THE ATHEISM DELUSION

First Published - 2013 by Najmat Al Sabah
Translated by English Translation Committee of Ansar Imam al-Mahdi PBUH

This edition published 2016 by Compass Publishing
in association with Najmat Al Sabah
Province 903, Kerada Dakhil, Baghdad, Iraq

ISBN 978-1-907308-77-2

A catalogue copy of this book is available from the British Library.

Typeset by The Book Depository

Printed and bound by CMP
www.cmpbookprinting.co.uk
ISBN 978-1-907308-77-2

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AHMED AL-HASAN

Contents

CHAPTER ONE

TURTLES ALL THE WAY DOWN

The messengers of heaven have always been opposed by the "men of religion" who profit from religion in their time. When will people notice this so they don't fall into the same trap again?![*]

Giordano Bruno and Galileo Galilei

Giordano Bruno (1548-1600) was an Italian philosopher. He believed that the earth spins around the sun, and he promulgated the Copernican model of the earth's spin. Bruno was imprisoned by the men of religion of the Christian Church. They then cut his tongue, tortured, and killed him for saying that the earth spins around the sun, whereas the men of the Church believed that the sun and planets spin around the earth.

Galileo Galilei (1564-1642) was a professor of mathematics at the University of Pisa. At the start of the seventeenth century, he observed the sky with a telescope he made himself, and he discovered that the earth really does spin around the sun, but the Catholic Church saw this as just a theory incompatible with the Bible. So they prosecuted Galileo for heresy, the charge invariably brought against anyone who opposes the Church. He was imprisoned at first, and later placed under house arrest and forbidden from teaching or giving lectures. His books were banned and he died in his house, persecuted by the men of religion, the geniuses who knew everything, who knew very well

*. It is said that the astronomer Bertrand Russell was giving a lecture about how the earth spins around the sun. An old lady stood, walked up to him and said, "What you are saying is nonsense. The earth is actually supported on the back of a turtle." He asked, "And what is the turtle standing on?" Mocking his way of thinking, she said, "You're a clever young man, but it's turtles all the way down!"

This old lady and others like her do not come up with "turtles" on their own—they get them from the men of religion of their time. The turtles of these men are actually quite numerous. They are all the way down every path, turtles set up for whoever doesn't want to correctly employ their mind to know the truth, the truth as it is, rather than as it was inherited from their forefathers, or conveyed to them by the men of religion throughout time. In the first chapter, we will examine some of the turtles that these men of religion have sold us and continue to sell in a different way, or in a new disguise.

that the earth does not spin, ever! Would any Christian of that time have believed that Galileo, a heretic according to the Church, knowledgeable than the Christian scholars of religion who own the magical theological equation that no one can understand, which says: God is three distinct persons, each one an absolute deity, one dispatching the others, yet they are one?! They have convinced more than a billion Christians of it, even though the falsehood of this nonsensical magical theological equation is as unmistakable as 1 + 1 = 2! So why wouldn't they be able to convince the Christians for hundreds of years that the claim of a very insignificant heretic like Galileo—who says that the earth spins—is false as well?!

In the end, the Church officially apologized to Galileo, but this was hundreds of years after his death, and only after the earth's spin became a fact known to everyone. So before its followers deserted it, the Church finally became convinced, albeit unwillingly, that the earth spins.

In the twentieth century, the Catholic Church apologized to Galileo, and acquitted him of his great crime, the crime of saying: "Indeed, the earth spins."

Nearly four centuries later, after all is said and done, Galileo is a criminal acquitted of his crime: saying that the earth spins around the sun! Today he is no longer a heretic, and according to the Church, his statements are no longer heretical! So Giordano Bruno was killed for speaking the truth, therefore, the Church is a murderer that sheds innocent blood! The inevitable conclusion is that the statements of the Church that contradicted Galileo's are the real heresy. So in reality, it is actually the Church that has been the heretic for nearly four centuries.

The question to the Christians of the world today is this, is it possible that your Church is also being heretical as far as the divinity of Jesus Christ, the Holy Spirit, and the Father, and the notion that they are three persons, especially given that there were Christians who objected to it? And is it possible that one day you will discover that Saint Arius, deemed a heretic by the Church for denying the absolute divinity of Jesus Christ, wasn't really a heretic? Will it become unmistakable to you that it is the Church that fought against Arius that is actually the heretic, just as it was with Bruno and Galileo?!

I fear that day might arrive far too late to fix this, or to even have a chance to fix it. Shouldn't each Christian search for the truth while he

still lives? Search for yourself instead of following the opinion of the Church, proven by its own admission to have been the heretic in the case of Galileo for almost four centuries.

And like a shepherd who takes his sheep out to graze at sunset when the other shepherds have already returned, in the prominent Wahhabi scholars of the second half of the twentieth century we find an extraordinary story that recalls the lesson of Galileo. I doubt they knew anything about him, for if they had, they would have accused him of being the greatest idol worshipper for saying that the earth spins, thus contradicting them. Their story is told through a brief summary of religious rulings that reflect complete ignorance: despite man going up to the moon in the twentieth century, and astronauts returning with images of a spinning earth, to the Wahhabi scholars it was clear, the earth doesn't spin, ever!

Their religious rulings are as follows:

A question for Muhammad Ibn Uthaymeen:*

May God bless you. This is a question from listener Ibtissam Muhammad Ahmed who is from Al-Anbar, Iraq. She asks, "What is the meaning of God's words: ﴿And you see the mountains, thinking them rigid, while they will pass as the passing of clouds. [It is] the work of God, who perfected all things.﴾ [Quran Chapter "The Ant" 27:88]. Is this verse evidence of earth's spin?"

Sheikh Ibn Uthaymeen's response: … we say that the theory of night and day alternating due to the earth spinning on the sun is invalid because it contradicts the literal meaning of the Quran… Moreover, it is proven that the Prophet [Muhammad] pbuh said to Abu Thar (may God be pleased with him) at sunset: "Do you know where the sun goes?" Abu Thar said, "God and His Messenger know best." He said, "It goes and prostrates beneath the Throne." This narration gives the proof that it is the one that moves around the earth, because of the words: "Do you know where the sun goes?"

In addition to that, he said in the mentioned account: "That is, if it is given permission. If it is not, then it will be told, 'Return to wherever you want,' so it will rise from its setting place." This is evidence that the sun is the one spinning (turning) around the earth. And this is what every believer must believe according to the literal meaning

*. Muhammad Ibn Uthaymeen (1925-2001) was a Saudi Arabian Sunni scholar. He received his Islamic education from Sunni scholars and became a teacher at various religious institutions. He was considered a conservative and a prominent leader of the Salafi movement.

> of the words of their All-Knowing Lord, without considering these rotten theories that time will turn on and bury, just as it buried other worn-out theories. This is what we believe regarding this matter … What is important regarding this matter is that we must believe that the sun spins on the earth, and that the alternation of night and day is not caused by the earth's spin, but rather it is brought about by the sun spinning around the earth instead (Binothaimeen.net 2004. Arabic source, translated).

Look at Ibn Uthaymeen in the twentieth century saying that the earth spinning, or turning, around the sun is just a rotten theory that time will turn on and bury, but in the end, time turned on Ibn Uthaymeen, rotted and buried him. Today, everyone except the unfortunate ones exploited by Ibn Uthaymeen and the likes of him knows that the earth spins around the sun. Sadly though, some of them have studied physics, and they still believe that the earth does not spin!

Abdul Aziz Ibn Abdullah Ibn Baz said the same thing that Ibn Uthaymeen said:*

> I also confirmed the article with some quotes from the scholar Ibn Al-Qayyim (may Allah [God] be Merciful to him) that give evidence to prove that the earth is round. As for the spinning of the earth, I have denied this and explained the evidence that confirm its falsehood, but I did not declare those who believe that it does to be Kafirs [disbelievers], but I do so for those who say that the sun is static and does not move. This is because saying so contradicts the explicit texts in the Qur'an and the authentic Sunnah, which confirm that the sun and the moon run on their courses (Binbaz.org.sa 1977).

It is clear that by saying the sun spins, Ibn Baz is trying to say that it spins around the earth like the moon does, as he believes the earth is fixed and doesn't spin. Thus, there is no way for night and day to occur unless the sun were to spin around the earth.

Whoever follows these people and shares their beliefs should reconsider. They said the theory that the earth spins around the sun is rotten, but it has now been made clear for you that it is their statements and beliefs that are rotten. So won't you reconsider before it's too late? Perhaps their statement about the vicegerency of God on His

*. Abdul Aziz Ibn Abdullah Ibn Baz (1910-1999) was a Saudi Arabian Sunni scholar and a leading proponent of the Salafi form of Islam. He also received his Islamic education from Sunni Islamic scholars.

earth after Muhammad (the Messenger of God pbuhap) being false, is just like their statement that the earth doesn't spin around the sun. The earth that Ibn Uthaymeen, Ibn Baz, and all the Wahhabi scholars have said doesn't turn, turns. Beware, for on the Day of Resurrection, regret no longer benefits, and you might discover that the vicegerency of God on His earth after the Messenger Muhammad pbuhap is true, and that what Ibn Uthaymeen and Ibn Baz said about it is false, just like how they got it backwards when they said the sun turns around the earth:

> What is important regarding this matter is that we must believe that the sun spins on the earth, and that the alternation of night and day is not caused by the earth's spin, but rather it is brought about by the sun spinning around the earth instead.

As for those of you who follow people like them, may God reform your condition. Beware, perhaps they have presented religion backwards for you as well, just as they did with the earth and the sun.

Here, I will conclude the discussion of Galileo, the earth's spin, and the Christian and Wahhabi men of religion. I simply ask the reader to keep this lesson in mind when we discuss their opinion of evolution.

The Opinions of the Men of Religion Regarding the Theory of Evolution

Unfortunately, most of the clerics of the three Abrahamic religions (Judaism, Christianity and Islam) have taken the same stance towards Darwin's theory as they took toward his predecessor Galileo. Just as time passed by Galileo's theory of the earth's spin, culminating with a heartbreaking tragedy because of the clerics who fought it and who shed the blood of the scientists, and then evidence of the earth's spin accumulated until the point of having images of the earth spinning in space; likewise, now time has passed by evolution, and scientific evidence (such as genetics) has accumulated to the point that denial of evolution is now foolish and contemptible stubbornness. However, many clerics continue to rely on the ignorance of the people who listen to and follow them. Unfortunately, even today they reject evolution, the evidence from genetics and comparative anatomy, and the study of unearthed animals, and on top of all that, they even reject the evidence

of a succession of fossils tracing back to beings that walked upright on two feet millions of years ago.

For biologists, all of this evidence is more than enough to prove evolution, and today it is a scientific fact taught in schools and universities. Biologists no longer search for evidence to prove evolution, but instead investigate its mechanisms and its history. In spite of this, many clerics continue to reject it without scientific proof or evidence to the contrary. As if they were not just satisfied with rejecting it, some of them have also declared that whoever believes in evolution is a disbeliever who should be put to death!

We will briefly consider the question of evolution and the evidence supporting it, but if those who call themselves scholars of religion, when rejecting the theory of evolution, would just propose an alternate theory that is consistent with the established scientific facts of genetics, comparative anatomy and fossils. And if they would just look at the lungfish and the amphibious fish and tell us: did this fish evolve from the aquatic fish or not? And what is the evidence for their point of view? They should also determine the timespan of human life from the creation of Adam pbuh until today. This is important because the proposed timespan should be consistent with their statements that deny evolution, and also with the scientific facts regarding the history of the genus *Homo* on the earth. It is now an unquestionable scientific fact that modern man is *Homo sapiens*. The origin of *Homo sapiens* as well as their history and route of migration out of Africa is well known, so those who deny evolution should at least give an approximate date of when Adam was created, and the location where he first lived. Even an approximate location would be acceptable. Of course, the dates they provide must be based on the religious scriptures that they claim disprove evolution. Then they will find themselves unraveling the yarn that they have spun, and they will find they have no argument or proof, other than provoking the pride and arrogance of man with statements like, "Evolution claims that man descended from apes."

The Religion of Church Christianity and Evolution!

Although it may not have issued an official statement on the matter, or even expressed an opinion on what the theory of evolution presents, the Catholic Church has rejected the theory for decades. This is despite the fact that the theory deals directly with the topic of creation,

the most essential issue of religion. In fact, the theory of evolution completely contradicts the Biblical story of Genesis.

An almost identical stance has been taken by other church denominations, as they reject the theory of evolution even though some of them do not openly say so. The reason for this might be obvious: times had changed. The Inquisition had ended, so the chance to cut Darwin's tongue like Bruno's, or to imprison and oppress him like Galileo, ended as well. So they resorted to silence. Eventually, when they realized that the evidence in favor of evolution was significantly accumulating, especially after advancements in the field of genetics, the Catholic Church was compelled to admit to the theory. Then the Catholic clergy began to say that they had never opposed Darwin, or the theory of evolution. Actually, the truth is that they did not cut Darwin's tongue or burn him at the time, because their authority in Europe had come to an end. Today, they are compelled to accept the theory of evolution, even though it could mean the death of the religion of Church Christianity, because the evidence is only debated by an ignorant few who don't understand what evolution is or how it works, and who don't understand that the theory has changed from the way Darwin originally presented it. Actually, the only thing that remains from what he presented is perhaps the general concept, since the details, methods of theorizing, proofs, and evidence of evolution have all recently emerged due to the advancements in science and research. So for those who believe in this theory, it now represents a perfected scientific treatise that explains the story of creation, without the need for any supernatural power intervening in its completion, or even in its initiation. Therefore, the theory of evolution is presented today as a theory that refutes religion and the existence of a god. No one can claim to accept both evolution and religion without resolving the conflict that prevents them from accepting both. The way the theory of evolution is presented, understood and looked at today by evolutionary biologists says that evolution is not purposeful in the long-term, so it cannot be reconciled with religion.

In other words, no one can say that they completely accept the theory of evolution, along with the implications resulting from it such as it not being purposeful in the long-term, and continue to maintain that they accept religion at the same time. This claim is a blatant contradiction at a basic level, and it wouldn't be made by a rational and knowledgeable person without first resolving this contradiction so that

their claim is correct, acceptable and logical. That is why I said that the acceptance of the theory of evolution by the Church, something it was compelled to do, could mean the death of the religion of Church Christianity unless the Church resolves this contradiction by proving that evolution is purposeful in the long-term.

Of course, they do not understand this, because unfortunately, many of them do not understand what evolution really is, or how the theory of evolution is presented today.

Here is a segment from a debate between Dr. Richard Dawkins and George Pell, an Australian Cardinal of the Roman Catholic Church and the Archbishop of Sydney, Australia:*

> CARDINAL PELL: …You have to reason about the facts of science, ask whether you believe that the suggestion that, you know, random selection is sufficient and also most evolutionary biologists today don't believe that.
> RICHARD DAWKINS: Don't believe what?
> CARDINAL PELL: They don't believe in random so this crude fundamentalist version of random selection that you propose.
> RICHARD DAWKINS: I do not propose it and I strongly deny that evolution is random selection. Evolution is non-random selection. Non-random.
> CARDINAL PELL: So there is a purpose to it is there?
> RICHARD DAWKINS: No.
> CARDINAL PELL: Could you explain what non-random means?
> RICHARD DAWKINS: Yes, of course I could. It's my life's work … There is random genetic variation and non-random survival and non-random reproduction which is why, as the generations go by, animals get better at doing what they do. That is quintessentially non-random. It does not mean there is a purpose in the sense of a human purpose in the sense of a guiding principle which is thought up in advance. With hindsight you can say something like a bird's wing looks as though it has a purpose, a human eye looks as though it has

*. Dr. Richard Dawkins, born in 1941, is a distinguished British biologist and an Oxford University professor who specializes in evolutionary biology and animal behavior. He has penned many publications including: *The Selfish Gene*, *The Blind Watchmaker* and *The God Delusion*. In his book *The Selfish Gene*, he scientifically established the important role of genes and the competitive battle for survival of the best gene. He also introduced and developed the meme theory. Richard Dawkins is famous for his atheist views, and the radical use of the theory of evolution to promote atheism. In 2006, Dawkins established, "The Richard Dawkins Foundation for Reason and Science". This foundation aims to promote acceptance of atheism and to defend scientific responses to questions pertaining to existence.

> a purpose but it has come about through the process of non-random natural selection. There is no purpose in the human sense. There is a kind of pseudo-purpose but it's not a purpose in the human sense of conscious guiding. But above all I must stress that Darwinian evolution is a non-random process. One of the biggest misunderstandings, which I'm sorry to say the Cardinal has just perpetrated, is that evolution is a random process. It is the opposite of a random process It is the opposite of a random process (Religion And Atheism Q & A: Adventures In Democracy 2012).

It is clear that the Cardinal entered the debate with Dr. Dawkins without understanding evolution, or what evolutionary biologists like Dawkins say about it: evolution is non-random because it is governed by the system of natural selection, yet it isn't purposeful in the long-term.

The Wahhabi Salafi Religion and Evolution

The response of Abdul Aziz Ibn Abdullah Ibn Baz:

> Question: I always hear and read that man was a monkey in the beginning, then he passed through stages and changed into the modern man that we know today. Is this logical or not? And are the origins (of man) a monkey—meaning the origins of the formation of its (the monkey's) body are the same origins of the formations of man's? Benefit us, (we ask that) Allah [God] reward you with good.
>
> Answer (by Sheikh Ibn Baz):
>
> (With the Name of Allah (God, the Creator), the Most Merciful, the Bestower of Mercy)
>
> Peace and blessings be upon the Messenger of Allah [God], his family, his Companions, and whoever follows his guidance. As for what follows:
>
> This statement that the questioner mentioned is rejected and false. It opposes the Book of Allah [God]—Exalted and Lofty is He—and the Sunnah of the Messenger—(we ask that) Allah [God] exalt him and raise his rank—and it opposes the consensus of the Salaf of the ummah [lit. predecessors of the nation, referring to the earliest generations of Muslims after the Prophet Muhammad]. And this statement has become known from the one called Darwin—and he is a liar in what he says.
>
> Rather, the origin of man—his origin is known. His origin is not a monkey, nor other than a monkey. Rather, he is man—upright, intel-

ligent—Allah (God, The Creator) created him from [wet] clay (water and soil), from [dust] earth. That is our father—Adam—peace be upon him—Allah [God] created him from [dust] earth (soil).

As Allah [God]—Exalted and Lofty is He—said (translated):

"And indeed We created man (Adam) out of an extract of [wet] clay (water and earth)." Quran Chapter "The Believers" 23:12.

He is created from this [dust] soil. Allah [God] created him with his image—his height was sixty cubits (90 feet)—60 cubits tall. Then the creation began to decrease (in height) until now … So his (Adam's) children are like him—created in the form of their father (Adam). They have hearing, they have sight, they have intellects, and they have the stature that you see today—they walk on their legs. They speak, hear, see, and eat with their hands …

They aren't in the shape of monkeys, nor the form of monkeys. They (people) have a specific form which befits them. And likewise is every species (community):

The monkeys are a separate species

The pigs are a separate species

Likewise are the dogs, donkeys, cats, and the species other than them

There is not a moving (living) creature on earth, nor a bird that flies with its two wings, but are communities like you. We have neglected nothing in the Book, then unto their Lord they (all) shall be gathered. Quran "The Cattle" 6:38.

These species (communities)—all of them will be gathered before Allah [God] and collected together on the Day of Resurrection—some of them will give detailed accounts about others

Then it will be said to them (the animals): Be dirt!

So they will become dirt (soil)—except for the Jinn and Mankind—theirs is a different situation. They will be called to account and recompensed for their actions. So whoever obeyed his Lord (worshiping only Him as a Muslim) then he (or she) will go to Paradise. And whoever disbelieved in his Lord (by worshiping others with Him or disbelieving in His existence, for example) then he (or she) will go to the fire.

As for these animals, then they are separate species. The monkeys are a separate species which has its own essential nature, its own origin, its own characteristics. And likewise are the pigs, dogs, donkeys,

> camels, cows, and sheep. And likewise the species (each) have their (different) forms and distinct characteristics which Allah [God] has created for it—He is Free from all deficiencies and defects—and He is the Most Wise, the All-Knowing. And He sees best the details …
>
> The details of their structures (make-ups)—He has more insight into this and knows it better (than everyone)—He is the Most High and Free from all deficiencies and defects. But it is obligatory that the servant (the human being) believes that the creation of Adam was not like the creation of monkeys. And that the origin of Adam is the same origin which he is upon today —his origin was not a monkey, nor other than that. Rather, he is man, upright in his form …
>
> He possesses intellect, he possesses hearing, he possesses sight, he possesses the known senses like smelling, touch, taste, and other than that from what Allah [God] created him with. So the statement that his origin is a monkey is a rejected statement, a false statement. And if it were said that the one who said this was a kaafir [disbeliever], it would be a well-founded statement. For what is most apparent—and Allah [God] knows best—is that the one who says this while knowing what the legislation (Quran and Sunnah) has brought, then he is a disbeliever because he has belied Allah [God] and His Messenger and he has belied the Book of Allah [God]—He is the Most High and Free from all deficiencies and defects (Ibn Baz 1977).

Unfortunately, Ibn Baz and many Wahhabi sheikhs remain lagging behind in terms of their capacity to comprehend. He is trying to respond to a scientific issue proven with scientific evidence by using ambiguous religious scripture that could be understood to be in agreement with science. And this is just a repetition of the drawn out statements Ibn Baz made about the earth's spin. What should we call this?!

Although Ibn Baz rejected the theory of evolution, he unwittingly admitted to it when he said the following concerning the human being:

> He is created from this soil. Allah [God] created him with his image—his height was sixty cubits (90 feet)—60 cubits tall. Then the creation began to decrease (in height) until now…

Aside from the fact that this is filled with ignorance and is false, what is of interest to me here is that Ibn Baz says that the height of man has definitely changed from sixty cubits to the current height. By saying this, he admitted to the theory of evolution, especially since this change in body size is a direct result of the laws of evolution. I repeat:

The claim that the height of man was sixty cubits is not valid and it is false, and his statement that the body of Adam was created in the image of God is an anthropomorphization that is untrue, and the faith of whoever believes in this anthropomorphization is deviated.

I don't think I need to convey the rest of the statements of the Wahhabis like Ibn Uthaymeen because they insist that the theory of evolution is false, and they declare that whoever believes in it is a disbeliever, even though they do not offer any scientific evidence to disprove the theory. This is not unusual coming from them, as it is the savage and barbaric way of the Wahhabi sheikhs to proclaim others to be disbelievers and to give their followers, the murderers and killers, permission to slay them. This method of theirs is the greatest evidence of their ideological, intellectual and scientific defeat. They lack the ability to understand what the rest of humanity has presented, let alone the ability to respond in a scientific manner.

Certain Sunni Scholars and the Theory of Evolution

Al-Azhar University, which represents the Ashari and Maturidi Sunni ideologies, is well known for rejecting the theory of evolution. These are some of the statements from an Al-Azhar graduate claiming to refute evolution.

Dr. Umar Sulaiman Ashqar, in his book, *Al-Aqeeda fi Allah* [Belief in God], begins by explaining his understanding of Darwin's theory—the theory of evolution:*

> Darwin's explanation of the process of evolution:
> Natural Selection: Elimination factors cause the weak and frail beings to perish and the strong ones to survive. They call this law "Survival of the Fittest", so the strong and healthy creature survives and passes its strong traits to its offspring. With time, the strong traits gather to make a new trait in the organism. This is "abiogenesis" that makes the being with these primary traits evolve into a higher organism. In this manner, evolution continues to occur, and that is progression (Ashqar 1999, 85).

*. Dr. Umar Sulaiman Ashqar (1940-2012), a Sunni scholar, received his doctoral degree from the Faculty of Islamic Law at Al-Azhar University. He was a lecturer at the Faculty of Islamic Law at Kuwait University, and he later served as a professor at the Faculty of Islamic Law at the University of Jordan in Amman, Jordan.

Response: Abiogenesis is a theory that explains the origin of the first replicators and how they emerged on the earth. It has nothing to do with the traits of organisms or the law of natural selection. It deals with how the first protein, or the first self-replicator, representing the simplest origin of life, came into existence. With regard to the evolution of organisms and bearing new traits during the process of development, this is not termed abiogenesis, but is actually the process of evolution and development. And the appearance of a new organism that expresses enough traits to separate from its relatives during the process of evolution is called speciation and diversification.

Wonders never cease with people like Ashqar who delve into a science they know nothing about. He is not even capable of distinguishing abiogenesis from evolution, or development from speciation, yet he says that the theory of evolution is false, and he sets out to refute it!

Ashqar later says:

> Professor Nabeel George, one of the reliable scientists in this field, says: "For that reason, natural selection does not explain the theory of abiogenesis or evolution. It only explains that the least fit will die, and that some characteristics will spread among the species. Those who speak of evolutionary leaps mean that an animal which did not have an eye suddenly had an eye, because of the action of some rays.
>
> Some specialists have proved that x-rays can cause changes in the number of genes, but this change occurs in something that is already present—it does not create something that does not exist. The number of a monkey's genes differs from the number of a human's genes. X-Rays only affect the genes that are already present; how could these rays, which do not possess any form of intelligence, create the intelligence in man which distinguishes him from monkeys and other animals?
>
> These rays can affect the genes, but it is more akin to distortion than reforming, as happens in the case of atomic rays (radiation). This is in addition to the fact that science of genetics disproves Darwin's theory, as experience shows. The Jews, and the Muslims after them, have been circumcising their sons for centuries, but this has not led to any of their children being born circumcised. The more science advances, the more Darwin's theory is proven wrong" (Ashqar 2003, 139).

Response: Here again, he shows his misunderstanding of the theory of evolution when he quotes the following:

> Those who speak of evolutionary leaps mean that an animal which did not have an eye suddenly had an eye, because of the action of some rays.

This is incorrect. According to the theory of evolution, the eye did not come into existence suddenly. Initially there were cells that sensed the environment of the organism. These cells then specialized in sensing light, multiplied, arched, and shrank to form the light orifice, and afterwards the lens was formed. The modern eye evolved through minute cumulative steps that occurred over millions of years and across many generations.

Ashqar's reference to circumcision shows that he understands nothing about the theory of evolution. What does circumcision or tradition have to do with the theory of evolution? Evolution occurs due to the presence of a favored genetic trait acquired by the organism. Circumcision is not a genetic trait, but rather a surgical procedure that groups of people habitually perform. Customs and surgical procedures cannot be inherited. Rather, it is genetic traits that are inherited and therefore have an effect on evolution.

By God! I wonder about a person who understands nothing about the theory of evolution, then writes a book to refute it, and he considers it a scientific response. There is no power except in God.

Ashqar says:

> This theory is not supported by reality
> a) If this theory were true, we would see many animals and people coming into existence through evolution, not only through reproduction. Even if evolution needs a long time, this does not mean that we would not see monkeys changing into men, one group after another.
> b) Even if we accept that natural circumstances and natural selection turned a monkey into a man for example, we cannot accept that these circumstances would also dictate that there would be a woman to accompany this man, so that they could reproduce and there would be a balance between men and women.
> c) The ability to adapt which we see in creatures such as the chameleon, which changes colour according to where it is, is an ability which is inherent in the formation of that creature. It is born with that ability which exists in some and is barely present in others. All creatures have limits beyond which they cannot pass. The ability to adapt is the matter of inborn potential, not a developed characteristic that has been formed by the environment as the proponents of this theory say.

> Otherwise, the environment would have forced rocks, soil, and other inanimate objects to adapt.
> d) Frogs are distinguished from man in their ability to live on the land and in water. Birds are distinguished from man by their ability to fly and move rapidly without the aid of a machine. A dog's nose is far more sensitive than that of a human - so is a dog's nose more advanced than a human's nose? Are frogs and birds more advanced than humans in some ways? Camels', horses' and donkeys' eyes see equally well by day and night, whereas human eyes are unable to see in the dark. An eagle's vision is far more acute than that of a human. So are eagles and donkeys more advanced than man? If we take self-sufficiency as the basis of superiority, then plants are superior to man and all animals, because they manufacture their own food and food for others, with no need for nourishment from elsewhere.
>
> If we take size as the basis of superiority, then camels, elephants and prehistoric animals (dinosaurs for example) would be superior to man (Ashqar 2003, 139-41).

Response: Ashqar believes that the modern human, *Homo sapiens*, has evolved from the modern ape. This is not the case. Actually, humans and modern great apes share a common ancestor. Due to his ignorance or misunderstanding of evolution, he demands that modern apes evolve into humans because he imagines that this is what happened in the past, but humans and modern apes diverged millions of years ago. This means that modern great apes and humans share a common ancestor, but they split into two different lineages. For this reason, it is scientifically impossible to expect that a modern ape would evolve into a human, because millions of years ago apes took a different evolutionary path than humans. It is nearly impossible to imagine apes going backwards on the evolutionary path to the original point of divergence from humans, and then embarking upon the same evolutionary path as humans.

Regarding the lineage from which chimpanzees separated, and humans evolved, the only remaining member of this lineage is the modern human—*Homo sapiens*, so no one can ask why all members of the human lineage didn't evolve into humans. The reality is that they evolved into distinct species, including the modern human. As for the question of whether evolution continues today or not, the answer is yes, it still continues in nature, even though the evolution of most organisms is not visible to us due to the brevity of our lives, and the long

life cycle of these organisms. However, it is possible for us to observe evolution in some insects due to their short life cycle. Through observations of some insect species in their natural habitat, we can see clear indications of evolution and a dramatic change in their traits. These are established facts that anyone can verify.

Regarding his demand that a female evolves, it is truly the most extreme form of ignorance, because evolution occurs within an entire species. One of the pillars of evolution is reproduction, the transfer of genes to the following generation. For example, when a mutation that alters the straightness of legs occurs in a female, she passes it on to her offspring, whether they are male or female. Likewise, if a mutation occurs in a male, he also passes it to his offspring, whether they are male or female. These mutations are small and do not take an individual out of its species. Therefore, a mate bearing the same mutation is not required in order to be able to breed. The individual is still able to breed with others of the same species who do not have that mutation. In cases where the mutation is a favored trait, natural selection will firmly establish it. Eventually, those individuals possessing this trait will entirely dominate the species.

Furthermore, without reproduction there is no evolution. So how could anyone imagine that males would evolve without females to the point where males and females become two different species, in order for Ashqar to demand the evolution of a female after a male had evolved? By God, it is tragic that these people respond to the theory of evolution with such worthless ignorance!

Ashqar's third point clearly reveals his extreme ignorance of evolution. The man barely understands a thing about the theory that he set out to refute.

As far as his comparison of the senses, I don't know why he finds it so strange that certain animal sensory mechanisms are more advanced than their human equivalent. This is beyond dispute and everyone agrees on it. For example, humans lack the sonar of bats, as well as the sight possessed by hawks. Does he disagree with these scientific, empirical, and anatomical facts?!

> Thus the colonialist education system, after destroying the people's religion, imposed the study of this theory in the curriculum, introducing it in scientific garb so that students would believe it to be true, thus instilling in students' minds the difference between this falsified

> science and religion, so that people would reject religion.
>
> It is sufficient for the reader to know that because of this theory, many Muslims deviated from their religion. For this reason the colonialists were keen to teach this theory to Muslim children in their schools at the time when American law forbade teaching this theory in schools from 1935 CE.
>
> But in Europe, after they had dealt the final blow to their deviated religion, they announced that Darwin's theory, which they had used in the battle to support science against religion, was not a scientific fact; it was no more than a theory, and the more science advanced, the more the falsehood of this theory became apparent (Ashqar 2003, 143).

The theory of evolution is a scientific theory. It is currently the only one recognized by all well-established universities and research centers around the world to explain life on the earth. European and American universities are still teaching the theory of evolution, and neither they nor any other academically respected university has ever stopped teaching evolution. So I don't know where Ashqar got this fabrication: "… the more science advanced, the more the falsehood of this theory became apparent."

As a matter of fact, the opposite is true. In reality, advancements in genetics have proven the theory of evolution with irrefutable scientific evidence that cannot even be the subject of a substantial opposing argument. Two examples of this genetic evidence include the retroviruses and the fusion of Chromosome 2 in humans.

Some Shia Scholars and the Theory of Evolution

Not all Shia clerics have rejected the theory of evolution. Actually it can be understood from their statements that some of them accept it. But I have yet to find any clear or apparent statement of acceptance from them that explains how it is consistent with religion in general, or with the religious scriptures, and more specifically the Quran.

At this point I will discuss the opinions of some of the opponents of evolution, and we will weigh the content of their statements on the scale of science and see what it is worth.

Sheikh Jafar Sobhani

In his book *Al-Manahij al-Tafsiriyya* [Interpretive Methods], Sheikh Jafar Sobhani says:*

> Charles Darwin published his book *The Transformation of Species* in 1908. Based on his investigations, he proved that the human being is the last in the evolutionary chain of species and that this chain traces back to an animal resembling an ape. So he referenced his fathers and forefathers in a special tree, reciting a poem that says:
>
> *Those are my fathers, so show me their likes …*
>
> When this theory was published, it was poorly received within religious circles among the Christians, Muslims and Jews. They had agreed that the human is a unique creature and that his chain traces back to Adam, the father of humankind, who was created in this form without any link to other animals.
>
> Furthermore, some naive people use that same hypothesis as an argument for the contradiction between science and religion, and to separate them from one another. They claim that the path of religion is different than that of science, sometimes intersecting with it, and other times diverging from it.
>
> There were those who did not believe in separating science from religion, so they tried to subject the Holy Quran to that hypothesis. And in doing this, they interpreted various Quranic verses that refer to the creation of the human being in a way that fits that hypothesis.
>
> The debate was intense between those in favor of taking the religious scripture literally and those in favor of interpretation. With time, the abovementioned hypothesis—and that concerning the creation of the human being that followed it—were proven to be false" (Sobhani 2005, 46. Arabic source, translated).

It seems that Sheikh Jafar, may God guide him to the truth, loves to jest. He wrote, "Those are my fathers, so show me their likes," without noticing that those "fathers", as Sheikh Jafar called them, are physical ancestors that he undoubtedly shares with the biologist Charles Darwin. Therefore, if they are proven to be Darwin's ancestors, then

*. Sheikh Jafar Sobhani, born in 1929, is a Shia scholar who received his education at the Islamic Seminary in Qom. He established the Imam Sadiq Institute in Iran and has written several books on the Islamic sciences.

they are Jafar Sobhani's ancestors, as well as the ancestors of every other human being on the earth. On the other hand, if they are not proven to be Sheikh Jafar Sobhani's ancestors, or "fathers", then they are definitely not Darwin's either. Proving or disproving this is a matter of science that I doubt Sheikh Jafar and his fellow shia authorities (marja) have the ability to delve into and discuss scientifically. This is especially true in view of the statement that Sheikh Jafar wrote about Darwin's theory that is full of errors. He said that Charles Darwin published his book *The Transformation of Species* in 1908, but Darwin actually died in 1882, and he didn't write a book titled *The Transformation of Species*. He did, however, write a book titled *The Origin of Species*, published in 1859, which did not deal with the origin of man. He addressed the origin of man and his relationship to the great apes in another book titled *The Descent of Man and Selection in Relation to Sex.*

I truly do not know what to say. It is better for me to leave the reader to comment.

Sayyid Ali Sistani

On the "About" page of the Center of Belief Researches website that belongs to Sistani, and which represents the doctrinal front of the Supreme Shia Authority sponsored by him, it says:*

> We find the Supreme Shia Authority of His Eminence, Grand Ayatollah Sayyid Ali Husseini Sistani—may his life be prolonged—with its programs and projects, to be the most ideal model in this field to defend the Shia doctrine and to spread the knowledge of Ahl al-Bayt pbut across the world.
>
> The Center of Belief Researches is one of these blessed projects, as it was founded under the supervision and with the support of the Hujjat al-Islam [The Proof of Islam and Muslims] Jawad Shahristani. The official opening coincided with the anniversary of the birth of Imam al-Ridha pbuh on the 11th of Dhu al-Qidah [The 11th month of the Islamic Calendar], 1419 A.H. It was founded to defend the doctrine, to develop the correct concepts and to support the creed of Ahl al-Bayt pbut through all of its various activities…
>
> Our Center has decided to take on the task to stand against the secular doctrine and to rebut its claims. This is in response to the instruction issued by the supreme religious cleric, His Eminence, the

*. "About" page, The Center for Doctrinal Researches website. (1433 AH/2011).

> Grand Ayatollah, Sayyid Ali Husseini Sistani—may his life be prolonged —regarding the necessity of this endeavor (Sistani 2011. Arabic source, translated).

The following was also mentioned on the website:

> The opinions mentioned on the website of the Center of Belief Researches do not necessarily represent the opinion of His Eminence Sayyid Sistani (Sistani 2011, translated).

This means that they may represent his opinion, or they may not. The following is what I have found on Sistani's Ideological website concerning this important issue. If this is not his opinion then he can deny it and state his opinion, otherwise the opinions are his and he is bound by this response.

From Sistani's Center of Belief Researches website:

> A question regarding the falsehood of the theory of evolution:
>
> May the peace, mercy and blessings of God be upon you.
>
> I would like to ask you about Darwin's scientific theory of evolution and development, which states that living organisms have evolved from simpler ones. For example, animals have undergone mutations throughout time and have transformed into more complex beings. What do you think of this theory? Does it go against Islam? Does it apply to humans?
>
> Thank you, and we ask God to protect you and to always help us learn what is beneficial from you. Mustafa, America.
>
> Answer:
>
> Respectable brother Mustafa,
>
> May the peace, mercy and blessings of God be upon you.
>
> It has been scientifically proven that this theory is false. Perhaps the simplest thing refuting this theory is that, based on the calculation of probabilities, it would take millions of years for a simple cell to transform into a more complex one. This is the case for a single cell, so what would it be for one animal transforming into another?!! It would take billions of years, and this has been proven to be false. This is one way to refute this theory. There are other ways as well, and all of them make the theory of evolution unable to withstand scientific criticism.
>
> Furthermore, in our Islamic doctrine, we have a clear opinion about how the creation of man began. The Holy Quran states it here

as the Almighty says: ﴿[He] Who who perfected everything He created, and began the creation of man from wet clay.﴾ Chapter "The Prostration" 32:7. Thus, the creation of man began from wet clay, and not from another animal as evolutionists say. The Almighty says: ﴿He created man from dry clay that is like pottery.﴾ Chapter "The Abundantly Merciful" 55:14. He also says: ﴿And We created you, then We formed you, then We said to the angels, "Prostrate to Adam." So they prostrated, except for Iblis. He was not of the prostrating ones.﴾ Chapter "The Heights" 7:11. And the Almighty says: ﴿Indeed, We created them from sticky clay.﴾ Chapter "Those Who Set the Ranks" 37:11.The Almighty also says: ﴿And When your Lord said to the angels, "Indeed, I will create a human being from the dry clay of formed mud. * So, when I have fashioned him and breathed into him of My Spirit, then fall down to him, prostrating."﴾ Chapter "The Rocky Tract" 15:[28-]29. In addition, there are narrations from the prophets and successors pbut that explain how Adam, the father of humankind, was created.

Therefore, the theory of evolution is incompatible with the above. May you remain under the protection of God.

Abu Hussain commented on the above answer and said: "We hope that you elaborate and we are very grateful. May God help you to do good deeds."

[The Center of Belief Researches then responded as follows:]

Answer:

Honorable brother Abu Hussein,

May the peace, mercy and blessings of God be upon you.

Quoting from *Thimar Al-Afkar* [The Fruits of Thoughts] by Sheikh Ali Al-Korani Al-Amili, 354-357:

The theory of evolution contradicts many modern sciences … placing it in an unenviable position. One of these contradictions concerns physical facts … Here is this contradiction: The sun and other stars burn and emit tremendous amounts of thermal, radiative and light energy into the depths of the universe. But this massive amount of energy cannot be expected to spontaneously return to the sun and other stars. If you leave anything for a certain period of time, it will quickly decay… If you leave a piece of meat out, or a piece of fruit or food, you can see that it spoils after a certain period of time and you have to take certain precautions to protect it from spoiling, like refrigerating it. However, this precautionary measure only helps for a certain period of time. If you abandon a house or a palace, it

will deteriorate after some years … and so on … Thus, everything is moving in one direction toward deterioration, decomposition and putrefaction. Entropy: in order for scientists to explain the concept of order and disorder in the universe or in any system, they use the term "entropy". Entropy refers to the amount of disorder, which means the amount of energy that is of no benefit. The second law of thermodynamics is known as the law of increasing entropy. Professor F. Bush says, 'All spontaneous changes occur such that chaos in the universe increases. This is simply the format of the second law applied to the universe as a whole.' The American scientist Isaac Asimov says, 'According to our information, all changes and transformations are toward increasing entropy, and toward increasing disorder and increasing chaos, and toward destruction.' In the same article, he goes into more detail about this topic saying, 'Another way of stating the second law then is: 'The universe is constantly getting more disorderly!' Viewed that way, we can see the effect of the second law all about us. We have to work hard to organize a room, but left to itself it becomes a mess again very quickly and very easily. Even if we never enter it, it becomes dusty and musty. How difficult to maintain houses, and machinery, and our bodies in perfect working order; how easy to let them deteriorate. In fact, all we have to do is nothing, and everything deteriorates, collapses, breaks down, wears out, all by itself—and that is what the second law is all about.'

We can sum up the first and second law as follows. Evolution scientist Jeremy Rifkin says about the second law: 'Albert Einstein says, '[This law] is the fundamental law for all science,' and Sir Arthur Eddington referred to it as 'the metaphysical law for the entire universe'.' Therefore, this comprehensive law confirms that all transformations and changes that occur in the universe move toward entropy, which means toward increasing disorder, decomposition, and disintegration …

In other words, the universe is moving toward death, and physicists say: 'The universe is moving toward heat death.' That is because the transfer of heat from hot bodies (the stars) to cold bodies (planets and cosmic dust for instance) will stop one day, when the temperature of all bodies in the universe equalizes…

In this case, the transfer of heat between bodies stops, which means that all activity stops.

This means the death of the universe.

We can put both the hypotheses of evolution and physics together on a single graph. From this, we will see that there is a complete contradiction between the two. The hypothesis of evolution says that

changes and transformations occurring in our world and in the universe lead to increasing complexity and order, which means that evolution is continuing at an ever increasing rate.

As for physics, it says that all current changes and transformations in the universe (and in our world) lead to increasing entropy, which means increasing disorder, decomposition and disintegration.

This means that the universe is not moving toward something better but is instead moving toward something worse, that is, toward death. It also means that there is no spontaneous process that leads to increasing order, complexity and composition.

This shows that time is a factor of annihilation, not construction. Despite this, all evolutionists resort to the issue of time to explain all the objections and difficulties facing the hypothesis of evolution. Therefore, when you rule out blind coincidence producing all of this order, complexity and beauty that fills the universe, they say: 'But this did not happen in a million years, it happened in hundreds or thousands of millions of years!' It is as if when they mention a long time period they think they are solving all difficulties and providing a solution for all the miracles that fill the universe!

This is ignorance. Rather, it is compound ignorance. We encourage those people to read physics books so they will know time—that they think is a factor of construction and development—is actually nothing but a factor of destruction, decomposition and disintegration! So, with which view should we side?! Should we stand by a hypothesis (or theory, at best) that has not yet been proven to be true and is opposed by many scientists?! Or do we side with a scientific law that has been proven by thousands of laboratory experiments (each device used testifies to the validity of this law) and is accepted by all scientists without any exception?

Therefore, the hypothesis of evolution opposes science to its core.

Evolution toward something better cannot occur in a world that moves toward disintegration and destruction in all its activities, movements, and changes, so evolution is scientifically impossible: ﴿Nay, but We hurl the true against the false, and it destroys it and it vanishes. And woe to you from what you describe.﴾ [Quran Chapter] "The Prophets" 21:18.

May you remain under the protection of God (Sistani 2011, translated).

Response: the above represents Sistani's opinion and response regarding the theory of evolution, or at the very least a response that Sistani

is satisfied with. So there is no problem with making its value and quality clear.

1. He said:

> It has been scientifically proven that this theory is false. Perhaps the simplest thing refuting this theory is that, based on the calculation of probabilities, it would take millions of years for a simple cell to transform into a more complex one. This is the case for a single cell, so what would it be for one animal transforming into another?!! It would take billions of years, and this has been proven to be false.

He states here that the theory of evolution has been proven to be scientifically false. I truly don't know where that has ever happened!! Perhaps only in their delusions. In fact, this theory has been proven to be scientifically correct, especially due to the advancements achieved in genetic research. The theory of evolution is currently being taught in the schools of developed countries and in all well-established universities worldwide. In addition to that, many vaccines and medical treatments are being produced and developed based on the theory of evolution.

He then presented his scientific evidence that is essentially just superficial words that reveal the author's ignorance of the theory of evolution. The theory of evolution does not state that a mutation will transform one species into another or one animal into another, nor does it state that there is a sudden emergence of complex organs, like an animal without eyes suddenly having eyes, such that a problem of mathematical probabilities could exist from this and stand in the way of the theory of evolution.

Actually, evolution occurs through a tremendous number of very slow steps, and since they are cumulative, there is no mathematical problem with the probability of each of the evolutionary steps occurring individually. Moreover, the probability of each one following the previous one is very high due to variation, reproduction and natural selection being present along the course of this path. And if all three of these are present, evolution is definitely present as well. This is a scientific fact denied only by people who do not understand variation, reproduction and selection, and what these three terms mean. I advise Sayyid Sistani and the Center of Belief Researches to read what

evolutionary scientists have written so that they might understand the theory of evolution before issuing such statements that only demonstrate their ignorance of the theory and its mechanisms.

2. Their quoting of ambiguous Quranic verses in order to refute a proven scientific theory has no scientific value for biologists, and it doesn't have any religious value either. None of these verses conclusively oppose the theory of evolution so that someone could say, for example, that religion and evolution cannot both be simultaneously true. Their statement that the creation of man began with wet clay, and their use of Quranic verses regarding this, can be refuted simply by saying that these verses pertain to the creation of the soul. The wet clay creation occurred in heaven as stated by the same Quranic verses that mention the story of creation, and this was mentioned in religious accounts as well. Heaven is a world of souls, not a physical, material world like this one, as we shall explain later, God willing. Another response is that the creation of man began when God created the first genetic plans, or the first replicable protein, because this protein was created from the chemical substances available on this earth, in its dust, or from dry clay particles. Thus, it is true that God has created man from wet clay, dust, dry clay, and earth, because the human being is the purpose of creation that is intended to be reached. Therefore, the verses about the creation of Adam from wet clay and dust can be understood to be in complete agreement with evolution. We also find other verses that clearly support the theory of evolution. The Almighty said:

> ﴿While He has created you in stages ✻ Do you not see how God has created the seven heavens in layers ✻ And made the moon a light therein and made the sun a burning lamp? And God has caused you to grow from the earth as a plant.﴾ Quran Chapter "Noah" 71:14-17

The verses are clear: "He has created you in stages … And God has caused you to grow from the earth as a plant." A detailed explanation of these verses will come later.

3. The summation of what they quote from Korani's book is that entropy requires complex systems to move toward collapse, and that the universe as a whole is moving in this direction, so then the earth and all that it encompasses is moving in this direction as well. According

to them, there is relapse and regression, rather than evolution. They conclude:

> Therefore, the hypothesis of evolution opposes science to its core.
>
> Evolution toward something better cannot occur in a world that moves toward disintegration and destruction in all its activities, movements, and changes, so evolution is scientifically impossible: ﴿Nay, but We hurl the true against the false, and it destroys it and it vanishes. And woe to you from what you describe.﴾ 21:18.

In fact, this argument was first raised by Dr. Henry Morris, who said that the second law of thermodynamics states that everything tends toward disorder, making the process of evolution impossible (Morris 1974).*

The fundamentalist Christians in the United States and Europe exploited this argument in order to respond to the theory of evolution. Some Arabs also rehashed this argument after it was translated and an associate of Korani's had relayed it. If only he had left it as it was, but instead he added words to it that reveal complete ignorance. In the end, Korani snatched it and put it in his book. The Belief website belonging to Sistani then took it from Korani and adopted it as fact and evidence that refutes the theory of evolution.

Generally speaking, the argument above is oversimplified, and it is scientifically incomplete and incorrect. It will be shown later that observational findings that are now widely accepted by science have demonstrated that the universe is flat, open, and expanding at an accelerating rate. Nevertheless, let us drop to their level and assume that the physical universe is a closed system to which the second law of thermodynamics applies—since entropy does not decrease within a closed system—and let us assume that entropy is increasing in the universe. This does not mean that every part of the universe is moving in a direction of increased entropy. It is possible for parts of the universe (that we have assumed to be a closed system), such as the earth, to head toward a more orderly state, at times, as long as it is balanced by other parts heading toward increased entropy. What is key is that the system as a whole does not violate the second law of thermodynamics. This reveals that their argument is built on a weak foundation and a superficial understanding of the second law of thermodynamics.

*. Henry Morris (1918-2006) was a professor of civil engineering and a practicing American Christian. He was also the president of the Institute for Creation Research and he published a number of scientific and religious books.

Also, the earth itself is not a closed system. There is actually more than one energy exchange system existing within it, as well systems exchanging with it, as the sun gives heat and light to the earth. Parts of the earth experience night and day successively, dividing it into several systems that make it go through a variable and continuous process of heat exchange. This is due to the existence of multiple systems, rather than just one system. In addition to this, because the earth's core is hot and consists of magma, there are unorganized processes of energy exchange between the core, crust and atmosphere of the earth.

Likewise, the space encompassing the earth is also a system, and heat exchange occurs between this space and the earth.

The moon's gravity also affects the earth, and this effect even changes over time because the moon is continuously moving further from the earth.*

Therefore, based on the earth's conditions as described above, the law of thermodynamics for two systems would be that the total entropy of those two systems will not decrease when heat exchange occurs between them. So increasing order on earth is possible due to the energy exchange between the earth and the surrounding universe. Similarly, increasing order in only some parts of the earth is also possible since several systems exchange energy with each other. What matters is that the total entropy of both the systems—not just the one—doesn't decrease.

The earth itself is neither a closed system nor a single system, but rather it is comprised of multiple systems. There is no problem with entropy increasing in one place on the earth and decreasing in another, nor is there a problem with the deterioration of life, demolition, earthquakes and floods occurring in one place on the earth, while at the same time construction, growth and the flourishing of life occur in another. This is something we witness every day, and it does not violate the second law of thermodynamics.

Furthermore, the fact that the universe has not headed toward collapse in the past or present is a topic that has been settled. It has been scientifically proven—by observing a type of supernova, cosmic background radiation, and the Doppler effect—that the universe is flat, and that its expansion is accelerating, and that this will continue for

*. The moon is distancing from the earth at a rate of about 3.8 centimeters per year (NASA, Accuracy of Eclipse Predictions, 1994).

a long time to come. We will address this issue later when we discuss dark energy.

I believe that my explanation of entropy and the second law of thermodynamics is sufficient to rebut the prior simplistic argument. But to make it even more clear, let's leave entropy and go to the conclusion that they depend on, that the universe has moved, and is still moving, toward disintegration, decay, and collapse. This is incorrect. In fact, it is actually the complete opposite. According to observations and precise astronomical monitoring, taking into account the Doppler effect, cosmic background radiation, and supernova observations, it has been clearly proven that the velocity at which galaxies are moving away from each other is accelerating. The material universe in which we live has been, and still is, expanding, multiplying and being added to. Even the galaxy that we live in still contains clouds of gas and dust that bring about the formation and birth of new stars, and this will continue for a long time to come. This scientific fact, proven beyond doubt, is enough to refute what Korani claimed in his book.

In addition, according to the standard model, or the big bang theory, the universe did not begin as a compound, complex universe, but rather began as a point of singularity, or quantum event, as proven by scientific evidence such as the divergence of galaxies, and the cooling of the universe over time. Then the big bang occurred, and matter began to gradually form. It is clear that the universe is still young, still expanding, and still being added to. According to precise scientific calculations that depend on accurate observations, the universe is not currently heading toward collapse, nor has it done so in the past, but is being added to and expanding.

Even if we assume that the universe has a positive curvature, like the surface of a ball rather than being flat, and will eventually head toward contraction and collapse, it wouldn't be scientifically possible until the universe reaches its maximum expansion point, then heads toward contraction and collapse when the positive energy within the universe—the energy pushing it to expand—is unable to resist the gravity of matter.

The universe hasn't reached the maximum possible expansion point. Actually, its rate of expansion is accelerating.

Therefore, their claim that the universe has been, and still is, heading toward collapse, based on the second law of thermodynamics, is scientifically incorrect. It is also inconsistent with the facts provided

by accurate astronomical observations and mathematical scientific calculations. What's more, according to the Doppler effect and the presence of cosmic background radiation, the universe is not currently heading toward collapse. And it did not begin as a complex, compound universe, then head toward decrease and collapse. On the contrary, it began as a simple universe, then headed toward augmentation, structure, and complexity, and it continues on this course now.

If we apply what has happened, and what is still happening, in the universe as a whole—just as Korani, his associate, Sistani, and his center wanted us to do—considering that it started out from zero, then was augmented to include the earth and its inhabitants, then the idea of evolution on the earth, and the trend of life or organisms toward multiplicity and additional structure and complexity isn't a problem. It actually completely corresponds with the general course of the universe, past and present, toward expansion and multiplication.

Even though I responded with the above answer, and I demonstrated the mistake that Korani made in his book, and that was presented by Sistani on his ideological website, and I have shown that the universe was, and still is, adding and expanding, and this will continue for a long time to come, it would have been enough to say to them that growth, being added to, multiplication, and movement from simplicity to complexity and multiplicity, and toward an optimal state and improvement, are occurrences that we see every day in life on the earth. So if evolution violates the second law of thermodynamics, then the growth and multiplication of plants violates it as well. And if evolution isn't possible for this reason, then the growth and multiplication of plants isn't possible either.

A plant starts as a seed—genetic plans—that then grows and is augmented with the passing of time. This applies to the growth of the fetus and the baby animal as well. There is no difference between the growth of a fetus, plant, or child, and evolution. They all demonstrate multiplication, augmentation, and a trend from simplicity to complexity over time. If evolution violates the second law of thermodynamics—as they claim—then the growth of fetuses, plants, and children violates the law as well, yet we see fetuses, plants, and children grow, augment, and multiply.

Note: I do not know how Korani, Sistani and his "Belief Center"—all having adopted the statements above—can make physics an axis on the graph that they mentioned. In fact, it is the first time I have heard

that physics, with all that it is, can even be an axis on such a graph. I hope they don't keep their genius all to themselves. I hope they send this graph to well-established universities around the world so these establishments can learn how physics can be an axis on a graph like that in order to share the benefit. If they don't know what physics is, then there is no problem with giving them a simple definition. Physics is the branch of science that deals with the behavior of matter, energy, and dimensions (such as the three spatial dimensions and the dimension of time), as well as the interactions and associations between them and the laws that connect them.

I am not ridiculing those people and the ignorance that they have presented, because we have too much on our plate to be concerned with ridiculing anyone. I only wish to draw the attention of the deceived and oppressed followers of Ahl al-Bayt to the great lengths these people will go to in order to do what they do best: shamelessly preach without knowledge.

This is the reason why any believer, who believes in Muhammad and the progeny of Muhammad pbut, and who fears for their faith and their hereafter, should not trust such people to make a decision regarding their hereafter for them.

Sayyid Muhammad Shirazi and his "Dialogue" with Darwin

Sayyid Muhammad Shirazi responded to Darwin's theory in a book he called *Between Islam and Darwin*. He identified himself in the beginning of his book as "His Eminence, the Supreme Religious Authority, Imam Shirazi, 'may his life be prolonged'".

There is no harm in going through some of his arguments against the science of historical geology and the theory of evolution in order to determine whether they have scientific value, or if he has "heard incorrectly so he answered likewise". Shirazi imagined what Darwin would have said, then attributed speech to him, and then responded under the name "Muslim", a name he chose for himself in his "dialogue".

In his book, Shirazi wrote:*

Darwin [What Shirazi imagines Darwin would say]: The experiment

*. Muhammad Al-Shirazi (1928-2001) was an Iranian Shia cleric. He wrote many books on a variety of subjects including politics, science and religion.

is examination and other evidence.

Examination: If a person were to examine the layers of the earth, he would find fossils of plants, animals, and humans. The fossils of each layer are different than the fossils of the others. Also, the closer a fossil is to the crust of the earth, the closer it is to being ideal, and the further away the fossil is from the crust of the earth, the further it is from being ideal.

Muslim [Shirazi responds to what he claims are Darwin's words]: How is this connected to evolution, knowing the origin of things, and that the human being used to be a monkey?

Darwin [what Shirazi imagines that Darwin would say]: Now I say, the connection is:

1. The bottom layer of the earth contains fossils of clam, sponge, coral, shrimp, fish, a unicellular shelled organism, and an alfalfa plant.

2. The second layer contains pine trees, palm trees, reptiles, birds, fish, and marsupials.

3. The third layer contains snakes, whales, apes, and modern trees.

4. The fourth layer contains mammoths, wooly quadrupeds, human beings, and all modern trees…

Muslim [Shirazi]:

First of all, how can you prove your claim that these layered fossils exist? And how can you prove your claim that the fossils in each layer have evolved from the fossils of the previous one?

…

Fifth: If we were to assume that humans do not exist at all in the lower layers, would this successive change of fossils prove evolution to be true? What if someone told you that God created a sponge in the lower layers, and so on, how would you respond?

Furthermore, does the existence of a small car on the first floor of a building, a bigger car on the second, and a bigger one on the third, and so on, since they have various shapes, prove that the car evolved by itself and that each one was not manufactured separately?

Moreover, let us suppose that a landslide occurred in New York City and then a thousand years later a person discovered the building whose floors contained the cars. Would they have the right to say the same thing as you did? How would you answer them if they said so? What is the difference between what you are saying and what they would say? (Al-Shirazi 1972. Arabic source, translated).

Response: Just like that, with the stroke of a pen, and with extremely simplistic arguments, he wants to eradicate historical geology in all its

splendor, and its ability to determine the age of the layers of the earth, and thus the age of the fossils therein. Shirazi says:

> …how can you prove your claim that these layered fossils exist?

Then, in his dialogue, he claims that science, Darwin (or whoever he is talking to) couldn't refute this question!

According to the example of the building, it seems that Sayyid Shirazi imagines that geologists classify the layers of the earth based on their order, and which one is on top, without any scientific standards or laws to significantly reduce the risk of falling into error. So he imagines that they would overlook natural occurrences such as landslides, earthquakes, volcanic eruptions, or the movement of the earth's tectonic plates without paying any attention to them while setting these scientific standards for classification. He should have first become acquainted with the geological methods of classifying and determining the age of the earth's layers, the conventional mechanisms and methods of examination, and whether or not those methods are scientifically accurate, so that he would not present such a naive and simplistic argument while at the same time calling himself an "Imam" (a divine leader) and an "Ayatollah" (a sign of God)!

In general, anyone searching for the truth only needs to investigate to find that the following scientific methods are used to classify the age of the layers of the earth:

1. Relative Dating Method:

This method depends on certain factors that include: for any sequence of rock layers not deformed by either cleavage or severe folding, the lower layer is older than the upper one, and so on. Therefore, determining the older layer is not random in the way that Shirazi imagines, but is a classification subject to scientific standards. Basically, this method determines the age of the rock layers relative to others, without knowing the actual age of each layer.

2. Absolute Dating Method:

This method makes use of the radioactive isotopes of elements. With time, the nucleus of an atom decays and forms a radioactive isotope.

This decay occurs at a constant rate over time for each element. Therefore, the time period of a rock layer containing a radioactive isotope can be calculated by comparing it to its known original isotope. This method has been well-known for decades, and was well-known long before Shirazi wrote his book. It is now used to determine the age of the rock layers with high accuracy. Several isotopes are used to determine the age of rocks, fossils and organic materials, such carbon (C) and argon (Ar).

This is how Shirazi responded to Darwin and the evolution scientists:

> And how can you prove your claim that the fossils in each layer have evolved from the fossils of the previous one?

The answer to this is very simple. We have earth layers, one on top of the other, that we have examined using highly accurate scientific methods that leave no room for error. We have found that the bottom layer is the oldest, the top layer is the newest, and the difference in age between layers sometimes reaches hundreds of millions of years. The older layers contain primitive organisms, and as we move toward the present, the organisms are more developed, evolved, and complex. Therefore, it cannot be said that the entire process of creation occurred in a single burst, because some of these organisms came hundreds of millions of years after others. So, based on accurate scientific data, the inevitable conclusion is that some organisms came after others. In fact, even bodily complexity and multiplicity came after a simplicity that preceded them by hundreds of millions of years.

The analysis, classification and comparison of the organisms was then carried out by means of rigorous sciences, such as comparative anatomy, with the most advanced analytical devices. According to scientific evidence and research, it has been found that they are generations of organisms that evolved from one another.

Now whoever rejects the results of these scientific tests and analyses would say that these organisms were created directly, each group in a particular period of time. However, they should explain why God created them in groups and made it look as if one evolved from another. Was it to deceive the people?! The Almighty is far above that!

Therefore, the issue is simple: these organisms have evolved from one another.

Today we can test this in a laboratory, manipulate genes, and create new species of organisms.

Shirazi also says:

> Ninth: Assuming that the first cell was a living cell is not enough to provide life for millions upon millions of organisms. Where would the life of these organisms come from? Does the existence of one piece of iron explain the existence of millions of tons of iron? Certainly not! (Al-Shirazi 1972, translated).

Response: I don't know if Shirazi even understands the concept of reproduction. Does he know that in a laboratory a single bacterial cell can multiply to form millions of bacterial cells?! I believe this is enough to prove that the multiplication of life is something that is very natural and ordinary, once the raw materials and suitable conditions are available. I believe it is indisputable that the earth provides sufficient conditions for life to multiply, and this is something that can be easily tested in a laboratory. The variation of life forms is both extremely natural and inevitable, as long as we keep in mind that there is a basis for physical life—the genetic plan—and that there are mutations that can always occur in this plan that lead to variation. If variation, reproduction, and a natural environment that selects the most fit to survive are all present, and the living organism transfers its genes to the next generation through reproduction, evolution will definitely occur.

Shirazi also says:

> Second: If nature selects the fittest, why do primitive plants and animals still exist? Why do apes still exist? Why didn't nature transform them into the best form?
>
> Third: Why do you see the unfit attack the fittest and eliminate them? For example, lions prey upon humans, and poisonous animals like scorpions and snakes sting or bite humans (i.e the fitter animal) and kill them, and germs (microbes) kill humans, who are more fit.*
>
> Fourth: Why do things that are more fit regress to a less fit state? Just as humans become weak, die, and then turn into dust, the same

*. The electronic version says: "You do not see". This causes the statement to be contradictory and may be due to either a typographical error or confusion.

thing happens to plants and animals.

Fifth: Why are there fossils of extinct animals that belong to the highest classes as far as size of body and perfection of form …

Sixth: What is this nature that selects?

If it has a mind, comprehension and feeling, then what is it?

If it has no mind or comprehension, then how does it select?

If someone said, "This piece of iron has selected that brick to be its mate," wouldn't that be ridiculous and ludicrous?

How could nature be credited with this "alleged" selection that happens to be better than the selection of all scientists, wise men and philosophers, people of science, comprehension, and experience?! (Al-Shirazi 1972, translated).

Response: Shirazi's statement that apes and plants didn't evolve is incorrect. These are historical matters that can be easily resolved by comparing fossils and referring to facts concerning archaeology and fossils. For example, it has been proven that flowering plants did not exist in the past, so plants have evolved. Apes have also changed and evolved, as the apes we see today are completely different than the first apes. There were no great apes in the past. In fact, seventy million years ago there were no apes at all. Rather, there were small mammals from which others, including apes, evolved, after dinosaurs became extinct.

As for Shirazi's statement that an individual from among the lower-ranked animals kills an individual from the higher-ranked ones:

> For example, lions prey upon humans, and poisonous animals like scorpions and snakes sting or bite humans (i.e the fitter animal) and kill them, and germs (microbes) kill humans, who are more fit.

His assumption that this example is a refutation of natural selection proves that he has no understanding of the matter. Lions, scorpions, snakes, bacteria, and viruses all represent nature's tools that surround the species undergoing natural selection—the human being in his example. These tools select the individuals of that species that are the most fit to survive, or that are able to escape, overcome these obstacles, and pass their genes on to the next generation. Moreover, members of the same species sometimes play this role with even more ferocity than members of other species, as they compete for limited space in a shared environment.

I will present an example based on Shirazi's standards for examples in order to help those deceived by him to understand what I am saying:

Assume that we went back two million years to a time when a human species called *Homo erectus* existed. This species had a small brain (larger than that of a chimpanzee, but smaller than that of *Homo sapiens*, or the modern human being). It is believed that the modern human species, *Homo sapiens*, evolved from *Homo erectus* and became a separate species about two hundred thousand years ago. Now let us imagine that we are observing a *Homo erectus* group consisting of ten adolescent females and ten adolescent males surrounded by deadly predators like lions, venomous and deadly animals like snakes and scorpions, and deadly bacteria. These twenty adolescents differ from one another, as is always the case. Some are tall and others short. Some have completely straight legs and others have legs that are still slightly bent, an inherited trait that reduces their speed. Some have strong bodies and others have weak ones. Some have a strong resistance to bacteria, and others a weak resistance to bacteria. Some have larger than average brains and others smaller. Now when they are attacked by deadly predators, the strongest, fastest, and most intelligent will usually survive, and the weakest, slowest, and least intelligent will usually perish. For example, the intelligent ones will find a way to prevent a snake bite more often than the unintelligent ones, and in this manner the intelligent one (the one with the larger and better brain) will survive, reach puberty, mate, and pass his genes to a new generation. In this way, generation after generation, and by means of variation, selection, and reproduction, the size of the brain and the straightness of the legs will become more firmly established, as is the case for resistance to bacteria and other traits. Likewise, humans, deer, scorpions, snakes, and bacteria will all form a part of nature's tools of selection for the lion. Therefore, if we have two lions, one of them strong and fast, and the other weaker and slower, to the point where it is slower than the average deer and antelopes that live in its natural environment, it would probably perish, or be so weak that it could not compete with other males to mate, reproduce, and pass its genes to the next generation. On the other hand, the strong and fast lion would probably be able to mate, reproduce, and pass on its genes. This is how nature selects those most able to survive and endure within it. As for the deer, the lion is one of nature's tools of selection in the sense that

nature will select the fastest deer that is most capable of eluding and escaping predators. In this way, the genes most able to keep up with their environment endure, while the genes that cannot keep up will be eliminated. So this is natural selection and survival of the fittest, and it is not as it was understood by Shirazi—that members of a less developed species are unable to harm any member of a more developed species. He presented his argument based on this misunderstanding.

The remainder of Shirazi's arguments are based on his misunderstanding of natural selection. If he had known that natural selection is the survival of the fittest to live and reproduce in the organism's natural environment, then he wouldn't have presented this simplistic set of arguments. For example, natural selection of tall animals that exist in an environment in which food is available at a certain height means that animals tall enough to obtain plentiful food will pass down the tallness trait to their offspring. It also means that the short animals will either die, or they won't obtain enough food to reproduce and pass their genes on to the next generation. Moreover, an environment that provides plenty of food for a particular animal allows it to increase in size whenever mutation provides the genes for increased size. Therefore, natural selection of the fittest means that conditions within nature allow for the survival of some individuals of a species that possess favored genes, while not allowing for the survival of others. This is because these conditions are suitable for the survivors, not those who perished—those who didn't pass their genes on to the next generation because they didn't reproduce.

Shirazi also wrote the following imaginary dialogue:

> Darwin: The second proof is evolution, which occurs in many animal species. So we see that if a human is born in a cold climate he will become white. The same applies to animals. Thus, one species has a certain condition, shape, and certain habits in each environment. The same is the case with respect to plants. Therefore, if this is possible, then there is no difference between horizontal evolution, in which the color, size, and habits of one animal change due to differences in climate and other conditions, and vertical evolution, in which a cell turns into a plant, a plant turns into an animal, and an animal turns into a human.
>
> Muslim [Shirazi]: Your inference is very strange, as there are two ways of looking at it here:
>
> 1. That individual animals, plants, or humans differ slightly de-

> pending on the differences in the environment and climate, while at the same time all individuals belong to a single species, as is the case with humans, but some are black, red, or yellow.
>
> Or that all members of the species are bears, but all polar bears have certain traits, and the other bears in warmer areas have other traits.
>
> Or that all members of a species are the wheat plant, but the Iraqi wheat has its own traits and the Australian wheat has its own traits.
>
> 2. That one thing differs drastically based on environmental differences, for example, being an ape in one environment, or a human or plant in another, even though all of them have a single origin.
>
> What we see, and what everyone knows to be correct, is the first way of looking at it.
>
> As for the second way of looking at it, what is your evidence to prove it?
>
> It is like saying:
>
> Just as mud can be used to make bricks, pottery, and adobe, it can also be used to make iron, ivory, and water.
>
> Could such an analogy be possible?
>
> Darwin: I am thinking!
>
> Muslim [Shirazi]:Then your second piece of evidence has been refuted. What is your third piece of evidence? (Al-Shirazi 1972. Arabic source, translated).

Response: Darwin is slandered in Shirazi's imaginary dialogue. Darwin didn't divide evolution horizontally and vertically, just as he never said that a cell can turn into a plant, a plant into an animal, or an animal into a human. Also, he didn't advocate transmutation, nor do any of today's evolutionary biologists or punctuationists.

As for Shirazi's saying,

> What we see, and what everyone knows to be correct, is the first way of looking at it.

This means that Shirazi has admitted evolution without realizing it. He has admitted evolution within the limits of family, like the *Ursidae* family, while rejecting it when it reaches a level of higher taxonomic separation. Therefore, he is the one who should present evidence that evolution stops at the limits of the family. Why wouldn't it reach a higher degree of separation, a point it must reach over time, since it is a normal result of the accumulation of evolution over time?

We have genetic mutations that definitely lead to variation. The combination of genetic mutation, natural selection, and reproduction leads to the emergence of new and distinct traits in organisms, such as size, shape, hair type, claws, etc. The differences become substantial due to their accumulation over time. Shirazi and people like him accept all of this within the context of a single family. This means that they accept the accumulation of differences over hundreds of thousands of years, or maybe even a few million years. But Shirazi doesn't accept that these differences reach the point of a different family, even though this differentiation is an inevitable and natural result of the accumulation of variation over a longer period of time—tens of millions of years, for example. This is long enough to emphasize this separation in a substantial way, resulting in the biological classification of an organism into a different family.

He accepted that there is continuous modification and restructuring of the organism that depends on its environment. This restructuring and modification is responsible for the variation between polar bears and sun bears, considering the tremendous differences between them in shape, size, weight, color, food type, and metabolism. However, he rejects the argument that modification and restructuring reach a level of variation that places them into different families, for example. So Shirazi is required to present evidence for this, because classification is an inevitable result of the accumulation of modification and restructuring. It is a process that relies on genetic mutation, and in nature it is theoretically possible for genetic mutation to form species, genuses, and families when given sufficient time.

It has been proven in the laboratory that genes can be structurally altered. This can be done in an uncontrolled way, as in radioactive bombardment, or in a controlled way, as is widely done today.

Furthermore, the point has been reached in which a complete bacterial genetic plan can be constructed using non-living chemical substances. In this way, we can theoretically produce a human being in laboratories by using the ovum and sperm of chimpanzees, or by using just the cell nucleus of a chimpanzee and the enucleated ovum of a woman. All we have to do is alter the chimpanzee chromosomes in order to have the same number and likeness of human chromosomes, which is theoretically possible.

A point has been reached that goes even farther than this. Just as a complete bacterial genetic plan was produced in the laboratory using

non-living chemical substances, and it was implanted in the cytoplasm of bacteria and the chromosomes were able to live and replicate, a complete human chromosome plan can also be produced using non-living chemical substances (Alleyne 2010), because the difference between bacterial chromosomes and human chromosomes is like the difference between a small building and a large one, as both of them have the same building materials. We should keep in mind that biological classification of humans, chimpanzees, gorillas and orangutans places them all in one family—the Great Apes—just as all bears are placed into one family, *Ursidae*. The difference between humans and chimpanzees is like the difference between sun bears and polar bears. Actually, some of the differences between chimpanzee and human bodies are less than those found between the sun bear and polar bear. Therefore, when Shirazi admitted that evolution exists, considering it exclusively within the limits of the family, without realizing what he was saying, he admitted that chimpanzees, bonobos, and humans have evolved from a common origin as well, since they are all members of one family.*

As for his statement:

> It is like saying:
> Just as mud can be used to make bricks, pottery, and adobe, it can also be used to make iron, ivory, and water.
> Could such an analogy be possible?

This is meaningless because making bricks from clay doesn't alter atoms at the level of nuclear particles. So we cannot compare this to the transformation of clay into another element such as iron, for example, since the transformation of one element into another requires the restructuring of nuclear particles. We have two levels here that are entirely different, so this comparison is meaningless. It is also meaningless for Shirazi to compare this simplistic example to what happens in evolution, since the variation in evolution occurs at a single molecular level, which is the restructuring of chromosomes that have the same molecular composition in all organisms. The only difference between chromosomes in each organism is their arrangement. In fact,

*. Richard Alleyne, 'Scientist Craig Venter Creates Life For First Time In Laboratory Sparking Debate About 'Playing God'', Telegraph.Co.Uk, last modified 2010, accessed December 10, 2015, http://www.telegraph.co.uk/news/science/7745868/Scientist-Craig-Venter-creates-life-for-first-time-in-laboratory-sparking-debate-about-playing-god.html.

it would have been better for him if he had not made this comparison. And this concludes my response, but there is no harm in explaining things further.

It seems that Shirazi doesn't know what he is talking about because when it comes to the evolution of life, we are talking about the restructuring of chromosomes—the building blocks of life. And when comparing chromosomes to elements, the analogy would be the restructuring of atomic nuclei—the building blocks of elements. Chemical elements can be reformed and restructured. Had he asked any astrophysicist or physicist, he would have learned that iron is produced from other elements in the surrounding universe, and in tremendous quantities as well. Iron, and many other elements, are produced through nuclear fusion, a process that occurs in the stars around us. Nuclear fusion causes the structuring and formation of the elements. So when our discussion is taken to the subatomic level, and it is about the transformation of atomic nuclei, there is no difference between iron, oxygen, carbon, helium, and hydrogen, since they are all constructed from the same building blocks. Therefore, elements can be reformed and restructured to produce other materials from the same primary building materials of the elements. This is what happens in stars as they burn hydrogen and helium. Heavier element nuclei that contain more protons and neutrons are produced as a result of the fusion of light element nuclei. In this way, carbon, oxygen, and the remaining elements are produced until reaching iron, the most stable element. Then, if a great supernova explosion of the star occurs, the nuclear fusion process goes beyond iron to heavier elements such as uranium.

So we can create iron from another element if we control the atomic nuclear particles (protons and neutrons). All we need is a large amount of energy in order to create such a small distance between these particles that the strong nuclear forces can begin to work, and then nuclear fusion occurs. This amount of energy is available in stars, for example. For this reason, the production of one element from another element occurs in the universe that surrounds us all the time. However, it is even easier to produce lighter nuclei from heavier nuclei through nuclear fission, as the large amount of energy needed to bring particles closer to one another isn't required. We must simply induce the fission of an unstable nucleus, like the nucleus of uranium-235. This is what occurs in nuclear reactors, but in a controlled way. For example, it can be controlled by adding a material like a cadmium alloy

to absorb excess neutrons so that nuclear fission proceeds at an acceptable rate, rather than at an exponential, uncontrolled rate that turns it into an atomic bomb.

Is Creationism (Single or Multiple Bursts) Acceptable, Based on the Scientific Method?

Truly, anyone who has a basic background in evolution and how it occurs scientifically, or has read a book by any scientist of evolution and examined their responses to arguments, or has simply read the book that Darwin wrote in the nineteenth century where he included and responded to numerous arguments, and then proceeds to examine the works that those who call themselves religious authorities and religious scholars have written, will find that they address issues that they know nothing about. They don't even understand evolution, or how it occurs according to scientists. Instead, they have understood evolution in a backward way, and then proceeded to argue in an extremely superficial and simplistic manner based on that backward understanding. We also find them repeating Darwin's original arguments—that Darwin had already presented and refuted in his book—similar to how they present superficial arguments in an attempt to refute the accuracy of the principles and methods of historical geology used to determine the age of the older rock layers, even though the accuracy of these methods is undeniable. They argue against the theory of evolution, asking why the circumcision of children isn't inherited, and why an ape that is trained to walk doesn't pass the walking trait down to its offspring. When average people read these arguments, people who don't know what evolution is—they might fall for them. But they are simplistic arguments to those who understand the theory of evolution and how it works. The traits that are inherited by the next generation are those written in the genetic plan of the organism. They are not acquired traits, like the walking of a trained ape or the circumcision of a child. This is self-evident to evolutionary biologists.

On the other hand, some of the people who challenge the theory of evolution assume that evolutionary biology states that compound and complex organs such as the eye came into existence through a single mutation. Not even Darwin says that, let alone modern scientists. They are supposed to be refuting what is taught in well-established universities around the world. These universities don't teach that com-

pound and complex organs such as the eye came into existence through a single mutation, or even tens or hundreds of mutations. In fact, they are ignorant of the basics of the theory of evolution. So these people present a distorted version of the theory, and respond based on their erroneous understanding of it. This is nauseating for whoever reads their books, and it makes them conclude that they are completely defeated in the face of evolution, as well as the atheist movement, the movement that they are trying to confront using single-burst creationism that excludes evolution. This theory contradicts not only biology, historical geology and archeology, but also the literal meaning of religious scriptures as well. This will be clarified when we discuss religious scriptures, like the Quran, which clearly indicate that creation occurred in many stages and through evolution.

A single question is enough to topple single-burst creationism that excludes evolution. It has definitely, and undoubtedly, already been proven through historical geology, that when the rock layer is older, it contains organisms of lower rank, and when the layer is newer, it contains organisms more developed than the ones in the layers that preceded it. The issue is one of development: moving from bacteria to eukaryotes to multicellular organisms, reaching the fish of the ancient world, passing through the vertebrates and fish, then amphibians and land animals, then mammals, then the diversity of mammals and increasing size, and so on. So the question is: why did God create living things in multiple bursts in different time periods, while in each period creating a group more developed than their predecessors, so that whoever sees them believes that they have evolved from the earlier ones? Do those who deny evolution think that God wants to deceive us?! God is far above that.

Do they have a logical, scientific explanation—other than evolution—for these bursts that succeed each other in time, development, and complexity? For example, if we were to take the whales and dolphins that now live in water, that are considered to have evolved from mammals that lived on land, we would find—in the fossils discovered so far—a chain of intermediate organisms appearing consecutively over time, each one separated from the other by millions of years. They started as land mammals, then gradually developed so as to descend into and live in the water. We find that each group evolves progressively toward living easily in water, until we eventually reach the whale. Is there a reasonable explanation or answer as to why God

created these creatures over consecutive time periods, so that whoever sees them determines that the whale is an inevitable result of this chain of organisms that appeared consecutively over time, and progressively evolved towards life in water?!

I believe there is no logical answer except evolution. Otherwise, the alternative answer, which contradicts science, would be to accuse God Almighty of doing all of this in order to deceive the people, but He is far above that.

We look at whales and dolphins and we find that they swim by bending their bodies up and down in a manner identical to land mammals when they run. They don't swim like fish that, in most cases, bend from side to side. When we observe whales, we find that they give birth and feed milk produced by mammary glands to their young in exactly the same way as mammals.

Sometimes the opponents of evolution also resort to books by biologists and geneticists who are resistant to, or critical of, the theory of evolution, without recognizing that some of them don't deny evolution, but instead simply regard it as a controlled process, or present it in a novel way. For example, scientists disagree about how mutation works (its speed, pausing, etc.) to affect biological diversity. There is a tremendous difference between those who say that the theory of evolution is true, with a god directing it, and those who say it is false. Their shared belief is that a god exists, not that the theory of evolution is false. Furthermore, not every statement by a biologist has scientific value. One should not just present an opinion, especially when it is the opinion he has adopted. Supporting evidence should also be presented in order for people to see whether it has scientific value, or if it has already been scientifically refuted, and then the issue will be settled. There are universities and research centers around the world that adopt precise scientific standards and have people who evaluate research papers, books, and critiques of scientific theories. If there was a valuable scientific critique by an expert, these universities and scientific centers would have quickly embraced it, and it would be published and promoted, and scientific seminars would be held to discuss it. However, what we see is the exact opposite. Today, in all the well-known universities around the world, the theory of evolution is the only explanation for the existence of life on the earth. Whoever wants to search for the truth themselves by conducting scientific research should at least acquire sufficient knowledge in historical geology, evolutionary biol-

ogy, genetics, anthropology and archeology. They should then read the scientific critiques of the theory of evolution, as well as the responses to them, so as to make their position scientifically solid and valuable. However, if someone says that some biologist has responded to the theory of evolution in some book, or some scientist said something about the theory of evolution so it is false, or if one refers to someone who is not even a specialist when evaluating the theory, then these are truly contrived and unscientific stances. When you read their scientific reviews, you sometimes find they lack any credibility, since some of them present the theory of evolution in a twisted, backward way, and then respond to it. It is as if the responses are intended for the average person who doesn't know anything about the theory of evolution, and are meant to be a marketing tool for their insignificant research. There is no scientific basis for these responses. Rather, they are based on the fact that their authors have advanced degrees in biology, or in a field that is not even relevant to the topic, such as cosmology.

In summary, whoever says that they want to refute the theory of evolution shouldn't distort or twist it. He must refute the theory as it is presented in well-established universities around the world today, not as he imagines it, or as the opponents of the theory have incorrectly presented it.

A note of caution: I have noticed that those who reject the theory of evolution repeat the same arguments that evolution scientists have already presented and responded to themselves. This is inappropriate for whoever claims to have knowledge and claims to be scientifically refuting the theory. They should read and recognize that evolution scientists have already responded to their arguments, some of which were presented by Darwin himself in the nineteenth century. Therefore, whoever repeats the same arguments is either incapable of discussing and refuting the responses of the evolution scientists to these arguments, or he hasn't read what evolution scientists have written and doesn't know that they were the first to present and respond to these arguments as well as dozens of other arguments. In either case, it was inappropriate for them to put anything down in writing without knowledge.

CHAPTER TWO

ACCEPTING EVOLUTION IS UNAVOIDABLE

The Theory of Evolution (Abiogenesis and Development)

The theory of evolution is actually divided into two parts—or almost two separate theories—that explain the emergence, development, and evolution of life on this earth. The first part, or the first theory, is concerned with explaining the emergence of the first life, or the origin of life on the earth from nonliving matter. The second part, or the second theory, is concerned with explaining the evolution and development of life from that first seed. So it makes sense for us to discuss the origin of life first, and after that we will turn to the discussion of development.

First: The Theory of Abiogenesis (The First Seed)

Biologists believe that each living cell contains the secret of material life by which replication, growth, and reproduction occur. That secret is the chromosome, the location where information is stored. The chromosomes carry DNA, consisting of non-homogeneous sequences of four different nucleotides (A-T-C-G). These four types of nucleotides represent the letters of the genetic language that are used for writing and storing information. The information is copied during the replication process when DNA is duplicated. Therefore, DNA can be considered the component that represents life, because it carries information for replicating itself and producing proteins, and therefore results in reproduction and growth. Variation can occur as a result of the mixing of male and female DNA, or due to mutations that occur specifically during the duplication process, or in some cases, due to radioactive bombardment. Another nucleic acid, known as RNA, is used as a mediator for transmitting information during DNA replication and protein production. The information in DNA is read by RNA and translated into either a new copy of DNA so that reproduction can occur, or into protein chains that affect the shape and behavior of the cell so that growth can take place. So what makes liver cells different than intestinal cells is the genes that were expressed as a plan for their

construction. These pieces of information, or genes, are written in a law-abiding way, and in a precise language, in order for the meaning to reach RNA. Then, either DNA replication takes place, or protein chains are produced. Therefore, we have factories and an industry based on a law-abiding, linguistic plan (i.e. the information, or genes).

There is more than one hypothesis or theory of abiogenesis. One theory is that a group of meteors carrying amino acids struck the earth billions of years ago and a primordial soup of left-handed amino acids formed in the water on the earth. Then, either a self-replicating protein or RNA happened to form. Another theory is that chemical materials that self-replicate emerged first, until we reached life, or DNA.

Discussing the Hypotheses of Abiogenesis

None of the theories of abiogenesis have been proven with scientific evidence. Actually, they are all unproven theories or hypotheses.

The DNA and RNA present in living cells, which are considered replicators, as well as the proteins that could conceivably self-replicate, all consist of very large numbers of units or molecules. So if we were to consider the probability that they would accidentally form, or assemble, simultaneously, just once, in the correct replicable way, we would reach a number that cannot be achieved scientifically within the time limits that we are familiar with on the earth.

Even if we assumed that abiogenesis began with the simplest protein that ensures the self-replication process (and let's accept the assumption that it's extremely simple and consists of just a 32-amino-acid sequence), since there are 20 different types of amino acids that can form this sequence, then the number of possibilities we would have is ($4.294967296 \times 10^{+41}$), or approximately 4×10^{41}, which is the number 4 followed by 41 zeros. This is a very large number, and it represents an extremely low probability of occurrence.

In fact, this made Dr. Richard Dawkins stumble into unrealistic assumptions in his book *The Blind Watchmaker*, in a desperate attempt to decrease the number of zeros on one side and increase them on the other. In this way, most atheists drop tens of zeros here, and add tens of zeros there, in a very unscientific and careless way, making imaginary assumptions in the hope of eventually reaching a number they deem acceptable and achievable within the time limits available on the earth, about a billion years at most.

Now let's assume that the first miracle occurred: amino acids formed on the earth under the extraordinary circumstances suitable for their emergence or arrival, and they were in an environment on the earth that was suitable for one attempt at the emergence of a self-replicating protein each second for a billion years. The number of available attempts would be (31,449,600,000,000,000) or approximately 3×10^{16}. If we subtracted this number from the number of required attempts, we would still need $3.99999999999999999999999997 \times 10^{+41}$ attempts, approximately (3.9×10^{41}), in order for it to be possible. As we can see, one attempt per second for a billion years had almost no effect on the number. Therefore, if we calculate the time required for the probability to be met at one attempt per second, the time period is approximately (4×10^{41}) seconds, or approximately 10^{34} years, which is the number 1 with 34 zeros after it. This is an enormous number, far exceeding the age of the earth, and even the age of the universe. The age of the earth is estimated at 4.6 billion years, which is a single digit with nine digits after it, and the age of the universe is estimated at 13.7 billion years, which has just ten digits after it.

If we calculate it another way, by calculating how many attempts per second for a billion years it would take to obtain a self-replicating protein within the limits of probability, the number of attempts per second would be the result of dividing the number of required attempts by the available time, which is a billion years. The result would be: (12,718,762,718,762,718,762,718,762.718763), or approximately 10^{25}, meaning that we would need approximately 1 with 25 zeros, or almost 10 million, million, million, million, attempts each second for a billion years in order for it to be possible. This number is extremely far-fetched.

Not only that, but the probability of sufficient amino acids existing on the earth is also very low. There are two types of amino acids: left-handed and right-handed. The proteins that exist within the structure of life are only comprised of left-handed amino acids. Therefore, our previous attempt to have proteins would only work with the assembly of left-handed amino acids. This means that the probability of ending up with the required protein is one-half to the power of the number of amino acids in that protein. So if the number of amino acids in the required protein is fifty, for example, then the probability of all of them being left-handed is one-half to the power of fifty. This is a very low probability. By combining the extremely low probability of each of the

required consecutive steps for the formation of a protein, the possibility almost disappears, becoming nearly impossible.

However, there are atheists who calculate it backwards, deriving the required numbers from the premise so as to make it possible in the end. For example, the first problem is the availability of building material: amino acids. So they resort to proposing hypotheses, such as the hypothesis that amino acids had formed due to the conditions on the earth and the abundance of lightning as earth was forming, in order to solve this problem. Another far-fetched hypothesis is that the earth was bombarded with meteors loaded with amino acids four billion years ago. When they discovered that the amino acids could only be left-handed, some of them proposed yet another far-fetched hypothesis, saying that these meteors were exposed to the light of a neutron star on their way to the earth, and so on. Therefore, the whole claim is built upon far-fetched hypotheses in order to prove that the formation of a self-replicating protein on the earth billions of years ago was completely normal. Despite the fact that all of these hypotheses are far-fetched, and that the probability of just one of them is so low that it barely exists, let alone all of them occurring in succession, some of them feel they can say that they are reasonable and acceptable.

Atheists find it very reasonable to believe that an enormous number of meteors loaded with massive amounts of amino acids specifically chose the planet Earth, which is like a grain of sand in the desert compared to the universe, even if the probability of this event is so low that it barely exists!

Atheists also find it very reasonable for these meteors to have been exposed to the light of a neutron star on their way to the earth so as to form left-handed amino acids. They find all of these hypotheses, which have an almost nonexistent probability, to be very reasonable. However, they find it far-fetched that a lawmaker is behind the law that created the self-replicating protein or DNA! They also find it far-fetched that a speaker is behind the linguistic genetic plan!

I think that what has been presented is sufficient to conclude this issue. Would a rational person, who knows of the nearly nonexistent probability of an event occurring, even when factoring in the entire age of the universe, still say that it is normal for the event to occur during the one to one-and-a-half billion year period prior to the existence of life on the earth, and at the same time refuse to discuss any possibility that this event might be miraculous, and then grasp at straws to prove

his hypothesis? Then, when he finds scientific evidence that some meteors might have struck the earth at some point in time, he uses this possibility and goes so far as to say that these meteors came from the depths of the galaxy like vats loaded with amino acids. But just saying amino acids doesn't achieve their goal, so they add that these amino acid filled vats passed by a neutron star on their way to the earth, and the light polarized them, eventually causing them to transform from a mixture of right and left-handed into only left-handed amino acids. The imaginary hypotheses continue in order to escape this suffocating dilemma of probabilities.

There are other hypotheses regarding the formation of RNA and DNA, such as the one introduced by some chemists and biochemists, which suggests that it didn't begin with proteins or nucleic acids, but rather with non-living chemical substances like polymers or clay particles that were formed in a certain replicable way.

> . . . we might say that their survival machines must have been seized at a later stage by DNA. If so, the original replicators were utterly destroyed, for no trace of them remains in modern survival machines. Along these lines, A. G. Cairns-Smith has made the intriguing suggestion that our ancestors, the first replicators, may have been not organic molecules at all, but inorganic crystals—minerals, little bits of dry clay (Dawkins 1989, 21-22).

These are far-fetched hypotheses, and they continue to be just that—hypotheses that aren't based on accurate scientific data. Depending on what occurs in certain chemical reactions in which crystals seem to replicate is nothing more than dependence on a phenomenon irrelevant to the topic of research. The truth is that replication and the passing down of information don't occur in chemical reactions at all. Within experimental and theoretical sciences, these are merely hypotheses that have yet to be proven by anything scientifically reliable. There is no difference between them and the "Great Spirit in the sky"

that arranged the pebbles on the beach, as Dawkins' primitive tribe believes. Therefore, I see no reason to discuss or refute these hypotheses, since they are nothing more than assumptions that don't reach a scientific level worthy of discussion or response.*

All things considered, if the discussion shifts to the sub-biological level, meaning the level of chemical reactions, then it would be best for the discussion with atheists to shift to the established principles of chemical reactions, the physics of atomic and subatomic particles, and the four forces (the weak nuclear, strong nuclear, gravitational, and electromagnetic). Since we are moving on to atomic and subatomic forces, our discussion should be about proving the existence of a god at this sub-biological level, be it molecular, atomic, or subatomic. According to the hypothesis that there is a polymer or something similar to it that began to replicate itself regularly and to evolve until it brought us to where we are today, life would have begun from that polymer, rather than from a protein, or genetic plan. If that is the case, it would be better for the discussion to be about the origin of matter. We will discuss this when we reach the topic of the big bang, and we will prove the existence of a god at this level of research and knowledge. This will be enough to prove the existence of a god regardless of the presence and evolution of physical life, and whether or not it has come into existence through the intervention of a god, and whether it evolved randomly or non-randomly or purposefully or non-purposefully.

There is a theory, or hypothesis, which suggests that life came prefabricated within certain meteorites or rocks a few hundred million years after the formation of the planet Earth. In this respect, there are experiments being conducted to determine whether it is possible for living organisms or primary replicators to survive extreme cold, extreme heat, and severe collisions. It has also been proven that some multicellular organisms can live in a state of hibernation without water at extremely low temperatures.

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*. "If you walk up and down a pebbly beach, you will notice that the pebbles are not arranged at random. The smaller pebbles typically tend to be found in segregated zones running along the length of the beach, the larger ones in different zones or stripes. The pebbles have been sorted, arranged, selected. A tribe living near the shore might wonder at this evidence of sorting or arrangement in the world, and might develop a myth to account for it, perhaps attributing it to a Great Spirit in the sky with a tidy mind and a sense of order" (Dawkins 1986, 43).

-This will be discussed later in the book.

Another theory, or hypothesis, is that the first replicators emerged on the edge of swamps and oceans that were exposed to wet-dry cycles and severe tides as a result of the moon being closer to the earth than it is now. This, in conjunction with the sun, might have caused amino acids to concentrate in small pools, and this would have facilitated the formation of the primordial soup that is suitable for the emergence of the first replicators.

Yet another theory, or hypothesis, concerns extreme conditions, and assumes that abiogenesis occurred in either hot springs or in an extremely acidic environment. This hypothesis was introduced due to the discovery of several life forms in the depths of the oceans that are able to survive high temperatures. Some of them can also survive high levels of acidity. Therefore, the first replicators may have emerged under similar conditions, especially since these conditions were prevalent in the first several hundred million years of the earth's existence.

Actually, an unbiased person can clearly see that the proposed theory regarding abiogenesis is not a solid scientific presentation based on facts and reality. Rather, it is research based on the foundation and the hypothesis that nothing exists but nature, and everything must be explained exclusively within the limits of nature, even if it is a series of one imaginary hypothesis after another. Achieving one of them alone is absolutely impossible, let alone achieving all of them in succession.

In fact, rationality determines that if all of these very low probabilities were achieved in succession, it would indicate the occurrence of a miracle, which would indicate that there is someone who has managed things in this way to achieve this result: the existence of life on the earth.

Since thus far there is no scientific theory that explains abiogenesis with an acceptable, scientific explanation supported by conclusive evidence, Dawkins, in his book *The Blind Watchmaker*, goes to the extent of discussing the possibility of a quasi-miracle occurring, like when lightning strikes a person at the very moment they expected, or when lightning strikes the same person seven times as documented in the *Guinness Book of World Records*. Dawkins says that what is considered miraculous in a short period of time isn't considered miraculous over a long period of time—in other words, when sufficient time is available. This means he assumes the emergence of the cell to be a miracle, but a miracle relative to time. To refute this, it is sufficient to say that the probability of a self-replicating organism arising is almost nonexistent within the time limits we are familiar with. In fact, even if he wanted to calculate the probability at the level of the entire universe, the number of planets potentially suitable for this occurrence wouldn't support it since he would have to include the probability of meteors being loaded with amino acids, the probability that they would strike the earth, the probability that they would be left-hand amino acids, and the probability that a nucleic acid or self-replicating protein would emerge, making it absolutely deserving of the description of miraculous, supernatural and extraordinary. Therefore, even the strongest proponents of the idea that the first emergence of modern life was a completely natural occurrence say that it happened only once, and it never recurred. This is an implicit confession that abiogenesis is a miracle, or at the very least, a difficult and far-fetched claim:*

*. In addition, all of this still will not produce a eukaryotic cell that is suitable for evolution and speciation. The best that can be obtained is the production of a self-replicating protein. Let's say the best possible scenario is that this protein can become a living bacterial cell through evolution. Bacterial cells differ from the cells of plant and animal organisms, which are eukaryotic. Commonly known organisms are scientifically divided into bacteria which are prokaryotes, and eukaryotes, which contain organelles. The transformation of an organism from a bacteria to a eukaryote qualified for evolution and speciation is a complex issue, and the probability of its occurrence is rather low. If we were to calculate it, we might enter the same probability maze as before. Margulis' theory says that eukaryotic cells, such as the cells in our bodies, result from the merging of different types of bacteria. For example, there are mitochondria

> Organisms can never be totally unrelated to one another, since it is all but certain that life as we know it originated only once on earth (Dawkins 1996, 258).

In conclusion: there is no logical, scientific explanation for the emergence of life that is supported with evidence, or even accepted by scientists.

As far as the primordial soup theory, postulating a miracle or unseen intervention to explain the availability of a primordial soup suitable for the emergence of life may not be less likely than postulating the natural availability of the soup and the subsequent formation of the protein.

We can say that postulating a divine miracle—after we prove the existence of a god—would make the issue of abiogenesis even more logical than postulating crystalline or clay replicators.

However, saying that they formed and replicated without external intervention to the point of producing life would mean that they would have to replicate many times after that first replication, and they would have to continue to produce new life, or at least a new type of primary replicator every so often, up until today, as long as the raw materials were available. This hasn't happened before, nor is it currently happening. Therefore, it is incorrect.

Moreover, the same applies for the primordial soup theory. Even if we recreate the primordial soup in the laboratory, it isn't expected to produce a self-replicating protein, or a ribonucleic acid, without our intervening beyond making the primordial soup. Therefore, we must assume that an outside intervention compiled chemical compounds, crystals, clay particles, or amino acids into a compound capable of self-replicating, multiplying, and producing the first life. If this was the case, then why wouldn't this intervention that produced life be a di-

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within the nuclei of our cells that have DNA that is different than the cell's primary DNA. This means that some type of union occurred in the past, which is why there is more than one type of cellular DNA. The mitochondria are self-replicating, and this means that there is more than one replication mechanism in eukaryotes. However, mitochondria usually come only from the mother, because the ovum is large enough to accommodate mitochondria, unlike the sperm, which is small. Therefore, we can track the female ancestor through mitochondrial DNA, just as we can track the male ancestor through the Y chromosome since it exists only in male sperm. The chloroplast, a eukaryotic cellular organelle that exists in plants, contains DNA that is different than the plant's primary DNA.

vine, unseen intervention, especially after we prove the existence of a god in due course?!

Abiogenesis doesn't have a scientific explanation. It forms a gap that science and scientists have been unable to fill despite all of the laboratory capabilities available today, which, for the purpose of experimentation, provide the right conditions to simulate any time period in which biologists and biochemists would expect life to emerge, just as it would have formed four billion years ago, or even less than that.

Regarding what was mentioned above, my objective is not to reject the hypothesis of abiogenesis, or the formation of a self-replicating protein by some means if the material, conditions, and time are available. In fact, I believe in what the Imams pbut have said, and what cosmologists and biologists predict: that the universe is filled with organisms, and we are not alone. What I wanted to make clear is that abiogenesis is a dilemma that science has not solved, for it hasn't found a way around the problem of the availability of material and conditions suitable for the emergence of life, or let us say, as we believe, the implementation of the first genetic plan, or the seed of the genetic plan, out of inorganic chemical substances that evolved until it reached its purpose: the human being, and the human genetic plan.

In conclusion, there is no hypothesis of scientific value to explain the emergence of life on the earth in a logical and acceptable way without postulating the occurrence of things that are scientifically impossible. Therefore, there is a logical and acceptable opportunity, at least up to this point, to assume the intervention of a god along with the unseen aspect in order to explain abiogenesis alongside those unlikely, or quasi-impossible-to-occur hypotheses.

However, let us examine the hypothesis that the opposing party—the atheist party—clings to, which is that inorganic primordial chemical replicators, made of crystals or clay, produced protein, or that the earth was a bowl of left-handed amino acid soup, and that the number of attempts were sufficient (just like that, without having a scientific, logical, achievable explanation for the availability of this substance). Then, after all of this we acquired our protein composed of only left-handed amino acids. If this had happened, would it negate the truth that Dawkins and other like-minded atheists are trying to overlook: that the genetic plan is compound, complex, law-abiding, linguistic, and it achieves a purpose—as we shall demonstrate—therefore indicating a lawmaker and a speaker? If they reject that He, or a deputy of

His, is the lawmaker of the genetic plan, with Him being the unseen reason behind its emergence on the earth, and if they insist that only natural causes are the reason for its emergence, then how will they negate or overlook the fact that it proceeds toward a purpose, obeys laws, and uses a language, all of which cause it to function, and indicate the purposeful one who created and spoke through its law?!

Is it possible for us to say that the plans for a building or a bridge, when successfully implemented, obey laws, are written in an engineering language, and that the one who wrote it is conscious, yet not say the same when we see the genetic plan implemented and functional? Does our language indicate that we are conscious of meanings and intend meanings, yet the genetic language does not indicate that its creator or speaker realizes and intends to achieve a particular meaning or purpose with it?!

I believe any rational person would say that if our language indicates that we are intelligent beings and that we intend to achieve meanings, then the genetic language indicates that there is a speaker and purposeful being behind it, especially since it has achieved clear purposes that have now become known to us, such as intelligence—the best survival machine.

Second: The Theory of Development and Evolution

On November 24,1859, Charles Darwin published his famous book *On the Origin of Species by Means of Natural Selection, or, the Preservation of Favoured Races in the Struggle for Life*. In this book, he presented a theory stating that organisms on the earth (plants and animals) evolved, and did not come into existence suddenly or at once.

Although at the time Darwin did not have enough fossils to support his theory, he presented evidence that he obtained from an observation and research of hybridization and domestication during his famous global expedition on the *HMS Beagle*, and from the observations and research of other biologists. Most of Darwin's evidence came from observation, comparative anatomy, and research on the lineage of modern organisms. However, scientific evidence for evolution continued to accumulate after Darwin through research, aided by technological advancements in the study of fossils, comparative anatomy, and genetics. Darwin, as well as the evolutionary biologists who came after him, concluded that the combination of variation between individu-

als (due to variation in their genetic plans, for instance), the process of selection carried out by their natural surroundings, and heredity, results in evolution of life suitable for that environment. If the reader understands the meaning of variations in genetic plans and nature's preservation or selection of the favored races, then they will clearly see that evolution is inevitable, and that fossil evidence as proof of evolution is unnecessary.

Simply stated, whenever we have variation, selection, and heredity, we inevitably have evolution. Variation exists, and there is no doubt that it is present among individuals of the same species. Selection also inevitably exists, because it is an intrinsic part of nature, its demands, and the environmental changes that constantly occur, such as declining water levels, droughts, rising or dropping temperatures, or the introduction of a new predator or prey. And as long as breeding and reproduction occurs, heredity is inevitable as well. So evolution was inevitable in the past, just as it is in the present, and will be in the future, since all of its required components have and still do exist. Therefore, the issue is not debatable, because it is as clear as the earth's spin. In addition to this, there is evidence that has accumulated from comparative anatomy, fossils, and genetics that confirms evolution, though evolution is obvious, even in the lineage of modern organisms.

Therefore, evolution occurs whenever there is variation, heredity due to reproduction, and natural selection of the fittest. For example, if we take the evolution of compound organs such as the eye, ear, and nose, the first evolutionary step would be the evolution of a sensory cell in a primitive, multi-cellular animal. These cells would then multiply in later generations, due to the fact that there is variation caused by genetic mutation that provides for this multiplication. If these sensory cells provide benefit and energy for the animal by helping it to elude enemies and acquire food, and the energy provided exceeds the cost, then animals with this trait will be more capable of surviving, and will be selected by the natural environment. With this, selection of these sensory cells takes place. So in this way, whenever the evolutionary step is of more benefit than cost to the animal, it will be preserved.

After specialized sensory cells multiply through evolutionary steps due to variation and selection, a group of cells that sense light becomes available, and another group that senses chemicals or smell also becomes available, and so on. When a group of cells that senses light exists in the animal, and variation is also present, the environment se-

lects the most favorable cells to progress toward the optimal state. So a concave shape is favored because it senses light better, as is a lens that concentrates light and makes the image clearer, and so forth. When suitable improvement mutations are available, the animal favors (not through consciously favoring, but in accordance with the law of evolution that I have described) a system that combines and organizes the work of sensory cells with different functions as a group, rather than individually, because that makes it better able to survive. If mutation provides such a system, or provides the connection of such a system between the sensory cells and the organization of their work, then the system will be preserved. This represents the primitive nervous system, which we can say is the basis for the brain. And this is how the sensory cells evolve to become an eye, a nose, etc. In general, it is a matter of economics for the animal: if the trait acquired through genetic mutation helps the animal to obtain food and increases its ability to acquire two units of energy while the energy expenditure of putting this trait into operation is one unit, then this trait will benefit the animal, and will usually be preserved. On the other hand, when the energy expenditure of operating the trait exceeds the benefit (and using the above example, the energy expenditure would be three units), then the trait is harmful, and it will be eliminated. Elimination in this instance does not mean that an individual animal eliminates the trait, but rather it is eliminated by the entire species, meaning that animals that acquire this trait that is more harmful than beneficial will perish, because they won't be capable of surviving or competing with their peers.

There is a difference of opinion regarding the path taken by evolution, and there are several theories to explain its course. These theories disagree about the speed of evolution and whether it always proceeds very slowly, or whether its speed is discretely variable or continuously variable. There is also the theory of extreme genetic mutation that has been abandoned, for the most part. This theory states that a compound

organ comes into existence directly and at one time through a single genetic mutation.

Evidence of Evolution

The Combination of Variation, Natural Selection, and Heredity Unquestionably Results in Evolution

This can be simplified with the following examples:

Europeans descended from dark-skinned (black) origins, yet today, we find that their skin is white. Actually, they are grades of white. For example, southern Europeans are less white than northern Europeans because favored races were selected by the environment. As for the reason that nature selected white skin, it might simply be due to Vitamin D, which requires sunlight to penetrate the skin for it to be synthesized, as dark skin prevents or reduces the penetration of sunlight. In Europe, where there is less sunlight, people with dark skin are at higher risk of developing Vitamin D deficiency, which poses a threat to life and reproduction, so the fittest survive. Since variation in skin color (or pigment) will inevitably occur, light skin is selected because in an environment with little sunlight, a person with light skin is fit to survive. So in this way, an inevitable sifting process occurs, and this continues one generation after another until the skin attains a color that is suitable for the environment. The same applies to nose size, height, and other traits.

> Exposure to a new environment inevitably causes an adaptation to it. In the 50,000-100,000 years since the African diaspora, there has been an opportunity for substantial adaptation, both cultural and biological. We can see traces of the latter in skin color and in size and shape of the nose, eyes, head, and body. One can say that each ethnic group has been genetically engineered under the influence of the environments where it settled. Black skin color protects those who live near the equator from burning under the sun's ultraviolet radiation which can also lead to deadly skin cancers. The dairy-poor diet of European farmers, based almost entirely on cereals that lack ready-made vitamin D, might have left them vulnerable to rickets (our milk still has to be enriched with this vitamin). But they were able to survive at the higher latitudes to which they migrated from the Middle East

> because the essential vitamin can be produced with the aid of sunlight, from precursor molecules found in cereals. For this Europeans have developed the whiteness of their skin, which the sun's ultraviolet radiation can penetrate to transform these precursors into vitamin D. It is not without reason that Europeans have, on average, whiter skin the further north they are born.
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> The size and shape of the body are adapted to temperature and humidity. In hot and humid climates, like tropical forests, it is advantageous to be short since there is greater surface area for the evaporation of sweat compared to the body's volume. A smaller body also uses less energy and produces less heat. Frizzy hair allows sweat to remain on the scalp longer and results in greater cooling. With these adaptations, the risk of overheating in tropical climates is diminished. Populations living in tropical forests generally are short, Pygmies being the extreme example (Cavalli-Sforza 2000, 10-11).*

Example: The change in the color of moths from white to black as a result of the industrial revolution.

Moths benefited from their white color because the white bark of trees concealed them and they weren't seen by birds. With the industrial revolution in Europe, tree bark blackened in some of the industrial areas as a result of the pollution caused by coal. The white moths were then exposed to birds, whereas the moths with a darker color mutation were able to remain hidden and survive. So the color of the moths changed within a short period of time, rather than requiring millions of years, because they have a short life cycle. Therefore, in the case of moths, a relatively short time period is sufficient for hundreds or thousands of generations to pass and for biological evolution to occur.

Example: The variable neck length of the ancestors of giraffes, with some having a relatively longer neck than others.

If we assume that giraffes lived where food was at a height more suitable for those with long necks than short necks, then natural selection would occur, favoring the giraffes better suited for life in that

*. Professor Luigi Luca Cavalli-Sforza, born in 1922 in Genoa, is an Italian population geneticist who also worked in the field of anthropology. He received his MD in 1944 and collaborated with evolutionary biologist Ronald Fisher at Cambridge University. He has been a professor at Stanford University in California since 1970 (now emeritus), and is a member of the Lincean Academy. He won the Balzan Prize for the Science of Human Origins in 1999. He is also an emeritus member of the Italian Society for Evolutionary Biology.

environment. Therefore, short-necked giraffes would either starve to death, or would be incapable of reproducing and mating due to insufficient food, or they wouldn't be able to feed their young. In this way, the number of short-necked giraffes would decrease in this environment, and they might become extinct, whereas long-necked giraffes would survive and reproduce satisfactorily. So giraffes with the long-neck trait would increase in number and pass these genetic traits to their offspring, and the short-necked trait would be cleansed from the giraffe genetic plan, generation after generation.

These matters are practically self-evident, and proving their validity today using genetics is the same as proving that the earth spins around the sun using images. Nonetheless, a great number of people deny it just because they think it contradicts religious scriptures.

Example: Predatory animals such as wolves vary in all aspects, just like other organisms.

If wolves exist in an environment where the prey is quick, then slow, short-legged wolves will starve to death, so they won't pass their traits on to the next generation. With the passage of time, through natural selection, fast, long-legged wolves will develop in that environment. In a snowy environment, only white wolves will survive because the dark ones will be easily seen by the prey and won't be able to hunt, so they will starve to death. In this way, the color of the wolf's fur is gradually refined to white, and the same thing can happen to prey, such as when the fur of rabbits becomes white in order to aid in camouflage. As for polar bears, their white color aids them greatly in camouflage while hunting their prey, so the prey don't notice them until it is too late. Were it not for the white color trait, they might not have been able to obtain food. The white color is not acquired suddenly, but rather through the process of evolution, just as with the evolution of moths during the industrial revolution. Both occur when genetic mutations provide the option suitable for the survival, reproduction, and establishment of one trait at the expense of another. However, the time that it took for the polar bear to evolve from the brown bear was approximately 150,000 years according to Dr. Ian Stirling. This time period is far longer than that required by the moths of the industrial revolution, the reason being the difference between long and short animal life cycles, as I have clarified previously.*

*. Doctor Ian Stirling is considered one of the world's leading authorities on polar bears. He has written and spoken extensively about the danger posed to polar bears

Example: Nowadays, we all say that despite significant advancements in construction, technology, and medicine, our health problems, diseases, and their complications have increased.

All of us—perhaps even some doctors—wonder, what is the reason for this?! Yet, one of the reasons is clear: it is simply that we have, with our advancements, eliminated one side of the evolution equation of our (physical) species: natural selection.

To clarify further, let's examine any hereditary disease: diabetes, for example. The healthcare industry (doctors, laboratories, specialists, pharmacists, and medications, etc.) prolongs the life of diabetics so that they reach adolescence, have children, and pass their genes to their offspring. This causes an increase in the number of those among us who have these genes. Therefore, with our advancements we have eliminated natural selection. Had we not added health care to the equation, natural selection would have occurred, and many diabetics would have died before reaching adolescence and being able to have children, so the number of people who have these genes would have gradually decreased.

In addition, due to our residing in somewhat protected houses, many people have become incapable of withstanding the difficulties associated with living in a natural environment, such as the ability to withstand germs or insect bites.

Moreover, there is a study regarding the biological elimination that befell the natives of the New World as a result of the germs carried by pets that were brought to this region by new settlers. While Europeans had adapted to living with these germs and developed a resistance to them, the natives of the New World hadn't, so these germs gave rise to the restructuring of these populations based on the system of evolution.

Comparative Anatomy

Comparative anatomy confirms evolution. There are many examples of this, but I will present only one: the laryngeal nerve that is found in fish, amphibians, deer, humans, and giraffes. In fish, this nerve travels from the brain to the gill after looping around the heart.

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by global warming.

Now if the body of each animal was designed independently, and didn't evolve from fish, this nerve would directly connect the brain to the upper part of the larynx since there is a just a short distance between them. However, in nature, this nerve follows the same route in animals as it does in fish. This means that it evolved from the nerve in fish, and that the elongation of the neck and the remote position of the heart in the animal's body compelled it to stretch so that it could make a detour around the aorta, just as it does in fish. This nerve takes a long course in giraffes because it loops around the aorta, then it turns back almost an equal distance until it reaches the upper neck and connects to the upper part of the larynx. The long course this nerve takes is of no real benefit according to biologists and comparative anatomists. It has made this detour in fish and has followed the same circuitous route in the rest of the animals due to evolution. So this detour is a historical inheritance.

Therefore, the laryngeal nerve has taken this unnecessary turn because it wasn't originally designed for each animal independently. It travelled from the brain down to where the chest starts and returned to the upper larynx. This is proof of evolution and development because in each evolutionary step, the lengthening of the nerve by tiny increments was much easier than making a direct connection. Otherwise, if the body of each animal was designed and created independently, the nerve would be directly connected, and the economical waste resulting from designing a nerve of this length as in the giraffe, for example, would be unnecessary.

The fact mentioned above is also used to oppose intelligent design, since this defect in design that occurred during the process of evolution proves that this is not an intelligent design perfectly suited for all animals. The original design led to significant lengthening of the recurrent laryngeal nerve in animals, especially the ones with long necks such as the giraffe, without adding any benefit. This invalidates intelligent design in evolution.

What has been mentioned above is a summary of how comparative anatomy is used to prove evolution, and it is also the atheist argument against intelligent design. I have tried to simplify the issue as much as possible. Illustrations may help simplify it further.

God willing, we will discuss this argument and show that the defect in body structuring that happened during the evolutionary process is not a viable argument against the law-abiding and purposeful nature of evolution. The first genetic plan is purposeful and law-abiding, and therefore indicates a lawmaker and designer who set it down in order to achieve a specific result. Indeed, the matter of the recurrent laryngeal nerve refutes the claims of those who believe that creation occurred in a single burst and who deny evolution, because all design and implementation occurring in a single burst requires negation of this defect that we see in the elongation of the recurrent laryngeal nerve. In fact, even if we were to say that the elongation of the recurrent laryngeal nerve is beneficial, it wouldn't change the fact that it is a historical evolutionary inheritance that opposes creation occurring in a single burst.

I have presented the example of the recurrent laryngeal nerve in particular because it is not only used to prove the theory of evolution, but also to deny that evolution is law-abiding and purposeful. I will demonstrate how this conclusion is invalid, and how imperfections in the products of evolution do not in any way mean that evolution doesn't conform to laws, but merely indicates that creation didn't occur in a single burst. Rather, it happened in stages, and through evolution.

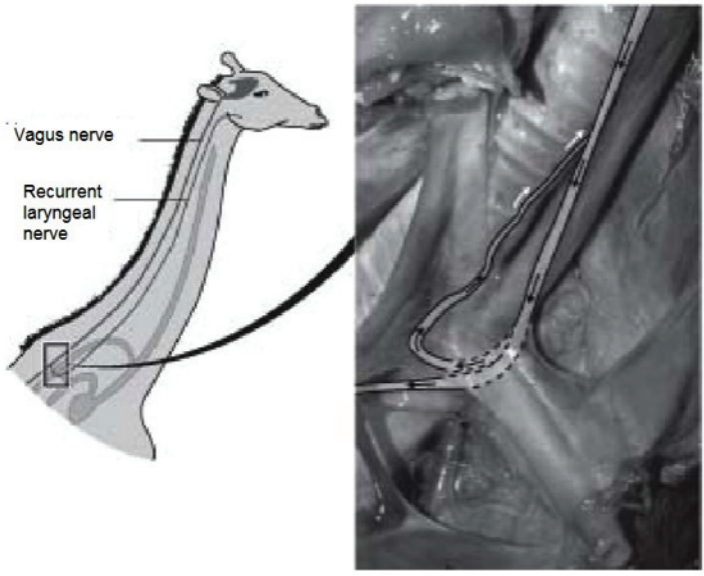


Figure 1: An illustration of the elongation of the recurrent laryngeal nerve in the giraffe during the process of evolution as it loops around a blood vessel and then returns to the larynx inferior to the head.*

*. Dawkins R 2009. *The greatest show on earth: the evidence of evolution*. Free press, Transworld. p 160.

