNA are highly variable from species to species, but a universal Code is embodied in the transfer RNA molecules which is the same in all cells apart from some minor

difference. Thus, the genetic apparatus appears to be quite universal.

For three billion years life was dominated by its physical machinery. Individual species must do what their genes dictate. This tyranny of the gene has been precariously overthrown only in the last two million years by a single species, Homo Sapiens, the human species. Human life has two sides, the objective side and the subjective side. The objective side is the physical machinery of life and the subjective side is the self-consciousness and free will.

Self consciousness and free will have been the dominating factor in evolutions of the social cultural and spiritual life of human specie. Our behaviour-patterns are to a great extent determined by our self-consciousness and free will rather than by our genes.

However, we have a new tyrant which has arisen in our culture. The new tyrant is the "Meme", the cultural analogue of the gene. A mene is a behavioural pattern which replicates itself by cultural transfer from individual to individual, from community to community instead of biological inheritance. Examples of meme are, religious beliefs, linguistic idioms, fashions in arts and science, in food and clothes. The Meme is the self-replicating unit of behaviour like the gene in biology of life. Our self-consciousness and capacity for foresight can only give us the power to transcend our meme.

Human life is indeed, highly complicated. This undoubtedly reveals the glory of God because man is very special to Him. The glory of God is also revealed in the fact that He created an atmosphere on our planet earth which contained all the elements and the environment necessary for natural evolution of life.

Life is no doubt, something which is very special in God's creation. The breath of life is quite different from the physical machinery of the living cells. It is a mystery which is, perhaps, beyond the scope of scientific enquiry. But scientific enquiry has now revealed a lot of information about the physical machinery of life, the living cells and their functions.

In the previous chapter we have discussed about the formation of elementary particles, nuclei, atoms, molecules and matters from the Cosmic Dust produced by the Big Bang. Modern Radio-astronomical observations show that our galaxy is thickly populated with molecular clouds containing large quantities of molecular hydrogen, water, ammonia, carbon-monoxide, methyl alcohol, hydrocyanic acid and other molecules which are chemically reducing rather than oxidising. Observations also show that new stars are being formed, by gravitational condensation of molecular gas at the places where these molecular clouds are present. Our Solar System including the earth was also formed by condensation of a similar molecular cloud about five billion years ago. So the primitive earth must have possessed an atmosphere composed of the same reducing molecules as mentioned above. The original atmosphere of the earth has, no doubt, changed in course of time. Geophysical evidence suggests that it became oxidising about two billion years ago, after plant life was well established and photosynthesis organism had began to produce free oxygen in large quantities. But at the epoch of life's origin the earth atmosphere was reducing and contained some or all of the hydrogen-rich species, water, ammonia, methane and molecular hydrogen. Other common species which are neither reducing or oxidising

such as molecular nitrogen and carbon dioxide were probably present. Strong oxidising species such as oxygen was presumably absent. It is also likely that there existed on the primitive earth substantial quantities of heavier hydrocarbon molecules and other reduced, organic species which would have then dissolved in the primitive oceans and formed an oily scum on their surface. So pre-life earth's atmosphere contained a wide variety of hydrogen-rich gases and liquids.

Modern experiments have shown that the input of energy into a reducing atmosphere, such as that of the pre-life earth, caused the production of amino-acid's ultra-violet energy of the sun could probably produce substantial amount of amino-acids on primitive earth, They would have descended from the atmosphere with rains and accumulated in lakes and seas. Thus, nature could provide an ample supply of amino-acids on the primitive earth. Now it is found that amino-acids provide the building block out of which all living creatures build protein. So with ample supply of aminoacids on its water-surface the primitive earth was waiting for the breath of life to stir them into organised activity.

But for life to come on earth nature had to synthesise amino-acids to form the building blocks of life. We don't know anything about this pre-life synthesis. It might have happened by some process which none of our chemists have ever been able to reproduce. So we know almost nothing as yet about the origin of life. We do not even know whether the origin was gradual or sudden. It might have been a process of slow growth stretched over millions of years or it might have been a single molecular event that happened in an instant of time, a very small fraction of the

second. If we believe the origin of life as being slow we must think of it as a natural selection process. But if we believe it as being instantaneous we must think of it as statistical fluctuation process without selection. In reality the origin of life must have been complicated with incidents of rapid changes separated by long periods of slow adaptation. Many scientists believe that the origin of life was an isolated event occurring on a rapid time scale. This supports the theory of evolution by random statistical fluctuations causing species to evolve. Evolution by random statistical fluctuations is called "genetic drift". However, genetic drift and natural selection are both important and there are time and places where one or the other may be dominant. In particular, the genetic drift might have been dominant in the very earliest phase of biological evolution before the mechanism of heredity had become exact. It is very useful in building models of pre-life evolution.

