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ASSEMBLING SCIENCE DICHOTOMY OF ISLAMIC AND WEST EPISTEMOLOGY PERSPECTIVE

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Abstract: *The dichotomy of science has been going on for a long time, resulting in knowledge originating from Islamic civilization and Western civilization. This dichotomy ultimately requires scientific integration in various scientific disciplines and educational institutions. Whereas the source of all knowledge comes from God. The purpose of this article is to find a meeting point for the epistemology of Islamic scholarship (al-Qur'an) and the West so that in the end there is no dichotomy of knowledge. This research is normative because it examines the texts of Islamic and Western civilizations to find a meeting point for the scientific epistemology developed by the two civilizations. The results showed that the development pattern of scientific epistemology in the West tended to be dominated by reason and sensory experience (rationalism and empiricism). however, the last few periods of scientific epistemology in the West have developed intuitive methods that ultimately minimize or at least not mainstream the roles of reason and sense experience. This concept is similar to the Islamic epistemology system which carries reason (burhani), senses (bayani), and heart ('irfani).*

Keywords: *Dichotomy, Islam, Science, Western.*

INTRODUCTION

Editorial "science" according to etymology comes from Arabic, namely: *'i-l-m* which means understanding the essence of something accurately and factually. While the definition of science in English is called science. This scientific editor is in line with the term *ma'rifah* which has the meaning of wisdom/knowledge. However, the terms *al-'ilm* and *al-ma'rifah* are generally different in their application to sentence editors. *Al-ilm* is usually used to understand cases that have a general or universal character *(al-kulli)*, while the word al-ma'rifah is used to understand cases that have a part or particular character *(al-juz'i)*. The term al-ilm itself is a mas}dar form of *'alima, ya'lamu, 'ilman.*

The holy book of the Qur'an mentions the editorial of al-'ilm more than 100 times, while the derivative or derivation of the word al-'ilm is mentioned about 744 times in the Qur'an. This indicates the urgency of science in the cycle of human life activity. Then the treatise ilahiyah which was first received by the Prophet Muhammad also indicated the urgency of science, by explaining the three main principles of science in the form of the command to read, the pen (qolam), and science for the survival of mankind.

Therefore, when the origin of Adam was created, the Qur'an interpreted clear how Allah taught Adam knowledge related to law or the environment. It is on this basis that angels and jinn are commanded to honour Adam. As the word of God contained in the letter al-Baqarah (2) : 31

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنْبِئُونِي بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ .

"He taught Adam all the names (of objects), then presented them all before the angels, then said, 'Name me the names of all those things if you are true people.'"

Jalal al-Din al-Suyuti (died 911 H / 1505 AD) interpreting the verse by understanding (teaching) the names of objects into Adam's heart by Allah SWT. So that even the angels recognize the knowledge possessed by Adam. While Imam al-

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Bagawi said there was an attitude of "feeling more important" shown by the angels towards the creation of Adam. This is because the Angels were created first and knew everything before Adam (al-Bagawi, 1986). Imam al-Baidawi mentions that the creation of Adam and the different limbs of the body has the capacity to achieve various models of insight, whether they are transcendental, empirical, or imaginary. The existence of an order to honour Adam is a form of respect for the knowledge he has.

In another verse, Allah determines the privileges of those who have scientific insight, as in the letter al-Mujadalah (58) : 11

يَا أَيُّهَا الَّذِينَ آمَنُوا إِذَا قِيلَ لَكُمْ تَفَسَّحُوا فِي الْمَجَالِسِ فَافْسَحُوا يَفْسَحِ اللَّهُ لَكُمْ ۖ وَإِذَا قِيلَ انْشُزُوا فَانْشُزُوا يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ ۚ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ

"O you who believe, when it is told to you: "Be spacious in the assembly", then expand it, surely Allah will give you freedom. And when it is told: "Stand ye", then stand up, surely Allah will raise the believers among you and those who have been given knowledge by several degrees. And Allah is Knowing of what you do."

