History of Truth
the Truth About God & Religions
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In Search of God
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1. In the Name of Allah, the Most Beneficent, the Most Merciful.

2. All the praises and thanks be to Allah, the Lord of the ‘Alamin (mankind, jinns and all that exists).

3. The Most Beneficent, the Most Merciful.

4. The Only Owner (and the Only Ruling Judge) of the Day of Recompense (i.e. the Day of Resurrection)

5. You (Alone) we worship, and You (Alone) we ask for help (for each and everything).

6. Guide us to the Straight Way

7. The Way of those on whom You have bestowed Your Grace, not (the way) of those who earned Your Anger (such as the Jews), nor of those who went astray (such as the Christians).

(Quran 1:1-7)
DEDICATIONS

To The God of the universe.

Thank You for showing me Your way.

Allah, I bear witness that there is no god but You.
Allah, all Praises are to You for Your Glory, Mercy and Bounty.
Allah, please accept this humble effort and forgive me for my shortcomings.
Allah, help me to disseminate this knowledge to those who need it.
Allah, help me to live as a Muslim and die as a believer.
Allah, bless anyone who seeks the truth and Your way.

My Lord! Bestow on them (my parents) Your Mercy as they did bring me up when I was young.

Amen.
Translation of Al-Azhar’s approval for publishing this book

In the Name of Allah, Most Gracious, Most Merciful

AL - AZHAR
ISLAMIC RESEARCH ACADEMY
GENERAL DEPARTMENT

For Research, Writing & translation

Dr. Adel Mahmoud Elsaie

May Peace be upon you and the mercy and blessings of Allah.

Following your request for examining and reviewing your book: “History of Truth, The Truth about God and Religions.”

We would like to inform you that this book follows Islamic beliefs and can be published at your expense.

Please ensure the utmost accuracy of the verses of the Quran and the Prophetic Sayings.

May Allah guide your steps.

May Peace be upon you and the mercy and blessings of Allah.

General Manager, Department of Research, Writing & translation.
Throughout time immemorial, man has been in search of the truth. The truth, relative to physical phenomena and spiritual experiences, has lead mankind to a winding course. Sometimes, confusion and disorientation of the principles of life, unfortunately, can taint this course. Religion and philosophy are the historical vehicles for the search of truth. While religion presents the Divine aspect of the purpose of life, philosophy is a human attempt to gain a higher intellectual knowledge of oneself, morality and the underlying meaning of life. The current tendency to separate science and religion imposes disgraceful restrictions on science to achieve even more prosperous horizon. This book incorporates theology, natural sciences and philosophy in an attempt to satisfy the eternal quest for the search of the ultimate truth.

It is easy to go through life avoiding difficult questions about our origin and our destiny. It is easy not to talk about dying, or why people suffer. However, life would not be the same if there were no questions and answers. It is important to have an accurate understanding of our origin and yes, its pursuit is worthwhile. Everyone needs a sense of identity, purpose and personal goals. This is impossible without a sense of origin. What a person believes about human origin will condition that person’s life style and affect one’s ultimate destiny. Our origin goes back, perhaps, tens of thousands of years and our destiny takes us from the present time to eternity. Although our life on this earth spans through, perhaps, 60 or 70 years, we are heavily involved with this short time while neglecting our origin and destiny.

Sometimes we have very interesting and yet vital questions that linger in our minds:

- Why do humans suffer and how can one be happy?
- What is the purpose of this life?
- What will happen to us after death?
- Does God exist?
- Were we created or did we evolve from apes?
- Why do we have this huge universe?
When one asks these questions to anyone, one gets different answers such as:

- I do not care and I just want to enjoy my life.
- Leave me alone. I am trying to survive.
- I do not know. I never thought about that.
- I know that God exists, but I am confused with all those religions. I do not know which one is right. I will try to live a good moral life and that is it.
- I know that God exists, but I am not really doing a good job in preparing myself to meet Him. Maybe I will do that when I retire and have more time.

Only a small percentage of people know why they exist and they are living their lives the way it is supposed to be. Those are the people who understand their priorities in life and act accordingly. Those are the people who appreciate human knowledge and know its limitation. Those are the people who realize the difference between science and reality. Einstein said "One thing I have learned in a long life - that all our science, measured against reality, is primitive and childlike... Science without religion is lame, religion without science is blind,"(1941).

In the present time, it seems that science and technology have an answer for everything. Consequently, many people may tend to think that they know everything. If you ask one of those persons about life and how it started, the answer will be quick and most likely will be: life started as an organic substance that came to earth through a comet that collided with earth billions of years ago. Life after that evolved according to Darwin, (1809 - 1882). Ask him again about human behavior and he will start referring to Freud, (1856 - 1939). Then, most people tend to think that we know all the answers about everything. The reality is that we know very little about few things. And if you don’t believe this statement, just ask a pharmacist how aspirin works, a brain surgeon how the brain works, or a psychoanalyst how we dream.

One of the top priorities of everyone in this life, regardless of one’s wealth or social status, is to make one’s house comfortable. The English language provides the word "home" to emphasize a feeling of comfort, security, peace and love in a house. Humans spend a lot of time and energy to change a house into a home. If someone plans to move to another house, he usually reserves his energy and money for the next house.
However, everyone knows that all our homes are temporary and sooner
or later everyone will move to another house or home called "the grave."
Should we not be wise and invest a little bit in making sure that this
game is a home? Should we not make sure that this home will have "light
and heat"? Would we not like to have this grave as a piece of paradise?
Ancient Egyptians dramatized this concept 5000 years ago. They did not
just build graves; they built pyramids. The fourth dynasty pharaoh Khufu
(also known as Cheops) built the great pyramid of Giza, one of the seven
wonders of the ancient world, as his tomb. The pictures of this tomb do
not do the pyramid any justice. This pyramid is much larger than anyone
would think. It covers 13 acres and contains more than 2 million blocks
of stone, (Lacovara & Millar, 2004, p. 40). This proves that what the
ancient Egyptians experienced in their daily life was just as important as
what awaited them beyond the death’s gate. They firmly believed in an
afterlife that was not all that different from the normal life. This concept
of ensuring comfort in the afterlife, although practiced by polytheists, had
its root in the original monotheist religion, perhaps by Enoch (Prophet
Idris in Arabic). Some scholars believe that Prophet Idris was the same as
the ancient Egyptian god Osiris.

The questions, that everyone should ask, are:

- Should I invest heavily in a home that I will live in, perhaps, for tens
  of years, or in the home that I will live there for, perhaps, thousands
  of years?

- How can I make this home for thousands of years extremely
  comfortable?

The Quran goes one step further than that by labeling life in the grave as
only a visit, which indicates a short stay, compared to eternity.

Over thirty years ago after graduation from college, I found myself
thinking about religion and God. I wanted to search for the ultimate truth.
I wanted to know the true purpose of life. Taking answers for granted from
someone was not good enough for me. I wanted to "feel" the answers and
not just "know" them. I wanted to have a strong faith based upon logic. A
few times during prayer, I was wondering if I was just following a ritual.
How do I make sure that God exists? How do I achieve strong belief?
And, how do I know that I am following the right religion? My religion
tells me that it is the true religion. This is also the same for Christianity,
Judaism, Buddhism and the rest of the religions. I want to be sure that I am following the right religion. Humans have choices to select a religion, but they cannot control the consequences of their choices. Consequently, I started my search with an open mind and a total objectivity.

I started reading books that addressed the existence of God. To my delight, I found an Arabic book about God and the modern sciences written by Dr. Abdel-Razek Nofal. This book had a great effect on me throughout my life because it convinced me that God truly exists. This can be demonstrated by the numerous examples that show the perfect balance in the universe and the intricate design of the earth, its atmosphere and its different life forms. Then I asked myself the next basic question; what is the right religion? I read about Moses, Jesus, Buddha and Confucius. I excluded Judaism since it is not a universal religion and not just anyone can be Jewish. It is hard to believe that God, the Ultimate Just, has chosen only about 15 million Jews as His people at the present time and the 6 billion gentiles on Earth have no chance for salvation. A Muslim has to believe in Moses, his message, his miracles, as well as the Jewish and all other prophets. This makes the original Judaism included in Islam. I read the Bible and the Quran. I had so many troubles with the Bible. My first problem was the eternal confusion of the mystery of the trinity. Is God one, or two, or three? My Christian friends told me that God is one. But there is a statement in the Bible that says that Jesus ascended to heaven and sat on the right hand side of God. This makes them two separate beings. I was told that they are two but they are one and I just had to have faith. Every time I discuss this subject with my Christian friends, we found ourselves involved in a Byzantine argument where no conclusion could be reached. It is interesting to note that the term Byzantine argument was coined in the second century AD, when Christians argued about the nature of God as compared to the nature of Jesus.

Next, the last words of Jesus on the cross are very confusing. First, there are four different versions of the Gospels according to Matthew, Mark, Luke and John. This raises major questions about the accuracy of recording a Holy Book. These verses are part of a Christian doctrine of divine inspiration. If God had inspired these four gospel writers, why did God inspire them to record different words? These verses are not just different words, but totally different concepts. It seems that the closest statement should be the one that Jesus said in his own Aramaic language: *Jesus cried with a loud voice saying Eli, Eli, lama sabachtani? That is to say, My God, my God, why hast thou forsaken me?"* (Matthew 27:46, &
Mark 15:34, though it is Eloi instead of Eli in Mark.) which means “God, God, why have you abandoned me?”

It is hard to believe that Jesus said that God abandoned him. There are three possibilities:

- **He said that.** Then, why did the son of God think that his father abandoned him? Jesus told the disciples that he would die and rise from the dead in three days. He knew that he would die and be resurrected, so how can that be called abandonment? If he is the son of God that came to save humanity with his blood, so how can that be called abandonment? If he knew his mission in life, so how can that be called abandonment? This statement simply contradicts all the New Testament. Many Christian scholars have the same trouble justifying this statement.

- **He did not say that.** This means that Matthew and Mark were not accurate and God did not inspire the Gospels because God would not allow any inaccuracies.

- **The man on the cross was not Jesus!** This may seem at first sight as an unreasonable idea. But if we know that the same sentence, word for word, exists in the songs of David, Psalm 22.1, one may be tempted to suggest that the man on the Cross was a Jew asking God for help from his Old Testament.

It is interesting to note that Christian theologians introduced a branch called Apologetics to provide answers to criticisms against Christian beliefs. Apologetics started early in Christian history to resolve many contradictions in the New Testament. It is no secret that the word Apologetics came from the Latin word "apology" and the Greek origin "Logos." Some apologists suggest that Jesus said all the above versions. This is in spite of the fact that no single Gospel included all the four versions. Analyzing the Apologetics reasoning of the above four versions of Jesus’ last word does not present a satisfactory argument. Also, recent Apologetics advocates that historical and archeological evidences support early Christian history. That is a fair statement. However, historical and archeological evidences support the historical Jesus only and cannot be extended to support the Christian belief about the nature of Jesus. In the New Testament, Jesus always presented himself as the "son of man." He never said that he was the son of god. Forty years later, Paul made him the
"son of god," and in the first Ecumenical Council of Churches, 325 AD, Athanasius made Jesus of the same Divine "substance" as that of God.

The three monotheistic religions Judaism, Christianity and Islam originated in the Middle East. Islam and Christianity share many common beliefs and history that no other two religions may claim to share: Oneness of God, Day of Judgment, resurrection from the dead, eternal afterlife and the moral values of peace, freedom and justice. While there are differences between Muslims and Christians about the nature of Jesus, (Pbuh i.e. Peace be upon him) there is no disagreement in the Middle East about the Name of God, or the status of many of the common prophets in Judaism, Christianity and Islam. Noah (Pbuh), Abraham (Pbuh), Moses (Pbuh) and Jesus (Pbuh), are also prophets in Islam. The Quran declares Mary as the holiest woman ever (Chapter "Surah" 3, verse "Ayah" 42) - not Muhammad’s (Pbuh) mother, daughter, or wife. One complete chapter in the Quran is devoted to Mary with her name as the title of chapter 19. The Bible does not give Mary the same honor. The Quran mentions Jesus and Mary 34 times and Muhammad 4 times.

Arab-speaking Christians and Muslims recognize Allah as the only name of God. Any Arab-speaking Christian, when asked about the name of God, would answer Allah! The English Old Testament starts with: "In the beginning, God created the heaven and earth." The Arabic Old Testament starts with: "In the beginning, Allah created the heaven and earth." The name of God throughout the Arabic Old and New Testament is Allah.

It is ironic that the Western Christians are unaware of the name of God of their Arabic brothers. The differences in the stature of the prophets in Judaism, Christianity and Islam involve only Jesus and Muhammad, Peace Be Upon Them. Jews do not recognize Jesus and claim that he was a false Messiah and Christians do not recognize Muhammad and claim that he was a false prophet.

Moreover, some Christians may feel that the Quran has satanic origin, God forbid, because the Quran does not recognize the divine nature of Jesus (Pbuh). This is a false notion. Satan is rejected and accursed in many verses in the Quran. Also, Muslims have to seek the protection of God from Satan every time they recite the Quran.

After extensive reading and thinking, I became convinced that Islam is the righteous religion and Islam has the answer to all our social, economic
and judicial troubles. That is when I decided to write this book with the only motive to make the truth known.

To try to reach answers about vital questions, assumptions and criteria have to be adopted. The guidelines followed in reaching conclusions in this book are as follows:

1. This book is for anyone, from any faith, who seeks the truth.
2. Not a single attempt was intended to offend any faith, or lack of, for that matter.
3. The search for knowledge should be approached with an open mind, heart and soul and that search should not decrease or stop.
4. Our logical approach is real and meaningful with no deception or arrogant ideas.
5. Divine Creation is not subjected to any or all the laws of physics.

In the present time, there are serious challenges to monotheism:

1. High-powered scientists armed with tremendous marketing tools, promoting atheistic concepts that a layman has no way of challenging.
2. Global education system that fails to stimulate a comprehensive thinking process, but rather introduces subjects such as history, physics and life sciences in a fabricated form to exclude God from our lives. Again, students have no way of challenging their teachers.
3. Overwhelming western culture that promotes fake images of success. Again the layman anywhere on earth has no chance but to accept the western image for success.

Having watched all that, I feel compelled to agree with John Calvin, the Protestant theologian, who said:

"I would be a coward if I saw that God’s truth is attacked and would remain silent without giving any sound,"(Filson, 2006, p. 9).

I tried to study the approaches taken by the true scientists, such as Newton and Einstein, along the history of humanity. I admired tremendously their reasoning and logic because their goal was knowledge for the sake of knowledge and not for business, publicity, or marketing by twisting facts. Accordingly, this book represents a scientific attempt to answer the following questions:
1. Does God exist?
2. Should there be a universal religion and what is that right religion?
3. How can one be constantly sure that his or her conclusion is accurate?

The first question is the most difficult one if we do not know where to look. Therefore, the first question is answered by examining the known facts about the universe and life. The introduction of these subjects is presented in simple contexts and not just pure scientific abstracts. The divine Law of Repetition is introduced. This law simply states that because common guidelines exist in all living organisms or physical objects, then the Designer or the Creator of all living and non-living objects is the same. With humility and open mindedness, we should believe that God exists. He, then, has to make somehow this existence known to everyone. Some people adopt an arrogant idea of believing in god, but not in any organized religion or any messenger of god. These people may think that god should communicate directly with them and they have reached the level of the prophets. How else will they know what god wants from them. Examining the monotheistic religions that believe in One God is followed. Next, one conclusion should become obvious after that: because God is one, then there should be only one religion for the entire universe at any time and any places. This is the essence of monotheism. This is accomplished by establishing criteria for accepting a religion and then applying these criteria on the three Abrahamic “monotheistic” religions, Judaism, Christianity and Islam.

It is important to note that I am not writing this book as a biologist, cosmologist, physicist, or theologian. I am writing this book as a human being searching for the truth and purpose of life. In doing so, I am following two religious commands in Islam; first to seek knowledge and second to spread knowledge. Also, I would ask you to consider the contents of this book with an open mind because this information could prove to be of greater importance to you than you might yet realize.

In writing this book, technical information has to be introduced and could not be avoided. I tried to make the presented information simple and readable for average readers. Also a glossary section is added to present definitions of technical or religious terms.
This book is an attempt of recording the Truth, which is one of the Names of God and is mentioned in the Quran 226 times. It is not about faking lies about Moses, Jesus, or Muhammad (Peace be upon them), who are loved, honored and respected by all Muslims. Some Jewish and Christian "scholars" made it their business to spread unsubstantiated lies about the life of Muhammad and to quote obscure references or preach half the truth. The main references in this book are the Bible and the Quran, thus it should be easy for the readers to check these references. Also, a good part of the information on Christianity in this book was obtained from Christian authors and friends. Allah addressed mankind to get to know each other, Surah 49, Ayah 13. Consequently, as a Muslim I had to form my ideas about Christianity from its sources. That is something most of the critics of Islam never tried.

Religion is a serious business. In the present time, there is a statement that declares all religions lead to One God. Well, I do not accept that. I cannot believe that worshiping a cow or a statue leads to one God. Humans make choices everyday in their lives but they cannot control the consequences of those choices. It should be a matter of utmost wisdom for everyone to think and plan for the Day of Reckoning. Our faith will lead us to our destiny. Everyone in every faith should be prepared to face God, the Ultimate Judge. Humans will be asked about their faith and will have to acknowledge the truth, regardless of their faith. This Day of Judgment is like a court scene, where the Judge knows all, even more than people can tell. As such, this book is also my attempt to do my best to search for God and a religion. I started researching and writing this book in 1992. I believe that this time is well spent since this book can be my defense on the Day of Judgment. I will beseech God:

"I did not ignore the important questions about my origin and my destiny. I tried, I thought, I researched and this is the best within my capacity."
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Years ago on a Christmas day, my granddaughter Dannah asked me a question: how can God be baby Jesus? Then she started laughing. This was the intuition of a 5 years old girl. Since then, she has been asking me a lot of questions about God and religions.

May God bless my daughter, her husband Bilal, Telecommunication Engineer, M.Sc. in Telecommunication from SMU and my granddaughters: Dannah, Daliah, Deyalah and Denah who will be InShaa Allah the harbinger of Islam in the new age.

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• To all who contributed – my undying gratitude.
• To all who seek the truth – my unfaltering encouragement.
During the course of this book, a simple convention of a numbering system will be adopted that allows us to use a very large and very small numbers to be written in a compact form. The very large numbers will be used to describe the universe, while the very small numbers will be used to describe atoms and cells. The system used is called the exponential system. Let us begin with everyday numbers: since 10,000 = 10 x 10 x 10 x 10, it is written as 1E4, which means 1 multiplied by 10 four times, or 1 followed by four zeros. The letter E refers to the exponential system.

A million = 1,000,000 or 1E6
A billion = 1,000,000,000 or 1E9
A trillion = 1,000,000,000,000 or 1E12

Very small numbers are written in an analogous way. One millionth (that is 1 divided by 1 million) will be written as 1E-6, or 0.000001.

One billionth = 0.000000001 or 1E-9
One trillionth = 0.000000000001 or 1E-12

There is a price for such compactness. It is easy to forget the difference between 1E4 and 1E8 since both are large numbers or the difference between the small numbers 1E-4 and 1E-8. Let us not forget that the difference between the above two sets is 10,000 or 1E4, which is a big number.

If we accept that the size of the observable universe is 1E26 meters and the size of the smallest part of an atom is 1E-14 meters, then, the ratio of the largest to the smallest known sizes is 1E26/1E-14, or 1E40. This is 1 followed by 40 zeros or 10 thousand trillion trillion trillion times!

The human brain cannot even come close to comprehending these huge or tiny numbers. But they exist. Similarly, one cannot attempt to grasp the concept of the eternal, limitless, omnipotent, omniscient and Mighty God. But He exists.
One day I had dinner with a friend. We were talking about career, life, present, past and future; the usual chat. One question came up about plans for the future and what we hope to achieve. He told me that his plan for his life is to retire when he is 64. After that, he would work on his farm growing cattle and enjoying a peaceful life. At the age of 72, he will be sick and die at 74. I laughed and asked him how does he know that he is going to die at 74. He answered me with a: “Don’t you know statistics? Statistics say that men live until they are 74.” He was convinced that he was going to live until 74. A few days later, my daughter came to tell me that one of her colleagues from high school died in a car accident. He was 21. I remembered my friend and I said statistics does not mean a thing if it is about life and death. Even if statistics shows that 99% of the men
die at 74, that is not a guarantee for anyone that he will live that long. He simply could be among the remaining 1%.

How little we know. Scientists tell us that this whole universe started 8, 15, or 20 billion years ago (Guth, 1998, p. 279), and these days, each person lives for 1, 20, 70, or 90 years. Life span is very small compared to that of our universe. We live our lives in constant trials to improve our way of living. However, we are not sure if we are going to succeed or fail in those trials. But, only one thing is certain and that is, everyone is going to die. As a matter of fact, we are born with a sentence of death. Now imagine that our life started in a courtroom when the judge announces that we are sentenced to death. Then our whole life is just like waiting for the judge to announced when, where and how we are going to die. This is not an attempt to paint a gloomy picture on life. This is an honest attempt to put life in its real perspective because this concept of living in a prison waiting the decision of the judge can actually improve life, set our priorities in order and project a sense of humility in our life.

One time, I had problems with the air conditioning unit in my car during a hot summer. My priority at that time was to find an honest car mechanic to fix the car. I had so many troubles finding one. Few days later, I went to my physician to have a physical examination. He told me that he suspected cancer. Now, you can imagine what happened to my car problem! The cancer turned out to be a false alarm and I am grateful to God for giving me more time.

How many times does a “healthy” person visit a doctor for a routine physical examination to be told that he is terminally ill and has few months to live? How many times does someone driving his car and get involved in a fatal car accident? How many times do people die in a natural catastrophe? The fact is we do not know when, where and how we will die and probably we do not want to think about death. However, the first step to understand many facts should start by believing the only shocking fact in our lives: death. To approach that, take the following priority test:

What would you do if you were told that?
You have 20 years to live?
You have 1 year to live?
You have 6 months to live?
You have one month to live?
You may die at any moment?
These are not the kind of questions that you read in a book, only to continue reading the next sentence. Ask yourself these questions. Stop here and think. Try to write your answers. When it comes to the possibility of knowing that you have only one month to live, very many things will change in your life. Your priorities will turn upside down. Things that used to bother you before will lose their significance and other things that you used to ignore will become important.

The 15 Minutes Criterion

Now, try something else. Imagine yourself laying down in bed and you are in your final moments. Actually, your final 15 minutes in this life. What are you going to be thinking of? How are you going to evaluate your life? Is there something that you wanted to do and kept postponing it? Did you actually live your life the way you wanted?

Remembering death could be a very positive experience in our lives. You can use “The 15 Minutes Criterion” to overcome many frustrations in life. When you face many of the disappointing situations in your life, you can judge the importance of that frustration by whether or not you will think about it during your last 15 minutes before death. Next time you have a frustrating experience, remember the 15 minutes criterion and put that experience in its real magnitude.

People who encountered a near death situation tell us that their priorities changed drastically. They say that they started appreciating flowers, human relations, etc. Some even start thinking about God. The question is why should we have to wait for a near death experience to think or feel? And are we going to have a second chance of life or are we not going to have a chance at all?

One day I attended a very interesting talk by Dr. Nizam Peerwani (1985), the Chief Medical Examiner of Tarrant County, Texas, about death from a scientific point of view. The following is an extract from his talk:

“Medically, death is only an abstract noun which is meaningful to laymen, lawyers, philosophers and the clergy but which is very inadequate as a biological description. It is, however, a useful and convenient term to describe death as a disintegrating biological process in which we may recognize a beginning and an end, with striking changes in between. Although legally and religiously, there is a precise moment of death, there
is really no moment in time at which it occurs. We die in bits and pieces, hence medically, we can only state with reasonable certainty that death occurs when it can be demonstrated that an irreversible disintegrating process has started.

We recognize that there are three independent systems necessary for the maintenance of life, namely respiratory, circulatory and nervous systems. Failure of any one system leads to the failure of the other two and thus death occurs. Since the precise moment of death is a legal definition, there had to be some legal criteria based upon medical understanding of the process of death. Death was defined by the simple criteria of the failure of either the cardiac or the respiratory system. No mention, thus far, was made of the nervous system. In the 1960s, the advent of human organ transplantation caused scrutiny to be directed towards the definition of death. Tissues such as heart valves, bone, skin, cornea and tendon can be used from a non-heart-beating donor. Other organs such as hearts, kidneys, livers etc. can only be used from heart-beating donors. Committees were formed to examine the exact definition of death, tens of whom were physicians representing various medical specialties such as anesthesiology, neurology, pathology, psychiatry, neurosurgery, general surgery and internal medicine as well as a lawyer, a theologian and a historian of science. The purpose of committee was to try to distinguish true brain death due to irreversible termination of brain function from vegetative state in which a patient in a coma may exhibit spontaneous respiration upon removal of life support systems or may have brain stem reflexes. Although there is no complete agreement on the exact moment of death the existing criteria of brain death have rarely been challenged in courts of law.”

The conclusion is that we do not yet understand fully the only common fact in our lives. Medically, body changes become evident in the first and subsequent hours after death. These changes include four steps:

1. Body cooling: body begins to lose its temperature at approximately 1/2 - 1 degree each hour until it reaches that of the environment; provided that the environment is colder than that of the body.
2. Body stiffening: shortly after death, within 3 - 4 hours, the body begins to stiffen. By the 12th hour after death, the entire body is stiff. Once the body begins to decompose, it then begins to lack firmness. Hyperthermia, whether endogenous or exogenous, may accelerate this process whereas cold temperatures may retard this process.
3. Gravitation of blood: with the termination of the heartbeat, blood begins to collect in the dependent portions of the body after death. Within 8 - 10 hours after death, blood is pooled in all these areas and cannot be displaced if the body is turned over after it is fixed.

4. Decomposition: decomposition involves different processes, which may occur singly or in combination. Decomposition of a body includes the following:

   a. Breakdown of cells and organs caused by slow down of chemical processes due to reduction in Adenosine triphosphate (ATP).
   b. Bacterial growth in the tissues generally arises from the large bowel where they reside in large numbers during life. Bacterial growth affects the tissues by changing their color, producing multiple different gases and resulting in gradual softening or liquefaction of the tissues.
   c. Mummification when bodies are buried in dry or warm soil or exposed to high environmental temperature. This tissue dehydration process impedes bacterial growth and putrefactive process.
   d. Adipocere formation or conversion of some of the fatty tissues into a soap-like substance.

Thus, the human being decomposes to chemicals worth approximately five dollars buried in the ground, while some humans, throughout their lives, have pride worth a million dollars. Death transforms the life of a human being from a state of action without knowledge to a state of knowledge without action. If we truly know that we are going to die, how can we be arrogant or stubborn? Arrogance is the main reason why we do not think straight. If you searched for one human trait that produced so much pain and suffering, that took humanity in wrong directions and that started wars: it is arrogance. Hitler started the Second World War because he believed in the supremacy of the German race. History tells us of pharaohs and kings who placed themselves above everyone else to the extent of making them gods. Arrogance is the one single character that destroys peace and security that everyone is trying to achieve. After all, it is the original sin of Satan.

Humans start life weak and helpless and end life the same way. But somehow in between, people acquire some power and knowledge and that is when most people acquire varied degrees of arrogance. In many cases, in different professions, you find people who think of themselves
as the elite or the chiefs. They think that they know everything and they have an answer to every problem. They have a complete vision of how this whole world should be run and how people should think or live. Tyrants and dictators think the same way.

Somehow, humans tend to think that they are immortal and invulnerable. When we attend a funeral and see a dead body laying in the ground, we feel sad for a while. But then life goes on and we convince ourselves that it is the other person who died and not us. As a matter of fact, we may convince ourselves that we still have a long way to go. We may even blame the deceased for his death because he did not know how to protect himself from diseases. But we are smart enough to defend ourselves against viruses and bacteria and we will do a much better job in protecting ourselves. When someone is paralyzed for life or dies in an airplane or car accident, we may tend to blame the pilot or the car driver for not being careful enough. We do not think for a moment that a car accident may happen because the driver lost his concentration for a split second, as many of us often do. We simply believe that we are invulnerable. One of the effective ways of acquiring humility is to constantly remind ourselves that we are vulnerable and anything may happen to us on this very day. It is particularly helpful if you start your day by reminding yourself with your vulnerability to any kind of accident or catastrophe without being paranoid.

I added the last disclaimer “without being paranoid” to avoid the casual use of the “Yes-But” rule of speech as a comment on the last paragraph. Someone may comment: “Yes I will remind myself with my vulnerability, but I don’t have to live in fear.” Quite frequently when two persons are discussing a subject and one presents a point of view, the other uses this rule by saying “Yes” you are right in your statement, “But” you are wrong because you failed to add so and so or you ignored this or that fact! Watch this rule during conversation and you will be amazed how much is revealed about the arrogance of the person using this rule!

During the Renaissance in Europe, the rise of science resulted in the healthy and much needed function of freeing Europeans from the stifling grip of the church’s control. This intellectual movement produced great scientists like Isaac Newton, (1642-1727), who developed the gravitational theory that was very effective in explaining the dynamics of the universe, (1687). However, Newton understood his limitations and the limitations of one of the great scientific achievement in history. Newton acknowledged:
He had special trouble trying to understand the actual nature of gravity. While his theory predicted the effects of gravity quite accurately, it said nothing about the mechanism by which gravity acts. Newton was a devout believer. In fact, he believed that gravity is a divine action; in effect, a stone fell because God’s finger was pushing it down. It is interesting to know that hundreds of years later, scientists still do not understand the exact nature of gravity. All what we know about gravity is that it exists and it works according to Newton’s theory. But we do not know why it works. Newton was ranked number two in “THE 100 a ranking of the most influential persons in history” book by Michael Hart (1978). Jesus was ranked number three in that book. I will keep you guessing of who was ranked number one in this book, but you will know him near the end of this book.

On the other hand, the French philosopher Auguste Comte (1798-1857) developed the sociology as a separate social science, (Mill, 1865). He wanted to get rid of traditional deities. To satisfy the needs of the unsophisticated masses, Comte proposed a new church presided by scientists, not priests, as saints. Comte suggested that he would be willing to serve as Pope of the scientists. However, he became increasingly grandiose and died insane.

Newton and Comte represent scientists with two completely opposite approaches. The former knew his limitations and the limitations of his work while the latter failed to realize his limitations and did not know when to stop. Throughout history, science has provided answers for questions that start with “how”, but has never been able to answer who or why. Religion is the only logical way to provide answers to who and why. The answer is consistently: “God and He wants it this way.”

Humans should be grateful to God for having limited senses because our lives would be really hell if we had unlimited vision and hearing. Can you imagine yourself having unlimited vision and your eyes having the power of electron microscope? How can you move if you want to avoid all the viruses and bacteria in the air and they exist by the millions around you? How can you pick up a glass of water to drink if you see all the atoms in the glass and water is mixed with viruses and bacteria? How can you eat if you see every cell, alive or dead, in your favorite meal? Now
suppose that your ears have the power of hearing every sound on earth with the same intensity. This would be like having millions of radios with each one tuned to one radio station on the planet earth. All of those radio stations are turned up at the same time. If someone has unlimited vision and hearing, one may not last for 10 minutes before going totally insane. It is therefore a mercy from God that humans have limited senses.

In our time, some scientists treat hypothesis as facts and realities. When some scientists and educators assert that evolution without God is undisputed fact and imply that only the ignorant refuses to believe it, how many laymen are going to challenge them? When a scientist hosts a TV show explaining discovery of bits and pieces of ancient bones and claims that as a proof that we descended from apes, how can laymen argue with him? When a scientist describes the universe and its galaxies and implies that serious modern scientists do not see evidence of God, how many unbelievers or semi believers contradict him? And if one questions their scientific arguments, one would be accused of not being serious or modern or scientific. This sheer weight of authority is brought to the defense of evolution and atheism. Moreover, books, magazine articles, movies and TV programs treat evolution as an established fact. Oftentimes we hear or read a sentence like “when man evolved from the lower animals” or “millions of years ago when life started in the oceans.”

Some people are therefore programmed and brain washed to accept evolution as a fact and the contrary evidence passes unnoticed. It is the arrogance of some scientists that prevents them from admitting that there is a possibility that they are wrong. Some scientists do not always base their conclusions on facts. They are also people and much is at stake for there are decorated prizes in the form of fame, research grants and publicity. Sometimes science is powered by individual ambitions and is very susceptible to preconceived ideas. The scientist, whose 1992 study linking high voltage power lines to cancer, stirred public fear, (Liburdy, 1992). In 1999, he was found to have faked his data by using only 7% of his samples to substantiate his conclusion. This scientist received over three million dollars in federal grants for his research.