As already mentioned the chemical building blocks of life are mainly the amino-acids and nucleotide monomer out of which proteins and nucleic acids, respectively are built. The biological state concerns itself with the appearance of biological organisation.

In modern times, reproduction of cells is always accompanied by replication of molecules but this need has not always been so in the past. One could occur without the other. It is possible to postulate organisms that are composed of pure nucleic acid and capable of replication but incapable of reproduction. If the functions of life are separated in this way, it is to be expected that latter type of organisms will become an obligatory parasite upon the former.

The results of last 30 years intensive chemical experimentation have shown that pre-life synthesis of amino-acids was easy to stimulate but pre-life synthesis of nucleic acid was not. So it is postulated by some scientists that the original living organisms were cells with reproductive apparatus directed by protein (amino-acids), but with no genetic apparatus (nucleic acids). Such cells would lack the capacity for exact replication but could grow and divide and reproduce themselves, in an approximate statistical fashion. They might have gradually diversified and refined their reproduction pathways.

Primitive cells had no genetic apparatus but were saturated with molecules life AMP as a result of energy carrying function of ATP. About 3 billions years ago, perhaps accidentally, the AMP molecules began to synthesise RNA. within the cells with some help from Protein the nucleotide produced an RNA molecule which then continued to replicate. In this way RNA first appeared as a parasite within the cell. The protein-based life and parasite RNA grew gradually into a harmonious unity, the modern genetic apparatus.

In modern living cells genetic information is carried only by nucleic acids and not proteins. But originally in the absence of nucleic acids cells presumably passed genetic information to their offsprings in the form of proteins. A population of proteins can mutually catalyze each others synthesis; so they might have the capacity of carrying genetic information also. Perhaps the process was much limited in original cells having no replication scheme. As soon as the genetic apparatus was perfected, cells possessing it had overwhelming advantage over earlier forms of life.

The earliest forms of life perhaps contained cells of rudimentary kind lacking nucleic acids and genetic

apparatus. One celled bacteria and blue green algae might be their first descendant.

They were simple microscopic species They reproduced themselves and they still do without sex. There are no blue green algae males or females; just an asexual form which reproduces itself by simply dividing. This process, however, does not produce any variety; all individuals remain exactly alike. There has been no variation from one generation to the next.

To make sure that it can survive environmental changes a species needs variety. The way to get that variety is through sexual reproduction.

First hint of sex on earth came when two of the existing one celled organisms bumped into each other and fused temporarily. Out of this happy union came a third cell. For union the organisms must move around and at the same time a parent cell had to be able to provide food for the new cell that come out of the union. No one-celled creature, however, could do both jobs. So two different kinds of cells eventually developed; egg cells to provide the baby food and the sperm cells to provide the mobility. Thus, sexes appeared in these basic forms. Subsequently all higher species divided themselves to male and females. This division meant that no reproduction can happen unless individuals meet and mate and blend their genes to produce a new generation not exactly like either of the parents; perhaps carrying the genetic key to a better adaptation to life. At least two sexes males and females are necessary, because the reproductive strategy has two tasks-fertilising and feeding. The sperm in the male searches, finds and fertilises the female.

We have just two sexes, the minimum necessary for producing variety in the species. If we were given a more complicated strategy for reproducing one that involved, say, three stage process or three cells uniting, the world would be a very different place with a lots of unnecessary complications in life. So the glory of God is revealed in the system of reproduction that has come down to us. This is undoubtedly most simple and at the same time serves quite well to produce genetic varieties of better qualities.

The human reproduction process starts with the happy union and mating of a male with a female. The male fertilises the female ovum, and the fertilised ovum is anchored in the inner wall of the uterus. The embryo starts to grow there.

In the early stage (3-4 weeks) the embryo gets a leech like appearance. At this stage the Cardiovascular system starts to appear and the embryo is now dependent on the maternal blood for its nutrition like a leech. The next stage of development is a lump of flesh which continues upto about six weeks and then other organ system starts its formation and functioning.

The next stage of development is the formation of bones and muscles and by the 12th week a complete miniature skeleton is formed. The period of gestation is about 38 weeks. But the actual duration varies widely for a few weeks before or after the expected date.

Each parent contributes almost equally to the genetic resources of the offspring. The blending of the two sets of genetic materials results in a genetically brand-new organism. The sex of the new comer will be determined by which chromosome the sperm is carrying. At the time of conception the boy gets an X chromosome from his mother

and a Y chromosome from his father. A girl gets two X one from each parent. It is X or Y from the father, that is the determining blue-print for the offspring to be a girl or boy. These chromosomes are called X and Y, because they look more or less like X and Y respectively under the microscope. It is this liny morsel of generic material that spells the difference between a boy and a girl. There is however, very little difference in the overall biological functions of males and females. As a matter of fact the difference between male and female humans are small, in comparison to the sexes in other species.