Based on the study of the text above, some events need to be emphasized, that when discussing the editorial of science, religion (al-Qur'an) classifies between the editor of *'allama* and *utu al-'ilma*. The initial editor emphasized that knowledge was obtained spontaneously from Allah without any research or exploration efforts (normal procedures for seeking knowledge). This phenomenon in religious language is called *al-'ilm al-laduni'*. The procedure for further seeking knowledge must be carried out with various efforts based on the object and subject of the science involved. So it is not surprising then that the Qur'an applies the *utu* editorial, which means observation. In every scientific observation procedure, there must be a researcher and the object being studied, this event is supported by the hadith of the Prophet which defines the synonym of the word *utu* with *t}alab*, which means observation or research. The knowledge obtained by this scientific method by the majority of scholars is called *al-'ilm al-kasbi*. This study will be discussed in the next term.

The editor of *'ilm* and its various forms have been mentioned by the holy book al-Qur'an. The editorial mention of *'ilm* or the like can be described in the following statements: ‘ilmu (105 times), ya'lamu (215 times), 'alima (35 times), a'lam (49 times), 'allama (12 times), yu’allimu (16 times) ‘ulima (3 times), ‘ulama’ (163 times). Based on the word 'ilm and its derivation, it can be seen the meaning of each which includes: knowledge, who knows, knowledgeable people and others (Raharjo, 1990).

To obtain a definition related to science in the text of the Qur'an, it is not just about exploring vocabulary that comes from the word 'ilm, because the definition of "knowing" is not necessarily represented by the word. At least various editors have similar definitions, such as: hikmah, 'arafa, basirah, and others.

The dynamics of scientists and science in the Western world have made quite boisterous progress. During the Ancient Greek period, only one scientific methodology was obtained in the form of reason. As a result, there was only one way of thinking (as proposed by Aristoteles), in the form of deductive reasoning. This deductive method is a method of thinking that is obtained and analyzed from general-style assumptions *(kulli)* and conclusions that are specific *(juz'i)*. The deductive method of thinking generally uses a thinking pattern called a syllogism. More simply, the definition of deductive thinking is a method of thinking that examines general events first and then is linked in certain sub-sections.

Admittedly or not, the development of science in the West experienced its peak during the Renaissance. However, the triumph of Western civilization cannot be separated from the problems and prolonged turmoil. The problems in question are cases of global disharmony and environmental crises. The rejection of revelation as a source of knowledge has negated the religious point of view regarding the system of natural and human life, so Sayeed Hosein Nasr called Western civilization to worship the "holiness" of reason and nature. This article will examine the development of science in Islamic (al-Qur'an) and Western epistemology, and will

describe the meeting point of science from the perspective of Islamic and Western epistemology. This concept resulted dualism in education, so that the terms religious schools and public schools, religious campuses and public campuses (Hakim, 2017).

RESEARCH METHODS

This article was compiled through a descriptive approach by researching and accurately explaining the data sources used. This type of research is normative by using literature as a research source (Zed, 2004). So books or research related to this article is collected and analyzed carefully and in-depth. This article will examine the development of science in the West and Islam, the aim is to find out whether there is a correlation between the two, thereby minimizing the dichotomy of science.

Through a qualitative approach (Amzar, 2001), this article will examine the methods of developing science in the West and Islam in various related literature or books. The data is then analyzed using scientific logic which produces descriptive data from the literature sources studied. Thus this research will be a solution to the problems studied, especially those related to the dichotomy of science.

EPISTEMOLOGY CONCEPTS IN PHILOSOPHY STUDY

According to the perspective of philosophical studies, three important categories can't be separated in the preparation of scientific studies, including the objectives of science/knowledge (ontology). The methods, means, and processes used in obtaining knowledge (epistemology), and the function of science/knowledge (axiology). This article emphasizes the second concept, namely the concept of epistemology. The definition of epistemology in a language perspective is a combination of two Greek phrases, in the form of episteme which means method, and logos which means structured knowledge. So it can be

concluded that epistemology is a method or means used to systematically acquire knowledge.

Epistemology is a branch of science from the philosophy that examines the purity of the method, structure, and validity of science. As for the definition of epistemology in terms, as stated by Bakker and quoted by Miska Muhammad Amien, that epistemology has similarities with methodology, which is assumed to be similar to the philosophy of science (Amin, 1998). Epistemology also examines human knowledge about science according to the level and scale of its truth (Hoesin, 1996). Meanwhile, epistemology can also be interpreted as a part of philosophy that examines human knowledge in various forms and benchmarks for its validity.

