

Ibn Al-Haytham's Philosophy on Scientific Research Applied in Islamic Research Methodology: Analysis from *Tasawwur*, Epistemology and Ontology Perspectives

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Abstract

*Scientific methodology was first introduced in the social science discipline through Émile Durkheim's work entitled Rules of Sociological Method. Nevertheless, scientific methodology is presumed to be inadequate when wholly applied in Islamic-based research because it has limitations when studying Islam and Muslims. This indicates the importance of re-examining the scientific approach when formulating an Islamic research methodology. Based on historiographical sources, the scientific methodology was first explored by a Muslim intellectual named Ibn al-Haytham. The question is, what is the philosophy entrenched in Ibn al-Haytham's scientific research? Moreover, is his philosophy adequate to develop Islamic research methodology? Hence, this paper intends to identify the philosophy beyond Ibn al-Haytham's scientific research and analyze its suitability with the Islamic research methodology. Thus, by using content analysis, the discussions are arranged into three sections. First, is to identify the basis of Islamic research methodology. Second, is to examine Ibn al-Haytham's philosophy on scientific research. Third, is to analyze the compatibility between the two subjects. The study has found that Ibn al-Haytham's philosophy on scientific research has the strength from the aspect of *tasawwur* (worldview), epistemology, ontology, tools of analysis and the final aim of a study. Hence, his research philosophy is fit to be applied in the Islamic research methodology.*

Keywords: Ibn al-Haytham, Philosophy, Scientific research, Islamic research methodology, *Tasawwur*

Introduction

Émile Durkheim (1858 –1917) introduced the use of scientific methodology in the field of social sciences through his work, *Rules of Sociological Method*, in 1938 (Platt, 1996:69). Off late, Western researches in the field of social science have been actively carrying out empirical research to measure religiosity among the society by using scientific methodology (Krauss et al, 2005; Muhammad Syukri Salleh, 2012:266). In general, this has an implication on Islamic social science researchers who are influenced by scientific methodology centered on Western ethnocentrism and not based on Islam (Muhammad Mumtaz Ali, 2008).

If this conventional scientific methodology was examined from the philosophical aspect of *tasawwur* (worldview), epistemology and ontology, it contradicts the Islamic philosophy (Muhammad Syukri Salleh, 2011:3-5). This is due to some Western thinkers, especially those from the positivistic paradigm, who deny the existence of metaphysical realm and the power of God that structure the natural world (Shaharir Mohamad Zain, 2000:69). This type of scientific research philosophy has limitations in understanding social reality, especially of the Muslims (FadzilaAzni Ahmad, 2010:117).

Therefore, it is necessary to re-evaluate the scientific research philosophy based on Islamic *tasawwur*, epistemology and ontology perspective. This evaluation is important for the research related to Islam and the Muslims. In order to pursue this aim, Ibn al-Haytham was identified as the main pioneer who's responsible for exploring the scientific methodology (Kennedy et al, 2000:ii; Mat Rofa Ismail, 2006:103; Jim al-Khalili, 2009). Besides, he is also known as the "Father of the Scientific Method" (Khalif Muammar A. Harris & Adibah Mukhtar, 2008:7; Muhammad Mumtaz Ali, 2008). The re-evaluation of this concept could develop an important part of the Islamic research methodology.

According to Muhammad SyukriSalleh (2008:157), the Islamic research methodology needs to be explored by delving again into the main sources of Islam such as the Qur'an, Hadith and traditional Islamic research of the past and present.

Hence, this paper intends to identify Ibn al-Haytham's scientific research philosophy from the perspective of his thinking and to analyze the suitability of that philosophy in reference to Islamic research methodology. The discussion in this study encompasses three main sections. First, to examine the basics involved in formulating Islamic research methodologies; second is to examine Ibn al-Haytham's philosophy on scientific research; and third, to analyze the compatibility of the two subjects.

