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Philosophy of science actualization for Islamic science development Philosophical study on an epistemological framework for Islamic sciences

Kamarudin Zaelani*, [1]

IAIN Mataram NTB, Fakultas Tarbiyah dan Keguruan (FITK), Jln. Gajah Mada No. 100, Jempong, Mataram, NTB, Indonesia

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ABSTRACT

Philosophy is a free-thinking, radical, and universal method of obtaining a truth, and the philosophy of science is the free-thinking, radical, and universal application of science principles and rules. The philosophy of science is not a methodology but is a reflective process rooted in the principles of science. The philosophy of science represents a component of philosophy, not only a research method or a scientific paper's procedures, and it serves as the foundation and direction of scientific development, which is continually seeking truth or reality (*unfinished journey*). Cases of deterioration in the field of Islamic social sciences include exact or natural sciences. Discussions on Islamic scholarly epistemology show similar problems to those of Western epistemology. This study reviews the methodologies, truth, and objectivity. Conducting philosophy of science procedures instils confidence in what has previously been defined as a science "*scientific statement*". In this case, the philosophy of science offers a wide range of approaches or paradigm models, and various methods can be adopted by all sciences, including the Islamic religion sciences.

1. Introduction

As previously explained and still valid today, science is divided into two groups, "*natural* science" and "*social science*".[2] The Islamization of science seems to be more prominent in the social sciences. Recently, many books have addressed the movement, particularly those published by Islamic institutions, such as MTs, MAs, and Islamic higher education institutions, such as "Islamic Institutes or Islamic universities". The subjects addressed include Islamic Mathematics, Islamic Science, and even Islamic puzzles.[3]

A study in Islam is expected to please Allah SWT[4] but is also expected to contribute to the welfare of mankind.[5] Therefore, Islamic scientists differ from Western scientists who are unaware of

* Jln. Tegal Banyu, Lembuak Kebon, Narmada Lombok Barat, NTB, 83371, Indonesia. Tel.: +62 82340352013, +62 81936714359, +62 0370 620783, +62 0370 620784; fax: +62 0370 620784.

E-mail address: zaelaniomenk@yahoo.co.id.

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[1] FITK State Islamic Institute Mataram's Lecturer.

[2] Other terms include *applied science* and *social science*. The terms *natural science* and *applied science* are used by Bahm in his book: ***What is Science?***, pp. 30–34. Many other thinkers, such as M. Weber and many of the Anglok group, are eager to divide science into two groups: *natural science* and *social science*. Van Peursen, ***Susunan Ilmu Pengetahuan***, (Jakarta: Gramedia, 1985), pp. 5–6.

[3] The idea of the Islamization of science was initiated formally in an international seminar in 1982 in Islamabad led by Ismail el-Faruqi. The idea enjoyed widespread acceptance among Moslem intellectuals, and its effect was felt as far as Indonesia. This movement was on the Pan-Islamism agenda pioneered by Jamaluddin al-Afgani of Turkey in the 19th century and initiated by the Libyan president Muammar Qhadapi. The seminar was organized by the International Institute of Islamic Thought to formalize role ideas and to hold discussions to obtain a clearer understanding of the Islamization of science and to develop an agenda for action. In Indonesia, A. M. Saefuddin authored a book on the Islamization of economic thinking. M. Dawam Raharjo, ***Melihat ke Belakang, Merancang Masa Depan, Sebuah Pengantar*** to P3M (Perhimpunan Pengembangan Pesantren dan Masyarakat), ***Islam Indonesia Menatap Masa Depan***, (Jakarta: PT. Guna Aksara, 1989), pp. 1–10.

[4] Q.S az- Zumar: 9 Q. S. al-Mujadalah: 11, and many others.

[5] As stated in the al-Hadist of the Prophet, which means, "The best of you is the more useful for others".

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religious science's purpose or what is required or forbidden by the religion. Islamic scholars believe that the truth is not determined by human kind, "*anthropocentrism*", but that the truth comes from God, "*theocentris*", which demonstrates the differences between the views of Moslem scholars and Western secular scientists. Moslem intellectuals in the pursuit of knowledge may conduct a variety of experiments using several methods to find new problems but, in practice, they are prohibited from harming another individual.[6]

The development of science in the Islamic world, particularly in a philosophical sense, began with theology reviews.[7] This era in the history of science was short-lived and shifted toward philosophy during a period known as the Islamic scholastic period.[8] After scholasticism had faded following the period of Ibn Rusdy, the diffusion of Islamic philosophy ceased; the consequences were ignorance and backwardness in the Islamic world with a lack of modern thinking that existed in the Western world.

