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Islamic and Scientific Epistemology: A Comparative Study

ABSTRACT

Epistemology is the study of the origin and limits of human knowledge, as well as the distinction between opinions and beliefs. The field includes facts, background assumptions, principles, and methodologies that influence the generation, evaluation, and transmission of knowledge. Islamic and scientific knowledge share intricate epistemological frameworks, with Islamic epistemology depending on revelation, intuition or inspiration, reason, and empirical techniques, while scientific epistemology relies on perception and reasoning. This article explores the fundamental principles and methods of both Islamic and scientific epistemology, examining their similarities and differences. This work employs a qualitative research approach, incorporating analytical and comparative methods to compile the information. This knowledge is crucial for advancing comprehensive, ethical, and significant knowledge in both traditional and modern domains, as well as for understanding how different epistemologies contribute to our understanding of truth and knowledge. The examination of Islamic and scientific epistemologies highlights the intricate and multifaceted aspects of human knowledge. Both of these approaches provide beneficial perspectives and methodologies that can improve our understanding of the world. By acknowledging the similarities and dissimilarities between these frameworks, one can adopt a more refined and inclusive strategy towards knowledge, leading to a greater appreciation of the various ways in which we strive to discover and comprehend truth.

Keywords: *Epistemology, Scientific Epistemology, Islamic Epistemology, Knowledge.*

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Introduction

The Greek terms "episteme" and "logos" are the source of the word "epistemology." Where the "episteme" means "information," "Logos" refers to "reason." "Ology" depicts the information department.[1] An epistemological framework is a conception of knowledge based on a set of mutually consistent foundational assumptions regarding the origin and nature of knowledge (epistemic assumptions), how it is developed (methodological assumptions), and how it is justified.[2] Different epistemological traditions encompass various ways in which cultures, groups, and individuals engage in knowledge and understanding. It is widely recognized that there is no singular or universally accepted method for acquiring knowledge. This notion embraces a multitude of perspectives and methodologies found within diverse cultural, social, and philosophical contexts, including religious epistemology. Numerous religions possess distinct approaches to comprehending knowledge and providing justification. These may involve scriptures, revelations, or the teachings of religious authorities.[3] Islamic epistemology emphasizes the integration of revelation and reason and is based on the lessons found in the Qur'an and Hadith. This worldview has promoted significant advances in disciplines such as cosmology, physics, and pharmacology throughout the Islamic Golden Age.[4]

However, a careful epistemological framework depends mostly on identification, research, and observable facts. This method, which constitutes the foundation of modern science, produces and confirms information through a consistent process. It emphasizes critical thinking, skepticism, and reproducibility of results, all of which have been crucial to the tremendous advances in civilization and research that have taken place over the last several centuries.[5] Understanding these similarities and differences enables a more profound understanding of the philosophical foundations of scientific and Islamic epistemologies underlying congruent data approaches. This comparative research not only advances educational institutions but also encourages interfaith discussion and engagement, leading to a more thorough and all-encompassing approach to the digital age that respects and appreciates other points of view.

Significance of this topic

A comparative study of Islamic and scientific epistemology is significant for several reasons. It bridges the gap between religious and empirical knowledge systems, fostering interdisciplinary dialogue. This comparison enriches the philosophical discourse by exploring complementary and contrasting methods of knowledge acquisition. This topic delves into how knowledge is acquired, validated, and applied within Islamic and scientific frameworks,

[1]Woleński, Jan. "The History of Epistemology." Handbook of Epistemology, 2004, 3-54. doi:10.1007/978-1-4020-1986-9_1.
[2] Chisholm, Hugh. The Encyclopædia Britannica: A Dictionary of Arts, Sciences, Literature and General Information. 1911.
[3]"Religion and Epistemology." Routledge Encyclopedia of Philosophyhttps://www.rep.routledge.com/articles/thematic/religion-and-epistemology/v-1 , Accessed on July 13, 2024, time, 6:30 pm
[4]Nasution, Aswin, Asy'ari Asy'ari, Sri Handayani, and Ridwan Ali. "Islamic Epistemology." *Proceedings Series on Social Sciences & Humanities* 12 (2023), 386-396. doi:10.30595/pssh.v12i.825.
[5]"Scientific Method (Stanford Encyclopedia of Philosophy)." Stanford Encyclopedia of Philosophy https://plato.stanford.edu/entries/scientific-method/ accessed July 13, 2024, time, 8:00 pm

highlighting their similarities, differences, and points of convergence. This comparative study fosters a deeper understanding of how knowledge is perceived and utilized in both Islamic and scientific traditions. The Quran frequently urges believers to seek knowledge and reflect on the signs of Allah in the universe. For example, Surah Al-Alaq emphasizes the act of learning and acquiring knowledge:

ٱقْرَأْ بِٱسْمِ رَبِّكَ ٱلَّذِى خَلَقَ[6]

Read, ˹O Prophet, ˺ in the Name of your Lord Who created.