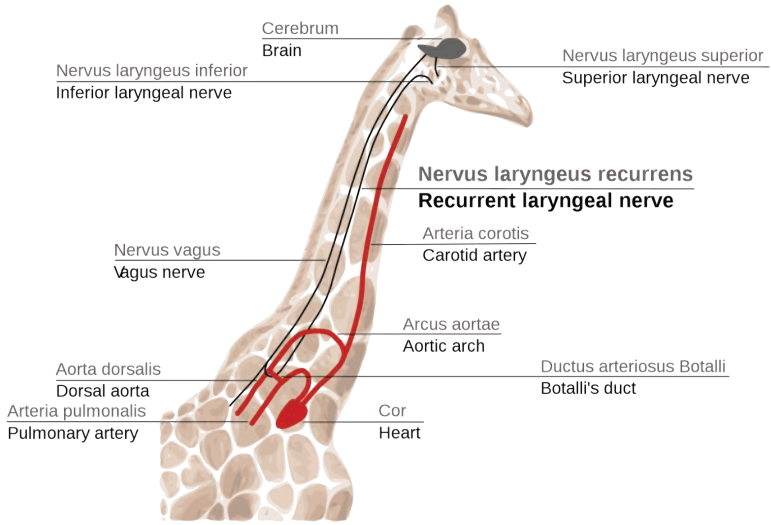


Figure 2. An illustration of the elongation of the recurrent laryngeal nerve (in black) in the giraffe during the process of evolution as it goes around a blood vessel and then returns to the larynx inferior to the head.

Fossils

The subject of fossils is lengthy and vast, and goes back in time at least hundreds of millions of years. Fossils provide evidence of evolution in general, and evolution of the human body in particular. The 4,600 million-year history of the earth has been documented with a reasonable level of scientific accuracy, and the last several hundred million years of life on the earth have been recorded and organic fossils preserved with even greater detail and accuracy. This historical geological record clearly confirms the evolution of life and organisms on the earth.

In general, geological history and fossils are one way to prove evolution, but some critics of the theory of evolution, due to their ignorance, think that this is the strongest and only evidence for the theory. However, the fact of the matter is that it is just one of the links that infer evolution, and it may not even be the strongest when compared with the research in genetics and comparative anatomy. Furthermore, fossils are no longer studied only by historical geologists, anatomists, and anthropologists who make conclusions that an ignorant person

could question. Today, it is possible to conduct precise laboratory analyses of fossils to accurately determine the geological age, and genetic analyses of fossils that are tens of thousands of years old in order to accurately identify them.

Evolution is Obvious in the Lineage of Living Organisms, at the Level of Body Parts or Even at the Level of Instincts

First and foremost, at the level of parts and how they are organized, we find that normal fish breathe air that is dissolved in water, while lungfish, such as *Lepidosiren paradoxa*, can breathe atmospheric air. This is considered one of the first steps taken by fish towards life on land. Some lungfish live in shallow water, and others spend the summer in mudholes covering themselves with a mucous material that protects their bodies. All of these are evolutionary steps toward life on land, aided by their capacity to breathe atmospheric air.

Lungfish breathe with their gills like other fish. They also have air sacs that are usually used for floating, but have evolved for breathing atmospheric air. Lungfish are considered to have taken a clear step toward developing their two air sacs into two true lungs at a later time, just as in the case of vertebrates that breathe air with two true lungs.

There are also fish called climbing perch, *Anabas testudineus*, that can climb, crawl and live on mud for long periods, and then return to the water. They are fish in every sense of the word. They even use their gill covers to crawl because their fins haven't evolved in a way useful for walking.

The mudskipper is an amphibious fish that walks on its fins (that evolved on mud), and breathes air through its skin and developed fish gills. This animal, or fish, lives underwater and on mud. It spawns in water and its young hatch in water as well. Clearly, this is a step the fish has taken toward living on land, and evolving from swimming in water to walking on land.

Therefore, in the lineage of organisms present on the earth today, we have fish that evolved to breathe atmospheric air, fish that evolved to endure water shortage and recession in addition to breathing atmospheric air, and fish that crawl on mud in addition to breathing atmospheric air and withstanding water recession; and still others that have fins that evolved to walk on mud. The matter of change and evolution of the organ or body part of the animal is scientifically proven,

so we cannot claim scientifically that evolution doesn't exist while having this sequence and the transitional stages in front of us. As far as how this evolution occurred, it could easily have been caused by the presence of an area of muddy water. Over time, such an environment would sift the fish so that just the ones possessing superficial blood vessels in contact with atmospheric air—which represent a part (lung) that enables them to obtain oxygen directly from atmospheric air—can pass through the sieve. Therefore, this environment will sift the fish so that only the ones that can crawl on mud will be able to move from one muddy pond, in which life has become impossible, to a better one in order for life and reproduction to continue. In this way, the sifting process continues until the genetic plan suitable for this environment becomes firmly stabilized—in other words, until fish with traits suitable for this environment can survive, reproduce, and refine their traits into the most suitable ones over time. This is how evolution occurs.

> Numerous cases could be given amongst the lower animals of the same organ performing at the same time wholly distinct functions; thus the alimentary canal respires, digests, and excretes in the larva of the dragon-fly and in the fish Cobites. In the Hydra, the animal may be turned inside out, and the exterior surface will then digest and the stomach respire. In such cases natural selection might easily specialise, if any advantage were thus gained, a part or organ, which had performed two functions, for one function alone, and thus wholly change its nature by insensible steps … there are fish with gills or branchiae that breathe the air dissolved in the water, at the same time that they breathe free air in their swimbladders, this latter organ having a ductus pneumaticus for its supply, and being divided by highly vascular partitions …
>
> The illustration of the swimbladder in fishes is a good one, because it shows us clearly the highly important fact that an organ originally constructed for one purpose, namely flotation, may be converted into one for a wholly different purpose, namely respiration. The swimbladder has, also, been worked in as an accessory to the auditory organs of certain fish … All physiologists admit that the swimbladder is homologous, or 'ideally similar,' in position and structure with the lungs of the higher vertebrate animals: hence there seems to me to be no great difficulty in believing that natural selection has actually converted a swimbladder into a lung, or organ used exclusively for respiration (Darwin 1859, 174-75).

Second, at the level of instincts, there are different species of slave-making ants that use slaves to serve them. In one species, this instinct has evolved so completely that the ants are incapable of feeding themselves, or taking care of their young, since the slaves do everything from building the nest, and caring for their young, to feeding both their young and old. They even carry their masters around. However, in another species in which this instinct is incomplete, we find that the ants depend on slaves only for assistance and domestic work. We find yet another species that perhaps does more work than its slaves. These differences clearly show that the slave-making instinct of the *F. sanguinea* and *Formica rufescens* is an evolved instinct.

> By what steps the instinct of *F. sanguinea* originated I will not pretend to conjecture. But as ants, which are not slave-makers, will, as I have seen, carry off pupae of other species, if scattered near their nests, it is possible that pupae originally stored as food might become developed; and the ants thus unintentionally reared would then follow their proper instincts, and do what work they could. If their presence proved useful to the species which had seized them—if it were more advantageous to this species to capture workers than to procreate them—the habit of collecting pupae originally for food might by natural selection be strengthened and rendered permanent for the very different purpose of raising slaves. When the instinct was once acquired, if carried out to a much less extent even than in our British *F. sanguinea*, which, as we have seen, is less aided by its slaves than the same species in Switzerland, I can see no difficulty in natural selection increasing and modifying the instinct—always supposing each modification to be of use to the species—until an ant was formed as abjectly dependent on its slaves as is the *Formica rufescens* (Darwin 1859, 121).

Applying the General Principle of Cosmic "Evolution" to Life on Earth:

At the level of the universe as a whole we find—according to the big bang theory—that it had a simple beginning, then it started to multiply and become more complex. So this massive amount of matter, stars, planets, and galaxies originated from a point of singularity. God willing, we will discuss this emergence of life in detail, and see that—according to astronomical observations of the universe, and by apply-

ing the Doppler effect to them—the universe is expanding, the speed at which the galaxies are moving away from each other is accelerating, and there are new planets, stars and galaxies continuously forming as well. Therefore, the universe was, and still is, constantly multiplying, being added to, and expanding at an accelerating rate. Since life on the earth is a part of this universe, there is no problem with it being governed by the same principle of gradual cosmic "evolution". So, the beginning would be very simple, and then multiplicity and complexity would stem from this simple beginning. Besides agreeing with science, it also agrees with the correct religious doctrine regarding creation, and the unchanging way of God as well. The seven heavens, and the potential existence (or the created existence in general), began with a simple initial emanation. Afterwards, multiplicity and complexity emerged. As we move away from the source of existence (in other words, as our knowledge decreases), we see the existing objects multiply and become complex. The differences between them increase as well. The sixth heaven has more complexity and more multiplicity than the seventh, while the fifth heaven has more complexity and more multiplicity than the sixth, and so on. Furthermore, if we study just the physical heaven itself, we find that, according to the big bang theory, it began as simple and headed toward complexity and multiplicity. So what is the problem with life on the earth being governed by the same cosmic principle, or what we could call the divine, unchanging way? Actually, the requirement of the unchanging way of God says that it must be so. Therefore, it would begin simple, then multiplicity and complexity would emerge from that simple beginning, just as this is the way of God in the seven heavens and in the physical heaven.

There are those who say that the physical universe is heading towards collapse and annihilation, so life on the earth must be heading there as well because it is subject to the same cosmic laws. With this statement, they believe they have refuted the principle of evolution, or the theory of evolution. However, this is false. In fact, this is a simplistic argument because even if we were to assume that the universe is currently heading toward collapse—when it is actually still young—this doesn't mean that it began as complex and multiple. On the contrary, it has been scientifically proven that the universe had a simple beginning, and then the big bang took place. Afterwards, multiplicity and complexity gradually occurred. So, even the assumption that life on the the earth is inevitably moving toward collapse and

annihilation doesn't negatively impact the validity of the theory of evolution, because moving toward collapse at a later time, for instance, doesn't mean in any way that it began as multiple and complex. The beginning could have been very simple, with just one cell for example, then multiplicity, complexity, and the diversification of life would take place. This multiplicity and complexity would then head toward collapse and annihilation, similar to what happens during the life of a human being. Life begins as a simple cell in the mother's womb, then the cell multiplies and becomes more complex. The human being then grows, becomes old, and finally heads toward collapse and annihilation, becoming weak and eventually dying. We discussed this point in detail in the first chapter.

Degeneration (Atrophy and Loss of Organs)

Degeneration, the atrophy and loss of organs, also demonstrates evidence for evolution in instances where traces of this process remain somewhat conspicuous. This is because it is an evolutionary process, and the loss or stunting of an organ is due to the loss of its usefulness. Some examples of degeneration include: atrophied organs like the feet of some snakes, and stunted wings that aren't used for flying in birds such as Cormorants that specialize in diving relatively deep to catch their fish. Another example is non-functional or blind organs like the eye of the blind cave fish.

The reason for this degeneration is that the organ isn't being utilized, and it is economically costly for the animal, as I have previously explained. For example, for the blind cave fish, because it lives in the dark, the eye is useless, or of very little use, and keeping the eye open and functional is costly since it requires constant energy. When the eye of the cave fish is open and utilized, it consumes energy just like the other bodily organs, so the fish requires more food, and so living, surviving and reproduction become more difficult. Therefore, whenever the benefit of the previously evolved organ disappears, the animal species gradually eliminates it, either by decreasing its size, or closing it off with skin growth. This happens when suitable mutations become available. The animals that acquire this genetic mutation will eliminate this organ and their bodies will be more economical. Thus, they become more fit for survival, because they require less food. As such, when food is scarce , the environment selects the animals that are the

most fit for survival. This is how a change occurs in animal species, and this change occurs gradually, as is always the case in evolution.

Isolated Ecosystems and the Existence of Different Biological Systems Within Them

When life evolved independently, as it did on certain islands that are isolated from the rest of the world, it produced life forms somewhat different than those in other places. This clearly indicates evolution, and the importance of natural selection. This is the case with respect to the marsupials of Australia and the animals exclusive to Madagascar, such as the Fossa. Therefore, if the existence of life on the earth is not due to evolution and natural selection, isolated places wouldn't have had the distinctive feature of organisms that are unlike others and that only exist in those places. The only logical and rational explanation is that life evolved there independent of the other regions of the earth. Therefore, life took an exclusive course that couldn't leave these places and reach other regions because it was restricted to that area and surrounded by natural impediments such as oceans.

The Presence of Abnormal Traits in Certain Organisms

An example of an organism with abnormal traits is the cuckoo bird. This bird parasitizes the nests of other birds by laying its eggs within their nests. Cuckoos evolved eggs in such a way in order to deceive the host bird. The cuckoo nestling also evolved to include a mechanism that aids in its survival: a pit on its back that it uses immediately after hatching to evict other nestlings and eggs from the nest. This enables it to monopolize the food so the host can support it, especially since the nestling is sometimes far bigger than the host parents. If the other eggs and nestlings remained, the food that the small host parents provide wouldn't be sufficient for this large nestling to survive and grow if there were a competitor in the nest. The evolving of the parasite's eggs means that the parasitic cuckoo whose eggs are more camouflaged and more similar to the eggs of the host—or let's say that the host finds acceptable—succeeds in passing their genes to the next generation. This is unlike the birds with distinct eggs that are rejected by the host. The latter bird fails to pass its genes to the next generation. In this way, the eggs evolve. I have explained this here so the reader won't have a sim-

plistic understanding of how a bird evolves its eggs or how a nestling evolves a pit on its back. These statements are clear to evolutionary biologists, yet may be confusing to others.

Domestication and breeding

Domestication and breeding represent artificial evolution carried out by humans. Taking a group of animals with different traits, the best traits are chosen and maintained by breeding the animals with the traits preferred by the breeder. These animals are not bred with animals that possess undesirable traits, so over time, the herd acquires those traits preferred by the breeder and eliminates the undesirable ones. This is well-known to cattle breeders, for instance. Given time, we can imagine a similar situation occurring with breeds of chickens having significantly different traits, as well as breeds of dogs having significantly different size or appearance or even ferocity, or different breeds of pigeons, and so on.

The process of establishing preferred traits through breeding is limited to those improvement mutations available to the breeder that result in the preference of some herd members over others. However, due to advancements in genetics today, improvement mutations can be supplied in the laboratory, made to order, and then propagated in cattle herds, for example.

Genetic Evidence

There is a great deal of genetic evidence, including:

The Fusion of Chromosome 2 in Humans

This refers to two pairs of chromosomes that have fused in humans, yet remain separate in the chimpanzee, orangutan and gorilla. Humans have 23 pairs of chromosomes, while the rest of the great apes have 24.

Dr. Jacob Ijdo from the University of Iowa says:[*]

> The data we present here demonstrate that a telomere-to-telomere fusion of ancestral chromosomes occurred, leaving a pathognomonic relic at band 2q13. This fusion accounts for the reduction of 24 pairs of chromosomes in the great apes (chimpanzee, orangutan, and gorilla) to 23 in modern human and must, therefore, have been a relatively recent event. Comparative cytogenetic studies in mammalian species indicate that Robertsonian changes [which are chromosomes that have a central centromere (center of the chromosome) formed from 2 chromosomes that have noncentral centromeres] have played a major role in karyotype evolution (23, 24). This study demonstrates that telomere-telomere fusion, rather than translocation after chromosome breakage, is responsible for the evolution of human chromosome 2 from ancestral ape chromosomes.[†‡]

This illustrative video by Dr. Miller, *The Collapse of Intelligent Design: Kenneth R Miller Lecture*, explains the issue of the fusion of Chromosome 2 in humans.[§¶]

https://www.youtube.com/watch?v=Ohd5uqzlwsU

*. Dr. Jacob George Ijdo is a clinical associate professor of internal medicine specialized in immunology at the University of Iowa. He received his PhD at the University of Amsterdam, the Netherlands.

†. Telomere = tip of the chromosome

‡. J. W. IJdo et al., "Origin Of Human Chromosome 2: An Ancestral Telomere-Telomere Fusion.", Proceedings of the National Academy of Sciences 88, no. 20 (1991): 9051-9055.

§. Dr. Kenneth Miller, born in 1948, is an American cellular and molecular biologist who is currently a professor of biology at Brown University.

¶. YouTube, "The Collapse Of Intelligent Design:Kenneth R. Miller Lecture", last modified 2015, accessed December 16, 2015, https://www.youtube.com/watch?v=Ohd5uqzlwsU.

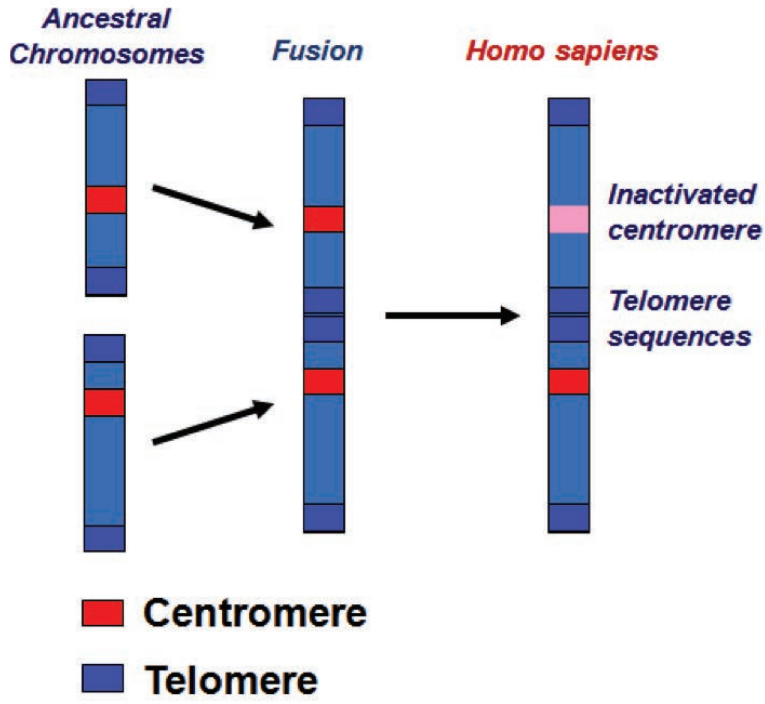


Figure 3: The Fusion of Chromosome 2 in Humans.

Retroviruses common to Humans and the rest of the Primates

Research by Professor John McDonald has found that:*

> All but two (CERV 1/PTERV 1 and CERV 2) of the 42 families of chimpanzee endogenous retroviruses were found to have orthologs in humans.†

In order to explain how this proves evolution, let's imagine that there is a record of life events of the human species and the rest of the great apes. When we read this record, we find that they all have signs of the

*. Dr. John McDonald received a PhD in Genetics at the University of California. He is a professor at Georgia Tech and conducts cancer research on the molecular biology of cancer.

†. Nalini Polavarapu, Nathan J Bowen and John F McDonald, "Identification, Characterization And Comparative Genomics Of Chimpanzee Endogenous Retroviruses", Genome Biology 7, no. 6 (2006): R51.

same specific injuries. These injuries left trace effects millions of years ago. The only explanation for the uniformity of these trace effects is that they affected a common ancestor of the modern species. Otherwise, when calculating probabilities, one would see that it is almost impossible for them to have the same quantity and quality of injuries, and to suffer the same trace effects at the same time and location.

Using an example to make this clear, let's assume that we have two people, A and B, and we have records of both of their ancestral histories, which when reviewed show:

One of the forefathers of A (let's assume that he is the hundredth) has a centimeter long wound in a particular location on his right arm that happened on a certain date.

We also find that one of the forefathers of B (also the hundredth) has a centimeter long wound in the same location on his right arm, and it occurred on the same date.

We find one of the forefathers of A (let's assume he is the seventieth) injured his left eye and ended up one-eyed on a certain date.

We find one of the forefathers of B (the seventieth) injured his left eye and ended up one-eyed on the same date.

These identical and common events recurred tens of times to their ancestors in this manner.

Now, anyone looking at this history will conclude that these forefathers are the same individuals: common ancestors that unite these two individuals, A and B.

Certainly, genetic evidence of evolution is abundant. I don't intend to go through all of it, so I will end by quoting geneticist Dr. Francis Collins, who discusses some of the evidence that he himself discovered during his study of the genetic plans of humans, certain mammals, and other organisms.*

> When I contracted malaria in West Africa in 1989, that was despite having taken the recommended prophylaxis (chloroquine). Randomly occurring natural variations in the genome of the malarial parasite, subjected to selection over many years of heavy use of chloroquine in that part of the world, had ultimately resulted in a pathogen that was resistant to the drug, and therefore spread rapidly. Similarly, rapid

*. Dr. Francis Collins, born in 1950, is an American geneticist who led the Human Genome Project. As a geneticist, he believes in the theory of evolution, while at the same time, he also believes in the existence of God. He published multiple books attempting to scientifically defend his belief in the existence of God.

evolutionary changes in the HIV virus that causes AIDS have provided a major challenge for vaccine development, and are the major cause of ultimate relapse in those treated with drugs against AIDS. Even more in the public eye, the fears of a pandemic influenza outbreak from the H5N1 strain of avian flu are based upon the high likelihood that the current strain, devastating as it already is to chickens and a few humans who have had close contact with them, will evolve into a form that spreads easily from person to person. Truly it can be said that not only biology but medicine would be impossible to understand without the theory of evolution (Collins 2006, 133).

The study of genomes leads inexorably to the conclusion that we humans share a common ancestor with other living things …

This evidence alone does not, of course, prove a common ancestor; from a creationist perspective, such similarities could simply demonstrate that God used successful design principles over and over again. As we shall see, however, and as was foreshadowed above by the discussion of "silent" mutations in protein-coding regions, the detailed study of genomes has rendered that interpretation virtually untenable—not only about all other living things, but also about ourselves.

As a first example, let us look at a comparison of the human and mouse genomes, both of which have been determined at high accuracy. The overall size of the two genomes is roughly the same, and the inventory of protein-coding genes is remarkably similar. But other unmistakable signs of a common ancestor quickly appear when one looks at the details (Collins 2006, 133-34).

Unless one is willing to take the position that God has placed these decapitated AREs in these precise positions to confuse and mislead us, the conclusion of a common ancestor for humans and mice is virtually inescapable. This kind of recent genome data thus presents an overwhelming challenge to those who hold to the idea that all species were created ex nihilo (Collins 2006, 136).

When one compares chimp and human, occasional genes appear that are clearly functional in one species but not in the other, because they have acquired one or more deleterious mutations. The human gene known as caspase-12, for instance, has sustained several knockout blows, though it is found in the identical relative location in the chimp. The chimp caspase-12 gene works just fine, as does the similar gene in nearly all mammals, including mice. If humans arose as a

> consequence of a supernatural act of special creation, why would God have gone to the trouble of inserting such a nonfunctional gene in this precise location? (Collins 2006, 138-39).

Once geneticist Francis Collins had presented genetic evidence to prove the theory of evolution, he made the following comment:

> At this point, godless materialists might be cheering. If humans evolved strictly by mutation and natural selection, who needs God to explain us? To this, I reply: I do. The comparison of chimp and human sequences, interesting as it is, does not tell us what it means to be human. In my view, DNA sequence alone, even if accompanied by a vast trove of data on biological function, will never explain certain special human attributes, such as the knowledge of the Moral Law and the universal search for God. Freeing God from the burden of special acts of creation does not remove Him as the source of the things that make humanity special, and of the universe itself. It merely shows us something of how He operates (Collins 2006, 140-41).

Summary

Evidence verifying the theory of evolution is plentiful, and sound arguments against the belief in single-burst creation are many. An example is the previously mentioned recurrent laryngeal nerve argument, which along with other similar comparative anatomy and historical geology arguments, conclusively prove that a progression of animals and plants existed in successive time periods.

Bacteria came into existence, followed after a long period of time by a eukaryotic cell, then later by multicellular organisms. Life gradually evolved in this manner.

Therefore, if the process of creation occurred in a single burst, and God's purpose was the human being and the environment and the organisms around the human being, and if humans have only existed in recent times relative to the geological history of the earth, then why would God create the first groups of organisms in an order such that each newer group is similar to but more developed and evolved than the older group?

Did God create them with this gradual development over time, in order to deceive human beings, so that they would believe in evolution when seeing creation arranged developmentally in a gradual manner

within the geological layers? Of course not. God wants man to know the truth as it is, and to believe in God and the creation as He made it.

The only convincing, logical, and acceptable answer to what we see in historical geology is that life began as simple, then gradually evolved and developed.

If the proponents of single-burst creation have a logical and convincing answer that has scientific value and is supported by genetic research, comparative anatomy and the lineage of modern organisms, and so on, then let them present it. As for their rejection of evolution just because they don't like it, or because some atheists exploit it in order to refute the existence of God Almighty—this is arbitrariness and detestable stubbornness. Furthermore, because they cannot respond to the atheists, they resort to obstinance and they resort to rejecting the theory of evolution despite the established evidence for its validity, the solid scientific arguments against the belief in single-burst creation, and the fact that even the religious scriptures indicate evolution.

What can those who dispute the theory of evolution, who ignorantly and stubbornly reject it, do? Well, they could refute it in such a way as to make it scientifically invalid or require modification once they find evidence that contradicts the predictions of the theory. The theory of evolution challenges those who reject it to present one single piece of evidence—just one—that contradicts what the theory predicts. In fact, such evidence is nowhere to be found. From the time the theory of evolution was presented until now, thousands of experiments and research efforts in biology, comparative anatomy, and genetics haven't yielded any evidence pertaining to terrestrial organisms that contradicts its predictions. This means that the validity of the theory of evolution is beyond doubt. Therefore, more than a hundred years with thousands of experiments, studies, and observable evidence all consistent with a particular theory, without exception, is enough to prove the validity of evolution.

Some of the Arguments Used Against the Theory of Evolution and Development

The Argument of Probability Used Against the Theory of Evolution

Essentially this argument is as follows: if we were to mathematically calculate the probability of complex living structures assembling, we would get astronomical figures that would clearly demonstrate the impossibility of happening by chance.

As an example, let's look at the hemoglobin molecule, which consists of four amino acid chains twisted together. Each of these chains consists of 146 amino acids, and there are 20 different types of amino acids. The number of required attempts or possibilities for just one chain to assemble in the way needed, without knowing the correct plan, is the number 20 times itself 146 times. This is a massive number ($8.92 \times 10^{+189}$), or almost 1 with 190 zeroes after it. Therefore, it would be impossible for this event to occur in this manner as a result of evolution, because it would require a period of time not only longer than the age of the earth (almost 4.6 billion years), but longer than the age of the entire universe (almost 13.7 billion years). If we assumed that the time available for evolution was one billion years, then the number of attempts we would have per year would be approximately 1 followed by 181 zeroes, which would be ($3.179 \times 10^{+172}$) attempts per second, or approximately 1 followed by 172 zeroes attempts per second for one billion years. All of this would be in order to reach the number of attempts that would produce the correct result for only one hemoglobin chain. This is certainly beyond the limits of possibility, and impossible to achieve within the limits of life in which we live.

Nevertheless, what has been mentioned above concerns single-step evolution, which doesn't exist in nature. What exists is evolution is cumulative steps, where each step benefits from the preceding one and doesn't start from zero each time. This means that the previously mentioned numbers would become reasonable and achievable ones.

> A haemoglobin molecule consists of four chains of amino acids twisted together. Let us think about just one of these four chains. It consists of 146 amino acids. There are 20 different kinds of amino acids commonly found in living things. The number of possible ways of

> arranging 20 kinds of thing in chains 146 links long is an inconceivably large number, which Asimov calls the 'haemoglobin number'. It is easy to calculate, but impossible to visualize the answer. The first link in the 146-long chain could be any one of the 20 possible amino acids. The second link could also be any one of the 20, so the number of possible 2-link chains is 20 x 20, or 400. The number of possible 3-link chains is 20 x 20 x 20, or 8,000. The number of possible 146-link chains is 20 times itself 146 times. This is a staggeringly large number. A million is a 1 with 6 noughts after it. A billion (1,000 million) is a 1 with 9 noughts after it. The number we seek, the 'haemoglobin number', is (near enough) a 1 with 190 noughts after it! This is the chance against happening to hit upon haemoglobin by luck. And a haemoglobin molecule has only a minute fraction of the complexity of a living body. Simple sieving, on its own, is obviously nowhere near capable of generating the amount of order in a living thing. Sieving is an essential ingredient in the generation of living order, but it is very far from being the whole story. Something else is needed. To explain the point, I shall need to make a distinction between 'single-step' selection and 'cumulative' selection. The simple sieves we have been considering so far in this chapter are all examples of single-step selection. Living organization is the product of cumulative selection (Dawkins 1996, 45).

Dawkins gives an example to illustrate the invalidity of this argument:

> *Hamlet.* Do you see yonder cloud that's almost in shape of a camel?
> *Polonius.* By the mass, and 'tis like a camel, indeed.
> *Hamlet.* Methinks it is like a weasel.
> *Polonius*. It is backed like a weasel.
> *Hamlet.* Or like a whale?
> *Polonius.* Very like a whale.

> I don't know who it was first pointed out that, given enough time, a monkey bashing away at random on a typewriter could produce all the works of Shakespeare. The operative phrase is, of course, given enough time. Let us limit the task facing our monkey somewhat. Suppose that he has to produce, not the complete works of Shakespeare but just the short sentence 'Methinks it is like a weasel', and we shall make it relatively easy by giving him a typewriter with a restricted keyboard, one with just the 26 (capital) letters, and a space bar. How long will he take to write this one little sentence?
>
> The sentence has 28 characters in it, so let us assume that the monkey has a series of discrete 'tries', each consisting of 28 bashes

at the keyboard. If he types the phrase correctly, that is the end of the experiment. If not, we allow him another 'try' of 28 characters. I don't know any monkeys, but fortunately my 11-month old daughter is an experienced randomizing device, and she proved only too eager to step into the role of monkey typist. Here is what she typed on the computer:

UMMK JK CDZZ F ZD DSDSKSM
S SS FMCV PU I DDRGLKDXRRDO
RDTE QDWFDVIOY UDSKZWDCCVYT
H CHVY NMGNBAYTDFCCVD D
RCDFYYYRM N DFSKD LD K WDWK
JJKAUIZMZI UXDKIDSFUMDKUDXI

She has other important calls on her time, so I was obliged to program the computer to simulate a randomly typing baby or monkey:

WDLDMNLT DTJBKWIRZREZLMQCO P
WDLDMNLT DTJBKWIRZREZLMQCO P
Y YVMQKZPGJXWVHGLAWFVCHQYPOY
MWR SWTNUXMLCDLEUBXTQHNZVIQF
FU OVAODVYKDGXDEKYVMOGGS VT
HZQZDSFZIHIVPHZPETPWVOVPMZGF
GEWRGZRPBCTPGZMCKHFDBGW ZCCF

And so on and on. It isn't difficult to calculate how long we should reasonably 'expect to wait for the random computer (or baby or monkey) to type METHINKS IT IS LIKE A WEASEL … The chance of it getting the entire phrase of 28 characters right is (1/27) to the power 28, i.e. (1/27) multiplied by itself 28 times. These are very small odds, about 1 in 10,000 million million million million million million. To put it mildly, the phrase we seek would be a long time coming, to say nothing of the complete works of Shakespeare.

So much for single-step selection of random variation. What about cumulative selection; how much more effective should this be? Very very much more effective, perhaps more so than we at first realize, although it is almost obvious when we reflect further. We again use our computer monkey, but with a crucial difference in its program. It again begins by choosing a random sequence of 28 letters, just as before:

WDLMNLT DTJBKWIRZREZLMQCO P

It now 'breeds from' this random phrase. It duplicates it repeatedly, but with a certain chance of random error—'mutation'—in the copying. The computer examines the mutant nonsense phrases, the 'progeny' of the original phrase, and chooses the one which, *however slightly*, most resembles the target phrase, METHINKS IT IS LIKE A WEASEL. In this instance the winning phrase of the next 'generation' happened to be:

WDLTMNLT DTJBSWIRZREZLMQCO P

Not an obvious improvement! But the procedure is repeated, again mutant 'progeny' are 'bred from' the phrase, and a new 'winner' is chosen. This goes on, generation after generation. After 10 generations, the phrase chosen for 'breeding' was:

MDLDMNLS ITJISWHRZREZ MECS P

After 20 generations it was:

MELDINLS IT ISWPRKE Z WECSEL

By now, the eye of faith fancies that it can see a resemblance to the target phrase. By 30 generations there can be no doubt:

METHINGS IT ISWLIKE B WECSEL

Generation 40 takes us to within one letter of the target:

METHINKS IT IS LIKE I WEASEL

And the target was finally reached in generation 43. A second run of the computer began with the phrase:

Y YVMQKZPFJXWVHGLAWFVCHQXYOPY

passed through (again reporting only every tenth generation):

Y YVMQKSPFTXWSHLIKEFV HQYSPY
YETHINKSPITXISHLIKEFA WQYSEY
METHINKS IT ISSLIKE A WEFSEY
METHINKS IT ISBLIKE A WEASES

METHINKS IT ISJLIKE A WEASEO
METHINKS IT IS LIKE A WEASEP

and reached the target phrase in generation 64. In a third run the computer started with:

GEWRGZRPBCTPGQMCKHFDBGW ZCCF

and reached METHINKS IT IS LIKE A WEASEL in 41 generations of selective 'breeding'.

The exact time taken by the computer to reach the target doesn't matter. If you want to know, it completed the whole exercise for me, the first time, while I was out to lunch. It took about half an hour. (Computer enthusiasts may think this unduly slow. The reason is that the program was written in BASIC, a sort of computer baby-talk. When I rewrote it in Pascal, it took 11 seconds.) Computers are a bit faster at this kind of thing than monkeys, but the difference really isn't significant. What matters is the difference between the time taken by *cumulative* selection, and the time which the same computer, working flat out at the same rate, would take to reach the target phrase if it were forced to use the other procedure of *single-step selection*: about a million million million million million years. This is more than a million million million times as long as the universe has so far existed. Actually it would be fairer just to say that, in comparison with the time it would take either a monkey or a randomly programmed computer to type our target phrase, the total age of the universe so far is a negligibly small quantity, so small as to be well within the margin of error for this sort of back-of-an-envelope calculation. Whereas the time taken for a computer working randomly but with the constraint of *cumulative selection* to perform the same task is of the same order as humans ordinarily can understand, between 11 seconds and the time it takes to have lunch.

There is a big difference, then, between cumulative selection (in which each improvement, however slight, is used as a basis for future building), and single-step selection (in which each new 'try' is a fresh one). If evolutionary progress had had to rely on single-step selection, it would never have got anywhere. If, however, there was any way in which the necessary conditions for *cumulative* selection could have been set up by the blind forces of nature, strange and wonderful might have been the consequences. As a matter of fact that is exactly what happened on this planet, and we ourselves are among the most recent, if not the strangest and most wonderful, of those consequenc-

es (Dawkins 1996, 46-49).

Here I would like to point out something important: this would be a sound argument of probabilities if directed against the theory of abiogenesis, but it cannot be used against the theory of evolution within the limits of life.

The Argument Regarding Complex, Compound Organs such as the Eye and the Sonar System of the Bat

Essentially this argument is as follows: the eye is a complex organ consisting of several parts, composed in a precise and structured way, that work as a team in an organized fashion designed to perform its function as well as possible, so it is impossible to imagine that a genetic mutation or leap occurred that led to the emergence of the eye.

In fact, this argument is based on the idea that evolution of the eye occurred in a single step, which is incorrect and irrelevant to the theory of evolution, since evolution actually occurs gradually. For example, it could be imagined that the eye evolved over the course of hundreds of millions of years, and through thousands or even millions of gradual, cumulative, evolutionary steps. Therefore, we can say that it began with a light sensitive cell hundreds of millions of years ago and the process of evolution continued until arriving at the modern eye. A system that senses light certainly gives the organism an advantage in reproduction and survival. Additionally, whenever eyesight improves, it gives the animal an advantage over other animals, at least when it comes to escaping enemies and obtaining food.

As such, every step that improves the sensation of light and vision gives it an advantage in survival and reproduction over competitors that do not possess this evolutionary step.

Therefore, it cannot be said that a partial eye doesn't function or benefit whoever possesses it. For example, an eye without a lens provides blurry vision, giving an advantage in survival and reproduction over one without vision. So we can say that the evolution of a complex, compound system, such as the eye, is a very normal process. This is also the case for the sonar of the bat that enables some species to measure the distance between themselves and a moving target while flying (taking the Doppler effect into consideration).

The Argument that the Small Part Needed for Evolution to Begin Doesn't Have Any Real Benefit in Order for the Evolutionary Process of Natural Selection to Produce Variation

> What use is half a wing? How did wings get their start? Many animals leap from bough to bough, and sometimes fall to the ground. Especially in a small animal, the whole body surface catches the air and assists the leap, or breaks the fall, by acting as a crude aerofoil. Any tendency to increase the ratio of surface area to weight would help, for example flaps of skin growing out in the angles of joints. From here, there is a continuous series of gradations to gliding wings, and hence to flapping wings. Obviously there are distances that could not have been jumped by the earliest animals with proto-wings. Equally obviously, for any degree of smallness or crudeness of ancestral air-catching surfaces, there must be some distance, however short, which can be jumped with the flap and which cannot be jumped without the flap.
>
> Or, if prototype wingflaps worked to break the animal's fall, you cannot say 'Below a certain size the flaps would have been of no use at all'. Once again, it doesn't matter how small and un-winglike the first wingflaps were. There must be some height, call it h, such that an animal would just break its neck if it fell from that height, but would just survive if it fell from a slightly lower height. In this critical zone, any improvement in the body surface's ability to catch the air and break the fall, however slight that improvement, can make the difference between life and death. Natural selection will then favour slight, prototype wingflaps. When these small wingflaps have become the norm, the critical height h will become slightly greater. Now a slight further increase in the wingflaps will make the difference between life and death. And so on, until we have proper wings.
>
> There are animals alive today that beautifully illustrate every stage in the continuum. There are frogs that glide with big webs between their toes, tree-snakes with flattened bodies that catch the air, lizards with flaps along their bodies; and several different kinds of mammals that glide with membranes stretched between their limbs, showing us the kind of way bats must have got their start. Contrary to the creationist literature, not only are animals with 'half a wing' common, so are animals with a quarter of a wing, three quarters of a wing, and so on. The idea of a flying continuum becomes even more persuasive when we remember that very small animals tend to float gently in air, whatever their shape. The reason this is persuasive is that there is an infinitesimally graded continuum from small to large.

The idea of tiny changes cumulated over many steps is an immensely powerful idea, capable of explaining an enormous range of things that would be otherwise inexplicable. How did snake venom get its start? Many animals bite, and any animal's spit contains proteins which, if they get into a wound, may cause an allergic reaction. Even so-called non-venomous snakes can give bites that cause a painful reaction in some people. There is a continuous, graded series from ordinary spit to deadly venom.

How did ears get their start? Any piece of skin can detect vibrations if they come in contact with vibrating objects. This is a natural outgrowth of the sense of touch. Natural selection could easily have enhanced this faculty by gradual degrees until it was sensitive enough to pick up very *slight* contact vibrations. At this point it would automatically have been sensitive enough to pick up airborne vibrations of sufficient loudness and/or sufficient nearness of origin. Natural selection would then favour the evolution of special organs—ears—for picking up *airborne* vibrations originating from steadily increasing distances. It is easy to see that there would have been a continuous trajectory of step-by-step improvement, all the way. How did echolocation get its start? Any animal that can hear at all may hear echoes. Blind humans frequently learn to make use of these echoes. A rudimentary version of such a skill in ancestral mammals would have provided ample raw material for natural selection to build upon, leading up by gradual degrees to the high perfection of bats.

Five per cent vision is better than no vision at all. Five per cent hearing is better than no hearing at all. Five per cent flight efficiency is better than no flight at all. It is thoroughly believable that every organ or apparatus that we actually see is the product of a smooth trajectory through animal space, a trajectory in which every intermediate stage assisted survival and reproduction (Dawkins 1996, 89-91).

CHAPTER THREE

EVOLUTION IS A DIVINE PATH

The Fossil History of Humans:

Many people who reject the theory of evolution believe that the fossil record documents that humans evolved from the great apes we know today, specifically orangutans or chimpanzees. But the fact of the matter is that the evolutionary branches of all modern great apes diverged from the human branch millions of years ago. The orangutan diverged from the human a long time ago, even before the chimpanzee, which is considered to be closer to humans. Nevertheless, the chimpanzee diverged from the human millions of years ago as well. The fossil history has documented that a being scientifically named Ardipithecus, or Ardi for short, existed 4.4 million years ago. He walked upright on two feet in the African forests. His canine teeth are small and more like human teeth than those of chimpanzees. He is now scientifically included in the evolutionary tree of humans. In short, this means that the fossil record documents a series of bipedal upright beings, like the modern human, extending back 4.4 million years or possibly even earlier. Furthermore, humans split from the rest of the great apes about 7 million years ago. Many of these fossils go back millions of years, confirming the existence of anthropoids and the evolution of the modern human and Neanderthal man from one of them. Lucy and the Kenyanthropus are examples of the fossils that date back more than 3 million years.

The fossil record of humans documents that the anthropoid—or the man with an upright body (*Homo erectus*)—goes back about two million years. *Homo erectus* was most likely capable of using fire and simple tools, such as stone axes. He also had a social life. The fossil record from Caucasus, Georgia documents an elderly *Homo erectus* that lived for two years after his teeth had fallen out. This means that others might have fed him or prepared food for him, indicating that the *Homo erectus* who migrated from Africa is very likely to have had a social life, albeit a simple one.

Family Ties

> Our ancestors had already ventured out of Africa 1.8 million years ago—and settled in the Republic of Georgia.
>
> … the skull is humanlike but small. But the remarkable feature is the mouth.
>
> Not only are there no teeth, but nearly all the sockets are smooth, filled in by bone that grew over the spaces. The jaws look like two crescent moons. Although it's hard to be sure of his age, "'it looks like he was maybe about 40, and the bone regrowth shows he lived for a couple of years after his teeth fell out," says the anthropologist [Professor Lordkipanidze]. "This is really incredible. How did the toothless old man survive, unable to chew his food? Maybe his companions helped him," says Lordkipanidze. If so, those toothless jaws might testify to something like compassion, stunningly early in human evolution (Ngm.nationalgeographic.com 2005).*

The fossil record also documents the emergence of a branch from *Homo erectus* around 600-800 thousand years ago called *Homo heidelbergensis*. This human (or anthropoid) was able to make spears and hunt large prey. He also had a large brain. He migrated from Africa and evolved into the Neanderthal Man, then spread throughout Europe and survived until his extinction, approximately twenty-four thousand years ago.

The fossil record also documents the appearance of the intelligent human (*Homo sapiens*) around 200 thousand years ago, branching off from either *Homo erectus* or the Heidelberg Man. *Homo sapiens* then reached its final, current form about one hundred thousand years ago.

Furthermore, the archeological study of artifacts records both the appearance of skills unique to *Homo sapiens* and his migration around seventy thousand years ago. This was a successful migration of a small select group from Africa across the Bab-el-Mandeb straits of the Red Sea into the Arabian Peninsula that led to humans spreading throughout the earth. During that time, the water had receded and a group was able to cross. This select group of African *Homo sapiens* advanced through the southern Arabian Peninsula due to the presence of water springs at the time. These water springs existed since the coast was exposed before seawater covered it due to a rise in the sea level, and the presence of water springs helped them bypass the desert so that they could cross the Arabian Peninsula by the coast line, passing through

*. Professor David Lordkipanidze is a Georgian archeologist and anthropologist who discovered the fossil named *Homo georgicus*.

modern Yemen and Oman until they reached the Gulf region, an area that is currently covered by water.*

At the time, the Gulf region was not yet covered with salt water, but was a warm valley with rivers entering from the north (modern Southern Iraq and Southwest Iran). This valley (the modern Gulf) was a very suitable place to live. It was warm, and full of rivers, lakes, marshes, and forests. This was very important, as the earth went through a harsh period of frost and cold at the end of the last Ice Age. Therefore, this valley was an ideal place for the growth of the first human beings. It was a place with abundant fresh water, fruits, and food. We could say that it was the best location at the time for human growth. In this region, the number of *Homo sapiens* increased. Although some of them migrated to the rest of the world, a group remained in this valley until it was flooded and filled with seawater. It is scientifically estimated that water flooded the Gulf area sometime between 15,000 and 8,000 BC. Following the flood, the select group—or the survivors of the flood—moved to the uppermost part of modern Southern Iraq and Southern Iran, following the rivers that were flowing into their fertile valley, which would later become a gulf filled with salt water.†‡§

*. Scientific certainty is possible regarding the issue of migration because a great deal of evidence exists. However, it has not been possible to explain exactly how the migrants crossed Bab-el-Mandeb. Even if the water were receding, a few kilometers of seawater would still have to be crossed. This raises many questions that are difficult to answer without recognizing that crossing Bab-el-Madeb wasn't an ordinary process. How were they able to swim several kilometers, even though they had no skills or device for floating or moving in a particular direction? Why did these people cross, and what compelled them to take the risk of crossing into the unknown? Why didn't multiple crossings occur if there was accessibility, ease, or great benefit that appealed to the animal instinct of everyone? Therefore we cannot imagine that this crossing was pointless and didn't involve selecting. If we don't say that it was an unseen selection that prepared the crossing conditions suitable for this select group, then at the very least, it was natural selection based on the theory of evolution. Thus, those who crossed the strait of Bab-el-Mandeb are a group that is more distinct than the others. What distinguishes this group, at the very least, is their ability to cross several kilometers of seawater without others doing the same.

†. Warmth was vital, especially during the Ice Age that the earth endured and that ended approximately 10,000 years ago. The warmth of this valley and the abundance of food guaranteed the growth in *Homo sapiens* numbers and their spread to all parts of the earth.

‡. In other words, toward the end of the Ice Age, when the ice melted and the sea level rose.

§. It would be unreasonable, for example, for them to head toward the desert, knowing that the modern Gulf, the region with a source of fresh water, was North of the fertile valley.

After the flood, salt water covered areas of the southernmost part of modern Iraq, which suffered due to the flood for thousands of years, until fresh water and flooded rivers washed away the salt and piled up the sediment, resulting in the formation of lands that could be cultivated adjacent to marshes full of fish. This drove the inhabitants to once again move toward the Gulf and inhabit lands that were either uncovered or formed after the flood. This continued for thousands of years.

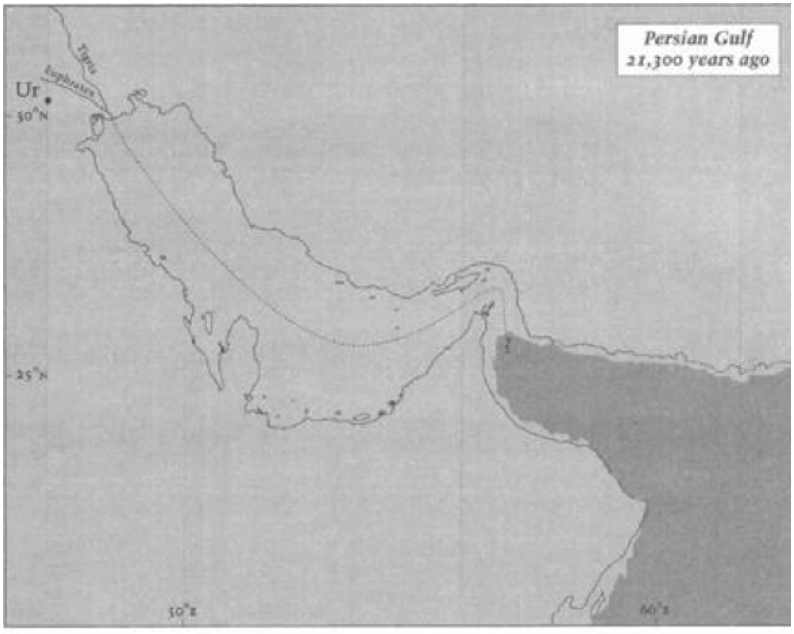
In general, we can consider the inhabitants of this valley (the modern Gulf) to have comprised the first human civilization on earth. They started the Sumerian or Akkadian villages in Southern Iraq that preceded the Sumerian-Akkadian civilization that we know. Therefore, we can say that they were the first Sumerians, or those ancestors we read about in the Sumerian clay tablets, in which they extol their ancestors, their civilization, and their supreme moral values.

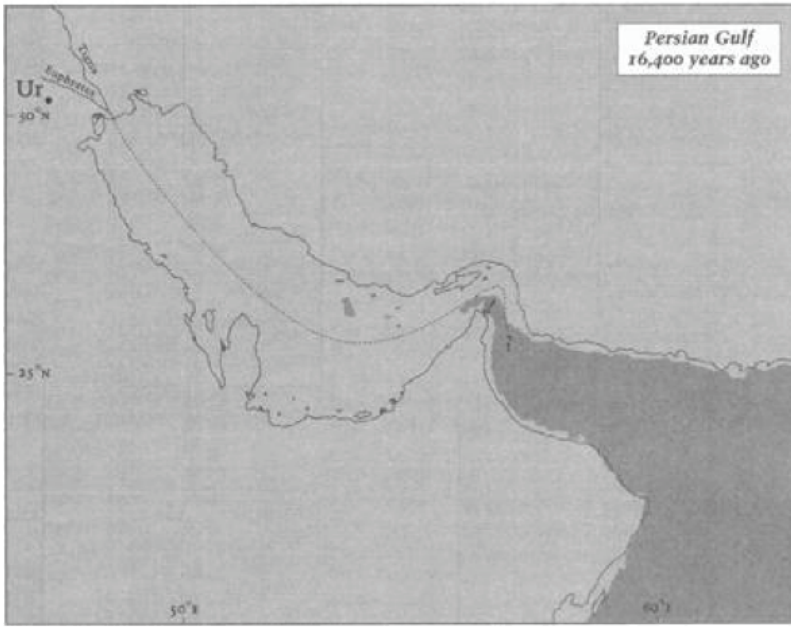
Furthermore, these early Sumerians—or let us say the ancestors of the Sumerians—spread throughout the rest of the earth, as they moved to Egypt and built the foundations of the ancient Egyptian civilization that predated the Egyptian civilization that we know. According to recent genetic studies, every human on the earth today, except for the ones who stayed in Africa, can be traced back to this small select group that migrated from Africa to the Southern Arabian Peninsula (modern Yemen, Oman, and the United Arab Emirates), then to the fertile basin (the modern Gulf) and to the rest of the world, then to Southern Iraq and to the rest of the world from there. The subsequent natural conditions didn't help the many who stayed in Africa as much as it helped the few who abandoned it. Certainly, the select group multiplied abundantly and colonized the earth to such an extent that

a reverse migration from the fertile valley and old Southern Iraq into North Africa occurred. According to genetic research, the inhabitants of North Africa—from Egypt to the Arab countries of Maghreb, and even Sudan—are migrants from the valley and old Southern Iraq. So this is how the select group gained control and dominance. First, they escaped the conditions of Africa, then the flooding of the gulf and ultimately returned and colonized North Africa.*

Moreover, according to the fossil record, the modern human (*Homo sapiens*) encountered and coexisted with another human being, the Neanderthal, for almost fifteen thousand years after migrating into Europe. The Neanderthal existed in Africa before *Homo sapiens* and evolved from the same ancestor, either *Homo erectus* or Heidelberg man, as was previously demonstrated. However, the migration of *Homo erectus* out of Africa was through the north, and he reached Far East Asia. The remains of anthropoids that evolved from *Homo erectus* have even been found in Indonesia and China. The Neanderthal that evolved from Heidelberg man used fire and sometimes buried their dead. Afterwards, about twenty-four thousand years ago, the Neanderthal became extinct, and only the modern, intelligent human remained on the earth.

*. It is worth mentioning that the Chinese believe they are from a different species than the rest of humans, since they believe that they go back to *Homo erectus* which migrated from Africa some time ago, early on. This theory is taught in China based on fossils that have been discovered there. Recently, however, Professor Xin Lee, a leading Chinese geneticist, conducted scientific research in which he took DNA from more than 160 sweat samples of people in East Asia. He said that he did not find a single sample among the many he obtained that could be regarded as being from the offspring of the old *Homo erectus*. In fact, he stated on BBC that every person in China and East Asia traces back to the migrating African community of the *Homo sapiens*, which descended from *Homo erectus*. He said that despite being Chinese himself, teaching that the Chinese are descendants of a different species, and hoping that he would find something different, the scientific results and conclusions he reached are abundantly clear: humans in every region of the earth are related, and they are not different than one another. Therefore, we must all be happy (Bower, 1998).


Persian Gulf
21,300 years ago
Tigris
Euphrates
Ur
30°N
25°N
50°E
60°E


Persian Gulf
16,400 years ago
Tigris
Euphrates
Ur
30°N
25°N
50°E
60°E

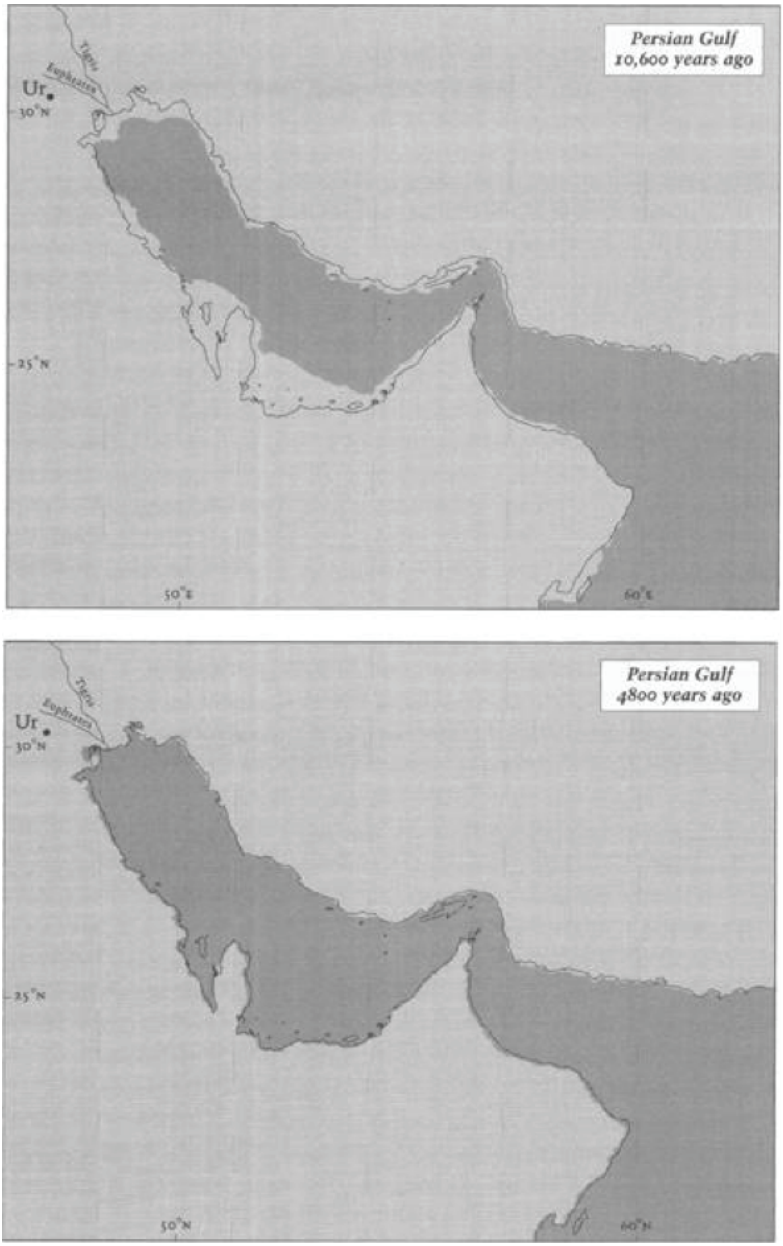


Figure 4: Illustrations demonstrating that the valley was filled with water. The times given are approximate.*

*. Source: Hancock, *Underworld: The Mysterious Origins of Civilization*, p.

The Time of the Adam of Religion and the Scientific Time of Human Fossils on Earth

The time of the Adam of religion—or let us say the date of his existence as a human being living on the earth—is a modest number when compared to the time science gives for the existence of humans on the earth. For example, according to the Old Testament, the time since Adam, or the human on Earth, is within the limits of 6000 to 7000 years.

1This is the book of the generations of Adam. When God created man, he made him in the likeness of God.
2 Male and female he created them, and he blessed them and named them Man when they were created.
3 When Adam had lived 130 years, he fathered a son in his own likeness, after his image, and named him Seth.
4 The days of Adam after he fathered Seth were 800 years; and he had other sons and daughters.
5 Thus all the days that Adam lived were 930 years, and he died.
6 When Seth had lived 105 years, he fathered Enosh.
7 Seth lived after he fathered Enosh 807 years and had other sons and daughters.
8 Thus all the days of Seth were 912 years, and he died.
9 When Enosh had lived 90 years, he fathered Kenan.
10 Enosh lived after he fathered Kenan 815 years and had other sons and daughters.
11 Thus all the days of Enosh were 905 years, and he died.
12 When Kenan had lived 70 years, he fathered Mahalalel.
13 Kenan lived after he fathered Mahalalel 840 years and had other sons and daughters.
14 Thus all the days of Kenan were 910 years, and he died.
15 When Mahalalel had lived 65 years, he fathered Jared.
16 Mahalalel lived after he fathered Jared 830 years and had other sons and daughters.
17 Thus all the days of Mahalalel were 895 years, and he died.
18 When Jared had lived 162 years he fathered Enoch.
19 Jared lived after he fathered Enoch 800 years and had other sons and daughters.
20 Thus all the days of Jared were 962 years, and he died.
21 When Enoch had lived 65 years, he fathered Methuselah.
22 Enoch walked with God after he fathered Methuselah 300 years and had other sons and daughters.

> 23 Thus all the days of Enoch were 365 years.
> 24 Enoch walked with God, and he was not, for God took him.
> 25 When Methuselah had lived 187 years, he fathered Lamech.
> 26 Methuselah lived after he fathered Lamech 782 years and had other sons and daughters.
> 27 Thus all the days of Methuselah were 969 years, and he died.
> 28 When Lamech had lived 182 years, he fathered a son
> 29 and called his name Noah, saying, "Out of the ground that the LORD has cursed, this one shall bring us relief from our work and from the painful toil of our hands."
> 30 Lamech lived after he fathered Noah 595 years and had other sons and daughters.
> 31 Thus all the days of Lamech were 777 years, and he died.
> 32 After Noah was 500 years old, Noah fathered Shem, Ham, and Japheth (Genesis 5:1-32).

Some people interpret this scripture to mean that the time of humans on the earth does not exceed 7000 years.

> Some people claim that fossils prove the existence of human bones that are more than one million years old. However, this table demonstrates that the time of human existence on earth is no more than 6000 to 7000 years. The response to that is a mathematical calculation: we find that the current world population cannot be the fruit of more than 6000 years on earth. If we assume that each family has about three children, and if we deduct a high percentage of people who died naturally or due to natural disasters and wars, and if the history of man is one million years old and the population of mankind started with one man a million years ago, the earth's space multiplied thousands of times would not be enough for their existence. Perhaps the existing bones belong to mammals that have the shape of a human, but do not have the breath that is from the mouth of God (Fekry 2012 Genesis 5:93-96 Arabic text, translated).

Fekry and others have concluded that the time of humans—or the time since Adam—on the earth was no more than 6000 years, but his calculation of the hypothetical population is certainly very simplistic. He didn't take into consideration the many issues related to reproduction and survival, such as the primitive, harsh life that humans led in Africa. This was before agriculture, when diseases, predators, and the difficulty of obtaining food and hunting prey would have been enough

to limit the number of humans. And in some cases, they were on the verge of extinction. If not for the exposure of humans in Africa to a harsh process of natural selection, which had at times put them on the brink of extinction, the brain would not have evolved this way, in what is considered a short period on the evolutionary time scale.

There are very few religious accounts defining this period. Nevertheless, some Sunni clerics have specified that Adam lived almost 7,000 years ago.

Based on fossils that have been discovered, we now have information regarding the scientific time of humans on earth. If we consider only *Homo erectus*, the upright man, who had the form of a human, walked upright, had almost no hair, knew fire, and possessed hunting tools, then the time of humans on the earth would be almost two million years. This number doesn't agree with the previously mentioned religious time since Adam even if it is doubled. Furthermore, scientifically speaking, the *Homo erectus* species didn't bury their dead and had a different form than that of the modern human. That wasn't the case with Adam and his children pbut, whom God taught to bury the dead, as the Quran states:

> ﴿And recite to them the story of the two sons of Adam, in truth, when they both offered a sacrifice, and it was accepted from one of them but not from the other, the latter said, "I will surely kill you." The former said, "Indeed, God only accepts from the pious." … ⁎ And his soul allowed him to murder his brother, so he killed him and became among the losers. ⁎ Then God sent a crow searching in the ground to show him how to conceal the body of his brother. He said, "O woe to me! Have I failed to be like this crow and conceal the body of my brother?" And he became of the regretful.﴾ Quran "The Table Spread" 5:27, 30-31.

Even if we only consider *Homo sapiens*, the intelligent human, we would have about 200 thousand years at most. This period doesn't agree with the religious time since Adam pbuh either. *Homo sapiens* was confined to Africa for nearly 100 thousand years and they didn't bury their dead, considering that the oldest evidence of *Homo sapiens* burying the dead was about 100 thousand years ago outside of Africa. This was probably the group of *Homo sapiens* that had migrated to Palestine and then became extinct. According to the religious scripture,

Adam, and the other prophets after him, were not in Africa, and they buried their dead.

Generally speaking, we cannot scientifically consider ourselves *Homo erectus* at all, since there is a significant difference in brain size and mental abilities between them and us. Therefore, Adam is certainly not a *Homo erectus*. This categorically refutes that Adam pbuh belongs to the time that precedes the existence of *Homo sapiens*, meaning 200 thousand years ago. Of these 200 thousand years, *Homo sapiens* lived for more than 100 thousand years solely in Africa, where they led a primitive life and didn't bury their dead. Moreover, the form of the *Homo sapiens* didn't become complete and identical to that of modern humans until about 100 thousand years ago. Therefore, scientifically speaking, the Adam pbuh who is mentioned in religious scriptures could only have physically existed on earth after 100,000 B.C. Yet, in any case, he had an evolutionary human lineage that goes back millions of years, which means that he was definitely born to two parents.

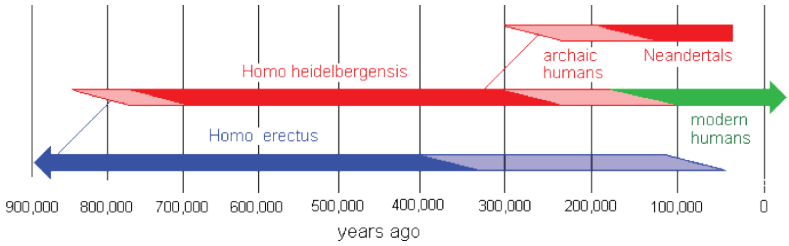


Figure 5: Timeline of *Homo erectus*, *Homo heidelbergensis*, Neanderthal, and *Homo sapiens* evolution up to the modern human*

> The evolutionary dividing line between *Homo erectus* and modern humans was not sharp.
>
> It extended over several hundred thousand years during the middle of the Pleistocene Epoch. Adding to the confusion about this important transitional period is the fact that some regions were ahead of others in the process of evolving into our species. The evolutionary changes above the neck that would lead to modern humans may have begun in Southern Europe and East Africa 800,000 - 700,000 years ago. Elsewhere in the Old World, this change apparently began around 400,000 years ago or later. The transition to our species, *Homo sapiens*, was not complete until around 100,000 years ago and even

*. Dennis O'Neill, *Homo heidelbergensis*, 2011.

later in some regions (Anthro.palomar.edu 2015).*

The search for Adam pbuh within the timeline of *Homo sapiens* that could be consistent with religious scripture is limited to the period in which the select group migrated out of Africa to the Arabian Peninsula, and then to elsewhere, about 70,000 years ago.

According to genetic analysis, all modern humans originate from that first group that migrated out of Africa to the Arabian Peninsula about 70,000 years ago, with the exception of a few African tribes that are believed to have descended from the group of *Homo sapiens* who remained there.

Some human migrations to Asia and Europe date back to a continuous migration between approximately 40,000 to 60,000 years ago. They were groups from the offspring of the first group that migrated out of Africa to the Arabian Peninsula. If we wanted to say that everyone on the earth today is physically from the offspring of the religious Adam pbuh—except for some African tribes—and that Adam is from the offspring of the first group to migrate out of Africa, then Adam pbuh must have been born into that group sometime after its migration to the Arabian Peninsula, and afterwards the small group became extinct except for Adam, and his offspring who survived, reproduced, and migrated throughout the rest of the earth.

We can imagine many scientific reasons for the extinction of these first groups in the Arabian Peninsula, especially since it was only inhabitable in its southern region that contained water springs. These springs were soon thereafter flooded by seawater. This means that when we combine religious scripture and scientific facts, there is no way that Adam existed 70,000 years ago. In fact, according to certain religious scriptures, he must have been a descendant of the group that migrated out of Africa to the Arabian Peninsula. The following religious scripture says that this African group of *Homo sapiens* made pilgrimage 2,000 years before the existence of Adam. This means that they were people who were instructed to worship God in accordance with their circumstances, capabilities, and comprehension.

Zurara said, "I said to Imam Abu Abdullah pbuh, 'May God sacrifice me for you. I have been asking you about pilgrimage for forty years

*. Dennis O'Neil is a Professor Emeritus of Anthropology at the Palomar College Department of Behavioral Sciences in San Marcos, California.

> and you continue to answer.' He said, 'O Zurara, pilgrimage was made to this house 2,000 years before Adam existed, so why would you think that questions about pilgrimage would end within just forty years?'" (Al-Amili 1983, vol 11, 12. Arabic text, translated).

Therefore, factual scientific evidence combined with this text leads us to the conclusion that Adam was born into a family that belonged to the group that had migrated and was instructed to worship God, even though their souls were of a lower type than that of Adam and his children.

Furthermore, the Sumerian history, based on discovered texts, states that the origins of the Sumerians go back to the group that migrated out of Africa, in light of the fact that Sumerians call their ancestors "the blackheaded people".

> After Anu, Enlil, Enki, and Ninhursag
> Had fashioned the blackheaded people,
> Vegetation luxuriated from the earth (Kramer (1956) 1981, 149).

We can understand from this phrase that the color of their ancestors was black.

Therefore, Adam was the descendant of the ones who migrated, and he and his children settled in the Gulf valley. Afterwards, a conflict took place, described by the religions as the incident of the murder of Abel and the banishment of Cain to the mountains in the upper fertile valley (the present-day Gulf) or the southwestern part of present-day Iran. The banished group spread throughout Asia, Europe, and the rest of the world. Later on, some descendants who had stayed in the valley followed and lived alongside them. When the valley flooded, a small group of the righteous people who had stayed in the valley left, and began a new life in the central and southern part of present-day Iraq. Perhaps the reason for the Sumerian expression that they were the remaining descendants of humankind, as well as similar religious expressions understood to mean that they were the only ones who survived the flood, is that they were the only group remaining from the descendants of Abel, Seth, and the righteous children of Adam, and that they did not intermarry with the descendants of Cain, the wicked ones from the offspring of Adam.

Furthermore, as for the rest of the people who cannot be said to be physical descendants of Adam, such as certain African tribes whose origins don't trace back to the migrant group, they could have been from the children of Adam, in connection with the soul, later on, after Adam pbuh was born. This means that, at a certain time, individuals are born who, while in the womb, had souls transmitted into them from the souls taken out of Adam pbuh in the world of al-Tharr. They represent the offspring of his soul in terms of the creation that occurred in paradise, or the first heaven.

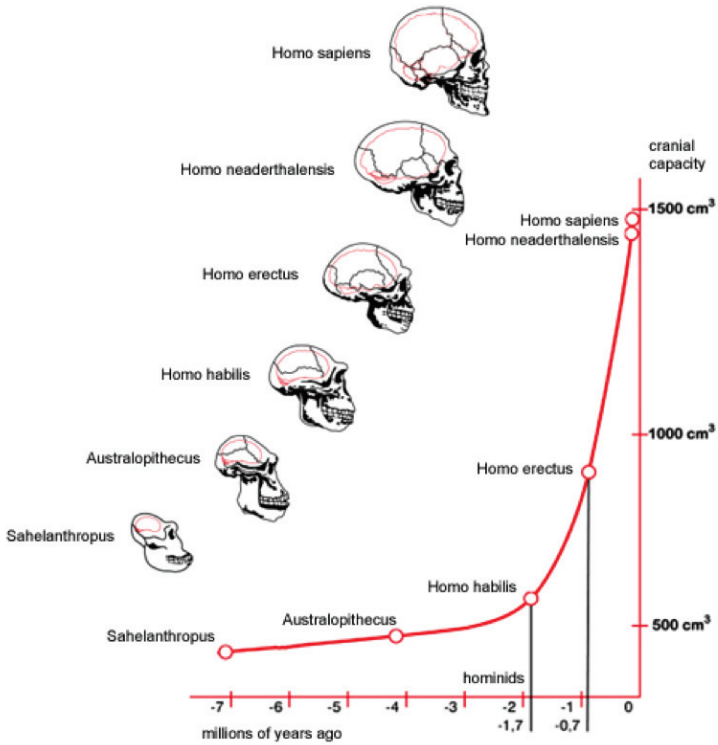


Figure 6: The increase in skull size over time among genus *Homo* members and its ancestors up to *Homo sapiens* (the modern human), showing that the general direction of evolution is toward larger brains.*

*. Reading Evolution: The Evidence. Class project for course ANT 131: Introduction to Evolution, Fall Semester 1998, 2001, Dept. Of Anthropology, Syracuse University .

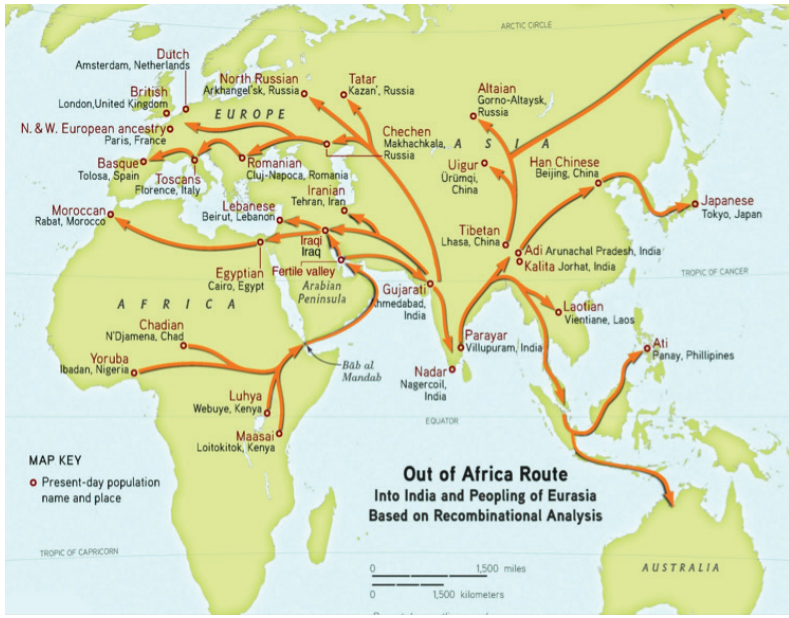


Figure 7: Map illustrating the exodus of *Homo sapiens* or the modern human out of Africa to the rest of the earth passing through the fertile valley.*

The Theory of Evolution and the Quran

Evolution is a scientific theory, so when we refer to religious scriptures that agree with it, this doesn't mean that we intend to prove evolution with them. We only intend to prove that the religious scriptures are consistent with this scientific discovery, and perhaps also prove that religion preceded the theory by demonstrating the unseen knowledge within the religious scriptures. For example, it can be said that the Quran mentioned evolution, as the Almighty said, ﴿And God has caused you to grow from the earth as a plant﴾ Quran Chapter "Noah" 71:17, while humans have only recently discovered this scientific fact. This proves the prescience of the Quran and the messenger Muhammad pbuhap through his unseen knowledge concerning a scientific fact more than one thousand years before its discovery. The same can be said concerning the religious accounts from the progeny of Muhammad pbut, as they mentioned the existence of "Nisnas", anthropoids

*. This map from *National Geographic* has been modified.

that preceded humans, over a thousand years before the recent discovery of this scientific fact. The existence of the Neanderthal man, who is genetically distinct from modern humans, has been proven by genetic research, and the existence of *Homo erectus* and African *Homo sapiens* have been proven by discovered fossils.

> The Almighty says: ﴿He has created you in stages ⁎ Do you not consider how God has created seven heavens in layers ⁎ And made the moon a light therein and made the sun a burning lamp? ⁎ And God has caused you to grow from the earth as a plant﴾ Quran Chapter "Noah" 71:14-17.

﴿He has created you in stages.﴾ The Arabic word for stage, *Tawr*, means a distinct, developing state. The Arabic word for mountain is *Tawran*, as it is distinguished by height and elevation above its surroundings. In addition, the Arabic word for bird, *Tāir*—and the plural *Tayr*—is derived from the same root, because birds have distinct tools—wings—that enable them to elevate and rise above their surroundings. Therefore, the Arabic word for stages, *Atwār*, means distinct, developing, elevated states. So the meaning of ﴿He has created you in stages﴾ is that God created you in the past: it has already been completed, and you went through several distinct, developing states, meaning that we progressively went through developing, physical stages until we reached a body that has a superior intelligence machine, thus the body became competent and Adam's soul pbuh connected to it. There is no problem with the stages of development being accomplished over billions of years until a suitable body is reached for the soul of Adam pbuh to be lowered and be transmitted into an individual having this suitable body type while in the womb.*

The meaning of ﴿Do you not consider how God has created the seven heavens in layers﴾ is: do you not consider how God created you in stages, similar to how the heavens were created? Therefore, if the stages were not clear to us before, they are exactly like the case of the seven heavens, which are distinct in being one on top the next and more developed than one another in rank. Therefore, this verse leads us to the same conclusion as before, that the body of Adam went

*. Here, the Arabic word *qad* [has caused] is a word of achievement, meaning that creating your creation in stages has been achieved and completed in the past. Therefore, what is meant by stages is the stages of elevation and physical evolution that preceded the descent of Adam's soul pbuh into this world and its connection to his body.

through stages of development, just as the heavens are gradually elevated and developed in stages.

I do not think the verse ﴿God has caused you to grow as a plant from the earth﴾ needs any further explanation, for it is extremely clear. The verse says that you are a seed that was planted in this earth, and it sprouted and produced.

God has caused you to grow just like plants, but plants aren't produced directly, they go through stages and develop, beginning as a small seed planted in the earth that is watered. Then a small plant sprouts from the seed, earth, and water, and it grows and develops, one stage after another, until it becomes complete and starts to produce fruit. This is what has happened with you. The genetic plan of God was planted in this earth and it developed until it reached its conclusion and purpose. God willing, we will demonstrate how this plan provides clear evidence for the existence of God Almighty. Therefore, the theory of evolution proves rather than disproves the existence of God.

> The Almighty said: ﴿Verily We created man from an extract of wet clay. * Then We made him a sperm-drop in a firm lodging. * Then We created clinging clot from a sperm drop, and We created a lump from the clot, and We created bones from the lump and We covered the bones with flesh; then We formed him into another creation. So blessed is God, the best of creators.﴾ Quran "The Believers" 23:12-14.

> ﴿Who perfected everything that He created and began the creation of man from wet clay. * Then He made his offspring out of the extract of a disdained fluid.﴾ Quran "The Prostration" 32:7-8.

The "extract" is the select group that was extracted from others due to its distinction and preference over the others. Therefore, the meaning of the Almighty's saying ﴿Verily we created man from an extract of wet clay﴾ is that the first human on the earth was created from a distinct, preferred group (extract), and the chain of that extract starts with wet clay ﴿an extract from wet clay.﴾

> The Almighty said: ﴿Indeed, God selected Adam, Noah, the family of Abraham, and the family of Imran over the people.﴾ Quran "Family of Imran" 3:33.

﴾God selected Adam﴿: Since Adam pbuh is the first human being in the first heaven, it cannot be said that his soul was selected, because selection must be from a group. Therefore, this selection can only apply to the earthly body to which Adam's soul was connected. This means that other creatures existed on the earth, and God selected the body of Adam from those human-like beings, since selection can only be done from similar ones. The statement that Adam was selected from them relates to Adam being physically similar to those among whom he was born, and to the first Adamite soul being transmitted among them. It is incorrect to say that Adam was selected from the rest of creation. What reasonable meaning would there be to say that a human being was selected from a group of lions, cows, donkeys, and so on? Does this have any meaning? Would anyone wise say such a thing?!!

The Almighty said: ﴾Have those who disbelieved not considered that the heavens and the earth were a joined entity, and We separated them and made every living thing from water? So will they not believe?﴿ Quran "The Prophets" 21:30

With respect to existence as a whole, the word water in this verse doesn't mean the water (H_2O) that we know on the earth. I have clarified this previously. (Al-Hasan 2010 [The Book of Monotheism], 37-38 - Trans.) Nevertheless, with respect to just the physical, earthly life, the meaning of the verse would be that life on the earth began from earthly water ﴾and We made every living thing from water﴿. This clearly means that the beginning of life was from earthly water. This verse shows that the first seed of life was from the aquatic environment, and the soil or chemical components in the water, and this is completely consistent with the theory of evolution. However, life on the earth doesn't continue from water, and what is contained within water. It can certainly be said that life continues in water, or by water, but not from water, as the life that was extracted from water, and the soil within it, is just the first life.

The Theory of Evolution, the Islamic Accounts, and the Vicegerency of Adam Over the Anthropoids in his Time

The details of evolution are certainly not mentioned in the religious accounts, but there are some religious accounts that point to evolution, and they clearly show that Adam pbuh was not the first creature who

had the modern human body. Rather, there were creatures physically similar to the Adamite human, who weren't children of Adam pbuh, and they existed before him. Religious accounts call them the "Nisnas", a name close to the modern scientific names of the evolutionary stages, such as *Homo erectus*, *Homo sapiens* and Neanderthal man, while some biologists call them anthropoids.*

What matters to us is that there are many religious accounts of the progeny of Muhammad pbut that confirm this scientific fact that has only recently appeared as a result of fossils and genetic research. This is considered a sign and proof in favor of the progeny of Muhammad pbuh for whoever seeks the truth. How would the progeny of Muhammad pbut have known that there were human-like beings before we existed on the earth unless they pbut were connected to God Almighty? This proves the [divinely appointed] Proof of the progeny of Muhammad, for whoever sees the truth. It also proves the existence of God of whom they talked about, informed us of, and from whom they conveyed these facts. I will refer to only some of these accounts:

> Muhammad Ibn Ali al-Baqir (may the prayers of God be upon him) said: "God Almighty created the earth and He created seven peoples therein. They aren't descendants of Adam. He created them from the soil of the earth and He caused them to inhabit it one after the other, each with his own people, then God Almighty created the father of mankind, and created his offspring from him" (Al-Sadooq 1982, 359, Arabic source, translated).

This religious account shows that God created at least seven types of human-like beings on the earth before Adam pbuh. They aren't descendants of Adam pbuh, since they preceded him on this earth.

> The Prince of the Believers, Ali pbuh, said: "God Almighty wanted to create a creation with His own hands after 7,000 years of Jinn and Nisnas existing on the earth. He wanted to create Adam and remove him from the layers of heaven. He said to the angels, 'Look at the Jinn and Nisnas inhabitants of the earth that I created.' When they saw the sins, bloodshed, and immorality they were unjustly committing on the earth, it overwhelmed them. They became angry and deplored the inhabitants of the earth. They couldn't contain their anger and said, 'Our Lord, You are the Mighty, the All-Capable, the Omnipotent,

*. The literal meaning in Arabic for the word anthropoid is "human-like beings".

> the Subjugator, the Great. Your weak, humble creatures are wallowing in Your grip, living on the sustenance You give them, enjoying the health You give them, and they are disobeying You with these great sins, and You don't deplore them, get angry, or avenge Yourself when You hear and see them. It overwhelmed us and we see it as a great misdeed toward You.'
>
> When He heard what the angels said, He said: '﴿I am making a vicegerent on the earth﴾ who will be a Proof of Mine upon my creatures on the earth.' [Quran Chapter "The Cow" 2:30]. The angels said, 'Praise be to You. ﴿Will you make therein one who corrupts within it﴾ [2:30] as the Jinn have, and who will shed blood as the Jinn have, those who will envy and despise each other? Make that vicegerent one of us, as we don't envy or despise each other, we don't shed blood, and we glorify You with praises and sanctify You.' The Almighty said: '﴿Indeed, I know that which you do not know.﴾ [2:30] I want to create a creature with My hands, and I want to make from his offspring prophets, messengers, righteous servants, and guided Imams, and make them vicegerents among My creation on My earth, who command them against disobeying Me, warn them of My torment, guide them to My obedience, and guide them on the path toward Me. I shall make them a Proof of Mine upon the others, and I will exterminate the Nisnas on My earth, and cleanse it of them'" (Al-Qumi 1983, 359, Arabic source, translated. Also Al-Sadooq 1966, vol 1, 104).

It is clear from this religious account that there were human-like beings that existed before Adam on this earth. Another important matter mentioned in this account is that that Adam pbuh will be lowered to the earth to be a Proof upon human-like beings before their existence on the earth ends. Or at the very least, let us at least say that this would take place before the later Adamite existence (the offspring of Adam pbuh) prevailed over them. As it says, "﴿I am making a vicegerent on the earth﴾ who will be My Proof on the earth upon my creatures and I will exterminate the Nisnas on My earth, and I will cleanse it of them". When Adam pbuh was first lowered to this earth, there were certainly no conscious creatures on it in order for him to be a Proof upon them, and to instruct them to worship God, except the Nisnas (the human-like beings), and this means that Adam was lowered before the existence of the Nisnas (human-like beings) had ended, or before the later Adamite existence prevailed over them. Therefore, Adam was created as one of them, and he was born from them, and his soul, which was created from wet clay and the breathing, connected to

that body. However, he wasn't at the same existential level as they were since he represented a new step toward a rational, conscious existence on the earth that is instructed to worship God. As for him warning the human-like beings and informing them about God despite their existential level being lower than his, it is similar to when he told the angels about the names, while the existential and cognitive level of the angels was certainly lower than that of Adam pbuh.*

This matter is confirmed by some religious accounts that demonstrate the presence of a prophet alongside people who had a different level of religious knowledge. Rather, they didn't even know the basics of religion. This prophet teaches them the basics of religion, and there is no problem with Adam pbuh being the subject of these accounts:

> Abu al-Hasan pbuh said, "Dreams didn't exist at the beginning of creation. Rather, they are new." I asked, "What is the reason for that?" He replied, "God Almighty dispatched a messenger to the people of his time, and he called them to worship and obey God. So they said, 'If we do that, what will we get? By God, you are not wealthier than we are, nor do you belong to a better tribe.' He said, 'If you obey me, God will let you enter paradise, and if you disobey, he will put you in hellfire.' They said, 'What are paradise and hellfire?' So he described them. Then they said, 'When will we reach that?' He said, 'When you die.' They said, 'We have seen our dead turn into bones and remnants.' So they rebuffed and ridiculed him even more. Then God Almighty made them see dreams. They came to him and told him what they saw that they had previously denied. He said, 'God Almighty wants this to be evidence against you so if you die, that is how your spirits will be. When your bodies decay, the spirits will be punished until the body is resurrected'" (Kulaini 1982, vol 8, 90. Arabic source, translated).

The beginning of creation mentioned in the religious account applies to the time of Adam pbuh. Therefore, the people mentioned in this account are some of the human-like beings that preceded Adam pbuh.

Furthermore, visions during sleep or while awake are ways in which God inspires the prophets. Therefore, visions must have begun with the first of the prophets, Adam pbuh.

*. We will explain the meaning when we get to the story of the creation of Adam pbuh.

Was the Human Being Originally An Ape?!

We are heavenly, our origin is heavenly, and we were created in the first heaven where we had our first test, the test of al-Tharr mentioned in the Quran. Therefore, we are souls, not just earthly bodies. Our father Adam pbuh was created from the wet clay that was raised to the first heaven and placed at the gate of paradise.

> Abu Abdullah al-Sadiq pbuh said, "Angels used to pass by Adam pbuh, meaning to pass by his form, while he was wet clay lying in paradise, and they would say, 'Why were you created?' (Al-Rawandi 1989, 41. Arabic source, translated).

Then the spirit was breathed into this raised wet clay, and Adam was created. Eve was created from him. Adam and Eve lived in the temporal paradise, which is in the first heaven. ﴿And We said, "O Adam, dwell, you and your wife, in paradise and eat therefrom in abundance from wherever you will. But do not approach this tree, lest you be among the wrongdoers."﴾ Quran Chapter "The Cow" 2:35. ﴿So We said, "O Adam, indeed this is an enemy to you and to your wife. Then let him not remove you from paradise so you would suffer.﴾ Quran Chapter "Taha" 20:117.

Furthermore, God created us, the children of Adam, in the first heaven in the world of al-Tharr, and he tested us with the first test: ﴿And when your Lord took from the children of Adam—from their back—their descendants and made them testify of their souls, [saying to them], "Am I not your Lord?" They said, "Yes, we have testified." Lest you should say on the day of Resurrection, "Indeed, we were not aware of this"﴾ Quran Chapter "The Heights" 7:172. Our earthly existence is a foreign one, and it is temporary—not permanent or eternal. We will not even return to the same earth to live after death, as long as we are from those who choose their humanity, and discard the earthly animal state that we are connected to in order for God Almighty to test us. If this is the case, how can the divine human be ascribed to the earthly animal state—the earthly animal state to which his soul was connected to undergo the second test? Therefore, the issue of the origin of our bodies and their evolution from another being on the earth doesn't change the fact that our origin is heavenly. In addition, attributing evolution of the human body to the modern ape is incorrect, and who-

ever says it is mistaken. If the human body evolved just like other organisms, its origin can only be attributed to the first seed, as the Almighty said: ﴿And God has caused you to grow from the earth as a plant.﴾ The human body evolved along with the other organisms, and it is incorrect to attribute its origin to any of its intermediate states on its evolutionary path.

Indeed, the human body can be attributed to the last state that preceded its transition to humanity. Physically, there is no difference between that state and us. It is a complete, human, physical state. Therefore, at the level of the *Homo sapiens*, they have complete bodies and a human form. In fact, the *Homo erectus* that appeared almost two million years ago looks very similar to us. Even the Ardipithecus (Ardi) that goes back more than 4.4 million years used to walk on two feet, and had small canine teeth, just like us. Scientifically speaking, the human evolved from Ardi, and since we, according to biologists, are the only mammals walking upright on two feet, then Ardi, in particular, is our ancestor. Therefore, as long as this is the case, it cannot be said that the human body evolved from an ape similar to the ones that surround us today. To say so is incorrect and it doesn't agree with the theory of evolution. Why specifically an ape, for example? If the issue is referring to the intermediate states, why isn't it said that the human evolved from a fish since it is an intermediate state on the path of evolution? Why isn't it said that the human evolved from the *Homo erectus*, who is also an intermediate state on the human evolutionary path, and is much closer to the human state than the ape-like state? Why specifically the ape? Is the use of the ape only an attempt to repulse and aggravate?! Is it an attempt to distance people from science and knowledge and keep them in the depths of ignorance for as long as possible? Nonetheless, scientific research in evolution today refutes that the human being evolved from the chimpanzee. Rather, it states that humans and the rest of the great apes have common origins.

Man Was Created in the Best Form, and it's Possible, According to the Religious Scripture, for Him to Return to the Lowest of the Low, A Despised Ape!!

Some who claim to have religious knowledge use the verse, ﴿We have certainly created man in the best form﴾ Quran Chapter "The Fig" 95:4 as evidence that the theory of evolution contradicts the religious scrip-

ture, since they understand the verse to mean that the human body was created in its current form from the very first moment. Had they read the verse that follows, they would not have entangled themselves in this foolish conclusion, as the Almighty said, ﴿We have certainly created man in the best form. Then We returned him to the lowest of the low.﴾ Quran Chapter "The Fig" 95:4-5 Have they asked themselves: if this verse is referring to the human body, how would it be returned to the lowest of the low, and where is that? Do they believe that the human body is now at the stage of the lowest of the low, after it was previously in the best form? Or do they believe, for instance, that the form of all the children of Adam will change in the future to the lowest of the low so that they will become apes or ape-like beings?![*†]

The truth is, it would have been better for them if they didn't involve themselves in this issue. If only they had learned from the mistakes of their predecessors.

﴿We have certainly created man in the best form﴾: "best form" doesn't mean physical form and ability. Rather, it means that man was created in the image of God. This image of God is not a physical or ideal image, but is the manifestation of the names of God. As such, the meaning of man being created in the image of God is that he is created in such as way that he shows "the names of God in the creation", and becomes "God in the creation". Every human is capable of being like that through the Holy Spirit, which manifests in the human soul. However, there are people who allow the opportunity to pass by, and return to their origin by their own choice:

> ﴿Say, "Shall I inform you of a penalty from God that is worse than that? It is that of those whom God has cursed and with whom He became angry and made of them apes and pigs and slaves of tyranny. Those are worse in rank and further astray from the sound path."﴾ Quran Chapter "The Table Spread" 5:60.

This is the truth: God gave the human being—every human being—the master key that opens all doors and proves their humanity. They can open the doors, one after the other, to move from a light to a greater light until they face the light within which there is no darkness. They can also quite simply toss the key on the floor and return to their

*. Ibid., 95:4.

†. Ibid., 95:4-5

animalistic, beastly state, thereby becoming the equivalent of an ape, as in the Quranic text: ﴿made of them apes﴾!

There is no injustice in the realm of God. Hellfire is the world for whoever has chosen it and requested immortality in it. The veil will be lifted for them and they will find it blazing with their deeds, injustice and corruption, and filled with the scorpions of their envy and the monsters of their thoughts, crimes, and beastly, animal realities that become clear to them, so they will torture each other with these malicious realities once the cover is exposed. There is no injustice in the realm of God. Whoever requests temporal immortality will be given his wish and will stay where he wants, it is just that the veil will be lifted for him in order to see how it really is. ﴿Do not flee, but return to where you were given luxury, and to your homes, perhaps you will be questioned.﴾ Quran Chapter "The Prophets" 21:13.

In every way, God is just. In fact, He is not only just, but He is charitable and generous to a degree that we cannot comprehend. That is why He doesn't harm anyone. His most extreme form of punishment is to give man what he has chosen, which is where the cause of man's eternal doom usually lies. God Almighty states: ﴿And you had already known about those who transgressed among you concerning the sabbath, and We said to them, "Be apes, despised."﴾ Quran Chapter "The Cow" 2:65. He also states: ﴿Say, shall I inform you of a penalty from God that is worse than that? It is that of those whom God has cursed and with whom He became angry and made of them apes and pigs and slaves of tyranny. Those are worse in rank and further astray from the sound path."﴾ Quran Chapter "The Table Spread" 5:60 as well as: ﴿So when they were insolent about that which they had been forbidden, We said to them, "Be despised apes."﴾ Quran Chapter "The Heights" 7:166. The meaning of these passages is that they tossed the keys from their hands and lost the human spirit that God had transmitted into their father Adam pbuh and had encouraged them to obtain. All they have left is the animal spirit, so they returned to their origins: animals and beasts who barely understand a word.*†‡

Jabir said, "I asked Abu Jafar about the knowledge of the knowledgeable one, and he said to me, 'O Jabir, there are five spirits in the

*. Ibid., 2:65

†. Ibid., 5:60.

‡. Ibid., 7:166.

> prophets and successors: The Holy Spirit, the spirit of faith, the spirit of life, the spirit of power, and the spirit of lust. Through the Holy Spirit, O Jabir, they learned of what is beneath the Throne all the way down to what is beneath the earth. O Jabir, these four spirits can be affected by impurities, but not the Holy Spirit; it does not engage in distraction or play.'" (Kulaini 1982, vol 1, 272. Arabic source, translated).

Therefore, whoever doesn't have the spirit of faith within them, or whoever is robbed of the spirit of faith, has three spirits left, or three sides of the spirit. These are the same as the sides of the animal spirit, so they have no distinction over apes and pigs. In fact, their transformation is basically their return to their origins and realities that they didn't want to move away from. Indeed, they chose willingly to remain in those states. Therefore, God spoke to them in the Quran, telling them to remain as the apes that they are.

> ﴿We said to them, "Be apes, despised."﴾
>
> ﴿and made of them apes and pigs.﴾
>
> The Almighty said: ﴿Or do you think that most of them hear or reason? They are but like cattle. Rather, they are even more astray in their path.﴾ Quran Chapter "The Criterion" 25:44.

You can understand from these verses that some beings who have human bodies are said by God to be apes, pigs and cattle, or are even more astray in their path. If you want an interpretation of "more astray in their path" using animal examples, I can tell you that there are primitive worms, roaches, beetles, and scorpions. Thus, there is a spiritual or inner evolution, and a being that has the body of a human can spiritually evolve and progress until he becomes a human and has the spirit of faith and the Holy Spirit, or he can devolve until he has just an animal spirit like an ape or even those at the lowest level, such as a worm, whose comprehension doesn't go beyond its bodily orifices: an orifice for food, an orifice for excrement, and an orifice for sex. Unfortunately, this is what the human can be at times.

There are three spirits: life, power, and lust. Whoever has these three spirits is an animal capable of handling its environment intelligently in accordance with his physical brain, meaning according to its size, composition, and ratio to the material body of the animal. All

animals, including the human, are equal when it comes to this. For example, apes can choose appropriate tools for breaking hard fruit, beavers build dams, and the Kea parrot can behave with rather notable intelligence. Some animals also have a social life, so we find them treating each other with compassion. In some animal societies, there are very intricate systems, such as those among bees or ants.

As a result, I believe the question of whether or not the human body evolved from human-like beings, and whether or not this conflicts with the religious text, is complex and worthy of research and scrutiny by the human being himself in order to know the truth.

The Truth About the Creation of Adam

The Beginning of God's Creation of the Human

God Almighty began the creation of Adam in the first heaven (the heaven of souls). But in order for Adam and his offspring to be fit to be "lowered" to the earth and connect with the bodies, the wet clay had to be "raised" to the first heaven, and the soul of Adam and everyone else had to be created from it. This was necessary since the spirit was transmitted into this raised wet clay, and this raised wet clay became the tool for connection of the spirit with the body. The spirit cannot touch the body because they are in—and from—two different worlds, and are worlds apart. Therefore, a tool had to exist in all of the levels of gradation and in all of the worlds between the physical and the first heaven. Furthermore, when the body is raised, it has these levels so it can move within their boundaries.

Therefore, the wet clay that was raised (that represents everything within the earth) has this range of movement between the bodily world and the spiritual world; or let us say from the bodily world at the beginning of the first heaven coming into contact with the second heaven; or let us say the spiritual world at the beginning of the second heaven (the heaven of the spirit and the kingdom of heaven).

Furthermore, Adam's creation began from the clay and water of the earth in order for his soul, which was to be created in the first heaven, to carry what is on the earth from strength and lust that would enable him to reproduce and live on every spot of the earth, and to dominate the earth. As such, by the command of God Almighty, the angels took

some dust and water of the earth and raised it to the first heaven, and the light (as in non-dense) body of Adam was molded from it therein and placed in the temporal paradise, meaning the end of the first heaven or, in other words, at the door of the kingdom of heaven (the second heaven). This is the first kingdom of heaven, which the angels traverse.

> Abu Abdullah al-Sadiq pbuh said, "Angels used to pass by Adam pbuh, meaning to pass by his form, while he was wet clay lying in paradise, and they would say, 'Why were you created? (Al-Rawandi 1989, 41. Arabic source, translated).

> This means he was lying in the paradise that was in the first heaven. Al-Baqir pbuh said, "God created Adam, so he remained as a form that the cursed Iblis would pass by him and say, 'Why were you created?'" (Al-Qumi 1983, vol 1, 41. Arabic source, translated).

> ﴿So We said, "O Adam, indeed this is an enemy to you and to your wife. Then let him not remove you from Paradise so you would suffer.﴾ Quran Chapter "Taha" 20:117.

When the earth was ready to receive Adam pbuh, the vicegerent of God, God breathed the spirit of faith into the ideal body of Adam that was in the first heaven. Thus, the first human soul was formed, as in the saying of the Almighty, "When I have proportioned him," as well as His saying, "And We created you." This is on the level of the world of souls, or the first heaven.

Afterwards, He breathed the Holy Spirit into Adam as in His saying, "… and I breathed some of My Spirit into him," and His saying, "And giving you form," meaning giving you form upon the image of God, as in the Old Testament:

> 26 Then God said, "Let Us make man in Our image, after Our likeness."
> 27 So God created man in His own image, in the image of God He created him; male and female He created them" (Genesis 1:26-27)

In the accounts, Imam al-Baqir pbuh was asked about the meaning of God creating Adam in His image. He said:

> It is a recently created image that God selected and chose over the

> different remaining images. He ascribed it to Himself, just as he ascribed the Kaaba and the Spirit to Himself. ﴿And I breathed some of My Spirit into him.﴾ (Kulaini 1982, vol 1, 134. Arabic source, translated. Also Al-Sadooq 1956, 103)

God commanded the angels to prostrate to Him, as when the Almighty said: ﴿Fall down to him in prostration"﴾, and His saying: ﴿Then We said to the angels, "Prostrate to Adam."﴾ As such, some prostrated, and some were arrogant and were expelled.

> ﴿So when I have proportioned him and breathed some of My Spirit into him, then fall down to him in prostration."﴾ Quran Chapter "The Rocky Tract" 15:29.

> ﴿ And We created you, then We formed you, then We said to the angels, "Prostrate to Adam." So they prostrated except for Iblis. He was not from the prostrating ones.﴾ Quran Chapter "The Heights" 7:11.

Afterwards, God Almighty created the soul of Eve pbuh from the soul of Adam pbuh. The Almighty said: ﴿O mankind, fear your Lord, who created you from one soul and created from it its mate and transmitted from both of them many men and women. And fear God, through whom you ask one another, and the kinship. Indeed, God is always an Observer over you.﴾ Quran Chapter "The Women" 4:1. Imam al-Sadiq pbuh said, "God Almighty created Adam from wet clay and created Eve from Adam." (Al-Rawandi 1989, 42. Arabic source, translated). Then he brought forth their offspring and tested all of them with the first test in the world of al-Tharr (the world of souls). The test was with one question: ﴿And when your Lord took from the children of Adam—from their backs—their descendants and made them testify to Him of their souls, [saying to them], "Am I not your Lord?" They said, "Yes, we have testified." Lest you should say on the day of Resurrection, "Indeed, we were of this unaware."﴾ Quran Chapter "The Heights" 7:172. The verse is clear, ﴿made them testify of their souls﴾, meaning it was a world of souls.

So the one who comes first in the test—and who wins the race—is the first to see and hear, and the first to answer.*†

When this test ended, God wished for what He knew to be fulfilled: the lowering of Adam pbuh to the earth and his test therein. Therefore, Adam's test pbuh was in the first heaven (the temporal paradise), and he failed it as was destined: ﴿And Adam and his wife ate of it, and their private parts became apparent to them, and they began to fasten over themselves from the leaves of Paradise. And Adam disobeyed his Lord and erred.﴾ Quran Chapter "Taha" 20:121. As a result, he was lowered to the earth, as well as our mother Eve—may the prayers of God be upon them—and may God bestow their intercession upon us in this world and in the hereafter.

The Quranic text is clear: Adam and Eve were created and initially lived in the paradise of the first heaven, which is a temporal paradise, but not on the earth. Rather, it is in the first heaven: the world of souls.

The Almighty said, ﴿We said, "O Adam, dwell, you and your wife, in paradise and eat therefrom in abundance from wherever you will. But do not approach this tree, lest you be among the wrongdoers."﴾ Quran Chapter "The Cow" 2:35.

The Almighty said, ﴿And "O Adam, dwell, you and your wife, in paradise and eat from wherever you will but do not approach this tree, lest you be among the wrongdoers."﴾ Quran Chapter "The Heights" 7:19.

The Almighty said, ﴿So We said, "O Adam, indeed this is an enemy to you and to your wife. Then let him not remove you from paradise so you would suffer. ⁎ Indeed, you will not be hungry therein or be unclothed. ⁎ And indeed, you will not be thirsty therein or be hot from the sun." ⁎ Then Satan whispered to him; he said, "O Adam, shall I direct you to the tree of eternity and possession that will not deteriorate?" ⁎ And Adam and his wife ate of it, and their private parts became apparent to them, and they began to fasten over them-

*. God Almighty did not create Eve's pbuh soul independently as he did the soul of Adam pbuh. This was in order for there to be affection and mercy between them. So the affection, or love, and obedience is directed from Eve to Adam, and the mercy is directed from Adam to Eve ﴿And of His signs is that He created for you from yourselves mates that you may find tranquillity in them; and He placed between you affection and mercy. Indeed in that are signs for a people who give thought.﴾ Quran Chapter "The Romans" 30:21.

†. What is meant by higher level here is the first spirit, which is Muhammad's pbuhap spirit. The level of the spirit below it was created from it, which is the spirit of Ali and Fatimah pbut.

selves from the leaves of paradise. And Adam disobeyed his Lord and erred.﴾ Quran Chapter "Taha" 20:117-121.

The verses are clear: Adam pbuh was not earthly. He was not created on the earth to begin with. Instead, he was created in paradise, in the first heaven, which is not the eternal paradise; ﴿Then let him not remove you from paradise so you would suffer.﴾. This paradise is not like the earth where the human being can become hungry, unclothed, thirsty, hot or harmed by the sun and the weather if he doesn't work and collect fruit, or plant and hunt, or raise animals, and take precautions to push away harm. Therefore, it is something other than earthly.

Let us examine the distinct condition of Adam in these verses and whether or not it concurs with the condition of the earth and the bodies therein. The body of the earthly human, unless partially covered by clothes, is revealed, and it is certainly seen by him and others. If Adam was wearing earthly clothes, they wouldn't vanish once he disobeyed God. If Adam and Eve were on the earth, and if they were unclothed from the beginning, they would have noticed their condition from the beginning, rather than after disobedience. If clothes were on them on the earth, they wouldn't vanish from their bodies just due to disobedience.

Therefore, the issue isn't earthly, and neither is the story. As told by God in the Quran, it doesn't comply with the condition of the earth and the people in it. However, if Adam and Eve were in a temporal paradise in the first heaven for the disobedience, it is natural for the private parts to appear to them only when they disobey, and not before, because the clothing that conceals the private parts there is the clothing of piety that is worn by the soul as a natural result of obeying God and going against the desires and Satan. The clothing of piety is more important and better than the clothing of the body because God looks at the soul and spirit of the human being, and what it wears, rather than the body of the human and what is covering it.

> ﴿O Children of Adam! We have bestowed upon you clothing to conceal your private parts, and as an adornment. But the clothing of piety, that is the best. That is from the signs of God, perhaps they will remember.﴾ Quran Chapter "The Heights" 7:26.

During disobedience, this clothing is removed and the private parts of the human being are exposed before his Lord. This means that, from

the outset, Adam and Eve (pbut) wore clothes in paradise. They wore the clothing of piety that was removed from them, so they weren't naked in the beginning in order for their initial condition to be revealed to them. What was actually revealed to them was their condition after disobedience and after the clothing of piety was removed.*

﴾"O Children of Adam! Do not let Satan tempt you as he removed your parents from paradise, stripping them of their clothing to show them their private parts. Indeed, he and his tribe see you from where you do not see them. We have made the satans supporters of those who do not believe."﴿†

The verse clearly states that the clothing of Adam was removed from him because of his disobedience. ﴾Do not let Satan tempt you as he removed your parents from paradise, stripping them of their clothing to show them their private parts﴿. The clothing was returned by seeking forgiveness: ﴾Their private parts became apparent to them, and they began to fasten over themselves from the leaves of paradise.﴿

The verses clearly show that the fall of Adam pbuh and Eve from the temporal paradise in the first heaven to the earth cannot be said to be a fall from a paradise on this earth to the earth. ﴾We said, "Go down from it, all of you; and when guidance comes to you from Me, whoever follows My guidance, there will be no fear concerning them, nor will they grieve."﴿ Therefore, it is a fall from the first heaven to the physical heaven, and to the earth specifically. Imam al-Sadiq pbuh clarified that Adam requested to return to the paradise he was in, and God answered him. This clearly shows that it was the paradise he would enter after his soul was separated by death from this body one more time, and he would return to his previous state.

> Imam al-Sadiq pbuh said, "When Adam pbuh circumambulated the House for one hundred years, he did not look at Eve. He cried about paradise until he had two great rivers of tears on his cheeks. Then Gabriel pbuh came to him and said, 'May God prolong your life and may

*. This is the case for any human being, not just Adam. The angels could see that he was stripped of piety and would know that he was disobedient. That is why Adam and Eve were concerned about what happened. It is embarrassing, to say the least, coming from Adam, the teacher of the angels, and that is why he started to request forgiveness: so that the clothing of piety would return to him. ﴾Their private parts became apparent to them, and they began to fasten over themselves from the leaves of paradise.﴿ Quran Chapter "Ta Ha" 20:21.

†. Ibid., 7:27.

> He bring you near to Him.' So when he said, 'May God prolong your life', Adam's face beamed with joy, and he knew that God was satisfied with him. And when he said, 'May He bring you near to Him" Adam laughed, because 'May he bring you near to Him' means, 'May He cause you to laugh.' He stood by the door of the Kaaba clothed by the skins of camels and cows and said, 'O God, undo my error, forgive my sin and return me to the home that you removed me from.' 'Thus, God Almighty said, 'I have undone your error, pardoned your sin and I will return you to the home that I removed you from.'" (Al-Sadooq 1960, 269. Arabic source, translated).

This is the story of the creation of Adam pbuh from the wet clay that was raised to the first heaven and had the spirit breathed into it. Adam was created in the temporal paradise that is in the first heaven. We are heavenly and our souls were created from the spirit breathed into the raised wet clay in order for us to be tested on this earth, and in order for the souls to be able to connect with the earthly bodies that are the expanse of its test in this physical material world.*

The Meaning of Raising the Dust of the Earth to the First Heaven

Raising here means returning, by one or more steps, in the direction of the starting point or source. This means that, if we picture the human being—and the rest of creation as well—as a manifestation of the divinity in the nothingness that can exist, we will have a particular rank whenever we move away (in terms of knowledge) from the source of the manifestation, and it will have less light and more darkness (which is the nothingness that permeates it).

Let us assume that the world of matter, in which our bodies exist, is composed of 10% light and 90% darkness (nothingness), and that each step that light takes toward absolute darkness (absolute nothingness, absence of knowledge and awareness) represents a whole number. Therefore, to raise a material object (for example, the wet clay of Adam pbuh) by one step is to move it to the parallel world in which

*. The temporal heaven consists of two parts or levels. They are the physical heaven, which is this material physical heaven containing galaxies, suns, moons, and the earth we live in, and the first heaven, which is the heaven of the souls, in which Adam was created. It contains the temporal paradise, which Adam and Eve were placed in at the beginning of their creation before they fell to the earth following the disobedience. The first heaven is itself the heaven of the world of al-Tharr.

the percentage of light is 11% and the percentage of darkness (nothingness) is 89%, meaning to move it to the world that is ahead of the earth.

It must be the case that the worlds are divided in an ideal manner, because their creator is absolute, and as such they must be as close as possible to being absolute, because they represent the first thing to come from him (Muhammad = all of the worlds). To make this easier to understand mathematically, this means that the divisor is the smallest thing imaginable. Therefore, you can imagine that there is a number that is the closest number to zero, but you cannot realize this decimal number. For example, if you say it is 0.0001, then 0.00001 is smaller than it, and so on until you reach a number that you can affirm exists, and know some of its attributes, but never actually know it. If you put this number in the denominator of any fraction, the quotient is the closest thing possible to infinity because the denominator is the closest thing possible to zero. This means that if we were destined to see a person raised before our eyes, we could see him gradually disappear, meaning that we would see a body, then a ghost, before it disappears. However, it never actually disappeared; all that happened is that it moved to a parallel world that is one degree higher in rank than ours toward the light. Alternatively, we can say that it returned to the starting point or source by one or more steps, depending on the state of raising of that material body. In any case, the sum of light and darkness, or existence and nonexistence, outside of the source of light or existence, is zero, which means nothing really exists outside of the source.

For example, let us picture a source of light, with light coming from it in a particular direction. With each step that the light advances forward, some of it condenses to form a screen of matter that some of the light passes through. In this way, the light has formed a number of screens in front of the light source, and some of the light passes through them. The number of these screens is as close as possible to infinity. Between the screens is a vacuum filled with antiparticles (antimatter) equal to the sum of all the "screens of matter" and energy of the light, meaning the sum of matter and energy outside the light source is equal to zero. In other words, nothing really exists outside of the light source. There will be a more detailed discussion of this issue in due course.

The Lowering of Adam to Earth

It has been clarified for us from what came before, that from a religious perspective the human being can be an ape, or even a pig: ﴿Say, "Shall I inform you of what is worse than that as a recompense from God? Those whom Allah has cursed and with whom He became angry and made of them apes and pigs … ﴾ Quran Chapter "The Table Spread" 5:60

It is also clear, according to religious scripture, that the creation of Adam did not begin on this earth.

The meaning of "raising" and its agreement with science has been explained.

Now: we have reached a point in our discussion that will explore the relationship between Adam pbuh and the theory of evolution, so we will now discuss the bodies of Adam and Eve and how their souls connected to the bodies and were "lowered" to this earth for the test.

Let us hypothesize about this first Adamite material body:

The first hypothesis is that the soul of Adam appeared in bodily form directly on this earth, especially since he was originally created from wet clay raised from the earth. Biology absolutely rejects this. Data from recent genetic analysis has proven the origin and lineage of the human body. In addition, evidence has accumulated from genetic analysis, fossils, and theoretical research to support the theory of evolution.

The second hypothesis, prevalent among the majority of clerics, is that a body was created for Adam pbuh from clay and water on this earth. Afterwards, the spirit entered this body and transmitted human life into it. However, this hypothesis contradicts the Quranic text that clearly indicates that the creation of Adam and Eve began in the temporal paradise in the first heaven. Adam's fall to the earth then occurred by the command of God, as I have previously explained in detail. Moreover, this hypothesis is completely rejected from a scientific standpoint, and it contradicts biology and genetic analysis for the same reason as the first hypothesis. Whoever adopts either of these hypotheses must remove science, scientific research and facts from their vocabulary. Their thesis is nothing but a delusion that they are pleased with in order to fool themselves. It is a hypothesis that contradicts science in both a general and detailed sense. The origin of our bodies has recently been determined by precise scientific methods. Our bod-

ies didn't just originate out of thin air for it to be hypothesized that the body of Adam appeared suddenly, only a few thousand years ago.

The third hypothesis is that in the beginning, there was a law that structured the emergence of life from the genetic plan, and that the first seed or genetic plan was purposeful. That purpose was to sculpt an animal body during the long journey of evolution until it became suitable for the soul of Adam to connect to and be transmitted into it while in the womb. The same is the case regarding Eve pbuh:

﴿While He has created you in stages ⁕ Do you not see how God has created the seven heavens in layers ⁕ And made the moon a light therein and made the sun a burning lamp? ⁕ And God has caused you to grow from the earth as a plant.﴾ Quran Chapter "Noah" 71:14-17. The verse clearly says that we went through stages and that these stages are similar to the layers of the heavens, meaning, one stage above the other, with some more developed than others, and some dominant over others. The verse then concludes by clarifying that our creation—us humans—is a process of being made to grow (planting). This word is unambiguous, so the matter at hand is growing or planting. We need only to look at the plants of the earth to see that they start with a dormant seed containing a genetic plan that the seed then begins to implement once suitable conditions are available. A small plant develops, and its very first two leaves might be different than the leaves of the tree that will develop from it.*

﴿God has caused you to grow from the earth as a plant.﴾ He caused us to grow from the earth, and all that our growing needed was a productive genetic plan to reach the destination that God Almighty wants.

This hypothesis is quite suitable for Adam and Eve pbut to enter the test on this earth, yet without having an advantage over others so as to exempt them from the earthly test.

﴿We said, "Go down from it, all of you. And when guidance comes to you from Me, whoever follows My guidance—there will be no fear concerning them, nor will they grieve."﴾ Quran Chapter "The Cow" 2:38. This means that the soul created from the wet clay that had been raised to the first heaven fell in order to connect to a particular animal body that was ready to receive it. Its earthly test occurred in the way that God wanted. This doesn't contradict the theory of evolution as proven

*. Ibid., 71:14-17.

by biologists, especially regarding the origin of the human species. Rather, it agrees with the theory of evolution and development.

There is no problem with the existence of an organism that developed from clay and water until it reached a physical animal composition having the first three spirits (the spirits of life, power and lust), and then transmitting the the soul of Adam pbuh into it to cause a complete shift from animalism and beastliness to prophetic, message-bearing humanity, culture, and elevated moral values. This also explains in a rational and scientifically acceptable manner the leap of civilization and culture that began in the land of Sumer thousands of years ago.

The matter continued after Adam pbuh, in his offspring, as the spirit of faith and holiness manifested in their souls. It is as if their souls were exactly like mirrors reflecting the spirit of faith and holiness, so their souls became a divine nature that calls them to rise. If humans use this key correctly, they pass the test and rise to the highest ranks and obtain the spirit of faith, and then the spirit of holiness, until they become a manifestation of God on the earth. This includes everyone, even Muhammad pbuhap, the finest of creation: ﴿And thus We have revealed to you an inspiration of Our command. You knew not what is the Book or [what is] faith, but We have made it a light by which We guide whom We will of Our servants. And indeed, you guide to a straight path.﴾ Quran Chapter "The Consultation" 42:52. However, if humans throw this key away and settle for the animal spirits, then they bring about their own destruction, lose their opportunity, and return to their origins of animalism and beastliness. ﴿We said to them, "Be apes, despised."﴾

Therefore, this is a second stage that came after the stage of Adam's pbuh creation in the first heaven, which represented the true creation of Adam. This stage is concerned with bringing the soul of Adam pbuh to the earth for the test, a stage of connecting the soul of Adam to a material body in this physical world in order for him and his offspring to be tested. This occurred after the soul of Adam pbuh was lowered to this earth and remained therein for as long as God Almighty wanted, and the souls of Adam and Eve pbut practiced some of the rituals of God on this earth.

Afterwards, God Almighty wanted to connect their souls to two earthly material bodies and make them forgetful of their previous state in order for the test to take place. Therefore, they were born from be-

ings similar to Adam, after the bodies of these people became prepared to receive a soul like that of Adam pbuh. They also gained the ability to receive the divine message through Adam pbuh, who was born among them and dispatched to them.*

It is bizarre for some people to accept that the body of Adam pbuh began directly from clay or dust, yet reject that it began from a living being, even though the living being is much higher in existential rank than inanimate clay.

The Earthly Adam, the Covenant, the Test, and Faith:

The angels raised wet clay from the earth to the heavens as God had commanded them, and He used it to create the form of Adam pbuh in the first heaven, and then the spirit was breathed into it. Thus He created Adam pbuh, or the soul of Adam pbuh, in the first heaven (the paradise of Adam, pbuh). Subsequently, the will of God took place with Adam being lowered to the earth, so that he, or his soul, was lowered to the earth, as was Eve pbuh. His soul then continued to roam the earth and he completed actions he had to complete, such as encountering the covenant stone and carrying it, begging forgiveness, and circumambulating the house with Eve. He stayed this way, a soul roaming the earth, until God wanted the soul to be connected to a body. This body was born bearing the soul of the first human being on this earth, and the same happened with Eve pbuh.