The Basis Involved in Formulating Islamic Research Methodology

Formulating a comprehensive Islamic research methodology is still in its early stages. This is because Muhammad Syukri Salleh (2008) had carried out the latest discussions that touch upon the basic aspects of methodology. According to Muhammad Syukri Salleh (2008:136), formulating the methodology is important for Islamic researchers, especially for research on Islam and Muslims. At present, the dominant research methodology practiced for this purpose is based on the conventional social science methods (Muhammad Syukri Salleh, 2011:4).

From a philosophical view, the scientific aspect in the conventional social science methods does not have enough tools of analysis to understand social reality (Muhammad Syukri Salleh, 2008:136). Therefore, Muhammad Syukri Salleh (2011:8-14) is of the view that Islamic research methodology should fulfill two basic criteria. Firstly, it should be anchored on Islamic philosophy comprising components such as Islamic *tasawwur*, Islamic epistemology and Islamic ontology. Secondly, a combination of *daruri*¹ knowledge and propositions based on reasoning ('*aql*) with *nazari*² knowledge and propositions based on the Qur'an and Hadith (*naql*). The first criterion is explained in detail in the following three sub-topics.

(a) Islamic *Tasawwur*

From an etymological aspect, '*tasawwur*' originated from an Arabic root word, *sawwara* (Madkur, 1990:373; Mihna, 1993:45). Literally, the term *tasawwur* means perception, presumption, mental attitude or a viewpoint on matters (Ibn Manzur, 1994:473; al-Qasimiy, 1989:755). Besides the term Islamic *tasawwur*, there are several other specific terms used by Islamic academicians to portray the meaning of Islamic *tasawwur*.

Qutb (1965:48) had used the term *al-tasawwur al-Islamiyya* to lend meaning to Islamic *tasawwur* as being a sense of overwhelming confidence about Islam that has formed in the minds and hearts of every Muslim. Then, al-Zayn (1982:66) used the term *al-mabda' al-Islamiyya*, which meant more on the union of faith (*iman*) and the mind. In other words, it is compulsory for every Muslim to have full faith in the existence of Allah SWT, the prophethood of Prophet Muhammad SAW and the Qur'an by using their mental faculties. To be faithful to something that is occult in nature must be based on a view substantiated by mental faculties until it becomes an undeniable fact for the believer. It is similar with being faithful (*iman*) to Islam, as a religion that was divinely revealed to Prophet Muhammad SAW in order to organize the relationship between man and Allah SWT, between man and himself and between man amongst other men.

In addition, al-Mawdudi (1985:11) had used the term *nazariyyat al-Islam* to explain Islamic *tasawwur*. This means that the concept of an Islamic way of life begins by being a witness to the supreme qualities of Allah SWT. This has an effect on all of man's daily activities. Almost similar to al-Mawdudi's (1985) definition is the definition adduced by al-Faruqi(1995:11-12). He used the term *al-tasawwur al-tawhidi*, which means a view on life about truth, reality, the world, space and time, history and fate, which is all held by the *kalimah al-syahadah*, and this is the basis of *tawhid* (monotheism).

¹*Daruri* knowledge is knowledge that is easily understood or knowledge relating to something that does not need research or intellectual discourse. It is further divided into *badhi* knowledge (knowledge that is easily obtained) and *hissi* knowledge (knowledge obtained through our senses) (Mustafa Sa'id al-Khin&Muhyiddin Dib Misto, 2004:108-109).

²*Nazari* knowledge is knowledge about something that needs research and intellectual discourse (Mustafa Sa'id al-Khin&Muhyiddin Dib Misto, 2004:109). Obtaining this knowledge needs abstract thinking and debate based on *naql* propositions (Muhammad SyukriSalleh, 2001:14).

