

Philosophy of Science in a Critical Perspective on Modern

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Abstract

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Science undergoes major changes from time to time. The positive result of this development related to the purpose of knowledge acquisition is that humans become more proficient in fulfilling all their needs. Although it has positive aspects, the development of science also has negative aspects for human life, namely negative elements related to human morality and mentality that are increasingly evident as a result of the difficulty of humans understanding science and technology. The purpose of this research is to better understand the process of science philosophy in the development of current understanding, which is carried out using the SLR (Systematic Literature Review) method. The review of information sources was taken from the Google Scholar database. for Indonesian journals published between 2021 and 2024. The findings of this research are that the role of philosophy in the development of knowledge is recognized as follows: (1) as a source of criticism and reflection on values and morals (moral-axiological), (2) as a source of knowledge, (3) as a source of expanded knowledge, and (4) as a source of knowledge improvement.

Keywords: Philosophy of Science, Modern Science, Critical Perspective

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INTRODUCTION

In the early 20th century, the idea that science is based on experience (empiricism) and logic, where knowledge can be tested intersubjectively, has had a long history. The philosophical school of logical empiricism tried to formalize these ideas (Glattfelder, 2019).

Modern knowledge and technology developed in Western countries have influenced every aspect of human life in today's globalized world. Science is described as a silent system that helps humans understand their environment and situation and adapt to them. In other words, personalizing the environment in the context of everyday life. Since all information created by humans is an attempt to make life easier, science was originally intended to make human existence simpler and more affordable to sell (Digital et al., 2022).

The contemporary world is characterized by advances in knowledge and technology. With the advancement of information and technology, many benefits can be enjoyed by humans. Modern times are characterized by many activities in several fields, such as education, information, and other fields. It is undeniable that humans rely heavily on technology and science to perform their daily tasks. The development of these two fields greatly facilitates people's daily lives. In addition, increased knowledge not only results in increased understanding and knowledge, but also improves educational standards and other aspects. Advances

in technology and knowledge can quickly and easily fulfill human requirements (Rachma Heryadi et al., 2024).

Based on this explanation, it is very interesting to further examine the nature, principles, and relevance in the modern era. Therefore, this paper will discuss its nature, principles, and relevance in the present by analyzing appropriate topics based on previously obtained sources.

RESEARCH METHOD

This research is a literature review that uses the Systematic Literature Review (SLR) method as one of its methods. Kitchenham (Hamidah et al., 2022: 295) states, Systematic Literature Review (SLR) is a research methodology that aims to find, assess, and combine all research relevant to research topics and problems. The SLR research methodology, according to Francis & Baldesari (Hamidah et al., 2022: 296), is used with the following steps:

1. Solve the research question. How does the development of knowledge affect it?
2. Search for literature to support the research question through various national journal search platforms. To simplify the literature analysis, the researcher concentrated only on a few criteria relevant to the research question and excluded literature that did not meet these criteria. Here are some examples of the criteria:
 - a. The data used comes from the domains of philosophy, science, and knowledge.
 - b. Data obtained from the site <https://scholar.google.com/>
 - c. The data used is data with time lapse 2021 -2024.
3. In this chapter, literature critique and analysis is carried out by presenting literature works that are able to answer research questions. The literature data used in this research is evaluated through a screening process using predetermined quality criteria. Based on the screening process, the analyzed journals were able to answer the questions that may arise during this research. The following are the steps taken in the screening and filtering process:
 - a. Categorizing, reviewing, and presenting the literature found to obtain information that is relevant to the research.
 - b. Conducting quality control to review the relevant literature by using the research findings along with the literature analysis used in the review and analysis.
 - c. Creating a final report by analyzing and publishing the information.

The researcher used descriptive narrative words to describe the research results thoroughly. This method is in accordance with the principles of qualitative research, namely understanding the phenomenon as a whole (Rachma Heryadi et al., 2024). The sources reviewed include scientific journals, books, and articles related to the topic of the meaning, meaning, and nature of philosophy of science (Literatur et al., 2024).

The results of this research were then contextualized with contemporary Islamic education to ensure their relevance. Analysis of research data is carried out by analyzing the literature read, discussing, analyzing, and paraphrasing

various concepts sourced from books, articles, and experts who are the main sources of information in this research. (Darmawan, 2024).

RESULTS AND DISCUSSION

The Nature of Philosophy of Science

The word philosophy is known as “falsafah” in Arabic, while in English as “philosophy”, which comes from the word “philosophy”, which comes from Greek. “Philosophia” comes from two words: “philein,” meaning ‘love,’ and ‘stoli,’ meaning “wisdom.” In other words, philosophy is referred to as the love of wisdom. Adib, 2010). The following are definitions of philosophy given by philosophers and philosophers. Plato considered philosophy as a useful science that can be used to gain genuine knowledge of the truth. Philosophy, according to Aristotle, is knowledge that covers the following topics: ethics, economics, politics, logic, rhetoric, metaphysics, and aesthetics (philosophy of beauty) (Darmana et al., 2021).