Some people reject the concept of God because they feel, as it has been said, “seeing is believing.” However, in their daily lives they acknowledge the existence of many things that cannot be seen, such as air, gravity, radio or television waves, electricity, magnetism and the Big Bang. We have not seen the Big Bang, but there are evidences that it happened. We have
not seen radio waves, but there are evidence that they exist. Similarly, there is no physical way to see or subject God to human analysis, but there are overwhelming evidence that He exists. The irony is that some people accept the existence of the unseen waves or electricity based upon evidence, but they refuse to apply the same standard to God. When it comes to the concept of God, some people prefer to see Him as an old man smoking cigars as in the Hollywood movie “Oh God.”

Consider two living beings such as a tiny ant and a huge elephant, do you think that the ant can see or measure the size of the elephant? Does the ant have any ways of knowing exactly what the elephant is doing all the time? Even if the ant knows what the elephant is doing at one time, does it know why? It is the arrogance of some people that prevents them from admitting that they are so tiny with limited senses and knowledge. The ant may realize that it is limited to comprehend the existence and size of the elephant, but some people think that they have unlimited senses that they have to see or measure God to believe. This example should be referred to when we are stuck with something that we cannot hope to understand. Another factor that helps keeping God away from our life is the school systems. In some countries, religion is forbidden from being taught in schools. Other countries, that allow teaching religion in schools, give religious classes the lowest priority after science, history and languages. In some Islamic countries, religion is the last class when students are tired from school and they are ready to go home. Also, Physics teachers never mention the sentence “praise God” when, for example, they explain gravity. They never mention what Newton himself thought about gravity or say that we really do not know how it works and ask the students to think about it as a miracle from God. Some biology teachers fail to mention that we do not fully understand the complex chemical processes in the cell or what exactly is the origin of energy required for life and how it works. Teaching in schools does not encourage intellectual or spiritual concepts. Some teachers have their subjects ready to be spilled out upon the students and that is the end of it.

An additional reason leading to human’s confusion is the failure of the men of religion to convince the masses that they are good examples to follow. The scandals and corruption of the TV Evangelists are the reasons for people to think about the religious record of hypocrisy. When one religious leader is found to be a hypocrite, the unreasonable approach, of condemning all religions with hypocrisy, prevails. Moreover, people think that religious institutions have turned into a big show business. They
observe religious programs on TV, where the host sings, cries, screams and dances in a way that competes with the best actor in Hollywood. People have observed clergy support for murderous dictators. They know that people of the same religion have killed one another by the millions in war, with the clergy backing each side. People after that tend to condemn the religion itself and everyone who tries to talk about religion.

In the second century, the philosopher Praxeas promoted the idea that God, the father and God, the son, were so completely unified that both the father and the son were crucified and died on the cross. “God is dead” became a slogan used by several theologians and philosophers. The strong wave of atheism started in the beginning of the nineteenth century using that slogan. The advances in science and technology created a strong drive of atheism and freedom from religion. This was a direct consequence of the doctrines and control of the western church. On one hand, Christianity defines itself as a monotheistic religion. On the other hand, it is based on the polytheistic concept of Trinity. Also, the crucifixion of Jesus helped fueling the notion that “God is dead.”

The nineteenth century was the century in which controversial figures such as Charles Darwin, (Darwin, 1958), Karl Marx, (Elster, 1986), Friedrich Nietzsche, (Armstrong, 1993a, p. 356), and Sigmund Freud, (Bocock, 2002), introduced atheistic ideas and philosophies. Their ideas affected most of the human aspects of life such as the origin of life, the economical and political systems, the philosophy and the human behavior. In the present time, a group of so called scientists and philosophers adopted the approach of promoting Darwinism more than Darwin, Marxism more than Marx and Freudism more than Freud. This group considers themselves the elite of the society and they are using every available means to promote their ideas of atheism.

Charles Darwin
Charles Darwin (1809-1882) was an English naturalist. He wrote his book The Origin of Species in 1856, where he formulated his theory of evolution. In this book he addressed the origin of life, a subject that sparks curiosity for all humans. Charles Darwin was the grandson of the eccentric evolutionist Erasmus Darwin (1731-1802). He was appointed as a naturalist on HM Beagle to survey wildlife in South America. In 1871, he published The Descent of Man. In this book, he advocated that humans were the products of biological evolution and that they descended from primitive animals. He believed that both humans and
apes were descendants of a common primitive ancestor. Religious people from all religions considered the evolution a notion contrary to the basic belief of creation by an omnipotent God. The work of Darwin is regarded the most anti-religious and most materialistic propaganda in history. The third chapter of this book will analyze the evolution hypothesis and will prove that it is a fraud.

**Karl Marx**

Karl Marx (1818-1883) was a German political philosopher and economist. He founded the communism based upon a materialistic explanation of history. Marx considered the religion as “the opium of people” that produced humans incapable of efficient production. His theory of “historical materialism” advocated that social and political changes were heavily influenced by the class struggle between the proletariat and the bourgeois. God, religion and spirituality were dismissed from his materialistic system. He suggested that God could not help the human suffering of the oppressed and the poor. He advocated that religion and God were tools in the hands of the Church and the bourgeois to control the masses. The ideas of Marx started the Soviet revolution and established the Soviet empire that failed miserably in just 70 years. No other empire in history lasted such a short time. The effect of Darwin on Marx is interesting. When Marx read Darwin’s book, the Origin of Species, he admired the materialistic and atheistic concepts of the book. Marx found the material needed to dismantle all religious belief and promote his materialistic approach. The founders of the Soviet Union established a science museum in Moscow, which shows the fossils of ancient species, for the purpose of eliminating religion with the support of scientific data!

**Friedrich Nietzsche**

Friedrich Nietzsche (1844-1900) was a German philosopher. In 1882, he adopted the ideas of Praxeas when he proclaimed that God was dead. He wrote, (Armstrong, 1993a, p. 356), “Where has God gone? I tell you - we have killed him, you and I - we all are his murderers... God is dead. God will remain dead.” He believed that eliminating God from the human life would improve the quality of life. He was also plagued throughout his life by poor eyesight and migraine headaches. He was driven to madness by the complete rejection of his contemporaries to his ideas. The more he was ignored, the more he combated Christianity and its moral claims. Nietzsche claimed that new values could be established to replace the traditional ones and this led to his concept of the superman. He envisioned the superman to replace God and to fight the moral values of the Church.
Concentrating on the real world, rather than on the rewards of the afterlife promised by religion, the superman stresses the importance of this life including the suffering and pain that accompany human existence. His superman is a creator of a “master morality” that reflects the strength and independence of someone who is liberated from all traditional values. He believed democracy to be fatal to society and attributed most of its failure to Christianity. Nietzsche’s ideas profoundly affected the official philosophy and propaganda of the Nazis, where the German race was considered a superior one. He died in Weimar on August 25, 1900, after a life of bitter disappointments.

**Sigmund Freud**

Sigmund Freud (1856-1939) was an Austrian physician who established the framework of the psychoanalysis. He regarded belief in God as an illusion that requires psychological help. Human Being created the concept of God through the manipulation of the unconscious. Freud viewed God as a projection of human weaknesses and strong desire of mortality. Religion was a necessary step in the undeveloped societies, but now science can take its place. Freud was strongly articulate about his faith in science: “No, our science is not an illusion! An illusion it would be to suppose that what science cannot give, we can get elsewhere”, (Bocock, 2002, p. 77). He suggested that people must outgrow God in their own pace: “to force them into atheism or secularism before they were ready could lead to unhealthy denial and repression.” Freud associated the origin of religion to his myth of the Oedipus complex. This myth describes how a group of sons, jealous of their father’s control over their mother, united and killed the father. Then, as atonement for their act of murder, they worshipped the figure of the father as God the Father. It is interesting to suggest that Freud got this idea of God’s projection as a father from the Christian doctrines of trinity. Freud also regarded sexual desires and fears as existing in the unconscious of everyone’s mind. This concept was shocking to the Victorians in the same manner as Darwin’s claim of evolution. Now, a number of new books criticizing Freud and his brainchild psychoanalysis for a generous array of errors, duplicities, fudged evidence and scientific howlers. The continuing success of drugs in the treatment or alleviation of mental disorders ranging from depression to schizophrenia undermines the Freudian foundations. In the present time, some scientists question if Freud is finally dead!

Sometimes I wonder what were the above-mentioned four pioneers of atheism thinking of when they were dying. Were they envisioning that they
are going to turn to dust and this is it? Now, the new generations of Marx, Darwin, Nietzsche and Freud are gaining power in the TV, magazines, books and unfortunately in schools. Sometimes it looks like we are living in a system totally committed to atheism or at least promoting the notion of keeping God in His place if he exists. Between schools, media and modern serious science many people do not have chance to think about God.

The Law of Repetition

One Ayah in the Quran, in Surah 55, is repeated 31 times. This Ayah states: “Then which of the favors of your Lord will you deny?” This Surah is 78 Ayat (or Ayahs, Arabic: Ayat) and lists many favors that Allah bestows upon us and after citing each favor; the above Ayah is repeated as a continuous reminder to humanity to acknowledge His unlimited generosity. It is interesting to note that the Arabic word for “humanity” is derived from the same Arabic term that means “forgetfulness.”

Another Ayah is repeated four times in Surah 54, starting in Ayah 17. The Ayah states “And We have indeed made the Quran easy to understand and remember. Then is there any that will receive admonition?” Moreover, a part of an Ayah is repeated five times in Surah 27, starting in Ayah 60 “Can there be another god besides Allah?”

The above repeated Ayah are just examples of the repetition in the Quran. The repetition of a certain Ayah adds to the beauty and eloquence of the authentic Words of God. It touches the hearts and minds of the believers. This repetition may be thought of as part of the styles of the Words of God.

It is possible to extend this style of repetition in the Quran to physical phenomena or events. Consequently, I will introduce the Law of repetition. Generally the Divine Law of Repetition examines the repetitive design or repetitive event in different branches of science. It then attempts to answer the question of who is the cause of this repetition. The Divine Law of Cause and Effect attributes one cause to one effect. This law is a strong proof for the existence of God. The more general Law of Repetition attributes repetitive effects in non-related fields to One God. This law simply states that because common guidelines exist, in all living organisms, physical objects or historical events, then the Designer or the Creator of all organisms, objects or events is the same. This law also
states that because a phenomenon exists in different branches of science, then this phenomenon has to be attributed to only one Uncaused Cause. With humility and open mind, we should believe that God exists.

There are overwhelming evidences to believe that the unseen God does indeed exist because one can observe the signs and the physical results of His creation. One can see these signs in the technical perfection and intricacy of the structure of atoms, solar systems, galaxies and living cells. They all have a similar design of a nucleus and objects rotating around it. This similarity or repetition in their design reveals that the Designer or Creator of these physical objects is the same, regardless of their size or function.

Humans, animals and birds have many repetitive features because they all share the Earth’s common environment. On the outside they have symmetrical organs - two hands, two or four legs, two eyes, two ears - all arranged symmetrically. Hair, feathers and scales are also arranged symmetrically. Even the colored designs on the wings of the butterfly are arranged symmetrically! The internal organs of humans and animals are arranged to use the space inside efficiently. The human left lung has fewer lobes so that it can accommodate the heart, which nestles inside it. Nearly every species, from cow to chicken to human, has its heart on the left. No one really knows the exact mechanism that pushes the cells of the heart to the left during the embryonic stage. No one really knows the exact mechanism that pushes the cells of the ears to each side of the head during the embryonic stage, etc.

Developing an embryo is more complex than building a skyscraper. In a skyscraper, a supervisor reviews the drawings and instructs workers where to go and which construction material to use. Bit by bit, from the foundation up, the building takes shape. In a living body, the workers are the construction materials and both are living cells. Each cell has a copy of the master plan inserted into its nucleus in the form of the DNA. Just as the construction supervisor cannot send the roofers before the foundation is poured, cells have to appear at the right time in the right place. Depending on its function, each cell reads a different part of the genetic code from the DNA. Some cells become specialized as proteins, fat or muscle. Others act like conduits signals, carrying messages to other cells. Such signals play a big role in establishing the structure and location of any organs. This is not a simple process, but a very complex one that embryologists have no detailed answer as to why and how.
This whole universe follows certain laws. We know a few of them and may learn some more. One such universal law is “the Law of Repetition.” This law is seen in the examples provided by atoms, solar systems, and galaxies. An atom has a nucleus and electrons rotating around the nucleus. Solar system has a star and planets rotating around the star. Galaxies have a nucleus and stars rotating around the nucleus. Therefore, this law may be stated as follows:

The building block of basic objects has a nucleus and smaller things rotate around it.

A human being develops from a single cell, the zygote, which forms when a female egg is fertilized by a male sperm. Immediately after fertilization, the zygote also rotates about the center of the egg. No one knows why! Is it possible that this Law of Repetition represents an act of worship or submission to the Will of God? How else can anyone explain this phenomenon that is valid for the tiny atom and zygote, the midsize solar system as well as the colossal galaxy?

The practice of pilgrimage in Islam follows the same above Law of Repetition. Two million Muslims perform pilgrimage in Mecca each year by circling the Kaabah (the house of Allah) and praising God. Thereby the Kaabah can be looked at as a nucleus and the Muslims are the smaller creatures that rotate around it. Similarly the Quran states in Surah (chapter) 39, Ayah (verse) 75, that the Angels surround the Throne of God, praising their Lord.

Humans are made of cells and cells are made of atoms. Because atoms surrender to the Will of God and are in a constant act of worship, it follows that humans are born into this world with a pure and innocent condition. This also means that the basic nature of humans is righteously created with no original sin inherited from Adam or Eve.

To expand this Law of Repetition in different branches of science, one has to examine the basics and then one will find that the basics of one branch of science can be applied to other branches. As an example, all physical systems are in a state of equilibrium or balance. This statement can be expressed by many equations in different branches of science. An example of this case is Newton’s third law, which states “for every action, there is a reaction equal to the action and opposite in direction”, (Shipman, Wilson, & Todd, 2007, p. 56). The equation in this case can be written as:
Action = Reaction

The mathematical symbol of the equal sign, =, means the right hand side of the equal sign is balanced or in equilibrium with the left-hand side of the equal sign.

All studies in different branches of engineering schools consist of studying and solving equilibrium equations, studying the physical properties of matter and then designing a system that satisfies equilibrium and the properties of material. This is all what a student learns in engineering school. When dealing with forces, the equilibrium equations can be stated as the applied forces equal to the reactions. In the case of balancing energies, the equilibrium equations are stated simply as the input energy equals to the output energy.

Let us look at the different sciences in the school of engineering:

1. **Structural engineering**: Studying equilibrium of structures and the physical properties of steel and concrete.
2. **Aerospace engineering / Aerodynamics**: Studying equilibrium of air and the physical properties of air.
3. **Civil Engineering / Hydraulics**: Studying equilibrium of flowing fluids in pipes or channels and the physical properties of these fluids.
4. **Electrical engineering**: Studying equilibrium of flowing electric currents in circuits and the physical properties of electric and magnetic fields.
5. **Chemical engineering**: Studying of equilibrium of chemical processes and the physical properties of the elements involved in the chemical processes.
6. **Mechanical engineering / Thermodynamics**: Studying the equilibrium of different kinds of energies such as heat and the physical properties of those energies.
7. **Mechanical engineering / Vibration**: Studying equilibrium between potential and kinetic energies based upon the physical properties of the vibrating objects.

The entire school of engineering is based upon studying equilibrium and properties of matter. Equilibrium can be static for stationary systems
such as buildings or bridges or dynamic for moving systems such as cars, aircraft or planets.

The Law of Repetition is demonstrated in engineering as follows:

\[
\text{All systems are in a state of static or dynamic equilibrium.}
\]

This law of equilibrium did not just happen in nature by evolution or some other mechanism. There is no physical explanation as to why equilibrium is happening everywhere and at all time, unless we extend Newton’s explanation of the nature of gravity to include equilibrium as another divine action. Perhaps equilibrium is God’s way of telling us that His creation is always balanced and perfect. In this case, studying science is just the human way of understanding some of God’s laws for the purpose of appreciating His power and supremacy.

As an extension to the above law, chemical reactions happen all the time in a human body. Every chemical reaction is subject to chemical equilibrium. A disease can be defined as an imbalance in one of those reactions. Taking medication restores the balance. Pharmacology is a branch of medicine that studies the known chemical reactions in the human body and the effect of medication on diseases. Studying in the school of medicine involves the equilibrium of the chemical reaction inside the body as well as the properties of each organ and system in the human body. In that sense, the similarity of engineering and medicine becomes obvious.

A further demonstration of the Law of Repetition is that all systems are uniform on a large scale, but display irregularities on a small scale. If you look at the sky at night, you see the uniformity of the void, with a few scattered stars that represent the irregularities in that huge void. In this case, the stars represent the irregularities in the huge, otherwise uniform, void. Human beings are also uniform on a large scale. Taken as a whole, the population’s height, weight, intelligence, behavior, health, etc. can be quantified with an average value for each trait. Many people are healthy while others suffer an irregularity such as disease. Trees also are uniform on a large scale. They all have roots, stems, branches and leaves. But, the bearing of different kinds of fruit or no fruit at all, even the different shapes of leaves can be thought of as small scale irregularities. And the list can go on and on.
From a human standard, the irregularities can be beneficial or harmful. The irregularities exist for a reason that we cannot understand each one of them. The solar system is a huge void with the sun and the planets existing as tree leaves in a vast desert. Atoms have the same structure as the solar system with the nucleus and electrons separated by relatively large distance. And since the human body consists of atoms, it can be seen that it is mainly empty space with the nuclei and electrons as the exceptions to this huge void. Why is that? Recall the above-mentioned example of the ant and the elephant! The ant does not know what is in the mind of the elephant. Likewise, we will never know what is in God’s mind unless He reveals some of His Knowledge. This is simply the system that He chooses and we do not know why. Hence, this Law of Repetition can be stated as follows:

*All systems are so uniform on a large scale with some irregularities on a small scale.*

This Law may also help us to understand some of the aspects of human suffering, such as some babies that are born with birth defects. These defects are the exceptions and the uniformity is that the majorities are born healthy. We may be able to suggest that we know why that happens. People should be grateful to God that they do not have defected babies. But how many people on earth actually thank God when they have healthy babies? How many people thank God that they are not sick? How many people thank God that they can find food, water and shelter? The great lesson of the few who suffer is that the majority should be grateful for all the favors that God bestowed on them. What about those people who suffer in this life? The answer is who knows what God prepared for them in heaven? May be they will be happier for a long time than those who appear to be fortunate on Earth. I do not claim to know the exact answer, but I have full confidence in God’s Wisdom and Justice.

Years ago, as a student studying my Ph.D., I encountered a problem in my thesis that I could not find its solution right away. I felt extremely concerned and sad. Then I went for a walk to calm myself down. There, I saw a man without legs begging for few pennies to eat. I looked at him and thought here was a man whose ambition was to eat and he was trying to get help for his hunger. And there I was, feeling sad for a luxury item that I could not get fast enough. That was about thirty years ago. I try to remember that scene when I face some problems in my life and compare my problems with that man’s problem. This really forced me to say thank you God for what I have.
Another application of the Law of Repetition is the old cliché that states “history repeats itself.” Let us understand what this statement means. In one way it means that civilization and power in certain countries rises to a peak and then citizens become blinded by success, then this civilization reaches its demise and another civilization starts and so on. Everyone knows that. But, did you also notice that the more ancient empires lasted more than the following ones. History books tell us about the following civilizations and empires:

Sumerian civilization in Iraq (3500 - 800 BC)
Egyptian civilization (3000 - 1070 BC)
Minoan civilization in Crete (3000 -1000 BC)
Creek civilization (2000 - 300 BC)
Chinese civilization (1523 BC - 906 AD)
Indian civilization (1500 -185 BC)
Mexican civilization (1200 - 300 BC)
Roman Empire (753 BC - 476 AD)
Byzantine Empire (330 - 1453)
Islamic Caliphate (632 - 1526)
Ottoman Caliphate (1300 - 1923)
British Empire (1558 -1982)
French Empire (1804 -1962)
Russian Empire (1689 -1917)
Soviet Empire (1917 -1992)
American civilization (1917 - )

The word civilization comes from the Latin word *civis*, meaning someone who lives in a city. It is an advanced state of intellectual, cultural and material development in human society, marked by progress in language, arts, architecture, education, government and ability to defend itself, making it a recognized power affecting political events. History books show that the duration of civilizations used to be a few thousand years, then several hundreds. Now we live in an era where “superpowers” last a few hundred years, or even less than a hundred years as in the case of the Soviet Union. People who can be affected by preconceived ideas write history books, which can also be audited and adjusted by governments according to the political climate of that time. The Ottoman Caliphate is a case in point. Historians claim that it was an empire. History books in many Islamic countries consider that empire a case of colonization. Very few history books mention that it was an Islamic Caliphate that united
many Islamic countries. This is a fact that many governments choose to ignore. If we recognize the Ottoman Caliphate as an extension of the previous Islamic Caliphate, it would make its duration from 632-1923 or about 1300 years. Consequently, the next Law of Repetition states the following:

*Duration of civilization decreases with time.*

The only exception to this Law is the Islamic Caliphate. Since the Muslims lost the Ottoman Caliphate, Islamic revival is growing in all Islamic countries and Islam is the fastest growing religion in non-Islamic countries.

If you want to let your mind wander about this Law of Repetition, you can find many other interesting examples about the Law of Repetition.

Now for those who want a proof that God exists, the Quran provides the answer in Surah (chapter) 41, Ayah (verse) 53:

“*Soon will We show them Our Signs in the (furthest) regions (of the earth), and in their own souls, until it becomes manifest to them that this is the Truth. Is it not enough that thy Lord doth witness all things?*”

Almost all Quranic interpretations agree that the above verse addresses the unbelievers, but I feel that this verse inspired many Muslims to look at the universe and their bodies to strengthen their faith. This verse identifies two groups of people:

1. Those who are looking for a proof or a technique to become faithful can achieve that by looking at the skies and at the human bodies. The complexity of the design of the universe and the living cell leaves one’s mind spinning. People need to contemplate and ponder to arrive at the highest conclusion in this universe.

2. Those who have faith and accept God’s Word that He is a witness of His Existence without a need for further proof. They know that He exists by their hearts. This is truly a blessed group. The first group represents the non-Muslims and the Muslims who seek scientific and rational evidences for the divine creation. Those
are, also, who base their faith on a logical approach and an analytical procedure. They usually become strong advocates to Islam and in some cases they have stronger faith than most of the traditional Muslims. This group challenges the strong wave of materialism and atheism in favor of the clear moral values that Islam represents.
In the name of Allah, Most Gracious, Most Merciful.

53. We will show them Our Signs in the universe, and in their own selves, until it becomes manifest to them that this (the Qur’an) is the truth. Is it not sufficient in regard to your Lord that He is a Witness over all things?

54. Verily! They are in doubt concerning the Meeting with their Lord? (i.e. Resurrection after their deaths, and their return to their Lord). Verily! He it is Who is surrounding all things!

(Quran 41:53-54)

Studying the universe can be an overwhelming spiritual experience. We see pictures of our solar system, distant stars and galaxies, but the human minds fail to comprehend the size and complexity of this huge universe. In this chapter, you will encounter a host of theories and names. I attempted very hard to make the presented material simple, so you can get an appreciation of the splendor and grandeur of this universe. However, if you are temporarily stunned, you are sharing the astonishment of the scientists who lived through the development of their theories and who at times saw nothing but increasing complexity with little hope of
history of truth understanding. If you stick to it, you will share the excitement of the scientists and the humility of the believers. If you keep asking questions: Who, Why and How, you will have only one logical answer: God exists and He made it His Way.

From time immemorial, people have wondered at the starry heavens. On a clear night, the beautiful stars hang like shining jewels against the vast darkness of space. The parade of sunrise and sunset, the changing phases of the moon and the silent convoy of the stars across the black dome of heaven have long proven a spectacle and a puzzle. The spectacle has inspired the artist, the musician and the poet. The puzzle has intrigued philosophers and scientists. Just what is out there in the space? What is the meaning of it all? How did it start? Is there life out there? We do not know. But, who has any idea of what God can do?

The spectacle of the heaven above charges the believers with humility and faith. They realize that they are a grain of dust on a grain of dust on a grain of dust. Yet, God gives us the intellect to contemplate all of this. The recent Hubble telescope discovery increased the estimates for the known galaxies from 10 billion to 100 billion, with each galaxy containing billions of stars and perhaps planetary systems. When we discover new galaxies, stars and planets, this should make us aware of how great God is and how little we know. God simply revealed some of his magnificence. To ancient people the sky exhibited many repetitive behaviors. The bright sun, which divided daytime from nighttime, rises every morning from one direction, the east, moves steadily across the sky during the day and set in a nearly opposite direction, the west. At night more than 1000 visible stars followed a similar course, appearing to rotate in permanent groupings, called constellations, around a fixed point in the sky, which was known as the north celestial pole.

Observation of the stars that appear in the west after sunset or in the east before sunrise showed that the relative position of the sun among the stars changed gradually. The Egyptians may have been the first to discover that the sun moves completely around the sphere of the fixed stars in approximately 365 days.

Several ancient peoples, notably the Egyptians, the Mayans and the Chinese, developed interesting constellation maps and useful calendars but the Babylonians accomplished even greater achievements. To perfect their calendar, they studied the motions of the sun and moon. It was their
custom to designate as the beginning of each month the day after the new moon, when the lunar crescent first appeared after sunset.

Due to limited knowledge, the earliest civilizations developed inaccurate model of the universe. At about 4000 BC, the Mesopotamians, believed that the Earth is the center of the universe and that the other heavenly bodies move around it. Later, in ancient Greece, the challenge was resumed and a new view was taken of the universe. The Greek Aristotle and the Alexandrian astronomer Ptolemy expanded the nightly motion of stars across the sky from a dome to a sphere. In doing so, the Greeks took the first step towards realizing that the universe is larger than it appears. They also developed an elaborate mathematical way of describing the cyclic motion of the Moon and planets around the Earth, which, on what seemed good evidence, appeared fixed at the center of universe. The Greek astronomer Aristarchus of Samos maintained, about 270 BC, that the Earth revolved around the sun, (Evans, 1998, p. 67). However, because of Aristotle’s authority, the Greeks regarded the colossal, heavy Earth as a motionless globe around which the universe revolved. This theory, known as the geocentric system, remained virtually unchallenged for about 2000 years due to the widely accepted model of the universe according to the famous Aristotle. Had humanity believed Aristarchus, our knowledge of astronomy would have been more advanced than our present case.

Greek astronomy was transmitted eastward to the Syrians, the Hindus and the Arabs. The Arabic astronomers compiled new star catalogs in the 9th and 10th centuries and subsequently developed tables of planetary motion. Arab astronomers recognized the Great Nebula in Andromeda, the first galaxy other than our own, as a faint blur as early as 964 AD in the vast loneliness of the universe. Al-Battani (known also as Albatenius), leading Arab astronomer and mathematician of his time, made his astronomical observations in Syria for a period of more than 40 years, (Van Helden, 1985, p.42). He published his work as “De Motu Stellarum” (Concerning the Motion of the Stars, 1537) and corrected errors of Ptolemy in regards to the length of the year.

In 1543, the Polish astronomer Nicholas Copernicus published his theories “On the Revolutions of the Celestial Spheres”. The Sun, not the Earth, was put at the center of the universe, the planets were set in orbits about it and human beings were abdicated from their throne at the center of all creation.
Models and Mathematics

Discovery of the structure of the universe, the atom, or the DNA started by developing a model that describes the behavior of these structures. The modeling procedure is the same for different scientific disciplines, although the details of the modeling vary between different disciplines. Modeling of the same problem also changes with time as more knowledge is acquired.

In the above description of the relationship of the Earth to the sky, three different models were introduced, namely:

1. A model of the Earth at the center of the universe with the sky as a dome above Earth.
2. A model of the Earth at the center of the universe with the sky as a sphere above Earth.
3. A model of the Earth rotating around the sun.

Development of physical models will be illustrated by presenting a simple model of a vibrating pendulum or yo-yo. A basic property of the pendulum is frequency. There is nothing complex in this idea; if one watches a pendulum oscillating up and down, the number of oscillations in a second is called the frequency of vibration. This pendulum consists of a spring and a block attached to it. If the spring is held fixed, the block will be stationary at vertical equilibrium position. The spring provides the restoring force against gravity. If the block is to move from equilibrium position, the spring is stretched and it stores potential energy and a force is developed in the spring. When the block is released, the spring force pulls the block towards the equilibrium as the potential energy is converted to kinetic (motion) energy. This process of energy transfer between the potential and kinetic energy continues and causes the block to oscillate about the equilibrium position.

The frequency of the pendulum can be calculated by equating the potential and kinetic energy. This solution is subject to certain assumptions, which should only be made if the solution is easier to solve and the results are accurate enough for whatever use they are intended. Some of the logical assumptions for that spring-block system include ignoring the effects of earthquake and wind. One should not assume that the results would be correct if the pendulum is moving in a windy place or during an earthquake. If wind and earthquake are included in the solution of this system, the resulting equations are usually very complex.
Similarly, when dealing with the dynamics of the universe, one cannot include the effects of every phenomenon in the equations describing the motion of the universe. There are two reasons for that: first, there are still many unknowns in the universe; second, including some known phenomena could make these equations impossible to be solved. Theories dealing with the dynamics of the universe have much observational studies to support them. Mathematical reasoning is the only way to understand the fundamentals that lie behind observations. This is so because mathematics is a language in which ideas can be formulated and followed in logical steps. Many times mathematics has provided insights available in no other way. Unfortunately, some people suffer mental blocks when they see a simple equation. However, our civilization would scarcely exist without the physical laws and intellectual techniques developed by mathematical research. No one could balance his checkbook without applying mathematical rules. Many of the world’s great thinkers have decided that mathematics represents the absolute truth. “God ever geometrizes,” Plato said, (Bell, 1986, p. 21). “God ever arithmetizes,” echoed the 19th Century Prussian scientist Jacobi, (Bell, 1986, p. 21). In our time the British physicist Sir James Jeans declared: “The Great Architect of the Universe now begins to appear as a pure mathematician”, (Ahmed, 2005, p.65).

Today, although mathematicians affirm the universality of their subject, some deny that it possesses any absolute qualities of truth. Bertrand Russell defines mathematics as “the subject in which we never know what we are talking about nor whether what we are saying is true”, (Crystal, Crystal, & Russell, 2000, p. 274). He may be talking about some mathematicians who expect the universe to follow their theories, instead of searching of the actual laws that describe the behavior of the universe.

Creating the Universe

Understanding the universe that began from a primal void may be the greatest intellectual search ever. If the intellect of mere mortals seems too weak for the challenge, the imagination may be up to it. Cosmology and particle physics are both required to understand the evolution of the universe. Cosmology is the study of the birth and development of the universe, the largest entity known. Particle physics is the study of the basic building blocks of matter, the smallest entity known. The union of the two fields resulted in a scientific revolution.
The universe started with an enormous explosion, in which space, time, energy and matter were created. There is almost complete agreement of this among scientists. The evidence that makes them so certain that the Big Bang model is correct comes from discoveries in astronomy and subatomic physics as well as astronomical observations based upon the analysis of light emitted from distant stars. Light is usually described as consisting of light waves. When raindrops intercept the sunlight, rainbow is produced with the familiar band of colors. Colors of the rainbow range from red, with lower frequency and longer wavelength, to violet, with higher frequency and shorter wavelength. A prism has the same effect of separating white light into its component colors. Many dark lines cross the spectrum of visible light. These lines are very important because the number and position of the lines reveals much information. Two dark lines surround each color. Spectroscopy is a process that separates light captured from distant stars or galaxies into its component wavelengths - its colors. By measuring how much light of various wavelengths and intensities an object emits over time, astronomers can determine many things: the object’s chemical composition; its temperature; its rotation; whether it is moving towards or away from the Earth and how fast; plus in many cases, its mass, its age and its distance from the Earth.

The spectrum of waves extends from radio waves of one kilometer long (from crest to crest) to gamma rays with wavelength of a fraction of one-millionth of a millimeter. The visible light from the sun extends over a very small fraction of the spectrum of waves.

