

## SCIENCE, REASON AND CONSCIENCE: A PHILOSOPHICAL JOURNEY FROM THE CHAIR TO THE CREATOR – 13

Everything has a beginning and an end, just like the first step we take when embarking on a journey of thought. This journey began with a conversation sparked by an ordinary object and has led us to explore the deepest mysteries and meanings of the universe. Now, we have arrived at the next stop in this journey, where we are preparing to ask new questions about the essence of the universe and existence, guided by the light of science, reason, and conscience, while reconsidering old ones.

What began with an example of a chair has evolved into a profound discussion at the intersection of faith, doubt, and science. This time, you will encounter a perspective unlike any you have heard before, right at the heart of the debate.

As the Atheist and Agnostic grapple with the Believer's strong arguments, the discussion in the room deepens and becomes more complex. Each question, each answer, opens the door to a new thought.

Are you ready? Now, we are unlocking the door to the unknown; as we step through, armed with reason, science, and faith, we will continue **our search for truth...**

**Believer:** Friends, both of you claim that the existence of entities in the universe can be explained through “natural processes,” and you have supported this from the beginning. In response to the examples I provided, you say, “Since these are not living organisms, we cannot say anything about them, but living organisms are formed and can be explained by the laws of nature and natural processes. Any explanations outside of natural processes are not scientific.”

When I asked about natural processes, you tried to confuse us with complex and difficult-to-understand expressions, as if you were trying to get us to say, “These are topics too complicated for us to understand.” But that’s an old trick; today, we have the means and technologies that allow us to understand and explain everything more clearly. So, let’s unpack this concept of “natural processes” together and help our audience understand what’s really going on behind these terms.

First, from your perspective, could you define the concepts of “natural process” and “the sufficiency of natural processes?”

At this point, the Atheist responded to the Believer and took the floor to clarify this view, saying:

**Atheist:** To give a general definition, natural processes refer to ***“the formation and development of a substance or organism in nature spontaneously, without human intervention.”*** These processes occur through a combination of biological, chemical, and physical events, usually following a certain order and continuity. Natural processes are **systems that operate according to nature’s own internal dynamics.**<sup>1</sup>

The term *“sufficiency of natural processes”* refers to the idea that the events, structures, and processes observed in the universe can be fully explained by natural physical and chemical

laws. According to this view, the complexity and order of the universe can be understood through natural processes without resorting to a supernatural or conscious creator.<sup>2</sup>

Here are some explanations to better understand this concept:

- 1. Physical and Chemical Laws:** Natural processes are governed by physical and chemical laws. For instance, fundamental laws of nature like gravity, electromagnetism, and the laws of thermodynamics explain the movements and interactions in the universe.
- 2. Evolution and Natural Selection:** Natural processes that explain biological diversity and complexity operate through mechanisms such as natural selection and genetic mutations. The adaptations of living beings occur over time through these natural processes.
- 3. Cosmological Processes:** The formation and development of the universe are explained by natural processes like the Big Bang theory and cosmological evolution. The formation of galaxies, stars, and planets occurs under the influence of physical laws.
- 4. Chemical Processes:** Chemical reactions explain the transformation of substances and changes in energy. For example, photosynthesis is a chemical process through which plants produce energy.

According to the understanding of the “sufficiency of natural processes,” everything observed in the universe can be explained by natural processes without the need for a supernatural force. This viewpoint is supported by scientific methods and validated through observations, experiments, and rational analysis. In this view, the order and complexity of the universe are fully compatible with and sufficiently explained by the workings of natural laws and processes. For example, evolution explains how living species change over time through natural selection and how new species emerge. This process occurs through genetic variations and environmental pressures, without the need for supernatural intervention.

Following these explanations, the Believer began to express his own perspective in response to the definitions given:

**Believer:** Let’s try to better understand the essence of natural processes based on your definitions, and explain this with examples from living organisms. First, I would like to point out the following:

- For every example we’ve provided so far:
  - You approached it with the criticism, “These are not living organisms,” and stated that they could be explained by natural processes.
- We’ve tried to provide simple examples from inanimate objects for our audience to better understand.
  - Yet, you insisted on using living organisms as examples.
- We mentioned that “Living organisms are also composed of atoms and molecules, just like inanimate objects; therefore, these examples could also give an idea.”