This religious account shows that, in the beginning, Adam didn't have a material body. Rather, he only had a light (as in non-dense)

*. ﴿And you have already known the first creation, so will you not remember?﴾ Quran Chapter "The Inevitable" 56:62. This passage means that you were in a previous world, the world of al-Tharr or the world of souls, where you and Adam were created. For you, the world of souls, or the world of al-Tharr, represented your first creation. So why do you not remember that world even though you were in it and knew about it? ﴿And you have already known the first creation, so will you not remember?﴾ This is why the Almighty says: "Just as you were created in a previous world and you knew about it before but I caused you to be forgetful when I connected your souls to the bodies on this earth and as I shrouded your souls from knowing about their previous state, God Almighty can do the same thing again—create you in another world in another state—and what is happening with you today will be repeated." ﴿We have decreed death among you, and We are not to be outdone ⁎ In that We will change your likenesses and create you in what you do not know. ⁎ And you have already known the first creation, so will you not remember?﴾ Quran Chapter "The Inevitable" 56:60-62.

body, a soul, but after he was caused to lower to the earth, he connected to a body:

> Abu Abdullah al-Sadiq pbuh said: "When Adam fell from paradise and ate food, he felt a heaviness in his stomach. So he complained to Gabriel pbuh. Gabriel said, 'Then bear down,' so he made him bear down and he excreted, and the heaviness left him." (Al-Rawandi 1989, 50. Arabic source, translated)

Then God wanted Adam and Eve to come together physically, and to form the first Adamite family, and to create the first agricultural village. God wanted Adam to plant, and domesticate and raise animals. So the journey of humanity, agriculture and the raising of animals began with Adam.

> Abu Jafar pbuh said that the Messenger of God pbuhap said: "When God Almighty had Adam pbuh fall from paradise, He commanded him to eat from what his own hands had planted after having enjoyed the comfort of paradise, so he wailed and cried over paradise for 200 years, and prostrated to God for three days and nights without lifting his head." (Al-Rawandi 1989, 50. Arabic source, translated)

His 200 years of crying was the time it took for his soul to lower to the earth by the command of God in order for him to live there. This was before his soul was connected to a material body and before he would actually have to plant, or to raise and domesticate animals.

> Abu Abdullah pbuh was asked, "Why did God place the stone in the Corner in this position, and not elsewhere? Why is it kissed? Why was it taken out of heaven? And why was the covenant and pledge of the servants placed inside of it, and not elsewhere? For what reason? Please inform me, may God ransom me for you. I have thought deeply about this, and I am amazed." He said, "You have asked, and thought deeply about this issue and investigated it. So understand the answer, empty your heart, listen closely and I will tell you, God willing. God Almighty placed the black stone, a jewel that was brought from paradise to Adam pbuh, in that corner for the covenant. This is because when God took the offspring from the backs of the children of Adam pbuh, He took the covenant from them in that place, and it was there that God manifested Himself to them. A bird will come down to the Riser in that very same place. The first one to pledge al-

legiance to him is that bird, and by God, it is Gabriel. The Riser will lean back on that station. This station is the Proof and evidence of the Riser. It will bear witness for whoever comes to him and fulfills their covenant and pledge by which God Almighty obligated His servants. The reason for kissing and touching [the cornerstone] is to renew the pledge and covenant, and to renew the allegiance in order for them to fulfill the pledge to which God bound them within the covenant. So they come to the cornerstone every year and they fulfill that pledge and trust by which they are bound. Have you not noticed that you say, 'I have fulfilled my trust and pledged my covenant, so bear witness that I have.' By God, no one fulfills that except our followers, and no one upholds that pledge and covenant except for them. For they come to it and it recognizes and believes them. Other people come to it, and it recognizes them as liars and denies them. This is because no one upholds the covenant other than you. By God it bears witness for you, and by God it bears witness against them regarding their shame, denial and disbelief. It is the overwhelming proof from God against them on the Day of Judgement, and it will come with a tongue that speaks and with two eyes in its first form, recognized by the creation and undenied. It testifies for whoever came to it and renewed the pledge and covenant with it, by upholding the pledge and covenant and fulfilling the trust. And it testifies against whoever denied, disbelieved and forgot the pledge with disbelief and denial.

With regard to God taking it out of paradise, do you know what the stone was?" I said, "No." He said, "The stone was one of the greatest angels near to God. When God took the covenant from the angels, the first one to believe in it and accept it was this angel. Thus, God made him a trustee over all of His creation. He provided him with the covenant, entrusted him with it, and had the creation worship by renewing their acceptance of the covenant and their pledge to which they were bound by God Almighty. Then God put the angel with Adam in paradise, and every year he would remind Adam about the covenant and the renewal of acceptance with him. When Adam disobeyed and was taken out of paradise, God made him forget the pledge and covenant to Muhammad pbuhap, his successor, the covenant to which He bound Adam and his children, and he made him lost and perplexed. When he forgave Adam, He turned this angel into the form of a white pearl and cast it out of paradise to Adam while he was in the land of India. Upon seeing it, Adam felt he recognized it even though he did not know anything about it except that it was a pearl. God Almighty made it speak and it said, 'O Adam, do you recognize me?' He said, 'No.' He said, 'Indeed, Satan has prevailed

over you and made you forget the remembrance of your Lord.' Then he turned back into the form he had when he accompanied Adam in paradise and said to Adam, 'Where is the pledge and the covenant?' Adam rushed to him and remembered the covenant and cried, and he submitted to him, kissed him and renewed the acceptance of the pledge and the covenant. Then God the Exalted and Almighty turned him into a stone jewel, a shining clear white pearl, so Adam pbuh carried it on his shoulder for the purpose of honoring and glorifying it. Whenever he became fatigued, Gabriel pbuh would carry it for him until he reached Mecca, and he kept the stone as a companion in Mecca and renewed his acceptance with it every day and night.

Then, when God the Exalted and Almighty built the Kaaba, He placed the stone in that place. This is because He, the Exalted and Almighty, took the covenant from the children of Adam, He took it in that same place. And in that place, He provided the angel with the covenant. That is why it was put in that corner.

God moved Adam away from the place of the house and toward Safa, and Eve toward Marwa, and then placed the stone in that corner. When Adam gazed from Safa as the stone was placed, he said, 'God is great', and he lauded and glorified God. This is how the tradition began, of saying, 'God is great' and facing the corner in which the stone was placed from Safa. God entrusted him above all other angels with the covenant and pledge, because when the Almighty took the covenant regarding His Lordship, the prophethood of Muhammad pbuhap and the successorship of Ali pbuh, the angels rushed, shoulder to shoulder, and this angel was the first to accept the covenant, and there was no one among them who loved Muhammad and the family of Muhammad pbut more than he did. That is why God selected him over the others and provided him with the covenant. He will arrive on the Day of Judgment with a tongue that speaks and eyes that see to testify for all of those who came to him at that place and upheld the covenant." (Kulaini 1982, vol. 4, 184-186. Arabic source, translated. Also Al-sadooq 1983, vol 2, 429-431)

The Established Religious Scripture Does Not Oppose the Theory of Evolution

The theory of evolution is a scientific theory supported by a wealth of scientific evidence, including genetic evidence that cannot be rejected by any reasonable person who understands this evidence. As a result, there is no room for argument about the validity of the theory. It is a fact only refuted by ignorant people who don't comprehend what the

theory says. Unfortunately, such people are numerous. I believe that Dawkins, as he has previously stated, and other atheist evolutionary biologists, are glad when men of religion insist that the theory of evolution is incompatible with religion. This is because as evolutionary biologists, they are actually capable of proving its validity beyond any doubt. Thus, when one says that religion and evolution incompatible with one another, this means that there is a major defect in religion, because the men of religion have admitted and insisted that religion conflicts with a theory proven with valid scientific evidence.*

In fact, there is no way that any person can come with an ambiguous or unestablished religious text, claim that it conflicts with the theory of evolution, and consider it evidence of its invalidity. This, in itself, is absolute foolishness. Whoever wants to scientifically disprove the theory should provide scientific evidence that refutes it, and they should refute the evidence that supports the theory. Moreover, if a person wants to prove that the theory of evolution conflicts with the religious text, they should provide established religious text not open to interpretation that conflicts with the theory. Furthermore, they should first prove that the theory is scientifically invalid, and then present an alternative scientific theory supported by evidence. In any case, this cannot be proven, because evolution is itself an established scientific fact and its deniers are simply stubborn and ignorant. The reason for their stubbornness, aside from their ignorance, may be the dual interjection of the ideologies of atheism and faith in this scientific issue. Thus, atheists imagine that proving evolution proves their ideology, whereas believers imagine that proving evolution invalidates their ideology.†

These fanciful ideas are absolutely incorrect. We have proven, and will further prove, that evolution is evidence for faith and for the existence of a god. The truth is, the idea that atheism and evolution are inseparable must be abandoned, because it is incorrect and delusional. Even if each and every aspect of the theory of evolution and abiogenesis is correct, it still doesn't conflict with the religious text. If amino

*. Dr. Dawkins has said: "I quite like the idea that people are being taught in their churches that evolution is incompatible with God, because we absolutely can demonstrate that evolution is a fact."

†. Our discussion always pertains to the established religious scripture. With respect to the religious accounts: if a religious account conflicts with scientific facts, it is either open to interpretation such that it has another interpretation that does agree with science, or it is erroneous.

acids had formed through natural laws that were applicable in a certain time period of the life of the earth, and then gathered correctly to form replicators or a genetic plan, and then it took the correct steps to form the first self-replicating cell—and after that, genetic evolutionary processes, genetic mutations and selection took place over billions of years until the earth's state came to the existence of an organism with a human body, this explanation for the existence of man still wouldn't conflict with the religious text to the point that it couldn't be reconciled with biology and what it presents regarding the emergence and evolution of life on the earth as previously discussed. What was created from the raised wet clay—in the religious text—is the soul of Adam pbuh in the first heaven. Thus, there is no problem with a particular body gradually evolving on this earth and the soul being connected to it afterwards.

Likewise, the cell emerging from nonliving material doesn't conflict with the religious text. It isn't a creation from nothing, but rather a process of synthesis from matter, forces, and energies created by a chain of causes that goes back to the original cause: God Almighty. This will be explained further when we discuss the big bang theory.

In addition, the genetic plan is law-abiding (organized). Therefore, it indicates a law-maker (structurer), so not only does it not conflict with the religious text, but it actually proves the existence of God. I will explain this in further detail, God willing.

Therefore, the result is that the religious text by itself doesn't conflict with the theories of abiogenesis and evolution. So religion cannot be refuted under the pretense that God and religion explain the existence of man on the earth in a way that conflicts with biology, the fossil record, genetic analysis and fossil analysis. It has been made clear that this conflict doesn't exist at all. Certainly, it can be said that science conflicts with the understanding of the religious text by some people who took it upon themselves to be clerics, including Sunni and Shia Muslims, Christians and Jews. This argument is to be directed at them, and not at divine religion in general, or divine, established religious text. They bear the consequences of their own opinions. Skeptics or atheists cannot hold the opinions of those clerics against the divine religion or the religious text. This is a great lie and a deception that atheists, or those who are skeptical of God's existence, deceive themselves with, namely that the divine religion and religious text are the same as the opinions of those clerics. If atheists wish to live this lie and

deceive themselves with a delusional victory of atheism over religion, that is their business. However, I believe that, in this way they would be no better than the deceptive men of religion that they criticize.

The religious texts not only agree with biology and modern science, but they have also mentioned conscious life forms, some of which of are known today through fossils, meaning the human-like beings like some types of *Homo erectus*, *Homo sapiens* and the Neanderthal. These texts have stated that human-like beings existed before humans, and some of them were rational, conscious beings, but less so than humans.

> Muhammad Ibn Ali Al-Baqir pbuh said: "Since the creation of the earth, God Almighty has created seven peoples who are not descendants of Adam. He created them from the soil of the earth and caused them to inhabit it, one after the other, each with his own people. Then, God Almighty created the father of this mankind, and He created his offspring from him." (Al-Sadooq 1982, 359. Arabic source, translated. Also Al-Ayashi 1991, vol. 2, 238).

This religious account and others indicate that conscious, intelligent life forms have evolved on this earth. In this account, there are seven generations that are conscious and intelligent, whose souls are different than Adam, who are not from his children, and who preceded him pbuh on this earth.*

> The Prince of the Believers, Ali pbuh, said: "God Almighty wanted to create a creation with His own hands after 7,000 years of Jinn and Nisnas existing on earth. He wanted to create Adam … I want to create a creature with My hands, and I want to make from his offspring prophets, messengers, righteous servants, and guided Imams, and make them vicegerents among My creation on My earth, who command them against disobeying Me, warn them of My torment, guide them to My obedience, and guide them on the path toward Me. I shall make them Proofs of Mine upon the others, and I will exterminate the Nisnas on My earth and cleanse it of them." (Al-Qumi 1983, vol. 1, 36. Arabic source, translated).

This religious account clearly says that before Adam pbuh there were human-like beings on the earth. It is clear that the seven thousand years are not the units of measurement familiar to us today. We can

*. Al-Sadooq, *Al- Khisaal* p. 359, and similariy, Al-Ayashi, Tafsir [Interpretation of Al-Ayashi].

imagine different time units of measurement that are not familiar to us, because they are in different dimensions outside of the universe in which we live.

Religious Texts That Cause Some to Imagine That They Conflict With Evolution

The Example of Jesus

> ﴿Indeed, the example of Jesus to God is like that of Adam. He created him from dust, then He said to him, "Be," and he was.﴾ Quran Chapter "Family of Imran" 3:59.

Some imagine this text to be sufficient to refute evolution because it conflicts with it. This is how they understand it:

"This verse is responding to whoever said that Jesus was created without a father, so he is a god. So the verse means that Adam was also created without a father, meaning from dust. God said to him, 'Be,' and he was, so he was created directly from dust. This meaning of the verse conflicts with the theory of evolution, because the theory of evolution would indicate that Adam was created from a mother and a father, whereas the verse means that Adam was created without a father."

What is intended from the analogy certainly isn't congruity. The case of Adam is different than the case of Jesus; Adam wasn't created from just a mother, as Jesus pbuh was. The similarity is a general one, meaning that what is intended from the verse is that the creation of Jesus involved divine intervention, just like the creation of Adam did. In this case, even if we forgo any other understanding of the verse and say it intends to negate the divinity of Jesus, because he was born from only a mother, by using the creation of Adam from dust without a mother and a father as an example, then it is enough for the meaning of the verse to be the creation of Adam from dust in the first heaven, which is the original true creation of Adam pbuh, and the one preceding his being lowered to the earth. Abu Abdullah Al-Sadiq pbuh said, "The angels used to pass by Adam pbuh, meaning pass by the clay form while he was lying in paradise, and they would say, 'Why were you created?'" (Al-Rawandi 1989, 41. Arabic source, translated). God didn't call the incident of Adam's being lowered to the earth a creation. Rather, he

called it a fall to the earth, and it occurred after the creation of Adam from the wet clay that was raised to the first heaven and after the spirit was breathed into it: ﴿We said, "Go down from it, all of you; and when guidance comes to you from Me, whoever follows My guidance, there will be no fear concerning them, nor will they grieve."﴾ According to this understanding, there is no contradiction between the above Quranic text and the theory of evolution. As such, the body to which the soul of Adam pbuh was connected, after his fall to the earth, came from biological parents. This is sufficient to refute the inference that the Quranic text conflicts with theory of evolution. It can at the very least be said that it is an ambiguous text in this regard. Therefore, how can it be used to prove the existence of a conflict between a religious text and a scientific matter backed by a wealth of accumulated evidence, and taught in universities throughout the world as the only explanation for the existence and evolution of material life on the earth?*

In fact, even if we say that what is intended by the verse is the creation of Adam's body from dust on this earth, the text still doesn't conflict with Darwin's theory because the first cell that evolved was created from water and other elements available in dust (the earth). As a result, the body of Adam pbuh was originally created from dust. This means that a cell was created from water and elements on the earth and it evolved until it formed the material body of Adam. Consequently, it is true that Adam was the first human being created from dust, and not from an Adamite mother and father, because his parents weren't from his human type, nor did they have the same type of soul or spirit. Therefore, it is true that the birth of Jesus pbuh from only a mother is similar to the creation of Adam—the first human on the earth—from dust without a mother and a father, and this doesn't conflict with evolution.

To clarify further, we say that the religious text encompasses both statements: that Adam was created from a mother and father, and that Adam was created without a mother and father. This takes into consideration that he was first created from dust in the first heaven and he wasn't born to a mother and a father. In addition, it can even be said that his earthly body wasn't born to a mother and father because he was born to parents who weren't from his type (soul-wise). It can also

*. Al-Ruwandi, *Qasas Al Anbiya* [The Stories of The Prophets] (Mujma' Al Bohuth Al Islamiya, Mashhad, Iran, 1989), 41.

be said that he was born to a male and female, or a mother and father, considering that his biological body came this way.

Furthermore, it can even be said that the analogy between Adam and Jesus is that they were both born to a mother just as were other humans, and in the same manner. However, they are different than the rest of humans in another way. Jesus was born to only a mother and without a father, and Adam was born to a mother and he had a father, but they didn't have the same type of soul and human spirit as Adam.

The Society of Adam

According to the religious scripture, Adam is a prophet. Therefore, if the soul of Adam pbuh connected to a biological body that was among a group lower than it in spiritual advancement, how did he live with them? How did he behave with them? Where did this group go?

The Answer:

It must be known that in order for the soul of Adam to connect to a body, the body must be prepared to receive it. Consequently, the brain must be suitable in size and quality. The size of the brain must be appropriately sufficient for thinking, consciousness and reasoning. This means that the brain would have an average size of about 1400 ml, similar to our brains.

The is also the case with respect to quality. Thus, the composition, cells and cortex of a brain this size must have also evolved appropriately.

If this was the case for the group to which Adam pbuh was born, then it is certainly an intellectual group capable of consciousness and even mutual understanding. Therefore, as a prophet, Adam pbuh could have been dispatched to a people of God's creation after they came to have the capacity to know God at the level of the message with which Adam was dispatched. Thus, the soul of Adam pbuh was lowered and connected to a body, and he called them to the worship of God Almighty. Afterwards, Adam, his wife, and those who believed and supported them, isolated themselves from the rest of the people, just as Abraham pbuh did when he and his wife isolated themselves and emigrated away from their people, after he had called them to God and was rejected by them. However, God wished for Adam pbuh, his progeny, and his supporters to overcome that group, and for that group

to become extinct, even if the extinction happened after a period of time.

For example, at the time of Noah pbuh, after this group had attained a certain level of protection specific for Adam pbuh and his progeny for a period of time, the Quran says that God selected Adam pbuh, meaning He selected him from a group: ﴿Indeed, God selected Adam, Noah, the family of Abraham, and the family of Imran over the people.﴾ Quran Chapter "Family of Imran" 3:33. The religious accounts indicate that there had been a prophet dispatched to people who had not known certain spiritual matters before him. They had also not known the manner in which God testifies for his vicegerent on the earth, which is through visions, as mentioned in the Quran. The truth is that this applies to a people who preceded the dispatch of prophets from the children of Adam. These people must have been none other than the ones to whom the first prophet of our humankind—Adam pbuh—was dispatched.

> Abu al-Hasan pbuh said: "Dreams did not exist at the beginning of creation. Rather, they were created later." He was asked, "For what reason?" and he replied, "The reason is that God Almighty dispatched a messenger to the people of his time, and he called them to worship and obey God. So they said, 'If we do that, what will we get? By God, you are not wealthier than we are, nor do you belong to a better tribe.' He said, 'If you obey me, God will let you enter paradise, and if you disobey, he will put you in hellfire.' They said, 'What are paradise and hellfire?' So he described them. Then they said, 'When will we reach that?' He said, 'Once you die.' They said, 'We have seen our dead turn into bones and remains.' So they denied and ridiculed him even more, so God Almighty made them see dreams. They came to him and told him what they saw and of what they pretended not to know. He said, 'God Almighty wants this to be evidence against you so that if you die, that is how your spirits will be. When your bodies wear out, the spirits will be punished until the body is resurrected.'" (Kulainī 1982, vol. 8, 90. Arabic source, translated).

It is clear from the above religious account that the people mentioned in it didn't know anything about a spiritual connection with the heavens. If they had had a religion and had practiced worship, it would have been at a level lower than the Adamite level that we are familiar with, whereas Adam was a prophet and his progeny had knowledge

of these issues and passed them down to one another. Therefore, it is impossible for a people from the children of Adam not to know about visions, or heaven and hell, even if it was just in a general sense. The same is the case with regard to the calls of Adam and the successors. This means that the issue is exclusive to Adam, and that the people whom he called were people being called to the worship of God Almighty based on the religious Adamite method for the very first time.

> Imam Ali pbuh said: "God Almighty said, ﴿I will make a vicegerent on the earth﴾ who will be My Proof upon my creatures on the earth … and I will exterminate the Nisnas on My earth and cleanse it of them." (Al-Qumi 1983, vol 1, 36. Arabic source, translated).

How Were the Livestock Lowered?!

> ﴿… And He lowered for you eight mates of livestock …﴾ Quran Chapter "The Troops" 39:6.

This verse means that God brought their ideal form down to this physical world. Religiously speaking, this text means that the process of evolution was initially governed by the law of the genetic plan, and at times by its law-abiding mutations. According to the above text, evolution is governed in its path, progress and purposes by laws producing the forms that God Almighty—the Creator of these laws—wants.

Some accounts mentioned that the dog was created from the saliva of Iblis and clay. This is the same as the previous issue [with Adam]. It doesn't conflict with the theory of evolution, because what is meant isn't the creation of the material body of the dog, but rather, according to the religious text, the soul of the dog, meaning its ideal form. As I have explained in *The Allegories*, the clay was taken from the navel of Adam's body, created from the raised clay, before the spirit was transmitted into it and before the soul was created from it. I have clarified the reason for that, and also that it caused the dog, a predator, to be an animal that is tame toward humans after Adam pbuh was lowered to the earth.*

In general, this is an issue of the unseen, which cannot be proven using the material world. Believing it requires faith to begin with,

*. Ahmed AlHasan, *The Allegories* (Ansar Al-Mahdi Publications, 2010).

so whoever requests evidence is actually requesting evidence for the truth of faith. Nevertheless, there is a scientific issue that points to what I have clarified, and it serves as an indicator that is perhaps more beneficial to believers than to others. The issue that concurs with what I have presented is that, scientifically speaking, the dog is almost the oldest animal to become habituated to life with humans, and humans didn't domesticate the dog, as they did with other animals. In fact, the dog is self-domesticated, meaning it had a tendency to incline toward humans. One generation after another, it evolved to become a friendly animal that is completely obedient to the human. The summary of the theory of dog domestication is that it started with a group of wolves separating from the others and lingering near the discarded leftovers around primitive human residential communities thousands of years ago, since the leftovers contained material that could be used as food for those wolves. Naturally, a wolf with the tameness trait gets closer to the human and gets more food than the frightened wolf. More food means a better chance of surviving and passing genes to the next generation. In this way, natural selection established the traits of friendliness and closeness to humans in these animals across generations until they became domesticated, and today we refer to them as dogs. This indicates the truth that is unseen.

> Behavioral biologist Raymond Coppinger and Lorna Coppinger (2001) have taken Morey's model of the dog's self-domestication a step further. They envision the following scenario for dog domestication. First, agriculture created human settlements, a way of living that contrasted with nomadic hunter-gatherer lifestyle. In every human village, there will be discarded products such as bones, carcasses, grains, fruits, as well as human waste. The Coppingers argue that this human dump site became the first niche for some wolves. These wolves would frequent the garbage dump to gain access to the new food source. Those wolves that were less frightened by humans tended to be more successful in making a living this way because they would waste less energy evading humans when they saw them approach. Such wolves by definition were more tame, thereby leading to the early association of wolves and humans, which ultimately led to the domestication of dogs. (Wang 2010, 164-65).*

*. Professor Ray Coppinger was a professor of biology at the Cognitive Science Department of Hampshire University, Massachusetts, until 2006. He is now he an honorary student at Boston University.

God Almighty says: ﴿O children of Adam, We have lowered clothing to conceal your private parts and as adornment …﴾ Quran Chapter "The Heights" 7:26.

To lower clothing means to bring down its material, which is plants, animals or chemical substances. These would not have existed on the earth or in this physical world if their ideal form had not been brought down, so they were formed in this world in that form. It also means to lower the ability and knowledge that enabled humans to manufacture and develop clothing until reaching the stage of manufacturing special fabrics using nanotechnology.*

Note: The Bible, Old and New Testaments, and the Torah stories in particular, contradict the theory of evolution. The creation of Eve from the rib of Adam is one example of this contradiction that will be discussed later.

> 21 So the LORD God caused a deep sleep to fall upon the man, and while he slept took one of his ribs and closed up its place with flesh. 22 And the rib that the LORD God had taken from the man he made into a woman and brought her to the man. (Genesis 2:21-22)

However, we believe that the Old Testament has been subjected to distortion. For this reason, conflict between the Old Testament text with the theory of evolution doesn't mean that the divine religion is invalid.

Research on the Relationship Between Incest and Evolution

Those who claim to represent religion have floundered when trying to identify the spouses of the sons of Adam pbuh. Most of them not only say that brothers married sisters, but also that Eve was created from the rib of Adam. This is present in Judaism and Christianity and it has been passed on to the Sunni school of thought. Therefore, what they have done in the first instance is to make humanity a product of the marriage of Adam to a part of his own body, and then they made it a product of incest between brothers and sisters. This issue is used by the atheist proponents of evolution to argue against the claimants of faith who support the idea of direct creation. Scientifically, it is known

*. For example, certain fire resistant fabrics or fabrics minimally affected by temperature.

that higher apes avoid incest, so how would God create a human being who would, at the beginning of creation, practice incest?!

This argument cannot be directed against the Imams of Ahl al-Bayt pbut since they have rejected this slander of Adam and his children. However, some Shiites who have interpreted the Quran have unfortunately adopted this slander under the pretext of it agreeing with what they imagine the the literal of the Quran to be, and that is mentioned in some of the religious accounts, even though the Imams pbut clarified how a contradiction should be resolved. So, how did these Shia overlook the matter of taqiyya and the rule that guidance lies in opposing them, which the Imams pbut confirmed, when it comes to these contradictions? We will respond to this issue by examining opinions and clarifying the truth.*

The Jews and Christians

The Jews and the Christians believe that the progeny of Adam pbuh are a product of incest and of the marriage of brothers to sisters, and that Eve was created from the rib of Adam's body. This perverted belief originated from them and then passed on to the Sunnis and some of the Shia.

The Old Testament (the Torah) states the following concerning the creation of Eve:

> 21 So the Lord God caused a deep sleep to fall upon the man, and while he slept took one of his ribs and closed up its place with flesh. 22 And the rib that the Lord God had taken from the man he made into a woman and brought her to the man. (Genesis 2:21-22).

Antonios Fekry states the following in his interpretation of this Old Testament verse:

> God made Eve from the rib of Adam. The rib is adjacent to the heart and underneath the arm so that he can surround her with his love and protect her with his arm. She is not made from his head so that she will not act conceitedly toward him. She is also not made from

*. In both Sunni and Shia Islam, taqiyya, literally fear or caution, is a form of religious dissimulation, or a legal dispensation whereby a believing individual can deny his faith or commit otherwise illegal or blasphemous acts while they are in fear or at risk of significant persecution.

> his foot so that he will not step on her. Notice the way of God: God took a rib from Adam, that is to say, God deprived him of something, namely one of his ribs. Yet, what did He give him afterwards? An equivalent support. As such, for everything God deprives us of, He compensates us with multiple blessings. (Fekry 2012, 152-161. Arabic source, translated).

Priest Tadros Yaqoub states:

> He told us about His creation of Eve as a sole wife of Adam. He brought her for him from his side, after he made him fall asleep … So Adam saw that she was a bone from his bones, and flesh from his flesh. And he called her woman because she was taken from man. (Yaqoub 2012. Arabic source, translated).

It is mentioned in the Old Testament (the Torah), concerning the offspring of Adam:

> 17 Cain knew his wife, and she conceived and bore Enoch. When he built a city, he called the name of the city after the name of his son, Enoch. (Genesis 4:17).

Explaining this Old Testament verse, Antonios Fekry says:

> Cain's wife was his sister. God allowed this in the beginning in order to establish offspring. Enoch was the third-generation descendant of Adam from Cain's side. He had almost the same name as Enosh, the seventh-generation descendant of Adam from Sheth's side. (Fekry 2012, 152-161. Arabic source, translated).

It will be explained how these corrupt ideologies contradict established biological facts, as well as how they place the human at a level beneath chimpanzees, gorillas, and other animals that avoid incest.

Claims made by Sunni Clerics

Many Sunni clerics and commentators agree with the Christian and Jewish belief concerning the creation of Eve and the lineage of Adam. In their view, Eve, the wife of Adam pbuh, was created from his rib, and the sons of Adam married his daughters. In other words, they believe Adam mated with himself, and that the prophets, the successors,

and the lineage of Adam are a result of incest. This is an example of their pronouncements and statements on the subject:

> The woman was created from a crooked rib:
>
> Question: The Prophet pbuh said, "Treat women kindly, for the woman was created from a rib."
>
> Sheikh Shaib al-Arnaut, in his research and commentary on the book Riadh Al-saliheen [The Gardens of the Righteous] by Imam Al-Nawawi, says the following about this hadith: "This statement is an analogy, as it was stated in the second religious account, 'the woman is like the rib'. It does not mean the woman was created from the rib of Adam, as some have imagined. In the authentic Sunna, there is nothing of the sort.'"
>
> Honorable Sheikh, this is exactly what Sheikh al-Arnaut said, although the prophet pbuh literally and explicitly says the woman was created from a rib. I think evidence of that is in God Almighty's saying: ﴿O mankind, fear your Lord, who created you from one soul and created from it its mate﴾ Quran Chapter "The Women" 4:1, and His saying: ﴿It is He who created you from one soul and created from it its mate﴾ Quran Chapter "The Heights" 7:189 and: ﴿And of His signs is that He created for you from your souls mates﴾ Quran Chapter "The Romans" 30:21, and: ﴿And God has made for you from your souls mates﴾ Quran Chapter "The Bee" 16:72. The commentators have said that this is referring to women. Thus, Eve was created from the rib of Adam pbuh.
>
> Honorable Sheikh, is what Sheikh al-Arnaut said true or false? What are your instructions concerning the hadith he used as an argument: the woman is like a rib? If you straighten her, you break her. If you enjoy her, you do so, although there is crookedness in her?
>
> Answer 1: It appears from the hadith that the woman, Eve pbuh, was created from the rib of Adam. This does not contradict the other hadith in which the woman is likened to a rib. The point to be derived from this is that it is 'likening', and that she is bent like a rib, because the rib is her origin. This means that the woman was created from a bent rib, so it cannot be denied that she is bent. Moreover, if the husband wanted to straighten her, that would lead to discord and separation, which would break her. If he were patient with her poor state, weakness of mind, and other aspects of her 'crookedness', the relationship would last and the companionship would continue. This is explained in hadith commentaries, including those by Al-Hafith Ibn Hajar, may God have mercy on all of them. This shows that denying the creation of Eve from the rib of Adam is incorrect. God supports, and may the prayers and blessings of God be upon our Prophet Mu-

hammad, his progeny and his companions.

The permanent committee for scientific research and issuing fatwas:
President: Abdul Aziz bin Abdullah bin Baz
Vice-president: Abdul Aziz Aal Al-Sheikh
Member: Abdullah bin Ghadyan
Member: Saleh Al-Fawzan
Member: Bakr Abu Zaid (Alifta.net 2016)

Concerning the marriage of brothers and sisters (incest), Ibn Kathir said:

> It has been said that God Almighty allowed Adam pbuh to wed his daughters to his sons because it was necessary. However, it was said that within each womb, there was a male and a female, so he would wed the female of one womb to the male of the other. The sister of Abel was praiseworthy, and the sister of Cain was lowly. Therefore, he wanted to keep her for himself, and not for his brother. Adam refused unless they offered a sacrifice. The one whose sacrifice was accepted could have her, so they both offered a sacrifice and Abel's was accepted, while Cain's was not. Their issue was as God Almighty said in His book.
>
> Commentators have interpreted this as follows:
>
> The companions of the Prophet said: "Every child Adam sired had a maiden born with him. He would wed the son of that womb to the maiden of the other, and would wed the maiden of that womb to the son of the other. He had two sons named Cain and Abel. Cain was an owner of plants, and Abel was an owner of cattle. Cain was the older of the two brothers and had a sister who was better than Abel's sister. Abel asked to marry Cain's sister, but Cain refused, saying, 'She is my sister, she was born with me, and she is better than your sister.' Thus, his father commanded him to wed her to Abel, yet he refused. They made a sacrifice to God Almighty to determine which one was more worthy of the maiden. Adam pbuh was absent from among them. He had gone to Mecca in order to see that place. God Almighty said, 'Do you know that I have a house on earth?' He said, 'O God, no.' God said, 'I have a house in Mecca, so go to it.' So Adam said to the heavens, 'Protect my children faithfully,' but they refused. He asked the earth, and it refused. He asked the mountains, and they refused. So he asked Cain, and Cain said, 'Yes. You will go, return, and find your family in a condition that will please you.' So when he set off, they offered the sacrifice. Cain was proud of his sacrifice, and

> he said, 'I am more worthy of her than you. She is my sister, and I am older than you, and I am my father's successor.' When they offered the sacrifice, Abel offered a fattened animal, and Cain offered a bundle of grain. He found fine grain inside it, so he ate it. Fire then came down and consumed the sacrifice of Abel, while it left the sacrifice of Cain. Cain became angry and said, 'I will kill you so that you will not marry my sister.' Abel said, 'God accepts from the pious ones.'
>
> Ibn Abbas said, "It was commanded that a woman be prohibited from marrying her twin brother, while it was also commanded that he wed her to another brother. In each womb, he had a man and a woman. He had a praiseworthy woman and another who was ugly and lowly. Thus, the brother said of the lowly one, 'Let me marry your sister, and I will let you marry my sister.' He said, 'No. I am more worthy of my sister.' So they offered a sacrifice, and the lamb was accepted, and the grains were not, so the owner of the grains killed the owner of the lamb." (Ibn Kathir 1999, Interpretation of Quran Chapter "The Table Spread", Verses 27-31, 112, Arabic source, translated).

It will be explained that these ideologies are corrupt and go against science, and that those who believe in them have deviated from the truth. It will also be demonstrated how they placed the human at a level beneath other animals.

Statements of Some Shia Clerics

Some of the Shia clerics have followed in the footsteps of Sunni scholars. They have no problem saying that mankind is a product of sibling marriage (incest). I will relay some of their statements:

In *Tafsir Al-Mizan* [Interpretation of the Scales], Muhammad Husayn Al-Tabatabai said:

> Concerning the procreation of the second generation of humans:
>
> The first generation of mankind–Adam and his wife–procreated by mating. Eve gave birth to sons and daughters (brothers and sisters). Is it the case that their lineage is through mating with each other incestuously, or is it by a different path? This is the literal saying of the Almighty: "dispersed from both of them many men and women", based on the approximation above, that the existent lineage of humans indeed goes back to Adam and his wife, without any other male or female sharing that with them. The Quran only mentioned both of them dispersing. If others did likewise, He would have said

> 'dispersed from them and from others', or have mentioned it with alternative wording. It is known that the restriction of the concept of lineage with Adam and his wife necessitates their sons mating with their daughters.
>
> The Islamic verdict is that incest is forbidden, as it is stated in the texts. However, this is a verdict for human benefit and avoidance of harm. It is not a formative one that cannot change. It is in the hands of God Almighty, He does whatever He wishes, and He rules however He wishes. Therefore, it is acceptable that He allows it for a day due to a necessity, and then forbids it subsequently, when it is no longer necessary, in order to avoid spreading obscenity in society. (Al-Tabatabai 1997, vol 4, 144-145. Arabic source, translated).

Al-Tabatabai inferred that people are a product of incest between the sons and daughters of Adam pbuh, by using an apparent meaning of God Almighty's saying, ﴿dispersed from both of them, many men and women﴾, because the verse didn't mention any origin for the lineage other than them!

In truth, this verse is speaking literally about the souls in the first heaven, or the paradise where Adam pbuh was created. Therefore, even if we were to say that the verse indicates restricting the lineage to Adam and Eve, it would still be referring to souls. It clearly shows that the soul of Eve was created from the soul of Adam pbuh. This creation means that her soul was split from the soul of Adam pbuh, rather than Eve's body being created from a part of Adam's pbuh, as stated in the Old Testament and as certain Sunni clerics believe.

The creation of the earthly Adam pbuh, or his being lowered to earth, came after the creation of his soul.

As such, the soul of Adam pbuh was created in the heavens from raised wet clay, and the spirit was breathed into it.

Then Eve's soul pbuh was created from Adam's pbuh.

Afterwards, the rest of the souls of Adam's children pbuh were created from both of them, including the souls of the wives of the two sons of Adam, as the verse clearly shows. The Almighty said:

> ﴿O mankind, fear your Lord, who created you from one soul and created from it its mate and dispersed from both of them many men and women. And fear God, through whom you ask one another, and the kinship. Indeed God is ever over you an Observer.﴾ Quran Chapter "The Women" 4:1.

Generally, the literal meaning of the verse cannot be used as evidence that mankind is a product of marriage between brothers and sisters (incest), as claimed. Even those who don't accept what I have just presented—despite the fact that it is very clear—concerning the meaning of the verse, and that it is speaking literally about the souls, ﴿created you from one soul and created from it its mate﴾, must admit that what we have presented is a another way to understand it. As such, the literal meaning has now become ambiguous for them, and they cannot use it as a source for their belief, since ideology cannot be derived from that which is ambiguous.

In addition, we quote a statement of another Shia cleric, Nasser Makarim Shirazi:

> How did the marriage of Adam's children take place?
>
> The Almighty said: ﴿dispersed from both of them many men and women﴾. We learn from this phrase that the spreading of the lineage of Adam and their reproduction was only through Adam and Eve with no third entity intervention.
>
> In other words, the existent human lineage goes back to Adam and his wife, without any other male or female sharing that lineage with them.
>
> This implies that the children (brothers and sisters) of Adam intermarried, because if human lineage had multiplied by their marrying of others, the saying of the Almighty ﴿from them﴾ would be incorrect.
>
> This issue has been discussed in several hadith as well. There is nothing to wonder about. According to the inference made in a collection relayed from Ahl al-Bayt pbut, this marriage was permissible, as there was no verdict yet that it was forbidden for a man to marry his sister.
>
> It is self-evident that something is only forbidden if God Almighty forbids it. Therefore, there is nothing against Him allowing something at a certain time due to urgent necessity and particular interests and then forbidding it at a later time.
>
> However, it has been stated in other hadith that the sons of Adam did not marry their sisters, so this puts a heavy responsibility on those who see it this way and have this belief.
>
> If the case is such that we must follow what agrees with the literal meaning of the Quran, then when these hadith contradict each other, we must choose the first belief, because it agrees with the literal of the

present verse, as I have previously explained.

There is another possibility here that states the children of Adam married from the remaining humans who preceded Adam and his lineage. In this and certain other religious accounts, Adam was not the first human to inhabit the earth.

Scientific studies and investigations reveal today that mankind has lived on the earth for an extremely long time, whereas Adam did not appear on the earth so long ago. Thus, we must accept the theory that says that other humans lived on the earth before Adam, while the disappearance of the last of them coincided with the appearance of our Adam. So what could stand in the way of the children of Adam having married the last of the preceding human species that was at the final stages of its extinction?

However, this possibility also contradicts the literal meaning of the present verse (This research needs further expansion for which there is no room here.) (Al-Shirazi 2000, vol 3, 82. Arabic source, translated).

They say that a collection of religious accounts state that mankind is a product of incest. They assigned more weight to the religious accounts of incest because they agree with what they imagined the Quran to mean. They took the verse to refer to the bodies and to pertain exclusivity to Adam and Eve. On the other hand, it is obvious from what it literally means that it is referring to the soul, rather than the body. As it says, ﴿He created you from one soul and created from it its mate﴾. At the same time they overlooked the fact that, whether intentionally or not, the religious account to which they assigned more weight agrees with the belief of the opponents of the progeny of Muhammad pbuhap. Many of the religious accounts of Ahl al-Bayt that agree with the opponents were only issued out of taqiyya, and there is also the rule that guidance lies in opposing those who oppose Ahl al-Bayt. Therefore, what should have been done was to assign no weight to the religious account of incest because it agrees with those who oppose the progeny of Muhammad pbuhap, the Jews and Christians—the people of false ideologies. During conflict, guidance lies in opposing them. Therefore, the religious accounts refuting incest should have been accepted.

In addition, I have found that Al-Tabatabai used the account of "Al-Ihtijaj" as evidence to draw his conclusions:

In "Al-Ihtijaj", Al-Sajjad pbuh described the marriage of Abel to

> Loza, the sister of Cain, and the marriage of Cain to Aqlima, the sister of Abel. He was asked if they had children together, and he replied, "Yes." He was told, "That is what the Magi do." He then said, "The Magi did this after God had forbidden it. Do not disregard it, as it is among God's verdicts. Did God not create the wife of Adam from him, then allow him to marry her? That was a part of the divine laws at their time. God forbade it afterwards."
>
> I say: What is mentioned in this hadith concurs with the apparent meaning of the Quran. However, there are other hadiths that contradict it, stating that they married women of paradise and Jinn who were sent down to them. I have recognized the truth in them where this issue is concerned (Al-Tabatabai 1997, Vol. 4, 150-151. Arabic source, translated).

If we look closely at the account of Al-Ihtijaj, we find it mentions that Eve was created from a part of Adam's body. This means they believe this as well, because the religious account they have relied on clearly says that Eve was created from a part of Adam's body, just as the Old Testament and the Sunnis state.

> Ali Ibn al-Hussain pbuh said:
>
> "When God forgave Adam, Adam had sexual relations with Eve. Adam had not done that since they were created, and only did so on the earth after God forgave him. Adam would sanctify the House and its holy surroundings, so if he wanted to approach Eve he would leave the premises and take her with him. Once he went past the premises, he would approach her where they resided. They would then wash out of respect for the House and return to the courtyard of the House. Adam had twenty males and twenty females born from Eve, a male and female in each pregnancy. From the first pregnancy, Eve gave birth to Abel and a girl named Aqlima. From her second, she gave birth to Cain and a girl named Loza. Loza was the most beautiful of Adam's daughters. When they came of age, Adam feared there would be a conflict between Abel and Cain, so he called to them and said, 'I want to wed you, Abel, to Loza, and you, Cain, to Aqlima.' Cain said, 'I do not agree with that. Would you wed me to Abel's ugly sister and wed Abel to my beautiful sister?' Adam said, 'I will decide this between you by drawing lots. If Cain's lot is cast upon Loza, I will wed him to her. If it is cast upon Aqlima, I will wed him to her.' They both agreed to that, so they cast lots. Abel's was cast upon Loza, Cain's sister, while that of Cain was cast upon Aqlima, Abel's sister. Thus, Adam wed them, as God willed.

> God forbade the marriage of siblings after that.' He was asked if they had children together, and he replied, 'Yes'. He was told, 'That is what the Magi do today.' So al-Sajjad said, 'The Magi did this after God had forbidden it. Do not disregard it, as they are among God's verdicts. Did God not create Adam's wife from him, then allow him to marry her? That was a part of the divine laws at their time. God forbade it afterwards.'" (Al-Tibrisi 1966, vol 2, 43-44. Arabic source, translated).*

We will mention clear religious accounts from the progeny of Muhammad pbut wherein they reject marriage between siblings and they don't accept anyone saying that the children of Adam practiced it in spite of the fact that animals avoid it, as has been scientifically proven today in the communities of chimpanzees and gorillas, who for the most part avoid incest. So how can those who call themselves men of religion attribute incest to humans?!

Does it make sense that they reject evolution because they oppose the idea that humans and chimpanzees have a common ancestor, or that the distant origin of the human body is an ape, while at the same time placing the modern human—particularly Adam and his children—at a level far lower than the apes, in such a way that the mating of brothers and sisters, typically avoided by chimpanzee and gorilla communities for millions of years, would be practiced and accepted, according to them, by humans? Indeed, we are not talking here about just any human, but rather Adam, the prophet of God, and his children, the successors pbut.

The Incest Argument and Agreement between Religion and Evolution

I am putting forth the argument and the reply in order to shed light upon the truth and minimize room for objection.

Essentially, the incest argument that is used against evolution is as follows:

> If evolution were true, then Adam or one of his Adamite fathers preceding him might be a product of incest, as there was no divine law forbidding it, so incest would become prevalent in those communities as would be expected in the absence of a divine law forbidding it.

*. The House is one of many names used to refer to the Ka'aba in the Quran and the religious accounts. Other names include the Sacred House and the House of God.

If that is the case, why wouldn't incest become prevalent in those communities, as would be expected in the absence of a divine law forbidding it?!

Those who don't believe that humans are a product of incest between Adam's sons and daughters can argue that science and religion agree with each other, but the religious scholars can't, because they consider incest as natural and they consider incestuous marriage in Adam's time to be lawful. So neither the Jewish or Christian scholars, or the majority of Sunni and Shia scholars or interpreters, can use this argument, because they believe that all of mankind is a product of incest. According to their ideology, the sons and daughters of Adam married each other, and mankind is the product of this mating that contradicts the biological composition of the body that rejects incest.

In the eyes of the progeny of Muhammad, this statement is perverted and false. The Imams of the progeny of Muhammad pbuh have made its falsehood clear, and there are religious accounts in which they pbut clear Adam and his progeny of this perversion, saying that incest was forbidden under the laws of Adam pbuh.

> Abu Abdullah pbuh said: "Seth was born to Adam, and his name was 'The gift of God'. He was the first Adamite successor on the earth. Japheth was born to Adam after Seth. When they reached adulthood, God Almighty wanted to reach the lineage that you see today and to forbid the marrying of brothers and sisters that had been written by the pen, so on a Thursday afternoon, God sent down a woman from paradise who was called Nazla. God Almighty commanded Adam to wed her to Seth. He did so. On the afternoon of the following day, He sent down a woman, called Manzala, from paradise. God Almighty commanded Adam to wed her to Japheth. He did so. A boy was born to Seth and a girl was born to Japheth. God Almighty commanded Adam to wed Japheth's daughter to Seth's son, when they came of age He did so. In due course, the finest of prophets and messengers were born among their descendants. God Almighty, protect us from what they say about the matter of brothers and sisters." (Al-Sadooq, Man Laa… 1983, vol. 3, 381, Hadith 4337. Arabic source, translated).

Certain religious accounts mention that the wives of Adam's righteous sons were women from paradise. They describe the souls of these women as being connected to their bodies, just as the soul of Adam

was connected to the earthly human body, which was the beginning of the journey of Adam and his offspring on the earth. However, this soul was created in heaven from raised wet clay, and breathed into, before it was lowered and connected to the body.

The reply to the argument:

It has been made clear from the above that those who can present this argument are the ones who believe in what the Imams pbut said: humankind is not a product of incest or unlawful marriage.

It suffices to say that there is no evidence that a divine law forbidding incest was absent among those first people—before the time of Adam pbuh—among whom Adam pbuh descended. There could have been primary divine commands for those nations that suited their level of awareness. Certainly the Nisnas, or the nations of humans before the time of our father Adam pbuh, had divine commands, at least simple ones befitting their state. No one can affirm that forbidding incest was not a part of their divine law. In fact, there was certainly a prohibition of incest and, according to the accounts, it was applied as well. This law applied to Adam, and to his children as well as his ancestors, who also had divine commands.

In terms of a scientific response to the argument, it has been proven that biological evolution, in general, tends toward preventing incest by selecting the gene that leads to its prevention. In other words, bodies whose genetic plan has a gene that repulses the body from practicing incest would be more capable of surviving. Evolution has clearly and evidently succeeded in preventing it in some cases in nature, and Hominidae is one of these. We believe that development of the genetic plan follows certain laws in order to attain bodies that abstain from incest.

If we take a look at the great ape closest to the human, the chimpanzee, we find that when the female reaches adolescence, she leaves her family in order to go and mate with a male from another family. Doctor Jane Goodall, a highly renowned specialist in chimpanzee communities said:*

No Consortships, either observed or inferred, have involved mothers

*. Dr. Jane Goodall is a British scientist who specializes in primatology, ethology and anthropology. She is considered the world's foremost expert on chimpanzees. She is best known for her 45-year study of social and family interactions of wild chimpanzees in Gombe Stream National Park, Tanzania.

> and sons or maternal siblings. No male has ever been observed to try to take his mother or sister on a consortship. Because the father-daughter relationship is not known, there are likely to be occasions when such pairs go off together. But again, the fact that the older males tend to be less sexually interested in young females of their own community can reduce the likelihood of incestuous consortship of this sort. (Goodall 1986, 470).

> Young females were sometimes reluctant to respond to the courtship of much older males and they suggest that this could be another mechanism for minimizing incestuous mating. (Goodall 1986, 469).

> At Gombe there are permanent transfers, or immigrants (females who have left their natural community to join neighbouring ones), and temporary transfers, or visitors (females who visit neighbouring communities for relatively short periods, usually during consecutive periods of estrus, then return to their original social groups). In addition, certain peripheral females may continue to move back and forth between communities. (Goodall 1986, 86).

> In free-living chimpanzees Jane Goodall has observed incest taboos. Mothers do not allow their sons to copulate with them, sisters do not copulate with their brothers and females do not copulate with older males in their familial group. Though none of these chimpanzees are biologically related, they have grown up in this family group and show no sexual behavior toward one another. (Cwu.edu 2015).

If the individuals of a chimpanzee community avoid incest, and if the incest-avoiding phenomenon exists in the animal kingdom, then what would have prevented it from being prevalent among the Adamite Hominidae communities, or have prevented them from having completely abstained from incest before Adam pbuh, especially since there is a biological deterrent to incest?!

The bodies built by a genetic plan having a gene that results in incest-avoidance will be successful in nature and favored by natural selection. In other words, one possessing this gene would be more fit for survival because the genetic plan that doesn't contain this gene would be prone to extinction and dying out. This is due to recessive lethal genes, whose effect will clearly surface through incest or inbreeding. Bodies built on a genetic plan that doesn't contain the incest-avoidance gene would be less capable of raising offspring than others, because

incest leads to a catastrophic increase in the possibility of matching recessive, lethal genes, which would result in the death of the offspring. The genetic plan that allows incest would consequently lose the race of evolution and survival to the genetic plan that prevents it. With time, the genetic plan that builds bodies that avoid incest will be the one that survives, which is why it is normal for female chimpanzees and gorillas to leave their families upon reaching adolescence in order to mate with outsiders and individuals from other families.

> A lethal gene is one that kills its possessor. A recessive lethal, like any recessive gene, doesn't exert its effect unless it is in double dose. Recessive lethals get by in the gene pool, because most individuals possessing them have only one copy and therefore never suffer the effects. Any given lethal is rare, because if it ever gets common it meets copies of itself and kills off its carriers.
>
> There could nevertheless be lots of different types of lethal, so we could still all be riddled with them. Estimates vary as to how many different ones there are lurking in the human gene pool. Some books reckon as many as two lethals, on average, per person. If a random male mates with a random female, the chances are that his lethals will not match hers and their children will not suffer. But if a brother mates with a sister, or a father with a daughter, things are ominously different. However rare my lethal recessives may be in the population at large, and however rare my sister's lethal recessives may be in the population at large, there is a disquietingly high chance that hers and mine are the same. If you do the sums, it turns out that, for every lethal recessive that I possess, if I mate with my sister one in eight of our offspring will be born dead or will die young. Incidentally, dying in adolescence is even more 'lethal', genetically speaking, than dying at birth: a stillborn child doesn't waste so much of the parents' vital time and energy. But, whichever way you look at it, close incest is not just mildly deleterious. It is potentially catastrophic. Selection for active incest-avoidance could be as strong as any selection pressure that has been measured in nature.
>
> Anthropologists who object to Darwinian explanations of incest-avoidance perhaps do not realize what a strong Darwinian case they are opposing. Their arguments are sometimes so weak as to suggest desperate special pleading. They commonly say, for instance: 'If Darwinian selection had really built into us an instinctive revulsion against incest, we wouldn't need to forbid it. The taboo only grows up because people have incestuous lusts. So the rule against incest cannot have a "biological" function, it must be purely "social".' This

> objection is rather like the following: 'Cars don't need locks on the ignition switch because they have locks on the doors. Therefore ignition locks cannot be anti-theft devices; they must have some purely ritual significance!' Anthropologists are also fond of stressing that different cultures have different taboos, indeed different definitions of kinship. They seem to think that this, too, undermines Darwinian aspirations to explain incest-avoidance. But one might as well say that sexual desire cannot be a Darwinian adaptation because different cultures prefer to copulate in different positions. It seems to me highly plausible that incest-avoidance in humans, no less than in other animals, is the consequence of strong Darwinian selection.
>
> Not only is it a bad thing to mate with those genetically too close to you. Too-distant outbreeding can also be bad because of genetic incompatibilities between different strains. Exactly where the ideal intermediate falls is not easy to predict. Should you mate with your first cousin? With your second or third cousin?
>
> Patrick Bateson has tried to ask Japanese quail where their own preferences lie along the spectrum. In an experimental set-up called the Amsterdam Apparatus, birds were invited to choose among members of the opposite sex arrayed behind miniature shop-windows. They preferred first cousins over both full siblings and unrelated birds. Further experiments suggested that young quail learn the attributes of their clutch-companions, and then, later in life, tend to choose sexual partners that are quite like their clutch-mates but not too like them.
>
> Quail, then, seem to avoid incest by their own internal lack of desire for those with whom they have grown up. Other animals do it by observing social laws, socially imposed rules of dispersal. Adolescent male lions, for instance, are driven out of the parental pride where female relatives remain to tempt them, and breed only if they manage to usurp another pride. In chimpanzee and gorilla societies it tends to be the young females who leave to seek mates in other bands. Both dispersal patterns, as well as the quail's system, are to be found among the various cultures of our own species (Dawkins 1989, 293-94).

The result is that our bodies are biologically built to avoid incest. This is a natural outcome of evolution and survival of the fittest genes in the competitive race between them. It has been proven by experimentation that some animals avoid incest—invalidating the ideology of the Jews, Christians and the Sunni jurists, as well as the Shia clerics who adhered to their doctrine—proving the truth stated by the progeny of Muhammad pbut over a thousand years ago.

Does Anyone Do Justice to the Progeny of Muhammad pbut?

For anyone searching for the truth, it would suffice to look at the accounts concerning this fact from the progeny of Muhammad pbut, which are over a thousand years old, and have been subsequently been proven by modern science. Indeed, they pbut opposed the prevailing falsehood of their time, that mankind is a product of incest and the marriage of siblings. While the rest of the Muslim sects say that humankind is a product of marriage between brothers and sisters, we find that the progeny of Muhammad pbut demonstrate clearly that this is incorrect. Instead, Adam's two sons pbuh married women to whom they were not related to a degree that would forbid their marriage.

Sheikh Al-Sadooq, in the chapter "Explaining How the Offspring Began" of his book *Illal Ash-Sharai* [The Reasoning of Islamic Law], said:

Abu Abdullah pbuh was asked how the offspring of Adam pbuh began, since some people say that God Almighty inspired Adam pbuh to wed his daughters to his sons, revealing that all of humankind is the product of marriage between brothers and sisters.

> Abu Abdullah pbuh said: "God Almighty is far above that. Whoever says this is actually saying that God Almighty made His finest creation, His beloved ones, prophets, messengers, vicegerents, believing men and women, and Muslim men and women, all come from a forbidden act, and that God Almighty did not have the ability to create them from something permissible, yet he took their pledge on what is permissible and pure. By God, I learned that an animal copulated with his sister after she changed beyond recognition. When her identity was revealed and it became known to him that she was his sister, he shredded his own genitals with his teeth and dropped dead."
>
> Then he pbuh was asked about the creation of Eve, as he was told that some people say that God Almighty created Eve from Adam's lowermost left rib.
>
> Abu Abdullah pbuh said, "God Almighty is far above that. Whoever says this is actually saying that God Almighty did not have the ability to create a wife for Adam from anything other than his rib. The people of falsehood say that Adam was copulating with a part of his own body, since she was created from his rib. What is the matter with those people? May God judge between them and us! When God Almighty created Adam from clay and commanded the angels to prostrate to Him, He caused Adam to fall asleep, and then created

> a creature for him and placed her in the pit between his haunches so that the woman would be obedient to the man. She then began to move. When Adam noticed her, she was called upon to step away from him. When he looked at her, he saw a beautiful creature that resembled him, apart from her being female. He spoke to her and she replied in his language. He said to her, 'Who are you?' She said, 'A creature of God, as you can see.' So Adam said, 'O Lord, who is this beautiful creature whose company I am enjoying?' God replied, 'This is my servant, Eve. Would you like for her to be with you, keep you company, talk to you and comply with your wishes?'" He said, 'Yes Lord, and for that I will thank You and praise You for as long as I live.' God Almighty said, 'Ask Me for her hand in marriage, for she is My servant and she may also satisfy your desires.' Then God cast lust upon Adam after He had given him knowledge. Adam said, 'O Lord, I ask You for her hand in marriage. Tell me, what would please You?' God said, 'It would please Me if you were to teach her My religion.' Adam said, 'If that is what You wish, O Lord, then I shall do it.' God said, 'That is what I wish. I wed you to her, so bring her close to you.' Adam asked her to come close, and she said, 'No, you come close to me.' So God Almighty commanded Adam to go to her, and he did. Had it not been for that, women would have been the ones approaching men and asking them for marriage. This is the story of Eve pbuh."
> (Al-Sadooq 1966, Vol. 1, 17-18, Arabic source, translated).

In another hadith, Abu Abdullah pbuh was asked how the lineage of Adam pbuh began, as some say that God Almighty inspired Adam pbuh to wed his daughters to his sons, and that all of humankind is the product of marriage between brothers and sisters.

> Abu Abdullah pbuh said, "God Almighty is far above that. Whoever says this means that God Almighty made His finest creation, His beloved ones, prophets and messengers, believing men and women, and Muslim men and women come from a forbidden act.Whoever says this is actually saying that God Almighty made His finest creation, His beloved ones, prophets, messengers, believing men and women, and Muslim men and women come from a forbidden act, and that He did not have the ability to create them from something permissible, yet He took their pledge on what is permissible and pure. By God, I learned that an animal copulated with his sister after she changed beyond recognition. When her identity was revealed and it became known to him that she was his sister, he shredded his own genitals with his teeth and dropped dead. Another beast unknowingly copu-

lated with his mother and did the exact same thing. So how would a human, with all of his humanity, virtue and knowledge, do that? What happened is that one generation of these creatures you see went astray from the knowledge of the progenies of their prophets and sought knowledge where they were not supposed to, until they reached a high level of perversity and ignorance. You now see how things were in the past, since the beginning of creation, and the things that have always been."

Then he pbuh said, "Woe to them! How could they stray so far from what the clerics of al-Hijaaz and Iraq agree upon that God Almighty commanded with the pen, two thousand years before the creation of Adam, writing on the preserved tablet everything that will be until the day of resurrection? It is written in all the scriptures of God: from that which is forbidden is for brothers to marry their sisters. Among these scriptures, we have the four well-known scriptures in this world: The Torah, the Gospel, the Psalms and the Quran. God sent all of them down from the preserved tablet to His messengers, may the prayers of God be upon them all. He sent the Torah to Moses pbuh, the Psalms to David pbuh, the Gospel to Jesus pbuh, and the Quran to Muhammad pbuhap and to the prophets pbut. None of these books permit that. I honestly say: the only purpose of whoever says that, or anything similar to it, is to strengthen the arguments of the Magi. However, no one will accomplish that, may God fight them." (Al-Sadooq 1966, Vol. 1, 17-18, Arabic source, translated).

The Claim that Eve was Created from the Rib of Adam—Scientifically Confronted

From a scientific standpoint, Eve being created from a part of Adam means that she would have his complete genetic plan, meaning that she would be a male. As such, a miracle would be required here in order to change the gender-determining Y chromosome to an X chromosome in order for the result to be a female (XX) and not a male (XY).

Moreover, since those who make this claim say that the lineage is restricted to Adam and Eve, then all humans should be identical in everything, and the only difference between them would be their gender. This means we should all be a single clone with nothing setting us apart except our gender identification. This is unless they admit that genetic mutations and evolution are true and say that evolution resulted in a change in the genetic plan, meaning that genetic mutation and alteration of traits of the offspring occurred after Adam and Eve.

In fact, their theory is a dead end and this is their only way out. However, it requires them to acknowledge the theory of evolution. Yet, this would make them contradict themselves and refute their theory that Eve was created from Adam, since they cannot say they only acknowledge evolution within the confines of the human body, because speciation or diversity is an inevitable result of the accumulation of mutations and selection over time. Therefore, whoever accepts mutations and a alteration of traits cannot deny that they inevitably result in speciation over time. It is irrational to accept one quarter or one half of evolution; you either accept it entirely or deny it entirely. There is no logical reason behind the foolish statement that evolution can only happen within one species, yet it cannot lead to the emergence of new species. Whoever states this only does so as a result of ignorance in the fields of genetics and evolutionary biology.

Finally, there are those who say that the genetic plan of the part that was taken from Adam was completely changed, and that Eve was then created from it. This means that if you take the chemical material from which the genetic plan of Eve was built from any other place on the earth, it would make no difference. So what would be the reason for and wisdom behind taking a part of Adam, then demolishing it and rebuilding it again? Would it not have made more sense to take the primary substances from any place on the earth, and build the genetic plan of Eve without needing to demolish it?

As a matter of fact, there is no reasonable solution for this issue except what I have explained in the interpretation of the verse: what occurred in heaven, is in the paradise of Adam pbuh, and it pertains to the soul, not the body.

Human Nature and Incest

Those who say that mankind is a product of marriage between siblings (incest) believe that this obscene act—of which the Imams pbut have disapproved—doesn't conflict with human nature.

Al-Tabatabai states:

> The evidence that human nature does not conflict with incest from the aspect of instinctive aversion is that, according to recorded history, it was practiced among the Magi for long periods of time. Furthermore, it is said to be legitimate and common in Russia, as well as

> common—though illegitimate—in Europe. (Al-Tabatabai 1997, Vol. 4, 145, Arabic source, translated).

In other words, Al-Tabatabai is saying that, if a group of people legalized and practiced a certain act for a long time, that constitutes evidence that it doesn't conflict with human nature or instinctive aversion.

I do not believe that I need to comment further regarding evidence at this level of nonsense. Nevertheless, I do want to draw attention to the spread of same-sex marriage (homosexuality and lesbianism). This has taken place particularly in the modern era, to the point where it has been legalized in the civil law of many countries throughout the world. So if a group of people practice homosexuality and lesbianism legally in certain countries, does that mean it doesn't oppose human nature when it comes to instinctive aversion, using Al-Tabatabi's method of inference?!

Research on the Pregnancy of Mary pbuh with a Male (Jesus pbuh)

There are several issues raised by atheists concerning the birth of Jesus pbuh to Mary without a father. Among the most important arguments are:

How did an ovum with a complete number of 46 chromosomes form, despite the fact that it normally has half the number of chromosomes?!

How did an ovum that has a complete set of chromosomes become stimulated to divide, even though when cloning embryos in a laboratory, if the nucleus of an ovum is replaced with a nucleus having complete chromosomes, it requires external stimulation in order to begin dividing and growing?

How did it result in a male, despite the fact that it is an ovum of a female? Normally, a female has a pair of X chromosomes (XX) and no Y chromosome that can result in a male. In other words, a female cannot produce a male. The determiner of the male sex is the male, because he carries the XY pair of chromosomes.

Before we begin to respond to these questions, we must briefly clarify how the sex of a fetus is determined. A normal human has 46 chromosomes. A female has the two sex chromosomes XX, whereas a male has the two sex chromosomes XY. Therefore, a normal female is

usually designated as 46,XX, while a normal male is usually designated as 46,XY.

The division of chromosomes during reproduction produces two groups of sperm: types X and Y. The ovum is usually type X because the female doesn't have a Y chromosome.

At the time of fertilization, the sperm and the ovum come together to form the fetus.

If sperm Y unites with ovum X, the result will be a male.

If sperm X unites with ovum X, the result will be a female.

There is a genetic mutation called androgen insensitivity syndrome that affects androgen receptors in the fetus with the chromosomes 46,XY. This mutation reduces the effect of the male sex gene, and therefore a feminine reproductive system forms. The condition of a person afflicted with this syndrome depends on the type of mutation involved and the extent to which it affects the androgen receptors. Therefore, this person could either have both male and female genitalia—albeit incomplete—or just one of the two. For the most part, they have female characteristics.

Thus, if a fetus who has the chromosomes of a male (46,XY) suffers from complete androgen insensitivity syndrome, he will be completely female externally. In fact, it is usually difficult to diagnose this syndrome early on without a thorough examination. The unborn child will have female external genitalia. Therefore, he will usually be a female, but without a uterus or ovaries. In other words, she will be a female with an incomplete female reproductive system and she will have an atrophic male reproductive system buried deep within the abdomen.

What concerns us here is that this syndrome clearly indicates the possibility that an XY fetus can exist without the Y chromosome having any effect,, such that he becomes a complete female with complete reproductive organs. Therefore, the issue of a male being produced from the cells of this female without male intervention is normal and consistent with science because she has the chromosomes 46,XY.

With regard to Jesus' pbuh birth from Mary pbuh, we are not saying that it is completely normal for this to occur. However, none of the arguments mentioned above are logically or scientifically impossible. Indeed, some of them can be easily explained scientifically.

For example, it is true that a female doesn't carry a Y chromosome that determines the male sex of the fetus. However, in the case of androgen insensitivity syndrome, a type of genetic abnormality, the

unborn child has X and Y sex chromosomes, while his external appearance is that of a female. What we are saying is that this syndrome can be so extreme in a particular fetus that she will be a female with complete reproductive organs, yet still have X and Y chromosomes.

This refutes the argument that a female can produce only a female on her own.

It is theoretically possible for an ovum to have a full complement of chromosomes, especially in a an abnormal situation, such as when a female has the chromosomes 46,XY.

As for the issue of stimulating the ovum to divide, it can happen by means of the radiation that surrounds us, and bombards our bodies from every direction. Sometimes, when the radiation has enough energy, it can cause cellular abnormalities and genetic mutations in the cells of some people, resulting in the development of cancer. Stimulating the ovum to divide with an external stimulus is actually done in laboratories during cloning. After the nucleus of the ovum is replaced with a cell nucleus that has a complete set of chromosomes, the ovum is artificially stimulated to divide using an external stimulus in the laboratory.

Therefore, all of these arguments have been refuted and have been thoroughly explained through science.

In addition, there is Klinefelter syndrome, a condition in which there is an increase in the number of female sex (X) chromosomes. It is usually denoted as 47,XXY, meaning that the affected individual has an extra X chromosome. There are severe variants of Klinefelter syndrome such as 49,XXXXY. In this case, the mother's affected ovum would have an additional doubling of the already doubled X chromosomes. Therefore, her affected son would have twice the number of already doubled X chromosomes. Another condition is mosaic Klinefelter syndrome,in which there is a mixture and mosaic of chromosomes and this individual would have chromosomes 47,XXY/46,XX. Of the last two conditions,especially the latter rarely-occurring one, we can assume that it combined with androgen insensitivity syndrome, and resulted in a female with complete female reproductive organs who simultaneously carries a Y chromosome that does not affect her gender. the latter condition is extremely rare, and we can assume that it is combined with androgen insensitivity syndrome. The result of the combination of these two syndromes would be a female with complete

reproductive organs who simultaneously carries a Y chromosome that does not have any effect on the sex of the fetus.

CHAPTER FOUR

THE THEORY OF EVOLUTION AND RATIONAL EVIDENCE FOR THE EXISTENCE OF THE LORD OR GOD

The Theory of Evolution and the Fallacies of Dividing it up and Denying the Existence of God

For evolutionary biologists, the theory of abiogenesis and the theory of evolution provide a reasonable explanation supported by scientific evidence that life on the earth began from chemical substances that assembled in a form capable of self-replication. These were the first replicators that gradually evolved over millions of years, proving that nature is the cause of the emergence of life on the earth. This means that if we consider living creatures to be an effect, they indicate a cause, not an unseen cause, but rather a familiar cause—the nature that exists around us. Thus, the creator of these living creatures is nature, and nothing else.

The theorizing atheists say they have a complete explanation of how life emerged and evolved on the earth, so they don't need to assume the existence of a force that is invisible or outside the known forces of nature—or a god—in order to explain life and its evolution on the earth. The emergence of life from nonliving substances has been proven in the laboratory, even if only to a limited extent, and evolution and development have been proven with scientific evidence, so life on the earth is a natural result, rather than the result of the existence of a god.

As a matter of fact, the scientific explanation for life on the earth proves the existence of a god—not the opposite. If we scrutinize the theory of evolution (abiogenesis and development), we find that it is a process of implementing the purposeful, law-abiding genetic plan, making it an indicator of a purposeful lawmaker. Therefore, not only do they not conflict, but they completely agree with the rational evidence provided by the Quran to prove the existence of a god, specifically, that "the attributes of an effect indicate the attributes of its cause." Therefore, evolution is entirely purposeful.

However, what evolutionary biologists and Dawkins (who theorizes for atheism) do is perform a trick of dividing up a single massive entity, because nature (i.e the environment we live in) and us are a single entity. In other words, nature and the replicators are a single entity, or let us say, they are all parts of a single entity. As a result, the combination of these parts (i.e this entity) is definitely purposeful. That is why Dawkins intentionally divided up this entity so that he could say, "Look, they appear to be purposeful when they are combined, but as a matter of fact, they are not like that!"

What Dawkins did was like going inside the body of a human who is running for a specific purpose then saying, "Look here, this heart is pumping blood vigorously because the muscles need oxygen and nutrients, the kidneys are eliminating urea from the body, the liver is eliminating poisons from the body, the stomach is digesting food, and so on. All of this isn't in order to keep the body alive, but rather each organ has a short-term purpose within the limits of its functions. Each is blind to the life of the body and therefore not purposeful in the long- term, so there is no purpose." In truth, they are purposeful as a whole, so it is the purpose of all of the processes together, and not just some of them.

Since Dawkins and the promoters of atheism set out from a position of denial, rather than doubt, they divided evolution according to their own perspective. They said, "Look, there is random genetic mutation, and there is non-random natural selection that only has a short-term purpose, since what happens is that the natural environment selects the most fit to live in it, so there is no ultimate or long-term purpose. The product, whether it is final or intermediate, resulted from the accumulation of the products of this process over time, so it is a blind process after all, not a purposeful one."

Had they not set out from belief in atheism and disbelief in the existence of a god, but had instead set out from doubt in the existence of a god, and had they looked at evolution as a single entity, they would have seen that it proceeds based on an elaborate, productive system. This is analogous to the best foundry one could imagine. In a foundry, pieces of metal don't come out refined from the casting site. Rather, they undergo several procedures, including refining and perhaps cutting, until they come out in the final desired shape. The same holds true for evolution. Moreover, had they considered evolution as a single entity, they would have found it purposeful, since it is productive.

Indeed, evolution produced intelligence, and consequently wisdom, altruism, and morals. One cannot give something that they don't have, so if it wasn't purposeful, and if it didn't have a lawmaker behind it, it wouldn't have given rise to such valuable products.

Unfortunately, by dividing up evolution and looking at its parts, they cannot see the product as belonging to evolution. What they are doing is no different than a person who divides a large industry into separate production lines so as to focus the attention of the researcher from the ultimate purpose of the industry to the purposes of each short-term production line.

One can view things from different perspectives, and sometimes it completely changes what one sees. A viewing filter placed in front of your eyes can completely change what you see as well. You can only view 3D images through a special viewing filter, or let's say, from a particular viewing perspective. If you refuse to view the images from this perspective, even for the sake of experiment, you certainly won't see the image as being 3D, even though it is 3D, and numerous other people see it as 3D.

Therefore, evolution is a complex, compound process that happens as a single, purposeful entity. Genetic mutations, the surrounding environment, and reproduction are all parts of a single, purposeful entity—evolution. What evolutionary biologists have done for the purpose of scientific research is to divide up evolution, then to view this entity as separate parts. Promoters of atheism, such as Dawkins, used this dividing up of evolution into genetic mutations and natural selection in order to invalidate the purpose of evolution, so that he could say, "Look at what we have, just short-term purposes, no long-term or ultimate purpose, so there is no conscious force behind this process, and therefore there is no god." Nevertheless, the right thing to do is to look it as a whole, and to look at what it has reached, in order for us to clearly see it as purposeful.

Unfortunately, Dawkins and those who use the theory of evolution to prove atheism try to turn a blind eye to the obvious signs that indicate that evolution as a whole is law-abiding. These signs clearly appear to them when they search through the disassembled parts of evolution. They are forced to see the short-term purposes, and forced to see the possibility that these short-term purposes are attributable to natural selection, or even to genes. Moreover, they unwillingly admit that, in the short-term, evolution is law-abiding, not random. This is

because, at the very least, there is the law of survival of favored genes, since there are certainly genes that left the race, and there are others that remained and have been firmly established and refined. Examples are genes that have provided the benefits of strength and speed, or the brain and intelligence.

Settling the Debate: "Evolution Is Purposeful"

We have genes, genetic mutations, and the law of the survival of the best gene—or we can say—the best organism. The difference between the gene and the organism is similar to the difference between the plans for a house and the house itself. The law of the survival of the favored gene improves these sets of genes. We now know, without a doubt, that the absolute best survival machine for life on the earth is the intelligence machine (the brain). Even though the economic cost of the intelligence machine, the brain, is very high for the organism, as it requires a massive amount of nutrients, evolution is ultimately forced to go down this path, i.e to evolve the intelligence machine.

Given that genetic mutations have always existed, genes for building the intelligence machine (the brain, for instance) will become available sooner or later, even if genetic mutations are completely random.

In addition, since the law of survival of the best gene or organism is what governs evolution, we can positively state that evolution has had a direction and purpose from the beginning: to produce the genes for the intelligence machine, or an intelligent being. In other words, evolution is purposeful.*

I believe this thorough explanation is enough to refute the atheistic theory of Dr. Dawkins in the context of life on the earth, which is based on the idea that evolution isn't purposeful in the long-term.

In fact, if we wanted to expand on our previous conclusion and generalize it to any form of life imaginable, we would be able to positively state – according to the law of evolution based on the mutation of replicators, or replicating mechanisms, and the selection of the fittest—that any life, whether similar to life that exists on the earth (built from water, carbon, nitrogen and other chemicals), or on another planet or in another universe and built from ammonia instead of water, or

*. The genes and the living organism are like the plans and the building itself. Therefore, the genes represent the plans, and the living organism represents the product of the implemented plan.

silicon instead of carbon (since it is capable of forming long chains like carbon), the inevitable result of that life would be to produce the intelligence machine. According to the law we know now, this is the inevitable purpose of evolution. It isn't possible for evolution or any life, replicator, or replicating mechanism to avoid reaching this point sooner or later.

We should also keep in mind that any other life in our universe is expected to be based on water and carbon, as water is considered to be the perfect liquid state for accommodating life, because the density of water decreases when frozen, causing it to float, thus enabling life to continue in the liquid water beneath the ice. Hydrogen, oxygen, nitrogen and carbon are the most abundant elements in the universe. Moreover, carbon, unlike other elements, can form weak chains that are easily broken, which is suitable for metabolism and life, unlike silicon chains.

Thus, we have now settled the debate and resolved the disagreement regarding the possibility of proving the existence of a god or a lord using the theory of evolution. We have proven that life has the attribute of purposefulness, as well as that life and evolution are purposeful. Since the attributes of an effect indicate the attributes of its cause, it proves that the cause is purposeful, conscious, and knowledgeable. As such, we have proven the existence of a purposeful, conscious and knowledgeable cause. Consequently, the existence of a lord or a god is proven, whether God is the direct cause or the direct cause is one of the effects of God, which also indicate Him by having the attribute that we have proven: purposefulness. This alone is enough to refute the modern atheist theory, built on the foundation that evolution doesn't have a long-term purpose.

The Intelligence Machine

I said that the purpose of evolution is to reach the intelligence machine, because it is the absolute best survival machine in the fierce competition for survival between genes. Although the existence of seven billion humans on the earth today is enough to prove this fact, I will still discuss this truth briefly for further explanation. If we were to assume that genetic mutation has been random from the start, we would definitely say that it must provide a gene that is suitable for building an intelligence machine. We don't mean by "intelligence ma-

chine" the modern brain of humans and animals, but rather anything that we can imagine to have been the beginning of the brain, such as a single nerve cell. Those possessing intelligence are definitely favored in the competition and will have a greater chance of survival. If those possessing an intelligence machine compete with one another, the organisms with the intelligence machines that provide more intelligence will win the race for survival of the fittest. The emergence of the intelligence machine is inevitable in evolution, as is optimization of it over time. Therefore, we can say that the intelligence machine is an inevitable purpose of evolution. In short, evolution intends to reach intelligence.

I would like to point out that I am not saying that the result of any competition between individuals, or even species, favors the intelligent one. However, what I am saying is that the gene for building the intelligence machine is the one that is favored in competition, and it is definitely the winner of the race.

So, as a result of the nature and circumstances of confrontation, the more intelligent individual—or the one with a better intelligence machine—might lose to a less intelligent individual—that is, one with an inferior intelligence machine, or even no intelligence machine at all.

And the species with a better intelligence machine might lose, due to the nature and circumstances of the confrontation, to a species with an inferior one in the competition for survival.

Nevertheless, once the gene is found for building the intelligence machine and it is incorporated into the genome that builds living organisms, it cannot lose the competition to other genes, and it cannot be discarded from the genome that builds organisms, but will instead progress with a significant rate of acceleration that increases with time, because there is a significant difference between this and other genes in the competition to survive, progress, and to stay in the lead.

The competition between genes isn't limited to survival. Rather, competition even exists between them to stay in the lead within the genome that builds the bodies of organisms. Genes strive to become the greatest in number, even though this competition doesn't happen in an aware or conscious manner. Nevertheless, it still abides by the general law of evolution.

The Rational Evidence provided by the Quran to Prove the Existence of God

What has been mentioned earlier in this chapter is enough to prove that evolution is purposeful, and thus prove that there is someone behind it who wants to reach this purpose. As a result, we proved the existence of a god within the framework of the law, which states: the attributes of an effect indicate the attributes of its cause. This is the case since we have proven that the effect—life on the earth—is characterized as being purposeful. We have therefore proven that its cause has the attribute of being conscious and pursuing a purpose. We also proved the existence of a conscious and knowledgeable god. Yet, in the remainder of this chapter, I will demonstrate that evolution is purposeful even if the theory has been divided up. I shall focus on this, because biologists use the dividing up of evolution, and the atheists among them insist on considering evolution only from this perspective. I find doing that the equivalent of having or seeing with one eye.

With regard to evidence for "nothingness doesn't produce", it must be noted that the effect we should be discussing, to indicate that God is a cause, is the origin of the physical universe and everything beyond it. This cannot be discussed within the limits of Darwin's theory or biology. However, it can be discussed scientifically within the limits of research and theories of physics, which deal with the universe and how it originated. This issue will be explored in detail in Chapter 6.

The First Proof of the Existence of an Absolute God: "The Attributes of an Effect Indicate the Attributes of its Cause"

This includes the evidence of lawmaking: the presence of laws in the effect indicate that its cause is a lawmaker, therefore indicating a knowledgeable cause, and this is what we seek to prove.

This also includes the evidence of systems: the presence of organization in the effect indicates that its cause is an organizer, therefore indicating a knowledgeable cause, and this is what we seek to prove.

This also includes the evidence of purpose: the existence of purpose in the effect indicates that its cause is purposeful, therefore indicating a knowledgeable cause, and this is what we seek to prove.

This also includes the evidence of wisdom: the fact that the effect—whether in speech or action—has the attribute of wisdom indi-

cates that its cause is wise and knowledgeable, and this is what we seek to prove.

In summary, the conclusion is as follows:

When we see something that is organized, we know that its cause is knowledgeable and capable of organization, thus proving the existence of an organizing and knowledgeable cause. When we find a saying or action that is characterized by wisdom, we know that it came from someone wise, which proves the existence of a wise cause. For example, when we see a stand of fruit trees that were planted in an organized way, we deem the planter organized and purposeful, and therefore knowledgeable and conscious of what they are doing, thus we say that it was done by a human being, for example. When we see a forest that has a group of random, unorganized trees, the attribute of randomness of the forest indicates that humans did not plant them.

In general, this evidence can be somewhat applied within the boundaries of life on the earth. There are numerous examples, especially in regards to human beings, given that they are characterized by special attributes that indicate that their original cause is knowledgeable, capable of organization, and purposeful. It is possible for this evidence to have a connection to the theory of evolution.

"The Attributes of an Effect Indicate the Attributes of its Cause" in the Universe We Live in

There is no doubt that a set of physical laws govern the universe. Laws mean that there is a lawmaker. Without a doubt, law leads to order, and order means that there is an organizer.

I will give an example to make the issue clearer: when we see traffic lights at an intersection that organize traffic, we know that there is a conscious, knowledgeable, and organizing force that desires this organization and thus set up these traffic lights. In the same way, we say that the law of gravity indicates the one who set it down, and it is also true for the electromagnetic, and the strong and weak nuclear forces, at their level of presence and magnitude. They all impose universal laws of movement, just as in the intersection example. Had it not been this way, matter would not exist in the universe, and neither would we. Is it reasonable that when we see simple traffic lights, we conclude that traffic or city officials set up the lights at the intersection to organize traffic, and that there is a government behind the officers

that organizes their work, yet we don't conclude that a knowledgeable and wise force set down the universal laws that we have discovered and that have been scientifically proven to us: the laws that we find to be organizing and governing the movement of the entire universe?!

A reasonable person would undoubtedly conclude that an organizer set down those laws that organize the universe. As for the one who insists on denying the wise and knowledgeable organizer, his insistence is merely contemptible stubbornness, showing that he is not much different than the people who insisted that the earth doesn't spin.

Is all of this organization without an organizer?! By God, I wonder about people who believe this, yet say that traffic lights were set down by traffic officials or roads administration. They should be fair to themselves and apply randomness in this case as well, and say that the traffic lights constructed themselves and came to the intersection on their own. Is it reasonable to say that there is an organizer when we see order and laws in one place, but say that there is no knowledgeable organizer when we see order and laws in another?!

To summarize the proof that the attributes of an effect indicate the attributes of its cause, thus indicating the existence of a cause with these attributes, we say:

The atheists and us have both entered the court of human reason with:

The effect = the universe

The attribute(s) of the universe = law and organization

The attribute of the cause = knowledgeable organizer

The cause = unknown

We have studied the universe with modern science and have learned its attributes. Knowing these attributes has allowed us to know the attributes of the one who brought it into existence. Based on his attributes, we have found that he is an organizer (a lawmaker), and thus conscious and knowledgeable.

It has now been proven that there is a cause who is a conscious and knowledgeable organizer.

Therefore, we have proven the existence of the knowledgeable organizer, who set down the laws of the universe, and for us, this is what we seek to prove.

The Attributes of an Effect Indicate the Attributes of its Cause in Life on Earth

There is no doubt that a set of universal physical laws are dominant on and within the earth. Therefore, this too can be used as proof here, as laws are the reason for this productive order, while nature, which carries out selection, is simply a product of these strict laws. Nature is built on these strict, firmly established laws, and it cannot be said that nature is random, or that it isn't law-abiding. As a result, nature's selection of the fit or fittest forms is law-abiding, or based upon laws. At the very least, as long as there are physical laws that are clear enough to us at the atomic and subatomic levels that life depends on (since they form life on earth), then there is a lawmaker, and this is what we seek to prove.

What we have stated here is sufficient, as the matter is clear, and we can move on to discussing other subjects, particularly three other issues related to life on the earth:

1. The genetic plan.
2. The law of evolution and development through natural selection.
3. The purpose of evolution and development by means of natural selection.

1. The Genetic Plan

The gene can be defined as a specific piece of information written in a language that uses a quaternary system of nucleotides. By means of replication, either a part of the gene or the entire gene can pass through generations.

Similar to a computer system or language, which is a binary language of zero and one, the genetic language is quaternary and consists of four different types of nucleotides symbolized by the four letters (A-T-C-G). These nucleotides are arranged in two long, coiled, connected strands, forming the chromosome. Therefore, the chromosome is one large file that contains a massive amount of information written in a quaternary nucleotide language. This information is called genes. Genes give every organism its form and operating system including the form and operating system of each of its parts, from hair, skin, fingers and limbs, to the heart, brain, digestive and respiratory systems.

This is also true for leaves, flowers, and fruits, all the way down to their roots.

Genes are a language used to communicate a plan. When this plan is implemented, the organism is formed. When a part of it is implemented, part of the organism is formed. Therefore, for example, each human has a uniform genetic plan in all of their cells. When the liver is formed while a fetus is in the mother's womb, part of this plan is implemented to form the liver. When the heart is formed, another part of this plan is implemented. The same is true for glands within the body.

We can imagine a new gene appearing within the genome that is prevalent on earth in a number of ways:

A mutation occurs during gene replication resulting in the replacement of one nucleotide with another, or let's say one of the four letters with another, therefore the gene changes and becomes something else—a new word. For example, if we have a gene with the sequence (AAAGCCCTGCCC), and a mutation occurs whereby one of the A's is replaced with a G, the new gene will become (AAGGCCCTGCCC). Some people explain this mutation as a replication error.

A mutation occurs because a gene segment splits. This gene segment is a collection of nucleotides, and it could be a part of a gene, an entire gene, or more than one gene. It might invert, transfer to another position on the same chromosome, or transfer to another chromosome and attach to it. In the latter case, it would be similar to taking a page or a group of pages from a physics book, and putting it in another book, such as a history, math, or chemistry book.

The production of new genes during sexual reproduction, which is the result of an exchange of the smallest genes between the genomes of the father and mother.

For example, a child takes 23 chromosomes from the father through the sperm, and 23 chromosomes from the mother through the ovum. The 23 chromosomes in the father's sperm are a mix of the father's 46 chromosomes—half from his mother, and half from his father. So he has two chromosomes that are the same in terms of specialty and function,"1M" from the mother and "1F" from the father. These chromosomes carry different information at their corresponding parts. For example, if gene 1 in chromosome 1M is responsible for skin formation, then gene 1 in chromosome 1F is responsible for skin formation as well. If gene 1-1M is responsible for skin color, then gene 1-1F is also responsible for skin color, and each one of them gives a different

skin color. What happens when the body produces the sperm is that it doesn't put all of the father's chromosomes ("F" chromosomes) or all of the mother's chromosomes ("M" chromosomes) in that sperm. Each chromosome in the sperm is a brand new file carrying some pages from his maternal (M) chromosomes, and some from his paternal (F) chromosomes. Therefore, the new chromosome is not the same as any of the father's chromosomes. Rather, it is a new one, carrying the information in a new arrangement. Each of the sperm he produces carries a set of new chromosomes that is different than any other sperm. The sperm that fertilizes the ovum gives the fetus new chromosomes that are different than the chromosomes of his father, and different than that of his father's father and his father's mother. This is also true for the ovum, as the ovaries do the same thing when producing the ovum, taking half of the 46 chromosomes that the child's mother inherited from her mother and father, yet none of the 23 chromosomes within the ovum will be her mother's chromosomes (M), or her father's (F) chromosomes that were inherited from them. Instead, each will be a new chromosome—a mix of the two, similar in function and formed from the 46 chromosomes. This means that the new chromosome is a new book that contains pages from the two old books of her father and mother.

To clarify further, let's consider chromosomes to be textbooks. Every person, whether male or female, has 23 books from his father and 23 from his mother in each cell of his body. Each book he received from his father has a counterpart received from his mother, yet the content of each one is different. For example, he has a geography book from his father and a geography book from his mother, each with different contents. Moreover, he has a history book from his father and a different history book from his mother, as well as a physics book from his father and a different physics book from his mother, and so on, until we reach 23 pairs. When the male produces sperm, he inserts only 23 textbooks (chromosomes) into it. He takes the geography book that he received from his father, but doesn't insert it as it is, Instead, he removes some of its pages, then replaces them with pages from the geography book he received from his mother. In the same way, the pages that were removed from his father's book are inserted into his mother's geography book to compensate for the removed pages.Therefore, we end up with sperm carrying only 23 books, but they are not the same as

the books of the father or mother. Rather, they are something new—a mixture of the two.

Is Genetic Mutation One Hundred Percent Random?

Our opponent, or whoever denies the existence of God, cannot prove with conclusive evidence his claim that genetic mutation, or the continuous change in genes around which evolution revolves, is always a random change or mutation. The point is that he considers it random because the non-randomness of it hasn't been proven. This means that both possibilities are scientifically plausible. Therefore, we can say it is random, or non-random and even law-abiding and organized, or we can say it is a combination of randomness and non-randomness within the vast spectrum of possibilities that amino acid chains can provide.

To make this more clear, we begin with an equal probability that genetic mutation is either random or non-random.

We can say that the possible number of potential genetic mutations in nature is enormous. We can even say that it is a number that the "age of life" cannot accommodate. In fact, the age of the universe is miniscule in comparison. I do not think it is necessary to repeat the massive and astronomical figures pertaining to genes, some of which I have demonstrated in the section regarding hemoglobin. This massive number makes it impossible for us—who are limited by this "age"—to perceive order and non-randomness if they exist. This is because we would only know that there is non-randomness in genetic mutation or change through the systematic repetition of mutation, as this repetition would show us that the system isn't random. It requires a huge duration of time for this systematic repetition to happen, one that is beyond the limits of time that we are familiar with, let alone that would happen within the limits of time that we can observe. So it is impossible for us to positively conclude, beyond doubt, that genetic mutation, or the change around which evolution revolves, is non-random, or conclude that it is random (as Dawkins did), because proving randomness also requires us to examine the same enormous time span necessary to prove non-repetition and non-randomness. The existence of some random mutations is not sufficient for a judgement to be made, so the assertion of Dawkins and other biologists and geneticists here, that there is complete randomness, is mere conjecture not supported by scientific evidence, other than the presence of certain random mu-

tations resulting from radiation bombardment of DNA, for example. The existence of these random mutations doesn't prove that all genetic mutations are random.

Therefore, to us, within the limits of life that we know, there is uncertainty as to whether it is random or non-random, and there is no scientific reason to consider randomness more likely. Since it is neither possible nor correct to affirm that mutation or genetic change is random, the claim that evolution is without ultimate purpose is arbitrary, and it lacks proof.

We can conclude by positively stating that the claim that evolution has no purpose has been shown to be a mere arbitrary determination that holds no real scientific value. Rather, it is based only on it being impossible to prove otherwise. For example, is it reasonable to decide that Dawkins is a believer, because I don't have enough evidence to prove that he is an atheist?!

Actually, this is what Dawkins has done concerning change in the genetic plan, or genetic mutations, which represents the essential basis of evolution. This might be one of the main reasons behind the conflict between us and Dawkins (and other atheist scientists), because if genetic change, or mutation, is proven to be non-random and law-abiding, it means that it is purposeful and law-abiding, and it therefore means a god exists who wrote its laws and who wants to fulfill a certain target with it. To claim otherwise requires proof as well. Dawkins has neglected this, repeatedly saying that genetic change, or genetic mutation, is random without any scientific proof. He only says this because he wants to deny the existence of a god. He decided to conclude that genetic change, or mutation, is totally random based on random mutations that can occur in meiosis to produce reproductive cells, or because of a replication error or cosmic radiation bombardment.

Therefore, determining if genetic change, or mutation, is random or not must be made externally. What is present externally, which is the result of evolution that we know and observe, makes it more likely that genetic mutation, or change, is non-random, and has been, and still is, occurring in accordance with a law.

The first genetic plan was put together based on a law that led to a complete system. This system includes life; metabolism; the ability to produce energy; reproduction; moves toward improvement; and the acceleration of genetic mutation during speciation, and its stagnation or deceleration in different time periods, or in relation to

different species. Above all, it has produced the mechanism of intelligence. Therefore, it cannot be concluded that the genetic plan has no lawmaker, since it is law-abiding; that it has no organizer, since it is organized; or that it has no speaker, since it is a language understood and translated into proteins, for example, by the factories of life within the cell. This will be discussed in detail in due course.

> What is special is that these molecules are put together in much more complicated patterns than the molecules of nonliving things, and this putting together is done by following programs, sets of instructions for how to develop, which the organisms carry around inside themselves. Maybe they do vibrate and throb and pulsate with 'irritability', and glow with 'living' warmth, but these properties all emerge incidentally. What lies at the heart of every living thing is not a fire, not warm breath, not a 'spark of life'. It is information, words, instructions. If you want a metaphor, don't think of fires and sparks and breath. Think, instead, of a billion discrete, digital characters carved in tablets of crystal. If you want to understand life, don't think about vibrant, throbbing gels and oozes, think about information technology (Dawkins 1996, 112).

2. The Law of Development through Natural Selection

Evolution or development through natural selection has three pillars: variation, selection and heredity. Its internal factors are variation and heredity, while its external factor is survival of the fittest, or nature's selection of the fittest. Therefore, we can say that evolution by natural selection is a law-abiding process because it has several laws that govern it. We can also say that it is a precise process governed by a constitution with several laws. God willing, we will prove how it is a precise law and constitution and how it must have a lawmaker to achieve a certain clear-cut purpose.*

*. Every legal constitution, be it for governance or for a particular work, has a number of laws. Sometimes, at certain points, these laws are in conflict. As a result, one of them is allowed to pass while the other one is suspended, or both of them are allowed to pass in a partial manner, or both are suspended, leading to a third law in the constitution to solve this constitutional problem. As such, the constitution is a group of laws for managing a certain function. The constitution cannot be criticized or considered non-purposeful on the basis of causing a loss to the one affected when dealing with a certain, exceptional issue, or the existence of a problem with the original giver or creator.

Natural selection takes place through the environment, whether through surrounding nature—such as weather conditions of heat, cold, humidity, snow, deep water, shallow water, pure water, and mud—or through hostility, meaning preying upon and being preyed upon, or through desire, such as sexual selection.

Selection through natural conditions and weather depends on the physical laws affecting the earth and the universe as a whole, and these laws certainly indicate a lawmaker.

As for natural selection based on the selection of the mechanism of hostility, or preying upon and being preyed upon, it is also law-abiding and indicates a lawmaker. At the herbivore level, they have evolved a system of digestion and nutrition that is suitable for their food. Plants have also developed defense mechanisms, such as thorns. At the carnivore level, they have developed hunting mechanisms such as speed, canine teeth, powerful eyesight, and camouflage. Meanwhile, the prey developed the ability to camouflage, move quickly, and to choose the right times to feed. Therefore, you will find that organisms strengthen each other and co-evolve, which is something that, as an integral unit, cannot be called random. In fact, it represents a law-abiding system, and therefore indicates an organizer and lawmaker.

An example of sexual selection is when certain female birds choose the male with the longest or most colorful feathers.

When we see a complex and sophisticated instrument such as a telescope or microscope, we conclude that there is a designer who made it, and a law that governed its making. Thus, It is unreasonable for us not to make the same conclusion when we see another complex and sophisticated instrument that resembles it to a certain degree, namely the eye. I will leave it up to the atheist biologist Richard Dawkins to describe the eye to us as he, a specialist, sees it:

> This level of magnification shows the eye as an optical instrument. The resemblance to a camera is obvious. The iris diaphragm is responsible for constantly varying the aperture, the f stop. The lens, which is really only part of a compound lens system, is responsible for the variable part of the focusing. Focus is changed by squeezing the lens with muscles (or in chameleons by moving the lens forwards or backwards, as in a man-made camera). The image falls on the retina at the back, where it excites photocells. The light-sensitive cells ('photocells') are not the first thing the light hits, but they are buried inside and facing away from the light … The first thing the light hits

> is, in fact, the layer of ganglion cells which constitute the 'electronic interface' between the photocells and the brain. Actually the ganglion cells are responsible for preprocessing the information in sophisticated ways before relaying it to the brain, and in some ways the word 'interface' doesn't do justice to this. 'Satellite computer' might be a fairer name. Wires from the ganglion cells run along the surface of the retina to the 'blind spot', where they dive through the retina to form the main trunk cable to the brain, the optic nerve. There are about three million ganglion cells in the 'electronic interface', gathering data from about 125 million photocells … As you look at the fine architecture of this cell, keep in mind the fact that all that complexity is repeated 125 million times in each retina. And comparable complexity is repeated trillions of times elsewhere in the body as a whole. The figure of 125 million photocells is about 5,000 times the number of separately resolvable points in a good quality magazine photograph. The folded membranes … are the actual light-gathering structures. Their layered form increases the photocell's efficiency in capturing photons, the fundamental particles of which light is made. If a photon is not caught by the first membrane, it may be caught by the second, and so on. As a result of this, some eyes are capable of detecting a single photon. The fastest and most sensitive film emulsions available to photographers need about 25 times as many photons in order to detect a point of light. The lozenge-shaped objects in the middle section of the cell are mostly mitochondria … Each one can be thought of as a chemical factory which, in the course of delivering its primary product of usable energy, processes more than 700 different chemical substances, in long, interweaving assembly-lines strung out along the surface of its intricately folded internal membranes… Each nucleus, as we shall see in Chapter 5, contains a digitally coded database larger, in information content, than all 30 volumes of the Encyclopedia Britannica put together. And this figure is for each cell, not all the cells of the body put together… When you eat a steak, you are shredding the equivalent of more than 100 billion copies of the Encyclopedia Britannica (Dawkins 1996, 17-18).

This assemblage, complexity and precise organization compelled Dawkins, despite being an atheist, to admit that there is order and no randomness or coincidence in all of this beautiful and splendid assemblage and complexity. However, because he is an atheist, he divided the mechanisms of evolution with the goal of weakening the fact that it indicates that evolution is law-abiding and purposeful as a whole, and he denied the purpose.

So he could say that there is a watchmaker of sophisticated and complex watches according to a precise law, yet, because Dawkins doesn't wish to see the purpose, he said that this watchmaker is not conscious, or he is blind, so this watchmaker is merely nature itself. The truth of the matter is, by acknowledging the law, Dawkins put himself in a position where he has no choice but to acknowledge the lawmaker, and the lawmaker is inevitably conscious. Therefore, it has been proven that there is a conscious watchmaker, or a god. We have previously explained the purpose that Dawkins was blind to, and we will do so further and in more detail, God willing.

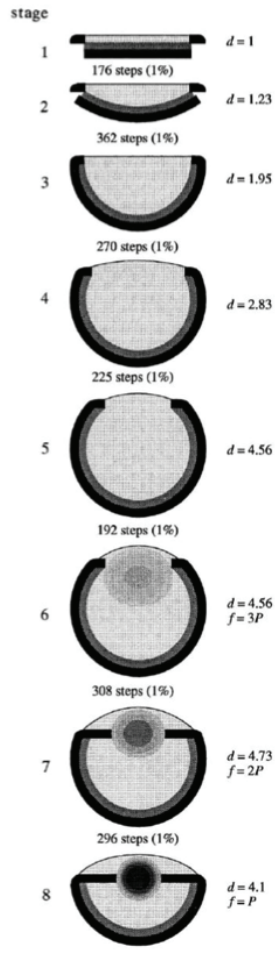


Fig 8. Nilsson et al., An illustration demonstrating the stages of eye evolution.

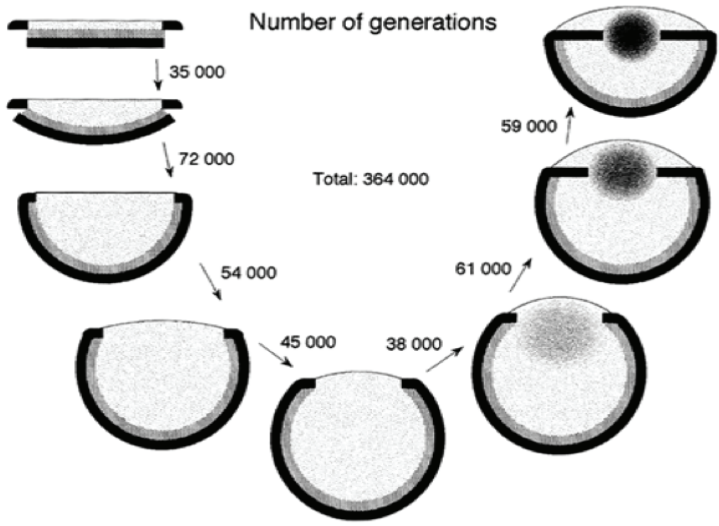


Fig. 9 The stages of eye evolution, as well as the number of generations expected for each stage of evolution.

When we consider sonar, or ultrasound, we conclude that there is a designer who made this complex and sophisticated device that can find submarines in the depths of the oceans and stones in the human gallbladder. So is it reasonable that we don't make the same conclusion when we come across sonar in the dolphin or the bat? Atlantic dolphins can identify the shape of targets, and the distance between targets that are very close together. The sophisticated technology of sonar (ultrasound) in bats enables them to move at night, to gracefully pass obstacles, and to distinguish between the frequency of their own echo and that of other bats, or noise. Using its sonar, the bat can easily hunt its prey at night, as some species of bats—such as horseshoe bats—have the ability while flying to calculate the relative speed of movement between themselves and their moving prey using the Doppler effect. This means that they use radar technology more sophisticated than that of the immobile traffic radar that calculates the speed of a car moving down the road. Moreover, bats developed their sonar millions of years before us.

If we say that the sonar of a ship, or a doctor, or a traffic radar was designed by a designer according to a precise and coherent law to

fulfill the purpose it was made for, then we must say that the sonar of the bat was designed by a designer according to a precise law, to fulfill the purpose it was made for as well, with complete competence, as we can see. Bats use the sophisticated technology of echolocation. As Dawkins said:

> These bats are like miniature spy planes, bristling with sophisticated instrumentation. Their brains are delicately tuned packages of miniaturized electronic wizardry, programmed with the elaborate software necessary to decode a world of echoes in real time. Their faces are often distorted into gargoyle shapes that appear hideous to us until we see them for what they are, exquisitely fashioned instruments for beaming ultrasound in desired directions (Dawkins 1996, 24).

Therefore, the sonar in bats confirms an important fact, namely, that it wasn't randomly made. Rather, there is a system and a law that governs and perfects its making in order to accomplish the objective in the best way possible.

Darwin reached an important conclusion after discussing instincts and their evolution:

> …it is far more satisfactory to look at such instincts as the young cuckoo ejecting its foster-brothers,—ants making slaves,—the larvae of ichneumonidae feeding within the live bodies of caterpillars,—not as specially endowed or created instincts, but as small consequences of one general law, leading to the advancement of all organic beings, namely, multiply, vary, let the strongest live and the weakest die (Darwin 1859, 131).*

This conclusion that Darwin reached represents a clear statement that the theory of evolution, by itself, indicates the existence of a god, because the theory of evolution is, according to the above conclusion, a precise law of development. Once we see it, we cannot neglect or ignore that behind it is a conscious lawmaker who is knowledgeable, wise

*. The female cuckoo places her eggs in the nests of other birds. When the cuckoo chick hatches, it directly carries out an instinctive process where it ejects the eggs, and any other chick that already hatched or is hatching in the nest. In this manner, it takes control of the nest, as the host bird will feed it and raise it, believing it to be its own, but instead, it is the cuckoo's chick, the one that killed the host bird's chicks and ejected its eggs from the nest.

and even purposeful in every sense of the word, as we shall clarify. This proves, beyond doubt, the existence of a god. Dawkins also says:

> If you think that Darwinism is tantamount to chance you'll obviously find it easy to refute Darwinism! One of my tasks will be to destroy this eagerly believed myth that Darwinism is a theory of 'chance' (Dawkins 1996, xv).

Here, Dawkins decides that natural selection is law-abiding and not at all random, and that it is governed by order. However, as an atheist, Dawkins denies purpose. Having acknowledged order and law, he believes that denying purpose will be enough for his denial of the existence of a law-making and organizing god.

Dr. Richard Dawkins says:

> Paley compares the eye with a designed instrument such as a telescope, and concludes that 'there is precisely the same proof that the eye was made for vision, as there is that the telescope was made for assisting it'. The eye must have had a designer, just as the telescope had.
>
> Paley's argument is made with passionate sincerity and is informed by the best biological scholarship of his day, but it is wrong, gloriously and utterly wrong. The analogy between telescope and eye, between watch and living organism, is false. All appearances to the contrary, the only watchmaker in nature is the blind forces of physics, albeit deployed in a very special way. A true watchmaker has foresight: he designs his cogs and springs, and plans their interconnections, with a future purpose in his mind's eye. Natural selection, the blind, unconscious, automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker in nature, it is the blind watchmaker (Dawkins 1996, 5).*

As is completely clear, Dawkins admits that there is a complex product, that there is a law for making it, and a maker. He just doesn't see purpose, so he says that the maker has no purpose and decides that the maker is not conscious of what he is doing, and therefore the maker is

*. William Paley (1743-1805) was a well-known eighteenth century theologian. He published the book *Natural Theology* in 1802. Here, Dawkins refers to sections of Paley's book.

merely nature. With this, Dawkins denies the existence of a god. However, since Dawkins is an esteemed biologist—and not a philosopher as some like to describe him—he has overlooked quite a bit. For him to admit the existence of a law and a complex law-abiding product is enough to prove the lawmaking and conscious maker. Furthermore, his not seeing purpose doesn't mean a purpose doesn't exist. In order to deny the existence of purpose he absolutely must prove it doesn't exist, which he cannot do. We have already proven purpose, and God willing we will further prove purpose, thus closing off any means of escape for atheism through natural selection.

> Echo-sounding by bats is just one of the thousands of examples that I could have chosen to make the point about good design. Animals give the appearance of having been designed by a theoretically sophisticated and practically ingenious physicist or engineer, but there is no suggestion that the bats themselves know or understand the theory in the same sense as a physicist understands it. The bat should be thought of as analogous to the police radar trapping instrument, not to the person who designed that instrument. The designer of the police radar speed-meter understood the theory of the Doppler Effect, and expressed this understanding in mathematical equations, explicitly written out on paper. The designer's understanding is embodied in the design of the instrument, but the instrument itself does not understand how it works. The instrument contains electronic components, which are wired up so that they automatically compare two radar frequencies and convert the result into convenient units - miles per hour. The computation involved is complicated, but well within the powers of a small box of modem electronic components wired up in the proper way. Of course, a sophisticated conscious brain did the wiring up (or at least designed the wiring diagram), but no conscious brain is involved in the moment-to-moment working of the box.
>
> Our experience of electronic technology prepares us to accept the idea that unconscious machinery can behave as if it understands complex mathematical ideas. This idea is directly transferable to the workings of living machinery. A bat is a machine, whose internal electronics are so wired up that its wing muscles cause it to home in on insects, as an unconscious guided missile homes in on an aeroplane. So far our intuition, derived from technology, is correct. But our experience of technology also prepares us to see the mind of a conscious and purposeful designer in the genesis of sophisticated machinery. It is this second intuition that is wrong in the case of living machinery. In the case of living machinery, the 'designer' is unconscious natural

selection, the blind watchmaker (Dawkins 1996, 36-37).

The truth is, whoever reads Dawkins' words above understands that this specialized scientist is admitting that the natural sonar of bats is undoubtedly the expression of a law and a lawmaker. And if the extremely precise interaction between the rest of the bat's mechanisms, such as wings, is added to the natural sonar, then the issue of lawmaking becomes one hundred percent certain. In addition, there is interaction between the parts of the bat, such as the wings, with their natural sonar, at extremely high accuracy, making it one hundred percent confirmed that there is a law and a lawmaker.

Therefore, Dawkins admits the designer, but denies that the designer is purposeful. For this reason, he calls this designer the blind watchmaker. Dawkins intends everything these words mean, including all of the contradictions they bear. He claims that his book *The Blind Watchmaker* resolves this contradiction.

In fact, it doesn't resolve anything. Instead, it is an attempt to divide a large factory, or a large industry (evolution), into stages with small factories or production lines in the course of studying this large industry, in order to conceal its purpose by dividing it up.

For example, we can divide any industry to say it doesn't intend to reach a final purpose in the same way that he did. Let us take a look at the wool or cotton industry, including the cleaning and preparation of cotton or wool for spinning. Anyone who sees this process externally as separate parts, factories, or production lines, can say that this industry did not initially intend to reach a final purpose. The only thing that exists is the short-term purpose of each production line, and the next line benefits from the purpose of the previous line.

What happens in the first step, for instance, is a process of cleaning, preparation, and sorting the beneficial material from the non-beneficial. Afterwards, the spinning factory receives one of the products from the cleaning and preparation factory that is suitable for spinning, and spins it exclusively to varying grades. Each grade can be used for the manufacture of a different textile. Then a particular fabric factory selects only one of the spun products and it is woven to produce a particular fabric. Finally, a sewing factory chooses only one fabric to make a particular shirt. Whoever sees each production line by itself can say that the process has no long-term purpose and that the final product is coincidental and unintentional, as Dawkins does. However, whoever

sees the process as an integral work can see the purpose clearly from the beginning, to achieve the production of clothes, blankets and curtains. Our vision of the final purpose is not affected by the industrial process having many branches with short-term purposes, losses, and damaged material throughout the journey of manufacturing.

3. The Final Target or the Purpose of Evolution

Before we delve into this topic, let us first understand what purpose is by way of an example. If we gather pieces of wood and carpentry tools to make a chair, our final target is to make the chair. However, the purpose or objective of making the chair is to sit on it. The same is the case with respect to evolution of the eye. The final target of the material and laws is to make the eye, but the purpose of the eye is sight. In truth, Dawkins, and those who say that evolution is non-purposeful, are not speaking about the purpose or objective of evolution. Rather, they are actually speaking about the final effect or final target that evolution achieves, and they call it a purpose or objective of evolution. Therefore, it must be noted that what we sometimes call a "final target", Dawkins, in his books, calls a purpose. There is no problem with calling the final target a purpose, given that evolution intends to reach it. Regarding life on the earth, as we shall prove, the final target of matter and laws is to produce the living being who is conscious and capable of populating the earth. As for the true purpose or objective, it is communication with the unseen and worship. Regarding the subject of evolution, proving the final target is sufficient, and if we prove the final target, then the purpose is proven, because proving the final target is proving the existence of a god, which is what would be proven by proving the purpose.

We can recognize that a particular work intends to reach some target or purpose in a number of ways, such as by analyzing the plan it started from, and how it functions, such that if we know that it is a law-abiding and non-random plan, it is proven that its purpose is to reach a certain final target. We can also tell that a work has a certain final target it intends to reach by looking at its results, and the middle and final predicted outcome. One would then question whether that work sought and intended to reach the final target from its beginning, or whether it is just a pointless, unintentional result, indicating that the work is pointless and not law-abiding.

Evolution is Purposeful by Studying its Products and the Law-Abiding Nature of the Genetic Plan:

Producing the Ideal Survival Machine: The Intelligence Machine

In the process of evolution, there is genetic mutation, and given sufficient time it will inevitably provide every possibility. Additionally, in the process of evolution, selection allows the fittest and best to survive.

If we go back in time to before the existence of a mechanism to deal with light, sound, or electromagnetic frequencies or chemical scents—meaning we are talking about life at the level of either bacteria or eukaryotic organisms that don't have sensory cells for sensing the environment—and then we apply what happens in evolution to this primitive life that was the only life that existed sometime in the distant past on the earth, we would say that mutation must provide sensory mechanisms sooner or later, whether they sense light or sense other things in the environment of the organism. The organism that has this mechanism, whether it is a light-sensing cell, or an electromagnetic wave-sensing cell (or others) has an advantage over others, because this mechanism provides it with a higher ability to procure food and escape enemies, and this is why evolution will definitely firmly establish a mutation like this, because this organism will be more successful than its peers in transferring its genes to later generations. If this starts with a light-sensing cell, for example, it is entirely expected—according to the aforementioned laws—that all mutations leading to increased efficiency would be added to the cell. Therefore, it is normal to achieve the eye in the end. In fact, it is normal to achieve an eye like a falcon, which can see clearly while attacking its prey at a very high speed. It is also normal for us to expect an efficient hearing mechanism to be achieved, like that of bats and dolphins that count as a superior sonar.

In general, what we want to make clear is that producing and evolving sensors is inevitable in the journey of evolution, as mutations must provide environment-sensing mechanisms and selection must firmly establish them. If the sensors came to life on the earth, even if as primitive as a group of light and electricity-sensing cells, then any other mechanism that ties them together, and organizes their work with the other parts of the organism, such that the organism benefits

more from it, whatever the form, would certainly be firmly established by evolution. The truth is that this mechanism is the intelligence machine, or let us say the basis or origin of the intelligence machine, in the wording we are more familiar with. Since the intelligence machine is the ideal survival machine, it will definitely evolve to become a superior intelligence machine.

We can now summarize this introduction—and then start at a later phase where the ideal nature of the intelligence machine stands out clearly—by saying that the intelligence machine is the ideal survival machine, because intelligence as a survival mechanism, when available, surpasses all other survival mechanisms, such as strength and weapons (e.g. canines and claws), and so on. The best proof of that, right in front of us, is our control of a very high percentage of planet Earth, due to the fact that we have the best intelligence machine compared to other competing organisms.

Therefore, genetic mutation must provide intelligence machine mutations. Since it is the ideal survival machine, it must be selected by natural selection, while its evolution must continue until it becomes a superior intelligence machine once suitable conditions for improvement through evolution become available, such as walking upright. In addition, all of these conditions are subject to evolution, so they must become available sooner or later. Therefore, we can say that evolution has the intention of eventually producing a superior intelligence machine.

Evolution will not stop developing the superior intelligence machine until this machine, and its product, reach a level that stops the process of evolution itself, which is what has happened with humans today. We have almost stopped the process of evolution, at least in relation to us humans. One of the most important reasons behind that is the superior intelligence machine we possess, which has given us capabilities that allow most of the individuals of our species to survive and reproduce. As a result, the law of natural selection no longer governs us in order to continue the process of our evolution, and that of the superior intelligence machine that we possess. Indeed, there is one way to evolve our intelligence machine: through artificial genetic mutation. In other words, it can be done by our changing the genetic compositions in order to produce people with more intelligent brains, for example.

From the above, we can say that evolution intends to reach production of the intelligence machine inevitably, as an intermediate purpose. Once the intelligence machine is present, it certainly takes a path through evolution to reach a superior intelligence machine, sooner or later, because it is an ideal survival machine, and its development is required, and desired, once conditions become suitable and favorable for it.

Therefore, the goal of evolution is to produce a superior intelligence machine, once conditions suitable for its production become available. In our case, for example, these conditions might be standing on two legs, or a wide female pelvis, both being inevitably provided by genetic mutation sooner or later in the journey of evolution.

In general, evolution of the intelligence machine (the brain) into a superior intelligence machine in the human is caused by factors that are all inevitable, as long as there is evolution. Therefore, no matter how the issue is approached, the conclusion is that the purpose of evolution is to eventually reach a superior intelligence machine. These factors include:

- The availability of genetic mutation toward improvement: according to what we on this earth know, we can say that even if genetic mutation is completely random, it must provide a mutation that improves the intelligence machine, sooner or later, even if doing so at a particular time period attracts attention in a considerable way. We will discuss this in due course. Here, however, we will discuss the worst case scenario for us, which is the best case for the atheistic hypothesis, that genetic mutation is one hundred percent random.

- Walking upright: this has allowed the pelvic inlet to widen, therefore allowing the birth of children with bigger heads that hold bigger brains. In addition, once bipedalism freed the hands, they became tools for high quality creativity, and ideal survival tools in the presence of an intelligence machine that would lead it in the right direction, and take full advantage of it. This is why freed hands push the evolution of the brain toward improvement. Freed hands assist each brain improvement mutation to survive and become firmly established in the genetic group, as they make the availability of manmade tools possible, tools such as axes, spears, and so on, which is of great benefit to these mutations. This is also true when it comes to using these tools to the fullest extent. Accordingly, brain improvement mutations are passed to later

generations, and they are firmly established, thanks to the availability of the trait of walking upright, which freed the hands.

