



Why Are We Curious About The Universe? A Philosophical And Comparative Analysis

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Abstract: In 1930, Albert Einstein discussed the philosophical implications of his general theory of relativity for cosmology. In 1983, Stephen Hawking examined the philosophical implications of the cosmological constant and its role in cosmology. In 1986, Barrow and Tipler discussed the philosophical concept of the anthropic principle and its significance for understanding the universe. In 1997, Lee Smolin's book offers a philosophical exploration of cosmology, discussing the implications of the universe's evolution and the role of natural selection in cosmological theories. Many authors have discussed their philosophical and scientific approaches to cosmology. After examining their studies in the field of cosmology, one question arose in my mind: "Why are we curious about the Universe?" The answer to this question, which we obtained through a philosophical approach with some scientific evidence, is that we are a part of the Universe. We have correlated humans as part of the Earth through a comparative study of Prathvi Dhatu (Bones and muscles), Aap (liquid), Tej (heat), and Wayu (gases) in our body. Through these observations and evidences, we come to the conclusion that we are part of the Earth, and knowing that Earth is part of the Universe implies that we are part of the Universe. This article elaborates on how we are part of the universe.

Keywords: Cosmology, Philosophical implications, Universe, Comparative study.

I. INTRODUCTION

Cosmology is all about understanding the universe—how it began, what it's made of, and what will happen to it in the future. It explores big questions like why the stars and galaxies exist, how they formed, and why the universe behaves the way it does. Cosmologists study everything from the tiniest particles to the largest structures in space to figure out how the universe works and how it has changed over time. No branch of science can claim to have a bigger area of interest than cosmology,¹ for cosmology is the study of the universe; and the universe by definition contains every-thing.

Modern cosmology has progressed because of two main things: what we see in the sky and what we think might be happening out there. It really started in 1917 when Albert Einstein² wrote a paper trying to describe the universe using math. Then, Alexander Friedmann³ made models of the universe that showed it's expanding from a big explosion. In 1929, Edwin Hubble and Milton Humason⁴ looked at the colors of faraway stars and galaxies, which gave us important clues about how the universe behaves.

In 1948, Bondi⁵ et al. proposed a different idea called the steady-state theory, which caused a lot of arguments and led to many tests to figure out who was right. In 1965, Arno Penzias and Robert Wilson⁶ found microwave radiation all over the sky, which supported the idea of a big explosion at the beginning of the universe.

These big moments led to many books about cosmology, especially in the 1970s when people got really interested in how space and time work. This textbook we're talking about here is from the early 1980s, and it's different from others because it looks at things in a new way. It wants to show you what people were thinking about cosmology at that time and why it's important to look at things differently sometimes.

In 1930, Albert Einstein⁷ talked about what his theory of relativity meant for how we think about the universe. In 1983, Stephen Hawking⁸ looked at what a certain idea called the cosmological constant could mean for our understanding of the universe. In 1986, Barrow and Tipler⁹ discussed a big idea called the anthropic principle and why it's important for understanding the universe. In 1997, Lee Smolin¹⁰ wrote a book that talked about the big questions in cosmology, like how the universe changes over time and why some ideas in science seem to fit better than others.

For a long time, philosophers have thought about whether there might be life beyond Earth. They wonder what this means for where humans fit in the universe and what it teaches us about why we're here. Since ancient times, smart people like Plato, Aristotle, and later, René Descartes, have thought about whether there might be life on other planets. They didn't just wonder if aliens exist; they also thought about what it means for our beliefs about gods, the nature of reality, and what's right and wrong. They asked big questions about what it would mean if we found out we're not alone in the universe.

Stephen Hawking,¹¹ a famous scientist, talked a lot about how the universe started and changed in his famous books like "A Brief History of Time" and "The Universe in a Nutshell." He looked at things like the Big Bang, black holes, and how time works, giving us ideas about how our universe began and grew. Physicist Brian Greene¹² is famous for his ideas about string theory, a way to understand how everything in the universe works on a tiny scale. He wrote books like "The Elegant Universe" and "The Fabric of the Cosmos" to help people understand these big ideas. In these books, he talks about how the universe has changed over time and explores cool concepts like the multiverse, where there might be many universes, and the rules that make everything work in our cosmos. Astrophysicist Neil deGrasse Tyson¹³ talks a lot about how the universe started and changed. He does this through books like "Astrophysics for People in a Hurry" and when he talks on TV or online. Tyson explores big questions about how the universe began, how it's getting bigger, and the things that make it change over time.

