

The Nature of Science in Ontological Studies

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Abstract:

The nature of science has become one of the main themes in philosophical studies, particularly from an ontological perspective. Ontology, as a branch of philosophy that discusses existence and reality, views science as a systematic effort by humans to understand the existing reality. In the ontological framework, science is identified through the existence of the subject of study, the fundamental properties of the reality being examined, and the relationship between the subject (human) and the object being studied. This research is a library study, which means that the research uses library sources such as books, journals, and articles to analyze and support the study of the Nature of Science regarding Ontological Studies. The data analysis used is content analysis. The results of this research indicate that there are 5 schools of thought within the study of ontology that explain the nature of knowledge.

Keywords: *Science, Ontological Studies*

Introduction

Science is an essential part of the journey of human civilization. As a means to understand reality, science offers conceptual and practical frameworks that enable humans to explore, explain, and utilize the phenomena around them. However, the fundamental question of "what is science" remains a subject of deep discussion across various disciplines, especially in the study of ontology.

Ontology, as a branch of philosophy that discusses the nature of existence and reality, plays an important role in understanding the essence of science. The study of ontology does not only focus on what exists (being), but also on how knowledge itself has existence, character, and function in human life. In other words, science is not only viewed as an accumulation of facts or knowledge, but also as an entity that has a close relationship with reality and truth.

The ontological study of science presents a variety of profound perspectives. One of them is the debate regarding the nature of science, whether it is objective or subjective. Is science something that exists outside of human consciousness (independent), or is it a social construct shaped by perception, culture, and specific historical contexts? Furthermore, ontology also questions the metaphysical dimensions of science, such as the fundamental nature of science itself: is science a

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direct reflection of reality, or is it merely a temporary representation of the ever-evolving human understanding?

In this context, it is also important to discuss the relationship between science and truth. Does science always lead to absolute truth, or is it merely a dynamic process towards a better understanding of reality? This question not only challenges the validity of science but also provides a philosophical foundation for the various scientific methods and approaches used by humans.

The ontological approach in understanding the nature of science also encompasses how science influences and is influenced by social structures, ethics, and culture. As a product of human thought, science is never detached from the values that underlie human life itself. This emphasizes that science does not stand alone as a neutral entity, but is always in a dialectic between human existence and the world they inhabit.

This introduction aims to explain the importance of ontological studies in understanding the nature of knowledge, as well as to elaborate on the relationship between knowledge, existence, and truth as the main themes that will be explored further in this article. Through this discussion, it is hoped that readers can gain a deep understanding of how science is viewed not only as a tool for understanding the world but also as a reflection of the complexity of human existence itself.

Methods

This research uses the library research method. The library research method is a type of research that uses sources from the library to obtain research data. Therefore, this research does not go into the field to obtain research data. However, utilizing the books available in the library to obtain research data.

The data collection technique used is documentation. Documentation is a data collection technique that utilizes written sources or documents related to the research topic to obtain research data. In this research, the researcher collects and analyzes written documents such as books, journals, and articles related to the nature of science in the study of ontology.

The data analysis from this research is in the form of content analysis. Content analysis is an analytical technique aimed at producing descriptive data that is objective and systematic regarding the content of the topic being researched. In this research, the analysis will focus on the study of ontology.

Results and Discussion

Linguistically, ontology comes from the Greek language, whose root words are "Ontos" and "Logos." Ontos is what exists, while Logos is knowledge. In simple terms, ontology is the science that talks about what exists. Thus. In terms of terminology, ontology is a branch of philosophy that deals with the nature of existence, encompassing the existence of everything that is and everything that might be.

Ontology was first introduced by Rudolf Goclenius in 1636 AD. In its development, Cristian Wolff divided metaphysics into two, namely general metaphysics and special metaphysics. General metaphysics is intended as another term for ontology¹ Meanwhile, special metaphysics is further divided into theology, cosmology, and psychology²

The word ontology comes from Greek, which is a combination of the words onto and logia. The word onto means being or existence and logos means science. Simply put, ontology is the science that talks about what exists. In terms of terminology, ontology is a branch of philosophy that deals with the nature of existence, encompassing the existence of everything that is and is considered to be³ Ontology discusses the rational foundations of "being," striving to understand the deepest essence of "being."⁴

The issue of ontology is the issue of "existence" or essence, which is the fundamental principle of Islamic educational philosophy. Islam, as our religion, requires tauhid as the starting point for the further development of knowledge. This condition is fulfilled in the two sentences of the shahada as an oath of loyalty and promise, as well as the acknowledgment of humanity's innate knowledge of the Creator. Puwant argues that the main meaning of the shahada is the liberation from the shackles of faith, which is followed by faith in Allah, the One and Only God, for the stability and continuity of freedom itself⁵

So, ontology is a branch of basic philosophy that discusses the answer to the question "what?" regarding a reality or fact⁶

This is also explained by Soetriono and Hanafie, which is the principle in applying the limits or scope of existence that becomes the object of study (ontological object or formal object of

¹ Pama Bakri Albadri et al., 'Ontologi Filsafat', *PRIMER: Jurnal Ilmiah Multidisiplin* 1, no. 3 (2023): 311–17, <https://doi.org/10.55681/primer.v1i3.148>.