- However, you responded, “The functioning and systems of living organisms are much more complex, so their natural processes are different and cannot be equated.”

We are not incapable of providing examples from living organisms; however, because such examples involve technical terms, we hesitated to bring them up, thinking they might be difficult to understand. But since there has been insistence on this matter, we’ve decided to delve into the details regarding living organisms as well. I apologize in advance to our audience as I explain these technical subjects; my goal is to express this information as clearly and simply as possible, so that listeners of all levels can understand.

Here is an example of a living organism: by explaining how *E. coli* bacteria exist through natural processes, we can better understand this situation.

One of the most studied bacteria, *E. coli*, is a microorganism that naturally resides in the intestines of humans and animals (in other words, the smallest living organism). It is usually harmless and helps the digestive system function healthily. When observed under a microscope, these bacteria appear rod-shaped, measuring about 1-2 micrometers in length and 0.1-0.5 micrometers in diameter. In other words, *E. coli* bacteria are about one-millionth the size of a millimeter. If you were to divide one millimeter into a million parts, each part would be the size of one of these bacteria. This makes them invisible to the naked eye but easily observable under a microscope.

The genetic material of *E. coli* functions like an “instruction manual” that determines all of its characteristics. This manual contains the information on how the organism will develop, how it will function, and how it will interact with its environment. It dictates not only physical traits like eye color, hair color, and height but also genetic predispositions to certain diseases. This manual is called the “Genome,” and it consists of sequences of DNA (Deoxyribonucleic Acid).

**A Listener:** What does the word "gene" mean?

**Believer:** The word "gene" refers to very small pieces of information that control all the characteristics of living beings' bodies. It can be thought of as a kind of "biological recipe book." Genes determine traits like our eye color, hair texture, and height.

Every person inherits genes from their mother and father. That’s why children can have similar traits to their parents. For example, a child might inherit the gene for curly hair from their mother and the gene for brown eyes from their father.

Genes are parts of a molecule called DNA, which is found in our cells. This DNA acts as a “guide” that tells our entire body how to function. Genes are specific sections of this guide, and each gene controls a particular trait or function in our body.

In short, genes are the biological pieces of information we inherit from our parents that determine everything about how our body is.

**Another Listener:** What exactly is DNA?

**Believer:** DNA (Deoxyribonucleic Acid) is a molecule that carries genetic information and is the fundamental building block of living beings. It has a double-helix structure, consisting of two long strands. These strands are made up of building blocks called nucleotides.

**Another Listener:** Could you explain nucleotides in a way we can understand?

**Believer:** Of course. A "nucleotide" refers to the basic building blocks of DNA and RNA. You can

think of them as the small pieces that make up the long chains of DNA. Nucleotides act like letters that help to write the genetic information in DNA. The genetic code in DNA is formed by a long chain of nucleotides coming together.

Each nucleotide consists of three main parts:

1. **Sugar** (Deoxyribose in DNA, Ribose in RNA)
2. **Phosphate group**
3. **Nitrogenous base** (such as Adenine (A), Thymine (T), Cytosine (C), and Guanine (G))

These bases are arranged in a specific order in DNA, creating the code for genetic information. Just like a sentence is written with letters, the information in DNA is written by the arrangement of nucleotides.

This is how a DNA sequence is formed.

**Another Listener:** What exactly do you mean by "DNA sequence"?

**Believer:** A DNA sequence refers to the specific order in which the nucleotides (adenine, guanine, cytosine, and thymine) are arranged in the DNA molecule that carries the genetic information of a living organism. This sequence acts like a code and determines the characteristics of the organism.

**A Listener:** Could you explain the genome to us?

**Believer:** The "genome" refers to all the genetic information of a living organism. All the DNA, meaning all the genes that a human or any living being possesses, make up that organism's "genome." The genome is like a genetic "instruction book" found in every cell of our body. These instructions determine how the body functions, develops, and looks.