So epistemology has a relationship with philosophy because it is a branch of science that discusses the nature and validity of the truth of science. In addition, epistemology also has a relationship with the method, because epistemology is one way that is studied by humans in obtaining essential knowledge. Epistemology is also associated with a system that functions to find facts about the validity of science.

Muslim scholars studied epistemology seriously and comprehensively in the past. These scholars recognize the urgency of interpreting science to find the truth, they classify science and describe the sources of knowledge and the methods used. In fact, they also describe the interrelation and hierarchy of the sciences. This phenomenon shows the existence of an advanced and developed Islamic civilization during the heyday of science in the past.

Departing from the facts that have been explained, there is a significant gap between the methods of the epistemology of science in Islam and epistemology of science in the Western perspective, the difference is related to theological issues to explore science absolutely. Therefore, the epistemology of science in an Islamic perspective emphasizes empirical facts in the form of experience or reality that must

be accompanied by a complete theological basis. Meanwhile, Western epistemology, as understood by some people, puts forward reason and experience in exploring science.

The search for various knowledge using eternal universal values is the main foothold in the development of civilization echoed by Islamic epistemology. So Islamic epistemology is a method that is considered complete and has flexibility and comprehensiveness in reaching knowledge. Because Islamic epistemology is supported by a variety of empirical data and is not influenced by intuitive knowledge, metaphysics or knowledge obtained from sources of revelation (al-Qur'an and Hadith).

SCIENCE IN THE PERSPECTIVE OF ISLAMIC EPISTEMOLOGY

The Islamic view (read: al-Qur'an) about knowledge is clearly illustrated at the beginning of the revelation that was revealed to the Prophet Muhammad, namely:

اِقْرَأْ بِاسْمِ رَبِّكَ الَّذِيْ خَلَقَۚ. خَلَقَ الْاِنْسَانَ مِنْ عَلَقٍۚ اِقْرَأْ وَرَبُّكَ الْاَكْرَمُۙ الَّذِيْ عَلَّمَ بِالْقَلَمِۙ عَلَّمَ الْاِنْسَانَ مَا لَمْ يَعْلَمْۗ

"Read in the name of your Lord (Allah) who has created. He has created man from a lump of 'alaq. Read and your Lord is the Most Gracious. (Dial) Who teaches man by qolam, teaches man what he does not know (QS Al-'Alaq [96]: 1-5)"

The verse does not clearly describe the object of the reading being studied because Allah through the Qur'an wants his servant to study any reading provided that the reading is based on bi ismi Rabbik, which has useful values for humanity and the natural surroundings. Iqra' can be defined as an order to read, explore, research, know the typology of something, study the environment, read the signs of the times, whether written or not. Then the object of the command to read covers all aspects that can be reached by humans.

Departing from the first revelation received by the Prophet, there are two kinds of typologies of how to acquire knowledge and its development. *First*, Allah

gives knowledge to humans through the efforts made in the form of a pen (study) or the like. *Second*, Allah gives knowledge to humans through His will and without any human effort. The first method that imparts knowledge to humans accompanied by various efforts is called *'ilm kasbi*. While the second method is called *'ilm laduni*. There are Muslim scholars themselves who are still debating about *'Ilm Laduni* science as a source of knowledge. Even though they have different definitions and are still being debated, at least two of these sources of knowledge come from Allah SWT.

As mentioned earlier, *ilmu kasbi* knowledge is a type of knowledge that is obtained by humans and comes from their efforts in living the play of life as well as through various efforts made to bring benefits to life. For example, knowledge about activities that cannot be separated from human life, such as the alternation of day and night, the rising and setting of the sun and moon and various other natural events. The second example is the knowledge gained by humans based on the efforts made, in the form of studying, researching, listening to explanations or reading various existing knowledge information.