The Greek “Phillen,” meaning “love,” and “Sophia,” meaning “wisdom,” are the etymology of philosophy. It can be said that love for wisdom is equivalent to philosophy. According to etymology, this article has some prefixes and conclusions that arise from the writings of Socrates. According to Socrates, man is incapable of carrying out tasks because of his inability to do so. Apart from wisdom, man only has the ability to confirm it. The Socrates quote above also criticizes the Sophists, who are said to be wise (Suhartono, 2007).

In Indonesian, “love” refers to any action performed by two people. The first party is considered the subject, and the second party is considered the object. It could be that this action or deed is motivated by the subject's desire to “merge” with the object. To be able to communicate with the object, the subject must understand its meaning or essence. The union of subject and object is determined by knowledge of the object. The more you understand the subject, the more you understand the object. . In addition, “Wisdom” is from the word “wise” and contains the syllables “ke” and “an”, illustrating the haikiki sense of wise. In other words, wisdom is described as fair, good, and right. According to the result of reason and consideration of feelings, such actions are the result of high volition. Thus, it can be concluded from etymological research that philosophy is the knowledge of knowledge. In addition, philosophy can also be described as knowledge that underlies or underlies deep knowledge (Darmana et al., 2021).

Socrates mentions the emergence of the classical period in his philosophy. Among the most famous classical philosophers are Socrates (470-399 BC), Plato (427-374), Aristotle (384-322), and Plotinus (205-70 BC). However, prominent names such as In medieval times, philosophers such as John Scotus Eriugena (815-877 AD), Saint Anselmus (1034-1109), Roscellinus (1050-1120 AD), and Saint Thomas Aquinas (1225-124 AD) appeared. In contrast, some important figures in contemporary literature are Kepler (1571-1630 AD), Galileo Galilei (1564-1642), Rene Descartes (1596-1650 AD), Isaac Newton (1643-1727), and Immanuel Kant (1724-1804). One of the people who have contributed

the most to the development of modern knowledge are the philosophers of the 20th century, and their contributions are still very valuable (Fadli, 2021).

Principles of Philosophy of Science

The philosophical approach, which is based on the three principles of existentialism, is a framework for determining the strengths and weaknesses of a particular field of knowledge, referred to as interdisciplinary. According to its principles, philosophy is the foundation of knowledge that can be used as a guide to understanding any subject. Philosophy, also known as the root of knowledge, is a method of thinking. In a comprehensive sense, a discipline can be described as knowledge based on three methods: radical, universal, systemic, and specific. According to Sumarna's view (2020: 14-23), the existence of knowledge must be based on the following four principles: radical, universal, systematic, and speculative. Based on the description above, the three main components that form the basis for analyzing this work are ontology, epistemology, and axiology.

These three methods for establishing the validity of knowledge are more commonly referred to as ontology, epistemology, and axiology. These three aspects are methods for completing research on various objects that need to be researched. According to Afifuddin and Ishak (2022), philosophy focuses on issues as the subject matter of study which is composed of three third issues: ontology, epistemology, and axiology. knowledge of reality taught by metaphysics, or knowledge of knowledge taught by epistemology; and knowledge of knowledge taught by axiology, such as in ethics and aesthetics.

The Relevance of Philosophy of Science to the Modern Era

The development of knowledge always involves something new from one time to the next. This is especially true nowadays, where there is a lot of progress in the fields of education, economics, construction and technology. Progress in this scientific field can be observed from several new themes originating from various corners of the world which can be observed and discussed in everyday life. The birth of this scientific development cannot be separated from philosophical thinking, namely never stopping thinking about something that already exists. As a result, it is always looking for ways to understand something that requires updating or exploring something that has not yet been fully developed. This is one of the reasons why philosophers have a different point of view from other people because they do it in a gentle way. According to Suriasumantri (2017), philosophy is a process of seeking truth by considering knowledge.

This knowledge comes from rationalism which relies on understanding, special knowledge, critical analysis, and analysis. More emphasis is placed on the universality and depth of study of anything by philosophical knowledge. While education focuses only on one concise and rigorous aspect of knowledge, philosophy addresses broader and detailed topics. Philosophy often makes people think and think critically about what they know, making previously strict and closed knowledge more flexible. This understanding is based on a set of facts about a particular topic that is consistent with existing knowledge. In our life, there are two types of truth (facts), the first is recognized reality, namely

everything that is said because it is true. The second is a statement based on our own experience. Based on the two facts above, there are two types of knowledge, namely information obtained through agreement and information obtained through silent observation or study. (Idzam, 2012).