The glory of God is revealed in the unique process by which the human embryo is created, nurtured and protected in the mother's womb. The conception and the growth of the embryo to a full baby in the mother's womb proceed automatically in the destined path. After the baby is born he/she is brought up with extreme love and care which make his/her life meaningful and worth living.

As a man grows he develops a personality or self-consciousness which is influenced by his Body, Mind and Will, which in turn are influenced by his brain. The brain is the most important organ in the human body. Packed into a package of about one and half kilogram shaped as the walnut, a little bigger than a grape-fruit, the brain contains something like 100 billion cells, each cell is linked to thousand of other cells creating a dazzling electro-chemical circuitry consisting of trillions of connections that controls everything we taste or touch, do or say, see or think. This is God's gift to man, more so than any of the rest of us; this little dynamo is what makes us human.

The human brain is a triune brain, three, brains in one. This distinctive, three part structure of the human brain

reflects the distinctive creation of man. Each of the three sub-brains has its own kind of intelligence, memory, sense of time and space, motor skills and specialised functions. None operates independently of the others, but each has a distinctive character.

Brain scientists have tried to map the brain, finding out what function is controlled in what area of the brain. In half a century of spurveying they have been able to locate most of the higher brain function to the points where they can activate certain functions stimulating particular areas of the brain. If one's brain is poked in one place he will search something that is not there; if it is poked somewhere else, an old memory will flash in his mind.

The function of the brain can generally be described by considering it to be consisting of two hemispheres the right and left hemispheres. Each hemisphere is assigned primary responsibility for different functions. In about 90 percent of humans the left hemisphere governs logic, analytical reasoning and language. We rely on it when we talk, think, analyse and argue. The right hemisphere governs the analysis of shapes and spaces. We rely on it to judge distance, the speed of objects and the spatial relationships between objects, Scientists have discovered that men and women have different cognitive strengths. They have located those strengths in the hemispheres of the brains. Men tend to have stronger right-hemisphere functions. As a result they tend to excel in mathematics. because they can see the abstract relationship better. They tend to make better Ball-Players and also be more successful in reading maps, because they can perceive special relationships between objects better.

Women, on the other hand, tend to have stronger left-hemisphere functions. As a result, they tend to excel in verbal fluency and comprehension. They tend to talk better, argue more persuasively and learn foreign language more easily. They are better at expressing their feelings in words. They are better equipped to sing in tune. All these skills appear to be located in the left hemisphere. The relative advantages of each do, however, shift over time.

These cognitive differences between men and women appear to be convincing in many scientific experiments, observations and surveys. In 1983 the scientists discovered a peculiar bulge in the corpus callosum of female brains. This bulge has turned out to be an extra bundle of neurons that is missing in male brains. The difference was substantial. The corpus callosum in the female brains was as much as 40 percent larger than in the male brains. This bulge appears to act as a communication station for messages between the left and the right hemispheres. Thus, female brains are wired with more neural pathways connecting the right and the left hemispheres, and therefore they have a greater capacity to integrate the activities of the two sides.

Think of the brain as a city divided in half by a river. In the female brain, because there are many more bridges over the river traffic moves faster and more efficiently between the two halves.

With more connections between the verbal left hemisphere and special right hemisphere, women are better equipped to bring the two kinds of thinking together. This blending of logical and creative perception may result in the famous sixth sense of "women's intuition". It is not something they can see, but it is more than just a feeling.

Men on the other hand, have an advantage because communication between their hemispheres is slow. Men are better at keeping separate tasks separate, talking and running a drill press, for example. Men, very often find it easier to do their duty without getting bogged down in second thoughts, moral reservations or feeling of guilts.

Thus, scientists have observed some biological differences in the male and female brains. They have also observed some behavioural differences between the sexes. But we are just not at a point where we can say one leads to another. Whatever differences are there between males and females in their brains and behaviours they undoubtedly make men and women more attracting and loveable to each other.

The human brain demonstrates the uniqueness of man in the creation of God. The rest of the human body is also uniquely, designed and built to carry out biological, chemical and physical functions necessary for its growth and maintenance.

The brain generates the forces in the body, mind and will which shape his individual personality or self-consciousness. Man is different from other animals mainly for his self-consciousness which dominates his actions in life. It is not clearly understood what makes self-consciousness in man, but this makes him to realise his own self, his functions in life and his relation with the world outside him. It gives him the power to judge, distinguish the right from wrong, the good from evil and act consciously for the right and the good. It gives him the unique power to imagine beyond the immediate, to envision new ways of living and then work

to turn those visions into reality. He exercises the unique human powers to reshape his future by reshaping his present. It urges him to do great works and advance human civilisation.

Faith in God, meaning of human life and death, realisation of good and evil, transformation of social, moral and cultural values, all come from ever-widening human self-consciousness.

Human consciousness is generated by the brain forces. Acquisition of knowledge and experience leaves their marks on the brain which nurtures, strengthens and widens self-consciousness. Revolutionary advancement of scientific and technological knowledge also widens human consciousness, and promotes better understanding of human life and humans behaviours.