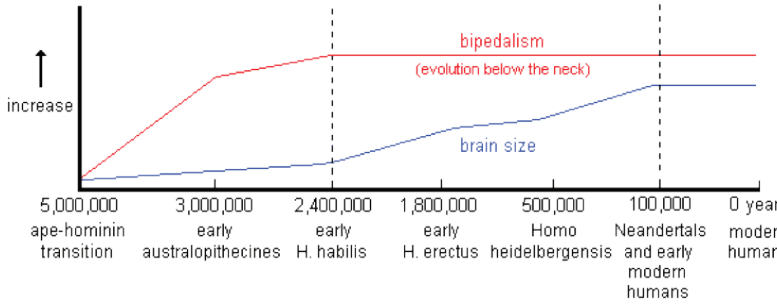


Figure 10: The relationship between the evolution of the intelligence machine (the brain) and bipedalism.

- The need for linguistic communication: the intelligence machine is considered a reason for its existence and development. It is what allows linguistic communication (even if it is through signs) to exist and develop in the first place. Linguistic communication is a high quality means of survival that drives intelligence machines toward evolution and development, because the best intelligence machines are the the ones that are better at storing and handling information. Individuals who are capable of better communication are more capable of survival than others because they can escape predators and hunt prey more effectively. To make this more clear, language will benefit from genetic mutation toward brain improvement, because individuals will be able to handle a wider and more complex vocabulary, and therefore be able to communicate better. This means that these individuals are more capable of procuring food and a partner for reproduction, as well as escaping predators. As a result, their ability to survive and more frequently pass genes to later generations is greater than others, and these genetic mutations of brain improvement become firmly established. This is how the brain evolves over the course of generations to the point where we eventually possess a superior intelligence machine.

- The availability of the right type of food (such as fish that contain iodine and omega-3), that is of benefit to the brain, makes extremely beneficial brain improvement mutations. This makes these mutations

a feature worthy of being chosen by natural selection, and they are passed down over generations.

- The elimination of the body's thick hair; the existence of sweat glands that provide an ideal cooling mechanism for the body; and the superior brain, considered to be a machine that requires a great deal of energy to operate, generating tremendous amounts of heat that will kill the organism unless there is a mechanism to cool it when required.

To reiterate what I explained previously, the superior intelligence machine reached by evolution in our case (the brain), doesn't mean that its evolution has come to an end, or that the path taken by evolution is the only path that produces a superior intelligence machine. In fact, it is possible that there were other paths that perhaps would have produced a superior intelligence machine better than the one we see today. Or, maybe it would be better in some ways and worse in others. However, in all cases, there is a definite purpose that evolution must accomplish sooner or later, namely, producing a superior intelligence machine.

Therefore, it is settled: evolution is purposeful, and its purpose is to produce a superior intelligence machine.

I could stop here in proving that evolution is purposeful, but there is no harm in supplementing our argument with other inferences to support what we have proven.

Evolution and the Stable Family:

Sexual reproduction (or reproduction by genetic sharing between two individuals) is a result that evolution must reach as organisms become more complex and compound, because as a survival strategy, it is better than sexual reproduction. Asexual reproduction within a certain species means that its individuals are identical, repeated copies, due to the same genetic plan. The result of this is that any weakness in confronting an enemy exists to the same extent in all the individuals of the species. So for example, a certain virus would easily be able to destroy all individuals of the species, whereas sexual reproduction provides a great number of genetic plans that belong to individuals of the same species. Every couple can produce plans of children that carry completely different plans than the parents and the other siblings. This advantage enables the species to avoid extinction and gives it a better chance of survival because if an enemy defeats an individual of a spe-

cies, that doesn't absolutely mean it can defeat the other individuals because their genetic plans are different, so they are variations, and both their capabilities and resistance vary.

Therefore, since sexual reproduction is ideal for a species' resistance to disease, plagues, and enemies, genetic mutations must provide the sexual reproduction trait sooner or later, and natural selection must choose this trait and firmly establish it because it is ideal for survival. Therefore, evolution must reach the point of sexual reproduction.

The trait of sexual reproduction often requires the couple to meet and be close to one another, meaning to be together in one place. This represents the first step toward building a stable family. However, it remains only a step at the beginning of the road, because sexual practice is restricted to the time of need, which is fertilization. For instance, most female organisms develop mechanisms to announce that they are ready for fertilization. This means that sexual practice is limited, which is not conducive to building a family. For example, the reproductive organs of female chimpanzees swell to show that they are ready for fertilization.

As far as Hominidae, the next step toward building a family may have come later, after the wearing of clothes, which was by no means a straightforward decision. There must have been a logical, rather strong reason for the law of natural selection to allow for wearing clothes, because they would cover the reproductive organs, or the distinct signs. This means it would become difficult to tell the time of female fertilization. This, in turn, would mean unsuccessful reproduction. Here, I will propose several hypotheses as to why clothes were worn:

- Cold: in fact, anthropoids were in the hot or moderate African Savanna, and it was possible to manage the cold with oily layers existing beneath the skin. Therefore, the cold might not be a sufficient explanation for the wearing of clothes.

- Modesty: the genes developed modesty in response to the genetic battle with the sexual partner who wants to spread his genes without losing effort on the difficult work of raising the children and other similar things, as he considers it important to put this effort into spreading his genes in great number instead. What is meant by modesty here, is modesty geared toward protecting the sexual organs from anyone other than the spouse. This type of modesty may be a reason for the initial wearing of clothes to cover the sexual organs, and thus fulfilling this purpose.

We can also say that the need for clothes for protection from enemies and the weapons of prey encouraged anthropoids to wear clothes. Leather clothes are like armor that protected them from the horns of predators, and possibly even from the spears of other hominids with whom they share a larger living space. This can explain the extinction of some hominids and the survival of *Homo sapiens*, as the latter not only discovered the weapons of axes and spears, but also armor and leather clothing. In fact, it is rather likely that the age of leather armor is close to the age of stone weapons, especially since leather armor was available in abundance following weapons production and the ability to hunt prey en masse.

It is also fair to assume that this armor provided other benefits for the ones who wore it, such as protection from cold, protecting the sexual organs, and loyalty to one's partner.

We can imagine that with time, sexual practice developed into a continuous desire as a result of the wearing of clothes, because individuals who only engage in sexual intercourse when distinct signs appear won't be able to pass on their genes to later generations after those distinct signs are covered with clothing. They will either not engage in sexual intercourse at all, or they will do so on a limited basis—perhaps rarely coinciding with the time of fertilization. Again, this too will limit the passing down of their genes. It is inevitable that if there are individuals who have sexual intercourse on a continuous basis, one of these instances will coincide with the time of fertilization. Such individuals will transfer their genes more successfully than others, so it is natural for the trait of continuous intercourse to prevail due to it being a successful trait that is passed on to later generations through natural selection. It can be expected that with time, distinctive signs like preparation for fertilization will disappear because they also have an economic cost, so during the course of the evolutionary journey it is likely that they will disappear just as other traits do when they are no longer required.

The sexual relationship that evolves into a continuous relationship—rather than just a relationship during preparation for reproduction—will build a profound relationship between the couple, and strengthen the bond between them. This is the first step toward forming a family. So we have scientifically proven that the family was formed a very long time ago, before *Homo sapiens* left Africa, because for the most part, *Homo sapiens* started wearing clothing approximately

170,000 years ago, with some evidence indicating that it may have begun earlier than that (News.ufl.edu 2015).

Dr. David Reed, a geneticist at the University of Florida, has studied the genetic evolution of different types of lice that are parasitic to humans. These lice come in three types: head lice, pubic lice, and clothing lice. Dr. Reed found a match between their evolutionary history and the evolutionary history of humans, and he specified the time when these parasites separated from their ancestors that had infested some animals. Based on his research, he found that humans without body hair existed around three million years ago. The University of Florida News website says that from his genetic research, Reed concluded that humans start wearing clothing about 170,000 years ago, and that body lice or clothing lice diverged from head lice after humans started wearing clothes (Toups 2010).

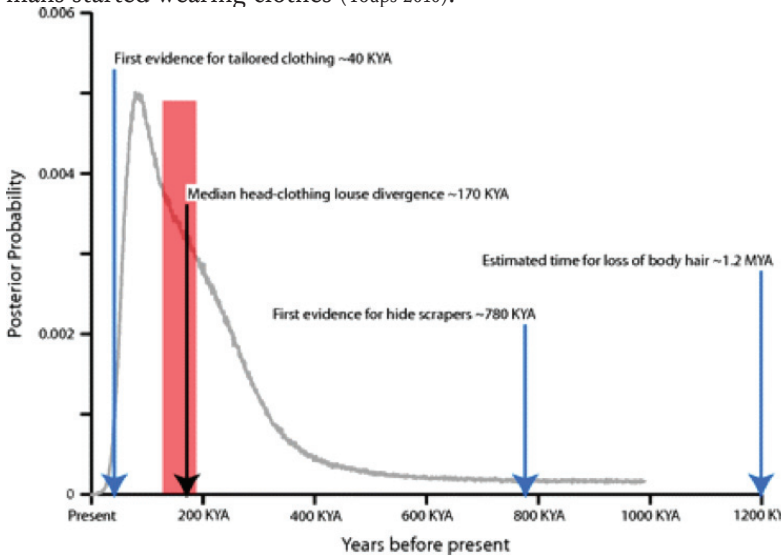


Fig 11: Origin of clothing lice indicates early clothing use by anatomically modern humans in Africa.

I believe that the scientific explanation I have presented on this topic is enough to refute the social theory that the family formed only recently (about 10,000 years ago) as a result of children gathering around their mother, since according to this theory they would not have known their fathers due to the existence of sexual communalism. Today we

have evidence that the family may have formed far earlier, perhaps even before the emergence of *Homo sapiens*.

The Genetic Plan and its Law-abiding Function

This subject brings us back to what we have said previously: determining whether a certain work is purposeful or not follows from either knowing the plan that it began with and knowing that it was originally codified with a law and governed by a system, or knowing the outcome of the work. Since knowing its plan and course of action, and judging whether they are random or not, are matters that are not entirely available to us, what we are left with is its outcome (the human for example), or even parts of its outcome (the eye for example), and studying them in order to draw conclusions. When we do, we clearly see that it is likely to be purposeful. Whoever doesn't wish to see this despite what we have clarified concerning the intelligence machine, that is their issue.

Existence of non-beneficial or harmful mutations, which produce genes that cause certain illnesses doesn't prove that genetic mutation is 100% random, because they can be caused by radiation outside the living organism, like certain mutations that cause cancers. For the most part, such mutations aren't related to the genetic plan and the internal mutation system that it possesses. Furthermore, we must recognize that when we say that genetic mutation is law-abiding and non-random, that doesn't mean it is completely perfect, such that no deterioration or defect occurs producing disease-causing genes. It also doesn't mean that subsequent generations cannot inherit such diseases through that gene, as in cases of breast cancer. These issues occur, but they don't affect the overall, purposeful path of evolution. What matters is fulfilling the purpose. As for the presence of defects—due to the "receiver"—this can be disregarded since it generally doesn't impede the path of evolution. This doesn't mean that the genetic plan is random, nor does it mean that it isn't designed to reach a certain purpose. The system of DNA, the accuracy of its composition, the precision of its replication of information, and the low probability of errors occurring in information replication, all attest to genes having a law governing their change and mutation, so that this change, for the most part, will be a productive one.

This is how Dawkins views this exactness in correct replication and how he regards this innovative system:

> A good secretary in real life has an error rate of about one per page. This is about half a billion times the error rate of the histone H4 gene (Dawkins 1996, 124).

Dawkins also says that externally, natural selection is waiting for these errors, or non-beneficial setbacks, in order to eliminate them:

> This whole comparison has been a bit of a cheat, but in an interesting and revealing respect. I gave the impression that what we are measuring is copying errors. But the histone H4 document hasn't just been copied, it has been subjected to natural selection. Histone is vitally important for survival. It is used in the structural engineering of chromosomes. Maybe lots more mistakes in copying the histone H4 gene occurred, but the mutant organisms did not survive, or at least did not reproduce. To make the comparison fair, we should have to assume that built into each typist's chair is a gun, wired up so that if he makes a mistake he is summarily shot, his place being taken by a reserve typist (squeamish readers may prefer to imagine a spring-loaded ejector seat gently catapulting miscreant typists out of the line, but the gun gives a more realistic picture of natural selection) (Dawkins 1996, 124).

Therefore, the remaining defects are negligible when compared to the evolution and development that result from the movement, change, and mutation of genes, which means that mutation, change, and transformation are law-abiding and non-random. A machine in a particular factory that produces something specific and beneficial is law-abiding and purposeful, even if one day, for some reason, it produces something else that is non-beneficial or even inferior, defective, and harmful. Furthermore, if we take genetic mutation and natural selection as an integral work group, then it is clear that they complete each other in order to bring about the existence of life, as well as its diversity, evolution and upward development. This means that this group is law-abiding and works according to a productive law.

As for the philosophical problem: why is the genetic system, or the DNA system, not perfect, and why there are defects in it? If the maker of the system is entirely perfect, then the system should be perfect and shouldn't have defects such as what we see in the case of the recurrent

laryngeal nerve or genes that transfer certain diseases. Why wasn't a perfect genetic plan and why weren't perfect evolutionary laws set down in such a way that defects and wasted energy wouldn't occur during and following the process of evolution?!

In addition to what has already been mentioned, this argument can be rebutted in several ways:

First, neither the direct creator, nor the direct designer, are the Absolute Divinity. Rather, they are spiritual beings from the creation of God. God created with "hands" just as He stated in the Quran: ﴿And the heaven We constructed with hands, and indeed We are Expanders.﴾ Quran Chapter "The Winnowing Winds" 51:47. The hands of God are His creation who work by His will, while the maker of the genetic plan is the hand of God, meaning an imperfect creation, and he is unlike God, the Complete, the Absolute. Therefore, there is no problem saying that the maker of the genetic plan doesn't set down a perfect plan. Rather, he makes a plan that reflects his own imperfection and darkness, as he is not an absolute divinity.*

Second, the physical world is characterized as one of darkness and light, so it is capable of having the law applied to it according to its own limits. This means that the receiver of the law is imperfect, so there must be a trace of imperfection in it.

Third, who said that the lawmaker doesn't desire some of these setbacks, or these genes that pass down defective traits or diseases? At this level of our discussion, in which the original lawmaker is God, we say that diseases are trials through which God tests his creation in order to observe the extent of their patience. Therefore, on a religious level, the existence of defects and setbacks is justified.

Fourth, the above philosophical argument can be refuted with an established fact, namely that the one who constructed the argument did so based on results regarding which he is ignorant of the initial and intermediate foundations. This design can have benefits for the survival of organisms at specific, earlier stages of evolution, or even at specific stages in the lives of some organisms.

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*. These hands are the creation of God and they work by His command. No matter how close they are to Him or how high they are regarded, they are a creation and are not characterized by absolute divinity. Muhammad and Ali pbut, the progeny of Muhammad, the prophets, and the angels pbut are created beings within which there is darkness. As reality demonstrates, they are not free from imperfection.

One very important issue remains concerning the recognition of the law-abiding nature of genetic mutation: is evolution the result of genetic mutation alone? In other words, is genetic mutation the driving force of evolution?

In fact, the following argument is always presented in order to refute the law-abiding nature of genetic mutation:

> Mutation is necessary for evolution, but how could anybody ever have thought it was sufficient? Evolutionary change is, to a far greater extent than chance alone would expect, *improvement*. The problem with mutation as the sole evolutionary force is simply stated: how on Earth is mutation supposed to *'know'* what will be good for the animal and what will not? Of all possible changes that might occur to an existing complex mechanism like an organ, the vast majority will make it worse. Only a tiny minority of changes will make it better. Anybody who wants to argue that mutation, without selection, is the driving force of evolution, must explain how it comes about that mutations tend to be for the better. By what mysterious, built-in wisdom does the body choose to mutate in the direction of getting better, rather than getting worse? (Dawkins 1996, 305-06).

Dawkins makes it sound like there are only two options: either the driving force of evolution is genetic mutation alone, or genetic mutation is a random process and selection alone determines the route of the evolutionary process. In fact, the truth lies somewhere in between: selection alone doesn't drive the process of evolution, and mutation isn't completely random. Genetic mutation has a law-abiding nature that provides the beneficial possibilities to produce this complete integration that we see. There is also an external selection force that preserves these genes and continuously spreads them, while also destroying other harmful genes. To disregard the mechanism of selection leaves mutation with no true evolutionary value, while disregarding the law-abiding and non-random nature of genetic mutation makes it rather difficult to scientifically and logically explain many occurrences that are inseparable from evolution, such as changes in the speed at which it takes place. We find that at times evolution almost stops, while at other times it accelerates substantially. This change cannot be explained by natural selection alone.

In addition, disregarding the law-abiding, non-random nature of genetic mutation would result in a extremely small probability that we

would even exist—a probability that is unattainable within the limits of time that we know. Indeed, this probability is so small that it nearly reaches the point of nonexistence. It doesn't increase with cumulative evolution, because it isn't related to evolution as a whole. Rather, it is related to mutation. Every little detail of the body is beneficial within evolution and complete integration, no matter how small we imagine it to be, and it is a possible mutation within a massive range of possibilities, so it must be the case that mutation is law-abiding and nonrandom. Even Dawkins admits this, but within limits that don't affect his atheism or prove the existence of a god.

> While we write this off as mystical nonsense, it is important for us to be clear exactly what we mean when we say that mutation is random. There is randomness and randomness, and many people confuse different meanings of the word. There are, in truth, many respects in which mutation is not random. All I would insist on is that these respects do *not* include anything equivalent to anticipation of what would make life better for the animal. And something equivalent to anticipation would indeed be needed if mutation, without selection, were to be used to explain evolution. It is instructive to look a little further at the senses in which mutation is, and is not, random.
>
> The first respect in which mutation is non-random is this. Mutations are caused by definite physical events; they don't just spontaneously happen. They are induced by so-called 'mutagens' (dangerous because they often start cancers): X-rays, cosmic rays, radioactive substances, various chemicals, and even other genes called 'mutator genes'. Second, not all genes in any species are equally likely to mutate. Every locus on the chromosomes has its own characteristic *mutation rate*. For instance, the rate at which mutation creates the gene for the disease Huntington's chorea (similar to St Vitus's Dance), which kills people in early middle age, is about 1 in 200,000. The corresponding rate for achondroplasia (the familiar dwarf syndrome, characteristic of basset hounds and dachshunds, in which the arms and legs are too short for the body) is about 10 times as high. These rates are measured under normal conditions. If mutagens like X-rays are present, all normal mutation rates are boosted. Some parts of the chromosome are so-called 'hot spots' with a high turnover of genes, a locally very high mutation rate.
>
> Third, at each locus on the chromosomes, whether it is a hot spot or not, mutations in certain directions can be more likely than mutations in the reverse direction. This gives rise to the phenomenon known as 'mutation pressure' which can have evolutionary conse-

quences. Even if, for instance, two forms of the haemoglobin molecule, Form 1 and Form 2, are selectively neutral in the sense that both are equally good at carrying oxygen in the blood, it could still be that mutations from 1 to 2 are commoner than reverse mutations from 2 to 1. In this case, mutation pressure will tend to make Form 2 commoner than Form 1. Mutation pressure is said to be zero at a given chromosomal locus, if the forward mutation rate at that locus is exactly balanced by the backward mutation rate.

We can now see that the question of whether mutation is really random is not a trivial question. Its answer depends on what we understand random to mean. If you take 'random mutation' to mean that mutations are not influenced by external events, then X-rays disprove the contention that mutation is random. If you think 'random mutation' implies that all genes are equally likely to mutate, then hot spots show that mutation is not random. If you think 'random mutation' implies that at all chromosomal loci the mutation pressure is zero, then once again mutation is not random. It is only if you define 'random' as meaning 'no general bias towards bodily improvement' that mutation is truly random. All three of the kinds of real non-randomness we have considered are powerless to move evolution in the direction of adaptive improvement as opposed to any other (functionally) 'random' direction. There is a fourth kind of non-randomness, of which this is also true but slightly less obviously so. It will be necessary to spend a little time on this because it is still muddling even some modern biologists." (Dawkins 1996, 306-07).

In the above quotation, Dawkins clearly admits—as has been scientifically established—that there are "hotspots" for mutation. Among other things, he also admits that mutation pressure is not the same at all points. These admissions mean that the genetic plan is law-abiding and non-random, and is sufficient proof for a lawmaker behind it.

Dawkins defines randomness as follows:

> It is only if you define 'random' as meaning 'no general bias towards bodily improvement' that mutation is truly random.

This is truly strange. He admits that there are hotspots in genetic mutation and there is unequal mutation pressure, and so on. We have seen that these issues, or laws, that govern the genetic plan have worked together with selection to produce an integrative, refined and complex composition, such as the superior intelligence machine in the hu-

man being. Therefore, we have every right to say that these laws not only indicate a lawmaker, but also that this lawmaker is purposeful and wants to improve the body, because we have actually observed bodily improvement over the course of evolution. The strangest aspect of Dawkins' definition is his conclusion that bias has no purpose, even though bias exists. How did he reach the conclusion that there is no bias toward bodily improvement? Even if the body didn't improve, Dawkins would need evidence to support his claims. However, improvement has actually occurred. One reason for this is that mutation is governed by laws. In some cases, biologists, geneticists, and Dawkins as well, are ignorant of some of these laws, yet are aware of others, such as the laws regarding hotspots, unequal pressure, and so on.

When Dawkins finds himself confronted by scientific facts that confirm that mutation tends toward and is biased toward improvement, he goes even further and admits that mutation is biased toward improvement:

> Variation and selection work together to produce evolution. The Darwinian says that variation is random in the sense that it is not directed towards improvement, and that the tendency towards improvement in evolution comes from selection. We can imagine a kind of continuum of evolutionary doctrines, with Darwinism at one end and Mutationism at the other. The extreme mutationist believes that selection plays no role in evolution. The direction of evolution is determined by the direction of the mutations that are offered. For instance, suppose we take the enlargement of the human brain that has occurred during the last few million years of our evolution. The Darwinian says that the variation that was offered up by mutation for selection included some individuals with smaller brains and some individuals with larger brains; selection favoured the latter. The mutationist says that there was a bias in favour of larger brains in the variation that was offered up by mutation; there was no selection (or no need for selection) after variation was offered up; brains got bigger because mutational change was biased in the direction of bigger brains. To summarize the point: in evolution there was a bias in favour of larger brains; this bias could have come from selection alone (the Darwinian view) or from mutation alone (the mutationist view); we can imagine a continuum between these two points of view, almost a kind of trade-off between the two possible sources of evolutionary bias. A middle view would be that there was *some* bias in mutations towards enlargement of the brain, and that selection increased the bias in the

> population that survived.
>
> The element of caricature comes in the portrayal of what the Darwinian means when he says that there is no bias in the mutational variation that is offered up for selection. To me, as a real-life Darwinian, it means only that mutation is not systematically biased in the direction of adaptive improvement (Dawkins 1996, 308).

So Dawkins admits that genetic mutation can be biased toward bodily improvement, and that selection works toward increasing this bias toward improvement. In fact, this admission and compromise is enough to prove the law-abiding, deliberate and purposeful nature of genetic mutation. Can the bias of mutation toward specific and significant improvement, such as brain size, be explained without mutation being purposeful and law-abiding? Not to mention that this bias occurs at a specific time period? That is the case with evolution of the brain in the recent time period of human existence, the last few million years. Why didn't this bias toward improvement occur in mammals at any time period before? If it isn't deliberate and if the genetic plan isn't law-abiding, why did this evolution occur in the recent time period of human existence at such an accelerated rate? Indeed, mutation in the genetic plan can be non-random at times.

Regarding Dawkins' statement:

> … mutation is not systematically biased in the direction of adaptive improvement.

This conclusion—despite being arbitrary, unconvincing and lacking any evidence—doesn't actually change the fact that the genetic plan is law-abiding, which was proven after it was shown that mutation is biased towards improvement. Natural selection's increase and establishment of this improvement doesn't mean that mutation doesn't have systematic bias toward improvement. Rather, the entrance of selection into the improvement equation confirms that the organization of evolution as a whole—which consists of genetic mutation that is biased toward improvement and the law-abiding selection aimed at establishing this improvement—is a precise and law-abiding system with the purpose of accomplishing bodily improvement in a specific, predetermined direction, which is a purpose that this organization seeks to fulfill. These issues or realities clearly indicate that a lawmaker is behind them.

Inactive genes

One of the things indicating that the nature of genetic mutation is law-abiding and completely non-random is inactive genes, or genes that do not currently serve a function. They represent the majority of genes, at times exceeding ninety-seven percent. Even today, geneticists do not know their specific function. Some biologists and geneticists consider them merely an evolutionary inheritance.

It must be noted that, if the inactive genes are not law-abiding, and if these genes are merely an evolutionary inheritance that follows no law, then they should continue to carry out their role of affecting the body. However, if they were to continue to function, then the body would be significantly deformed, perhaps causing the gradual disappearance and extinction of various species most of the time. The fact that these genes do not function also indicates the law-abiding nature and non-randomness of the genetic plan. What is happening here is similar to what happens when any engineering project is implemented. When some parts of the engineering plan are implemented, they are not implemented in the same project again. Imagine the deformation and failure that would happen if the foundations in an engineering project were applied two or three times, or if a part of an engineering structure was applied twice or more. Therefore, the existence of such a precise system in the genetic plan, self-deactivating parts that have already been applied, absolutely indicates a wise, law-making, conscious force that wrote the law of composition and function of this plan. He also set it down it in an exactly precise and law-abiding way, exactly like how the systematic implementation of an engineering plan indicates its designer and executor to the outside.

An example of this would be how hair did not reappear on humans when they moved out of Africa to the cold parts of the world during the last Ice Age, despite the fact that they would have needed this trait in order to resist the cold. If genes had provided the trait of hair in sufficient quantities to cause evolution, we would have found another type of human being, covered with body hair like a gorilla, appear in Russia, Europe and North America. Just as the loss of the body hair trait and the trait of perspiration had led to the cooling of the body and provided humans with an advantage over other predators in the African savannah, the trait of hair and fur covering the human body

would have given them a major advantage, or would have at least made them better able to compete, especially during the last Ice Age.

The Results of Evolution and its Purpose

I will first discuss their statement that evolution is non-randomness that resulted from randomness.

On the subject of determining randomness and non-randomness, when wanting to give an example to show that the process of natural selection is non-random and that it comes from random origins—which are, in Dawkins' opinion, nature, genetic mutation, or genetic change—he says the following:

> If you walk up and down a pebbly beach, you will notice that the pebbles are not arranged at random. The smaller pebbles typically tend to be found in segregated zones running along the length of the beach, the larger ones in different zones or stripes. The pebbles have been sorted, arranged, selected. A tribe living near the shore might wonder at this evidence of sorting or arrangement in the world, and might develop a myth to account for it, perhaps attributing it to a Great Spirit in the sky with a tidy mind and a sense of order. We might give a superior smile at such a superstitious notion, and explain that the arranging was really done by the blind forces of physics, in this case the action of waves. The waves have no purposes and no intentions, no tidy mind, no mind at all. They just energetically throw the pebbles around, and big pebbles and small pebbles respond differently to this treatment so they end up at different levels of the beach. A small amount of order has come out of disorder, and no mind planned it.
>
> The waves and the pebbles together constitute a simple example of a system that automatically generates non-randomness. The world is full of such systems. The simplest example I can think of is a hole. Only objects smaller than the hole can pass through it. This means that if you start with a random collection of objects above the hole, and some force shakes and jostles them at random, after a while the objects above and below the hole will come to be nonrandomly sorted. The space below the hole will tend to contain objects smaller than the hole, and the space above will tend to contain objects larger than the hole. Mankind has, of course, long exploited the simple principle for generating non-randomness, in the useful device known as the sieve (Dawkins 1996, 43-44).

As far as the example of pebbles and waves, I truly don't know how

Dawkins has overlooked the fact that this is law-abiding and non-random, and that it has produced non-randomness. One of the causes of wave movement is the effect of the law of gravity between the moon and the earth, due to the moon's proximity to the earth. As such, wave movement is primarily governed by a law-abiding gravitational force, meaning that wave movement is not the result of randomness, but rather, it is the result of a system and the law of gravity. The pebbles on the beach are also subject to the laws of gravity, so they are tossed and sorted nearer or farther along the beach according to their own weight. The law of gravity is non-random and it didn't come from randomness. God willing, we will discuss the law of gravity when we examine the big bang theory, because neither space that bends nor graviton particles come from randomness or absolute nothingness.

Dawkins has no right to say that randomness has produced non-randomness; this is simply false. Indeed, Dawkins might ask, "What is the purpose of the pebbles being arranged on the beach by the non-randomness of the law of gravity?" The answer to this is very simple. It isn't necessary for it to have a specific purpose here. What matters is that it is an orderly non-random law that has not come from absolute nothingness, so it definitely has a purpose. It is sufficient to say that the purposefulness of the law of gravity has resulted in the existence of stars, galaxies and galactic clusters, and subsequently even our own existence. Therefore, it is law-abiding and purposeful. It isn't necessary for us to know every purpose of the law of gravity, as we don't even represent the size of an atom in comparison to the universe that the law of gravity brought into existence. So if on some occasion, at some moment and for some reason we are not conscious of the purpose of the law of gravity—such as when the time span of the purpose is a million years—that doesn't mean that the law isn't purposeful. It is sufficient that we have proven that it is a law and it is non-random. This proves it is purposeful and has a lawmaker who wants to achieve a purpose through it.

I believe it is clear now that the primitive tribe from Dawkins' story of the Great Spirit is more rational than Dawkins himself because at the very least, they recognize the obvious: order and non-randomness don't come from disorder and randomness. One who doesn't have something cannot give it, so how can randomness create order?

The issue of the hole and the objects it sifts is clearer than that of the pebbles and the waves. When we place objects above a hole, we

expose them to a law, and we cause them to be governed by the hole. In addition, the fall of these objects is governed by the law of gravity, so we have a law and non-randomness producing non-randomness and order. Therefore, it is purposeful.

I don't find it necessary to discuss in detail the rest of Dawkins' examples, such as the solar system example. Everyone is aware of the fact that the solar system is subject to the non-random law of gravity, so the non-randomness of the law of gravity is what has provided the solar system with non-randomness.

Also, in the example that was given prior to responding to the misconception or argument of probabilities in evolution, Dawkins explained the difference between single-step evolution—which has nothing to do with the theory of evolution and is refuted with the aforementioned argument of probabilities—and cumulative evolution, which takes place in nature, is a part of the theory of evolution, and is not refuted by the aforementioned argument. However, despite having explained this difference in general, Dawkins' example put him in a position where genetic change or mutation is non-random, meaning that, according to the example, evolution is law-abiding and purposeful. It also means that it has a lawmaker who wants to fulfill a purpose with it. This proves the existence of the god that Dawkins sought to deny. Indeed, he proved this himself with his example. Even if Dawkins doesn't believe that his example reveals what is happening in nature, because it means that evolution is purposeful, we see it as an example that brings together to a great extent what is happening in nature with how there is a process of evolution that is always revealing its purpose.*

Dawkins' example of the monkey and Shakespeare's phrase proves that cumulative evolution is completely purposeful, because in his example, he made the computer, in every time and in every generation, revise based on the phrase it wanted to reach through attempts, and compare it to what was obtained. In short, this means that the computer had a target to reach—the phrase to which it compared all of its attempts each time—and the most similar and most suitable one of its phrases was chosen from its attempts in order to eventually arrive at that phrase.

> The computer examines the mutant nonsense phrases, the 'progeny'

*. Review: The argument of probabilities in the theory of evolution.

> of the original phrase, and chooses the one which, *however slightly*, most resembles the target phrase … (Dawkins 1996)

In summary, the computer had a plan that it was executing, not directly, but through attempts and cumulative evolution. This is exactly the point that we seek to arrive at: where evolution is law-abiding, and change or mutation in the genetic plan is non-random (meaning it is law-abiding), at least at times, while it pursues a specific goal. Therefore, there must be someone behind it who wrote its law in order to arrive at the goal. Alternatively, we can say that the goal was designated by the lawmaker, and he also set down the law that guarantees the goal will be reached, once applied.

In addition, the computer that carried out this work is capable of comprehension, exemplified by reading the results, comparing them with the target goal to be reached, and choosing the most suitable one with which to continue:

> The computer examines the mutant nonsense phrases, the 'progeny' of the original phrase, and chooses the one which, *however slightly*, most resembles the target phrase …

Therefore, it is incorrect to apply this example to an element of nature described by Dawkins as blind, unless we say there is a knowledgeable, conscious force that is externally directing the process of evolution, even if only to a certain extent and under certain conditions or with intervention when necessary. Taken from the same example of Dawkins above, this also proves our case.

Our evidence of this knowledgeable, conscious force that is dominating the natural selection process is that nature—or the environment of the organism, and everything in it, even the parts of the organism itself—is controlled by the laws of the quantum particles from which the elements of all bodies are formed, therefore the existence of these quantum particles traces back to one of the four universal forces. (We can specify the force of gravity here, as we shall explain in due course, gravity must exist due to an original eternal entity that is independent, which shall be explained later as well.) This proves the existence of the Absolute Independent One, not only in the nature surrounding the organism that carries out selection, but also in every part of the very body of that organism. These bodies depend on Him, as He is

the origin of the quantum particles that matter consists of. It is exactly like the running of any electrical motor depends on the electricity produced by a power plant.

In addition, Dawkins returned to his example, commenting:

> Although the monkey/Shakespeare model is useful for explaining the distinction between single-step selection and cumulative selection, it is misleading in important ways. One of these is that, in each generation of selective 'breeding', the mutant 'progeny' phrases were judged according to the criterion of resemblance to a *distant ideal* target, the phrase METHINKS IT IS LIKE A WEASEL. Life isn't like that. Evolution has no long-term goal. There is no long-distance target, no final perfection to serve as a criterion for selection, although human vanity cherishes the absurd notion that our species is the final goal of evolution. In real life, the criterion for selection is always short-term, either simple survival or, more generally, reproductive success. If, after the aeons, what looks like progress towards some distant goal seems, with hindsight, to have been achieved, this is always an incidental consequence of many generations of short-term selection. The 'watchmaker' that is cumulative natural selection is blind to the future and has no long-term goal (Dawkins 1996, 50).

Dawkins couldn't escape admitting that there is a purpose directing evolution in order to make it non-random. However, he said that it is a short-term goal, rather than a long-term one:

> In real life, the criterion for selection is always short-term, either simple survival or, more generally, reproductive success.

This means that there is a purpose. If this purpose is short-term, and if it is success in reproduction, that doesn't change the fact that it is a purpose and that evolution is purposeful. To be more precise, the lawmaker of evolution is purposeful, so the final purpose is but an inevitable result of the accumulation of short-term purposes. Indeed, he might say that it is non-random accumulation centered around non-purposeful, random mutation, but the response to that is what I have previously said, that the accumulation that occurs is a result of natural selection and genetic mutation, both of which are controlled by physical laws. These laws, as a final result, bring us to a unified theory or a unified law, which in turn brings us to an eternal, original reason for matter, i.e, nature with all that it contains. As a result, this original

reason (God) dominates the natural selection that depends on Him. He runs through it by running the quantum particles that form it. As such, He is its lawmaker.

We shall explain this by way of an example: we have evolution occurring based on a short-term purpose, let us call it "general success in reproduction". Now, let us imagine that this purpose is a red flag, and *The Blind Watchmaker* of Dawkins, evolution, follows these red flags, one after the other. Although this watchmaker cannot see the final purpose, he clearly sees the short-term purpose, and he follows it accurately according to the law fixed within him and the law of the environment that is directing him. As a result, following short-term purposes made him unknowingly reach the final purpose. This certainly means that whoever made the laws of evolution is definitely purposeful in the long run, because these laws that formed the short-term purposes are what ultimately brought evolution to this purpose. Therefore, we cannot dogmatically state that these laws, with all of them and their work combined, do not intend to reach that purpose. What is correct for us to say is that these laws are purposeful, and they were made to reach that result and purpose, especially given that it is something of importance. The fact that it is completely appropriate as a purpose of evolution cannot be overlooked. Is it possible for us to say that the spirals of a snailshell—that represent a precise mathematical equation—are not controlled by a law?! The truth is, they are controlled by a mathematical law. In fact, every quark, electron, and quantum particle in the matter of an organism follows a law. If we take this to its end point, we reach a unified law that came from an original, eternal reason. He is the maker of all the laws that run nature, and therefore run the process of biological evolution as well.

In nature, we see that life and evolution are law-abiding and they follow a certain path. Metabolism and life have a precise law that brought them into existence. They function according to that genetic plan, which represents a precisely organized and complex composition. Furthermore, the environment, or nature, has laws that govern the direction of the genetic plan externally toward a certain direction, or a short-term purpose. When we find that these short-term purposes have accumulated and brought us to a purpose—rather than to nothingness—then we will certainly conclude that these laws are purposeful, or to be more accurate, that their lawmaker is purposeful. Moreover, we may also find that these short-term purposes have reached a

great and significant purpose that is externally valuable, namely, the intelligence machine of the human, or the human who made all that is new on this earth. Surely this is sufficient proof that the lawmaker of evolution, or whoever planned the paths that evolution would take, or let us say the maker of the genetic plan that produces life, has been purposeful and conscious of his work from the beginning—especially after it has been proven to us that he is the original reason for the existence and continuation of matter, as will be demonstrated in due course.

In truth, there is no rational person who doesn't consider the human to be a great purpose.

It is indeed strange how Dawkins considers it a ridiculous notion that the human being is a valuable purpose. Even if we consider the human being, or his intelligence machine, as an intermediate—rather than a final—purpose, the human is still a great purpose that cannot be rationally denied. Therefore, it is not only truly strange, but also distasteful bias for Dawkins to say,

> … although human vanity cherishes the absurd notion that our species is the final goal of evolution.

Let it be an intermediate purpose rather than a final one, but this is still enough to prove that the lawmaker of life and evolution is purposeful. Nevertheless, we have proven and will further prove that evolution is purposeful, even without turning to the human as its result and purpose. Furthermore, the process of natural selection that occurs with every generation is a product of a periodic law-abiding revision process imposed internally and externally in order to pass on what suits survival according to the prescribed law and to prevent what does not suit survival according to the same prescribed law of evolution, and to prevent traits that don't meet the requirements for establishment, according to the same prescribed law of evolution. This clearly means that the law of evolution was set down to bring life to a certain result or a certain purpose. Indeed, wonders never cease concerning Dawkins and atheists who see all of this law-making and then say there is no lawmaker, who see short-term purposes, admit them, then deny

the long-term purpose, even though the latter is an inevitable, cumulative result of short-term purposes.*†

To put it simply:

We have a path that goes from point A to point Z.

A person starts their journey from point A to point B, with the purpose of reaching point B.

He makes another journey from point B to point C, with the purpose of reaching point C.

He then continues his journey from point C to point D, with the purpose of reaching point D.

The journey continues in this fashion until he eventually reaches point Z.

Point Z was definitely not this person's goal from the beginning. However, the law that made a certain point this person's goal, that brought him a step closer to point Z each time, is certainly a law that when applied has a cumulative result of reaching point Z. So the accumulation of short-term purposes resulted in the long-term purpose, meaning the application of this law in each time has eventually brought us to point Z. Moreover, point Z must be reached by the general path of evolution. Imagine that point Z is the intelligence machine (the brain for example) or the light-sensing machine (the eye). Mutation must provide their genes and improvement, while selection must establish them and their improvement. Therefore, the issue has been settled in favor of evolution being purposeful.

It must be noted that we could imagine evolution producing beings that are blind or without an intelligence machine, but it is not possible for us to imagine evolution not providing sight or an intelligence machine, or establishing and improving them along its overall path, within life in general (and not just within individuals of a certain species).

Therefore, evolution is purposeful and law-abiding. This law has a lawmaker who is purposeful, and he intends to reach the purpose through the application of the law.

*. Imposed internally by genetic differentiation and heredity.

†. Imposed externally by surrounding conditions and nature.

Independent Evolutionary Pathways Reaching the Same Result

There are advanced mechanisms, or compound, complex devices, such as the eye and sonar, that have been reached by animals far away from each other. Their evolution began from completely independent starting points and lines of evolution, but reached the same result. Echolocation is present in bats, in oilbirds that build their nests in semi-dark caves, and in whales and dolphins that live in the water. Although they are completely different animals with different habitats, they have reached the same result. Whether the medium of wave transmission is air (as in bats), or water (as in whales), and whether the waves are ultrasound (as in bats), or audible sound waves (as in oilbirds), the result reached by all of them is the same: the ability to utilize waves to determine location.

In addition, the eye of the octopus appears similar to our eyes, yet anatomically it is vastly different. The "wires" that link the photocells to the brain in our body go over the surface of the retina to form a network that blocks light to some degree. In the eye of the octopus, on the other hand, the wires that come out of the photocells don't go forward, such that they pass in front of it and block the light. This means that the starting point of evolution of the octopus eye is certainly different than the starting point of our eye, yet evolution brought us and the octopus to the same result: eyes for vision that are nearly identical. This means that vision is a part of the purpose of evolution, such that completely different evolutionary pathways with completely independent starting points reach the same result at the end of evolution that we are familiar with, i.e. the present era. Even Dawkins confirms this fact, yet doesn't notice that by proving it he has proven that evolution is purposeful.

> … it is vanishingly improbable that exactly the same evolutionary pathway should ever be travelled twice. And it would seem similarly improbable, for the same statistical reasons, that two lines of evolution should converge on exactly the same endpoint from different starting points.
>
> It is all the more striking a testimony to the power of natural selection, therefore, that numerous examples can be found in real nature, in which independent lines of evolution appear to have converged, from very different starting points, on what looks very like the same endpoint. When we look in detail we find—it would be

> worrying if we didn't—that the convergence is not total. The different lines of evolution betray their independent origins in numerous points of detail. For instance, octopus eyes are very like ours, but the wires leading from their photocells don't point forwards towards the light, as ours do. Octopus eyes are, in this respect, more 'sensibly' designed. They have arrived at a similar endpoint, from a very different starting point. And the fact is betrayed in details such as this (Dawkins 1996, 94-95).

Therefore, the evolution of parts, such as the eye, has reached a purpose, even though both the starting points and the evolutionary pathways were different. Dawkins expressed his astonishment with this result:

> … it is all the more striking a testimony to the power of natural selection …

Indeed, Dawkins finds it astonishing that the result is the same despite the differences in both the starting points and pathways, yet he still refuses to admit that this convergent result of different paths is a clear purpose of evolution, because if he admits the purpose, he admits that God exists. This is a result that he doesn't want to reach even if it is crystal clear.

> At least two groups of bats then, two groups of birds, toothed whales, and probably several other kinds of mammals to a smaller extent, have all independently converged on the technology of sonar, at some time during the last hundred million years. We have no way of knowing whether any other animals now extinct - pterodactyls perhaps? - also evolved the technology independently. (Dawkins 1996, 97).

> The African porcupine was long believed to be closely related to the American porcupines, but the two groups are now thought to have evolved their prickly coats independently. Presumably prickles were useful to both for similar reasons in the two continents. Who is to say that future generations of taxonomists won't change their minds yet again? What confidence can we vest in taxonomy, if convergent evolution is such a powerful faker of deceptive resemblances? (Dawkins 1996, 269).

Dawkins views these facts as evidence of the power of natural selec-

tion, but unfortunately he doesn't see their even stronger indication that—despite the differences in their starting points and environments—the same result (purpose) was still reached, because evolution is purposeful!

Is it possible for a rational person to see numerous objects carrying information about their movement and moving in paths that cause them to converge on a single point, yet then say that these objects aren't purposeful and that the information guiding their movement changes in a random, non-law-abiding and non-purposeful way?

Can we ask ourselves: if the movement of genetic mutation or change is completely random and doesn't follow a law for reaching a purpose, and if selection does not intend to reach certain purposes in the long-term, then how did this information cause everyone to ultimately reach the same point when their evolutionary paths were complete?

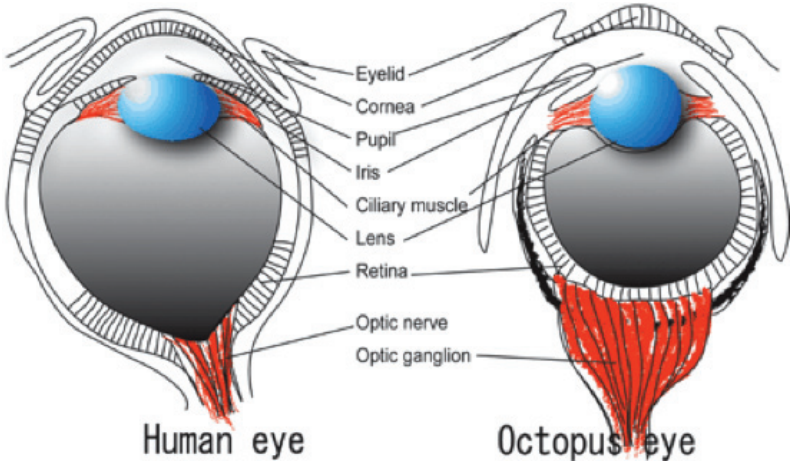

Figure 12: Ogura et al., Comparative analysis of genetic expression for convergent evolution of camera eye between octopus and human.

Specific Trends of Evolution and its Purpose

The brain and its increase in complexity and size with time, for example, is clear evidence that evolution is headed toward a certain result

that it seeks to reach. This result or purpose is to increase the size of the brain.

> These checks on modem skulls encourage confidence in Jerison's estimates of long-dead brains. His conclusion is, firstly, that there is a tendency for brains to become bigger as the millions of years go by. At any given time, the current herbivores tended to have smaller brains than the contemporary carnivores that preyed on them. But later herbivores tended to have larger brains than earlier herbivores, and later carnivores larger brains than earlier carnivores. (Dawkins 1996, 190).

In light of this specific trend in evolution toward increased brain size over time, and with our knowledge of the huge importance of brain size, we see clearly that the purpose of evolution is to reach a large brain size that is qualified to perform a certain task. This is especially clear given what we see, and what we are now familiar with, of what the large brain provides. Indeed, no one doubts that the size and type of the human brain have great significance in terms of differentiating humans from other animals.

The significant and steady way the brain evolved in size and quality, particularly during the later stages of evolution, undoubtedly indicates that this is a purpose of evolution. Or let us say that the most important purpose produced by evolution is intelligence—a product of the brain—which we recognize as being more significant and better than any other product of evolution. Intelligence is an inevitable result of the emergence of life, or at least it is an inevitable result in relation to life within the limits we have become familiar with on this earth. Since the life we know is basically the genetic plan, and the selection that refines it, the result is that the genetic plan and selection—or evolution—is purposeful, its purpose being intelligence, or producing intelligent life. The purpose, within the limits of intelligence that we are familiar with, is a large complex brain.

> The number of advanced civilizations in the Milky Way Galaxy today depends on many factors, ranging from the number of planets per star to the likelihood of the origin of life. But once life has started in a relatively benign environment and billions of years of evolutionary time are available, the expectation of many of us is that intelligent beings would develop. The evolutionary path would, of course, be different from that taken on Earth. The precise sequence of events that

have taken place here-including the extinction of the dinosaurs and the recession of the Pliocene and Pleistocene forests-have probably not occurred in precisely the same way anywhere else in the entire universe. But there should be many functionally equivalent pathways to a similar end result. The entire evolutionary record on our planet, particularly the record contained in fossil endocasts, illustrates a progressive tendency toward intelligence. There is nothing mysterious about this: smart organisms by and large survive better and leave more offspring than stupid ones (Sagan 1978, 240).*

The Inconsistent Speed of Evolution and the Genetic Law

… just about all evolutionists would reject constant speedism, and Darwin certainly would have rejected it. Everyone that is not a constant speedist is a variable speedist.

Within variable speedism we may distinguish two kinds of belief, labelled, 'discrete variable speedism' and 'continuously variable speedism'. An extreme 'discretist' not only believes that evolution varies in speed. He thinks that the speed flips abruptly from one discrete level to another, like a car's gearbox. He might believe, for instance, that evolution has only two speeds: very fast and stop … 'Stopped' evolution is the 'stasis' that is thought by punctuationists to characterize large populations. Top-gear evolution is the evolution that goes on during speciation, in small isolated populations round the edge of large, evolutionarily static populations. According to this view, evolution is always in one or other of the two gears, never in between. Eldredge and Gould tend in the direction of discretism, and in this respect they are genuinely radical. They may be called 'discrete variable speedists'. Incidentally, there is no *particular* reason why a discrete variable speedist should necessarily emphasize speciation as the time of high-gear evolution. In practice, however, most of them do.

'Continuously variable speedists', on the other hand, believe that evolutionary rates fluctuate continuously from very fast to very slow and stop, with all intermediates. They see no particular reason to emphasize certain speeds more than others. In particular, stasis, to them, is just an extreme case of ultra-slow evolution. To a punctuationist, there is something very special about stasis. Stasis, to him, is not just evolution that is so slow as to have a rate of zero: stasis is not just passive lack of evolution because there is no driving force in favour of

*. Dr. Carl Edward Sagan (1934-1996) was a famous astronomer and a professor at Harvard University followed by Cornell University. Many of his books have been translated into other languages, including Arabic.

> change. Rather, stasis represents a positive *resistance* to evolutionary change. It is almost as though species are thought to take active steps *not* to evolve, *in spite of* driving forces in favour of evolution.
>
> More biologists agree that stasis is a real phenomenon than agree about its causes (Dawkins 1996, 245-46).

We are not concerned here with the details of the ideologies of evolutionists, nor their disagreements about the mechanisms of evolution and the behavior of species within evolution. Rather, I have quoted the above in order to demonstrate a scientific issue that evolutionary biologists almost all agree upon, namely, that the speed of evolution is inconsistent. There have been stages where evolution has been fast and others where it has been slow. These changes in its speed may explain the problematic issue for evolutionary scientists concerning the gaps in the geological record. This is because the high speed movement of evolution (by evolutionary standards) in a certain period of time explains the absence of transitional fossils that a researcher would expect to find. From a geological perspective, the short period of time in which these transitional organisms lived and existed makes it difficult to obtain transitional fossils from that period.

However, at the same time, this gives us a clear indication of the law-abiding nature of the genetic plan. This inconsistent speed is certainly governed, to a great extent, by genetic mutation. This means that the speed of mutation is definitely changing throughout the path of evolution, and it is fast and accelerating at certain times. We can observe that these times are exactly the transitional periods between species, or periods of speciation. This generates a big question mark for which the researcher of evolution hasn't found any reasonable answer.

The logical explanation is that chromosomes are governed by a law that determines the speed of their mutation, meaning that the genetic plan is law-abiding. That is why it produces a great deal of mutations in a specific direction during a specific time period; it pressures the path of evolution in that period and makes it accelerate and move at a very high speed until it reaches a specific purpose during a certain time period in evolution. We can term that purpose "new species". Afterwards, the speed of mutation returns to stasis, or becomes very slow, and evolution does as well, because it depends on mutation, as without mutation there is no evolution.

In addition, when we find that the speed of evolution of a certain part increases at a certain stage, and its increase is specifically toward improvement, that means the speed of mutation also increased greatly at that stage and was biased toward improvement too. This is natural, because there are many options for the speed of evolution toward improvement. If we take the path of evolution of the modern human brain as an example, we find that it has greatly accelerated in evolution toward an increase in size over the last few million years. This increase in brain size represents an evolution that is beneficial to the body. In fact, it is unquestionably the most important result of evolutionary improvement. The only logical explanation for the great increase in mutation speed toward increasing brain size in the human over the last few million years is that mutation is law-abiding and purposeful. It also must be greatly dependent upon an internal law of the genetic plan that is neither completely random, nor dependent only on random causes, such as error in genetic replication and radiological bombardment from space.

> … one of the fastest known evolutionary changes, the swelling of the human skull from an *Australopithecus*-like ancestor, with a brain volume of about 500 cubic centimetres (cc), to the modern *Homo sapiens*'s average brain volume of about 1,400 cc. This increase of about 900 cc, nearly a tripling in brain volume, has been accomplished in no more than three million years. By evolutionary standards this is a rapid rate of change: the brain seems to swell like a balloon and indeed, seen from some angles, the modem human skull does rather resemble a bulbous, spherical balloon in comparison to the flatter, sloping-browed skull of *Australopithecus*. But if we count up the number of generations in three million years (say about four per century), the average rate of evolution is less than a hundredth of a cubic centimetre per generation. The caricature of a gradualist is supposed to believe that there was a slow and inexorable change, generation by generation, such that in all generations sons were slightly brainier than their fathers, brainier by 0.01 cc. Presumably the extra hundredth of a cubic centimetre is supposed to provide each succeeding generation with a significant survival advantage compared with the previous generation …
>
> We can, to be sure, discern long-term trends of change - legs get progressively longer, skulls get progressively more bulbous, and so on - but the trends as seen in the fossil record are usually jerky, not smooth …
>
> The American paleontologists Niles Eldredge and Stephen Jay

> Gould, when they first proposed their theory of punctuated equilibria in 1972, made what has since been represented as a very different suggestion. They suggested that, actually, the fossil record may not be as imperfect as we thought. Maybe the 'gaps' are a true reflection of what really happened, rather than being the annoying but inevitable consequences of an imperfect fossil record. Maybe, they suggested, evolution really did in some sense go in sudden bursts, punctuating long periods of 'stasis', when no evolutionary change took place in a given lineage (Dawkins 1996, 228-29).

Furthermore, it is worth mentioning here that, if genetic mutation—which provides the variation necessary for evolution—is dependent on just unintentional error in genetic replication, mutation due to radiological bombardment of chromosomes, and similar things that can be called random and non-law-abiding, then it makes no sense for the effect of genetic mutation to completely stop such that an animal, or a fish (such as the Latimeria), remains without evolving or changing for hundreds of millions of years. This is the case even though we know for certain that the environment surrounding it is constantly changing, and these changes are sometimes extreme, such as the change that occurred almost 65 million years ago that led to the extinction of dinosaurs and most organisms on the earth. Error in replication and mutation due to radiation should always be possible as long as there is reproduction and replication, as well as the existence of constant radiation bombardment from space. So what happened that evolution froze in those organisms?![*]

This strange phenomenon, as we see in the case of the Latimeria fish, the horseshoe crab and the Nautilus, or even the alligator snapping turtle, are explained by some punctuationists as the result of organisms resisting evolution. Dawkins, who perhaps doesn't accept punctuationism, explains them to be the result of a group of genes being in harmony with each other and not allowing new genes into the group. Either way, the issue means that there is something in the

*. Undoubtedly, genetic change occurs due to the replication of DNA that is necessary for reproduction and heredity. It can be said that this change is intentional, meaning the genetic plan is law-abiding. Sometimes, genetic mutation—not randomness—governs its law. It can also be said that it is unintentional, meaning it is the result of an error in genetic replication. It can also be said that it is partly intentional and partly unintentional. There are three hypotheses here, and it cannot be scientifically asserted that all mutations occurring during replication are random due to an error in replication.

genetic plan that caused evolution to stop, as in this extreme case of the Latimeria fish. We can call it an internal law of the genetic plan that governs the plan. This is what often makes it go in this direction or that direction, as well as what sometimes puts it in a condition of complete stasis for a very long period of time that doesn't even correspond to evolution's very slow rate.*

Genes are basically information written in a specific language in the chromosomes. The existence of laws that govern them, such as the one assumed by Professor Dawkins, means that there is a lawmaker for these genes, and that he is the one who set down the laws by which they function. Therefore, if they move in a certain direction, they can stop at a specific place, and point, whereas if it moves in another direction, it doesn't stop at that point. This is clear in the case of the eye of the Nautilus, which is basically an open hole containing sensory cells. This means that it has a developed eye without a lens, whereas its other relatives, such as the octopus, have highly developed eyes with a lens.

*. With a slow speed of evolution, an animal the size of a mouse doesn't need more than 60,000 years to become the size of an elephant. However, in reality, it takes at least tens of millions of years. This means that the path of evolution is either extremely slow with a steady speed, or that there are stages of stasis that evolution periodically goes through. Theories were made to explain this slowness, either by variation and speed, or by stasis and movement in evolution: "Stebbins calculates that at his assumed very slow rate of evolution, it would take about 12,000 generations for the animals to evolve from an average weight of 40 grams (mouse size) to an average weight of over 6,000,000 grams (elephant size). Assuming a generation-time of 5 years, which is longer than that of a mouse but shorter than that of an elephant, 12,000 generations would occupy about 60,000 years. 60,000 years is too short to be measured by ordinary geological methods of dating the fossil record. As Stebbins says, 'The origin of a new kind of animal in 100,000 years or less is regarded by paleontologists as "sudden" or "instantaneous".' (Dawkins, 1996, p. 242).

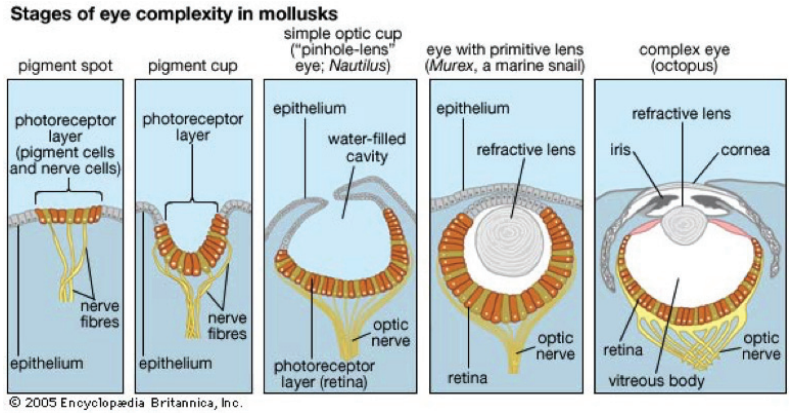

Figure 13: The Stages of Evolution and Increased Complexity of the Eye structure through examining images of the eyes of an octopus, Nautilus, and others.

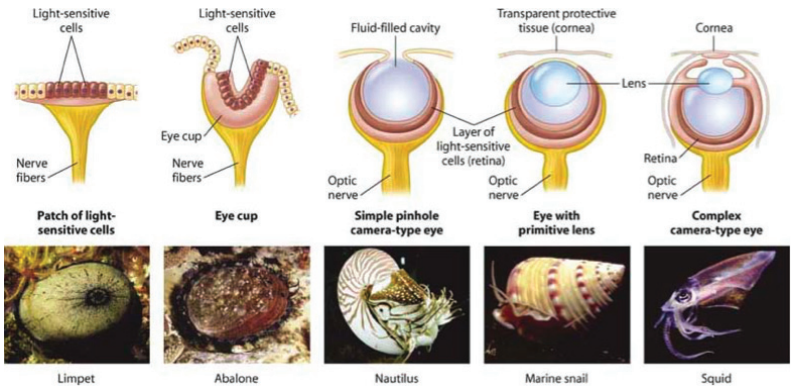

Figure 14: Illustrative comparison of the size of the eyes of several organisms that are gradated in evolution and complexity.

The Law of the Genetic Language

The genetic language in the DNA of trees is the same as the genetic language in the DNA of any animal. Indeed, it is the same as the genetic language in the DNA of a human being. The uniformity, precision

and laws of this language that make it readable and understandable to everyone—even though evolution has moved in different directions and at different speeds—is a clear indication that its maker speaks with a law and with knowledge, such that he set down the genetic language in a law-abiding way that protects it from the continuous impact of evolution. It has a precise, unchanging dictionary that is sufficient to encompass all the directions of evolution. We can understand the magnitude of this by comparing the genetic language to our languages that branch continuously, that are affected by the environment, and that change with every new development that occurs in our lifetime.

The Law-Abiding Nature of Balance in Selection

Certainly, the existence of a balanced system clearly indicates that there is someone who intended to arrange it in this way. This is because balance, at the critical point, is not a trivial matter. Rather, it is an extremely important, precise system, used frequently by designers in engineering systems and when it is found, it indicates that there is an organizer behind it, as it doesn't come from randomness and non-order; and one who doesn't have something cannot give it. We have found that the system of evolution was arranged in such a way that it provides this balance, which at times is crucial. For example, selection is sometimes the result of the balance between sexual selection, and the natural selection of the environment and surrounding conditions. Sometimes sexual selection leads to developing certain parts, or giving them coloring, such as the tail of the Whydah bird, or the tail of the peacock. If this was left solely to sexual selection, the increase in these parts would not stop as long as genetic mutation and variation provide more of it, and as long as females prefer this increase in tail length which gives the long-tailed male an advantage in spreading his genes. However, when that increase due to sexual selection reaches a certain point, and the length of the tail becomes an obstacle to acquiring food easily or escaping a predator, then the damage from the increase becomes costly, causing the demise of the organism in accordance with the natural selection of the surrounding environment. That is when natural selection pushes in the opposite direction, and at

a certain point a balance is achieved. Thus, evolution stops there in a state of balance.*

If not for sexual selection, evolution in this direction would not occur. Moreover, if not for natural selection, balance at a ideal point doesn't occur. This means that the system of evolution works here as if it was an engineering system containing a safety valve, such as the ones used by engineers to set the amount of allowable pressure or heat. Once the pressure or temperature has reached the set allowable level, the valve closes the outlet and doesn't allow the pressure or heat to increase further. If not for this valve, the system, engine, or the factory would explode.

We must take note of an important issue: even though we are capable of providing a scientific explanation for an event in a certain environment, that doesn't mean that this medium is not law-abiding, or that it is random and non-purposeful with no external cause. The important point is that, to a certain extent, we have been capable of understanding and knowing the law-abiding plan by which this environment functions.

*. As In the case with the thermostat that regulates production temperature at a specific degree, if the temperature increases, it activates cooling systems, and if the temperature decreases, it activates heating systems. In this way it always works towards maintaining a steady temperature that is suitable for a given product. An example may be in the process of industrial fermentation, specifically the life of the organisms that live in that environment.

Figure 15: An image of a male Whydah bird showing the length of his tail to a female Whydah. Reference: Wilkinson's World

How Do We See God Within His Creation?

Another way that lets us see the lawmaker when we find the law:

Indeed, our use of the law as evidence for the existence of the lawmaker is not negated by the fact that we do not see the lawmaker. This is because the existence of law and organization in itself indicates the existence of the lawmaker and organizer, even if we do not see this lawmaker or organizer ourselves. Rather, it is enough that we witness and observe the organization and law indicating Him. For example, let us suppose that a very intelligent life form on another planet wanted to rule the earth using their own computers and robots manufactured on earth. They sent an electronic message which were plans for producing high-tech, advanced computers and robots that we were not familiar with, as though they were, to some extent, intelligent. After we received the electronic message it had travelled via the Internet to factories that produce electronic circuits, computers and robots, and the message was implemented electronically. However, since there are

things that interfere with the assembly and production process, such as human error, we expect that among the products of implementing the electronic message are computers that are poor, defective, or ordinary compared to the superior computers and robots the electronic message intended to produce. Even if it had produced intelligent, superior computers and robots—and as we know, intelligence is a product of chemical substances—and then completely ruled the earth and the production and construction process within it, and we saw this outcome not knowing where its plans came from, then perhaps many of us might attribute its plans to errors that occurred in the original computers, the Internet, or viruses that entered the factory systems, etc. This conclusion might be justified by the fact that there are average and inferior computers and robots that have also been produced.

In fact, that is what the theorizing atheists like Dawkins and his supporters have done with Darwin's theory. However, when a reasonable person sees this result, they will analyze and study it in a logical way, and through the indications and the signs they learn that there is an organizer and a lawmaker behind it who wrote its law and sent it to be implemented on the earth using the available resources. Therefore, intelligence is a goal, and one way to achieve it is by the known chemicals that are abundantly available on the earth and that make up the nervous system.

The Intelligent Design Theory

The intelligent design theory relies on proving intelligent design in the lineage of organisms and their parts, and states that this design indicates a designer of these organisms, thus proving the existence of a god. There are two ways of approaching Intelligent Design.

The first way is to maintain that creation occurred in one burst, seeking to prove that organisms are designed by demonstrating the precision and complexity of living bodies and their parts, and therefore indicating that they were created exactly as we see them today without passing through any stages of evolution. This is the most common and well-known approach to intelligent design theory. However, the evidence for evolution is clear and powerful enough to render the belief that creation occurred in one burst as naive.

The second way: the theory of intelligent design can be molded in such a way so as to agree with evolution, seeking to prove through

the complexity, structure, and precision of the organization of living bodies and their parts that organisms are designed, and that evolution is purposeful, so there is a god behind evolution who wants to reach this purpose.

The problem with both approaches is that there are major holes in the design, even though the so-called designer (the god) is omniscient and omnipotent. Such a god must create an integral design with no major holes, like the weakness of the spine in human beings for example. The reason for this weakness is that the spine is designed for a curved body. It is not ideally designed for an upright body like the human, which is why many people on the earth suffer from back pain at least once in their lives. Also, there is the laryngeal nerve and its elongation that some comparative anatomy experts consider a mistake in design. It could not have been designed for each species individually because its length does not provide any true benefit for the individual. In fact, it is harmful as its length makes the nerve more prone to damage than if it were shorter to the extent required.

With respect to those who believe that creation occurred in one burst, this argument cannot be logically refuted, because the laryngeal nerve error is a major error and is enough to refute the intelligent design of the body along along with all of its parts for every species. Since this defect demonstrates considerable deviation from a perfect, intelligent design, it cannot be explained unless it is an evolutionary inheritance.

With respect to those who believe in both evolution and intelligent design, while at the same time believing the designer is an absolute divinity, meaning that he is omniscient and omnipotent, the argument still holds, due to the fact that there is a defect in the design of living bodies that refutes the designer's omniscience. However, if they say what God says in the Quran, that creation, or the design and execution of creation, were through the hands of God, meaning through the intercession of God Almighty's creation, then the design that is not completely perfect can be justified as a little error in the design in the beginning that was made worse by evolution, until it became a cumulative evolutionary inheritance that appears as an obvious error in design.

This is also a clear indication that the original creator is God Almighty, the absolute God. However, the direct creator is not God Almighty is not the direct creator, but a sanctified creation who began

to create by the command of God Almighty, and they reflected their imperfection as light-filled created beings containing darkness, because the light in which there is no darkness is God Almighty, the best of Creators, who created the first intellect, Muhammad pbuhap, then created the first lights from him, and then commanded them to begin creating as He wished, with His strength and might. This is why the Almighty said:

> ﴿Verily We created man from an extract of wet clay. Then We made him a sperm-drop in a firm lodging. Then We created the sperm-drop into a clinging clot, and We created the clot into a lump, and We created the lump into bones, and We covered the bones with flesh; then We formed him into another creation. So blessed is God, the best of creators.﴾ Quran Chapter "The Believers" 23:12-14

Note also the use of the singular and the plural in the verse: "we created … we made … we created … we created … we created … we covered … we formed". The verse is then sealed with the statement that the dominant one over the creators who began creating is God Almighty: ﴿So blessed is God, the best of creators﴾. God clarified the status of these creators and that they are hands of God Almighty, meaning the ones, through whom God the best of creators, began the creation: ﴿And the heaven we constructed with hands, and indeed we are expanders.﴾ Quran Chapter "The Winnowing Winds" 51:47

Some might say that the position of the human spine, and the plans for the laryngeal nerve in this way, have certain benefits on the path of evolution, or even in certain times. The truth is, even if this is proven beyond doubt, it still does not refute the fact that these issues indicate that they are a historical evolutionary inheritance and therefore refutes creation occurring in one burst.

In addition, it does not refute the fact that it is not a design coming from an omniscient, omnipotent creator. A better design can be imagined, which means that it is not the best, most ideal, and most complete design. Therefore, there is no escape from accepting what God stated in the Quran: that the hands of God were intermediaries in the creation process.

Summary:

In this chapter, we have proven that evolution is purposeful by proving that the superior intelligence machine has been its purpose

from the beginning. Afterwards, through signs and indications, we sought to prove that:

Mutation is sometimes law-abiding, so it has been proven to be purposeful; and that evolution, which is the result of a coordinated activity of mutation and selection, is law-abiding and purposeful.

Our opponent assumes the opposite, yet is completely incapable of presenting decisive, irrefutable evidence for complete randomness, be it in the stage of all genetic mutation, or in the final result of evolution, or let us say the result that evolution reached so far. This itself is enough to keep those who want to prove the nonexistence of a god devoid of decisive evidence and incapable of concluding that there is no god at this stage. This is the case if he does not have to admit the existence of a god based on the evidence presented in this chapter, at least the evidence concerning the intelligence machine being the purpose of evolution.

CHAPTER FIVE

THE ATTRIBUTES OF AN EFFECT INDICATE THE ATTRIBUTES OF ITS CAUSE IN HUMANS

The Superior Intelligence Machine: The Human Brain

The brain as an intelligence machine is irrefutable evidence that evolution is purposeful, as I have explained previously. The gene that builds the intelligence machine is the best gene, because it is the best survival machine in the competition for survival. Whenever a gene for building an intelligence machine is found in life, evolution will refine it to move toward greater intelligence. This proves that evolution is purposeful, and this is enough to prove the existence of a god behind the purpose.

Many theories have been proposed to explain the rapid and continuous brain growth in the ancestors of humans over the last few million years, until the brain of *Homo sapiens* was reached. All of these theories can be summarized with one statement: the brain is the best survival machine, so whenever suitable conditions are available, and when mutation provides genes for its improvement, whether in size or in quality, it will inevitably move quickly toward improvement.

The brain is an ideal survival machine for the organism, but the economic cost to the body is high, because it requires a large amount of energy to function compared to other body parts. A more developed brain means the body as a whole will require larger quantities of food. Accordingly, there is an equation that states that whenever the improvement of this machine through genetic mutation is able to help the body gather greater amounts of food in order to achieve sufficiency and the ability to reproduce, or provide an additional opportunity to survive danger, or prepare it for a greater capacity for social communication, then it is certain that natural selection will firmly establish a mutant gene like this as quickly as possible. The brain will grow in this way as long as genetic mutations toward improvement are available. The brain is the ideal survival machine, which is why it is normal for natural selection to continue evolving the intelligence machine of the

organism, until every improvement provided by genetic mutation is exhausted.

Perhaps the most important thing that has set the human ancestors of Africa apart in the last few million years is their social life. They would hunt and combine their strength, so they were able to survive more effectively in groups. Optimal communication between individuals is central to building a successful group that will survive. In order to achieve optimal communication, they require a language that evolves more and more, developing to fulfil their communication needs. Therefore, every new generation may find themselves encountering more words and more information that must be memorized when compared to the previous generation. With time, the words and information increase in complexity, and may also evolve and multiply. So in the beginning, language may have consisted of sign language and a few sounds, which, in time, multiply and become more complex, increasing the need to improve the memorization machine—the brain. Whenever genetic mutation provides this improvement, it inevitably becomes selected and firmly established by natural selection because individuals who carry this improvement gene become better able to survive, reproduce, and pass their genes to subsequent generations. The genes for brain improvement, whether in size or quality, continue to increase and become established in the gene pool that exists in nature. Brain size will gradually increase in this way.

The only accurate explanation that biologists have for the abundant availability of brain improvement mutations—just in the ancestors of humans perhaps—especially in the last few million years (specifically the last two million) is the known fact provided by the fossil record: there is a recurring pattern in evolution, which is that the speed in evolution is inconsistent in general. There are pauses or semi-pauses, and conversely, there is a relatively high speed by evolutionary standards alongside these pauses. This evolutionary pattern cannot explain how genetic mutation made consecutive improvement mutations available at certain time periods and at great speed relative to the generally slow history of evolution, because when we are talking about the speed of evolution, or its speed toward improvement in particular, it is as if we are saying that there is rapid genetic mutation geared toward improvement. These two issues go hand in hand, as there is no evolution without genetic mutation. The fact that genetic mutation makes a remarkable number of improvement mutations available for the body

part of a specific species, and at a particular time period, cannot be accounted for by those who say that genetic mutation is completely, and one hundred percent, random.

We can say that the matter is purposeful and intentional because genetic mutation provided improvement mutations both in size and in quantity specifically for the human brain in the most recent time period in particular, so it is unreasonable to attribute it to pure chance alone.

Why did genetic mutation provide so many improvement mutations in size and quality for the human brain in the most recent time period in particular (approximately two million years)?!

Why were improvement mutations of the brain not provided for other organisms, such as the chimpanzee?!

An evolutionary biologist could respond by hypothesizing that the mutations were also provided for the chimpanzee and others, but they were economically costly as the brain requires a great deal of energy in order to work. Therefore, any improvement of the brain does not just mean a better ability to obtain food, escape enemies, and survive, but it also increases the need for additional energy and food, thus placing the animal in additional danger. Since the chimpanzee is not bipedal, it could not enjoy the ideal benefit of these mutations in order for them to be selected, which is why these genes were not established in the chimpanzee gene pool. However, since humans were bipedal, the benefit of these mutations outweighed the cost and hence they were selected and established in the human gene pool.

However, this response still means that evolution is purposeful and planned in order to reach a specific purpose, since based on this answer, the steps of evolution are built in a way that resembles the arrangement of a puzzle. The steady improvement of the brain, whether in size or in quality, towards the production of a superior brain, is a step that has only ever been achieved by humans, because it is built upon the previous step of bipedalism. The superior brain was achieved only after bipedalism was achieved, so the matter is organized and not random. Evolution of the brain in both size and quality in the most recent time period (about two million years) required preliminary steps that had to be built before it. Without them it would never have occurred, even if suitable improvement mutations were available. In short, this means that no matter how the process of evolution proceeded, it would have produced the human being or the bipedal, intellectual being with

a superior brain, because mutation and selection must eventually provide a bipedal animal sooner or later. If this animal were to become available, its brain would have to evolve substantially, both in size and quality, to produce for us the animal with the superior brain, or the human being. Since mutation and selection must do this sooner or later, we must reach this result, the modern humans, or *Homo Sapiens*.

If a person does not want to accept this result as a whole, they have no escape from accepting what I have shown with decisive evidence: that no matter what path it takes, evolved life must produce intelligence in some way, as long as sufficient time is available.

What is inseparable from the opinion of Carl Sagan and other scientists regarding intelligence—whether he admitted this result or not—is that life and evolution have a purpose, because that is the only meaning of the statement that the intelligence machine is a purpose that evolving life must reach, no matter where it exists in the universe we live in.

> The number of advanced civilizations in the Milky Way Galaxy today depends on many factors, ranging from the number of planets per star to the likelihood of the origin of life. But once life has started in a relatively benign environment and billions of years of evolutionary time are available, the expectation of many of us is that intelligent beings would develop (Sagan 1978, 240).

However, there are those who do not accept that the intelligence machine is an inevitable product of the existence of life, and they object to it. Stephen Hawking says:*

> So how does one account for our lack of extraterrestrial visitors? It could be that there is an advanced race out there which is aware of our existence but is leaving us to stew in our own primitive juices. However, it is doubtful it would be so considerate to a lower life-form: do most of us worry how many insects and earthworms we squash underfoot? A more reasonable explanation is that there is a very low probability either of life developing on other planets or of that life developing intelligence. Because we claim to be intelligent, though perhaps without much ground, we tend to see intelligence as an in-

*. Professor Stephen Hawking is a well-known theoretical physicist. He was the Lucasian professor of mathematics at the University of Cambridge, a position previously held by Isaac Newton. Among his significant scientific contributions is the development of the theory regarding black hole radiation.

> evitable consequence of evolution. However, one can question that. It is not clear that intelligence has much survival value. Bacteria do very well without intelligence and will survive us if our so-called intelligence causes us to wipe ourselves out in a nuclear war. So as we explore the galaxy we may find primitive life, but we are not likely to find beings like us (Hawking 2001, 171).

In truth, the objection of Hawking and many others cannot be used against what we sought to prove previously, because we do not wish to prove that the intelligence machine is the best machine for enabling bodies to survive under all conditions, including extreme ones. Rather, all we wish to prove is that the intelligence machine is the best survival machine when competing with peers for food and survival in the journey of the evolution of life, so evolution must reach and evolve the intelligence machine if sufficient time is available.

In order for the discussion to be scientific and accurate, it must be restricted to the effect that the intelligence machine has on organisms throughout the journey of evolution, and to comparing it to other survival machines in the competition for food and survival. In that case, we would inevitably and inescapably conclude that the intelligence machine is the ideal survival machine.

The discussion here, though fictional, will be about bacteria or single-celled eukaryotic organisms. If the intelligence machine appeared in some of these organisms due to mutation, they would have a survival advantage, because it would give them an advantage over other survival machines such as speed or biological weapons when it comes to acquiring food and escaping enemies. Therefore, evolution selects the intelligence machine and evolves it, and so on. Thus, the issue is settled and there is no escape for Hawking, Dawkins and others, except by assuming the presence of frozen life in living bacterial fossils. This is an imaginary assumption that cannot be achieved in reality, as long as there is mutation of improvement and sufficient time to establish it.

The truth is, even at the level of the fallacy presented by Hawking and others, we can say that whenever bacteria enter a competitive race for survival with organisms intelligent enough, intelligence undoubtedly wins. The best evidence for this is what is happening now in the medical field: does Hawking doubt that our intelligence enables us to win over the bacteria that attack our bodies, and to eliminate many types of harmful bacteria in any particular location we choose, such as

the operating room? It is not improbable to imagine that humans will one day be capable of eliminating any type of bacteria or eukaryotic microscopic organism on the earth as a whole.

I believe it has now been settled that as long as there is evolution, it is purposeful and its purpose is to produce the intelligence machine. Moreover, as long as there is purpose, there must be a purposeful lawmaker behind it who wants to achieve that purpose. Even if we do not see him with our eyes, here we have seen him with our intellect and with the intelligence machines produced by the message he had sent, which brought us into existence as intellectual biological bodies.

It is certainly beneficial that human beings used the intelligence machine to reach the theory of quantum mechanics, the equivalence principle, and later the production of nuclear energy. The intelligence machine has not erred so far. If we used the intelligence machine, it would not tell us to make nuclear weapons and set them off on the earth. If there is a nuclear war, it is certainly not a product of the intelligence machine. Rather, a nuclear war does not occur at all unless the human intelligence machine is frozen. The intelligence machine had no involvement in the senseless decision made by the United States government to strike Japan with nuclear weapons.

I believe it is unfair for the intelligence machine to be held responsible for behavior based on when it has been frozen.

Thought

Animals share our ability to think and respond. There are many examples in the animal kingdom, and perhaps the clearest known example is that of the great apes and their ability to use tools made of stone and tree branches to acquire food. Chimpanzees can learn sign language and can handle language intelligently. They accurately recognize their enemies, or whoever disturbs or harms them, and even try to offend them when given the chance. Chimpanzees have shown in some experiments that they have the ability to think, identify a problem, and find a solution. The orangutan has the ability to imitate and learn.

Alfred Russel Wallace, who co-discovered the theory of evolution, said that the orangutan baby's behavior was "very like that of a baby in certain circumstances" (Wallace 1869, 66).*†

The intelligence of the orangutan (man of the woods) is well-known by those who interact with it.

> But in thinking over these experiments, two psychologists, Beatrice and Robert Gardner, at the University of Nevada realized that the pharynx and larynx of the chimp are not suited for human speech (Sagan 1978, 115).

> The Gardners hit upon a brilliant idea: Teach a chimpanzee American sign language, known by its acronym Ameslan, and sometimes as "American deaf and dumb language" (the "dumb" refers, of course, to the inability to speak and not to any failure of intelligence). It is ideally suited to the immense manual dexterity of the chimpanzee. It also may have all the crucial design features of verbal languages (Sagan 1978, 115-16).

> On seeing for the first time a duck land quacking in a pond, Washoe gestured "waterbird," which is the same phrase used in English and other languages, but which Washoe invented for the occasion. Having never seen a spherical fruit other than an apple, but knowing the signs for the principal colors, Lana, upon spying a technician eating an orange, signed "orange apple." After tasting a watermelon, Lucy described it as "candy drink" or "drink fruit," which is essentially the same word form as the English "water melon." But after she had burned her mouth on her first radish, Lucy forever after described them as "cry hurt food." A small doll placed unexpectedly in Washoe's cup elicited the response "Baby in my drink." When Washoe soiled, particularly clothing or furniture, she was taught the sign "dirty", which she then extrapolated as a general term of abuse. A rhesus monkey that evoked her displeasure was repeatedly signed at: "Dirty monkey, dirty monkey, dirty monkey." Occasionally Washoe would say things like "Dirty Jack, gimme drink." Lana, in a moment of creative annoyance, called her trainer "You green shit" (Sagan 1978, 117-18).

Alfred Wallace (1823-1913) was a British naturalist. He is considered to have discovered, along with Darwin, the theory of evolution by natural selection. He discovered it independently and sent his writings on the subject to Darwin.

†. The evolution of the great apes has two separate branches. One branch traces back to the gorilla and the chimpanzee, and the other traces back to the orangutan. Orangutan is Malay word, orang hutan, which means "man of the woods".

Lucy was eventually able to distinguish clearly the meanings of the phrases "Roger tickle Lucy" and "Lucy tickle Roger," both of which activities she enjoyed with gusto (Sagan 1978, 118).

At the Yerkes Regional Primate Research Center in Atlanta, Georgia, they are learning a specific computer language called (by the humans, not the chimps) "Yerkish"…

Lana monitors her sentences on a computer display, and erases those with grammatical errors. Once, in the midst of Lana's construction of an elaborate sentence, her trainer mischievously and repeatedly interposed, from his separate computer console, a word that made nonsense of Lana's sentence. She gazed at her computer display, spied her trainer at his console, and composed a new sentence: "Please, Tim, leave room" (Sagan 1978, 119-20).

I would expect a significant development and elaboration of language in only a few generations if all the chimps unable to communicate were to die or fail to reproduce. Basic English corresponds to about 1,000 words. Chimpanzees are already accomplished in vocabularies exceeding 10 percent of that number. Although a few years ago it would have seemed the most implausible science fiction, it does not appear to me out of the question that, after a few generations in such a verbal chimpanzee community, there might emerge the memoirs of the natural history and mental life of a chimpanzee, published in English or Japanese (with perhaps an "as told to" after the by-line).

If chimpanzees have consciousness, if they are capable of abstractions, do they not have what until now has been described as "human rights"? How smart does a chimpanzee have to be before killing him constitutes murder? What further properties must he show before religious missionaries must consider him worthy of attempts at conversion?

I recently was escorted through a large primate research laboratory by its director. We approached a long corridor lined, to the vanishing point as in a perspective drawing, with caged chimpanzees. They were one, two or three to a cage, and I am sure the accommodations were exemplary as far as such institutions (or for that matter traditional zoos) go. As we approached the nearest cage, its two inmates bared their teeth and with incredible accuracy let fly great sweeping arcs of spittle, fairly drenching the lightweight suit of the facility's director. They then uttered a staccato of short shrieks, which echoed down the corridor to be repeated and amplified by other caged

> chimps, who had certainly not seen us, until the corridor fairly shook with the screeching and banging and rattling of bars. The director informed me that not only spit is apt to fly in such a situation; and at his urging we retreated.
>
> I was powerfully reminded of those American motion pictures of the 1930s and 40s, set in some vast and dehumanized state or federal penitentiary, in which the prisoners banged their eating utensils against the bars at the appearance of the tyrannical warden. These chimps are healthy and well-fed. If they are "only" animals, if they are beasts which abstract not, then my comparison is a piece of sentimental foolishness. But chimpanzees can abstract. Like other mammals, they are capable of strong emotions…
>
> The cognitive abilities of chimpanzees force us, I think, to raise searching questions about the boundaries of the community of beings to which special ethical considerations are due, and can, I hope, help to extend our ethical perspectives downward through the taxa on Earth and upwards to extraterrestrial organisms, if they exist (Sagan 1978, 126-28).

All of the above—if the details are correct—does not in any way mean that the human is just an animal body that evolved from the bodies that preceded it. The idea that animals and us have thinking and abstraction in common, at lower levels, is an issue acknowledged by religion—or at least Islam. It is stated in the Quran:

> ﴿Until, when they came upon the valley of the ants, an ant said, "O ants, enter your dwellings that you not be crushed by Solomon and his soldiers while they perceive not." ⁎ And he took attendance of the birds and said, "Why do I not see the hoopoe—or is he among the absent? ⁎ But the hoopoe did not stay long and said, "I have encompassed that which you have not encompassed, and I have come to you from Sheba with certain news."﴾ Quran Chapter "The Cattle" 6:18,20,22.

> ﴿And there is no creature on the earth or a bird that flies with its wings except that they are nations like yourselves. We have not neglected anything in the Book. Then unto their Lord they will be gathered.﴾ Quran Chapter "The Cattle" 6:38.

If we believe in evolution, then we certainly believe that the human being's ability to think has also evolved over time along with the evolution of the human brain in terms of size and quality. However, it is a very unique ability when compared to the rest of the animals. I

have previously shown that the evolution of the intelligence machine is evidence for an inevitable purpose for evolution on the earth. Then, we clarified how the relative speed of evolution of the human brain over the last two million years and its transformation into a superior brain is evidence that our brains in particular are a purpose of evolution. Wherever we were able to prove that evolution is purposeful, we proved the existence of a god behind it.

We would now like to move from the intelligence machine to its product, and see what distinguishes us culturally from the rest of the animals, with unequivocal clarity.

We now want to prove the existence of God to be through the unique culture specifically, rather than through the distinct ability of humans to socialize and communicate, and through the development of an accompanying linguistic method. There are many animals that live an organized social life to varying degrees, such as ants, bees, hyenas, lions, chimpanzees, and orangutans. They have linguistic means of communication for understanding one another, including the sign language used by bees, organisms far lower than chimpanzees.

Therefore, our research on human culture and its indication of the existence of God will not be about having a brain or an intelligence machine, or the ability to think and abstract. Instead, it will be about the unique human culture that suddenly appeared a few thousand years ago, and how this culture indicates the existence of God. This culture represents a developed, moral system of life. We can identify this culture clearly by what entered human life at a specific time: giving others their rights, establishing laws relevant to this, and a genuine altruism that is not built on genetic selfishness or the expectation of benefit, as well as setting down the foundations of knowledge and advanced life such as laws of punishments, reading, writing, systems of calculations, and so on. We want to demonstrate that they came through external teachings and radical change that happened to human life.

The following is a clear and obvious admission by Dawkins that these issues come through teaching, and they completely oppose the animal biology that controls our animal bodies:

> I am not advocating a morality based on evolution. I am saying how things have evolved. I am not saying how we humans morally ought to behave. I stress this, because I know I am in danger of being misunderstood by those people, all too numerous, who cannot distinguish

> a statement of belief in what is the case from an advocacy of what ought to be the case. My own feeling is that a human society based simply on the gene's law of universal ruthless selfishness would be a very nasty society in which to live. But unfortunately, however much we may deplore something, it does not stop it being true. This book is mainly intended to be interesting, but if you would extract a moral from it, read it as a warning. Be warned that if you wish, as I do, to build a society in which individuals cooperate generously and unselfishly towards a common good, you can expect little help from biological nature. Let us try to teach generosity and altruism, because we are born selfish. Let us understand what our own selfish genes are up to, because we may then at least have the chance to upset their designs, something that no other species has ever aspired to (Dawkins 1989, 3).

We need to learn altruism, and this is what I will discuss in the following section. Together we will try to discover who taught us or where we learned genuine altruism, which is completely against our selfish biological composition that directs us with genetic selfishness.

Two Comments:

Animal Rights:

The issue of animal rights and respecting animals mentioned by Dr. Sagan—and even their ability to perceive religion to some extent which subsequently qualifies them for religious guidance at their level—is acknowledged by Islam and the Quran, or at least the creed of the progeny of Muhammad pbut. In the Quran and the Sunnah of the Prophet and the Imams pbut, it is mentioned that animals are nations like us and they must be respected.

> ﴿And there is no creature on the earth or a bird that flies with its wings except that they are nations like yourselves. We have not neglected anything in the Book. Then unto their Lord they will be gathered.﴾ Quran Chapter "The Cattle" 6:38.

The progeny of Muhammad pbut mentioned that it is detestable for a person who raises a sheep and treats it with kindness to slaughter it, because this sheep has become accustomed to receiving kindness from

them. This is evidence that the true Islam relayed by Ahl al-Bayt considers the sheep to have feelings and emotions that must be respected.

> It was said to Abu AlHasan pbuh: "I had a sheep, that I fattened so I could sacrifice it, and when I took it and laid it down [to slaughter it], it looked at me, invoking my mercy and compassion, but then I slaughtered it." Abu AlHassan pbuh said, "I wouldn't have liked for you to do that. Don't raise one of them and then slaughter it (Al-Hurr Al-Amili 1983, vol 24, 92).

Certainly, many animals heard the call to religious guidance at the level of the prophets pbut and the successors. In the Quran we have stories of animals that heard about the calls of the prophets, such as the hoopoe and the ant in the story of Solomon pbuh.

Ali, Fatimah and Their Young Upset the Design of the Selfish Gene, so is there Anyone to Contemplate?

Dawkins said:

> Let us understand what our own selfish genes are up to, because we may then at least have the chance to upset their designs, something that no other species has ever aspired to (Dawkins 1989, 3).

The truth is, a fair person must say that we as a human species have indeed ruined the selfishness of genes. The high morals, or the genuine altruism that was spread by the prophets and messengers of God and that was brought by the Abrahamic religions, has destroyed this selfishness. The selfish gene says, "My son is better than my nephew; my brother is better than my cousin; my cousin is better than the stranger; the son of my city is better than the son of the other city; the son of my country is better than the son of the other country; the son of my nationality is better than the son of the other's nationality; and my country is better than the neighboring country."

Prophets and religions brought kindness and altruism to the stranger above one's self and children, and these altruistic morals spread among the people. I will mention just one story related to this—a historical story from the Quran that is famous in Islam. It is the story of the people of the message of Islam themselves, the progeny of Muhammad pbuhap, the prophet of Islam, in which Ali and Fatimah,

daughter of Muhammad pbuhap, and their young children endured hunger after giving their food to the poor:

> ﴿And they feed food to the needy, the orphan, and the captive, in spite of their love for it, * [Saying], "We feed you only for the face of God. We do not desire any reward or thanks from you."﴾ Quran Chapter "The Human" 76:7-8.

The Chapter "The Human" (Surah Al-Insan) tells the story of the true human who triumphed over his animalism, and who came to rescue others from their selfish genetic animalism. They were not looking for repute with this altruism, because it was discrete. They originally hid it and did not announce it or request reciprocal benefit for it. They gave, and took nothing, and giving was not easy for Ali and Fatimah pbut, because it was a risk to the lives of their children.

Thanks to these people, and similar individuals from the prophets and messengers of God, today we have individuals, groups and even countries that favor strangers over themselves, even if they give only a small amount that does not affect them. Perhaps sometimes, there are purposes behind the giving, but generally it is a step in the right direction that we reached thanks to these great individuals. They are the highest altruistic examples that mankind learned from.

Today, we have true victories over genetic selfishness, but they all depend on the efforts of the great prophets and messengers of God who gave the highest example of genuine altruism in order to save humanity from its animalism.

I believe the evolutionary biologist or the atheist sociobiologist should be prompted to at least review his calculations by the actions of Ali and Fatimah pbut, seeing that they diagnosed the disease of genetic selfishness and prescribed the cure for it over a thousand years before an evolutionary biologist even diagnosed it.

> Ibn Abbas said: "Regarding the words of God Almighty: ﴿They fulfilled the vows and fear a day in which evil is widespread. * And they feed food to the needy, the orphan, and the captive, in spite of their love for it.﴾ [Quran Chapter "The Human" 76:7-8.] Al-Hasan and Al-Hussein became ill, so they were visited by their grandfather, the Messenger of God pbuhap, and the rest of the Arabs, and they said, 'O father of Al-Hasan, why do you not make a vow for your children?' So Ali said, 'If they recover from their illness, I will fast three days in

gratitude to God Almighty.' Fatimah said the same, while a maid by the name of Fitha Nubaya said, 'If my masters recover, I will fast in gratitude to God Almighty.' The two boys recovered, and the progeny of Muhammad did not have too little or too much. Ali then went to Simon Al-Khaybari and borrowed three measures of barley. Fatima took one measure, ground it and baked it into bread.

After Ali prayed with the Messenger of God pbuhap, he came home. The food was set down in front of them, Suddenly, a person in need came, stood at the door and said, 'Peace be upon you, family of Muhammad. I am a needy Muslim son, feed me, may God Almighty feed you from the tables of heaven.' Ali heard him and ordered them to give him the food, so they did, and they spent their day and night tasting nothing but water. On the second day, Fatima ground and baked another measure and Ali prayed with the prophet pbuhap. When the food was set down in front of them an orphan came, stood at the door and said, 'Peace be upon you, family of Muhammad. I am an orphan, a child of immigrants. My parents were martyred, so will you feed me?' They gave him the food and remained for two days tasting nothing but water. On the third day, Fatimah ground and baked the remaining measure, while Ali prayed with the prophet pbuhap. When the food was served to him, a captive came, stood at the door and said, 'Peace be upon you, people of the house of prophethood. You capture and confine us, yet you do not feed us. Feed me, for I am a captive.' They gave him food and remained for three days and nights tasting nothing but water. The Messenger of God pbuhap came to them and saw the hunger they were suffering from, so God Almighty sent down the verses from: ﴿Has there come upon man a period of time when he was not a thing even mentioned?﴾ up to ﴿"We do not desire any reward or thanks from you.﴾" Quran Chapter "The Human" 76:1-76:9 (Ibn Al-Athir n.d., vol 5, 530-1. Arabic source, translated).*

What Altruism are we Talking About?!

Animal individuals, including humans, usually behave selfishly. In nature, no one gives food to others or looks after others without a price.

*. This historical event has been narrated by the Sunnis and Shias in more than one way. For instance, it has been narrated by Al-Hakim Al-Haskani in the book *Shawahid Al-Tanzeel* [Testimonies of Revelation], and by Al-Baithawi, and Abu Al-Saud, and Tafkher Al-Deen Al-Razi in their books of *Tafsir* [Interpretation of the Quran]. It is also narrated by Mujmila Ali Ibn Ibrahim in his book of Tafsir [Interpretation of the Quran] (volume 2, page 398), and also Al- Sheikh Al-Sadooq in his book *Al-Amali* [The Book of Dictations] (page 257)..

At the level of the individual, animals do not feed or look after each other. Acts of apparent altruism, in comparison to selfish, individual behavior, are rare in nature. A male might provide food and build a nest for a female because he wants to pass his genes to subsequent generations by fertilizing the female's eggs, as the female usually invests the food for the fetus in these eggs, and parents may provide food and protection for their children, but is this genuine altruism? And if it is not, then what altruism are we talking about when we want to prove the unique quality of humans—beings who possess morals—the foundational basis of which is altruism?

In religion, we talk about altruism to some extent when we discuss battling the "I" at the level of the society and the environment we live in. That is why it is necessary to clearly and unequivocally define the kind of altruism we are talking about, so that we don't allow ill-intentioned people to achieve their goal of making people ignorant by passing off their deceiving, unified law. It is a law they all use, whether they are clerics, atheists, or those who have taken a path between the two, this law or fallacy that says, "Look, there is a walnut in my hand and it is round," and then they show you something round in the other hand and say, "Look, it is round, therefore it is a walnut."

We all generally know what altruism is and that it opposes selfishness. We can define it as favoring others over one's self, or favoring others over someone closer to one's self through specific behavior.

If we look around, we find that animals sometimes show altruistic behavior. We can, for example, identify the behavior of mothers and fathers toward their children, and the behavior of the worker bees toward the queen, other workers, and the hive as a whole. However, is this genuine altruistic behavior, or does it just have the appearance of altruistic behavior? In reality, it is selfish genetic behavior since it is based on genetic selfishness and nature's favoritism and preference for the survival of bodies carrying the genes that cause this altruistic behavior; namely, parents caring for their children and providing them with food, and worker bees sacrificing themselves to protect the hive, the queen and her sisters. So these genes carried the successful trait of allowing for their passage, continuation, and survival. The biological truth is that the father and mother care for their children because there is a gene in their genetic makeup that drives them to do that (by influencing the formation of the nervous system, the brain, or the glands and hormones, for example). One of the reasons why their ge-

netic makeup succeeds in spreading and surviving is the existence of the gene that drives them toward this altruistic behavior.

The explanation for how the genetic makeup of the parents benefits from the survival of the children is rather simple, since the children carry a percentage of the genes from each parent. For example, a human child carries half of the father's genes and half of the mother's genes.

Therefore, parents whose genetic makeup contains the gene of altruism toward children, providing them with what is required in order to reach the age of adolescence and reproduction, will achieve the continuation and survival of their genes into subsequent generations. Therefore, this kind of altruism, of parents toward children, has a selfish genetic origin, meaning it is built on gene selfishness, and it is not genuine altruism. The parents who do not look after their children well, or whose genetic makeup lacks genes that sufficiently drive them toward altruism in order to provide their children with what is necessary (for example, a nest, food, and protection), will not be able to pass their genes to subsequent generations. This is because, in brief, they will not succeed in raising children that reach the age of adolescence and reproduction and pass their genetic makeup to subsequent generations. This is how these parents are punished, or how this genetic makeup or genetic plan is penalized; the genes that are specific to them do not continue in this life, and they leave the race.

Thus, the issue of parents looking after their children is completely accounted for genetically.

If the genes find a different successful strategy other than direct parental care of their children, they can use that strategy, as in the case of the cuckoo. This bird lays its eggs in the host nest and the host raises its offspring. The cuckoo does not care for its own offspring, and it has no affection for them. The relationship of the cuckoo with its offspring ends as soon as it provides them with what is necessary, by placing them in the nest of the host who will have no choice but to raise them on the cuckoo's behalf. This is clear evidence that the genes are in control of this matter within the body.

The same is true for the worker bee. These bees are extremely close to their sisters, even closer than they are to their mothers, because they all carry identical copies of their father's genes. So, there is a logical reason why they strive to sacrifice themselves, racing to attack the enemy, even though the worker that stings dies. This altruistic gene

succeeded in reproduction and survival because, to put it simply, it was the most capable of protecting the hive as a whole. So its death is apparently of greater benefit to its genes than its life, because by racing to its death in place of its sisters and in defense of its mother, the queen bee, it contributes to the survival of the numerous copies of its genes within the bodies of all of its worker bee sisters. It also contributes to the survival of its genes in the eggs and sperm in its mother's body (the queen bee). Certainly, a genetic makeup such as this is more capable of survival and continuation than the one that does not race toward sacrificing itself. Nature will select the brave one that races toward sacrifice, or in other words, the one that is fit, able to survive and resists the natural circumstances surrounding it.

In general, gene selfishness can explain the altruistic traits of one organism toward another when sacrifice is more beneficial to its genes than life, regardless of their relationship.

The altruism of parents toward their children can be genetically accounted for. The genes carrying out this function will be more favored and more capable of survival than genes that do not allow for or encourage altruism of parents toward their children. In the same way, we can account for the altruistic behavior of an older brother toward his younger brother, or children toward their parents. We can also account for why some animals clean each other, or even why vampire bats feed their neighbors: they expect future benefit, even if unconsciously.

However, the selfish gene theory cannot explain the sacrifice a person is willing to make in order to save a stranger, nor can it explain when someone gives the food or water they need to others, because in such cases, if it results in the demise of the altruist—or at the very least, the inability to multiply his own genes, or it diminishes his chances—then the genetic loss is greater than the gain regarding the genes he shares with one he rescued or fed, or favored, in general, over himself. To explain this further using numbers: my life is equivalent to a one hundred percent transfer and survival of my functioning genes, whereas the life of a stranger is equivalent to the transfer of a portion of my functioning genes, the genes we have in common, which is about five percent, so losing my life clearly means a greater loss of survival of my genes. Therefore the selfish gene theory is not able to explain these types of altruism in which genes of the altruist lose in a significant way. The explanation for this type of altruistic behavior cannot be based on gene selfishness.

In addition, reciprocal altruism is not genuine altruism. Since it is a favored evolutionary strategy, it is expected to become prevalent when there is a need for it, as is the case with some animals that groom each other, or vampire bats regurgitating food for their neighbors, because the gene pool that carries its genes will be favored by selection and will inevitably prevail. The gene pool that does not carry this type of reciprocal altruism will leave the competitive race because the fate of the members of its species will be extinction. For example, vampire bats cannot survive more than two days without food, and reciprocal altruism is a lifeline for the numerous individuals who do not find food on a given night. Because of this, reciprocal altruism is a lifeline for the species as a whole, so it is certainly favored by natural selection. Generally, reciprocal altruism is well accounted for by science.

There is also altruism for the sake of repute. In reality, we can say that this is also a type of reciprocal altruism, especially if the purpose of sacrificing food for others is bragging and reputation, and thus to obtain greater gain, such as attracting the attention of more females and consequently marrying more females. This means that the individual's genes will be successfully transferred to subsequent generations in a more widespread manner. Therefore, these types of altruism, which will be examined further, are genetically accounted for.

Certainly, these types of non-genuine altruism are based on gene selfishness. They are not of interest to us, because we are looking for moral altruism that is not related to the interest and benefit of the genes.

We are not talking about the altruism of relatives or reciprocal altruism, which can both be accounted for genetically. And we are not talking about altruism for the sake of repute, which may occasionally be genetically accounted for as well. These types of altruism can benefit the bodies that practice them because they provide them with a better chance of survival.

Furthermore, we are not talking about altruism, whose basis is individual selfishness, that transfers among individuals and groups as a cultural unit, such as showing off or anything similar, meaning that the motive for it is a psychological need or desire of the altruist.

If this is the case, then what altruism are we talking about and considering as evidence that the human being is special and morally unique with respect to the rest of the animals?

We are talking about altruism that cannot be accounted for biologically by tracing it back to the selfishness of the gene, which uses the bodies and body parts as an ideal machine for the survival and transmission of genes. We are talking about an altruism that cannot be accounted for by saying that the purpose of culture is to achieve some psychological benefit, even if in the long run.

We are talking about altruistic behavior that does not benefit the genes and that cannot be accounted for by the selfishness of genes, or considered to be merely a superficial, non-genuine altruism, as it is not based on a selfish biological origin. We are talking about altruism in which the altruist does not expect future benefit in return, or praise, or even a word of gratitude from others.

This poses pressing questions: what drives us toward this genuine altruism? What caused it to originate in us specifically?

The truth is, it must have started with both a method and individuals. If we research the history of the issue—as history is the only way to settle it—we find that the method filled with this genuine, elevated altruistic behavior is the religious method, and the knights of altruism are the prophets and saints. The oldest writings that we have found in artifacts regarding altruism are the religious texts and the calls that were issued by religious individuals. This is an issue that was established in the oldest of civilizations, such as Sumer and Akkad, with individuals like Noah pbuh and Abraham pbuh, who are considered an origin to which the heavenly religions (Judaism, Christianity, and Islam) trace back. These religions have adhered to the same Sumerian-Akkadian moral system.

The call for altruism has always been a religious one, and the knights of this realm are the prophets, the messengers, and the bearers of the divine messages. ﴿And they feed food to the needy, the orphan, and the captive, in spite of their love for it.﴾

The Culture of the *Homo sapiens*

There are two human-like groups that branched out from the African *Homo erectus* and succeeded in passing through the last few hundreds of thousands of years. The two groups are the European Neanderthal and a small group of *Homo sapiens*, some of whom migrated through Bab-el-Mandeb and then filled the world. Although the Neanderthals had a larger average brain size than *Homo sapiens*, they did not de-

velop a culture or civilization like that of the *Homo sapiens* group that migrated out of Africa. The social bond among *Homo sapiens* did not exist among the Neanderthal groups. About thirty-five thousand years ago in Europe, *Homo sapiens* were making statues and artwork that expressed themselves, whereas the Neanderthals were not able to keep up with them. So what factor entered the equation of that small group that migrated through Bab-el-Mandeb? What happened to that select group to produce a generation that could fill the earth?

It is possible for anyone to propose any hypothesis that allows him to answer this question. But in fact, there is no sufficient, true scientific explanation at all for what happened to the mind of the *Homo sapiens* that migrated from Africa. The Neanderthal lived for hundreds of thousands of years in Europe but they were unable to produce any development of culture or civilization not even with regard to social life, language, or drawings. All they did was make simple stone tools, and there is speculation about whether or not they were the original inventors, since they might have learned this from the *Homo sapiens* when they migrated to Europe. At the same time, we find that in less than sixty thousand years, the migrant *Homo sapiens* reached the stage of recording moral laws on clay tablets that have reached us through the Sumerians. Is it possible to ignore the fact that a change suddenly occurred in the equation of this earthly being that made him behave in an organized way, and not an animalistic way as in the past, such that he began planting, producing, raising animals, manufacturing, organizing his social life, speaking, and finally, writing? What happened to make this human develop so significantly, whereas the one in Europe did not develop, even though he had a bigger brain?

There is a secret which caused this obvious qualitative leap of *Homo sapiens*, and it cannot be attributed to brain size alone, or to simply just reaching or surpassing the critical mass of the brain. Some scientists explain the difference between humans and the rest of the animals as being linked to the brain to body size ratio. However, if the issue depended on large brain size, the Neanderthal would have developed, as its average brain size was as large as the that of the modern human (*Homo sapiens*) and perhaps at times larger, by about ten percent. Nevertheless, compared to what modern humans have accomplished, the Neanderthal did not do anything. The modern human recorded his culture and social life in Europe, whereas the Neanderthal recorded nothing valuable. In fact, even their social life was simple, and they

were not bonded like the modern humans, who had a greater tendency toward social life. Therefore, there is no escape from admitting that something new entered the equation, causing this intellectual and cultural progress, as well a progress of civilization, that made the modern human (*Homo sapiens*) take an obvious leap of culture and civilization, of which the most prominent recorded features are the highest moral ideals, such as altruism and justice.

The Theories or Theses Made to Explain the Cultural Leap of Humans

It is not our concern here to present a theory to account for the increase in brain size, or the possible use of the brain for thinking, making tools for hunting, and so on. This is an issue that has been discussed previously. However, we will clarify theories that some people imagine can explain the appearance and spread of human culture in an acceptable way. They are supposed to explain the appearance and spreading of culture, without stopping at an explanation of the imitation and transmission of cultural units. Rather, they are supposed to be able to explain the initial appearance of the unique human culture and its most significant elements that are based on that culture, including the highest moral standards, such as genuine altruism (not based on genetic selfishness) and justice, to the point of reaching the organization and building of civilization. Otherwise, if a thesis cannot explain the appearance of a unique culture in humans such as altruism, then it will undoubtedly fail to explain the unique human culture itself.

The Theory of Biological Evolution Itself Attempts to Explain this Issue

This explanation is based on the same law of evolution. It is hypothesized that natural selection refined everything in us so that only selfish genes influence human behavior. In general, according to them, there are biological reasons for human behavior, so the brain sufficiently explains the characteristics of human behavior.

In fact, this thesis is grotesque when considered from a moral perspective because it is a deterministic thesis. If we wish to apply it in reality, then it would justify the views of extremism, deviation and criminalism, so the criminal commits his crime because there are bio-

logical reasons driving him to do so, and the benefactor gives to charity because there are biological reasons driving him to do so. This thesis fails to explain human behavior at times when humans rein in their biological need and what their genes dictate because of societal views or a certain ideology, and it fails to explain true, genuine morals (it does not believe that they exist in the first place).

For example, natural selection refined altruism within us by favoring the traits of altruism that serve the survival of the genes, such as altruism of parents toward their children, or reciprocal altruism. But this issue can only explain altruism that involves genetic benefit, meaning the genes are the ones that built it into the organisms throughout the evolutionary path, because it is a better path for transferring genes to subsequent generations. This is the case with altruism of parents toward their children, and relatives toward one another, since they all generally have a significant number of shared genes.

In addition, this can also explain altruism of future reciprocity, such as the process of vampire bats regurgitating some blood and donating it to a hungry fellow bat that could not find prey to suck blood from on a given night in the hope that it will be treated likewise when it faces the same difficulty.

However, this thesis, which is adopted by many biologists, cannot explain genuine altruism that is not based on genetic selfishness or reciprocity. It also cannot explain the unique moral culture that suddenly appeared in recent human history (meaning the last few thousands of years).

The Meme Theory

The meme theory is a thesis developed by Richard Dawkins, based on the original idea of George Christopher Williams. We can say that both Dawkins and Williams have been compelled to use the meme theory as an attempt to resolve the inability of the selfish gene theory to explain many cultural human behaviors, such as genuine altruism, something that cannot be attributed to gene selfishness or reciprocal altruism. Therefore, it is an attempt to explain and discuss how we were able to invent genuine altruism. It is also an attempt to resolve the moral dilemma of determinism that even makes crimes biologi-

cally accounted for, as everything about human behavior goes back to the genes. Dawkins found that the solution lies within the meme thesis, or the selfish meme, which he proposes will work for topics that the selfish gene theory and selection fail to explain.*

In contrast to the above thesis of genetic determinism, Dawkins' meme thesis appears to say that we now have the freedom and the ability to rein in genetic selfishness. In other words, we are now independent enough to prevent the genes from completely controlling us as mortal survival machines used by the genes to survive. It is best if I allow Dawkins himself to speak about this issue:

> 'Brains, for reductionists, are determinate biological objects whose properties produce the behaviors we observe and the states of thought or intention we infer from that behavior… Such a position is, or ought to be, completely in accord with the principles of sociobiology offered by Wilson and Dawkins. However, to adopt it would involve them in the dilemma of first arguing the innateness of much human behavior that, being liberal men, they clearly find unattractive (spite, indoctrination, etc.) and then to become entangled in liberal ethical concerns about responsibility for criminal acts, if these, like all other acts, are biologically determined. To avoid this problem, Wilson and Dawkins invoke a free will that enables us to go against the dictates of our genes if we so wish…This is essentially a return to unabashed Cartesianism, a dualistic *deus ex machina*.'
>
> I *think* that Rose and his colleagues are accusing us of eating our cake and having it. Either we must be 'genetic determinists' or we believe in 'free will'; we cannot have it both ways. But—and here I presume to speak for Professor Wilson as well as for myself—it is only in the eyes of Rose and his colleagues that we are 'genetic determinists'. What they do not understand (apparently, though it is hard to credit) is that it is perfectly possible to hold that genes exert a statistical influence on human behaviour while at the same time believing that this influence can be modified, overridden or reversed by other influences. Genes must exert a statistical influence on any behaviour pattern that evolves by natural selection. Presumably Rose and his colleagues agree that human sexual desire has evolved by natural selection, in the same sense as anything ever evolves by natural selection. They therefore must agree that there have been genes influencing sexual desire—in the same sense as genes ever influence anything. Yet they

*. George Christopher Williams (1926-2012) was an American evolutionary biologist and a professor emeritus of biology at Stony Brook University, New York.

> presumably have no trouble with curbing their sexual desires when it is socially necessary to do so. What is dualist about that? Obviously nothing. And no more is it dualist for me to advocate rebelling 'against the tyranny of the selfish replicators'. We, that is our brains, are separate and independent enough from our genes to rebel against them. As already noted, we do so in a small way every time we use contraception. There is no reason why we should not rebel in a large way, too (Dawkins 1989, 331-32).

The meme in culture is like the gene in biology. If the gene is inheritable information transmitted in the chromosomes, the meme is a certain culture transferred among living beings where groups and individuals learn from one another, one generation after another. The brain is the machine of preservation and transfer, which in the meme thesis plays the role of primordial soup container (and perhaps the soup as well), in which the first replicators were formed, and later evolved into DNA.

Therefore, the memes are a certain culture (verbal or nonverbal, linguistic vocabulary, clothes, behavior, and so on) replicated among individuals of animal or human society. The meme thesis was made to explain the cultural development of humans in particular by the favored meme being transferred among individuals. In addition, some biologists consider memes—such as linguistic or cultural vocabulary—to be one of the reasons why humans acquired the superior brain which enables them to replicate the memes better in terms of quantity and quality, which in turn depends on the size and quality of the brain.

In general, the meme thesis can be considered an attempt to explain the leap of culture and civilization in human history that genes and biological evolution alone could not completely explain.

> I have a lot of sympathy with this attitude, and I do not doubt that there are genetic advantages in our having brains of the kind that we have. But nevertheless I think that these colleagues, if they look carefully at the fundamentals of their own assumptions, will find that they are begging just as many questions as I am. Fundamentally, the reason why it is good policy for us to try to explain biological phenomena in terms of gene advantage is that genes are replicators. As soon as the primeval soup provided conditions in which molecules could make copies of themselves, the replicators themselves took over. For more than three thousand million years, DNA has been the only replicator

> worth talking about in the world. But it does not necessarily hold these monopoly rights for all time. Whenever conditions arise in which a new kind of replicator *can* make copies of itself, the new replicators *will* tend to take over, and start a new kind of evolution of their own. Once this new evolution begins, it will in no necessary sense be subservient to the old. The old gene-selected evolution, by making brains, provided the 'soup' in which the first memes arose. Once self-copying memes had arisen, their own, much faster, kind of evolution took off. We biologists have assimilated the idea of genetic evolution so deeply that we tend to forget that it is only one of many possible kinds of evolution. Imitation, in the broad sense, is how memes *can* replicate (Dawkins 1989, 193-94).

Furthermore, in an attempt to explain the short time period in which the human experienced cultural development, and to justify any leap in culture and civilization, Dawkins assumed that the memes can have a very rapid effect, unlike the slow effect of genes.

> I think that a new kind of replicator has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate that leaves the old gene panting far behind (Dawkins 1989, 192).

The propagation and establishment of memes depends on the concept of imitation and replication. Their emergence sometimes depends on their invention when needed or when errors occur during imitation leading to the emergence of a new meme. This is how memes vary and transfer between individual animals or humans.

Memes are the replicable, cultural material, while animals and people are replication machines that replicate them, preserve them, work with them, and transfer them to others. These machines evolve—when genetic mutation toward improvement is available—according to the memes and their expansion, multiplication and accumulation. They can be one of the reasons for establishing the genes of improvement. This can explain the size and quality of our brains, so it can be said that the expansion of culture had an influence on the increase in brain size and the evolution of its quality, as it is a factor pushing in that direction.

> Differences in group behavior—something that it is very tempting to

> call cultural differences—have been reported among chimpanzees, baboons, macaques and manyother primates. For example, one group of monkeys may know how to eat bird's eggs, while an adjacent band of precisely the same species may not. Such primates have a few dozen sounds or cries, which are used for intra-group communication, with such meanings as "Flee; here is a predator." But the sound of the cries differs somewhat from group to group: there are regional accents.
>
> An even more striking experiment was performed accidentally by Japanese primatologists attempting to relieve an overpopulation and hunger problem in a community of macaques on an island in south Japan. The anthropologists threw grains of wheat on a sandy beach. Now it is very difficult to separate wheat grains one by one from sand grains; such an effort might even expend more energy than eating the collected wheat would provide. But one brilliant macaque, Imo, perhaps by accident or out of pique, threw handfuls of the mixture into the water. Wheat floats; sand sinks, a fact that Imo clearly noted. Through the sifting process she was able to eat well (on a diet of soggy wheat, to be sure). While older macaques, set in their ways, ignored her, the younger monkeys appeared to grasp the importance of her discovery, and imitated it. In the next generation, the practice was more widespread; today all macaques on the island are competent at water sifting, an example of a cultural tradition among the monkeys.
>
> Earlier studies on Takasakiyama, a mountain in northeast Kyushu inhabited by macaques, show a similar pattern in cultural evolution. Visitors to Takasakiyama threw caramels wrapped in paper to the monkeys—a common practice in Japanese zoos, but one the Takasakiyama macaques had never before encountered. In the course of play, some young monkeys discovered how to unwrap the caramels and eat them. The habit was passed on successively to their playmates, their mothers, the dominant males (who among the macaques act as babysitters for the very young) and finally to the subadult males, who were at the furthest social remove from the monkey children. The process of acculturation took more than three years (Sagan 1978, 125-26).

Generally,Generally, the issue of memes and the fact that they are invented or copied from others when needed is not unique to humans. However, the thesis or theory of memes—which can explain the transfer of a particular culture—cannot explain the invention of a particular original culture if there is no individual need for that culture. This

issue becomes dire when this culture is harmful to the individual and to his individual genes.

We are concerned with the question: can the meme theory or thesis explain the most important thing about human culture, namely its attributes, such as genuine altruism, which the selfish gene theory cannot explain?

In truth, the meme theory is equally unable to explain genuine altruism, not only because there is no benefit achieved by the altruist such that his altruism would be an invention created by his need for it, but also because genuine altruism is a bad trait for individual genes. It is a trait that cannot be favored by nature because it is a trait that works against the interest of the individual genes.