The Islamic deterioration was not limited to the social sciences field but included exact or natural sciences. Ibn Sina, renowned in the medical field, would never have as much involvement in Islamic history after this generation. Further discussion on Islamic scholarship epistemology shows that the problems encountered are similar to those in Western epistemology. The subjects to be reviewed in this study include methodologies, truth, and objectivity.

Describing the meaning of science philosophy and Islamic science development requires an understanding of philosophy, science, Islamic science sources, and individual Islamic sciences to clarify definitions. These terms form the basis of this essay.

2. Discussion

2.1. Philosophy and science overview

2.1.1. The definition of philosophy

Etymologically, philosophy is derived from the Greek word "*philosiphia*", which consists of two syllables, "*philo*", which means love, and "*sophia*", which means wisdom. Thus, philosophy means love of wisdom.[9]

According to experts, the definition of philosophy depends on the authority and reflects the location, life time, disciplines, and specifications of the authority. Some philosophy definitions follow:

- *First,* philosophy is a set of attitudes and beliefs towards life and nature, which are usually accepted uncritically.
- *Second,* philosophy is a criticism process or beliefs and upheld attitudes.
- *Third,* philosophy is an attempt to obtain a universal perspective.
- *Fourth,* philosophy is composed of words that explain meaning using logical language concepts.
- *Fifth,* philosophy is either a set of problems or any problem that has caught the attention of an individual and requires an immediate answer.[10]

These definitions of philosophy represent individual viewpoints based on different mindsets and varied perspectives.

Ya'kub cited other definitions of philosophy from several prominent scientists:

1) Aristotle (384–322 BC) defined philosophy as the truth science.
2) Heraclitus (536–470 BC) suggested that philosophy scholars elaborate on science and have greater understanding.
3) Cicero, (106–3 BC) suggested that philosophy is the mother of science and the ultimate science.
4) Thomas Hobbes (1588–1679 M), an English philosopher, said that philosophy is the scientific explanation of causality.
5) Immanuel Kant (1724–1804 M), a Germany philosopher, argued that philosophy is a science that investigates the basic reasons to act or to find something.[11]

Philosophy can be defined as a radical, universal, and free-thinking process for truth seeking. Philosophy is not the same as the knowledge of philosophy. Philosophizing is a process and method for finding results, while the knowledge of philosophy is based on results obtained through a philosophical process.

2.1.2. The definition of science

Defining science was a simpler endeavour in the past. The definition of science depends on a philosophical system, with restrictions and demarcations between each particular science.[12] An analysis of science or knowledge is not straightforward because there is no consensus among scientists concerning puzzling scientific terms or problems, which may persist forever. A problem will either become a subject for analysis or it will never be resolved. Therefore, there is a need for further research to provide resolution to scientific problems.[13]

Bahm explored six important elements of science: issues, attitudes, methods, activities, conclusions, and life influences. The function of scientific elements is to define the meaning of science itself.[14] Verhaak described the characteristics of science as an attempt to gather knowledge results through a systematic system, as suggested in the terms "*fundamental idea/philosophy of*". The exploration results occurred in a wide variety of models classified into two basic models: the posteriori model or priori model.[15]

Realizing the difficulty of finding common ground regarding the definition of science, scientists often classify science into natural science and social science.[16] Both categories have existed since the days of ancient Greece, which distinguished between *physic* "*regularity*" and *nomos* "*deal*". *Physic* is a natural science, and *nomos* is a

[6] An example of limited practices by Moslem scientists is artificial insemination and organ transplants because of ethical concerns. For example, Islam accepts insemination IVF, where the sperm and ovum are from a husband and wife who are endorsed by Islam. Transplants are not opposed by Islam as long as they result in benefits for the individuals involved. P3M, ***Op. Cit.*** p. 150.

[7] Various schools emerged in this period, such as Mu'tazila, Ashariah, and Khowarij. Read: Harun Nasution, ***Teologi dalam Islam: Aliran–aliran, Sejarah, Analisa dan Perbandingan***, (Jakarta: Universitas Indonesia UI. Press, Cet. V. 1986).

[8] Additional transition process descriptions are provided by Irma Fatimah. ***Filsafat Islam: Kajian Ontologis, Epistimologi, Aksiologis, Historis dan Prosfektif***, (Yogyakarta: Lembaga Studi Filsafat Islam, Cet. I, 1992).

[9] Hamzah Ya'kub, ***Filsafat Ketuhanan***, (Bandung: PT. Al-Maa'arif Penerbitan Percetakan Ofset, Cet. II, 1984), p. 11.