## *Chapter III*

### *Revealing the Glory of God in the Achievements of Men*

There is no doubt about the fact that human being is something very special compared to the animals around us, we are remarkably different and cannot be their descendants. We walk, we talk, we smell, we taste, we touch, we think, we love, we hate; the shaping of our culture is our ultimate responsibility; what kind of culture is best for us and who shall decide, are two most important questions for us; question that no other animals can even ask, much less answer.

We love and care for each other, we assemble in groups to form villages, towns and cities, We think about God and His creation and reveal His glory. We practice religion and worship God.

We have invented the wheel, the alphabet, the clock, the reciprocating machines, the cyclotron, space vehicles and everything in between. We have invented music, arts, games and so many other things of beauty, pleasure and utility. We have to-day, all amenities to make our lives easy, happy, pleasant and comfortable. We have also made tremendous achievements in our social, political, economic

and cultural developments and established a highly advanced civilisation on this planet.

According to the Holy Books Adam was the first man create by God; subsequently He created Eve for his companionship and they lived in Heaven. The Devil tempted them to disobey God and they were sent to Earth for punishment. This was the Fall of Man to his primitive stage from which he struggled for thousands of years and elevated himself to the present position. Science can neither prove nor disprove this legend, but science definitely reveals the glory of God in the human struggle for his progress and betterment in life.

It is believed that the early man had the same human faculties as we have to-day. But initially he had no knowledge about his environment on the earth. He needed food, clothing, shelter and protection from wild animals. He, had to eat food raw, because he had no fire to cook it. He had to depend on plants and wild animals for his food, but he had no tools to catch the wild animals. He might try-hitting some of them with rock if he could get close enough to them or he might fry using a heavy stick as a sort of club. If he did, he would have discovered one of man's first tool.

He must have tried to cut woods and other plants and possibly he found some stones with sharp edges to use as cutting tools. He could make the edges sharper by rubbing the stones together. He might fasten some kind of handle to the stone and he would be the first person to make and use an axe.

When the sun disappeared the early man did not know why it did. He had no home, no shelter to go. There would be no light to direct him except from the moon and stars. When there was a thunder-storm, he would have no idea

what caused it. Thunder and lightning might scare him; the wind and rain would make him cold and wet. He might get sick and would not know why he was ill.

After several of these storms he would begin to look for shelter: such a place might be a cave. But if he could not find a cave, the next best thing would be to dig a hole in the side of a hill. This would be his first home. Eventually he could build fire to cook his food, keep himself warm and protect himself from wild animals.

If he lived this kind of life for few years there might come a time when there would be little or no rain. The plant food he usually ate would not grow without water. His supply of drinking water might not last very long either. Without water and plant food, the wild animals he hunted would have moved away. He could either stay there, and starve or go to some better place. However, not knowing any better places, he would probably stay there. If he lived near a river, he might see trees or logs floating down the river. He might try to ride on a tree and this would be his first boat. With this discovery he might risk moving longer distances to find a new home.

So, early man had to struggle for his life. He did not know about the world in which he lived. He did not know why things happened. And he began to ask himself more questions as he gained new experiences. The more question he asked the more he learned. In this way he continued to gather knowledge, about the nature and environment in which he lived and use this knowledge for improvement of the conditions of his life. In a course of thousands of years he has reached the stage of modern science and technology which have made his life remarkably easy and pleasant. Knowledge has given him power, and wealth and modern

amenities of life and civilisation which is reaching upward, higher and higher pushing against all obstacles.

How man could survive, sustain himself and improve his conditions? This was possible because a favourable environment was created for him on earth and he was given the physical and mental faculties to gather knowledge of this environment and use it for his benefit. In addition, he was given God's guidance through His Messengers to conduct his social, moral and spiritual life with dignity. These are parts of God; Grand Scheme for His creation and revealing His Glory in an exquisite manner.

The things around us and the forces which act on us make up our environment. Heavenly bodies, all living and non-living things on earth, its climate, air, water and soil, heat, light and all other forms of energy are parts of our environment. All living things including man are dependent on each other and on the materials and forces of nature. Science includes the studies of these materials and forces in our environment and our relation to them. It is classified knowledge, gained from observations, experiments and inferences. Human being has been gathering such knowledge from his beginning and will continue to do so in future.

So the knowledge grows and with it human progress. All things in our environment are in the form of matter. Our environment also includes forces which make life possible by enabling us to use different forms of matter. These forces are various forms of energy such as mechanical, heat, light, chemical electro-magnetic, gravitational and atomic energy.