The command to read in the first revelation the khitob is not only to the Prophet but to all mankind. The material that is read or studied can be in the form of the written word of God (Qur'aniyah verse) or the unwritten word of God (Kawniyah verse). Studying the verses of the Qur'an will get results in the form of religious sciences such as monotheism, fiqh, morals and the like. As for studying the kawniyah verses, you will gain scientific knowledge such as biology, physics, astronomy, chemistry and various derivatives (Rahman, 1988).

Therefore, it can be formulated if the *science of kasbi* comes from the verses of the Qur'an and *kawniyah*, if humans want to obtain it, it must be accompanied by real efforts and optimal abilities. So that the repetition of the *Iqra'* editorial in the first revelation is intended as an effort to command to explore and explore science, then humans are also ordered to teach their knowledge to each other for the benefit

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of nature and hope that there will be benefits obtained in the knowledge that has been studied (Nadjamuddin, 2010).

As for *Laduni science* is one type of knowledge that is obtained by humans without learning methods and is a source of knowledge recognized by Islam. In the author's perspective, *laduni science* is an abundance of knowledge that comes from outside human endeavours as a gift from God to him, whether used for personal interests or the interests of the environment and humans around him.(Salim, 2004) The legitimacy of laduni science is contained in the al-Kahf (18): 65. This division effort is carried out because according to the perspective of the Qur'an there are several things that are visible but cannot be explored by human ability or effort.

Departing from the division of knowledge that has been described previously, in general, the objects of knowledge in the Islamic perspective can be classified into two important parts, namely the material realm and the immaterial realm. Therefore, Muslim scholars offer a different dimension of knowledge and are called al-hadarat al-ilahiyah al-khams to explain the overall hierarchy of the reality of existence. The five things are: First, nature nasut. Second, Malakut. Third, natural jabarut. Fourth, natural lahut. and Fifth, nature hahut (Shihab, 1996). Humans (by Allah's permission) have the potential to develop the five sciences above. This is indicated in the al-Nahl (16) : 78

وَاللّٰهُ اَخْرَجَكُمْ مِّنْۢ بُطُوْنِ اُمَّهٰتِكُمْ لَا تَعْلَمُوْنَ شَيْـًٔاۙ وَّجَعَلَ لَكُمُ السَّمْعَ وَالْاَبْصَارَ وَالْاَفْـِٕدَةَۙ لَعَلَّكُمْ تَشْكُرُوْنَ

> *"And Allah brought you out of your mother's belly in a state of not understanding everything, and He gave you hearing, sight and conscience so that you would be grateful."*

Based on the editorial fragment of the verse above, the famous Indonesian commentator, M. Quraish Shihab said that there are four tools used in understanding the five scientific indicators in an Islamic perspective, namely: hearing (*as-sam'*), sight (*al-basaran/nadar*), reason (*al-'aql/al-fikr)* and heart (*al-qalb/al-fu'ad*). These four aspects constitute the epistemology of science in Islam. The

explanation is as follows: First, Hearing (*as-sam'*). The practice of this method is to draw on the usefulness values of previous research or contemporary research. This method received validation from Q.S. Qaf (50): 37

إِنَّ فِي ذَٰلِكَ لَذِكْرَىٰ لِمَنْ كَانَ لَهُ قَلْبٌ أَوْ أَلْقَى السَّمْعَ وَهُوَ شَهِيدٌ

The verse above justifies that hearing is one of the scientific methodologies in Islam, even in that verse hear is parallel to the heart and the martyr. The process of teaching and listening to explanations is a necessity for the continuity of science in Islam. Therefore, Islam condemns the 'alim' who hide their knowledge by not wanting to teach others (Adim, 1973). Then the knowledge referred to here is owned by humans together. More than that, the concept of as-sam' also requires a willingness to accept the truth based on clear scientific arguments and avoid denouncing the truth based on scientific knowledge (Misbahuddin, 2015).

Second, vision (al-basar/an-nadar). The second methodology to understand the nature of truth is to observe, pay attention or observe. Nadara editor originally meant seeing through the naked eye. While observing or paying attention has a broader meaning, and can be done using the senses of sight, hearing, feeling or even using reason to think. One of the French philosophers, Pierre Simon Laplace said: I mistrust anything but the direct result of observation and calculation (Bakker & Zubair, 1990). Through the activity of seeing or observing, humans can obtain the validity of objects of knowledge or material things that are sensory. The Qur'an uses the nad}ara or bas}ara editorials more than 30 times in the Qur'an (Baqi, 1980).