[10] Harold, H. Titus, Marilyn S. Smith and Richard, T. Nolan, ***Living Issues and Pholisophy***, Edisi 7. Translated By: Prof. DR. H. M. Rasyidi, ***Persoalan–Persoalan Filsafat***, (Jakarta: Bulan Bintang, Cet. I, 1984), pp. 10–15, compared with Bertens, K., ***Panorama Filsafat Modern***, (Jakarta: Gramedia, 1987), pp. 13–28, and Tan Malaka, ***Madilog: Materialisme, Dialektika dan Logika, Seri Pemikiran Nasional***, (Jakarta: PT. Pusat Data Indikator, Cet. I, 1999), pp 41–53.

[11] Hamzah Ya'kub, ***Op. Cit.***, pp. 12–13.

[12] Science was no longer defined as the nature of science but rather by the methodology that was being implemented. Van Peursen, ***Op. Cit.***, 1985, p. 1.

[13] According to the writer, this resembles knowledge homework.

[14] Axiolgy: ***The Science of Values***, (New Maxico: World Books al-Buquerqee, 1990), pp. 14–49.

[15] A *priori* model was pioneered by Plato, while a *posteriori* was pioneered by Aristotle, which was obtained through the causality that characterizes knowledge. Verhaak and Haryono, Priest, R., ***Philosophy of Science***, (Jakarta: Gramedia, 1989), pp 1–12.

[16] Peorsen, ***Lok. Cit.***, or going to footnote number 2.

social science.[17] Both natural science and social science are mutually complementary today. The natural sciences are quantitative, and the social sciences are not only qualitative. Natural sciences are bound to materials and are followed by individuals who desire to learn. The social sciences, however, are not always binding, but depend on the method and instrument approach.[18] Moreover, Peursen explained that the difference between natural sciences and social sciences lies in the method for describing and understanding.[19] Amid the difficulties of identifying a definition of science, Poedjawijatna recited a science definition from the "*Introduction to Philosophy*", by D. White. P. "*Science is a thesis complete description of experiences in the simplest possible terms*". This book explains that science is an answer using data or experience as a description in as simple a form as possible.[20]

2.2. An overview of the philosophy of science

2.2.1. The definition of the philosophy of science

The exact philosophy of science is impossible to accomplish because of the scope of the vast fields of science and discussions that are based on varied backgrounds, directions, objects, individuals' assumptions, ages, and relevance to the wide range of fields from which science is derived. This article limits the discussion on the philosophy of science to clear themes.

Philosophy is a free-thinking, radical, and universal method of obtaining a truth; the philosophy of science is a free-thinking, radical, and universal application of the rules and principles of science. Another definition states that the philosophy of science is not a methodology but is also a reflective process rooted in the principles of science.[21] According to Koento Wibisono, the philosophy of science is a component of philosophy and not only a research method or scientific procedure and serves as the foundation and direction of scientific development, which is continually seeking truth or reality (*unfinished journey*).[22]

Beetling et al., stated that the philosophy of science is the method of obtaining scientific knowledge characteristics. The definitions assert that the philosophy of science represents advanced research on facts about an object.[23]

Advanced research is the investigation of something that has either been answered or for which there is no clarity. For answered objects, the philosophy of science's role and function is to prove the truth. For objects with no resolution, the philosophy of science's role and function are to pursue answers or solve problems that remain unclear.

When various science organizers investigate specific problems of respective special science, others may conduct further investigations on these scientific activities. Over time, the reciprocal relationship between objects and methods, the problem, the purpose of scientific research, the scientific approach, and scientific material gain clarity. Then, the philosophy of science becomes a form of advanced thinking.

2.2.2. Position and function of the approaches of the philosophy of science

To explain the position and function of the philosophy of science approaches in the context of systematic philosophy, we recall the importance of the characteristics of philosophy. Philosophizing is a process of free, universal, and radical thinking in pursuit of the truth. Philosophizing, in this sense, is an attempt to study and reveal the human odyssey in this world towards the afterlife.[24]

The philosophy of science is a component of epistemology, which specifically examines the nature of science. Epistemology is often categorized as either a natural science philosophy or social science philosophy, which does not allow autonomous philosophy in fact and reality today. There are principle differences between philosophy and knowledge, but there are no principle differences between the natural sciences and social sciences because both have similar scientific characteristics.