Despite their differences all forms of matter have the following common or general properties: (1) all matters occupy space, (2) all matters have weight, (3) matter

cannot easily be destroyed (4) matter can change its state (5) matter has inertia and (6) two portions of matter cannot occupy the same space at the same time. These properties do not distinguish one form of matter from another. On the other hand special properties of matter help us to distinguish one from another. For example we say that glass is bright and transparent. Sugar is sweet, gold is yellow and heavy, rubber is elastic, lead is heavy and iron is hard.

Matter includes living and non-living materials which are respectively called organic and inorganic materials. Organic matter is alive or comes from living things. Inorganic matter has never been alive and is always non-living. Organic matter includes all animal, plant and micro-organism life. Chemical elements are inorganic matter: one difference between organic and inorganic matter is that most organic matter will burn whereas inorganic matter will not burn at ordinary temperature. By the glory of God general and special properties of all forms of matter are such as to make all materials useful to man.

As for example, all material bodies attract one another due to gravitational force between them. This is a fundamental property of matter. Matter is pulled towards the centre of the earth by this force of gravity on it which is a measure of its weight. How could you live on earth if you had no weight? The earth and all the heavenly bodies attract each other. The sun's force of gravity helps hold the earth and other planets in their orbits around the sun and so on.

Let us take the example of inertia, which is a fundamental property of matter. Due to its inertia matter if at rest tends to remain at rest, if in motion it tends to remain in motion unless acted upon by an outside force. Matter

cannot move itself and if it is in motion it continues to move in the same direction. It would continue to move for ever if friction and force of gravity did not stop it. We can move objects through water and air because of their inertia. In short inertia is a property of matter, which makes it useful to man.

Another example of a useful property of matter is that matter can exist in the form of solids, liquids and gases. Many kinds of matter can be changed from one state to another by changes in temperature. By these changes many useful works can be done for the benefit of man.

In this way every property of matter can be used for the benefit of man. They are ordained so by the Glory of God. Energy and forces existing in environment are just what we need for doing useful works of various kinds for sustaining and improving our lives. Energy in general is classified in two types: potential energy and kinetic energy. A piece of coal has energy stored up in it, sometimes called "stored-up sunshine". When the coal is burnt its energy is changed to heat energy. The coal contains chemical energy. The water at the top of a dam can do work if it is allowed to fall. Energy which is stored-up as in the coal or energy which can do work because of its position, as in the water at the top of the dam is potential energy.

Falling, water, winds, electric current, heat light etc. possess a different type of energy. They can exert, force because they are in motion. This energy of motion is called kinetic energy.

Energy is absorbed or given out when matter is changed from one state to another. Heat energy is absorbed when ice melts. This heat energy is given out when the water freezes again. Heat energy is also absorbed when water changes

into steam in a boiler. Heat energy is given out when the steam changes back into water.

When coal is burnt the potential (chemical) energy stored in the coal is changed to kinetic (heat) energy. In this process of transformation of energy from potential to kinetic type matter (coal) itself changes from one form to another. Coal when burnt, changes from solid to gaseous form.

Energy itself can also be changed from one form to another. Chemical energy of fuel is changed to heat-energy by burning the fuel. In a telephone or in a microphone sound energy is converted to electro-magnetic energy. In the receiver this electromagnetic energy is again converted into sound energy. So useful works are done by transforming energy from one form to another. In this transformation, however, total amount of energy remains the same. In other words energy is not destroyed nor created in this process, it is only transformed from one form to other. Similarly in ordinary processes matter also cannot be destroyed or created; it can only be changed from one form to another. Of course, in some special processes matter can be converted into energy and vice-versa; but the sum total of matter and energy is always conserved.

The properties of matter and energy discussed above, undoubtedly reveals the glory of God. Man can change matter from one form to another and make new materials for his use. He can control energy and change it from one form to another and thus make it do work for him. But for this he had to struggle against fear and superstitions. He had to find facts, acquire scientific knowledge and devise scientific methods. In other words, he had to acquire scientific and technological capacity for management of his

environment. Not all people could do it: those who could have wealth and power and those who could not have remained poor and primitive.

Scientific and technological capability has, no-doubt, given man material wealth and power but religion has been the key-factor in the development of his social, cultural moral and spiritual life. To the believer religion is the revelation of the glory of God, revelation of God's Guidance for conducting man's social, moral and spiritual life. These guidances came through hundreds of thousands of Messengers or Prophets from time to time in human history. Religion was the only thing that made man dignified, special and proud of being human. There had been three main streams of religion, the Semite, Indian and the Far Eastern Streams. Five world religions emerged, these are Judaism, Christianity, Islam, Hinduism and Buddhism, Zoroastrians is also one of the most ancient religions, but it is now practised by only about 125,000 Parses in the whole world. Shikism and Jainism are two other religions, practised by certain groups mainly in India,. Goals of all religions are same. All religions seek or respond to the Divine Being and His Guidances for conducting human life. All religions have urged man to live in harmony with the Divine will and obey his guidances. All religions teach man about the indestructibility of his soul, life after death and devotion to his God.