The genes cannot explain the trait of genuine altruism because it is an opposing trait and a mortal enemy of individual genes. The memes also cannot explain the existence of this trait because as a cultural meme it cannot come into existence, let alone succeed and persist, because it is an opposing trait and an enemy of the selfish structure firmly established within us by gene selfishness, which built us to be selfish entities to guarantee their survival. There is no exception to the selfishness of the entities (i.e. our bodies), except those altruistic cases that are built on genetic selfishness itself, or reciprocal altruism, which we have explained previously: the altruism of parents toward their children, and the vampire bat feeding its neighbor in the cave based on the principle, "scratch my back today, and I will scratch yours tomorrow". This type of altruism has nothing to do with intentional, genuine altruism.

In his book The Selfish Gene (particularly in the chapter about memes), Dawkins did not discuss this issue, despite the fact that it is the most important issue regarding this subject. What is required of the atheist is to prove the validity of his belief—not to create a theory explaining the invention of cultural units when needed, or when they produce benefit, which are then replicated and transferred—and he must explain the appearance of a culture that is unique to humans, such as altruism, and the reason for its appearance and the principle behind it.

> It is possible that yet another unique quality of man is a capacity for genuine, disinterested, true altruism. I hope so, but I am not going to argue the case one way or the other, nor to speculate over its possible

> memic evolution (Dawkins 1989, 200).

Can we consider this statement an admission from Dawkins that he is unable to provide a logical explanation for genuine altruism that agrees with his atheistic theory? Is it reasonable to think, for example, that he has an explanation for the most important issue negating his atheistic doctrine, yet he elects to omit it? I leave the reader to answer these questions.

Dawkins continues, saying:

> The point I am making now is that, even if we look on the dark side and assume that individual man is fundamentally selfish, our conscious foresight—our capacity to simulate the future in imagination—could save us from the worst selfish excesses of the blind replicators. We have at least the mental equipment to foster our long-term selfish interests rather than merely our short-term selfish interests. We can see the long-term benefits of participating in a 'conspiracy of doves', and we can sit down together to discuss ways of making the conspiracy work (Dawkins 1989, 200).

In all the situations in which we defend our selfish interests, whether the basis of our defense is cultural and memic, or genetic, and whether the selfish interests are long-term or short-term, we are behaving selfishly and not altruistically. Momentary altruism for the sake of long-term selfishness does not change the fact that the behavior is still selfish and intends to achieve an interest, even if long-term, as in the case of altruism for reputation. Consequently, this type of behavior cannot be a valid explanation of genuine, disinterested, true altruism.

Dawkins continues, saying:

> We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination. We can even discuss ways of deliberately cultivating and nurturing pure, disinterested altruism—something that has no place in nature, something that has never existed before in the whole history of the world. We are built as gene machines and cultured as meme machines, but we have the power to turn against our creators. We, alone on earth, can rebel against the tyranny of the selfish replicators (Dawkins 1989, 200-01).

However, a trait that opposes the survival of the individual genes cannot exist and grow within us. It is not possible for it to grow and

become established in nature because it is a trait that opposes our selfishness as survival machines built by the genes. It is a trait that works against the interest of the individual genes. This is an issue that atheists will not be able to respond to scientifically.

A powerful current that swept away all the other pieces of wood except a boat—or all organisms except humans—could not be overcome without rowing, and there can be no rowing without a rower.

Given the scientific proof, we should accept and admit that there is a rower. The existence of its strongly apparent influence has been proven to us by our movement against the powerful current and by our rebellion against the tyranny of our genes.

By saying the rower, we do not mean God. In fact, let the rower be the soul or the spirit. Certainly, proving its existence is a way of proving the world of spirituality and consequently proving the existence of God.

The reason we do not see the soul with our eyes is simple: it is in a world unlike the material physical world in which we live. As for how it can physically affect us, this can be scientifically explained, at least by trans-universal forces. This will be explained in Chapter 6. It is possible for one universe to influence another universe, as well as for entities in a universe to influence entities in another universe, even without direct, material, and perceptible contact occurring between them. In the same way, we can understand the influence of the world of the souls on this material universe in which we live.

Dawkins' Attempt to Explain Morality

In his book *The God Delusion*, Dawkins attempts to explain morality. He does not explicitly mention the genuine altruism that I have discussed previously, and which, as I have shown, cannot be explained by the meme theory, the selfish gene theory, or reciprocal altruism.

However, he attempts to explain a type of altruistic transaction that we have grown accustomed to in our social life by saying that it emerges when a Darwinian law misfires, and afterwards it may spread as a cultural meme. Perhaps he is trying to delude the reader into thinking that what he has presented is sufficient to explain all types of altruism, whereas in truth it is not sufficient to explain any type of genuine altruism, or altruism without a price. This will be explained when we discuss Dawkins' arguments.

So far we have learned about two distinct types of altruism: the altruism of relatives and reciprocal altruism. We can also add altruism for the sake of reputation, and for demonstrating power and boldness in order to reap the benefits of authority.

Reputation:

> I have mentioned kinship and reciprocation as the twin pillars of altruism in a Darwinian world, but there are secondary structures which rest atop those main pillars. Especially in human society, with language and gossip, reputation is important. One individual may have a reputation for kindness and generosity. Another individual may have a reputation for unreliability, for cheating and reneging on deals. Another may have a reputation for generosity when trust has been built up, but for ruthless punishment of cheating. The unadorned theory of reciprocal altruism expects animals of any species to base their behaviour upon unconscious responsiveness to such traits in their fellows. In human societies we add the power of language to spread reputations, usually in the form of gossip. You do not need to have suffered personally from X's failure to buy his round at the pub. You hear 'on the grapevine' that X is a tightwad, or—to add an ironic complication to the example—that Y is a terrible gossip. Reputation is important, and biologists can acknowledge a Darwinian survival value in not just being a good reciprocator but fostering a *reputation* as a good reciprocator too (Dawkins 2006, 218).

Demonstrating Power, Boldness and Superiority:

> The Norwegian economist Thorstein Veblen and, in a rather different way, the Israeli zoologist Amotz Zahavi have added a further fascinating idea. Altruistic giving may be an advertisement of dominance or superiority. Anthropologists know it as the Potlatch Effect, named after the custom whereby rival chieftains of Pacific north-west tribes vie with each other in duels of ruinously generous feasts. In extreme cases, bouts of retaliatory entertaining continue until one side is reduced to penury, leaving the winner not much better off. Veblen's concept of 'conspicuous consumption' strikes a chord with many observers of the modern scene. Zahavi's contribution, unregarded by biologists for many years until vindicated by brilliant mathematical models from the theorist Alan Grafen, has been to provide an evolutionary version of the potlatch idea. Zahavi studies Arabian babblers,

> little brown birds who live in social groups and breed cooperatively. Like many small birds, babblers give warning cries, and they also donate food to each other. A standard Darwinian investigation of such altruistic acts would look, first, for reciprocation and kinship relationships among the birds. When a babbler feeds a companion, is it in the expectation of being fed at a later date? Or is the recipient of the favour a close genetic relative? Zahavi's interpretation is radically unexpected. Dominant babblers assert their dominance by feeding subordinates. To use the sort of anthropomorphic language Zahavi delights in, the dominant bird is saying the equivalent of, 'Look how superior I am to you, I can afford to give you food.' Or 'Look how superior I am, I can afford to make myself vulnerable to hawks by sitting on a high branch, acting as a sentinel to warn the rest of the flock feeding on the ground.' The observations of Zahavi and his colleagues suggest that babblers actively compete for the dangerous role of sentinel. And when a subordinate babbler attempts to offer food to a dominant individual, the apparent generosity is violently rebuffed. The essence of Zahavi's idea is that advertisements of superiority are authenticated by their cost. Only a genuinely superior individual can afford to advertise the fact by means of a costly gift. Individuals buy success, for example in attracting mates, through costly demonstrations of superiority, including ostentatious generosity and public-spirited risk-taking (Dawkins 2006, 218-19).

Dawkins' Summary of the Four Reasons for Altruism

> We now have four good Darwinian reasons for individuals to be altruistic, generous or 'moral' towards each other. First, there is the special case of genetic kinship. Second, there is reciprocation: the repayment of favours given, and the giving of favours in 'anticipation' of payback. Following on from this there is, third, the Darwinian benefit of acquiring a reputation for generosity and kindness. And fourth, if Zahavi is right, there is the particular additional benefit of conspicuous generosity as a way of buying unfakeably authentic advertising (Dawkins 2006, 219-20).

None of the above are genuine altruism. As we have learned previously, the first and the second are centered on genetic selfishness and reciprocal altruism. The third and fourth can be combined into reciprocal altruism, because they have the same idea of "give today and reap the benefit tomorrow", so they are acts of altruism to achieve future benefit, and none of these are types of genuine altruism. Therefore,

the existence of these types of altruism does not explain intentional, genuine altruism.

Dawkins' Attempt to Explain Ethics and Genuine Altruism Continues

> Through most of our prehistory, humans lived under conditions that would have strongly favoured the evolution of all four kinds of altruism. We lived in villages, or earlier in discrete roving bands like baboons, partially isolated from neighbouring bands or villages. Most of your fellow band members would have been kin, more closely related to you than members of other bands—plenty of opportunities for kin altruism to evolve. And, whether kin or not, you would tend to meet the same individuals again and again throughout your life—ideal conditions for the evolution of reciprocal altruism. Those are also the ideal conditions for building a reputation for altruism, and the very same ideal conditions for advertising conspicuous generosity. By any or all of the four routes, genetic tendencies towards altruism would have been favoured in early humans. It is easy to see why our prehistoric ancestors would have been good to their own in-group but bad—to the point of xenophobia —towards other groups. But why—now that most of us live in big cities where we are no longer surrounded by kin, and where every day we meet individuals whom we are never going to meet again—why are we still so good to each other, even sometimes to others who might be thought to belong to an out-group?
>
> It is important not to mis-state the reach of natural selection. Selection does not favour the evolution of a cognitive awareness of what is good for your genes. That awareness had to wait for the twentieth century to reach a cognitive level, and even now full understanding is confined to a minority of scientific specialists. What natural selection favours is rules of thumb, which work in practice to promote the genes that built them. Rules of thumb, by their nature, sometimes misfire. In a bird's brain, the rule 'Look after small squawking things in your nest, and drop food into their red gapes' typically has the effect of preserving the genes that built the rule, because the squawking, gaping objects in an adult bird's nest are normally its own offspring. The rule misfires if another baby bird somehow gets into the nest, a circumstance that is positively engineered by cuckoos. Could it be that our Good Samaritan urges are misfirings, analogous to the misfiring of a reed warbler's parental instincts when it works itself to the bone for a young cuckoo? An even closer analogy is the human urge to adopt a child. I must rush to add that 'misfiring' is intended only in

> a strictly Darwinian sense. It carries no suggestion of the pejorative.
>
> The 'mistake' or 'by-product' idea, which I am espousing, works like this. Natural selection, in ancestral times when we lived in small and stable bands like baboons, programmed into our brains altruistic urges, alongside sexual urges, hunger urges, xenophobic urges and so on. An intelligent couple can read their Darwin and know that the ultimate reason for their sexual urges is procreation. They know that the woman cannot conceive because she is on the pill. Yet they find that their sexual desire is in no way diminished by the knowledge. Sexual desire is sexual desire and its force, in an individual's psychology, is independent of the ultimate Darwinian pressure that drove it. It is a strong urge which exists independently of its ultimate rationale.
>
> I am suggesting that the same is true of the urge to kindness—to altruism, to generosity, to empathy, to pity. In ancestral times, we had the opportunity to be altruistic only towards close kin and potential reciprocators. Nowadays that restriction is no longer there, but the rule of thumb persists. Why would it not? It is just like sexual desire. We can no more help ourselves feeling pity when we see a weeping unfortunate (who is unrelated and unable to reciprocate) than we can help ourselves feeling lust for a member of the opposite sex (who may be infertile or otherwise unable to reproduce). Both are misfirings, Darwinian mistakes: blessed, precious mistakes (Dawkins 2006, 220-21).

In summary, Dawkins is saying that the traits of the type "altruism with a price" turned into traits of "altruism without a price" due to a mistake in implementing the law, as he says: "Rules of thumb, by their nature, sometimes misfire" because of changing circumstances: "Nowadays that restriction is no longer there"—however, the rule persists.

Discussion of Dawkins' Arguments

The Victims of the Cuckoo

The cuckoo is a parasitic bird that does not nest its eggs or feed its young. Instead, it puts its eggs into the nests of other birds, which is a strategy for spreading its genes. Thus, it can spread its genes by continuously putting its eggs in the nests of other birds without wasting time raising the young. Since the birds that fall victim to it are prone to extinction, any genetic mutation that enables them to recognize

and toss a cuckoo's eggs from their nest will be established in the gene pool. The birds carrying this gene will be able to reproduce and pass their genes to the next generation, unlike other birds that don't have the gene. The cuckoos respond by evolving their eggs in a similar way, and with time, the eggs and offspring of the cuckoo evolve, the eggs resembling the color and pattern of the victim bird's eggs so the host will not recognize them and toss them from the nest. Moreover, the eggs usually hatch in a short period of time compared to the host eggs, and the cuckoo chicks have a pit in their back, so as soon as the cuckoo chick hatches—perhaps even before its eyes open—it puts whatever is in the nest, whether eggs or chicks, into this pit, and ejects it from the nest. Then it can have the food brought by the victim bird, its host, all to itself.

What the cuckoo bird is doing is an operation of deception built by the genes. The altruism of the victim bird toward the cuckoo chick is simply the result of falling for a fraudulent, deceptive act, carried out by the cuckoo by changing the shape and size of the eggs and putting them in the victim's nest. The victim bird then feeds the chicks in its nest as its own offspring. By feeding the chicks of others, it is a deceived victim, not a donor such that someone might say, for instance, that this is an altruistic act. This will never change with respect to this bird based on this incident, such that we would expect to begin seeing this victim bird searching for the nests of other birds and feeding their chicks.

With respect to it being a law built by the genes that misfired, it must be noted that there is a continuous process of revision and correction by the victim. The genetic battle between the cuckoo and its victims is ongoing and has not been settled yet. How can Dawkins see that the law misfired once—because of the deception and craftiness of the cuckoo—and not see that there are corrective steps taken by the victim bird, meaning that the genes are vigorously fighting this misfiring?

Furthermore, even the issue of the law misfiring is relative. In the the cuckoo chick example, the victim has a way to identify eggs since they have certain characteristics, and it identifies the chicks it feeds as its own due to the fact that they are in its nest and are perhaps also behaving in the same way as its offspring behave. Some victim birds identified the cuckoo chicks, and that is why, over time, the genes have evolved movements and sounds resembling those of the victim's chicks.

As a result, the law built by the genes in the victim bird to identify its offspring and care for them has allowed the cuckoo to deceive the victim bird in this way. If the genes build a means of identification that is difficult to breach, or if what is happening is unlikely to be a process of breaking the law, then we cannot explain it as a law that misfired. This is also the case with respect to disinterested, genuine altruism in humans. We recognize our relatives, not because they are close to us in location, but because we distinguish them through their form and precise characteristics, allowing us to identify them from among millions of other people. This makes the idea presented by Dawkins (that the law misfired when strangers were near us rather than our relatives, so the traits of altruism were directed toward the strangers, since in nature relatives were close to us) an unacceptable, illogical idea that the intellect rejects.

Child Adoption

Love of children is something that the genes built into us for their own interest so that parents would look after children and their genes would transfer from one generation to another.

If someone adopts a child to fill his own emotional void, the law has missed its goal, from having a biological child who carries the genes of his parents, to instead having the adopted son who does not carry the genes of the parents.

Intentional, genuine adoption occurs with us humans, and the issue at hand is to prove the origin of morals in humans. Therefore, isn't it incorrect for their morals to be used as an example to prove the appearance of morals in them?

Certainly, it can be said that a mistake occurs with the adoption of an unrelated child or even with the adoption of an unrelated child by an individual of a species as a result of genetic mutation. This would be the beginning of the emergence of a new cultural meme, meaning that this idea spreads as a culture throughout society.

We need to discuss two issues here:

1. Is this adoption genuine altruism?

2. How much can this type of meme (adopting an unrelated child) succeed in nature?

If only those who cannot have children adopt children, then we cannot call it genuine altruism because it is a culture of filling the void

of fatherhood or motherhood, and it is not altruistic adoption, and I do not believe we need to discuss this further.

However, if the parents can have children, as is the normal case, then such a culture cannot spread among them in nature because it goes against the spreading of their genes. If such a culture wanted to spread among them, the genes would fight it with the emergence of genes that prevent it, and they would be successful genes that would sweep the gene pools that did not contain this type of gene. Dawkins and other biologists traced the initial emergence of moral human culture back to time periods where humans were groups that lived in nature and were subject to natural selection like the rest of the animals.

Altruism of Relatives

The individual who is altruistic toward his relatives identifies them as relatives to varying degrees, and there is a motive built within him to look after them according to their varying degrees of closeness, as they carry varying percentages of his individual genes. The higher the percentage, the more he looks after them, and vice versa. This makes it necessary for him to have the ability to identify them by their faces. That is why he looks after his son more than his nephew and his brother more than his cousin, so the issue is not related to spatial closeness. For this reason, the closeness of strangers did not cause the instinct of altruism of relatives to misfire and be directed toward them when they became close—after settling in early agricultural villages, for example.

Indeed, it could be imagined that a mutation sometimes occurs that directs this trait, namely altruism of relatives, toward strangers as well, but a mutation such as this would eventually be doomed to extinction sooner or later because such a gene pool cannot compete with one that has the trait of altruism of relatives only, because those who are altruistic toward their relatives will succeed in transferring their genes in a greater way, and since the competition between the individuals of a single species is fiercer, the group with the mutant gene will eventually exit the race, and only altruism of relatives will remain.

Reciprocal Altruism

The reciprocal altruist has the trait of "give me and I give you" built by the genes, which cannot become "I give you without a price", no

matter how many mistakes occur in applying the law due to cheating or anything similar because the issue is biological. However, if we say it is not biological, then researching reciprocal altruism as a genetic Darwinian case in the first place becomes meaningless.

Furthermore, in the presence of the cheat who takes without giving, natural selection usually leads to the extinction of the sucker who gives again even if cheated. The issue of the extinction of the suckers in the presence of the cheat is a done deal even if the suckers are the majority. As a result, their fate will be extinction in the presence of the cheat, who will take advantage of them until the end.

Naturally, the cheat does not count as an altruist in the first place, because he takes and does not give. As such, the one who remains is the grudger, and he is the one who reciprocates based on the principle of "scratch my back and I'll scratch yours later, but I will remember your face, so if you cheat me, I will not scratch your back again." This model of reciprocal altruism is the one that is prevalent in nature. It is a result of evolution, which must be taken into account when considering the issue of reciprocal altruism.

In fact, it is difficult to imagine how this reciprocal altruistic trait misfires and turns into the trait of genuine altruism. For example, if the vampire bat regurgitates his excess food for his hungry neighbor, he expects his neighbor to return the favor. If the neighbor does not return the favor, our grudger victim bat will not be cheated again, because he is a grudger, remembers faces, and does not give to a cheat twice. The fact that he gave to the cheat once does not mean that the law misfired, because the law built by the genes tells him, "Take the initiative and feed the hungry bat that is asking for blood, but remember his face. If he does not return the favor, do not give him again. If he does return the favor, continue with him in a reciprocal process of altruism whenever one of you gets in trouble one night and does not find an animal to suck blood from."

Even if we say that a mistake occurred in the application of the genetic law and the grudger repeated his altruism toward a cheat two or three times, it does not mean that the grudger will become a sucker. This is because the matter depends on remembering faces and identifying the friend. If the grudger becomes a sucker, his fate is extinction in the presence of the cheat. Consequently, reciprocal altruism cannot produce genuine altruism as long as it depends on identifying

individuals by their individual traits in the non-genuine, superficial, altruistic exchange.

Therefore, the grudger must prevail in evolution. In addition, the accurate identification of individuals is necessary in the exchange of reciprocal altruism, whether by memorizing faces or memorizing the place where the other party in the exchange lives and what identifies him as the other party in the exchange.

> It is quite entertaining to watch a computer simulation that starts with a strong majority of suckers, a minority of grudgers that is just above the critical frequency, and about the same-sized minority of cheats. The first thing that happens is a dramatic crash in the population of suckers as the cheats ruthlessly exploit them. The cheats enjoy a soaring population explosion, reaching their peak just as the last sucker perishes. But the cheats still have the grudgers to reckon with. During the precipitous decline of the suckers, the grudgers have been slowly decreasing in numbers, taking a battering from the prospering cheats, but just managing to hold their own. After the last sucker has gone and the cheats can no longer get away with selfish exploitation so easily, the grudgers slowly begin to increase at the cheats' expense. Steadily their population rise gathers momentum. It accelerates steeply, the cheat population crashes to near extinction, then levels out as they enjoy the privileges of rarity and the comparative freedom from grudges which this brings. However, slowly and inexorably the cheats are driven out of existence, and the grudgers are left in sole possession. Paradoxically, the presence of the suckers actually endangered the grudgers early on in the story because they were responsible for the temporary prosperity of the cheats.
>
> By the way, my hypothetical example about the dangers of not being groomed is quite plausible. Mice kept in isolation tend to develop unpleasant sores on those parts of their heads that they cannot reach. In one study, mice kept in groups did not suffer in this way, because they licked each others' heads. It would be interesting to test the theory of reciprocal altruism experimentally and it seems that mice might be suitable subjects for the work.
>
> Trivers discusses the remarkable symbiosis of the cleaner-fish. Some fifty species, including small fish and shrimps, are known to make their living by picking parasites off the surface of larger fish of other species. The large fish obviously benefit from being cleaned, and the cleaners get a good supply of food. The relationship is symbiotic. In many cases the large fish open their mouths and allow cleaners right inside to pick their teeth, and then to swim out through the gills

which they also clean. One might expect that a large fish would craftily wait until he had been thoroughly cleaned, and then gobble up the cleaner. Yet instead he usually lets the cleaner swim off unmolested. This is a considerable feat of apparent altruism because in many cases the cleaner is of the same size as the large fish's normal prey.

Cleaner-fish have special stripy patterns and special dancing displays which label them as cleaners. Large fish tend to refrain from eating small fish who have the right kind of stripes, and who approach them with the right kind of dance. Instead they go into a trance-like state and allow the cleaner free access to their exterior and interior. Selfish genes being what they are, it is not surprising that ruthless, exploiting cheats have cashed in. There are species of small fish that look just like cleaners and dance in the same kind of way in order to secure safe conduct into the vicinity of large fish. When the large fish has gone into its expectant trance the cheat, instead of pulling off a parasite, bites a chunk out of the large fish's fin and beats a hasty retreat. But in spite of the cheats, the relationship between fish cleaners and their clients is mainly amicable and stable. The profession of cleaner plays an important part in the daily life of the coral reef community. Each cleaner has his own territory, and large fish have been seen queuing up for attention like customers at a barber's shop. It is probably this site-tenacity that makes possible the evolution of delayed reciprocal-altruism in this case. The benefit to a large fish of being able to return repeatedly to the same 'barber's shop', rather than continually searching for a new one, must outweigh the cost of refraining from eating the cleaner. Since cleaners are small, this is not hard to believe. The presence of cheating cleaner-mimics probably indirectly endangers the bonafide cleaners by setting up a minor pressure on large fish to eat stripy dancers. Site-tenacity on the part of genuine cleaners enables customers to find them and to avoid cheats.

A long memory and a capacity for individual recognition are well developed in man. We might therefore expect reciprocal altruism to have played an important part in human evolution. Trivers goes so far as to suggest that many of our psychological characteristics —envy, guilt, gratitude, sympathy etc.—have been shaped by natural selection for improved ability to cheat, to detect cheats, and to avoid being thought to be a cheat. Of particular interest are 'subtle cheats' who appear to be reciprocating, but who consistently pay back slightly less than they receive. It is even possible that man's swollen brain, and his predisposition to reason mathematically, evolved as a mechanism of ever more devious cheating, and ever more penetrating detection of cheating in others. Money is a formal token of delayed reciprocal

> altruism.
>
> There is no end to the fascinating speculation that the idea of reciprocal altruism engenders when we apply it to our own species. Tempting as it is, I am no better at such speculation than the next man, and I leave the reader to entertain himself (Dawkins 1989, 186-88).

If we look for the reciprocal altruistic trait that genes have built in humans during earlier periods of evolution, and that has not disappeared or turned into genuine altruism (as I have previously explained), we find it embodied before us in all of our work and transactions with each other. Working and providing services for pay are all exchanges of reciprocal altruism. The past transactions and the current sales are also exchanges of reciprocal altruism. Therefore, the trait of reciprocal altruism exists today in the form of exchanges of reciprocal altruism as it did in the past, and it has not transformed into a trait of deliberate, genuine altruism.

Therefore, is it correct to attribute the trait of true altruism in humans to an origin of reciprocal altruism without evidence, especially after this statement?!

Summary:

Dawkins said:

> I am suggesting that the same is true of the urge to kindness—to altruism, to generosity, to empathy, to pity. In ancestral times, we had the opportunity to be altruistic only towards close kin and potential reciprocators. Nowadays that restriction is no longer there, but the rule of thumb persists.

This suggestion of Dawkins, by which he tries to explain morals and altruism, has been shown to be worthless, as the restrictions have always existed. What genes built in our bodies is altruism toward our relatives because they are our relatives. We accurately identify them to be our relatives by their traits, not because they are close to us in proximity or because they are in direct contact with us, such that altruism of relatives would turn into altruism toward everyone who is close in proximity. Furthermore, the issue of reciprocal altruism is governed by the method of the grudger who gives and waits for a result from the counterpart, and if the counterpart does not reciprocate, he cuts him

off. This is something the genes have built and it only changes genetically, not just because the lifestyle changes.

Conclusion: Gene Selfishness Precludes Genuine Altruism

Genes are selfish, but this does not mean that bodies behave with pure selfishness. The meaning of genes being selfish is that bodies cannot behave altruistically and oppose the selfishness of genes. Since genes are selfish, they are careful to build bodies that guarantee their survival and transfer across generations. For this reason, the law of the selfish genes does not allow the memes that oppose it—the memes of true altruism—that seek to destroy it, to pass through in nature. The existence of natural selection makes it impossible for them to pass through, as the fate of any individual or group having these memes is to perish and disappear. Consequently, this means the disappearance of these genuine altruistic traits and the impossibility of their existence in nature.

In addition, since survival is the basic goal of genes, it must have genes that oppose genuine altruism in case it appears in the species. Otherwise, they are not selfish, and they do not care about survival and transfer across generations as has been established. In fact, the selfishness of our bodies is clear and evident to us—they are built to fight genuine altruism. We do not have genuine altruism as a genuine trait that is firmly established within our bodies. Rather, the genuine trait that is firmly established within our bodies and brains is selfishness. For this reason, genuine altruism requires a genuine revolution against the body in order to have as significant a presence among us as it does today. Whether we, as individuals, practice genuine altruism or not, the vast majority of us agree that it is a noble goal and a desirable trait that we wish to have. This wish was not born today, but has actually been on record since the earliest age of human recording, meaning since the time of the Sumerians. This means that a genuine human revolution against the body and the selfishness of the body occurred thousands of years ago, and this revolution cannot be explained scientifically at the level of the body alone; it is actually impossible to do so as I have clarified. For this reason, at this stage, we have to bring the soul and spirit into the equation to solve this dilemma. Whoever wishes to reject the hypothesis of the spirit because he hates faith is still obligated to hypothesize something else. So let him hypothesize a

totem or a meme of unknown origin, or whatever he wishes. However, in the end, it is a hypothesis that has nothing to do with the body or biology, actually not even with common sense at all.

The Ancient Astronaut Theory

This thesis was proposed by Zecharia Sitchin, author of *The Twelfth Planet* and *The Lost Book of Enki*, with support from other researchers. A similar idea was discussed by engineer Maurice Chatelain, author of *Our Cosmic Ancestors*.*†

Zecharia Sitchin proposed his thesis based on the data of archeological excavations that mentioned that the Sumerians knew about the solar system thousands of years ago. He also used evidence from Sumerian drawings of their kings and the Anunnaki gods that show a major difference in height when compared to average humans. In addition, clay tablets were translated by researchers, including Sitchin, and he interpreted them to mean that extraterrestrials came to the earth hundreds of thousands of years ago. They also derived that Sumerians, the leaders of human civilization, are the product of the fertilization between these astronaut beings and the *Homo erectus*, or the product of the manipulation of genes of the hominid. As a result, test-tube babies or something similar were produced, in order for the result to be rational humans who built human civilization, the beginning of which was in Mesopotamian Sumer (Iraq) followed by the Egyptian civilization.

However, no real, reliable data exists to say that this really happened. For example, the supporters of this thesis say that the electric battery invented by the Sumerians was possibly used in communications, and this statement requires evidence. What is more probable is that it was used for metal plating or something similar. In any case, there is nothing that says how the Sumerians used this battery.

The supporters of this thesis also use the Sumerians' drawing of the entire solar system, including Pluto which was discovered in 1930, as evidence. According to them, this indicates that the Sumerians had advanced knowledge. But the truth is that it does not remotely indicate the existence of astronaut beings. The remaining evidence, such

*. Zacharia Sitchin (1920-2010) was an American who authored the famous book, *The Twelfth Planet*.

†. Maurice Chatelain was a French engineer who briefly worked for the communications department at NASA.

as the height of the bodies of the kings and Sumerian gods, is along these lines.

What concerns us about this thesis is the fact that some people rely on it to explain the Sumerian civilization. This is a real indicator and admission by a number of people that there was a leap of culture and civilization among the Sumerians, and this leap needs to be accounted for. For this reason, the thesis was made and accepted by some. Nevertheless, this thesis remains incapable of withstanding scientific criticism. There are arguments against Sitchin's translation and interpretation of the Sumerian text, and there are scientific arguments against what Sitchin presented about cosmology, as well as the fact that it goes against evolutionary biology.

It seems that Aalim Subait al-Nili (may God have mercy upon him) was greatly influenced by the ideas of Sitchin. This is what we notice in his thesis about the Sumerian Gilgamesh and Thul Qarnain, and his interpretation of the journey of Gilgamesh as extra-terrestrial. In any case, this theory, in addition to its incapability of withstanding scientific criticism, also does not present proven scientific facts. Instead, it relies upon interpretation of texts, events, drawings, and archeological findings, which already have a better, more realistic, and more plausible interpretation.

The Prevalent Religious Thesis

The prevalent religious thesis is a human interpretation of the religious text. It states that the human was an earthly clay statue into which the spirit was breathed directly on the earth, so the statue became alive and of flesh and blood. This theory, which most clerics insist upon, completely conflicts with science, one hundred percent. The Catholic Church finally found itself without any choice but to abandon it because of this conflict. The issue of evolution is generally considered a precise scientific issue with no respectable scientific opposition, and the evolution of the human body from previous origins is a settled issue. Today, genetic analysis has, at the very least, proven that the modern human came from the intelligent African human, the *Homo sapiens*, who scientifically speaking, existed 200 thousand years ago. He was a primitive human who did not even bury his dead. As such, is it reasonable that Adam, the prophet whom God taught the names,

is one of those primitive people of Africa who did not bury their dead, even though God taught Adam and his children to bury the dead?*

I believe this alone is enough to refute this traditional theory, regardless of the fact that the evolution of the modern human from a primitive animal millions of years ago is scientifically proven (although the fossil series now gives an almost complete reading to biologists, in addition to genetic evidence and what we mentioned above). Evolution is the only scientific theory taught in well-known academic universities to explain the appearance of life and man on this earth.

This traditional religious theory not only conflicts with science and scientific facts, but it is also incompatible with the literal meaning of conclusive religious texts, such as the Quranic text of the Muslims.

According to this theory, there is no reasonable, non-conflicting explanation for Adam's paradise, because it is incapable of answering the following questions without falling into contradiction:

How is it that he does not become naked, hungry, or feel the heat of the sun in that paradise?

How did he become naked in it when he disobeyed?

What is the connection between the disobedience and nakedness, or the appearance of private parts in particular in Adam's paradise?

> ﴿And Adam and his wife ate from it, and their private parts became apparent to them, and they began to fasten over themselves from the leaves of paradise. And Adam disobeyed his Lord and erred.﴾ Quran Chapter "Ta Ha" 20:121.

> ﴿So he made them fall through deception. And when they tasted of the tree, their private parts became apparent to them, and they began to fasten together over themselves from the leaves of paradise. And their Lord called to them, "Did I not forbid you from the tree, and tell you that Satan is a clear enemy to you?"﴾ Quran Chapter "The

*. Burying the dead is one of the basics of the Adamite religion and Adamite life on this earth. Thus, for the children of Adam, burying the dead began with the first deceased offspring of Adam on this earth, who was killed: ﴿And recite to them the story of Adam's two sons in truth, when they both offered the sacrifice and it was accepted from one of them but was not accepted from the other. Said [the latter], "I will surely kill you." Said [the former] "Indeed, God only accepts from the pious."…٭ And his soul permitted to him the murder of his brother, so he killed him and became among the losers. ٭ Then God sent a crow searching in the ground to show him how to hide the body of his brother. He said, "Woe to me! Have I failed to be like this crow and hide the body of my brother?" And he became of the regretful.﴾ Quran Chapter "The Table Spread" 5:27, 30-31.

Heights" 7:22.

What is the meaning of Adam's fall from paradise to this earth to settle in it if according to the theory Adam had originally been on this earth from the beginning?

> ﴿But Satan caused them to slip out of it and removed them from where they had been. And we said, "Go down as enemies to one another, and you will have upon the earth a place of settlement and provision for awhile."﴾ Quran Chapter "The Cow" 2:36.

Another Religious Thesis

Another theory is that the spirit was breathed into a body that evolved on this earth. It explains that the creation of Adam was in two stages: the first stage is the creation of man from wet clay, meaning creating bodily "man" from the substance of this earth directly as a complete bipedal creature capable of evolving. They imagine that, with this, they are explaining the discovered fossil history of the ancestors of "Man", a history that that extends for millions of years. However, they reject any evolutionary connection between this fossil history and the earthly animal life that preceded it, as well as what came before that.

They imagine that after the completion of the evolution process in "man" who was directly created from wet clay, the second stage occurred, which was the breathing of the spirit into this integral, bodily man that had linguistic and technological skills, making Adam pbuh the first "Man".

This idea was presented by Dr Abdul Sabur Shahin in his book, *Abi Adam - Qisa Al-Khaleefah Bayna Al-Astoora wa Al-Khalifa* [My father Adam - The Story of Creation, Between Myth and Reality].

He believes that the ancestors of Man were independently created. This is also the case with respect to the remaining species according to his understanding. He acknowledges evolution only within the boundaries of a single species or single family, which is an unscientific opinion. Within the boundaries of a species or family, evolution eventually reaches speciation and the production of other species, no matter how long it takes, so speciation is an inevitable result of the process

of evolution. Indeed, this creates a major flaw in what Abdul Sabur has presented. He says:

> The idea of creator evolution has fallen. And we say it is an idea and not a theory. Even though people were fascinated by this theory for decades… it has fallen along with all the other ideas connected to it. The truth of the independent creation that religion decided has triumphed, and it has also been confirmed by science. Therefore, Man has been nothing but man, and he was not a monkey. The fish has been nothing but a fish in its aquatic world. And all of that was only according to the absolute divine will and a fulfilment of the divine ability (Shahin 1988, 46. Arabic source, translated).

These words are pitiful. Unfortunately, they are often repeated by some clerics quoting one person or another, although they are simply unscientific statements not based on any significant scientific research, and not adopted by any research center or well-established university. I do not know where the idea of evolution has scientifically fallen. Oh Lord, has it only happened in the imagination of the deluded dreamers?!

Evolution is a momentous scientific theory that is scientifically proven with a great deal of evidence. It is acknowledged by all well-known scientific universities and significant research centers around the world. There is no noteworthy refutation of this theory. In fact, this theory became a settled matter after science reached the level of advanced genetic research at the end of the twentieth century. No one questions it anymore, except those who are ignorant of what genetics has accomplished.

To clarify his idea, Abdul Sabur says:

> The Almighty's saying, ﴿He has created you in stages﴾ [Quran Chapter "Noah" 71:14]: From a historical perspective, stages can mean the prolonged periods of time through which the man passed, and their travel through the stages of shaping and forming and the breathing of the Spirit of God [into them]: ﴿He gave you hearing, sight, and hearts.﴾ [Quran Chapter "The Prostration" 32:9]. From a material perspective, stages can mean what came directly after that, as is mentioned in the Quran about the fetus and its stages in the "firm lodging", and that is the mother's womb. The speech in the chapter "The Believers" is an answer to a question that arose from the mentioning of the stages in Chapter "Noah"…What are these stages??…The an-

swer came in the seventy-fourth chapter "The Believers", where the Almighty said, ﴿And certainly We created Man from an extract of wet clay﴾ [23:12]. The verse drives the mind away from the possibility of merging the two processes. Man was created from an extract taken from wet clay, so he was not created directly from wet clay. As for the direct son of wet clay, he is the father of man, and that was millions of years ago. This is the meaning expressed in the seventy-fifth chapter "The Prostration", which is an important addition to answering the question raised about the meaning of "the stages" in the seventy-first chapter… God Almighty says ﴿[He] Who perfected everything He created, and began the creation of Man from wet clay. * Then He made his offspring out of the extract of a disdained liquid. * Then He proportioned him and breathed into him from His spirit…﴾ "The Prostration" [32:7-9] . The creation of Man began "from wet clay", meaning the "man's" beginning, then God extracted offspring from him ﴿out of the extract of a disdained liquid﴾, then there was the proportioning and the breathing of the Spirit, so Man was the fruit at the end… through the accumulation of the ancient, archaic, historical stages (Shahin 1998, 95-96. Arabic source, translated).

Unquestionable Truth: between man and Man, there is absolute generality and specificity. The word "man" is a general word for every bipedal creature that appeared on the surface of the earth, while "Man" is a specific term to every man assigned to know God and worship Him. Therefore, every Man is man but not every man is Man. What is of course intended is the first meaning for which the word "man" was used in the verse of the Quran; he is the one who appears or moves with beauty (Shahin 1998, 102, translated).

Along with anthropologists, we can conclude that the earth knew this creation that appeared on its surface millions of years ago. Scientific estimates differ, depending on the age of fossils and the results of scientific analyses. Scientists mistakenly or negligently named this creature a Man, so they said the Man of Peking, the Man of Java, or the Man of Kenya, and other names that represent the stages of the formation of man as they are called in the Quran. The use of the word "Man" was only used to describe them generally, just as the word "man" was used to indicate the meaning of Man generally as well. Otherwise, the precise term that should be used in naming these ancient creatures indicated by fossils, according to the language of the Quran, is "man". Thus, they should be called the Peking man, Java man, Kenya man, and the Neanderthal man. As for the term

> "Man" according to the Quran, it is only used for the creature who is assigned to worship one God and no one else. That creature begins with the existence of Adam pbuh. By this, Adam is the father of Man and not the father of man, and there is no connection between Adam and man, who perished before him in order to pave the way for the appearance of that new Adamite offspring, except for a general or comemmorative connection, as he is one of their offspring (Shahin 1998, 104, translated).

The summary of his thesis is that there was a bipedal creature created directly from wet clay millions of years ago. This creature was "man". This creature evolved in form and he possessed intellectual ability and primitive language. He then acquired a distinct spirit that was breathed into him. As such, he developed and became the first "Man", who was Adam. Using this thesis, he tried to solve the problem of the prevalent traditional religious thesis, opposing science blatantly and repugnantly. Thus, there is no more room to argue about the scientifically established fact that the history of the ancestor of modern Man extends millions of years, that his origins are from Africa, and that he evolved at later stages.

Abdul Sabur tried to solve the problem by admitting that the history of the ancestor of recent Man, or the ancestors who walked on two feet in particular, spans millions of years. He also admitted evolution, yet within the limits of this span. He also rejected Man's connection to an ancestor or an origin more distant than the ancestor who walked on two feet. He also rejected the existence of a single origin of all life forms on this earth, something that has been established in evolutionary biology and proven in genetic studies. In fact, Abdul Sabur hypothesized that Man was created as man several million years ago, and then evolved and formed to finally become the first Man, Adam pbuh, without any scientific evidence or discussion of this hypothesis which goes against evolutionary biology, and all of the scientific evidence that has proven that the common ancestor extends back and does not stop until it reaches the point that unifies all earthly life: the first chemical structure capable of self-replication that later evolved into RNA, DNA, and bacteria, then a eukaryotic cell, and then animal and plant organisms composed of many cells.

Although Abdul Sabur Shahin and his followers tried to solve the problem of the contradiction between the naive religious thesis of

some religion clerics and what has been scientifically proven, their theses still have a major defect: they are often inconsistent with what the decisive religious text indicates. In addition, they sometimes conflict with established scientific principles, as explained by Abdul Sabur.

According to these theses there is no logical or reasonable interpretation for the verses and religious accounts that state that Adam—who was created from the wet clay and the spirit—was created in paradise. ﴿So we said, "O Adam, indeed this is an enemy to you and your wife. Do not let him remove you from paradise so you would suffer."﴾ Quran Chapter "Ta Ha" 20:117.

They consider it to be an earthly garden, which conflicts with many verses and religious accounts.

There is no logical explanation for the fact that Adam was never hungry, naked or thirsty, and did not feel the heat of the sun, although according to this thesis, he had always been on the earth, since the beginning. ﴿Indeed, it is promised for you not to be hungry therein or be naked. ٭ And indeed, you will not be thirsty therein or be hot from the sun.﴾ Quran Chapter "Ta Ha" 20:118-19.

There is no logical and reasonable explanation for the nakedness of Adam, and seeing his private parts, although according to this thesis he had always been earthly. ﴿And Adam and his wife ate of it, and their private parts became apparent to them, and they began to fasten over themselves from the leaves of paradise, and Adam disobeyed his Lord and erred.﴾ Quran Chapter "Ta Ha" 20:121.

There is no reasonable explanation for the fall of Adam and Eve from paradise. ﴿He said, "Go down from paradise, all of you, being enemies to one another. And if guidance should come to you from me, then whoever follows my guidance will neither go astray nor suffer."﴾ Quran Chapter "Ta Ha" 20:123.

There is no reasonable explanation for the fall of Adam to the earth to settle and live therein after the disobedience. It is irrational for the departure, and the fall succeeding it, to be from the earth to the earth. ﴿But Satan caused them to slip out of it and remove them from that in which they had been. And we said, "Go down, all of you as enemies to one another, and you will have on the earth a place of settlement and provision for a time."﴾ Quran Chapter "The Cow" 2:36.

> ﴿He said, "Go down being enemies to one another. And for you on the earth, there is a place of settlement and provision for a time."﴾

Quran Chapter "The Heights" 7:24.

There is no interpretation for the accounts that say that Adam's wet clay form was lying at the gate of paradise before the spirit was breathed into him.

The creators of this thesis completely abolished Adam's existence and his previous creation from the wet clay in paradise. To them, Adam's beginning was one hundred percent earthly although the Quranic texts clearly state that Adam's beginning pbuh was heavenly, and it was in the temporal paradise of the first heaven specifically, regardless of the fact that they will definitely be forced to deny the world of al-Tharr mentioned in the Quran, because their thesis has absolutely no place for the world of al-Tharr, since to them Adam's beginning pbuh was on the earth!

I do not know how they will be able to, for example, explain these verses, if they are requested to, by any acceptable means.

﴿And when your Lord took from the children of Adam—from their backs— their descendants, and made them testify of their souls, [saying to them], "Am I not your Lord?" They said, "Yes, we have testified." Lest you should say on the day of resurrection, "Indeed, we were of this unaware." ⁕ Or lest you say, "It was only that our fathers associated others with God before, and we were but descendants after them. Then would you destroy us for what the falsifiers have done?"﴾
Quran Chapter "The Heights" 7:172-73.

In his book *Asl Al-Khalq wa Amr Al-Sujood* [The Origin of Creation and the Command of Prostration], Aalim Subayt Al-Nili made a thesis similar to that of Abdul Sabur.

It is understood from Aalim Subayt's words that he believes in the validity of the theory of evolution, and he did not place a restriction on it like that of Abdul Sabur. From the sayings of Aalim Subayt, it appears that he believes in evolution and natural selection as established in evolutionary biology, and he also believes that Adam is the product of breathing the spirit into the body that resulted from evolution on this earth. Aalim Subayt differentiated between Man and man just like Abdul Sabur did. However, what Abdul Sabur considered to be Quranic speech directed at Man assigned to worship God was considered by Aalim Subayt to censure him, thus reversing the issue. So Aalim Subayt made it as if Man evolved into man. Adam, who Abdul

Sabur considered to be the first Man, is the first man according to Aalim Subayt:

> Dry clay is the concentrated extract taken from mud, and it is a mass of matter put into a formed method and path, and it is capable of protecting itself. It also has the power to help it survive by division and reproduction. Therefore, the dry clay of formed mud is the first substance of life (Al-Nili 2004, 34. Arabic source, translated).

> You will find that the previous hypothesis (that the dry clay of formed mud is the first matter infused with life, which developed to become a proper Man through epoch and eons) is a correct hypothesis from more than one aspect (Al-Nili 2004, 36, translated).

To resolve the conflict between his hypothesis and the religious accounts and verses that speak about Adam being created from wet clay, Aalim Subayt made a hypothesis that states that Adam was created from wet clay and not from dry clay, as the one who was created from dry clay is Man, who later developed into man. The man (Adam) is the one created from wet clay, and Adam, the man created from wet clay, is the product of divine intervention to hasten the process of evolution by forced selection.

In order to solve the conflict between the above words and the theory of evolution, genetics, and the saying of God Almighty, ﴿…a man whom You created out of the dry clay of formed mud﴾ Quran Chapter "The Rocky Tract" 15:33, he stated that the wet clay here is not the wet clay everyone is familiar with, rather it is a homogenous, firm substance that developed from dry clay. In order to solve the conflict between his hypotheses and the saying of God Almighty, ﴿[He] Who perfected everything He created, and began the creation of Man from wet clay﴾ Quran Chapter "The Prostration" 32:7, he said:

> ﴿…[He] began the creation of Man from wet clay﴾ 32:7 which apparently necessitates a type of contradiction, but this is where the Quranic miracles lie. In Chapter Sad, He also mentioned that he is from wet clay, so the difference lies in the remaining terms. His saying, ﴿I am going to create man from wet clay﴾ 38:71 is different than His saying, ﴿[He] began the creation of Man from wet clay.﴾ 32:7 Thus, the first saying is in the past, where He talks about something that will happen in the future, meaning, He will create man from dry clay or from wet clay. Thus, He mentioned the first origin to demon-

> strate the major difference between two conditions, showing the ability to infuse it with the power of development, whereas in the second saying, He is now speaking about an incident that happened before, so it is the exact opposite of the first one in the way of telling the incident. The first animalistic being had not reached the stage of the Man yet. Rather, he started becoming Man from the wet clay stage. With respect to the term "wet clay", it is actually true for both cases. As for the degree of purity, it is understood from the other words included in the text (Al-Nili 2004, 74, Arabic source, translated).

Thus he continued with absurd assumptions to escape from one argument and fall into others, like the lumberjack of the night who does not know where his axe falls.

> There is a repelling source in the wet clay stage, note the change in the description: ﴿except for Iblis. He refused and was arrogant and became of the disbelievers.﴾ [Quran Chapter "Sad" 38:74]. He has made him arrogant and a disbeliever because He created the model that hastens evolution from the same dust, if we take the idea of inserting a hastening element or model—which is the only idea that solves the problems in religious accounts quoted from the infallible pbuh about wet clay and the first origin of the creation, as you will see. All that happened is that this time, the dust was pure without impurities in it, just as it is stated in one of the religious accounts, and that the wet clay formed from it was pure with no impurities, in contrast to the first origin of the dry clay of formed mud. Do not think that what is meant by impurities here are the usual impurities nor that this is wet clay. Rather, the wet clay was called wet clay because its linguistic origin is the elements that are very cohesive and have a certain specialized function. Then, He described it to be a sticky clay because of the strong cohesiveness between its elements due to the absence of any impurities in this pureness. With this purity, the man is created directly without passing by the stage of Man. Therefore, please note, it is a holy wet clay. That is why the only place that is suitable for the creation of this man into the holy self is the singular form "I created…" (Al-Nili 2004, 56, translated).

> The wet clay which we witness before us is Adam's wet clay which is a proportional, consistent substance in its elements developed from dry clay, not from something else. However, the Divine Hand intervened in hastening its purification and development with special care. It involves the late appearance of this developed man naturally (Al-Nili

2004, 60, translated).

In any case, the idea or thesis that Adam is the product of a spirit breathed into a body that developed through evolution is a wrong and incorrect idea. In addition, it contradicts the verses pertaining to al-Tharr: ﴿And when your Lord took from the children of Adam—from their backs—their descendants, and made them testify of their souls, [saying to them], "Am I not your Lord?" They said, "Yes, we have testified." Lest you should say on the day of resurrection, "Indeed, we were of this unaware."﴾ Quran Chapter "The Heights" 7:172, and the verse saying that He created you from one soul: ﴿O Mankind, fear your Lord who created you from one soul and created from it its mate and dispersed from both of them many men and women. And fear God through whom you ask one another, and the kinship. Indeed, God is ever an observer over you.﴾ Quran Chapter "The Women" 4:1. It also contradicts the accounts about the sperm drop that comes out during death, and other accounts and verses.

This thesis is incapable of providing a logical explanation about death, and what happens during death regarding the removal of the soul and the spirit. Therefore, what is this spirit or soul that is removed from the body when the Man dies? Is it the breathed spirit, hence a distinct one that not every Man possesses, but only the one who developed according to this thesis? Or is it something else? In truth, nothing else is connected to the earthly, developed body, according to this thesis. At the same time, the death of the body is nothing but a process of deactivating the chemical reactions that make the organs of the body function. Thus, the death of the body in and of itself does not include the removal of a true soul. Rather, it is just a cessation of reactions that leads to deactivating the organs and consequently the body as a whole.

Scientifically, the body that evolved on this earth is just a body composed of chemical substances. If we want to summarize it in scientific terms, we could say that the body of any living being, such as the human, is a colony of replicators (DNA, RNA, etc.) that possess the plan of a reactive chemical machine that is implemented in order for the replicators to survive and pass to later generations—nothing more.

This raises multiple, unsolvable arguments against the above theses: it is incorrect to obligate a body that does not possess a true soul qualified for duties. Scientifically speaking, the human body is a mere

chemical structure, like any bat or octopus or chimpanzee. Therefore, how can it be assigned duties in the first place, and then be held accountable or punished afterwards? Who is being assigned duties and held accountable? Is it the body, composed of reactant chemical substances that make it perform certain functions?!

If the breathing of the soul is a virtue and a rise in rank, it is incorrect that the spirit would be breathed into one body but not into another in the first place, since bodies are merely chemical machines that are not qualified for assigned duties, and then hold one of them accountable and reward the other. This goes against the alleged justice of the Almighty and Just Creator.

However, we find Aalim Subayt saying,

> From the time the clot was created up to the time of death, each one of them received a very different amount [of spirit]. Some of them die with no spirit, and some of them are born with a great spirit (Al-Nili 2004, 53, translated).

What is the criteria for the breathing of the spirit? Is it work and obedience? In reality, it cannot be obedience from a mere body composed of reactant chemical substances whose reaction produces lust, power, and life of the body in the form of the movement and function of organs. Scientifically, these are all material forces completely explained from a material standpoint, and these forces do not need to assume that anything else beyond matter exists. The religious accounts spoke of them as spirits of lust, power and movement, meaning the movement and function of the organs that all living beings have in common. These spirits are nothing other than the material components of this body and their products.

I believe what I have explained is sufficient to show that these theses are incorrect, so I will refrain from discussing them in further detail, even though any person reading this book may have much to say about them.

What I have set out in this book is correct, which is that every human is born with a soul created from the raised wet clay and the breathing of the spirit. This soul is connected to the body with complete interplay and management such that this soul feels the body's pleasure, pain, life, and death. It has actual material impact on the body, like the work of an active driver within it.

Since this soul is created from the breathing, it is a clear and lucid image of the spirit and the total intellect. For this reason, it is correct that it is assigned duties, and it is the one assigned with the divine duty of obedience. And it is tested in this world by its connection to the body that has temporal, lustful demands.

From the above, it has also been clarified that everyone has souls qualified for being assigned duties, and everyone has the same capacity and ability. As such, no argument can be made against the justice of God Almighty. He made everyone equal and placed them in the temporal test. Muhammad, Ali, the prophets, the successors, and the righteous ones won due to what they brought forth, and God did not initially favor them over others, as this would go against His justice. Thus, the others who lost entered the test with the same opportunity as Muhammad pbuhap, Ali, the prophets, and successors pbut but they fell short, and did not work and obey, so they lost.

The Truth that is in this Book

The truth in this book is that the human soul was created from the raised wet clay and the breathing of the spirit that were connected to a material body that evolved on this earth. The first human soul was created in the first heaven and was composed of the wet clay that was raised to it, as well as the breathing of the spirit into it. Thus, the creation of Adam pbuh occurred in the first heaven. If non-believers cannot understand or rationalize the first heaven, we can assume that, according to the multiple universe theory, it i exists in a universe parallel to our universe that we now live in. From there, this soul was returned to this material universe we are in through its connection to a body—when it is in the womb —and it is a body like our current bodies. It is no different from us. Thus, the first Man, Adam pbuh, was formed on this earth. The case of Eve pbuh is similar to that of Adam. Mankind reproduced and populated the earth for the first time in a noteworthy, recorded, and preserved manner in Sumer.

If you cannot understand the connection of the soul that is in a parallel world to the body that is in this world, you can consider it to be like the hypothetical connection between parallel universes and the transfer of a particle or wave between universes.*

*. For those who are not familiar with the multiple universe theory, a brief explanation will be offered in this book, God willing.

With respect to the soul of Eve, it was derived from the soul of Adam pbuh:

> ﴿O Mankind, fear your Lord who created you from one soul and created from it its mate and dispersed from both of them many men and women. And fear God through whom you ask one another, and the kinship. Indeed, God is ever an observer over you.﴾ Quran Chapter "The Women" 4:1.*

> The Almighty also said, ﴿It is He who created you from one soul and created from it its mate, that he might live with her, and when he covers her, she carries a light burden and continues therein. And when it becomes heavy, they both invoke God their Lord, "If you should give us good, we will surely be among the grateful."﴾ Quran Chapter "The Heights" 7:189.

Subsequently, the souls of the offspring were brought out of the souls of Adam and his offspring, and God tested them in that world: ﴿And when your Lord took from the children of Adam—from their backs—their descendants, and made them testify of their souls, [saying to them], "Am I not your Lord?" They said, "Yes, we have testified." Lest you should say on the day of resurrection, "Indeed, we were of this unaware."﴾ Quran Chapter "The Heights" 7:172. All the souls of the children of Adam were composed of both the raised wet clay and a manifestation of the spirit of faith and the Holy Spirit, or say an image of the spirit of faith and the Holy Spirit. Thus, every human is created on the basis of reaching the highest ranks, and of being with the people of the seventh heaven, and knowing God. Moreover, he has the tool with which he rises, which is the image of the spirit of faith and the Holy Spirit. As such, through the image placed within him, he is supposed to know and reach his truth.

The reason that the soul of Adam, Eve, and the others created in the first heaven or the world of al-Tharr is connected to the bodies on this earth, is to repeat the test and give them another chance to be tested. (For further reading on this subject, you may refer to detailed explanations I have presented in other books.) This connection

*. At a higher rank, it is the first spirit, the spirit of Muhammad pbuhap, and from it the rank of the spirit beneath it was created, which is the spirit of Ali and Fatimah pbut.

of these heavenly souls to the earthly bodies led to the appearance of culture and civilization, as will be clarified.

> Abdullah Ibn al-Fathil al-Hashimi said to Abu Abdullah, "Why did God Almighty place the spirits in the bodies after they were in His higher kingdom at the highest rank? He pbuh said, God Almighty knew that if spirits were left in a state of nobility and elevation, the majority of them would incline toward claiming lordship in place of the Almighty, so by His power, He placed them in bodies that He initially destined for them, out of His concern for them and mercy toward them. He made one need the other; one attached to the other; one elevated over the other in this world and in the hereafter; and one sufficient for the other. He sent His messengers to them and established His proofs upon them as bearers of glad tidings and warners, who commanded toward worship and humility toward their God through the types of worship He commanded them with. He created immediate and delayed punishments for them, and immediate and delayed rewards to make them want to do good and refrain from evil, and to guide their seeking of sustenance and provision, so they would know that there is a Lord above them and that they are created worshippers, and so they would incline toward worshipping Him, hence deserving everlasting bliss and eternal Paradise, and being secure from resorting to that of which they have no right."
>
> Then he pbuh said, "O Ibn Fathel, God Almighty is more concerned about His servants than they are about themselves. Do not you see how they all love superiority over others until some of them incline toward claiming lordship, and some of them incline toward claiming prophethood without right, and some of them incline toward claiming to be imams without right, despite the imperfection, inability, weakness, humiliation, need, poverty, pain, and the alternating among these things that they see in themselves, and the death that overcomes and conquers them all? O Ibn Fathel, surely God Almighty only does what is best for His worshippers, and He does not at all oppress people. Rather, it is the people who oppress themselves" (Al-Sadooq 1966, vol 1, 16. Arabic source, translated).

Therefore, considering that the soul is created from wet clay, it has the capacity to encompass the physical, material spirits or forces, which are lust, power, and movement or life of the body. Since the soul is created from the breathing of the spirit, it is qualified to rise and to encompass the Holy Spirit and the spirit of faith.

For this reason, the wet clay was raised and the soul was created from it and from the breathing of the spirit, because as God knows, it will return to the wet clay or to the material world of the bodies or the earth in particular. Because it is created from it, it is qualified to interact with what is earthly, encompass it, and merge with it, meaning the body, as it represents a suitable test for it. At the same time, because it is from the breathing of the heavenly spirit, it is qualified to rise and to encompass what is heavenly, meaning the spirit of faith and the Holy Spirit.

We can imagine the soul to be a double-sided mirror. One side has an image and a place for the physical spirits or forces of the body (the spirits of lust, power, and life) and the other side has a place for the spirit of faith and the Holy Spirit. Thus, the soul is inclusive of the five spirits: the spirits or forces of the body, the spirit of faith, and the Holy Spirit. Therefore, it is inclusive of forces and spirits from different worlds, because it is created from different worlds. Accordingly, the raised wet clay is from the physical world of the material, and the breathing of the spirit is from the higher heavens.

> Abu Abdullah pbuh said: "O Jabir, God Almighty created the creatures in three categories, and it is in the saying of God Almighty: ﴿And you become three kinds ⁎ Then the people of the right—what are the people of the right? ⁎ And the companions of the left—what are the companions of the left? ⁎ And the forerunners, the forerunners—Those are the ones brought near.﴾ [Quran Chapter "The Inevitable" 56:7-11].
>
> The forerunners are the messengers of God pbut and the elite of God from His creation. He has placed in them five spirits. He supported them with: the Holy Spirit, by which they recognized things; the spirit of faith, by which they feared God Almighty; the spirit of power, by which they had the ability to obey God; the spirit of lust, by which they desired obedience to God Almighty and despised disobedience to Him. He also placed within them the spirit of movement by which the people come and go.
>
> He has placed these spirits within the believers and the people of the right: the spirit of faith, by which they feared God; the spirit of strength, by which they were able to obey God; the spirit of lust, by which they desired obedience to God; and the spirit of movement, by which the people come and go" (Al-Kulaini 1944, vol 1, 271. Arabic source, translated).

> Abu Jafar pbuh was asked about the knowledge of the Knowledgeable One, so he said: "There are five spirits in the prophets and successors: The Holy Spirit, the spirit of faith, the spirit of life, the spirit of strength and the spirit of lust. Through the Holy Spirit, they knew of all that is under the Throne [down] to what is within the earth… These four spirits are all struck by impurities except the Holy Spirit, which does not trifle or play" (Al-Kulaini 1944, vol 1, 272, translated).

> Abu Abdullah pbuh was asked about the knowledge of the Imam concerning what is in the ends of the earth while he is in his house secluded behind curtains, so he pbuh said: "God Almighty has placed five spirits in the Prophet pbuhap: the spirit of life by which he moved and walked, the spirit of strength by which he stood and strove, the spirit of lust by which he ate, drank and coupled in permissible ways, the spirit of faith by which he believed and was just, and the Holy Spirit by which he bore prophethood. When the Prophet pbuh died, the Holy Spirit transferred and moved to the Imam. The Holy Spirit does not sleep, forget, trifle, nor boast. The other four spirits sleep, forget, boast and trifle. And he used to see through the Holy Spirit" (Al-Kulaini 1944, vol 1, 272, translated).

Human Culture

There is no doubt that the appearance of the being called the modern or intellectual human (*Homo sapiens*) represented an obvious leap the development of culture and civilization as previously clarified. However, if we examine the history of this same being, *Homo sapiens*, particularly the group that migrated out of Africa, we also find that archaeological data indicates a clear leap of culture in a specific time period. It may be scientifically difficult to accurately specify where it began, because nothing material has been attained that can be relied on to specify the beginning of the leap of civilization. The indicators of the beginning of agricultural villages more than ten thousand years ago in the Near East do not represent the beginning, but rather, they represent a spread and expansion in the beginning that made it archaeologically possible to identify due to the traces of it that remained.

However, by scientifically and objectively studying the most ancient findings that have been preserved and recorded, we can reach some of the truth if not the whole truth. The Sumerian-Akkadian civilization is the oldest civilization and culture to record its history,

relayed through Sumerian writings that unquestionably represent the closest or one of the closest inheritors of the first migrating group that inherited the fertile valley (the current Gulf). Following the flood, this civilization moved to the north of the valley (the current gulf). Within the borders that are inhabitable, and on the borders of marshes and lakes, villages formed prior to the Sumerian (Akkadian) history in Mesopotamia (Iraq). The history of some of what has reached us from the Sumerians dates back thousands of years before Christ. However, since the civilization of those early people relied on reed—and especially since they lived in a valley filled with lakes—nothing of it has reached us. What has reached us is their later civilization, meaning around the fifth millennium B.C. What they recorded and wrote, after writing and recording began, indicates a leap of culture and civilization in every sense of the word. We can say that this leap manifested with both tools and a great number of people residing in Iraq, such that conditions could not erase it. Certainly, this number came from individuals that bequeathed this sophisticated cultural level of human behavior to their children. In other words, this is a leap of civilization that goes back to other millenniums that were perhaps erased by the flood and obliterated by the salt water that covered the current Gulf.

When the children of the Sumerian (Akkadian) civilization speak about their ancestors and the clay tablets, you find them saying that their ancestors were more culturally and morally sophisticated than they were. It is a culture and civilization completely different than what preceded it. Here, we are not speaking about mere tools. Rather, we are speaking about a social and political system and high morals. Therefore, there was a leap of culture and civilization that cannot be scientifically explained, and it was recorded in a certain historical time period and reached us through Shumer or Sumer or the land of Akkad and Sumer, the South of modern Iraq. This leap of culture led some researchers like Zachariah Sitchin to suggest that the Sumerians (Akkadians) had a celestial origin, and that they came from outer space.

> We can assume that these people called Sumerians have descended from tribes who inhabited Iraq in prehistoric eras that preceded the Early Dynastic Period, and that they were known in historical times by a particular name—Sumerians—in reference to a particular part of Iraq where they were centered. This part is the southern region named Shumer or Sumer. Perhaps what most makes this assumption

> a realistic opinion is that the foundations of the civilization that we named Sumerian and that flourished during the Early Dynastic Period can be traced to the civilization periods which we named predynastic periods, forming a continuity of civilizations. This means that the origins of the Sumerian civilization began in Iraq, and we can trace its foundations and origins to the earliest times. We can, for example, call the people of the Ubaid period Sumerians, based on the emergence of the most prominent elements of Sumerian civilization therein, such as temples and villages, even though we do not know the language spoken by the Ubaidians (Baqir 2009, 89-90. Arabic source, translated).

Certainly, Egyptian civilization represents an excellent representation of this leap of culture and civilization. However, it came after the Sumerian civilization. In addition, some recent genetic research has proven that the origins of Egyptians and North Africans go back to the ancient Sumerian region that is Southern Iraq. For this reason, I will only discuss the Sumerian or Akkadian civilization—the civilization of the ancestors—to prove this leap of civilization using the Sumerian (Akkadian) example.

Literature in Sumer and Akkad

Indicators of a Leap in Consciousness and Intellect

Literature is a standard of measure of human culture and the human ability to think. As such, we are obliged to consider that Sumerian or Akkadian (Babylonian and Assyrian) literature—such as the Epic of Gilgamesh with its various texts—important evidence that man's capability of consciousness and knowledge has not changed ever since the known beginning in Sumer and Akkad that was recorded and conveyed on clay tablets. Literature is an independent measure that doesn't need other mechanisms that might disrupt the accuracy of its use as a standard of measure, as is the case with industrial civilization, building and construction. These are difficult for anyone to use as accurate measures because they rely on other methods beyond the humanness of man, such as accumulating inventions and manufacturing and constructing tools, which are interdependent. Nevertheless, they are still measures that perhaps require inference in order to reach the required result.

Some say that humanity has made great progress in the construction field. Today, we are able to build skyscrapers and bridges over the middle of the sea. Therefore, construction may also govern our advancement in intellect and consciousness over that of our Sumerian ancestors. However, if we look closely and compare the Ziggurat of Ur built by the Sumerians with the most complex grand constructions of today, we will conclude there is no difference in the level of intellect and consciousness between the engineers who designed and completed the Ziggurat of Ur, and their Chinese counterparts who designed and completed the longest sea bridge in the world, or those who, in a few days, completed the construction of a hotel of thirty or more stories. That is because Chinese engineers today have past experiential information and industrial techniques that improve construction, which have accumulated over time throughout the history of mankind. The Sumerians did not have that, because they represent the starting point. The difference between the Sumerian team of engineers thousands of years ago and the Chinese team of today is not a difference of intellect and consciousness, but a difference in what is available externally. It is like giving someone shovels and simple tools and information about construction, and asking him to construct a building such as the Ziggurat of Ur, while giving another person developed tools and a great deal of information accumulated from previous experiences, as well as computers and various software designs and analyses, and requesting that he build a bridge connecting China and Hong Kong. In my opinion, if both of them were to do as you request, I would not be able to determine the difference between them in terms of intellect or faculty of consciousness. I believe any rational person would make the same conclusion.

We may conclude that, from the perspective of building, construction, industry, and agriculture, the Sumerian civilization absolutely represents a leap of civilization in relation to the history preceding its existence. It indicates a leap in intellect and consciousness among the Sumerians, the beginning of which cannot be scientifically determined with accuracy. Nevertheless, it certainly started long before recorded history, perhaps by tens of thousands of years. It places them at the same level of our intellect and consciousness today. However, for urban civilization, for example, we need to investigate, give examples, and make comparisons in order to reach the required result.

With respect to literary texts, I believe that any person who reads the Epic of Gilgamesh, for example, will see it as a work of literature worthy of being categorized at the height of human literature (for those who think it is a product of humans), and therefore conclude that mankind in Sumer and Akkad underwent a leap of culture and civilization within the historical span of the tens of thousands of years that are linked to Sumer and Akkad. It can be read using the tools of consciousness available to the average person. This clearly means that something new entered the equation of the *Homo sapiens* that changed him from a simple, primitive being controlled by the selfishness of survival, to an intellectual, conscious human who tried to be altruistic in this life and turn his desire for survival into a desire for immortality in a different, ideal world, free of evil and filled with good, agreeable morals.

Figure 16: Ziggurat of Ur

The Origin of the Sumerians

The Sumerian language differs from the Semitic languages that existed in Mesopotamia. This difference has posed a problem in determining the origin of the Sumerians, causing many researchers and specialists to suppose that Sumerians had a distant origin, such as India,

East Asia or even Europe. Earlier specialists, such as Joseph Halévy, and later ones, such as Dr Nael Hanun, have come to different conclusions. Some considered the question regarding the Sumerian origins to be invalid. Hanun concluded that Sumerian writing was invented by Akkadians during the first attempts at writing and transcribing in the cuneiform language. Therefore, the Sumerians are the Akkadians (the Babylonians and Assyrians), and are not of a different nationality. This means that the Sumerian-Akkadians are Semites.*

> The research of Thorkild Jacobsen proves the absence of any conflict between Sumerians and Akkadians on the basis of national differences. This is despite the inevitability of such conflict when disputing over sovereignty in an area of limited space and resources, such as ancient Mesopotamia, which lacked any natural barriers that would have separated its lands for the two nations to co-exist. We can summarize the most important results reached by Jacobsen in his research as follows:
>
> 1. The conflicts between the different human groups in ancient Mesopotamia were not due to national differences. Rather, they were due to political and territorial disagreements.
> 2. Cuneiform texts never mentioned a single case of conflict or war between Sumerians and Akkadians, even though they were regarded as two different nationalities. Rather, they were in separate cities, or separate civil-states, with a distinct sense of nationalist belonging felt by the residents of each of the two cities.
> 3. Any research concerning the differences between Sumerians and Akkadians can only pertain to the use of language, names of personalities, and religious beliefs. It cannot pertain to ethnic differences or natural anthropological elements—such as skin color, features, hair type and so on—since it is impossible to monitor such differences in the first place.
>
> The most important conclusions made by Ignace Jay Gelb in his research can be summarized as follows:
> 1. The anthropological evidence confirms that the skeletons discov-

*. Dr Nael Hanun, born in 1952, is an Iraqi researcher who received an M.A. in Ancient Artifacts from the University of Baghdad (1976), a M.A. in Cuneiform Writings from the University of Toronto, Canada in 1982, and a PhD in Akkadian Language and Literature from the University of Toronto, Canada in 1986. He has taught in Iraqi universities, including the University of Baghdad and the University of Al-Kufa and finally at the University of Damascus. He is the author of many publications and released the first Arabic dictionary of the Sumerian and Akkadian language.

ered since the oldest period in Babylon belong to the race known as the Eastern Branch of the Mediterranean Sea race. This means that they resemble skeletons of Bedouin tribes in the Arabian Peninsula and the desert of Sham. Moreover, no skeletons of the round head type specific to people of Central Asia were found, as it is assumed that Central Asia was the first home of the Sumerians.

2. Research confirms the significance of the evidence drawn from the names of ancient cities discovered by Landsberger and outlined above. The essence of this evidence is that the names of major ancient cities in Southern Iraq were not Sumerian.

3. Names of Akkadian personalities appear together with those of Sumerian personalities in cuneiform texts, even in cities that are apparently Sumerian during Sumerian periods. The names of the kings of the first dynasty that ruled after the flood were mostly Akkadian. This is based on how Sumerian kings are identified. Out of the 23 kings whose names were mentioned in this dynasty, there were no more than six Sumerian names. In cities such as Shuruppak and Ur, the names of Akkadians have appeared in texts since the ancient Early Dynastic period.

4. Most of our information about the kings of the Early Dynastic period, who are believed to be Sumerian, derives from texts of epics composed in the Sumerian language during the ancient Babylonian period, not during the supposed Sumerian periods.

5. In its first stages, the writing was not limited to the supposed Sumerian region of Southern Iraq. Rather, it spread to what is known as the Akkadian region—the northern part of Southern Iraq—during the period similar to the protoliterate period.

6. The Akkadian texts began to appear in the third Early Dynastic Period, which is considered one of the periods of Sumerian sovereignty before Sargon of Akkad established his state. During the period of this state, royal texts and names of years were bilingual. Religious and economics texts, on the other hand, were either in Sumerian or Akkadian. In the region of Diyala, which is far from what is believed to be the Sumerian region, the Sumerian language was used to transcribe agreements. In the ancient Babylonian period, the Babylonians used the Sumerian language—as well as the Akkadian language—for inscription.

7. The lexical study of the Sumerian language shows the existence of two groups of terms: the first includes Sumerian terms, while the second includes a large number of words borrowed from a non-Sumerian language.

8. A large number of cuneiform characters were found to have pho-

netic significance in the Sumerian language. Sumerian speakers used them, but these characters had no symbolic significance to indicate meaning associated with them. Researchers have given them the name "kakasiga". The existence of these characters, or linguistic codes, indicates that they were derived from words belonging to a non-Sumerian language.

9. Sumerian symbolic syllables possessing the same meaning differed from one region to another throughout Southern Iraq, or E HUL. This is expressed differently in the northern regions of Southern Iraq, using the symbolic syllables SAG GIS RA. Some precedents and linguistic tools were used in certain regions, while they were neglected in others.

10. Akkadian writing influenced Sumerian writing in a manner no less noticeable than the oral linguistic influence. This indicates that Akkadians were involved with writing when it was invented. For example, syllables were found in Sumerian writing that were derived from Akkadian words like the syllable (id) derived from the Akkadian word (idu) meaning hand, the syllable (pu) derived from the Akkadian word pu meaning mouth, and the syllable (iz) derived from the Akkadian word (isu) meaning stick. There are also Sumerian words that were derived from Akkadian words and then morphed into symbolic syllables with the same meaning. Example of this are "sam" (price) and "hazi" (axe).

In the 1970s, Taha Baqir raised an important issue regarding the Sumerians. He rejected the tendency of certain researchers to attribute physical characteristics to Sumerians through statues and artwork. He explained that the visible features on the Adamite statues were influenced by artistic techniques and styles predominantly followed in sculpting. The appearances and shapes of these statues of individuals do not, in reality, represent ethnic differences or characteristics specific to the Sumerians and Akkadians. Rather, they represent attire appropriate for the status of the depicted person. Baqir's view is corroborated by the fact that that these features and characteristics, which researchers attributed to statues of Sumerians, also appear on statues of people in regions distant from the hypothetical region of Sumerians like Mari (Tel al-Hariri in Syria). In addition, we find that the forms of the people in statues attributed to Sumerians from the Early Dynastic Era differ from the famous statues of Prince Judia (the Sumerian) who lived around 2200 B.C.

It is clear from the aforementioned that the hypothesis concerning the existence of a Sumerian people—which has been proved through the existence of Sumerian language and Sumerian names

of people—raises more questions than it provides answers. It is also clear to us that language is the only proof of the existence of Sumerians as people who lived with or preceded Akkadians in Southern Mesopotamia. Even in terms of writing, it has become clear that solid scientific studies do not side with accepting the opinion that writing is the invention of Sumerians. From this point on, we incline toward believing that there were no people ethnically different than the ones called Akkadians. We have sufficient reasons for saying that Akkadians created the Sumerian language for the purpose of transcription, before they were able to invent a method to transcribe the Akkadian language itself. We see this when the Sumerian language was first formed and could not be used as speech, as we will explain in due course.

Nevertheless, the Sumerian language helped Akkadians reach syllables after the pictorial and symbolic stages. Syllables were the only way to transcribe the texts of the Akkadian language that was used in speech, and the pictorial and symbolic methods could not used for transcribing the language because they were filled with conjugations, derivatives and an abundant vocabulary. Thus, it was only possible using syllables. If the pictorial and symbolic methods were not invented to transcribe a language that was originally made for transcription, it would not have been possible to reach syllables.

What led us to this opinion was working to compile the Sumerian lexicon of the Akkadian, Sumerian and Arabic languages, the first volume of which was issued in Baghdad in 2001. After completing the first volume and beginning to work on later volumes that include the terms, it became clear to us that a great number of Sumerian terms and symbolic syllables were made for the first time between the middle of the second millenium and the middle of the first millennium. That is over five centuries after the hypothetical disappearance of Sumerians. This fact led us to conclude that these terms were made by the Akkadians themselves. If the Akkadians were the ones who made the Sumerian terms at that time, what prevents us from believing that they made the terms and syllables before then? What could cause us to think that they were incapable of creating rules of writing to control the formation of these terms in texts, such as the texts we now know as Sumerian?

In addition to the aforementioned, through research on this subject we have obtained vast evidence supporting the hypothesis we have made (Hanun 2007, 29-32. Arabic source, translated).

Sumerians or Akkadians have the world's oldest recorded civilization

and culture, as well as the oldest organized and known religion to date. If we consider religion to be only a cultural history, the three Abrahamic religions, Judaism, Christianity, and Islam, would be mere carriers of the Sumerian Akkadian religion, and nothing more than reflections of it. The stories of the creation, the flood and Noah; the stories, examples, high moral values and exalted behavior of some individuals; the worship, prayer, and invocation of God—all of this exists in the Sumerian religion.

In addition, the origin of all three Abrahamic religions traces back to Abraham pbuh, who came from Sumer.

Since the Sumerians have the oldest earthly civilization and culture of known value, the ancient Sumerians, or the people from whom Sumerians descended, can be considered to represent the source from whom the children of Adam and their culture spread throughout the remainder of the earth. In the clay tablets, the Sumerians described their ancestors as the "blackheaded people". This agrees with what has recently been proven scientifically, namely that the *Homo sapiens* currently spread throughout the earth are of African origin.

The first civilizations to emerge shortly after the Sumerians had surrounded the land of the Sumerians, with the Sumerians representing the center of these civilizations. This unequivocally means that they spread to surrounding countries and established cultures therein, or, at the very least, it means that their culture and civilization spread.

Therefore, the culture of the Sumerians (Akkadians) appeared suddenly—without preliminaries—and it was very sophisticated and distinct. This stark cultural and civilizational leap made by the Sumerians represents a clear indicator of something new entering the equation, causing man to not only build a material civilization, but to also move from selfish, animal, oppressive behavior to seeking moral, fair, altruistic, humane behavior.

The only reasonable explanation, supported by archeological findings, is that religion entered the equation. The religious explanation for this shift of civilization is the only one that is correct, factual, and supported by artifacts that confirm the introduction of these values through religion, or Adam and the prophets. When the soul of Adam pbuh connected to a material body of selfish biology, this soul entered the equation, and this benevolent soul transmitted moral values, such as altruism, from God. People then believed that these moral values were truths, due to indicators they sensed within themselves. They

then started fighting their "I" with altruism, achieving a benevolent and blessed result, the beauty of which stunned even atheists. The atheists then began advocating altruism, which is all they could do, despite the fact that its forerunner and the one who introduced it is the worst of enemies to the atheists: divine religion.

If we combine the history of the Sumerians' clay tablets and artifacts with their religious text, we will reach the conclusion that the Sumerians—or the inhabitants of Mesopotamia—are actually the inheritors of the civilization and culture of Adam pbuh and Noah pbuh (Utnapishtim), even if an extremely long time had passed before we obtained that history from artifacts and clay tablets.

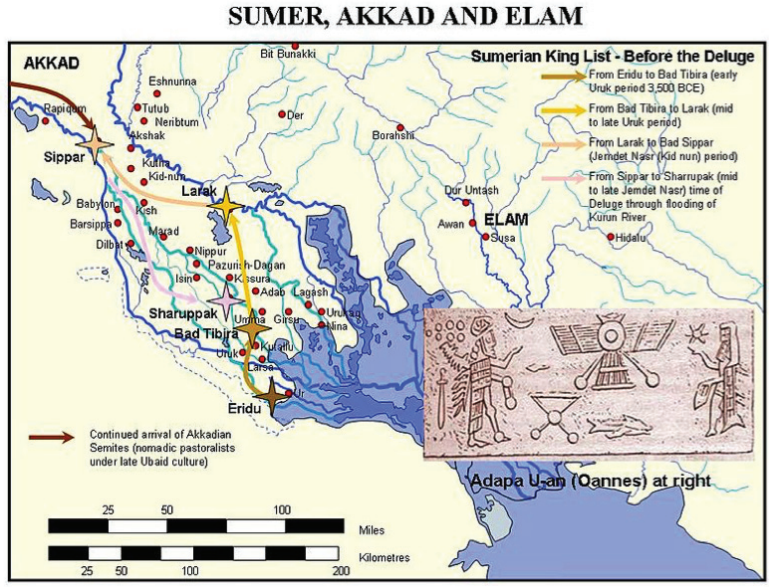

Figure 17: A Map of Sumer, Akkad, and Elam

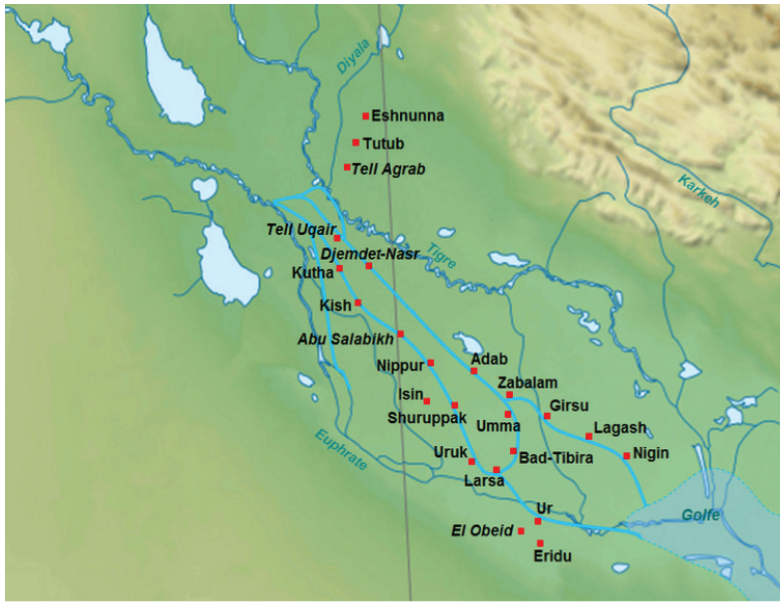

Figure 18: A Map of the Countries of Mesopotamia. Source: Wikimedia

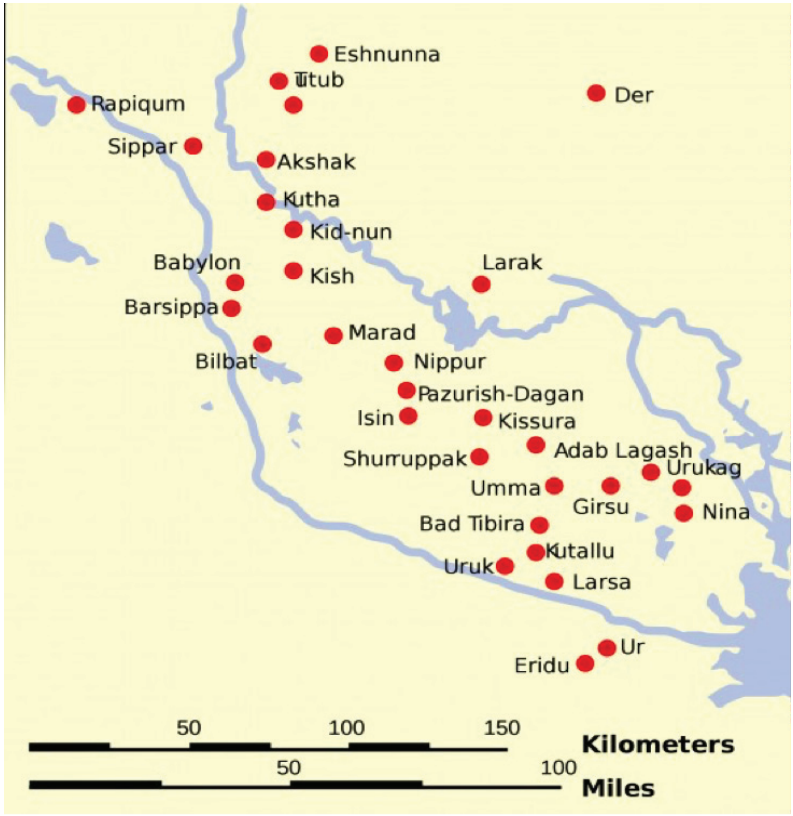

Figure 19: A Map of Sumer and Akkad. Source: Ancient History Encyclopedia

The maps are arranged to also give an adequate picture of the process of water recession caused by the hydraulic jump of the flood that filled the valley with water. This flood formed the modern gulf and caused the migration of the early Sumerians (or whatever you wish to call them) from the valley to the regions of Southern Iraq and their settlement on the water edges between 8000-15000 B.C. Consequently, they built villages and cities, and then they and their civilization spread to the rest of the world, such as North Africa.

The Civilization and Culture of Sumerians or Akkadians

What distinguishes the behavior of Sumerians (Akkadians), as our chosen example, from animals and anthropoids such as the *Homo erectus* or the ancient *Homo sapiens* (before civilization) in terms of culture and civilization, are the following most significant attributes:

Moral Standards such as Justice

Laws were made to govern interactions between individuals and to achieve social justice. In fact, we find that Sumerian literature contains very high moral standards such as altruism and favoring others over one's self.

> The Sumerians, according to their own records, cherished goodness and truth, law and order, justice and freedom, righteousness and straightforwardness, mercy and
> compassion. And they abhorred evil and falsehood, lawlessness and disorder, injustice and oppression, sinfulness and perversity, cruelty and pitilessness. Kings and rulers constantly boasted of the fact that they had established law and order in the land; protected the weak from the strong, the poor from the rich; and wiped out evil and violence. In the unique document analyzed in Chapter 7, the Lagashite ruler Urukagina, who lived in the twenty fourth century B.C., proudly recorded that he restored justice and freedom to the long- suffering citizens, did away with ubiquitous and oppressive officials, put a stop to injustice and exploitation, and protected the widow and the orphan. Less than four centuries later, Ur-Nammu, founder of the Third Dynasty of Ur, promulgated his law code (see Chapter 8), which lists in its prologue some of his ethical achievements: he did away with a number of prevalent bureaucratic abuses, regulated weights and measures to ensure honesty in the market place, and saw to it that the widow, the orphan, and the poor were protected from ill-treatment and abuse. Some two centuries later, Lipit-Ishtar of Isin promulgated a new law code, in which he boasted that he was especially selected by the great gods An and Enlil for "the princeship of the land in order to establish justice in the lands, to banish complaints, to turn back enmity and rebellion by force of arms, and to bring well-being to the Sumerians and Akkadians." The hymns of a number of Sumerian rulers abound in similar claims of high ethical and moral conduct (Kramer (1956) 1981, 101-02).

This is a text translated from Sumerian documents describing the goddess Nanshe:

> Who knows the orphan, who knows the widow,
> Knows the oppression of man over man, is the orphan's mother,
> Nanshe, who cares for the widow,
> Who seeks out (?) justice (?) for the poorest (?).
> The queen brings the refugee to her lap,
> Finds shelter for the weak (Kramer 1981, 104).

Organized Social Behavior:

Organized social behavior includes establishing the country and government; organizing agriculture; creating a farmer's almanac; organizing medical treatment; creating a medical handbook; and creating administrative jobs, such as director of municipality, officer, ambassador, library manager, and so on.

On the Organization of Schools and Means of Education, Dr Kramer says:

> The Sumerian school was the direct outgrowth of the invention and development of the cuneiform system of writing, Sumer's most significant contribution to civilization.
>
> The first written documents were found in a Sumerian city named Erech. They consist of more than a thousand small pictographic clay tablets inscribed primarily with bits of economic and administrative memoranda. But among them are several which contain word lists intended for study and practice. That is, as early as 3000 B.C., some scribes were already thinking in terms of teaching and learning. Progress was slow in the centuries that followed. But by the middle of the third millennium, there must have been a number of schools throughout Sumer where writing was taught formally. In ancient Shuruppak, the home city of the Sumerian "Noah," there were excavated, in 1902–1903, a considerable number of school "textbooks" dating from about 2500 B.C.
>
> However, it was in the last half of the third millennium that the Sumerian school system matured and flourished. From this period there have already been excavated tens of thousands of clay tablets, and there is little doubt that hundreds of thousands more lie buried in the ground, awaiting the future excavator. The vast majority are

> administrative in character; they cover every phase of Sumerian economic life. From them we learn that the number of scribes who practiced their craft throughout those years ran into the thousands. There were junior and "high" scribes, royal and temple scribes, scribes who were highly specialized for particular categories of administrative activities, and scribes who became leading officials in government. There is every reason to assume, therefore, that numerous scribal schools of considerable size and importance flourished throughout the land (Kramer 1981, 3-4).

> In the third millennium B.C., these "textbooks" became increasingly more complete, and gradually grew to be more or less stereotyped and standard for all the schools of Sumer.
>
> Among them we find long lists of names of trees and reeds; of all sorts of animals, including insects and birds; of countries, cities, and villages; of stones and minerals. These compilations reveal a considerable acquaintance with what might be termed botanical, zoological, geographical, and mineralogical lore—a fact that is only now beginning to be realized by historians of science (Kramer 1981, 6).

Literature

The literature in the Sumerian clay tablets expresses the highest levels of moral values in the best literary form, encoded with symbols that at times, for the writer, allow for dispensing with dozens of sentences. This literature also contains great wisdom and painful, sad events that touch the human heart and make the reader sympathize with these ideal, wise characters who possess high morals, such as Gilgamesh and Dumuzi, yet are harmed and killed for the fulfillment of noble purposes. It also depicts people wailing and crying because they did not help those personalities who represented just causes and were oppressed.

Although Sumerians portray them as gods, when you read the stories of these characters in the Sumerian clay tablets, it is clear that they are human. They eat, drink, sleep, marry, and have children. It is obviously a mere process of distorting the divine religion. These gods are nothing but an unseen group represented by the prophets, the righteous ones and the angels, as well as by the self and this world. Exaggeration and distortion of religion has been ongoing, ever since God created Adam. Perhaps sometimes what is meant by "god" is not the Absolute God. Rather, what is meant is everything that is deified.

In *The Book of Monotheism*, I explained the meaning of "divinity" and "lordship", and that they are expressions that can originally apply to creation.*

> This myth illustrates vividly the anthropomorphic character of the Sumerian gods. Even the most powerful and most knowing among them were regarded as human in form, thought, and deed. Like man, they planned and acted, ate and drank, married and raised families, supported large households, and were addicted to human passions and weaknesses. By and large, they preferred truth and justice to falsehood and oppression, but their motives are by no means clear, and man is often at a loss to understand them (Kramer 1981, 86-87).

When reading the Sumerian clay tablets, we find that, in their literature, the Sumerians were searching for the savior who saves mankind from its animalism. Some of these divine characters were depicted as the awaited savior and redeemer, and the symbol of human justice, whose appearance was awaited by the Sumerians. How can the sudden appearance of these intellectual literary epics be explained without

*. Divinity: In a general sense, "divinity" includes the Perfect One whom the creation deifies in order for them to achieve perfection and remedies their imperfection. It is similar to lordship because it includes both the father, who is the lord of the family, and the vicegerent of God, who is the lord of the earth, on His earth. ﴿The earth shined with the light of its Lord﴾ Quran Chapter "The Troops" 39:69. al-Sadiq pbuh said about this verse: "The Lord of the earth is the Imam of the earth." He was asked, "What happens when he emerges?" He said, "People substitute sunlight and moonlight with His light, and the light of the Imam pbuh suffices." In this physical world, lordship includes the one who takes responsibility for the needs of another person. He is a lord to the other person because he remedies his imperfections and provides for his needs in this physical world. That is why we find that Joseph pbuh, a prophet, calls Pharaoh the lord of the wine-giver in the Holy Quran: ﴿And he said to the one he knew would go free, "Mention me before your Lord." But Satan made him forgetful of the mention of his Lord and Joseph remained in prison for several years.﴾ Quran Chapter "Joseph" 12:42 In addition, Joseph calls the ruler of Egypt his lord, as he provided for Joseph and looked after him ﴿And she, in whose house he was, sought to seduce him. She closed the doors and said, "Come, you." He said, "I seek the refuge of God. Indeed, he is my lord who has made my dwelling good. Indeed wrongdoers will not succeed."﴾ Chapter "Joseph" 12:23. The one who has made his dwelling good, according to appearances in this physical world, is the ruler of Egypt: ﴿And the one who bought him from Egypt said to his wife, "Make his dwelling comfortable, perhaps he will benefit us, or we adopt him as a son." Thus, we established Joseph on the land that we might teach him the interpretation of dreams. And God is predominant over His affair, but most of the people do not know.﴾ Quran Chapter "Joseph" 12:21 Divinity also includes that which is deified by others to remedy the imperfection and fulfill needs that the others have. Thus, the name God in Arabic is derived from the word "deity"(Al-Hasan 2010). *The Book of Monotheism*. Refer to the book for further details.

saying that a massive leap of civilization occurred?! How can a rational person imagine that *Homo sapiens* attained this ideal, sophisticated, intellectual level that suddenly appeared in Mesopotamia, without the existence of something new entering into the equation and changing everything?!

> The literary output in Mesopotamian civilization is particularly consequential in the history of human literature because to us, it represents the first attempt of a human to express life, its values, and its meaning using fiction and art. Although this was the first attempt in the history of human evolution, the most remarkable thing found by the examiner of Mesopotamian literature is that, although it is extremely ancient and preceded all world literature, it has the fundamental attributes that distinguish famous world literature. This is the case from the perspective of style and methods of expression, as well as from the perspective of content, imagination and artistic imagery.*

Sumerians considered themselves the inheritors of civilization, morals and high values that preceded them. In fact, they would reminisce about these days of the past, as is evident in the Epic of Enmerkar and the Lord of Aratta.

Scientific and Industrial Achievements

The most important characteristic distinguishing the Sumerians is the existence of an education system of schools, teachers, educational books, and a system of teaching. The Sumerians had a list of professions, demonstrating the magnitude of the leap of culture and civilization of this nation. They had teachers; doctors; writers; architects; bakers; butchers; cooks; reed workers; potters; stone carvers and engravers; carpenters; boat makers; and tailors. Also included was the use of complex geometrical tools, such as the slide rule, in astronomy; the manufacture of weighing equipment; working with metals such as bronze; leather crafting; crafting of the saw, chisel, hammer, bow, nail, safety pin, rings, the pick-axe, axe, knives, arrowheads, swords, shields, glue, bags, war chariots, shoes; wheel making; irrigation building; canal excavation; the asphalt industry; and the paving of streets. The street of Al-Mawkib in the ancient city of Babylon still exists. It

*. Bāqir, Tāhā. *Malhamat Kalkāmish* [The Epic of Gilgamesh], (London: Dār al-Warrāq, 2006)

was paved with Sumerian tar thousands of years ago, dating back to before Christ.

The Sumerians developed the subjects of algebra and geometry. They also devised certain numeral systems, the multiplication table and mathematical division problems. All of mankind today is in debt to the Sumerians because they invented the sexagesimal system. They also created a precise representation of the solar system, showing how the earth and other planets spin around the sun. In fact, they demonstrated the planets of the solar system, some of which were not discovered until recently using a telescope. There were many other inventions as well.

All of these Sumerian scientific and industrial achievements—and much more that I have not mentioned—is considered a clear indicator of a leap of culture and civilization that in turn led to the achievements themselves. This is especially true given that the artifacts and Sumerian writings we have do not demonstrate a logical, gradual process of progression to oppose the fact that everything from Sumerian culture—the oldest human culture—is due to a leap of civilization. In fact, Sumerians recorded the opposite, stating that their ancestors were superior to them. Can any rational person say that what happened is not a product of a leap of culture and civilization that took place at an earlier time in this part of the world? If the development of Sumerian culture and civilization from a primitive, backward culture is a mere hypotheses without evidence, then one who cites scientific research should accept the data provided by the Sumerians themselves. They state that their culture and civilization were inherited from a sophisticated culture and civilization that preceded them. The earlier ancestors of Sumerians were not more backward in terms of culture or civilization than the Sumerians. Certainly, perhaps their culture was not transmitted in their own handwriting, like the Sumerians, because they were few in number, especially in the cradle of Adamite humanity. There were many other reasons, including the flood and natural conditions, as well as the unavailability of material possibilities that were available to the Sumerians to transmit their culture and civilization through their own handwriting. The Sumerians were often just transmitting the culture and civilization of their predecessors. We find that they read the story of the flood and Noah pbuh in the Epic of Gilgamesh, and also praised the culture of their ancestors in the Epic of Enmerkar and the Lord of Aratta.

Religiousness and Concern with the Unseen World

The story of the religions of the Sumerians, Akkadians and Babylonians in Mesopotamia is extremely significant, perhaps more so than any other religious story relayed by ancient history. It is also the oldest story in human history. It involves a multitude of gods, while the Sumerian religion includes the just figure who saves mankind from its animalism—a figure present in every religion.

Whoever believes that the Sumerian religion is backward due to its multitude of gods should reconsider and research more accurately, for the Sumerian religion is no different than the religions that came after it. Moreover, the succeeding human religions were built upon the foundation of the Sumerian religion. We find that the many "gods", as the Sumerians sometimes called them, were described as humans or wise kings in the Sumerian stories, epics and clay tablets—they marry, have children, kill, commit injustice, and people cry over them—or they are just symbols. So it is not difficult for us to understand that the lady of the gods, Ishtar, is the temporal life itself, as we find her lamenting the ones who perished in the flood of Noah (Utnapishtim):

> The goddess cried out like a woman in childbirth,
> Belet-ili walied, whose voice is so sweet:
>
> '"The olden times have turned to clay,
> because I spoke evil in the gods' assembly.
> How could I speak evil in the gods' assembly,
> and declare a war to destroy my people?
>
> '"It is I who give birth, these people are mine!
> And now, like fish, they fill the ocean!"' (George 2003, 92).

One who examines the Sumerian story of religion will find himself reading it entirely in symbolic terms. He will find the story of the three religions and the savior, the redeemer, or the Mahdi. He will also find that the Sumerian gods are nothing but people and symbols of everything that can be deified in truth or in falsehood, such as the prophets and the righteous vicegerents of God from the children of Adam pbuh, or such as the temporal life, the "I", and the group.

We now can say: no rational person would say that the advanced achievements that clearly appeared in history thousands of years ago

came from nothing, or developed from a primitive, backward culture, given the fact that no trace of the chain of this alleged cultural development exists. This is especially true since the statements of the Sumerians themselves refute any statement based on delusion, without relying on evidence, which suggests that the the sophisticated culture, civilization, and behavior of Sumerians developed from primitive people.

We should now ask ourselves, do these achievements not indicate that the being who produced them has the attribute of organization and, therefore, that the cause of that being has the attribute of being a knowledgeable organizer, thus proving the existence of God? I believe any rational person not inclined toward stubbornness would say yes.

Finally, the following text shows that Sumerian-Babylonian culture is actually an inheritance from a human culture and civilization that is older and perhaps more sophisticated in morals and conduct than the Sumerian civilization we know about from its clay tablets. The Epic of Enmerkar and the Lord of Aratta mentions:

> Once upon a time, the lands Shubur and Hamazi,
> Many (?)-tongued Sumer, the great land of princeships'
> divine laws,
> Uri, the land having all that is appropriate,
> The land Martu, resting in security,
> The whole universe, the people in unison (?),
> To Enlil in one tongue gave praise.
>
> (But) then, the father-lord, the father-prince, the father-king,
> Enki, the father-lord, the father-prince, the father-king,
> The irate (?) father-lord, the irate (?) father-prince, the
> irate (?) father-king,
> . . . . abundance . . . .
> . . . . (5 lines destroyed) (Kramer 1981, 255).

This is not the only text demonstrating the Sumerian opinion regarding their culture, civilization and knowledge. Many researchers who have specialized in Sumer or the ancient history of Mesopotamia have noticed that these people, whom we consider to represent the oldest civilization on earth, consider themselves inheritors of a civilization. Moreover, they consider the origin of this culture, civilization and knowledge to be divine and heavenly.

Charles Virolleaud says:*

> According to the opinion of Babylonians, humans did not achieve what distinguishes them from animals: plowing fields and building cities through research, excavations, experiences, and various efforts or interaction. Rather, they received knowledge all at once from the gods (Virolleaud 1949, 124. Translated from French to Arabic, then to English).

We received their writings, in their own handwriting, which tells us that their own culture, civilization and knowledge were actually inherited from their predecessors, who were more ethical and more knowledgeable. In addition to all this, they presented the entire story to us, and they closed the door on the atheistic fabrications, showing that the origin of this knowledge, culture and civilization is the heavens and the god. So how do atheists expect a reasonable person—who respects his intellect—to leave all of these scientific facts behind, and chase after a mirage that will not lead to any scientific truth? Instead, it will only lead to mere delusions based on desires, and stubbornly rejecting the established archaeological scientific facts that are unequivocal. This is because they are written by our ancestors in Sumer and Akkad, the cradle of Adamite humanity and civilization. If it is proven that this description of the human (in terms of intellect and consciousness) occurred suddenly in a certain time period, this indicates that there is a knowledgeable cause who produced it.

Selected Berths at the Harbors of Sumer and Akkad

What has been mentioned is enough to illustrate my point: a major transformation, leap, and transition of *Homo sapiens* occurred, perhaps tens of thousands of years ago. This is demonstrated by the evidence we have discovered from the lands of Sumer and Akkad. Nevertheless, there is no harm in going through some introductory concepts that confirm what I have clarified above, and also shed more light on the truths of Sumerian and Akkadian texts.

*. Charles Virolleaud (1879-1968) was a French professor and a teacher at the University of Sorbonne. He was a researcher who specialized in Semitic, Sumerian and Iranian studies.

The Epics of Sumer, Akkad and Divine Religion:

Many researchers of the history of the ancient Near East or Middle East consider religion to be purely a human product. They say that it started with deifying the goddess Ishtar with her different names, the goddess whose statues they discovered in various sizes spread throughout the ancient civilizations of the Near East spanning over 9000 years B.C. They justified this religious beginning by saying that human society was dominated by the woman, in the form of the mother, around whom the children would gather. These children knew only that they belonged to her. Therefore, according to them, the woman (the great mother Ishtar) was sanctified, and statues were made for her. After a period of time, when agriculture was discovered, the human society became patriarchal. Society began to settle, and families and homes were built. This resulted in the introduction of male gods into the temples, and this is how the religion was formed. Religion later evolved into Judaism, Christianity, Islam and other religions as well.

However, those who built their theory based upon ancient female statues forget that it can be easily refuted by the assertion that these statues were only made for sexual enticement and do not represent something sacred. Thus, the existence of a sacred female for whom a statue was made in a certain era does not allow for the investigative researcher to conclude that every female statue that has been previously made represents her. This opinion, that ancient man built tools of sexual enticement does exist, and is proposed by some archaeologists.

Moreover, there are archaeological texts that describe the goddess Ishtar or Inanna known in Sumer and Akkad with the attributes of this world in which humans live. As such, in the texts, she is not the mother and not even a real female.

Rather, she is the temporal life to whom the king Tammuz refused to prostrate in the manner that other kings prostrated to her when he sat upon the throne. Accordingly, she handed Tammuz (the faithful son) to the demons to kill him:

> Inanna [Ishtar] proceeds to the two Sumerian cities Umma and Badtibira whose two deities prostrate themselves before her and are thus saved from the clutches of the demons. She then arrives at the city of Kullab, whose tutelary deity is Dumuzi. The poem continues:

> Dumuzi [Tammuz] put on a noble robe, he sat high on (his) seat
> The demons seized him by his thighs . . . . .
> The seven (demons) rush at him as at the side of a sick man
> The shepherds play not the flute and pipe before him.
>
> She (Inanna) fastened the eye upon him, the eye of death,
> Spoke the word against him, the word of wrath,
> Uttered the cry against him, the cry of guilt:
> "As for him, carry him off." (Kramer 1981, 164).

This is the worldly life to which Gilgamesh refused to submit when he sat on the throne and wore his crown:

> [Gilgamesh] opened his mouth to speak,
> [saying] to the Lady Ishtar:
> '[And if indeed I] take you in marriage,
>
> '…… body and clothing,
> [whence would come] my food and my sustenance?
> [Would you feed me] bread that is fit for a god,
> [and pour me ale] that is fit for a king?'
>
> '[Who is there] would take you in marriage?
> [You, a frost that congeals no] ice,
> a louvre-door [that] stays [not] breeze nor draught,
> a palace that massacres . . . warriors,
>
> 'an elephant which . . . its hoods,
> bitumen that [stains the hands] of its bearer,
> a waterskin that [cuts the hands] of its bearer,
> limestone that [weakens] a wall of ashlar,
>
> 'a battering ram that destroys [the walls of] the enemy,
> a shoe that bites the foot of its owner!
> What bridegroom of yours did endure for ever?
> What brave warrior of yours went up [to the heavens?] (George 2003, 48-49).

On the whole, the theory that the origin of religion deifies the mother is a mere hypothesis that does not rely upon solid scientific proof. As such, I do not see a need for a detailed response.

Nevertheless, I do see it necessary to clarify the evidence supporting the divine origin of the Sumerian religion. This topic concerns proving that the Sumerian religion is a divine religion that had a prior existence and was distorted. Therefore, we are to explain that the Sumerians who knew of ablution with water and knew about prayer, fasting, supplication and invocation were a religious people, and their religion was divine. As such, the Sumerian epics and stories include events from the unseen that occurred thousands of years after the Sumerians spoke of them.

Indeed, perhaps their religion was distorted during some periods—but it is a divine religion. This is similar to how the people of Mecca were people of a distorted Abrahamic Hanafi religion and worshipped and sanctified idols, or how the Salafis or Wahhabis today worship an idol and are inheritors of the old idol worshippers in Mecca. They say they are Muslims, yet they worship a big idol that they believe exists in the sky rather than on the earth. This idol has two hands with fingers, two feet and two eyes. Certainly, the issue of distorting the divine religion has existed and continues to exist.

If we return to the advent of divine religion, we find that Adam came to the earth with the first divine religion, which contained stories of his faithful sons who came after him. Naturally, the people were supposed to memorize these stories, narrate them and pass them on. The stories and epics of the Sumerians, at times, are only narrations of these sacred and related stories. This can be seen in the detailed Sumerian narration of the story of the Flood, which existed long before the Torah:

> A Flood
> The First "Noah"
>
> That the Biblical deluge story is not original with the Hebrew redactors of the Bible has been known from the time of the discovery and deciphering of the eleventh tablet of the Babylonian "Epic of Gilgamesh" by the British Museum's George Smith. The Babylonian deluge myth itself, however, is of Sumerian origin. In 1914 Arno Poebel published a fragment consisting of the lower third of a six-column Sumerian tablet in the Nippur collection of the University Museum, the contents of which are devoted in large part to the story of the flood. This fragment still remains unique and unduplicated … Badly broken as the text is, these passages are nevertheless of significance

> … They include a number of revealing statements concerning the creation of man, the origin of kingship, and the existence of at least five antediluvian cities (Kramer 1981, 148).

It is possible that these stories are occasionally distorted, especially from the perspective of other religions. This may be due to the the passage of time and the entrance into the equation of human nature muddled with temptation. However, can something that is distorted be completely devoid of the truth?!

Have we asked ourselves what became of the legacy of Adam and Noah?!

Where was this legacy at the time of the Sumerians or Akkadians?!

Have we considered what happened to the legacy of divine religion that existed before the flood?!

It does not stand to reason that Noah and those who accompanied him would be concerned with delivering goats and cows, yet would not deliver the divine religion from Adam pbuh before writing began. Mankind after Noah pbuh—represented by the Sumerians and Akkadians, followed by the Babylonians and Assyrians—must have conveyed the legacy of Adam, Noah, and the highest holy examples—though it was through distorted stories transmitted over generations—just as they conveyed the history of kings, farmers, and craftsmen. Therefore, the result is that that the Sumerian religion is the religion of Adam and Noah, perhaps distorted at times by the deification of anything that can be deified, such as the temporal life and the righteous people.

An example of this distortion can be seen in an attempt that was made to distort the Epic of Gilgamesh. This was discovered in ancient artifacts. This demonstrates two points:

First, that the Epic of Gilgamesh is a religious text, since no one would care to distort a literary text.

Second, that the text of the Epic of Gilgamesh that we have with us today is definitely not free of distortion.

Taha Baqir says:*

> Perhaps the strangest thing found recently by archaeologists in the archaeological site known as Sultantepe in southern Turkey, near Harran, was sections of the epic and a strange letter forged by an old

*. Taha Baqir (1912-1984) was one of the leading archeologists in Iraq. He has written many books, the most important being the Epic of Gilgamesh.

> writer in the second century B.C. It was as if the letter was written by Gilgamesh and addressed to an ancient king. Gilgamesh requests him to send gemstones to make a talisman for his friend Enkidu. It was to weigh as much as thirty minas.
>
> When comparing these original and various pieces with the text of Nineveh, they seemed to be valuable information, not only to bridge the gaps, but also showing unequivocally that the Poem [Epic] of Gilgamesh did not exist at the time of the Assyrians. This is proof that the legend evolved throughout generations. In other words, the writers did not copy the old text in a literal and honest manner. Rather, they added, omitted and distorted. This is what affirmed the spread of the (albeit wrong) idea that the East never was and never will be strong and stable (Baqir 2006, 85. Arabic source, translated).

Therefore, if there have been deliberate attempts to distort written texts, then what about texts narrated orally, before the era of writing? Certainly, they were subject to even more distortion. When they were written down in the first writing era, they were written in their distorted form. Therefore, we can conclude that the stories of the Flood, Dumuzi, and Gilgamesh, as well as other stories of Sumerian-Akkadian origins, certainly were not written in the form circulated by narrators before the writing era.

The Religion of Sumer and Akkad and the Three Religions: Islam, Christianity and Judaism

The truth is that any person acquainted with the Torah, the Gospel and the Quran, as well as what is in the Sumerian clay tablets, would certainly reach one of two inevitable conclusions:

The first conclusion is that the origin of religion traces back to the writings of Sumerian men, and that the Torah, Gospel and Quran are only a rehashing of the Sumerian religion (the creation of the first man Adam, the story of Abel and Cain, the story of the Flood, sin, the afterlife, heaven, hell, and so on).

The second conclusion is that the Sumerian religion is the religion of Adam and Noah pbut itself but it was conveyed, and then written in a distorted form, and the Sumerians and Akkadians (Babylonians and Assyrians) believed in it, in that distorted form. This is what I wish to point out by showing that the Sumerian stories are only events from the unseen that Adam brought to the earth. They are the stories

of the righteous ones from his children pbut, and what would happen to them, especially the ones representing important landmarks on the path of religion, such as Dumuzi (the faithful son) or Gilgamesh.

Dr. Samuel Kramer noted the great similarity between what is written in the Torah and the Sumerian tablets. He decided to include chapters in his books that clarified the similarity between the Sumerian clay tablets and the Torah, for example:

"Chapter 19, Paradise: The First Biblical Parallels" (Kramer 1981, 141).

"The Sacred Marriage and Solomon's Song of Songs" (Kramer 1969, 85).

The Sumerians knew and practiced detailed matters in the divine religion, such as believing in visions and that visions are the words of God. They also believed in signs and that God can talk to a person in everything he experiences.

In the book Légendes de Babylone et de Canaan [The Legends of Babylon and Canaan], Charles Virolleaud says:

> We now know that mankind was created to serve the gods, and that the gods punish them for the slightest mistakes. Therefore, they must obey the wishes of the heavens accurately and do as they say. How else would they preserve this harmony and avoid the wrath of the gods? If they saw dreams of the gods inspiring in them what they wished, how would they interpret them in a way that would satisfy the gods, that is, if there were dreams? What if there were no dreams?
>
> The answer is that they would resort to omens and natural indicators, as these would guide them to the truth. Therefore, absolute attention must be given, not only to the changes of the moon, but to the shape of the clouds. Indeed, every movement of what crawls in the grass and even the planets in the galaxy give an indication of the wills of the gods, whether good or bad. It is here that art or science would stand out and distinguish whether the will was good or bad.
>
> The magicians must intervene, either to hasten good luck or to push away the hostile force that threatened life. This does not mean the life of the individuals or the people, rather the life of the king who controlled the destiny of the entire nation.
>
> This king, to whom the gods gave knowledge was, as previously mentioned, the seventh king of the antediluvian state. Therefore, according to the hereditary order, he matches Enoch [Idris] who occupies the seventh rank from the lineage of Adam, the chain of the

> patriarchs before the Flood. It is remarkable that their names have nothing in common though their acts are exactly the same. As a matter of fact, the Biblical text concerning the seventh patriarch (Enoch) is very brief:
>
> > Enoch walked with God, and he was not, for God took him [Genesis 5:24].
>
> Enoch became the hero of a chain of legends that made him the inventor of writing, the author of the first book and the creator of the science of planets and stars, astronomy and aeronomy. It seems as if he is Evedoranki. We can safely assume that this legend of the Jews is nothing but a development or expansion of the old Chaldean legend.
>
> The rest of the kings and patriarchs, the six ancestors of Enoch, and their three vicegerents, have qualities in common. The only character concerning us is the tenth character that lived through the Flood (Virolleaud 1949, 28. Translated from French to Arabic, then to English).

The stories of the Sumerians speak clearly—as do the other divine religions—about the afterlife and that good and righteous people enter heaven, whereas evil ones enter hellfire.

> Those people were certain that they would live after death, yet live in darkness and with no reward, unless they would take the good path in this world, meaning through righteousness. An example of this is what happened to Oum-Napishtim [Noah pbuh], or by applying the law to the people, as Hammourabi did (Virolleaud 1949, 38, translated).

Was the Story of Job, the Prophet of God, Narrated by the Sumerians Before it occurred?!

There are indications that the stories of the Sumerians, or the Akkadians, are only from the unseen and concern real stories that will occur after the time of the Sumerians, during the course of the divine religion.

Anyone who has read the Sumerian clay tablets will see that they mention prophets and messengers who came in an era after Sumerian civilization. An example of this is the tablet that mentions the story of the prophet Job pbuh before he was born. The story of Job pbuh is also written in the Torah and the Quran.

> All the tablets and fragments on which our Sumerian essay is inscribed date back more than a thousand years before the compilation of the Book of Job (Kramer 1981, 112).

These are excerpts from the story of Job, as written in the Sumerian tablets long before Job was born:

> "I, the wise, why am I bound to the ignorant youths?
> I, the discerning, why am I counted among the ignorant?
> Food is all about, yet my food is hunger,
> On the day shares were allotted to all, my allotted share was suffering.
>
> "My god, (I would stand) before you,
> Would speak to you, . . . , my word is a groan,
> I would tell you about it, would bemoan the bitterness of my path,
> (Would bewail) the confusion of . . .
>
> "Lo, let not my mother who bore me cease my lament before you.
> Let not my sister utter the happy song and chant.
> Let her utter tearfully my misfortunes before you,
> Let my wife voice mournfully my suffering.
> Let the expert singer bemoan my bitter fate…
>
> "Tears, lament, anguish, and depression are lodged within me,
> Suffering overwhelms me like one chosen for nothing but tears,…
> Malignant sickness bathes my body. . .
>
> "My god, you who are my father who begot me, lift up my face…
> How long will you neglect me, leave me unprotected?…
> How long will you leave me unguided?
>
> "They say—valiant sages—a word righteous and straightforward:
> 'Never has a sinless child been born to its mother,
> …. a sinless youth has not existed from of old….'"
>
> The man—his god harkened to his bitter tears and weeping,
> The young man—his lamentation and wailing soothed the heart of his god…
> The encompassing sickness-demon, which had spread wide its wings, he swept away.
> The (disease) which had smitten him like a . . . , he dissipated,

The evil fate which had been decreed for him in accordance
with his sentence, he turned aside,
He turned the man's suffering into joy,…(Kramer 1981, 113-14).

Sumer and Akkad Cried over Dumuzi, and Now they cry over Al-Hussain pbuh?

The Sumerians or the Akkadians grieved and cried over Dumuzi (Sumerian: Dumu, "son" + Zi, "faithful") for thousands of years. The grieving of the Mesopotamians over Dumuzi continued until the time of the prophet Ezekiel. The Torah mentions that the residents of Mesopotamia grieved over Tammuz (Dumuzi):

13 He said also to me, "You will see still greater abominations that they commit."
14 Then he brought me to the entrance of the north gate of the house of the Lord, and behold, there sat women weeping for Tammuz. 15 Then he said to me, "Have you seen this, O son of man? You will see still greater abominations than these."
16 And he brought me into the inner court of the house of the Lord. And behold, at the entrance of the temple of the Lord, between the porch and the altar, were about twenty-five men, with their backs to the temple of the Lord, and their faces toward the east, worshiping the Sun toward the east. Ezekiel 8:13-16.

It is this act of killing Tammuz (Dumuzi), described as an abomination, which caused these women to weep and the men prostrate at his altar.