Immanuel Kant¹⁴ thought a lot about existence in his books, especially in "Critique of Pure Reason." He tried to understand what's real, who we are, and how our minds connect to the world around us. He wondered about how we see things and what makes them real to us. Martin Heidegger¹⁵ talked a lot about existence, life's meaning, and what it means to be alive. He wrote a book called "Being and Time" where he looked closely at how people exist and experience life. He wanted to understand what it truly means to be alive and how we make sense of the world around us.

Kip Thorne,¹⁶ a scientist who studies black holes and how things move in space, wrote a book called "The Science of Interstellar." In this book, he talks about whether time travel could be possible. He discusses ideas like wormholes, which are like tunnels in space, and how they might let us travel through time, according to what we know about how things work in the universe. Even though Carl Sagan¹⁷ mostly talked about space and stars, he wrote a book called "Contact" where he also talked a bit about time travel. In the story, scientists try to communicate with aliens, but it also talks about how we might use fancy technology and things in space to travel through time.

Pawar¹⁸⁻²² et. al have studied various cosmological models and discussed the expansion of the universe, the accelerating universe, and various cosmological parameters such as energy density, pressure, Hubble's parameter, and the age of the universe. Different energy-momentum tensors, including perfect fluid, two fluid, and domain walls, have been examined, providing a deeper understanding of cosmology.

After examining their studies in the field of cosmology, one question arose in my mind: "Why are we curious about the Universe?" The answer to this question, which we obtained through a philosophical approach with some scientific evidence, is that we are a part of the Universe. We have correlated humans as part of the Earth through a comparative study of Prathvi Dhatu (Bones and muscles), Aap (liquid), Tej (heat), and Wayu (gases) in our body. Through these observations and evidences, we come to the conclusion that we are part of the Earth, and knowing that Earth is part of the Universe implies that we are part of the Universe. This article elaborates on how we are part of the universe.

This paper is arranged as follows: Section-2 Historical Perspectives on the Universe's Curiosity, Section 3- Comparative study, Section 3.1-Philosophical Frameworks, Section-4 Key Concepts and Debates, Section-5

Cosmological Implications for Philosophy, Section-6 Contemporary Issues and Challenges, Section 6-Discussion and Conclusion.

II. HISTORICAL PERSPECTIVES ON THE UNIVERSE'S CURIOSITY

Long ago, in places like Mesopotamia, Egypt, Greece, and China, great philosophers¹⁸ thought a lot about the universe and where people fit in it. Some of the famous Greek philosophers, like Thales, Pythagoras, and Aristotle, wondered about the sky, the stars, and how everything began. They asked questions like where the universe came from, what it's made of, and why it exists. In the old days, during the Middle Ages smart people were interested in understanding the universe. They mixed ideas from Christian beliefs and ancient philosophy. A scholar named Thomas Aquinas¹⁹ combined the ideas of Aristotle, an ancient philosopher, with Christian teachings. He tried to make sense of how faith and reason work together to understand the universe.

Ancient Buddhist philosophy offers unique perspectives on cosmology, emphasizing interconnectedness, impermanence, and the nature of reality. Here's a simplified overview:

1. **Interconnectedness²⁰**: Interconnectedness is the concept which tells that the universe is like a big web where everything is connected. They call this idea "dependent origination." It means that everything happens because of something else, and nothing exists on its own. So, everything in the universe relies on other things for its existence.
2. **Impermanence²¹**: The Universal law of nature tells that everything is always changing. This idea is called impermanence. The universe goes through cycles of being created, existing, and then disappearing. There's nothing that stays the same forever; everything is always changing.
3. **Cosmic Cycles²²**: Cosmic cycles are called as "kalpas." These cycles are like big patterns where the universe goes through different stages. It expands, exists for a while, and then contracts back. During these cycles, worlds and beings come into existence and then fade away. This reflects the idea that nothing lasts forever, and everything in the universe is always changing.