While the verse of the Qur'an that instructs to observe His creation is al-A'raf: 185:

أَوَلَمْ يَنْظُرُوا فِي مَلَكُوتِ السَّمَاوَاتِ وَالأَرْضِ وَمَا خَلَقَ اللَّهُ مِنْ شَيْءٍ وَأَنْ عَسَى أَنْ يَكُونَ قَدِ اقْتَرَبَ أَجَلُهُمْ فَبِأَيِّ حَدِيثٍ بَعْدَهُ يُؤْمِنُونَ

The verse above indicates that humans should observe the creation of the

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heavens and the earth as well as anything related to them. Observations on God's creation as in the example above are synchronous and for the existence of useful human life on earth. Then the Qur'an also hints about the urgency of observation for human interests that are essential. Through the texts of the Qur'an that examines life after death (Q.S. al-Hasyr [59]: 18), humans are encouraged to make observations that are of good value and have benefits for the environment or other humans. This term is one of the differences between the epistemology of science in Islamic and Western perspectives.

Third, reason *(al-'aql/ al-fikr). Aql* etymologically means to restrain, it can also be interpreted to bind. The Qur'an mentions that the majority of al-'aql is expressed as a form of a verb, in the form of ya'qilun (22 verses) and ta'qilun (24 verses). The word al-'Aql in the form of a verb means tafakkur or thinking. This definition is by the al-Baqarah verse 242, where Allah SWT gives signs of His power in human life so that they want to reflect and think on the greatness of God and create knowledge that brings benefit to the people and the universe.

Intellect can acquire knowledge as long as it is functioned based on the right frame of mind, this right mindset is called logic. The dominant scientific methodology using reason is called demonstrative methodology or burhani. Intellect is able to explore the intellectual order that is sensory. Musa As'arie said that reason has a correlation with the value order of knowledge that is both material and spiritual (has multiple dimensions). al-Kindi mentions that knowledge obtained through the medium of reason will have a universal and not partial character (Asy'arie, 1999).

In addition to mentioning the word *al-'aql* with the editor of the verb *ya'qilun* or *ta'qilun*, Allah also uses the redaction of *al-fikr* as a form of thinking activity. The word *al-fikr* through its various forms *(tafakkara or tafakkarun)* is mentioned 16 times in the Qur'an. *Tafakkara and tafakkarun* editors themselves have the meaning of thinking or thinking. Through his commentary, M. Quraish Shihab explained that

the editorial of *al-fikr* has several meanings: *First,* to dig up something until what is excavated is visible. *Second,* pound until soft. *Third,* clean the clothes (brush) until the stain is clean. Editorial *al-fikr* can be used for an abstract matter, such as the prohibition of thinking about the substance of God. He (Allah SWT) indeed cannot be described in someone's imagination so it is very difficult, or even impossible to understand. However, humans can think about Allah's creation which is abstract (Shihab, 1997).

The editor of *al-fikr* has a fairly broad meaning, which is related to sincerity, earnest effort, and tirelessness to research or even explore all parts of God's creation. Then for that effort will eventually get the essence of the universe created by Allah. Scientists who are experts in exploring the universe will find the structure of atoms, as well as neutrons and several other particles in the living system of the universe.

Fourth, the Heart (al-qalb/al-fu'ad). The definition of the editor of al-qalb is the heart, the word al-qalb is mentioned 101 times in the Qur'an. Epistemology of science using the heart is called intuitive methodology or 'irfani. The object of study in the irfani method will be presented in one's soul. Therefore, a scientific methodology like this is called a methodology or science of huduri (knowledge by presence) (Khasinah, 2013). Intuition knows some knowledge beyond the reach of reason. This is because the method of intuition has features when compared to reason. However, in the Islamic perspective, there is no dichotomy of sources of knowledge, all kinds of knowledge must be based on bi-ismi Rabbika.