However, the term *ru'yat al-Islam li al-wujud* by Syed Muhammad Naquib al-Attas (1995:2) portrays the Islamic view about reality and truth that explains the facts regarding existence. The Islamic view transverses the physical realm by comprehensively encompassing both the worldly realm and the after-world. According to Syed Muhammad Naquib al-Attas (1995:1) this interpretation contradicts with another interpretation of *tasawwur* according to Islam, which is *nazrat al-Islam li al-kawn* (the Islamic view towards the physical realm). By using the term *nazrat*, it is as though it portrays *tasawwur* according to Islam as a speculation of Western philosophy, which is solely based on the senses or things that can empirically be seen. Hence, also the term *al-kawn* (physical realm), which portrays Islamic *tasawwur* as being limited to the worldly realm, when actually *tasawwur* according to Islam transverses the physical realm and comprises both the worldly realm and the after-world.

Thus, it could be concluded that Islamic *tasawwur* is a comprehensive or whole picture about Islam, which intends to conclusively explain the basic principles of Islam in an actual and wholesome manner until it becomes the basis for a view on life and blends within a person (Haron Din, 1992:3; RamliAwang, 1997:6).

(b) Islamic Epistemology

Islamic philosophy is born and breed on certain foundations. These foundations are related to theory or the origins of Islamic knowledge, which is known as Islamic epistemology (Syed Muhammad Naquib Al-Attas, 1995:4; Sidek Baba, 2006:186). Actually, epistemology originated from two Greek words, namely *episteme* and *logos*. *Episteme* means knowledge, meanwhile *logos* means theory or a study of (Blackburn, 1996:123; MuhyarFanani, 2009:15). Epistemology is the in-depth discussion on the processes that bring about the addition of knowledge (RoziyahSidik, Zulkarnain Mohamed & Nasruddin Yunos, 2011:47). This is also known as *nazariyyat al-ma'rifah* in Islamic traditions (Mutahhari, 2011:1; Mohd Radhi Ibrahim, 2003:1).

According to Sidek Baba (2006:186-187) and Hamid Fahmy Zarkasyi (2007), Islamic epistemology consists of two main sources, which are the *naql* (divine revelation) and '*aql* (*ijtihad* or reasoning on the basis of Qur'an and *al-Sunnah*). Sources of *naql* are Qur'an or *al-wahy al-matlu* (divine revelation that has been read) and *al-Sunnah* or *al-wahyghayr al-matlu* (divine revelation that has not been read). Both are also known as *al-adillat al-qat'iyator* proof that has legitimacy, which cannot be challenged. Meanwhile, the '*aql* source, especially those that have been agreed upon by the *al-ijma'* and *al-qiyas*. Both these sources are known as *al-adillat al-ijtihadiyyator* views that were formed at after some laborious and intense thinking.

Moreover, there are explicit views that divide epistemology into five sources of knowledge, which are recognized in Islam, such as divine revelation (*wayh*), inspiration (*ilham*), intuition, intellect ('*aql*), and senses (Hassan Langgung, 1986:19-23; FadzilaAzni Ahmad, 2010: 117 & 119). However, Sidek Baba (2006:186-187) mentioned that there are four elements, which are the platform or basis of Islamic epistemology. The main element is staunch belief ('*aqidah*), while the rest of the elements are worship ('*ibadah*), ethics (*akhlaq*) and Islamic legislation (*syari'ah*). ZiaudinSardar (1990:89) stated that epistemology is the main thrust for any view on life.

(c) Islamic Ontology

Ontology literally refers to theory about the existence. The term originates from Greek words *ontos* and *logos* (IdzamFautanu, 2012:120). According to Abdul Rahman Abdullah (2005:19), discourse on ontology centers on the scope of the knowledge; whether it is limited to the physical ('*alam al-syahadah*) or transverses the metaphysical realm ('*alam al-ghayb*). Thus, for a detail view, Mukhtar Latif (2014:187) stated that there are seven characteristics related to ontology. First, *being*; second, *reality*; third, *existence*; fourth, *essence*; fifth, *substance*; sixth, *change*; and seventh, *singularity* and *variety*.

