Revisiting Islamic Studies: Cementing Bases for Integrating Science and Religion in Islamic Higher Educational Institutions

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Abstract

Transformation within Islamic State Higher Institutions (PTKI) from State College for Islamic Studies (IAIN) to State Islamic Universities (UIN) is a dynamically shifting paradigm in Islamic Studies. The transformation not only occurs formally administratively in infrastructures, curricula, or teaching approaches, but also in conceptual framework and knowledge paradigms. This research objective is to investigate whether Muslim academics need to review Islamic studies in higher Islamic education institutions to include science and to integrate it with Islamic studies both in curricula and methods of teaching. The method of this research is a rigorous literature based study focusing on reviewing previous studies related transformation that was held within the Islamic higher education institutions. The results show that in the transformation process within PTKIN, there is a meaningful shift of Islamic studies from traditional approaches to modern ones. Formerly, Islamic studies only associated with developing religious scripts (al-'ulûm al-naqliyyah), while now it should focus also on developing logic and interpretation (al-'ulûm al-'aqliyyah). The change from the IAIN to the UIN is a concrete response toward an integrative relation between science and religion. Even though each UIN offers different concepts about the integrative paradigm designs, all UINs agreed on the importance of building a new tradition in the PTKIN with the integrative paradigms from theoretic-philosophic-concepts to practical-implemented-contexts.
Keywords: *Islamic Studies, Science, Islamic Higher Education, Integrative Paradigm*

Abstrak

Transformasi dalam Perguruan Tinggi Keagamaan Islam (PTKI) dari Institut Agama Islam Negeri (IAIN) ke Universitas Islam Negeri (UIN) merupakan sebuah pergeseran paradigma yang dinamis dalam studi-studi keIslaman. Transformasi ini tidak hanya terjadi secara formal dan administratif dalam infrastruktur, kurikulum, atau pendekatan-pendekatan dalam mengajar, tetapi juga dalam bingkai konsep dan paradigma pengetahuan. Tujuan penelitian ini adalah untuk menginvestigasi apakah akademisi Muslim perlu mereview studi-studi keIslaman di lingkungan PTKI untuk memasukkan sains dan menginterasikannya kedalam studi-studi keIslaman baik dalam kurikulum maupun metode-metode pengajaran. Metode penelitian ini berbasis literatur pada penelitian-penelitian terpercaya dan fokus pada pengkajian penelitian-penelitian terdahulu yang berkaitan dengan transformasi yang terjadi di lingkungan

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Perguruan Tinggi Keagamaan Islam. Hasil menunjukkan bahwa proses transformasi dalam PTKI adalah pergeseran yang amat berarti bagi studi-studi keIslaman dari pendekatan-pendekatan tradisional menuju yang modern. Sebelumnya, studi-studi keIslaman hanya terkait dengan pengembangan teks-teks agama (*al-'ulûm al-naqliyyah*), sementara kini harus fokus juga pada pengembangan logika dan penafsiran (*al-'ulûm al-'aqliyyah*). Perubahan dari IAIN ke UIN merupakan suatu respons nyata menuju integrasi antara sains dan agama. Meskipun tiap-tiap UIN menawarkan konsep yang berbeda-beda tentang desain paradigma integratif, seluruh UIN setuju pada pentingnya pembangunan suatu tradisi yang baru di PTKI dengan paradigma integratif dan dari teoritis-filosofis-konsep menuju implementasi praktis dan kontekstual.
Kata kunci: Studi-studi KeIslaman, Sains, Perguruan Tinggi Islam, Paradigma Integratif

Introduction

Muslim academics are suggested to revisit what is called 'Islamic Studies', which is in fact connected with their journey of understanding science, and this would make it clear to them that various perspectives are still needed in reformulating science and its role in society (Azra, 1999). Some would argue that science is common knowledge and has no roots in Islamic tradition, so it could not make Muslims wise. Others assert that there are similarities in science and religion and that they are basically one entity and are steps to transcend into the divinity of God. However, amid radicalism, extremism, and intolerance the global community are seeing challenges in designing curriculum of Islamic studies in higher education institutions. Abdullah (2017b) contended that due to these phenomena, many Islamic scholars began to consider a way how Islamic studies are conducted by Indonesian Islamic higher education including religious education as an alternative of graduate studies where "contents and methods offer innovation and transformation." (p. 391).