The fundamental values goodness, truth, beauty, honesty, selflessness, purity and love form the core of every great religion. All religions take evils very seriously in individuals as well as in societies. Sin is an offence against God and man and religions urge man to pray to God and seek His assistance to refrain from committing sin.

Religious sentiments encourage political activism on social, justice issues like the nuclear freeze, equal rights for women and the unprivileged people, repression and oppression and human rights protection in general:

Science and religion are not only compatible; they are complimentary; the closer we come to a scientific understanding of the universe, the closer we come to an awareness, of God and His Religion. Science provides the knowledge and religion provides the perspective: science the information and the means to control, religion the will to control. To go forward without either one is to deny the complexity and subtlety of the human being.

Religion holds out goals for man and society, provide ideals and means for mankind in deliverance from evils and establishment of justice and peace in this world. Religion is primarily an individual experience and subjective, it is thought and felt by individuals, but when the majority of these individuals in a society accept a particular faith, this becomes objective and a function of the society and is transmitted from one generation to another and expressed through the culture of the society. There is a clear meaning of life for the believers which is to seek the pleasure of God following His universal moral value. On the other hand, the meaning of life for the non-believers is to serve their individual purposes according to their individual values.

Belief, ritual and spiritual experience are the cornerstones of religion. Spiritual experience is supreme from individual point of view. Every encounter with the divine is unique and it can only be grasped by personal and direct experience. There is a super-human power that has an authority above all that society can claim, and that power is revealed in the spiritual experience of individuals. The

Divine being also has a concern for the community, for the individual in society and for redemption of society.

Religion offers a believer salvation in life and hereafter. It has teachings about life after death. It gives him self-consciousness, dignity in his life and faith in his destiny. Religion gives a man some kind of understanding of himself. Who am I? What am I here for? what should I do? what fulfills me? Religion defines the human, his mission and ideal in life. It provides an image and model of the human.

There are no doubt, differences in the doctrines, philosophies, rituals and practices of different religions, but these differences are expressions of different levels of understanding of different human beings and not basic in the spirit of the different religions. The fundamental values are the same in all religions and these values have given man theological and philosophical wisdom, moral and social Codes of his life, and exciting spiritual experience, visions and revelations. Religions have also been sources of inspiration and motivation for creative geniuses in their role of cultural achievements in societies. They have produced great arts, great literature, great music, great philosophy, great science, great work of charity, selflessness, love and forgiveness.

Man has thus made great achievements inspired by the religions spirit. But man at the same time cannot forget the fact that the history of religions has often been stained in blood. There have been bloody wars, torture, oppression, violation of human rights, exploitation and injustice in the name of religions. Often behind the religious labels, institutions, priests, elite class, cults, military and non-religions dimensions and factors tend to be dominant in the society, Political social and religious leaders very often exploited the religious

feelings of the common people to serve their own purpose of acquiring power and wealth.

Religious feelings were very often also used in class struggle, struggle between exploiting and exploited classes, particularly when the classes had different religions, Human life has many dimensions such as social, political, economic, cultural and religious. Sometimes these are mixed up and they may be interpreted as religious alone.

All these distortions in religions result, as discussed in the next chapter, from the Evil in man and lack of his understanding and self-consciousness. The latter, in particular, often makes men so-called fundamentalists or fanatics who have the tendency to consider his own religion to be exclusive of others, and to be intolerant of people of other faiths; the fanatic asserts that his own religion is the true religion and his own God is the true God, and his own way alone is the only one way. He has the tendency to impose his own faith and way on others.

So, the Evil in man, his selfishness, his greed for power and wealth, his pride, hate and lust and above all his lack of self-consciousness is the main resource for religious, ethnic and class violence and conflicts. This should be overcome by emphasising and cultivating the fundamental religious values selflessness, honesty, purity and love on both individual and community basis. The religious resources for non-violence, love, reconciliation, patience, forgiveness and repentance should be strongly nourished and further vitalised. All efforts should be made to implement them in individual and communal life. The nuclear age demands this. Since our survival is linked with this, people should be made conscious and understanding of the imperative and urgent need of these.

There must be development and expansion of self-consciousness among the people of the world as a whole. The grave problems such as war, violence and conflicts, poverty, violation of human rights, exploitation and injustice, environmental holocaust etc. are common to the entire humankind. They cannot be solved by fragmented efforts. People of different faiths, races and ethnic origins have to come together and work hard to settle them. Religions have to be enticed by the common moral value and modern secular concern. By the glory of God this is quite possible now as the intellectuals of the world can see the spiritual insight of the unity of mankind in physical and material terms. It is very heartening that the intellectuals of the world have started a global movement of inter-faith dialogue and understanding. They have recognised that religions are common heritage of man and stressed that they should be united on the basis of common spiritual insight, common moral values and common secular concern. This movement has to be extended at the grass-root level of the people in the world. Inter-religions prayers should become a people's movement. Inter-faith groups should be established every where.

