

## COMPUTER UNIVERSE

A computer model of the universe based on the Quran was proposed for the first time in 1998 in my book *The Divine Expert System*, which was published by the Muslim Association for Advancement of Science, Aligarh. Its revised version *The Computer Universe* was published in 2006 by Adam Publishers, New Delhi. The model described the universe as giant computer designed, programmed and created by God with purpose as opposed to the scientific worldview that it evolved itself by *chance with no purpose*. The computer model offers a new window to look at the universe and understand the self-regulated functioning of the universe, deterministic mode of behaviour of the universal components and how substances acquire their characteristic properties. A living organism is treated as natural biocomputer or biorobot.

In 2004 (four years after the publication of my first book, *The Divine Expert System*), Prof. Seth Lloyd of Massachusetts Institute of Technology, USA, published a research paper entitled “Computational capacity of the universe” in the journal *Physical Review Letters*, and Stephen Wolfram of Wolfram Media, USA, published a book *A New Kind of Science*. Lloyd published another book *Programming the Universe: A Quantum Computer Scientist Takes On the Cosmos* in 2006. Very recently (in 2009), a book *Wetware : A Computer in Every Living Cell* by Denis Bray suggesting that organism is a computer has also come out. All these works based purely on science support the concept that the universe works like a computer. The basic change that the computer concept of the universe brings into our present knowledge of the universe and cosmology is that it is the patterns of information rather than matter and energy *per se* that represent the fundamental units of reality.

There are several verses in the Quran which point to a computerised set-up of the universe. These relate to the structural components, natural mechanisms and functioning of the universe, monitoring and real-time recording of the goings-on, testing of human beings, recording of the activities of each human individual, judgement of human beings based on individual dossiers, to cite but a few. A computer model of the universe developed in the light of the Quran is briefly discussed here. Detailed discussion may be found in my two books *The Computer universe: A Scientific Rendering the Holy Quran*, and *An Introduction to Islamic Science*.

### A COMPUTER MODEL OF THE UNIVERSE

We are living in Allah’s giant computer and everything including what each one of us is doing is being logged in real time. Man, you are being watched!

Physical, chemical and biological sciences at best explain to us and provide information on properties of various forms of energy and matter. There are certain other fundamental questions about the universe that have not been addressed so far in science. Some of these are: a) origin of chemical structures with specific properties, b) origin of rules and laws in the physical, chemical and biological segments of the universe, c) existence of universal constants, d) interconnectivity and coordination of the universal components to function as a single system, and e) origin of natural processes and

mechanisms. The question of their origin poses one of the most difficult riddles to human intellect. Strictly speaking the question is beyond the realms of secular science. Self-regulated functioning of natural systems, occurrence of natural cycles and phenomena, and spontaneity of physical, chemical and biological reactions and processes do indicate the existence of a computerised set-up. It is possible to explain the various aspects of the universe considering it as a computer system. It also implies that whatever happens in this computer universe is determined by Allah's program which rules out the element of chance from it.

### **Natural evidence**

There is sufficient evidence to justify the comparison of the universe with a programmed, self-sustaining system. Everything around us, be it a microscopic bacterium or a mega system like galaxy, is a programmed system in its own right. All these components are integrated to produce the whole system – the universe.

### ***Natural laws and determinism***

The physical components of the universe, from subatomic level to megasystems comprising galaxies and beyond, obey certain rules and laws that can be described in mathematical terms. In 1623, Galileo stated: "Philosophy is written in this very great book which always lies open before our eyes (I mean the universe), but one cannot understand it unless one first learns to understand the language and recognize the characters in which it is written. It is written in mathematical language...without these means it is humanly impossible to understand a word of it..." [1]. According to Einstein, "Our experience...justifies us in believing that nature is the realization of the simplest conceivable mathematical ideas" [2]. As Richard Feynman put it: "Every one of our laws is a purely mathematical statement in rather complex and abstruse mathematics...It gets more and more abstruse and more and more difficult as we go on...It is impossible to explain honestly the beauties of the laws of nature in a way that people can feel, without their having some deep understanding of mathematics" [3]. The famous mathematician-physicist Pierre Simon Laplace's doctrine of complete determinism is a tribute to the success of Galilean-Newtonian principles. According to him, the entire universe is like a clockwork mechanism – to a supremely intelligent mind with all-seeing eyes and unlimited calculating powers, the present would completely determine the future, and for that matter, the past as well [4]. As a philosophical belief about the material world, determinism can be traced back to the time of Ancient Greece, several thousand years ago. Determinism became incorporated in modern science around the year 1500 A.D. with the establishment of the idea that cause-and-effect rules completely govern all motion and structure on the material level. According to the deterministic model, the universe works like a perfect machine without deviation from the predetermined laws. It was the work of Isaac Newton, which firmly established determinism at the core of modern science. He demonstrated that the three laws of motion, which he advanced could accurately predict in time the orbits of the planets around the sun, the shapes of the paths of projectiles on the earth, and the schedule of the ocean tides throughout the month and year. Newton's laws are completely deterministic because they imply that anything that happens at any future time is completely determined by what happens now, and everything that is happening now was completely determined by what happened at any

time in the past. Determinism remains even today as the core philosophy and goal of physical science [5]. As rightly pointed out by Sir Isaac Newton “(the beautiful universe he observed) could only proceed from the counsel and dominion of an intelligent and Powerful Being.”

The cause-effect relationships can either be linear or non-linear. The concept of linearity relates to the effects that are proportional to causes. For example, if a ball is hit twice as hard, it will fly twice as quickly. Many practical situations are observed to behave in linear fashion. But there are also others that are not linear [6]. In expressing the measurement appropriate for a given system (e.g., Solar System, a falling object on the earth, ocean currents, etc.), the values of the measurements at a given starting time are called the *initial conditions* for that system. Newton’s laws imply that for any given system, the same initial conditions will always produce identically the same outcome. But there is a hitch. The accuracy of prediction depends on the accuracy of the measurement of the initial conditions. A seemingly insignificant difference in the measurement can create drastic difference in the outcome. In other words, the measurements should have *infinite accuracy* to make accurate prediction. Unfortunately, even with our most sophisticated instruments, infinite accuracy cannot be achieved. Such systems are called “chaotic”. For example weather as a whole is a chaotic system. It is because of this, our weather forecasts are reliable only for the short-term and not for the long-term. The long-term weather forecasts even made with the most sophisticated computer methods imaginable will always be no better than guesses [5]. But this does not mean that the universe is not deterministic; it only means that we cannot make accurate prediction because we cannot make measurements with infinite accuracy due to the limitation in our instrument capability. The chaos is deterministic if we can make the measurements of the initial conditions with infinite accuracy. It is, therefore, called “deterministic chaos”. Because of this nature, the term “butterfly effect” is sometimes used to imply such phenomena. It refers to the idea that a flap of butterfly wings (which is insignificant) in a location can cause a storm in another part of the world.