² Imam Muhatdin, *Filsafat Ilmu Dan Etika Keilmuan* (Pasaman Barat: CV Azka Pustaka, 2022).

³ D Rokhmah, 'Ilmu Dalam Tinjauan Filsafat: Ontologi, Epistemologi, Dan Aksiologi', *Cendekia: Jurnal Studi Keislaman* 7, no. 2 (2021): 172–86.

⁴ Susanto, *Filsafat Ilmu: Suatu Kajian Dalam Dimensi Ontologis, Epistemologis, Aksiologis*. (Jakarta: PT Bumi Aksara, 2019).

⁵ Budi Afriandi and Rosniati Hakim, 'Objek-Objek Kajian Filsafat Ilmu (Ontologi, Epistemologi, Aksiologi) Dan Urgensinya Dalam Kajian Keislaman', *Jurnal Universitas Muhammadiyah Sumatera Barat* 7, no. 1 (2024): 72–80.

⁶ Ni Putu Gatriyani, *Filsafat Ilmu* (Makassar: CV Tohar Media, 2023).

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knowledge) and the interpretation of the nature of reality (metaphysics) of that ontological or formal object, and can serve as the foundation of science that questions what is studied by knowledge and is usually related to the realm of reality and existence ⁷

Reality or fact based on ontology can be viewed from two perspectives, namely qualitative and quantitative. Qualitative means questioning whether that reality has certain qualities, such as leaves that have a greenish color and roses that have a fragrant smell. Whereas quantitative refers to questioning whether the reality is singular or plural ⁸

Monism

The term monism comes from the Greek language, specifically from the word monos, which means single or alone. This doctrine holds that the fundamental essence of all reality is only that, it cannot be two. There must be only one essence as the original source, whether that source is material or spiritual. It is impossible for each essence to be free and stand alone. One of them must be the fundamental and dominant source that determines the development of the others ⁹

Monism is also one of the theological concepts found in Hinduism. This belief can be said to not be widely known and understood by many people, and it is also not as popular as other beliefs or schools of thought. Monism, according to Titib, is stated as the belief in the oneness of the Almighty God as the essence of the universe ¹⁰

Lorens Bagus provides several definitions of Monism, namely:

1. The theory that everything in the universe can be described by (or explained within the framework of) the activities of a single fundamental element. For example, God, matter, thought, energy, form.
2. The theory that everything originates from a single ultimate source
3. The belief that reality is one, and everything else is an illusion
4. The doctrine that maintains that the fundamental basis of all existence is a single source. ¹¹

Thus, from the above understanding, it is stated that this doctrine or school of thought holds the view that there is no existence other than the One as the essence of everything.

⁷ Ace Nurasa, Nanat Fatah Natsir, and Erni Haryanti, 'Tinjauan Kritis Terhadap Ontologi Ilmu (Hakikat Realitas) Dalam Perspektif Sains Modern', *JHIP - Jurnal Ilmiah Ilmu Pendidikan* 5, no. 1 (2022): 181–91, <https://doi.org/10.54371/jiip.v5i1.396>.

⁸ Jufri A.P, *Berbagai Ideologi Dalam Filsafat Ilmu* (Bantul, Yogyakarta: CV Ananta Vidya, 2024).

⁹ Yosep Hadi Putra and Laurensius Arliman S, 'Hakikat Dari Monisme, Dualisme, Pluralisme, Nihilisme, Argontisme', *Lex Jurnalica* 18, no. 1 (2021): 13–19.

¹⁰ I Made Adi Brahman, 'Monisme: Pengetahuan Yang Membawa Kebijakan', *Sphatika: Jurnal Teologi* 10, no. 1 (2019): 54, <https://doi.org/10.25078/sp.v10i1.1573>.

¹¹ Muhammad Ilham, 'Monoisme Dan Pluralisme Kebenaran Dalam Perspektif Hukum Islam', *SANGAJI: Jurnal Pemikiran Syariah Dan Hukum* 5, no. 1 (2021): 67–80, <https://doi.org/10.52266/sangaji.v5i1.603>.

Dualism

The term dualism comes from Latin, which means having two characteristics.¹² Dualism is a philosophical school of thought that attempts to reconcile two opposing doctrines, namely materialism and idealism. Materialism states that matter is the essence, whereas ideas or spirit are not the essence. As for idealism, on the contrary, it is ideas that are the essence, while matter is not the essence. According to materialism, the spirit arises because there is matter; it is impossible for there to be a spirit without matter. According to idealism, it is actually the emergence of matter that is due to the existence of the spirit¹³.

Dualism states that both matter and spirit are equally real. Both types of essence are each free and independent, both eternal and everlasting. The relationship between the two creates life in this world. The figure of this doctrine is Descartes (1596-1650 AD), who is considered the father of modern philosophy. He named the two essences as the world of consciousness (spiritual) and the world of space (material)¹⁴.