People must move from conflicts and hatred to tolerance, understanding, mutual trust and collective action.

Promotion of self-consciousness among the common people is the key factor for success of this movement. Self-consciousness in an individual is a gift of his brain, but for its proper development and orientation towards the desired goal of establishing peace and harmony among people it must be properly cultured in the society. This .is the greatest challenge for the intellectuals today.

## *Chapter IV*

### ***Revealing the Glory of God in Man's Struggle Against Evil and Keeping the Balance of Order over Disorder on this Earth***

The glory of God is revealed in the great achievements of man of which he can be really proud of. He can stand tall and hold his head high, certainly no other creature could conceive and create something of such great beauty and utility. There is, however, another side of man that is nothing to be proud of. This is the Evil side of human nature. Surely there is beauty inside man, but there is also a beast, a part of him that he would like to deny but can't, a part that makes him miserable and unhappy. The beast in man may compel him to do harmful things, absurdities and bring tragedies and destruction in this world. Man is contradictory in nature he has compelling urges and contrary visions. This makes both Good and Evil inherent, in his personality or Self-consciousness.

Man's personality is shaped by his Mind, Body and Will. Each of the three is a force in the Personality and so interwoven with the other two that it is difficult to say of man's action, this is of the Mind, that is of the Body, and

this is of the Will. Most of us believe that our mental thinking is a lot better than our living. But our thinking is also, very often, as confused as our living, because our Mind is constantly subject to forces exerted by the Body and the Will.

Our body obeys physical chemical and biological laws. It may, however very easily fall prey to bad habits like smoking, drinking, drug-taking, sexual indulgences, violent impulses and criminal activities. These habits are, in general, particularly developed by young people to fill their vacuum in life, a vacuum created by an existence which has lost its meaning for them. The Mind, of course, very often suggests the sane course to take in these matters, but the urge of bodily appetite and Self-will conquers reason of the Mind.

The Core of man's life, the spring of all his actions is the will. The will has a number of satellites : love, lust, hate, greed, pride, ambition, the fear of what people think. As the sun controls the movements of its planets, the will in our Universe determines the course of our thinking and living. The will of a man always expresses itself in the form of a demand. The basic demands are for sex, security and success. There are many ways in which the will motivates man's action through the sex-drive. Selfishness is inherent in all these processes. The demand of the Will for security and success also breeds selfishness in man. The drive for these inculcates in man the lust for power, wealth and fame. The more he has, the more he wants. But the fallacy is : the more a man has, the more insecure he becomes. The will possesses a blind lust for satisfaction and feeds itself on that which never satisfies. The most aggressive weapon of the will is pride which is terrible in strength and delicately

sensitive in nature. The will very often takes refuge behind pride.

The Mind, Body and the Will which influence man's personality are themselves controlled by his brain forces. These forces generally create demands in the Mind, Body and particularly in the will of a man, for doing things of contradictory nature, both good and evil.

The basic Evil in man is his Selfishness both individual and collective. Man becomes individually selfish to meet, the demand for his sexual pleasure, security and success. This selfishness puts man against man, impairs individual relationships and causes individual misery in the society. Classes in human societies have found the way to mobilise class selfishness which appeals to common prejudices and hate and aims at achieving better economic and social concessions for a class. This puts race against race, group against group, religion against religion, colour against colour, sect against sect, community against community. It causes conflicts, tensions and bloodshed among them. This has caused extreme bitterness, misery and suffering in many parts of the world.

Nations have also mobilised selfishness for national interest aiming at acquiring economic, political and social strength for them. This has unleashed destruction and misery particularly on the neighbours which has affected the lives of millions of people. Selfishness is at the root of all other evils in an individual man, in a class of men or in a nation of men. Selfishness manipulates greed, dishonesty, injustice, ambitions, lust, prides, fears, hates and unfair means in men, in a class of men or in a nation of men to gain profits, power and wealth or to win control of communities, and countries.

Good and Evil, both are inherent in individual men and in communities of men. The evil in man, however, glorifies the good in him and the glory of God is revealed in man's struggle for good against evil, which run through every heart, every society, every generation and every nation. The greatness of man lies in this struggle. This struggle, in fact, is the struggle for suppression of contradictions in human personality produced by his brain forces. In other words he must suppress the demand for evil in his will. For this he needs extra sensory or spiritual power which makes the eternal struggle of good against evil, This power in an individual may dominate over the forces generated in his brain and enable his personality to avoid contradiction, to do the right things and avoid the wrong ones.