The existence of immutable laws in nature is undisputable. How did these rules originate? Although we have theories of inorganic evolution and organic evolution, they do not explain or account for the origin and existence of natural laws. There are a large number of laws and rules described in physics, chemistry and biological sciences. The existence of universal constants is a reflection of the operation of these rules uniformly over the entire universe. Faraday constant ( $96.5 \text{ kJ mole}^{-1}$ ), Avogadro number ( $6.022 \times 10^{23} \text{ mol}^{-1}$ ), Planck constant ( $6.626 \times 10^{-34} \text{ Js}$ ), velocity of light ( $2.998 \times 10^8 \text{ m s}^{-1}$ ), gas constant ( $8.314 \text{ J mol}^{-1} \text{ K}$ ) and Boltzmann constant ( $1.381 \times 10^{-23} \text{ kJ K}^{-1}$ ) are but a few examples. It is according to these laws and rules the universe has been designed, developed and perfected as a coherent system. Their origin cannot be attributed to chance or accident because formulation of the laws requires intelligence. The intelligence is, however, not immanent in the system but must be assumed to exist outside of the system. The existence of laws of nature is one of the unquestionable proofs of the existence of a Programmer for the universe. We cannot think of spontaneous unassisted origin of these laws without the involvement of a super intelligence. Although we experience, observe and study innumerable laws and rules in operation in nature, the need of intelligence or a creator for them has neither been acknowledged nor recognized in science.

We cannot deny the fact that a programmed reality exists in nature. The countless number of celestial bodies of colossal size tracing their own paths in the cosmos without collision is indicative of a perfectly programmed behaviour. The gravitational forces responsible for this meticulous and amazing consistency in the peripheral motion and recurring relative positions of stars and planets do not operate in an arbitrary manner, but obey certain eternal laws prescribed by the Creator Allah. It is because of this, we are able to formulate principles, which can reflect the natural order. The high degree of success achieved by man-made mathematical models in describing and/or predicting several natural phenomena adds strength to this reasoning. Failure of the models can only be due to the lack of understanding of the rules governing them, insufficient knowledge of the variables involved and the nature of their influence or due to the less accurate methods of measurement but not because, rules do not exist and mathematics does not fit in. What can be concluded from the success of the mathematical models and theories in the quantitative interpretation of natural phenomena is that the universe has built-in rules and regulations to enable it to function like a self-controlled and self-sustainable system. To make one realize how much these rules mean to the functioning of the universe, let me quote none other than Stephen Hawking, the renowned British mathematician, "...if the electric charge of the electron had been only slightly different, stars either would have been unable to burn hydrogen and helium, or else they would not have exploded". "The remarkable fact is that the values of these numbers (fundamental numbers) seem to have been very finely adjusted to make possible the development of life" [7, p. 125]. Further, "The initial rate of expansion (of the universe) also would have had to be chosen very precisely for the rate of expansion still to be so close to the critical rate needed to avoid recollapse" (due to gravitational attraction) [7, p. 127]. These rules and properties could not have come into existence accidentally. Instead the universe has an Authority who designed and perfected it the way it is. To quote again Stephen Hawking: "It would be very difficult to explain why the universe should have begun in just this way, except as the act of a God who intended to create beings like us" [7, p. 127]. (This statement is quoted here not to indicate his views about religion and God).

### ***Built-in controls***

The fact that phenomena like natural cycles, planetary movements and a host of others, occur with clockwork precision and accuracy leads to the obvious conclusion that our universe is controlled and works according to a pre-set program like a computer-controlled system. Consider, for instance, the working of the sun (a natural nuclear reactor) in comparison with a man-made nuclear reactor. Nuclear reactions such as fusion and fission are energy-yielding reactions of the highest order. Of these, nuclear fusion is supposed to be the ultimate kind as far as our knowledge goes. In man-made reactors, fission reaction is taken advantage of for energy generation. When heavy elements like  $^{235}\text{U}$  are bombarded with neutrons ( $^1_0\text{n}$ ), their nuclei become unstable following neutron absorption. The unstable nucleus breaks down to smaller daughter nuclei (fission fragments) and more neutrons with concomitant release of gamma radiation ( $\gamma$ ) and enormous amount of energy. A simplified, generalized nuclear fission reaction may be written as follows.



The daughter nuclei produced in the above reaction are lanthanum (La) and bromine (Br). The neutrons so generated can in turn split other atoms producing more neutrons and the process goes on as a chain reaction. The reaction once started can proceed unabated and lead to explosion (because of the release of huge amounts of energy) unless it is controlled. The control of the nuclear reaction is accomplished by regulating the production of neutrons using neutron absorbers like cadmium. These materials absorb neutrons and maintain the desired neutron flux in the reactor. In fact the nuclear reactor and the atom bomb work on the same principle with the difference that in the former the reaction is controlled while in the latter, it is not controlled. With the advent of modern computer systems and robotics, human experts no longer directly man a nuclear reactor. Several hundreds of critical process parameters are monitored and controlled by highly sophisticated computers to prevent it from turning into a rogue one. Outside the reactor and the laboratory, we have the sun up there in the sky giving us energy ever since it began. The sun is also a reactor that works on the fusion principle involving hydrogen atoms. The sun is at  $3 \times 10^{16}$  km from the centre of the Spiral Galaxy (the Milky Way) and it rotates with a velocity of 200 km per second about this centre. Its radius is  $6.69 \times 10^5$  km and its mass is  $2 \times 10^{30}$  kg. The fusion reaction involving hydrogen (H) atoms leading to the production of helium (He) that is going on in the sun is represented below.