Overall, the ontology concept from an Islamic perspective encompassing and is associated with the existence of Allah SWT through the signs that portray His supreme qualities. According to GhazaliBasri (2012:22), Allah SWT portrays signs of His supreme qualities through the *Qur'aniyyah* and *al-kawniyyah* verses. The *Qur'aniyyah* verse explicitly shows the narrations of Allah SWT on matters contained in the Qur'an, while the *al-kawniyyah* verse is about Allah's creations in the universe that is visible and discernible by man.

Hence, knowledge obtained through the *al-kawniyyah* verses pertaining to natural sciences and humanities, just as all the knowledge from the Qur'an, would eventually drive humankind to get acquainted with Allah SWT (Mohd Kamal Hassan, 2011:8).

Moreover, GhazaliBasri (2012:24-25) emphasised that the concept of Islamic ontology always ensures every scientific explanation found in empirical research does not contradict with Islamic *tasawwur*, which upholds *tawhid* (monotheism). Therefore, the principle of *tawhid* or *Rabbani* acts to unite the extremist views in order to understand nature, for example the conflict between the features of objectivity and subjectivity (Abdul Rahman Abdullah, 2005).

Ibn Al-Haytham's Philosophy on Scientific Research

Since one of the important criteria in formulating Islamic research methodology is centred on Islamic philosophy that comprises three basic components, which are Islamic *tasawwur*, Islamic epistemology, and Islamic ontology, hence, Ibn al-Haytham's philosophy on scientific research, which is examined in this paper, is also based on these three components, which are as follows.

(a) *Tasawwur*

The *tasawwur* aspect is closely related to a person's view about life. Hence, according to Muhammad Saud (1969:60), Mat Rofa Ismail (1997:122) and al-Bayhaqi (2010), Ibn al-Haytham is an Islamic scholar and intellectual who adhere to the teachings of Islam. Pertaining to this matter, he has given his views, as follows:

"I am truly committed to give my views, since this could take me closer to Allah SWT, allow the factor that permits this to be blessed by Him and the signs that make me obey Him and be conscious of Him." (Ibn AbiUsaybi'ah, 1965:552).

Based on the above excerpt, there is one important outcome or consequence. Ibn al-Haytham was committed in his interest to implement scientific research because the research could become a tool to always allow him to be close to Allah SWT. It is evident that Ibn al-Haytham had made the main intention of his scientific research to be the achievement of Allah's SWT blessings or His pleasure (*mardat Allah*) (ZiauddinSardar, 1992:35). Moreover, this intention is in accordance with the exhortations of Allah SWT, which means:

"And of the people is he who sells himself, seeking means to the approval of Allah, and Allah is kind to [His] servants." (al-Baqarah, 2:207).

In his efforts to seek the blessings of Allah SWT, Ibn al-Haytham had related the scope of physics to the metaphysics in his arguments. In the scripture *Kitab al-Manazir* (Book of Optics), Volume 2, Chapter 3, he had discussed the faculty of judgment concerning things that have been seen by human is actually has been established in the soul (*al-nafs*). Hence, the ability to evaluate does not need much effort or deliberation because it happens naturally (Ibn al-Haytham, 1989:131-138). His stand is in-line with the scope of Islamic *tasawwur*, which encompasses the material and spiritual realms (Syed Ali Tawfik al-Attas, 2012:60).

Besides that, his deep interest to carry out scientific research was due to the philosophies of Galen and Aristotle, who wanted to be closer to God and attest to His supreme existence (Ibn AbiUsaybi'ah, 1965:552-553). Basically, the *tasawwur* of Ibn al-Haytham's thinking aims to consolidate the bond of *tawhid* to Allah SWT. Therefore, as a Muslim mathematician, he did some research on the related field pertaining to what is necessary for worship (*'ibadah*) by Muslims. This is evident in Ibn al-Haytham's work about mathematically ascertaining the direction of the Kaaba (*qiblah*), which appeared in a study entitled *Qawl fi Samt al-Qiblah bi al-Hisab* (Discourse on Ascertaining the Direction of the *Qiblah* by using Calculations) (Ahmad S. Dallal, 1995).