The Spiritual force is generated in the human personality. An individual may receive Spiritual Power by his faith in the unseen God, feeling His presence near him, His love and care for him and surrendering himself to Him, conducting his life in His way, seeking His pleasure in his work, in his prayers and devotion to Him. To receive this power one must pray, meditate, listen and keep the shutters of mind and heart open to hear the voice of his aroused conscience, which is the voice of God. The spiritual power enables a man to control his will. God Himself does not control human will. He has given him a free will, but he is the object of His Loving care which has a plan for his life and meaning for his existence. His loving care has a work for him to do which is to obey Him and reveal His glory. His loving care for man has provided all facilities for him to perform the chosen work. This is a love that has the power to enable man to live forgetful of self, a love that makes man worth living, suffering and dying for. This

power can generate forces in the personality of a man which can make him honest, unselfish, pure and loving.

The basic moral values ordained, by God for men to follow are: Honesty, unselfishness, Purity and Love. Absolute Honesty illuminates man's life. It guides him to be on the right path, to put right what is wrong, to seek the truth to practice pure reasoning and objective thinking, and, above all, to realise the glory of God.

Unselfishness caters for Care and Welfare of others, it shares man's life with the multitude of the people. This is the moral progression of the heart and mind which expands under the power of loving care of God. One cannot see the loving care of God until he cultivates his own loving care for others. Unselfishness and love for others go together.

Absolute purity of thought, mind and body gives men immense satisfaction, peace and absolute freedom which enable him to practice absolute honesty. Purity of thought is essential to realise the truth. Abuse of the body particularly by indulging in sexual, alcoholic and drug addicting pleasure constitute its worst impurities which causes extreme bitterness in life. Purity of the body from such abuses really satisfies man's mind and body.

Absolute-love hates evils, but not the evil doers. In the greater sense of the term, absolute love means an all out effort to win all men to a way of life in which it is normal to care enough to put right what is wrong in the human society. Love has come from God and it is most valuable in making human life meaningful.

Moral values discussed above are the most effective weapons to fight the Evil in man. The moral values in individuals collectively contribute the Moral Force in a human society which avoids contradiction and wrong doing

and uphold the rights, privileges and responsibilities of the individuals in that society. This Moral Force is the guiding force in establishing just, peaceful and progressive societies and advancing human civilisation.

As already mentioned, Evil is inherent in man and we cannot expect individuals to be completely free from it. But the glory of God is revealed in most of the human societies by their collective self-consciousness leading them in the right path to achieve progress, prosperity, peace and happiness in life. An individual's life in a human society may be quite disorderly and unpredictable, but the society as a whole may develop a collective self-consciousness to advance and maintain a certain social, cultural, economical, political and moral order which makes it distinct from other human societies. The behaviours of the society as a whole are quite predictable.

This is also true in the natural world. An individual molecule of a gas confined in a vessel kept even at constant temperature and pressure has a chaotic motion with random variation in its direction and speed at every instant of time. This makes the behaviour of the individual molecule quite unpredictable. But the overall behaviours of the gas as a whole is quite orderly and predictable and obeys certain physical laws: Thus the gas molecules collectively constitute a reliable system for performing action for the benefit of men.

The behaviours of individual constituents is unpredictable in all system of the natural world, but there is order in each system on the whole, maintaining the universal order of God's Creation and Evolution.

The unpredictable behaviours of individual particles in the natural world owes its origin in action and reaction or

give and take action among their neighbours. However, Order is maintained in the system by adjustment of the give and take action on a collective basis to serve a meaningful purpose of the system as a whole and this undoubtedly reveals the glory of God in His creation. The give and take action among neighbouring particles and its adjustments on a collective basis for the whole system follow rigidly certain laws of physics. This analogy of the natural world is quite applicable in the human world for individual communities as well as for the world community as a whole. Thus, as already mentioned, individuals in a particular society may behave in disorderly manners but the society as a whole may be quite orderly : However an individual Community may also be disorderly and behave in a chaotic way making its behaviours quite unpredictable but the world community as a whole has a definite and predictable pattern of growth and advancement. It is true that individual man and even individual societies may create disorder in their respective domains due to disorders in their individual self-consciousness; but by the glory of God, the overall or collective Order in most individual societies and particularly in the world community as a whole is maintained; in other words, the fate of the human society as a whole is under Divine Care and Protection against disorderly behaviour of individual men and individual societies. God maintains an overall balance of order in all systems of the natural world also.

The Evil in man is eternal and so is his fight against it. By the Glory of God the balance is overwhelming in favour of Good. The Evil, no doubt, has been causing misery among some people in some areas of the World; but the bulk of the people all over the world have established the Good in their

societies and have been living in peace and happiness. This is so inspite of the extreme contrasts and disparities in the living conditions of individual men, individual societies and individual nations. Love and Care of God and of one another is the common heritage of men which makes the world worth living for every one of them. This love and care give the Believers strength to bear all hardships including even starvation and torture. The believers can adjust themselves to any situation and live in peace and happiness. As a matter of fact, the believers remain happy in all circumstances and under extreme situations in life. By the Glory of God all men are happy to live in this world.