- (a)  ${}^1\text{H} + {}^1\text{H} \rightarrow {}^2\text{H} + {}_{+1}\text{e}$
- (b)  ${}^1\text{H} + {}^2\text{H} \rightarrow {}^3\text{He} + \gamma$
- (c)  ${}^2\text{H} + {}^2\text{H} \rightarrow {}^3\text{H} + {}^1\text{H}$
- (d)  ${}^2\text{H} + {}^2\text{H} \rightarrow {}^3\text{He} + {}^1_0\text{n}$
- (e)  ${}^3\text{He} + {}^3\text{He} \rightarrow {}^4\text{He} + 2 {}^1\text{H}$
- (f)  ${}^3\text{H} + {}^2\text{H} \rightarrow {}^4\text{He} + {}^1_0\text{n}$

Where  ${}^1\text{H}$  is ordinary hydrogen,  ${}^2\text{H}$  is deuterium (heavy hydrogen) and  ${}^3\text{H}$  is tritium (radioisotope of hydrogen),  ${}_{+1}\text{e}$  is positron,  $\gamma$  is gamma photon and  ${}^1_0\text{n}$  is neutron. The fusion reaction taking place at the centre of the sun is supposed to reach temperatures of  $10^7$  K and pressures exceeding  $10^{11}$  atm. The solar fires reach out as far as  $10^5$  km from the surface of the sun with velocities of 500 km per second. Our reactors fade into insignificance when they are compared with the sun. The rules that govern a reaction inside the laboratory are equally applicable to such a reaction occurring outside the laboratory. This would mean that if our reactor needs controlling, the sun (the natural reactor) also needs controlling to prevent it from exploding. The fact that the fusion reaction has been going on in the sun ever since it started functioning and that it has not exploded so far, proves that the fusion reaction going on in the sun is a controlled (programmed) phenomenon; the control program is immanent in it.

### ***Spontaneous nature***

Every natural process is a spontaneous phenomenon. Physical, chemical and biological processes are all spontaneous phenomena as though the reacting species *know* what they should produce under different conditions. Their properties and mode of behaviour in diverse environments are all fixed. Evidently, the programs are there latent in their structures.

### *Sequential development*

We find a developmental sequence in every phenomenon. A plant develops from a seed through cell division and differentiation. An animal also develops similarly through various stages from the zygote. There is clear evidence of the existence of a genetic program in living organisms. This program is responsible for the development and moment-to-moment existence of a living organism. Several millions of instructions are carried in a genetic program. Every biological mechanism is suggestive of the sequential execution of the instructions contained in the genetic program of the organism concerned. Whether it is the genetic program responsible for the biological activities of an organism or the programs for physical and chemical processes, these programs (specific number of instructions in a specified sequence) could only have been developed through application of intelligence and could not have originated by chance and accidents. The existence of these programs in nature is also an unailing proof of the existence of a Programmer or God for the universe.

For example, each biochemical process has its own specified instructions (we observe them as reaction steps) and sequence. These instructions in the right sequence form a 'program bit' in the bioprogram (biosoftware) of the species (discussed later). A storage sector in the chromosome may be assumed to contain a 'program bit'. This concept may be illustrated with the help of an example. Take the case of photosynthesis, the primary mechanism that enables a plant to harness light energy from the sun. In the process light energy is converted into chemical energy through synthesis of carbohydrates. It has been estimated that 200 billion tons of carbon is fixed as carbohydrates each year. The biochemical reactions involved in photosynthesis occur in the chloroplast stroma. Melvin Calvin elucidated the basic steps in this process, which is now known as the Calvin Cycle. There are three basic events, which characterize this process. These are carboxylation, reduction and regeneration. The simplified biochemical steps may be written as follows.

Step-1 involves the addition of CO<sub>2</sub> to a 5-carbon acceptor, ribulose-1,5-bisphosphate (RUBP) leading to the production of two 3-carbon molecules (3-phosphoglycerate).

Step-2 involves the reduction of 3-phosphoglycerate into a carbohydrate.

Step-3 involves a complex series of reactions, which regenerates the 5-carbon acceptor RUBP.

One CO<sub>2</sub> is gained with each cycle. Six cycles lead to the formation of a 6-Carbon sugar. Each reaction step which we characterize based on our observations may consist of several instructions (steps) at the molecular level. The complete biochemical reactions that characterize the phenomenon of photosynthesis can be therefore best treated as a reflection of the existence of a 'photosynthesis program'. The 'photosynthesis program' stipulates the reactions and their sequence for execution. The 'photosynthesis program' may be treated as a 'program bit' in the microbioprogram of the species. Thus we may conceptualize the mechanism of photosynthesis (a biochemical process) as the execution of a small program designed for that purpose. Such a perception is lacking in biology.

### ***Brain as a computer***

Brains of animals are capable of storing and processing information. Human brain is the most advanced of them all. Plants also function like a computer. Leaves regulate their uptake and loss of gases by conducting simple calculations based on 'distributed computation'; a kind of information processing that involves communication between many interacting units. In distributed computation, signals exchanged between components of the system define the process for solving a problem [8].