The Quran encourages the study of the natural world as a means to recognize the greatness of Allah. Surah Al-Imran states:

إِنَّ فِي خَلْقِ ٱلسَّمَٰوَٰتِ وَٱلْأَرْضِ وَٱخْتِلَٰفِ ٱلَّيْلِ وَٱلنَّهَارِ لَءَايَٰتٍ لِّأُوْلِي ٱلْأَلْبَٰبِ[7]

"Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding."

This Sahih Hadees explains the importance of searching for knowledge:

حَدَّثَنَا عَبْدُ اللَّهِ بْنُ دَاوُدَ،قَالَ فَإِنِّي سَمِعْتُ رَسُولَ اللَّهِ صلى الله عليه وسلم يَقُولُ " مَنْ سَلَكَ طَرِيقًا يَطْلُبُ فِيهِ عِلْمًا سَلَكَ اللَّهُ بِهِ طَرِيقًا مِنْ طُرُقِ الْجَنَّةِ وَإِنَّ الْمَلاَئِكَةَ لَتَضَعُ أَجْنِحَتَهَا رِضًا لِطَالِبِ الْعِلْمِ وَإِنَّ الْعَالِمَ لَيَسْتَغْفِرُ لَهُ مَنْ فِي السَّمَوَاتِ وَمَنْ فِي الأَرْضِ وَالْحِيتَانُ فِي جَوْفِ الْمَاءِ وَإِنَّ فَضْلَ الْعَالِمِ عَلَى الْعَابِدِ كَفَضْلِ الْقَمَرِ لَيْلَةَ الْبَدْرِ عَلَى سَائِرِ الْكَوَاكِبِ وَإِنَّ الْعُلَمَاءَ وَرَثَةُ الأَنْبِيَاءِ وَإِنَّ الأَنْبِيَاءَ لَمْ يُوَرِّثُوا دِينَارًا وَلاَ دِرْهَمًا وَرَّثُوا الْعِلْمَ فَمَنْ أَخَذَهُ أَخَذَ بِحَظٍّ وَافِرٍ" .[8]

Kathir ibn Qays said: I heard the Messenger of Allah (ﷺ) say: If anyone travels on a road in search of knowledge, Allah will cause him to travel on one of the roads of Paradise. The angels will lower their wings in their great pleasure with one who seeks knowledge, the inhabitants of the heavens and the Earth and the fish in the deep waters will ask forgiveness for the learned man. The superiority of the learned man over the devout is like that of the moon, on the night when it is full, over the rest of the stars. The learned are the heirs of the Prophets, and the Prophets leave neither dinar nor dirham, leaving only knowledge, and he who takes it takes an abundant portion.

The comparative study of Islamic and scientific epistemology is significant for fostering a richer, interdisciplinary dialogue between religious and empirical knowledge systems. This exploration reveals the methods by which knowledge is acquired, validated, and applied in both traditions, highlighting their intersections and differences. The Quran's emphasis on seeking knowledge and contemplating the natural world underscores the harmony between faith and reason. Additionally, the teachings of the Prophet Muhammad (ﷺ) further emphasize the virtue and importance of knowledge, portraying scholars as inheritors of prophetic wisdom. Such comparative studies enhance our understanding of how knowledge is

[6]Surah Al-Alaq : 96:1
[7]. Surah Al-Imran3:190
[8]Imam Hafiz Abu Dawud Sulaiman bin Ash'ath, Sunan Abu Dawud(Riyadh: Darussalam Publishers and Distributers, 2008) The book of knowledge, chapter, Regarding virtue of knowledge, Hadith no: 3641.

perceived and utilized across diverse intellectual landscapes, promoting a more integrated and comprehensive view of epistemology.

Literature Review

There are various studies available on the epistemology because the man's main purpose in life is to get knowledge, and there are various ways to get the knowledge that comes in everyday life. The article, “Epistemology as a Scientific Methodology Foundation for the Development of New Theories in the Field of Islamic Education Management,” was written by Iwan Setiawan, Anis Fauzi, and Moh Suhri Rohmansyah in 2023. In this article, the scientific method and scientific truth are part of the scope of the philosophy of science in the new theory of Islamic education management. In order to satisfy human curiosity, scientific activities are carried out in certain ways in this paper.[9] The other one is "THE EPISTEMOLOGY OF ISLAMIC PHILOSOPHY," written by Amril, Ahmad Khoirul Fata, and Mohd Roslan Mohd in 2023. It discusses integrating revelation, reason, and senses in knowledge production from a Qur'anic perspective, addressing the epistemological dichotomy between Western and Eastern Islam.[10] Another article, "EPISTEMOLOGY: AN ISLAMIC PERSPECTIVE," was written by M. Azram in 2012. In this paper, the background of epistemology, different areas of epistemic-like sources, types (revealed and derived), elements in Islam, principles (Unity of Allah, unity of creation, and unity of thoughts), and limitations are discussed. [11]Now there is curiosity to know the points of similarities and differences between scientific and Islamic epistemologies that are discussed, so this research article addresses these research questions.