The story of the killing of King Dumuzi starts with him paying the price for his refusal to prostrate to Ishtar-Inanna (the worldly life).

If Inanna [Ishtar] would ascend from the nether world,
Let her give someone as her substitute.

Inanna ascends from the nether world,
The small demons like *shukur*-reeds,
The large demons like *dubban*-reeds,
Held on to her side.
Who was in front of her, though not a vizier, held a scepter in his hand,

Who was at her side, though not a knight, had a weapon fastened about the loin.
They who accompanied her,
They who accompanied Inanna [the goddess Ishtar or the temporal life]
Were beings who know not food, who know not water,
Eat not sprinkled flour,
Drink not libated water,
Take away the wife from the man's lap,
Take away the child from the nursemaid's breast.

Inanna [Ishtar] proceeds to the two Sumerian cities Umma and Badtibira, whose two deities prostrate themselves before her [Ishtar or the worldly life] and are thus saved from the clutches of the demons. Then she arrives at the city Kullab, whose tutelary deity is Dumuzi. The poem continues:

Dumuzi [Tammuz] put on a noble robe, he sat high on (his) seat.
The demons seized him by his thighs … ,
The seven (demons) rush at him as at the side of a sick man,
The shepherds play not the flute and pipe before him.

She (Inanna) fastened the eye upon him, the eye of death,
Spoke the word against him, the word of wrath,
Uttered the cry against him, the cry of guilt:
"As for him, carry him off."
The pure Inanna gave the shepherd Dumuzi into their hands.

They who accompanied him,
They who accompanied Dumuzi [Tammuz],
Were beings who know not food, know not water,
Eat not sprinkled flour [food made from flour],
Drink not libated water, [i.e., water submitted as an offering],…
(Kramer 1981, 163-64).

Therefore, Ishtar-Inanna, the wife of king Dumuzi, handed him to the demons for him to be killed in a paradox that is difficult to understand by those who do not know the meaning of the supremacy of God or the divine appointing, or as the Sumerian-Akkadians call it, "the kingship that came down from the heavens."

However, it is frequently mentioned in the divine religion that Ishtar, the temporal life, is often led by the kings whom God has not

appointed, because they have prostrated to her and submitted to her, thus worshipping their temporal desires.

Ishtar, the temporal life, is rebellious against those appointed by God to rule in it, because they are actually rebellious against her. The share of Ali pbuh was five bitter years in which all the demons of the earth raged to fight him pbuh in al-Jamal, Siffin and Nahrawan. They did not stop until they killed him in al-Kufa. The share of al-Hussain pbuh, the king appointed to rule in this world, was a massacre in which not even the infant survived.

These are some of the texts from the Sumerian clay tablets that have reached us regarding the tragedy of Dumuzi and his sister. We will now see how close it is to the description of what happened to al-Hussain pbuh, although they are archaeological texts that circulated among the Sumerians-Akkadians thousands of years before the birth of al-Hussain pbuh:

His heart was filled with tears.
The shepherd's heart was filled with tears.
Dumuzi's heart was filled with tears.
Dumuzi stumbled across the steppe, weeping:
"O steppe, set up a wail for me!
O crabs in the river, mourn for me!
O frogs in the river, call for me!
O my mother, Sirtur, weep for me!"

If she does not find the five breads,
If she does not find the ten breads,
If she does not know the day I am dead,
You, O steppe, tell her, tell my mother.
On the steppe, my mother will shed tears for me.
On the steppe, my little sister will mourn for me."

He lay down to rest.
The shepherd lay down to rest.
Dumuzi lay down to rest

As he lay among the buds and rushes,
He dreamed a dream.
He awoke from his dream.
He trembled from his vision.
He rubbed his eyes, terrified.

Dumuzi called out:
"Bring . . . bring her . . . bring my sister.
Bring my Geshtinanna, my little sister,
My tablet-knowing scribe,
My singer who knows many songs,
My sister who knows the meaning of words,
My wise woman who knows the meaning of dreams.
I must speak to her.
I must tell her my dream."

Dumuzi spoke to Geshtinanna, saying:

"A dream! My sister, listen to my dream:
Rushes rise all about me; rushes grow thick about me.
A single growing reed trembles for me.
From a double-growing reed, first one, then the other, is removed.
In a wooded grove, the terror of tall trees rises about me.
No water is poured over my holy hearth.
The bottom of my churn drops away.
My drinking cup falls from its peg.
My shepherd's crook has disappeared.
An eagle seizes a lamb from the sheepfold.
A falcon catches a sparrow on the reed fence.

My sister, your goats drag their lapis beards in the dust.
Your sheep scratch the earth with bent feet.

The churn lies silent; no milk is poured.
The cup lies shattered; Dumuzi is no more.
The sheepfold is given to the winds."

Geshtinanna spoke:

"My brother, do not tell me your dream.
Dumuzi, do not tell me such a dream.

The rushes which rise all about you,
The rushes which grow thick about you,
Are your demons, who will pursue and attack you.

The single growing reed which trembles for you

Is our mother; she will mourn for you.

The double-growing reed, from which one, then the other, is removed, Dumuzi,
Is you and I; first one, then the other, will be taken away.

In the wooded grove, the terror of tall trees which rises about you
Is the galla; they will descend on you in the sheepfold.

When the fire is put out on your holy hearth,
The sheepfold will become a house of desolation.

When the bottom of your churn drops away,
You will be held by the galla.

When your drinking cup falls from its peg,
You will fall to the earth, onto your mother's knees.

When your shepherd's crook disappears,
The galla will cause everything to wither.

The eagle who seizes a lamb in the sheepfold
Is the galla who will scratch your cheeks.

The falcon who catches a sparrow in the reed fence
Is the galla who will climb the fence to take you away.

Dumuzi, my goats drag their lapis beards in the dust.

My hair will swirl around in heaven for you.
My sheep scratch the earth with bent feet.
O Dumuzi, I will tear at my cheeks in grief for you.

The churn lies silent; no milk is poured.
The cup lies shattered; Dumuzi is no more.
The sheepfold is given to the winds—" (Wolkstein and Kramer 1983, 74-77).

Dumuzi escaped from his demons.
He fled to the sheepfold of his sister, Geshtinanna.

When Geshtinanna found Dumuzi in the sheepfold, she wept.

She brought her mouth close to heaven.
She brought her mouth close to earth.
Her grief covered the horizon like a garment.

She tore at her eyes.
She tore at her mouth.
She tore at her thighs.

The *galla* climbed the reed fence.
The first *galla* struck Dumuzi on the cheek with a piercing nail,
The second *galla* struck Dumuzi on the other cheek with the shepherd's crook,
The third *galla* smashed the bottom of the churn,
The fourth *galla* threw the drinking cup down from its peg,
The fifth *galla* shattered the churn,
The sixth *galla* shattered the cup,
The seventh *galla* cried:

"Rise, Dumuzi!
Husband of Inanna, son of Sirtur, brother of Geshtinanna!
Rise from your false sleep!
Your ewes are seized! Your lambs are siezed!
Your goats are seized! Your kids are seized!
Take off your holy crown from your head!
Take off your *me*-garment from your body!
Let your royal sceptre fall to the ground!
Take off your holy sandals from your feet!
Naked, you go with us!"

The *galla* seized Dumuzi.
They surrounded him.
They bound his hands. They bound his neck.

The churn was silent. No milk was poured.
The cup was shattered. Dumuzi was no more.
The sheepfold was given to the winds (Wolkstein and Kramer 1983, 83-84).

Moreover, You read in the Babylonian calendars that grieving and crying about the god Dumuzi started on the second day of the month (Du uzi) meaning Tammuz [July], and commemorative processions would be held, in which torches were carried. This would be on the

> ninth, sixteenth and seventeenth day. In the final three days of this month, a ceremony, called Talkimtu in Akkadian, would be held, and there was a ritual demonstration and burial of a figure that represents the god Tammuz. Despite the impact caused by the ideology of the death of the god Dumuzi in the old society within and outside of Meopotamia, grieving for him never became one of the rituals of the temple. Rather, the ceremony continued to be held annually within the scope of popular practice … And we are informed of a number of lamentations written by the Sumerian and Babylonian poets that grieved the young god Dumuzi, that were read in commemorations in different cities (Ali 1999, 125-26, Arabic source, translated).

The Sumerians' Lamentation of Tammuz or Dumuzi:

> The cup lies; shattered.
> Dumuzi was no more.
> The sheepfold was given to the winds.

In another poem, a Sumerian poet laments Dumuzi, the faithful son, saying:

> My heart went to the edin, weeping, weeping
> I am the lady of the temple, I am Inanna who destroys the lands of enemies.
> I am Ninsun, the mother of the great master.
> I am Geshtinanna, the mother of the sacred boy.
> My heart went to the edin, weeping, weeping
> It went to the place of the boy,
> It went to the place of Dumuzi,
> To the nether world, the home of the shepherd.
> My heart went to the edin, weeping, weeping
> To the place where the boy was chained
> To the place where Dumuzi was held
> My heart went to the edin, weeping, weeping (Ali 1999, 125-26. Arabic source, translated).

The truth is that a great injustice has been done to the Sumerians who taught mankind writing, made laws and laid the foundation for sciences. They were also the first to invent the wheel and create systems of calculation, algebra and geometry. The injustice is that Dr. Kramer and other experts of Sumerian civilization portray them to be grieving

over a myth, or a mythical story they wrote themselves. They portray it as though it is just an expression of fertility and infertility that alternate throughout the year, as if they were a people whose individuals were all on drugs that made them lose their senses, such that their successors, the Babylonians, grieved and established commemorations for thousands of years for a symbol in a story that they wrote themselves, from beginning to end.

For thousands of years, Mesopotamians, one generation after another, every year, depicted the body of Dumuzi. And every year, they cry over and recite lamentations of Dumuzi.

Is all of this nothing but delusions?!! Is it just a story that they wrote?!! For what reason would they write it?! To express fertility that comes in the spring and infertility following it in another season of the year?! There should be a reasonable explanation for the grief of the first civilization known to man, the grief for thousands of years over Dumuzi, the faithful son, or Tammuz.

With regard to religious legacy, the religious accounts from the Imams pbut tell us with complete clarity that the Sumerians grieved and cried over al-Hussain pbuh by relating the crying and grief of the Sumerian prophets, Noah pbuh and Abraham pbuh over al-Hussain pbuh,

> Al-Ridha pbuh said, "When God Almighty commanded Abraham pbuh to slaughter the ram that He sent down to him instead of his son Ishmael, Abraham wished that he had slaughtered his son Ishmael with his own hands and that he was not commanded to slaughter the ram in his place. This is so that he would have what is given to the father who slaughters his most beloved son, the highest ranks of the ones patient over calamities. So God Almighty inspired him: 'O Abraham, who is the most beloved to you from among My creation? He said, 'O Lord, You have not created a creation more beloved to me than your beloved, Muhammad pbuhap.' Thus, God Almighty inspired him, 'Is he more beloved to you or are you more beloved to yourself?' So he pbuh said, 'He is more beloved to me than I am to myself.' So He said, 'Is his son more beloved to you, or is your son?' He pbuh said, 'His.' He said, 'So does this unjust slaughtering of his son at the hands of his enemies pain your heart more, or the slaughtering of your son by your hands in obedience to me?' He said, 'O Lord, the slaughtering of his son at the hands of his enemies with injustice pains my heart more.'

He said, 'O Abraham, people claiming to be from the nation of Muhammad will kill his son, al-Hussain, with injustice and aggression, just as the ram is slaughtered. And with that, they will incur my wrath.' So, with that, Abraham pbuh became sad, his heart ached, and he began crying. So God Almighty inspired him, 'O Abraham, I ransomed your grief over your son Ishmael, were you to slaughter him with your hands, with your grief over al-Hussain and his killing. I have awarded you the highest ranks of the ones patient over calamities.' That is the saying of the Almighty, ﴿And we ransomed him with a great sacrifice.﴾ Quran Chapter "Those Who Set The Ranks" 37:107. Two things mutually established, occurring, different—and both despised." (Al-Sadooq 1982 58-59, and Al-Sadooq 1984 vol 2, 187. Arabic source, translated).

Regarding the illness of Abraham pbuh, Abu Abdullah pbuh said: "Concerning the saying of God Almighty: ﴿And he cast a look at the stars. And said, 'Indeed, I am ill.'﴾ Quran Chapter "Those Who Set the Ranks" 37:88-89. He saw what was going to happen to al-Hussain pbuh, so he said, 'I am ill because of what will happen to al-Hussain pbuh.'" (Al-Kulayni 1944, vol 1, 465. Arabic source, translated).

Al-Majlisi narrated in Al-Bihar Al-Anwar [The Seas of Light]: "When Adam descended to the earth, he did not see Eve, so he started roaming the earth in search of her. He passed by Karbala and he became dejected and sad for no reason. He tripped in the place in which al-Hussain was killed, causing his feet to bleed. Thus, he lifted his head toward the heavens and said, 'My Lord, have I committed another sin and thus you are punishing me? As I have roamed the earth, no harm has touched me like it has on this land.' So God inspired him, 'You did not commit a sin, but on this land, your son, al-Hussain, will be killed with injustice, so your blood dripped in accordance with his.' Adam said, 'Will al-Hussain be a prophet?' The Almighty said, 'No, but he is the son of Prophet Muhammad.' Adam asked, 'And who is the killer?' He said, 'The killer is Yazid, the cursed one of the people of the earth and the heavens.' So Adam said, 'What can I do?' He said, 'Curse him, O Adam.' So Adam cursed him four times and walked to Mount Arafat, and found Eve there."

It was narrated that, when Noah embarked on the Ark it went all around the world. When it passed by Karbala, the earth seized it and Noah feared drowning. Thus, he prayed to his Lord and said, "My Lord, I have been around the world and have not felt fear as I do in this land." So Gabriel descended and said, "O Noah, in this place, al-Hussain will be killed, the son of Muhammad, the Seal of the Prophets, and the son of the Seal of the Successors." He said,

> "And who is the killer, O Gabriel?" He said, "His killer is the cursed one of the people of the seven heavens and seven earths." Thus, Noah cursed him four times and the ship moved until it reached al-Judi and settled therein.
>
> It was also narrated that Abraham pbuh passed by the land of Karbala on a horse. The horse tripped and Abraham pbuh fell, causing his head to be slashed. He began asking for forgiveness from God, saying, "My Lord, what have I done?" So Gabriel pbuh descended and said, "O Abraham, you did not commit a sin but here is where the son of the Seal of the Prophets and the son of the Seal of the Successors will be killed. Thus, your blood dripped in accordance with his." He pbuh said, "O Gabriel, who is his killer?" He said, "The cursed one of the people of the heavens and the earth. Without the permission of its Lord the pen wrote on the tablet that he is cursed, so God inspired the pen, 'You deserve praise for this cursing.'" Thus, Abraham pbuh raised his hands and cursed Yazid, and his horse fluently said "Amen". Abraham said to his horse, "What have you learned such that you said Amen to my prayer?" It said, "O Abraham, it honors me that you ride me, so when I tripped and you fell from my back I was greatly ashamed. Yazid, may Almighty God curse him, was the reason for my tripping." (Al-Majlisi 1983, vol 44, 243).

What is mentioned above causes the contemplative reader to notice that the epics of Sumer and Akkad are religious accounts. Some of them are from the unseen and the future in relation to the time in which they were written. For us, it removes all doubt: religion is a great part of the content of the Sumerian-Akkadian epics and stories (Babylonian and Assyrian).

Since we have reached this point, it is appropriate for us to mention the Eternal Epic of Uruk or the Epic of Gilgamesh. Together, we will try to read it in another way, one that is perhaps unprecedented. We will try to read it as a story told by Adam to his sons, and Noah to his sons, and Abraham to his sons, a story that spread among the Sumerians and the people of the ancient world, particularly in the Near East. It became the favorite story of the Mesopotamians, and generations conveyed it until it reached us thousands of years later. However, it was perhaps distorted when people circulated it, as we have previously explained.

This is the story of Gilgamesh, who will come one day to fulfill justice and save mankind from its animalism. It says in ancient Egyptian artifacts:

> A rising man, with all dignity, is holding two rising oxen: one on his right, and the other on his left. (Virolleaud 1949, 38, translated).

Mesopotamia (Sumer), or the south of Iraq, has been waiting thousands of years for Gilgamesh to appear there one day.

Gilgamesh, the Son of Ninsun the Crying Mother over Dumuzi

Dumuzi:

> "My heart went to the edin, weeping, weeping
> I am the lady of the temple, I am Inanna who destroys the lands of enemies.
> I am Ninsun, the mother of the great master.
> I am Geshtinanna, the mother of the sacred boy.
> My heart went to the edin, weeping, weeping
> It went to the place of the boy,
> It went to the place of Dumuzi,
> To the nether world, the home of the shepherd.
> My heart went to the edin, weeping, weeping
> To the place where the boy was chained
> to the place where Dumuzi was held
> My heart went to the edin, weeping, weeping."

Gilgamesh:

Enkidu's speech to Gilgamesh:

> 'There is not another like you in the world.
> Ninsun… she was the mother who bore you,
> and now you are raised above all men,
> and Enlil has given you the kingship,
> for your strength surpasses the strength of men.' (Sanders 1972, 64).

Through the Epic of Gilgamesh, we can read about the journey of mankind that is yet to come. It is not a journey of the past, as imagined and explained by some commentators. We can also read about the story of the person who saves mankind from its animalism, something that, unfortunately, is always strongly present, especially in major confrontations:

> ﴾like that of a donkey who carries volumes [of books]. Wretched is the example of the people…﴿ Quran Chapter "Friday" 62:5.

> ﴾like that of the dog: if you chase him, he pants, or if you leave him, he [still] pants. That is the example of the people … ﴿ Quran Chapter "The Heights" 7:176.

> ﴾And made of them apes and pigs and slaves of the tyrant. Those are worse in position … ﴿ Quran Chapter "The Table Spread" 5:60.

For thousands of years, and across continents, the savior has been well-known. His tidings spread from Mesopotamia to North Africa and we find symbolic pictures of him in Egyptian artifacts:

> A rising man, with all dignity, is holding two rising oxen: one on his right, and the other on his left. This is a sight we see in many Babylonian artifacts. It usually represents Gilgamesh and his struggle with wild animals (Virolleaud 1949).

In the Epic, Gilgamesh is two-thirds god. We find his story—and he is the man of the second deluge—connected to the story of his Sumerian father Ziusudra (Noah) and the Babylonian Utnapishtim (Noah), the man of the first deluge. Moreover, perhaps the most important of Gilgamesh's travels in the Epic is his journey to meet his grandfather Noah, Utnapishtim, who is immortal among the gods. He asks him about the secret by which he can rid himself of his humane third, and thus be immortal with the gods like his grandfather Noah pbuh. In other words, he will deservingly have his name written in the record of eternal life and will be spiritually immortal. Thus, the issue is about his spirit, as he is two thirds god and he wanted to make his remaining third like that as well. It has nothing to do with physical immortality, as those who explain the Epic imagined.

We find Gilgamesh to clearly be a savior in some texts, as well as a symbol of justice for whom everyone is waiting for and speaks of his story:

> …[the young men of Uruk] he harries without warrant.
> Gilgamesh lets no son go free to his father,
> by day and night [his tyranny grows] harsher.
>
> 'Yet he is the shepherd of Uruk-the-Sheepfold,

Gilgamesh, [the guide of the] teeming [people,]
Though he is shepherd and their [protector,]
powerful, pre-eminent, expert [and mighty]
Gilgamesh lets no girl go free to her bride[groom.]

The warrior's daughter, the young man's bride:… (George 2003, 4).

Some experts of Sumerian civilization understand that what is meant by this passage is that Gilgamesh is violating people's honor or oppressing them.This does not stand to reason, as the Epic would be completely contradictory, since, at the beginning, Gilgamesh was described with the finest attributes of a just ruler. Also, in the same lines he is described as wise, so how does a wise king violate the honor of his subjects and oppress them?

Moreover, the next part of the Epic describes Gilgamesh with ideal attributes, such as altruism, bravery and loyalty. For this reason, such lines are either deliberate distortion added to the text or they are symbolic, and thus require interpretation and clarification.

If we contemplate the text, we find that it is referring to the Savior who saves mankind from its animalism—the Savior of Mankind whose story exists in every nation. This is because, if the nations of those who come before the time of his dispatch are not prepared to receive him, then at the very least, there will be individuals of these nations who can be saved by his story that they pass on. He is the person that connects them to God and opens the door of the heavens, so whoever wants to listen can listen to great inspiration that informs him of the truth in order for him to become strongly attached to it, the truth that made us appear from nothing. It is this truth that we were created to know. This is why he will occupy everyone with God and not with himself, because, if he preoccupies them with himself or allows them to become preoccupied with him without warning them, there will be no difference between him and any other oppressing tyrant who desires fame and repute.

Now, we can well understand why the young men of Uruk "he harries without warrant", and why "Gilgamesh lets no son go free to his father… no girl go free to her bridegroom, the warrior's daughter, the young man's bride…" It is because they were all strongly attached to God Almighty. Gilgamesh the redeemer came and opened a source of great inspiration for those redeemed ones who will exist at a certain

time. He taught them how to become attached to God, and how to love God and hear God in everything.

If you were to refer to the Sumerians, you would find them yearning for these matters.

> He is Gilgamesh that means the frontline warrior and "the man who will be the seed of a new tree." (Baqir 2006, 19. Arabic source, translated).*

Gilgamesh, the character who is holy to the Sumerians or Akkadians (Babylonian-Assyrians) and many of the people of the ancient world, is described accurately in the Epic of Gilgamesh as "two-thirds god and one-third human," meaning that the light in his existence prevails over the dark side or the "I". However, in the end, he searches for the secret of ultimate salvation from this darkness. Even the name, Gilgamesh, states his mission, as he is the frontline warrior.
From the Epic:

He is the warrior who killed the demon Humbaba.

He is the warrior who offended Ishtar (the worldly life).

He is the warrior who crushed his "self".

He is also the person who will be the seed of a new human tree that is victorious over its animalism.

> No one knows the exact meaning of the name of Gilgamesh. Some Akkadian texts mentioned that it means the frontline warrior and there is a possibility that his Sumerian name means "the man who will be the seed of a new tree, meaning a man who will become the originator of a family" (Baqir 2006, 19, translated).

Perhaps the worst distortion to which these epics were subjected is the identification of epic characters with erroneous evidence due to confusion—for example, identifying them as kings whose names were mentioned in the Sumerian King List. The epic character of Gilgamesh is identified as King Gilgamesh although the names of his fathers and lineage are different. This is the exact situation of someone who reads the epic story of al-Mahdi that Prophet Muhammad pbuhap mentioned in many religious accounts, and then says there was a king in the Abbasid state over a thousand years ago whose name was al-Mahdi,

*. The above quote, "the man who will be the seed of a new tree" is from The Sumerian King's List (Jacobsen 1939, 188) and is quoted by Taha Baqir as above in his book *Malhamat Kalkamish* [The Epic of Gilgamesh].

and believes that the one meant by the epic story of the Islamic Mahdi is that Abbasid king.

Unfortunately, this has happened frequently with Gilgamesh, although some experts of Sumerian artifacts have stated that it is incorrect to consider the Gilgamesh of the epic to be the same as the Gilgamesh of history, based on the similarity of the names alone.

Charles Virolleaud says:

> Therefore, there are reasons that make us believe that at a very ancient time there was a king named Gilgamesh. This name is listed in the List of Kings of Uruk (recently discovered) but it is not at the top of the list (as expected), as the Gilgamesh of history did not found a country. Rather, he was included among a list of kings who we know nothing about historically, except their names … In any case, the Gilgamesh about whom history has written two lines, does not draw our attention. Rather, it is the Gilgamesh, whose poetic epic has reached us, who does (Virolleaud 1949, 39, translated).

It is worthwhile examining the Epic of Gilgamesh, which the kings of Sumer and Akkad, as well as Babylon and even Assyria had in their libraries and took care of and owned, as did the people, as if it was an incantation or a holy book:

Did it represent the story of the person who is yet to come, whom the Sumerians or Akkadians, Babylonians and Assyrians awaited as a savior and redeemer?

Taha Baqir says:

> The name of the hero Gilgamesh himself moved to the majority of the works of literature of the ancient nations. His works were attributed to heroes of other nations, such as Hercules, Alexander, Dhul-Qarnayn and Odysseus of the Odyssey (Baqir 2006, 16, translated).

He also says:

> Strange is the matter of Gilgamesh who became an example for the heroes of the other nations (Baqir 2006, 16-17, translated).

Dr. Charles Virolleaud says:

> In the olden times, the Egyptians knew of the character we are talking about, as a knife was found in the valley of the Nile in Gebel-el-arak;

> its blade was made of flint and not of metal, and its handle was made of ivory. On one side it had the picture of a rising man who is holding two rising oxen with complete dignity, one to his right and the other to his left. This is a sight we see in many Babylonian artifacts. It usually represents Gilgamesh and his struggle with wild animals (Virolleaud 1949, 38).

Therefore, Gilgamesh is not only a just or righteous person. He is not only a king or someone who will one day be a king. Rather, Gilgamesh is an international character and an example that the heroes of nations emulate, just as the artifacts show us. This is the only thing that can explain the existence of versions of the epic in different countries and even in different languages than the original.

> Perhaps the most compelling evidence of its great influence over the minds of the people of ancient civilizations is the broad spectrum of its spread in the ancient world. With respect to the early people of Iraq, it not only circulated among the inhabitants of the southern or middle part of Iraq, which is the part known as Sumer and Akkad, but it also infused the Northern part, Assyria. Therefore, many versions of it were found in the capitals of ancient Iraq, during the era of prosperity of the Babylonian civilization in the ancient Babylonian era (second millennium B.C.). As for Assyria, the last complete publication to reach us was found in the famous Library of Ashurbanipal, the Assyrian king. With respect to the centers of the ancient civilizations, we have already pointed out that some researchers found many versions of its parts in distant regions, such as Anatolia, the home of the Hittite civilization. Some of these texts were written in the ancient Babylonian language, and likewise, translations into Hittite and Hurrian languages were also found. Recently, there was an exciting discovery of a version of some of its chapters in Megiddo, one of the ancient cities of Palestine that is well known in the Torah. This small version dates back to the fourteenth century B.C. (Baqir 2006, 13-14. Arabic source, translated).

This is how the epic story describes Gilgamesh in the beginning. It summarizes everything about Gilgamesh in a few lines, and is an introduction to the character of Gilgamesh and his mission:

> He who saw the Deep, the country's
> foundation,
> [who] knew …, was wise in all matters!

[Gilgamesh, who] saw the Deep, the
country's foundation,
[who] knew …, was wise in all matters!

[He] … everywhere …
and [learnt] of everything, the sum
of wisdom.
He saw what was secret, discovered what
was hidden,
he brought back a tale before the Deluge.

He came a far road, was weary, found
peace,
and set all his labours on a tablet of stone (George 2003, 1).

It is clear that the text is describing a knowledgeable person: "…who knew … was wise in all matters … who saw the country's foundation … he saw what was secret, discovered what was hidden…" and an important teacher who comes with important knowledge. He will engrave it so that it remains among the people…"he set all his labours on a tablet of stone."

If we refer to the religious text about al-Mahdi, we find Imam al-Sadiq pbuh saying:

> Knowledge is twenty-seven letters. The prophets only brought two letters. To date, people know only these two letters. So when our Riser rises, he brings out the twenty-five letters and transmits them among the people. He adds the two letters to them, thus transmitting them as twenty-seven letters (Al-Majlisi vol 52, 336. Arabic source, translated).

Gilgamesh, a Religious Character

The Epic of Gilgamesh is filled with symbols. It contains symbolic visions and explains the meaning of some of the symbols. It also contains symbolic words and events. For example, in the heart of a battle between Gilgamesh and Enkidu, we find that everything calms suddenly, and Enkidu immediately stands and respectfully says to Gilgamesh:

'There is not another like you in the world.
Ninsun… she was the mother who bore you,
and now you are raised above all men,

and Enlil has given you the kingship,
for your strength surpasses the strength of men.' (Sanders 1972, 64).

The question here is, if Enkidu knew this from the start, why did he fight him?! It makes no sense that what is meant by "battle" is a physical battle between Gilgamesh and Enkidu. Indeed, it is possible to say that an ideological battle led Enkidu to eventually admit that Gilgamesh is the son of Ninsun and of Enlil, who, by decree, willed for Gilgamesh to be king.

The fact that Enkidu said these words following the battle shows clearly that he sanctifies Ninsun and Enlil, yet did not acknowledge that Gilgamesh was from their lineage. Now he does:

'There is not another like you in the world.
Ninsun… she was the mother who bore you,
and now you are raised above all men,
and Enlil has given you the kingship,
for your strength surpasses the strength of men.' (Sanders 1972, 64).

For this reason, we must also give consideration to the symbolism within the texts, rather than considering the texts to be explicit and literal. As a matter of fact, this is almost always the case for religious texts in general, because they are from other worlds and contain wisdom. Sometimes the goal of these texts is to deliver a message to its people and perhaps there is a frequent need to protect it from imposters, by using symbols that only its people know. Therefore visions, for example, are undoubtedly religious texts, but who among us doubts that they are often symbolic?!

The first journey of Gilgamesh, to kill the Satan Humbaba and remove injustice and oppression and evil from the earth:

Gilgamesh opened his mouth
. . . . . .ferocious Humbaba
. . .[let us] slay him, [so his power] is no more!
'In the Forest of Cedar, [where Humbaba] dwells,
let us frighten him in his lair!' (George 2003, 18).
…[until we] we slay [ferocious Humbaba,]
[and annihilate] from [the land the Evil Thing…] (George 2003, 28).

Prior to Gilgamesh seeing the satan, he sees many visions that bring him the good news of the success of his first mission:

> 'My second dream sur[passes] the first.
> In my dream, my friend, a mountain . . . ,
> it threw me down, it held me by my feet . . .
> The brightness grew more intense. A man [appeared],
> the comeliest in the land, his beauty . . .
> [From] beneath the mountain he pulled me out and . . .
> He gave me water to drink and my heart grew [calm.]…(George 2003, 32).

Anything that can be deified in the view of the Sumerians is a god, so the worldly life is a god, the "I" is a god, and the group is a god. The righteous and sacred ones are gods too, which is why we can replace the word god with the words prophets, righteous ones, the worldly life or the "I". Let us contemplate the text and see the wisdom with which it is filled:

> Gilgamesh opened his mouth,
> saying to Enkidu:
> 'Who is there, my friend, can climb to the sky?
> Only the gods [the righteous ones] [dwell] forever in sunlight.
> As for man, his days are numbered,
> whatever he may do, it is but wind (George 2003,109-10).

The Quran says,

> ﴿And We will regard what they have done of deeds and make them as dust dispersed.﴾ Quran Chapter "The Criterion" 25:23.

Gilgamesh, who is two-thirds god, eventually wanted to rid himself of his dark third, so he went to someone who did rid himself of the darkness and became immortal with the gods, his grandfather Utnapishtim, Noah. Thus, the journey of Gilgamesh to Noah was not a journey requesting physical immortality like some of its readers imagine it to be, but rather, it was a journey requesting spiritual immortality.

After all that has been said, is it fair that a person objects when we say that the Epic of Gilgamesh is deservedly religious and that Gilgamesh is a religious character?

Gilgamesh and Joseph pbuh

In his first journey, Gilgamesh achieved victory and killed the satan Humbaba. He then returned to Uruk and wore his crown for the second battle to begin, the one against the worldly life (the goddess Ishtar or Inanna):

Then did Gilgamesh put on his crown.

On the beauty of Gilgamesh Lady Ishtar looked with longing:
'Come, Gilgamesh, be you my bridegroom!
Grant me your fruits, O grant me!
Be you my husband and I your wife!

Let me harness you a chariot of lapis lazuli and gold,
its wheels shall be gold and its horns shall be amber.
Driving lions in a team and mules of great size,
enter your house amid the sweet scents of cedar!

'As you enter our house
doorway and footstool shall kiss your feet!
Kings, courtiers and nobles shall kneel before you…

[Gilgamesh] opened his mouth to speak,
[saying] to the Lady Ishtar:
'[And if indeed I] take you in marriage,

'. . . . . .body and clothing,
[*whence would come*] my food and my sustenance?
[*Would you feed me*] bread that is fit for a god,
[*and pour me ale*] that is fit for a king?

* * *

'[*Who is there*] would take you in marriage?
[You, *a frost* that congeals no] ice
a louvre-door [that] stays [not] breeze nor draught,
a palace that massacres . . . warriors,

'an elephant which . . . its *hoods*,
bitumen that [*stains the hands*] of its bearer,
a waterskin that [*cuts the hands*] of its bearer

limestone that [*weakens*] a wall of ashlar,

'a battering ram that destroys [*the walls of*] the enemy,
  a shoe that bites the foot of its owner!
What bridegroom of yours did endure for ever?
  What brave warrior of yours went up [*to the heavens?*]…

The goddess Ishtar [heard] these words,
  she [went up] to heaven in a furious rage.
[Weeping] she went to Anu, her father,
  before Antu, her mother, her tears did flow:

'O father, again and again does Gilgamesh scorn me,
  telling a tale of foulest slander,
slander about me and insults too.'

Anu opened his mouth to speak,
  saying to the Lady Ishtar:
'*Ah*, but was it not you who provoked King Gilgamesh,
  so he told a tale of foulest slander,
slander about you and insults too?

Ishtar opened her mouth to speak,
  saying to her father, Anu:
'Father, give me, please, the Bull of Heaven,
  so in his dwelling I may slay Gilgamesh!

'If you do not give me the Bull of Heaven,
  I shall *smash* [*the gates of the Netherworld, right down*] to its dwelling,
to the world below I shall grant [manumission,]
  I shall bring the dead to consume the living,
I shall make the dead outnumber the living.'

Anu opened his mouth to speak,
  saying to the Lady Ishtar:
'If you want from me the bull of Heaven,
  let the widow of Uruk gather seven years' chaff,
[and the farmer *of Uruk*] grow seven years' hay.'

[Ishtar opened her mouth] to speak
  [saying to] her father, Anu:
' . . . . . .already I stored,

. . . . . .already I grew,

'The widow [of Uruk has] gathered [seven] years' chaff
the farmer [*of Uruk* has grown seven years'] hay…'
(George 2003, 48-50).

The Quran says:

﴿And she, in whose house he was, sought to seduce him. She closed the doors and said, "Come, you." He said, "I seek the refuge of God. Indeed, he is my master, who has made good my residence. Indeed, wrongdoers will not succeed."﴾ Quran Chapter "Joseph" 12:23.

﴿[Joseph] said, "You will plant for seven years consecutively; and what you harvest leave in its spikes, except a little from which you will eat. *Then will come after that seven difficult [years] which will consume what you saved for them, except a little from which you will store. *Then will come after that a year in which the people will be given rain and in which they will press [olives and grapes]."﴾ Quran Chapter "Joseph" 12:47-49.

Those Who Fall or Stumble on the Journey of Immortality

I have made clear that the journey of Gilgamesh talks about spiritual immortality and the eternal life in the hereafter, not physical immortality. If ignorant people know that physical life ends, then how would Gilgamesh not know, he who is described in the Epic as wise and knowledgeable of the truth of things?

Since the immortality and death mentioned in the story mean the immortality and death of the soul, the death of Enkidu is similar. Thus, Enkidu could not complete the journey of immortality without falling or stumbling on the path, committing forbidden acts and going against the commandments Gilgamesh gave him. The result was that he fell into the clutches of the nether world, while Gilgamesh tried to save him from this and help him rise after his stumble:

Gilgamesh says to Enkidu:
"If now you will descend to the nether world,
A word I speak to you, take my word,
Instruction I offer you, take my instruction.

Do not put on clean clothes,
Lest like an enemy the (nether world) stewards will come forth,
Do not anoint yourself with the good oil of the *bur*-vessel,
Lest at its smell they will crowd about you.

"Do not throw the throw-stick in the nether world,
Lest they who were struck by the throw-stick will surround you,
Do not carry a staff in your hand,
Lest the shades will flutter all about you.

"Do not put sandals on your feet,
In the nether world make no cry;
Kiss not your beloved wife,
Strike not your hated wife,
Kiss not your beloved son,
Strike not your hated son,
Lest the outcry of Kur will seize you,…"(Kramer 1981, 196-97).

Enkidu did not heed the instructions of his master, but committed those very acts against which Gilgamesh had warned him. And so he was seized by Kur and was unable to ascend again to the earth.

"… In battle, the place of manliness, he has not fallen,
Kur has seized him."

… the story of the death of Enkidu and his burial is in all likelihood of Babylonian rather than Sumerian origin. According to the Sumerian poem "Gilgamesh, Enkidu, and the Nether World," Enkidu did not die at all in the ordinary sense of the word but was seized and held fast by Kur, a dragon-like demon in charge of the nether world, after he had knowingly broken the taboos of the nether world. The incident of but the death of Enkidu was invented by the Babylonian authors of the "Epic of Gilgamesh" in order to motivate dramatically Gilgamesh's quest for immortality, which climaxes the poem.

… In no case, however, did the Babylonian poets slavishly copy the Sumerian material. They so modified its content and molded its form, in accordance with their own temper and heritage, that only the bare nucleus of the Sumerian original remains recognizable (Kramer 1981, 183-84).

The Journey of Gilgamesh to his Grandfather Noah pbuh

Then began the journey of Gilgamesh to his grandfather Noah (Utnapishtim) in which he was seeking immortality—the immortality of the soul and not the body. From the beginning, Gilgamesh knew that there was no immortality for the body, for he said:

> Gilgamesh opened his mouth,
> saying to Enkidu:
> 'Who is there, my friend, can climb to the sky?
> Only the gods [the righteous ones] [dwell] forever in sunlight.
> As for man, his days are numbered,
> whatever he may do, it is but wind (George 2003, 109-10).

His grandfather Noah had been dead for a long time and he knew this well. Therefore, it was a journey to the other world.

In this journey, Gilgamesh crushes his "self" and achieves the immortality that he traveled seeking. He achieves what he wished for on the same journey even before reaching his grandfather Noah (Utnapishtim):

> After you are gone [my hair will be matted in mourning,]
> clad in the skin of [a lion I shall wander] the wild. (George 199, 66).

Gilgamesh enters the world of truth and sees things for what they really are on his journey to his grandfather Utnapishtim (Noah pbuh):

> To Mashu's twin mountains he came,
> which daily guard the rising [sun,]
> whose tops [support] the fabric of heaven,
> whose base reaches down to the Netherworld.
>
> There were scorpion-men guarding its gate,
> whose terror was dread, whose glance was death,
> whose radiance was fearful, overwhelming the mountains -
> at sunrise and sunset they guarded the sun.
>
> Gilgamesh saw them, in fear and dread he covered his face,
> then he collected his wits, and drew nearer their presence.
> The scorpion-man called to his mate:
> 'He who has come to us, flesh of the gods is his body.'

The scorpion-man's mate answered him:
'Two-thirds of him is god, and one third human.'
The scorpion-man called out,
saying a word [to King Gilgamesh,] flesh of the gods:

'[How did you come here,] such a far road?
[How did you get here,] to be in my presence?
[How did you cross the seas,] whose passage is perilous?
…… let me learn of your [journey!]

' …… where your [face] is turned,
…… let me learn [of your journey!]'

Gilgamesh replied:

'[I am seeking] the [road] of my forefather, Uta-napishti [Noah pbuh],
who attended the gods' assembly, and [found life eternal:]
of death and life [he shall tell me the secret.]'

The scorpion-man opened his mouth [to speak,]
saying to [Gilgamesh:]
'Never [before], O Gilgamesh, was there [one like you,]
never did anyone [travel the path] of the mountain.

'For twelve double-hours its interior [extends,]
the darkness is dense, and [light is] there none.
For the rising of the sun …… ,
for the setting of the sun …….. .

'For the setting of the …… ,
they sent forth …….. .
And you, how will you …… ?
Will you go in …… .

'Through sorrow …….. .
by frost and by sunshine [my face is burnt.]
Through exhaustion …….. .
now you …….. . '

The scorpion-man [opened his mouth to speak,]

[saying a word] to King Gilgamesh, [flesh of the gods:]
'Go, Gilgamesh! …….. .
May the mountains of Mashu [allow you to pass!]

'[May] the mountains and hills [watch over your going!]
Let [them help you] in safety [to continue your journey!]
[May] the gate of the mountains [open before you!]' (George 2003, 71-73).

The journey of Gilgamesh continues and he passes the tavern-keeper. It is as if she is a symbol of intoxication of the people with the love of the temporal life and the "I". The tavern-keeper calls him to the worldly life and to caring about himself and abandoning this tiring journey of seeking immortality:

Said the tavern-keeper to him, to Gilgamesh:
'O Gilgamesh, where are you wandering?

'The life that you seek you never will find:
when the gods created mankind,
death they dispensed to mankind,
life they kept for themselves.

'But you, Gilgamesh, let your belly be full,
enjoy yourself always by day and by night!
Make merry each day,
dance and play day and night!

'Let your clothes be clean,
let your head be washed, may you bathe in water!
Gaze on the child who holds your hand,
let your wife enjoy your repeated embrace!

'For such is the destiny [of mortal men,]
that the one who lives …… '
[Said] Gilgamesh to her, [to the ale-wife:]…

'But you dwell, O tavern-keeper, on the shore [of the ocean,]
you are familiar with all [the ways across it.]
Show me the way, [O show me!]
If it may be done [I will cross] the ocean!' (George 2003, 124).

Said Gilgamesh to her, to the tavern-keeper:

'Now, O tavern-keeper, where is the road to Uta-napishti?
What is the landmark? Tell me!
Give me its landmark!
If it may be done, I will cross the ocean,
and if it may not be done, I will wander the wild!' (George 2003, 78).

It is as if these last words of Gilgamesh were in the meaning quoted by Moses pbuh, so Moses pbuh says, ﴿to his lad, "I will not cease traveling until I reach the junction of the two seas or continue for a long period."﴾ The Quran Chapter "The Cave" 18:60.

The Journey of Gilgamesh continues until he reaches his grandfather Utnapishtim (Noah pbuh), who tells him the story of the flood. Thus, Gilgamesh learns the secret of life from his grandfather:

Utnapishtim said,
'There is no permanence.
Do we build a house to stand for ever,
do we seal a contract to hold for all time?
Do brothers divide an inheritance to keep for ever,
does the flood-time of rivers endure?
It is only the nymph of the dragon-fly who sheds her larva
and sees the sun in his glory.
From the days of old there is no permanence.
The sleeping and the dead, how alike they are,
they are like a painted death.
What is there between the master and the servant
when both have fulfilled their doom? (Sanders 1972, 94-95).

The Sumerian epics, stories and poems prove that the story of divine religion existed where the Sumerians were located—before the existence of Judaism, Christianity and Islam—complete in all its details, characters and symbols. In the Sumerian clay tablets, we find the real, one God who dominates everything. We also find the ideologies, moral values, sacred laws, methods of worship, the ways of achieving victory over Satan and the worldly life, as well as the "I" and the self-love.

Thus, it was entirely about religion, from beginning to end, for the Sumerians.

Where did they get it from? Where did they get this complex system that suddenly appeared, in complete form, in the history of Mesopotamia?

The truth, which any reasonable person can see as clear as the sun, is that a leap of culture and civilization has been revealed to us by the Sumerian culture and civilization. Anyone wanting to deny it—after all that has been said—that is their business. In any case, many theories and theses have been made to explain this cultural leaps, as previously discussed. If it was not such a cultural leap, it would have reached the point where the ancient astronaut theory of organisms coming from space was proposed!

It's very strange for someone to accept that the reason for human development was ancient astronauts in spaceships and their cosmic powers which we see no trace of on the earth, in order to justify this cultural leap, yet not accept that the soul of Adam was breathed into and connected to a body, and consequently developed, becoming more sophisticated among the creation in terms of organization and the ability to think and comprehend.

The Sumerians and the Supremacy of God

Regarding the government, Dr. Kramer says:

> The Government, The First Bicameral Congress:
>
> Man's social and spiritual development is often slow, devious, and hard to trace. The full-grown tree may well be separated from its original seed by thousands of miles and years. Take, for example, the way of life known as democracy and its fundamental institution, the political assembly. On the surface it seems to be practically a monopoly of our Western civilization and an outgrowth of recent centuries. Who could imagine that there were political congresses thousands and thousands of years ago, and in parts of the world rarely associated with democratic institutions? But the patient archaeologist digs deep and wide, and he never knows what he will come up with. As a result of the efforts of the "pick and spade" brigade, we can now read the record of a political assembly that took place some five thousand years ago in — of all places — the Near East.
>
> The first political "congress" in man's recorded history met in solemn session about 3000 B.C. It consisted, not unlike our own congress, of two "houses": a "senate," or an assembly of elders; and a "lower house," or an assembly of arms-bearing male citizens. It was a "war congress," called together to take a stand on the momentous question of war and peace; it had to choose between what we would describe as "peace at any price" or war and independence. The "sen-

> ate," with its conservative elders, declared for peace at all cost, but its decision was "vetoed" by the king, who then brought the matter before the "lower house." This body declared for war and freedom, and the king approved.
>
> In what part of the world did the first "congress" known to man meet? Not, as you might surmise, somewhere in the West, on the continent of Europe (the political assemblies in "democratic" Greece and republican Rome came much later). Our hoary congress met, surprising as it may seem, in that part of Asia now generally designated as the Near East, the traditional home of tyrants and despots, a part of the world where political assemblies were thought to be practically unknown. It was in the land known in ancient days as Sumer, situated north of the Persian Gulf between the Tigris and Euphrates Rivers, that the oldest known political assembly was convened. And when did this "congress" meet? In the third millennium BC In those days, this Near Eastern land Sumer (it corresponds roughly to the lower half of modern Iraq) was inhabited by a people who developed what was probably the highest civilization in the then known world (Kramer 1981, 30-31).

The connection of the Sumerians to the supremacy of God is something that could not have been recognized by Kramer or most other archaeologists. This is because they either do not believe in the supremacy of God, or they are atheists who think that religion was invented by the Sumerians, and that the Torah and the Quran are just the result of copying (in their eyes) fictitious Sumerian stories, such as the story of the Deluge. That is why, when they discovered that the Sumerian king presented the issue of war to two councils, they concluded that the Sumerians were practicing democracy similar to today's Western democracy. On the contrary, the Sumerians were not practicing Western democracy at all, and what they practiced had nothing in common with it, as there are many Sumerian texts that confirm that the ruler took his authority by divine appointment.

The Sumerian governing system is a system they inherited from Noah pbuh and the prophets just as they inherited the divine religion. Thus, they had a distorted divine governing system, just as they had a distorted divine religion. As such, the Sumerian governing system was neither a dictatorship nor a democracy in today's Western democratic sense.

In the Sumerian governing system, a king was assigned by the gods, just as a king or ruler is assigned by God in the divine governing system. The mission of this ruler is to fulfil the will of God, apply the law of God, and be just toward the oppressed. Thus, there is a purpose behind the assignment of the divine ruler, which is not the rule itself. That is why the divine governing system can be achieved even in the case where the assigned ruler of God supervises the application, monitors the application, and intervenes in order to correct any movement toward error. It is not necessary that he himself rule in order for the purpose of his assignment to be fulfilled.

We find this or something similar in the Sumerian example mentioned by Dr. Samuel Kramer, as there was a dispute between Uruk and Kish about authority and the claim of divine appointment. The ruler of Uruk requested the people's opinion on whether to choose war or peace, but it was not an opinion he was obligated to follow, as is clear from the above example.

> The political situation that brought about the convening of the oldest "congress" recorded in history may be described as follows: Like Greece of a much later day, Sumer, in the third millennium B.C., consisted of a number of city-states vying for supremacy over the land as a whole. One of the most important of these was Kish, which, according to Sumerian legendary lore, had received the "kingship" from heaven immediately after the "flood." But in time another city-state, Erech, which lay far to the south of Kish, kept gaining in power and influence until it seriously threatened Kish's supremacy in Sumer. The king of Kish at last realized the danger and threatened the Erechites with war unless they recognized him as their overlord. It was at this crucial moment that Erech's two assemblies were convened — the elders and the arms-bearing males — in order to decide which course to follow, whether to submit to Kish and enjoy peace or to take to arms and fight for independence (Kramer 1981, 31-32).

It is true that some of the kings of Sumer had only claimed to be divinely appointed. However, what matters to us is that the Sumerians in general believed in divine appointment. This is confirmed by what we see often in the clay tablets, namely that the kings were from the lineage of the gods and that the gods assign them. There is a story relayed by the Quran that represents a dispute that occurred in Sumer or

Mesopotamia between a king claiming to have kingship and Abraham, the Beloved of God pbuh, the king appointed by God:*

﴿Have you not considered the one who argued with Abraham about his Lord because God had given him kingship? When Abraham said, "My Lord is the one who gives life and causes death," he said, "I give life and cause death." Abraham said, "Indeed, God brings up the Sun from the east, so bring it up from the west." So the disbeliever was overwhelmed [by astonishment], and God does not guide the wrongdoing people.﴾ Quran Chapter "The Cow" 2:258.

Generally speaking, one can refer to the Sumerian, Akkadian and Babylonian texts to see that in many of the passages this matter is clear, as is their belief that kingship is a divine appointment. It is just like the true ideology of divine religion in the Torah, Gospel and Quran. This clearly shows that the Sumerians inherited the old divine religion and were committed to its teachings, most importantly the divine laws and the one who implements them. However, as time passed, the thing that always happens occurred in this case too: the distortion of divine religion, the usurping of divine kingship and the persecution of the king appointed by God. This was the case with Abraham pbuh, who eventually had to leave the land of his fathers, until God wished for

*. The Old Testament calls the Sumerian Ur, where Abraham was born, the Chaldean Ur : "Terah took Abram his son and Lot the son of Haran, his grandson, and Sarai his daughter-in-law, his son Abram's wife, and they went forth together from Ur of the Chaldean to go into the land of Canaan, but when they came to Haran, they settled there" Genesis 11:31. For the Jews and Christians, Ur has been seized by the Elamites, Babylonians and the Chaldeans. Therefore, they may be called by these names. Archeological research recognizes that the Sumerians and Akkadians are one people, and that these names are for only one group of people, not two. Also, the Babylonian people lived in the same location in southern Iraq. They represent a natural extension of the Akkadians or the Sumerians, so there is no problem with calling both the Akkadian and Sumerian civilization by the same name, whether it be Akkadian, or Sumerian, civilization. Perhaps it's enough to say Shinarians, when referring to Sumerians or Akkadians, considering that they represented the oldest civilization in the land of Shinar: "Cush fathered Nimrod; he was the first on the earth to be a mighty man.19 He was a mighty hunter before the Lord. Therefore it is said, "Like Nimrod a mighty hunter before the Lord." 10 The beginning of his kingdom was Babel, Erech, Accad, and Calneh, in the land of Shinar" Genesis 10:8-10. Generally speaking, since the Sumerian civilization is the oldest recorded civilization and it reaches us in this region that represents the place of settlement and refuge for the immigrants and survivors of the flood, we can call these ancient people, who were in the fertile valley and from whom the inhabitants of the earth descend, the Sumerians. Thus, it is natural to call the Akkadians, Babylonians, Assyrians and even the Chaldeans, Sumerians. They all have one origin, and they are the first people to live in the fertile valley, the present-day Gulf, before the flood.

his children to later return. It is the return of his son Ali Ibn Abi Talib pbuh to the land of Sumer and Akkad or Semeru, Shinar or Mesopotamia (Iraq).

This is a text relayed by Dr. Kramer about the Sumerian tablets. It shows that the Sumerians believed in a divine religion and divine appointment of the king or ruler:

> "O Sumer, great land, of the lands of the universe,
> Filled with steadfast light, dispensing from Sunrise to Sunset the divine laws to
> (all) the people,
> Your divine laws are exalted laws, unreachable,
> Your heart is profound, unfathomable,
> The true learning which you bring . . . , like heaven is untouchable,
> The king to whom you give birth is adorned with the everlasting diadem,
> The lord to whom you give birth sets ever crown on head,
> Your lord is an honored lord; with An, the king, he sits on the heavenly dais,
> Your king is the great mountain,… (Kramer 1981, 93).

Research in the Flood of Noah

The flood of Noah is mentioned in religion, yet, because of its distorted presentation by some religious clerics—or its distorted form in some distorted divine books—divine religion came under attack, the basis being that religion is just a collection of myths. This is because a flood of that magnitude and in that time, as described in the distorted, religiously accepted form, cannot scientifically occur. There is no trace of its occurrence. In fact, the opposite is the case. It cannot occur without leaving numerous traces after the water recedes from the land. Present day science has not shown any sign that such traces exist.

Before we discuss and analyze the story of the flood, we will consider some scientific arguments against the religious story of the flood. Some of them are exploited by atheists to refute divine religion for being merely an inflated rumination of ancient myths, such as the Sumerian story of the flood. We will learn the rebuttals of these arguments by presenting the Quranic story of the flood with correct understanding, demonstrating that it does not conflict with scientific, historical, archaeological, or geological facts.

Scientific Arguments Against the Traditional Religious Story of the Flood

1. All of the water present within and on the earth is not enough to completely cover land up to the peak of the highest mountain, meaning to reach a few kilometers in height. In fact, it is not enough to cover land at a much lower level than that.
2. How did the animals of isolated islands and continents reach Noah? Moreover, how did they return to their isolated islands again, without leaving a trace on their way back? The simplest examples are the marsupials of Australia, and the fossa animal of Madagascar. They are endemic to their region, and no trace of their existence has been recorded anywhere else.

3. There are no traces of a flood that included every spot on the earth within the time frame of the traditional story of the flood.

Summary of Atheist Arguments Against the Traditional Religious Story of the Flood of Noah

This is a summary by the well-known author Christopher Hitchens of some of his refutations of the story of the flood as it appears in the Torah, or the Old Testament:*

> Noah was asked to take into the ark a pair from every species (sura 11.36-41). Some zoologists estimate that there are perhaps ten million living species of insects; would they all fit into the ark? It is true they do not take up much room, so let us concentrate on the larger animals: reptiles, 5,000 species; birds, 9,000 species; and 4,500 species of class Mammalia (p. 239). In all, in the phylum Chordata, there are 45,000 species (p. 236). What sized ark would hold nearly 45,000 species of animals? A pair from each species makes nearly 90,000 individual animals, from snakes to elephants, from birds to horses, from hippopotamuses to rhinoceroses. How did Noah get them all together so quickly? How long did he wait for the sloth to make his slothful way from the Amazon? How did the kangaroo get out of Australia, which is an island? How did the polar bear know where to find Noah? As

*. Christopher Hitchens (1949-2011) was a British-American author and journalist who contributed to a number of magazines, in addition to writing in literary critiques. He is well known for his belief in atheism and critiques of religion. His books include *God is Not Great*, in which he criticized the Abrahamic religions.

> Robert Ingersoll asks, "Can absurdities go farther than this?" Either we conclude that this fantastic tale is not to be taken literally, or we have recourse to some rather feeble answer, such as, for God all is possible. Why, in that case, did God go through all this rather complicated, time-consuming (at least for Noah) procedure? Why not save Noah and other righteous people with a rapid miracle rather than a protracted one? (Hitchens 2007, 415).

The following is a summary of objections made by the biologist Dr. Dawkins to the traditional story of the flood of Noah and Noah's ark:

> "Think what the geographical distribution of animals should look like if they'd all dispersed from Noah's Ark," he said. "Shouldn't there be some sort of law of decreasing species diversity as we move away from an epicentre—perhaps Mount Ararat? I don't need to tell you that this is not what we see."
>
> Take Australia's marsupials, for example.
>
> "Why would all those marsupials, but no placentals at all, have migrated en masse from Mount Ararat to Australia? Which route did they take? And why did not a single member of their straggling caravan pause on the way and settle—in India perhaps or China or some haven along the Great Silk Road?" (The Sydney Morning Herald 2010).

When a religious cleric, whether Jewish, Christian or Muslim, relates the traditional story of Noah—that marsupials, like other animals, came down from Noah's ark after the flood in a region of Iraq or its surroundings—this causes biologists, and even people with an average education, to regard this story as a completely fabricated myth, and to regard whoever believes it in this form as extremely intellectually backward. Marsupials have been endemic only to Australia for millions of years, and not to the remaining continents of the world, the reason being that they evolved independently on this isolated island.

The Story of the Flood from the Sumerians and Babylonian, or the-Mesopotamian Nations

In the chapter "The First Noah", Kramer says:

> That the Biblical deluge story is not original with the Hebrew redactors of the Bible has been known from the time of the discovery and deciphering of the eleventh tablet of the Babylonian "Epic of

> Gilgamesh" by the British Museum's George Smith. The Babylonian deluge myth itself, however, is of Sumerian origin. In 1914 Arno Poebel published a fragment consisting of the lower third of a six-column Sumerian tablet in the Nippur collection of the University Museum, the contents of which are devoted in large part to the story of the flood. This fragment still remains unique and unduplicated (Kramer (1956) 1981, 148).

Thus, the story of the flood has existed and was recorded before any of the three religions: Judaism, Christianity and Islam. It dates back thousands of years before Christ, and was relayed by the Mesopotamian people as a narrative from the perspective of their ancestors.

In *History Begins at Sumer* Kramer recounts the Sumerian story of creation and the flood. However, it is incomplete due to breakage and damage incurred by the tablets. Here are some of its passages:

> After An, Enlil, Enki, and Ninhursag
> Had fashioned the blackheaded people,
> Vegetation luxuriated from the earth,
> Animals, four-legged (creatures) of the plain, were brought artfully into existence.

> There follows another break of about 37 lines, after which we learn that kingship was lowered from heaven and that five cities were founded:

> After the . . . of kingship had been lowered from heaven,
> After the exalted tiara and the throne of kingship had been lowered from heaven,
> He perfected the rites and the exalted divine laws . . . . ,
> Founded the five cities in . . . pure places,
> Called their names, apportioned them as cult centers… (Kramer 1981, 149).

> . . . .
> Thus was treated . . . . .
> Then did Nintu weep like a . . . ,
> The pure Inanna set up a lament for its people,
> Enki took counsel with himself,
> An, Enlil, Enki, and Ninhursag . . . . ,
> The gods of heaven and earth uttered the name of An and Enlil.

Then did Ziusudra, the king, the pashishu of . . . . ,
Build a giant . . . . ;
Humbly, obedient, reverently he . . . . ,
Attending daily, constantly he . . . . ,
Bringing forth all kinds of dreams, he . . . . ,
Uttering the name of heaven and earth, he . . . . .
. . . . the gods a wall . . . . ,
Ziusudra, standing at its side, listened.

"Stand by the wall at my left side . . . . ,
By the wall I will say a word to you, take my word,
Give ear to my instructions:
By our . . a flood will sweep over the cult centers;
To destroy the seed of mankind . . . . ,
Is the decision, the word of the assembly of the gods.

By the word commanded by An and Enlil . . . . .
Its kingship, its rule (will be put to an end)."

The text must have continued with detailed instructions to Ziusudra to build a giant boat and thus save himself from destruction. But this is missing, since there is another break of about 40 lines at this point. When the text becomes intelligible once again, we find that the flood in all its violence had already come upon the "land" and raged there for seven days and nights. Then the sun-god Utu comes forth again, bringing his precious light everywhere, and Ziusudra prostrates himself before him and offers sacrifices. The lines read:

All the windstorms, exceedingly powerful, attacked as one,
At the same time, the flood sweeps over the cult centers.

After, for seven days and seven nights,
The flood had swept over the land,
And the huge boat had been tossed about by the windstorms on the great waters,
Utu came forth, who sheds light on heaven and earth,
Ziusudra opened a window on the huge boat,
The hero Utu brought his rays into the giant boat.

Ziusudra, the king,
Prostrated himself before Utu,
The king kills an ox, slaughters a sheep.

> Here, again, there follows a break of about 39 lines. The last extant lines of our text describe the deification of Ziusudra. After he had prostrated himself before An and Enlil, he was given "life like a god" and breath eternal, and translated to Dilmun, "the place where the sun rises." Thus:
>
> An and Enlil uttered "breath of heaven," "breath of earth," by their
> . . it stretched itself,
> Vegetation, coming up out of the earth, rises up.
>
> Ziusudra, the king,
> Prostrated himself before An and Enlil.
> An and Enlil cherished Ziusudra,
> Life like a god they give him:
> Breath eternal like a god they bring down for him.
>
> Then, Ziusudra the king,
> The preserver of the name of vegetation and of the seed of mankind,
> In the land of crossing, the land of Dilmun, the place where the sun rises, they caused to dwell (Kramer 1981, 151-53).

To clarify, the beginning was at the time when the creation of the intellectual human being, or the *Homo sapiens*, was complete. His skin was black, and he came from Africa to the fertile valley. He represents the beginning of the story of Adam and the vicegerency, which, in turn, represents the origin to which the Sumerians trace back. Therefore, it is natural for the Sumerians to describe their ancestors as the "blackheaded people":

> After An, Enlil, Enki, and Ninhursag
> Had fashioned the blackheaded people,

This phrase, which was often repeated in Sumerian texts, was unclear to archeologists. It posed an unexplained mystery: why would Sumerians call their ancestors by the name "blackheaded people"? It has now been made clear that the reason is that the ancestors came from Africa, and the skin color of their heads was black.

The second stage in the Sumerian story of creation is the divine vicegerency of a human vicegerent on the earth:

> After the . . . of kingship had been lowered from heaven,
> After the exalted tiara and the throne of kingship had been lowered from heaven,
> He perfected the rites and the exalted divine laws,…

It is clear from the Sumerian text that this represents the story of the vicegerency of Adam pbuh, or the first (human) vicegerent of God on the earth, which was mentioned in the Abrahamic religions. "Kingship had been lowered from heaven", means that a vicegerent of God was appointed on the earth, so kingship originally belongs to God. The descent of kingship to the earth signifies the appointment of a human as a vicegerent of God on the earth. Once the vicegerent was appointed, jurisprudence and the sacred divine laws were sent down to him, meaning that God inspired Adam pbuh and informed him of the religion, the jurisprudence, and the sacred, divine laws.

Clearly, the above text has major gaps, especially concerning the story of the flood. However, we can summarize what is mentioned about the flood as follows:

The maker of the ark is a Sumerian whose name is Ziusudra.

God inspired Ziusudra, and some of the divine inspiration reached him through visions.

Ziusudra (or Noah) learned about the flood before it occurred, through divine inspiration.

There is emphasis when mentioning that the flood swept over the cult centers:

> A flood will sweep over the cult centers… At the same time, the flood sweeps over the cult centers.

This is an indication of the deviation of religion clerics and their distortion of religion at the time of Ziusudra (Noah).

There is emphasis on the flood being a divine punishment of people for their rebellion against the commands of God and destroying their rule, which opposed Ziusudra (Noah), who was appointed by God: "Its kingship, its rule (will be put to an end)."

Ziusudra's task was to make an ark that would preserve a special lineage of people, plants, and animals. Perhaps there is a clear indication of this in the Sumerian text, namely the phrase: "The preserver

of the name of vegetation." Certainly, what is intended is special vegetation because, otherwise, no matter how great a flood on the earth is, plants do not require ark to transport and preserve them. At the very least their seeds remain and grow after a flood without any help. Therefore, it is clear that what is intended are agricultural plants that humans eat. Perhaps what is intended in particular is that Ziusudra transported sufficient amounts of their seeds to repeat the productive agricultural process, without the need to start from scratch when the wheat seeds and agricultural seeds used for crops were no longer available to humans (the son of Adam). Therefore, perhaps the text is clear in saying that the ones being transported on the ark are a group of people who believe in the words of Noah, as well as the seeds of economical, productive plants that are important to humans are being transported as well. Accordingly, we can also conclude that the animals being transported are the domesticated animals that benefit humans. In the end, Ziusudra, or Noah, succeeded and was rewarded, because he accepted the words of God and the inspiration of God. He also rose in the kingdom of heaven after being transported and saved on the ark. Ziusudra lived in the land of Dilmun, or the land of crossing, as the Sumerian text calls it:

> Ziusudra, the king,
> Prostrated himself before An and Enlil.
> An and Enlil cherished Ziusudra,
> Life like a god they give him:
> Breath eternal like a god they bring down for him.
>
> Then, Ziusudra the king,
> The preserver of the name of vegetation and of the seed of mankind,
> In the land of crossing, the land of Dilmun, the place where the sun rises, they caused to dwell.

Dilmun:

The description of Dilum by the Sumerians is:

> In Dilmun the raven utters no cry,
> The ittidu-bird utters not the cry of the ittidu-bird,
> The lion kills not,
> The wolf snatches not the lamb,

Unknown is the kid-devouring wild dog,
Unknown is the grain-devouring . . ,
Unknown is the widow,
The bird on high . .s not his . . ,
The dove droops not the head,
The sick-eyed says not "I am sick-eyed,"
The sick-headed says not "I am sick-headed,"
Its (Dilmun's) old woman says not "I am an old woman,"
Its old man says not ''I am an old man,"
Unbathed is the maid, no sparkling water is poured in the city,
Who crosses the river (of death?) utters no . . ,
The wailing priests walk not round about him,
The singer utters no wail,
By the side of the city he utters no lament (Kramer, 1981, 144-45).

To clarify, the description above cannot be considered realistic unless it concerns a certain land or country that Ziusudra, or Noah, lived in after the flood. Thus, it is clearly a symbolic description. Furthermore, for those readers who are informed of the religious accounts regarding Al-Mahdi, this description brings to mind the nation of Al-Mahdi as well as the description wherein the wolf does not eat the lamb. In fact, it can be said that what is intended is the ideal state, where injustice is lifted and the justice of the heavens is applied. As such, we can understand that Dilmun, or the place where Ziusudra lived after the flood, is the just nation of Al-Mahdi that has been anticipated since the time of Ziusudra (Noah), or perhaps even before that. Its capital and starting point is in Iraq, enabling us to say that Dilmun, in this Sumerian text, is Iraq.

The Story of Noah in the Epic of Gilgamesh

Chapter 4
The Story of the Flood

It was narrated by Utnapishtim the immortal to Gilgamesh:

Gilgamesh and Ur-shanabi crewed [the boat,]
they launched the craft, and [crewed it] themselves.
In three days they made a journey of a month and a half,
and Ur-shanabi came to the Waters of [Death.]

[Said] Ur-shanabi to him, [to Gilgamesh:]
'*Set to*, O Gilgamesh! Take the first [punting-pole!]
Let your hand not touch the Waters of Death, lest you *wither* [it!]

'Take a second punting-pole, Gilgamesh, a third and a fourth!
Take a fifth punting-pole, Gilgamesh, a sixth and a seventh!
Take an eighth punting-pole, Gilgamesh, a ninth and a tenth!
Take an eleventh punting-pole, Gilgamesh, and a twelfth!'

At one hundred and twenty double-furlongs Gilgamesh had used all
the punting-poles,
so he, [Ur-shanabi,] undid his clothing,
Gilgamesh stripped off [his] garment,
with arms held aloft he made a yard-arm.

Uta-napishti was watching Gilgamesh in the distance,
talking to himself he [spoke] a word,
[taking counsel] in his own mind:
'Why are the boat's [Stone Ones] all broken,
and aboard it one who is not its master? (George 2003, 82-83).

[Said] Gilgamesh to him, [to Uta-napishti:]
'Why should my cheeks not be hollow, [my face not
sunken,]
my mood not wretched, my visage not wasted?

'Should not sorrow reside in my heart,
and my [face] not resemble one come from afar?
[Should not] my features be [burnt] by frost and by sunshine,
[and should I not] wander the wild in lion's garb?

'[My friend, a wild ass on the run,]
[donkey of the uplands,] panther of the wild,
[my friend Enkidu, a wild ass on the run,]
[donkey of the uplands, panther of the wild -]

'[having joined forces we climbed] the mountains,
[seized and] slew [the Bull] of Heaven,
[destroyed Humbaba, who] dwelt [in the] Forest of Cedar,
killed lions [in the mountain *passes* –]

'[my friend, whom I loved so dear,]

[who with me went through] every danger,
[my friend Enkidu, whom I loved so dear,]
[who with me] went through every danger:
[the *doom of mortals* overtook him.]

'[Six days] I wept for him [and seven nights:]
[I did not surrender his body for] burial
[until a maggot dropped from] his [nostril.]
[Then I was afraid *that I too would die*,]
[I grew] fearful of death, [and so wander the] wild.

'What became of [my friend *was too much*] to [bear,]
so on a far road [I wander the] wild;
what became of my friend Enkidu [*was too much* to bear,]
so on a far path [I wander the wild.]

'How can I keep silent? How can I stay quiet?
My friend, whom I loved, has turned to clay,
my friend Enkidu, [whom I loved, has turned to clay.
[Shall] I not be like him and also lie down,
never to rise again, through all [eternity?]'

Said Gilgamesh to him, to Uta-napishti:
'I thought, "I will find Uta-napishti the Distant, of whom men tell,"
and I wandered journeying through every land.
Many times I passed through terrible mountains,
many times I crossed and recrossed all the oceans.

'Of slumber sweet my face had too little,
I scourged myself by going sleepless.
I have filled my sinews with sorrow,
and what have I achieved by my toil?

'I had yet to reach the tavern-keeper, my clothing was worn out.
[I killed] bear, hyena, lion, panther, cheetah,
deer, ibex, the beasts and game of the wild:
I ate their flesh, their pelts I flayed (George 2003, 84-85).

Death so savage, who hacks men down.

'Ever do we build our households,

ever do we make our nests,
ever do brothers divide their inheritance,
ever do feuds arise in *the land*.

'Ever the river has risen and brought us the flood,
the mayfly floating on the water.
On the face of the Sun its countenance gazes,
then all of a sudden nothing is there!

'The abducted and the dead, how alike is their lot!
But never was drawn the likeness of Death,
never in the land did the dead greet a man.

'The Anunnaki, the great gods, held an assembly,
Mammitum, maker of destiny, fixed fates with them:
both Death and Life they have established,
but the day of Death they do not disclose.' (George 2003, 86-87).

Said Gilgamesh to him, to Uta-napishti the Distant:
'I look at you, Uta-napishti:
your form is no different, you are just like me,
you are not any different, you are just like me.

'I was fully intent on making you fight,
but now in your presence my hand is stayed.
How was it you stood with the gods in assembly?
How did you find the life eternal?'

Said Uta-napishti to him, to Gilgamesh:
'Let me disclose, O Gilgamesh, a matter most secret,
to you I will tell a mystery of gods.

'The town of Shuruppak, a city well known to you,
which stands on the banks of the river Euphrates:
this city was old – the gods once were in it –
when the great gods decided to send down the Deluge.

'Their father Anu swore on oath,
and their counsellor, the hero Enlil,
their chamberlain, the god Ninurta,
and their sheriff, the god Ennugi.

‘Princely Ea swore with them also,
repeating their words to a fence made of reed:
“O fence of reed! O wall of brick!
Hear this, O fence! Pay heed, O wall!

‘ “O man of Shuruppak, son of Ubar-Tutu,
demolish the house, and build a boat!
Abandon wealth, and seek survival!
Spurn property, save life!
Take on board the boat all living things’ seed!

‘ “The boat you will build,
her dimensions all shall be equal:
her length and breadth shall be the same,
cover her with a roof, like the Ocean Below.”

‘I understood, and spoke to Ea, my master:
“I obey, O master, what thus you told me.
I understood, and I shall do it,
but how do I answer my city, the crowd and the elders?”

‘Ea opened his mouth to speak,
saying to me, his servant:
“Also you will say to them this:
‘For sure the god Enlil feels for me hatred.

‘ “ ‘In your city I can live no longer,
I can tread no more [on] Enlil’s ground.
[I must] go to the Ocean Below, to live with Ea, my master,
and he will send you a rain of plenty:

‘ “ ‘[an abundance] of birds, a *profusion* of fishes,
[*he will provide*] a harvest of riches.
In the morning he will send you a shower of bread-cakes,
and in the evening a torrent of wheat.’ “

‘At the very first glimmer of brightening dawn,
at the gate of Atra-hasis assembled the land:
the carpenter carrying [his] hatchet,
the reed-worker carrying [his] stone,
[*the shipwright bearing his*] heavyweight axe.

'The young men were . . . . . ,
the old men bearing ropes of palm-fibre;
the rich man was carrying the pitch,
the poor man brought the . . . tackle.

'By the fifth day I had set her hull in position,
one acre was her area, ten rods the height of her sides.
At ten rods also, the sides of her roof were each the same length.
I set in place her body, I drew up her design.

'Six decks I gave her,
dividing her thus into seven.
Into nine compartments I divided her interior,
I struck the bilge plugs into her middle.
I saw to the punting-poles and put in the tackle.

'Three myriad measures of pitch I poured in a furnace,
three myriad of tar I . . . within,
three myriad of oil fetched the workforce of porters:
aside from the myriad of oil consumed in *libations*,
there were two myriad of oil stowed away by the boatman.

'For my workmen I butchered oxen,
and lambs I slaughtered daily.
Beer and ale, oil and wine
like water from a river [I gave my] workforce,
so they enjoyed a feast like the days of New Year.

'At sun-[*rise*] I set my hand [to] the oiling,
[before] the sun set the boat was complete .
. . . . . were very arduous:
from back to front we moved poles for the slipway,
[*until*] two-thirds of [the boat *had entered the water*.]

'[Everything I owned] I loaded aboard:
all the silver I owned I loaded aboard,
all the gold I owned I loaded aboard,
all the living creatures I had I loaded aboard.
I sent on board all my kith and kin,
the beasts of the field, the creatures of the wild, and members of
every skill and craft.

'The time which the Sun God appointed -
"In the morning he will send you a shower of bread-cakes,
and in the evening a torrent of wheat.
Go into the boat and seal your hatch!" –

'that time had now come:
"In the morning he will send you a shower of bread-cakes,
and in the evening a torrent of wheat."
I examined the look of the weather.

'The weather to look at was full of foreboding,
I went into the boat and sealed my hatch.
To the one who sealed the boat, Puzur-Enlil the shipwright,
I gave my palace with all its goods.

'At the very first glimmer of brightening dawn,
there rose on the horizon a dark cloud of black,
and bellowing within it was Adad the Storm God.
The gods Shullat and Hanish were going before him,
bearing his throne over mountain and land.

'The god Errakal was uprooting the mooring-poles,
Ninurta, passing by, made the weirs overflow.
The Anunnaki gods carried torches of fire,
scorching the country with brilliant flashes.

'The stillness of the Storm God passed over the sky,
and all that was bright then turned into darkness.
[He] charged the land like a bull [on the rampage,]
he smashed [it] in pieces [like a vessel of clay.]... (George 2003, 88-92).

All day long the South Wind blew . . .,
blowing fast, submerging the mountain in water,... (Kovacs 1989, 100).

Like a battle [the cataclysm] passed over the people.
One man could not discern another,
nor could people be recognized amid the destruction.

'Even the gods took fright at the Deluge,
they left and went up to the Heaven of Anu,

lying like dogs curled up in the open.
  The goddess cried out like a woman in childbirth,
Belet-ili wailed, whose voice is so sweet:

‘ “The olden times have turned to clay,
  because I spoke evil in the gods’ assembly.
How could I speak evil in the gods’ assembly,
  and declare a war to destroy my people?

‘ “It is I who give birth, these people are mine!
  And now, like fish, they fill the ocean!”
The Anunnaki gods were weeping with her,
  wet-faced with sorrow, they were weeping [with her,]
their lips were parched and stricken with fever.

‘For six days and [seven] nights,
  there blew the wind, the downpour,
the gale, the Deluge, it flattened the land.

‘But the seventh day when it came,
  the gale relented, the Deluge *ended*.
The ocean grew calm, that had thrashed like a woman in labour,
  the tempest grew still, the Deluge ended.

‘I looked at the weather, it was quiet and still,
  but all the people had turned to clay.
The flood plain was flat like the roof of a house.
  I opened a vent, on my cheeks fell the sunlight.

‘Down sat I, I knelt and I wept,
  down my cheeks the tears were coursing.
I scanned the horizons, the edge of the ocean,
  in fourteen places there rose an island.

‘On the mountain of Nimush the boat ran aground,
  Mount Nimush held the boat fast, allowed it no motion.
One day and a second, Mount Nimush held the boat fast, allowed
      it no motion,
a third day and a fourth, Mount Nimush held the boat fast,
  allowed it no motion,
a fifth day and a sixth, Mount Nimush held the boat fast, allowed
  it no motion.

'The seventh day when it came,
I brought out a dove, I let it loose:
off went the dove but then it returned,
there was no place to land, so back it came to me.

'I brought out a swallow, I let it loose:
off went the swallow but then it returned,
there was no place to land, so back it came to me.

'I brought out a raven, I let it loose:
off went the raven, it saw the waters receding,
finding food, *bowing and bobbing*, it did not come back to me.

'I brought out an offering, to the four winds made sacrifice,
incense I placed on the peak of the mountain.
Seven flasks and seven I set in position,
reed, cedar and myrtle I piled beneath them.

'The gods did smell the savour,
the gods did smell the savour sweet,
the gods gathered like flies around the man making sacrifice.

'Then at once Belet-ili arrived,
she lifted the flies of lapis lazuli that Anu had made for their courtship:
"O gods, let these great beads in this necklace of mine
make me remember these days, and never forget them!

' "All the gods shall come to the incense,
but to the incense let Enlil not come,
because he lacked counsel and brought on the Deluge,
and delivered my people into destruction."

'Then at once Enlil arrived,
he saw the boat, he was seized with anger,
filled with rage at the divine Igigi:
"[From] where escaped this living being?
No man was meant to survive the destruction!"

'Ninurta opened his mouth to speak,
saying to the hero Enlil:

"Who, if not Ea, could cause such a thing?
Ea alone knows how all things are done."

'Ea opened his mouth to speak,
saying to the hero Enlil:
"You, the sage of the gods, the hero,
how could you lack counsel and bring on the Deluge?

"On him who transgresses, inflict his crime!
On him who does wrong, inflict his wrongdoing!
'Slack off, lest it snap! Pull tight, lest it [slacken!]'

' "Instead of your causing the Deluge,
a lion could have risen, and diminished the people!
Instead of your causing the Deluge,
a wolf could have risen, and diminished the people!

"Instead of your causing the Deluge,
a famine could have happened, and slaughtered the land!
Instead of your causing the Deluge,
the Plague God could have risen, and slaughtered the land!

' "It was not I disclosed the great gods' secret:
Atra-hasis I let see a vision, and thus he learned our secret.
And now, decide what to do with him!"

'Enlil came up inside the boat,
he took hold of my hand and brought me on board.
He brought aboard my wife and made her kneel at my side,
he touched our foreheads, standing between us to bless us:

' "In the past Uta-napishti was a mortal man,
but now he and his wife shall become like us gods!
Uta-napishti shall dwell far away, where the rivers flow
forth!"
So far away they took me, and settled me where the rivers flow
forth (George 2003, 92-95).

The story of the flood in the Epic of Gilgamesh is no different than the previously mentioned Sumerian text. Here, as well, the flood is caused by divine wrath, while an ark is built to save Utnapishtim (Noah) and the believers. However, there are other important aspects to this text:

There are clear indicators of the region in which Noah lived. It is a region close to the water or, more specifically, a region of reeds, as Utnapishtim's house is clearly built from reeds. In fact, in a clear text that will be mentioned later, Noah's ark was also built from reeds.

> "O fence of reed! O wall of brick!
> Hear this, O fence! Pay heed, O wall!"
>
> "Demolish the house, and build a boat!"

In addition, the Epic of Gilgamesh mentions that the flood was caused by the collapse of a dam or dams:

> Ninurta, passing by, made the weirs [dams] overflow …

Moreover, the Epic of Gilgamesh mentions that the direction of the flood, or that of the flood's waves, wind, and gusts, was from the south to the north. It also mentions that water covered the mountains, meaning that the region was surrounded by areas of elevation such that the water could cover these mountains.

> All day long the South Wind blew . . .,
> blowing fast, submerging the mountain in water, (Kovacs 1989, 100).

If we want to now combine the above characteristics of the flood into one region that is in or around Iraq, the only region we would find is the fertile valley before water covered it, turning it into the present day Gulf.

With the collapse of the dam of the present day Strait of Hormuz, the direction of the flood's gusts is from the sea to the valley, meaning they come from the south from the perspective of whoever is in the valley. Certainly, this is taking into consideration the fact that the region is low and contains elevated regions such as mountains. These regions represent its surroundings and islands, some of which are protruding from the gulf today, such as Bahrain.

Since the region before the flood was a valley filled with sweet water lakes, and the sweet water coming from the north used to pour into it, it is natural for it to have reeds. It is also natural for both the house of Noah and for his ark to be made from reeds, as is clearly mentioned in the text that will follow.

Figure 20: Epic of Gilgamesh, Tablet 11: Story of the flood, known as the "Flood Tablet", British Museum.

The Babylonian Text of Atrahasis on the Sumerian Story of the Flood

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The Third Segment:

The Lost Beginning

Atrahasis made ready to speak,
and said to his lord:
"Make me know the meaning of the dream.

……

‘Wall, listen to me!
Reed wall, pay attention to all my words!
Demolish the house, build an ark,
Forsake possessions, and save your life,
And the ark which you shall build.

At the stated time of which I will inform [thee],
Enter [the ark] and close the door of the ark.
Aboard her [bring] thy grain, thy possessions, thy goods,
Thy wife, thy family, thy relations, and the craftsmen.
Beasts of the field, creatures of the field, as many as eat herbs,
I will send to thee and they shall guard thy doors.” (10)
Atrahasis opened his mouth to speak,
Saying to his lord:
“I have never built an ark.
Draw a design of it on the ground,
So that I may see how it is built
…on the ground…
Then I will carry out all that thou hast commanded of me.
(Remainder broken off).”Al-Sawah 2002, 172. Arabic source, translated).

This Same Text with a Different Translation:

And that night Atrahasis was sleeping on his back.
In his dream the Lord spoke to him: “Beware, O Atrahasis!
The water… The water will destroy everything.
I warn ye of this, rescue mankind with your authority.
Beware, beware!”

Atrahasis was alarmed.
Atrahasis came out of his dream fearful and, the following day, went to the temple of the Lord.
He asked about the previous day’s dream,
And with a shining eye the Lord said:
“I said what I must do and that you must pay heed
To the news that I am to tell you; O wall!

Listen to the wall of the reeds,
Pay heed, pay heed to my words,

Destroy homes and build an ark,
Forsake money and save yourself,
And carry on the ark the seed of all living creations.

Build a large ark, yet built it entirely from reeds,
And make the ark a safe haven in the name of preserving life.
Measure it precisely and make it appear equal along its length.
Determine its closure like the closure of Al-Absu."

"I have understood what you want, O Sir.
What you have commanded I would be honored to achieve,
Yet, O Sir, I have never before built an ark,
So draw me a picture of it on the ground,
In order for me to see its picture and build the ark."

So God drew the picture on the ground
And, after seven days of continuous work, Atrahasis was able to build the ark.
The area of its base was one Ariku,
And each of its walls reached a height of one hundred and twenty arms.
As such, its dimensions and structure were determined.

Six sections we created inside it, and these were divided among seven stories.
The base of the ark was then divided into seven stories and nine sections,
Applied to which were nails and wood in order to prevent water penetrating. (AlMajidi 1998, 175. Arabic source, translated).

In the above text, it is clear that Atrahasis (Ziusudra - Utnapishtim - Noah) built his ark from reeds. Perhaps it was solid reed like bamboo, rather than regular, weak reed. Before being covered by water, the environment of the fertile valley (present day Gulf) was suitable for the growth of different types of reed and trees, as the fertile valley was a large region with rivers and lakes.

Build a large ark, yet built it entirely from reeds,
And make the ark a safe haven in the name of preserving life.

The story of Utnapishtim, Ziusudra, or Atrahasis do not match all of the historical narratives coming from Iraq, the location where the in-

heritors, people, and in particular, where the survivors of Noah lived. However, the texts do agree that a flood occurred and the reason for the flood was a religious one, namely divine wrath.

Furthermore, the region where the flood occurred is Mesopotamia and its surroundings. It was entirely covered with vast amounts of water, such that no one survived except those who were aboard the ark with Noah. The ark was flowing, moving with the sea.

In addition, from the texts, we find that the ark was made from reeds, as well as that it was made over a short time period, perhaps days, Further, it was large in size, at least in relation to the time period in which it was made. The region had contained and was surrounded by areas of elevation. The flood itself was caused by the collapse of a dam, with the water coming from the south to the north.

If we want to combine all the above with the scientific and historical data, the region of the flood can be narrowed down to the present day Gulf, before water covered it when the last ice age ended, the snow melted, and the sea level rose.

The story of the Flood in the Torah:

Genesis 6:

1 When man began to multiply on the face of the land and daughters were born to them, 2 the sons of God saw that the daughters of man were attractive. And they took as their wives any they chose. 3 Then the Lord said, "My Spirit shall not abide in man forever, for he is flesh: his days shall be 120 years." 4 The Nephilim were on the Earth in those days, and also afterward, when the sons of God came in to the daughters of man and they bore children to them. These were the mighty men who were of old, the men of renown.5 The Lord saw that the wickedness of man was great in the Earth, and that every intention of the thoughts of his heart was only evil continually. 6 And the Lord regretted that he had made man on the Earth, and it grieved him to his heart. 7 So the Lord said, "I will blot out man whom I have created from the face of the land, man and animals and creeping things and birds of the Heavens, for I am sorry that I have made them." 8 But Noah found favor in the eyes of the Lord.9 These are the generations of Noah. Noah was a righteous man, blameless in his generation. Noah walked with God. 10 And Noah had three sons, Shem, Ham, and Japheth.11 Now the Earth was corrupt in God's sight, and

the Earth was filled with violence. 12 And God saw the Earth, and behold, it was corrupt, for all flesh had corrupted their way on the Earth. 13 And God said to Noah, "I have determined to make an end of all flesh, for the Earth is filled with violence through them. Behold, I will destroy them with the Earth. 14 Make yourself an ark of gopher wood. Make rooms in the ark, and cover it inside and out with pitch. 15 This is how you are to make it: the length of the ark 300 cubits, its breadth 50 cubits, and its height 30 cubits. 16 Make a roof for the ark, and finish it to a cubit above, and set the door of the ark in its side. Make it with lower, second, and third decks. 17 For behold, I will bring a flood of waters upon the Earth to destroy all flesh in which is the breath of life under Heaven. Everything that is on the Earth shall die. 18 But I will establish my covenant with you, and you shall come into the ark, you, your sons, your wife, and your sons' wives with you. 19 And of every living thing of all flesh, you shall bring two of every sort into the ark to keep them alive with you. They shall be male and female. 20 Of the birds according to their kinds, and of the animals according to their kinds, of every creeping thing of the ground, according to its kind, two of every sort shall come in to you to keep them alive. 21 Also take with you every sort of food that is eaten, and store it up. It shall serve as food for you and for them." 22 Noah did this; he did all that God commanded him.

Genesis 7:

Then the Lord said to Noah, "Go into the ark, you and all your household, for I have seen that you are righteous before me in this generation. 2 Take with you seven pairs of all clean animals, the male and his mate, and a pair of the animals that are not clean, the male and his mate, and seven pairs of the birds of the Heavens also, male and female, to keep their offspring alive on the face of all the Earth. 4 For in seven days I will send rain on the Earth forty days and forty nights, and every living thing that I have made I will blot out from the face of the ground." 5 And Noah did all that the Lord had commanded him. 6 Noah was six hundred years old when the flood of waters came upon the Earth. 7 And Noah and his sons and his wife and his sons' wives with him went into the ark to escape the waters of the flood. 8 Of clean animals, and of animals that are not clean, and of birds, and of everything that creeps on the ground, 9 two and two, male and female, went into the ark with Noah, as God had commanded Noah. 10 And after seven days the waters of the flood came upon the Earth.11 In the six hundredth year of Noah's life, in the second month,

on the seventeenth day of the month, on that day all the fountains of the great deep burst forth, and the windows of the Heavens were opened. 12 And rain fell upon the Earth forty days and forty nights. 13 On the very same day Noah and his sons, Shem and Ham and Japheth, and Noah's wife and the three wives of his sons with them entered the ark, 14 they and every beast, according to its kind, and all the livestock according to their kinds, and every creeping thing that creeps on the Earth, according to its kind, and every bird, according to its kind, every winged creature. 15 They went into the ark with Noah, two and two of all flesh in which there was the breath of life. 16 And those that entered, male and female of all flesh, went in as God had commanded him. And the Lord shut him in. 17 The flood continued forty days on the Earth. The waters increased and bore up the ark, and it rose high above the Earth. 18 The waters prevailed and increased greatly on the Earth, and the ark floated on the face of the waters. 19 And the waters prevailed so mightily on the Earth that all the high mountains under the whole Heaven were covered. 20 The waters prevailed above the mountains, covering them fifteen cubits deep. 21 And all flesh died that moved on the Earth, birds, livestock, beasts, all swarming creatures that swarm on the Earth, and all mankind. 22 Everything on the dry land in whose nostrils was the breath of life died. 23 He blotted out every living thing that was on the face of the ground, man and animals and creeping things and birds of the Heavens. They were blotted out from the Earth. Only Noah was left, and those who were with him in the ark. 24 And the waters prevailed on the Earth 150 days.

Genesis 8:

But God remembered Noah and all the beasts and all the livestock that were with him in the ark. And God made a wind blow over the Earth, and the waters subsided. 2 The fountains of the deep and the windows of the Heavens were closed, the rain from the Heavens was restrained, 3 and the waters receded from the Earth continually. At the end of 150 days the waters had abated, 4 and in the seventh month, on the seventeenth day of the month, the ark came to rest on the mountains of Ararat. 5 And the waters continued to abate until the tenth month; in the tenth month, on the first day of the month, the tops of the mountains were seen.
6 At the end of forty days Noah opened the window of the ark that he had made 7 and sent forth a raven. It went to and fro until the waters were dried up from the Earth. 8 Then he sent forth a dove from him,

to see if the waters had subsided from the face of the ground. 9 But the dove found no place to set her foot, and she returned to him to the ark, for the waters were still on the face of the whole Earth. So he put out his hand and took her and brought her into the ark with him. 10 He waited another seven days, and again he sent forth the dove out of the ark. 11 And the dove came back to him in the evening, and behold, in her mouth was a freshly plucked olive leaf. So Noah knew that the waters had subsided from the Earth. 12 Then he waited another seven days and sent forth the dove, and she did not return to him anymore.13 In the six hundred and first year, in the first month, the first day of the month, the waters were dried from off the Earth. And Noah removed the covering of the ark and looked, and behold, the face of the ground was dry.14 In the second month, on the twenty-seventh day of the month, the Earth had dried out. 15 Then God said to Noah, 16 "Go out from the ark, you and your wife, and your sons and your sons' wives with you. 17 Bring out with you every living thing that is with you of all flesh—birds and animals and every creeping thing that creeps on the Earth—that they may swarm on the Earth, and be fruitful and multiply on the Earth." 18 So Noah went out, and his sons and his wife and his sons' wives with him. 19 Every beast, every creeping thing, and every bird, everything that moves on the Earth, went out by families from the ark. 20 Then Noah built an altar to the Lord and took some of every clean animal and some of every clean bird and offered burnt offerings on the altar.21 And when the Lord smelled the pleasing aroma, the Lord said in his heart, "I will never again curse the ground because of man, for the intention of man's heart is evil from his youth. Neither will I ever again strike down every living creature as I have done. 22 While the Earth remains, seedtime and harvest, cold and heat, summer and winter, day and night, shall not cease.

Genesis 9:

1 And God blessed Noah and his sons and said to them, "Be fruitful and multiply and fill the Earth. 2 The fear of you and the dread of you shall be upon every beast of the Earth and upon every bird of the Heavens, upon everything that creeps on the ground and all the fish of the sea. Into your hand they are delivered…

The Reason for the Flood of Noah in the Torah is Religious: Divine Wrath

There are aspects to the story in the Torah that are clearly false, because they conflict with established scientific facts. Some examples of this are as follows:

- The ark of Noah carried a pair from every animal living on the earth:

> 14 they and every beast, according to its kind, and all the livestock according to their kinds, and every creeping thing that creeps on the Earth, according to its kind, and every bird, according to its kind, every winged creature. 15 They went into the ark with Noah, two and two of all flesh in which there was the breath of life. 16 And those that entered, male and female of all flesh, went in as God had commanded him. And the Lord shut him in.

- The earth was entirely covered by water at a height fifteen yards above the highest mountain on the earth:

> 19 And the waters prevailed so mightily on the Earth that all the high mountains under the whole Heaven were covered. 20 The waters prevailed above the mountains, covering them fifteen cubits deep. 21 And all flesh died that moved on the Earth, birds, livestock, beasts, all swarming creatures that swarm on the Earth, and all mankind. 22 Everything on the dry land in whose nostrils was the breath of life died. 23 He blotted out every living thing that was on the face of the ground, man and animals and creeping things and birds of the Heavens. They were blotted out from the Earth. Only Noah was left, and those who were with him in the ark.

- For more than a year Noah remained on the ark with this tremendous number of animals and the food they required:

> 6 Noah was six hundred years old when the flood of waters came upon the Earth. 7 And Noah and his sons and his wife and his sons' wives with him went into the ark to escape the waters of the flood…11 In the six hundredth year of Noah's life, in the second month, on the seventeenth day of the month, on that day all the fountains of the great deep burst forth, and the windows of the Heavens were opened.

> 13 In the six hundred and first year, in the first month, the first day of the month, the waters were dried from off the earth. And Noah removed the covering of the ark and looked, and behold, the face of the ground was dry. 14 In the second month, on the twenty-seventh day of the month, the Earth had dried out. 15 Then God said to Noah, 16 "Go out from the ark, you and your wife, and your sons and your sons' wives with you."

The above claims are clearly false. There is no scientific explanation for the amounts of water that cover all mountains on Earth, as this amount of water is not available on Earth.

There is also no logical explanation for this tremendous number of animals staying alive on the ark for a time period of over a year. How did the ark carry them with amounts of food that are sufficient for them for a time period of over a year as the Biblical story says? From where did Noah bring enough meat for the beasts that he carried, according to the Biblical story, for over a year?

> 11 In the six hundredth year of Noah's life, in the second month, on the seventeenth day of the month, on that day all the fountains of the great deep burst forth, and the windows of the Heavens were opened. 12 And rain fell upon the Earth forty days and forty nights. 13 On the very same day Noah and his sons, Shem and Ham and Japheth, and Noah's wife and the three wives of his sons with them entered the ark. In the six hundred and first year, in the first month, the first day of the month, the waters were dried from off the Earth. And Noah removed the covering of the ark and looked, and behold, the face of the ground was dry. 14 they and every beast, according to its kind, and all the livestock according to their kinds, and every creeping thing that creeps on the Earth, according to its kind, and every bird, according to its kind, every winged creature. 15 They went into the ark with Noah, two and two of all flesh in which there was the breath of life. 16 And those that entered, male and female of all flesh, went in as God had commanded him. And the Lord shut him in. 17 The flood continued forty days on the Earth. The waters increased and bore up the ark, and it rose high above the Earth. 18 The waters prevailed and increased greatly on the Earth, and the ark floated on the face of the waters. 19 And the waters prevailed so mightily on the Earth that all the high mountains under the whole Heaven were covered. 20 The waters prevailed above the mountains, covering them fifteen cubits deep.

Moreover, where are the traces of these large amounts of water? In reality, the traces of earthly events are present. They can be read back for millions of years. So what about an event that occurred only a few thousand years ago; how did its traces vanish?!

Perhaps they will say they were concealed by a miracle!

Yet then the story becomes fictional. Whenever it enters a dark tunnel, is shown to conflict with established scientific facts, and has no historical existence, it is justified with a miracle. However, when God brings about a miracle, it must be out of wisdom and for a wise reason, not out of frivolity or to misguide people and conceal facts and events such as the flood of Noah pbuh.

It is clear that the story of the flood is a historical story. Therefore, everything related to it can be scientifically verified. Whatever is incorrect in this story can now be easily revealed through science. Accordingly, nothing remains except the correct story that does not conflict with the scientific data provided by historical geology and the results of precise scientific investigation.

In fact, the story told in the Torah can by no means be patched over. It is clearly false. Even if they say that the flood was regional and that it occurred in a certain place on the earth, certain aspects of the Biblical story still do not in any way concur with science and fact. An example of this is the case of the animals and beasts remaining alive with Noah pbuh on an ark of the aforementioned size and for a time period of over a year. From where did Noah bring amounts of food and water sufficient for them, for this long period? If he did bring these large amounts, how did an ark of this size carry them?

This truth, is conclusive evidence for one of two possibilities:

Either the Torah is distorted and, consequently, the present day Judaism has deviated from the religion of God Almighty, as Christianity has, because it acknowledges the validity of what the Torah states.

Or, alternatively, Judaism and Christianity are both false and man-made and the Torah is purely composed by man.

In our view, we opt to say that the Torah is distorted, while Christianity, which acknowledged the validity of what is in it, is a distorted and false religion.

The Story of the Flood in the Quran

﴾36And it was revealed to Noah that, "No one will believe from your people except those who have already believed, so do not be distressed by what they have been doing. 37And construct the ark with Our eyes and Our inspiration and do not address Me concerning those who have wronged; indeed, they are to be drowned." 38And he constructed the ark, and whenever an assembly of the eminent of his people passed by him, they ridiculed him. He said, "If you ridicule us, then we will ridicule you just as you ridicule. 39And you are going to know who will get a punishment that will disgrace him and upon whom will descend an enduring punishment ." 40So it was, until when Our command came and the oven overflowed, We said, "Load upon the ark of each [creature] two mates and your family, except those about whom the word has preceded, and [include] whoever has believed." But none had believed with him, except a few. 41And [Noah] said, "Embark therein; in the name of God is its course and its anchorage. Indeed, my Lord is Forgiving and Merciful." 42And it sailed with them through waves like mountains, and Noah called to his son who was apart, "O my son, come aboard with us and be not with the disbelievers." 43He said, "I will take refuge on a mountain to protect me from the water." [Noah] said, "There is no protector today from the matter of God , except for whom He gives mercy." And the waves came between them, and he was among the drowned. 44And it was said, "O Earth, swallow your water, and O sky, withhold." And the water subsided, and the matter was accomplished, and the ark came to rest on the [mountain of] Judiyy. And it was said, "Away with the wrongdoing people." 45And Noah called to his Lord and said, "My Lord, indeed my son is of my family; and indeed, Your promise is true; and You are the wisest of judges!" 46He said, "O Noah, indeed he is not of your family; indeed, he is unrighteous work, so ask Me not for that about which you have no knowledge. Indeed, I advise you, lest you be among the ignorant." 47[Noah] said, "My Lord, I seek refuge in You from asking that of which I have no knowledge. And unless You forgive me and have mercy upon me, I will be among the losers." 48It was said, "O Noah, disembark in peace and blessings from Us upon you and upon nations from those with you. But other nations We will grant enjoyment; then a painful punishment from us will touch them.." 49That is from the news of the unseen which We reveal to you. You knew it not, neither you nor your people, before this. So be patient; indeed, the [best] outcome is for the righteous.﴿

Quran Chapter "Hud" 11:36-49.

The Quranic story concurs with the historical stories in so far as the flood was a divine punishment and that Noah was made aware of it through inspiration. In the historical Sumerian stories, the type of inspiration was specified to be visions or dreams seen by Noah pbuh.

The Quranic story specifies an important issue that was mentioned previously, namely that the flood occurred in a region with mountains:

﴿He said, "I will take refuge on a mountain to protect me from the water." [Noah] said, There is no protector today from the matter of God, except for whom He gives mercy." And the waves came between them, and he was among the drowned.﴾ This raises an important question:

How did the flood occur in the region of Southern Iraq, as confirmed through its historical mention by the Sumerians and Babylonians, given that that region is an alluvial plain? Where did the mountains in this flat region come from?!

Therefore, we must search for a region with mountains that is contiguous with the valley of the two rivers or, actually, that represents its extension. The only suitable place with this combination of characteristics is the fertile valley we mentioned earlier, before it was covered by water and became the present day Gulf. It is correct to consider this region to be southwards of Iraq.

In addition, another issue in the Quranic story is that it describes its waves to be like mountains. ﴿And it sailed with them through waves like mountains﴾ This description does not seem suitable for a flood that occurs due to rain, because a flood like this one, in an open plain region, will not create waves like mountains. However, the Quranic statement is suitable for a flood that occurs as a result of a massive tsunami, or the collapse of a natural dam separating a depression from an ocean with tremendous amounts of water that can fill the depression with great speed, causing the creation of a major hydraulic jump and, consequently, creating waves like mountains. This is perfectly suitable for the collapse of the dam of the present day Strait of Hormuz and the filling of the valley with water, forming the modern Gulf.

The Story of the Flood of Noah in the Religious Accounts

In fact, the story of the flood of Noah in some religious accounts differs greatly from scientific reality. We find that the accounts describe the amount of water in the same distorted manner as the biblical de-

scription, that the water covered all mountains by fifteen yards. This could not have happened because, as I clarified previously, this would leave traces that cannot be concealed within a few thousand years – and we do not find any historical trace of it in the geology of the earth.

The claim that, prior to the flood, Noah pbuh was living on the bank of the Euphrates, or one of the villages along the Euphrates, does not conflict with that village being in the fertile valley or the present day Gulf. This is because, before the flood, the Euphrates was longer, flowing into the lakes of the valley.

Further more, there is no problem with rainfall and a rise of the river level contributing to the flooding of the valley, alongside the collapse of the dam and a rise of the seawater level as a result of the last ice age ending.

There are some religious accounts that correctly describe the way in which the events of the flood of Noah occurred, and do not conflict with science. For example, what is meant by Noah boarding the animals on the ark is tamed animals from which the human eats. This can be found in the following narration:*

> Imam Abu Abdullah pbuh said: "He made it in thirty years, and was commanded to board onto it from each pair the eight pairs that Adam pbuh brought from paradise. This was in order for them to be sustenance for the successors of Noah pbuh on Earth, just as the successors of Adam pbuh lived. The earth drowned with all that was in it, except for what was with him on the ark." (Al-Rawandi 1989, 82. Arabic source, translated).

The Location of the Flood of Noah

In archaeological history, as well as religious history, Noah lived in the valley of the two tributaries (Mesopotamia), or to the south where the fertile valley (present day Gulf) was. His ark was built in or around this region, as confirmed by the clay tablets that relay the story of the flood, as well as the Torah. According to the Biblical narrative, the flood of Noah covered the entire earth, even its mountain peaks. In fact, it covered the mountain peaks by fifteen cubits of water:

*. It has been previously explained that the theory of the ark of Noah carrying all animals on board is invalid. It has also been made clear how this theory conflicts with established scientific facts and can in no way be proven.

> 19And the waters prevailed so mightily on the Earth that all the high mountains under the whole Heaven were covered. 20The waters prevailed above the mountains, covering them fifteen cubits deep.

This story found in the Torah does not withstand scientific criticism. There is not enough water within and on the Earth to cover the mountain peaks. Moreover, there has not been a major mass extinction of life forms throughout the entire earth for millions of years. The last time in which a major extinction of life throughout the entire Earth occurred was the late Cretaceous Period, about 65 million years ago. The modern human, the *Homo sapiens*, existed only 200 thousand years ago. In fact, he did not develop into his current state until about 100 thousand years ago, whereas, according to the same Biblical story, the time of the flood of Noah was not more than a few thousand years ago.

In addition, there is the argument of the animals on isolated islands.

Therefore, the biblical story, which has been adopted by most Muslim clerics, does not withstand scientific criticism, nor does it concur with science in any way. Thus, we either reject science and suffice with ignorance, or say that the flood of Noah was limited and involved a certain region on the earth.

We will now discuss the possibilities of this flood that agree with scientific and archeological data:

It is possible that the flood occurred in the South of Iraq due to rain and torrents. This hypothesis concurs completely with the position of the region. The region falls between two rivers, below mountainous regions to its North. Nevertheless, a flood such as this remains limited, as it is difficult to imagine the floods of rivers or rain causing the eradication of all life forms in a particular region. There is a chance that some of them would have escaped, at least the ones that live on its edges. Such floods occur gradually rather than in one fell swoop, such as in the case of a breaking dam or a tsunami. In addition, the Quranic text's description that they are waves like mountains does not apply.

Perhaps it is assumed that one of the reasons for the flood is what is mentioned in some research, namely that the Black Sea was filled with water a few thousand years ago and, possibly, a hydraulic jump occurred due to it being filled, which caused the flow of large amounts of water on land. This then created a flood that could cause the extinc-

tion of life forms in the region it would pass through. However, the problem with this hypothesis is that there are no traces for such a flood on its path until reaching Mesopotamia (the valley of the two tributaries). In addition, there are many natural obstacles that might prevent large amounts of water from reaching Mesopotamia. Furthermore, it would push the ark of Noah toward the south and the Gulf, and not toward the springs of the rivers, as is mentioned in the Sumerian legend. It would be from the north, not from the south, as the Sumerian texts state.

It is also possible that the flood occurred in the valley located in Southern Iraq, which represents the modern Gulf before it was filled with water. This would have been the result of the rise in seawater level at the end of the last ice age and the collapse of the natural dam of the Strait of Hormuz. If we want to apply the Quranic text to the flood that occurred in this valley a few thousand years ago, we find it to concur completely. The amount of water that would enter the valley from the sea due to the collapse of the natural dam of the Strait of Hormuz would be extremely vast. We can say that it formed waves like mountains as the Quran mentions. In addition, the present-day islands in the modern Gulf are nothing but the peaks of mountains that stood tall in this fertile valley before the collapse of the dam and the valley being filled with saltwater. Therefore, the religious text that says that Noah's son wanted to take refuge on a mountain to protect himself from the water is corroborated, because he believed that it was an ordinary floods that was approaching, resulting from a rise in the level of the rivers that poured into the valley, such as the Tigris and the Euphrates. The damage from such floods could be avoided by taking refuge in highlands, such as the mountains of the fertile valley. However, it did not cross their minds that it was different this time, and that the flood Noah–Utnapishtim–Ziusudra warned them about would be devastating, covering the mountains and filling the valley, whose area is equal to that of a country such as Iraq.

The Time Period of the Flood of Noah

The flood of Noah occurred nearly four thousand years before Christ, according to the Biblical date. This view has even been adopted by interpreters of the Quran. The fertile valley was filled with saltwater at the time, and the modern Gulf had already formed. This would

mean that the location of the flood is Mesopotamia. Since the region was flat, the amount of water that could form a flood the size of the flood of Noah must have come from a large reservoir of water. This is why the Torah portrayed it as a flood that encompassed the entire planet Earth at a tremendous height. It has been explained that this hypothesis mentioned in the present-day Torah conflicts with scientific, historical and geological facts.

The other remaining possibility is that Noah and his people, whom we can call the ancestors of the Sumerians or the early Sumerians, used to live in the fertile valley, and that the flood occurred in the fertile valley (the modern Gulf). If this was the case, what determines the time of the flood would be the date when the valley was filled with water and the hydraulic jump of saltwater occurred that perhaps swept vast areas of modern Southern Iraq. The valley was completely filled with water sometime between 15,000-8,000 B.C.

Thus, what happened was the flooding of the valley, caused by the large amounts of water, which was made available by the melting of ice at the end of the ice age. This formed water springs pouring into the seas that, together with the water springs that also used to pour into the sea, led to a rise in seawater level until the natural dam collapsed and seawater entered the valley. It was possibly accompanied by rainwater and a rise of the river levels that used to pour into the valley from the other side. Therefore, the waters met in the valley and the flood and the hydraulic jump of water occurred, until they covered regions of Southern Iraq. Subsequently, the water receded toward the valley or the modern Gulf again, and the ark anchored in order for the first journey of mankind to begin, which we learned about as it was recorded and written down in Southern Iraq. ﴿Then we opened the doors of Heaven with rain pouring down * and caused the earth to burst with springs, and the waters met for a matter already ordained.﴾
Quran Chapter "The Moon" 54:11-12

The Location where Noah's pbuh Ark Anchored (Dilmun—Mount Ararat —Mount Judi):

The location where Noah's ark anchored has been determined by our knowledge that Noah, his people, and the generations that followed them inhabited Mesopotamia after the flood. Only a stubborn person would deny this. The story of the flood is of Sumerian origin, meaning

the people of Mesopotamia transmitted it as the legacy of their fathers and ancestors. I believe that the attempt to shift the settlement location of Noah and his people after the flood to another area outside of Mesopotamia is a miserable attempt that is hindered by many insurmountable obstacles.

I have clarified that the Sumerian description of Dilmun is identical to the description of the state of al-Mahdi that will be established in Iraq, and whose capital will be Iraq.

The hypothesis that Noah's ark anchored on one of the mountains of Turkey or Armenia has been shown to conflict with many established scientific facts. The origin of this belief is the Jewish interpretation of the Biblical text that mentions the name Mount Ararat.

We have stated previously that the Biblical text of the story of the flood of Noah, including the water covering all the mountains of the earth, conflicts with established scientific facts. That is why it is inconceivable that the ark of Noah anchored on a mountain several kilometers above sea level, and that what caused this was a water flood and rise in water levels. We have explained that the earth does not have this tremendous amount of water. Even if it was said to be a flood caused by the Black Sea being filled with water - although it is a hypothesis that does not withstand criticism, as shown - no hydraulic jump of water can occur that is several kilometers in height and that continues to move horizontally at the same height for thousands of kilometers until reaching the Mt Ararat between Turkey and Armenia. This hypothesis represents fiction, and is not scientifically possible.

Therefore, this interpretation of the Biblical text cannot be adopted, as it conflicts with science as well as the Sumerian text in several places.

Mount Judi, mentioned in the Quran, is the name of the place where the ark anchored. There is nothing about this name to indicate that it is anywhere other than Iraq. The interpreters of the Quran, who assumed it is a mountain in Turkey, are actually following the interpretation of the Jewish Rabbis of the Biblical text, without having studied or examined it.

CHAPTER SIX

NOTHINGNESS DOES NOT PRODUCE

﴿Or were they created from nothing, or were they the creators?﴾*

The Second Proof of the Existence of an Absolute God: Nothingness Does not Produce

God Almighty alluded to this in the Holy Quran by His saying: ﴿Or were they created from nothing, or were they the creators?﴾ Quran Chapter "The Mount" 52:35.

The summary of this evidence is as follows:

The universe is not old [without a beginning], but rather it is new, because it is changing. Anything that is new is preceded by nothingness, so it must have an originator. This is because absolute nothingness is comprised of nothing, and thus it does not produce. It is absolutely impossible for something to come from nothing, meaning, for something to come from absolute nothingness.The universe or universes, or the new existence is a "thing", so it could not have come from absolute nothingness. Therefore, the new existence (the universe or universes) proves that it has come from an old existence that has no need of it or any other existences.

So if we were to say that its originator is old and is not preceded by nothingness, then we would be proving the existence of the Almighty.

If we were to say that He is new as well, then He would require an originator and would not be the first. This is because it would mean that the thing exists and doesn't exist at the same time. So if it were anything other than Him, a chain would be formed. This chain cannot be infinite in every respect and aspect, because the world is new, finite, and it has a beginning. Since the chain is finite, at least with respect to having a beginning, it must end at an old originator, which proves the existence of the Almighty.

What we mean by "new" is something preceded by nothingness (its non-existence), which means it has a beginning.

*. *Quran* 52:37

What we mean by "old" is something that is not preceded by nothingness and has no beginning. Oldness in this context is not related to time. Rather, it is a true oldness that has nothing to do with the dimension of time and its existence or nonexistence. Something that is old cannot be subject to events because that would make it both old and new at the same time, which is a contradiction, so whatever is subject to events is new.

What we mean by the absolute infinite is something that's not limited [in every respect and aspect] so there is no beginning and no end, regardless of the dimensions of time and space and their existence or nonexistence. We do not mean the "infinity" found in certain equations, such as:

1+ ½ + ¼ + 1/16… = 2

It is true that the left-hand side of the equation extends infinitely. However, it does have a beginning, just as a flat universe does. It is true that it is also supposed to expand infinitely. However, it has a point from which it began.

The issue of this evidence (nothingness does not produce) is bigger than terrestrial life, so it is not related to Darwin's theory. We can summarize by saying that "the effect indicates a cause" doesn't mean that every effect indicates God directly but rather, that the chain of effects and causes must end up at an original (old, eternal, and self-existent) cause, because nothingness does not produce. This cause is God Almighty and life on this earth is just a small link in this chain. Consequently, any debate to refute this evidence must be about the origin of matter and proving that it came from nothingness, or nonexistence, This has not been proven by anyone. Actually, scientists have more or less proven that the big bang is the beginning of the physical universe.

As a matter of fact, there was a cause behind the big bang. As such, the sequence of causes will continue after it until they end at the original cause, which is God Almighty. God willing, we will discuss next the standard model or the big bang, and how it demonstrates the existence of God.

Explaining the Existence of the Universe

Among the hypotheses and theories that explain the existence of the universe are the following:

There is the hypothesis that states that the universe is eternal. With the advancement of physics and observation methods, this hypothesis or theory is now obsolete. It no longer bears any scientific value, for it has been scientifically established with conclusive evidence that the universe is new and has a beginning. Therefore, the discussion of eternity should be focused on the primary cause from which the universe emerged. The discussion of this issue will follow, God willing.

There is also Hoyle's theory or hypothesis and his attempt to explain why galaxies move away from each other in terms of cosmic time having no beginning. This theory has also become obsolete as a result of everything that has been established through observation and measurement, in favor of the standard model, as will be shown.*

There is the theory that the universe is new and, along with all of its components, was brought into existence directly by a god. This is a traditional religious theory, adopted by some of the interpreters of religious scriptures, such as those who believe that the earth does not spin around the sun. The falsehood and invalidity of this theory has also been demonstrated. Physicists now know—with a reasonable degree of scientific accuracy—when and how the Earth, Sun, Milky Way, and many other galaxies came into existence, as well as when the universe as a whole came into existence, how it currently moves, and some of the possibilities concerning the future of the universe.

The Big Bang Theory:

The big bang theory has been proven with abundant scientific evidence, including mathematical proofs and equations. The general theory of relativity itself, following Friedmann's solutions [to Einstein's field equations], predicts the standard model or the big bang, and that size of the universe was zero or infinitesimal.†

The evidence also includes observational evidence and measurements such as the reddening color of galaxies, which means, based on the Doppler effect, that they are diverging and the universe is expanding; and evidence such as cosmic background radiation. Details about

*. Dr. Fred Hoyle, a British astronomer (1915-2001) is known for his presentation of the steady-state model.

†. Dr. Alexander Friedmann (1888-1925) was a Russian physicist and mathematician known for his solutions to Einstein's theory.

how astronomers and theoretical physicists have finally settled on accepting the standard model, or the big bang, will follow.

Quantum Theory—Quantum Mechanics

At the beginning of the twentieth century while investigating the reason for blackbody radiation, Max Planck developed the quantum theory. Planck explained electromagnetic energy as being discrete quanta that can be emitted or absorbed, rather than as a continuous wave as he had imagined. Therefore, according to Planck's theory, energy is absorbed or emitted from an atom in specific quantities, which are the quanta.*

According to Planck's equation, the energy of a particle relies on the frequency:

E= vh

E: energy
v: frequency
h: Planck constant used to describe the quantum
h = $6.62606896 \text{ X } 10^{-34}$ j·s
or
h = $4.135667516(91) \text{ x } 10^{-15}$ eV·s

*. Max Planck (1858-1947) was a German physicist. He is considered to be the originator of the quantum theory and one of the most prominent physicists of the 20th century.

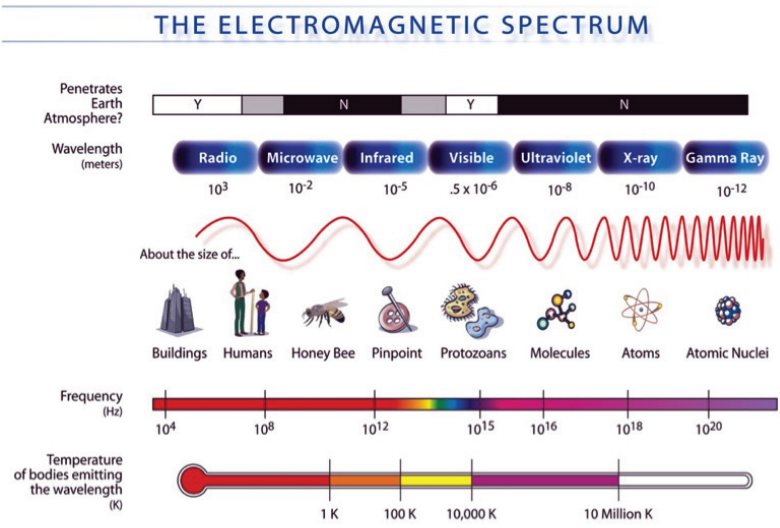

Figure 21: electromagnetic wave spectrum and frequencies and the relationship between energy (or heat).