### ***Natural designs***

A unique characteristic of the universe is that its components are interdependent on each other and the perfection comes in at the level of the universe. The universe as a whole is a self-sustained system. Any one can recognize a design, a purpose and the need for intelligence for their origin. We observe in nature that the component systems are designed with structures and mechanisms most appropriate to them to serve as a part of it. We cannot think of a better design to replace them. We acknowledge this fact knowingly or unknowingly by trying to imitate them or copying them. We also do not observe a half-developed organ, incomplete in its structure or inefficient in its functioning to say that these systems were developed or evolved by gradual refinement and renovation through natural selection. In other words, they can only be products of creation or evolution in one go and not that of a step-by-step improvement. Several kinds of designs can be identified and recognized in nature. Apart from the structural design of each component of the universe, there are innumerable processes and mechanisms that exhibit spectacular operational designs. Depending on how they are viewed by our senses, they would appear to range from the simplest to extremely complex phenomena. We are so familiar with many of these natural phenomena in our daily life (e.g., gravity, wind, rain, etc.) that they have ceased to inspire awe in us or to attract our attention. Our stomach is capable of digesting every kind of meat. Suppose that you are able to cut out a piece of your stomach and swallow it. It will be immediately digested. But so long as that piece remained as part of the stomach (i.e., before you cut and removed it), it was not digested at all by the stomach! In other words, stomach produces juices containing enzymes and other substances capable of its own breakdown but remains at the same time unattacked and safe while it breaks down the food materials arriving to it! Evidently, there is a mechanism designed to prevent it from being digested by the juices produced by it. When a morsel of food is taken into the mouth, the teeth chew only the food material and spare the tongue as if it can distinguish the food material from the tongue. We also know that blood can exist as liquid only inside the blood vessels; everywhere else, it clots. One can see a design and purpose in all these. A perusal of the scientific literature will reveal this overwhelming truth in greater detail.

Womb in mammalian species does not offer any advantage to their females but yet it evolved against the expectations of Darwin's theory. Womb provides the most ideal environment and infrastructure for the development of the young for a specific period. It anticipates the deposition of male sperm, its fusion with female egg to form zygote and its further development into a foetus. Breasts develop in the females not for their own benefit but for the benefit of another individual (which in Darwinian terms, a competitor) – the baby. Meiosis is a mechanism designed to reduce the chromosome number in the cell to one half (from  $2n$  to  $n$ ) during gamete production. The process is not an arbitrary

one in the sense that it is not a simple reduction of the chromosome number to half; but the reduction is achieved through the separation of homologous chromosomes so that the resulting cells will have one of the chromosomes of each homologous pair. Fertilization brings together the male and female gametes restoring the cell chromosome number to  $2n$ . Just look around; we will find in everything a design most appropriate to it to serve the purpose for which it was created.

### **A Quranic model of the computer universe**

Concepts, theoretical models, mechanical models, etc., are developed by man to improve his own comprehension of nature and natural phenomena. Nature herself offers several clues to man for modelling and making things useful to him. For instance, man got the idea of aviation technology from bird's flight in air. Conversely, man also seeks to understand a natural phenomenon by comparing it with his own 'creation'. A typical example is the comparison of human brain with a computer. The computer technology, particularly areas like artificial intelligence (AI) and neural networks, has also gained much from the knowledge of the cybernetics of biological systems especially those relating to information processing in brain and transmission of nerve impulses.

Several such comparisons can be struck between natural and artificial (man-made) systems and components. The purpose of drawing these analogies here is not to make a comparison of the anatomical, morphological and/or functional superiority of one over the other, but to bring into focus a meaningful and comprehensible picture of a natural system *vis a vis* its nearest artificial (man-made) counterpart. The level of sophistication of Allah's organizational set-up and the machinery that runs the whole universe are beyond human imagination and perception. But certainly in our computer technology is a miniature clue that can guide us to visualize the absolute realities. Within the scope of this approach, we may attempt to have a holistic view of the universe in comparison with a man-made system. Let us take the example of an expert system to illustrate this point.

By definition, a man-made expert system is a computer system capable of performing at the level of human expert in some particular domain. For example, consider the expert system developed by Hal Lemmon in the U.S.A., for cotton management in large-scale farms [10]. The system called by the acronym, COMAX (Cotton Management Expert) is the first of its kind to be integrated with a simulation model for daily use in farm management. The program for the simulation of cotton crop growth and development integrated with Comax is Gossym. It can provide a complete simulation from seed germination to crop harvest on a computer within a few minutes. This expert system works as follows. Comax consists of a knowledge base, an inference engine, Gossym, a weather station and data (e.g., seeding rate, soil parameters, etc.). The knowledge base is a set of 'if-then' rules and facts. Each day the system automatically calls the weather station by telephone as it is driven by weather variables. The inference engine examines the rules and facts to decide what is to be done. It prepares data files accordingly to hypothesise the weather and also to hypothesise application of water and nitrogen. Then it calls Gossym which reads the data files prepared by the inference engine and simulates the growth of the cotton plant under the condition specified in those files. Results from the simulation (such as the day the simulated crop experiences water stress) are saved as facts in the knowledge base.

If the recommendations of the Comax are carried out through a set of dedicated peripherals as and when the commands come, the cotton field will receive all the necessary inputs such as water, nutrients, etc., in right amounts and at right times. An observer who is unaware of the Comax behind the scene of events will be amazed at the seemingly independent and spontaneous way of functioning of the farm in a well coordinated manner for achieving its targeted goals. The functioning of the universe can also be viewed as a programmed phenomenon directed towards achieving the objectives set by God. The whole universe may, therefore, be considered as a divine computer system.

### ***The Quranic indicators***

There are several verses in the Quran, which point to a computerised set-up of the universe. These relate to the structural components, natural mechanisms and functioning of the universe, monitoring and real-time recording of the goings-on, testing of human beings, recording of the activities of each human individual, judgement of human beings based on individual dossiers, to cite but a few. Some of the relevant messages are given below.

“Glorify the name of your Guardian Lord, most high, Who created and further gave order and proportion, Who ordained laws and granted guidance.”

(Q. 87:1-3)

“Verily your Lord is God Who created the skies and the earth in six days and is firmly established on the throne (of authority) regulating and governing all things....”

(Q. 10:3)

“For to anything which We have willed, We only say the word, “be” and it is”.

(Q. 16:40)

“So He completed them as seven skies...and inspired in each sky its duty and command...”

(Q. 41:12)

“This Our Record speaks about you with truth, for all that you did were put on record by Us”.

(Q. 45:29)

“Read your own record; sufficient are you this day to make out an account against you”.

(Q. 17:14)

“Then he who is given his record in his right hand, soon will his account be taken by an easy reckoning....But he who is given his record behind his back, soon will he cry for perdition, and he will enter a blazing fire.”

(Q. 84:7-12)

“....God is swift in taking account.”

(Q. 24:39)

“With Him are the keys of the unseen, the treasures that none but He knows. He knows whatever there is on the earth and in the sea. Not a leaf falls without His knowledge. There is not a grain in the darkness (or depths) of the earth, nor anything fresh or dry (green or withered), but is (inscribed) in a clear Record”.