In 1912 the American astronomer Vesto M. Slipher (1875-1969), working at the Lowell Observatory in Arizona, discovered the “red shift,” which paved the way to one of the greatest discoveries in this century, (Clark, 1997). All the dark lines in the visible part of the spectrum of all galaxies were shifted toward the red and the lines in the red part of the spectrum are shifted into the infrared and so on. This happens because the crests and troughs of the electromagnetic radiation are shifted towards the red, with the lower frequency, if the galaxy is moving away faster. This can be understood by a simple analogy. If you compress a coil spring, the number of coils in one inch will increase. But if you expand the coil spring, the number of coils in one inch will decrease. The number of coils in one inch is similar to the number of wave. Thus compression increases the frequency and expansion reduces it. In wave physics the shift towards the red end of the spectrum always indicates velocity of recession, i.e. moving away or expanding.
Another example to understand this is related to sound. Sound is pressure waves that excite the ear which when compressed against the ear will give the sensation of hearing. Suppose you are standing in a railway station, an express train is approaching at a high speed, with its whistle blowing. As it passes you, the pitch of the whistle drops suddenly. This has nothing to do with the whistling or your ear; it is due to the speed of the train. This can be explained as follows: Suppose the speed of sound is 344 meters per second and that the approaching whistle is 344 meters away. Half a second later it is 172 meters away. Treat these as two separate instants and you will see that the second sound reaches you, the stationary listener, only half a second later than the first. The wavelengths are being compressed because of the movement of the train is toward the listener. This is similar to the compression of a coil when it hits a wall. So the wavelengths are shortened and the frequencies increase to a higher pitch. As the train passes the stationary listener, the process reverses and each successive sound wave has a greater distance to travel. The interval between the successive peaks, therefore, is longer than the interval between their emissions and accordingly, the pitch of the sound will be lowered. This is what is known as the Doppler Effect.

The same thing applies to light waves, but in this case the speed is not that of sound, 344 meters per second, (Shipman, Wilson & Todd, 2007, p. 144), but of light, 300,000,000 meters per second, (Shipman, Wilson & Todd, 2007, p. 158). The instrument in this case is not the human ear, but the spectroscope, spreading out radiation into their color frequencies. The visual equivalence can be stated as follows:

1. An increase in auditory pitch (increase in frequency and decrease in wavelength) is a shift of the spectral lines towards the violet end of the spectrum, if the source is approaching the receiver.
2. A decrease in auditory pitch (decrease in frequency and increase in wavelength) is a shift of the spectral lines towards the red end of the spectrum, if the source is moving away from the receiver.
A red shift, therefore, indicates the velocity of recession of the source, such as a star. If the faintness of a galaxy is accepted as an indication of its distance and the red shift of the spectra as the velocity of recession, then the velocity of recession is proportional to the distance of the object. The further the star from us, the faster its speed of recession.
original fireball. But the Big Bang got its enduring name when English astronomer Fred Hoyle (1915 - 2001), who believed the universe always had and always would exist in a “steady state,” ridiculed the sudden birth notion (Gough, ed., 2005, p. 97). Hoyle suggested that the universe always looks the same from any viewpoints and at any time. Therefore, although galaxies are born, they evolve and move away from each other, newly created matter, in the form of hydrogen gas continually replaces them, which evolves into galaxies and stars in due course. This means that the universe is in a state of constant creation of matter. The creation term is a misnomer, because as an atheist, Hoyle did not believe in God. His model suggested that the universe has no beginning and no end. He claimed the steady state theory explained the observed abundance of deuterium (a form of hydrogen), hydrogen and helium, which are so successfully explained by the Big Bang, (Hoyle, 1961). The steady state theory has now been completely abandoned by cosmologists - even by Hoyle himself.

There is doubt about precisely when the Big Bang happened. It was somewhere between 15 and 20 billion years ago. Recently, the Hubble space telescope was used to estimate the age of the universe. The question of the age of the universe is not only fascinating in its own right but also bears directly on just about every other cosmic mystery from the universe’s history to its eventual fate. The Hubble delivered its new verdict which suggested that the age of the universe is between 8 and 12 billion years. That may seem imprecise, but it was specific enough to throw astrophysicists into a state of high anxiety. The problem is that our own galaxy has stars believed to be 14 to 16 billion years old. It makes astronomers uncomfortable to try to explain how stars could have been formed before the universe began. This uncertainty arises because it is unknown how tightly the universe is packed with matter. The gravity from high-density matter would have slowed the universe’s expansion considerably by now, meaning that the age of the universe could be closer to eight billion years old. Most theorists think the density of the matter is indeed high, although observers have not been able to calculate exactly how high. Therefore, scientists may have to modify the details of the Big Bang.

However, among the astronomical observations that support the Big Bang, four strong evidences are important:
1. The first is that galaxies are all moving away from each other at a tremendous speed. Galaxies are observed using electronic detector attached to a telescope. The further the galaxy from us, the faster its speed of recession. Astronomers have detected this by the red shift in the galaxy’s spectrum. By measuring the red shifts, astronomers can determine the speed of recession of the galaxies. Since they know the further off they are the faster they move, they can calculate their distances. This is possible if we know exactly how the speed increases with distance. At the moment there is uncertainty about this. That is why the age of the universe was estimated to be 15 to 20 or eight to 12 billion years (Guth, 1998, p. 279). The ratio of the speed to distance - called Hubble constant - ranges between 15 to 30 kilometers per second per million light years. The speed is then determined from the red shift and the distance is determined using Hubble’s constant by simple calculation. The best available measurements as of 2009 suggest that the initial conditions of the Big Bang occurred between 13.3 and 13.9 billion years ago (Komatsu et al. 2009).

2. The second piece of evidence is the discovery in 1965 of radiation reaching us from every direction of the universe. These are similar to the electromagnetic radiation from light bulbs, from lightning flashes and from any hot objects. The discovery happened during the testing of a sensitive microwave receiver. This cosmic microwave background is of equal intensity from every part of the sky and its maximum intensity occurs at a wavelength of 1.1 mm. What we are seeing is the glow of a primordial universe as it was at a very early date. Now, after about 15 billion years, this radiation has cooled to a few degrees above the absolute zero. This is the temperature to be expected today if the radiation had originated in an extremely hot Big Bang.

3. The third item of evidence of the Big Bang comes from nuclear physics. Studies of how the chemical elements would evolve after the Big Bang suggest that in the present day universe, a ratio of deuterium and helium should be reached. Astrophysicists have verified that the existing ratio is what the theories predict.

4. The fourth evidence came in 1994, when NASA’s Cosmic Background Explorer satellite - COBE - discovered landmark evidence that the universe did in fact begin with the primeval explosion. In order for gravity to make galaxies out of atoms, it needs some chunks
in the space in which the atoms are closer together, regions with greater than average density so that they could draw surrounding matter. And if they are present, they should be visible to a sensitive probe such as COBE in the form of warm and cool spots staining a microwave background. Indeed that is what happened. The signals from COBE shows a map of the sky with spots of all sizes indicating regions where the microwaves are minuscule 30 millionths of a degree warmer or cooler than the average. Scientist George Smoot (1992) an astrophysicist at the University of California at Berkeley, when seeing the computer map, proclaimed:

“If you are religious, it is like looking at God”, (Howard, 1993, p. 4).

The hypothesis of a primordial explosion is, therefore, extremely well founded. However, there are some variations of the theory. For now, there are not enough evidence for an alternative to the Big Bang and the future may present another model of how the explosion started. Nevertheless, the Big Bang will remain one of the greatest constructs of the 20th century scientific thinking. It tells a story that spans for billions of years of the universe to an end that can only be assumed. One of those assumptions deals with whether or not the Big Bang is a cyclic phenomenon with the universe alternately expanding and contracting like a spring forever without a need for God! Even if the universe behaves like a spring, one should raise the perpetual question: Who started it?

At the birth of the universe, all matters and energy were compacted into an almost infinitely hot and infinitely dense point somewhere in a dark void. There was no space and no time. According to the theory of creation called inflation, the cosmos expanded at a furious rate in the first fractions of a second of existence. Then, suddenly all the particles, energy, time and space in the universe appeared. According to the Big Bang theory, a single point called a singularity, exploded spontaneously. This was not a burst of matter into space, but rather an explosion of the space itself. Mathematically speaking, singularity is defined as a point where no solution exists. A simple way to understand singularity is to try to divide a number, any number, by zero. The answer is infinity! But what is infinity? Infinity is a number that is larger than any number one can think of. If someone uses a calculator or a computer and tries to divide a number by zero, the result will be “error”!
The suggested steps for creating the universe can be described as follows:

1. The earliest moment that can be spoken of with certainty came after a period called the Planck time - the incredibly short time of $1E^{-43}$ second, a $1$ preceded by $43$ zeros or a ten millionth of a quadrillionth of a sextillionth second! At that time, the entire universe, which might have been only part of some unknown whole, was much smaller than an atomic nucleus. As suggested by calculation, $1E+20$ as many as the universe at that time could fit in an atomic nucleus! All the four fundamental forces - gravitational, the strong and weak nuclear forces and the electromagnetism - were combined together in one super force. The present theories fail to predict what happens in that short time, but they can be cautiously applied after the Planck time.

2. The next major event occurs after $1E^{-35}$ second, where the universe was propelled by the fragmented super force into the four basic forces. The universe inflated, not just expanded but doubling its size every $1E^{-35}$ second. Its borders (the space) rushed out at a speed that is faster than the speed of light (Einstein’s theories may not allow matter or energy to travel through space faster than light, but they place no such restriction on space itself). During this inflation period from $1E^{-35}$ to $1E^{-33}$ second, the universe increased to about the size of a grapefruit. At this time, there were no atoms, but only quarks which constitute the nucleus of atoms, appeared as separate entities. Alan Guth at the Massachusetts Institute of Technology proposed this inflation model in the 1980s. The most startling part of inflation is the notion, as Guth puts it, “that the universe is a free lunch” - something comes from nothing (Guth, 1998, p. 15).

3. At $1E^{-20}$ second after the Big Bang, cosmic strings, if they exist, would have formed and later served as seeds for galaxies. The laws of God observed today have emerged. Perhaps a small loop of strings attracted, with its gravity, enough matter to form a galaxy; a bigger loop might attract enough to form a galactic cluster. Cosmic strings seem to offer a good model for explaining the pattern of galaxies. Unfortunately, there is no evidence that strings exist.

4. At $1E^{-5}$ (0.00001) second, the universe was a soup of quarks, leptons and radiation. It was cool enough for quarks to bind together in triplets to form protons and neutrons, the building blocks of atomic nuclei.
5. The Plasma period started three minutes later and simple atomic nuclei of heavy hydrogen, helium and lithium were formed. The name plasma is applied to a high temperature gas when the outer electrons became separated from their atoms. It is the plasma that glows inside a fluorescent tube or advertising sign. The universe was too hot for the atoms to hold together. They were ripped apart by the intense radiation as soon as they were created. The plasma period lasted for 300,000 years, (Jones & Hanson, 2006, p. 5). The universe was like a dense smoke of free moving charged particles that light could not penetrate.

6. After 300,000 years simple atoms were formed when electrons were finally able to orbit protons without being immediately knocked out of their orbits by photons, the radiation or wave particles. The light that emitted during these atom formations is now the microwave background radiation that was detected in 1965. The universe became transparent to light. Theoretically, some areas were denser than others and thus were warmer and emitted more light. These areas later formed gas clouds or smoke.

7. From 300,000 to two billion years, under the influence of gravity, the colossal smokes gradually broke up into smaller galaxy-size structures, (Kerrod, 2003).

8. After that, stars were formed in galaxies and the universe continued to expand at a rate of five to 10% every billion years.

In trying to explain the development of the universe, we are left with many unanswered questions:

1. What was there before the explosion started?
2. Why did the universe start at a very hot point?
3. Why did the universe start at a critical temperature and critical rate of expansion that separate models from collapsing as soon as it starts from those that go on expanding forever? After billion of years the universe is still expanding at almost the same rate. If the rate of expansion one second after the explosion had been smaller by even a part in a thousand billion billion, the universe would have been collapsed before it ever reached its present size.
4. What is the origin of the density fluctuations of the early universe that started the stars and galaxies?
The existing laws of physics offer no answer to the above questions. Those questions represent a great test of human faith or arrogance. Marc Davis from the University of California at Berkeley said:

“We all had to say that those were just God-given conditions” (Newsweek, 1988).

This is one scientist who appreciates the limitations of the human knowledge. Other scientists introduce arrogant ideas when they encounter problems that they cannot hope to understand. They may blame God for not revealing all of His secrets and His full list of laws in a way that everyone should understand. Some are even frustrated that they do not know all the laws that apply to the universe before 1E-20 second after the Big Bang. Stephen Hawking (1988), in his book “A Brief History of Time” wrote on page 122:

“One possible answer is to say that God chose the initial configuration of the universe for reasons that we cannot hope to understand. This would certainly have been within the power of an omnipotent being, but if he had started it off in such an incomprehensible way, why did he choose to let it evolve according to laws that we could understand?”

Moreover, Hawking considers the Big Bang as a model that places limits on when and how God might have been carrying his job! On page nine of the above-mentioned book, Hawking wrote:

“An expanding universe does not preclude a creator, but it does place limits on when he might have carried out his job!”

The late Carl Sagan of Cornell University of New York wrote in the introduction of this book:

“Hawking is attempting, as he explicitly states, to understand the mind of God. And this makes all the more unexpected conclusions of the effort, at least so far: a universe with no edge in space, no beginning or no end in time and nothing for a Creator to do.”

The above statement is elaborated in the same book on page 141.

Sagan’s idea is analogous to the creation story in Genesis that God created the universe in six days and then rested in the seventh day. The suggestion
here according to Hawking and Sagan that the seventh day was so long that it started right after the Big Bang and God was still resting and has nothing to do.

In Stephen Hawking’s latest book with Leonard Mlodinow, (2010, p. 180), “The Grand Design,” they wrote “Because there is a law such as gravity, the universe can and will create itself from nothing. Spontaneous creation is the reason there is something rather than nothing, why the universe exists, why we exist….It is not necessary to invoke God to light the blue touch paper and set the universe going.” So, they introduce the approach of “God-not-required” to the question of our existence, so long we have gravity! They fail to answer the five basic questions on gravity: who, why, what, where and when. The simple question of who made the gravity has no answer in their book.

Now suppose, for the sake of argument, that two persons were brought together one from the seventh century and the other from the twentieth century. What may happen if the latter person were to explain the Big Bang and the theory of relativity to the former person? Could you visualize their discussion? The first person would appear extremely puzzled and incapable of understanding or believing the second person. Because we do not understand everything that God did or is doing and because our existing knowledge fails to explain many of the mysteries of the universe, some of our present time scientists tend to think that the problem is not in our limitation, but in the limitation of God Himself.

The subject of evolution of the universe is a very complex one and we do not know all the details of the Big Bang. With time, our knowledge will expand and we may improve on the existing model of the universe. Some Scientists may be disappointed that 90 to 99 percent of the universe is unknown to mankind. But, what else is new? Nearly, the same percentage of the human brain is unknown. We cannot determine the weather precisely, nor can we predict the location and intensity of the next earthquake.

**Understanding the Known Universe**

Probably, you are reading this book in a room with four walls in your home and you feel that you are not moving. Your place exists on a tiny planet called Earth. The Earth is one of the nine planets orbiting around the Sun. The sun is a typical star of intermediate size and luminosity. The Sun is one of the 100 billion stars traveling together that makes up a spiral
galaxy called the Milky Way. Galaxies are generally not isolated in space but are often members of small or moderate-sized groups, which in turn form large clusters of galaxies. The Milky Way is one of a small group of about 20 galaxies that astronomers call the Local Group. The spiral galaxy Andromeda is also a member of the Local Group. The Large, Small and Mini Magellanic Clouds are nearby satellite galaxies, but each is small and faint, with about 100 million stars. Further work revealed a concentration of clusters of galaxies that are called superclusters. Ours is called the Local or Virgo supercluster. There seem to be no observations to lead astronomers to assume any structures larger than superclusters. This grouping from the solar system to the supercluster systems is based upon the observation that each system travels in concert or as a group.

![Local Group Complete](image)

**Figure 2.3 - Our Local Group cluster of galaxies**

Now, let us try to see how much your actual speed in the universe is. According to classical mechanics, persons in a uniformly moving train behave as they would be if the train were at rest. With the windows covered, it would be impossible to tell whether the train was moving. To an observer on the ground outside the train, the persons inside the train would seem to have the same speed as that of the train. However, if a person inside the train started running in the same direction as the train, the outside observer would see that person moving faster than the train. As an example, if the train is moving with a speed of 100 kilometer per
hour (km/hr) and the person is moving with a speed of 10 km/hr, then the observer would see that person moving with 110 km/hr (100+10=110). Therefore, it can be concluded that the actual speed of the person inside a train can be found by adding his speed in the train to the speed of the train. In the same way, let’s find your speed by adding the following:

- Speed at the equator of Earth due to its rotation about its axis = 0.44 km/sec
- Orbital speed of Earth about the Sun = 29.8 km/sec
- Speed of the Sun relative to the center of the Milky Way = 250 km/sec

From that, we conclude that your speed relative to the center of the Milky Way is 280 km/sec or 174 mile per second (mi/sec)! That is an incredible speed. You don’t even know it or feel it!

**Superclusters and Clusters of Galaxies**

![Figure 2.4 - Virgo Cluster is an extremely dense cluster of galaxies](image)

An unknown process created the density differences in the universe. They become marked only after some two billion years. Where density was greater, Protogalaxies, the first celestial bodies, were formed. The process of expansion of the universe had made it possible for galaxies to form in considerable numbers. The resulting galaxies would have an immense
range of sizes - from one hundred times the size of our galaxy down to a hundred-thousandth of it. According to the existing model of the Big Bang, the largest structure appeared first. Protogalaxies are assumed to be formed first after two billion years from the Big Bang. Protogalaxies shrunk to become galaxies.

Overall, the distribution of clusters and superclusters in the universe is not uniform. Instead, superclusters of tens of thousands of galaxies are arranged in long, stringy filaments, around large voids. The Great Wall, a galactic filament discovered in 1989, stretches across more than 500 million light-years of space. Clusters of Galaxies include from two to thousands galaxies. Superclusters or clusters of galaxies are detected by groups of galaxies that travel together.

**Galaxies**

A galaxy is a massive group of hundreds of millions of stars, all gravitationally interacting and orbiting about a common center. All the stars visible to the unaided eye from Earth belong to the Earth’s galaxy, the Milky Way. The sun with its associated planets is just one star in this galaxy.

The most distant galaxies known, near the edge of the observable universe, are faint blue objects called “blue fuzzies” because of their appearance on photographic plates. The images were obtained by aiming a telescope at apparently blank regions of the sky and using a solid-state charge-coupled detector to gather the very faint light, then processing the images by means of a computer. The galaxies, moving away from Earth at about 88 percent of the speed of light, may have been formed about 2 billion years after the origin of the universe.

A Muslim Persian astronomer, Al-Sufi (903-36), is credited with first describing the spiral galaxy seen in the constellation Andromeda, (Couper, & Henbest, 2009, p. 211). By the middle of the 18th century, only three galaxies had been identified. In 1780, the French astronomer Charles Messier (1730-1817) published a list that included 32 galaxies, (Vehrenberg, Güntzel-Lingner & Messier, 1978). These galaxies are now identified by their Messier (M) numbers; the Andromeda galaxy, for example, is known among astronomers as M31.
In the early years of the twentieth century, it was already known from the work of the English astronomer William Huggins that nebulae (Latin for “clouds”) were of two kinds: hazy patches of gases with spiral or elliptical shape, (Rezende, 2006, p. 213). Since 1900 galaxies have been discovered in large numbers by photographic searches. Galaxies at enormous distances from Earth appear so tiny on a photograph that they can hardly be distinguished from stars. The largest known galaxy has about 13 times as many stars as the Milky Way.

When viewed or photographed with a large telescope, only the nearest galaxies exhibit individual stars. For most galaxies, only the combined light of all the stars is detected. Galaxies exhibit a variety of forms. Some have an overall globular shape, with a bright nucleus surrounded by a luminous structureless disk. Such galaxies, called ellipticals, contain a population of old stars, usually with little apparent gas or dust and few newly formed stars. Elliptical galaxies come in a large range of sizes, from giant to dwarf. In contrast, spiral galaxies are flattened disk systems containing not only some old stars but also large populations of young stars, much gas and dust and molecular clouds that are the birthplace of stars. Often, the regions containing bright young stars and gas clouds are arranged in long spiral arms that can be observed to wind around the galaxy. Generally, a halo of faint older stars surrounds the disk; a smaller nuclear bulge often exists, emitting two jets of energetic matter in opposite directions.

Other disks like galaxies, with no overall spiral form, are classified as irregulars. These galaxies also have large amounts of gas, dust and young stars, but no arrangement of a spiral form. They are usually located near larger galaxies and their appearance is probably the result of a tidal encounter with the more massive galaxy. Some extremely peculiar galaxies are located in close groups of two or three and their tidal interactions have caused distortions of spiral arms, producing warped disks and long streamer tails.

**Our Milky Way Galaxy**

Earth is a planet orbiting one of 100 billion stars that constitute a large spiral galaxy. William Herschel, a pioneer of the study of the skies, first introduced the concept of these islands of stars in the 1780s using large telescopes. On the basis of counting the stars visible in different directions, he concluded that the sun lay at the center of a star system that
was flat and elongated in shape. Astronomers have known this system as the Galaxy - from “galaxias” -, which is what the Milky Way was called in ancient Greece.

Figure 2.5 - Milky Way Galaxy. The flattened disk of the Milky Way Galaxy shows the galaxy’s spiral arms and the sun’s modest place in the Orion arm.

The observations of radio telescopes have confirmed that this system is fully disklike with four spiral arms. They are the Centaurus, Sagittarius, Perseus and the Orion arms. The Sun lies in the Orion arm of the Galaxy.

At the center of the Galaxy, as of all spirals, there is a concentrated core of stars. These form a bulge at least 20,000 light-years in diameter and some 3,000 light-years thick, (Ronan, 1991). The Sun is 30,000 light-years from the center of the Galaxy. The Sun is about halfway out towards the edge and moves at a speed of 250 km/sec and takes no less than 200 million years to complete each rotation, a period sometimes called the cosmic year. Since its formation, the Sun has managed only twenty round trips. If we assume that the cosmic year is divided into 365 cosmic days and the cosmic day is divided into 24 cosmic hours, then humans were created on Earth, perhaps, only two cosmic hours ago!

**Our Solar System**

The first astronomers, long ago, noticed that there were five special “stars” that gradually moved through the sky. They became known as the
“wanderers” or planets. Planets shine with a steady light, but real stars often twinkle. All the planets that are visible in the night sky are members of the Sun’s family, or the solar system.

The five planets that can be seen without a telescope are Mercury, Venus, Mars, Jupiter and Saturn. After the invention of the telescope, astronomers found three more distant planets. Uranus was discovered in 1781, Neptune in 1846 and Pluto in 1930. All nine planets travel in orbits around the sun.

Johannes Kepler studied the motion of the planets. In 1609 he discovered that the orbits of the planets are slightly stretched circles, called ellipses. A circle has one focal point called the center while an ellipse has two focal points. For each planetary orbit, the sun is at one of the focal points. Thus, the distances of the planets from the sun change by small amounts as they travel in their orbits. Kepler discovered how the planets moved, but it was Newton who realized that the force of gravity holds the planets in their orbits. If the Sun’s gravity did not constantly keep pulling at the planets, they would fly away into the depths of space.

Now we know that our solar system consists of the sun; the nine planets and their satellites; the asteroids, comets and meteoroids; and interplanetary dust and gas. The planets are commonly divided into two groups: the inner planets (Mercury, Venus, Earth and Mars) and the outer planets (Jupiter, Saturn, Uranus, Neptune and Pluto). The inner planets are small and are composed primarily of rock and iron. The outer planets (except Pluto) are much larger and consist mainly of hydrogen and helium. The sun consists of 73.5% hydrogen and 25% helium, (Ronan, 1991).
The dimensions of this system are specified in terms of the mean distance from the Earth to the sun, called the astronomical unit (AU). One AU is 150 million km (about 93 million mi). The most distant known planet, Pluto, has an orbit at 39.44 AU from the sun (Zeilik, 2002, p. 221). Comets achieve the greatest distance from the sun; they have highly eccentric orbits ranging out to 50,000 AU or more. This solar system is the only planetary system known to exist, although in the 1980s a number of relatively nearby stars were found to be encircled by swarms of orbiting material of indeterminate size or to be accompanied by suspected brown dwarfs. Many astronomers think it is likely that solar systems of some sort are numerous throughout the universe.

If one could look down on the solar system from far above the North Pole of Earth, the planets would appear to move around the sun in a counterclockwise direction. All of the planets except Venus and Uranus rotate on their axes in this same direction. The entire system is remarkably flat—only Mercury and Pluto have obviously inclined orbits. Pluto’s orbit is so elliptical that it is sometimes closer to the sun than Neptune is.

Current theories connect the formation of the solar system with the formation of the sun itself, about 4.7 billion years ago. The fragmentation and gravitational collapse of an interstellar cloud of gas and dust, triggered perhaps by nearby supernova explosions, may have led to the formation of a primordial solar nebula. The sun would then form in the densest, central region. At larger distances from the center of the solar nebula, gases condense into solids such as are found today from Jupiter outward. The association of planet formation with star formation suggests that billions of other stars in our galaxy may also have planets. The high frequency of binary and multiple stars, as well as the large satellite systems around Jupiter and Saturn, attest to the tendency of collapsing gas clouds to fragment into multi-body systems.

The satellite systems mimic the behavior of their parent planets, but many more exceptions are found. Jupiter, Saturn and Neptune each has one or more satellites that move around the planets in retrograde orbits (clockwise instead of counterclockwise) and several satellite orbits are highly elliptical. Jupiter, moreover, has trapped two clusters of asteroids (the so-called Trojan asteroids).

Asteroids are small rocky bodies that move in orbits primarily between the orbits of Mars and Jupiter. Numbering in the thousands, asteroids
range in size from Ceres, which has a diameter of 1000 km (620 mi), to microscopic grains, (The American heritage science dictionary, 2005, p. 46). Some asteroids are perturbed into eccentric orbits that can bring them closer to the sun. If the orbits of such bodies intersect that of the Earth, they are called meteoroids. When they appear in the night sky as streaks of light, they are known as meteors and recovered fragments are termed meteorites. Laboratory studies of meteorites have revealed much information about primitive conditions in our solar system. The surfaces of Mercury, Mars and several satellites of the planets (including Earth’s moon) show the effects of an intense bombardment by asteroidal objects early in the history of the solar system. On Earth this record has eroded away, except for a few recent impact craters.

Some meteors and interplanetary dust may also come from comets, which are basically collections of dust and frozen gases about 5 to 10 km (about 3 to 6 mi) in diameter, (Huggett, 2006, p. 38). Comets orbit the sun at distances so great that they can be perturbed by stars into orbits that bring them into the inner solar system. As comets approach the sun, they release their dust and gases to form a spectacular coma and tail. Under the influence of Jupiter’s strong gravitational field, comets can sometimes adopt much smaller orbits. The most famous of these is Halley’s comet, which returns to the inner solar system at 75-year periods. Its most recent return was in 1986.

**The Sun: Our Daytime Star**

![Sun-Planets size](image)

The Sun lies on the spiral Orion arm of our Milky Way galaxy, which is marked by dark and bright nebulae from which new stars are constantly
born. The sun is a typical star of intermediate size and luminosity. Yet if the Sun is indistinguishable among its celestial neighbors, it is immense by terrestrial standards. Its diameter is 1,392,000 km, more than 109 times the equatorial diameter of the Earth. Its volume is 1,303,600 times that of our planet (Ronan, 1991). In light-years, the Sun’s average distance to the Earth is 8.3 light-minutes (which means that light from the Sun reaches the Earth in 8.3 minutes), whereas the distance to the nearest star, Proxima Centauri, is 4.28 light-years, 250,000 times greater than the distance from the Sun to the Earth (Ronan, 1991).

Sunlight and other radiation are produced by the conversion of hydrogen into helium in the sun’s hot, dense interior. The temperature of the Sun’s core is about 15 million degrees in the Kelvin scale. Although this nuclear fusion is destroying 600 million metric tons of hydrogen each second, the sun is so massive (2 E+30 kg, or 4.4 E+30 lb.) that it can continue to shine at its present brightness for six billion years (Nicolson, 1999, p. 118). This stability has allowed life to develop and survive on Earth.

The table below shows the dimensions and properties of the solar planets, (Benz, 2009, p. 4):

<table>
<thead>
<tr>
<th></th>
<th>Mercury</th>
<th>Venus</th>
<th>Earth</th>
<th>Mars</th>
<th>Jupiter</th>
<th>Saturn</th>
<th>Uranus</th>
<th>Neptune</th>
<th>Pluto</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from Sun (million km)</td>
<td>57.8</td>
<td>108</td>
<td>149.6</td>
<td>228</td>
<td>778</td>
<td>1430</td>
<td>2871</td>
<td>4500</td>
<td>5900</td>
</tr>
<tr>
<td>Diameter (1000 km)</td>
<td>4.88</td>
<td>12.1</td>
<td>12.8</td>
<td>6.79</td>
<td>143</td>
<td>120</td>
<td>51.8</td>
<td>49.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Mass *</td>
<td>0.055</td>
<td>0.815</td>
<td>1.00</td>
<td>0.11</td>
<td>318</td>
<td>95.2</td>
<td>14.5</td>
<td>17.2</td>
<td>0.002</td>
</tr>
<tr>
<td>Gravity *</td>
<td>0.28</td>
<td>0.88</td>
<td>1.00</td>
<td>0.38</td>
<td>2.34</td>
<td>0.93</td>
<td>0.79</td>
<td>1.12</td>
<td>0.04</td>
</tr>
<tr>
<td>Year *</td>
<td>0.241</td>
<td>0.615</td>
<td>1.00</td>
<td>1.88</td>
<td>11.86</td>
<td>29.46</td>
<td>84.03</td>
<td>164.8</td>
<td>248</td>
</tr>
<tr>
<td>Orbital speed km/ sec</td>
<td>47.9</td>
<td>35.0</td>
<td>29.8</td>
<td>24.1</td>
<td>13.1</td>
<td>9.64</td>
<td>6.81</td>
<td>5.43</td>
<td>4.74</td>
</tr>
<tr>
<td>Density**</td>
<td>5.60</td>
<td>5.20</td>
<td>5.52</td>
<td>3.95</td>
<td>1.31</td>
<td>0.704</td>
<td>1.21</td>
<td>1.67</td>
<td>2.03</td>
</tr>
<tr>
<td>Inclination of orbit in degrees *</td>
<td>7.00</td>
<td>3.39</td>
<td>1.00</td>
<td>1.85</td>
<td>1.30</td>
<td>2.49</td>
<td>0.77</td>
<td>1.77</td>
<td>17.2</td>
</tr>
</tbody>
</table>

* (Earth = 1), ** (Water = 1)

Table 2.1 - Dimensions and Properties of the Solar Planets
**Mercury: The Closest to The Sun**

Mercury can be observed either before dawn or after sunset as a bright, silvery, starlike object. Since its orbit lies within the Earth’s, Mercury presents phases similar to our moon. Mercury is seen only when it is furthest away on the opposite side from the Sun. Mercury is never be further from the Sun than 69.7 million km and with its elliptical orbit, it gets as close as 45.9 million km.

![Figure 2.8 - Mercury](image)

Because it is close to the sun, it gets 4.7 times more heat, light and other radiation per unit area than the Earth. Its surface temperature can reach 467 degree Celsius. At night the temperature plunges down to –200 degree Celsius because there is no blanket of atmosphere to trap the heat. Mercury resembles the Earth in its internal structure. It is surprisingly dense because it has an unusually large iron core, twice as much as the Earth’s. With only a transient atmosphere, Mercury has a surface that is covered with craters caused by heavy bombardment by asteroids early in its history. The spacecraft Mariner 10 detected a very weak magnetism around Mercury.
Venus: The Hot Planet

Venus is one of the easiest planets to pick out in the sky and is sometimes called the evening star. If you observe Venus with even a small telescope, you will see that it has phases like the Moon. When Galileo discovered this behavior, he realized that Venus must orbit the Sun at a closer distance than the Earth. Venus is the twin-planet of the Earth. It is close in size, weight and internal composition of the Earth. Like the Earth, it has similarly sized, dense nickel-iron core and a rocky mantle. However, their atmospheres are very different. Venus has a carbon dioxide atmosphere 90 times thicker than that of Earth, causing an efficient greenhouse effect by which its atmosphere is heated. The resulting surface temperature is the hottest of any planets - about degree Celsius (about 890 degree Fahrenheit). When the Earth first formed, it may have been rather like Venus is today. Life on Earth has broken down the dense carbon dioxide atmosphere that once existed here as well.