In 1905, Einstein included an application of the quantum theory to light in one of his research papers. He explained light to be quanta (photons) rather than continuous waves as was previously thought. This research had a profound impact on the revolution of quantum mechanics, as well as on the idea that the particle theory and wave theory complement each other in terms of describing the quantum. Subsequently, Einstein's presentation established the wave-particle duality of light (photons) and, later on, the particle-wave duality of matter (e.g. electrons).*

The traditional classical theory for explaining the atom fails in many areas that include the following:

In the Rutherford model of the atom, the fall of the electron into the nucleus leads to the collapse of the atom. The negatively charged electron, assuming that it is stable, would be attracted by the positively charged nucleus and would fall into it, and the atom would spiral down until it falls into the nucleus and the atom collapses.

*. Albert Einstein (1879-1955), a German-American, was one of history's most prominent physicists. He achieved fame upon presenting the special and general theories of relativity. He was awarded the Nobel Prize in Physics in 1921.

The classical theory does not explain the movement of the electron to another level, or from one orbit to another, or its movement at a particular moment.

It also does not explain radioactive decay or fission of the atomic nuclei and the release of particles such as the Alpha particle (which consists of two protons and two neutrons, i.e., a Helium nucleus emitted by an unstable nucleus) or the Beta particle (an electron emitted during the decay of a neutron) outside of the domain of the nucleus at a particular moment.

The solution to these problems began when Bohr used the quantum theory to explain what occurs in the atom. Initially, Bohr explained the atom—partially—on the basis of quanta. He assumed that the electron emits or absorbs a specific amount of energy, and thus moves to a lower or a higher level.

Thus, successive steps were taken on the path to quantization, because classical mechanics cannot explain what occurs in the atom, nor can it be used alongside quantum mechanics to fully explain the atom. Thus, the quantization of the atom continued, and as we shall see, nothing has remained from the classical form of the atom, i.e. electrons orbiting the nucleus.

Nevertheless, Bohr's model of the atom, in which he incorporated quantum mechanics and upon which he built the periodic table, is beneficial to understanding chemistry. This is because it is only concerned with knowing the state of the electrons inside an atom when they are shared or exchanged with another atom in order to achieve stability (stability is represented by the hypothetical outer electron shells of the atom being full). That is why Bohr's atom is usually studied, even though it does not reflect the reality of the atom or how electrons are formed within it.

Then came Louis de Broglie's description of electrons and physical particles behaving in a wave-like manner, as well as photons and energy waves that behave in a particle-like manner. It is clear from this description that classical physics can no longer explain that all particles behave in a wave-like manner, just as it is clear that the orbits of the electrons in Bohr's atom are not a true description of what is actually in the atom.

> Sir Arthur Eddington summed up the situation brilliantly in his book *The Nature of the Physical World*, published in 1929. "No familiar con-

> ceptions can be woven around the electron," he said, and our best description of the atom boils down to "something unknown is doing we don't know what."… But the point is that although we do not know *what* electrons are doing in atoms, we do know that the number of electrons is important. Adding a few numbers makes "Jabberwocky" scientific—'Eight slithy toves gyre and gimbal in the oxygen wabe; seven in nitrogen…if one of its toves escapes, oxygen will be masquerading in a garb properly belonging to nitrogen."
>
> This is not a facetious remark. Provided the numbers are unchanged, as Eddington pointed out more than fifty years ago, all the fundamentals of physics could be translated into "Jabberwocky" (Gribbin 1984, 92).

Subsequently, Heisenberg accurately described the atom or the behavior of the particles of the atom, and this was called matrix mechanics. He then focused on the mathematics and what can be observed, such as spectral lines, discarding the traditional description of the atom.

Then Paul Dirac developed quantum algebra, which is more inclusive.*

It has been accepted that the electron also behaves like a wave as de Broglie explained. This allowed Schrödinger to describe quantum mechanics with waves and to develop wave mechanics, perhaps in an attempt to provide a semi-classical solution for quantum.†

Thus, there were equations of two different types: one considered electrons to be particles, while the other considered them to be waves. Both types of equations were used to describe what can be measured in quantum mechanics. What is routinely used and studied is wave mechanics, or Schrödinger's solution, because it is easier to understand and closer to the traditional form than Heisenberg's matrix mechanics. Nevertheless, it was later discovered that the two solutions are equivalent, and that Schrödinger's wave solution did not solve the problem of wave jumps with a classical solution as he had hoped.

> First, the waves themselves turned out, on close inspection, to be as abstract as Dirac's q numbers. The mathematics showed that

*. Dr. Paul Dirac (1984-1902) was a British physicist and one of the founders of quantum mechanics. He, along with Schrödinger, received a Nobel Prize in Physics in 1933.

†. Dr. Erwin Schrödinger (1887-1961) was an Austrian physicist known for his contributions to quantum mechanics, particularly the Schrödinger equations, for which he was awarded the Nobel Prize in Physics in 1933..

> they couldn't be real waves in space, like ripples on a pond, but represented a complex form of vibrations in an imaginary mathematical space called configuration space. Worse than that, each particle (each electron, say) needs its own three dimensions. One electron on its own can be described by a wave equation in three-dimensional configuration space; to describe two electrons requires a six-dimensional configuration space; three electrons require nine dimensions, and so on. As for the blackbody radiation, even when everything was converted into wave-mechanical language the need for discrete quanta, and quantum jumps, remained. Schrödinger was disgusted, and made the remark which has often been quoted, with slight variations in the translation: "Had I known that we were not going to get rid of this damned quantum jumping, I never would have involved myself in this business." As Heisenberg put it in his book *Physics and Philosophy*, "… The paradoxes of the dualism between wave picture and particle picture were not solved; they were hidden somehow in the mathematical scheme."
>
> Without doubt, the appealing picture of physically real waves circling around atomic nuclei that had led Schrödinger to discover the wave equation that now bears his name is wrong. Wave mechanics is no more a guide to the reality of the atomic world than matrix mechanics, but unlike matrix mechanics, wave mechanics gives an *illusion* of something familiar and comfortable. It is that cozy illusion that has persisted to the present day and that has disguised the fact that the atomic world is totally different from the everyday world. Several generations of students, who have now grown up to be professors themselves, might have achieved a much deeper understanding of quantum theory if they had been forced to come to grips with the abstract nature of Dirac's approach, rather than being able to imagine that what they knew about the behavior of waves in the everyday world gave a picture of the way atoms behave (Gribbin 1984, 116-17).*

Bohr eventually came to the conclusion that the quantum particle is similar to the electron in that it has a dual nature. This means that it behaves like a wave under some conditions and like a particle under others. Its true nature is unspecified: it is neither a particle nor a wave. It is not possible to create an experiment where it behaves with a dual nature—as a particle and a wave—simultaneously. The nature of the

*. Dr. Fred Hoyle (1915-2001) was a British astronomer known for his presentation of the steady-state model.

particle and that of the wave complete each other, or in other words, they exhibit complementarity..

The famous double-slit experiment makes this clear. When a single electron is emitted from a source toward a plate with two slits, passing through the slits and reaching a screen on the other side, if the two slits are being observed, the electron will behave like a single particle and pass through only one of the slits. However, when the two slits are not being observed, an interference pattern is recorded on the back screen, which means that the electron has passed through both slits. So in one instance, the electron behaves like a single particle and in another, as a wave, or a group of ghost electrons. In other words, it as if the electron, when emitted from the source, transformed immediately into a cloud of ghost electrons, with each one qualified to be our real electron. When we observe it, we see one of these ghost electrons or forms of the electron and perceive it to be the real electron while the others disappear. In due course, we will discuss how the remaining forms of the electron disappear.

Max Born subsequently developed a method for understanding Schrödinger's waves using what is called the wave function, which is a solution for knowing the probability of the existence of a particle (such as the electron) in a certain position. It is likely for the electron or particle to be in any position, whereas the wave function only calculates the probability of this particle being in a particular position.*

Heisenberg's uncertainty principle, or indeterminacy principle, which is the most important discovery in quantum mechanics, was introduced later on.

So in this manner, physicists like Einstein, Bohr, Max Born, Schrödinger, Pauli, Heisenberg and Dirac developed Planck's quantum theory until it became a comprehensive theory for explaining particle mechanics (at both the atomic and subatomic level). According to quantum mechanics, the electron can be found in any position within the atom, so it is more like clouds or fog that is spread throughout the atom than it is to a particle or even a wave.

Quantum mechanics had the solution and answer to questions revolving around the atom, the behavior of electrons, and the nucleus. However, on some occasions, the answer was that there was no definite answer to some of the questions, or that there was more than one

*. Dr. Max Born (1882 -1970) was a German physicist and mathematician who received the Nobel Prize in Physics in 1954 for his research in quantum mechanics.

possibility, or that it just happened to be the way it was for no reason. The principle of causality that many questions in classical mechanics are based on does not have the same presence in the quantum mechanics that Bohr and his group adopted at the time. Quantum events can happen for no reason, and they can happen at a particular time for no apparent reason.

> Like the people who studied radioactivity in those days, Einstein believed that the actuarial tables were not the last word, and that later research would determine why a particular transition occurred exactly when it did, and not at some other time. But it was at this point that quantum theory really began to cut loose from classical ideas, and no "underlying reason" for radioactive decay or atomic-energy transitions to occur when they do has ever been found. It really does seem that these changes occur entirely by chance, on a statistical basis, and that already begins to raise fundamental philosophical questions.
>
> In the classical world, everything has a cause. You can trace the cause of any event backward in time to find the cause of the cause, and what caused that, and so on back to the Big Bang (if you are a cosmologist) or to the moment of Creation in a religious context, if that is the model you subscribe to. But in the world of the quantum, such direct causality begins to disappear as soon as we look at radioactive decay and atomic transitions. An electron doesn't move down from one energy level to another at a particular time for any particular reason. The lower energy level is more desirable for the atom, in a statistical sense, and so it is quite likely (the amount of likelihood can even be quantified) that the electron will make such a move, sooner or later. But there is no way to tell when the transition will occur. No outside agency pushes the electron, and no internal clockwork times the jump. It just happens, for no particular reason, now rather than then (Gribbin 1984, 65-66).

Heisenberg has introduced the uncertainty or indeterminacy principle, which is perhaps the most important principle of quantum mechanics. It states that it is impossible to measure a pair of quantum properties precisely. The position and speed of quantum particles, for example, would be impossible to determine simultaneously and with precision. The higher the certainty in knowing the position of a particular quantum is, the lower the certainty in knowing its speed or momentum at that very same moment. We can also say that it is not possible to know both the field value and its rate of change with precision at the same

moment. This is an intrinsic characteristic of quantum mechanics and it is a mathematical result that is confirmed by experiment.

> This collection of ideas—uncertainty, complementarity, probability, and the disturbance of the system being observed by the observer—are together referred to as the "Copenhagen interpretation" of quantum mechanics, although nobody in Copenhagen (or anywhere else) ever set down in so many words a definitive statement labeled "the Copenhagen interpretation," and one of the key ingredients, the statistical interpretation of the wave function, actually came from Max Born in Göttingen. The Copenhagen interpretation is many things to many people, if not quite all things to all men, and itself has a slipperiness appropriate in the slippery world of quantum mechanical slithy toves. Bohr first presented the concept in public at a conference in Tomo, Italy, in September 1927. That marked the completion of the consistent theory of quantum mechanics in a form where it could be used by any competent physicist to solve problems involving atoms and molecules, with no great need for thought about the fundamentals but a simple willingness to follow the recipe book and turn out the answers (Gribbin 1984,121).

In quantum mechanics, the massless photon—which represents energy—is no longer merely a wave, but rather a particle too. And the electron, which has mass, is no longer merely a particle, rather, it also behaves as a wave. In fact, even the wave is no longer a real wave—it is a concept represented by the wave function. We shall discuss the true reality of the wave function in due course. The electron emitted toward a plate with two holes or slits can pass through both of them simultaneously. The only way to determine which one it passed through is by observing and monitoring the two slits. According to the Copenhagen interpretation or Bohr's group, the observer has an impact on the system and causes it to assign a position to the electron.

I shall provide an example aimed at facilitating our understanding:

Let us assume that we have a source that is emitting particles—electrons, for instance. When the electron leaves the source, it becomes a group of ghost electrons, and one of them is our real electron. Here, the word "real" is hypothetical. This real electron is only identified when we look at it. In other words, it is real when we observe it. This means that, if you imagine turning your back to the electron, what is behind your back is a group of ghost electrons, one of which is the real

one. However, it is unidentified, meaning that any electron can be the real one. Now imagine that you turned around to look at this group of electrons. This is when the wave function collapses and you will not see them. Instead, you will only see our real electron. What happened is that they all disappeared except for one, which is the one that you have observe. Regarding the reason for their disappearance, there is no definite answer to this question.

In quantum mechanics, there are multiple answers. One of them is that the observer somehow affects the system in such a way that he solidifies the particle at a particular position, meaning that the observer has an impact on what he observes.

Another answer is that the group of ghost particles that accompanied our particle—which we observed—exists in different universes. What happens is that, when we look at it, we see one of the particles in one of these universes, and this observation veils the rest from us. That is why we do not see them nor do we see their impact on the experiment screen.

> The world seems to keep all its options, all its probabilities, open for as long as possible. The strangest thing about the standard Copenhagen interpretation of the quantum world is that it is the act of observing a system that forces it to select one of its options, which then becomes real.
>
> In the simplest experiment with two holes, the interference of probabilities can be interpreted as if the electron that leaves the gun vanishes once it is out of sight, and is replaced by an array of ghost electrons that each follows a different path to the detector screen. The ghosts interfere with one another, and when we look at the way electrons are detected by the screen we then find the traces of this interference, even if we deal only with one "real" electron at a time. However, this array of ghost electrons only describes what happens when we are not looking; when we look, all of the ghosts except one vanish, and one of the ghosts solidifies as a real electron. In terms of Schrödinger's wave equation, each of the "ghosts" corresponds to a wave, or rather a packet of waves, the waves that Born interpreted as a measure of probability. The observation that crystallizes one ghost out of the array of potential electrons is equivalent, in terms of wave mechanics, to the disappearance of all the array of probability waves except for one packet of waves that describes one real electron. This is called the "collapse of the wave function," and, bizarre though it is, it is at the heart of the Copenhagen interpretation, which is itself the

foundation of quantum cookery. It is doubtful, however, that many of the physicists, electronics engineers, and others who happily use the recipes in the quantum cookbook, appreciate that the rules that prove so reliable in the design of lasers and computers, or studies of genetic material, depend explicitly on the assumption that myriad ghost particles interfere with each other all the time, and only coalesce into a single real particle as the wave function collapses during an observation. What's worse, as soon as we stop looking at the electron, or whatever we are looking at, it immediately splits up into a new array of ghost particles, each pursuing their own path of probabilities through the quantum world. Nothing is real unless we look at it, and it ceases to be real as soon as we stop looking.

Perhaps the people who use the quantum cookbook so happily are comforted by the familiarity of the mathematical equations. Feynman explains the basic recipe simply. In quantum mechanics, an "event" is a set of initial and final conditions, no more and no less. An electron leaves the gun on one side of our apparatus, and the electron arrives at a particular detector on the other side of the holes. That is an event. The probability of an event is given by the square of a number which is, essentially, Schrödinger's wave function, ω. If there is more than one way in which the event can occur (both holes are open inside the experiment), then the probability of each possible event (the probability of the electron arriving at each chosen detector) is given by the square of the sum of the ω's, and there is interference. But when we make an observation to find out which of the alternative possibilities actually happens (look to see which hole the electron goes through) the probability distribution is just the sum of the squares of the ω's, and the interference term disappears—the wave function collapses.

The physics is impossible, but the math is clean and simple, familiar equations to any physicist. As long as you avoid asking what it means, there are no problems. Ask why the world should be like this, however, and even Feynman has to reply, "We have no idea." Persist in asking for a physical picture of what is going on, and you find all physical pictures dissolving into a world of ghosts, where particles only seem to be real when we are looking at them, and where even a property such as momentum or position is only an artifact of the observation. It is scarcely any wonder that many respected physicists, including Einstein, spent decades trying to find ways around this interpretation of quantum mechanics (Gribbin 1984, 172-74).

But what is it that is varying in an electron wave?

The answer came from a theoretical study of how free electrons

behave when they are fired at atoms. It is natural to describe an electron traveling through empty space as a wave packet, a little bundle of electron waves that travel along together, like the pulse of light waves produced by a searchlight that is turned on only for an instant. The Schrödinger equation shows that, when such a wave package strikes an atom, it breaks up; wavelets go traveling off in all directions like sprays of water when the stream from a garden hose hits a rock. This was puzzling; electrons striking atoms fly off in one direction or another but they do not break up—they remain electrons. In 1926 Max Born in Göttingen proposed to interpret this peculiar behavior of the wave function in terms of probabilities. The electron does not break up, but it can be scattered in any direction, and the probability that an electron is scattered in some particular direction is greatest in those directions where the values of the wave function are largest. In other words, electron waves are not waves of anything; their significance is simply that the value of the wave function at any point tells us the probability that the electron is at or near that point.

Neither Schrödinger nor de Broglie were comfortable with this interpretation of electron waves, which probably explains why neither of them contributed importantly to the further development of quantum mechanics. But the probabilistic interpretation of the electron waves found support in a remarkable argument offered by Heisenberg the following year. Heisenberg considered the problems that are encountered when a physicist sets out to measure the position and momentum of an electron. In order to make an accurate measurement of position it is necessary to use light of short wavelength, because diffraction always blurs images of anything smaller than a wavelength of light. But the light of short wavelength consists of photons with correspondingly high momentum, and, when photons of high momentum are used to observe an electron, the electron necessarily recoils from the impact, carrying off some fraction of the photon's momentum. Thus the more accurately we try to measure the position of an electron, the less we know after the measurement about the electron's momentum. This rule has come to be known as the *Heisenberg uncertainty principle*. An electron wave that is very sharply peaked at some position represents an electron that has a fairly definite position but a momentum that could have almost any value. In contrast, an electron wave that takes the form of a smooth, equally spaced alternation of crests and troughs extending over many wavelengths represents an electron that has a fairly definite momentum but whose position is highly uncertain. More typical electrons like those in atoms or molecules have neither a definite position nor momentum.

Physicists continued to wrangle over the interpretation of quantum mechanics for years after they had become used to solving the Schrödinger equation. Einstein was unusual in rejecting quantum mechanics in his work; most physicists were simply trying to understand it. Much of this debate went on at the University Institute for Theoretical Physics in Copenhagen, under the guidance of Niels Bohr. Bohr focused particularly on a peculiar feature of quantum mechanics that he called *complementarity*: knowledge of one aspect of a system precludes knowledge of certain other aspects of the system. Heisenberg's uncertainty principle provides one example of complementarity: knowledge of a particle's position (or momentum) precludes knowledge of the particle's momentum (or position).

By around 1930 the discussions at Bohr's institute had led to an orthodox "Copenhagen" formulation of quantum mechanics, in terms that were now much more general than the wave mechanics of single electrons. Whether a system consists of one or many particles, its state at any moment is described by the list of numbers known as the values of the wave function, one number corresponding to each possible configuration of the system. The same state may be described by giving the values of the wave function for configurations that are characterized in various different ways—for instance, by the positions of all the particles of the system, or by the momenta of all the particles of the system, or in various other ways, though not by the positions and the momenta of all the particles.

The essence of the Copenhagen interpretation is a sharp separation between the system itself and the apparatus used to measure its configuration. As Max Born had emphasized, during the times between measurements the values of the wave function evolve in a perfectly continuous and deterministic way, dictated by some generalized version of the Schrödinger equation. While this is going on, the system cannot be said to be in any definite configuration. If we measure the configuration of the system (e.g., by measuring all the particles' positions or all their momenta, but not both), the system jumps into a state that is definitely in one configuration or another, with probabilities given by the squares of the values of the wave function for these configurations just before the measurement (Weinberg 1992, 72-75).*

The most important argument of those who say that the universe came

*. Dr. Niels Bohr (1885-1962) was a Danish physicist born who was born in Copenhagen. He contributed significantly to formatting the models for understanding the structure of the atom and quantum mechanics. He is especially known for the Copenhagen interpretation, which calls for the acceptance of the probabilistic nature proposed by quantum mechanics.

from nothing comes from quantum mechanics, particularly the uncertainty principle. According to the uncertainty principle, empty space cannot be completely empty, as its emptiness means that fields such as the electromagnetic field must be completely zero. This conflicts with the uncertainty principle, which states that the field value and its rate of change cannot be simultaneously known.

Between the Determinism of Newton and the Probability and Uncertainty of Quantum Mechanics:

In Newtonian physics or classical physics, matters are determined with precision. There is no probability, doubt, or uncertainty. Thus, we can accurately determine the speed and position of objects. This allowed Laplace to take Newtonian mechanics to the furthest extent possible. Laplace came up with his determinism principle, according to which, if we know the speed or momentum and positions of every particle in the universe at a specific time, we can determine their speed and positions at any given time, both in the past and in the future. This means that we can know the future. This is called the principle of determinism. It is clear that there is no room left for the unseen or for a god to intervene and change things. The situation is determined and is not susceptible to intervention. This is the case to the extent that there is not even room left for the free will of man, because matters move toward predetermined and inevitable endings.

> The success of Newton's laws and other physical theories led to the idea of scientific determinism, which was first expressed at the beginning of the nineteenth century by the French scientist the Marquis de Laplace. Laplace suggested that if we knew the positions and velocities of all the particles in the universe at one time, the laws of physics should allow us to predict what the state of the universe would be at any other time in the past or in the future (Hawking 2001, 104).

However, quantum mechanics, which dominates the physics of today, cannot tell us the precise speed and position of a single particle, let alone all particles. Thus, things have become completely different. The particle can be in any possible position, while its speed can be any possible speed. As such, there is no longer complete determinism in quantum mechanics, meaning there is no longer any possibility of

knowing the future precisely, since there is more than one possibility. What remains of determinism in quantum mechanics is evolution of the wave function.

Therefore, we can state that quantum mechanics, which is used by the proponents of "a universe from nothing" to deny the existence of a god, has become a means for proving the free will of man, and that humans can intervene in creating their future. Man is not forced or compelled to follow a path laid out for him by inescapable universal determinism. Moreover, man can affect the events that he observes surrounding him. In fact, man perhaps has an effect on the universe—the entire universe is a quantum system, and humans observe it.

Some determinism provided by the evolution of the wave function remains in quantum mechanics. The possibilities provided by the wave function evolve deterministically, meaning that classical determinism no longer exists, having been replaced by a mix that we may call semi-determinism.

> As Max Born had emphasized, during the times between measurements the values of the wave function evolve in a perfectly continuous and deterministic way, dictated by some generalized version of the Schrödinger equation. While this is going on, the system cannot be said to be in any definite configuration (Weinberg 1992, 75).

It is certain that, following the advent of quantum mechanics, determinism in Newtonian physics no longer exists, even if most people, in their daily lives, know of nothing but Newtonian physics and its determinism. However, after the advent of quantum mechanics, can it be said that what people know is reality?!

Thus, we have more than one possibility for the future, and we cannot define any of them deterministically. ﴿God erases what He wills or confirms, and with Him is the Mother of the Book.﴾ Quran Chapter "The Thunder" 13:39.

However, these possibilities are governed by the deterministic evolution of the wave function. Through observation, we recognize one of them to be a reality that we have obtained.

> It is neither free will nor determinism. Rather, it lies between them (Al-Kafi 1944, vol 1, 160).

Special Theory of Relativity:

Prior to the theory of relativity, it was believed that there was something in space called the ether, in which light moved and to which the speed of light—regarded as constant relative to the ether—was attributed. When more than one observer moving within the ether measures the speed of light, they should be measuring different speeds of light. Accordingly, if you measure the speed of light while moving toward the light source, you should measure a higher speed than if you were to measure it moving perpendicularly to the light. However, the Michelson-Morley experiment proved that this isn't true. Rather, the speed of light is constant in all directions.

The speed of light remains constant regardless of the speed or direction of the observer. Whether you are standing still, running away from the light or moving toward it, in all cases you will measure a constant speed of movement of light photons in your direction. The speed of your movement will be neither added to or subtracted from the speed of light when determining the speed of photons approaching you. However, in Newtonian physics, if you move toward a particular object, your speed will be added to its speed in order to know the speed at which it is approaching you, while it will be deducted if you run away from it. This means that the speed of light is a universal constant that must be taken into consideration in the laws of physics. On this basis, Einstein's special theory of relativity, which was published in a research paper in 1905, invalidated the ether and the incorrect results derived from it. It also invalidated the idea of absolute time that is unrelated to space. Therefore, the movement of objects became located in spacetime and not in just in space alone.

According to the special theory of relativity, the dimension of time became one of the four dimensions that are connected to one another. Thus, there is time and the three spatial dimensions. This is how the constancy of the speed of light is explained: light has reached the maximum speed possible in the dimensions of space, and it has no additional amount of movement left to allow it to move in the dimension of time. This means that the faster things move, the less time they have. For example, if a person travels in a vehicle at a certain speed, and he has a timer to measure the duration of the journey, and someone who is standing outside is also measuring the duration of the journey, the person inside the vehicle will record less time than the

one standing next to the vehicle. The faster the vehicle travels, the less time the person inside the vehicle will record. This difference cannot be observed at the simple speeds we usually deal with. However, it is quite noticeable with speeds that are equal to a large fraction of the speed of light. When the object moves at the speed of light, time stops for it, meaning no time will be recorded. No object with mass can move at the speed of light. However, some material particles can be accelerated in a way similar to that used in particle colliders in order to reach speeds close to the speed of light. It has been observed that their ages double and increase very significantly. This means that when they move at a high speed, their time slows down significantly.

This also applies to the dimensions of space. For example, if you measure the length of a stationary vehicle, and then measure the length of the same vehicle as it moves at a particular speed in a direction perpendicular to the direction of measurement, you will record a smaller length for the second measurement. This is not observable at low speeds because it is a very small fraction. However, it is absolutely observable at speeds close to the speed of light.

The meaning of the above is that if there is more than one moving observer, they will measure different time periods for a single event, and no measurements by one of them is considered more accurate than the other, because the measurements are relative.

The constancy of the speed of light in the dimensions of space means that light has no remaining speed that allows it to move through time. It has reached the maximum speed possible in the dimensions of space. This means that time stops for photons, as they do not age, meaning that, in relation to the photons of light, the past and the future are the same. Thus, the photons of the cosmic background radiation, which has fallen behind the big bang (as will be clarified later), are now the same age they were at the moment of the big bang. If we were to assume that a person could move at the speed of light (although this is impossible as no object with mass can move at the speed of light), the same thing would happen with him. Time would stop for him, his age would remain constant and, from his perspective, the past and the future would become the same, meaning he would see the past and the future at any moment he wished.

The result of special relativity is that there is no longer a three-dimensional universe with an independent amount of time. Rather, the universe is four-dimensional and time is one of its dimensions.

We have time and space that together form a single connected fabric, where the movement of objects in one of its dimensions affects their path in its other dimensions. Thus, the movement of objects in the three dimensions of space affects their path in the dimension of time.

The constancy of the speed of light, which allowed Einstein to correlate the spatial dimensions with the dimension of time, and to see them as intertwined as a whole that forms the universal spacetime fabric, also led Einstein to discover that the mass and energy of a particle are equivalent and intertwined. This was one of the most significant results of the special theory of relativity. Einstein formulated the equation of mass-energy equivalence as follows:

$$E^2 - p^2c^2 = m^2c^4$$
$$E^2 = m^2c^4 + p^2c^2$$

Whereas:

E= Energy
c=speed of light
p=momentum

When momentum is equivalent to zero, the equation becomes as follows:

$$E^2 = m^2c^4$$

Which means:

$$E = mc^2$$

This last form is the one that is most commonly used.

Through mass-energy equivalence, it can be proven that the maximum speed is the speed of light, and that nothing with mass can move at the speed of light because the energy of its movement is added to a mass (by converting it via the law of equivalence). This means that the mass of an object increases the faster it moves. Therefore, it too requires greater energy in order to move. This energy is also converted to mass, which is added to its own mass—and so the adding continues. If we assume that it moves at the speed of light, its mass is infinite, re-

gardless of its initial mass. Therefore, it requires infinite energy in order to move. That is why, according to the law of equivalence, an object with a mass cannot move at the speed of light. Only light, particles, or waves that have no mass (such as photons) move at the speed of light.

Quantum Entanglement and Multiple Universes:

The introduction of probability and the uncertainty principle in quantum mechanics caused Einstein to take a negative stance toward quantum mechanics. Einstein leveled several criticisms at the uncertainty principle, including his rejection of probabilities and uncertainty with his famous statement: "God doesn't play dice."

He presented some of these criticisms at scientific conferences. They were responded to as follows:

> Following the previous inconclusive Solvay debate, Einstein had realized with no doubt that metaphysical scruples would get him nowhere. He needed a specific, quantitative demonstration that something was amiss, and by the time he arrived in Brussels, he thought he had one. He intended to prove to Bohr and his disciples that the uncertainty principle, now hailed as a fundamental principle of quantum mechanics, could not be the final truth. He had found a way around it, a way to get more information out of an experiment that Heisenberg's rule would allow.
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> The experiment, of course, was not a real one but another example of that favorite Einsteinian device, The thought experiment. It was a test that could not by any stretch of the imagination be done in anyone's laboratory, but it was one that the laws of physics permitted. More to the point, according to Einstein, the laws of physics in this case proved that the experiment would yield better results than Heisenberg would allow. It was so simple as to be incontestable.
>
> Imagine some photons in a box, Einstein said, and equip the box with a shutter operated by a clock. Let the shutter open for just a moment, at some precisely specified time, so that a single photon escapes. Weigh the box before hand and weigh it again afterward. From $E=mc^2$, the change in weight gives the energy of the fleeing photon. One version of the Heisenberg principle says that the more accurately you try to measure the energy of some quantum event, the less well you can know the time at which it occurred. In Einstein's new argument, so it's author believed, that restriction didn't apply. He could measure the energy of the departed photon, and he knew

the time it left the box, and he could make both those measurements independently, as precisely as he wished. He could beat the uncertainty principle, Einstein triumphantly declared.

Léon Rosenfeld, a Belgian physicist who would the following year become Bohr's assistant in Copenhagen, didn't officially participate in the Solvay meeting but came to Brussels anyway to observe the contest. He arrived at the university club, where the participants were staying, just in time to see a beaming Einstein, "followed by a court of lesser fry," returning from the sessions. Einstein set down and with evident pleasure described his anti-Heisenberg thought experiment "before all those admiring people."

Then Bohr arrived, looking "absolutely like a dog who has received a thrashing, with a hanging head." He and Rosenfeld had dinner together, with other physicists dropping by their table. Bohr was "terribly, terribly excited," insisting that Einstein couldn't possibly be right, that it would mean the end of quantum theory. But he was unable straightaway to put his finger on the flaw. Later in the evening he cajoled Einstein in the same way, but he serenely paid no attention.

But the next morning it was Bohr who was beaming. Overnight it came to him that Einstein had committed the ironic error of neglecting one of the consequences of his own theory of general relativity. Suppose, Bohr said, the box containing the photons was suspended on some kind of spring balance to gauge its weight. At the moment a photon escaped, he reasoned, the box, reduced in weight, would recoil slightly against gravity. This has two serious implications. First, the slight bouncing of the box produces uncertainty in the measurement of its mass, which translates in the uncertainty in the deduced energy of the escaping photon. Second, and more subtly, the motion of the box produces a change in the rate at which its clock turns. This is because, as Einstein had proved a decade and a half earlier, a clock runs at a changing rate as it moves in a gravitational field.

Bohr explained with satisfaction that the product of these two uncertainties, in energy and in time, was exactly what Heisenberg's principle said it should be. Einstein, chagrined to see that his eagerness to prove Heisenberg wrong made him overlook his own physics, had no choice but to admit defeat. Bohr did not gloat. In his later account of these events, he could not bring himself to say bluntly that he was right and Einstein was wrong. He emphasized instead Einstein's repeated acuteness in putting his finger on exactly those points where classical and quantum physics most strikingly take leave of each other. He lauded Einstein's influence in pushing the quantum physicists—he meant chiefly himself—to lay bare the characteristics

and undoubted oddities of their still-new subject.

Bohr's mannerly praise aside, the fact remains that the crushing blow Einstein took at quantum mechanics and the uncertainty principle swung by its target, doing no damage and leaving no mark. Although Heisenberg, Pauli, and the rest had only taken a peripheral role in this intellectual dual, "we were all quite happy and felt that now the game was won," Heisenberg said later.

Defeated in his latest attempt to prove that quantum mechanics was flawed, Einstein reverted to his earlier, more fundamental complaint. Quantum mechanics might be logically coherent—but it could not be the whole truth. Chance, probability, and uncertainty, he insisted, arose from physicist' inadequate understanding of the world they were trying to portray with their theories. The mischievous arguments of Bohr , Heisenberg, and the rest amounted to nothing better than a papering over of difficulties whose true resolution lay elsewhere. He was still convinced that one day a fuller theory would be found, and quantum mechanics would be consigned to history, along with so many other failed hypotheses (Lindley 2008, 168-171).

Another of these criticisms was Einstein's argument, shared by two other researchers, called the EPR paradox.

On Quantum Entanglement and What is Required From It:

In 1935, working with his young Princeton colleagues Boris Podolsky and Nathan Rosen, Einstein published his last and most famous blast against quantum theory.

"Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?" the paper asked in its title. The question was rhetorical. The answer was clearly no, according to Einstein, Podolsky, and Rosen.

The EPR argument is an elaboration of what Einstein had fretted about at the fifth Solvay conference in 1927. There he had seized on Born's assertion that a quantum wave function can describe only the probability of a particle being one place or another. That's all very well, said Einstein, but at some point probability must turn into certainty. An electron hitting a screen, in the example he chose, has to land at one place in particular. And when it lands, must not the quantum wave describing it somehow change instantaneously all across the screen?

No one then had seemed to see what he was getting at. The argument was indeed vague and metaphysical. But Einstein, Podolsky,

and Rosen now claimed they had made the objection concrete, turned it into a specific and demonstrable problem. They could pinpoint, so they argued, how quantum mechanics took leave of common sense.

First, in the old, true Einsteinian style, they needed to make absolutely clear what common sense amounted to. Any acceptable theory, they declared, must deal in what they called "elements of physical reality." By this they meant such things as position and momentum, the traditional kinds of quantities the physicist, by time-honored habit, regards as unarguable pieces of information about the physical world.

Very well--but what, actually, constitutes an element of physical reality? It was not an issue scientists had ever spent much time worrying about. So Einstein and his colleagues proposed a formal definition, one that has become famous or notorious, according to one's perspective. If, they said, "without in any way disturbing a system, we can predict with certainty…the value of a physical quantity, then there exists an element of physical reality corresponding to this physical quantity.

Think, for example, of the position or momentum of an electron. If you have a way to determine either property without in any way affecting the electron's path or subsequent behavior, then you are entitled to say that the electron's position or momentum is a definite fact, an undeniable datum. An element of physical reality, in other words.

Having set the argument up to their liking, Einstein and his colleagues then proceeded to demonstrate how quantum mechanics runs into trouble. They imagined two particles zooming away in opposite directions from some common origin, with the same speed, so that as soon as you measure the position or momentum of one, you automatically know the position or momentum of the other.

They conceded that an observer making measurements of one of the particles would run afoul of the uncertainty principle. Measure its momentum, and lose knowledge of its position, or vice versa, just as Heisenberg dictates. But now Einstein, Podolsky, and Rosen played their trump card. The whole point of their setup was that any observation of one particle tells you something about the other, and that's where strange things begin to happen.

Measure the first particle's position, and you immediately know the position of the second—even though you haven't looked at it directly. Or measure the first particle's momentum, and you also know the second's--again, without looking at it. Which means, the authors eagerly concluded, that both the position and the momentum of the second particle must be "elements of physical reality." Because these properties can be determined without disturbing the particle in ques-

> tion, they must have definite, preexisting values. It cannot be, they argued, that a measurement on the first particle only then causes the second particle's characteristics to materialize out of a quantum fog--because nothing has actually happened to the second particle.
>
> And the larger implication, they went on, is that Heisenberg's vaunted uncertainty principle does not, after all, mean that physical properties are fundamentally indefinite until measured. Rather, particles have definite properties, and the uncertainty principle is an admission that quantum mechanics cannot fully describe those properties. Which means, Einstein and his young collaborators concluded, that quantum mechanics is not telling the whole story--just as Einstein had long insisted. It was a partial theory only, an incomplete portrayal of the underlying physical truth (Lindley 2008, 188-191).

> That's why Einstein fixed on EPR-type experiments as a deep indication that quantum mechanics couldn't be right—because in such situations it seems that some elusive but instantaneous influence connects the quantum behavior of two particles no matter how far away from each other they fly. This uncomfortable long-distance connection, like so much else that's strange about quantum mechanics, arises because of the inescapability of uncertainty. Because the outcome of a measurement on one particle cannot be completely predicted, the second particle has to remain linked in some way, so it seems, in order that measurements on it remain coherent with observations of the first (Lindley 2008, 218).

The two particles in the above example are linked because they have one source and the sum of their momentum is known. Thus, if someone were to measure the momentum of the first particle, they would know the momentum of the second particle at the same moment. If they were to measure the position of the first particle, one would know the position of the second particle at the exact same moment—regardless of the distance between the two particles. However, according to the uncertainty principle, if someone attempted to measure a characteristic of either one of them (such as momentum), there would be a change in the position of the particle measured. Since the sum total is known, the second particle must change—regardless of the distance between them—in order to preserve the sum total.

This means a number of things, including the following:

The observer, or the measurement process, is no longer significant in the identification of the second particle's characteristics. The is because we now know its characteristics without measuring it directly.

This also means that the second particle's characteristic, which we know without directly measuring, is one of the elements of the physical reality. In turn, this means that particles have specific characteristics, unlike the supposition of Heisenberg's uncertainty principle "that physical properties are fundamentally indefinite until measured."

Furthermore, a consequence of combining quantum entanglement and the uncertainty principle in this example is that information transfers much faster than the speed of light. For example, when we measure one of the characteristics of the first particle, we do not need time to know the characteristics of the second particle; we actually know them at the same moment. This means that, if the measurement process affects the first particle, the second particle must be affected directly in order to preserve the sum total, although it is not the one being measured. This means that quantum mechanics violates the law of special relativity, which does not allow anything to move at a speed greater than the speed of light. This undoubtedly indicates an obvious flaw in understanding the universal reality.

The truth is that, even after proving that quantum entanglement is a physical reality through practical experimentation, the problem remains unsolved because it would either be that:

There is a problem with the assumption in Einstein's special relativity theory that prevents movement at a speed greater than that of light within this universe.

Or, that quantum mechanics, as Einstein wished to believe, "is not telling the whole story …it was a partial theory only, an incomplete portrayal of the underlying physical truth."

I believe that, in order to solve this problem, we can hypothesise that the information transferred between the two particles is transferred between them in a different universe—one in which they have a phantom existence—and that this other universe allows for things to transfer therein at a speed greater than that of light.

We can rephrase the problem Einstein presented: the two particles alongside the measurement process are considered to be a system. Therefore, our knowledge of the position of the second particle, by mere measurement of the position of the first particle, means that if the "physical properties are fundamentally indefinite until measured"—as

the uncertainty principle in quantum mechanics states—then, by observing the first particle, we caused an instantaneous change in the wave function of the system as a whole. Consequently, this causes the second particle to have a specific position, or speed, or, as Einstein asserted, "must not the quantum wave describing it somehow change instantaneously all across the screen?"

This moves the discussion to how realistic the wave function is. The issue of the instantaneous transfer of the wave function's changes in space—in other words, without needing any time period—means that they transfer at infinite speed, which is impossible in our universe. According to Einstein's special relativity theory, the speed of light cannot be exceeded, let alone by an infinite speed. Speed is distance divided by time. In this case, regardless of the distance, the speed is infinite and information is transferred immediately and instantaneously, meaning that time is equal to zero. In other words, we may state that the dimension of time has disappeared from the universe in which the wave function information transfers. Without a doubt, this means that—if special relativity is correct—this information transfers in another universe, the laws of which permit these things that are impossible in our own universe. It further means that this other universe must be affecting our universe and be connected to it, and that the things in our universe have a phantom existence in that universe, as they can communicate therein and transfer information among themselves at an infinite speed. Alternatively, perhaps we and the beings in this universe are phantoms of more sophisticated realities that exist in a universe more sophisticated than ours.

Quantum mechanics has opened the door in cosmology for the idea of multiple worlds or universes that can affect one another.

If the above research was not sufficient for proving the existence of the human soul or spirit, it certainly makes a reasonable person ask themselves how realistic it is for our existence to be exclusive to only this universe and that we are mere bodies created from the material of this universe. Isn't it possible that these multiple universes are lighter than this universe, and its particles finer than the particles of matter and energy in our universe, such that they allow transfer at a speed greater than the speed of light, which is [the speed that] this universe's particles of energy or photons move? In this case, can our universe not be a mere phantom existence of a more sophisticated universe?!

Quantum entanglement or inseparability has dimensions that are far greater than a case of two particles or photons emanating from a single origin. The entire universe is a quantum event that goes back to a single origin, at the time of the big bang. In the past, some of the particles were adjacent and adherent to one another. Thus, a particle at the extremities of the universe or in the body of another living being was perhaps, on some day and at some moment, adherent to a particle that is in your body right now, and you might be affected when it is affected, and likewise you can, in some way, affect things via quantum entanglement.

> You deem yourself a small body while the greatest world dwells within you (Al-Hawari 2003, 175).

Schrödinger's cat and the Observer's Effect on the System

The argument or paradox of Schrödinger's cat is represented by the following thought experiment:

Assume that you have a box that contains a cat, a poisonous substance in a glass bottle, a radioactive source, and a Geiger counter. What happens is, if radioactive decay of an atom from the radioactive source occurs, and the Geiger counter records the existence of a particle, the bottle of poison breaks and the cat dies. These things were arranged for a time period such that there is a 50 per cent chance that one of the atoms in the radioactive material will decay. Therefore, the only way for us to know whether the cat is dead or alive is by looking inside the experiment box. The condition of the cat depends on whether or not the atom has undergone radioactive decay, which cannot be predicted as it is subject to possibilities. Thus, we have radioactive material that—according to quantum mechanics—may or may not have decayed, meaning that both issues have a phantom existence until we look inside the box at the cat, and so the wave function collapses. At that point, due to our observation, one of the two possibilities will be determined. Consequently, we have radioactive material that has decayed and not decayed, and a bottle of poison that is broken and unbroken, and a cat which is dead and alive at the same time. What determines its fate is our observation and the collapse of the wave function as a result of this observation.

Schrödinger's experiment shows that there is a flaw in the Copenhagen interpretation: the cat cannot be imagined to be dead and alive at the same time, as is presumed in the experiment. Therefore, the cat is dead and alive until the wave function collapses as a result of our observation of the system, and a condition is assigned to the cat: either alive, or dead.

A prolonged debate continued over this paradox, which Schrödinger attempted to demonstrate in the Copenhagen interpretation:

> So, unlike the EPR experiment, the cat-in-the-box experiment really does have paradoxical overtones. It is impossible to reconcile with the strict Copenhagen interpretation without accepting the "reality" of a dead-alive cat, and it has led Wigner and John Wheeler to consider the possibility that, because of the infinite regression of cause and effect, the whole universe may only owe its "real" existence to the fact that it is observed by intelligent beings. The most paradoxical of all the problems inherent in quantum theory is a direct descendant of Schrödinger's cat experiment, and it jumps off from what Wheeler calls a delayed-choice experiment (Gribbin 1984, 208).

We can state that Schrödinger's thought experiment has highlighted the oddity of quantum mechanics that we have learned about previously. If quantum mechanics represents the laws of reality, and there is not the slightest flaw in the Copenhagen interpretation, then the experiment has highlighted the oddity of the reality of the universe we live in. The result we have reached at this point is that, should the wave function collapse due to the observer or the recording of the quantum event by the observer, as the Copenhagen interpretation states, it would mean that, if it were not for the existence of the human being or the intelligent being, there would be no universe. The universe owes its existence to our observation of it, as the entire universe is a quantum system with a wave function and many possibilities. It only exists when we observe it and the wave function collapses and appears in reality. This issue means that we humans—or let us say intelligence—represent the axis for which the universe was brought into existence.

> If not for you, I would not have created the galaxies.*

*. Hadith Qudsi

Do We Observe Things or do We Create Them through Observation?!

When we discuss quantum mechanics, we are not referring to another universe or a science fiction story. Rather, we are talking about our bodies and everything that surrounds us. Our bodies and everything around us consist of quantum particles governed by the laws of quantum mechanics, which are foreign to our classical perceptions. The laws of quantum mechanics have been proven by experiments and machines have been designed on the basis of these laws, as these laws govern the entire universe.

The axis of quantum mechanics revolves around the issue that reality is what we record through observation—or let us say that reality is identified as reality when we observe it. This means that our observation is what identifies it as reality and, as such, removes it from the realm of possibility. This issue may be foreign to our simple human perceptions in this universe, as it means that we identify even the past when we observe it. These words may have no meaning within the framework of our daily lives, because we only observe the present—or at least that is what we believe. However, at the level of our universal observation, we observe cosmic background radiation, which is a radiation (photons) left over from the big bang, having a temperature of 2.73 Kelvin, while this radiation is approximately 13.7 billion years old. This means that we not only observe the past, but we also observe the beginning of time in our universe, as well as observing the furthermost point on the axis of time.

John Wheeler presented the delayed choice thought experiment, which is along the lines of the double-slit experiment on a plate. In this case, we arrange a system for identifying the passing of the photon or electron (any quantum particle) from one of the two slits. However, rather than doing this by observing the two slits, we observe the particle after it has passed through the two slits in a way that identifies its passing through one of them, and we cover the observation system's lens with strips of film arranged like a venetian blind. If closed, they do not allow the photons to pass, while if open, they do allow them to pass. Consequently, the passing of the particle through one of the slits is identified. If we release the particle with the strips open, we are conducting an experiment as if we were observing the two slits and watching the particle pass through one of them. However, if the strips are

closed, the experiment becomes comparable to the classic double-slit experiment: the particle arrives at the screen and we will find an interference pattern showing us that a single particle passed through both slits simultaneously. However, let us assume that we do not determine the position of the strips that we placed over the lens until the particle has passed through the area of the two slits, and then afterwards we decide the position of the strips, be it open or closed. Thus, the state of the particle in the past, that is, when it passes through the two slits, will be determined on the basis of our delayed decision. Therefore, it will either be the particle that is identified (a single particle) that passed through one of the two slits, or a group of phantom particles or wave bundles that passed through the two slits together, meaning that the single particle passed through both slits at the same moment.

In other words, we in the present have decided, through our choice and observation, upon the state of this particle in the past.

Phrased more simply, this particle has more than one past, or more than one history, as it can pass through either one of the slits or both of them together, and thus we have determined one of its histories for it and made it a reality through our choice and observation of it in the present.

If the matter is as such, meaning that observation in the present identifies, determines, or creates the past, and we know that the entire universe, including us, is a quantum system, and that the universe began with a quantum event, we can also say that, by our observation of the cosmic background radiation, we created (identified or determined) the big bang, and we created a particular past or history of the universe, excluding the other multiple possible histories of the universe.

Alternatively, let us clearly state that, through our observation, we caused the existence of a certain history (past) of the universe that is suitable for the formation of matter and galaxies, a universe in which we can be created, exist, and live—one history from among several that are otherwise unsuitable for the formation of matter, and galaxies and our eventual appearance within them.

This means that our existence, according to this interpretation, is a condition for the existence of the universe we live in.

We can understand from this that we, humans, are the main purpose of existence.

> You deem yourself a small body while the greatest world dwells within you. You are the clear book—by your letters the concealed is exposed (Al-Hawari 2003, 175).

Quantum Mechanics and Causality

> In a rare plain statement, Bohr said that quantum mechanics demands "a final renunciation of the classical idea of causality." But if classical causality and reality have gone out the window, how are physicists to think instead? To that, Bohr had no clear answer, except to recommend his philosophy of complementarity which in effect meant embracing contradiction rather than trying to resolve it (Lindley 2008, 193-94).*†

The conformity of the predictions of quantum mechanics with reality, which has been proven by experiments and observations, supports the validity of the theory of quantum mechanics. However, the problematic issues remain difficult to explain.

There is no apparent reason for the overlapping reality to disappear and the reality that we measure to remain when we carry out the measuring or observation process as in the double slit experiment.

The instantaneous change of the wave function remains unexplained as shown in the EPR argument.

Invalidating causality would be running away from the solution rather than a solution in itself.

As a matter of fact, invalidating causality poses a major flaw in the reasoning and philosophy of what quantum mechanics states. The law of causality is almost self-evident. Reasonably, causality cannot be invalidated because nothingness does not produce, as nothingness is comprised of nothing in order for it to produce. In other words: you cannot give what you do not have.

Here, all that can be stated is that the cause of these quantum events is unknown within the framework of the universe in which we live. It cannot be stated that there is no cause at all, as there is nothing that can take place without a cause. This conflicts not only with rational evidence, but also with all the observed phenomena or ob-

*. Such as Heisenberg's uncertainty or indeterminacy principle.

†. Dr. David Lindley, born in 1956, is a British theoretical physicist. He received his PhD from the University of Sussex.

servations in this universe on a level greater than quantum events. Science relies on observations, which have a major role in proving many scientific theories. Therefore, the result of observations in this universe, which agree with the fact that every event has a cause, cannot be ignored unless the issue has nothing to do with science, as is the case with people who try to promote atheism by any means possible.

> So not only is the Copenhagen interpretation fully vindicated for all practical purposes by the experiments, it looks as if there are developments in store as far beyond those that quantum mechanics has already given us as those developments are beyond classical devices. But still the Copenhagen interpretation is intellectually unsatisfying. What happens to all those ghostly quantum worlds that collapse with their wave functions when we make a measurement of a subatomic system? How can an overlapping reality, no more and no less real than the one we eventually measure, simply disappear when the measurement is made? The best answer is that the alternative realities do not disappear, and that Schrödinger's cat really is both alive and dead at the same time, but in two or more different worlds. The Copenhagen interpretation, and its practical implications, are fully contained within a more complete view of reality, the many-worlds interpretation (Gribbin 1984, 233-34).

It cannot be said that there is absolutely no cause for these quantum events. This conclusion goes against the truth of causality that reason dictates. At the very least, we see this in everything that surrounds us. Therefore, decisive evidence is still required in order to prove that there is no reason for quantum events, and this evidence is absent as long as there is no certainty that all existence is no more than our universe we live in. In fact, today, many theoretical physicists and astronomers present theories of multiple universes with the possibility that they affect one another.

The many-worlds interpretation was presented by Hugh Everett to resolve the wave function collapse problem and disappearance of the alternative reality or other possibilities at the time of observation or measurement. According to the Copenhagen Interpretation, the other possibilities—each representing an alternative reality to the reality we observed and measured—disappear "just like that", without a logical reason or explanation. However, in the many-worlds interpretation they do not disappear. Rather, they are all real events, yet each event

is particular to some universe, and when we measure or observe, we identify one of them as a reality in our universe. This reality prevents us from seeing or measuring the alternative reality whose effect may appear when we do not measure it or observe it. This is comparable to the case of interference in the double-slit experiment when we don't monitor the two slits, and the single electron appears to have passed through both slits simultaneously and perhaps even collided with itself as well.

Currently, in the many-worlds interpretation, we assert that what passed through the first slit is a real form of the electron, and what passed through the second slit is also a real form of the electron. However, each of these two forms exists in a different world, and because we are not measuring and observing it, it appears on the background screen as an interference pattern. This means that virtual phantom particles from several worlds passed through the two slits, and they are all forms of the same, single electron. However, they are forms of it in those worlds. As for when we measure the electron and observe the two slits, we only see one electron passing through one slit. This is because our observation of it and turning toward it prevents us from observing and measuring its other forms that are within other worlds. This means that it is as if when we observe the electron in this world we turn our backs to it in the other worlds. For that reason, we observe it or measure it only in this world.

> So uncertainty upsets the old order not just on the smallest scales, in the way we can find out about individual elementary particles, but also on the cosmic scale, in terms of the way causality and probability connect up across vast distances. A true quantum theory of gravity would—presumably—make sense of all these difficulties.
>
> But it hardly seems likely, at this stage of the game, that in a quantum theory of gravity uncertainty would fade away. All the evidence suggests that it's here for the duration. There can be no going back to the old days of absolute determinism, when, as the Marquis de Laplace hoped, knowledge of the present would bring complete knowledge of the past and the future.
>
> Cosmically speaking, that may be a good thing. The Laplacian universe can have no moment of birth, because any set of physical conditions must arise, logically and inevitably, from some prior situation, and so on ad infinitum. Nothing uncaused can happen.

> But the quantum universe is different. Ever since Marie Curie wondered at the spontaneity of radioactive decay, ever since Rutherford asked Bohr what made an electron jump from one place in an atom to another, the recognition has grown that quantum events happen, ultimately, for no reason at all.
>
> So we reach an impasse. Classical physics cannot say why the universe happened, because nothing can happen except that prior events caused it to happen. Quantum physics cannot say why the universe happened, except to say that it just did, spontaneously, as a matter of probability rather than certainty. Einstein was right, in other words, when he complained that quantum mechanics could offer only an incomplete picture of the physical world. But perhaps Bohr was even more right in his belief that this incompleteness was not just unavoidable but actually necessary. We come to a paradox that Bohr would have loved: it's only through an initial, inexplicable act of quantum mechanical uncertainty that our universe came into being, setting off a chain of events that led to our appearance on the scene, wondering what original impetus led to our existence (Lindley 2008, 218-19).

The General Theory of Relativity:

According to Newton's laws, gravitation between two objects is dependent upon their masses and the distance between them at any particular moment. This means that, if one of the two objects moves, thus changing the distance between them, the effect of the gravitational force on the other object will directly change. In other words, the change occurs instantaneously. This would mean that the effect of the gravitational force travels at an infinite speed. This conflicts with special relativity, which has demonstrated that the maximum speed for any object is the speed of light. It is for this reason that Einstein worked for ten years on a theory that explains gravity in a way that does not conflict with special relativity. In 1915, he presented the general theory of relativity. This theory describes the universe as a whole in terms of the gravitational effect of matter and energy on the universe, as well as their effect on each other. In light of Einstein's theory of special relativity, there is no speed—within the universe—greater than the speed of light, no absolute time, and no complete independence of time from the other dimensions of the universe that we call space. Instead, there is a universal fabric consisting of the four dimensions.

In the general theory of relativity, the effect of gravity is a result of the four cosmic dimensions (spacetime) bending due to matter and energy. Therefore, it is as if the universal fabric is elastic and bendable and all matter in the universe bends this fabric according to its mass. All energy also bends this fabric according to its matter equivalent, based on the equation Einstein presented in the theory of special relativity: $E=mc^2$.

For example, the mass and energy of the sun bend the spacetime fabric, and the earth moves on this bend in a path that is similar to a straight line, as it represents the shortest path between two points in the four dimensions. We see this path as almost circular in the three-dimensional world, just like a plane flying in a straight line between two points in the three dimensions leaves a curved trace (shadow) on the surface of the earth due to the height differences on the earth's surface, and not due to the plane's path.

> The special theory of relativity was very successful in explaining that the speed of light appears the same to all observers (as shown by the Michelson-Morley experiment) and in describing what happens when things move at speeds close to the speed of light. However, it was inconsistent with the Newtonian theory of gravity, which said that objects attracted each other with a force that depended on the distance between them. This meant that if one moved one of the objects, the force on the other one would change instantaneously. Or in other words, gravitational effects should travel with infinite velocity, instead of at or below the speed of light, as the special theory of relativity required. Einstein made a number of unsuccessful attempts between 1908 and 1914 to find a theory of gravity that was consistent with special relativity. Finally, in 1915, he proposed what we now call the general theory of relativity.
>
> Einstein made the revolutionary suggestion that gravitation is not a force like other forces, but is a consequence of the fact that space-time is not flat, as had been previously assumed: it is curved, or "warped," by the distribution of mass and energy in it. Bodies like the earth are not made to move on curved orbits by a force called gravity; instead, they follow the nearest thing to a straight path in a curved space, which is called a geodesic (Hawking 2011, 29-30).

Many applications and experiments have proven that what the general theory of relativity predicted correlates with reality and observation. For example, the theory's description of Mercury's orbit is more ac-

curate than that of Newton's law of gravity. The theory also predicted the deflection of light and how it is affected by gravitational fields, and through experimentation, this prediction was indeed found to be true. It predicted the existence of black holes, and black holes were indeed discovered.

The most important aspect of general relativity, as far as our subject matter is concerned, is that time and space are not static space in which events occur. Rather, time and space bend and are affected by the things existing within them, meaning they are a kinetic, dynamic existence.

This has allowed some cosmologists to assume that the expansion of the universe is not restricted to matter and energy, but also includes the space that contains them.

Singularity:

Based on Einstein's general theory, which explains gravitation with the fact that bodies arch or bend space or the timespace fabric in proportion to their mass, physicist Karl Schwarzschild suggested in 1916 that bodies, which have sufficiently large masses and large gravitational forces, arch and bend the space around them completely. Thus, they are like holes in space, or in the timespace fabric, as their gravitation prevents anything, including light, from escaping its direct surroundings. Scientifically, this is called the event horizon. The speed required in order to escape from it would have to be greater than that of light. Hence, light cannot escape from the event horizon. The location surrounded by the event horizon is called the singular region, at which the known laws of physics collapse. We generally recognize the singular region and its direct surroundings (the event horizon) by the term 'black holes'.

Black holes are usually formed when a large mass – such as that of a large star that has expended its nuclear fuel and so collapsed under its own weight – is concentrated in a region of space sufficiently small to completely bend the timespace fabric. The singular region has zero volume. For this reason it is considered to have infinite density regardless of its mass. The radius of the event horizon – that is to say, the boundaries of the black hole – from which light cannot escape is dependent upon the mass of the black hole.

> Massive stars will burn their hydrogen into helium much faster than the Sun does. This means they can run out of hydrogen in as little as a few hundred million years. After that, such stars face a crisis. They can burn their helium into heavier elements such as carbon and oxygen, but these nuclear reactions do not release much energy, so the stars lose heat and the thermal pressure that supports them against gravity. Therefore they begin to get smaller. If they are more than about twice the mass of the Sun, the pressure will never be sufficient to stop the contraction. They will collapse to zero size and infinite density to form what is called a singularity (Hawking 2001, 114).

Black holes in space have been observed and recorded, whether through the movement of some stars around them when approaching the event horizon, or in the observing and recording of a black hole devouring a star, as a group of South Korean scientists have done recently in the 21st century (euronews.com 2016).

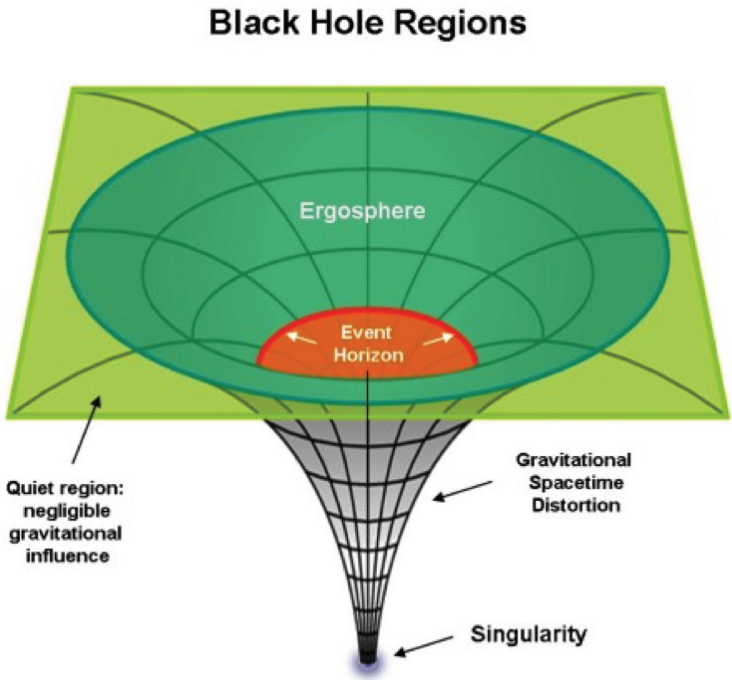

Figure 22: Illustration of a black hole. At its base, the point of singularity appears.

Escape Velocity

Escape velocity is the velocity that enables an object or particle to escape from the gravitational pull of another object. For example, the escape velocity of the earth, or from the gravitational pull of the earth, is approximately 12 km/s. This is significantly less than the speed of light, and that is why light escapes from the earth to the space surrounding it. This makes the earth visible to the outside observer. This is the case with respect to the sun and other stars, yet not black holes: their escape velocity is greater than the speed of light and, therefore, they are dark and cannot be seen.

Event Horizon

The event horizon is a surface that separates the spacetime region, which light can escape, from the region which light cannot escape. It is considered to be a boundary of the black hole.

Black Hole Radiation

The heading 'black hole radiation' seems to contradict what we said previously, namely that light does not escape from the event horizon of a black hole. Therefore, how can we now say that a black hole emits radiation?

This is a theory of theoretical physicist Stephen Hawking. It combines the general theory of relativity and, in part, quantum theory. It states that black holes are not completely black as there is radiation that the outside observer witnesses being emitted from the black hole. It is caused by the quantum fluctuations in a vacuum (previously discussed) that are predicted by quantum mechanics in accordance with the uncertainty principle. According to this principle, space cannot be completely empty because that would mean that the quantities of fields such as the electromagnetic or gravitational field are exactly zero and their rate of change is zero, which contradicts the uncertainty principle.

Therefore, according to quantum mechanics, there are always pairs of virtual particles in a vacuum that appear, meet and then cancel each other out; or particle-antiparticle pairs that appear and cancel each other out due to their colliding. If their appearance happens to be at

an event horizon of a black hole, or at a singularity, and if, instead of colliding with one another and cancelling each other out, one of them happens to fall into the black hole due to its gravitational pull, the countering particle can be liberated and escape far away from the black hole. The outside observer would see it as radiation emitted by the black hole. This is termed black hole radiation. Some also refer to it as Hawking radiation, named after its discoverer. It is dependent upon the mass of the black hole or singularity in the current universe, as per the following equation:

$$T = hc^3/8\pi kGM$$

Where:
T = the temperature of the black hole,
h = the Planck constant,
c = the speed of light,
G = the gravitational constant,
k = the Boltzmann constant, and
M = the mass of the black hole.
From the above equation, we find that the smaller the mass of the black hole or singularity, the higher the temperature of the black hole radiation. To definitively detect, observe and document this radiation in the universe, a small black hole must be found. This means one with a small mass, in order for its radiation to be strong enough and hot enough to stand out from the cosmic background radiation, which overspreads the universe at 2.7 degrees Kelvin. Generally speaking, to date, this theory has been proven using non-experimental evidence.

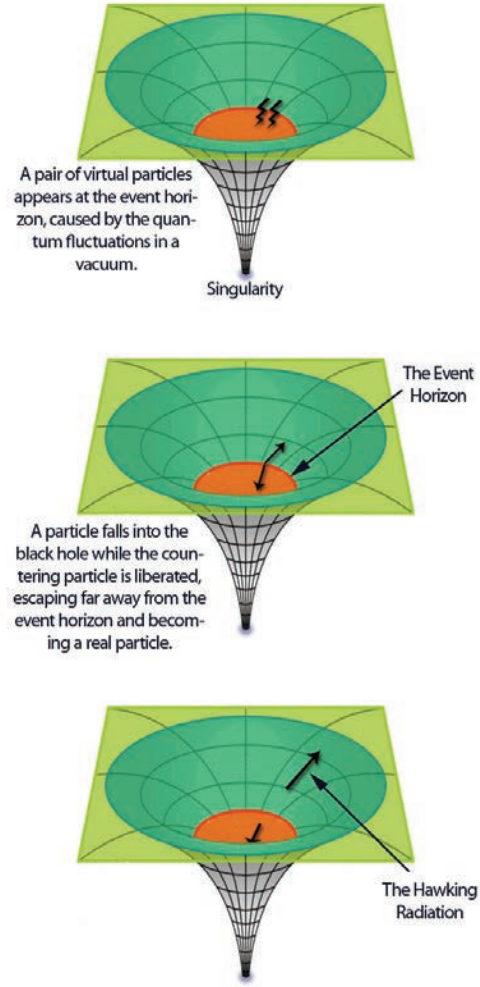

Figure 23: Hawking radiation, and where and how it was formed.

> If a black hole is present, one member of a pair of particles may fall into the black hole, leaving the other member free to escape to infinity. To someone far from the black hole, the escaping particles appear to have been radiated by the black hole. The spectrum of a black hole is exactly what we would expect from a hot body, with a temperature proportional to the gravitational field on the horizon—the boundary—of the black hole. In other words, the temperature of the black hole depends on its size (Hawking 2001, 118).

The Friedmann Models

General relativity predicts a non-static universe, an issue Einstein attempted to avoid by adding the cosmological constant to his equation. Along with many physicists at the time, Einstein believed the universe was static and stationary. Such a universe must collapse upon itself if there is no force or energy to resist the gravitation of matter and cosmological energy.

However, Russian physicist Alexander Friedmann resolved this issue differently. Instead of adding the cosmological constant to the equation, he found a solution of a nonstationary model of the universe that concurs with general relativity. Einstein eventually embraced the Friedmann solution, admitting he was wrong to add the cosmological constant and to assume a static universe. However, dark energy, which will be discussed in due course, was subsequently discovered, which works against gravitation. This means that it fulfils the job of the cosmological constant in resisting the gravitational force of matter and energy.

Subsequently, three models of an unstationary universe were completed, commonly termed the Friedmann models. This opened the door to the expanding universe that has a beginning. The Friedmann models have predicted that the universe is expanding before Edwin Hubble used the results of galaxy observations to discover that the frequency of light that galaxies emitted shifts toward the color red, and this shift increases the further away they are. According to the Doppler effect, this means they are moving away from each other at an increasing rate.

The Friedmann Models include the following:

The first model: the curvature of the universe is positive like the surface of a sphere. If it is expanding, it will eventually contract due to gravitation and its expansion will not continue forever.

The second model: the curvature of the universe is negative like the surface of a hyperbolic paraboloid or a horse saddle. If it is expanding, its expansion will continue forever.

The third model: the curvature of the universe is zero, or let us say it is flat. If it is expanding, its rate of expansion will slow down, approaching but never actually reaching zero. This means it will slow down, but never completely stop expanding. In this type of universe,

the positive energy provided by matter equals the negative energy provided by gravitation.

All Friedmann models predict that at the beginning of the universe, the distance between the galaxies was zero, meaning the volume of the universe was zero and its density was infinite. This means that the Friedmann models based on the theory of relativity state that the universe started from a point at which the general theory of relativity itself collapses. This point is called singularity, and it is at this point that the big bang began.

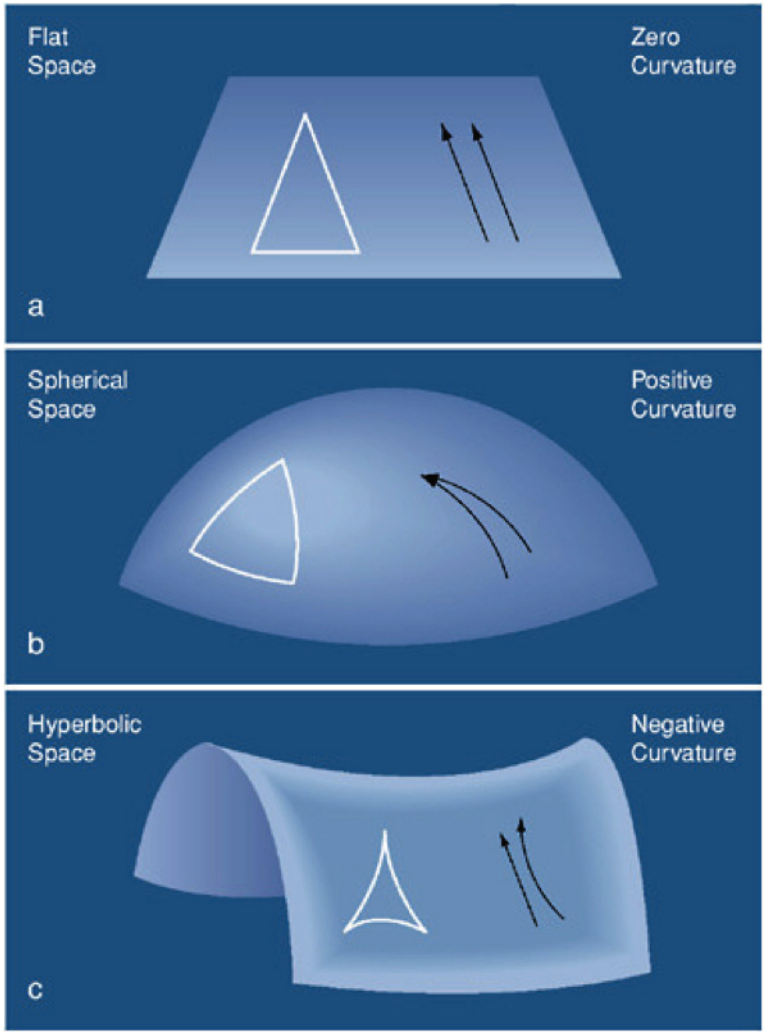

Figure 24: Friedmann Models

The Universe Has a Beginning:

The universe in which we live is composed of visible matter that is, essentially, gaseous clouds, rock debris, planets and burning stars. They are arranged in groups called galaxies that revolve in their orbits. Some of these galaxies contain hundreds of billions of stars, others even reaching a trillion stars. They move away from each other in the

universe with noticeable speed and acceleration. Some have a spiral shape, others oval, helical, or unorganized; others are deformed as they are the result of the collision of two galaxies.Those galaxies are structured in galactic clusters that represent the regions of visible matter in the universe. A single cluster may contain hundreds or thousands of galaxies.

These are fundamental issues, proven through astronomical observation and certain laws of physics, such as the Doppler effect caused by the shift in relative frequency. What concerns us here is the conclusion reached by astronomers, namely that galaxies are rapidly moving away from each other and at an accelerating speed. This means that the universe is expanding and it is not static. Consequently, it was smaller in the past and had a greater density. This means that the universe has a beginning and it is not eternal. This has been proven through observation, the Doppler effect of the shift in relative frequency, and, subsequently, cosmic background radiation. However, before cosmic background radiation, the big bang had a competitor: the steady state model presented by Hermann Bondi, Thomas Gold and Fred Hoyle. It can be said that this model was an attempt to explain galaxies moving away from each other in such a way that the universe would not have a beginning. It is almost an attempt to negate that beginning and what it represents: an indication of an entity greater than this universe that may have caused the beginning of the universe.

The Doppler Effect and the Expanding Universe:

The Doppler effect is the relative change (shift) in wave frequency due to the relative movement between the source of the waves and the observer. Based on this change, it can be determined whether the source of the waves is moving towards or away from the observer. This effect can be observed in daily life when a sound-emitting vehicle passes us, such as a police car or an ambulance. We find that when approaching us, its sound is louder than when moving away from us, whereas, to the driver, it sounds the same. By means of the Doppler effect, we can determine whether stars and galaxies are approaching or moving away from us by measuring the radiation frequency they emit and comparing it to the original laboratory frequency. When measuring the frequency of light emitted from a star using a ground telescope, together with our knowledge that light is a product of hydrogen burning and

the original wavelength of hydrogen experimentally, we can compare the wavelength of the hydrogen spectrum from the star to the original wavelength of the hydrogen spectrum. Therefore, we can determine whether this star is approaching or moving away. If the wavelength of the light of the star is less than its laboratory counterpart, we know that this star is moving away from us, and vice versa. The same goes for galaxies. Color-wise, if the color of the galaxy's light shifts toward blue, they are moving toward us and moving in our direction. If the color of the galaxy's light shifts toward red, that means it is moving away from us.

The results of observations have proven that the spectrum of most galaxies shifts toward red. The extent of this shift is directly proportional to the galaxy's distance from us. Therefore, the further away the galaxy is, the greater the redshift. This means that the galaxies are moving away from us. In addition, the further away a galaxy is from us, the greater its speed, meaning galaxies are moving away from each other quickly, and at an accelerating rate. This also means that galaxies and the matter in the universe were closer to each other in the past. The further we go back in time, the closer they are until we reach a volume of zero. Therefore, the stationary or static model of the universe is incorrect. It is not correct to say that the universe we live in is eternal, nor that the universe was directly created as it is now.

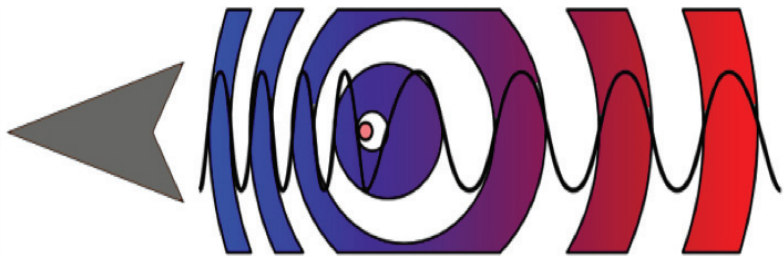

Figure 25: Simplified drawing of the Doppler Effect*

*. Original source is the free encyclopaedia, Wikipedia. Corrections have been made. When the "source of the waves" moves in your direction, the waves become more compressed the closer to you they are (the blue waves). However, if the source of the waves is moving away from you, the waves become more stretched out the further from you that they are (the red waves).

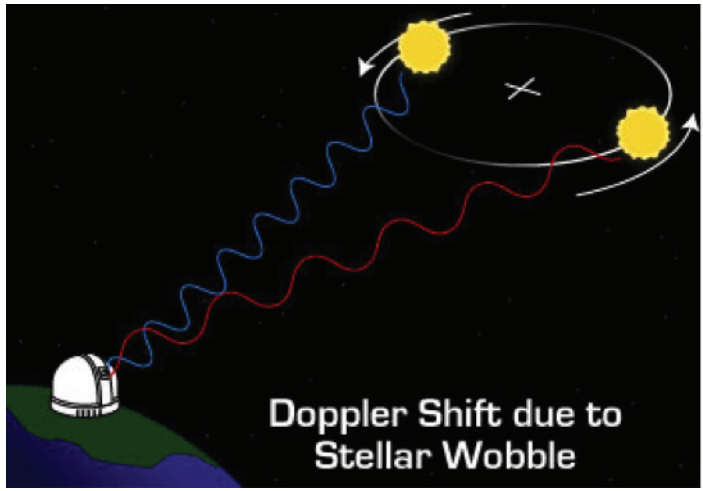

Figure 26: Simplified drawing as further example of the use of the Doppler Effect. The image explains how Doppler fluctuation is used for detecting planets.

Hydrogen Indicates that the Universe Has a Beginning

The universe, with all its galactic clusters, galaxies, stars and planets, is composed of chemical elements that represent the matter known to us. Most of these elements are known to whoever has studied the fundamentals of chemistry. They are arranged in the periodic table from hydrogen, the lightest of the elements, to the heavy radioactive elements such as uranium and radium.

From observing and studying the universe, we know that hydrogen is the most abundant element in the universe. Compared with other, heavier elements, we can say that hydrogen is just like the number of bacteria compared with other more complex organisms with respect to life on the earth.

In addition to the above, given our knowledge that burning stars do not produce hydrogen—yet that hydrogen is the fuel they consume to produce the other heavier elements—it becomes clear to us that this quantity of hydrogen (which represents most of the mass of the universe) existed in this universe before any other element. We can take this conclusion further and say that hydrogen is the first element to exist in this universe. This means that the oldest element in the

universe is the one with the simplest atomic composition (a proton + an electron). This alone is sufficient to draw our attention to the fact that the universe started out much simpler than what it is now, meaning that the universe as a whole went through the same course of evolution that life on earth subsequently went through. The foremost of the atomic elements composing our world was hydrogen, followed by helium, lithium, and giant stars that were like giant factories of matter with more complex atomic composition. Once the product is cooked in the star, the star bursts if it is large enough, and it scatters this product (which is composed of heavier, more complex elements) into space in the form of masses, rocks, debris and dust. These gather to form planets and asteroids. At the same time, the cloud of debris and gas may blaze anew if sufficient temperature for nuclear fusion is available, forming a star around which those planets revolve. That is the case with our sun, and that is how planets have and continue to be formed.

Cosmic Background Radiation:

We now know that hydrogen has existed from the beginning and that it is the lightest element. We also know that galaxies are moving away from each other at an accelerating speed, meaning that the universe (matter and energy) is constantly expanding and cooling. This was confirmed for us after the discovery of cosmic background radiation (cosmic microwave background) that exists in all parts of the universe at approximately 2.73 degrees Kelvin. This radiation can be measured from all directions of the universe. Its existence was predicted by the physicist George Gamow. Its temperature was theoretically estimated at 5 K, before being measured with high precision where it was shown that scientists' previous estimates (5 K) were very close to the temperature of background radiation photons (2.73 K).

The existence of this radiation—or photons—at this temperature means that it is a leftover trace remaining from a previous age, during which the universe was smaller, warmer, and packed with radiation or photons, as the more the universe expands, the longer the wavelength of photons becomes, and the lower their frequency and the temperature. The energy of photons is inversely proportional to their wavelengths.

It can be precisely confirmed through cosmic background radiation that photons had more energy in the past, and consequently, that the universe was warmer and smaller. This is done by measuring the energy of these photons or the temperature of cosmic background radiation in a time period before the present. This is possible because we know that photons move at the speed of light, so the ones that reach us arrive late in time depending on how far away from us the event in the universe is. If we assume that we are observing a galaxy X years away from us, it means we are watching and observing events that occurred X years ago. Therefore, if we can examine the energy of photons, or the cosmic background radiation temperature in that galaxy, and it turns out to be higher than the background radiation temperature surrounding us (which we know is 2.73 K), then we learn that the universe used to be warmer and smaller, confirming the validity of the standard model with a high level of knowledge. In fact, this is possible as there is a cosmic thermometer, cyanogen, through which we can determine the background radiation temperature in distant galaxies, meaning the cosmic background radiation temperature, or photon energy, before the present time. This is how scientists settled the issue in favor of the standard model or the big bang theory.

> But why should anybody accept the interpretation? For good reason. Photons take time to reach us from distant parts of the cosmos, so we inevitably look back in time whenever we look outward into space. This means that if the intelligent inhabitants of a galaxy far, far away measured the temperature of the cosmic background radiation for themselves, long before we managed to so do, they should have found its temperature to be greater than 2.73 degrees Kelvin, because they would have inhabited the universe when it was younger, smaller, and hotter than it is today.
>
> Can such an audacious assertion be tested? Yup. Turns out that the compound of carbon and nitrogen called cyanogen — best known to convicted murderers as the active ingredient of the gas administered by their executioners — will become excited by exposure to microwaves. If the microwaves are warmer than the ones in our CBR, they will excite the molecule a little more effectively than our microwaves do. The cyanogen compounds thus act as a cosmic thermometer. When we observe them in distant, and thus younger, galaxies, they should find themselves bathed in a warmer cosmic background than the cyanogen in our Milky Way galaxy. In other words, those galaxies ought to live more excited lives than we do. And they do.

The spectrum of cyanogen in distant galaxies shows the microwaves to have just the temperature we expect at these earlier cosmic times.

You can't make this stuff up.

The CBR does far more for astrophysicists than to provide direct evidence for a hot early universe, and thus for the big bang model. It turns out that the details of the photons that comprise the CBR reach us laden with information about the cosmos both before and after the universe became transparent. We have noted that until that time, about 380,000 years after the big bang, the universe was opaque, so you couldn't have witnessed matter making shapes even if you'd been sitting front-row center. You couldn't have seen where galaxy clusters were starting to form. Before anybody, anywhere, could see anything worth seeing, photons had to acquire the ability to travel, unimpeded, across the universe. When the time was right, each photon began its cross-cosmos journey at the point where it smacked into the last electron that would ever stand in its way. As more and more photons escaped without being deflected by electrons (thanks to electrons joining nuclei to form atoms) they created an expanding shell of photons that astrophysicists call "the surface of last scatter." That shell, which formed during a period of about a hundred thousand years, marks the epoch when almost all the atoms in the cosmos were born.

By then, matter in large regions of the universe had already begun to coalesce. Where matter accumulates, gravity grows stronger, enabling more and more matter to gather. Those matter-rich regions seeded the formation of galaxy superclusters, while other regions remained relatively empty. The photons that last scattered off electrons within the coalescing regions developed a different, slightly cooler spectrum as they climbed out of the strengthening gravity field, which robbed them of a bit of energy.

The CBR indeed shows spots that are slightly hotter or slightly cooler than average, typically by about one hundred thousandth of a degree. These hot and cool spots mark the earliest structures in the cosmos, the first clumping together of matter. We know what matter looks like today because we see galaxies, galaxy clusters, and galaxy superclusters. To figure out how those systems arose, we probe the cosmic background radiation, a remarkable relic from the remote past, still filling the entire universe. Studying the patterns in the CBR amounts to a kind of cosmic phrenology: we can read the bumps on the "skull" of the youthful universe and from them deduce behavior not only for an infant but also for a grown-up.

By adding other observations of the local and the distant universe, astronomers can determine all kinds of fundamental cosmic

> properties from the CBR. Compare the distribution of sizes and temperatures of the slightly warmer and cooler areas, for instance, and we can infer the strength of gravity in the early universe, and thus how quickly matter accumulated. From that we can then deduce how much ordinary matter, dark matter, and dark energy the universe comprises (the percentages are 4, 23, and 73, respectively). From there, it's easy to tell whether or not the universe will expand forever, and whether or not the expansion will slow down or speed up as time passes.
>
> Ordinary matter is what everyone is made of. It exerts gravity and can absorb, emit, and otherwise interact with light. Dark matter, as we'll see in Chapter 4, is a substance of unknown nature that produces gravity but does not interact with light in any known way. And dark energy, as we'll see in Chapter 5, induces an acceleration of the cosmic expansion, forcing the universe to expand more rapidly than it otherwise would. The phrenology exam now says that cosmologists understand how the early universe behaved, but that most of the universe, then and now, consists of stuff they're clueless about.
>
> Profound areas of ignorance notwithstanding, today, as never before, cosmology has an anchor. The CBR carries the imprint of a portal through which all of us once passed (Tyson & Goldsmith 2004, 59-62).*

The standard model (the big bang theory) has become widely accepted. We can say that the stationary model (or the steady state theory) of Fred Hoyle is no longer under scientific consideration. The validity of the standard model has been demonstrated with a high level of scientific knowledge, as well as the fact that, the further back we go into the history of the universe, the more dense, the less vast, and the warmer it is. The vaster the universe (matter and energy) is, the longer the wavelength of photons and the lower their energy and temperature. The reverse is also true.

> The observation in 1974 of absorption by the second rotating state of interstellar cyanogen has yielded an estimate of the radiation intensity at a wavelength of 0.132 centimeters, also corresponding to a temperature of about 3° K. However, such observations have so far set only upper limits on the radiation energy density at wavelengths shorter than 0.1 centimeters. These results are encouraging because they indicate that the radiation energy density does begin to fall off steeply at some wavelength around 0.1 centimeters, as expected if this is black-body radiation. However, these upper limits do not allow us

*. Dr. Neil Tyson, born in 1958, is an American physicist and astronomer.

> to verify that this really is black-body radiation, or to determine a precise radiation temperature.
>
> It has only been possible to attack this problem by lifting an infrared receiver above the earth's atmosphere, either with a balloon or a rocket. These experiments are extraordinarily difficult and at first gave inconsistent results, alternately encouraging either the adherents of the standard cosmology or its opponents. A Cornell rocket group found much more radiation at short wavelengths than could be expected for a Planck black-body distribution, while an M.I.T. balloon group obtained results roughly consistent with those expected for black-body radiation. Both groups continued their work, and by 1972 they were both reporting results indicating a black-body distribution with temperature close to 3° K. In 1976 a Berkeley balloon group confirmed that the radiation energy density continues to fall off for short wavelengths in the range of 0.25 centimeters to 0.06 centimeters, in the manner expected for a temperature within 0.1° K of 3° K. It now seems to be settled that the cosmic radiation background really is black-body radiation, with a temperature close to 3° K (Weinberg 1993, 69-70).

What remains is the potential for a new model to appear, or a revised version of an old model that describes the universe. As far as physicists are concerned, this is not unlikely.

> The original version of the steady-state cosmology has been pretty well ruled out by various astronomical observations, chief among them the discovery in 1964 of microwave radiation that seems to be left over from a time when the universe was much hotter and denser. It is possible that the steady-state idea may be revived on a grander scale, in some future cosmological theory in which the present expansion of the universe appears as merely a fluctuation in an eternal but constantly fluctuating universe that on average is always the same. There are also more subtle ways that the initial conditions might perhaps some day be deduced from the final laws. James Hartle and Stephen Hawking have proposed one way that this fusion of physics and history might be found in the application of quantum mechanics to the whole universe. Quantum cosmology is right now a matter of active controversy among theorists; the conceptual and mathematical problems are very difficult, and we do not seem to be moving toward any definite conclusions (Weinberg 1992, 35).

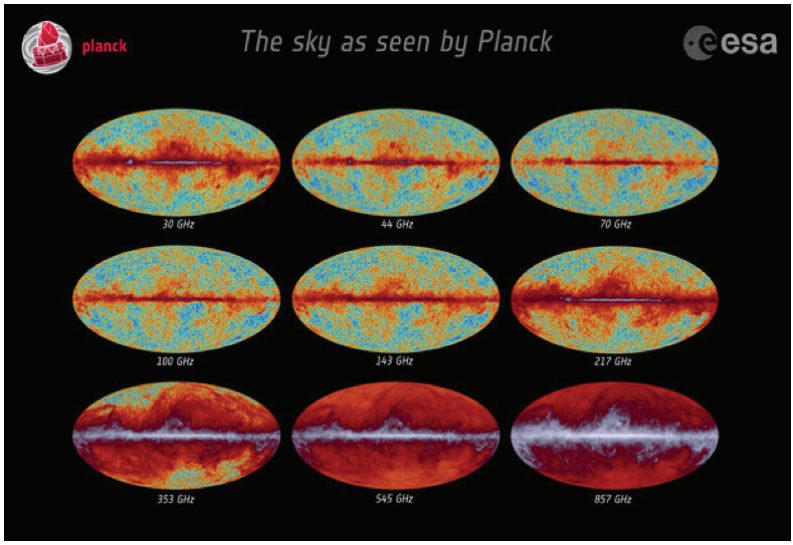

Figure 27: Sky Maps (with different frequencies) The Sky as Seen by the Planck Satellite

Back to the Beginning of the Universe

When we go back in time to the distant past of the universe, we find giant stars cooking hydrogen and helium to produce other heavy elements such as carbon and iron. If we go back even further, we will find that the heavy elements have disappeared and decomposed into lighter elements, and thus we have arrived at a universe whose matter is hydrogen, deuterium, tritium, helium and perhaps a little lithium. If we go back further still, we will reach a stage where the energy of photons does not allow the hydrogen atoms to remain stable. Thus, we will find these atoms broken down into electrons, hydrogen nuclei (protons), the nuclei of hydrogen isotopes, and helium nuclei. We then reach a universe composed of hadrons (such as protons), leptons (such as electrons and neutrinos) and photons. If we go back in time even further, the temperature will be so high that the high energy of photons will allow them to produce material particles when colliding with one another. We will also find that the particles of matter and antimatter appear and annihilate each other in a universe composed of photons

(or energy as photons have no mass), leptons, quarks, antiquarks and also bosons.

However, in any case, we will not be able to go back past a barrier and blockage that obstructs our scientific viewing of what is behind it. This barrier is present when the temperature is approximately 10^{32} K and at the time 10^{-43} seconds after the beginning of the universe. The laws of physics do not work before one Planck time–although certainly, there is only some speculation as to how the string theory would work before that point in time.

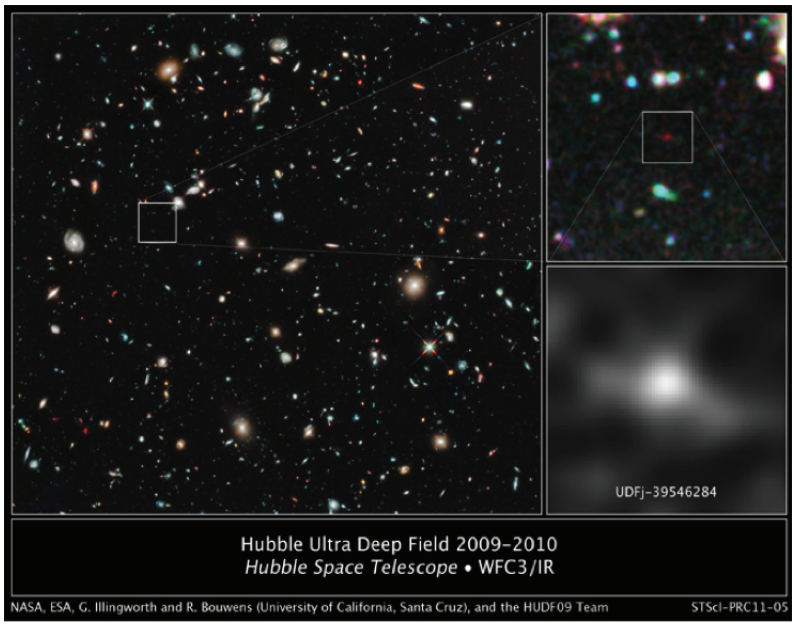

Figure 28: A picture of one of the oldest galaxies. Based on its "color", it is thought to be 13.2 million light years away.

> Nevertheless, we can at least imagine a time when gravitational forces would have been as strong as the strong nuclear interactions discussed above. Gravitational fields are generated not only by particle masses, but by all forms of energy. The earth is going around the sun a little faster than it otherwise would if the sun were not hot, because the energy in the sun's heat adds a little to the source of its gravitation. At super-high temperatures the energies of particles in thermal equilibrium can become so large that the gravitational forces between them become as strong as any other forces. We can estimate that this state

of affairs was reached at a temperature of about 100 million million million million million degrees (10^{32} ° K).

At this temperature all sorts of strange things would have been going on. Not only would gravitational forces have been strong and particle production by gravitational fields copious—the very idea of "particle" would not yet have had any meaning. The "horizon," the distance beyond which it is impossible yet to have received any signals (see page 419), would at this time be closer than one wavelength of a typical particle in thermal equilibrium. Speaking loosely, each particle would be about as big as the observable universe!

We do not know enough about the quantum nature of gravitation even to speculate intelligently about the history of the universe before this time. We can make a crude estimate that the temperature of 10^{32} ° K was reached some 10^{-43} seconds after the beginning, but it is not really clear that this estimate has any meaning. Thus, whatever other barriers may have been lifted, there is one barrier, at a temperature of 10^{32} ° K, that still obscures our view of the earliest times.

However, none of these uncertainties makes much difference to the astronomy of A.D. 1976. The point is that during the whole of the first second the universe was presumably in a state of thermal equilibrium, in which the numbers and distribution of all particles, even neutrinos, were determined by the laws of statistical mechanics, not by the details of their prior history. When we measure the abundance today of helium, or microwave radiation, or even of neutrinos, we are observing the relics of the state of thermal equilibrium which ended at the close of the first second. As far as we know, nothing we can observe depends on the history of the universe prior to that time. (In particular, nothing we now observe depends on whether the universe was isotropic and homogeneous before the first second, except perhaps the photon-to-nuclear-particle ratio itself.) It is as if a dinner were prepared with great care—the freshest ingredients, the most carefully chosen spices, the finest wines —and then thrown all together in a great pot to boil for a few hours. It would be difficult for even the most discriminating diner to know what he was being served. (Weinberg 1993, 145-47).

Some 14 billion years ago, at the beginning of time, all the space and all the matter and all the energy of the known universe fit within a pinhead. The universe was then so hot that the basic forces of nature, which collectively describe the universe, were merged into a single, unified force. When the universe was a roaring 10^{30} degrees and just 10^{-43} seconds old—the time before which all of our theories of mat-

> ter and space lose their meaning—black holes spontaneously formed, disappeared, and formed again out of the energy contained within the unified force field. Under these extreme conditions, in what is admittedly speculative physics, the structure of space and time became severely curved as it gurgled into a spongy, foamlike structure. During this epoch, phenomena described by Einstein's general theory of relativity (the modern theory of gravity) and quantum mechanics (the description of matter on its smallest scales) were indistinguishable (Tyson 2004, 25).

We can only know about the beginnings of the universe by going back in time while taking information from the present with us, obtained from observation and measurement, and while equipped with proven equations and laws of matter, such as Einstein's equation, his special and general theories of relativity and Planck's quantum theory. Much of what cosmologists and theoretical physicists present in terms of the standard model, the Big Bang theory and the journey of the universe (especially in its first few minutes) is based on precise measurements of what our current universe contains. Indeed, we are not used to them in our daily lives and we may even consider them odd. However, they are not fiction, but rather the realities that surround us. Einstein's general theory predicted the existence of black holes, and their effects were observed in the universe. Recently, in the twenty-first century, they themselves were observed with precision, and they were no longer a mere possibility predicted by scientific theories like those of Einstein. The Higgs boson was discovered in the Hadron Collider in the twenty-first century, as well as other quantum particles in modern physics, which began with Max Planck's quantum theory and Einstein's theory of relativity and equation on energy and matter. Realities are no longer as people are accustomed to, notions of time and space are no longer as they were. The human being is no longer just similar to plants and animals, being connected to them by the same genetic plan formed at the time of the first emergence of terrestrial life, but has now become similar to any rock, stone, piece of iron or element of matter, even if a living body is not contained therein. Everyone is composed of leptons and hadrons, which are in turn composed of quarks.

Cosmologists and theoretical physicists can now say with a reasonable level of confidence that they have theoretically travelled as far back in time as possible to the beginning of the universe. They

predicted the states in which our universe could be. They saw how hadrons, leptons and antileptons were formed from energy, and how they annihilated each other so that only one part in a billion of matter (or hadrons and leptons) remains. They saw how the four forces (gravitational, electromagnetic, strong nuclear and weak nuclear) were formed, followed by the formation of hydrogen and helium nuclei, followed by light atoms, such as hydrogen, helium and lithium atoms. They saw how these elements then gathered in giant gaseous clouds that moved and revolved, raising their temperatures until they reached the point of nucleus fusion. Giant nuclear factories called stars were then formed, wherein the remaining heavier elements (such as carbon and iron) were cooked. The star would explode after running out of nuclear fuel, spreading these elements in the universe and forming a part of the planets or the stars of the next generation. This continued until finally forming our current universe that we see today.

Cosmologists may be able to assert all of the above, yet it can also be scientifically stated that everything we observe and all of the laws we discover only describe a place within the universe in which we are situated. In other words, the observed region we live in and call "the universe" is only a part of the universe, and the features we observe and laws we write only provide an expression for this region. We can imagine this region in the universe as a block of ice floating on one of the earth's oceans. There is also a beginning of the universe that is completely blocked from us—it cannot be observed and its details cannot be entirely determined. Whatever anyone presents regarding the issue will always consist of just possibilities and assumptions.

> In following this account of the first three minutes, the reader may feel that he can detect a note of scientific overconfidence. He might be right. However, I do not believe that scientific progress is always best advanced by keeping an altogether open mind. It is often necessary to forget one's doubts and to follow the consequences of one's assumptions wherever they may lead—the great thing is not to be free of theoretical prejudices, but to have the right theoretical prejudices. And always, the test of any theoretical preconception is in where it leads. The standard model of the early universe has scored some successes, and it provides a coherent theoretical framework for future experimental programs. This does not mean that it is true, but it does mean that it deserves to be taken seriously.
>
> Nevertheless, there is one great uncertainty that hangs like a dark

cloud over the standard model. Underlying all the calculations described in this chapter is the Cosmological Principle, the assumption that the universe is homogeneous and isotropic. (By "homogeneous" we mean that the universe looks the same to any observer who is carried along by the general expansion of the universe, wherever that observer may be located; by "isotropic" we mean that the universe looks the same in all directions to such an observer.) We know from direct observation that the cosmic microwave radiation background is highly isotropic about us, and from this we infer that the universe has been highly isotropic and homogeneous ever since the radiation went out of equilibrium with matter, at a temperature of about 3,000° K. However, we have no evidence that the Cosmological Principle was valid at earlier times.

It is possible that the universe was initially highly inhomogeneous and anisotropic, but has subsequently been smoothed out by the frictional forces exerted by the parts of the expanding universe on each other. Such a "mixmaster" model has been particularly advocated by Charles Misner of the University of Maryland. It is even possible that the heat generated by the frictional homogenization and isotropization of the universe is responsible for the enormous 1,000 million-to-one present ratio of photons to nuclear particles. However, to the best of my knowledge, no one can say why the universe should have any special initial degree of inhomogeneity or anisotropy, and no one knows how to calculate the heat produced by its smoothing out.

In my opinion, the appropriate response to such uncertainties is not (as some cosmologists might like) to scrap the standard model, but rather to take it very seriously and work out its consequences thoroughly, if only in the hope of turning up a contradiction with observation. It is not even clear that a large initial anisotropy and inhomogeneity would have much effect on the story presented in this chapter. It might be that the universe was smoothed out in the first few seconds; in that case the cosmological production of helium and deuterium could be calculated as if the Cosmological Principle were always valid. Even if the anisotropy and inhomogeneity of the universe persisted beyond the era of helium synthesis, the helium and deuterium production in any uniformly expanding clump would depend only on the expansion rate within that clump, and might not be very different from the production calculated in the standard model. It might even be that the whole universe that we can see when we look all the way back to the time of nucleosynthesis is but a homogeneous and isotropic clump within a larger inhomogeneous and anisotropic universe.

> The uncertainty surrounding the Cosmological Principle becomes really important when we look back to the very beginning or forward to the final end of the universe. I will continue to rely on this Principle in most of the last two chapters. However, it must always be admitted that our simple cosmological models may only describe a small part of the universe, or a limited portion of its history (Weinberg 1993, 119-21).

In fact, Steven Weinberg believes that perhaps in the future, it will become clear to us that some of what we now consider universal laws of physics are actually laws that are formulated and based on historical events, like the rotation of the planets of the solar system around the sun, the cause being the direction of rotation of the rotating, gaseous dust cloud from which the sun and the planets were formed. This cloud is used to rotate in this direction, and that is why the planets rotate in the same direction. This is a historical event and not a law of physics.

> Of course whatever determinism survives in principle does not help us very much when we have to deal with real systems that are not simple, like the stock market or life on earth. The intrusion of historical accidents sets permanent limits on what we can ever hope to explain. Any explanation of the present forms of life on earth must take into account the extinction of the dinosaurs sixty-five million years ago, which is currently explained by the impact of a comet, but no one will ever be able to explain why a comet happened to hit the earth at just that time. The most extreme hope for science is that we will be able to trace the explanations of all natural phenomena to final laws and historical accidents.
>
> The intrusion of historical accidents into science means also that we have to be careful what sort of explanations we demand from our final laws. For instance, when Newton first proposed his laws of motion and gravitation the objection was raised that these laws did not explain one of the outstanding regularities of the solar system, that all the planets are going around the sun in the same direction. Today we understand that this is a matter of history. The way that the planets revolve around the sun is a consequence of the particular way that the solar system condensed out of a rotating disc of gas. We would not expect to be able to deduce it from the laws of motion and gravitation alone. The separation of law and history is a delicate business, one we are continually learning how to do as we go along.
>
> Not only is it possible that what we now regard as arbitrary initial conditions may ultimately be deduced from universal laws—it is also

> conversely possible that principles that we now regard as universal laws will eventually turn out to represent historical accidents. Recently a number of theoretical physicists have been playing with the idea that what we usually call the universe, the expanding cloud of galaxies that extends in all directions for at least tens of billions of light years, is merely a subuniverse, a small part of a much larger megauniverse consisting of many such parts… (Weinberg 1992, 37-38).

Shortly After the Beginning

The laws of physics cannot describe the state of the universe before 10^{-43} seconds after the big bang, despite what has been asserted by some string theory theorists. For this reason, the following description begins after this time. In fact, it begins after it by a time period sufficient for the universe to cool and allow for the formation of the parts of atoms that we know. The description continues until we reach the present time. We are to bear in mind that this description is nothing but information based on mathematical equations and data from observation and measurements of our current universe. In this universe, we have also observed some events from the distant and near past. When we look into the depths of the universe, we find events that go back further in time, because as we know, they move at a fixed speed even if it is the speed of light. It is for this reason that these events reach us after the time of their occurrence by a period directly proportional to the distance between us and them.

We shall tell our story as it occurred in a series of events shortly after the beginning until the present day. However, cosmologists did not learn about or read this story as it happened. Rather, the way they read and learned about it is more akin to reading a book from end to beginning. This reverse reading may be infused with reading things from the middle of the story. This is because, as we have previously clarified, the more distant the events are from us, the later they are in reaching us.

In theoretical physics, we reach the conclusion that, at the beginning, or before the 10^{-43} second (meaning around Planck time) the universe was so small that in order for physicists to understand the manner in which it behaved, they needed a theory and an equation that combines Einstein's general theory of relativity—which describes the universe and the large objects therein such as stars and planets—with

Planck's quantum theory—which describes things that are infinitely small, like photons and electrons.

> At this temperature all sorts of strange things would have been going on. Not only would gravitational forces have been strong and particle production by gravitational fields copious-the very idea of "particle" would not yet have had any meaning. The "horizon", the distance beyond which it is impossible yet to have received any signals, would at this time be closer than one wavelength of a typical particle in thermal equilibrium. Speaking loosely, each particle would be about as big as the observable universe! (Weinberg 1993, 146).

Until now, the theory of everything, or the equation that describes the infinitely large (the universe) and the infinitely small (quantum particles) does not exist in a form that theoretical physicists and cosmologists completely accept. There is the M theory, which is a theory in the making, and it may need to be adjusted and to pass some tests for it to be validated. To date, M theory remains an equation that is well proven mathematically. M theory or the superstring theory will be discussed later on.

> To understand the behavior of space, time, matter, and energy from the big bang to present day is one of the greatest triumphs of human thought. If you seek a complete explanation for the events of the earliest moments, when the universe was smaller and hotter than ever thereafter, you must find a way to enable the four known forces of nature—gravity, electromagnetism, the strong and the weak nuclear forces—to talk to one another, to unify and become a single metaforce. You must also find a way to reconcile two currently incompatible branches of physics: quantum mechanics (the science of the small) and general relativity (the science of the large).
>
> Spurred by the successful marriage of quantum mechanics and electromagnetism during the mid-twentieth century, physicists moved swiftly to blend quantum mechanics and general relativity into a single and coherent theory of quantum gravity. Although so far they have all failed, we already know where the high hurdles lie: during the "Planck era." That's the cosmic phase up to 10^{-43} second (one ten-million-trillion-trillion-trillionth of a second) after the beginning.
>
> Because information can never travel more rapidly than the speed of light, 3×10^8 meters per second, a hypothetical observer situated anywhere in the universe during the Planck era could see no farther

> than 3 x 10^{-35} meter (three hundred billion trillion-trillionths of a meter).
>
> The German physicist Max Planck, after whom these unimaginably small times and distances are named, introduced the idea of quantized energy in 1900 and generally receives credit as the father of quantum mechanics.
>
> Not to worry, though, so far as daily life goes. The clash between quantum mechanics and gravity poses no practical problem for the contemporary universe. Astrophysicists apply the tenets and tools of general relativity and quantum mechanics to extremely different classes of problems. But in the beginning, during the Planck era, the large was small, so there must have been a kind of shotgun wedding between the two. Alas, the vows exchanged during that ceremony continue to elude us, so no (known) laws of physics describe with any confidence how the universe behaved during the brief honeymoon, before the expanding universe forced the very large and very small to part ways.
>
> At the end of the Planck era, gravity wriggled itself loose from the other, still-unified forces of nature, achieving an independent identity nicely described by our current theories. As the universe aged past 10^{-35} second, it continued to expand and to cool, and what remained of the once-unified forces divided into the electro-weak force and the strong nuclear force. Later still, the electroweak force split into the electromagnetic and the weak nuclear forces, laying bare four distinct and familiar forces—with the weak force controlling radioactive decay, the strong force binding together the particles in each atomic nucleus, the electromagnetic force holding atoms together in molecules, and gravity binding matter in bulk. By the time the universe aged a trillionth of a second, its transmogrified forces, along with other critical episodes, had already imbued the cosmos with its fundamental properties, each worthy of its own book (Origins 2004, 41-44).

We can sum up what concerns us from the story of the universe that starts shortly after the beginning as follows:

After the big bang we came to have a hot universe. After it cooled slightly, in fractions of a second, it became composed of leptons, quarks, antiquarks, bosons and photons. However, quarks and leptons outnumber their antiparticles by one per billion, meaning that matter outnumbers antimatter. This outnumbering is the reason behind the existence of the stars and planets, as well as of our bodies.

A fraction of a millionth of a second later, the universe cooled some more and allowed quarks to combine and cohere. Thus quarks combined together, forming material particles heavier than leptons called hadrons (such as protons and neutrons). Consequently, antihadrons were formed, but in a ratio the same as that of quarks and antiquarks. So there was a one to a billion increase in favor of hadrons or matter over antimatter. As the universe continued to expand and cool, and the energy of photons consequently declined, the energy of photons was no longer sufficient to produce hadrons and antihadrons. As a result, only the excess material remained, meaning one hadron remained for every billion that vanished in favor of a billion photons that have less energy than before. This is a result of the expansion of the universe (matter and energy) between the first second and the end of the second second after the beginning of the big bang.

However, during this time, the heat of the universe (and consequently, the energy of photons) was sufficient to produce electrons and positrons (antielectrons). Once the universe (matter and energy) had continued to expand and cool, it reached a temperature below the threshold temperature of electrons, and the energy of photons was no longer sufficient to produce electrons and positrons. At this point, the same thing that happened to hadrons in the past happened to the electrons and positrons. Matter (electrons) and antimatter (positrons) were annihilated and the excess matter remained, which we previously said is one part in a billion. Thus, one electron remained for every billion pair of electrons and positrons that vanished.

We now have hadrons (protons and neutrons) and electrons in the universe, and they are the fundamental structures of atoms. As the universe continued to cool, it allowed hadrons to combine and cohere in the first few minutes and to form the nuclei of hydrogen, helium, and some other light elements like heavy hydrogen.

Hundreds of thousands of years later, as the universe cooled further, it reached a temperature less than 3000 K. This allowed the formation of hydrogen and helium atoms from nuclei and electrons that were freely floating in the universe, (which had previously formed, as we have explained above). Furthermore, the universe became translucent, allowing for vision as the electrons became confined in the atoms, and photons began moving freely after electrons got out of their way. At this point, we arrive at the emergence of the material universe we see. With regard to the other elements, they are still continuously

being produced and cooked in the process of the nuclear burning of hydrogen and helium or the restructure and reformation of atoms in burning or exploding stars.

> The universe will go on expanding and cooling, but not much of interest will occur for 700,000 years. At that time the temperature will drop to the point where electrons and nuclei can form stable atoms… (Weinberg 1993, 112).

> As the universe expanded, the energy carried by each photon decreased. Eventually, about the time that the young universe reached its 380,000th birthday, its temperature dropped below 3,000 degrees, with the result that protons and helium nuclei could permanently capture electrons, thus bringing atoms into the universe. In previous epochs, every photon had sufficient energy to break apart a newly formed atom, but now the photons had lost this ability, thanks to the cosmic expansion (Tyson 2004, 53).

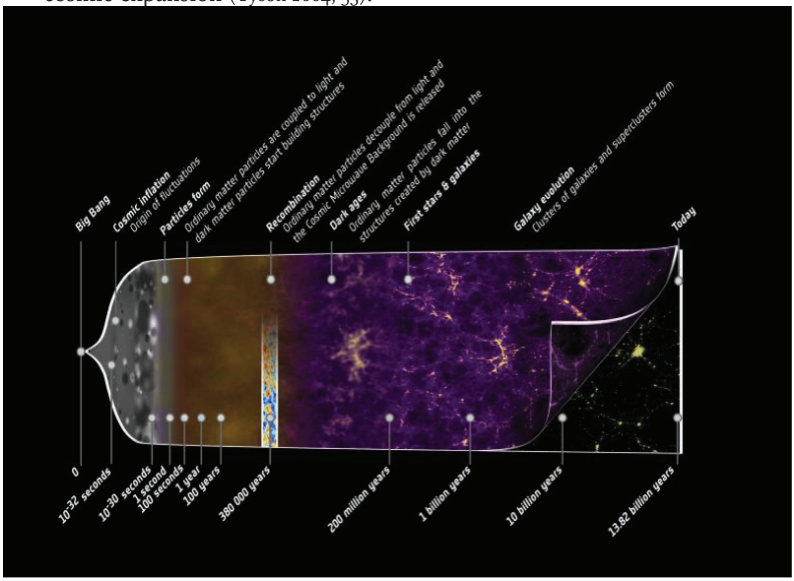

Figure 29: The stages of the emergence of the universe, from the big bang to the present day. Reference: ESA - European Space Agency

Antimatter:

Following Einstein's special theory of relativity, the equivalence principle and quantum mechanics theory, Paul Dirac, who made fundamental contributions to quantum mechanics, found that when calculating energy levels, they give positive as well as negative mathematical results. These negative results discovered by Dirac had no accurate explanation except that they were like holes that can hide the electron should it fall into them. In 1932, while observing cosmic radiation, Carl Anderson discovered a particle that had the mass of the electron but with a positive charge. This particle was called the positron or the antielectron. This was the hole of the electron that would cause both the electron and positron to disappear if the electron were to fall into it.*

The stage of discovering antimatter particles had begun and, subsequently, the opposites of other particles were discovered.

Antiparticles have the same mass as the material particle they counter. However, they usually have an opposing charge. Sometimes, parts of the antiparticle (i.e. quarks) have charges that oppose the parts of the material particle. This is the case with the neutron, which has zero charge.†

The electron has a negative charge, while the antielectron (or positron) has a positive charge.

The proton has a positive charge and the antiproton has a negative charge.

The neutron has a neither positive nor negative charge, as is the case with the antineutron. However, they are both composed of quarks whose charges oppose one another.

If they collide, antimatter and matter are annihilated, releasing high energy. Likewise, high-energy photons (like gamma ray photons) can have their high energy transformed into particles of matter and antimatter, for example the electron and positron, within the boundaries of Einstein's law, $E=mc^2$.

The photons of the universe were high-energy at the beginning of its formation. That is why the particle pairs of matter and antimatter

*. Carl Anderson (1905-1991) was an American physicist and astronomer.

†. A neutron also has an antiparticle although it has zero charge. Its antiparticle, the antineutron, has zero charge as well.

used to appear and get annihilated continuously, leaving high-energy photons behind that repeat the cycle, and so on.

A team of researchers were able to synthesize antihydrogen atoms, although they were able to maintain them for only a fraction of a second, as antimatter cannot be contained within a jar of matter because together they would be annihilated. The way of preserving antimatter is by containing it within the walls of a strong magnetic field. However, this field does not prevent the atoms of matter from going through it. Consequently, the lifespan of synthesized antimatter is short as long as matter surrounds it.

One important issue about antimatter remains, namely that the standard model assumes the material universe was formed due to the outnumbering of matter particles by one in every billion at the beginning of the universe's formation. There is no justification for this outnumbering. For this reason, it is indeed reasonable to assume the existence of antimatter in one of the borders of the universe, perhaps in a corner that is distant from the matter under our observation. If antimatter was present within the same scope as matter, and a mass of matter collided with a mass of antimatter about the size of a star, the energy released by their annihilation would be extremely high, as per Einstein's law of $E=mc^2$, and this energy may be estimated to be equal to the energy of billions of stars.

If energy of this measure is released at once, it may certainly be observed, even if it is in the most distant of galaxies. This is especially the case given the great advancement of cosmology. For this reason, if antimatter exists, it must be in a corner of the universe other than the corner wherein exist the material galactic clusters that we know, observe and live in.

> Still, the universe now seems disturbingly imbalanced: we expect particles and antiparticles to be created in equal numbers, yet we find a cosmos dominated by ordinary particles, which seem to be perfectly happy without their antiparticles. Do hidden pockets of antimatter in the universe account for the imbalance? Was a law of physics violated (or was an unknown law of physics at work?) during the early universe, forever tipping the balance in favor of matter over antimatter? We may never know the answers to these questions… (Tyson & Goldsmith 2004, 65).

Dark Matter

The earth revolves around the sun in a particular orbit and at a particular speed. The speed within this orbit is determined by gravitational force: a force exerted by a body on another. The effect of this force appears clearly in large objects, because it accumulates and increases as mass increases. Its laws were developed by well-known physicist Isaac Newton. However, it had been a mysterious force in physics until Einstein's general theory of relativity explained it to be the result of the bending of the fabric of the universe, or the spacetime fabric, depending on the mass of the object.

Hypothetically, if the sun had a much greater mass than it actually does, it would bend the spacetime fabric to a greater degree. Consequently, the earth (with its current orbit and speed) would move out of its current path and fall towards the sun due to gravitational force. For earth to rid itself of this fate, it must rotate at a greater speed so that its moment of inertia torque keeps it in the same path. Likewise, if we assume that the earth moved at a speed greater than it currently does, and that its speed was enough to escape the gravitation of the sun (meaning it reached the escape velocity), it would then move out of its orbit, away from the sun. In order to prevent this speeding earth from escaping its orbit and moving away from the sun, the mass of the sun must be increased so that its gravitation is sufficient to prevent the earth from escaping its orbit and moving away from it.

What is stated here is based on Newton's gravitational law, and in the same manner in which it applies to the earth, it also applies to the galaxies. An example is the gravitational effect of the mass of a galaxy on the stars and planets therein, and the effect of a cluster's mass on the galaxies, and the gravitational effect of a galaxy's mass on another galaxy.

Ever since the 1930s, observations have recorded galaxies in some galaxy clusters moving at a high speed that exceeds the speed at which the force of attraction allows for galaxy clusters. In other words, these galaxies move at a greater speed than the speed of escaping, yet they remain in its orbit. This means that there is gravitation that prevents it from escaping or makes it move at this speed. Even at the present time, the observations have confirmed that it exists around us in the universe and on a large scale, for many of the galaxy clusters confirm that there is a great force of attraction making the galaxies move at a

higher speed. The clusters would be unable to remain in their state if not for the existence of the force of attraction that protects these clusters from dissipating and dispersing in the universe once its galaxies exceed the escape velocity, within the limits of calculating the gravity of visible matter within the galaxy clusters. Also observed was a force of gravitation in excess of what visible matter provides in spiral galaxies.

The conclusion reached by astronomers from the observations is that there is a force of attraction abundant within the universe, the source of which is unknown. When astronomers termed it dark matter, they described it as not reacting with ordinary matter or reacting with the utmost weakness, insofar as it is not noticeable, nor does it affect ordinary matter through the force of attraction generated.

Thus, we have a force of attraction the cause of which is unobservable and not manifestly known to the astronomers and physicists - at least until the present time.

Initially, some physicists had rejected this line of reasoning, regarding the laws of Newton as utterly incorrect, requiring amendment with respect to massive volumes such as the galaxies and galaxy clusters since the distances between the stars within the galaxies are far apart. This is also the case with regard to the distances between galaxies and galaxy clusters. However, such an amendment of Newton's laws did not succeed in explaining the source of the excess force of attraction in a correct and acceptable manner. In addition, there is evidence affirming the existence of dark matter or the additional gravitational force beyond the gravitational force that is provided from known matter. Consequently, the laws of Newton have been correct and the universe needed at its beginning of creation a greater force of attraction than that which is provided by the known matter. This enables the galaxy clusters and galaxies to form rather than to disperse the matter in the universe, which came into being at the start of its creation.