Discussing this concern, we will focus our investigation on three subtopics: the history of Islamic Studies in Indonesian Islamic Higher Education, particularly Sunan Kalijaga State Islamic University; the paradigm of integration between science and religion within the university, and practical implications that could be used for teaching and learning. The main concern of this research it to investigate how state Islamic universities in Indonesia can adapt to modern science, such as social sciences and physical sciences while incorporating them with Islamic studies or religious sciences. Over four decades, the debates on the integration of science and religion has drawn attention of Muslims scholars. The discourse of this matter then yielded pros and cons between those accept the integration and those who oppose the integration. Those pros and cons are clearly seen in

their scholarly works. Recently, the establishment of state Islamic universities is a positive response to the dispute.

Research Method

The method of this research is a rigorous literature based study focusing on reviewing previous studies related to transformation within the Islamic higher education institutions. This method is called a library method, which we selected written sources that are appropriate to read, and we conducted intertextuality analysis in order to make "impact of the text on others in terms of the appearance of particular signs and the linking of ideas from one text to another" (Grbich, 2013, p. 187). The aim of this task is to end up with "the most relevant literature, and only literature that is relevant" (Roberts and Taylor, 2002, p. 58). In this method, we also interacted with authors' works related with Islamic studies in higher education in Indonesia, some of which are Abdullah (2017b), and another work discussing the theoretical framework and methodological construction for developing human sciences (Abdullah, 2020). To build trustworthiness of the reader, we analyzed these text documents as valuable repertories of information, and we established triangulation between one source and another source (Taylor & Bogdan, 1994). The ramifications of the reading and analysis of the texts are presented in Results and Discussion section.

Results and Discussion

Islamic Studies at State Islamic University Sunan Kalijaga

Academics may look differently at Islamic studies and thereby yield varied perspectives that are dependent on their backgrounds, where they studied, and with whom they shared their interests. With respect to connecting Islamic Studies with other disciplines, Abdullah (2006) has divided the timeline into four periods. From the beginning of Islam to the mid-20th century was the first period, when Islamic Studies limitedly referred to *'ulûm al-dîn* or *'ulûm al-naqliyyah* such as *fiqh*, *'ilm al-kalâm*, *tafsîr*, *hadîth*, and *târîkh*. And by such constraint, when scholars discussed Islamic Studies they would not have made a correlation with other disciplines, because the 'others' were supposedly 'non-Islamic,' therefore they called this period a single entity whose base is *hadârah al-nash*, a tradition of understanding Islam dependent on holy scripts and using the epistemology of *bayânî*.

In the second period (1951-1975), an intellectual movement pushed for a need to recognize non'*ulûm al-naqliyyah* studies, such as humanities and the social and physical sciences (Abdullah, 2003). Abdullah (2017a) reiterated:

> *This has been a long need felt by Indonesian Muslims. The establishment of the State Islamic Institute (IAIN), 1951 is an important part of the history of the development of Islamic religious education in the country. This is reinforced by the institutional and scientific transformation of IAIN to the State Islamic University (UIN) in the 2000s. Now we can find faculties at IAIN and UIN called the Faculty of Islamic Theology and Humanities, Faculty of Adab and Humanities, Da'wa and Communication and so on.* (pp. 308-309)

This period, however, saw no relationship between the disciplines of Islamic Studies and those three categories, or saw each one having its own separate way to reach the objective, meaning there was no dialogue among them. Consequently, when a sudden concern loomed in society, there was no collaboration assumed among these disciplines, and thus the way society would find a solution was not an interrelated approach (Abdullah, 2003). Abdullah (2005) further identified this period as having isolated entities, as no group of disciplines broke apart. The period saw the way of thinking scholars adopted as *bayânî* and being characterized by the tradition of '*ulûm al-naqliyyah*, tending not to utilize aid of other disciplines. In the epistemology of *burhânî*, the knowledge sources are social reality, culture, and natural phenomena. Given this, Abdullah (2017a, p.314) quoting Hernes (2010) as he stated:

> *To a great extent, the social sciences come with new ideas about religion, reason, humanity and society were merged into a fairly coherent worldview that stressed human rights, individualism and constitutionalism …*

The third period (1976-1995), the meaning of Islamic Studies found its new footsteps by Mukti Ali and Harun Nasution who reconstructed old-fashioned ways of thinking that had existed in molding Islamic discourses within the Islamic higher institutions. The need to utilize general knowledge as problem-solving together with Islamic Studies marked this new era. Ali (1991) and Nasution (1997) confirmed that to know Islam one should have multifaceted perspective in addition to '*ilm al-naqliyyah*. Therefore, it is necessary to borrow from other disciplines, such as social sciences, which could be used as methods to understand social phenomena.