Earth: Our Unique Planet

Figure 2.9 - Venus

Figure 2.10 - Earth
Earth is the third in distance from the sun and the fifth largest of the planets in diameter. It is the only planet known to support life, although some of the other planets have atmospheres and contain water. Earth prospers with life, sustained by very complex systems that provide light, air, heat, water and food all in exquisite balance. It shows evidence of having been created specially to accommodate living things. The mean distance of the Earth from the sun is 149,503,000 km (92,897,000 mi.). This is exactly the right distance. If the Earth were much closer to the Sun or farther away from it, the temperatures would be too hot or too cold for life.

The Earth and its satellite, the moon, move together in an elliptical orbit about the sun. The eccentricity of the orbit is slight, so that the orbit is virtually a circle. The approximate length of the Earth’s orbit is 938,900,000 km (583,400,000 mi) (Turnbull, Moncrieff & Wood, 2004) and the Earth travels along it at a velocity of about 106,000 km/hr (about 66,000 mph) (Ramsey, 1989). This speed is precise enough to offset the gravitational pull of the Sun and keep the Earth at the proper distance. If the speed were decreased, the Earth would be pulled towards the sun and could become a wasteland like Mercury. If the Earth’s orbital speed were increased, it would move farther away from the sun and could become an icy waste like Pluto. The Earth rotates on its axis once every 23 hour (hr) 56 minute (min.) 4.1 second (sec.) based on the solar year. A point on the equator therefore rotates at a rate of a little more than 1600 km/hr (about 1000 mph) (The Time almanac, 2004). This provides regular periods of light and darkness. But what if the Earth rotated on its axis once every year, it would mean that the same side of the Earth would be facing the sun all year long. That side would become like a furnace desert while the
side away from the Sun becomes an icy wasteland. Few, if any, living creatures could survive in those extreme temperatures.

Man has been able to study the surface of his own planet for as long as the Earth has been inhabited. Yet, it is strange to think that before orbiting spacecraft had actually returned colored pictures of the Earth, no one had predicted accurately what it would look like from space. Now we know the Earth as a beautiful blue and white planet. From beneath the spiraling patterns of brilliant white clouds, the familiar shapes of the continents loom into view.

Many factors make the Earth unique in the solar system. It is the only planet with substantial amounts of water. The oceans cover more than three quarter of the surface. This huge amount of water coupled with the presence of oxygen in the atmosphere is a powerful force of erosion. Shifting weather behavior and long term changes in climate rapidly wear down the continental rocks. Glacier, wind and rain smooth mountains. Mighty rivers engrave channels through the rocks and the lowland plains, carrying sand from one place and laying it down in another.

Volcanoes and earthquakes are mechanisms that permit the Earth to release pressure that builds up internally as the rocks beneath our feet slowly slide. Earthquakes are sudden, unpredictable and fatal in many parts of the globe, but they teach geologists about the inner structure of the Earth. Vibrations spreading out from an earthquake are measured all over the Earth. The manner in which these vibrations travel shows that the Earth is made of five parts:

**The atmosphere**
The gaseous envelope that surrounds the solid body of the planet. Although it has a thickness of more than 1100 km (more than 700 mi.), about half its mass is concentrated in the lower 5.6 km (3.5 mi.) (DenBeste, Jordine & Love, 2005, p. 247). The atmosphere contains the right proportions of the gases that are essential for life. Some of those gases, by themselves, are deadly, but because air contains safe proportions of these gases, we can breathe them without harm. One such gas is oxygen, making up 21% of the air we breathe. Without it all life would vanish in minutes. But too much oxygen would endanger our existence. Pure Oxygen becomes toxic if breathed too long. In addition, the more oxygen there is, the more easily things burn, also, combustible materials would become highly flammable and there would be fires everywhere. Thank God that oxygen
The Universe

is diluted with other gases, mainly nitrogen, which makes up up 78% of the atmosphere. But nitrogen is much more than just a dilutant. During thunderstorms, millions of lightning bolts occur on Earth every day. This lightening causes the oxygen to combine with nitrogen. The compounds produced are carried to the Earth, by rain and plants make use of them as fertilizer. Carbon dioxide makes up less than 1% of the atmosphere. This percentage is just the right amount for the plants to survive, giving off oxygen in return. Humans and animals breathe in oxygen and exhale carbon dioxide. An increase in the percentage of the carbon dioxide is harmful to humans and animals. A decreasing percentage could not support plant life. What a marvelous, precise, self-sustaining cycle has been arranged for plant, animal and human life! The atmosphere does more than sustain life. It serves as a protective shell too. About 15 miles above ground, a thin layer of ozone gas filters out harmful radiation from the Sun. Without this layer, such radiation could destroy life on Earth. Also the atmosphere shields the Earth from bombardment by meteors. Most meteors never reach the ground because they burn up in their descent through the atmosphere, appearing to us as falling stars. Otherwise, millions of meteors would strike all parts of the Earth, resulting in extensive damage in life and property.

The hydrosphere

The layer of water that, in the form of the oceans, covers approximately 70.8% of the surface of the Earth. The hydrosphere consists mainly of the oceans, but technically includes all water surfaces in the world, including inland seas, lakes, rivers and underground waters. The average depth of the oceans is 3794 meter (12,447 ft), more than five times the average height of the continents. The mass of the oceans is approximately 1,350,000,000,000,000,000 (1.35 E+18) metric tons, or about 1/4400 of the total mass of the Earth (Lodders & Fegley, 1998, p. 164).

The lithosphere

Consisting mainly of the cold, rigid, rocky crust of the Earth extends to depths of 100 km (60 mi.). The rocks of the lithosphere have an average density of 2.7 and are almost entirely made up of 11 elements, which together account for about 99.5% of its mass. The most abundant is oxygen (about 46.60% of the total), followed by silicon (about 27.72%), aluminum (8.13%), iron (5.0%), calcium (3.63%), sodium (2.83%), potassium (2.59%), magnesium (2.09%) and titanium, hydrogen and phosphorus (totaling less than 1%). In addition, 11 other elements are present in trace amounts of from 0.1 to 0.02%. These elements, in order of
abundance, are carbon, manganese, sulfur, barium, chlorine, chromium, fluorine, zirconium, nickel, strontium and vanadium. The elements are present in the lithosphere almost entirely in the form of compounds rather than in their free state. These compounds exist almost entirely in the crystalline state, so they are, by definition, minerals. The lithosphere comprises two shells—the crust and upper mantle—that are divided into a dozen or so rigid tectonic plates. The crust itself is divided in two. The upper crust, of which the continents consist, is made up of rocks whose average chemical composition is similar to that of granite. The lower crust, which forms the floors of the ocean basins, is made of darker, heavier rocks (Jarumayan & Sadili, 2003).

The mantle
The mantle and core are the heavy interior of the Earth, making up most of the Earth’s mass. The dense, heavy interior of the Earth is divided into a thick shell, the mantle, surrounding an innermost sphere, the core. The mantle extends from the base of the crust to a depth of about 2900 km (1800 mi) (Krebs, 2003, p. 73). Except for the zone known as the asthenosphere, it is solid and its density, increasing with depth. The upper mantle is composed of iron and magnesium silicates, as typified by the mineral olivine. The lower part may consist of a mixture of oxides of magnesium, silicon and iron (Jarumayan & Sadili, 2003).

The core
Seismological research has shown that the core has an outer shell about 2225 km. (1380 mi.) thick. This shell is probably rigid and studies show that its outer surface has depressions and peaks, the latter forming where warm material rises. In contrast, the inner core, which has a radius of about 1275 km. (795 mi.), is solid. Both core layers are thought to consist largely of iron, with a small percentage of nickel and other elements. Temperatures in the inner core may be as high as 6650 deg. C (12,000 deg. F) (Jarumayan & Sadili, 2003).

This is our planet. We all fit inside this little blue point in the solar system in the Orion arm of the Milky Way galaxy in the Local Group cluster of galaxies in a vast universe.

• With all of our global conflicts and wars…
• All of our problems and injustices…
• All of our greatness, hope and frailties…
• All of our technologies, art and inventions…
• All of our civilizations…
• All of our animals and plants…
• All of our races and religions…
• All of our nations, countries and their governments…
• All of our loved ones and hated ones…
• A total of more than 6 billions of souls, trying to survive from one day to another.

Now stop and think for a while. You may think you are alone within this little blue point in the solar system in the Orion arm of the Milky Way galaxy and no one really care about your existence. Yet, someone knows how many cells are in your body, who dies and who lives. With Him are the keys of all the visible and unseen, all the knowledge, all the past and future. Funny, how man denies the existence of Allah and does not see the universe… Did it come to pass without a Creator?

Ask yourself again. How big are you? How big are the things that upset you today? Did you think today about God and his vast creation that we know and that we don’t know?

*Mars: The Red Planet*

![Figure 2.12 - Mars](image)

Viewed through a telescope, Mars looks like a rusty-red disk. Its surface has various light and dark parts, as well as white ice caps at the north and south poles. Like our Earth, Mars experiences a cycle of seasons - while one half of the planet has summer, the other half has winter. The markings on Mars and their changes led astronomers to speculate for many years that Mars might have simple plant life. Spacecrafts Viking I and Viking II
both landed on Mars in 1976. They took thousands of photographs from space so that a very great deal is now known about what Mars is really like. Mars has a core of iron and iron compounds with a diameter of 3,000 km. It also has a mantle of silicate materials. The whole planet is a great desert. The red color is typical of desert rocks that are found in many places on Earth and comes from the rusting or oxidation of iron. Even the sky looks red on Mars due to red dust in the air. Sometimes, great dust storms develop and about every ten years there is such a huge hurricane that the whole planet becomes engulfed in choking dust. Meteorites that crashed onto the surface from space created many craters. Volcanic activity too has contributed to the scenery on Mars. Mars is an inhospitable place. This cold and dry world has an atmosphere that is very thin compared to our Earth. The Martian air consists mainly of carbon dioxide, so people or animals could not breathe it. There is almost no oxygen. We know now that there are no plants on Mars.

**Jupiter: King of the Planets**

![Figure 2.13 - Jupiter](image)

Jupiter is one of the giant planets that include Saturn, Uranus and Neptune. They have the major share of all the planets’ mass. The giant planets have over a hundred times as much material as the tiny planets circling the inner solar system. The outer planets are mainly made of light gases such as hydrogen and helium, whereas the inner planets are made of rocks and iron. These giant planets are considerably larger than the inner planets. Jupiter, for example, is eleven times the diameter of the Earth and it has a volume over one thousand times as large. These giants are not so dense as the Earth either, for their densities are closer to that of water than of rock. All of the giants spin rapidly on their rotation axes. Jupiter takes less than ten hours to make a single spin. This high speed twirling makes the
planets bulge out at their equators. A further interesting feature of the outer planets is the many moons, over thirty in all. Jupiter and Saturn each has a moon that is slightly bigger than the planet Mercury. Saturn, of course, has intrigued us for centuries with its splendid system of rings. At times, Jupiter outshines all the stars in the night sky - only Venus gets brighter. Jupiter shows a variety of features, some of which can be seen by small telescope. The dark and light colored bands of clouds are well known. The Great Red Spot (GRS) is the dominant feature of the Southern Hemisphere of Jupiter, which has been observed through telescopes ever since the 1650s. Pictures from the spacecraft Voyager I show the circulating nature of the GRS and show small puffy features within the spot itself. It rotates counterclockwise with a period of 6 days and is currently about 26,200 km long by 13,800 km wide (Ronan, 1991). Jupiter emits radio waves and has a large and strong magnetic field. Like that of the Earth, this field is a dipole, similar to a bar magnet. Because of this magnetic field, Jupiter possesses a magnetosphere, which extends into the space around the planet. Jupiter’s magnetosphere is very different from that of the Earth. First, Jupiter’s magnetic field is about 100 times larger than that of the Earth, and second, the effect on it of the solar wind is some 25 times less because Jupiter is much further from the sun.

Another odd fact about Jupiter is that it sends out more heat than it receives from the Sun! This is because Jupiter is still shrinking by about one centimeter each year. This shrinking releases heat energy.

In the year 1610 Galileo discovered Jupiter’s four main moons. They are named Lo, Europa, Ganymede and Callisto. All four are easily spotted even with binoculars.

**Saturn: The Ringed Giant**
Saturn is similar to Jupiter in many ways, except that it has a magnificent series of rings. Saturn has ten satellites. One of them, Titan, is nearly 6000 km across, which makes it the largest moon in the solar system. Titan has its own atmosphere, made up of methane and ammonia. Saturn is not even as dense as water - a lump of Saturn matter would float on the sea.

Galileo first saw Saturn’s ring system in July 1610 with his newly developed telescope. His instrument was not good enough to show the rings clearly and all Galileo could report was that Saturn appeared to be a triple planet. When he was observing it some seven years later, it was near its edge and the rings were invisible to him. Saturn, he said, seemed to have swallowed its own children. The Dutch astronomer Huygens, who managed to observe that there was, indeed, a ring around Saturn, finally cleared the mystery in 1655 (Ronan, 2001). But the true nature of the rings was not discovered until two centuries later, in 1856, when James Clerk Maxwell (1831 – 1879) analyzed the evidence and showed that the gravitational field of Saturn would tear any solid ring to pieces. Maxwell concluded, therefore, that the rings could be composed of tiny particles in orbit around the planet (Ronan, 2001). Subsequent studies, including results obtained from the Voyager probes, confirm Maxwell’s conclusion.

The rings are a magnificent spectacle with no more than 1,000 meter thick. They extend outwards from 7,000 km above the cloudy surface of Saturn to more than 74,000 km. The most accurate counts to date show that there are at least 10,000 rings (Greeley & Batson, 2001, p. 244).

How the rings were formed is something of a mystery. There are two competing theories. The first is that they are the debris left behind after a satellite was torn apart by the gravitational forces of Saturn. The second is that they consist of material that failed to combine into a satellite at the time the planet was forming. The second theory is now thought to be the more likely.

**Uranus: The Tilted Giant**

The astronomer William Herschel discovered Uranus on the 13th of March 1781 (Allen, 2003, p. 236). Although Herschel had intended to work as a musician, he found astronomy fascinating. He taught himself about the skies and in 1773 he made his own reflecting telescope. With this he started to look at the stars. As his enthusiasm and knowledge grew, he built larger and larger telescopes.
Herschel decided to make a map of the stars and to record their positions and brightness. During one of these careful searches, he found an entirely new planet. This greatly surprised scientists who had not suspected that there were any more planets. Herschel wanted to name his new planet after King George III who then reigned England. Eventually, however, it was agreed to be called the planet Uranus. The choice of Uranus was made because in mythology Uranus was the father of Saturn and Saturn was the father of Jupiter.

Uranus has a diameter four times larger than the Earth and it takes 84 years to orbit the Sun. Occasionally, one can just about catch a glimpse of Uranus with the naked eye on a very dark night if one knows where to look. With an up-to-date chart of planet positions, one can find it with a small telescope. One odd feature about Uranus is that it is a planet lying on its side. The rotational axis is tipped over at an angle of 98 Degree. This means that the seasons on Uranus must be very strange indeed. For several Earth years, the Sun does not shine at all in one hemisphere, while the other is continuously bathed in sunlight.

**Neptune: The Last Giant**

Astronomers located Neptune in 1846 after a remarkable piece of detective work by mathematicians. After many years of careful observation, Uranus puzzled observers. It did not keep to the path around the Sun that astronomers predicted on the basis of Newton’s law of gravity. Something kept knocking it off course. English and French mathematicians realized that another planet might be tugging Uranus to one side. These wizards computed where the unseen planet must be. An observatory in Berlin
worked on these calculations and they found a new dot of light: planet Neptune had been found.

![Figure 2.16 - Neptune](image)

*Pluto: The last Planet*

![Figure 2.17 - Pluto](image)

Soon Neptune started to go off course after its discovery. Could there be yet another planet further out that was pulling Neptune to one side, astronomers wondered? In 1915, Percival Lowell worked out where it must be but nothing could be seen. Then, in 1930 Clyde Tombaugh found the ninth planet, almost by accident, after a long search. He named it Pluto (Boyle, 2009, p. 41).

Pluto seems similar to the larger, icy satellites of Jupiter or Saturn. Pluto is so distant from the Sun and so cold that methane freezes on its surface. Every so often, newspapers report that someone has predicted the existence of a tenth planet out beyond Pluto and even calculated its
location. All these sensational claims eventually turn out to be based on wrong calculations. Planetary scientists now think that there cannot possibly be a large unknown planet in our solar system. If it really existed we should by now be well aware of its gravitational pull on other planets.

**Searching the Missing Universe**

At the Carnegie Institution of Washington, astronomers have been measuring the speed of distant galaxies for years. They do that by measuring the amount of red shifts of bright stars at various distances from the galactic center. Their conclusion, based upon many measurements, was a tremendous surprise. In spiral galaxies, the stars move in circular orbits, with velocities that increase with increasing distances from the center. At the edges of spiral disks, velocities of 300 km/sec (about 185 mi/sec) have been measured at distances as great as 150,000 light-years (Steinicke & Jakiel, 2007, p. 32). This increase in velocity with increase in distance is unlike planetary velocities in the solar system, where the orbital velocities of planets decrease with increasing distance from the sun. This difference tells astronomers that the mass of a galaxy is not as centrally concentrated as is the mass in the solar system. A significant portion of galaxy mass is located at large distances from the center of the galaxy, but this mass has so little luminosity. Although scientists have seen its gravitational effects, no one has identified this “dark matter.” Apparently there is a phantom universe out there, consisting of 90 to even 99 percent of the mass of the cosmos (Bless, 1996, p. 546) and we have little knowledge of it!

Besides the ultimate question of how really the universe started, there are many other questions still hanging in the minds of cosmologists:

- What is the age of the universe?
- Where and what is the missing 90 - 99 % of the mass of the universe?

Since Hubble’s heyday in the 1920’s, astronomers have known that the universe is expanding. Scientists use the Hubble constant to deduce the age of the universe. As mentioned before, Hubble constant is the ratio of the speed of recession of the galaxies and their distances. However, there are two loopholes; what is the right distance and what is the right speed? It is extremely hard to measure how far away galaxies are. If they came in standard brightness, like 100-watt light bulbs, the astronomers
could just figure that a dimmer galaxy was more distant than a bright one. Unfortunately, they do not. Edwin Hubble himself did not realize this and triggered an earlier “age crisis” in the 1940’s, when he announced that the universe is two billion years old (Edwards, 2001, p. 2). Geologists already knew that the Earth was over 4 billion years old!

To make this puzzle more complex, Hubble constant may not be a constant after all. It is hard to imagine that distances, speeds and distribution of the galaxies do not affect Hubble constant. Hubble constant is a simple ratio of speed and distance. What if Hubble constant is called Hubble variable and the latter is in the form of much more complicated formula?

Moreover, astronomy’s most reliable light bulb is a type of star called the Cepheid variable, whose inherent brightness can be easily calculated. But Cepheid variable can be spotted only in the neighboring few galaxies. But nearby galaxies are virtually useless in filling the other half of the equation - the expansion rate. The reason is that, in a universe that is expanding everywhere, neighboring galaxies are flying apart at a much slower speed than distant galaxies. Nearby galaxies are also subject to their neighbor’s gravity. The Andromeda galaxy, for example, is being pulled closer to our Milky Way, despite the overall cosmic expansion.

Therefore, since accurate distances can be measured only nearby, while useful speed of galaxies are found only deep in space, astronomers do the best they can to bridge the gap. They use the close galaxies to estimate the distances to the far away galaxies. But the method is inexact, which is why astronomers have not been able to agree on what the age actually is. The current estimate of the age of the universe ranges from 8 to 25 billion years, which indicates that “something” is very wrong!

Over the past few years, astronomers have uncovered the existence of the Great Wall, a huge conglomeration of galaxies stretching across 500 million light years of space; the Great Attractor, a mysterious concentration of mass pulling much of the local universe in the direction of the constellation Hydra and Centaurus; the Great Void, where few galaxies can be found; and galaxies caught in the agony of formation a mere billion years after the Big Bang, when they should not exist.

The existence of the Great Wall, the Great Attractor, the Great Void, superclusters and clusters of galaxies indicate that the universe is full of extremely massive matters with heavy gravity pulling those structures
together. These mysterious matters account for 90 to 99% of the mass of the universe! Lately scientists have revived an old idea called the cosmological constant. This is a kind of powerful “antigravity” force that forces the galaxies to fly apart even as ordinary gravity tries to draw them together. It was first conceived by Einstein himself, who then rejected it as “the greatest blunder of my life” (Davies, 1996, p.135). Einstein in 1915 thought that he needed it in his general relativity to balance the influence of the gravity. He was sure that the universe had to be static that he modified his theory to make this possible by introducing this cosmological constant. The relativity equations showed that without a cosmological constant, the universe would have to be either contracting or expanding. If he had stuck to his guns, he might have won another Noble prize. Recent research work suggests that the cosmological constant may be responsible for 65% of the expansion of the universe. (American Mathematical Society, 2007, p. 9267).

The universe makes a lot of sense if one can assume that just after it was born, all of the space went into overdrive, exploding outward for the briefest fraction of a second. This inflation theory explains, among other things, such mysteries as why the universe looks pretty much the same in all directions and how a smooth distribution of matter evolved into today’s lumpy distribution, with clusters of galaxies surrounded by empty space. The inflation theory does not just explain cosmic phenomena; it makes predictions. It suggests that the blackness of space is only seemingly empty. In fact, it probably is abundant with vast amount of matters and energy that cannot be directly detected because they do not shine.

Dark matter is more than merely theoretical. The first hint that the cosmos contains more than what meets the eye came back in the 1930’s when astronomer Fritz Zwicky pointed his telescope at the Coma cluster of galaxies and realized that it should not exist (Lang, 1999, p. 134). Individual galaxies in the cluster were orbiting each other so fast that they should long since have flown out into deep space - unless gravity from unseen matter was keeping them together. No one took Zwicky too seriously; the idea was crazy, first of all and besides, the measurements of orbital speed were difficult to make and prone to errors. In the 1970’s astronomers discovered that some galaxies are rotating too fast on their own axis indicating an extra gravity from unseen matter.

Not until a decade ago was the dark matter finally accepted as a huge problem rather than a nagging anomaly. Observation after observation
showed that galaxies moved as if they were embedded in cloud of an invisible matter containing ten times as much mass as was accounted for by visible gas and stars. Clusters of galaxies behaved as if there was 30 times as much dark matter as visible matter exerting its gravitational pull. To satisfy inflation theory, the ratio would have to be even greater: 100 times as much dark matter as visible.

The challenge of identifying and understanding the dark matter that forms 90 to 99% of the mass of the universe has become one of the most irresistible and frustrating quests in science. For about a decade, the search of the missing universe has proceeded on two fronts:

1. Attempts to directly observe the missing matter.
2. Attempts to identify it using computer models. This is based upon the assumption that dark matter is made of a given particle or substance. Then the behavior of the universe is simulated to see if the result will look like the present universe.

The missing universe could be composed of any, some or none of the following dark matters:

**Neutrinos**

These are ghostly subatomic particle that have no electrical charge and interact only weakly with ordinary matter. They are also known as hot dark matter because they fly through the space at nearly the speed of light. They are known to exist in great numbers that they may account for some 20% of the dark matter.

Wolfgang Pauli (1930) first suggested neutrinos as a factor to permit an understanding of the energy distribution of electrons (Caldwell, 2001, p. 65). They have been detected in 1953 in a high-power nuclear reactor. The sun emits plenty of neutrinos from the nuclear furnace at its core and, at night, these particles from the sun come up from below, the Earth being almost transparent to them. In 1987, light from an exploding star in the galaxy of the Large Magellanic Cloud reached Earth after traveling for 170,000 years. Enormous numbers of neutrinos were generated in this explosion and a sensitive neutrino detector in Japan picked up about 10 of them.

Neutrinos, left over from the Big Bang, are the most abundant particles of physics. In the time it takes to read this sentence, billions and billions
of them pass through the body of every human being on Earth, leaving no trace! They pass through ordinary matter as though it was not there at all. Unless a neutrino scores a direct hit on an atomic nucleus, it leaves no hint of its passage. And such hits are so unlikely that the average neutrino can easily penetrate a slab of thick lead, a trillion miles thick, without impacting a single atom.

Recently, physicists from Canada and Japan have found the most convincing evidence yet that neutrinos have a tiny mass after all. The neutrino’s mass cannot be much, around one billionth of a proton’s. This finding means that scientists will have to adjust their theories of the universe.

**WIMPs** (Weakly Interacting Massive Particles)
These are also known as cold dark matter because they are slow moving. However, they are purely hypothetical particles derived from speculative theories. They perform somewhat better in computer models, but cold dark matter cannot account for the newly discovered features of the cosmos as Great Wall, Great Void and Great attractor.

**MACHOs** (Massive Compact Halo Objects)
They are assumed to be large planets similar to the size of Jupiter or very dim stars made of ordinary matter. This is the simplest theory, but so many would be required that it seems unlikely that all the dark matter could be made of them.

Recently, scientists found a planet orbiting a star known as 47 Ursae Majoris, 200 trillion miles from Earth in the Big Dipper (Cooper, 2007, p. 118). This planet is twice the size of Jupiter (the size of Jupiter is 1300 times that of Earth). A second planet, circling the star 70 Virginis, in the constellation Virgo, has six times the mass of Jupiter. These planets, like Jupiter, probably consist of gases such as hydrogen, ammonia and methane.

Picking out a planet by a telescope against the glare of a star is like trying to spot a 100-watt bulb next to the sun. Astronomers find it much easier to look for the subtle influence of a planet on its parent star, such as the effect of gravity of planets on the motion of an orbiting star.
**Black holes**

These are objects with gravitational pulls so intense that light cannot escape from them. They are strongly predicted by the general theory of relativity, but their presence in such abundance should have been detected already.

Astronomers had evidence that some galaxies were strong emitters of X-rays, the source of which was not known. Donald Lynden-Bell at Cambridge University suggested that super dense bodies could provide the answer (Comins, 2003, p. 393). Such a body would attract matter, accelerating it to a huge speed as it fell in. The falling matter would move at an immense speed, emitting X-rays in huge quantities. The extreme density of such a body would create an intense gravitational field. This would mean that space-time around the body would be so strongly curved as to cause the interior to be closed off from the outside universe. Nothing could escape from them. This is why such objects are now called black holes.

![Diagram of space-time](image)

*Figure 2.18 - Space-time diagrams of the sun, white dwarf, Neutron star and black hole*

The British cosmologist Stephen Hawking and his colleagues have established that such black holes can be described by the equations discovered first by Roy Kerr of New Zealand (Comins, 2003, p. 238). Hawking believes that minute black holes could have been formed from very dense matter crushed together at an early stage of the Big Bang. Black holes of larger masses probably exist in the central region of spiral and elliptical galaxies. They also form after the collapse of very massive stars.
Physicists and astronomers, hoping to observe dark matter directly, have searched for objects both large and subatomic. On the theory that the dark “thing” is made of some as yet undiscovered particles, they have built every conceivable sensitive detector. They have looked for all the above and more, but results have been inconclusive. Neutrinos with mass might help solve the problem of the missing universe and thus provide support for the inflation theory, but in some ways that would just make the crisis in cosmology worse. The more dark matter in the universe, the harder it is to explain the new findings about the younger universe of 8 to 12 billion years.

If the universe has a lot of dark matter, as the inflation theory predicts, its gravity would be slowing down the expansion of the universe, making the universe younger than it looks. If, on the other hand, there is relatively little matter, the expansion would be slow and the older universe would be the more accepted theory.

We live on a planet in a universe with no concrete evidence of its age and with over 90% of its mass is missing. Only God knows the best.

Applications of the Law of Repetition

The Law of Repetition may be used to predict behavior in different branches of science. If one branch of science is developed fully, while a second branch is not yet fully developed and if the two branches agree in their basic laws up to a certain point, then we may be able to extend the second branch based upon our knowledge of the first branch. This concept will be applied to include repetitive phenomena in aerodynamics and relativity. Aerodynamics is fully developed below and above the speed of sound, while the relativity is developed only below speed of light. The aerodynamic model may be applied on the relativity model, leading to a very interesting conclusion. The analogy of aerodynamics and relativity can be shown as follows:

1. In aerodynamics, Mach number (M) is defined as the speed of an object divided by the speed of sound. In relativity, the speed parameter (R) is defined as the speed of an object divided by the speed of light.
2. In aerodynamics, Prandtl-Glauert factor is defined as $1/\sqrt{1-M^2}$. In relativity, Lorentz factor is defined as $1/\sqrt{1-R^2}$.
3. Both factors are used to predict quantities at different speeds and both factors reach infinity if $M=1$, $R=1$. 
The theory of relativity advocates that the maximum speed of any object is the speed of light. This is based upon the fact that Lorentz factor reaches infinity at the speed of light and there should not be an infinite value in the physical laws. As it was mentioned before that at the Big Bang the speed of the universe rushed out at a speed that is faster than the speed of light. It was suggested that speed of light is a limitation on objects in space, but not on space itself. This statement negates the notion that the ultimate speed is that of the speed of light in all conditions.

In aerodynamics, before approaching the speed of sound, it was thought that aircrafts would never reach the speed of sound. The air resistance of aircrafts increases dramatically as the speed of sound is approached. Theoretically, this air resistance should become infinite at the speed of sound, hence the term "sonic barrier." However, wind tunnel testing of aircraft models showed that the air resistance increases when approaching the speed of sound, but it does not reach infinite value at the speed of sound. The coefficient of air resistance reaches a finite high value at the speed of sound, then starts decreasing at speeds higher than the speed of sound. Actually, Prandtl-Glauert factor is changed from \((1/\sqrt{1-M^2})\) at subsonic speeds to \((1/\sqrt{M^2 -1})\) at supersonic speeds.

In 1964 Bertozzi conducted an experiment of accelerating electrons to various measured speeds and – by an independent method – also measured their kinetic energies (French, 1968, p. 6). He found that as the force that acts on a very fast electron is increased, the electron’s measured kinetic energy increases to very large values but its speed does not increase appreciably. He concluded that no matter how much energy an electron is subjected to, its speed should not exceed the "light barrier."

From the above, the similarity of the aerodynamic and relativity models is quite obvious below the speeds of sound and light.

So, the following questions arise:
1. Is it possible that two models are similar at speeds higher than the speeds sound and light?
2. Is it possible that Lorentz factor behaves like that of Prandtl-Glauert factor at speeds higher than the speeds sound and light?
3. Is it possible that Lorentz factor becomes \((1/\sqrt{R^2 -1})\) at speed larger than the speed of light?
4. If the answers to the above questions are affirmative, then the Law of Repetition is much more powerful than we ever imagined!
In the name of Allah, Most Gracious, Most Merciful.

12. And indeed We created man (Adam) out of an extract of clay (water and earth).

13. Thereafter We made him (the offspring of Adam) as a Nutfah (mixed drops of the male and female sexual discharge) (and lodged it) in a safe lodging (womb of the woman).

14. Then We made the Nutfah into a clot (a piece of thick coagulated blood), then We made the clot into a little lump of flesh, then We made out of that little lump of flesh bones, then We clothed the bones with flesh, and then We brought it forth as another creation. So blessed be Allah, the Best of creators.

(Quran 23:12-14)

Life is as complex as the universe and if the last chapter provided you with a dose of spiritual experience, this chapter will supply you with another dose. The factories, inside your 100 trillion cells, will bewilder you. The length of the DNA in your body, which exceeds the distance between the
Earth and the Sun, is incomprehensible. The optimal structural design of the birds’ bones attests to an Omnipotent Creator. Yet the evolutionists want to convince everyone that we have gone from hydrogen to human! In doing that, they are introducing the following definition of the hydrogen gas:

“Hydrogen as an odorless, tasteless, flammable, invisible gas which, if given enough time (say 10 billion years), becomes people!”

Again, as you read this chapter, keep asking questions: Who, Why and How. You will have only one logical answer: “God is the Mighty Creator and He made it His Way.”

What exactly is life and how and where did it begin? Scientists’ answers to these questions are changing as discussions and theories pour in from fields as diversified as oceanography and molecular biology, geochemistry and astronomy. Did life start as organic soup in a warm pond, or under the hellish skies of a planet, unknown to us, racked by volcanic eruption and threatened by comets and asteroids? Then the intruders from outer space may have delivered the raw material necessary for life. The basic concept of evolution is that life started spontaneously, here on Earth or on an unknown planet and took a very slow process to evolve from atoms to amino acids to proteins, to cells, to fish, to amphibian, to reptile, to mammal and finally to human. This idea is very similar to some monster like Frankenstein, pieced together from different dead elements and jolted into life by lightning bolts.