The findings of his study that are based on the premise of *tawhid* and worship in Islam shows that he is a humble (*tawadu'*) scholar. For example, he admits the limited amount of knowledge he had. In one of his works, Ibn al-Haytham had ended the passage by saying:

"While all he knows about the subject is in his book, his knowledge is limited and there may even be errors in his work. Only Allah knows best." (Mohammad Ilyas, 1996:15).

The fact is that the humble characteristic that is in Ibn al-Haytham shows that not all the information obtained from his scientific research might be the absolute truth but rather the absolute truth comes from Allah SWT (MohdYusof Othman, 2009:141). This also shows his scientific research guides himself toward perfection of moral virtue (*akhlaq*).

(b) Epistemology

From an epistemological context, Ibn al-Haytham in his work entitled *Maqalah fi Daw' al-Qamar* (Treatise on Moonlight) begins with narrating a verse from the Qur'an (Abdul Ghafur Chaudhri, 1969:122). That verse is the word from Allah SWT which means:

“It is He who made the Sun a shining light and the Moon a derived light and determined for it phases – that you may know the number of years and account [of time]. Allah has not created this except in truth. He details the signs for a people who know...” (Yunus, 10:5).

Ibn al-Haytham, in the treatise, had tried to explain that moonlight that reaches Earth is not due to the reflection of the Sun's rays. It is caused by sunlight that falls on the Moon at a certain angle and illuminates the Moon, which is then seen from Earth (Ibn al-Haytham, 1969:214). This explanation was also substantiated by geometrical proving.

In addition, Ibn al-Haytham's reasoning was not exempt from intuition or inspiration. This is evident from his success in associating matters that could be empirically observed with the element of intuition, which were found in his discussions on psychoanalysis (Gonzalez, 2002:7; Nader El-Bizri, 2005:195-196). Thus, according to Osman Bakar (1991:28), the momentum concept introduced by Ibn al-Haytham could actually be achieved by involving a jump of a creative nature and later proved empirically. In his work entitled *Maqalah fi al-Tahlilwa al-Tarkib* (Treatise on Analysis and Synthesis), Ibn al-Haytham realized that an analysis was not just solving algorithms that could be then be applied using mathematical logic but the method also needs intuition (Mahmoud al-Deek, 2004).

Next, Ibn al-Haytham had explained that observation via sensory faculties and mental reasoning is the basic elements of his scientific research, as the excerpt below shows:

“In my opinion, truth cannot be achieved unless there is an understanding that its elements are based on sensory perception and its form is based on mental reasoning.” (Ibn AbiUsaybi'ah, 1965:552).

According to Muhammad Saud (1990:69), Shuttleworth (2009) and Mat Rofa Ismail (2012:124), there are at least four main stages in Ibn al-Haytham's scientific research method. First, is to make the observation; second, to build the hypothesis; third, to carry out the experiment; fourth, to form the conclusion. These four stages in methodology could be matched with two basic elements outlined by Ibn al-Haytham, which is, firstly, the observation and experiment needs good sensory perception; and secondly, building the hypothesis and argumentations that substantiate the conclusion heavily relies on sound intellectual reasoning.

Besides that, Ibn al-Haytham was confident that research could be carried out via observations, verifications and experiments, as stated in his work *Kitab al-Manazir* concerning light that travels in a straight line³ and research that only involves observation, like his work on astronomy entitled *Maqalah fi Hay'ah al-'Alam* (Treatise on Configuration of the World)⁴.

(c) Ontology

From an ontological perspective, Ibn al-Haytham strongly believes in the concept of *al-hatmiyyah al-'ilmiyyah*, which is a concept that adheres to the universal phenomenon of one harmonious legal system or also known *sunnat Allah* (the law of Allah). This universal law allows observations to be carried repeatedly (Mat Rofa Ismail, 1997:122). The harmonious course of nature according to the *sunnat Allah* allows him to reason using the law of causality (cause and effect) (MohdYusof Othman, 2009:261). This is shown in one of the excerpts from his writing:

³ Experiments to prove that light travels in a straight line were recorded in detail in *Kitab al-Manazir* Vol. 1, Chapter 3. He got the idea from observing dust on a ray of light, which could be seen clearly in a dark room with a ray of light shining in through a hole in the wall (Ibn al-Haytham, 1989:13). Based on the findings of his research he had created a model called *bayt al-muzlim*, which became a model for the human eye and the camera. (Mat Rofa Ismail, 2012:124-125).