(Q. 6:59)

These verses offer a clear insight into the nature of functioning of the universe. The Quran generally refers to the universe as ‘the skies and the earth’. The system components have specific commands built into them (Q. 41:12), they all function in accordance with the laws ordained by God (87:1-3) who after creation of the earth and the skies is governing all things from His Throne (Q. 10:3). What can be inferred from these messages is that the universe is a self-regulated programmed system created by God. In other words, the divine commands (instructions or programs) are immanent in the living and non-living systems. The self-regulated functioning of the sun and other systems provides ample support to this.

Another notable indicator of the existence of a programmed set-up is the monitoring and real-time recording of all that is happening in the universe (Q. 6:59). It was also revealed that man was created to serve Him (Q. 51:56) and his life on the earth is a test of his obedience to God (Q. 18:7). Accordingly, God tells us that every activity of every individual is being recorded. Each man has a separate file in His Record (Q. 45:29; 17:14). God also tells us that He is swift in taking account (Q. 24:39). All these messages are explicit suggestions of a computer-like operational mechanism.

In various contexts the Quran uses the terms *ruh*. This Arabic word may be considered to mean divine biosoftware. The following verses agree well with such an interpretation.

“When I have fashioned him (first man, Adam) and breathed into him from My *ruh*, you (Angels) fall down in obeisance to him.”

(Q. 15:29)

This verse refers to the creation of Adam. After moulding him into shape from clay, God breathed into the model from His *ruh* creating Adam. It can be scientifically interpreted as follows. It was the divine biosoftware (*ruh*) that was installed (breathed) into the clay model to create Adam. Thus the non-living clay model of man sprang to life.

### ***The Angels – Intelligent robots in Allah’s Kingdom***

The Quran provides a good account of the nature and characteristics of Angels as well as their functions and responsibilities. The Angels act strictly as commanded by God.

“Praise be to God Who created the skies and the earth, Who made the Angels messengers with wings....He adds to creation as He pleases: for God has power over all things.”

(Q. 35:1)

“...He (Satan) said: Your Lord only forbade you this *Tree* lest you should become Angels or such beings as live for ever.”

(Q. 7:20)

“Say: The Angel of Death put in charge of you will (duly) take your souls; then you shall be brought back to your Lord.”

(Q. 32:11)

“Oh, you who believe! Save yourselves and your families from a fire whose fuel is men and stones, over which are (appointed) Angels stern (and) severe, who do not flinch (from executing) the commands they receive from God, but do (precisely) what they are commanded”.

(Q. 66:6)

“Behold, two (guardian Angels) appointed to learn (man’s actions and note them) one sitting on the right and the other on the left. Not a word does he utter but there is a sentinel by him ready (to note it).”

(Q. 50:17-18)

From the above verses, it is possible to infer that the Angels in the Kingdom of Allah are beings endowed with eternal life (Q. 7:20). They are assigned specific duties and are at His command (also see section 9.3). The Angels mentioned in the Quran include Angel for sending divine messages to the Prophet (Q. 35:1), Angel for executing death of human beings (Q. 32:11), Angel for guarding Hell (Q. 66:6) and Angel for recording (Q. 50:17-18). The Angels do their job exactly as commanded by God (Q. 66:6). All these references imply that the Angels depending on their duties have the divine software necessary to transmit the divine messages (Revelations) to the prophets, to carry out death, to guard Hell, to do the recording, etc. The Angels are intelligent beings as can be inferred from their logical analysis of the nature of human beings when Allah announced His intention to create the human race (Q. 2:30).

“Behold, your Lord said to the Angels: “I will create a vicegerent on earth.”

They said: “Will You place therein one who will make mischief therein and shed blood? While we do celebrate your praises and glorify your holy (name).”

He said: “I know what you do not know.”

(Q.2:30)

The Angels may be considered as ‘intelligent robots’ functioning at Allah’s command. There is an indication that they belong to *Jinn* race as it is mentioned that *Iblis* (an Angel who became Satan after his expulsion from the divine abode) belongs to *Jinn* race (Q. 18:50). The *Jinn* race was of thermal origin, created long before the creation of human race (Q. 15:27; 55:15). The literal meaning of the word *Jinn* is ‘hidden’. The *Jinn* may therefore be considered as an invisible (hidden) race. The Quran also makes reference to Angels in several places in conjunction with *ruh* (software) probably to indicate that they are the custodians of software or that the Angels themselves are carrying the software (built-in) required for executing the tasks entrusted to them. This is very much evident from the Quranic verses given above (Q. 19:17-19) on sending *ruh* for creation of Jesus Christ (A.S.) and ‘his’ appearance in human form before Mary. From the following verses also such an interpretation can be drawn.

“The Night of Power is better than a thousand months. Therein come down the Angels and *ruh* by God’s command on every errand.”

(Q. 97:3-4)

“He sends down His Angels with *ruh* by His command to such of His servants as He pleases, (saying): Warn (man) that there is no God but I: so do your duty to Me.”

(Q. 16:2)

Therefore we may visualize that when Allah gives a command, the Angel concerned will pick it up and execute the job through the appropriate program. Although the universe itself is a self-regulated system controlled by Allah’s software, He also executes any command at His Will.

“He rules (all) affairs from the sky to the earth; in the end all affairs will go up to Him on a day that is a thousand years of your (man’s) reckoning.”

(Q. 32:5)

Considering all these aspects, a schematic representation of the divine governance of the universe based on the Quranic messages is proposed (Fig. 1). It may be noted from the figure that after creating the universe, Allah is seated on His Throne governing everything. He gives command to the Angel concerned who executes the job in accordance with the divine program. Although Allah's abode is outside of our physical universe (extracosmic), there is connectivity between the two for transmission of His commands to the universe and flow of information from the universe to Allah's abode.

“He knows all that goes into the earth and all that comes out of it, all that comes down from the sky and all that ascends thereto. And He is the Most Merciful, the Oft-Forgiving.”

(Q. 34:2)

“...He Who knows the unseen – from Whom is not hidden the least little atom in the skies or on the earth; nor is there anything less than that, or greater, but is in the Perspicuous Record.”