Pluralism

The Latin word "pluralis," which implies multiple or plural, is the origin of the English word pluralism. In contrast to dualism, which holds that fundamental reality is dual, and monism, which holds that fundamental reality is solitary, the pluralism school of thought generally holds that the essence is plural in nature¹⁵.

The figures of this school during Ancient Greece were Anaxagoras and Empedocles, who stated that the existing substance is formed and consists of four elements: earth, water, fire, and air. The modern figure of this school of thought is William James (1842-1910 AD), who proposed that there is no absolute truth, no universal truth, no permanent truth, no independent truth, and no truth separate from the mind that knows¹⁶.

Nihilism

The term nihilism comes from Latin, which literally means nothing or nonexistence. In general, nihilism means the view that existence and living in the world are completely meaningless and entirely unbeneficial. In the context of society, nihilism means the belief and doctrine that the state of society is so bad and irreparable that it is better to destroy it. The goal of destruction is to be destroyed for the sake of destruction itself. Because according to them, for a society in such a state, any program or effort for improvement or development is unlikely to make it better.

¹² Putra and S, 'Hakikat Dari Monisme, Dualisme, Pluralisme, Nihilisme, Argontisme'.

¹³ Juhaya S. Praja, *Aliran-Aliran Filsafat & Etika* (Jakarta: KENCANA, 2020).

¹⁴ Albadri et al., 'Ontologi Filsafat'.

¹⁵ Putra and S, 'Hakikat Dari Monisme, Dualisme, Pluralisme, Nihilisme, Argontisme'.

¹⁶ Albadri et al., 'Ontologi Filsafat'.

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Philosophically, nihilism believes that what exists does not exist, and if it does exist, it cannot be known¹⁷.

The term nihilism was introduced by Ivan Turgenev in 1862 in Russia. The doctrine of nihilism actually dates back to ancient Greece, specifically in the views of Gorgias (485-360 BC) who presented three propositions about reality. First, nothing exists. Second, if something exists, it cannot be known. Third, even if we can know that reality, we will not be able to tell it to others. Another figure of this school is Friedrich Nietzsche (1844-1900 AD). In his view, the world is open to human freedom and creativity. The eyes of humans are no longer directed towards a world behind or above the world in which they live¹⁸.

Agnosticism

Agnosticism is a school of thought that states that humans cannot possibly know the essence of something beyond this reality. Humans cannot possibly know the essence of stone, water, fire, and so on. Because according to this belief, human capabilities are very limited and it is impossible to know the essence of anything that exists, whether by their senses or by their mind¹⁹.

When related to science, ontology plays an important role in science because it delves into the fundamental nature of existence and reality. This involves the investigation of the essence of truth and the existence of various subjects of knowledge. Ontology provides a framework for understanding the nature of reality, principles of existence, and fundamental truths underlying various fields of knowledge. By exploring the nature of existence and reality, ontological thinking contributes to a deeper understanding of the world and the subjects of study, thereby enriching the pursuit of knowledge across various domains. The ontological way of thinking in science involves deep consideration and reflection on the nature and existence of entities or objects studied by a particular field of knowledge. Ontological thinking allows one to explore fundamental aspects related to what can be known, how that knowledge is conceptualized, and how relationships between entities or concepts are formed²⁰.

Conclusion

Ontology, as a branch of philosophy that discusses the nature of reality, serves as an important foundation in understanding science. In the study of ontology, science is viewed as a human effort to understand the nature of existence, both material and immaterial. Ontology studies reveal

¹⁷ Putra and S, 'Hakikat Dari Monisme, Dualisme, Pluralisme, Nihilisme, Argontisme?.'

¹⁸ Albadri et al., 'Ontologi Filsafat'.

¹⁹ S. Praja, *Aliran-Aliran Filsafat & Etika*.

²⁰ Nova Liza et al., 'Aspek Ontologis Dalam Ilmu Pengetahuan', *Journal on Educatio* 06, no. 04 (2024): 20252–57.

that science is not only descriptive (depicting reality) but also normative, providing a framework for understanding the essence and purpose of knowledge itself.

The nature of science from an ontological perspective encompasses several main aspects, namely: (1) science as an entity grounded in the existence of reality that can be understood by human reason; (2) the relationship between the subject (humans) and the object (reality) in building knowledge; and (3) science as an effort to understand order and meaning in the world. This study emphasizes that science is not only limited to empirical facts but also includes the abstract concepts underlying those facts.

Ontologically, science is closely related to philosophy, especially in the effort to understand fundamental questions about "what exists" and "how what exists can be known." Therefore, science is not just a product of data accumulation, but also a reflective process that continuously evolves according to the dynamics of reality and changes in human perspective. Thus, the study of ontology makes a significant contribution to deepening the understanding of science as a human activity aimed at seeking truth, understanding reality, and contributing to a more meaningful life.

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