1-What are the fundamental principles and methods of Islamic epistemology and scientific epistemology?

2-Which aspects of Islamic and scientific epistemology are similar and which are different?

Objective

A few of this article's objectives are:

1-To recognize the basic knowledge requirements of Islamic and scientific epistemologies.

2-To compare and differentiate the epistemological aspects of Islamic and scientific study.

3- To promote critical discussion about the nature, limitations, and truthfulness of knowledge acquisitions in scientific and Islamic contexts.

[9]Iwan Setiawan, Anis Fauzi, and Moh Suhri Rohmansyah. "Epistemology as a Scientific Methodology Foundation for the Development of New Theories in the Field of Islamic Education Management." *International Journal of Asian Business and Management* 2, no. 2 (2023), 153-166. doi:10.55927/ijabm.v2i2.3707.
[10]Amril, Amril, Ahmad K. Fata, and Mohd R. Mohd Nor. "THE EPISTEMOLOGY OF ISLAMIC PHILOSOPHY: A Chronological Review." ULUL ALBAB Jurnal Studi Islam 24, no. 1 (2023), 65-88. doi:10.18860/ua.v24i1.19858.
[11]Azram, M. "Epistemology -An Islamic Perspective." IIUM Engineering Journal 12, no. 5 (2012). doi:10.31436/iiumej.v12i5.240.

Methodology

The research approach used in this work is qualitative. Furthermore, analytical and comparative approaches have been used to compile the information. To address the study issues, a survey of the literature on scientific and Islamic epistemology has been conducted. First, compile relevant documents, lectures, academic interpretations, and empirical research from the two epistemological traditions to address the research questions. Next, contrast the methods used by each culture for obtaining, verifying, and using knowledge. Analyzing the philosophical, cultural, and historical foundations of the similarities and differences and reaching a summary of the findings that sheds light on the ways in which various epistemological systems interact, contrast, or complement one another.

Islamic epistemology

The foundation of epistemology's cognitive discipline is an understanding of the nature and limitations of knowledge. In Islamic studies, epistemology plays a critical role in determining how knowledge is acquired, challenged, and shared within the Islamic culture. Islamic epistemology is based on the teachings of the Prophet Muhammad and the Quran. It gives information and critical thought, and reflects a great deal of weight as a means of understanding the world and preserving moral and ethical norms. By familiarizing themselves with the fundamentals of Islamic epistemology, researchers can approach their work with a heightened awareness of the data sources found within Islam and the methodologies employed to analyze and interpret them. This ensures that research carried out within an Islamic framework is grounded in morality and makes important commitments to share information in a way that is in line with Islamic teachings.[12].Understanding tauhid, which highlights Allah's oneness, is directly related to an understanding of Islam. Islamic customs place further emphasis on the idea that education should be an investigation of the universe, as well as a journey of thought. Knowledge may be acquired through persistent extraterrestrial development, dedication, and goodwill. At its core, the knowledge acquired in Islamic courses is seen as a chance to expand one's worldview.[13]

The basic principle of Islamic epistemology is the acceptance of Divine revelation (Wahy) as the principal source of knowledge. The ultimate source of authority and truth is the Quran, which is considered Allah's message. Indeed, the Quran holds a central and revered position in Islam as the primary source of knowledge and divine guidance. Muslims believe it to be the literal word of Allah as revealed to the Prophet Muhammad (peace be upon him) through the angel Gabriel over a period of approximately 23 years. It serves as the ultimate authority in matters of faith, theology, morality, and law for Muslims worldwide.The Hadith—a collection of the Prophet Muhammad's (peace be upon him) documented sayings, deeds, and endorsements, is the temporary source of Islamic knowledge. They are extremely important in Islam and are crucial to comprehending the Quran. The Hadith provides the basic context, elaboration, and workable applications of the lessons found in the Quran, although the Quran itself is regarded as the infallible word of God and the primary source of Islamic guidance. In

[12]Yazdi, Mehdi H. The Principles of Epistemology in Islamic Philosophy: Knowledge by Presence. Albany: SUNY Press, 1992. Pg 05

[13]Torres Fernández, Antonio. "TAWHID AND ISLAMIC PHILOSOPHY." An-Nahdlah: Journal of Islamic Studies 1, no. 2 (2024), 85-114. doi:10.62261/annahdlah.v1i2.6.

addition, two essential knowledge sources are the perceptive consensus (Ijma) and the analogy (Qiyas).[14]

Islamic epistemology acknowledges that learning may be achieved in a variety of complimentary methods. These methods include connected perception, reason ('Aql), and revelation. Islamic epistemology views reason and judgment as connecting the links between Divine revelation and human knowledge. This ensures that religious beliefs are based on sound reasoning and that moral and legal norms may be properly applied in many situations. Islamic epistemology emphasizes that Adam, the first man, learned the fundamentals of all natural sciences from Allah. This emphasizes the belief that knowledge is a gift from Allah, and thus seeking knowledge may be an important concept in Islamic education.Islamic epistemology highlights Allah as the source of all knowledge, emphasizing the importance of Divine guidance and revelation as well as the belief that all knowledge ultimately originates from the Creator.[15]

Al-Jabri's epistemic modeling is one example. He founded the Bayani, Burhani, and Irfani schools, three distinct denominations of Islamic epistemology. Within the context of Islam, these three epistemological positions offer different ways of understanding and learning.