⁴For example, Ibn al-Haytham (1990:172) said that with a consistent observation, planet Mercury could be seen to be at a distance from the Sun's position. This shows that Ibn al-Haytham had presented his arguments based on observations only because studies on stellar objects emphasize on astute observations (Abdul GhafurChaudhri, 1969:114).

“The characterization of the eye by this property is one of the things that show the wisdom of the Artificer, great be His glory, the skillfulness of His work and the successful and skilful manner in which nature has arranged the instruments of sight...”(Ibn al-Haytham, 1989:103).

Ibn al-Haytham (1989:103-104) had admitted to this orderliness process of human sight, including the blinking of the eye when a speck of dust enters the eye, as the manifestations of God’s greatness. According to Shaharir Mohamad Zain (2012:28), even the formulation of the hypothesis by Ibn al-Haytham was laden with values, which relates to the formation of nature as the work of God himself. The fruits of nature go back to the divine laws of Allah SWT, which facilitated him when observing that phenomenon. Hence, at the end Ibn al-Haytham (1989:104) recognized the greatness of Allah SWT, as his statement below shows:

“They are subtle matters that show the wisdom and mercy of the exalted Artificer and the consummate perfection of His work, the skillful ways of nature and the subtlety of His productions.” (Ibn al-Haytham, 1989:104)

Briefly, the three components discussed are based on the scientific research methodology of Ibn al-Haytham, which is stated in Diagram 1.