In summary, ancient Buddhist philosophy gives us deep thoughts about the universe. It focuses on how everything is connected, how nothing lasts forever, and how we try to understand the world beyond what we usually see. It's about looking at the bigger picture and finding meaning in the universe's mysteries.

III. COMPARATIVE STUDY OF HUMAN BODY AND EARTH:

In this section we have correlated humans as part of the Earth through a comparative study of Prathvi Dhatu (Bones and muscles), Aap (liquid), Tej (heat), and Wayu (gases) in our body. Through these observations and evidences, we come to the conclusion that we are part of the Earth, and knowing that Earth is part of the Universe implies that we are part of the Universe.

a. Prathvi Dhatu (Bones and muscles):

COMPONENTS PRESENT IN HUMAN BONES:

- i. **Calcium (Ca)**: Human bones are primarily composed of calcium compounds, such as calcium hydroxyapatite, which provides strength and rigidity to the bones.
- ii. **Phosphorus (P)**: Phosphorus is another essential component found in human bones, contributing to bone mineralization and structure.
- iii. **Collagen**: Collagen, a protein, forms the organic matrix of bones, providing flexibility and resilience to withstand stress and impact.

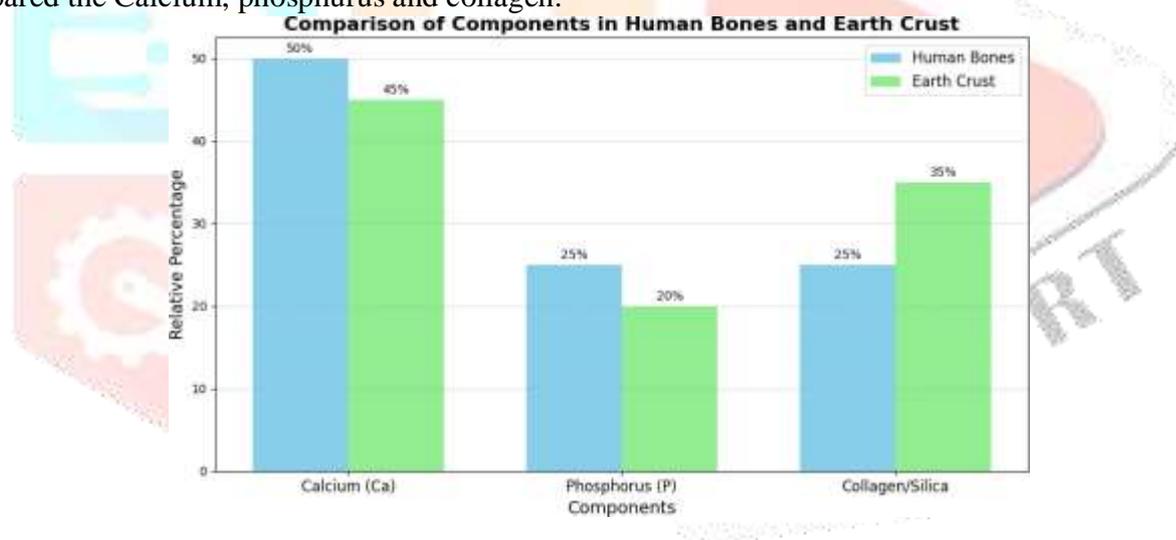
CORRESPONDING COMPONENTS FOUND IN EARTH:

1. **Calcium (Ca):** Calcium is one of the most abundant elements in the Earth's crust, comprising various minerals like calcite, gypsum, and limestone.
2. **Phosphorus (P):** Phosphorus is also present in the Earth's crust, typically found in phosphate minerals such as apatite, which contribute to the formation of rocks and sediments.
3. **Silica (SiO₂):** Silica is a mineral compound abundant in the Earth's crust, forming rocks like quartz and sandstone. While silica is not a primary component of bones, it plays a role in the mineralization process and is found in trace amounts in bones.

COMPARISON:

- Both human bones and the Earth's crust contain calcium and phosphorus, although in different forms and concentrations.
- The presence of these elements in both bones and the Earth underscores the interconnectedness between human anatomy and the natural environment.
- While bones primarily consist of organic and inorganic compounds, the Earth's crust is composed of various minerals and rocks, highlighting the diverse chemical composition of terrestrial materials.