During this period, Mukti Ali has introduced the use of social sciences in understanding religion (Bahri, 2014).

In responding to the thoughts of Mukti Ali and Harun Nasution, Indonesian Muslim academics were split into supporters and those who were opposed. The opposition suggested that studying Islam by using non-*naqlî* perspectives could devalue the sacred religion because such activity would question the validity of God's word. Some argue of disassociation of science and religion, contending that "science comes from human-being which tends to be profane while religion comes from God that is both absolute and sacred" (Usman, Fuad, & Nurmunajat, 2017, p. 25). On the other hand, the supporters contended that researching the sacred religion by utilizing other disciplines would not reduce the meaning of Islam itself because Ali offered the concept of scientific-cum-doctrine, which did not question Islam as revealed religion but would try to understand Islam in the context of empirical history. It therefore requires other perspectives to prove the normative ideals of the Qur'an and *Sunnah* (Mudzhar, 1997). According to Bahri (2014), Mukti Ali agreed that the approaches used in social sciences can be utilized to understand a religious phenomenon "only if it is studied as something than religious" (p. 169).

In the last period (1996-2000s), Islamic Studies could depart from an understanding of the *naqlî* science because it had already used auxiliary sciences. Therefore, the fourth period emerged after 1996 because of the inadequate role that Islamic Studies had assumed in offering an alternative solution for today's reality. This partly occurred because there is no standardized philosophy in understanding Islam. In this period also, Islamic Studies was not limited to only *naqlî* science in its operative scope. By using the aid of other disciplines, to include any discipline, the Qur'an and *Sunnah* are embedded as their bases (Abdullah, 2003).

Islamic Studies Paradigms: Bayânî, Burhânî, and 'Irfânî

Three kinds of epistemology existing in science tradition are *bayânî, burhânî,* and *'irfânî.* The first term refers to sustainability, class, and clarity. Among their unique characteristics are being textual in nature, which stresses discourse that revolves around words and meanings; and there is a hegemony of analogy reflected through the use of *salaf* authority as a source of knowledge and which becomes the main basis for rationing the analogical relation with the issue of *al-far'.* There is a reasoning hegemony of actions, meaning there is no certainty in reality because anything runs on

probability based on the will of God, which is absolute in any aspect (Al-Jabirî, 1993). The implication of the model of *bayânî* is that a tendency of one's attitudes to become dogmatic, defensive, and apologetic is reflected in saying: *right or wrong is my country*. The paradigm of *bayânî* may influence someone not to accept other thoughts as people tend to defend their thoughts, and always want to dominate in sharing ideas or solving problems without adequate argumentation (Abdullah, 2001).

The basis of the *bayânî* paradigm is sacred texts, and the basis of *burhânî* is reality whether in nature, society, humanities, or religion. Disciplines that emerged during the tradition of *burhânî* called *al-'ilm al-husûlî*, are ones that are conceptualized, composed, and systematized through logical premises and not through textual authorities of *salafî*, as those that occurred in *bayânî*, and also not through the authoritative intuitions as in *irfânî* (Abdullah, 2003). The logical premises in *burhânî* were composed via a collaboration between an abstract process and valid observations using equipment to facilitate researchers in laboratories, observatories, inquiry fields, and in-depth literature review. The role of reason in this context is decisive in search of causality (Al-Jabirî, 2003). In order to understand the reality of social life, culture, and nature, scientists need a variety of approaches to emphasize repeatedly their crucial role by analyzing and examining theories and conclusions that are formulated through the premises.

The epistemology of *'irfânî*, the source of knowledge, is experience, whether from the authentic life experience that is so valuable which everyone encounters regardless of kinds of sacred texts they have read, as with so-called first-hand experience of Oriental tradition, or preverbal, pre-reflective consciousness, or prelogical knowledge by Western tradition (Abdullah, 2001). Scientists might not prove such experience, but it could have happened to anyone, and this paradigm is considered important in managing people's senses so that they do gain a good understanding of others.

During the fourth period (1996-2000s), the three paradigms have shown their circular relationship, as one has to complement the other. For example, Islamic education has developed those paradigms, and it contextually developed theories based-Qur'anic texts and *Sunnah* as social reality and culture, and that must become a source of knowledge in Islamic education, so that those education theories become dynamic and applicable. Abdullah (2017a) has asserted:

Indonesian Muslim intellectuals especially who dedicates their academics works in the State Islamic Higher Education (PTKIN) take another path. From 1980 onward, the idea of social sciences are initially introduced and blended with '*Ulum al-Din* (Islamic knowledge) and finally developed in 2000s as Islamic Studies (*Dirâsât Islâmiyyah*). Even, in some circles in the State Islamic University (UIN), they already introduced Religious Studies and a Comparative Study of Religion. (pp. 315-316)

The affective aspect of the discourse of the '*irfânî* paradigm must draw scholars' attention so the Islamic education is valuable and able to develop right state of mind and to not to be trapped at cognitive evaluation only as it has existed (Dryden & Vos, 1999).