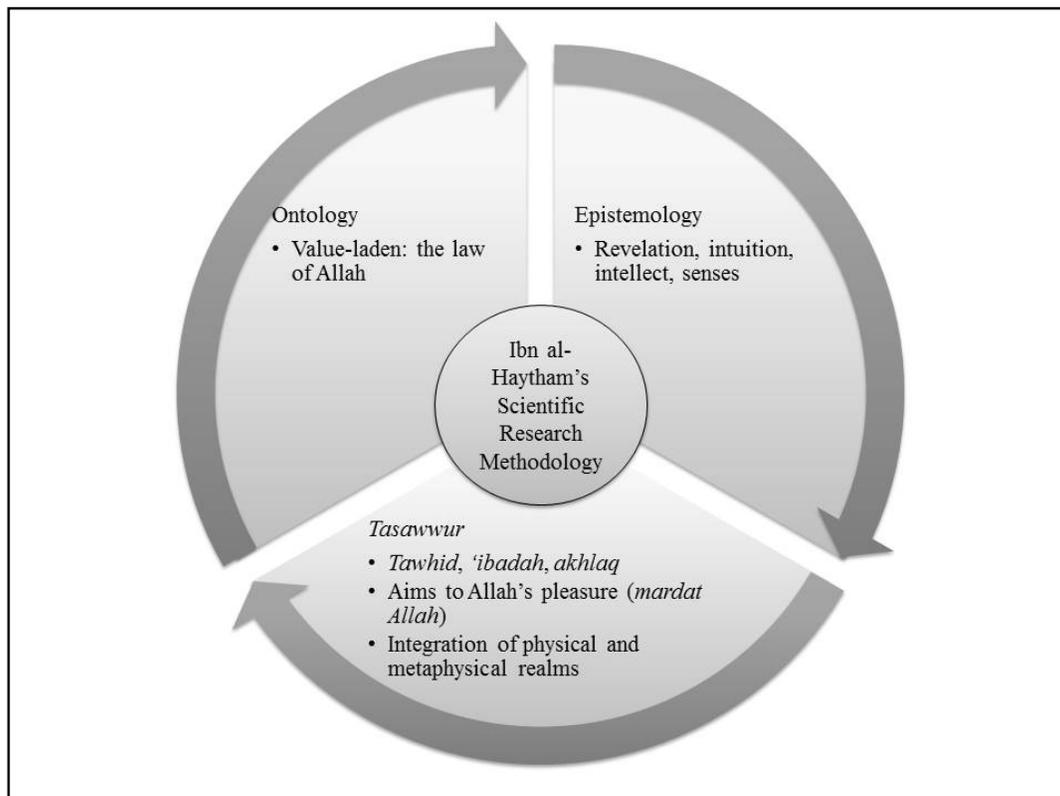


Diagram 1: The *Tasawwur*, Epistemology and Ontology Components in Ibn al-Haytham’s Scientific Research Methodology

The source of Ibn al-Haytham’s knowledge that was identified through his thoughts was based on divine revelation (*wahy*), intuition, intellectual faculties and sensory perception. These four epistemologies form a *tasawwur* or worldview of nature that intend to seek Allah’s blessings, have a discourse within a scope that encompasses the physical and metaphysical realms while having his study contribute towards strengthen the *tawhid*, practicing worship to God (*‘ibadah*) and enhancing moral virtues (*akhlaq*). Hence, based on the *tasawwur*, his scientific research is value-laden.

The Strength of Ibn Al-Haytham’s Philosophy on Scientific Research that Influences Islamic Research Methodology

This section would try to examine the philosophy on scientific research that has been extracted from the thoughts of Ibn al-Haytham and applied in Islamic research methodology, which regards to Islam and Muslims. In general, Ibn al-Haytham had put the role of divine revelation from Allah SWT as the basic guide for his scientific research.

Therefore, scientific research concerning Islam and Muslims should make the Qur'an the basic guide for carrying out research at the theoretical or practical levels on man and society (Muhammad Mumtaz Ali, 1994:91; M. RiazKirmani, 1999:97). This is because the Qur'an is the words of Allah SWT (*kalam Allah*), which is permanent and of the highest standing compared to other sources. In other words, the Qur'an assists the sensory perception and human intellect (Mohd Shukri Hanapi, 2013). This has been exhorted by Allah SWT, which means:

“And We had certainly brought them a Book which We detailed by knowledge – as guidance and mercy to a people who believe.” (al-A'raf, 7:52).

According to Muhammad SyukriSalleh (2008:136), the analysis tools in Western scientific research, especially from the positivistic paradigm is very limited. For example, one of the fields of social sciences that is psychology. Positivistic psychology today is too focusing towards the external elements of humans, such as behaviorism and causality relations. In fact, this poses a problem for research on human psychology (Ma'rofRedzuan, 2001:35). The admiration of psychologists and sociologists towards the scientific research methodology, which has been used in conventional pure sciences study, creates an attitude of scientism⁵ (Abdul Hadi W. M., 2007:11). However, there are Western psychologists and sociologists that admit humans as complex and unique subjects of study (Chapin, 1914:371; Ma'rofRedzuan, 2001:35).

Therefore, human psychological theory should be equipped with spiritual theories, which have been clearly explained in the Qur'an (ZohréKhosravi&KhosrowBagheri, 2005:165). Moreover, Ibn al-Haytham (1989:133) himself had touched upon the role of the soul in explaining the theory on vision. According to Imam al-Ghazali, this is because humans have a universal similarity, which are the spiritual components, that is the spirit (*al-ruh*), the intellect (*al-'aql*), the soul (*al-nafs*) and the heart (*al-qalb*) (Noor Shakirah Mat Akhir, 2008:174). This makes the discussion on human psychology according to Islamic *tasawwur* more holistic (Yatimah Sarmani & Mohd Tajudin Mingal, 2008:2-3). This statement is also based on a Hadith of the Prophet SAW, which means:

“... Beware! There is a piece of flesh in the body if it becomes good (reformed) the whole body becomes good but if it gets spoilt the whole body gets spoilt and that is the heart.” (Muslim, Hadith No. 4178).