A genome consists of millions or even billions of nucleotides, and the sequence of these nucleotides defines the genetic traits of that organism. Every person's genome is unique, which is why each individual looks different and has distinct characteristics.

In short, the genome is the sum total of all the genes a living organism has. You can think of it as a vast data repository that holds all the genetic information together.

**Another Listener:** Could you simplify this and give us examples from our daily lives to help us understand better?

**Believer:** I'd be happy to. We can better understand these concepts through a book analogy:

- **DNA:** This is like the physical book itself, including its pages and ink.
- **Nucleotides:** These are like the individual letters, punctuation marks, and spaces made up of ink in the book.
- **DNA Sequence:** This refers to the specific order of letters, punctuation marks, and spaces that form the text in the book.
- **Genome:** This is the entire content of the book, not just the stories, but also the foreword, table of contents, footnotes, and so on.

**A Listener:** What are you trying to tell us with this information?

**Believer:** Although *E. coli* bacteria are about **one-millionth the size of a millimeter**, they contain an enormous amount of genetic information (a genome) consisting of approximately 4.6 million base pairs (a total of 9.2 million nucleotides). This genome (genetic information) determines how *E. coli* grows, reproduces, utilizes nutrients, and interacts with other organisms in its environment.

Now, let's examine the probability of just the genome of *E. coli* forming randomly, using the principles of mathematics:

We mentioned that *E. coli* is one of the most studied bacteria, and for this reason, its entire genome has been mapped. We know that this bacterium contains a vast amount of genetic information, composed of 4.6 million genetic letters.

To explain mathematically the probability of *E. coli*'s genome forming by chance:

The DNA of *E. coli* is like a "sentence" composed of approximately 4.6 million characters (or letters) made up of four possible letters: A, T, C, and G. These letters encode the genetic instructions that determine how the cell operates. Now, imagine writing such a long sentence completely at random. Your chance of arranging each letter in the correct order would be like 4 to the power of 4.6 million, an incredibly small probability—in fact, it is practically impossible.

**Listener:** What does "4 to the power of 4.6 million" mean?

**Believer:** It means multiplying the number 4 by itself 4.6 million times. Mathematically, this generates an astronomical number. Let me explain it with a simpler example:

- 4 to the power of 2 (multiplying two 4s together):  $4 \times 4 = 16$
- 4 to the power of 3 (multiplying three 4s together):  $4 \times 4 \times 4 = 64$
- 4 to the power of 4.6 million:  $4 \times 4 \times 4 \times 4 \times \dots \times 4 \times 4 \times 4 \times 4$  (multiplying four 4s together 4.6 million times) = **AN ENORMOUS NUMBER**

By the time you reach 4 to the power of 4.6 million, the number becomes so large that it's like a 1 followed by millions of zeros. This represents a probability so small that it is beyond words to describe.

**Listener:** What does this mean?

**Believer:** This means that the probability of the letters (A, T, C, G) in the DNA of *E. coli* being arranged in the correct sequence and in exactly the right way is extremely low. **In other words, to achieve such a precise and orderly sequence by chance, you would need to perform an astronomical number of trials—of which only one would result in the correct sequence.** To put it more clearly, the likelihood of DNA forming in such a complex and organized way randomly is impossible because **even the age of the universe wouldn't be enough to allow for it.**

In the scientific world, probabilities greater than  $10^{50}$  (10 to the power of 50) are considered practically impossible.<sup>3</sup> This is because even the age of the universe is insufficient for such a low probability to occur. In other words, the number of trials required for the *E. coli* genome to form by chance exceeds the lifetime of the universe.

The estimated age of the universe is around 13.8 billion years, which is roughly equivalent to  $4.35 \times 10^{17}$  seconds (calculated as 1 year = 31,536,000 seconds).<sup>4</sup> So, if you put 15 zeros after

435, the resulting number represents the age of the universe in seconds. If we assume one trial per second, a maximum of  $4.35 \times 10^{17}$  trials could be performed during the entire lifetime of the universe.