1-Bayani Reasoning (Naqli):

Bayani philosophy places a strong emphasis on the interpretation of religious texts (Quran, Hadith) and binding rulings (fiqh). Since the word "Bayani" itself suggests explanation, articulation, or choice, clarity and explicitness are crucial in the conveyance of information. It centers on indisputable, obvious truths that come from reliable sources, such as the Quran and the Hadith (the sayings of the Prophet Muhammad). It highlights how important it is to precisely validate and share these sources in order to make definitive decisions about matters of quality and trust. Bayani epistemology examines religious texts using techniques like language analysis and legal reasoning. It also comprises additional fields based on textual sources and the Arabic language, such as Nahwu, Fikih, Ushul-Fikih, Kalam, and Balaghah.[16]

2-Burhani Reasoning (Aqli):

Burhani philosophy is about logic and empirical data. According to this epistemology, the accuracy of statements or explanations must be assessed by rigorous, persuasive reasoning. It emphasizes the use of both deliberate and chance-based methods of collecting information. According to Burhani epistemology, the scope of consideration is not restricted to depending only on specialists in the field of study. This makes it possible to understand the data more thoroughly. In Burhani epistemology examines the importance of reason, logic, and abilities. It is distinguished by well-reasoned arguments and organized, cogent consistency. The center

[14]"Knowledge in the Quran and the Sunnah Leading to an Epistemology." Qeios - Empowering Researchers. https://www.qeios.com/read/DO1WI6. . accessed July 17, 2024, time, 10:22 pm

[15]Sulaiman Lebbe, Rifai. "Islamic Epistemology in the Works of Ashraf Adeel. F. H Malkawi." *SSRN Electronic Journal*, 2021. doi:10.2139/ssrn.3852012.

[16]Ngindana Zulfa, Laila, and Ulya Himawati. "Stagnant of Epistemological Aspect In Islamic Education Studies: Critical Studies In Bayani, Burhani, And Irfani." Proceedings of the 3rd Annual International Seminar and Conference on Global Issues (ISCoGI 2017), 2019. doi:10.2991/iscogi-17.2019.32.

is practical and offers reliable methods for gathering data, thinks and creates items that beyond the physical realm by applying the principles of reason. To generate reasonable theories in several fields, including Physics, Material science, space science, and Finance, one must engage in logical reasoning, research, and discussion.[17]

3. Irfani Reasoning (Kashfi):

Irfani philosophy is about a strong emphasis on intuition while gathering knowledge and magical experiences. It focuses on natural knowledge acquired through engagement and thought from beyond this world and highlights the need for purifying the heart and achieving intimacy with Allah. It uses techniques like contemplation, dhikr (the acknowledgment of Allah), and Sufi practices to encourage people to learn more about the wondrous and faraway worlds. It emphasizes how distinct Irfani is from 'ilm (information) in that it deals with information obtained via coordinated perception that is constrained by reason or change. Irfani epistemology is instinctive; it gathers knowledge quickly and without the need for specific mental processes. The characteristics of this type of knowledge are coordinated experience, the proximity of items within the topic, and a close comprehension devoid of classification. It works in fields like self-reflection, purification of the heart, and Sufi poetry that conveys spiritual truths and emotions.[18]

Framework	Source of knowledge	Nature of ideas	Methodologies	Fields of Knowledge
Bayani reasoning	Revelation (Quran& Hadith)	Clear, Evident, Definitive	Linguistic analysis, Chain verification, Juristic reasoning	Nahwu,Fikih, Ushulfikih,Kalam, and Balaghah
Burhani Reasoning	Reason & Logic	Rational, Analytical, Evidence-based	Logic, Philosophy, Scientific observation	Biology, Physics, Astronomy, and Economics
Irfani Reasoning	Intuition & Spiritual Experience	Direct, Experiential, Transformative	Meditation, Dhikr, Sufi practices	Self-reflection, purification of the heart,Sufi poetry that conveys spiritual truths and emotions.

Key characteristics of Islamic Epistemology frameworks

[17]Rohman, Abdul, Abu Dharin, Mintarti, Noor Asyik, Mulyani M. Taruna, and Mustolehudin. "The Cowongan Tradition in the Logical Interpretation of Bayani, Burhani, and Irfani." Revista de Gestão Social e Ambiental 18, no. 9 (2024), e05525. doi:10.24857/rgsa.v18n9-070.

