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Pre-Socratic Natural Philosophy and Science: A Reflection

Dr. Jakir Hussain Choudhary
Assistant Professor
Department of Philosophy
Kharupetia College, Darrang (Assam)
Email: choudhary_jakir555@gmail.com

Abstract

The present paper attempts to explain the origins of Western philosophy in ancient Greece, focusing on pre-Socratic thinkers who laid the foundation for the Western intellectual tradition. Emerging in the 5th and 6th centuries BC, pre-Socratic philosophy is characterized by a realistic and materialistic approach, seeking to explain the world through natural phenomena. Thinkers like Thales, Anaximander, and Democritus developed scientific methods, observing the world and proposing theories about its ultimate source. Their inquiries, free from religious dogma, marked the beginning of science and philosophy. The pre-Socratics' contributions, including atomic theory, have had a lasting impact on Western thought, influencing later philosophical and scientific developments — this is the thrust of the paper.

Key words

Philosophy, Pre-Socratic, Science.

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Dr. Jakir Hussain Choudhary

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Introduction

Philosophy as a love of learning in the Western world had its beginning among the scholars of ancient Greece. Looking back into the Greek past, the notion of philosophy begins with a school of thinkers before Christ. There are different opinions on when it rightly started. Many claim that the conception of philosophy began with the Greeks in the 5th and 6th centuries BC, known as pre-Socratic philosophy. "Although the term ought to refer to any Greek philosopher from c. 600 BC to c. 400 BC, the last year of Socrates' life, it is customarily reserved mainly for those thinkers who attempted systematic cosmologies and were centrally concerned with the nature of physical reality."[1] Pre-Socratic philosophy can be called realistic because, for them, all other things are products of *phusis* (matter), which exists outside the mind. In a sense, pre-Socratic realism refers to the earliest Greek philosophers down to the time of Socrates, who attempted to explain the structure and constitution of the world based on natural reality or objects existing in their own right. This was particularly dominated by Miletus on the Ionian seaboard of Asia Minor. They were naturally curious and wanted to know not just how things were then, but how they are always, albeit they had found answers to the basic questions that are oldest and most persistent in human interests. Truly, they replied to the question, *what it is all about* – often satisfying the fine art of philosophy. They had a name for their kind of inquisitiveness; they called it 'philosophy,' which means 'love of wisdom.' Greek scholars combined two word roots (*philein* = to love + *sophia* = wisdom in the sense of theoretical or cosmic insight) that together translate as 'pursuit of knowledge,' coining the word philosophy. For them, philosophy is the search for general knowledge. Thus, philosophy as we know it was first thought of in ancient Greece. Their investigations and inquiries were directed first towards natural phenomena because they were realists, making natural phenomena the ultimate principle of the world existing independently of mind, or the world with all its complex contents was supposed to owe its origin and growth to it. That is to say, the realistic and materialistic movements are the outcome of pre-Socratic philosophy. In short, pre-Socratic realism begins when men in early days attempted to answer the problem, *what is the explanation of the world?* The first and foremost reply to the question, *what is the ultimate reality* places the nature of that reality in sensuous objects. Thus, in a nutshell, it can be said that the earliest philosophers were challenged by the most disturbing philosophical problems with reference to concrete substance.

The pre-Socratics' method may be described as the scientific method, and they meant by science an independent and free inquiry into natural phenomena.