The probability of randomly forming a genome, which is around  $10^{2,769,200}$  (10 to the power of 2,769,200),<sup>5</sup> is vastly larger than the number of trials possible during the universe's lifetime ( $4.35 \times 10^{17}$ ). If you place 2,769,200 zeros after 10, the resulting number would be far larger than the number you get by placing 15 zeros after 10. This means that the time span of the universe is insufficient for such a probability to occur.

In fact, the number of trials needed surpasses the age of the universe by roughly  $10^{2,769,183}$ . In other words, you would need around  $10^{2,769,183}$  universes to perform enough trials to achieve this.

**To explain more simply:** Imagine that the nucleotides Adenine (A), Guanine (G), Cytosine (C), and Thymine (T) have existed since the first day the universe was created. Even if they had been working continuously until today, they would not have completed the code for a single *E. coli* bacterium. They would still need much more time to finish the job.

**A Listener:** How much longer would they need to work?

**Believer:** Another universe, as old as the one we live in, would have to come into existence. And still, they would need more time. Another universe, just as old as ours, would need to form again. Yet, they still wouldn't have found the genome's code. More time would be required. After those universes, one more universe as old as ours would have to come into existence again. But they still wouldn't have succeeded.

**A Listener:** How much longer will this continue?

**Believer:** You would need  $10^{2,769,183}$  universes, each as old as ours (meaning you'd need the number 10 followed by 2,769,183 zeros worth of universes) for there to be a chance of just one *E. coli* genome being formed by chance.

**A Listener:** What does that mean?

**Believer:** **If there were randomness or chance at work, the nucleotides would have been working from the moment the universe came into existence until today, and still, an *E. coli* bacterium would not have emerged. This shows that the probability of such a complex structure, like the genome of *E. coli*, forming by chance is impossible.** Even for it to happen once, the probability of such a complex arrangement forming randomly is staggeringly difficult.

Imagine putting 2,769,183 zeros after the number 10. You would need that many universes for just one *E. coli* genome to form randomly. This highlights just how impossibly large this number is and how unlikely the chance of such an occurrence really is.

The Believer turned to the Atheist and Agnostic and continued:

**Believer:** You claim that "the events, structures, and processes observed in the universe can be fully explained by natural physical and chemical laws." **Here you have not the entire universe, but the existence of a living being that is only one-millionth the size of a millimeter.** Just for the

existence of this one being, you would need 102,769,183 universes. Now, go ahead and explain the random formation of the genome of *E. coli* bacteria using natural physical and chemical laws.

If existence is brought about through natural processes, and if natural processes, which are a combination of biological, chemical, and physical events operating according to the internal dynamics of nature, mean that a substance or organism forms and develops on its own in nature, then how will you explain the existence of just one *E. coli* genome?

Moreover, the marvelous precision in *E. coli* is not limited to its genome. This bacterium can reproduce every 20 minutes and contains 7,000 different biomolecules. Of these molecules, 4,000 are proteins, and the rest consist of DNA, RNA, and other organic compounds. On top of that, some of these molecules are soluble in water (polar), while others are soluble in fat (non-polar). A chemist would understand the significance of this far better, and upon seeing this phenomenon, would exclaim in amazement, "**ma sha' Allah!**" Go ask your chemists, and they will explain it to you in great detail.

**In other words, this precise structure in *E. coli* is flawlessly rebuilt every 20 minutes. How can the harmonious functioning of so many different types of molecules within such a small organism be explained by random processes? Isn't this more than just a mental block?**

The fact that *E. coli* comes into existence perfectly every 20 minutes is an awe-inspiring "**biological wonder.**" In fact, we must call this "**a miracle happening every moment.**"

The Atheist and Agnostic seemed to have lost their words after the Believer's profound explanations. Their eyes were filled with thoughts, and they had begun searching for answers in their minds. There was a desire within them to object, but the consistency and logic of the arguments they faced surrounded them. It was as if any word that would come out of their mouths was destined to vanish before it even began.