The true meaning of Islamic Studies therefore at this phase has given place for science, meaning when scholars study science they actually learn Islam because science is part of Islamic Studies. Science is no longer considered as general, secular knowledge which has nothing to do with religion. Science in this context does not only base itself on the *burhânî* paradigm and only relate with nature, but it also should be able to combine *bayânî* and '*irfânî*. It should have a solid foundation of sacred texts as inspiration, and science should be able to strengthen the closeness of scholars with God. Through such a process, when science and technology are used by humans, this should not affect fellow humans or the environment negatively, i.e., hazardous impacts and disasters, because there is an affective aspect of science and technology, and there must be sacred texts as foundation and inspiration for its advancement (Sardar, 1988).

Integrating Science and Islam

Baqir, Wahyudi, and Anshori (2005) made interesting comments related to the connection between science and religion that when we talk about the integration of science and religion, we could ask whether this could happen, Baqir believed that the integration is done at the level of ontology, epistemology, and axiology. Ideally, science integration in Islam should cover those three levels. Ontologically, science is developed to prove the truth of religion through scientific findings, and thus through science humans could know their God, because there exist verses of *kawniyyah*. Furthermore, considering how the model of integration could work epistemologically, we may see Al-Jabirî's assertion that there is not any

conflict among *bayânî, burhânî,* and *'irfânî,* but instead each complies with the others. Axiologically, one could apply this by respecting the role of ethics in augmenting science and technology-based religious teaching. Therefore conceptually, the integration of science and religion in Islam should not encounter barriers, yet in reality there is still a gap (Baqir, Wahyudi & Anshori, 2005).

Dhaouadi's (1993) discussion on science and religion in Islam affirmed that no opposition, betrayal, or division exist between science and religion in Islamic tradition. But there is collaboration between Muslim scholars' work using intelligence (*'aql*) in developing science. On the one hand, scientists' tradition of *naqlî* develops science from the sacred texts; on the other hand, Islam does not recognize dualism in the context of science and religion. Still, according to Dhaouadi (1993), separating science from religion could mean ignoring the concept of unity (*tawhîd*), the core of teaching in Islam. Therefore, science and human knowledge should also integrate the spiritual dimension, and there are two aspects of spirituality. First, the objective of science and knowledge is not only to the material but also the immaterial. Second, both spirituality and science could be used as media to communicate with the divine world.

Similarly, Nasr (1976) stated that in the Islamic perspective, knowledge and science come from God. Therefore, there are no dichotomous entities, but rather classifications and hierarchies. This means that there is primary knowledge humans must learn as media to reach God, and there is also secondary knowledge. Al-Ghazali divided knowledge into two classifications. Primary knowledge everyone should learn because through this they can approach God. This includes knowledge about God, mechanism of prayer, and the prophets. There is also a secondary category, which is optional for anyone to learn according to their interests, such as medicine, agriculture, business, and chemistry. A Muslim should learn the two categories as media to approach God. In this way, medicine, chemistry, and agriculture are considered within Islamic knowledge and science, and not just *fiqh, tafsîr, hadîth, tasawuf,* and *kalam* (Ghulsyani, 1998).

The classification offered by al-Ghazali seems to show that there is dichotomous knowledge, while Islam does not tolerate this. So according to Ghulsyani, the separation could cause a misconception that general knowledge has no correlation with Islam, and this seems to be unsuitable with the universality of Islam as *rahmatan lil 'âlamîn*. Therefore, each activity a Muslim does is under guidance of the Qur'an, from the simplest to the most complicated. As stated by Muthahhari, the perfection of Islam as a

religion demands that each discipline is useful for humanity and is considered part of the second category. Ghulsyani (1998) further commented on al-Ghazali's fault in categorizing knowledge because both the Qur'an and *Sunnah* did not limit knowledge. First, in most parts of the Qur'an and *hadîth*, the concept of knowledge seems to be general as stated in the Qur'an: "Say (unto them o Muhammad): are those who know equal with those who know not?"(Qur'an, 39: 9).