(Q. 34:3)

Everything that is going on in the universe is being recorded in real time and is stored in the divine Memory (the divine Register or Record mentioned in the Quran). All the information about the universe is thus available to Allah. And He knows everything, He hears everything and He sees everything. All these are true and immensely possible for the simple reason that man can also create a similar set-up using his computer technology if need arises.

### **The Divine Master Program**

The universe is a system running on a program designed by Allah, the Programmer. Natural laws, properties of matter in relation to chemical structure, evolution of the physical universe and biological organisms, their interactions, modes of communication and interconnectivity, etc., were discussed as originating from and governed by the divine software of the universe. The theory is further elaborated and improved upon in this section.

We find two kinds of systems in the universe, more widespread non-living systems (abiosystems) and a number of living systems (biosystems) whose distribution is confined to a single planet, the earth. To appreciate better the functioning of an organism as a natural computer biosystem, an understanding of how non-living things acquire their properties is a pre-requisite. Although atoms of chemical elements make up these two kinds of system, their functioning is basically different from each other. The origin of life properties of a biosystem has been traced to the existence of a genetic program in the cell but no explanation has been so far advanced to account for the self-regulated behaviour of an abiosystem. If you ask a chemist or a physicist why a phosphorus atom behaves as it does, he would certainly come up with an answer in terms of its constituents. He would say, a phosphorus atom contains 15 protons, 16 neutrons and 15 electrons, and an atom of that composition *should* behave like a phosphorous atom. But how do these energy/matter particles *know* themselves how they should behave? To that question, he would draw blank.

Basically a computer system consists of software and hardware components. In the computer jargon, the term ‘software’ describes the programs. A program is a set of instructions written in a suitable language in the proper sequence and is loaded into the

memory of the computer for executing the task intended for. The software is thus the *unseen* component, which drives the computer to perform the task specified in it. The term ‘hardware’ describes all the visible components of a computer. Supposition of the universe as a computer system necessitates the existence of a Divine Master Program (DMP).

“Allah does blot out (*delete*) or confirm (*retain*) what He pleases:  
with Him is the Mother of the Book.”

(Q. 13:39)

The “Mother of the Book” mentioned in the above verse may be considered as the divine knowledgebase which contains all kinds of software including the DMP. This knowledgebase may be supposed to have been stored in the Divine Memory (Fig. 1). The DMP may be visualised as having composed of three subprograms namely, the Abioprogram, the Bioprogram and the Control Program. The Abioprogram (the source of chemical information) governs abiogenesis (origin of the inanimate world) and the characteristic properties of the inanimate components while the Bioprogram (the source of biological information) governs biogenesis (origin of living species) and the characteristic properties of the living matter. The Control Program is responsible for the co-ordination and control of the whole universe during its genesis as well as in the post-developmental stage.

### ***The Abioprogram – the source of chemical information***

The Quran tells us:

“So He completed them as seven skies...and inspired in each sky its duty  
and command...”

(Q. 41:12)

“And among His signs is this, that sky and earth stand by His command...”

(Q.30:25)

These messages indicate that the divine instructions are immanent in the system itself. The mode of behaviour and functioning of the component systems of the universe are, therefore, governed by these programs coded in their structures. The fundamental physical constituents of the universe are energy and space. For convenience in discussion and for a better understanding of the concepts proposed, the physical universe may be viewed as having made up of atoms and molecules. Energy exists as matter and non-matter (e.g., electromagnetic radiation, heat, electrical, etc.) forms. In whatever forms it exists, it has a structure. Each substance has an intrinsic chemical structure. This, in turn, confers specific properties to that material. We know now a hundred and odd chemical elements (Table 1) with several atomic species (isotopes) for each of them. Each nuclide has a certain atomic structure, which determines its physical and chemical properties. These elements can combine in numerous combinations obeying certain specific rules to produce a wide variety of substances each with a specific structure and properties of its own. How does this happen? Are the elements (or nuclides) intelligent entities to invent and decide their structures, properties and rules by themselves? This is one of the most fundamental aspects of the working of the universe that has not been addressed in science. The rules that govern the formation of chemical structures as well as acquiring properties by them are prescribed and governed by the divine Abioprogram. Similarly for

all other kinds of energy (non-matter forms), the Abioprogram determines their nature of existence (structure) and behavioural pattern (properties). A substance may be therefore conceived as an embodiment of information in a coded form. The Abioprogram immanent in various forms of energy/matter can therefore be explained in terms of a structure-code concept. The atom is considered here as the basic unit of matter for illustrating this concept (Table 2). We may assume that the structure signifies a code 'written' in a special language like the symbolic language used in computer machines. This code (semantic content) is deciphered in terms of the Abioprogram and the structure derives its properties (Table 2). The Quranic message that God's commands are built into the universal components (Q. 41:12) can be explained in this way. Thus the Abioprogram determines and confers the properties to energy/matter forms, which make up the raw materials for the hardware components (including the hardware of living systems as will be discussed later) of the universe. The numerous substances found in the universe owe their vastly diverse properties to their structures, which, in turn, are decided by the composition and arrangement of atoms. Structure at the level of a molecule (substance) is defined here as the totality of the nuclide composition and arrangement of the atoms. In the structure-code concept, the nuclides form the alphabets (Table 1) and along with their arrangement, as in a word, through bonding, etc., the code is deciphered in terms of its properties (Fig. 2). A set of alphabets can carry meaning only if it has affiliation with a language. The meaning of a word depends on its alphabetic composition as well as the order in which they are arranged. Two words may be different in their alphabetic composition or in their arrangements. For instance, English words 'nest' and 'sent' have the same alphabets but different arrangements whereas the words 'take' and 'buy' are different in their alphabetic composition. Likewise, different chemical structures are formed based on the composition and arrangement of the atoms of the elements. The structures of n-butane and iso-butane have the same elements and same number of atoms with the chemical formula of  $C_4H_{10}$ ; but the arrangement of the atoms is different in the two substances. These two structures correspond to English words 'nest' and 'sent'. The chemical structures of water ( $H_2O$ ) and benzene ( $C_6H_6$ ) are different in their elemental (alphabet) composition. They are comparable with English words 'take' and 'buy' (Fig. 2). By this analogy, the phenomenon of how chemical structures (substances) derive their properties based on the divine program can be explained. Periodicity in the properties of elements which provide the basis for their classification (Periodic Table) and also for the prediction of properties of a hitherto unknown element; specificity in the change of properties of a substance with a change in structure, etc., are clearly the clauses of the Abioprogram operating at different levels of structural hierarchy. Recognition of at least some of these rules is now helping us in the search for new compounds with specific properties. For instance, computer-aided molecular modelling (CAMM) has become a powerful tool for studying virtually any chemical structure. The method works on the reverse logic of structure-property relationships. In this case, we specify the properties; the computer will give us the structure of the molecule in return. Use of this technique in the search for new drugs has enabled the researchers to cut short the long list of candidate molecules to a smaller number expected to have the required biological activity. In fact by studying the structure-property relationships, we are deciphering the abioprogram at various hierarchal levels of the universe. The chemical structure may be thus likened to a kind of algorithm conforming