For a moment, time seemed to stand still in the room. Everyone's gaze wandered over their faces, observing the confusion and astonishment. Instead of objecting, they sensed that remaining silent was the wiser choice. Despite the questions building up inside them, this deep silence, combined with the weight of the truths they had heard, created a profound stillness.

It felt as though an invisible tension hung in the air, drifting among the unspoken words. While the Atheist and Agnostic continued searching for a way out, every fiber of their being was trying to find an answer that could change the course of the discussion. Yet, the unease within them whispered that this answer was far out of reach. In that moment, everyone in the room could sense the uncertainty on their faces.

**Believer:** What we have explained so far is only about the genome of a very small living organism found in human and animal intestines. The human body, on the other hand, consists of trillions of cells, each containing a DNA molecule made up of billions of base pairs, in a structure far more precise and perfect than *E. coli*. These DNA molecules carry the genetic information that determines human physical traits, biochemical processes, and even certain behaviors. To claim that this highly precise structure and information in the human genome can be explained solely by evolutionary mechanisms such as random mutations and natural selection is to

abandon logic, reason, science, and even conscience, when considering probability calculations and the intricacies of biochemical and physiological processes.

If we define the formation of the genome of a “relatively” simpler organism like *E. coli* as a "biological marvel" or even a "miracle," then attributing the origin of a being as magnificently ordered and organized as a human to random processes is not consistent with a scientific perspective.

When the age of the universe is insufficient for even the random formation of the genome of a single bacterium in the human body, explaining the entire structure and function of an organism as precise and ordered as a human through random events contradicts scientific data and logic, and conscience rejects it altogether.

**We are saying this about a single human, yet there are eight billion people on Earth, along with hundreds of billions of other living beings. I'll leave it up to you to decide what to call someone who claims that all these billions of beings came into existence randomly and by themselves.**

Look at what Bediüzzaman Said Nursi says in his work *The Treatise on Nature* regarding this matter:<sup>6</sup>

*“Behold how far the unbelieving ideas of the naturalists have deviated from the realm of reason. And see how those fools, who imagine nature to be the creator, even though they claim to be learned and wise, have fallen so far from reason and science, and how they have adopted as their creed a superstition that is impossible from every angle...”*

The Atheist and Agnostic had fallen silent in response to the Believer’s strong arguments. With their hands resting on their chins, they were lost in thought. They wanted to object, but the arguments presented were extremely compelling. The atmosphere of the discussion had grown increasingly intense. Everyone was curious about what would happen next after the striking points made by the Believer. At that moment, the silence in the room was almost palpable. As the Atheist and Agnostic pondered how to respond to the Believer's words, there was an air of uncertainty about what the next step would be.

**TO BE CONTINUED (GOD WILLING)**

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**I HAVE PARTICULARLY PREFERRED TO USE ENGLISH AND WESTERN AUTHORS' WORKS AS SOURCES BELOW.**

The reason for this preference is the unfortunately biased attachment of many people to **WESTERN AND ENGLISH SOURCES**. However, in Eastern sources and especially in our own works, there are works admired by Western sources. The works of Bediüzzaman Said Nursi's Risale-i Nur Collection, Imam Ghazali, Muhyiddin Ibn Arabi, Ibn Rushd, Ibn Sina, Ibn Khaldun, and many other valuable names prove this.

<sup>1</sup> Some scientific books that clearly define natural processes as "the formation and development of a substance or organism in nature, without human intervention" are as follows:

1. *Principles of Geology* (11th Edition) – Charles Lyell: 2020
2. *Ecology: The Economy of Nature* (9th Edition) – Robert E. Ricklefs and Rick Relyea: 2018
3. *The Selfish Gene* (40th Anniversary Edition) – Richard Dawkins: 2016 (first published in 1976)
4. *Silent Spring* – Rachel Carson: 1962



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5. *The Origin of Species* – Charles Darwin: 1859
  6. *Gaia: A New Look at Life on Earth* – James Lovelock: 1979
  7. *The Web of Life: A New Scientific Understanding of Living Systems* – Fritjof Capra: 1996

These works are valuable resources for understanding how natural processes occur without human intervention and how nature functions within its own dynamics.