> During the first half million years after the big bang, a mere moment in the 14-billion-year sweep of cosmic history, matter in the universe had already begun to coalesce into the blobs that would become clusters and superclusters of galaxies. But the cosmos was expanding all along, and would double in size during its next half million years. So the universe responds to two competing effects: gravity wants to make stuff coagulate, but the expansion wants to dilute it. If you do

> the math, you rapidly deduce that the gravity from ordinary matter could not win this battle by itself. It needed the help of dark matter, without which we would be living—actually not living—in a universe with no structure: no clusters, no galaxies, no stars, no planets, no people. How much gravity from dark matter did it need? Six times as much as that provided by ordinary matter itself. This analysis leaves no room for MOND's little corrective terms in Newton's laws. The analysis doesn't tell us what dark matter is, only that dark matter's effects are real—and that, try as you may, you cannot credit ordinary matter for it (Tyson & Goldsmith 2004, 71-72).

Alongside the hypothesis of the existence of dark matter to explain the additional increase, or the hypothesis that Newton's laws are incorrect, and amending them according to the big sizes, there is also the theory of multiple universes presented by Hugh Everett. This theory has gained considerable currency within scientific circles, especially following the proposal of the superstring theory and M-theory and mathematical proof of it, as well as the demonstration of dimensions other than the four known and perceivable dimensions (the three dimensions of space and the dimension of time). Scientifically, if there was a phantom universe, unobservable and parallel to our universe, it is possible that this universe will have an effect upon our universe through the force of attraction. For example, insofar as it is possible to assume the string of the force of gravity—or the graviton particle—is free and unconnected to the fabric of the cosmos or the brane in which we live and thus it is possible to transfer it from one universe to another. The consequence of this is that the existence of a universe parallel to our own is sufficient to explain the force of gravity of an unknown source, causing an increase in the speed of the galaxies moving within the galaxy clusters.*

> In this brane world, we would live on one brane but there would be another "shadow" brane nearby. Because light would be confined to the branes and would not propagate through the space between, we could not see the shadow world. But we would feel the gravitational influence of matter on the shadow brane. In our brane such gravitational forces would appear to be produced by sources that were truly "dark" in that the only way we could detect them is through their

*. Hugh Everett (1930-1982) is an American physicist who was the first to propose the many-worlds interpretation.

> gravity. In fact in order to explain the rate at which stars orbit the center of our galaxy, it seems there must be more mass than is accounted for by the matter we observe (Hawking 2001, 184).
>
> The missing mass might arise from some exotic species of particle in our world such as WIMPs (weakly interacting massive particles) or axions (very light elementary particles). But missing mass could also be evidence of the existence of a shadow world with matter in it. Maybe it contains shallow human beings wondering about the mass that seems to be missing from their world to account for the orbits of shadow stars around the center of the shadow galaxy (Hawking 2001, 188).

Dark Energy:

During the twentieth century, astronomical observations of Type Ia supernova—which explodes when a white dwarf reaches 1.4 solar masses—have provided cosmological standard candles by which it is possible to know astronomical distances accurately. This is because when this type of white dwarf explodes and transforms into a supernova, they all produce the same luminosity and dim at the same rate since they all have a nearly identical composition. Additionally, they all explode when reaching the same 1.4 solar masses, which represents the white dwarf's maximum mass, as it strips the hydrogen-rich gases from its aging companion star. As such, density and heat continuously increase until the temperature reaches more than 10 million degrees and nuclear fusion of the entire white dwarf occurs. The star then ignites and explodes massively, tearing the star apart and producing a supernova that is greater than Type Ia.

The cause of the increase or decrease in the brightness of the white dwarfs is the distance between them and the observer, or the distance between the supernova and the observer. This is what makes them standard candles for accurately determining astronomical distances, as has been previously mentioned. For example, if we already know the distance between us and a supernova and then want to measure the distance between us and a second supernova that has a quarter of the first supernova's brightness, then the distance between us and the second supernova is twice the distance between us and the first supernova. This is due to the fact that brightness is proportional to the square of the distance. This also means that, if we know the distance between us and a supernova, we are able to calculate its luminosity. Since su-

pernovae are continuously exploding in the universe around us, they have provided accurate information about astronomical distances. In addition, observing them showed how fast the universe (matter and energy) is expanding.

At the end of the twentieth century, a team of researchers who observed supernovae concluded that a supernova far from us is less bright than it should be. This means that the universe is expanding at a speed greater than expected, which in turn means there is increasing, massive, unknown energy resisting the gravity of the mass of cosmic matter and pushing toward expansion at an increasing rate.

Once a tool for measuring precise astronomical distances had been developed, astronomers measured distances of galaxies and the speed of their distancing, and discovered that there is a great unknown energy fighting the gravitational force of matter in the universe. It is also actively partaking in the continuous expansion of the universe at an increasing rate. This energy was called dark energy.

With regard to calculating this mathematically, based on both the above and other available results and observations, astronomers were able to know the value of the difference between $\Omega_\Lambda - \Omega_M = 0.46 \pm 0.03$.

Ω_Λ represents the ratio of the density provided by dark energy to the critical density.

Ω_M represents the ratio of the average density of all matter in the universe to the critical density.

The critical density is the density at which the curvature of the universe is zero, according to Einstein's equations.

According to the results of astronomical observations, in the visible universe, the ratio of the average density of all matter including dark matter in the universe—calculated based on gravity—to the critical density is almost equal to 0.25, meaning $\Omega_M \approx 0.25$.

From the above equation, we can find that the value of Ω_Λ is:

$$\Omega_\Lambda = \Omega_M + 0.46$$
$$\Omega_\Lambda = 0.46\ (\pm 0.03) + 0.25 \approx 0.71$$

This means that $\Omega_\Lambda + \Omega_M = 0.96 \sim 0.99$. To some physicists and astronomers, this number is almost one, meaning the curvature of the universe is zero.

From Einstein's relativity equations concerning the shape of the universe and its expansion or stability, we can know the value of the

critical density of matter in the universe. Critical density is the density of matter in the universe at which the curvature of space is zero. Actual density is the density of the universe that is actually measured, including the cosmic energy converted to the matter that it equals according to Einstein's equation $E = mc^2$.

If the actual density is larger than the critical density, the curvature of the universe is positive like the surface of a sphere. This also means that, if our universe is expanding, it will eventually contract and its expansion will not continue forever.

If the actual density is smaller than the critical density, the curvature of the universe is negative like the surface of hyperbolic paraboloid and its expansion will continue forever.

If the value of the actual density is equal to the value of the critical density, the curvature of the universe is zero, or let's say it is flat, and its expansion will continue. However, the rate of its expansion will slow down and approach zero without ever actually reaching it.

According to the previous results, the ratio is approximately 1. This means that the actual density is equal to the critical density, which in turn means that the curvature of the universe is zero or, in other words, it is flat.

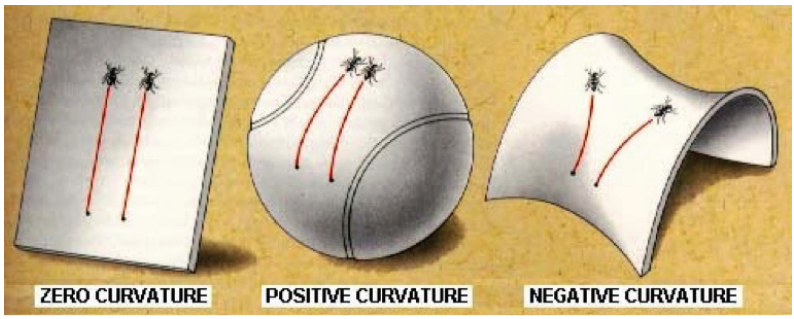

Figure 30: Friedmann Models. Wheeler, A. J. - A journey into gravity and spacetime.

In addition to what supernovae have provided, as mentioned above, scientists have been able to determine the sum of Ω_Λ and Ω_M and that their value is approximately 1.02 ± 0.02. This finding is the result of research conducted at the end of the twentieth century and beginning of the twenty-first century whereby cosmic background radiation was observed and a precise map of the deviations within it was drawn us-

ing sophisticated equipment mounted on aircraft and satellites. If we return to the result provided by supernovae of the value of the difference between them, we would obtain almost the same result, which is that their sum is approximately 1.

Therefore, the cosmological constant in Einstein's equation is not 0 as previously expected, while there is an unknown energy, or dark energy, that represents the majority of the energy affecting the universe. If converted to mass, it would be the greatest contributor to the mass of the universe.

A further point to establish is that the curvature of the universe is 0, meaning that it is flat.

> The WMAP data show that the largest deviations from smoothness in the CBR span an angle of about 1 degree, which implies that $\Omega_M + \Omega_\Lambda$ has a value of 1.02, plus or minus 0.02. Thus, within the limits of experimental accuracy, we may conclude that $\Omega_M + \Omega_\Lambda = 1$, and that space is flat. The result from observations of distant SN Ia's may be stated as $\Omega_\Lambda - \Omega_M = 0.46$. If we combine this result with the conclusion that $\Omega_\Lambda + \Omega_M = 1$, we find that $\Omega_M = 0.27$ and $= \Omega_\Lambda = 0.73$, with an uncertainty of a few percent in each number. As already noted, these are the astrophysicists' current best estimates for the values of these two key cosmic parameters, which tell us that matter—both ordinary and dark—provides 27 percent of the total energy density in the universe, and dark energy 73 percent. (If we prefer to think of energy's mass equivalent, E/c^2, then dark energy furnishes 73 percent of all the mass.) (Tyson 2004, 95).

Regarding the origin of dark energy, some physicists think that quantum mechanics provides a sufficient explanation, since hypothetical particles constantly appear and disappear in a completely empty space. This is because there are quantum fluctuations of emptiness, according to the uncertainty principle in quantum mechanics, as was previously demonstrated.

The space of matter and energy increases with the expansive spread of matter and energy, irrespective of whether it is a part of a bigger space and galaxies, given their diverging and accelerating movement over time, occupy a bigger part than it does, or whether it is the entire universal space and it was miniscule in the past, and began its expansion with the big bang.

Assuming that dark energy comes from the quantum fluctuations of empty space, the result would be that with the expansion of space, dark energy increases in the empty space between matter along with an increased dispersal of matter in the universe. As a result, what is expected in a flat universe, which has a non-zero cosmological constant in Einstein's equation of relativity, is that it tends toward an increase of Ω_{Λ} at the expense of Ω_{M}, constantly, as they maintain a sum of one. It is expected that Ω_{M} would reach a number as close as possible to zero, and that Ω_{Λ} would reach a number as close as possible to one. However, this requires a vast period of time.

Theoretically, the cosmological constant can be very large. If we now return to the beginning of the formation of the universe and assume that the cosmological constant is much bigger than it is now—as is expected theoretically—then the density of the dark energy would be large and the Ω_{Λ} value will not require all of that time to exceed the value of Ω_{M}. Rather, the value of Ω_{Λ} would be much bigger than the value of Ω_{M} within a small period of the age of the universe (perhaps a few million years). This means that the growing influence of the colossal amount of dark energy will make the expansion of the universe occur rapidly and lead to the dispersal and scattering of matter into space, since it will not allow the stars, planets and galaxies to form, and no life will exist in the universe. This means that the current suitable cosmological constant for the emergence of life in the universe is evidence that the universe is codified for life to emerge within it, because the possibilities of the cosmological constant are numerous. It would not be rational for it to occur without prior intention that the cosmological constant, in terms of universal observations, being a great deal less than theoretically expected. Consequently, it is suitable for the galaxies, the stars, the planets and for the emergence of life.

> The straightforward application of quantum theory to what we call a vacuum predicts that quantum fluctuations must create dark energy. When we tell the story from this perspective, the great question about dark energy seems to be, Why did cosmologists take so long to recognize that this energy must exist?
>
> Unfortunately, the details of the actual situation turn this question into, How did particle physicists go so far wrong? Calculations of the amount of dark energy that lurks in every cubic centimeter produce a value of about 120 powers of ten greater than the value that cosmologists have found from observations of supernovae and

> the cosmic background radiation. In far-out astronomical situations, calculations that prove correct to within a single factor of 10 are often judged at least temporarily acceptable, but a factor of 10^{120} cannot be swept under the rug, even by physics Pollyannas. If real empty space contained dark energy in anything like the amounts proposed by particle physics, the universe would have long since puffed itself into so large a volume that our heads could never have begun to spin, since a tiny fraction of a second would have sufficed to spread matter out to unimaginable rarefaction (Tyson & Goldsmith 2004, 99-100).

In an attempt to explain the fixing of the cosmological constant, several universes are shown here in multiple ways by the physicists and the cosmologists. There is an assumption that states: that we live in a universe that is part of a sequence of several universes - unconnected to each other. Each universe has its own space that has been formed by many chance events and explosions inside an entity with higher dimensions. Here we can imagine that our universe is an output of one of these many chance events and explosions, most of which have been formed by a cosmological constant that does not allow the emergence of life within them. Therefore, the presented quandary no longer exists.

However, this remains a mere hypothesis. We may assert that every one of the multiple universes originated from a universe higher than it. Accordingly, they do not share a common origin and thus this does not solve the problem of probability in the fixing of the cosmological constant. One may further add to this that the hypothesis of the multiple universes itself leads to additional questions regarding those multiple universes and the possibility of influencing each other even if the quantitative variations in the space is an output of this influence.

To this point, this is a general hypothesis that represents a weak response to what has been proved according to actual universal observations—namely, that the current cosmological constant, at that amount, is suitable for the emergence of life and hence the emergence of our bodies. This is the case even if it was not with this amount—but, rather, a far bigger amount—as is hypothesized according to the theoretical principles when life emerged in this universe. This means that it was intended with life as it objective. Thus, this proves the existence of God.

> … in the multiverse concept, the entire state of affairs embeds in

> higher dimensions, so space in our universe remains completely inaccessible to any other universe, and vice versa. This lack of even theoretically possible interactions puts the multiverse theory into the category of apparently nonstable, and therefore nonverifiable, hypotheses—at least until wiser minds find ways to test the multiverse model. In the multiverse, new universes are born at completely random times, capable of swelling up by inflation into enormous volumes of space, and of doing so without interfering in the least with the infinite number of other universes (Tyson & Goldsmith 2004, 103).

There are astrophysicists who respond that this argument exists because we exist here, meaning that the dilemma is related to the observer or the human being. In other words, our existence limits the value of the cosmological constant. Due to the fact that we exist here and we have observed the cosmological constant, its current value has acquired importance. This solution to the dilemma of the cosmological constant is termed the anthropic principle or the anthropic approach. However, in reality, it bestows importance upon the existence of the human observer of the cosmological constant insofar as he or she is attempting to solve the dilemma of the cosmological constant. Therefore, at present, according to the anthropic principle or anthropic approach, the cosmological constant and the universe become worthless without the existence of the human who observes it - as we demonstrated previously in quantum mechanics. In this case, the human and his or her existence become highly important since there is no cognitive or scientific value to the universe without the existence of the observer (the human). The universe as we know it now does not exist without the human, and this means that the human is the first cosmological goal. As long as there is a goal, a higher, purposeful power or god is behind it.

> However, suppose that only in the smooth regions were galaxies and stars formed and were conditions right for the development of complicated self-replicating organisms like ourselves who were capable of asking the question: why is the universe so smooth? This is an example of the application of what is known as the anthropic principle, which can be paraphrased as "We see the universe the way it is because we exist." (Hawking 2003, 124).

There is another paradigm of the multiple universes to solve the rep-

resented dilemma of the cosmological constant. It is called the Ekpyrotic model, and it depends on the superstring or the M theory. This paradigm assumes the existence of multiple universes on the shape of extended diaphragms/ membranes and collisions occur between them, and every collision that occurs produces a big bang in both of the clashed membranes and hence a new universe in/within both of them, and naturally with the multiplicity of the universes, some of them would be life producer, beside universes most of them are unproductive.

> … Paul Steinhardt of Princeton University, who could use some tutoring in creating catchy names, has produced a theoretical "ekpyrotic model" of the cosmos in collaboration with Neil Turok of Cambridge University. Motivated by the section of particle physics called string theory, Steinhardt envisions a universe with eleven dimensions, most of which are "compactified," more or less rolled up like a sock, so that they occupy only infinitesimal amounts of space. But some of the additional dimensions have real size and significance, except that we can't perceive them because we remain locked into our familiar four. If you pretend that all of space in our universe fills an infinite thin sheet (this model reduces the three dimensions of space to two), "you can imagine another, parallel sheet, and then picture the two sheets approaching and colliding. The collision produces the big bang, and as the sheets rebound from one another, each sheet's history proceeds along familiar lines, giving birth to galaxies and stars. Eventually, the two sheets cease to separate and start to approach one another again, producing another collision and another big bang in each sheet. The universe thus has a cyclical history, repeating itself, at least in its broadest outlines, at intervals of hundreds of billions of years. Since "ekpyrosis" means "conflagration" in Greek (recall the more familiar word "pyromaniac"), the "ekpyrotic universe" reminds all those with Greek at the tips of their brains of the great fire that gave birth to the cosmos that we know.
>
> This ekpyrotic model of the universe has emotional and intellectual appeal, though not enough to win the hearts and minds of many of Steinhardt's fellow cosmologists. Not yet, anyhow. Something vaguely like the ekpyrotic model, if not this model itself, may someday offer the breakthrough that cosmologists now await in their attempts to explain the dark energy. Even those who favor the anthropic approach would hardly dig in their heels to resist a new theory that could provide a good explanation for the cosmological constant without invoking an infinite number of universes, of which ours hap-

> pens to be one of the lucky ones (Tyson & Goldsmith 2004, 106-07).

Multiple Universes:

It has been demonstrated that there are real quandaries or at the very least, areas of ambiguity in quantum mechanics, especially with regard to probability and uncertainty. There is no convincing answer for everybody in Bohr, Heisenberg or others concerning the destiny of the other expected possibilities for the particle or the wave, not recorded in the observation and collapse of the function of the wave. To solve these dilemmas, a postgraduate student in Princeton University named Hugh Everett presented the theory of the multiple universes.

> The importance of Everett's work, published in 1957, is that he took this seemingly outrageous idea and put it on a secure mathematical foundation using the established rules of quantum theory. It is one thing to speculate about the nature of the universe, but quite another to develop those speculations into a complete, self-consistent theory of reality (Gribbin 1984, 238).

All other possibilities of occurrence - or shall we call it alternative reality - exist within these multiple universes, even if we have not observed even one of these possibilities. Certainly, this is the reality that we currently live and see. Therefore, instead of answering illogically by stating that the other possibilities disappeared or evaporated at the moment of observation and that the moment of observation created one of the possibilities - reality - and removed the other - the alternative reality—and instead of giving the observer and the measurement process an incomprehensible influence in creating a reality and making another disappear, Hugh introduced an explanation stating that all possibilities exist in reality and have been actualized, but in other worlds or other universes. This means that there is no breakdown in the function of the wave. Rather, more than one true reality exists, but in different worlds and universes that appear in the interference that can be measured at the quantum level that occurs when we measure the particle. For example, when we choose one of these realistic images and observe it, that same observation process prevents us from watching and measuring the rest of the realistic images. For this reason, we are able to measure and observe one of the realistic images.

This means that in the experiment of the two sides, when one electron was sent toward the two sides and the back screen was recording an interference, there was, in reality, a particle entering from the first side and a particle entering from the second side. However, when we observe both sides and see the particle cross through one of them, what is happening is that we see what is occurring in one of the universes while what happens in the other universe is concealed from us and see the particle that we observed in the first universe.

This in fact not only means that there are multiple universes, but it also means that one particle has more than one existence. In other words, it has at least one existence in every universe and therefore, we too exist in other universes.

Most significantly, as a result, causality has been restored to quantum mechanics and quantitative events have become reasoned and logical.

SCHRÖDINGER'S CATS

It is hard to grasp what this means when we talk about the collapse of the wave function of the whole universe, but much easier to see why Everett's approach represents a step forward if we look at a more homely example. Our search for the real cat hidden inside Schrödinger's paradoxical box has, at last, come to an end, for that box provides just the example I need to demonstrate the power of the many-worlds interpretation of quantum mechanics. The surprise is that the trail leads not to one real cat, but two.

The equations of quantum mechanics tell us that inside the box of Schrödinger's famous thought experiment there are versions of a "live cat" and "dead cat" wave function that are equally real. The conventional, Copenhagen interpretation looks at these possibilities from a different perspective, and says, in effect, that both wave functions are equally unreal, and that only one of them crystallizes as reality when we look inside the box. Everett's interpretation accepts the quantum equations entirely at face value and says that both cats are real. There is a live cat, and there is a dead cat; but they are located in different worlds. It is not that the radioactive atom inside the box either did or didn't decay, but that it did both. Faced with a decision, the whole world—the universe—split into two versions of itself, identical in all respects except that in one version the atom decayed and the cat died, while in the other the atom did not decay and the cat lived. It sounds like science fiction, but it goes far deeper than any science fiction, and it is based on impeccable mathematical equations, a consistent

> and logical consequence of taking quantum mechanics literally (Gribbin 1984, 237-38).

In the old solution to this problem, the instances or possibilities accumulate and are all expected. At observation time, the instances disengage from each other and only one of them appears (reality) to the observer without an explanation for the disappearance of other instances or possibilities (the alternative reality). It is as if there is nothing real in the Copenhagen explanation. Regarding the solution of Hugh Everett, all instances or possibilities occur and do not create the process of watching or measuring an instance without another other one. At the time of observation, all possibilities or instances occur and are created, but in more than one universe. What is observed from it is the instance that is only in one of these universes. This means that all the possibilities are a reality according to the explanation of multiple universes, yet we obtain only what we watch—namely, what is happening briefly. As such, the solution of the multiple universes may have put an end to the problem of the possibilities and its disappearance. Or, as Einstein said: "God doesn't play dice".

It is clear that the explanation of the multiple universes is more logical because it does not eliminate causality. It means the existence of more than one reality. Thus, when we watch, we choose a reality and it becomes part of our universe. In the explanation of the multiple universes, the past is determined, but it is a past or a history for more than one world. Our watching determines a particular history for our universe in which we live among those actual histories and therefore, those actual histories remain as a reality branched from us due to watching. This means, at least, that our diagnosis for the history of the big bang does not mean that the possibilities or the histories disappeared so as never to return. That is because they are actual histories and that is why they exist as universes included in a super universe and our universe is a part of it too.

The future is impossible to know according to the explanation of the multiple universes, because it branches into several paths and we will be on one of them at a given moment in the future.

This reminds us of words said almost 1400 years ago:

> ﴿God eliminates what He wills or confirms, and with Him is the Mother of the Book.﴾ Quran Chapter "The Thunder" 13:39

Physics today confirms the validity of the Quran. Further, it confirms the validity of the method of the progeny of Muhammad pbut, because no one else except them has explained this verse in the beginning. The opponents of Ahl al-Bayt initially vilified their statement. Now we are here, one hundred years after quantum mechanics established the validity of what the progeny of Muhammad pbut said in the beginning.

As previously mentioned, the theory of multiple universes has been used as a response to the argument of the cosmological constant that is set to allow for the establishment of matter and the universe we live in. The existence of a large number of universes provides a great number of possibilities. So it would not be strange for one of these possibilities to be the universe in which we live. We have already demonstrated that the weakness of this solution to the problem of determining the cosmological constant.

Quantum Theory and A Universe from Nothing

The uncertainty principle in quantum mechanics poses an extremely important issue for the theorists of a universe from nothing, or something from nothing. The uncertainty principle states that a vacuum cannot be completely empty of any quantum fluctuations, because, if it were, there would be a position with a fixed value and velocity of zero. This is a violation of Heisenberg's uncertainty principle, which states that the position, velocity, value and rate of change of a field cannot all be exactly determined with precision. The significance of there being quantum fluctuations in vacuum—as far as these people are concerned—is that it means that a vacuum, or space that is empty of anything, can produce a something in our universe.

> As we saw in Chapter 2, quantum theory means that fields can't be exactly zero even in what is called the vacuum. If they were zero, they would have both an exact value or position at zero and an exact rate of change or velocity that was also zero. This would be a violation of the uncertainty principle, which says that the position and velocity can't both be well defined. All fields must instead have a certain amount of what are called vacuum fluctuations (in the same way that the pendulum in Chapter 2 had to have zero point fluctuations). Vacuum fluctuations can be interpreted in several ways that seem different but are in fact mathematically equivalent. From a positivist viewpoint,

> one is free to use whatever picture is most useful for the problem in question. In this case it is helpful to think of vacuum fluctuations as pairs of virtual particles that appear together at some point of space-time, move apart, and come back together and annihilate each other. "Virtual" means that these particles cannot be observed directly, but their indirect effects can be measured, and they agree with theoretical predictions to a remarkable degree of accuracy (Hawking 2001, 118).

The truth is, even if is experientially proven that vacuum in our universe produces something from nothing, no real reason for that or for the quantums that appear and disappear in a vacuum can be determined within the boundaries of our universe. Arguments against quantum mechanics, possibility and the uncertainty principle have already been mentioned. One of the solutions was the Hugh solution, which assumes that multiple universes exist and that the possibilities that do not come true in our universe come true in another.

Therefore, some astronomers and theoretical physicists such as Stephen Hawking, Lawrence Krauss, and other "something out of nothing"—the phrase upon which they said that the universe appeared from nothing, needless of a deity—enthusiasts have built their structure upon a philosophical, undetermined issue in quantum mechanics for which there is no evidence whatsoever: nullifying causality. This is despite the knowledge that the multiple universe theory is a strong competitor, and that unexplained gravity, for instance, can be a trace coming from another universe. The same is the case with regard to the quantum fluctuations in the universe in which we live: it does not negate these fluctuations being traces that reach us from other universes.

Moreover, those who wish to prove that the universe does not require an exterior thing in order for it to be established need to resolve the problem of the cosmological constant as well as that of the possibility of our universe's existence and the previously mentioned multiple universe theory. Multiple universe theories can conflict with the principle of voiding causality in quantum mechanics, as it would be easy to say that quantum fluctuations in vacuum are but traces of an adjacent universe, or passing forces of the multiple universes. Thus, what Stephen Hawking, Lawrence Krauss and others have built concerning atheism becomes a collapsing, scientifically contradictory structure.

The Singularity of the Big Bang

When it is said that the universe emerged from a massive explosion of a singularity, this means that the universe initially emerged from what resembles a black hole, or to be specific, the center of a black hole. If we were to bring the universe back to its possible beginning (as per the standard model)—meaning we were to bring back the planets, stars, galaxies and everything in the universe through a shrinking process to their beginning where time is zero—we would have a volume of zero. There would be no matter, no space, no time, very high density and an immense gravitational force. In short, we would have a singularity, and it is at singularity where the current laws of physics collapse. Hence, there are no laws to accurately predict what happens from singularity.

To bring the idea of the big bang closer to mind, we shall discuss the black hole, at whose center there is also a singularity. We shall also discuss the journey of the black hole as it heads towards its end by explosion, as some theoretical physicists predict. Again, the black hole is defined as either of the following:

A material mass that was exposed to immense pressure that surrounded it and was outside of it at the beginning of the universe's emergence, causing it to be greatly condensed until it eventually became a small black hole. This is termed a primordial black hole. This is a hypothetical type of black hole, as there is not yet strong evidence in support of it.

Or: A massive star that had shrunk until it collapsed upon itself due to its large gravitation when its nuclear fuel ran out.

When a star loses the force of nuclear explosions (which maintain its size by resisting its gravitation), self-gravitation prevails and causes the star to shrink and entirely collapse, and spacetime to entirely bend. The size of the hypothetical black hole depends on its mass and rotation. No object escapes the black hole after entering the event horizon, the boundary in which light rays fail to escape the black hole. It is well known that the greatest speed scientifically known to date is the speed of light, which is considered a cosmological constant. Directly after the event horizon and away from the black hole, there is a region of hypothetical space in which gravitational and electromagnetic forces have an impact. There are quantum fluctuations in this region which are pairs of virtual particles that appear together and cancel each other out. Therefore, they are like something that shows up from nothing

without making a true appearance. These virtual particles or negative and positive energies can cause each other to fall into the black hole, and thus form real particles or antiparticles with negative energy within the black hole due to the strength of the black hole's gravitation. Therefore, a real particle may emerge from the virtual particle that opposes the particle falling into the black hole. This real particle either follows its peer falling into the black hole, or its positive energy enables it to be liberated away from the black hole, thus forming a real particle. This is what black hole radiation. Therefore, the positive energy emitted from the black hole towards the outside was offset by particles with negative energy moving into the black hole, and diminishing its hypothetical mass. This is as per Einstein's equation of $E=mc^2$. Therefore, the entropy of the black hole diminishes. However, this diminishment is compensated by the entropy of the radiation emitted by the black hole and the increase in the black hole's temperature. This corresponds with the second law of thermodynamics, namely that any automatically-occurring change in a physical system must be accompanied by an increase in its entropy, or that the entropy is stable in every reverse cycle, but increasing in every non-reverse cycle.

Entropy is a measure of the amount of disorder in a system.

According to the second law of thermodynamics, entropy cannot decrease in a closed system.

Furthermore, the total entropy of two systems does not decrease when a heat exchange occurs between them.

Entropy decreases in a system that loses heat, and increases in a system that gains heat.

In the case of the black hole that is losing some of its mass—if it is radiant—and decreasing in entropy, as it is a non-reverse system, the entropy therein must increase. This first occurs by the particles released from it, which offset the decrease, and by the increase in its temperature in order for there to be an increase in the final sum of entropy. Hence, it does not violate the second law of thermodynamics.

As this process continues, we eventually end up with a black hole with an infinitely small mass and an almost infinite massive temperature. Stephen Hawking states:

> What happens when the mass of the black hole eventually becomes extremely small is not quite clear, but the most reasonable guess is that it would disappear completely in a tremendous final burst of

> emission, equivalent to the explosion of millions of H-bombs (Hawking 2011, 11).

According to the big bang, the universe began with a singularity that resembles the one at the heart of the black hole. Thus, the universe began with a singularity at a volume of zero and there was neither space nor four dimensions. However, there were immense heat and density. Therefore, a gravitational force caused the eventual release of energy and, consequently, the big bang (as in the aforementioned case of the black hole), which resulted in the emergence of the universe. Billions of years later, this universe developed into the form that we observe today.

Hawking and the Singularity of the Big Bang

> In 1965 I read about Penrose's theorem that any body undergoing gravitational collapse must eventually form a singularity. I soon realized that if one reversed the direction of time in Penrose's theorem, so that the collapse became an expansion, the conditions of his theorem would still hold, provided the universe were roughly like a Friedmann model on large scales at the present time. Penrose's theorem had shown that any collapsing star must end in a singularity; the time-reversed argument showed that any Friedmann-like expanding universe must have begun with a singularity. For technical reasons, Penrose's theorem required that the universe be infinite in space. So I could in fact, use it to prove that there should be a singularity only if the universe was expanding fast enough to avoid collapsing again (since only those Friedmann models were infinite in space).
>
> During the next few years I developed new mathematical techniques to remove this and other technical conditions from the theorems that proved that singularities must occur. The final result was a joint paper by Penrose and myself in 1970, which at last proved that there must have been a big bang singularity provided only that general relativity is correct and the universe contains as much matter as we observe. There was a lot of opposition to our work, partly from the Russians because of their Marxist belief in scientific determinism, and partly from people who felt that the whole idea of singularities was repugnant and spoiled the beauty of Einstein's theory. However, one cannot really argue with a mathematical theorem. So in the end our work became generally accepted and nowadays nearly everyone assumes that the universe started with a big bang singularity. It is

> perhaps ironic that, having changed my mind, I am now trying to convince other physicists that there was in fact no singularity at the beginning of the universe—as we shall see later, it can disappear once quantum effects are taken into account (Hawking 2011, 52-53).

Hawking Does Without Singularity and the Lord

In the aforementioned, it has been clarified that the traditional theory for explaining the emergence and beginning of the universe ends at a singularity. In fact, it arrives at a distorted point in relation to the beginning of the universe, as relativity and the laws of physics collapse at the singularity. Therefore, one uses the singularity itself as a starting point for accurately predicting what happens directly afterwards, because there are no laws that govern the singularity. In addition, the singularity itself raises questions about what preceded it. Since this is where the laws of physics cease, it is not expected for there to be sufficient, conclusive scientific responses about what preceded it.

For this reason, Hawking endeavored to present a universe that has a beginning but no boundaries, in order to eliminate the question regarding what preceded the beginning. According to his proposal, the beginning is a beginning yet it is also not a boundary such that someone would ask about what preceded it, as what preceded it was the universe itself. What Hawking proposes is that, the deeper we look into the beginning of the universe, the more time diminishes, becoming an additional dimension of space. Hence, there is no time at the beginning, so the question about the past preceding the beginning is meaningless, and the universe becomes independent in and of itself and only reliant on the possibilities from within itself.

In this manner, Hawking avoids the hypothesis of the singularity at which physical laws break down and, in his view, he now has a chain beginning of the universe at which the laws of physics (such as quantum mechanics) function. At the same time, he dispensed of the persisting question of what there was before the universe, or who began the universe. Therefore, as he sees it, he has made the universe self-sufficient, and needless of any external authority to begin it.

> To describe how quantum theory shapes time and space, it is helpful to introduce the idea of imaginary time. Imaginary time sounds like something from science fiction, but it is a well-defined mathematical

concept: time measured in what are called imaginary numbers. One can think of ordinary real numbers such as 1, 2, -3.5, and so on as corresponding to positions on a line stretching from left to right: zero in the middle, positive real numbers on the right, and negative real numbers on the left (Fig. 2.17).

Imaginary numbers can then be represented as corresponding to positions on a vertical line: zero is again in the middle, positive imaginary numbers plotted upward, and negative imaginary numbers plotted downward. Thus imaginary numbers can be thought of as a new kind of number at right angles to ordinary real numbers. Because they are a mathematical construct, they don't need a physical realization; one can't have an imaginary number of oranges or an imaginary credit card bill (Fig. 2.18).

One might think this means that imaginary numbers are just a mathematical game having nothing to do with the real world. From the viewpoint of positivist philosophy, however, one cannot determine what is real. All one can do is find which mathematical models describe the universe we live in. It turns out that a mathematical model involving imaginary time predicts not only effects we have already observed, but also effects we have not been able to measure yet nevertheless believe in for other reasons. So what is real and what is imaginary? Is the distinction just in our minds?

Einstein's classical (i.e., nonquantum) general theory of relativity combined real time and the three dimensions of space into a four-dimensional spacetime. But the real time direction was distinguished from the three spatial directions; the world line or history of an observer always increased in the real time direction (that is, time always moved from past to future), but it could increase or *decrease* in any of the spatial directions. In other words, one could reverse direction in space, but not in time (Fig. 2.19).

On the other hand, because imaginary time is at right angles to real time, it behaves like a fourth spatial direction. It can therefore have a much richer range of possibilities than the railroad track of ordinary real time, which can only have a beginning or an end or go around in circles. It is in this imaginary sense that time has a shape (Hawking 2001, 59-60, 63).

Time, however, seemed to be like a model railway track. If it had a beginning, there would have to have been someone (i.e. God) to set the trains going. Although Einstein's general theory of relativity unified time and space as space-time and involved a certain mixing of space and time, time was still different from space, and either had a

beginning and an end or else went on forever. However, once we add the effects of quantum theory to the theory of relativity, in extreme cases warpage can occur to such a great extent that time behaves like another dimension of space.

In the early universe—when the universe was small enough to be governed by both general relativity and quantum theory—there were effectively four dimensions of space and none of time. That means when we speak of the "beginning" of the universe, we are skirting the subtle issue that as we look backward toward the very early universe, time as we know it does not exist! We must accept that our usual ideas of space and time do not apply to the very early universe. That is beyond our experience, but not beyond our imagination, or our mathematics. If in the early universe all four dimensions behave like space, what happens to the beginning of time?

The realization that time can behave like another direction of space means one can get rid of the problem of time having a beginning, in a similar way in which we got rid of the edge of the world. Suppose the beginning of the universe was like the South Pole of the earth, with degrees of latitude playing the role of time. As one moves north, the circles of constant latitude, representing the size of the universe, would expand. The universe would start as a point at the South Pole, but the South Pole is much like any other point. To ask what happened before the beginning of the universe would become a meaningless question, because there is nothing south of the South Pole. In this picture space-time has no boundaries—the same laws of nature hold at the South Pole as in other places. In an analogous manner, when one combines the general theory of relativity with quantum theory, the question of what happened before the beginning of the universe is rendered meaningless. This idea that histories should be closed surfaces without boundary is called the no-boundary condition.

Over the centuries many, including Aristotle, believed that the universe must have always existed in order to avoid the issue of how it was set up. Others believed the universe had a beginning, and used it as an argument for the existence of God. The realization that time behaves like space presents a new alternative. It removes the age-old objection to the universe having a beginning, but also means that the beginning of the universe was governed by the laws of science and doesn't need to be set in motion by some god (Hawking & Mlodinow 2010, 108-09).

We are the product of quantum fluctuations in the very early uni-

> verse. If one were religious, one could say that God really does play dice (Hawking & Mlodinow 2010, 112).

To solve the quandary over the possibility of our universe in particular coming into existence, Hawkins hypothesized that there are multiple possibilities, depending on the same uncertainty principle of quantum mechanics. As we have previously elucidated, according to quantum mechanics, a quantum particle moving towards a plate with several slits can enter through all these slits simultaneously as long as no one is watching. The is the case with regard to cosmic beginning: as it is a quantum event, it therefore moves toward all possible directions, and the result is that the potential universes are multiple, and they include the universe we found ourselves in, and which we observe.

> In this view, the universe appeared spontaneously, starting off in every possible way. Most of these correspond to other universes. While some of those universes are similar to ours, most are very different. They aren't just different in the details … but rather they differ even in their apparent laws of nature. In fact, many universes exist with many different sets of physical laws (Hawking 2010, 110).

> However, a colleague named Jim Hartle and I realized there was a third possibility. Maybe the universe has no boundary in space and time. At first sight, this seems to be in direct contradiction with the theorems that Penrose and I proved, which showed that the universe must have had a beginning, a boundary in time. However, as explained in Chapter 2, there is another kind of time, called imaginary time, that is at right angles to the ordinary real time that we feel going by. The history of the universe in real time determines its history in imaginary time, and vice versa, but the two kinds of history can be very different. In particular, the universe need have no beginning or end in imaginary time. Imaginary time behaves just like another direction in space. Thus, the histories of the universe in imaginary time can be thought of as curved surfaces, like a ball, a plane, or a saddle shape, but with four dimensions instead of two…
>
> If the histories of the universe went off to infinity like a saddle or a plane, one would have the problem of specifying what the boundary conditions were at infinity. But one can avoid having to specify boundary conditions at all if the histories of the universe in imaginary time are closed surfaces, like the surface of the Earth. The surface of the Earth doesn't have any boundaries or edges. There are no reliable

reports of people falling off.

If the histories of the universe in imaginary time are indeed closed surfaces, as Hartle and I proposed, it would have fundamental implications for philosophy and our picture of where we came from. The universe would be entirely self-contained; it wouldn't need anything outside to wind up the clockwork and set it going. Instead, everything in the universe would be determined by the laws of science and by rolls of the dice within the universe. This may sound presumptuous, but it is what I and many other scientists believe.

Even if the boundary condition of the universe is that it has no boundary, it won't have just a single history. It will have multiple histories, as suggested by Feynman. There will be a history in imaginary time corresponding to every possible closed surface, and each history in imaginary time will determine a history in real time. Thus we have a superabundance of possibilities for the universe. What picks out the particular universe that we live in from the set of all possible universes? One point we can notice is that many of the possible histories of the universe won't go through the sequence of forming galaxies and stars that was essential to our own development. While it may be that intelligent being can evolve without galaxies and stars, this seems unlikely. Thus, the very fact that we exist as beings who can ask the question "Why is the universe the way it is?" is a restriction on the history we live in. It implies it is one of the minority of histories that have galaxies and stars. This is an example of what is called the anthropic principle. The anthropic principle says the universe has to be more or less as we see it, because if it were different, there wouldn't be anyone here to observe it (Figure 3.10). Many scientists dislike the anthropic principle because it seems rather vague and does not appear to have much predictive power. But the anthropic principle can be given a precise formulation, and it seems to be essential when dealing with the origin of the universe. M-theory, described in Chapter 2, allows a very large number of possible histories for the universe. Most of these histories are not suitable for the development of intelligent life; either they are empty, last for too short a time, are too highly curved, or wrong in some other way. Yet according to Richard Feynman's idea of multiple histories, these uninhabited histories can have quite a high probability (see page 84) (Hawking 2001, 82-87).

Some histories will be more probable than others, and the sum will normally be dominated by a single history that starts with the creation of the universe and culminates in the state under consideration. But there will be different histories for different possible states of the

> universe at the present time. This leads to a radically different view of cosmology, and the relation between cause and effect. The histories that contribute to the Feynman sum don't have an independent existence, but depend on what is being measured. We create history by our observation, rather than history creating us.
>
> The idea that the universe does not have a unique observer-independent history might seem to conflict with certain facts we know… That might sound like science fiction, but it isn't (Hawking 2010, 113).

Assuming there are several histories and several possibilities for the universe (which we have previously discussed), I believe that the mere assumption that the several other histories or possibilities of the universe evaporate and disappear just because we exist here to observe the universe makes our existence of an importance unbefitting of what atheism suggests. Here, I repeat what I said before:

> If the collapse of the wave function is caused by the observer or the recording of the quantum event by the observer, as the Copenhagen interpretation states, this means that if it weren't for the existence of the human being or the intelligent being, there would be no universe. The universe owes its existence to our observation of it, as the entire universe is a quantum system with a wave function and many possibilities, and it only exists when we observe it and the wave function collapses and it is identified in reality. This issue means that we humans, or let's say intelligence, pose the axis for which the universe was brought into existence (see page 418).

Therefore, Hawking's above saying that "we create history by our observation, rather than history creating us" does not help him to prove that the universe does not require a god, because in short, it makes us a condition for the existence of the entire universe, meaning the universe was made to exist for us and, consequently, we are a purpose and there is a purposeful entity. I have discussed the issue of us creating events in the section entitled, 'Do we observe things or do we create them through observation?'

We can also say that a percentage of these possibilities, though perhaps small, is fit for matter to form therein, and then for intelligent life to emerge to observe it. Therefore, these universes, or some of them, must exist and these beings observe them. Otherwise, what

distinguishes us and the universe we observe from them and the universes they observe?

Therefore, there is no escape here from the hypothesis that the multiplicity of universes is true. The multiplicity of universes is alone sufficient to untwist the thread; it can be proposed that the quantum fluctuations of a vacuum (which supposedly brought the current universe into existence) are the effects of other universes.

With regard to the anthropic principle, it does not resolve the issue of the appearance of our universe in particular. In fact, it may make the issue even more complicated for those who wish to deny the existence of a god and his intervention in bringing the universe to existence. Indeed, the human principle makes our existence the most important on the level of the universe as a whole, and it makes us the number one purpose of the existence of the universe. This proves the existence of a god.

What else can be understood from our being here, being intelligent, and observing?

In any case, any hypothesis makes our existence have an impact upon what we observe. This means that, in our situation, our observation impacts upon the universe itself. The conclusion to be derived is that the existence of the universe is meaningless if not for our existence, those doing the observing. This matter alone is clear evidence that the universe was made to exist for us.

Moreover, Hawking's hypothesis for the universe to begin and be self-sufficient by rolls of the dice from within, as he likes to call it, would require the prior availability of space, no matter how infinitely small—and even if only a singularity like in the other hypotheses—in order for us to achieve quantum fluctuations that bring the universe into existence. This moves the question from being about the beginning to being about what preceded this space. It is either that this initial universe (space and quantum fluctuations) is a creation (meaning someone brought the universe into existence, and the universe is not self-sufficient), or that the universe is old but simultaneously a place for creation, which is impossible. What is a place for creation is a creation itself. Thus, the hypothesis of a god is still necessary as per the aforementioned, and a lord is still needed. Even if this need is not on the level of energy and cosmic matter, it is still on the level of the cosmic space that is qualified for the appearance of quantum fluctuations therein, no matter how infinitely small this space is.

This is in addition to the fact that these quantum fluctuations are not explained; their existence is only decided by the uncertainty principle without knowing their cause and source. Even if we do not find a source for them, that does not mean they are not explained. All there is to it is that their source can be from outside our universe—an issue we have previously discussed, explaining that the multiple universes hypothesis is the correct one.

To us, the multiple universes have different existential ranks, and it is impossible for two of them to be a complete match. Furthermore, some of them are created from the others, and they affect one another.

String Theory

The idea of the string as a foundation for the building of the universe has a more precise basis. This means that if we look at the primary particles of the building of the universe with more precision than currently available, we find them to be fluctuating strings, and every string fluctuates in a particular way that personifies it. The electron is a string, the quark is a string, and the particles of the four forces are all strings. So the particle of the gravitational force, the graviton, is a string, and so on.

String theory is an attempt to unify the four forces of nature. The standard model has so far succeeded in unifying the three forces: the electromagnetic force, the weak nuclear force and the strong nuclear force respectively. These three forces work on microscopic levels. Quantum mechanics describes it, but it has so far failed to unify it with the force of gravity that works on levels of typically large objects, such as stars, planets, and galaxies. It is described by the general theory of relativity. The difficulty in finding a way to unify the general theory of relativity with quantum mechanics has made it difficult to unify the four forces of nature or, in particular, the three forces (electromagnetic, weak nuclear and strong nuclear) with the force of gravity. However, it is confirmed that there are places where gravity must be unified with the remaining forces, and these places are infinitely small and highly dense, such as the black hole, the big bang singularity or even the early stages of the big bang.

Accordingly, string theory presents itself as an alternative to unify these four forces, and consequently, presents itself to explain the universe as a whole, from the big bang, until now and to the end, in

terms of quarks, electrons, and even stars, planets, galaxies and galactic clusters and the universe as a whole. It is a theory that proposes the unification of the laws of physics instead of them being divided as they are now into two divisions: one that deals with what is small and precise—namely the laws of quantum mechanics—and another that deals with what is large—namely the law of general relativity.

String theory explains the mass of particles through the vibration of its inner string in a larger way, while the type of particle and its signal are determined through the pattern of vibration. Thus, there is one string and the change of some of its characteristics makes it an electron, a quark or a graviton, et cetera.

> Now, from special relativity we know that energy and mass are two sides of the same coin: Greater energy means greater mass, and vice versa. Thus, according to string theory, the *mass* of an elementary particle is determined by the *energy* of the vibrational pattern of its internal string. Heavier particles have internal strings that vibrate more energetically, while lighter particles have internal strings that vibrate less energetically.
>
> Since the mass of a particle determines its gravitational properties, we see that there is a direct association between the pattern of string vibration and a particle's response to the gravitational force. Although the reasoning involved is somewhat more abstract, physicists have found that a similar alignment exists between other detailed aspects of a string's pattern of vibration and its properties vis à vis other forces. The electric charge, the weak charge, and the strong charge carried by a particular string, for instance, are determined by the precise way it vibrates. Moreover, exactly the same idea holds for the messenger particles themselves. Particles like photons, weak gauge bosons, and gluons are yet other resonant patterns of string vibration. And of particular importance, among the vibrational string patterns, one matches perfectly the properties of the graviton, ensuring that gravity is an integral part of string theory.
>
> So we see that, according to string theory, the observed properties of each elementary particle arise because its internal string undergoes a particular resonant vibrational pattern. This perspective differs sharply from that espoused by physicists before the discovery of string theory; in the earlier perspective the differences among the fundamental particles were explained by saying that, in effect, each particle species was "cut from a different fabric." Although each particle was viewed as elementary, the kind of "stuff" each embodied was

> thought to be different. Electron "stuff," for example, had negative electric charge, while neutrino "stuff' had no electric charge. String theory alters this picture radically by declaring that the "stuff" of all matter and all forces is the *same*. Each elementary particle is composed of a single string—that is, each particle is a single string—and all strings are absolutely identical. Differences between the particles arise because their respective strings undergo different resonant vibrational patterns. What appear to be different elementary particles are actually different "notes" on a fundamental string. The universe—being composed of an enormous number of these vibrating strings—is akin to a cosmic symphony.
>
> This overview shows how string theory offers a truly wonderful unifying framework. Every particle of matter and every transmitter of force consists of a string whose pattern of vibration is its "fingerprint." Because every physical event, process, or occurrence in the universe is, at its most elementary level, describable in terms of forces acting between these elementary material constituents, string theory provides the promise of a single, all-inclusive, unified description of the physical universe: a theory of everything (T.O.E.) (Greene 2003, 145-46).

String theory requires the assumption that six additional dimensions exist. These are folded and infinitely small, while, though them, the strings vibrate if these dimensions are not observed in the manner of the three large spatial dimensions.

String theory assumes that strings cannot shrink into dimensions smaller than the Planck length, because such an attempt would lead to a reversal into expansion. This means that the big bang began at the Planck length, and not at a singular with zero volume and infinite density.

There are five different formats of string theory, and a sixth one that combines them all, known as the M theory. The most important facet of string theories is that the string is capable of resolving the contradiction between quantum theory and the theory of general relativity at infinitely small levels, which the point particle theory cannot resolve.

M theory is a more inclusive format of string theories. It is a theory that demonstrates that the other five string theories are ones that reflect the same truth, and M theory essentially links all of these theories together.

> For many years, physicists were as much in the dark as the blind men, thinking that the different string theories were very different. But now, through the insights of the second superstring revolution, physicists have realized that M-theory is the unifying pachyderm of the five string theories (Greene 2003, 312).

M theory proposes a new spatial dimension, one that is added to the ten previous dimensions of the five string theories. Thus, the dimensions in M theory number eleven: ten being of space, and one being of time.

M theory proposes not just the strings, but also two- and three-dimensional branes.

M theory is now considered to be the string theory insofar as it is proposed as being a valid basis for the theory of everything, or the theory which proposes the law that deals with the infinitely small (such as electrons and quarks) and what is large (such as the current universe including its stars, planets and galaxies). This means that M theory combines the theory of quantum mechanics with that of general relativity.

Superstring theories and the M theory assume that the string cannot shrink to a dimension smaller than the Planck length. This means that, accordingly, the universe was formed of a multi-dimensional and infinitely small piece that has the Planck volume. In other words, M theory evaded the volume of zero and the infinite density of the singularity point, which was presumably the beginning of the universe.

The cosmic view of M theory assumes that, after the big bang, only three spatial dimensions extended out of the several dimensions folded into a small piece of Planck volume from which the universe emerged, while the Planck length is incredibly small ($1.61619926 \times 10^{-35}$ meters). As we have previously illuminated, M theory is supposed to be a theory of unifying the four forces of nature, or gravitation with the other three forces (electromagnetic, weak nuclear and strong nuclear). Another proposition within the M theory is that there is a realm smaller than the Planck length, a realm not restricted with time and space, or a spaceless realm. This realm has its own mathematics, different than the conventional mathematics that are used to identify time and space.

> The hope is that … the theory will describe a universe that evolves to a form in which a background of coherent string vibrations emerges,

> yielding the conventional notions of space and time. Such a framework, if realized, would show that space, time, and, by association, dimension are not essential defining elements of the universe. Rather, they are convenient notions that emerge from a more basic, atavistic, and primary state.
>
> Already, cutting-edge research on aspects of M-theory, spearheaded by Stephen Shenker, Edward Witten, Tom Banks, Willy Fischler, Leonard Susskind, and others too numerous to name, has shown that something known as a zero-brane—possibly the most fundamental ingredient in M-theory, an object that behaves somewhat like a point particle at large distances but has drastically different properties at short ones—may give us a glimpse of the spaceless and timeless realm. Their work has revealed that whereas strings show us that conventional notions of space cease to have relevance below the Planck scale, the zero-branes give essentially the same conclusion but also provide a tiny window on the new unconventional framework that takes over. Studies with these zero-branes indicate that ordinary geometry is replaced by something known as noncommutative geometry, an area of mathematics developed in large part by the French mathematician Alain Connes. In this geometrical framework, the conventional notions of space and of distance between points melt away, leaving us in a vastly different conceptual landscape. Nevertheless, as we focus our attention on scales larger than the Planck length, physicists have shown that our conventional notion of space does re-emerge. It is likely that the framework of noncommutative geometry is still some significant steps away from the blank-slate state anticipated above, but it does give us a hint of what the more complete framework for incorporating space and time may involve (Greene 2003, 379-80).

Due to the fact that M theory is now the only theory that proposes the unification of gravitation with the remaining forces, and a possible explanation of a world before time and space, it was proposed by Hawking to be the awaited explainer of the appearance of the universe from nothing.

But can the M theory explain the appearance of time and space from nothing?

I believe that this is not possible, because no matter what thesis that the M theory or the final theory will arrive at, it will be centered around something like quantum fluctuations in space, or the vibrations of the string and so on. Thus, it will only transfer the question to a

more advanced level, and will not explain the existence of the universe from nothing.

From the aforementioned, and from what will be presented in due course, we see that it is truly misguided of a physicist to say that the universe came from nothing, and that it does not require anything outside of it in order for it to begin.

Multiple Universes and A Universe from Nothing

We have previously seen that explaining the exact cosmological constant requires hypothesizing the existence of multiple universes.

However, the multiplicity of universes opens the door to the argument that the interpretation of a universe from nothing relies upon the foundation of quantum fluctuations of nothingness. With the hypothesis of multiple universes, it is possible to explain these fluctuations with transient effects of the universes. This is more reasonable and logical than the "no reason-ness" adopted by quantum mechanics. This destroys the hypothesis of something from nothing at its foundation. There is no longer something from nothing, let alone before everything. The issue requires space—no matter how small—to exist in order for the quantum fluctuations of the vacuum to exist in it.

Those who explain the fixing of the cosmological constant using the issue of multiple universes assume that these universes are at the same level, and that they all return to a single origin, or that they are, as they always portray them, like bubbles coming out of a pot of boiling water. We can assume—and this is what we believe—that they are multiple universes, but at different levels, and that some of them came from others. Thus, the lowest universe level came from a universe of a higher level. These universes affect each other. According to this hypothesis, we can explain the appearance of quantum fluctuations in emptiness in relation to our universe. However, we cannot explain the fixing of the cosmological constant unless there is someone who fixes it, whose purpose is creating the universe. Consequently, this proves the existence of a god who wants to create something.

In scientific terms, there is nothing that makes the hypothesis that the multiple universes are at one level more probable than what we have assumed, which is that they are not on one level. In fact, perhaps the quantum fluctuations in space make the hypothesis that the universes are at different levels more probable, as these quanta represent

the primary particles from which our universe originated. Therefore, if they are from the impact of another universe, they are certainly from the impact of a universe from which our universe originated. This supports the idea that the multiple universes are not on one level, or from a single origin. Rather, they are on different levels and they originated from each other. Each universe has a different source than the other universes and, therefore, it has different manners of creation, existence, and composition. This makes the concept of multiple universes unsuitable for explaining the fixing of the cosmological constant.

A clarifying example is that if all of the multiple universes began with quantum fluctuations of space and from primary particles, like the ones our universe started from, then we may state that, as a whole, they are able to explain the fixing of the cosmological constant in our universe. However, if each one of the multiple universes began in a different way based on its level, for example, with something completely different than any particles of energy or material, then, as a whole, these universes are not able to explain the cosmological constant because they are not a single group that came from one common, direct origin.

A Universe with a Total Energy of Zero

I have previously clarified that, based on observations, the universe was proven to be flat and of zero curvature. We have also previously explained that there are three possible forms of the universe: spherical, horse saddle-shaped or flat.

In order to more clearly understand the meaning of a flat universe and what this entails, I present the following example:

Let us imagine that the positive energy of the universe and its materials all make the earthly sphere. According to the law of parity from special relativity, it is naturally possible to calculate energy as a physical substance. Let us also imagine that the universe is a rocket that we want to launch from the earth towards space. I have previously clarified that there is speed of escape from gravity, and I mentioned an approximate value of the speed of escape from the earth's gravity. Now, if we were to launch this rocket at a speed lower than the escape speed, it would rise to a certain distance, then boomerang and fall toward the earth due to gravity. We can understand that what happens to the rocket is similar to what happens to a spherical universe, where

the value of the energy pushing it to expand is less than the value of its gravity. This leads to its contraction and collapse upon itself, perhaps even prior to the formation of clear physical landmarks, such as the galaxies in our universe. If we launch the rocket at a speed much greater than the escape speed, it will go into space and keep moving quickly away from the earth. This represents the model that looks like a horseshoe in the Friedmann model. In a universe like this, perhaps the material therein—if it exists—does not find the time to form galaxies, as the speed of the expansion of the universe (energy and material) will scatter it in space.

The third possibility is to launch a rocket at a speed equal to the escape speed. This means that this rocket will escape gravity but then slow down without falling to the earth. Thus, it has escaped the earth's gravity. This is similar to the Friedmann model of the flat universe, as the positive energy of each material (and energy) in the universe (in our example, the energy propelling the rocket) equals the negative energy of universal gravity (in our example, the energy of the gravity resisting the movement of the rocket). A universe such as this has energy pushing it to expand to a sufficient degree for it to be released from the force of its gravity.

We have previously learned that observation has proven to us that our universe is flat, and that the cosmological constant therein allows its release from its gravity only, meaning that the positive energy equals the negative energy in our universe. Some physicists, such as Lawrence Krauss, theorize that a universe such as this perhaps originated from nothing, because the sum of its total energy equals zero.*

There is something else we can see in the universe with negative energy equal to its positive energy. If we were researching the issue from an economical perspective, we would choose something that guarantees only the release of the rocket from earth's gravity, as long as we would not need more than that.

Our universe is flat and the cosmological constant therein allows for its release from gravity. This means that it allows for material to form, and prevents the collapse of the universe upon itself as well. At the same time, it is economical in energy to the furthest possible extent—to the extent that the total energy equals zero. Therefore, it has

*. Dr. Lawrence Krauss is an American physicist and astronomer. He founded "Origins Project" at the University of Arizona, America and also obtained a PhD in Physics at the Massachusetts Institute of Technology.

no excess energy that would push it to expand more than needed, and no energy shortage causing its collapse upon itself.

This issue, which I think is easy to comprehend, makes whoever understands it affirm that the universe has fixed constants, with high accuracy. It is for this reason that physicists try to find a scientific explanation of this fixing of the cosmological constant, as we have previously illuminated. In reality, there is a scientific deficiency, at least until the present time, in explaining the cosmological constant that is fixed so precisely. We have already examined those solutions that are worthy of discussion.

The Sum of the Energy in the Universe and a Universe from Nothing

Previously, when we examined dark energy, it was explained how physicists managed to prove, with an acceptable level of confidence, that the shape of the universe is flat. If the universe is flat, then, on that basis, physicists such as Dr. Lawrence Krauss argue that the sum of energy in a flat universe is zero. The reason is that gravity has negative energy opposing the positive energy of material, and the positive energy of the flat universe is only sufficient for escape. This means that the positive energy is exactly equal to the negative energy, making the total energy of the universe equal to zero. The fact that its total energy is zero means it could have come from nothing—according to Lawrence Krauss and other proponents of this opinion—and no exterior energy entered the universe, making the energy and material of the universe an internal product only. The quantum disparities in emptiness guarantee this, based upon the principle of uncertainty and quantum mechanics.

This means that quantum disparity created the universe from nothing, and thus there is no outside intervention in the universe because it is not required. Thus, the universe started itself with itself, using the quantum disparities of emptiness, which emptiness is not free of, according to quantum mechanics. Therefore, there is no need to assume the existence of a god who started the universe from outside of it. Furthermore, this is all irrespective of the space in which quantum disparities of emptiness are created. That too requires explanation, no matter how small it is. This has been discussed previously.

Therefore, what we have now is space and quantum fluctuations that appear in it according to the laws of quantum mechanics and, in

particular, the uncertainty principle. Here, it must be noted that the uncertainty principle states that quantum fluctuations must exist in space, yet it does not explain their existence. Therefore, the reason and explanation for the appearance of these disparities remains unknown. Quantum mechanics forgoes explaining them, by annulling the steady principle of causality for all events within the universe at a level greater than the quantum one. Thus, causality is a principle that was not absent in a single cosmological incident, so how can it be absent here? And why is it not that our capabilities, which are certainly not absolute, do not qualify us to find the reason?

I believe that annulling causality is an escape from the answer. We can simply argue as Hugh Everett did, namely that there are other universes that can affect each other, making quantum disparities an effect of a neighboring universe or universes.

With regard to the total energy of the universe equalling zero, or the sum of forces therein equalling zero, this in no way negates the existence of a god. They want to say: nothing entered the universe from the outside, so why would we need to assume that a deity exists? However, if someone states that something should enter the universe from outside, so that we can assume that a deity does exists, or so that we need to assume that a deity exists, then this issue must be proven and evidence must be provided. I have explained the scientific evidence for that, which includes the fixing of the cosmological constant.

I, personally, state the following: nothing from outside the universes may enter them in the first place, and the sum of forces in them must be equal to zero. This is due to the face that the created existence as a whole must be nothing other than nothingness itself, because, if the created existence as a whole was not nothingness, it would be a counterpart of the divine self. Accordingly, we would fall into the greatest unsolvable verbal philosophical quandary, namely: where is the created existence in relation to the deity? Was the creation created within or outside the self? We can rephrase the question and say: is the deity inside creation, or outside of it?

If the created existence as a whole was not mere nothingness, any answer would obligate one of two things; either that a god is a creation, or that the created existence is old. This means either negating His absolute divinity or negating His oneness, the Almighty.

It is not a sufficient response to say that God is neither within things nor outside of them, or that innate dispositions are neither

within the self, nor outside of it. This response is a mere refutation of both answers mentioned previously [that a god is a creation, or that the created existence is old]. Nevertheless, in any case, this response is preferable to those two aforementioned answers and what they entail in terms of negating His divinity and oneness, the Almighty.

In fact, the existence of creation is merely nominal. In contrast to God's true existence, our state is like that of the quantum fluctuations in space that our bodies are filled with. In contrast to the Almighty, we are mere nothingness, because we did not come from nothingness in the first place. Rather, we are in the nothingness and we carry our nothingness with us. Thus, in truth, nothing exists except Him. Perhaps some religious people find it difficult to understand these statements, which I proved scientifically before presenting them. However, there are many proven scientific facts that are difficult to understand, such as quantum mechanics and general relativity. Is it easy to understand and comprehend that one electron, which is a material particle, enters from two slits on one side at the same time, or that time is a fourth cosmological dimension, like the three dimensions of space, and that the mass of the earth affects time and bends it in the spacetime fabric?

Where Are We?!

This question, which I have answered in the previous topic, is considered one of the most important pressing ideological questions for the human—if not the first and most important ideological question to cross a person's mind, given that it is the starting point in the search for truth. All people ask this question and repeat it in their minds: "Where are we?" or "Where are we in relation to God? Where did God create us? Was it within His Self, or outside of It? If it was outside of His Self, where is this outside? Did He create this outside and then create us in it, or is this outside eternal and old?"

It is clear that it cannot be old and eternal, because this means there is more than one old one, or more than one absolute divinity. However, if He created this outside, where did He create it? Did He create it in another outside that is older than Him? This sequence of questions will continue until stopping at an eternal and old outside. If the outside in which He created us is eternal and old, or if it stops at an eternal and old one, then there is more than one old one, and more

than one absolute divinity! Undoubtedly this is false, and it is shirk (polytheism). Wahhabis believe in this—that the creation is outside of the self. They believe in this corrupt doctrine. This belief is much worse than the Christian's belief in the three hypostases.

Regarding the statement that we were created within His Self, this means that His Self is a creation, because it is a place for creation. This refutes His antiquity and absolute divinity.

The answer that refers to an eternal and old outside, if we were to assume it, not only means that these old ones are multiple, it also means that it is a place for creation, if the creation is in it. This makes it a creation that both has a beginning and is also old and eternal at the same time. This is impossible, as nothing can be a creation and old.

In addition, claiming the existence of an outside from the self, distinct from it, refutes His absolute divinity, because it refutes that He is Absolute. Thus, this outside becomes a limitation of the Almighty, because He is not in this outside.

As we can see, this issue is highly complex. For this reason, most doctrinal writers have chosen to avoid it. Some Muslims chose an answer that means He is not within things, nor outside of them. This answer is closer to being no answer than being an answer to the question or a solution to this dilemma. It is a process of rumination of the word attributed to Imam Ali pbuh:

> Close to things without touching; distant from them without distinction. (Al-Qabaniji 2000, 145).

This is not a thorough answer to the dilemma. It is only a denial of both incorrect answers (that the deity is within things or outside of them). The fact that the Imams pbut did not go into detail regarding this major ideological issue connected to proving the existence of God and monotheism and which requires detailing, is for the same reasons we have previously stated and repeated: allegories are sometimes left to be explained by one of the Proofs of God in their time, so they would be an evidence of Him. Furthermore, perhaps some things are not clarified because either the time or the people are not present. Who would have been able to understand the meaning of escape speed or singularity during the time of Imam Ali pbuh, or understand that materials carry their nothingness with it, or understand antimatter and many things whose time, during that age, had not yet come?

> Al-Sadiq pbuh said, "Not everything that is known is told; and not everything is told has had its time come; and not everything whose time has come has its people present." (Al-Hilli 1950, 212).

> When the Spirit of truth comes, he will guide you into all the truth, for he will not speak on his own authority, but whatever he hears he will speak, and he will declare to you the things that are to come. New Testament John 13:16.

Dreams (Visions)

Earlier in this chapter, we examined a vitally important topic concerning the collapse of the wave function in quantum mechanics and the embodiment of one of the possibilities as a reality we observe. Hugh Everett suggests that all the possibilities are actually true realities, yet in multiple universes. Therefore, we have moved to discussing the topic of multiple timelines of one event, and the future cannot be told, because it has several possible aspects. Even if they are all realities according to the multiple universes, only one of them will be embodied in the universe in which we live. Thus, we will not be able to accurately recognize the future, because there is more than one future. I have said this previously:

As for the future, it is impossible to know according to the explanation of multiple universes, because it branches into several paths, and we will be in one of these universes in a moment in the future.

However, this impossibility does not mean that, in any case, we cannot know a possible future—meaning know one of these paths, think that it is the future, and even know all of them, while knowing that one of them is the future. As we have discussed, what is scientifically impossible in quantum mechanics and multiple universes is to scientifically recognize one specific future without the others.

This means that, according to quantum mechanics, dreams can be explained as futuristic messages that reach us, especially insofar as they may or may not come true. Thus, the dream is one of these possibilities or futuristic realities in one of the universes. Since this is scientifically explained, there is no value anymore in stating that dreams are evidence for the existence of a god and that, through a dream, you state what will happen in the future. This is because the dream you saw

that came true is nothing more than a message that can possibly occur. It came to you from one of the universes of the future in accordance with the possibilities of quantum mechanics. The proof is that you see other dreams that do not come true.

> According to my interpretation of the many-worlds theory, the future is not determined, as far as our conscious perception of the world is concerned, but the past is. By the act of observation we have selected a "real" history out of many realities, and once someone has seen a tree in our world it stays there even when nobody is looking at it. This applies all the way back to the Big Bang. At every junction in the quantum highway may have been many new realities created, but the path that leads to us clear and unambiguous. There are many routes into the future, however, and some version of "us" will follow each of them. Each version of ourselves will think it is following a unique path, and will look back on a unique past, but it is impossible to know the future since there are so many of them. We may even receive messages from the future, either by mechanical means as in Timescape, or if you wish to imagine the possibility, through dreams and extrasensory perception. But those messages are unlikely to do us much good. Because there is a multiplicity of future worlds, any such messages must be expected to be confused and contradictory. If we act on them, we are more likely than not going to deflect ourselves into a branch of reality different from the one the "messages" came from, so that it is highly unlikely that they can ever "come true". The people who suggest the quantum theory offers a key to practical ESP, telepathy, and all the rest are only deluding themselves. (Gribbin 1984, 251).

With regard to our view, we believe in the existence of the futuristic possibilities. A vision (dreams) can be one of the possibilities. It may not come true in this world because it is from the board of erasure and confirmation. This was mentioned in the Quran and in the religious accounts: ﴿God erases whatever He wills or confirms, and with Him is the Mother of the Book.﴾ Quran Chapter "The Thunder" 13:39. The religious accounts from the progeny of Muhammad pbut mention it under the name of "delay". One issue remains—symbols—which is what we see in the dreams. For example, teeth in a dream symbolize relatives, so if a person sees a dream in which one of his teeth are falling out, this means one of his relatives will die in the future. This comes true for a lot of people. So the issue of symbols in dreams cannot, in any case, be explained by quantum mechanics. Therefore,

dreams remain as evidence for the existence of a wise, knowledgeable, conscious, and unseen force that speaks to us, saying: "I am here."

There are also the dreams that affect the body greatly and tangibly, such as dreams of the fasting person on the day of fasting. In his sleep, during the day, he would see that he is eating and drinking, and wake up not feeling hungry or thirsty. These visions occur often. A possible explanation is that they occur as a result of signals from the brain, and feeling full and quenching the thirst are inevitable results of some bodily secretions or the work of some organs.

However, the truth is that, when a person wakes up, often noticing in the vision that he is fasting, he finds that the taste of the drink or food is perhaps still in his mouth. In addition, the thirst of the fasting person is not quenched when he is awake, but when he sleeps, he sees that he is drinking, and he is no longer thirsty. So why do these secretions work only during sleep? Why is it that when he sees the vision, he wakes up no longer thirsty, which would not have happened had he not seen in that vision or dream that he was drinking?!

Selected Warning Notes

They state: given that time started with the big bang, then before the big bang there was no time in which a creator could exist.

Warning note: this is an incorrect argument. Time is one of the dimensions of the material universe we live in, whereas a god is unlimited, absolute, old, eternal, and has no beginning. Accordingly, he cannot be restricted or contained by dimensions; otherwise, he would be a creation. Even what has been demonstrated scientifically—according to the theory of multiple universes, the hypothetical universes or worlds that are parallel to our world—cannot be restricted by the same dimensions of our world, one of which is time. If they were restricted by a time befitting of it, considering it has a beginning in all cases, how can the hypothesis of whether or not a god exists be restricted by proving his direct intervention at the beginning of time from its nothingness in our universe, in particular, even though some of the universes came before others, and did not all occur simultaneously?

They state: the universe is explained by the big bang and that the big bang is explained by quantum and gravitational laws. Therefore, there is no need for the existence of a god because our knowledge is

limited to this material universe and we discovered out how it came into existence.

Warning note: this is incorrect, because the issue must revolve around the existence of the original cause, which does not require a reason, so the assumption that the law of gravity has existed from the beginning, for example, necessitates the existence of a reason before it that made it exist. This is because, according to M theory, gravity requires graviton particles or strings, and these particles, strings or covers must have a reason to exist, and so forth. Therefore, if they find that the reason for the creation of the universe at time zero is the law of gravity, this does not negate the existence of a god. Instead, it confirms it, as they have proven that the material world is created, that it has a beginning with the big bang, that its beginning relies on laws, and that these laws rely on an entity that writes them. Thus, they have proven that the chain is continuous until prior to the big bang, until it ends with eternal reason and stops. We state: this eternal reason is God Almighty.

Warning note: It is erroneous to imagine that absolute nothingness is negative and positive energy equally combined and that, since their sum is zero, they are absolute nothingness. To those who believe this, absolute nothingness is 1-1. Yet, absolute nothingness is not just nothing, it's the absence of somethingness in the absolute nothingness. Therefore, to imagine that 1-1 represents absolute nothingness is incorrect. Indeed, 1-1 is mathematical nothingness and it equals nothing, but it is not absolute nothingness with no somethingness within it. There is an immense difference.

Here is an example to bring the picture closer: if we were to imagine that someone dug a hole in nothingness and placed the dust (or what he took out of that hole) in a pile next to the hole, then here we have a hole and dust (or what we took out of the hole) next to it. Their sum represents new nothingness, meaning that, if we were to somehow add the soil and the hole again, it would return as it was: nothingness, and no pile of dust—just nothingness. In this case, nothing entered the equation from outside in order for it to be said that there is true somethingness, as we have always had the same nothingness. However, this is not absolute nothingness with no somethingness within it. Rather, the nothingness we are talking about here is a hole and a pile of dust exactly equal to it. Therefore, in this nothingness, there is something evaluative, and this thing that carries its nothingness with it did not

appear from nothing. Someone caused its appearance, and that is the person or force that dug the hole.

Therefore, even if the somethingness is evaluative in nonexistence—like the appearance of subatomic particles or strings and their counterparts, and the manner in which they cancel each other out, as was explained according to the uncertainty principle in quantum mechanics—this is not called an appearance from nothing. In fact, what has appeared is the particle carrying the positive energy, and in its opposition appeared the particle carrying the negative energy, as a balancer of its appearance. The appearance of the particle with the positive energy must have a reason to make it happen. Quantum mechanics, according to the Copenhagen interpretation, as we have previously explained, escapes from searching for the reason by annulling the causality principle. However, this escape does not actually annul the reason. There remains an unknown reason, which is the digger of the hole in our previous example.

This absolutely proves the existence of a god and it proves what we have always been saying: God created the universe, and the universe continues to exist because of God. This does not mean that He Himself is directly carrying out the creation or existence. It is as He said in the Quran: ﴿We have built the sky with hands, and we are capable.﴾ Quran Chapter "The Winnowing Winds" 51:47. He is far above the actual hand. What is meant by hand are reasons or entities caused by Him.

Warning note: The issue of quantum fluctuations in space, or the appearance of particles or strings that carry positive energy and its counterparts, as well as its vanishing, clearly proves what we have always been saying: that the first creation –Muhammad – oscillates between appearance and vanishing. Alternatively, let us call this what physicists today call it: the sum of two energies, a positive and a negative one, that appears and disappears. All universes, including ours, follow him in his oscillation, so we find that it is very likely, rather natural, for energies to appear and disappear at the subatomic level in a process as similar as possible to the oscillation described by Imam al-Sadiq pbuh, that he is an oscillating veil; or, let us say, like a curtain placed in front of a door, moved by the wind, and so it is oscillating.

> Abu Baseer asked Abu Abdullah pbuh: "May I be made your ransom, how many times was the Messenger of God taken for ascension?" He pbuh said, "Twice. Gabriel asked him to stop at a place saying, 'Wait

> right there O Muhammad, you have stood at a place where no angel or prophet has ever stood before you. Your Lord Is praying.' He pbuhap asked, 'O Gabriel, how does He pray?' [Gabriel] said, 'The Almighty says, 'The Glorious, the Holy, I am the Lord of the angels and the Spirit. My mercy exceeds My wrath.' Then Muhammad pbuhap said, 'O Lord, I beg Your forgiveness, I beg Your forgiveness.'" Then the Imam pbuh said, "It was as God has said, ﴿And he was at a distance of two bow lengths or nearer﴾." Quran Chapter "The Star" 53:9. Abu Baseer then asked, "May I be made your ransom, what is the length of two bows or nearer?" He pbuh said, "It is the distance between the arch and the head of the bow." Then he pbuh said, "Between them there was a veil that was shining and oscillating. It was emerald. He looked into what God willed from the light of Greatness the size of the eye of a needle. God Almighty said, 'O Muhammad.' He pbuhap said, 'At your service, my Lord.' The Almighty said, 'Who will be after you to guide your followers?' He pbuhap said, 'God knows best.' The Almighty said, 'Ali Ibn Abi Talib will be the Prince of Believers, the master of the Muslims, the leader of the ones marked with brightness on their foreheads [from prostration].'" Then Abu Abdullah said to Abu Baseer, "O Abu Muhammad, by God, the authority of the Prince of Believers, Ali pbuh, did not come from Earth, but it came from the heavens, through words clearly spoken." (Al-Kulaini 1944, vol 1, 442).

Warning note: space is not only the areas void of material between planets, stars and galaxies. The majority of material itself is space filled with quantum fluctuations, meaning that the majority of every atom is space. This means that the body of the human being, for example, is space filled with quantum fluctuations, or particles that appear and disappear.

Warning note: when we say that God is the creator of nothingness, we do not mean that He created absolute nothingness, because absolute nothingness does not have somethingness within it in order for God to have created it. What we mean is that He Almighty created nonexistence along with existence. As it has now been explained, particles at a subatomic level appear and disappear, or cancel each other out, because they are positive and negative energies; or, let us say, they are matter and antimatter. This is an important issue that soundly explains the argument concerning the existence created within God, or outside of God. Alternatively, we can state: since only He Almighty is eternal, and there is no other eternal, then where did the creation come into existence: within Him or outside Him? If it is within God, then

God is a creation, and His antiquity and absolute divinity are invalid. If it is outside of God, then it necessitates the antiquity and eternalness of someone other than Him, who is the one outside of Him in which God brought the creation to existence. Therefore, it has now been explained that it is neither one nor the other. What we call created existence is only an existence that carries its nothingness with it, as is stated by modern science: matter and antimatter, or positive and negative energy. Consequently, it is neither within God nor outside of Him, because according to its truth, it is generally nothing in comparison to God Almighty, the true existence.

Warning note: According to the laws of physics, the ignorance of the Wahhabi clerics has now been scientifically explained, and their satanic, deviating religion has been demolished. This doctrine is built upon the creation being distinct from God and that the Almighty descends, and that the Almighty is up and above the heavens, among other beliefs of the idol-worshipping nonsense of the Salafi creed.

Warning note: This is the truth as it is, and I have explained it with unquestionable scientific proof. Perhaps a lot of people do not like being told that they are nothing, especially some of the arrogant clerics of religion. However, I think they are obliged, whether it be today or tomorrow, to believe that we consist of matter that carries its antimatter with it, and that we live in a material universe that carries its antimatter with it, and that the negative energy equals its positive energy. This is unless they wish to insist for a while longer, just as they have insisted previously, that the earth does not orbit the sun, or they will rely on the possibility that people continue to not understand these sciences, despite decades having passed since Einstein's theory of general relativity. Yet, unfortunately, until the present day, few educated people are aware of this, or are aware of the meaning of spacetime, the relativity of time and space, and that gravity is caused by the arching of the universal fabric (timespace). How much time will pass before people understand M theory, as well as that there are more than ten dimensions? How much time will the leaders of making others ignorant be given before people learn and understand that science has now proven that they carry their antimatter with them, and so does the universe they live in?

To be sure, a lot of people have still not heard about something called antimatter or dark matter, and this is an invitation to whoever can understand these things to read about them and look into them,

and try to employ them correctly to support religion and prove the existence of God, and prove that God is neither outside creation, nor within it. The atheists try as hard as they can to employ these sciences to refute religion. The Wahhabis take advantage of ignorance to misguide people and deviate them from monotheism and the worship of God, instead towards the worship of a huge idol made by their delusions and ignorance – an idol that is outside of his creation and is positioned above the heavens. Yet, I hope that, this time, people are rise to their responsibility and do not remain lagging behind the facts for many centuries to come.

Warning note: in general, what modern science has established has evidence in the Quran and in the religious accounts of the past vicegerents of God, may the prayers of God be upon them. Accordingly, the big bang and the expansion of the physical universe that we live in is mentioned in the Quran. The Almighty said, ﴿We have built the sky with hands, and we are capable.﴾ The meaning of the sky being built with hands is that the reason made by God built the sky, and that the sky is expanding. This is what observations of the galaxies around us have confirmed. They move further away at an increasing rate based on the Doppler effect and other evidence of the universe's expansion, which we have learned about in this book.

With regard to the creation preceding Adam on this earth, life on other planets, and the multiple universes, all these issues have been explained in detail, over a thousand years ago, by the progeny of Muhammad pbut. These are some of the religious accounts for whoever wants to learn the truth, and learn from Muhammad and the progeny of Muhammad. They are also a miracle of unseen knowledge, generally proven by modern science. Thus, atheists can see the truth if they really request to know the truth. I believe that a reasonable person works and takes precautions to push away potential harm, so what if the harm was almost definite?!

I believe that the matching of the sayings of the progeny of Muhammad pbuh with theories and facts of modern science spur the reasonable person to search and examine what he is inside of. As for the unreasonable person, it is his business; he does whatever he wishes.

> Al-Baqir pbuh said: "You see that God has not created humans other than you, but God has created a thousand thousand worlds, and a thousand thousand Adams, and you are at the end of these worlds and

those Adams." (Al-Sadooq 1956, 277).*

Al-Sadiq pbuh said, "God Almighty has twelve thousand worlds; each one of them is larger than seven heavens and seven earths. No world from them sees that God Almighty has a world other than it, and I am the proof upon them." (Al-Sadooq 1982, 639).

Imam Ali Ibn al-Hussain Munjim said: "Should I tell you about a man who, since you walked in, has gone through fourteen worlds, each one of them three times bigger than this world, and he has not moved from his place? Munjim said, 'Who is he?' He said, 'It is me.'" (Al-Saffar 1984, 420-21).

Imam al-Sadiq pbuh said about himself that he "walks in an hour of day the journey of a sun year until he goes through twelve thousand worlds like this world of yours. They do not know that God created Adam or Iblis. He was asked, 'do they know you?' He said, 'Yes. Their only obligation is allegiance to us and denouncing our enemy.'" (Al-Saffar 1984, 420-21).

Moreover, the religious accounts of the progeny of Muhammad pbut mentioned two more dimensions of the conscious, aware life other than the aforementioned dimension of the multiplicity of worlds or universes. There is the same universe we live in, meaning that there is conscious life within other planets and in other solar groups within our universe. In fact, the Imams mentioned what has now been scientifically proven: that the sun is not necessary for life to grow. Living beings have been discovered in the depths of the oceans that rely upon the heat of the earth's core, as well as chemical substances to grow and reproduce. Therefore, what is important is for energy to be available for life to grow, and that stars, such as our sun, are not the only source of energy in the universe.

Abu Abdullah Al-Sadiq pbuh said: "Behind this West of yours, are thirty-nine Wests, and a white earth filled with creation that utilize their light. They have not disobeyed God for even the blink of an eye. They do not know whether God created Adam or not." (Al-Hilli 1950, 89. Arabic source, translated).

Abu Abdullah Al-Sadiq pbuh said, "Behind the eye of this sun of

*. Also mentioned in Al-Khisal [The Traits], by Muhammad Ibn Ali Al-Sadooq.

> yours are forty eyes of a sun with much creation there, and behind your moon are forty moons with much creation therein, and they do not know whether or not God created Adam." (Al-Saffar 1984, 510, translated).
>
> Al-Baqir pbuh said: "Behind your sun are forty eyes of sun. Between each two suns are forty years. There is much creation therein that does not know whether or not God created Adam. And behind your moon are forty moons. Between each two moons is a forty-day journey. There is much creation therein that does not know whether or not God created Adam." (Al-Saffar 1984, 513, translated).*

There is also the earth we live in, as well as conscious life that came to it before us:

> Muhammad Ibn Ali al-Baqir, may the prayers of God be upon him, said: "Since God Almighty created the earth, he created seven peoples therein who are not the descendants of Adam. He created them from the soil of the earth and caused them to inhabit it, one after the other, each with his own world. Then, God Almighty created the father of this mankind, and He created his offspring from him." (Al-Sadooq 1982, 359).†
>
> Zurara said, "I asked Abu Abdullah pbuh: 'May God sacrifice me for you. I have been asking you about pilgrimage for forty years, and you continue to answer me. He said, 'O Zurara, Pilgrimage was made to this house two thousand years before Adam existed, so why would you think that questions about pilgrimage would end in forty years?'" (Al-Hur Al-Amili 1983, 12).

Therefore, over a thousand years ago, Muhammad and the progeny of Muhammad pbuhap stated the following:

- There is life other than us, which is conscious, aware and came to this earth before us. Fossils and genetic evidence have proved this, as we explained in this book.

- There is life, other than us, that is conscious, aware and exists within the universe we live in. This is in accordance with modern cos-

*. Similarly in Mukhtasar Basair Al-Darajat [Degrees of Insights, Abridged], page 89, by Hasan ibn Sulaiman Al-Hilli.

†. Similarly in Tafsir Al-Ayashi by Masoud Al-Ayashi [The Interpretations of Al-Ayashi], vol 2, page 238.

mological data and it is highly probable, especially following the observation of planets very similar to planet Earth.

- There is conscious, aware life, not in our universe to begin with, but rather in universes other than the one we live in. We explained this issue previously, when discussing quantum mechanics, multiple universes, and Hugh Everett's theory.

And all praise is to God alone.

My God… If You, after this life, were to return me as nothingness forever and ever,
I would not mind.
It means so much to me that You have been kind and created me and made me live these days so that I can know You.

Ahmed al-Hasan
Hijri 1434
2013 AD

APPENDIX 1: GLOSSARY

Hadron: A particle composed of a collection of elementary particles, such as quarks, that are held together by a strong nuclear force. Examples of common Hadrons are the proton and neutron.

Lepton: An elementary particle, such as the electron and quark.

Photon: An elementary particle of bosons that has energy but no mass. It can produce a particle of matter that has mass if the photon carries enough energy to convert to a mass in accordance with Einstein's law of $E= mc^2$. This is also the case with regard to gamma rays.

Electron: An elementary particle of Leptons that has mass and carries a negative charge.

Positron: An antiparticle and the antimatter counterpart of the electron. They mutually annihilate when they collide, and also produce energy.

Neutron: A particle of hadrons composed from the coming together of a group of quarks. It does not carry any charge.

Proton: A particle of hadrons composed from the coming together of a group of quarks. It carries a positive charge.

Causality: This is the assertion that every event or change has a cause or reason that led to its occurrence or change. Causality is inevitable because its invalidation requires absolute nothingness to be productive—which is impossible. With regard to the question of absolute nothingness not being productive, this is manifest, requiring neither consideration nor proof, because the mind intuitively judges that absolute nothingness itself does not produce existence. This is due to the fact that absolute nothingness has nothing in it at all and, therefore, we cannot imagine something emanating from it.

The attempt to invalidate causality in quantum mechanics requires absolute nothingness to be productive, while knowing that a quantum event in quantum mechanics comes from an environment/surround-

ing full of existence. Space is the existence of cosmic dimensions, and thus, in such a case, we cannot disregard the existence of that which surrounds events and say that quantum events, such as quantum fluctuations in a vacuum, emanated from absolute nothingness just because we could not or cannot diagnose what caused its appearance.

Intelligence: In general, this manifests itself in the ability to organize actions and reactions according to the characteristics of the environment and surroundings in order to reap benefit and fend off harm. The availability of tools of intelligence (such as the brain or nervous system) in the organism causes it regulate its other biological capabilities, such as biological arms and extremities, in order to attain abundant, exponential benefit from them.

APPENDIX 2

These are responses to some published opinions given to me by one of the believers, may God protect him. He requested that I respond to them, so I made the responses and clarification of the truth into an appendix, because it was in the original plan of the book. My comment starts with the word, "response" and it ends with the word "end".

Hadi Al-Madrasi:

The excerpts responded to are from from the book, *The Collapse of the Darwinian Theory and the Fall of the Theories That Follow* by Hadi al-Madrasi.

> Dr. Emile Quinoa admits it and says, "Although mutation is the only explanation that can be mentioned concerning the appearance of species, we have still not observed a single instance where mutation brings a new organ to the organism or changes its essence."
>
> He adds that mutations occur through a series of coincidental processes.
>
> We don't know how a new organ can coincidentally appear in the organism, whereas we know that what a new organ in the organism needs is tens of types of change.
>
> If we were to assume that "some eye" suddenly and coincidentally appeared in the organism, would the organism suddenly be able to see with it?
>
> Of course not, because vision is not a simple process of the eye. So if we were to assume that the eye itself, meaning its exterior structure, suddenly appeared, what would provide it with the nine-layered retina proper, of which the last layer consists of thirty million rods and three million cones?
>
> What would provide it with millions of nerves that correct the visual image?
>
> What would connect it to the remaining organs to coordinate its work, so that you could see more than 500 trillion light waves per second?
>
> Let's assume that birds were not flying organisms, but suddenly acquired wings. Is the wing sufficient for flying?
>
> Flying is a process that requires many factors, such as relative balance between the body and the wing, and harmony between the wing and the organs, and dozens of other factors. So how can this occur

coincidentally? (Al-Madrisi 2011, 43-4)

Response: This is incorrect. The theory of evolution doesn't at all state that compound organs appear in a single burst due to a single mutation. So neither the eye nor the wing appeared in a single burst due to a single mutation, but due to mutations so small that they are barely sensed but are influential to such an extent that the organism carrying it has an advantage over others, making it more capable of surviving among its peers and therefore, more advantaged in the transfer of its genes to the next generation. With the accumulation of these improvement mutations over millions of years, complex and compound organs are formed. So there is no chance, and no argument of probabilities.

In fact, this argument presented by the author of this book shows that he doesn't know the fundamentals about the theory of evolution to which he responded.—End

Mutations are very rarely passed down if the mating is between two organisms, both having a mutation in the same organ.

For example, if the tail of a mouse falls off due to mutation, its babies can only have no tail if it mates with a female mouse carrying the same mutation and under special conditions that are rarely available, such as the presence of a single thermal atmosphere, and the change of the environment, etc.

As for the ratio of mutations being passed down in any other case, it is 1 in 10,000. So if the mouse whose tail falls off due to mutation mates with a female mouse that has a tail, he needs to produce ten thousand generations for one generation to inherit the absence of a tail.

So in this case, the age of the earth is in no way enough for the appearance of the many species that exist on earth.

The reasonable average age of the earth is 2,000 million years. So how is it that in this short period of time, tens of millions of species, insects, and plants developed?

How did this tremendous amount spread on earth everywhere?

How is it that through these animal species came the higher being that we call the human?

We don't know how it is possible to believe in this, but we do know very well that the Darwinian theory is based on the absolute assumption of purely coincidental changes.

As for these changes, the mathematician BATO calculated them.

He concluded that for a new change to be completed in some

> genus, it might take a million generations. Let's think about the dog who Darwinism claims is an ancestor of the higher horse. How long, according to the mathematician Bato, would it take to become a horse? (Al-Madrisi 2011, 43-4)

Response: The above words have nothing to do with science. Mutations are changes in the genetic map that build the body of the organism. Certainly, they affect the building of the next generation's bodies, and they are hereditary, just like other genes. Both parents don't have to carry the mutated gene in order for it to be passed to the next generation—it is sufficient that one of them carries it. As for the time provided by the earth according to geological history, not only is it enough for evolution, it is more than enough, as evolutionary biologists have many theories explaining why evolution is slow, or why it stops at certain times. As for the argument of probabilities, I have clarified that it cannot be used to refute the theory of evolution, because evolution is cumulative. The argument of probabilities can only be used to refute the theories or hypotheses of abiogenesis, or the beginning of life on the earth.—End

> 4. Exterior Resemblance
>
> Due to the resemblance between humans and apes, the Darwinian theory states that humans directly evolved from apes, and that both the ape and human conditions competed for a long time within the human because the ape condition wanted to preserve itself. However, the environment wanted to create the human. Since human were of a higher rank, they defeated the ape and evolved from it. The changes that happened the human were a result of the environment they lived in. For example, the human face became round because he often used to live in trees, and stare at the ground so the pressure fell on his face and made it round.
>
> As for the human's tail, it was gone because he dragged himself on the ground, causing friction between the tail and his back side. So later on, his tail was removed. (Al-Madrisi 2011, 66)

Response: This is also unscientific. The biological body of the human is classified as one of the species of the great apes, and losing the tail was not caused by friction of the back side in this manner. He is portraying it as a cutting of the tail due to friction, whereas any change in evolution, no matter how simple, is due to a genetic mutation suitable

for the organism and its environment, so it provides an advantage to the organism over others in terms of bringing it closer to survival and reproduction. Consequently, the organism transfers this mutation to the next generation. The loss, or let's say the atrophy of the organ, does not occur with one mutation, but rather with many mutations. – End

> The stumbling of Darwinism in the case of plants.
>
> If Darwinism would ask the following question: Why do plants evolve? It would immediately say there is a need for it. For example, plants lived in the sea millions of years ago in the form of a simple plant with a soft body which would immediately dry out when exposed to the sun. So it needed wood to carry and keep its moisture to resist heat. At that time, wood for plants appeared, so they were capable of going out to the land.
>
> However, if this is the case like Darwinism says, why does kelp, which Darwinism itself considers the material of plants and trees throughout the world, still exists in oceans in its original state?
>
> Why don't we today find a group of them climbing seashores and escaping to land?
>
> Why does it still have a soft body which immediately dries out once it is exposed to the sun?
>
> How did a group of them evolve and migrate to villages and cities, whereas the majority of them still suffer from weakness and frailty?
>
> In addition, if Darwinism believes that evolution is continuous like it states, why did evolution end its play with flowering plants?
>
> Modern science has discovered many species of plants and trees, so why haven't we found a new species of trees coming into existence for tens of thousands of years, since there is a great need for that/?
>
> In addition, let's assume that plants evolved based on their need. How did hymenoptera insects such as bees that pollinate the flowers appear? (Al-Madrisi 2011, 88)

Response: Here we find the repetition of a series of frail arguments presented in the nineteenth century and answered by evolutionary biologists. So the examples of the continuity of evolution exist, and they are numerous. Due to our short life span, we can only see the evolution of organisms that are quickly reproduce and whose life spans are very short, such as butterflies and insects, because no matter how simple evolution is, it requires many generations. The change in color of the industrial revolution moths is one example that was seen by millions

of people and today, there are instances of new insects appearing that did not exist before.

As for why all origins don't evolve in one direction, this is truly a very simple argument that has already been answered. The evolution in a certain direction of some members of a particular species in a particular environment due to the availability of a particular mutation, does not obligate the evolution in the same direction of some members of the same species who live in a different environment, even if the same mutation were available to them, and even if it were not.—End

> Admission:
>
> Darwinism admits that in lower animals, it doesn't find an incomplete hand gradually move toward perfection until it becomes a human hand, and it also admits that it does not find a hand with three fingers that evolves into a hand with four, then five, and so on.
>
> It states that the present-day hand of all animals that live on land contains five fingers, or they used to contain that number in the past, such as the case with horse's hoof, or the ox's hoof, or the bird's wing, or the dolphin's fin.
>
> Why should we ever believe that creation was done at once when it comes to the fingers but not when it comes to the human and other organisms? (Al-Madrisi 2011, 102)

Response: The one refuting evolution is supposed to know the fundamentals of evolution very well. This entire group goes back to a common ancestor from whom the five fingers evolved.

Note: I repeat for whoever has not understood, that evolution occurs gradually and not in a single burst. The fingers did not suddenly appear. They evolved through consecutive mutations in the generations of a common ancestor of all these biological bodies that have five fingers.—End

> As for the transfer of the breast from the lower half of a woman's abdomen to the front of her chest, Darwinism states that the woman started carrying her child on her chest and walking only on her legs and when she would sit, she would also depend on her back side. Thus, during breastfeeding, the baby would need to find the breast on the chest, and not on the lower stomach.
>
> We should also whisper in the ears of the Darwinist sirs that until now, not a single reliable piece of evidence for what they say has been discovered. For example, in the fossils, there is not a single woman

> whose breasts are lower than where they currently are, not even by one centimeter. (Al-Madrisi 2011, 132)

Response: These words are also scientifically erroneous. The transfer of the breasts to a higher point on the body of some mammals who represent the ancestors of the human occurred millions of years before the appearance of the human. In addition, this transfer did not happen suddenly. I repeat what I said: it was reached with many mutations within ancestors. When the mutation represents a favored trait for the animal, the species keeps the mutation and it transfers to the next generation, and so on, and this happened until the breasts settled at the top of the chest in mammalian ancestors that preceded the human.—End

> What will the next human be like?
>
> Darwinism sees that in the future, the human will be in the following shape:
>
> 4. Human lineages will transform into species and the European human will be a particular species, and the African human will be a particular species, and so on. What distinguishes the species is that it cannot be fertilized by another species.
>
> Based on this shocking fact, we recommend that the ones wishing to marry European girls do so quickly, before they are transformed into a different species, making it impossible to mate with them. (Al-Madrisi 2011, 154)

Response: Regardless of whether or not it is a possibility to reach the point of species separation in the human, let's assume that there are people who say that it's possible. I believe it's inappropriate for such a comment to be made.—End

> According to the opinion of Islam, the concept is that God is the Creator of the universe which is confirmed by scientific and logical evidence alike. Therefore, there is no difference between God creating the species independently or Him creating one substance suitable for speciation and evolution using His own laws which He made it obey. So God is the creator of man, elephant, and bird, and there is no difference between the ancestor of man being a human, or an African

ape. There is also no difference between the ancestor of the elephant being an elephant or a reptile. there is also no difference between the first bird being a bird or an insect.

The continuous creation or creation through evolution, both provide conclusive evidence of the Creator's ability, because the one who makes one simple thing, then transforms it into countless types is no less capable than the one who makes these types at once.

Therefore, attributing evolution to blind nature is what Islam rejects. As for evolution itself, it cannot be an issue that goes against Islam and divine beliefs in any way whatsoever. (Al-Madrisi 2011, 154)

Response: If this is the case, it would have been better to be deliberate than to respond to the theory of evolution with arguments which to say the least, are unscientific.—End

Yassir Habib (Alqatrah.net,. 2016)

What is your response to Darwin's theory of evolution?

Question: In the name of God, the Abundantly Merciful, the Intensely Merciful,

May the prayers of God be upon Muhammad and the progeny of Muhammad the most pure, and may the everlasting and intense curse be upon their enemies and oppressors.

I am an academic young man studying life sciences and the human body. My university has a foreign curriculum, and it follows all that is scientifically recent in the world. The issue of how God created the earth and living beings is clear in the Holy Quran, although there are some complications. The problem is, my professor who supervises the important material I am taught is a secular Christian, who is very intelligent and highly educated. However, we always face a problem. He believes in Darwin's theory, and that the human used to be an animal. What made him more confident today is a published paper stating that the genetic map of the chimpanzee is 96 percent suitable for the human being. Honestly, my friends and I can't find religious evidence suitable for convincing him otherwise. Of course, we are accountable for his ideas when taking the exam. How would you comment, and how can you help me achieve the education required to confront him? And what books can help me?

Answer: In the name of God, whose names are sacred. May the peace, mercy and blessings of God be upon you.

Regardless of the religious evidence, the intellectual and scientific

> evidence also refutes Darwin's theory of evolution. Had your professor been more educated, he would have abandoned this belief of his. Day after day, with the appearance of new facts, the faith that natural scientists have in this theory is falling apart. It is enough for you to know that this is called a "theory" in their dictionary, which means it is scientifically questionable and has yet to be proven. If it were proven, they would have called it a scientific fact. (Alqatrah.net,. 2016)

Response: He is presenting us with brand new information which is that in academic sciences, the term theory by itself means it is unproven. This means that the pythagorean theorem is unproven, the special relativity theory is unproven, as well as the remaining theories of mathematics, physics, engineering and other sciences—they are all unproven because they are called theories!

In addition, the Arabic word for theory is derived from the Arabic word for look, meaning to research, think, examine, calculate, and extract a result from its preliminaries. It opposes axioms that don't require acts of looking to be recognized. A person who doesn't have the slightest familiarity cannot say that for a certain proposition to be described as a theory makes it unproven. The major scientific results reached by scientists are called theories.

As for the issue of the absolute truth, organized academic science does not adopt the concept of absolute truth. That is why no matter how much sciences are proven, even if by accurate mathematical calculations and unquestionable observations, they are called theories, because in academic science that are never spared from revision and research. So even if the origin is spared from revision, because it is decidedly true, its details can still be revised and corrected.

Describing scientific material as a theory and then adopting it by prestigious scientific communities and universities around the world, and teaching it as a correct scientific theory means it is not just an idea that one person or establishment believes in; rather, it is scientific material proven with scientific evidence, and it is subject to a strict scientific method. It also underwent and survived and was scrutinized through complex and strict tests, as modern science is based on the method of organized scrutiny.

Furthermore, its predictions must match reality. A theory is evaluated based on whether or not its predictions match reality. Everything the theory of evolution predicted has been validated, especially after

the appearance of genetics and precise comparative anatomy. Not one example has been proven of the mismatch between what the theory of evolution predicted and the reality that is discovered day after day, with the progress of science and the ability to test and experiment.

So trying to belittle a particular academic science just because it is called a theory is a miserable attempt, and whoever makes it is pitiful, because the whole of modern science does not adopt the concept of absolute truth. So whoever rejects a scientific theory and does not accept it for this reason has rejected the origins of the modern sciences, because they are built on the same method of research and scrutiny.—End

> What Darwin presented is nothing more than an assumption. Afterwards, there were people who were desperate to prove that assumption, so they carried out expeditions around the world to acquire fossils that proved evolution, and the development of a genus from one species to another. When they found some fossils of apes that they considered similar to humans, they cheerfully cried, "This is the evidence! The human evolves from the ape!"
>
> They philosophized their claim by saying that around 8 million years ago, apes genetically evolved themselves to adapt with changing nature, so they started walking on two feet instead of four about 4 million years ago, separating themselves from apes and forming a new genus with time. This genus became the human.
>
> When they are asked for their scientific evidence for what they claim, they say that it is the genetic similarity between the family of humans and the family of apes and the fossils that prove this evolution due to the existence of a family that appears to be overlapping that is between humans and apes.
>
> Their evidence is only the "similarity." Truly, it is ridiculously funny evidence. Does the resemblance between this family and that one at a certain percentage mean that this family was derived from that one? Does the resemblance we find between a tiger and a cat mean that tigers evolved from cats, for example? (Alqatrah.net,. 2016)

Response: His saying that their evidence is only the similarity is incorrect. It is obvious that he said this due to his ignorance of the evidence provided by evolutionary biology which we have clarified, and we have clarified how they prove evolution.

As for tigers, it seems he doesn't know that in biology, tigers and domestic cats are individuals of one family which is the Felidae fam-

ily. They all evolved from one origin only a few million years ago. So there is no need for him to laugh about the issue. Instead, he should be ashamed of his ignorance and his audacity to speak about things he doesn't know a single thing about.—End

> Let the resemblance between humans and chimpanzees be 99% and not just 96%. Actually, let it be more than that. We still cannot assert that they originally belonged to one family as long as there is a difference between them, even if very small. So as long as there is a difference, there is no scientific evidence that they have one origin. The claim of those people remains only a guess due to resemblance. (Alqatrah.net,. 2016)

Response:

His words mean that the existence of a difference in the DNA of two individuals prevents the assertion that the two individuals come from one origin. This is incorrect. For example, the DNA of each one of the children is a special mix of the DNA of the parents, each of whom both provide a mix of the genes of their parents in every sexual self. This means that each one of the children has a genetic map different from his siblings except for identical twins. Despite this difference in the genes of siblings, through DNA testing, it can be asserted that they are siblings. So the presence of the existence of a difference in the DNA does not itself prevent the assertion that the two individuals have a common origin.

In addition, when using DNA as evidence to discover the common ancestor between two families, it is generally not concerned with the resemblance of DNA. Instead, it is concerned with special evidence in the DNA such as retroviruses and the fusion of chromosome 2 in humans, which is still separate in the rest of the great apes.—End

> We are witnessing that in reality a person is born in Russia, for example, and another in Mexico with completely different parents, and the two people are not related and do not at all share a lineage. Each one has a different ethnicity. However, due to the resemblance of genetic traits, it is agreed upon that they are so similar, they are almost identical. If they are seen, they are said to be twins, though they are not twins at all.
>
> First, this resemblance itself is not sufficient scientific evidence for what the proponents of the Darwinian theory of evolution claim.

> Second, when it comes to refutations of this theory, they are numerous and varied, but we will only mention the following:
>
> If the origin of man is from apes, due to evolution, where did the ape itself come from? The proponents of Darwin's theory say that the ape evolved from another genus as well. If this is the case, why have no fossils been discovered that prove, for example, the evolution of apes from foxes, wolves, or even alligators? Why did excavators and explorers not find fossils for the evolution of reptiles from fish for example, or birds from insects? The theory states that everything evolves from something else by the act of nature and adaptation to it. However, nothing has been found to prove that except the claim that humans evolved from apes. As we have said, this claim of theirs is only built on the genetic resemblance they observed, and it is only the way of God and His creation. (Alqatrah.net,. 2016)

Response: The resemblance between two people who are not closely related is because they are distantly related. The example he mentioned which with he wishes to refute the theory of evolution proves it, and not the other way around. As for the great apes, they evolved from apes that preceded them, which evolved from animals similar to lemuridae, and the latter evolved from other mammals, and the fossils exist. As for the evolution of reptiles from fish, there are also fossils to prove that in addition to the genetic evidence that accumulates day after day.

As for birds, they did not evolve from insects in order for someone to request the existence of transitional fossils between them and insects. Birds evolved from reptiles, and according to biological categorization, they are what remains from the dinosaurs.—End

> Notice for example, that fossils of dinosaurs are millions of years older than fossils of apes. Since evolution exists, why weren't fossils of a dinosaur discovered that, for example, started evolving into an elephant or a giraffe? The fact that they found fossils of apes that are similar in structure to humans does not mean that evolution is steady. Otherwise, it would have been necessary to find fossils of dinosaurs evolving to elephants, or other organisms evolving from one genus to another, and they do not exist at all. (Alqatrah.net,. 2016)

Response: Elephants and giraffes are mammals that evolved from mammals that preceded them, and they did not evolve from dinosaurs. Transitional fossils in between species in evolution are not missing

today. In fact, many transitional fossils have been discovered. Indeed, some of them are missing which is natural, as no one expects to find all of the fossils, or expects to be so fortunate that nature preserves all the extinct transitional species, and that he would find all their locations.—End

> Assuming the theory of evolution is proven, why don't we observe it today, and not even from before the premises?

Response: In all prestigious universities around the world, evolution is scientifically categorized as a theory that is accepted by all universities, institutes, and prestigious scientific communities around the world. Everything predicted by the theory of evolution has been found to concur with reality. Scientific theories are evaluated on this basis, meaning how much their predictions concur with reality.

Evolution and its premises exist everywhere on the earth, like the evolution of viruses and pathogenic bacteria that are resistant to treatment, and like the moths of the industrial revolution and the eyes of eskimos. It is possible to reproduce evolution in the laboratory by changing the genetic composition of some organisms and producing new ones.—End

> Darwin and his people say that a group of apes started evolving by adapting to the changing environment. They practiced walking on two feet instead of four, and with that, they straightened the curvature in their bones which affected their offspring that also started walking on two feet through heredity. The question is, why don't we witness something like that today? There are many trained apes that can walk more than two steps on two feet at a higher speed than other apes that cannot. Why do we find that when they reproduce, these apes do not affect how their offspring walk, despite succession and mixing? The offspring still walk on four, and they need new training to walk on two?!

Response: The walking of these trained apes is just a habit, and habits do not transfer. Anything that happens due to an external effect does not transfer. The trait that transfers through heredity is the genetic trait, and not the acquired characteristic, such as the ape walking on two feet as a result of training, or the circumcision of the male human. In fact, by what is mentioned above, these arguments demonstrate how

shallow the one making them is, and how ignorant he is about the most simple scientific issues related to evolution. Despite his submersion in ignorance, you find that he dares, and with all insolence, to argue against a scientific issue like evolution, whereas he hardly understands a thing about it.—End

> If a person who trained himself to eat grit without having it affect his stomach, why don't we find that his children, grandchildren or great-grandchildren carry the same trait through heredity?
>
> If a person is born with a genetic change of six fingers in one hand, why is it that when he gets married and has children, we find that his son has five fingers and he does not inherit his father's trait, and evolve by his father's evolution? That is because external effects on genes do not produce any type of evolution.

Response: The genetic trait is not necessarily hereditary. A genetic mutation can occur in the human being, but the mutated gene is not passed down to the children. It can be passed down to some of them, and not others. To prove evolution, it is enough that genetic traits can be passed down through heredity.—End

> Concerning the origin of the universe, proponents of Darwin's theory say that it was coincidental, and that evolution is what formed these organisms with all their species and genuses. If they are asked about the first natural substance that caused the abiogenesis and evolution, they would say it is a pulse of energy. Where did this pulse come from? They admit that they don't know the answer. Based on that, these materialists acknowledge that there is a cause in abiogenesis, and it is the pulse of energy, whereas we creationists say that this cause is God Almighty. So which saying is closer to reason? Is it for a deaf, mute pulse with no reason, knowledge or feeling to create this entire, precise, grand universe, or for an aware, knowledgeable entity to do so?
>
> The first saying is like saying that an explosion happened at a printing press, and coincidentally, letters fell on papers and it was agreed upon that they were seen later in the form of an eloquent, deep sonnet or poem. Is this reasonable?
>
> They say it is not reasonable due to the speed of change. It cannot happen so fast. But with millions of years, it becomes possible. Our response is that the more time progresses, the more probable an error becomes. So a certain letter should come after a certain letter in the suitable place to form a correct word, then a correct phrase, then a

> correct sonnet. The chance of error increases as long as possibility is lessened with time. So if forming the poem isn't possible at the beginning of the explosion, it is undoubtedly impossible afterwards, as the chances of forming the poem correctly decreases.

Response: It is incorrect to derive the example of coincidence and compare it with what the theory of evolution presents, because evolution is cumulative and doesn't happen all at once, like he is imagining. That is why the argument of coincidence is invalid. As for the remainder of what he said above, it is nonsense, but I will show how the replication error, or the random genetic mutation leads to evolution. It appears from what he said that he does not understand anything presented by the theory. The theory of evolution states, and this is proven by experiments, that the error in genetic replication can be harmful or in can provide a beneficial trait. If it were harmful, it would not remain to be passed down to a later generation due to natural selection, because it will represent a disability for whoever is carrying it, and it will prevent him or hinder from competing with his peers; that is why it will not accumulate. As for the beneficial mutation, it will accumulate because it gives the organism an advantage trait over his peers. So natural selection will reinforce these traits, and they will accumulate, and evolution occurs smoothly.—End

> Despite all of the scientific developments humans have reached, such that they conquered and invaded the moon and the planets using sophisticated devices and tools, they are still incapable of creating one living cell from chemical material, like Darwin's theory presents and what the theory considers simple. Scientists acknowledged that it is impossible to form one living cell because the cell's composition is complex to a miraculous extent for humans. This invalidates Darwin's theory that the origin of the living cell is primary chemical natural material. What they have assumed is that nature formed the living cell, although nature is unaware. So how can it be accepted that the aware human being who is the son of nature as they say, is incapable of forming the cell although he has the intellectual guidance that inanimate nature does not have?

Response: The life of the living cell is the chromosomes. Chromosomes have been created from chemical material in the laboratory, and are capable of self-replication in massive numbers. Some ignorant

people argued that what was created was only the chromosomes, and not the cell's cytoplasm. Truly for the one who understands, this argument is like saying to a person who made a jet, "I dare you to make the paint you will color this jet with."

All right, if they make you the cytoplasm, will you be atheists along with them?

The argument should be complete or at least scientifically valuable, and not on this shallow and foolish level, that clearly indicate the ignorance ones who own it. - End

> These are only quick responses to the silly, invalid theory. We will leave the details for a different place. Anyway, we are not losing anything, after going to the grave if we don't believe in Darwin's theory, and it turns out to be true, assuming the impossible were to happen. As for them, they lose so much when they move to the grave, and it turns out that what we are saying about the existence of a creating Almighty God is true. So which option should a reasonable person choose?

Response: Above, the value of his responses to the theory of evolution is shown. We will leave the verdict to the reader.—End

> As for our advice to you, to acquire the necessary education, refer to the narrations and statements of our purified Imams, peace be upon them, concerning monotheism. You find a lot of them, in Bihar Al-Anwar for example, in the chapter of monotheism. Also refer to the classes we have given in Al-Hawza concerning knowledge of speech, especially the research on proving the Creator. Perhaps they will benefit you, God willing. It is also fine if you read the book of the Australian biologist Michael Denton, called "Evolution: A Theory in Crisis, in which he refutes Darwin's theory using evidence and proofs.
>
> May Allah support you in all that is good in this world and the hereafter, and peace.
>
> 2006

Kamal Al-Haydari

> The statements of Kamal al-Haydari concerning the theory of evolution:
>
> Adam was created with 'Be so it becomes', meaning he did not go through any phases… so is it clarified why God created Adam in

> the image of Adam? It is to tell us that Adam, the father of mankind, is distinguished from his children. Was this distinction given to any creation among humans other than Adam, the father of mankind? No, it was only given to him pbuh…
>
> I imagine the questioner in this instance was saying that Darwin's theory states that Adam went through phases until he came into existence. In response to that is that from the perspective of the Quran, this theory is invalid, to say the least. Indeed, scientifically, it has different place, but I am not discussing the scientific research here. But with respect to the Quran, at the level of Quranic research, God created him from dust and then said to him 'Be', so he became. So he did not evolve from another species.
>
> In addition, we have the authentic narrations that we read in Bukhari, Muslim, Musnad Ahmed, and the narrations in our books, that God created Adam on His image. (AlHaydari.com,. 2016)

Response: It is obvious that Kamal al-Haydari considers that Adam's material body was directly created from mud, meaning he thinks that God created a statue of mud, then breathed the spirit into it, so Adam's material body that lived on this earth was formed. We have read his saying, "Adam was created with 'Be, so it becomes', so he did not go through any phases." "God created him from dust and then said to him 'Be', so he became."

He rejects the theory of evolution, as he stated, and he considers it invalid: …"from the perspective of the Quran, this theory is invalid, to say the least."

These words reveal ignorance about what the theory of evolution presents from solid irrefutable evidence. The only people who reject the theory of evolution today after the precise genetic evidence are the ones who don't understand the theory and irrefutable scientific evidence. I have clarified the evidence in detail, and I have also shown the absurdity of the responses and arguments against it. They are all responses and arguments that reveal the ignorance regarding the theory of the ones who wrote them.

Consequently, I have shown in detail the foolishness and absurdity of their scientific research as Haydari likes to call it. Truly, they are not from the people of these sciences and they don't have the ability to discuss them. It has been clarified from the above that Kamal al-Haydari and his likes are incapable of understanding them, let alone discussing them and scientifically refuting them. It has been clarified

from the above that all of their responses are foolish responses with no scientific value, but they sell them locally, only to the poor people they deceive, just as Kamal al-Haydari and his likes deceive them with the lie that it is obligatory to imitate the cleric or the fallible one. His evidence for that lie, like he and others claim, is that the nonspecialist should refer to the specialist. This claim, at best, makes it permissible, not obligatory, like Kamal al-Haydari and his likes obligate with their deception, that they innovated without proof. Unfortunately, they still use it to deceive the followers of Ahlul Bayt whom those people oppressed, kidnapped, and kept in ignorance.

The result is that the theory of evolution is a solid, scientific theory, accepted by all prestigious universities and centers around the world. It is considered the only scientifically valid theory to explain life on Earth. In addition, its predictions match reality, and this is something that has been undoubtedly established, and reinforced, since the advancement in genetics. Scientific theories are evaluated on this basis, meaning how much their predictions match the reality we obtained from observations and experiments. So his saying that it is invalid only exposes his ignorance.

His statement that the theory of evolution is false from a Quranic perspective because it conflicts with the Quranic text is also incorrect, since there is not a single, literal Quranic text that absolutely conflicts with the theory of evolution. The only conflict that exists is the conflict between their incorrect understanding of the Quranic text and the theory of evolution—and there is a huge difference. The least that can be said is that this Quranic text can have more than one interpretation and meaning, so no one can say that it absolutely conflicts with the theory of evolution based on a potential interpretation and meaning of the text.

I have also presented Quranic texts which prove evolution.

Finally, my advice to whoever rejects the theory of evolution and says that it conflicts with the religious text is to examine the theory of evolution and try to understand it, and to change their incorrect opinion, because by God, He exposes their ignorance and puts them in extremely weak and unenviable positions is they do comprehend.

Dr. Dawkins said:

> I quite like the idea that people are being taught in their churches

> that evolution is incompatible with God, because we absolutely can demonstrate that evolution is a fact. (Dawkins, 2016)

This means that Dr. Dawkins is saying to the likes of Kamal al-Haydari, who say that that the theory of evolution conflicts with the Quran or religion, that they are giving atheism the greatest free gift for invalidating the Quran and religion. Because simply, evolutionary biologists can prove that the theory of evolution is true and correct with clear evidence.

The end.

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