The heart that referred in the Hadith above is from the human spiritual perspective, which its influences human behaviors (JAKIM, 2011). Besides that, the views of Western scholars who have explored the conventional scientific methodology used in the field of pure sciences or social sciences today were formed from their prejudices towards religion, especially the doctrine of Christianity some time ago (Anis Malik Thoha, 2009:89). This worldview actually causes the Western research methodology to deny the authority of divine revelation besides refuting the existence of the metaphysical realm.

Therefore, the scientific research philosophy borne from the thoughts of Ibn al-Haytham is seen as having a different explanation from the conventional scientific research philosophy. More specifically, based on the identification and analysis done in the previous topics, Table 1 summarizes the important points regarding to Ibn al-Haytham's scientific research philosophy together with the suggestions on the Islamic research methodology.

⁵Scientism is a belief that favors a method that is systematic, logical and objective over others and rejects elements that cannot be proved empirically (MohdYusof Othman, 2009:84).

Table 1: Ibn al-Haytham's Philosophy on Scientific Research and Its Compatibility with Islamic Research Methodology

Ibn al-Haytham's Philosophy on Scientific Research	Compatability with Islamic Research Methodology
1. <i>Tasawwur</i> : <ul style="list-style-type: none"> - Observations on the physical elements do not neglect arguments from the metaphysical aspect, such as the soul and intuition. - Research intended to ensure that <i>tawhid</i> was always being consolidated, worship carried out and moral disposition was accomplished 	i. To ensure that scientific research considers the research subject's soul which is a natural inclination that exists in a human. ii. To locate the path for scientific research so that the premise is on the understanding of knowledge on <i>fard 'ayn</i> (<i>tawhid</i> , <i>'ibadah</i> and <i>akhlaq</i>) in order to achieve the pleasure of Allah SWT (<i>mardat Allah</i>).
2. Epistemology: <ul style="list-style-type: none"> - Divine revelation as the basic guide in scientific research, whereas human thinking premised on sacred values are not sidelined. 	iii. To consider the source of the divine revelation the scientific research on Muslims besides the empirical and rational aspects, for example in the theoretical framework of the research (ReevanyBustami, EleesyaNasrudin&Blaikie, 2004:144).
3. Ontology: <ul style="list-style-type: none"> - Everything that occurs is based on the law of Allah (<i>sunnat Allah</i>). 	iv. To take the findings of the empirical research as proof that shows the Glory of Allah SWT. v. Islamic values always portray the personality of the researcher (MohdYusof Othman, 2009:263; Muhammad SyukriSalleh, 2001:23-24).

Table 1 displays the existence of cohesion between *daruri* knowledge and reasoning (*ijtihad* or *'aql* evidence) with *nazari* knowledge and divine revelation (*naql* evidence) found in the scientific research philosophy extracted from the thoughts of Ibn al-Haytham. It is also clear that the *tasawwur*, epistemology and ontology contained in Ibn al-Haytham's scientific research philosophy is based on Islamic *tasawwur*, epistemology and ontology. Hence, implementing scientific research on Islam and Muslims is more holistic and comprehensive according to Ibn al-Haytham's paradigm.

Conclusion

Briefly, Ibn al-Haytham's scientific research philosophy has five strong points in itself. First, the epistemology is sourced from divine revelation (*wahy*). Thus, it is clear the Qur'an is part of the source that guides the scientific research. Second, the *tasawwur* is based on *tawhid*. Third, the analysis tools are naturally holistic. This means that both the physical and metaphysical aspects are mentioned in the research and not merely the physical aspect. Fourth, from the ontological aspect it is laden with values. This is evident through his confession that the creation of nature adheres to the laws of Allah SWT. Fifth, his goal was to achieve Allah's SWT blessings and all the functions of his research point to that direction. Hence, all the five strong elements portray the cohesiveness of the Islamic scientific research philosophy according to Ibn al-Haytham's thoughts. Therefore, his strong points advocate the expediency of his scientific research philosophy to be applied in Islamic research methodology.

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