In Islam there is the concept of 'ilm nafi' (knowledge that provides benefits). The benefit here is a benefit for the humanity, in the form of personal or collective, as well as for the whole universe. Therefore, the term science is for the shake of science (science developed for the purposes of science it self) which was developed by Western civilization does not apply in the perspective of Islamic epistemology. The concept desired by Islam is to develop a science for the benefit of humans and

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the entire universe ('ilm nafi'), because humans were created as representatives of God on earth and also given the authority as His caliph.

If read the concept of khalifah in the Qur'an, then the authority to become khalifah must be accompanied by several conditions, including: First, all existing sources of knowledge must be studied and researched to produce new studies or knowledge (taskhir). Second, science must be researched and observed with the aim of providing benefits to the universe inhabited by humans (istimar). Third, science must be studied and used for justice and social relations by creating universal unity and equality and without limiting personal or individual interests ('adl). Fourth, science must be utilized and studied by referring to the civilization of society and the welfare of society (istislah).

The concept of science from the perspective of Islamic methodology is not used and studied with the aim of introducing dehumanization, materialism, hedonism-dehumanization, unemployment, and using the environment haphazardly for profit. Exploration as above is a form of activity that oppresses and eliminates society and the environment as well as a form of futile action.

Therefore, the philosophers and Muslim scholars based on the epistemological values mentioned above, have produced works that are beneficial for the environment and human life in their time or even today. Various Muslim philosophers (scientists) who have eternal contributions in human life and have sustainable benefits, including Jabir bin H}ayyan (721-815 AD) as the founder of the chemical sciences; Al-Khawarizmi (780-850 AD) as a pioneer in the field of arithmetic. The algorithm is one of the branches of science adopted from its name; next is Ibn Al-Haitam (965-1040), an expert in the field of optics as well as a famous astronomer; then there is Ibn Sina (980-1037), his works in medicine and pharmacy are still used as the main reference, not only in the Islamic world but even to the West; and Abu Al-Qasim al-Zahrawi (936-1013), a pioneer in the field of surgery; and Ibn Khaldun (1332-1406), an expert in the field of historical philosophy.

Acculturation of revelation (text) with empirical experience (reason and nature) in scientific development in the Islamic world at that time was actually adopted by Western civilization in the 16th century period. However, scientific development in the West was carried out by abandoning religious moral values. As a result, in the West at that time, positivism, materialism, pragmatism, and atheism emerged (Kasule, 2007).

The concept of scientific methods offered by Islam are values that should be applied by scholars, because the methods offered by Islam are not merely theories or concepts that are not realized. The scientific method actually has a coherent and undeniable validity. The concept of an-nadar which is interpreted by observation is in line with the concept of Bayani (observation). Some Muslim scholars made observations that produced a quite useful magnum opus, for example, al-Tusi with his observatory, then there was Ibn Haitsam who made observations in the field of optics. Furthermore, the presence of reason as one of the epistemologies in Islam is also undeniable. Even reason is used as the main instrument in the development of science in the West, until finally producing the ideology of rationalism popularized by Descartes, Leibniz, and Spinoza.

Then through the concept of al-qalb produces an intuitive method which was popularized by Western scholars by Henry Bergson. He called this intuitive concept a means to obtain knowledge directly. This *intuitive* method in Islam is also called *irfani*, Muhammad Iqbal as quoted by Khusnul Khotimah, said that the 'irfani method is more comprehensive than other methods (Khotimah, 2014).

SCIENCE IN THE PERSPECTIVE OF WEST EPISTEMOLOGY

Scientific civilization in the West was influenced by Greek Roman culture. The style of epistemology of science in the West is different from the pattern of epistemology circulating in other parts of the world. The characteristic of science in the West is more emphasis on rational-empirical aspects and abandons or does

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not recognize all irrational or non-rational knowledge. The style of science in the West separates and does not accept the influence and function of religion in an effort to study, develop and produce knowledge. There is no collaboration between rational-empirical science and religion.