That means, in other words, science is without any religious dogma. Here, one can recall Thales, the pre-Socratic thinker. There is no question of doubt that Thales of Miletus is "one of the Seven Sages of ancient Greece, is judged by Aristotle to be the founder of physical science..."[2] Russell Says, "The significance of Thales is... that this was the first recorded attempt to explain the universe on naturalistic and scientific principles, without the aid of myths and anthropomorphic gods."[3] Burnet holds that "there is no reason to doubt that Thales was the founder of the Milesian School of cosmologists, and to all appearances, he was the first human being who can rightly be called a man of science."[4] They were scientists and philosophers as well. For example, the Milesians of the pre-Socratics were scientists in that they observed the world and developed theories from observation because they were born observers. They were philosophers as their main concern was not just to say that the world is, but how it comes to exist at all. They wanted not only to describe phenomena but to discover their ultimate source. According to Russell, "The Milesian School is important... for what it attempted."[5] In ancient Greece, Thales and Anaximander were considered the originators of the mathematical tradition in the study of physical science. Like Thales, Anaximander himself holds that numerous things came into existence through separation in the homogeneous substance. Thus, his method was thoroughly scientific, as "Anaximander was full of scientific curiosity."[6] Hence, Milesian thinking is one of the regular mediums of the philosophical and scientific era. Burnet says, "The spirit of Ionian civilization had been thoroughly secular, and this was, no doubt, one of the causes that favored the rise of science."[7] Besides, Greek atomism, i.e., the atomic theory conceived by Leucippus and developed by Democritus, is highly important in the development of Greek philosophy and has been widely influential in succeeding centuries. The atomists, especially Democritus, made major contributions to the world of philosophy and the world of science, as he is often called the father of atomism. There are several extremely interesting aspects of Democritus' discovery, despite much of the obscurity and difficulty of his atomic theory. No doubt, modern atomic theory is clear and distinct from Democritus' atomism in many ways, but it acknowledges the parenthood of Greek atomism. Therefore, pre-Socratic realistic philosophy is exceedingly fine, as they constructed a system of natural science. Even today, pre-Socratics' realism is an example for all-round discussion.

Objectives: The main objectives of this paper are:

(i) To explore the origins and key characteristics of pre-Socratic philosophy, emphasizing its realistic and materialistic approach.

(ii) To evaluate the significant contributions of pre-Socratic thinkers, such as Thales and Democritus, to the development of science and philosophy, including the emergence of atomic theory.

(iii) To analyze the profound influence of pre-Socratic realism on Western intellectual tradition, underscoring its emphasis on naturalistic and scientific exploration

Methodology

This paper employs a qualitative methodology, utilizing both primary and secondary data along with historical analysis and critical assessment of original and interpretive sources to investigate pre-Socratic thought. Pivotal writings and fragments from prominent thinkers such as Thales, Anaximander, and Democritus are scrutinized to elucidate their impact on the evolution of science and philosophy.

Discussion and findings

Philosophy, since ancient Greece, has sought to uncover the truth about reality, driven by humanity's innate curiosity about the world. It is an attempt to grasp the bigger picture, understanding the intricate web of relationships between the world and its components. Philosophers have always tackled the toughest questions about existence, trying to make sense of it all. The purpose of philosophy and science is to think cautiously and methodologically about the facts that shape our reality. Philosophy examines the universe as a whole, seeking to explain and understand its workings. It is a multifaceted discipline, shaped by what philosophers want to achieve, what they are capable of, and what is allowed within their context. The universe is like a vast puzzle, and philosophy tries to piece it together, recognizing the distribution and association of natural and cultural phenomena. Science and philosophy are intertwined, sharing a common goal: to understand reality. They are like two sides of the same coin, with philosophy providing the broader context and science providing the specific details. Parmenides noted, "Understanding the relationship between the world and its components is a key to unlocking knowledge and culture."[8] Philosophy, therefore, is an attempt to comprehend phenomena in terms of their interconnectedness, identifying the facts of things through comparative analysis.

It is important to note here that philosophy plays a crucial role in shaping our understanding of the world, and its significance extends beyond academic circles. The philosophy of science, in particular, has been a driving force behind many groundbreaking discoveries. Einstein, for instance, was deeply influenced by philosophical ideas, which shaped his approach to physics. It is fascinating to note that many renowned scientists have been drawn to philosophy, recognizing its value in informing their work. In essence, philosophy is a way of looking at the world, an

attempt to understand the bigger picture. The ancient Greeks laid the foundation for this approach, freeing themselves from dogmatic thinking and embracing reason and observation. Thinkers like Thales, Anaximander, and Democritus exemplify this spirit of inquiry, seeking to understand the nature of reality through rational inquiry. By doing so, they paved the way for science to flourish, establishing philosophy as the foundation of intellectual pursuits.

Historically, philosophy and science have been intertwined, working together to unravel the mysteries of the universe. The ancient Greeks, for instance, saw no clear distinction between the two, with thinkers like Aristotle contributing to both fields. The pre-Socratics and empiricists shared a common goal – understanding the world through experience and observation. Over time, disciplines like physics, biology, and psychology emerged from philosophy, with science and philosophy evolving together. Even today, some argue that science and philosophy remain linked, with philosophy influencing scientific inquiry. The boundaries between the two are blurry, reflecting their shared roots in ancient Greece, where spiritual and material realms were not sharply separated.