[18]Prasetyo, Yogi, and Absori Absori. "'Irfâniy as Epistemology Method Sufism Based on Conscience." TSAQAFAH 14, no. 2 (2018), 207. doi:10.21111/tsaqafah.v14i2.1625.

The significance of these epistemologies and their interdependence in Islamic knowledge

Islamic epistemology is important to study because it provides a modified framework. It directs researchers within Muslim social regimes to balance assurance and reasonable demands, ensuring moral judgment through principles such as integrity, benefiting humanity, and avoiding damage. This approach fosters interdisciplinary research by bridging secular and religious divides, enriching academic discourse with comprehensive and interconnected insights. Additionally, Islamic epistemology addresses contemporary issues with innovative solutions grounded in Islamic values, thereby enhancing the overall quality and relevance of scholarly work.

The exploratory method encourages investigating the creation of humans and the universe, utilizing intellectual and sensory resources to explore, examine, and make informed conclusions. The analytical method involves proof, argumentation, and debate through techniques like induction, comparison, and testing, as evidenced by the Quran's extensive use of 'ilm (knowledge), sunan (laws), and verses. Islam promotes skepticism and critical analysis, urging followers to question data and critically evaluate texts and opinions from previous scholars and leaders.[19]Ethical principles inherent in Islamic epistemology, such as truthfulness, benefiting humanity, and avoiding harm, guide researchers to conduct their studies responsibly. Moreover, its holistic nature encourages the integration of various disciplines, leading to a more profound and interconnected understanding of research topics.[20]

These epistemology frameworks emphasize the integration and cooperation between three distinct yet complementary epistemological approaches: Bayani, Burhani, and Irfani. Each of these epistemologies has its own unique characteristics, methodologies, and contributions to the comprehensive understanding of knowledge within Islamic tradition.A researcher's work must be based on these three epistemologies; they cannot be combined into one. It encourages an inclusive and collaborative approach to knowledge where many Islamic studies epistemological traditions participate in fruitful dialogue.[21]

Scientific epistemology

Scientific epistemology is a branch of philosophy concerned with the nature and justification of scientific knowledge. It examines how scientists acquire knowledge about the world, the validity of that knowledge, and the methods by which it is obtained.The scientific epistemology framework encompasses the study of knowledge acquisition, justification, and understanding within the realm of natural science. It emphasizes the importance of empirical evidence and scientific methods in forming knowledge rather than relying solely on a priori reasoning. This framework aligns philosophical methods with scientific approaches, viewing

[19]Abu Bakar, Marina, Saad G. Zaghloul, Ahmed R. Mohamed Ahmed, Mus'ab Yusoff, Muhamad M. Abd Halim, Mohamad F. Md Thahir, and Mohd S. Samsudin. "Islamic Research Methodology in Contemporary Research: Is it Applicable?" International Journal of Academic Research in Progressive Education and Development 11, no. 1 (2022). doi:10.6007/ijarped/v11-i1/12366.

[20]"Epistemology in Islamic Philosophy." You Are Being Directed to the New Muslim Philosophy Website Has Moved to Muslimphilosophy.org.. https://www.muslimphilosophy.com/ip/rep/H019. accessed July 14, 2024, time, 7:05 pm.

[21]Article https://openlibrary.org/books/OL16319396M/Islamic_studies_di_perguruan_tinggi

epistemology as a part of psychology and a chapter within natural science. It underscores the significance of comprehending the natural world and utilizing cognitive tools to gain knowledge about it. Moreover, naturalized epistemology, a form of naturalism, advocates for conducting philosophy in a manner consistent with scientific methods, allowing scientific approaches to inform philosophical inquiries about the norms of inquiry.[22]

A branch of philosophy called scientific epistemology examines the nature and justification of scientific knowledge. It examines the techniques used by scientists to gather data and evaluates the reliability of that information. This area of research looks at issues including what constitutes knowledge, what circumstances make a belief true, and where knowledge comes from—such as perception, reason, memory, and witness. Under fundamental issues like "What makes justified beliefs justified?" and "What do people know?" epistemologists work to answer these in this discipline. They also look at the composition of knowledge and justified belief, i.e., whether justification requires a coherent set of concepts or whether all justified beliefs must spring from underlying beliefs.[23]

Debates on a number of fundamental topics, such as the nature of knowledge, its sources, its structure, and philosophical skepticism, are part of the study of scientific epistemology. Instead of focusing on conventional philosophical definitions and consistency arguments, it emphasizes an empirical approach to better understand how trustworthy ideas are created experimentally and how evolution shapes these processes. Understanding the foundations of scientific knowledge and the complex procedures involved in obtaining and validating it requires an understanding of scientific epistemology.