The development of methodology (epistemology) in the West is categorized into several parts, namely: the era of classical philosophy, the era of Hellenic philosophy, the Middle Ages, and the modern era. Plato (427–437 BC) and Aristotle (322–384 BC) are ancient philosophical figures in the development of Western epistemology. Through his work entitled Meno and the Republic, Plato calls the entity of knowledge as something that exists (what is existent). Everything that is not visible does not belong to science. Then Aristotle eliminates Plato's ideas by elaborating abstractions, thinking analysis and the principle of non-contradiction. He builds a coherent epistemology of logic and aims to find a coherent methodology of thinking and formulating appropriate arguments (E. C. (ed), 1998).

Then during the Hellenic philosophy, it is known that there are three major groups of thinking, namely: Epiquarianism, Skepticism, and Stoicism. First, the school of epiquarinism assumes all human perceptions are true. Second, the flow of skepticism. This flow is the antithesis of the school of Epiquarianism. The concept of the object of science is not absolute truth, the object is said to be true if it is tested with truly valid knowledge. Third, the flow of stoicism. namely the school emphasizes "cognitive impressions". Someone who has knowledge can be said to be right if there is an explicit alignment of cognitive impressions.

Thomas Aquinas (1225 – 1274 AD) and William Ockham (1288 – 1348 AD) became pioneers of the study of Western epistemology in the Middle Ages. The ideas raised by both of them became important studies by Western scientists. Thomas Aquinas pioneered true knowledge called "scientia", which is a science that is limited and bound by premises expressed by a demonstrative syllogism. The main concept in demonstrative syllogism, according to Thomas Aquinas, is essential

truth. The concept put forward by Thomas Aquinas contradicts the argument of William Ockham. The truth of science does not have to rely on the ultimate truth, the truth of science according to Ockham is a collectively recognized truth (knowledge of contingent truths) (ed., 1999).

Descartes (1596–1650 AD) with the philosophy of rationalism has colored the development of Western epistemological thought in the modern period. He doubts all elements of science and considers premises in any form to be false, at least their validity and validity are still doubtful. In order to dispel these doubts, Descartes offers two methods. First, everything requires certainty of truth (criteria of truth) including ideas or ideas that are rigid and definite (distinc). Second, the doubt can be accepted after a scientific study is carried out that the truth of knowledge is real (cogito ergo sum).

Spinoza (1632–1677 AD) had a different concept from Descartes. According to him, the validity of a science must be studied through the consistency of the entities of science. Spinoza does not require the distinction and transparency of knowledge (distinct and clear). Meanwhile, every true science depends on the subject (knower). Because the subject is the first party who can classify the truth of science based on external knowledge and experience. The above definition was put forward by Leibniz, a philosopher who died in 1716 AD (E. C. (ed), 1998).

John Locke (1632-1704 AD) defines science as a perception of truth or untruth that comes from two sciences (Knowledge is the Perception of the Agreement or Disagreement of two Ideas). However, the science in question is not science that is in harmony with what is understood by rationalists, but science in the form of perception based on the process of sensory knowledge. Or it can also be called knowledge gained through the process of experience.

The era of modern philosophy there is the figure of David Hume (1711-1776). He studied the importance of studying the method of human perception related to its correlation with science. Perception by David Hume is divided into two parts,

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namely: conception or idea and impression. Conception is one of the very small perceptions and exists in the human mind when studying science. While the impression is an impression or influence that is quite dominant obtained by the human mind based on observation and sensory experience (Adian, 2002).

The conclusion of this historical route of Western epistemology eventually resulted in several epistemological schools which were quite hegemonic in the modern Western world. There are at least four schools of epistemology that developed in the West, namely: First, Rationalism. This school puts forward reason as the main source of knowledge, knowledge as the sole and final authority in determining the truth of agreed knowledge. Almost the majority of all Western scientists agree on the significant role and function of reason. Among these Western thinkers include: Spinoza, Descartes, Christian Wolf, Leibniz and others.

Second, Empiricism. It is one of the schools that ennobles experience as the main source of knowledge. All knowledge is obtained from the experience of observing objects of knowledge with the five senses. Just as rationalism deifies reason as a source of knowledge, this school of empiricism calls the senses the main tool and the only source of certainty and truth of knowledge for humans. This stream of empiricism was studied and developed by Western scientists such as Thomas Hobbes, John Locke, Francis Bacon, David Hume and George Berkeley.