<sup>2</sup> Some of the books that support the concept of the "sufficiency of natural processes" and clearly express this view are:

1. *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe Without Design* – Richard Dawkins: 1986
2. *A Universe from Nothing: Why There is Something Rather than Nothing* – Lawrence M. Krauss: 2012
3. *The Selfish Gene* – Richard Dawkins: 1976
4. *The Grand Design* – Stephen Hawking and Leonard Mlodinow: 2010

These works are considered important sources that advocate the sufficiency of natural processes and elaborate on how the events, structural complexities, and order observed in the universe can be fully explained by natural laws.

<sup>3</sup> Such extremely small probabilities, when considering factors like the age of the universe, physical conditions, and the lifespan of humans, are regarded as events with practically no chance of occurring. Specifically, when taking into account factors such as the age of the universe and the number of atoms in the observable universe, probabilities greater than  $10^{50}$  are considered practically impossible.

This concept is often used to emphasize that the likelihood of extremely low probabilities occurring is almost non-existent. For example, **the chance of a monkey randomly typing one of Shakespeare's works by pressing keys on a typewriter is much lower than 1 in  $10^{50}$  and is therefore considered impossible. In other words, if you placed a monkey at a typewriter from the very moment the universe was created and it continued pressing keys randomly, it still wouldn't have written a Shakespearean play by now.**

Although there may not be a direct scientific paper or publication on this specific concept, many scientists and mathematicians use this idea in their work and explanations. For instance, physicist Sean Carroll addresses this topic in his book *The Big Picture*, noting that factors like the age of the universe and the number of atoms in the observable universe make probabilities greater than  $10^{50}$  impossible.

Similarly, mathematician Ian Stewart, in his book *Do Dice Play God?*, discusses the concepts of probability and impossibility, stressing that probabilities greater than  $10^{50}$  are practically impossible.

These sources demonstrate a scientific basis for considering probabilities over  $10^{50}$  as impossible:

1. Carroll, S. (2016). *The Big Picture: On the Origins of Life, Meaning, and the Universe Itself*. Dutton.
2. Glen, S. (2020, February 21). *Likely, unlikely, certain and impossible*. DataScienceCentral. Retrieved August 6, 2024, from <https://www.datasciencecentral.com/likely-unlikely-certain-and-impossible>
3. Gray, K. (n.d.). *Stuff happens: A statistical guide to the "impossible"*. KDnuggets. Retrieved August 6, 2024, from <https://www.kdnuggets.com/stuff-happens-a-statistical-guide-to-the-impossible>
4. Stewart, I. (2014). *Do Dice Play God?: The Mathematics of Uncertainty*. Basic Books.

<sup>4</sup> This statement is also scientifically supported by current research. The age of the universe is based on data obtained from various observations, including studies of the universe's expansion and the cosmic microwave background radiation.

Specifically, measurements made by the Planck satellite and the Atacama Cosmology Telescope (ACT) have determined the age of the universe to be between 13.77 and 13.8 billion years. These results were obtained by analyzing the rate of the universe's expansion and the properties of the cosmic microwave background radiation. Such measurements have led to a strong consensus among scientists regarding the age of the universe.

For more detailed information on this topic, you can review the following sources:

1. Stony Brook University. (2020, July 15). *New research of oldest light confirms age of the universe*. ScienceDaily. Retrieved August 4, 2024, from ScienceDaily.
2. NASA. (n.d.). *WMAP - Age of the Universe*. NASA WMAP Mission. Retrieved August 4, 2024, from NASA WMAP.
3. Wood, C. (2021, January 13). *How do we know the Universe is 13.8 billion years old?* Big Think. Retrieved August 4, 2024, from Big Think.

<sup>5</sup> The difference between the two numbers gives a ratio of  $102,769,200 / 4.35 \times 10^{17} = 102,769,183$ .

<sup>6</sup> From the Risale-i Nur Collection by Bediuzzaman Said Nursi the Flashes 183: Twenty-Third Flash (The Treatise on Nature) / THIRD WORD / Second Impossibility