There is no single scientific epistemology framework, but there are several core principles that are widely accepted by scientists. These principles include some key epistemological approaches in scientific research:

1-Empiricism:

The term empiricism derives from the ancient Greek word empeiria, "experience."[24]Empiricism mainly relies on observation and experimentation as the primary means of acquiring knowledge. This is often phrased as "science is based on evidence."Empiricism is a philosophical theory that holds that human knowledge comes predominantly from experiences gathered through the five senses. In empiricism, knowledge is gained from observation and experimentation, rather than from pure reason or intuition.[25]The scientific method embodies empiricism, as it involves careful observation, then making hypotheses, deriving predictions, and then conducting experiments or

[22]Niiniluoto, I., Matti Sintonen, and Jan Wolenski. Handbook of Epistemology. Berlin : Springer Science & Business Media, 2004. Pg 549

[23]"Logic, Epistemology, Philosophy of Science." The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/logic-epistemology-philosophy-of-science. accessed July 14, 2024, time , 9:00 pm.

[24]"Definition, History, Criticism, & Facts." Encyclopedia Britannica. Last modified September 28, 1998. https://www.britannica.com/topic/empiricism.

[25]"What is Empiricism?" WhatIs.com. Last modified September 7, 2022. https://www.techtarget.com/whatis/definition/empiricism.

observations to test those predictions[26].It comprises the fields of natural sciences and social sciences.

2-Skepticism:

Skepticism is a questioning attitude towards all claims, including those that are already well-established. Scientists are always looking for new evidence that could challenge existing theories.[27]These are not fixed laws, and there is continuous discussion among scientists who study philosophy over how best to apply and understand these concepts. They still provide a fundamental foundation for comprehending the creation and defense of scientific knowledge. Because skepticism questions established beliefs and hypotheses, it has contributed significantly to advancements in philosophy, science, and medicine. It has been beneficial to philosophy throughout its history by limiting assumption and inspiring original solutions to the issues it raises.[28]

3-Rationalism:

Rationalism is a philosophical viewpoint that emphasizes the use of reason and logic in learning and comprehending the surroundings. It states that rather than depending just on sensory experiences, knowledge is largely obtained via reason and logical reasoning. It is characterized by the belief that reality possesses an inherent logical structure and that certain truths exist and can be directly understood by the intellect. There are different interpretations of rationalism, including the focus on the nature of knowledge and how it can be acquired and justified.Rationalism finds a strong foundation in mathematics, where logical deductions and proofs are used to establish truths. [29]

Framework	Source of knowledge	Nature of ideas	Methodologies	Fields of knowledge
Empiricism	Sensory experiences (sight, touch, taste, etc.) and experimentation.	Derived from experience	Observation, Experimentation	natural sciences and social sciences
Skepticism	Questioning and doubt	Suspended judgment	Critical examination, dialectical	Philosophy,Scientific Inquiry&Law and Journalism
Rationalism:	Intellect, Reason and Logic	Innate ideas, a Priori knowledge	Deductive reasoning, Logical analysis, Intellectual intuition	Mathematics, Logic, Philosophy of Mind, Cognitive Science, Ethics

Key characteristics of scientific Epistemology frameworks

[26]"1.1 Methods of Knowing – Research Methods in Psychology." Open Text WSU – Simple Book Publishing. Last modified August 21, 2017. https://opentext.wsu.edu/carriecuttler/chapter/methods-of-knowing/.
[27]"Skepticism (Stanford Encyclopedia of Philosophy)." Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/skepticism/. accessed July 14, 2024, time 10:30 pm.
[28]"Skepticism." Wikipedia, the Free Encyclopedia. Last modified March 27, 2024. https://en.wikipedia.org/wiki/Skepticism
[29]"Rationalism - Meaning, Background, Examples, Types, & Applications." Testbook. Last modified May 28, 2023. https://testbook.com/ias-preparation/rationalism.

The significance of these epistemologies and their interdependence in scientific knowledge

The synergy between empiricism, rationalism, and skepticism is of paramount importance for the progress of knowledge and intellectual exploration. Collectively, they form the cornerstone of the scientific method, where empirical evidence serves as the foundation for formulating hypotheses that are subsequently scrutinized and refined through rational analysis. In fact, combining these approaches fosters exceptional problem-solving and critical thinking abilities. In the educational setting, students who embrace scientific data, employ logical reasoning, and maintain a healthy skepticism acquire the cognitive skills necessary to navigate complex subject matter and draw well-informed conclusions. As a result, more robust and comprehensive understandings are achieved, contributing to the development and acceptance of theories in both philosophical and scientific contexts. The mutualism of observation, logic, and skepticism is what ensures that knowledge is built upon a solid foundation of evidence, coherence, and evaluation—ultimately driving advancement and progress.[30]

Similarities between Islamic and scientific research's epistemological frameworks

Even if Islamic and scientific research have different origins and approaches, there are certain similarities between their epistemological frameworks. The following are the main similarities between these two methods for gaining knowledge:

1-Emphasis on Rationality and Reason:

Islamic scholars have always highlighted the function of reason ('Aql) alongside with revelation in Islamic epistemology.Thinkers like Al-Farabi, Ibn Sina (Avicenna), and Al-Ghazali have underscored the importance of rational analysis and logical argumentation in understanding religious texts and the natural world, while in scientific epistemology The scientific method is fundamentally grounded in rationality and logic. Scientific inquiry relies on formulating hypotheses, using deductive and inductive reasoning, and applying logical principles to test and validate theories.[31]

2-Importance of Empirical Observation

In Islamic epistemology, empirical observation is recognized as a means of gaining knowledge about the natural world. Islamic scientists like Ibn al-Haytham made significant contributions to optics and experimental science by valuing observation and experimentation, and in scientific epistemology, empirical evidence is the cornerstone of the scientific method.