Second, several verses of the Qur'an and *hadîth* have explicitly explained that knowledge does not simply mean only to learn *sharî'a* principles and the law as God reveals: "And We verily gave knowledge unto Dawud and Sulaiman, and they said: "Praise to be Allah, Who hath preferred us above many of his believing slaves." Sulaiman was Dawud's heir. And he said: "O mankind! Lo! We have been taught the language of birds and have been given (abundance) of all things. This surely is evident favor" (Qur'an, 27: 15-16). In this verse Prophet Sulaiman perceived that knowledge of bird languages is a blessing or the mercy of God. In another verse, God reveals, "Hast thou not seen that Allah causeth water to fall from the sky, and We produce therewith fruit of divers hues; and among the hills are streaks white and red, of divers hues, and (others) raven-black. And of men and beasts and cattle, in like manner, divers hue? It is clear that the word *'ulamâ'* in the verse are those who know natural laws and the mystery of God's creations on this planet.

Third, in some trusted story, the Prophet Muhammad stated: "seek knowledge until China, because learning is obligation for every Muslim" (Al-Suyutî, 1967); "scientists are those who learn a variety of knowledge, and they learn from many resources; worthy people are those who are knowledgeable ..."(Al-Suyutî, 1967); "wisdom is precious wealth which is stolen from the faithful, he or she deserves it when they found it" (Al-Suyutî, 1967). These texts of *hadîth* confirm that seeking knowledge is not limited to learning the basic teaching of Islam because it is plausibly clear that China at that time was not the center of theological studies but was famous with industry; therefore, Islamic principles and the law could be learned by atheists and infidels.

In addition to the Qur'anic and *hadîth*-based arguments, the other reasoning is that useful knowledge is not limited only to theological studies or *sharî'a* laws in aligning with *halâl* and *harâm*. Muslim scientists had such an understanding when they developed science, so that it could yield useful knowledge because this were useful for humanity while implementing the Qur'an. It is not surprising that they were a torchlight illuminating the

world, particularly the West, in arriving at its Renaissance (Magner, 1994). Muslim scientists flourished in assimilating the scientific heritage of civilization's other nations because the Qur'an has motivated Muslims to use reasoning. They began to realize that developing science was equal with developing religion because they did not observe conflicts between the objective of knowledge and religion and they believed that both religion and knowledge aimed at strengthening the unity of our universe, mirroring the oneness of God (Nasr, 1966).

Muslim scholars should render the word '*ilm* as stated in the Qur'an and *Sunnah* in a general meaning rather than exclusively referring to only religious courses. Islam encourages Muslims to seek knowledge which is beneficial for human beings and forbids those who seek witchcraft and gambling. Ghulsyani (1998) even states that science is part of religion in three aspects. First, if knowledge is to be used to reach the goals of Islam then the process of studying is an obligation. For example, health is important, and therefore learning medicine is a requirement. This could be applied to other fields of life such as economy and agriculture in order to sustain one's life (Ghulsyani, 1998).

Second, the Qur'an idealizes an egalitarian society and is not dependent on another entity (Qur'an, 4: 141). To realize this objective, Muslim communities should have independent cultures and economies. This, however, needs qualified human resources in science and technology. The setback of Muslim society was because of a lack of creativity (Rahman, 1982).

Third, the Qur'an suggests Muslims learn the system and mechanism of how nature was created and how living organisms can sustain life. In short, humans should learn all that God created within the body of human and external creations. These are reflected in the word of God, that He encourages humans to observe the process of creation (Qur'an, 29: 20). Based on these verses, God shows us that all objects in the universe signal His creation. A deep study of the universe and all that is in it is an important way to know God and how great His creations are. The prophets were basing their preaching on this issue. Prophet Musa made his arguments against Faroah (Qur'an, 20: 50-53) and Prophet Nuh (Qur'an, 71: 5-20). Therefore, not all human beings are able to read His creations' signs, only those who are knowledgeable and educated based on their expertise (Qur'an, 67: 3-4).

Al-Faruqi (1986) believed that the essence of Islamic civilization is *tawhîd* fits the above statement. He further asserted that *tawhîd* functionally

is a basic element that molds the cultural identity. It integrates all basic elements and so creates a solid integrity known as civilization. In the process of integrating those various elements, *tawhîd* characterizes its own shape. Furthermore, *tawhîd* builds such basic elements of civilization so that it can establish a harmonious entity. And without changing the essence, it can change itself toward all molding elements and give new characteristics to civilization. The essence of *tawhîd* is implicitly mentioned in "there is no God but Him" (Al-Faruqi, 1986).