These characteristics are specified by Jujun S. Suriasumantri, as follows: What objects are studied by science? How does the object reflect nature? What is the relationship between the objects and human characteristics, such as thinking, feeling, and sensing, that generate knowledge? What is the overriding process of knowledge as a form of science? How does it work? What steps should be taken to obtain true knowledge? What is truth itself known as, and what are truth's characteristics? What types of facilities and methods help us to obtain knowledge as a science form? What are the uses of knowledge as a form of science? What is the correlation between methods and moral rules? How is the object determined based on moral choices? How are procedural and scientific operation methods related to professional moral norms?[25]

Distinguishing knowledge types and confirming the validity of a science are typically achieved by posing certain questions: Knowledge studies are addressed by the "*ontology question*". How the knowledge is obtained is addressed by the "*epistemology question*". The purpose of the knowledge is addressed by the "*axiology question*". The answers to these questions distinguish the different types of knowledge that compose human life and expose the varieties of knowledge, for example, art and religion, and assign them proportionately. Without understanding each knowledge characteristic accurately, knowledge cannot be used to its fullest capacity and can be misused because "*science is not only confused by art, but confronted by religion also*".[26]

2.3. Islamic epistemology framework "Philosophy of science actualization for the development of Islamic science"

Islamic history claims that science was limited to the knowledge of al-Quran and al-Hadits.[27] Islamic science was developed beginning with the emergence of Islamic jurisprudence schools until modern schools of theology were considered schools "*of natural science and social science*" with Islam.

The Islamization of modern knowledge terms include Islamic Law, Islamic Economy, Islamic Mathematics, and even Islamic Physics, and the study of these terms is increasing. The problems of

[17] Jujun Suriasumantri, S., ***Ilmu dalam Perspektif Moral***, (Jakarta: Gramedia, 1986), p. 305.

[18] Using a different expression, the results problem, in connection with a natural sciences "material", must give the same result and are certainly not influenced by space and time, whereas the social science problem's result depends on the methods and approaches used.

[19] Van Peursen, ***Loc. Cit.***

[20] Pesdjawijatna, I. R., ***Tahu dan Pengetahuan***, (Jakarta: Bina Aksara, 1983), p. 62.

[21] Jujun Suriasumantri, S., ***Op. Cit.*** pp. 301–302.

[22] Beeling et al, ***Introduction to the Philosophy of Science***, (Jakarta: Gramedia. 1985), pp. 3–9. *Unfinished journey*, is the writer term.

[23] ***Ibid***, p. 1.

[24] Verhaak and Haryono, ***Loc. Cit.***

[25] Jujun Suria Sumantri, ***Filsafat Ilmu sebuah Pengantar Populer***, (Jakarta: Pustaka Sinar Harapan, 2000), pp. 33–34.

[26] Connected with a theme, there is an Athur Connat Doyle (1859–1930) aphorism and a Sherlock Watson quote by Suriasumantri, ***Elementary, My Dear Watson"& Elementary***, Ibid, p. 35.

[27] This is reflected in the title *ulama* or *fuqaha* who "have knowledge in an Islamic world", which is attributed to the people who understand the sources of Islamic Law, "al-Quran and al-Hadith", as well as several streams of Islamic Jurisprudence Schools, "*al-madzaahib al-fiqhiyah*", that have been adopted as sources of secondary law for Moslems. In fact, this term is still valid.

Islamic science resemble those of general science. As previously defined, the philosophy of science is a component of philosophy that works through problems in correlation with studies of knowledge, methods, and truth systems. These problems are further discussed and correlated with the Islamic knowledge system.

Departing from the description above, which is used as the theoretical framework in this article, Islam and Islamic thought are two different things. Islam is a religion that comes from revelation, while Islamic thought is an individual's grasp of objective results, truth against the divine message, "*revelation or wahyu*". As a subjective truth, Islamic thought itself is inconsistent in accordance with God's message, which is analogous to the source used for Islamic knowledge, as described earlier.

Therefore, every Islamic thought should be treated as a "*ijtihadi*" work "*synthetically thinking or philosophical*", where the philosophy of science is a continuous process for the development of science and reaches the will of God observed and assessed through His Word. From the standpoint of philosophical science, every Islamic thought includes the discussion area, criticism field, and comment surface to justify truth claims.