[30]Iwan Setiawan, Anis Fauzi, and Moh Suhri Rohmansyah. "Epistemology as a Scientific Methodology Foundation for the Development of New Theories in the Field of Islamic Education Management." *International Journal of Asian Business and Management* 2, no. 2 (2023), 153-166. doi:10.55927/ijabm.v2i2.3707.

[31]Kamali, Mohammad H. "Islam, Rationality and Science: A Brief Analysis." Contemporary Issues in Islam and Science, 2017, 75-94. doi:10.4324/9781315259475-3.

Observations, experiments, and measurements are crucial for developing and testing scientific theories.[32]

3-Structured Methodologies

In Islamic epistemology, Islamic scholars developed systematic approaches to knowledge, such as Ijtihad, which involves rigorous independent reasoning and analogical deduction (Qiyas) to derive legal and theological conclusions. As stated in Scientific Epistemology, the scientific method itself is a structured process involving steps such as observation, hypothesis formation, experimentation, analysis, and conclusion, ensuring a systematic approach to discovering knowledge.

4-Integration of Different Types of Knowledge

In Islamic epistemology, Islamic thought does not separate religious knowledge from the natural sciences. It views all knowledge as interconnected, stemming from the unity of Allah (Tawhid). This holistic approach encourages the integration of theological insights with empirical observations, whereas in scientific epistemology, modern science, especially in interdisciplinary fields, often integrates knowledge from various domains (e.g., biology, chemistry, and physics) to develop comprehensive understandings of complex phenomena.

5-Commitment to Truth

In Islamic epistemology, the pursuit of knowledge in Islam is seen as a way to understand the Divine truth and the workings of Allah's creation. Scholars are encouraged to seek truth and wisdom in all aspects of life, whereas in scientific epistemology, the scientific endeavor is driven by the quest for truth. Scientists aim to uncover objective truths about the natural world through rigorous inquiry and validation processes.[33]

6-Ethical Considerations

In Islamic epistemology, ethical principles guide the pursuit and application of knowledge. The use of knowledge should align with Islamic ethical values, promoting justice, compassion, and societal well-being, though in scientific epistemology, ethical standards in scientific research ensure integrity, accountability, and the responsible use of knowledge. Principles like honesty, objectivity, and respect for subjects are central to scientific practice.[34]

7-Historical Interactions and Mutual Influence

In Islamic epistemology, during the Islamic Golden Age, Islamic scholars preserved, expanded, and transmitted knowledge from various cultures, significantly influencing the development of modern science. Like in Scientific Epistemology, the Renaissance and subsequent scientific revolutions in Europe were influenced by earlier Islamic scholarship,

[32]Montazeritabar, Marziyehsadat. "Epistemological Foundations of Natural Sciences in Islam." *Open Journal of Philosophy* 09, no. 02 (2019), 63-71. doi:10.4236/ojpp.2019.92006.
[33]Montazeritabar, Marziyehsadat. "Epistemological Foundations of Natural Sciences in Islam." Open Journal of Philosophy 09, no. 02 (2019), 63-71. doi:10.4236/ojpp.2019.92006.
[34]Bhandari, Pritha. "Ethical Considerations in Research | Types & Examples." Scribbr. Last modified June 22, 2023. https://www.scribbr.com/methodology/research-ethics/.

illustrating a historical interplay where knowledge from the Islamic world contributed to the growth of modern scientific thought.[35]

The differences between Islamic and scientific research's epistemological frameworks

The epistemological frameworks of Islam and science differ greatly, even if they have many things in common. These variations result from their different origins, underlying concepts, and approaches. The following are the main distinctions between these two methods of knowledge understanding

1-Source of Ultimate Knowledge

In Islamic epistemology, the ultimate source of knowledge is Divine revelation (Wahy), as found in the Quran and Hadith. While reason and empirical observation are important, they are subordinate to and must align with the revealed knowledge. In scientific epistemology, the primary source of knowledge is empirical evidence derived from sensory experience and experimentation. Scientific knowledge is based on observations of the natural world and is independent of religious beliefs.

2-Role of Theology

Theology has a major role in Islamic epistemology and forms its foundation. Understanding Allah's will and creation is the framework in which knowledge is regarded, whereas scientific epistemology often keeps clear of religious assumptions in favor of measurable and observable events. It seeks to provide reasonable explanations for events instead of turning to otherworldly interpretations in order to explain them.