Proteins are the building blocks of living organisms. They make up much of the structure of all life forms. At the atomic level, a protein molecule consists almost entirely of a handful of elements - hydrogen, nitrogen,
oxygen, phosphorus, sulfur and most importantly carbon. Because carbon easily forms multiple bonds with as many as four other atoms at once, it acts as a kind of glue cementing together the pieces of life’s complex molecules. The reason that carbon bonds so easily is that it has relatively few electrons. In a carbon atom, electrons orbit a nucleus in what may be thought as concentric shells. In all atoms, each shell may hold certain number of electrons. The inner shell accommodates as many as two, while the next one can hold eight electrons. However, a carbon atom has only six electrons; two electrons in the inner shell and four in the next, leaving four vacancies in the outer shell.

Proteins are large complex organic compounds, made up of twenty different kinds of smaller compounds called amino acids. Large protein molecule consists of hundreds of thousands of amino acids. One protein differs from another in its number, sequence, kind and arrangement of amino acids. A peptide is a two or more amino acids kept together by a chemical bond called the peptide bond. Hair and fingernails are proteins that differ because of amino acids. Hemoglobin is a blood protein made of 4 chains of amino acids. The twenty different kinds of the amino acids can form an almost endless number of proteins. That is factorial 20 which equals 2.5E18 or 2.5 billion. It is estimated that the number of kinds of proteins in a human body ranges from 10,000 to 50,000 (Schnur, 2007). Taking a typical small protein to be one with 60 amino acids, the number of proteins that can be made from the 20 amino acids is 20E60, or 10E78. This is an enormous number, possibly greater than the total number of atoms in the universe (Bettelheim, Brown & Campbell, 2009, p. 323).

It is hard to imagine that a human being starts as one single fertilized egg. It grows and develops inside its mother until birth. At birth, a baby is made up of over 60 trillion cells. As early as 1900, scientists knew that chromosomes were located inside the nucleus of a cell. They also knew that chromosomes carried hereditary information in complex molecule called DNA, short for deoxyribonucleic acid. DNA is named for the sugar deoxyribose, which it contains. However, the structure of the DNA was not known until 1953, when scientists suggested a model for DNA. That model looks like a twisted ladder with rungs, made up of four nitrogen bases. One molecule of DNA may contain 20,000 pairs of these bases.
When a cell is divided and replicates itself, by a process called mitosis, the DNA molecule must also make exact copies of them. First, the DNA molecule comes apart like a zipper being unzipped. The two halves of the DNA separate between the base pairs. Then new bases, from the contents of the nucleus, attach to each half like puzzle pieces. Thus two identical DNA molecules are formed. Like a biological librarian, DNA preserves the information needed to fashion the protein molecules. A similar compound called RNA, short for ribonucleic acid, helps turn these instructions into reality. No evolutionist can be sure how or when DNA and RNA first emerged on Earth. The key to the DNA-RNA partnership is a shared language, spelled out along the DNA strands in three-letter “words” called codons. A codon is made up of the bases of three successive DNA nucleotides. The most common codons simply specify a particular amino acid.

If codons are words, genes are the sentences they form, beginning with a special initiator codon and ending with a terminator. A gene’s message consists of a list of required amino acids, arranged in an order needed to make a particular protein. DNA’s genetic messages are readily duplicated by messenger RNA, a molecule that effectively assembles itself during the copying process. Incorporating DNA’s instructions in its own structure, the messenger RNA then travels out to the machinery of the outer cell, where it begins the manufacturing of a specific protein molecule by following the recipe it carries.

To translate genetic information into proteins, living organisms follow a complex manufacturing process. Work begins as a strand of messenger RNA enters the cell’s protein assembly area, carrying a genetic code for a particular protein. The messenger RNA goes on its way through the watery interior of the cell in search of a structure called the ribosome. Typically a millionth of an inch across, these sophisticated protein assembly machines are equipped both to read the messenger RNA’s orders and to carry them out.
Once the messenger RNA docks at a given ribosome, the ribosome looks for the beginning of the RNA message, then attaches there. Messenger RNA proceeds to wiggle through the ribosome, allowing it to read the RNA codons in sequence. For each codon, the ribosome chemically signals to the transfer RNA, a type of RNA, whose job is to deliver a single amino acid. When the transfer RNA arrives, carrying the required amino acid, it touches down just long enough to unload its amino acid. Then, the ribosome links the incoming amino acid to a growing peptide chain. This process is remarkably efficient even in a bacterium; one ribosome can attach twenty separate amino acids to a peptide chain every second!

After the final codon has been read and its message obeyed, the ribosome releases a finished peptide chain into the cell. The peptide’s electrochemical properties will quickly wrap it and other peptides into the folded arrangement that forms a particular protein molecule. The molecule’s work will depend on its identity: the protein known as collagen provides structural support in bone and ligaments, for example, while proteins called antibodies fight disease.

Assuming that all of the above was self-developed without the Hand of a Mighty Creator is analogous to believing that a monkey randomly throwing pieces of brick, iron, wood and glass over a long span of time to make a magnificent high-rise building.

It is extremely hard to believe that a biology teacher explaining the above process without getting excited. This is not a simple process. Yet, this is a simple proof that God exists and He is the Only One that can design this process.

Would you do yourself a favor? Read the above process again and ask yourself who directed this step? It is inconceivable that nature could organize this process with such detail and efficiency.

Facts and Assumptions

To approach this chapter that describes life, its complexity and its models of existence, it may be useful to tell the following story of “Who has done it?”

One time, a police detective received an emergency phone call that there was a murder case in a house. He rushed to the murder scene to find a man
in bed with blood spread over his chest as well as the bed. The detective found a gun on the bed near the hand of the deceased.

“Based upon this evidence, the detective concluded that the man committed suicide.”

After further investigations, the detective found out that the window of the bedroom was opened. Searching the house, the detective found that it looked like a robbery.

“Based upon this evidence, the detective concluded that the man was murdered in an armed robbery.”

After further investigations, the police found the robber, who swore that he had found the window opened and the man was laying in bed and all what he did was rob the house. He insisted that he did not kill the man. The murder weapon was determined to belong to the victim. Further investigations revealed that the man was married and he had life insurance with his wife as beneficiary. A few days later, the detective found out that the wife tried to collect the insurance money and made preparations to leave the country. When the wife was questioned, she confessed that she killed her husband for his insurance money.

“Based upon this evidence, the detective concluded that the man was murdered by his wife.”

In the above simplistic murder case, evidence was showing a suicide case, then a homicide case by a robber and finally a murder by the wife. Assumptions based upon incomplete and inconclusive evidence at certain times may not be correct and may never reach the status of facts. If someone is on a mission to prove an assumption and if he becomes obsessed to reach a certain conclusion, facts and evidence may be twisted or even fabricated to present one’s point of view.

I remember this story every time the news comes on to support or discredit the evolutionary theory. A small fossil discovery somewhere in Africa or Siberia sometimes is hailed as the final evidence that will prove the evolution model. A few months later, a Big Bang of complex life existence on Earth is confirmed in the Namibian desert. This Big Bang of life presents another proof that the evolution theory is a big bust.
In considering the questions related to the origin of life, popular opinion or emotion sways many times. To avoid this and to reach logical conclusions, we need to consider the evidence with an open mind. It is interesting to note that evolution’s best advocate, Charles Darwin, indicated an awareness of his theory’s limitations. In his conclusion to “The origin of Species (1958),” he wrote of the grandeur of the “view of life, with its several powers, having been originally breathed by the Creator into few forms or into one,” thus making it evident that the subject of the origins was open to further investigations. But the present day evolutionary theory generally eliminates any mention of a Creator.

Before proceeding further, a clarification may be in order: Scientific achievement is not the issue here. Every informed person is aware of the amazing accomplishments of scientists in many fields. Scientific study has dramatically increased our knowledge of the universe, the Earth and of living creatures. Studies of the human body have opened up improved ways of treating illness and injuries. Therefore, it is only right to respect the skills and the achievements that have added so greatly to our knowledge. Now let us introduce the following two models:

1. **Evolution Model**, as used in this book, refers to organic evolution - the theory that the first living organism developed from non-living matter. Then as it reproduced, it is said to have changed into different kinds of life forms, producing ultimately all forms of life that have ever existed on Earth, including humans. All of these are accomplished without divine intervention.

2. **Creation Model**, on the other hand, is the conclusion that the appearance of all life forms can only be explained by the existence of the Almighty God, who designed and made the universe and all the basic life forms on this Earth.

**History of Evolution**

It is hard to say at what time before the nineteenth century that the idea of evolution in the animal kingdom was first raised. Several Greek philosophers thought that the living world was subject to transformations. Their conclusions were based on philosophical ideas and speculations.

In 1801, the French naturalist Lamarck became the first to introduce the concept of evolution. He published his work in a book called Zoological
Philosophy. Cuvier, another French naturalist published History of Fossilized Bones in 1812, in which he compared present day animals with fossils showing the existence of extinct species (Webb, 2002, p. 2). Charles Darwin (1809-1882), British naturalist, laid the foundation of the evolutionary theory with his concept of the development of all forms of life through the slow-working process of natural selection. After graduating from Cambridge in 1831, the 22-year-old Darwin was taken aboard the English survey ship H.M.S. Beagle. He noted, for example, that certain fossils of supposedly extinct species closely resembled living species in the same geographical area. In the Galapagos Islands in Ecuador, west of South America at the equator, he studied some forms of life such as huge turtles and swimming lizards not found anywhere else in the world. Darwin saw that these animals were similar to more common forms. The similarities convinced him that the Galapagos animals were related to more common turtles and lizards. In Galapagos, Darwin saw finches that shared so many features, but differed mainly in their beak structures, eating habits and their sizes. He thought they must have had a common ancestor. Each of the 13 famous finches of Galapagos was identified as a distinct species.

After returning to England in 1836, Darwin began recording his ideas about changeability of species in his notebooks on the Transmutation of Species. Darwin’s explanation for how organisms evolved was brought into sharp focus after he read An Essay on the Principle of Population (1798), by the British economist Thomas Robert Malthus, who explained how human populations remain in balance (Webb, 2002, p. 3). Malthus argued that any increase in the availability of food for basic human survival could not match the large rate of population growth. The latter, therefore, had to be checked by natural limitations such as famine and disease or by social actions such as war. Malthus introduced the term “Natural Selection” that Darwin popularized. Darwin immediately applied Malthus’s argument to animals and plants and by 1838 he had arrived at a sketch of a theory of evolution through natural selection. For the next two decades he worked on his theory and other natural history projects.

Darwin’s theory was first announced in 1858. In a paper presented at the same time by Alfred Russell Wallace, a young naturalist had come independently to the theory of natural selection. Darwin’s complete theory was published in 1859, in The Origin of Species. Often referred to as the “book that shook the world” (Huxley, 1958), the book was sold out
on the first day of publication and subsequently went through six editions. Darwin’s theory of evolution by natural selection is essentially due to of the food-supply problem described by Malthus that the young born to any species intensely compete for survival. Those young that survive to produce the next generation tend to embody favorable natural variations (however slight the advantage may be) and these variations are passed on by heredity. Therefore, each generation will improve adaptively over the preceding generations and this gradual and continuous process is the source of the evolution of species. Natural selection is only part of Darwin’s conceptual scheme. He also introduced the concept that all related organisms are descended from common ancestors in his second book "Descent of Man" (1871).

In "The Origin of Species", Darwin did not offer solid evidence of human evolution, only suggesting in the conclusion that in the future, "Much light will be thrown on the origin of man and his history", (2003, p. 15). In the same book, Darwin described serious challenges to the whole concept of natural selection in three chapters with the following titles:

- **Difficulties of the Theory**, chapter six.
- **Miscellaneous Objection to the Theory of Natural Selection**, chapter seven.
- **On the Imperfection of the Geological Record**, chapter ten.

In his second book, Darwin presented his guesswork about humans and apes. He believed that humans were the products of biological evolution and that they descended from primitive ancestors. His hypothesis did not state that humans descended from any of the great apes: orangutan, gibbon, chimpanzee and gorilla. Both humans and apes descended from some common primate ancestors that are now extinct.

The reaction to "The Origin of Species" was immediate. Some biologists argued that Darwin could not prove his hypothesis. Others criticized Darwin’s concept of variation, arguing that he could not explain the origin of variations. In fact, many scientists continued to express doubts for the following 50 to 80 years (Morris & Parker, 1987). The most publicized attacks on Darwin’s ideas, however, came not from scientists but from religious opponents. The thought that living things had evolved by natural processes denied the special creation of humankind and seemed to place humanity on the same plane as animals; both of these ideas were serious contradictions to orthodox theological opinion.
What do algae, a whale, a giant tree and we have in common? These are just four of the 1,500,000 different living organisms found on Earth (Ricklefs & Whiles, 2006, p. 480). They are about as different as living things can be; yet they are all alike in at least two ways. First, they all carry on basic life processes. Second, they all are made up of cells. In the late 1600’s, people started using microscopes to observe things smaller than the naked eye could see. An Englishman called Robert Hooke was examining materials under the microscope (Cooper & Hunter, 2006, p. 136). One of these materials was a piece of cork. He cut a very thin piece of cork and examined it under the microscope. He observed tiny, orderly, empty spaces that reminded him of the cells in a honeycomb. He called them cells.

The cell is the fundamental structural unit of all living organisms. Some cells are complete organisms, such as the unicellular bacteria and protozoa while others, such as nerve, liver and muscle cells, are specialized components of multicellular organisms. Cells range in size from the smallest bacteria, which are 0.1 micron in diameter, to the egg yolks of ostriches, which are about 8 cm (about 3 inches) in diameter (Russell, Wolfe & Hertz, 2007, p. 93). Although they may differ widely in appearance and function, all cells have a surrounding membrane and an internal, water-rich substance called the cytoplasm, the composition of which differs significantly from the external environment of the cell. Within the cell is genetic material, DNA, containing coded instructions for the behavior and reproduction of the cell and also the chemical machinery for the translation of these instructions into the manufacturing of proteins. Viruses are not considered cells because they lack this translation machinery; they must parasitize cells in order to translate their own genetic code and reproduce themselves.

All cells are dynamic at some stage of their life cycle, in the sense that they use energy to perform a variety of cell functions: movement, growth, maintenance and repair of cellular structure, reproduction of the cell and manufacture of specialized cell products such as enzymes and hormones. These functions are also the result of interactions of organic molecules.

The structure and functions of our cells could be compared to a central government or a factory. A factory, for example, is a place of great activity. Fuel and raw materials are delivered to the factory; the plant
workers follow a set of directions from the main office as they do their jobs. Fuel is burned in the generators to provide energy. Energy is used to put the raw materials together into finished products. During the manufacturing process, wastes are produced and need to be removed. The finished product is packed and stored until it is shipped out of the factory. These manufacturing processes inside a factory are very similar to the life processes carried out inside a cell. The finished products are the compounds that form the many parts of the cell. The main office and the planning department of our factory cell are the nucleus. The nucleus of the cell is the control center that controls everything that happens inside the cell.

**To have an appreciation of your human body** (Walker, 2009, p. 7):

- The human body contains 100 trillion cells (100,000,000,000,000 cells)
- There is a nucleus inside each human cell (except red blood cells). The size of the nucleus is less than four ten-thousandths of an inch in diameter.
- Each nucleus contain 46 chromosomes arranged in 23 pairs, one chromosome of every pair is from each parent. Our 46 chromosomes “threads” linked together would measure more than six feet.
- The chromosomes are filled with tightly coiled strands of DNA. The length of the DNA in your body is more than the distance from Earth to the sun.
- Genes are segments of DNA that contain instruction to make proteins - the building blocks of life.

**Each of the 100 trillion cells in each human functions like a walled city:**

- Power plants generate the cell’s energy.
- Factories produce proteins; vital units of chemical commerce.
- Complex transportation systems guide specific chemicals from point to point within the cell and beyond.
- Guards at the barricades control the export and import markets and monitor the outside world for any signs of danger.
- Disciplined biological armies stand ready to grapple with invaders.
- A centralized genetic government maintains order.
Is there a chance that all of the above came from a hydrogen atom? Human being had to be created by a Mighty God. When the theory of evolution was first proposed, scientists had no clue of the fantastic complexity of a living cell.

**Early Atmosphere**

Scientists agree that the early atmosphere of the Earth was far different from what it is now. Some feel that it consisted of methane, ammonia and water vapor. Others think it was composed of carbon monoxide, carbon dioxide, hydrogen and nitrogen. Most believe that the main elements of organic compound - carbon, hydrogen, oxygen and nitrogen - existed in the early atmosphere. In 1953 Stanley Miller circulated hydrogen, methane, ammonia and water vapor that he thought to be part of the early atmosphere throughout a chamber. He subjected these gases to electric discharges. The discharges represented the assumed sources of energy (lightning bolts and ultraviolet radiation) of the early atmosphere. Water vapor condensed and settled at the bottom of the chamber. At the end of one week, water was studied and found to contain large quantities of some of the many amino acids that are the building block of proteins (organic compounds).

It was therefore concluded that organic compounds could have been produced in a similar manner in the early atmosphere of Earth. This experiment exists in most textbooks of biology and is presented as a model of the origin of life. Some biology teachers even hail this experiment as a definite proof that “life happened spontaneously on Earth” (Carmell & Domb, 2000, p. 358). Miller got only four kinds of the 20 amino acids needed for life to exist. Other experiments like this one have produced other kinds of amino acids. However, scientists were still unable to produce all the 20 necessary amino acids under conditions that might simulate the early atmosphere. Some scientists still think that this is startling evidence that life can start spontaneously when the conditions are right.

Miller assumed that Earth’s early atmosphere was similar to the one in his laboratory. He said, “The synthesis of compounds of biological interest takes place only under reducing (free oxygen does not exist) conditions”, (Miller & Orgel, 1974). But evolutionists maintain that oxygen was present in the early atmosphere. This creates an interesting dilemma that
is expressed by Hitching as follows: “With oxygen in the air, the first amino acid would never have got started; without oxygen, it would have been wiped out by cosmic rays” (Hitching, 1982).

However, any attempts to predict the composition of the Earth’s early atmosphere can only be based on guesswork or speculation. Our present knowledge does not permit any actual facts about the exact composition of the early Earth’s atmosphere. Although Miller’s experiment is still a classic subject about the early atmosphere, new insights of planetary formations have made it extremely doubtful that methane and ammonia ever existed in the early atmosphere.

**Origin of Life**

The warm little pond that Darwin imagined as life’s birthplace contained a rich broth of organic soup. Over eons, he hypothesized that they would gradually assemble themselves into primitive organisms. For the next century, Darwin’s assumption was expanded by the neo-evolutionists that decided that the pond was really the ocean and began trying to figure out where the building blocks of life could have come from.

Most colleges and high schools textbooks in biology, zoology and life sciences present the origin of life from the evolutionists’ point of view. Life just started through a series of happy coincidences that led to the development of the first living cell. Reading these books, one would find a great deal of usage of speculative sentences like “could have been”, “might have been”, “it was suggested” and so on. However, the usual final conclusion of this subject is that “life developed on Earth through a series of chemical reactions that just happened when the circumstances were right” (Stanley, 2004, p. 266). This is part of the brainwashing of the education systems that are mostly controlled by evolutionists. No mention of the probability of the occurrence of a single step in this hypothetical scenario. There is no mention of the fact that we do not know exactly the composition and the environment of the early atmosphere. There is no mention of any suggestions that there might be another alternative for the origin of life just in case that the hypothetical steps to start life do not add up. The biggest irony is that the origin of life is presented as a fact using doubtful languages. For example, read the *Time Magazine* article “Up from the Apes”, Aug 23, 1999.

Some scientists imagined that simple organic molecules produced in the
early atmosphere could have fallen from space during heavy rain. The origin of these molecules could have been under the blazing skies of a faraway planet racked by volcanic eruption and bombarded by comets and asteroids. It is hypothesized that the molecules reacted to form more complex compounds such as fat, protein and nucleotides. They then happened to sweep into the newly formed oceans.

What are the chances of the above scenario to be happened entirely in the above sequence? Realistically speaking, not a single chance. However, in a science fiction movie, a group of scientists traveled back in time to watch the formation of this organic soup! The lightning and ultraviolet would quickly decompose any complex amino acids that formed. Miller saved the four amino acids that he obtained only because he removed them away from the discharges. Had he left them there, the discharges would have decomposed them.

However, if it were assumed that amino acids somehow reached the oceans, then under the surface of the water there would not be enough energy to activate further chemical reactions. Water in any cases prohibits growth of more complex molecules. Thus, once the amino acids are in the water, they must get out of it if they are to form larger molecules and evolve towards becoming proteins. However, once they get out of the water, they are faced with the destructive ultraviolet light again. In other words there are no chances to reach this first and relatively simple step (getting the amino acids) in the evolution of life. It is therefore difficult to see how polymerization (linking together smaller molecules to form bigger ones) could have proceeded in the early ocean since the presence of water favors depolymerization (breaking up bigger molecules into smaller ones) rather than polymerization. That is to say that water has the property of dissolving matter and not combining them. This is one of the many difficult problems that encounter evolutionists.

To continue this science fiction’s scenario, groups of these molecules could have come together in the oceans. Some kind of a membrane might have formed that kept them separated from the surrounding water. The chemical surrounded by the membrane might be called the first living cell on Earth! Nevertheless, this membrane is extremely complex, made up of proteins, sugar and fat molecules. The cell membrane includes channels and pumps that specifically control the influx and efflux of nutrients as well as waste products. These specialized channels involve highly specific proteins, which could not have been present at the very beginning of life.
Other molecules outside the membrane might have been brought together in a simple “life machine.” Some protein might have served as enzymes to activate chemical reactions. Sugar might have been formed and used as a source of energy. Nucleic acids eventually took over control of the activities (including reproduction) of these first cells.

It is also suggested that there was competition for energy sources between the primitive cells. This struggle for existence might have led to the evolution of the first producers. These are organisms that used photosynthesis to make their own food and provided food for the earlier consumers. Photosynthesis would have led to the existence of free oxygen, which in turn could have been used for respiration. As a result, more energy would be available for other functions.

As you read the above sequence of hypothetical events that led to the first living cell, you should ask yourself about the feasibility and the likelihood of each step. The chance of composing a living cell in such a manner is equal to the chance of composing a book by an infinite number of monkeys using an infinite number of computers in ten billion years!

There are many unanswered questions that face evolutionists. For example, there are actually over 100 amino acids, but only 20 of the 100 are required for life’s proteins (Sadava, Heller & Orians, 2006, p. 44). These amino acids come in two groups. Should they be formed at random, as in the imaginary organic soup, it is most likely that each half would be from one group. And there is no known reason why either group should dominate living cells. Yet, the 20 amino acids used in producing life’s proteins are from one group! It must be admitted that the explanation of this problem still remains one of the most difficult questions. Evolutionists just may never be able to explain it. What is the probability that 20 amino acids, of the same group, would come together by chance to form a protein molecule? To have an appreciation of this question, you may try the following experiment:

Mix a hundred grains of rice with another hundred grains of lentil. The rice represents one group and the lentil represents the other group. Plunge a spoon randomly in the pile as many times as you want. The objective is to get only 20 grains of rice arranged in a specified place in the spoon. How many numbers of times do you think it will take you to achieve this objective? Do you think that it is even possible to do that? No. Then how would it have been possible in the hypothetical organic soup?
To understand the meaning of probability of something to happen, assume that you have 2 cards, 1 and 2, with faces down and you want to get them in ascending order 12. So, if you get 1 and then 2, you are correct. But if you get 2 and then 1, you are wrong. Thus there is one chance in two that you get the right combination. This probability calculation is based upon the assumption that once you get a wrong combination you do not repeat it because there is a chance that you may be unlucky and always get the wrong combination 2 and then 1.

Now, assume that you have three numbers: 1, 2 and 3 and you want to get the combination in ascending order 123. There are six possible ways to a combination: 123, 132, 213, 231, 312 and 321. Since you are required to get only 123, then you have 1 chance in 6 of success. The number of chances is obtained by calculating the factorial as follows:

- Number of combination to 2 cards = 2 x 1 = 2
- Number of combination to 3 cards = 3 x 2 x 1 = 6
- Number of combination to 4 cards = 4 x 3 x 2 x 1 = 24
- Number of combination to 10 cards = 3,628,800
- Number of combination to 20 cards = 2.43E18
- Number of combination to 100 cards = 1E158

Now, assume that you already have the required 20 amino acids and you just want to put them in the right sequence in a single protein molecule. If each trial to arrange the 20 amino acids takes one second, you would require 2.43E18 seconds to do that. If we assume that the universe is 30 billion years old, then this number can be calculated in seconds as follows:

$$30,000,000,000 \times 365 \text{ days} \times 24 \text{ hours} \times 60 \text{ minutes} \times 60 \text{ seconds} = 1E18 \text{ seconds}$$

It is now obvious that the time required to arrange the 20 amino acids in a single protein molecule (2.43E18 seconds) may be more than double the age of the universe! This is without considering that the 20 amino acids are of the same group and there are over 100 amino acids.

According to Henry Morris in “Scientific Creationism”, the chance of even a medium protein molecule forming at random in an organic soup is only one in 1E600 (one followed by 600 zero!). In plain English, this means that someone may try this 1E600 times before getting a chance to
succeed. Mathematicians consider this kind of chance as never happen. This number of 1E600 is larger than the estimated total number of electrons in the universe, which is 1E80.

Yet, another greater difficulty for evolutionary theory involves the origin of the complete genetic code - a requirement for cell production. The old philosophical paradox of “the chicken or the egg?” can now be stated “the proteins or the DNA?” This creates an interesting dilemma that is expressed by Hitching as follows “Proteins depend on DNA for their formation, but the DNA cannot form without pre-existing proteins”, (1982, p. 66). Some evolutionists think that they have the answer; they developed by chance together at the same time and in the same place! Does this strike you as reasonable explanation even if this statement is coming from a modern serious scientist?

It is obvious that the origin of life discredits evolution.

Discrediting Evolution: The Fossil Record

Just as the biological hypothesis on the early atmosphere and the origin of life are hailed as factual evidence of the evolution, the fossil record is acclaimed as the most direct evidence for evolution! Fossils are the remains of past forms of life uncovered from the crust of the Earth. These may be complete remains (mammoths and insects), skeletons or hard parts of them such as teeth, bones, or shells. When most organisms die, they decompose quickly, so no record of their life is left. A hard part may be preserved if it is surrounded by clay or sand soon after death. The surrounding deposits prevent decomposition. Then, when these sediments turn to rock over long periods of time, the part of the organism is preserved.

Fossils formed in the sedimentary rock are the most common fossils. Layers settling on the top of each other form sedimentary rocks. When layers are not disturbed, the lower layers are the oldest and the upper layers are the newest. The fossil record is important, since no one has witnessed the evolution of a major group of species. Nevertheless, the existing record provides dim and imperfect view of the ancient life. The complete record of the past is always beyond our reach since so many organisms left no trace. Yet incomplete as the record is, biologists rely on new discoveries and the continued study of the existing fossils.
Darwin devoted one complete chapter in his book on the imperfection of the geological record, chapter ten. He conceded, “The distinctness of specific (living) forms and their not being blended together by innumerable transitional links is a very obvious difficulty.” The existing life forms do not offer any supports to the theory of evolution. That is why the fossil record became so important. It was felt that at least fossils would provide the evidence that the theory of evolution needed.

If the fossil records were complete and the evolutionists were honest serious scientists, everyone on Earth would accept the evolution as a fact. This record would show, for example, how a giraffe evolved. The long neck of the giraffe is often used to illustrate the evolution hypothesis. The long neck evolved from short-necked ancestors. The short-necked giraffe could graze on grass, but as the grass became scarce, so the only remaining food source was the leaves of trees. Then each short-necked giraffe would stretch its neck to reach the leaves on the trees. As these giraffes reproduced, the result of the neck stretching would be passed to their offspring. This hypothesis can be criticized on several points. Where are, in the fossil record, giraffes with short necks? There is no answer. Why did this happen only to giraffes? There is no answer. Why do not we have donkeys, for example, with long necks? There is no answer. Why did not all the grass-eating animals develop long necks? There is no answer.

If evolution were a fact, the fossil record would reveal a gradual changing from one kind of life form to another. There should be at least one fossil that shows these changes. For example, there should be fish fins growing into amphibian legs with feet and toes as well as gills growing into lungs. There should be reptiles with front limbs growing into bird wings, back limbs growing into legs with claws, scales growing into feathers and mouths growing into beaks. But the fossil record does not include any of these. As Darwin himself asserted “The number of intermediate varieties, which have formerly existed, (must) be truly enormous.” He is right, but there are no developing organs in the fossil record, except in the imagination of the evolutionists.

In the evolutionary theory, it was suggested that one species evolved to two or three other species. If we know that we have 1,500,000 species on Earth, then we should expect at least 1,500,000 transitional forms. They should be abundant on Earth. They should be everywhere. However, any of the fossils that was manipulated to present a single transitional form cannot lend any credibility. As a matter of fact, the above statement
of Darwin regarding the number of the intermediate forms, should be considered as a final discredit of the whole fiction of evolution.

Evolutionary theorists have argued that the gradual change from one life form to another took a lengthy period of time for which the fossil record was missing. So, evolutionists blame the incompleteness of the fossil record for not uncovering links between species. Even Darwin wondered about that. This frustrating situation led him to say: “Why then is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps is the most obvious and serious objection which can be argued against the theory”, (1909, p. 334). The fossil record in Darwin’s time proved to be discouraging to him in another way. He explained: “The abrupt manner in which whole groups of species suddenly appear in certain formation has been argued by several paleontologists as a fatal objection to the belief in the transmutation of species”, (1909, p. 354). He added “There is another and allied difficulty, which is much more serious. I allude to the manner in which species belonging to several of the main division of the animal kingdom suddenly appear in the lowest known fossiliferous rocks. The case at present must remain inexplicable and may be truly argued as a valid argument against the (evolutionary) views here entertained”, (1909, p. 359). Darwin attempted to explain these stubborn problems by attacking the fossil record. He said: “I look at the geological record as a history of the world imperfectly kept, imperfect to an extreme degree.”

Now, after extensive excavating of over a hundred million fossils, all catalogued and identified and the record is still so imperfect in the eyes of the evolutionists. The existing record shows only one fact and one course: basic kinds of living forms appeared in a very short time and did not transform appreciably for a long period of time. No developmental links between one major kind and another has ever been established. So what the fossil record actually reveals is the opposite of what the evolution hypothesis predicted.

Evolutionists maintain that life evolved in a very long time by chance through chemical reactions between non-living atoms. The Earth is now known to be formed about 4.6 billion years ago. Life is thought to form sometimes between 4.4 billion and 3.8 billion years ago (Rice, 2007, p. 296). However, heavy bombardment of the Earth by meteors occurred 4.5 billion to 3.8 billion years ago had possibly destroyed all
existed life. Volcanic eruptions expelled gases and contributed to a thick atmosphere of carbon dioxide, nitrogen and carbon monoxide with traces of ammonia, methane and hydrogen sulfide. Possible evidence of life was found in the rocks of Greenland about 3.8 billion years ago. The earliest known fossils of the blue-green algae that lived 3.5 billion years ago were found in Australia. The first one-celled organisms with a nucleus lived on Earth was 2.1 billion years ago (Hoffman, 2007, p. 19). The first multicelled algae existed 1.8 billion years ago (Gibson, 1999, p. 144). Thus for 4 billion years and until about 550 million years ago, life on Earth consisted only of algae, bacteria and plankton (Time, 2005). Then, at the start of what is called the Cambrian period (between 543 to 510 million years ago), in a burst of sudden creativity lasting no more than 10 million years, an astonishing array of multicelled animals show up in the fossil record. These creatures represent life forms than can swim, fly and crawl. This time is often called an “explosion or the Big Bang” of life forms. During these 10 million years, all the major group of invertebrates made their first appearance in the most spectacular rise in diversity ever recorded on our planet. Snails, sponges, starfish and many other complex sea creatures appeared. Some also had efficient and complex eyes more than any human.

After the Cambrian Big Bang of life, the testimony of the fossil record is exactly the same for all kinds of life: all life forms appeared suddenly with no transitional forms. Insects and plants present serious problems to evolutionists. If all life forms evolved from hydrogen, oxygen, carbon and other atoms, then what are the evolutionary ancestors of insects and trees? Cockroaches appeared in the fossil record 280 million years ago (Copeland, 2003, p. 21). Flies appeared in the fossil record 40 million years ago (Ross, 1998, p. 40). Ants appeared in the fossil record 25 million years ago (Morris, 1985). Cockroaches, flies and ants in the fossil record are very similar to their present day counterparts. Cockroaches are still cockroaches. Flies are still flies. Ants are still ants. Cockroaches did not evolve to flies and flies did not evolve to ants!