As an essential part of Islamic civilization, *tawhîd* has , methodology and context. The first dimension determines the application of basic principles of civilization, and the second dimension is prioritizing these principles. Three principles exist in the methodological dimension: unity, rationalism, and tolerance. Unity asserts that Islamic civilization is based on *tawhîd* values that absorb the values of foreign civilizations, and it modifies as well as integrates them into the system. Islamic civilization is believed to be harmonious in terms of shape, function, and series of events, which are integral according to Islamic teachings (Al-Faruqi, 1986). In the context of transmitting knowledge from Judeo-Christian civilizations, Muslim scientists undertook the processes of appropriation not reception (Sabra, 1992). The word *appropriation* means to appropriate classical intellectual tradition in the perspective of Islam, where positive values are needed to be adapted. The second tradition is rationalism, an element that molds the essence of civilization. This principle is comprised of three rules, which are rejection that not all ideas are suitable to reality, are ultimately contradictory, and open to new or opposing evidence. The first rule protects Muslims from opinions that are difficult to prove, and the second rule protects them from contradictions that exist in a challenging proposition, while the third rule protects them by challenging literalism, fanaticism, and conservatism (Sabra, 1992).

The third principle, tolerance, is an accepting behavior toward a current reality. So, the tolerance is relevant to the principles of epistemology and ethics that accept either decidedly or decidedly. The first condition is called *sâ'ah* (time), and the second is called *yusr* (easiness). Both conditions can give an access to Muslim communities from isolation of outsiders and conservatism that block the creativity. The principle of tolerance encourages human beings to be able to agree with new experiences. Additionally, this principle emboldens human beings to convey new data accurately to enrich experiences and bring civilization toward the future (Sabra, 1992).

We can see *tawhîd* as the essence of civilization through three aspects. First, *tawhîd* is a principle of metaphysics. For a Muslim, God is the only essence, and one should be devoted to Him in prayer. And to realize this truth, humans need to be conscious of the living existence around them. Therefore, they need knowledge, such as science that can help humans understand God's intention in natural laws, in His creations, and in social sciences to understand social phenomena. Second, *tawhîd* is a basic principle of axiology. This principle asserts that all human activities are or will be taken as responsibilities by God, and, therefore, there should be Godly consciousness in human activities. Third, *tawhîd* is a basic social principle. This principle asserts that humans who believe in God are all in a solid brotherhood and live based on mutual love and mutual corrections among them about rights and wrongs. Lastly, *tawhîd* is an aesthetic principle requiring humans to embrace their divine consciousness in arts, either as intentions or products (Sabra, 1992).

Given the *tawhîd* paradigm, all knowledge – in theology or natural sciences – is instrumental in approaching God, and when the paradigm plays this role then any knowledge is neutral, meaning that it is a kind of human devotion to God. However, as a result of human thinking, knowledge is relative and debatable before scientists, especially when they discover new findings. In this perspective, various kinds of knowledge become familiar, one to the other, because each discipline interprets a variety of new discoveries. When Muslim civilization reached its zenith, Muslim scientists approached their research objectives with the above vision, in which different disciplines were seen via one perspective, and these various disciplines were believed to have reciprocal relationships like branches of a tree. All objectives of knowledge are perceived to have unity and coherency in the universe. Therefore, all knowledge is the oneness. To understand various steps of their existence, Muslim scientists used experimental approaches and direct observations in addition to logic and intuition. Ibn Sina, 'Umar Khayyam, and Qutb al-Din Shirâzi were Muslim scientists who integrated authorities in religious sciences with a natural science encyclopedia (Muqowim & Lessy, 2019).

According to Sarton (1969), from 750 to 1100, Muslims were pioneers in science, and from 1100 to 1350 the centers of learning in the Islamic world were important in attracting people from around the world. After 1350, Islamic civilization declined, and Islamic *madrasah* did not develop natural sciences in the curriculum, except for astronomy and mathematics (Azra, 1999), which led to three consequences. First, while Europe struggled to

discover physical laws that hide in the universe and to uncover ways of exploiting wealth and natural resources, Muslims stopped these kinds of discovery activities. Second, Muslims learned empirical knowledge that seemed separated from the religious sciences. Consequently, Muslims did not understand the world view of Islam because this world view was changed with the atheism in the Western philosophical tradition. Third, the elimination of the natural sciences from the *madrasah*'s curriculum and the lack of *madrasah*'s relationship with modern resources among religious scholars had consequences for the split of two groups in the Muslim world: 1) some Muslims were under the influence of science and Western technology, and without knowledge and the limit of empirical sciences, they tried to interpret the Qur'an and *hadîth* according to these empirical sciences, but 2) some religious scholars suggested that scientific theories were opposite to Islamic doctrines and, therefore, this shows an offence toward science. Consequently, some Muslims turned back from Islam. If natural sciences had not been taken out from the religious curriculum, this situation might not have happened (Ghulsyani, 1998).