Third, criticism. It is an epistemological understanding that was studied and spread by Immanuel Kant (1724–1804). Kant is a philosopher who came from Germany, he tried to minimize the dichotomy of knowledge in the two previous understandings. Kant's philosophy aims to overcome the contradictions of the two schools (rationalism and empiricism) by describing the parts of science that fall into the realm of reason and experience.

In the fourth stage, the development of Western scientific epistemology was fulfilled with intuitionism, which was initiated by Henry Bergson (1859-1941 AD). The use of the senses and reason has limitations in revealing the reality of science

which is quite complex and develops quite quickly. Departing from these facts, Henry Bergson offered the highest human capability in the form of intuition. Intuition according to Bergson is a method to understand and know directly and instantly. The main component for science is the fact of the effort to form understanding spontaneously and eternally (intuitively), in addition to will and personal experience through the five senses (Tafsir, 2001).

The characteristics of Western epistemology include: First, Prioritizing reason and the five senses as a source of knowledge. Second, there is a disparity. This disparity in sources of knowledge is due to appear simultaneously and in a short time along with the renaissance period in the Western world. Whereas in the past, the church played a fairly fundamental role in the socio-religious or socio-intellectual situation in the West. Third, Anthropocentrism. It is an understanding which states that the center and main subject of the universe is human. This understanding believes in and develops the assumption that every policy of science about the universe must fulfill human interests (Al-Attas, 1993).

THE CORRELATION OF SCIENCE IN THE PERSPECTIVE OF ISLAMIC AND WESTERN EPISTEMOLOGY

As in the previous study, epistemology is a sub-section of philosophy that is related to the validity and essence of knowledge, ways or methods of obtaining knowledge, and a norm that aims to obtain the validity of science it self.

Islam regulates rigidly about epistemology in testing or obtaining the truth. In Q.S al-Nahl (16): 78 indicates four main methods, namely: hearing, sight, reason, and heart. A. Syafi'ie Ma'arif uses 3 methods of the epistemology of science which include: reason, senses, and heart. Meanwhile, the concept of Western epistemology (which is heavily influenced by Greece-Roman civilization), offers a rational empirical style that tends to separate itself from religious morality. The dominance of reason is quite strong in the history of the development of scientific epistemology

in the West. This rational empiricist domination brings considerable changes and affects their thinking patterns which have implications for the treasures of science.

This dominance of reason becomes the benchmark for a truth that departs from the assumption of cause and effect. If the two relationships (cause and effect) are real and rational, then the incident becomes an absolute truth. This condition will contradict the concept of acquiring knowledge in Islam, one of which is through laduni science. The Western concept also has a dichotomy between science and religion, each of which cannot be collaborated and cannot interfere with each other, even each has its own true values.

The concept of Western epistemology today accommodates intuitive values as a feature of their scientific method. It was Henry Bergson who said that the human mind and senses have limitations in understanding science, so he offers the concept of intuition as an alternative to the two previous schools of scientific epistemology. Thus there are similarities between Islamic and Western epistemologies regarding science. If the Qur'an offers reason, senses and heart as principles of scientific epistemology, the West also uses similar terms, namely: rationalism, empiricism, and intuitive.

CONCLUSION

The dynamic development of life requires scholars to find a comprehensive and adaptive concept of the epistemology of science in every era. Islam through the Qur'an has recommended important instruments in the form of reason, senses and heart as the main media in the epistemological concept that is carried. However, there are different opinions among Muslim scientists regarding how to acquire knowledge. Some of them reject the concept of *laduni* science as a way of acquiring knowledge.

Then the epistemology promoted by the West by prioritizing the ratio *(reason)* is recognized or does not bring progress *(reinesanse)* in their civilization. Western

philosophers only recognize truths that can be reasoned by reason and do not contradict logically. However, the progress of civilization gradually stagnated due to separating religious moral values. Rationalism, empiricism, positivism and secularism are one of the styles of scientific civilization that developed in the West, which was later refined by the *intuition* offered by Henry Bergson.

If the Qur'an offers a scientific methodology in the form of reason, senses and heart. So there are similarities with the West which gave rise to the method of rationalism, empiricism, and intuition. The three methods above can be called *bayani, burhani, and 'irfani*.

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