3-Validation of Knowledge

Islamic epistemology holds that knowledge can only be confirmed by combining rational unity, empirical observation, and obedience to divine revelation. Knowledge is also validated by the consensus of academics (Ijma) and analogical reasoning (Qiyas). The scientific method—which comprises hypothesis testing, experimentation, peer review, and reproducibility—is used by scientific epistemology to validate knowledge. The main requirements for confirmation are empirical data and logical consistency.[36]

4-Epistemological Hierarchy

Islamic epistemology begins with revelation from Allah and places reason and empirical observation at the base of a hierarchical framework for understanding. The idea that knowledge is inherently hierarchical is supported by the hierarchy of knowledge theory. This theory holds that human reason and observation are instruments for understanding ultimate

[35]Lumban Gaol*, Ebeneser L. "Islamic Scholars' Influence on Western Scientific Discourse During the Medieval Era." Riwayat: Educational Journal of History and Humanities 7, no. 1 (2024), 280-294. doi:10.24815/jr.v7i1.37094.

[36]Ernawati, Tuti, and Salminawati Salminawati. "Epistemology of Islamic and Western Perspectives (Teaching The Concepts of Scientific Thinking for Elementary-Age Children)." *Jurnal Basicedu* 6, no. 2 (2022), 2286-2294. doi:10.31004/basicedu.v6i2.2440.

truth, which is exclusively found in the Divine. Scientific epistemology hierarchy places the truth as the base.[37]

5-Purpose and Goals of Knowledge

Islamic epistemology holds that seeking knowledge is a means of understanding Allah's creation, fulfilling religious duties, and growing ethically and spiritually. It is believed that knowledge is a means of attaining a wonderful, moral life directed by Divine direction. Scientific epistemology holds that the main objective of a logical request is to include it with the norms of the ordinary world. While ethical considerations are important, the pursuit of scientific knowledge is often driven by curiosity, practical application, and technological advancement.

6-Approach to Uncertainty and Doubt

In Islamic epistemology, while reason and observation are valued, they are ultimately subject to the certainty provided by revelation. Doubt is addressed through scholarly consensus and the interpretation of religious texts, but in scientific epistemology, doubt and uncertainty are integral to the scientific process. Hypotheses are continually tested and revised based on new evidence, and scientific knowledge is always seen as provisional and subject to change.

7-Integration of Different Knowledge Areas

In Islamic epistemology, there is an integrated view of knowledge where religious, philosophical, and scientific knowledge are seen as complementary parts of a unified whole. All knowledge is ultimately linked to understanding Allah’s creation; however, in scientific epistemology, while interdisciplinary approaches are valued, there is a clearer distinction between different fields of study (e.g., physics, biology, and sociology). Each field has its own methodologies and epistemological assumptions.[38]

Conclusion

Analyzing the Islamic and scientific epistemological frameworks reveals various methods of knowledge acquisition and comprehension, while also illustrating distinct differences and commonalities. Scientific epistemology primarily relies on empirical evidence and logical reasoning, without considering theological concerns, whereas Islamic epistemology integrates divine revelations with rationality and empirical observations.

Both approaches emphasize the importance of reasoning, empirical observation, systematic techniques, and a commitment to truth. They also promote moral values in the pursuit and application of knowledge and encourage the integration of diverse knowledge. The similarities between the two frameworks suggest that they can coexist despite their differences, and can lead to a more comprehensive understanding of the principles and procedures that underpin scientific and Islamic research.

Islamic epistemology posits that data is fundamentally interconnected, leading to the understanding of Allah's creation. On the other hand, scientific epistemology methodically

[37]Yazdi, Mehdi H. The Principles of Epistemology in Islamic Philosophy: Knowledge by Presence. Albany: SUNY Press, 1992.
[38]Hassan, Dr. M. Kamal. "“ISLAM AND KNOWLEDGE”." Lecture, IIUM, January 2022

examines and acknowledges the realities of the physical world, emphasizing empirical evidence and reason. Recognizing epistemic frameworks facilitates comprehension of inquiry techniques and cultural norms. The basis for developing more comprehensive methods of data generation lies in evolutionary curiosity and universal discussions. Engaging with multiple epistemic perspectives fosters thoughtful dialogue, innovative solutions to contemporary problems, and deeper understanding of complex mysteries.

In summary, understanding the philosophical foundations of different data-generation methods necessitates familiarity with Islamic and scientific epistemology. This suggests that both approaches are working toward a common goal and have made progress, leading to a comprehensive understanding of the subject matter while considering multiple viewpoints. Moreover, this understanding will influence generalizations about the differences between information systems and their potential to promote human welfare and academic research. These frameworks are critical for understanding information from an Islamic perspective, analyzing it logically, guiding the direction of the study, evaluating the findings, closing conceptual gaps, and solving contemporary problems.