As for the trees, they followed the same trend of every other life form. The fossil record contains leaves from oak, palm and pine trees that existed for 180 million years (Gish, 1989). These ancient leaves are also very similar to their present day counterparts. The animal kingdom follows the same pattern. There are variations, but all are easily identified as the same “kind.”
Another fact, which should discredit the evolutionary theory, is that there exists no evidence in the fossil record of partially formed bones or organs that could be considered the start up of a new function. Evolution’s textbooks are silent about the origin of flying creatures such as bats and birds. Evolutionists speculate about the evolution of one kind of finch to another, because they have common features. Nevertheless, they are silent about the origin of any finch. Also, none of these transitional forms have been found. There is not even a clue of a credible link.

- Are there any fossils of giraffes or camels with necks of one quarter, one half and three quarters of their present necks? No.
- Are there any fossils of birds evolving a beak from a reptile jaw? No.
- Is there any fossil evidence of fish developing an amphibian pelvis? No.
- Is there any fossil evidence of fish fins turning into amphibian legs, feet and toes? No.

The average layman can produce many other questions like the ones above and some can be even funny. An unbiased zoologist may expand on the above questions and write a complete book to further discredit the speculation of evolution. The fossil record is our only authentic evidence that reveals the type of life forms that lived on Earth for hundreds of millions years. It clearly indicates that different life forms appeared suddenly and remained distinctly different without any trace of transitional forms. When the evolutionists claim that the fossil record support the speculation of evolution, they are committing a serious mistake. They present incomplete and distorted pictures to students and the public at large. It does not support the speculation of evolution. It is definitely a strong evidence of sudden creation of separate life forms. The fossil record reveals that the Omnipotent God created insects, trees, animals, humans and all other life forms in their separate forms.

It is obvious that the fossil record discredits evolution.

Discrediting Evolution: Humans or Apes?

Nearly 140 years after Darwin’s Origin of species, evolutionists are still promoting his message in the educational systems and in the media.
However, the longer scientists study the fossil record, the more convinced they become that evolution did not make a simple transition from ape to human or that apes and humans both emerged from a common primate. There were many false starts and dead ends. Evolutionists know that a single bone that does not fit in the picture can upset everything. Also, polls consistently show that half of the Americans reject this atheistic hypothesis. They prefer to believe, against all the marketing tactics of the evolution, the religious account of the creation model. Evolution should be taught as a controversial hypothesis accepted by some scientists and not as a fact supported by all scientists.

Recall the saying of “A picture is better than a thousand words.” Books, magazines and TV documentaries provide pictures with artists’ renderings of ape evolving to human. These artistic pictures supply the transitional links that do not exist in reality. Are apes our ancestors? Evolution hypothesis claims they are. That is why we see articles in magazines with titles such as: “How man began? Or how ape evolved to man? Or the missing link between ape and man.” Speculation and very creative artistic pictures answer these big questions.

Figure 3.3 - Magazines claim the missing links are found!!!
One giant step for mankind. TIME Magazine (July 23, 2001)

What we are left with is the imagination of nineteenth century scientists and the marketing of evolution by the twentieth century neo-evolutionists. And we all know what the new techniques in marketing can do to an inferior product. It will still be sold. What is striking in the media is the existence of strong desire coupled with great excitement to announce the discovery of a reconstruction of an ape-man that is older than the
oldest one on record. To achieve this, few bones and big imaginations are used. The fossils’ discoverer, then, starts collecting on his fame and newfound wealth by overestimating the importance of one’s own work. We watch the message of evolution in an interesting and fascinating show on television, while religious talk shows present subjects that most people knew and heard many times. Sometimes it looks like everyone is gaining from evolution: neo-evolutionists are gaining wealth and fame and some laymen might not want to accept the notion that God exists.

If the natural selection of Darwin is correct, why, then, only some life forms always move higher on the evolutionary ladder? Evolutionary theory assumes that humans are more advanced than apes, apes are more advanced than the rest of mammals, mammals are more advanced than reptiles, reptiles are more advanced than amphibians and amphibians are more advanced than fish. According to natural selection, given time and we had 4 billion years, we should have only one species and that is human. We should not have the inferior fish, amphibians, reptiles, or mammals. Only the fittest humans should survive. Then we were told that 1.5 million species still exist on Earth.

*Why didn’t all the inferior apes evolve to the superior humans?*

*Why didn’t all the inferior reptiles evolve to the superior mammals?*

*Why didn’t all the inferior amphibians evolve to the superior reptiles?*

*Why didn’t all the inferior fish evolve to the superior amphibians?*

*Why didn’t all the inferior species evolve to one single superior species?*

*Evolution is an incredible amount of argument over remarkably very little facts!*
The Apes Family

1. Rat-Like Primate:

Mammals existed on Earth for more than 100 million years before they began to dominate the Earth some 70 million years ago (Haviland, 2000). One of the earliest fossils of a mammal claimed to be in the order of primates that gave birth to the lineage of present day apes is a small and rodent-like. They were insect-eating quadrupeds about the size and shape of squirrels. This mammal is called prosimian or premonkey. It had thirty-four teeth as compared to most present day monkeys with thirty-two teeth. But is there enough evidence in the fossil record to support that this tiny animal was the ancestor of monkeys? No.
2. **Aegyptopithecus:**

![Aegyptopithecus](image)

Figure 3.6 - Aegyptopithecus

![Aegyptopithecus skull](image)

Figure 3.7 - Aegyptopithecus skull female (*Left*) and male (*Right*)

After a gap of about 40 million years, the Fayum Depression in Egypt yielded remains of the earliest known members of the ape family (Science Digest, 1981, p. 41). It was named **Aegyptopithecus** - Egypt ape, the suffix “pithecus” means ape. This creature is said to have lived about 30 million years ago. The fossil record does not show how the prosimians evolved into monkeys and apes. Since the discovery of **Aegyptopithecus** in 1967 to 1980, these apes were called the missing links and the common ancestors of the ape and human families (Time, 1980, p.58).
3. Ramapithecus:

After another 20 million to 25 million years gap (Cattermole, 2000, p. 239), in the fossil record, another fossil creature has been presented as man’s earliest known ancestors. It was given the official name Ramapithecus - Rama’s ape (Rama was a mystical prince of India). Fossils of it were found in India about half a century ago and in Kenya. Not many Ramapithecus specimens have been found so far; a total of some fifteen jaw fragments and more than forty teeth, representing perhaps twelve to twenty creatures. Nevertheless, that was enough to serve as the basis for a number of interesting speculations. These few specimens were found in India, China, Africa, Germany and Spain. The hypothesis about Ramapithecus came from the study of his teeth and his small canines. A long list of speculations was developed about his size, eating habit, body structure and the tools that he used from 40 teeth. This list includes the usual speculative terms such as “maybe”, “perhaps”, “there are reasons to suggest”...etc. Using some teeth and fragmented jaws, an ape was produced through artistic imaginations. This step was followed by the marketing propaganda as another overwhelming missing link in the human ladder of evolution! Natural History magazine, August / September 1979, stated: “How did Ramapithecus, reconstructed only from teeth and jaws - without pelvis, limb bones, or skull - sneaked into this manward marching procession?” Obviously a great deal of wishful thinking must have gone into such an effort to package the few bones to headline stories.
4. Oreopithecus:

Oreopithecus, another so-called ancestor, is in fact an animal that existed 12 million years ago after a gap of about 10 million years in the fossil record. It lived in the forest and its arms were very long - much longer than its lower limbs - as in the case of apes that swing from one tree to another. It is very small in size in comparison with today’s man (1.10 to 1.20 Mt.) and its brain capacity is quite small (400 cc.) (Washburn, 2007, p. 169). As in the case of Ramapithecus, the fossils were not accompanied by any traces of human activities. Some scientists even consider Oreopithecus as an independent family.

5. Australopithecus:

Figure 3.10 - Australopithecus afarensis (left) compared to Human (right)
After about eight million years gap in the fossil record, Australopithecus - southern ape - was discovered in South Africa in 1924 (Andrews & Stringer, 1989, p. 30). This creature lived about 3.9 million years ago in the Savannah and not in the forest. It was about four feet tall. Fossils also were found near the great African Lakes. Remains were also found in Java in sediments that are possibly one to four million years old. Australopithecus had a small ape-like skull, heavy jawbone and was pictured as a hairy ape walking on two legs. The teeth are small at the front and very large at the back. Its brain capacity remains small (about 500 to 550 cc.)

The reason for his peculiar teeth, the same as in the case of Ramapithecus, was probably because of their habitat and resulting diet. Baboons, living today in Ethiopia, have teeth and jaws very similar to Ramapithecus and Australopithecus. The human like teeth and jaws of these baboons are apparently related to their habitat and diet and are clearly not indicative of any approach to humans.

A cousin of Australopithecus was discovered in 1967 in the Omo Valley in Ethiopia (Larsen, 2010, p. 30). The fossilized remains of a woman in her twenties were discovered in 1974 in the Afar, in sediments that date about 3.5 million years ago (Alters, 1999, p. 579). Sixty percent of the bones and much of the skull was missing. Its brain size was a third of the size of a human brain and its skull was very much like a chimpanzee’s. Scientists could tell that this creature stood 3 feet 6 inches tall and walked fully upright (Gould, 2001, p. 236). This is because the knee joint was built in such a way that the animal could fully straighten its legs. While the discoverer was examining the first fossils in his tent, the Beetles’ song Lucy in the Sky with Diamond was playing on his tape recorder. So he gave it the name Lucy. The marketing forces of evolution promoted that name instead of those Latin names that the laymen cannot pronounce. Now, probably everyone on Earth has heard of “Lucy”.
Needless to say that evolution publications and newspapers acclaimed the discovery of Australopithecus and Lucy. “The mystery is finally solved!” “It was Australopithecus that eventually evolved to Homo sapiens, or modern men.” “By all the evidence men at last had met their long unknown, early ancestors.” “The evidence was breathtaking, the long-sought missing link had finally been found” (Moore, 1961).

More researchers are now rejecting the idea that Australopithecus and Lucy resemble human beings. Anatomist Solly Zuckerman wrote in his book “Beyond The Ivory Tower”, (1970): “When compared with human and simian (ape) skulls, the Australopithecine skull is in appearance overwhelmingly simian - not human. The contrary proposition would be equated to an assertion that black is white” He also stated: “Our findings leave no doubt that Australopithecus resembles not Homo sapiens but the living monkeys and apes. If any Australopithecus were found alive today, they would be put in zoos with other apes.”
6. Homo Erectus

A number of fossils are now grouped under the generic name Homo Erectus (upright man), including the somewhat notorious Java man, Peking man, Heidelberg man and Meganthropus. They are believed to have lived about 500,000 years ago, to have walked upright, to have had brains of about 1000 cc. and to have developed a crude culture involving simple implements and weapons.

The evidence of all this is ambiguous, to say the least. Java Man was later discarded by his discoverer and the bones of Peking man disappeared during World War II and are unavailable for examination. Heidelberg Man consisted solely of a large jaw and Meganthropus consisted of two lower jawbones and four teeth and has been assigned by many to the Australopithecus.

However, other fossils of this general kind have apparently been found at various places around the world. It may well be that Homo Erectus was a true man, but somewhat degenerate in size and culture, possibly due to inbreeding, poor diet and a hostile environment.

In 1984, a 12-year-old boy of the Homo Erectus species, dated at 1.6 million years old was excavated in Kenya. His body skeleton was virtually indistinguishable from our own and his skull and mandible looked much
like Neanderthal man, except the brain capacity was only about 800 cc. This skeleton is believed to be the most complete skeleton of an early human “ancestor” ever found.

Some may question the true humanness of Homo Erectus on the basis of his small brain size (900 - 1100 cc.) (Morris, 1985). However, that is definitely within the range of human brain size, although on the low end of the scale. Furthermore, there is no necessary correlation of brain sizes and intelligence.

The Human-Like Family

Modern type humans, with the capacity to reason, plan, invent, build upon previous knowledge and use complex languages, appear suddenly in the fossil record some fifty thousand years ago.

1. Neanderthal Man

The most famous of all so-called “missing link” is discovered in 1856 in the Neander Valley near Dusseldorf in Germany (Byrne, 1969, p. 6). Not until 1908, however, was the first more or less complete skeleton uncovered in France. Later identical types turned up in Spain, Italy, Greece, Morocco, Palestine, Iraq and Java.
Although Neanderthal man was a medium size, perfectly biped and endowed with well-developed muscles, his face shape was different from that of man today: His forehead was low and the absence of a chin gave his face a muzzle-like appearance. Compared to the ape family, Neanderthal man’s skull is more developed: its capacity increased to 1,300 -1,600 cc (Seth, 2003, p.144). The development of his intellectual level is manifested by the quality of weapons and implements discovered near the remains of Neanderthal man. He most probably found shelters in caves, in which he made fire and arranged his surroundings to suit his convenience. Near his remains, burial sites were discovered for objects thought to be required in the afterlife (large pieces of animals, antlers and horns, stone implements), which may suggest some spirituality.

One wonders whether Neanderthal man gave birth to Homo sapiens or whether both coexisted together. Fossils such as the Qafzeh Man discovered in Palestine, possess a skull that is almost the same as that of Homo sapiens. The coexistence of the two types may well have led to interbreeding. While this is simply a hypothesis, there is reason to think that man as we know him today displayed the same principal anatomical characteristics he has displayed some 35,000 to 40,000 years ago, thus constituting the species that we call Homo Sapiens.

2. Cro-Magnon Man

The best preserved and most accurately dated skeleton was found in France, which was discovered in 1868 in the Dordogne region. The height of Cro-Magnon Man is 1.80 Mt., (Regal, 2004, p. 53) and he still
Life possesses certain archaic features: The occipital region of the skull is not yet entirely developed, the face is very wide but the orbits are situated at a lower position and the nose is protuberant. These few remaining features were quickly to disappear and then there were no noticeable changes in human morphology. Fossils of Cro-Magnon Man were discovered in many parts in Africa, Asia and Europe.

Adam’s Family

Since I do not believe the human interpretation of the evolution of species, because it just does not make a convincing argument, I am obliged to believe the creation story of The Creator Himself. The authentic words of God states in the Quran:

“Behold, thy Lord said to the angles; “I will create a vicegerent on Earth.” They said: “Wilt thou place therein one who will make mischief and shed blood? - Whilst we do celebrate Thy praises and glorify Thy holy (name)?” He said: “I know what ye know no”, (Surah 2, Ayah 30).

The fascinating part of the above story is the answer of the angels to the Words of God. The angels, though pure and holy and endued with power from God, yet they do not know the future. Also their question was in no way a form of objection to the Will of God or a question to God’s Wisdom. They do not know that the creature, that God will create, will make mischief and shed blood. So how did the angles get this idea about the behavior of that creature? The only explanation is that: “from what they already know about the Earth and its existing creatures at that time.” They definitely knew about living creatures on Earth that were killing one another.

Now, who were those creatures at the time of Adam?
• Were these creatures fishes, amphibians, reptiles, birds, or mammals?
• Were these creatures Australopithecus, Home Erectus, Neanderthal or Cro-Magnon Man?

I do not claim to have an answer for the above questions and God knows best. But I understand from the above verse that there were life forms at the time of Adam and that Adam was not the first living creature on Earth and God knows best.
Discrediting Evolution: Comparative Anatomy

The fossil record establishes the evidence of all life forms that existed on our planet. As we have seen the fossil record clearly does not support the claim of the evolutionists that life evolved from one life form to another in a very long time. The biological Bang at the start of the Cambrian period represents a major crisis in the evolution hypothesis. The lack of consistent and abundant transitional links between different species is an obvious puzzle in the evolutionary ladder.

Darwin used the buzz word “natural selection” that was actually introduced by Malthus and coined it with intuitive marketing and selling power. Now, most people on Earth know about natural selection, just as they know about hamburgers.

Any life form that lives on Earth has to interact with the environment. Living organisms have to move, reproduce, take nutrition and dispose waste. As such, they need to have systems that allow the performance of the tasks of living. The study of systems of different organisms is called comparative anatomy. For example, dogs, sheep and horses have similar legs and foot structures in number and position of bones. Each, however, is slightly different. The main structure of human’s arms, lion’s fore limb and bird’s wing is also similar with slight variation. Does comparative anatomy support evolution, or is it another version of the Law of Repetition? The evolutionists believe that comparative anatomy is another “proof” of the evolution. This is without single evidence in the fossil record that details a transformation of one species to another. The fact that the main structure of the legs or fore limbs in some creatures is similar can well be understood. They are considered the optimal structure for moving in the common environment. This is just like saying that wheels are the optimal structure for moving cars on the common ground. The general appearance of all wheels is the same in spite of differences in size or treads patterns. No evolutionist can conclude that wheels evolved from a common ancestor without being considered insane.

Comparative anatomy indicates a Creative genius is behind all that and His Law of Repetition is at work. In Galapagos, Darwin observed the famous 13 different kinds of finches. This is always presented as a “proof” of evolution from one ancestor finch to 13 “species” based upon the shape of their beaks. This can simply be explained as a Divine adaptation of the shape of the beaks to the eating habits of the finches. They are all still
finches. They did not evolve from or to other species. They represent variations within the same family of finches. The family of humans has more variations than the family of finches. Within the family of humans, there are different races based upon the geographic location of the races. A classification of the human race may be defined as black, red, yellow and white. There are many variations between these broad classifications. If you assemble a group of humans from Nigeria, China, Pakistan, Sweden, Eskimo and Brazil with different heights, colors and shapes of eyes and lips, can any evolutionist claim that they belong to different species? Or, are they the same species with variations to adapt to their environments? The point is all species share many common features that are required for living in the same Earth’s environment and differ in the detail and specifics that suit the differences in the common environment. The fossil record and the existing life forms support the existence of varieties within one species and reject the concept of evolution from one species to another.

The following part will focus on the assumed transitional forms from one species to another. As you read on, consider the probability of each change happening by chance and spontaneously. The deception that some neo-evolutionist zoologists play on their students’ mind is to show two creatures from two species that have some similarities and then make the superficial point that evolution is correct.

**From Protozoan to Invertebrates?**

![Figure 3.16 - Protozoa](image)
From Invertebrates to Vertebrates?

One of the most important fossil gaps is that between the protozoans, one celled microorganism found in Precambrian fossils and the abundant complex marine invertebrate life of the Cambrian. Invertebrates are life forms that do not have backbones, such as sponges and jellyfish. How did that happen? The fossil record is absolutely silent.

From Fish to Amphibian?

Vertebrates are life forms that have backbones. Invertebrates have soft inner parts and hard outer shells; vertebrates have soft outer parts and hard inner parts that is the skeleton. The earliest vertebrates were certain kinds of fish. How did the backbone of vertebrates evolve? Did it evolve in steps or as one piece? There is no evidence at all.
1. **Fish**: There exist about 25,000 species of fish (Hart, 2002, p. 178). They have fins, gills and streamlined body.

2. **Amphibian example**: Amphibian is a creature that could live in both water and on land, such as frogs and toads. (Greek, amphi. Both or double, + bios, life).

3. **Backbones**: The backbone of fish would have had to undergo major adjustments for the fish to become amphibians. You do not have to be an anatomist to look at a fish and a frog to imagine how the backbone of the fish changed by itself to that of the frog.

4. **Pelvis**: Amphibian has pelvis, while fish does not. No fossil fish exists that shows how the pelvis of amphibians evolved from fish.

5. **Skull**: The front part of the skull of frogs is larger than that of fish, whereas the back of the skull is much smaller. Look at the skull bones of fish and frogs. Are they similar or different?

6. **Fins & limbs**: Evolution assumes that fish fins evolved to jointed limbs in amphibians. This requires major alterations in muscles and nerves.

7. **Gills & Lungs**: For fish to evolve to amphibians, gills must change to lungs. Extensive efforts to attach the amphibian to some fish ancestors have all failed. The lungfish has been a preferred example, since in addition to gills; it has air bladder of single or paired lobes for breathing when it is temporarily out of water. This air bladder is
also called swim bladder because it acts as a flotation device. Some evolutionists are tempted to think the air bladder evolved to lung. Why did not all other fish develop air bladder?

8. **Hearts**: In fish, hearts consist of two chambers, but in amphibians, hearts consist of three chambers. Fish fossils do not show how the third chamber was developed.

9. **Hearing**: Fish have receptor cells through their bodies for detecting wave vibrations and currents in water, but most frogs and toads have eardrums.

10. **Tongues**: Fish do not have an extendible tongue, but amphibians do.

11. **Eyes**: Fish do not blink, whereas amphibian eyes can blink.

**From Amphibian to Reptile?**

**Reptile examples**: Dinosaurs, snakes, lizards, crocodiles, turtles. (Latin, repto, to creep)

**Fertilization**: External fertilization is the main rule in amphibians where eggs are soft and jelly like. Embryos in amphibian eggs release their waste in the surrounding water as soluble urea. Reptiles reproduce by internal fertilization. They have new sexual organs and new mating procedures that require major changes in anatomy and instinct. After the
internal fertilization, the zygote travels into the oviduct and develops a shell around it. Shelled eggs provide a complete environment for the developing embryo. They supply protection, moisture and food and a means for gas exchange and waste removal. Inside the shell there are various membranes and sacs. A sac holds the fluid in which the embryo grows. Another sac receives and stores embryonic wastes, serving as a bladder. The yolk sac contains blood vessels through which the food passes to the embryo. The entire embryo is surrounded with a sac filled with fluid to keep it moist. The reptile embryo is distinctive in having an egg tooth to help it break out of egg. The reptiles’ complex eggs are supposed to be evolved from the soft eggs of the amphibians. How did the shell evolve? How did the sacs and membranes evolve?

From Reptile to Bird?

Birds’ example: Pigeons, geese, ducks, parrots, hawks, owls.

1. **Flight**: Flight of birds is one of the biggest mysteries in the evolution theory. Neo-evolutionists speculate that birds had to fly to escape attacks from wild animals. All species have enemies. Why do not zebras fly to escape attacking tigers? And why do not tigers grow wings to fly after zebras? Actually, why not all species fly? Simply, birds fly because God wants them to fly. There is no other reasonable explanation. Bird’s flight, especially the familiar flapping of birds,
is a very complex process. Despite careful analysis by conventional aerodynamic techniques and high speed photography, bird’s flight is not well understood. Nevertheless, we know that the bird wing is an airfoil that is subject to recognized laws of aerodynamics. The aerodynamic shape of the wing causes suction on the upper surface and pressure on the lower surface of the wing. The result is a net upward force, which is called lift that lifts birds in air.

2. **Blood**: Birds are warm-blooded endothermic. Their bodies maintain relatively constant internal temperature regardless of the outside temperature. Reptiles, on the other hand, are cold-blooded exothermic. Their internal temperature will either decrease or increase depending upon the outside temperature. Changing the blood from cold to warm is another big mystery for the evolution. Some evolutionists claim that some dinosaurs were warm blooded. However, the general view is still dinosaurs, like all reptiles, were cold blooded.

3. **Heart**: In birds, hearts consist of four chambers, but in reptiles, hearts consist of three chambers. Reptiles’ fossils do not show how the fourth chamber was developed.

4. **Bones**: The bones of birds are hollow and thin, to reduce their weights during flying, while the reptiles’ are solid. There are braces inside the bird’s bones like the stiffeners inside the airplane wings to add strength. How did the bones of birds become hollow and grow braces inside the bones? No answer.

5. **Eyes**: Birds have very sharp eyes so they can see from high altitude and pick worms between grasses. Birds have more sensory cells in their eyes than any other creatures.

6. **Beaks**: Beaks are exclusive to birds. Birds have beaks that come in many variations, such as crushing or fishing beaks. The evolutionists claim that beaks, with such specialized design evolved by chance from the noses of reptiles! This is another wild imagination of the evolutionists.

7. **Feet**: Birds have only four toes, while reptiles have five.
8. **Sound:** Birds do not have vocal chords, but they have vibrating vocal muscles, which produce harmonious songs like those of the mockingbirds and nightingales.

9. **Respiratory system:** In reptiles and mammals, lungs inhale and exhale air like bellows that alternately become full and empty. But birds have the most efficient respiratory system of all vertebrates. Many details of that system are not yet fully understood. It differs completely from the lungs of the reptiles. Also unique is the adaptation for meeting the high demands of flight. A Bird has two lungs and an extensive system of nine interconnecting air sacs. These sacs are also extended by tiny tubes into some of the long bones. During flight, a pigeon, for example, generate 27 times more heat than when at rest. However, birds do not have sweat glands to reduce their temperature. Therefore, the respiratory system of birds ensures constant flow of fresh air to the lung and in the same time act like an air-cooled engine. When the birds inhale, the air goes to some air sacs that push the air into the lungs. From the lungs, the air goes into other air sacs to expel it. The blood in the capillaries of the lungs flows against the airflow. The red blood cells in the bird’s blood carry more hemoglobin and thus, more oxygen supplied to the flight muscles. Because of that, birds can breathe the thin air of high altitudes, flying at over 20,000 feet for days as they travel thousands of miles. The body heat is relieved by internal circulation of the air between the air sacs and the hollow bones. How did such a miraculous system evolve? The complexity and efficiency of this system is a definite proof for creation and not for evolution.

10. **Eggs:** Both reptiles and birds lay eggs. However, the incubation process of birds is totally unique. Some birds have a spot on the breast that does not have feathers and contains many blood vessels to give warmth to the eggs. Birds, without such a spot, pull out the feathers from their breast. This process requires new instincts for building the nest, for hatching the eggs and for feeding the young. This incubation process is a greatly unselfish, considerate behavior involving skills, hard work and exposure to danger.

11. **Feathers:** They are unique to birds. Evolutionists claim that scale in reptiles evolved to these marvelous structures. A feather is very lightweight, yet possesses remarkable toughness and tensile strength. The shaft of a feather is a hollow cylinder with inside stiffeners. Out
from the shaft of a feather are rows of barbs that are arranged in a closely parallel fashion and spread diagonally outwards. Each barb may have many barbules on each side. Each barbule has hundreds of barbicels with tiny hooks. After microscopic examination of a pigeon feather, it was revealed that it had several hundred thousand barbules and millions of barbicels and hooks. These hooks hold all the parts of the feather together to make flat surfaces or vanes. A feather is an excellent airfoil as well as efficient insulator. A bird like a swan has some 25,000 feathers. How did this structural marvel evolve from scale? No Answer.

12. Archaeopteryx: “Meaning ancient wing” (Munsart, 1993, p. 205). This 150 million years old bird was believed by evolutionists to be the ancestor of modern birds that evolved from reptiles. It is interesting to note that archaeopteryx is presented in biology and zoology books and some dictionaries as the missing link between reptiles and birds. Its fossilized remains revealed reptilian features: toothed jaws and a reptile-like jaw articulation. It was a bird with wings and hollow leg bones. Its reptilian features exist in many modern birds. It was not the ancestor of modern birds because other fossils of birds were discovered in the same Bavarian rocks of the same geological period. No one really knows what it was.

From Reptile to Mammal?

![INTERNAL ANATOMY OF A DOG](image)

**Figure 3.22 - Mammal: Anatomy of a dog**

**Mammals:** About 4,000 species. (Latin, mamma, breast). Mammals vary in size from 1.5 gram hog nosed bat to the 100 ton whale. Mammals include lion, horse, deer, monkeys, rat, whale and dolphin.
1. **Breast:** The name mammal refers to a mammary gland in the breasts. A mammary gland gives milk to the infants and that milk changes its nutritional composition as the infants grow. Some evolutionists claimed that these milk glands might be modified sweat glands. On the contrary, reptiles do not have sweat glands. Moreover, sweat glands produce waste, not food. Also, unlike baby reptiles, mammal infants have both the instincts and the muscles to suck the milk from their mother’s breast.

2. **Diaphragm:** Mammals have a diaphragm that separates the thorax from the abdomen. Reptiles do not.

3. **Placenta:** Mammal mothers have highly complex placentas for the nourishment and development of their unborn babies. Reptiles do not.

4. **Jaws:** Reptiles have at least four bones in the lower jaws. Mammals have only one.

5. **Teeth:** Mammals have developed elaborate teeth. Instead of the simple peg-like teeth of the reptiles, there are a great variety of mammalian teeth adapted to cutting, nipping, piercing, grasping, pounding, or grinding food.

6. **Ears:** The organ of Corti in the ears of mammals does not exist in reptiles. This tiny complex organ has 20,000 rods and 30,000 nerve endings (Hitching, 1982). Also mammals have three bones in their ears, while reptiles have only one. Where did the extra two bones in mammal ears come from? Guess what, some evolutionist claim that the two extra bones in the ear came from the three bones that were lost in the mammal’s lower jaws! So, they claim that two bones of the reptile’s lower jaw moved to the mammal’s middle ear. As usual, there is no fossil evidence whatsoever to support this claim. It is just a wishful thinking.

7. **Legs:** Reptilian legs are located toward the side of the body so that the abdomen is on or very near to the ground. In contrast, the legs in mammals are under the body which raise it off the ground. Some evolutionists think that this is a minor difference that required minor changes in the skeleton.
What is the Origin of Insects?

Where are the insects in this evolution theory? Where did they come from? What did they evolve from? If the evolutionary origin of higher animals is confusing, the origin of close to 1,000,000 species of insects is completely blank (Morris, 1985). This figure may represent only a fraction on the species of insects that exist. They are extremely diverse and occur in all habitats capable of supporting life, but there is no fossil clue to their development from some kind of evolutionary ancestor. Insects have been found fossilized in a considerable numbers.

The most exceptional feature about such fossil insects is that they are very similar to those living now. In many cases, however, they are much larger than their modern relatives. There are giant dragonflies, giant cockroaches, giant ants and so on. However, their form is no different than that of modern insects. Some of the specific types have persisted throughout 70 million years.
What is the Origin of Plants?

More than 250,000 species of flowering plants are known. The plant kingdom is composed of five branches, three of which are algae. Most of the algae have no true tissues or organs. Both Algae and plants use the process of photosynthesis, by which light energy is absorbed and then converted into the chemical energy of glucose. This is another demonstration of the divine Law of Repetition. The study of paleobotany (origin of plants) has been even more disappointing to evolutionists than that of ancient animal life. One of the outstanding paleobotanists was Professor C. A. Arnold of the University of Michigan. He said:

“It has been long hoped that extinct plants will ultimately reveal some of the stages through which existing groups have passed during the course of their development, but it must be freely admitted that this aspiration has been fulfilled to a very slight extent, even though paleobotanical research has been in progress for more than one hundred years. As yet we have not been able to trace the phylogenetic history of a single group of modern plants from its beginning to the present” (Waldman, 2005,p. 265).
It is obvious that the comparative anatomy discredits evolution.

**Discrediting Evolution: Mutation**

Just how did evolution happen? What is the basic mechanism that is claimed to cause evolution from one species to another? Evolutionists found an answer in the study of heredity and mutation. The transfer of hereditary characteristics usually produces normal results. This is manifested by, for example, the production of white children from white parents and the production of black children from black parents. But, sometimes changes happen in the genetic message resulting from alterations in either chromosomes or genes. This change is called mutation. Thus, mutation is considered the basis for evolution.

Evolutionists believe that evolutionary changes take place over a long period of time (thousands or even millions of years) to allow one species to evolve to another. They often suggest that evolution in action provides direct evidence of evolution. Some examples are often cited to present their weak case. Penicillin kills many kinds of bacteria. However, sometimes a few bacteria survive the penicillin attack. They live to form colonies of bacteria that resist this form of penicillin and they continue to produce more bacteria resistant to penicillin. When another treatment of the same penicillin is administered, all bacteria that are not resistant die, while those that are resistant survive to reproduce. Do the surviving bacteria evolve to a new species? No, they are still bacteria. So, how does this example support the evolution?