to the abioprogram. The universe is therefore nothing but an information-laden system. Presently, scientists describe the behaviour of the universe with the help of general theory of relativity (large scale structures) and quantum mechanics (microstructures). Attempt is also being made to evolve a unified theory that will cover all the structures. These attempts, if successful (God-willing), will throw more light into the programmed functioning of the universe.

### ***The bioprogram – the source of biological information***

A living system (a biosystem, e.g., an organism) is composed of non-living elements and structures (i.e., abiostructures). The properties of the abiostructures which make up the biosystem, are therefore determined by the abioprogram. *But what makes a biosystem behave differently from an abiosystem is the special program, the bioprogram stored in its cell. This program dictates which abiostructure of the system should come into action and when.* This is similar to the functioning of our own machines. The hardware components of our computers are all abiostructures and their properties are abioprogram-determined. But when a program is loaded into the machine and executed, these abiostructures take orders from the program and perform the task in accordance with the instructions in the sequence given in it. The existence of two different philosophies namely, chemical and biochemical, according to which a chemical structure behaves in two different situations (non-living and living systems) is the unequivocal direct proof of the existence of divine Abioprogram and Bioprogram.

### ***Organism as natural biocomputer or biorobot***

An organism is a natural biocomputer or more precisely, especially animals, biorobot. A cell, the basic unit of a living system, is a biochip. Typically the size of a cell is approximately  $10^{-6}$  m ( $1\mu$ ) and mass,  $5 \times 10^{-9}$  g. A human individual is made up of  $10^{14}$  cells, the result of approximately 50 cell divisions [4]. The structures in the cell (organelles and nuclear structures including DNA) constitute the hardware serving as processor, clock, decoder, memory device, etc., of the biochip (Fig. 3) to execute the program stored in the memory. Since these structures are intended for the execution of the bioprogram, they are produced in the cell in accordance with the program.

The bioprogram is the software of an organism. It is non-physical or intangible (*ghayb*) to man. It is stored on a physical medium like the computer software. The chromosome (Fig. 4) is the storage device for the bioprogram. For a detailed discussion see [Biomemetics](#).

### **The Control Program**

A characteristic feature of the abio- and biosystems, which make up the universe is that each one of them has its own program at the individual level. At the same time, there is co-ordination and integration at the level of the universe. It is this integrated mode of control of the component systems that produces the whole system, the universe. The co-ordination and integration are accomplished through the execution of the Control Program, which is a package of divine laws and rules. Another requirement of the integrated functioning of the universe is the existence of communication networks linking every component of the system. That also exists in the universe.

The computer concept of the universe proposed here is the outcome of a dialogue between the Quran and science. Science alone cannot explain the phenomenon called the universe in its totality. Science would invariably and undoubtedly fall short of answers to questions about the origin of natural laws, properties and behaviour of universal components, origin of life, phenomenon of death and scores of other fundamental aspects relating to the non-living and living systems. All these aspects can be explained in conjunction with the Quran.

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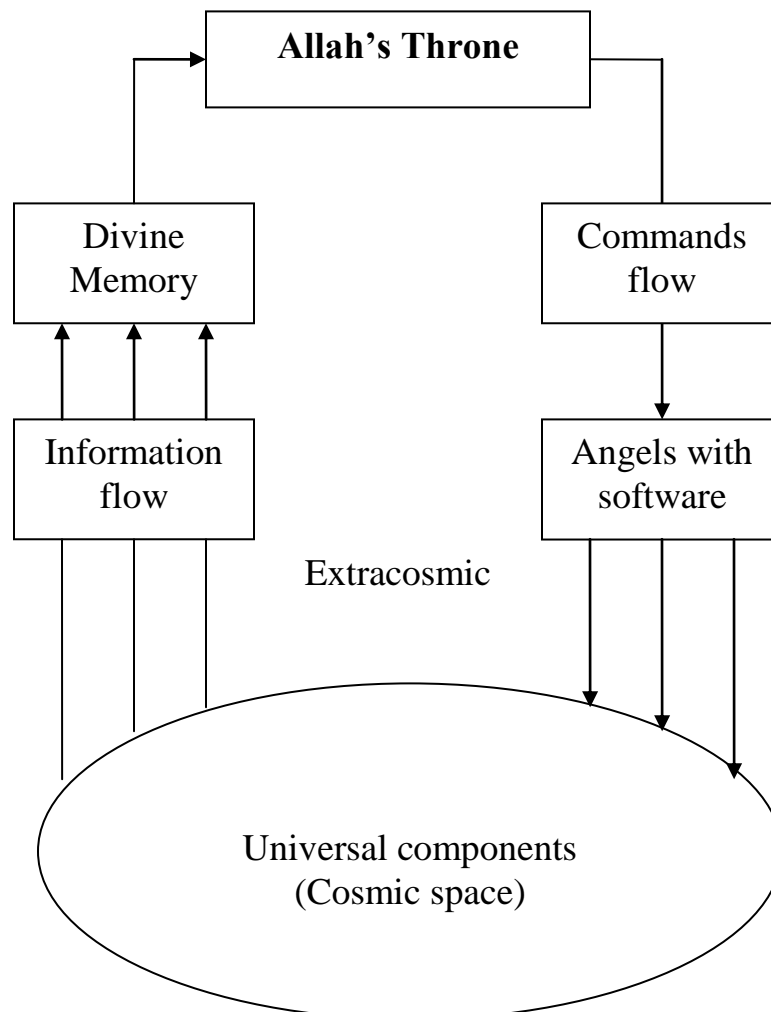
Table 6.1. Chemical elements that form the alphabets of Abioprogram