Integration of Science and Religion in Islamic Higher Educational Institutions

Muslims experienced the stagnancy in developing science. Therefore, they lagged behind Western science and the Renaissance because Muslims did not institutionalize their scientific ethos, such as universalism, communalism, organized skepticism, and disinterestedness (Merton, 1957). In addition, the *tawhîd* paradigm to understand science in Islam began from ontology, epistemology and axiology that they also developed. Muslims did not augment this paradigm to build exclusiveness.

There were worries among Muslims that the institutionalization of those paradigms would make an inclusiveness of Islam inclusive because it included only aspects that related to Islam. However, these worries were not necessary because in this institutionalization Muslims should have believed that Islam is universal and can bring the public good for the universe. Kettani (1988), therefore, asserted that pluralism should be included in this institution. In addition, creativity, criticism, patronage support, and networking accessibility were needed, and they should be integrated so that science is integral with institutions rather than with an individual or a figure. If science is dependent on a person then there is not a sustainability of science (Muqowim & Lessy, 2019).

In 1982, in Calcutta, India, Professor Ernest Renan contended the significance of science in human life and that all wealth is the result of science. It describes that there is no wealth in the world without science, and there is no wealth in the world other than science. In sum, the whole world of humanity is an industrial world, meaning that the world is a world of science. If science were removed from the human sphere, no man would continue to remain in the world (Kurzman, 2002). This motivated Indian Muslims to invent science because Renan knew that Islam does not deny science. Renan further stated that Islam is the closest religion to science, and there is no incompatibility between science and Islam.

Professor Renan further asserted that religious studies that were taught in Islamic education had no connection with science because of long colonization in the Muslim world. At times, Muslims believed that science was forbidden because science was brought by the Westerners. It is also important that in order to invent science, he urged Muslims to critically learn philosophy to see natural phenomena and shift their ways of thinking from a fragmental to an integral perspective because a view had emerged among Muslims that they understood philosophy from a separatist view, not from a comprehensive view that philosophy is the mother of all knowledge. He also stated that Muslims reached their highest civilization in science because they learned philosophy, which is part of Islam. Accordingly, there are many verses of the Qur'an and narratives in *hadîth* that encourage Muslims to ponder God's majesty because He creates all things in the universe for humans, other creatures, and history (Iqbal, 1965). Additionally, the advance of science is because of human needs. Therefore, various branches of science have developed for the sake of science in daily living.

The institutionalization of science in Islam began from the levels of paradigms to the practice. At the paradigm levels, Muslims today need to take their attention to the following: first, (re)understanding of Islamic studies that not only include *al-'ulûm al-naqliyyah*, but also *al-'ulûm al-'aqliyyah*. Science is part of Islamic studies because the foundation of Islamic studies is Islamic spirituality based on the Qur'an and *Sunnah*. Second, having said this, ontologically, epistemologically, and axiologically, there is no conflict between science and religion. Third, epistemologically, the study of science should integrate the paradigms of *bayânî*, *burhânî*, and *'irfânî*. This means that the sources of knowledge in science can comprise all three components: texts, reality, and experience. Texts include scripts that are embedded in the Qur'an and *Sunnah*, and references about science which

are written by Muslim or non-Muslim scientists. Reality is a natural phenomenon in our surroundings and one place may differ from the other. Therefore, people in different places invent different science. The paradigm of *'irfânî* is important to shape the unity of scientists so that they do not feel as they are more superior than other scientists.

The fourth paradigm is the spirit of philosophy. Philosophy is believed to comprehensively sees science as not standing alone, or being opposite to other kinds of knowledge. A scientist should understand disciplines other than his or her own because one cannot solely solve a problem with their knowledge but needs to involve other fields of studies. When they want to mitigate a natural disaster, a scientist not only depends on his or her own knowledge but also needs to hear from other scientists. Therefore, the spirit of philosophy guides scientists to look to an object of study objectively so that they do not make their claims without scientific bases. A respect toward multi-perspectives is truly significant to nurture mutual understanding among peoples.