Mutations can be caused by radiation and high temperature. The rate at which mutations occur varies widely. Evolutionists concentrate upon the examples where mutations occur fast to support their claims. Another example that is often cited is the fruit flies in England in the early 1900’s. Fruit flies are small (about two mm in length) (Pierce, 2008, p. 84), easily handled and they produce many offspring in two weeks. A male was found in 1910 with white eyes from a pure line having only red eyes. Experiments in hereditary were performed to breed white-eyed male with red-eyed females. Studies were also performed on curly-winged fruit flies when bred at high and low temperature. Curly - winged flies bred at 25 \(^0\) C will have offspring with curly wings. However, when bred at 16 \(^0\) C, the offspring will have straight wings (Hunter, 2008, p. 306). Regardless of the color of eyes or the shape of the wings, the fruit flies remained fruit flies. They did not change to another species.
A third example of the alleged observable evolution was the English moths. In these moths there are two colors, light and dark. H. B. D. Kettlewell found that dark moths constituted less than 2% of the population prior to 1848 (Dekkers, 2005, p. 85). The frequency of the dark moths increased in the following years. By 1898, 95% of the moths in Manchester and other highly industrialized areas were of the dark type (Jastrow, 1990, p. 228). Their frequency was less in rural areas. The moth population changed from mostly light colored moths to mostly dark colored moths. A single gene primarily determined the moth’s color. Again, moths were moths before and after industrialization. Evolutionists consider this change as a case of mutation that supports the evolution. Jastrow, defending Darwin and hailing this discovery, wrote in his book Red Giants and White Dwarfs: “Had he known it (The English moth), an example was at hand which would have provided him with the proof he needed. The case was an exceedingly rare one”, (Jastrow, 1990, p. 228). The English medical journal On Call referred to using this example as “notorious.” It declared: “This is an excellent demonstration of the function of camouflage, but, since it begins and ends with moths and no new species is formed, it is quite irrelevant as evidence for evolution” (On Call, 1972, p. 9).

The mutation may well be understood within the framework of the Law of Repetition. Mutation represents the irregularity in a uniform non-mutant life process. On a large scale, antibiotics kill many kinds of bacteria, but some bacteria become resistant to one kind of antibiotics. In this case, the treatment involves more than one kind of antibiotics. Mutation is the exception and not the rule.

It is obvious that mutations discredit evolution.

The Creation Model

Two models exist for the origin of humans on Earth: creation and evolution models. The monotheistic religions do not acknowledge any explanations of man’s existence on Earth other than that he was created by God. Evolutionists do not provide any conclusive proofs to support their claims, nor do they accept arguments to abandon their assumptions completely. The California-based Institute for Creation Research founded in 1975 by a group of scientists to bring people to the biblical version of creation. They focus on the much evolution’s inconsistency. They
have strong arguments regarding the fossil record and the origin of life. However, they maintain that the Earth is only 10,000 years old at most and not 4.6 billion years, so evolution had no time to develop (Scott, 2005, p. 60). This 10,000 years subject came from the literal interpretation of the Old Testament. In Islam, there is no reference in the Quran as to when the Earth came to existence.

Man was created with systems that are similar to other species according to the divine Law of Repetition. When evolutionists closely examine the case of a man and other species that have similar systems to him, they develop comparative anatomy that may rest on logical, but not enough bases. The existence of some similarity between man and apes cannot be denied. However, the resemblance between man and apes was imposed upon all animal and human species because they all share the same environment with all its variations. Thus man and other animals needed similar systems such as:

- A Respiratory system to consume oxygen from the common atmosphere.
- A Digestive system to ensure feeding from the common Earth.
- Skeletal and muscular systems to move in the common environment.
- A Nervous system to receive information from the common environment.
- Eyes and ears to get information from the common environment.
- A Urinary system to maintain the chemical composition of the blood.
- A Reproductive system to keep their existence on the common Earth.

If one understands the above simple and logical argument, one will clearly be convinced with the creation model. Without these functional similarities, species could not survive in the common environment. Even some of the details of the above systems are similar in different species. For example:

- Birds and humans have four chambered hearts.
- The number of fingers or toes is five in humans, apes and rats.
- The number of neck bones (cervical vertebra) is seven in humans, giraffes and porcupines.
- Chicken, cows and humans have their hearts on the left side.
- Birds, mammals and Humans have outside symmetric organs.
The conclusions that can be arrived at will undoubtedly depend on a great extent, not only on the strength of the faith that people possess, but also on their degree of knowledge in the fields involved in the study. In modern time, a scientific background may indeed provide enough reasons to cause people to strengthen their faith in God tremendously. However, there are those who reject the idea of God until they discover an equation that establishes the existence of God in an attempt to project an image of analytical minds. Another approach may try to compromise between creation and evolution without any substantiating evidence.

**Persistence of life**

It is known that some creatures appeared at certain time and never changed since. This persistence of life is contrary to what one would expect from the evolution model. The following table shows when life started for certain classes of life and those animals today are not much different than in the past (Morris, 1985, p. 87).

<table>
<thead>
<tr>
<th>Period</th>
<th>Years before</th>
<th>Life persisted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precambrian</td>
<td>600 million</td>
<td>Algae, bacteria, fungi</td>
</tr>
<tr>
<td>Cambrian</td>
<td>500 million</td>
<td>Sponges, snails, jellyfish</td>
</tr>
<tr>
<td>Ordovician</td>
<td>425 million</td>
<td>Clams, starfish, worms</td>
</tr>
<tr>
<td>Silurian</td>
<td>405 million</td>
<td>Scorpions, corals</td>
</tr>
<tr>
<td>Devonian</td>
<td>345 million</td>
<td>Sharks, lungfish</td>
</tr>
<tr>
<td>Carboniferous</td>
<td>280 million</td>
<td>Ferns, cockroaches</td>
</tr>
<tr>
<td>Permian</td>
<td>230 million</td>
<td>Beetles, dragonflies</td>
</tr>
<tr>
<td>Triassic</td>
<td>180 million</td>
<td>Pines, palms</td>
</tr>
<tr>
<td>Jurassic</td>
<td>135 million</td>
<td>Crocodiles, turtles</td>
</tr>
<tr>
<td>Cretaceous</td>
<td>70 million</td>
<td>Ducks, pelicans</td>
</tr>
<tr>
<td>Paleocene</td>
<td>60 million</td>
<td>Rats, hedgehogs</td>
</tr>
<tr>
<td>Eocene</td>
<td>40 million</td>
<td>Lemurs, rhinoceroses</td>
</tr>
<tr>
<td>Oligocene</td>
<td>25 million</td>
<td>Beavers, squirrels, ants</td>
</tr>
<tr>
<td>Miocene</td>
<td>7 million</td>
<td>Camels, wolves</td>
</tr>
<tr>
<td>PlIOCene</td>
<td>.5-3 million</td>
<td>Horses, elephants</td>
</tr>
<tr>
<td>Pleistocene</td>
<td>11 Thousand</td>
<td>Man?</td>
</tr>
</tbody>
</table>

Table 3.1 - Persistence of life
• For 425 million years, clams are still clams.
• For 345 million years, sharks are still sharks.
• For 135 million years, turtles are still turtles.
• For 60 million years rats are still rats.
• For 7 million years camels are still camels with their long necks

The Human miracles

The human body consists of many organs and systems. Each one of them, when studied with objectivity, represents a remarkable proof of a creation by the Almighty. For example, the wrist joint that rotates 360 degrees can stop at any angles. What would it take from a biomedical engineer to design such a joint in such a space that keeps on working for so many years without external greasing? Each system in the human body represents the most efficient system in the minimum space. Only two organs are presented in the following section that represents the ultimate complexity.

The Brain

Nothing on this Earth is more fantastic than the human brain. Doctors have made tremendous advances in studies of the brain. Even so, what they have learned is nothing compared to what remains unknown. One scientist said that we know only 10% of the brain and 90% remains mysterious. Definitely, the human brain is the most mysterious part of the human body. Every second about 100 million bits of information flow
into the brain from all senses. If we can think about one thing at a time, how does the brain handle these millions of simultaneous messages easily and all the time? Imagine a busy TV newsroom that receives news from all over the world. The news editors decide which stories are important. Then the news writers rewrite the important stories for broadcasting. These news stories are presented to the public. In some ways, the human brain acts like a newsroom. Here is how the human brain processes the information it receives and then reacts accordingly:

1. The brain stem has a network of nerves, the size of which equals your finger. This network acts as a kind of traffic control center, monitoring the millions of messages coming into the brain, ignoring the trivial and selecting the important for attention. Each second, this little network of nerves selects only a few hundred at most, to enter the conscious mind.

2. A further selection of our attention seems to come about by waves that sweep the brain eight to 12 times per second. These waves cause periods of high intensity, during which the brain notes the stronger signals and acts accordingly. It is believed that by means of these waves the brain scans itself to select the more important items. Thus an astonishing flurry of activity is going on in our heads every second.

The miracle starts in the womb. Three weeks after conception brain cells start forming. They grow in outbursts, at times up to 250,000 cells a minute (Dowling, 2007, p. 7). After birth the brain continues to grow and form a network of connections. The gap separating the human brain from that of any animal quickly manifests itself: The brain of the human infant, unlike that of any other animal triples in size during the first year. There are about ten billion (10,000,000,000) highly specialized nerve cells, called neurons that make up only 2 % of the body’s weight (Lichtblau, 2010, p. 3).

The human brain has many specialized activities that are capable of learning. Computer science uses the word “hardwired” to refer to built-in capabilities based on fixed circuitry, in contrast to capabilities put in the computer by a program “software” (Roy, p.1). Hard wiring in a human brain refers to inherent abilities like learning, but not the knowledge itself. Animals, by contrast, have hardwired instinctive wisdom, but limited capabilities to learn. The most intelligent animal never develops a mind
like that of a human being. And unlike animals, humans have the free will to program their intellects as they choose, based upon their values, knowledge, opportunities and goals. Specialists agree that the human brain is genetically programmed for language development and that speech can be explained only on the basis of an inherent language processing capacity within the brain. Unlike the rigidity that is displayed in the instinctive behavior of animals, however, there is tremendous flexibility in a human’s use of this hardwired capability for the language. A specific language is not hardwired into our brains, but we are preprogrammed with the ability to learn languages. If two languages are spoken at home, a child can learn both. If exposed to a third language, the child can learn it also (Cenoz, 2000, p. 42). In view of such inherent abilities, it is no surprise that a linguist said that the chimpanzee experiments with sign language actually prove that the chimps are incapable of even the most rudimentary forms of human language. One neurologist concludes: “The more we attempt to investigate the mechanism of language, the more mysterious the process becomes” (Science News Letter, 1955. p.148).

A human originates thinking, sets goals, plans to reach them, initiates work to carry them out and finds satisfaction in their accomplishment. Created with an eye for beauty, an ear for music, a flair of art, an urge to learn, an extreme curiosity and an imagination that invents and designs - man finds a great sense of achievement in exercising these gifts. He is challenged by obstacles and delights in using his mental and physical power to solve problems. Man has a moral sense to determine right and wrong and a conscious to blame when he goes astray. He finds happiness in giving and joys in loving and being loved. All such activities enhance his pleasure in living and give a sense of purpose and meaning to his life. A human can observe the plants and animals, the magnificence of the mountains and oceans around him, the vastness of the sky above him and feel his smallness. He is aware of time and space, wonders how he got here and where he is going and tries to understand what is behind all that.
The Ear

The ear, one of the most complicated organs of the body, consists of three parts: the outer ear, the middle ear and the inner ear.

The outer ear consists of the pinna, or external ear, which captures sound waves and directs them inward and the ear canal, which leads to the eardrum.

The middle ear contains three tiny bones, or ossicles, commonly called the hammer (malleus), the anvil (incus) and the stirrup (stapes).

The inner ear is formed of two main parts: a spiral structure, the cochlea, responsible for hearing and the semicircular canals, the labyrinth, which serve as the organ of balance and equilibrium. The inner ear is filled with clear fluids with precise chemical composition and accurate pressure. The regulation of chemical composition and fluid pressure is maintained through complex mechanisms not yet understood. The ear serves a dual purpose, not only hearing, but also the vital function of equilibrium. Any change in fluid composition or pressure may cause hearing loss as well as sense of dizziness and imbalance, known as vertigo.

An oversimplification of how the extraordinary organ of the ear works is as follows: atmospheric sound waves are collected by the ear and strike
the eardrum, making it vibrate. This in turn activates the tiny chain of the three ossicles in the middle ear, causing them to vibrate and conduct the sound waves to the inner ear. The eardrum and the ossicles not only conduct sound, but also amplify the sound energy by a factor of about 22 times. The sound waves, in turn, through the medium of the clear liquid in the inner ear transfer the vibrations to sensory cells (outer and inner hair cells), which convert the mechanical waves to electrical impulses. The impulses are conveyed to the brain via the auditory nerve. The mystery is the translation of vibrations into electric impulses, in such a small place and then into identifiable sounds. It remains incomprehensible and incredibly complex to ear doctors. Many questions remain to be answered and lots of challenging mysteries stand reflecting our ignorance in front of a simple question:

How do we hear?

Law of Cause and Effect

For any theory to be correct, it should not violate the basic laws of nature. Those laws are correct and have been tested in many experiments under different circumstances. However, there must be a distinction between the laws of physics and Divine Miracles. The known laws of physics are all acts of God, the Creator of all laws of Physics. Humans strive to understand these laws. Miracles are also acts of God that defy the laws of physics. The cosmic Big Bang challenges the laws of physics because it was a moment of Creation. All miracles performed by prophets, with the permission of God, defy the laws of physics. Humans sometimes confuse the Creator of the laws of physics and the discoverers of these laws. It is certainly within God’s Omnipotence to stop a law that He created to let people contemplate about the Creator of these laws. With the exception of the law of cause and effect, all other laws have their own limitations. I mentioned that Newton’s Laws of motions do not apply near the speed of light. This does not make these laws useless. They just have limitations. The atheistic concepts of the Big Bang and the evolution theory blatantly violate basic laws of physics, such as the law of cause and effect.

This law, which is universally accepted and applied in every branch of science, relates any phenomenon as an effect to a cause. The law states that (Hanegraaff, 1998, p. 80):
"No effect is ever quantitatively greater nor qualitatively superior than its cause."

Have you ever looked at a beautiful skyscraper and wondered who was the builder? If someone told that no one had built the skyscraper, but it had simply came to existence by itself, would you believe it? All what we see around us are effects created by the Ultimate Cause of everything. If someone told you that all the physical laws that exist in the universe had simply happened by themselves, would you believe it? The global educational system attaches a name of a human being to every physical law, such as Newton’s law of gravity or Einstein’s theory of relativity. Somehow in the middle of this educational process, we tend to think that the discoverer of a certain law is actually the creator of that law. Well, he is not. Any discoverer are only a medium of revealing God’s spectacle and the Almighty is the One and Only Creator of all laws.

From the previous chapter, we know that all the energy and matters in the universe were packed together in a cosmic egg! That cosmic egg exploded during the Big Bang and formed the present universe. No one knows where the cosmic egg came from or how it got there. It is simply assumed that it was there (someone even suggested that perhaps the cosmic egg came from a cosmic chicken!). No one knows how long it stayed there at its place, but, as the story goes, the cosmic egg exploded (no atheist knows why!). The universe expanded and cooled sufficiently that the hydrogen gas and the helium gas could form. From these hydrogen and helium, somehow, evolutionists believe that:

- A cosmic egg created itself somewhere and somehow for an unknown period of time.
- The cosmic egg exploded with an unknown reason.
- All laws of physics and chemistry created themselves or by the scientists who discovered them.
- All galaxies and stars created themselves.
- Our solar system created itself.
- Life created itself.
- Finally from that first primordial form of life all other forms of life evolved according to Darwin’s natural selection.

After studying the atheistic ideas of some of our modern serious scientists, I came to the conclusion that some Homo sapiens evolved to Homo Aroganse!
In the name of Allah, Most Gracious, Most Merciful.

22. He is Allah, than Whom there is La ilaha illa Huwa (none has the right to be worshipped but He) the All-Knower of the unseen and the seen (open). He is the Most Beneficent, the Most Merciful.

23. He is Allah than Whom there is La ilaha illa Huwa (none has the right to be worshipped but He) the King, the Holy, the One Free from all defects, the Giver of security, the Watcher over His creatures, the All-Mighty, the Compeller, the Supreme. Glory be to Allah! (High is He) above all that they associate as partners with Him.

24. He is Allah, the Creator, the Inventor of all things, the Bestower of forms. To Him belong the Best Names. All that is in the heavens and the earth glorify Him. And He is the All-Mighty, the All-Wise.

(Quran 59:22-24)
God in his utmost wisdom and mercy provided man with everything needed to conclude that He is the One Mighty God, the Creator and the Owner of everything in this universe. Contrary to the Christian doctrine that man is born sinner, Islam emphasizes that God forgave Adam and every born baby on this Earth is pure, clean and sinless. We do not inherit sins from anyone before us; not even Adam or Eve. This is what you would expect from a Just God. Why should we be punished for a crime that we did not commit and we have nothing to do with it? In Islam, every newly born baby comes to this world with inherent submission to the One God. So, if this baby were left alone without brainwashing him or her with atheistic or polytheistic ideas, he or she would grow up to be a Muslim. As man grows up, Allah provides him with a very special brain capable of discerning what is right and what is wrong. This gifted brain is also skillful of concluding that God is One if man just cares to look at the sky or look at himself. All the evidence is there, if one cares to search for his Creator. However, if the search of one’s Creator takes a low priority in life, then one has only himself to blame. This is the accountability of human and the Justice of God.

The last two chapters have proven without any doubts that God exists. However, one does not really need to understand the cosmic or biological Big Bang to believe in God. Any simple-minded persons can arrive at the same conclusion by asking who, why, what and how about the simple things that he encounters in his daily life. For example, why the world does not get very hot or very cold for people to perish by burning or by freezing. Who is adjusting the weather on Earth? Why trees come out after planting small seeds? What makes my heart beat? How can I face the frustration of life?

Religion is an integral part of our lives whether we like it or not. If we just understand that we are creatures of the Creator. If we just understand the responsibility of the Creator. If we just understand His unlimited bounty and His unlimited gifts that He bestowed on us. We live in His land. We eat His food. We drink His water. We breathe His air. We feel the warmth of His sun. In fact, we need Him in every step of this life. We need Him to make our life a little bit easier. We need Him to eliminate any hardship that we may face, or at least give us the patience to face the difficulties in this life and the belief in His justice if adversity persists. We need to be humble and thank Him for all His favors. And not just thank Him by words, but to actually feel that every part of our body is truly grateful.
**Homo Arrogans**

The Quran, the authentic words of God, is truly a remarkable miracle. The Quran has its own characteristics, which are so unique and so inspiring. One of these characteristics of the Quran is that a verse, (Ayah), is repeated in different places. One verse, for example, is repeated 31 times in one chapter, (Surah), (Chapter 55.) This Ayah states: “Then which of the favors of your Lord will you deny?”

This Surah lists many favors that God (Allah) bestows upon us and after citing each favor, the above Ayah is repeated as a continuous reminder to humanity to acknowledge His unlimited favors.

One time I was listening to the Quran, I noticed the repetition of the word “arrogance”, either as a noun, verb or a synonym. For example, the Quran tells us the story of Adam and Satan in Heaven. God commanded the Angels and Satan to bow down before Adam. All the angels bowed, but Satan rejected the command of God.

“He refused and was haughty”, (Surah 2, Ayah 34).

Satan thought that he was better than Adam and therefore should not bow down to him. Satan, soon thereafter deceived Adam and Eve which caused them to be expelled from Heaven. God then condemned and cursed Satan forever because of his arrogance. Therefore, the original sin is clearly that of arrogance, committed by the original sinner, Satan. This point is tremendously significant in that arrogance can potentially lead to much graver sins. It should also inspire humanity to maintain its humility. When God asked Satan why did you not bow down before Adam? Satan replied that he is better than Adam, hence he should not bow to him:

“I am better than he (Adam). Thou didst create me from fire, and him from clay”, (Surah 7, Ayah 12).

Satan’s egotism in putting himself above Adam is obvious from the above Ayah. He established his own standard of comparison by assuming that fire is better than clay, so he ignored the order of Allah. Arrogance against God is the worst type of sins and can be caused by complete ignorance coupled with superiority complex. Ancient history tells us about kings who thought of themselves as gods. For example, the pharaoh, who existed during the time of Moses, claimed to be the highest god.
Moreover, there are those who may believe in God but restrict Him and his Laws according to their convenience. They may like His forgiving side, but reject His punishing side. In other words, some people want a man-made god! Religious traditions inform us of arrogant people who wanted prophets to their liking. All the prophets were accused during their time of being insane, liars, magicians and power hungry.

The Quran and the Bible tell us many stories about the prophets and those who continued rejecting their message.

- It was the arrogant chiefs during the time of Noah who rejected him.
- It was the arrogant chiefs during the time of Abraham who rejected him.
- It was the arrogant chiefs during the time of Moses who rejected him.
- It was the arrogant chiefs during the time of Jesus who rejected him.
- It was the arrogant chiefs during the time of Muhammad who rejected him.
- It was the arrogant chiefs during the time of any prophet who rejected him.

The Quran makes many references to these chiefs and actually calls them “chiefs.” The Quran also talks about their arrogance because they felt that religion would take their power away from them. The past and present self-appointed chiefs include some of the elite “scientists” as well as some of the religious leaders in all religions. These people believe that their ideas, no matter how wrong they are, should be imposed on the laymen who should not challenge their scientific or religious arguments. In most cases, arrogant people underestimate the degree of their arrogance by using their own standard to “measure” arrogance. They usually justify their approaches as a means of influencing the laymen for a noble cause, such as educating the ignorant masses!

A person can be considered arrogant if one emphasizes his importance and does not think for a moment that he is vulnerable. Every human is vulnerable. No one knows what is going to happen to him in the next hour. One may have a heart attack, a paralyzing car accident, an airplane crash, an earthquake and the list is endless. But some people are tempted to ignore our factual vulnerability and prefer an illusory mortality. One of the effective means of combating arrogance is to keep remembering our vulnerability. If it happens that Satan tries to convince us that we know a
lot or even enough, keep remembering that the human knowledge is very limited:

- Over 90% of the mass of the universe is UNKNOWN
- The action of aspirin is UNKNOWN
- The mechanism of dreaming is UNKNOWN
- Over 90% of the human brain is UNKNOWN
- How the brain interprets our senses is UNKNOWN

If we are this humble in our knowledge, how can anyone be arrogant?

Now consider the following:

Evolutionists introduced the names “Homo Erectus” (Latin, upright human) and “Homo Sapiens” (Latin, wise human) (Lewin, 2005, p. 159), and I would like to introduce the term “Homo Arrogans” (Latin, arrogant human) for those who think that they have all the answers. This is the title of this section. I put it in Latin, because, at present time, if you want to sound scientific, you have to use Latin or ancient Greek terms as if that the English language is not good enough. Evolutionists should be able to explain how those species evolved from Homo Erectus to Homo Sapiens to Homo Arrogans!

Homo Arrogans have many holes in the fabric of their logic. They look at some similarities or some differences between species and build an entire theory. This is similar to the following hypothetical story:

Imagine that most of the life on Earth is somehow destroyed. Several thousand years later, civilization starts and people are anxious to know their past. Some of their elite scientists evolved to Homo Arrogans species. They have no idea about our means of transportation. An archaeologist collects many fossils. The specimens that he collected are a horse wagon, a bicycle, a car, a train and an airplane. He notices definite similarities and definite trends. He discovers that all specimens have wheels and a body. Similar materials exist in all the specimens such as: wood, iron and leather. However, there is a problem; the lowest species, which are the wagon and the bicycle, do not have engines. The engine of the car is smaller than that of the train and that in turn is smaller than that of the airplane. He concludes that the metal in the wagon evolved to the gears in the bicycle and this evolved to the engine in the car, which then evolved to the diesel engine in the train and finally this evolved to the jet engine of the airplane.
God and Science

In the West, the news media often represent the interaction of religion and science as a battle to death between religious scholars and scientific atheists. But for many scientists, who belong to the mainstream faith, things look entirely different. Throughout the last millennium, the Church was looked upon as a controlling mother with two defiant sons called physics and biology. Yet, despite strained relations, there is always optimism that religion and science can benefit from each other.

Medieval scientists, assured by their faith that the universe is rational, took their first steps towards uncovering God’s Design. The first great conflict happened between the Church on one side and Galileo on the other side. In 1595 Galileo (Steele, 2008, p. 27), supported the Copernican theory that the earth revolves around the sun against the Aristotelian and Ptolemaic assumption that planets circle a fixed earth. Galileo was condemned by the Church for his scientific beliefs and was ordered in 1616 not to discuss Copernicanism either orally or in writing. Only in 1984 a papal commission acknowledged that the church was wrong, but it was not until 1992 that the church actually reversed its condemnation of Galileo. It took the Church about four centuries to admit that it was wrong.

Therefore, the son physics moved out of the house and for a while, science enjoyed its freedom. The telescopes of the following centuries saw many stars in a huge void, evoking the dream of infinite universe with no sign of a beginning or a prospect of an end. Some scientists thought that the universe was never changing. To them, there was no need for a God!

This simple view did not last. Edwin Hubble discovered the red shift of the distant stars and in 1920’s the whole world knew that the universe had a beginning called the Big Bang. The fact that the universe had a beginning asserted the existence of an Omnipotent Designer that started the Big Bang. Cosmology used physics to uncover a magnificently organized universe; fine-tuned to foster life within it. In its adulthood, physics realized that mother is much smarter than she had been credited. The son physics started to have a tremendous appreciation for creating
the universe and his mother’s wisdom.
Biology moved out of the house later than physics and is later to return as well. Darwin introduced a concept of evolution of species by natural selection. It was an interesting guesswork, but where in this scheme was the Designer? In the 19th century the foundation of life was in a total mystery. Scientists of the time hoped that the complexity of humans and animals would resolve into simplicity when more was learned about life. Darwinists had no way of knowing about proteins, amino acids, the genetic code and other mysteries of the living cell.

In the last 50 years biology has uncovered some of the mysteries of the living cell and the results firmly indicate another Grand Design. The marvels of the living cell include precisely tailored microscopic systems that include molecular trucks to haul neatly tagged cargo from one end of the cell to the other along a molecular railroad tracks. It also includes power plants to generate the cell’s energy, disciplined biological armies standing ready to fight the invaders, and a centralized genetic government to maintain order. Darwin’s natural selection lies in smoking ruins.
Darwinism may explain simple things like the shape of finch beaks, but for the more complex questions of how life evolved and why, biology is still reluctant to admit God’s Grand Design.

At the present time, biology seems to be in a state of complete denial that controlled physics when the concept of the Big Bang was first introduced. Some modern biologists look for anything to reject the prospect of intentional design of life. Their denial will not last long, though; evidence is too strong. Other biologists suggested an interesting compromise. It is called creative evolution. They believe that God created Adam, but they may exclude the controversial Biblical statement that God created Adam in His own image. Now, they ask the question: Who was really Adam? Could he be the first living cell on Earth? Creative evolution advocates evolution not by natural selection but by the guidance of God. This conclusion is based upon incomplete evidence. All the conflicts and contradictions of evolution will have to be defended by the creative evolutionists and that was never done successfully.

The news media often ask scientists how science can be reconciled with religion. A better question would be how could anyone with some knowledge of science avoid watching the overwhelming evidences of One God?
Humans managed to divide science into three main categories:
1. Physical: such as physics, chemistry and engineering.
2. Biological: such as medicine, embryology, botany and zoology.
3. Sociological: such as psychology, economics, anthropology and history.

However, the great scientific pioneers in the human’s history could not really be classified as physicist, biologists, or sociologists. Most of them had knowledge in many branches of science. An inspiring list of those pioneers includes Newton, Galileo, Al-battani (Albatenius) and Ibn Sina. Without exception, true scientists were devout religious people. They simply understood that science would never have answers to all complex questions.

At present, in trying to deal with the enormous scientific and spiritual information that is available to us, it may help to abandon the above categorization of science and put the above three categories under a new name called Evidence of God! Or attach the Name of God to all branches of science such as physics of God, biology of God, etc. If we do that, the simplest physical law, biological and sociological phenomenon can then make sense. Asking questions about: who, why and how can then have one answer and one answer only. Some scientists are limiting their creativity by rejecting the concept of God. If scientists make it their business to uncover some of God’s Grand Design, humanity will enjoy a much greater scientific achievements, paralleled only to the great scientific advances that Islam inspired in the Middle Ages.

This would certainly require a major overhaul in the entire educational system. Teachers would be required to be more inspirational. Books would have to be rewritten to include the thoughts of the scientific pioneers and not merely their works without any human attachments. This would change the life of physicists, biologists, engineers, botanists and all other professionals. Every simple physical law, biological test or analysis is approached within the framework of the Grand Design. If that happens, the entire human family would be in a state of submission to the Will of God. That is what Islam is all about.

The attitude of Islam towards continuous knowledge and scientific development is quite remarkable. As a matter of fact, the first word revealed in the Quran was “Read.” It was an order from the Creator to the Muslims to seek true knowledge because this is the only way to achieve
an appreciation for the Glory and Greatness of God. With this order, science took on an international character in the Islamic universities of the Middle Ages. During that time, Muslims had a great advantage because the Quran inspired the Muslims to study the sky and the earth to find proof for their faith. Muhammad encouraged the Muslims to seek knowledge from the cradle to the grave, no matter if their search took them as far as China. Studying is considered an act of worshipping God. It is an established fact that scientific upsurge by Muslims came as a result of religious influence. Anyone who knows something about Islamic history is aware of the period of the Middle Ages, which saw cultural and scientific peaks in the Islamic world.

Muslims made great contributions in the fields of mathematics, astronomy, physics, botany, medicine etc. There is no numeral of greater significance than the zero, which came from the Arabic word “sifr” or empty. Solutions of algebraic equations were introduced early in the Islamic world, where it was known as the “science of restoration and balancing.” (The Arabic word for restoration, al-jabr, is the root of the word algebra and algebra as a science is an Islamic contribution.)

1. **Al-Khwarizmi** (780-850) of Baghdad popularized the use of the decimal numbering system and wrote the first clear textbook on algebra (Grattan-Guinness, 2000, p. 115). The title of this influential Arabic book was “al-jabr wa al-muqabala”, which means “the art of bringing together unknowns to match known quantities.” The key word “al-jabr” or “bringing together” gave rise to the word algebra.

2. **Al-Battani** (850-929) in Damascus is considered the greatest Muslim astronomer and mathematician (Grattan-Guinness, 2000, p. 115). He improved trigonometry and calculated the first table of cotangents. The Latinos called al-Battani “Albatenius”.

3. **Abu Kamil** and **Omar Khayyam** are the only other few Muslims names that contributed in Algebra (Grattan-Guinness, 2000, p. 115).

4. **Ibn Al-haitham** (965-1039), known as “Alhazen” in the West, was one of the greatest investigators of optics of all times (Grattan-Guinness, 2000, p. 115). He was also a physician. His fame came from a book on optics that became known to Kepler during the seventeenth century. This masterpiece, “Ketab Al-Manazeer” (Book of Mirrors) had great influence on the training of later scientists in Europe, in which he described the nature of light as consisting of
particles which carry heat and energy.

5. **Thabit Ibn Qurra** (833-902) in Baghdad was the commentator on higher mathematics and wrote on the theory of numbers (Grattan-Guinness, 2000, p. 115). He, also, wrote about gravity and its relationship with mass, stating that when there are two bodies, the larger body exerts a stronger influence on the lesser mass. Islamic astronomers of the Middle Ages, having learned how to build mathematical instruments, were setting up observatories and charting the movements of stars and planets, while contemporary Europeans were ignorant of nearly all sciences. During the 10th century, Cordoba, the largest city in Europe, was a center for Islamic learning. Its mosque, known as La Mezquita, was one of the largest in the Islamic world.

6. **Ibn Rushd** (1126-98), born in Cordoba, known in Latin as Averroës, was a Spanish-Arab Islamic philosopher, jurist and physician (Kirmani & Singh, p. 448-449). He also studied theology, philosophy and mathematics under the Arab philosopher Ibn Tufayl (1105? -85) and medicine under the Arab physician Avenzoar (1090-1162) (Kirmani & Singh, p. 448-449).

It is interesting to note that prominent Muslim scientists were given Latin names with the effect of obscuring their identity and origin and their association with the Islamic civilization. The Caliph’s library at Cordoba included 400,000 books (Howard, 2005, p. 5). Scholars from all over Europe went to study at Cordoba. As the signs of mathematical awakening in Europe appeared in the thirteenth century, the Christian monks made contact with Islamic universities in Spain, opening the way to the Renaissance and the translation from Arabic to Latin started.

The first university on earth, Al-Azhar (the resplendent) was established after the founding of Cairo itself in 969AD. This university has an important effect upon the development of educational institutions in Europe. The wearing of black academic gowns, traditions of public disputations and division of undergraduate and graduate faculties originated at Al-Azhar University. Non-Arab speaking students from Europe had to take a crash course in Arabic for six months because Arabic was the language of science.
The Search for One God

The search for a single deity, by thinkers and scientists, happened throughout the history of mankind. Many used logic, science and philosophy to resolve this crucial question.

The Egyptian Pharaoh Akhenaton concluded that the Sun god is the ultimate and only supreme power in the life of humanity. He abandoned polytheism in favor of monotheism by worshipping the sun god and ignored all the other traditional deities of Egypt, but his policies were immediately reversed by his successor King Tut.