The comparison of components in Human bones and Earth Crust is shown graphically, where we have compared the Calcium, phosphorus and collagen.



Similarly we have compared the components present in Human Muscles and corresponding components found in Earth as follows:

COMPONENTS PRESENT IN HUMAN MUSCLES:

1. **Proteins (Actin and Myosin):** Human muscles are mainly composed of contractile proteins called actin and myosin, which are responsible for muscle contraction and movement.
2. **Electrolytes (Sodium, Potassium, Calcium, Magnesium):** Electrolytes such as sodium, potassium, calcium, and magnesium play crucial roles in muscle function, including muscle contraction and nerve signaling.

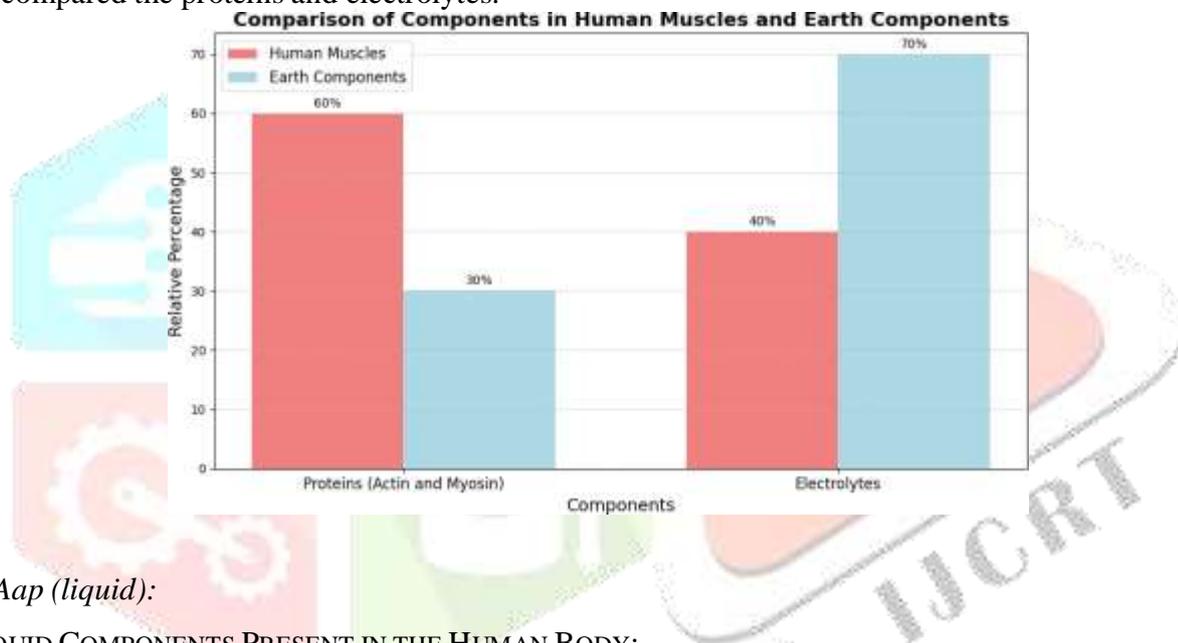
CORRESPONDING COMPONENTS FOUND IN EARTH:

1. **Proteins (Organic Matter):** While not identical to actin and myosin, organic matter in the form of proteins can be found in soil and sediment on Earth, contributing to soil fertility and microbial activity.
2. **Minerals (Sodium, Potassium, Calcium, Magnesium):** Minerals such as sodium, potassium, calcium, and magnesium are abundant in the Earth's crust, forming essential components of rocks, minerals, and soil.

COMPARISON:

- Human muscles contain proteins, water, and electrolytes, which are also present in the Earth's environment, albeit in different forms and contexts.
- While the specific proteins in muscles may not be directly found in the Earth, organic matter in soil and sediment contains proteins that contribute to ecosystem functions and soil fertility.