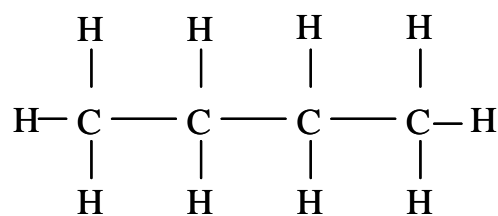
Atomic number	1	2	3	4	5	6	7	8	9	10
1	H	He	Li	Be	B	C	N	O	F	Ne
11	Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca
21	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
31	As	Ga	Ge	Sc	Br	Kr	Rb	Sr	Y	Zr
41	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn
51	Sb	Te	I	Xe	Cs	Ba	La	Ce	Pr	Nd
61	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
71	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg

81	Tl	Pb	Bi	Po	At	Rn	Fr	Ra	Ac	Th
91	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm
101	Md	No	Lr	Rf	Ha					

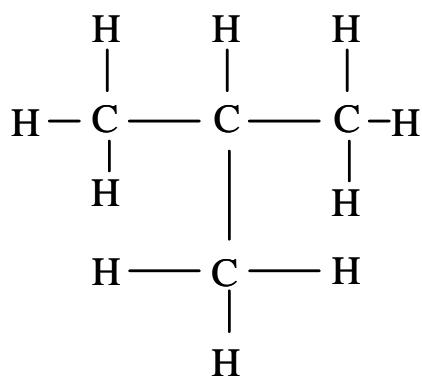
Table 6.2. An illustration of the Abioprogram-based structure-code concept in acquiring properties of matter in comparison with the acquiring of meaning by a word in English language

<i>Building block</i>	<i>Unit</i>	<i>Software</i>	<i>Task</i>
Alphabet	Word	English	Meaning
Element	Molecule	Abioprogram	Properties

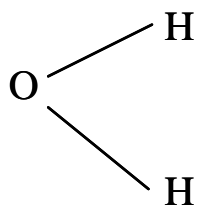




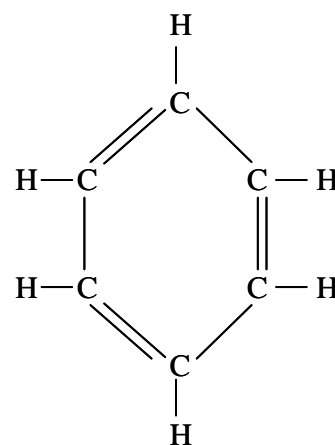
n-Butane (C<sub>4</sub>H<sub>10</sub>)



Iso-butane (C<sub>4</sub>H<sub>10</sub>)



Water (H<sub>2</sub>O)



Benzene (C<sub>6</sub>H<sub>6</sub>)

Fig. 2. Illustration of structure-code concept in relation to acquiring properties by substances based on the abioprogram

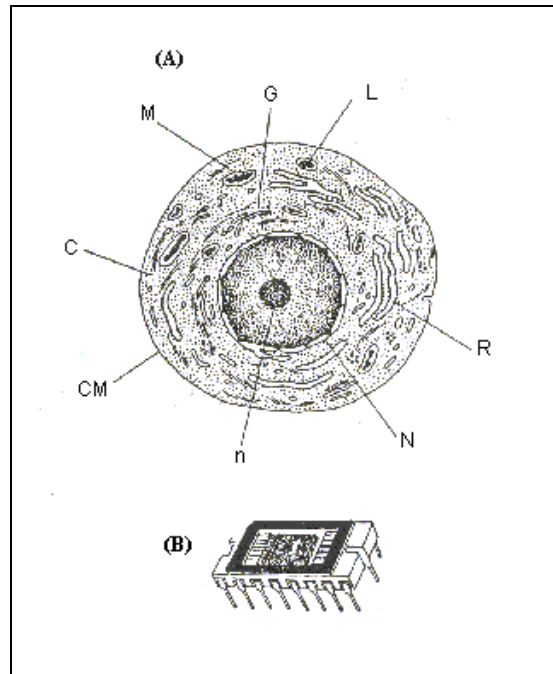


Fig. 3. A generalized diagram of the biochip (living cell) contrasted against man-made computer chip

A: Biochip    B: Computer chip

Note: The figures were not drawn to scale. The biochip is microscopic whereas man-made chip is macroscopic.

CM: Cell membrane; C: Cytoplasm; M: Mitochondria; G: Golgi body; R: Reticulum with ribosomes attached; L: Lysosomes; N: Nucleus which houses chromosomes; n: Nucleolus

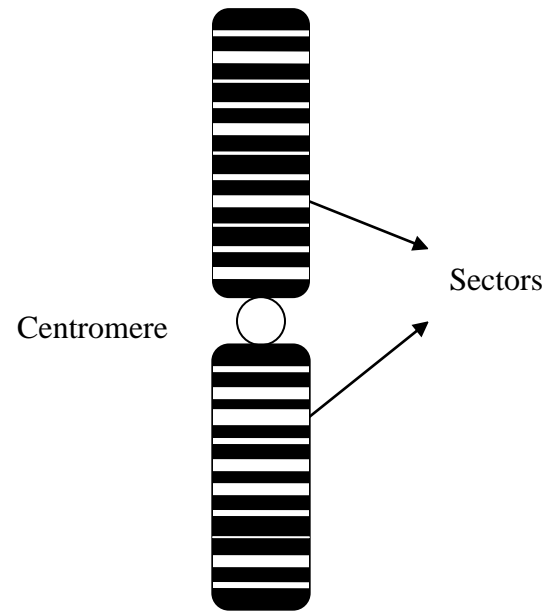


Fig. 4 Illustration of biomemory organization as sectors on a chromosome