This paradigm is useful because Nasr (1966) stated that lack of science in the Muslim world is due to Muslims' rejection of it because some considered it secular (Hoodbhoy, 1997). It means that Muslims have experienced stagnancy in science and technology, which might not have happened if they would believe in that paradigm, which encourages them to be open to outsiders.

To develop science, Muslims therefore should employ the practical aspects of science not only from its technical facets, but also with mechanisms of making grants, building facilities that are accessible to the public, and establishing accountable institutions. Governments in Muslim world need to create public policies that lean toward developing science, and, in particular, knowledge which is useful for daily lives. These governments also need to support their science institutions with sufficient grants to make science development sustainable. The grants can be used for multiple purposes, such as salaries for researchers and budgets for physical infrastructures including libraries, laboratories, meeting and convention halls, research centers, and writing facilities. Additionally, the governments need to establish research foundations that are purposive for science of all fields. As with science in the classical era of Islam, these new establishments can start with collecting work of philosophers such as Hippocrates, Aristotle, Ibn Sina, or al-Haytham. The establishments need to integrate their scientific work with modern practices of science as hybrids to invent new discoveries that are useful for humanities and technology that will help

peoples mitigate their new issues, such as climate changes, conflict of interest, social justice, food, and social security. There is also a need for designing Indonesia's particular research to suitably benefit the country (Muqowim & Lessy, 2019).

The transformation from the IAIN to the UIN in the context of the UIN Sunan Kalijaga has been done in two levels, namely mental creation and physical creation. The first level is related to the shift in paradigms and mindset, such as visions, core values, future dreams, and strategic plans. The second level is correlated with translating the paradigms and the visions in more implemented ways. At the first level, ideas about integrated-interconnected paradigms are addressed as meaning shifts of Islamic studies which are not only related to the augment of *al-'ulûm naqliyyah*, but also with *al-'ulûm 'aqliyyah*. Given these paradigms, differences no longer exist between science and religion because both have the same value resources, Qur'an dan *hadîth*.

These paradigm levels are then elaborated to become more practical in terms of policies, programs, and human resources. All of this has to do with the integrative-interconnected paradigms determined as the UIN Sunan Kalijaga's core values, and as the policies that have been made then reflect the *Tri Dharma Perguruan Tinggi*, which is based on the integrative-interconnected paradigms, such as learning, teaching, and community services that are based on these paradigms. Even though the policy making at the UIN Sunan Kalijaga has not fully met the paradigms, in general these paradigms benefit the academicians. At the practical level, policies related to the *Tri Dharma Perguruan Tinggi* are translated in forms of programs and practices. Therefore, qualified human resources should support the implementation of these programs. Even though the process of transformation has taken more than a decade, the paradigms should be reviewed and evaluated through auditing either from external auditors or internal ones, in order to guarantee the output of the paradigms. This also is coherent with a continuous process of quality improvements at the UIN Sunan Kalijaga to realize accountable processes of teaching and learning.

Conclusion

Institutional transformation from the IAIN to the UIN reveals a dynamic development at the PTKI, in particular at UIN Sunan Kalijaga Yogyakarta, and this is an accountability of knowledge in struggling with challenges and existing problems. Islamic studies, therefore, experiences changes because of the shift in the paradigms, such as *al-'ulûm al-naqliyyah*

and *al-'ulûm al-'aqliyyah,* and there is a meaningful shift of Islamic studies from traditional approaches to modern ones. Formerly, Islamic studies only associated with developing religious scripts (*al-'ulûm al-naqliyyah*), while now it should focus also on developing logic and interpretation (*al-'ulûm al-'aqliyyah*). The change from the IAIN to the UIN is a concrete response toward an integrative relation between science and religion. Even though each UIN offers different concepts about the integrative paradigm designs, all UINs agreed on the importance of building a new tradition in the PTKI with the integrative paradigms from theoretic-philosophic-concepts to practical-implemented-contexts.

Since the inception of the UIN Sunan Kalijaga, the interrelationship between those two paradigms is dynamic from single entities to isolated entities to integrated entities. Furthermore, the institutional change at the UIN Sunan Kalijaga has been inspired by the development of Islamic civilization, in particular science and technology during the 8th to 13th century. This historical reconstruction may be used by the UIN Sunan Kalijaga to respond modern concerns in science and technology. As mentioned earlier, the current shifts are in two domains: one is mental creation (i.e., moral, religion, and spirituality) and the other is physical creation (social and physical sciences), and these aspects are interrelated with how any Islamic university in Indonesia should develop their physical and human resources to become competitive in the changing world.

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