In line with in, that any works undeserved a true or not true assessments thought, until trying to describe what is actually "ontological epistemological, and axiological" which of desirable reversed questions about science that had levelled. For a systemic discussion of the analysis result, I have divided the explanations under several subtitles as follows:

2.3.1. Islam alienation

Since the arrival of Islam until the end of the caliph's reign, the categorization of a scientist is limited to a person who has competence and capabilities at mastering *al-Quran* and *al-Hadith*. Knowledge is based only on sense, intuition, and revelation. In this period was less of reason purposed even nothing at all. The role of reason began to appear after political disagreements in Islam, namely, the collapse of the caliph's government system. The role of reason heightened after the Islamic conquest of Andalusia "Spain".[28]

Currently, Moslems are already daring to reinterpret *al-Qur 'an* and *al-Hadith,* which correlates with the new context and current conditions, and these actions are scientific signals that still require an elaboration of their methodology, existence, nature, direction, and purpose.

The deterioration of Islam began to appear again after advances in Europe in the various fields of science, technology, political views, and cultures. Europe's progress cannot be separated from the Islamic government in Spain, which represented the centre of Islamic civilization and European learning at that time.

From this brief description, it appears that one of the causes of the deterioration of Islam is diverging maturity in concepts that cannot match those of Europe and the absence of follow-up measures to confirm prior findings.[29] Moslems remain isolated with a wide range of knowledge related to aspects of ontology, epistemology, and axiology. Therefore, the emergence of Islamization of knowledge was from. Recent discourse has addressed the incompatibility of Islam with multiple streams of modern science, such as sociology, anthropology, and meteorology. There has been a departure from conformity, and different methods have been adopted. The increasing alienation of Moslems in various science fields is evident.[30]

2.3.2. Contributions to the philosophy of science

The philosophy of science is the continued investigation of an object that is still pending by questioning its essence of ontology, epistemology, and axiology to further examine a subject matter that is not yet resolved or still doubtful. The philosophy of scientific procedures instils confidence in what has been previously defined as a "*scientific statement*". In this case, the philosophy of science offers a wide range of approaches or paradigm models, and various methods can be adopted by all sciences.

Depending on the writer, the philosophy of science prefers evidentiary inquiry over justification. This enables the identification of the what, how, and where of science as well as the goals of science. This is accordance with the explanation by Jujun S. Suriasumantri quoted earlier.

2.3.3. The philosophy of science and Islam in the future

Islam entered the decline phase caused by stagnation in the development of existing "*all alienation*" and marked by the emergence of Europe from a deep sleep. At that time, Europe was competent in furthering the development of science. Thus, the development of science is not stuck at one point but is at a point that precedes other points' variegated shades and shapes and colours. This development is observed from the beginning to the end of the decade as an unknown number of Moslem scholars who learned from the West, "Europe and others".

The philosophy of science is a set of concepts that offers more scientific development and corrections to science that has been developed previously. This concept has matured considering the extensive discussions in fields covering almost all aspects of knowledge from the source, the emerging background, the methodology, and the orientation. The benefit of the philosophy of science is that it understands the nature of science. Future development is marked by increasing development, some progress in various fields, and the use of ratios that take precedence over existing doctrines. Isla, as an authentic religion, should prepare for its future contribution to the science community.

Departing from the definition of the concepts offered by the philosophy of science to further scientific development, I find empowerment and development in particular Moslem communities. Moslems should adopt the concepts of the philosophy of science and apply them to the development of Islam, the Islamic religious sciences, and society in general.

3. Conclusion

The final conclusions of this paper are the following:

- The philosophy of science can benefit Moslems, particularly in advancing the field of science and to reverse backwardness.
- The philosophy of science is an urgent vehicle that is currently required by Islam to reduce its alienation. Moslem backwardness is the cause of its isolation in principles and direction, as well as the purpose of the development of science itself.
- The philosophy of science might be realized in Islamic science development for objects that introduce a theoretical

[28] This period is more popularly known as the Golden Age of Islam; even when Islamreached its golden age, central Spain was important for Islamic civilization. According to Badri Yatim, Spain almost rivaled Baghdad in the East at the time when much of Christian Europe was under Islam. This is evidenced by an unknown number of non-Moslem students who study Moslems. "Islamic University". Described at length in: Badri Yatim, ***Sejarah Peradaban Islam***, Jakarta: Grafindo Persada, Cet. VI, 1998.

[29] Lapidus, ***Sejarah Sosial Umat Islam***, Bag.I & ll, Jakarta: PT. Raja Grafiodo, 1999, pp. 581–585.

[30] See Dedy Jamaluddin Ibrahim Malik & Edi Subandi, ed. ***Zaman Baru Islam Indonesia: Pemikiran dan Aksi Politik***, Bandung: Zaman, 1998.

paradigmatic formulation of the what, how, and where of science and its direction. Thus, Islamic knowledge must face the challenges ahead and introduce Islam as a creator of advanced scientific concepts.

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