The comparison of components in Human muscles and Earth Components is shown graphically, where we have compared the proteins and electrolytes.

b. *Aap (liquid):*

LIQUID COMPONENTS PRESENT IN THE HUMAN BODY:

- i. **Water (H₂O):** Water is the primary liquid component of the human body, making up a significant portion of total body weight. It serves various vital functions, including regulating body temperature, transporting nutrients and oxygen, and lubricating joints.
- ii. **Blood Plasma:** Blood plasma is the liquid component of blood, primarily composed of water along with proteins, electrolytes, hormones, and waste products. It plays a crucial role in transporting nutrients, hormones, and waste products throughout the body.

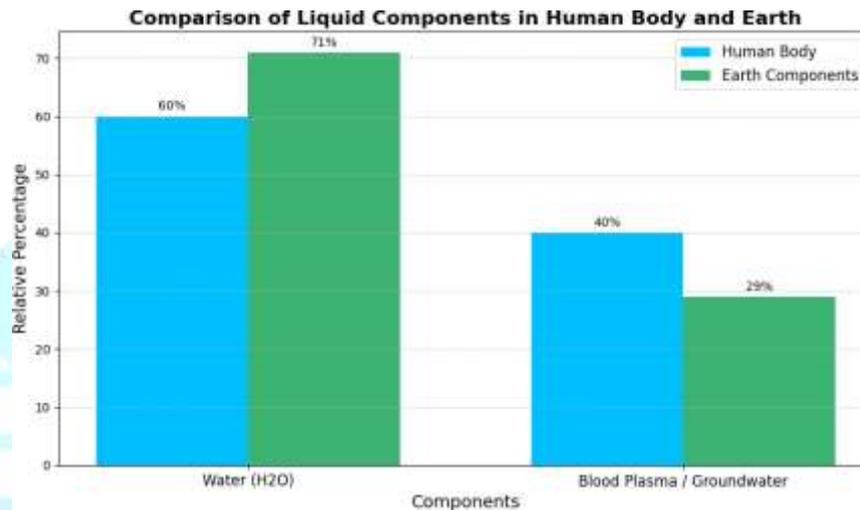
CORRESPONDING LIQUID COMPONENTS FOUND IN EARTH:

1. **Water (H₂O):** Water is abundant on Earth's surface, covering approximately 71% of its surface area in the form of oceans, rivers, lakes, and groundwater. It is essential for supporting life and various geological processes.
2. **Aquifers and Groundwater:** Aquifers and groundwater are natural reservoirs of water stored beneath the Earth's surface. They play a vital role in maintaining ecosystems, providing water for drinking, agriculture, and industrial purposes.

COMPARISON:

- Both the human body and the Earth contain water as a fundamental liquid component essential for sustaining life.
- While blood plasma is specific to the human body and serves circulatory functions, water in various forms is crucial for supporting diverse life forms and geological processes on Earth.
- The presence of water in both the human body and the Earth highlights the interconnectedness between biological systems and the natural environment, emphasizing the importance of water for sustaining life on Earth.

The comparison of liquid components in Human body and Earth is shown graphically, where we have compared the water (H_2O) and blood plasma.

c. *Tej (heat):*

COMPONENTS PRESENT IN THE HUMAN BODY:

- Body Temperature Regulation:** The human body maintains a constant internal temperature through processes such as thermoregulation, which involves mechanisms like sweating to dissipate heat and shivering to generate heat when necessary.
- Metabolism:** Metabolic processes in the human body generate heat as a byproduct, contributing to the maintenance of body temperature and energy production.
- Muscle Activity:** Physical activity and muscle contractions produce heat within the body, helping to regulate body temperature and support physiological functions.