According to Muslih (2016), one of the main types of philosophy is the philosophy of science, or philosophy of knowledge, where the discipline of philosophy focuses more on discussing knowledge, where the philosophy of science teaches about the philosophy of science. This philosophy of science has a focus point or area that is used to discuss and illustrate all aspects of the subject matter, including definitions, characteristics, philosophy, and developments related to the subject matter, as well as discussing the implications and consequences of the subject matter. In philosophy, there is a radical method of observation, therefore philosophers will never be found in situations that only involve certain entities. I will never be able to focus only on one particular aspect of reality, which means that I will try my best to gain certain knowledge and, in a more logical way, I will do the following: I will carry out a logical, systematic analysis and critical to obtain certain facts that are clear and in accordance with facts that can be clearly defined as a reference and basis.

Philosophy of Science in the Modern Era

As the industrial revolution ended, modern society emerged, the 17th century saw the emergence of several idealistic concepts and perspectives that were very important to the way of life of society at that time. Deviations from the original goal are caused by the goal. Sudrajat and Tasnur, 2020:34. Despite this shift in perspective, research on philosophy continues to make a significant contribution to modernization, as stated. According to Purba et al., 2021: 35, philosophy can also be used as a marketing strategy. Therefore, it can be said that this is a fixed theology and philosophy. Philosophy is also described as a method of reflection that can create a society that is critically thinking, innovative and independent. So it is concluded that in modern times, philosophy is still relevant to human life to address obstacles and transformations in any form which can only be discussed creatively by individuals who are independent, critical and open to new concepts.

Science

Scientists consider science to be a collective and conscious effort to analyze, obtain, and improve human understanding of various perspectives developing throughout the world. According to Jacob (Rofiq, 2018: 166), knowledge is a system that is connected to human life and the environment, adaptation to the environment and the environment itself as a component of strategies to improve the environment.

Joesoef (Rofiq, 2018:167-168) states that science includes products, processes and communities. According to him, science is a product, which means knowledge that is recognized by the scientific community as truth. Meanwhile, science is a process, which means a community effort to explore and understand nature in any circumstances, rather than creating or changing it. Scientists as a society refer to the social world which is governed by four principles

(imperatives), can be used by anyone and anywhere, belongs to the public, has no strings attached or is not advertised for certain purposes, and is based on theories and systematic thinking processes. According to Achmad (2018 :109-110), science also has features. In other words: 1) Concrete, which means that the truth can be healed. 2) The presence of the subject and object are very closely related. 3) No batteries, so there's a lot to learn. 4) The methodology used to gain knowledge. 5) Radicalism, which is based on real and rational concepts. 6) Revelation, which is not reason, is seen as the source of knowledge. 7) Knowledge results are cooperative and cumulative. 8) Truth is not absolute and can be interpreted. 9) Does not depend on personal knowledge. Apart from having characteristics, according to The Liang Gie (Achmad, 2018:110), knowledge also has five main characteristics, namely as follows: 1) Empirical (comes from basic review and experience) 2) Systematic (organization and structure) 3) Objective, without personal prejudice 4) Analytical (knowledge of the subject in detail in order to understand its properties, relationships and the different roles of its parts) 5) Verifying (can different depending on who you ask).

The aim of science and science is to explain phenomena that have been observed and enable people to thoroughly understand the nature of existing things. Knowledge makes society understand problems. and find a solution. This is related to academic knowledge and social knowledge (Suriasumantri in Rofiq, 2018: 167). Based on the previous description, it can be concluded that a comprehensive understanding of knowledge can understand all aspects of life and effectively guide the world through its development.

Science in the Modern Era

Sometimes, science experiences very rapid development and progress. Despite the fact that it has improved the quality of life on the one hand of humanity, on the other hand, it has developed into a very dangerous manifestation of the human ethical compass. This is because the development of science and the findings it produces which are not commonly found in modern times require a dose of optimism to ward off pessimism. (Rofiq, 2018:169). In a historical context, this is the foundation of knowledge that underpins contemporary thought, originating from the rationalism of René Descartes, the realism of John Locke, and the criticism of Immanuel Kant, as well as being based on the positivist ideas of August Comte. The 19th century, also known as the century of positivism, was very important and continues to be so today. The positivist point of view is the measure of truth. Philosophy is a practical method for human development, although abstract reasoning is essential.

CONCLUSION

Based on the previous discussion, it can be estimated that the philosophy of science plays an important role in the development of knowledge, which is proven by its position as the mother of all knowledge. Another factor that contributes to the understanding between the two is the object of study in the field of education itself. Furthermore, with the progress of science and technology today, in two ways, the philosophy of science functions as an interlocutor and critical axiological moral affirmation. In addition, it functions as the mother of

knowledge because it has the ability to function as the first level of knowledge of knowledge that cannot be obtained through knowledge. Third, as a comprehensive approach, to ensure that the progress of knowledge is not hindered by the oppression of social values. Fourth, as researchers, because science can develop technology, and humans use it to fulfill their social and personal needs. Fifth, as an assessment of the contribution of science in human mental development towards truth. Sixth, as a tool of moral control in the face of current technological advances, it is intended to stop the process of moral development. Finally, as a source of inspiration and motivation to learn, the general public evaluates educational activities. This also includes moral and aesthetic considerations.

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