The pre-Socratics laid the groundwork for Western philosophy, setting the stage for future scientific and philosophical inquiry. These early thinkers, like Thales, who predicted a solar eclipse in 585 BC, were polymaths who contributed to fields like astrology, mathematics, and architecture. Their innovative ideas and designs have had a lasting impact, influencing art, science, and culture. Unfortunately, their writings haven't survived, so we rely on ancient sources to understand their ideas. They developed theatre, democracy, history and sciences, showcasing their curiosity and creativity.

Moreover, the pre-Socratics focus on empirical experience and rational inquiry marked a significant shift from mythological explanations. Hippocrates, a Greek physician, exemplified this approach, treating the body as a whole organism and using observation to understand disease. He employed inductive reasoning, making predictions based on specific cases, and laid the groundwork for scientific methodology. Thus, the pre-Socratics emphasis on empirical observation and rational thought paved the way for future scientific advancements, challenging traditional views of "the world as a playground for gods."[9] They sought to explain the world through natural laws and material elements, turning towards empiricism as a foundation for understanding. This marked the beginning of a new era in human thought, establishing the pre-Socratics as pioneers in the pursuit of knowledge.

Thus, the origins of philosophy and science are often traced back to pre-Socratic thinkers, who laid the groundwork for Western intellectual tradition. Burnet suggests that "science emerged when Greece was in contact with Egypt and Babylon,

sparking a new way of thinking."[10] These early philosophers explained the world through natural laws and structures, rather than attributing it to gods. They understood the scientific method but lacked precise instruments, relying on observation and experimentation. Even the concept of 'law' in science has its roots in human experience and was influenced by ideas of deity and causality. Thales and Pythagoras exemplified this approach, using mathematical knowledge to understand the world. The idea of an ordered universe, governed by principles like mathematics, was a key insight of these early thinkers, shaping the development of science and philosophy.

Philosophy, as a way of thinking, was discovered by ancient Greeks, who saw it as a means to understand the world and everything in it. The fusion of philosophy and science is distinctly Greek, with philosophers seeking to understand and describe facts through scientific influence. Russell captures this blend, saying "philosophy stands between theology and science relying on human reason over authority."[11] Pre-Socratics are often credited with being the originators of science, from which other disciplines emerged. Greeks invented mathematics, science, philosophy and history, speculating freely about the world and life without orthodoxy. Their legacy continues to shape modern science, with Copernicus drawing on Pythagorean ideas. Philosophy remains a dynamic field, with ongoing efforts to define and redefine it, building on ancient foundations. Accordingly, it can be said that Greek thinkers laid the groundwork for Western intellectual tradition, introducing terms like 'Pyramid' and shaping mathematical language. They viewed the world as evolving, rather than created, and their inquiries contributed to science and epistemology. Anaximander's rationalistic approach exemplifies this blend of science and philosophy. Human curiosity drives knowledge-seeking through both philosophical and scientific lenses. Science and philosophy are interdependent, with philosophy examining presuppositions and science relying on concepts like causality. Knowledge of the world requires understanding facts and their relationships, making philosophizing essential to grasping any subject.

Conclusion

From the above discussion, it becomes clear that the relationship between science and philosophy has been intertwined throughout history with ancient Greeks laying the foundation. Thinkers like Democritus, Kepler, and Hobbes contributed to this fusion, which continued until the 19th century. Herbert Spencer viewed philosophy as unified scientific knowledge, emphasizing empirical methods and scrutiny. Scholars like Russell, Alexander, and Whitehead agreed, seeing philosophy as a broader, more comprehensive pursuit that unites scientific findings. Russell noted that philosophy should be bold in suggesting hypotheses, presenting them as

uncertain and open to scrutiny. The ancient Greeks, particularly pre-Socratics like Thales and Democritus, made significant contributions to science and philosophy. Democritus' atomism, for instance, has a fascinating connection to Russell's logical atomism, both positing a pluralistic reality. Thus, in a nutshell, it can be said that the Greeks' ideas have had a lasting impact, shaping modern science and philosophy. Despite having only fragments of their work, it is clear that they established the foundation for abstract thought, providing the building blocks for future philosophical and scientific developments. Their legacy is a testament to the power of human curiosity and the pursuit of knowledge.

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