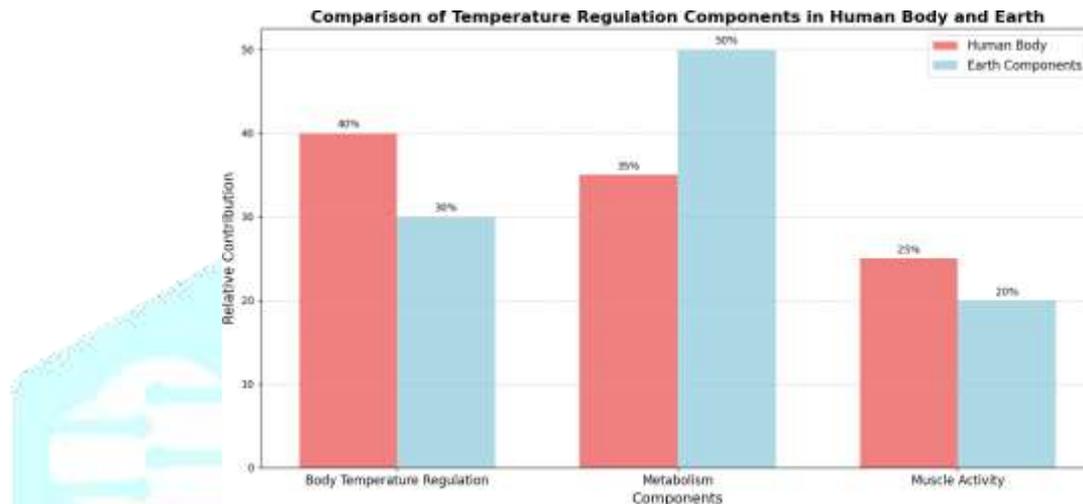
CORRESPONDING COMPONENTS FOUND IN EARTH:

- Geothermal Energy:** Heat from the Earth's interior, known as geothermal energy, contributes to processes such as volcanic activity, geysers, and hot springs. It plays a crucial role in shaping the Earth's surface and supporting various ecosystems.
- Solar Radiation:** The Earth receives heat from the Sun in the form of solar radiation, which drives atmospheric circulation, weather patterns, and climate systems. Solar energy is essential for sustaining life and driving natural processes on Earth.
- Internal Heat Flux:** Heat generated from within the Earth's crust, through processes like radioactive decay and mantle convection, influences geological phenomena such as plate tectonics, earthquakes, and the formation of mountain ranges.

COMPARISON:

- While the human body generates and regulates heat internally to maintain physiological functions, the Earth receives heat from external sources such as solar radiation and geothermal energy.
- Both the human body and the Earth experience dynamic processes related to heat, including energy production, temperature regulation, and the transfer of thermal energy.
- Understanding the mechanisms of heat generation, regulation, and exchange in the human body provides insights into broader natural processes occurring on Earth, highlighting the interconnectedness between biological systems and the Earth's environment.

The comparison of Temperature regulation components in Human body and Earth is shown graphically, where we have compared the body Temperature Regulation, Metabolism and Muscle Activity.

d. *Wayu (Gases):*

COMPONENTS PRESENT IN THE HUMAN BODY:

- i. **Oxygen (O₂):** Oxygen is a vital gas required by the human body for cellular respiration, the process by which cells produce energy. It is transported to tissues through the bloodstream and is essential for aerobic metabolism.
- ii. **Carbon Dioxide (CO₂):** Carbon dioxide is a waste product of cellular metabolism and is expelled from the body through respiration. It plays a crucial role in maintaining acid-base balance and regulating breathing rate.
- iii. **Nitrogen (N₂):** Nitrogen is the most abundant gas in the Earth's atmosphere and is also present in the human body, mainly as a component of proteins and nucleic acids. It serves structural and functional roles in biological processes.

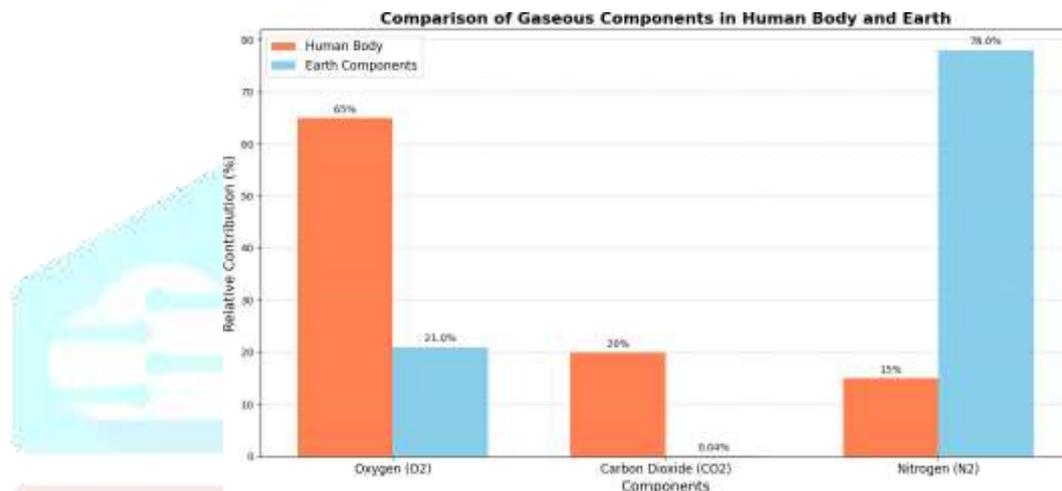
CORRESPONDING COMPONENTS FOUND IN EARTH:

1. **Oxygen (O₂):** Oxygen is a primary component of the Earth's atmosphere, comprising approximately 21%.
2. **Carbon Dioxide (CO₂):** Carbon dioxide is a naturally occurring gas in the Earth's atmosphere, produced through processes like respiration, combustion, and volcanic activity. It plays a critical role in regulating the Earth's climate and supporting photosynthesis in plants.
3. **Nitrogen (N₂):** Nitrogen is the most abundant gas in the Earth's atmosphere, accounting for approximately 78% of its volume. It is a crucial component of proteins, nucleic acids, and other organic compounds, and it contributes to atmospheric stability and plant growth through nitrogen fixation.

COMPARISON:

- Oxygen, carbon dioxide, and nitrogen are essential gases present in both the human body and the Earth's atmosphere, playing critical roles in biological processes and environmental dynamics.
- While oxygen is primarily utilized by the human body for cellular respiration, it also supports combustion, oxidation, and other chemical reactions crucial for maintaining life on Earth.
- Carbon dioxide serves as a waste product of metabolism in the human body and plays a significant role in the Earth's carbon cycle, influencing climate patterns and ecosystem dynamics.
- Nitrogen is essential for protein synthesis and cellular functions in the human body, while also contributing to atmospheric stability, soil fertility, and plant growth on Earth.

The comparison of Gaseous components in Human body and Earth is shown graphically, where we have compared the Oxygen (O_2), Carbon Dioxide (CO_2) and Nitrogen (N_2).



IV. CONCLUSION:

In summary, our research looked at how the human body is made up of four main parts: Pruthvi (earth- bones and muscles), Aap (water), Tej (fire or heat), and Waayu (air or gases). We found that these elements are crucial for our bodies to work properly. For example, Pruthvi makes up our solid bones and muscles, while Aap helps with fluid balance. Tej and Waayu are involved in processes like metabolism and breathing.

Components like calcium and phosphorus in human bones are similar to minerals found in the Earth's crust, such as calcite and apatite. This shows a strong link between biological materials and geological substances, echoing the idea that everything in the universe is interconnected.²⁵ Proteins and electrolytes in human muscles have their counterparts in Earth's organic matter and minerals. This similarity highlights how life on Earth is deeply connected to the planet's chemical and mineral composition.

Water and blood plasma in the human body are similar to water bodies and groundwater on Earth. Water's critical role in both biological and environmental processes underscores its importance in sustaining life, showing how essential elements are shared between life forms and the Earth.²⁶

Human processes like thermoregulation, metabolism, and muscle activity are analogous to geothermal energy, solar radiation, and internal heat flux in the Earth. These similarities illustrate how energy and heat generation are crucial both for living organisms and geological phenomena.²⁷ Gases such as oxygen, carbon dioxide, and nitrogen in the human body are also found in the Earth's atmosphere. This shared chemical foundation highlights a fundamental connection

between life and the environment, supporting the idea of a unified cosmic order.²⁸

Our study showed that these elements in our bodies are similar to those found in the Earth. This means that we are connected to the Earth because our bodies are made of the same stuff. It also suggests that we are part of the larger universe because the Earth is part of it too.

Overall, our research highlights how everything in nature is connected. We should take care of the Earth because it's where we live and because it's part of something much bigger—the universe. Understanding our connection to the Earth and the universe can help us appreciate and protect our planet for future generations.

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