1. **Ibn Sina** (980-1037), who is known by his Latin name Avicenna, was a great Muslim physician and at the age of 18 he had mastered mathematics, logic and physics (Grattan-Guinness, 2000, p. 115). At that age, he was rewarded for his medical abilities with the post of court physician to the Samanid ruler of Bukhara. But his chief concern was religion. Ibn Sina extended the logical approach, based upon philosophical concepts, of Al-Kindi (870), another Muslim thinker (Kirmani & Singh, p. 580). Ibn Sina formulated his approach to prove the existence of God in his book Kitab Ash-Shifa (Book of Healing). His logic starts with a reflection of the way our minds work. We have the tendency of looking at anything in a global manner and then examining the details later. A sentence consists of verbs and nouns and these consist of letters. We learn first how to pronounce words and sentences and then know the letters. A human body consists of a head, belly, arms and legs and these consist of cells. This process of breaking things into their components is our way of search for simplicity. We use bricks as simple building blocks to construct a complex skyscraper. The Earth consists of land and water. The Earth is one part of a more complex solar system, which is in turn a part of more complex star system and so on. Also, simple things are inferior to complex things, such as an arm is inferior to the whole human body. Ibn Sina took it for granted that the whole universe follows a repetitive logic or laws. He also believed in the law of cause and effect. Thus, he considered that everything in this physical universe is a part of Unlimited Reality, a Supreme Creator that started it all. Since we cannot comprehend the physical universe, which should be inferior to the Unlimited Reality, then we will not be able to grasp the true power of the Supreme Creator. God, the Unlimited Reality, is the Creator of all realities. Truly, He is at the
top of all realities, He must be absolutely Perfect and worthy of human submission, praise and worship.

2. **Abu Hamid Alghazaly** (1058-1111) was a great Muslim thinker (1995). He was born in Khurasan. He started his search for God by considering Sufism, a mystical interpretation of religion. Later, Alghazaly abandoned Sufism and formulated an approach that would be accepted by the majority of Muslims. He had several major publications that address the basic faith in Allah. One of his books, Revival of Religious Knowledge, a five-volume text, is considered a great Islamic reference. Alghazaly set himself to defend Islam against philosophy and mysticism. He tried to discern between right and wrong, between the reliable tradition of Islam and heretical innovation. He searched for a reliable unshakable faith in God. He believed that philosophy should restrict itself to obvious phenomena such as medicine, physics and astronomy. Philosophy should not be utilized as a way of proving God’s Existence. How can anyone state facts about God that He himself did not reveal? Ibn Sina became the target of attack on philosophy by Alghazaly. After an agonizing search he found what he was looking for. Without abandoning reason, Alghazaly discovered that spiritual experiences, which cannot be explained by physical laws, yielded a direct and intuitive way to God. However, he resented taking that spiritual experience beyond its reasonable limits such as someone may claim that he is God’s incarnate when he encounters such an experience. Like Ibn Sina, he concluded that humans are inferior of the Unseen God Who supplies the physically unexplained spiritual experience.

3. **Sir Isaac Newton** (1642-1727) used the avenues of science and logic to achieve total conviction in God. Newton began with an attempt to explain the universe with God as the Creator of all the physical laws that govern the universe. Newton believed that all natural laws are the effects with God as the only Cause of all actions. In fact, he believed that gravity is a divine action; in effect, a stone fell because God’s finger was pushing it down. As Newton was investigating the universe, he became convinced that he had a solid proof of God’s existence. He wrote “Gravity may put the planets into motion, but without the divine power it could never put them into such a circulating motion as they have about the sun and therefore, for this as well as other reasons, I am compelled to ascribe the frame of this system to an intelligent Agent”, (Newton, 2003, p. 53). God who
had designed all this so perfectly, had to be a supremely intelligent “Mechanic” and extremely powerful to manage this huge universe. In Newton’s Principia, he concluded that humans know God only by examining the evidences of His creations:

“This most beautiful system of the sun, planets and comets could only proceed from the counsel and dominion of an intelligent and powerful Being. He is eternal and infinite, omnipotent and omniscient; that is his duration reaches from eternity to eternity; his presence from infinity to infinity; he governs all things and knows all things that are or can be done. We know him only by his most wise and excellent contrivances of things and final causes; we admire him for his perfection; but we reverence and adore him on account of his dominion; for we adore him as his servants”, (Newton, 2003, p. 42).

According to “A History of God” by Karen Armstrong, (1993a, p. 305), and “Anti-Trinitarian Biographies,” Vol. III, 1850 by A. Wallace (1850, Vol. III, p. 433), Newton rejected the divinity of Jesus and the doctrine of the trinity. He attributed these doctrines to the corruption of the New Testament. Newton came to the conclusion that the Fathers of the Church had imposed their doctrines on the Church in a misleading bid for pagan converts. He believed that the concept of the “three in heaven” was never once thought of. The verses of the New Testament that were used to “prove” these doctrines were erroneous. In 1690, he wrote a manuscript on the corruption of the New Testament concerning I John 5:7 and Timothy 3:16. It was entitled, “A Historical Account of Two Notable Corruptions of Scripture”, (1841, p. 1-58).

Newton became obsessed in clearing the Christian faith. He believed that Noah had founded the original religion - a Gentile faith - that had been simple and free from mysticism. Noah advocated the unity of God. Later generations had corrupted this pure religion with weird mixtures of idolatry and superstition. Thus God had sent a succession of prophets to put humanity back on course. Newton’s approach to monotheism was as close as it can be to the Islamic teachings.

During the eighteenth century, Christian scholars began to apply the new scientific methods to the Christian faith and came to the same conclusion of the existence of God as Newton. However, during Newton’s time, there were those who claimed that Newton unfolded all the mysteries of God and discovered all His physical laws that govern the universe and consequently God has nothing else to do.
The Religion Criteria

Now we know that God Almighty exists and that he creates humans, He communicates with His people to give them his message. God has done that by sending messengers to show them the right way that leads to paradise in the hereafter and to warn them against the devil’s way that leads to hellfire. Some of the messengers were local for a certain time and to certain people. Some had larger responsibility and left their people with Holy Books that would guide them after the Prophets died. These Holy Books are like an owner’s manual of cars or a user’s manual of computer’s software. If you follow the instructions, you will get the maximum benefit, but if you ignore the instruction and the proper way of usage, then you will have a lot of troubles. This is a valid principle that applies to cars, computers, or humans.

Religion and Faith

We have mentioned in the introduction of this book that you could realize the existence of God by examining His signs or by having intuitive faith. However, this faith should not be blind, but based upon reasonable judgment. The reason is that in this world we have seen hundreds of people making all sorts of claims. Many claimed that they were prophets, receiving revelation from God. Others claimed to be the expected Messiah that will come before the end of the world. Even pagan religions asked their followers to have faith. Scriptures are said to be inspired or revealed by God and they are so many. Each preacher emphasizes the usual sentence: “you either have faith or not.” If humans accept this argument blindly, there will be much confusion. Faith should be based upon a rational and sensible conclusion. Furthermore, it is not enough for a religion to call for such terms as brotherhood, global peace, equality, mercy, etc, to be accepted. Religion is a serious business and choosing the right religion requires some reasoning. Religion should be treated at least as any other decision that humans make every day. You should not rush to a conclusion and at the same time you should not treat it as a long-term decision.

In the next section, an attempt will be made to present a set of criteria for accepting a religion based upon the following necessary and sufficient conditions:
Universality

Since we know that God is One and we are all His people that came from a single father and mother, it follows that there must be one religion. This is because God is not going to change His rules to suit different nations. He measures all humanity with only One Standard. Therefore, the religion should be universal regardless of race, color, time, place, wealth, or gender.

This condition right away excludes Judaism unless we accept the notion that God has chosen the Jews and only the Jews to the rest of humanity for His religion. In this case, this contradicts one of God’s attributes, Justice. Jews do not have missionaries and do not invite any one to join them. If someone wants to convert to Judaism, which is supposed to be a religion of God, he will have hard times. Often times, the media reports that the Jews in Israel reject the conversion of a teenager from a Jewish father. According to the Jewish law in Israel, the mother determines religion. Therefore, if someone manages to be converted by a Jewish organization outside Israel, the Jewish establishment in Israel will not recognize that conversion. Therefore, to follow a monotheistic religion, we are left with Christianity and Islam.

Simplicity

Throughout history, there existed a class of theologians and philosophers that claimed that they had knowledge about religion and God that the public could not understand. An example to such theology is the Gnostic Christian movement that flourished during the second and third centuries AD. Gnosticism presented a major challenge to orthodox Christianity. The term Gnosticism is derived from the Greek word gnosis (“revealed knowledge”). To its adherents, Gnosticism promised a secret knowledge of the divine dominion that the laymen would not comprehend. Therefore, denying the public from comprehending the religion that they were supposed to believe in.

A religion by definition should be understood and practiced by all people regardless of their intellectual and educational capability. A religion should be for the illiterate as well as those with the highest degrees. There should not be any confusions or ambiguity in explaining the religion.
Uniqueness

The Holy Scriptures should be unique and only the original version should be used. There should not be multiple versions that are revised and revised again by humans. If a translation of the original version exists, it should be accompanied by the original text in its original language. Human translation of Holy Books is never perfect. Translation of Holy Books is a serious business because it involves the imperfect human perception of the translators.

Openness

Following the above condition of simplicity, a religion should be opened with all its aspects. The exact history should be presented. The evolution of doctrine, if any, should be known and accessible to the public. The honest preachers should not attempt to keep their congregation in the dark about any subjects relating to the religion. It is nice for a religion to emphasize the good morals, but should this be the only criterion of accepting a religion? Preachers should state the whole truth and not half the truth about religions.

Authenticity

The scriptures of a religion should be authentic and traceable to its origin. All the records should not be adulterated or tainted with any human ideas or perception. The original writer or writers of the scriptures should be known and there should be sufficient evidence for the trustworthiness of the writers. The subject of authenticity should be very clear and definite without any confusions about who actually wrote the scriptures.

Consistency

God revealed the Holy Books. One should not expect inconsistency or contradictions in the scriptures. There should not be any errors or even a claim of error associated with Holy Books.

The Prophet

The character of the Prophet who received the revelation should be impeccable before the revelation. His life should be documented before and during the revelation to make sure that he was honest and truthful. He
God should not have bowed to anyone else but God.

The Holy Book

The Holy Book should have the following characteristics:

• It should identify God in names and attributes.
• It should show humans the proper way of communicating with God.
• It should convey a message that does not contradict human intuition and accepted morals.
• It should guide humans to the right path for salvation that leads to paradise.
• It should warn humans against evil acts that lead to hellfire.
• It should project a sense of purity and holiness.
• It should outline the divine standard that humans should follow.
• It should include overwhelming prophecies and scientific miracle as a continuous challenge to the unbelievers.

All the above conditions will be examined in the next volumes in an attempt to arrive at the religion of Allah.
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*The Holy Bible*. Standard and modern Translations.


*The Holy Bible Website*: http://bible.crosswalk.com All Versions.

*The Holy Bible Website*: http://www.scripturetext.com All Versions.


Please note the author condemns any offense of the Prophets of God in any of the above references.
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Quran websites:

http://www.usislam.org/books/free_islamic_books.htm Read and download Quran in many languages.

http://www.qurancourses.com/ Learning of Quran and Hadith is the foremost duty of every Muslim.

http://www.searchtruth.com/list.php Read and listen to The Quran in many languages.

http://www.reciter.org/ Welcome to the Electronic Reciter version 2.0. Click on the English, French, or Arabic text in the box below to select the interface language and launch the program:

http://www.alketab.com/default.asp The Holly Quran Website - 26 translations

http://www.tvquran.com/ Quran on TV from Palestine

http://www.quran4u.com/ Listen, Read, Quran & Tafsir


http://www.quranexplorer.com/quran/

http://www.quranflash.com/#

http://www.quranway.net/


General Islamic Websites

http://www.usislam.org/ A comprehensive Dawah and educational Website in 57 languages.

http://www.elsharawy.com/ Arabic Website of Sheikh Elsharawy

http://www.elqubessi.mohdy.com/ Arabic Website of Sheikh Ahmad Elqubessi

http://sahihalbukhari.com/sps/sbk/ Sahih al Bukhari


http://english.islamway.com/ Islam Way website


http://www.searchtruth.com/ search in the Quran and Hadith, Quran Auto Reciter Software, 99 Names of Allah and learn Arabic.

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http://www.islamreligion.com/ The religion of Islam


http://isna.net/ Islamic Society of North America
http://www.icna.com/main.shtml Islamic Circle of North America

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http://www.msa-natl.org/ Muslim Student Association national site in USA.

http://www.islamhelpline.com/ Islam help Line

http://www.prophetstory.com/ Arabic Stories of the Prophets


www.uga.edu/islam Islam and Islamic Studies Resources From University of Georgia

Encyclopedia of Muslim Family Arabic

http://www.qiblalocator.com/ Qibla Locator

**Bible Study**

Search engine of different versions of the Bible. Read Carefully and you will know Islam is the Truth.

http://bible.crosswalk.com/

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**Comparative Religions**

http://www.usislam.org/comparative/comparative.htm Comparative Religions

http://muslimconverts.com/ Welcome to Islam by Muslim Converts


www.jesus-or-allah.com Multi-National Muslim Committee, Christians.

http://www.islamtomorrow.net/ Chistian Bishop & Preacher & German Diplomat & Cat Stevens &others.
http://www.defending-islam.com/ Defending Islam by Hossein Caraballo


http://www.islaminfo.com/ Islamic Information and Dawah Centre International.


http://www.answering-christianity.com Islamic answer to Christian Doctrines


http://www.islamfortoday.com/ A guide to the religion of Islam by an Irish Catholic convert to Islam


http://www.thetruecall.com/home/ A guide for those Seeking the Truth

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**Converts to Islam**

http://www.usislam.org/converts/converts.htm Priests, Rabbis and missionaries, Famous Converts To Islam, Videos

http://www.muslimconverts.com/ How to convert to Islam and Issues facing Converts

http://www.jewstoislam.com/ Jewish converts to Islam from Rabbis to monotheism.
http://convertstoiسلام.org/ Multi-National Muslim Committee, Christians.

http://www.thetruereligion.org/converts.htm Christian priests and missionaries and many others who have discovered the one true religion.

http://www.latinmuslims.com/ Latin American Muslim Unity (LAMU)

http://www.islamtomorrow.net/ Christian Bishop & Preacher & German Diplomat & Cat Stevens & others.

http://www.welcome-back.org/Welcome Back to Islam


http://www.why-christians-converts-to-islam.com/A very good web site by brother Frank, who is a new convert to Islam.


Scientific Miracles in Quran

http://www.usislam.org/90scien.htm The Scientific Miracle

http://www.miraclesofthequran.com/index2.html Modern Science Reveals New Miracles of the Qur’an


http://www.harunyahya.com/ Many scientific and Islamic books by Harun Yahya.

http://www.55a.net/, The Quran Miracles Encyclopedia web Site


http://www.quran-m.com/ The Quran Miracle Encyclopedia.
GLOSSARY

Allah: The name of God of all Muslims and Christians in the Middle East.

Acid: A corrosive substance that releases protons in water. By definition, all acids measure less than 7 on the pH scale.

Algae: A large and varied group of single cell organisms that carry out photosynthesis and do not have specialized tissue structure. The cell contains a nucleus in which genetic material is stored.

Amino acid: An organic compound consisting of a standard nine-atom section and a distinctive atomic side chain. Certain kinds of amino acids are the building blocks of proteins.

Amphibian: A cold-blooded vertebrate animal adapted to both water and land. Baby amphibians remain in water and adults live in land.

Anthropology: The study of man based on the comparative analysis of and subsequent generalization about his physical and behavioral characteristics.

Archaeology: The study of man’s past on the basis of the tangible remains of his activity and of the surviving effects of these activities.

Asteroid: A small, rocky, airless body that orbits a star.

Astronomical unit: The average distance between the Earth and the Sun and a unit useful in studies of the solar system. Its accepted value is 149,597,870 kilometers (92,955,807 miles).

Astronomy: The science of measuring the motion and position of stars, planets and other astronomical bodies.

Atmosphere: A gaseous shell surrounding a planet or other body.

Atom: The smallest part of a chemical element that can take part in any chemical reaction and still retain its identity. All atoms consist of a nucleus and one or more orbiting electrons.

Ayah: (plural Ayat) (Arabic) Sign, parable. In the Quran, the manifestations of God in the world, or one verse in the Quran.

Bacterium: A member of many species of microscopic single-celled organisms.

Big Bang: According to a widely accepted theory, the universe started 15 to 20 billion years ago, when the universe began expanding from a state
of infinite density.

**Binary star**: A pair of stars in orbit around each other.

**Biochemistry**: The branch of chemistry that deals with the chemical processes of living organisms.

**Biosphere**: The totality of a planet’s living things and their habitats.

**Black hole**: A region of space-time in which there is such an immense concentration of material within a small volume that matter and energy cannot escape.

**Brown dwarf**: A star with such a low mass—less than 0.08 times the mass of the Sun—that thermonuclear reactions cannot take place inside it.

**Buddha**: (Hindi) The enlightened one. The title applies to the numerous persons who have attained nirvana (q.v.) but it is often used of Siddhartha Gautama, the founder of Buddhism.

**Carbon**: A chemical compound found in all living matter on Earth and notable for its tendency to form multiple bonds.

**Cell**: A basic functional and structural unit of living matter. A cell is capable of growth, reproduction and the excretion of wastes.

**Comet**: An asteroid-size body of dusty ice that travels in an elliptical orbit around the sun.

**Constellation**: A grouping of stars to form a shape or a pattern. This grouping into constellations does not imply any physical connection among them.

**Cosmic background radiation**: Microwave radiation peaking at a wavelength of 1 mm, which is visible at the same intensity all over the sky. It is taken to be the cooled remnant of the primeval fireball of the hot Big Bang that started the universe.

**Cosmic rays**: Atomic particles, mostly protons, of very high energy moving through space.

**Cosmic string**: A thin string of trapped energy left over from the earliest moments of the Big Bang, with immense mass per unit length. Cosmic strings may have acted as seeds for the formation of galaxies, clusters and superclusters.

**Cosmology**: The study of the universe as a whole, including its large-scale structure and movements, origin, evolution and ultimate fate.

**Cosmos**: The universe; also, a mathematical or scientific model of the
universe.

**Chromosomes**: The chainlike structure within the nucleus of the cell that carries genes.

**Cytoplasm**: The liquid material found in the region outside a cell’s nucleus.

**Deuterium**: A form of hydrogen having one neutron and one proton in its nucleus. Also known as heavy hydrogen.

**DNA** (Deoxyribonucleic acid): A complex organic compound found in all life on Earth and is responsible for the storage of genetic information. A DNA molecule consists of two parallel chains on nucleotides. DNA is named for the sugar deoxyribose, which it contains.

**Doppler shift**: A change in wavelength caused by the motion of either the emitter or the observer.

**Double star**: Stars appearing as a pair because they are close to each other in the line of sight.

**Electron**: A negatively charged particle that normally orbits the nucleus of an atom, but may exist in isolation.

**Element**: One of just over 100 substances that cannot be reduced by chemical means to simpler substances.

**Elliptical galaxy**: A galaxy, ellipsoidal in shape, composed primarily of stars with little gas and dust.

**Energy**: The ability to do work, where work is defined as the ability to move mass through space. Life and machines require energy.

**Entropy**: A measure of the energy existing in a system that is unavailable for use. A physical system exhibits increasing entropy until it reaches equilibrium. Entropy is sometimes said to be a measure of disorder.

**Enzyme**: One of many proteins that accelerate or otherwise affect biochemical reactions without themselves being changed.

**Escape velocity**: The velocity that a body must reach if it is to escape into space from a celestial body. For the Earth it is 11.18 km/sec, while for the Sun it is 617.3 km/sec.

**Eucaryote**: A cell containing a nucleus in which genetic material is stored.

**Evolution**: According to evolutionists, changes over generations in organism’s inheritable characteristics.

**Fossils**: The remains of ancient forms of life preserved in the earth’s crust.
**Frequency**: The number of cycles per second. In electromagnetic radiation, frequency is obtained by dividing the speed of light by the wavelength. It is measured in Hertz, or simply Hz.

**Galaxy**: A celestial island of stars, dusts and gases.

**Gene**: A complete unit of biochemical information that specifies the series of amino acids needed to make up a particular type of peptide chain, which in turn form part of a protein.

**General relativity**: A theoretical account of the effects of acceleration and gravity on the motion of bodies and the observed structure of space and time.

**Gentile**: (Hebrew) One who is not Jewish.

**Goy**: (plural goyim) (Hebrew) Non-Jews or Gentiles.

**Grand unified theory (GUT)**: A theory that aims to unify the four basic forces of nature, i.e. strong, weak, electromagnetic and gravity forces. At the Big Bang, these forces were unified.

**Gravity**: The mutual attraction of separate masses; fundamental force in nature.

**Graviton**: The messenger particles of gravity in theories of quantum mechanics.

**Halo**: A glowing ring around a celestial body such as the Sun and Moon. The term is also used to describe material around our galaxy.

**Homo Sapiens**: The primate species to which human beings belong, characterized by a brain of about eighty five cubic inches and by a language and tool-making abilities.

**Hubble constant**: The ratio of speed of recession of galaxies to distance. At present, there is some doubt about its value, which is thought to be between 17 and 30 km/sec. per million light years.

**Hydrocarbon**: One of the large numbers of organic compound made up exclusively of carbon and hydrogen atoms. Seven types of hydrocarbons have been detected in space.

**Idolatry**: The worship of a human or man-made entity instead of the transcendent God.

**Inertia**: The resistance of a body to change velocity. The inertia of a body equals its gravitational force.

**Inflation**: According to theory, a sudden expansion in space that occurred...
10E-35 seconds after the Big Bang.

**Infrared**: A band of electromagnetic radiation with a lower frequency and longer wavelength than red light. Most infrared radiation is absorbed by the Earth’s atmosphere, but certain wavelengths can be detected from Earth.

**Inorganic**: A chemical compound that does not include both carbon and hydrogen atoms. Also may refer to matter that is not and never has been alive.

**Invertebrate**: An organism without a backbone.

**Ion**: An atom that has lost or gained one or more electrons. A neutral atom has an equal number of electrons and protons, giving it a zero net electrical charge.

**Ionosphere**: An ionized atmospheric layer. The Earth’s ionosphere occurs at altitude of 35 miles and higher.

**Islam**: (Arabic) Surrendering to the Will of God.

**Isotope**: One of two or more forms of a chemical element that have the same number of protons but a different number of neutrons in the nucleus.

**Kepler’s Laws**: Three laws governing the orbital motion of planets. The first law which states that planets move in elliptical orbits with the Sun at one focus of the ellipse.

**Light year**: An astronomical distance unit equal to the distance light travels in a vacuum in a year, almost six trillion miles (6,000,000,000,000 miles).

**Logos**: Cosmic reason, used in ancient Greek philosophy, as the divine source of order and intelligibility.

**Magnetosphere**: The region around a planet in which its magnetic field is the dominant magnetic influence.

**Mammal**: A hairy, warm-blooded vertebrate animal that nurses its young. Almost all mammals bear their young alive, rather than in eggs.

**Membrane**: A flexible structure that encloses a cell, organelles within a cell, or other tissue. A membrane consists primarily of layered protein and fats.

**Metabolism**: The biochemical processes that convert energy to a form useful for life.

**Meteoroid**: A small metallic or rocky body found in space. A meteoroid
entering a planet’s atmosphere is called a meteor. Meteors often burn up in the atmosphere; those that reach the surface are called meteorites.

**Milky Way:** A hazy band of light crossing the entire sky in both northern and southern hemispheres. So named after its appearance, it is now known to be caused by myriad of stars as well as dust and gas. It is a spiral galaxy and our solar system exists close to the tips of one of the arms of the spiral.

**Molecule:** The smallest unit of an element or compound that retains its properties. A molecule may consist of a single atom or, more commonly, two or more atoms bonded together.

**Monotheism:** The belief that the universe is created and governed by one God.

**Moon:** One of a planet’s natural satellites, generally no smaller than ten miles in diameter. There are more than 50 known moons in the solar system.

**Mutation:** According to evolutionists, a random, inheritable change in the genetic pattern of an organism.

**Natural selection:** According to evolutionists, the evolutionary process in which well adapted species survives and increase in numbers while poorly adapted species become extinct.

**Nebula:** A cloud of dust or gas in space. Nebulae can be dark or bright, diffuse or compact.

**Neuron:** A specialized cell that transmits information through electrochemical signals. Neurons are distributed throughout a body in a neural network.

**Neutron:** A constituent of many atomic nuclei that has no electric charge with a mass just a little greater than a proton.

**Neutron star:** A massive star near the end of its life. It degenerates to tightly packed neutrons.

**Nirvana:** (Hindi) Literally “cooling off” or “going out” like a flame; extinction. Term used by Buddhists to denote the ultimate reality, the goal and the fulfillment of human life and the end of pain. It is impossible to define in rational terms but belongs to a different order of experience.

**Nous:** Mind or reason, used in ancient Greek philosophy, as the principle of divine reason.

**Nova:** Meaning “new”, this is an aging star which suddenly flares up in
brightness- perhaps by 10,000 times- and so suddenly appears in the sky. The flare up lasts for days or weeks at the most and then sinks back to its original brightness over months or years.

**Nucleic acid**: One of the complex organic molecules, including DNA and RNA that store and transmit genetic information.

**Nucleolus**: A small body within the cell’s nucleus. Its function is not clearly understood but may be related to the synthesis of RNA.

**Nucleotides**: One of the chemical units that makes up a nucleic acid such as DNA or RNA. A nucleotide consists of a phosphate, a sugar and a base, all bonded together.

**Nucleus**: The massive center of an atom composed of protons and neutrons and orbited by electrons. Also, a membrane-enclosed structure within a eucaryotic cell that contains genetic material.

**Open universe**: A universe that expands forever.

**Orbit**: The path of an object revolving around an astronomical body. Also, the path of an electron around the nucleus of an atom.

**Organic**: Pertaining to a compound made up of carbon and hydrogen and possibly other elements as well. All life contains organic compounds. The term may also refer to living or once-living material.

**Ozone**: A three-atom form of oxygen. Earth’s stratosphere includes an ozone layer that absorbs dangerous ultraviolet radiation.

**Paleontology**: The study of the life forms that exist in the past.

**Peptide chain**: A linear organic compound consisting of up to several hundred amino acids linked together. Proteins are composed of one or more peptide chains.

**Phosphate**: A type of inorganic compound. Some phosphates join to sugars and bases to form nucleotides.

**Photoelectric effect**: The emission of electrons by certain metals, such as selenium, when exposed to electromagnetic radiation.

**Photon**: The quantum particle of light and the messenger particle of electromagnetic radiation.

**Photosynthesis**: The biochemical process that converts light to chemical energy and glucose. Photosynthesizing organisms typically consume carbon dioxide and hydrogen and release oxygen as a by-product.

**PH scale**: A measure of acidity or alkalinity, with values ranging from 0,
for extremely acid, to 14, for extremely alkaline. A neutral compound has pH value of 7.

**Planck era:** Theoretically, the very brief time after the Big Bang and up to the Planck time. Conditions during the Planck era cannot be explained by the current physics.

**Planck’s constant:** A number whose value is important to the equations of quantum mechanics; equal to the ratio of a photon’s energy to its frequency.

**Planck time:** Theoretically, a time equal 10E-43 second after the Big Bang, after which the universe would have followed the known physical laws.

**Planet:** A large, nonstellar body that orbits a star and shines only with reflected light.

**Plasma:** An ionized gas consisting of ions and electrons moving freely. Plasmas are affected by electric and magnetic fields and are to be found in stars and interstellar gas.

**Primate:** The highest order within mammals, including apes and man.

**Prokaryote:** A cell without a nucleus.

**Protein:** One of a class of complex organic molecules necessary to life.

**Proton:** A positively charged particle with about 2,000 times the mass of electron; normally found in the nucleus of an atom.

**Pulsar:** An astronomical object that emits extremely regular pulses of radio or other energy at intervals of several seconds or less. Pulsars are thought to be spinning neutron stars.

**Quantum:** A fixed packet, or quantity, of some physical property such as mass or energy.

**Quantum mechanics:** A mathematical description of the rules by which subatomic particles interact, decay and form atomic or nuclear objects. Classical mechanics does not apply on subatomic level.

**Quark:** The fundamental particle that forms all hadrons, or particles subject to the strong force. Six kinds are known. These are: “up”, “top” and “charm” type with positive charges and “down”, “bottom” and “strange” type with negative charges.

**Quasar:** Acronym for a quasi-stellar radio object. Quasars are starlike in appearance. They are now believed to be very distant objects, probably the cores of active galaxies.
Radar: A method of identifying the location or speed of a distant object by bouncing radio waves off its surface and measuring the interval before they return; also, an instrument used for this purpose. The term is an acronym for “radio detection and ranging”.

Radio: The least energetic form of electromagnetic radiation, having the lowest frequency and the longest wavelength.

Radio astronomy: The observation and study of radio waves produced by astronomical phenomena.

Red giants and supergiants: Bright red stars of large size, 10 to 100 times the diameter of the sun.

Relativity: A set of theories that describe how measurements are affected by motion and gravity.

Reptile: A cold-blooded, vertebrate, nonamphibious animal such as turtle, lizard, snake, or a crocodile.

Ribosome: An organelle that synthesizes proteins.

RNA (Ribonucleic acid): A complex organic molecule named for the sugar ribose, which it contains. RNA consists of two classes: messenger RNA copies genetic information stored in DNA and transfer RNA helps match amino acids to those genetic instructions.

Satellite: A body that orbits another.

Silicon: The second most common element, after oxygen, in the Earth’s crust. It also makes up 7% of the matters in the universe.

Solar system: The sun and its associated system of planets, asteroids and other orbiting bodies; more generally, any star and the bodies that orbit it.

Special relativity: A theory showing that observers in uniform motion cannot perceive their motion and that all observers of such motion obtain the same value for the speed of light. From these two principles the theory concludes that measurement of distance, time and mass will vary depending on the motion of an observer moving uniformly in relation to the item being measured.

Species: The basic category of biological classification, consisting of similar organisms capable of interbreeding.

Spectrum: The array of colors or wavelengths obtained by dispersing light from a star or other source, as through a prism, Spectra are often striped with emission or absorption lines, which can be interpreted to
show the chemistry and motion of the light source.

**Star**: A self-radiating celestial body in which energy is generated in its central region by thermonuclear reactions.

**Steady state theory**: A theory that suggested in 1948 in which the universe never had a beginning nor will ever have an end but always remains in a steady state. After the discovery in 1965 of microwave background radiation in the universe, the Big Bang theory became dominant.

**Sufi, Sufism**: The mystics and mystical spirituality of Islam. The term was derived from the early Sufis who preferred to wear a coarse garment of wool (Arabic, Suf), favored by Prophet Muhammad.

**Sugar**: A simple carbohydrate. The sugar ribose and deoxyribose are found in RNA and DNA, respectively.

**Sunnah**: (Arabic) Practice. Those customs sanctioned by tradition to imitate the behavior and actions of the Prophet Muhammad.

**Superclusters**: A cluster of clusters of galaxies, some of which are as much as 360,000,000 light years in diameter.

**Supernatural**: That which is unexplainable in terms of the natural world or known facts.

**Supernova**: A star close to the end of its life that undergoes an explosion that ejects most of its material in space.

**Surah**: (Arabic) A chapter in the Quran.

**Symbiosis**: The close, interdependent relationship of two unlike organisms.

**Synapse**: A nerve cell connection point, through which electrochemical impulses are transmitted from one nerve cell to another.

**Tectonics**: The study of a planet’s crust, including its structure and processes.

**Ultraviolet**: A band of electromagnetic radiation that has higher frequency and shorter wavelength than visible blue light has. Most ultraviolet is absorbed by the Earth’s ozone layer.

**Van Allen belts**: Two regions in the Earth’s magnetic field or magnetosphere in which electrically charged atomic particles become trapped.

**Velocity**: The speed and direction of motion.

**Vertebrate**: An organism having a backbone.
**Wavelength**: The distance from crest to crest or trough to trough of an electromagnetic or other wave. Wavelengths are related to frequency; the longer the wavelength, the lower the frequency.

**X-rays**: Very short wavelength highly penetrating electromagnetic radiation. X-radiation from space is evidence of highly energetic reactions on celestial bodies.

**Yoga**: A discipline early evolved by the Indians, which “yokes” the powers of mind. By means of its techniques of concentration, the Yogi acquires an intense and heightened perception of reality, which seems to bring with it a sense of peace, bliss and tranquility.
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